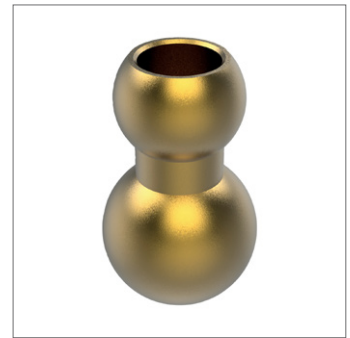
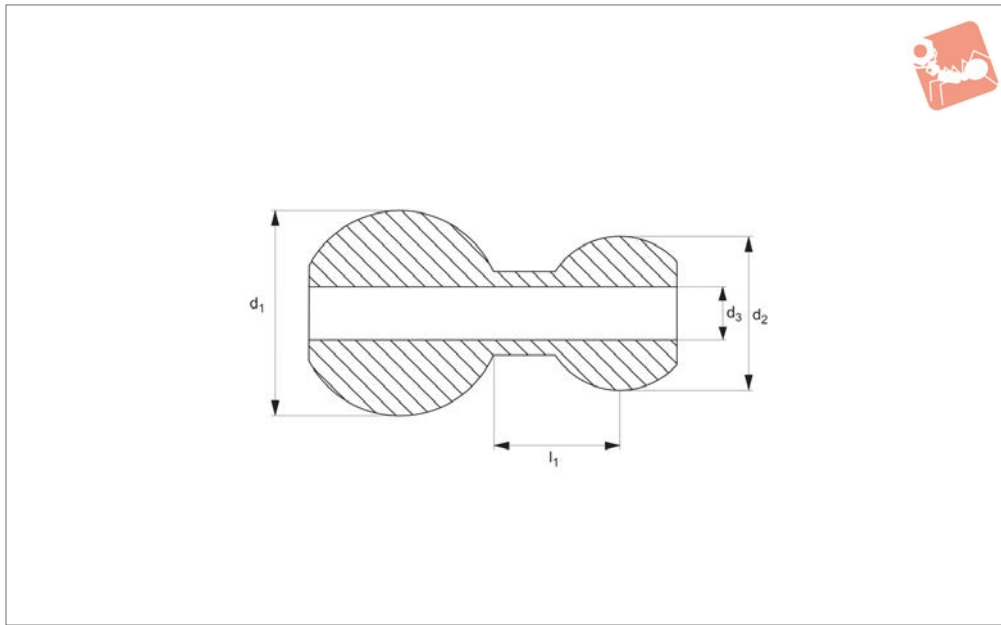




# Swivel Max. - Brass Base Element

modular coolant nozzle system - max. 6,7 bar

## Coolant Nozzles



**20051**

COOLANT NOZZLES

**Material**

Brass.

Max. pressure: 6,7 bar.

**Technical Notes**

Max. temperature: 43°C.

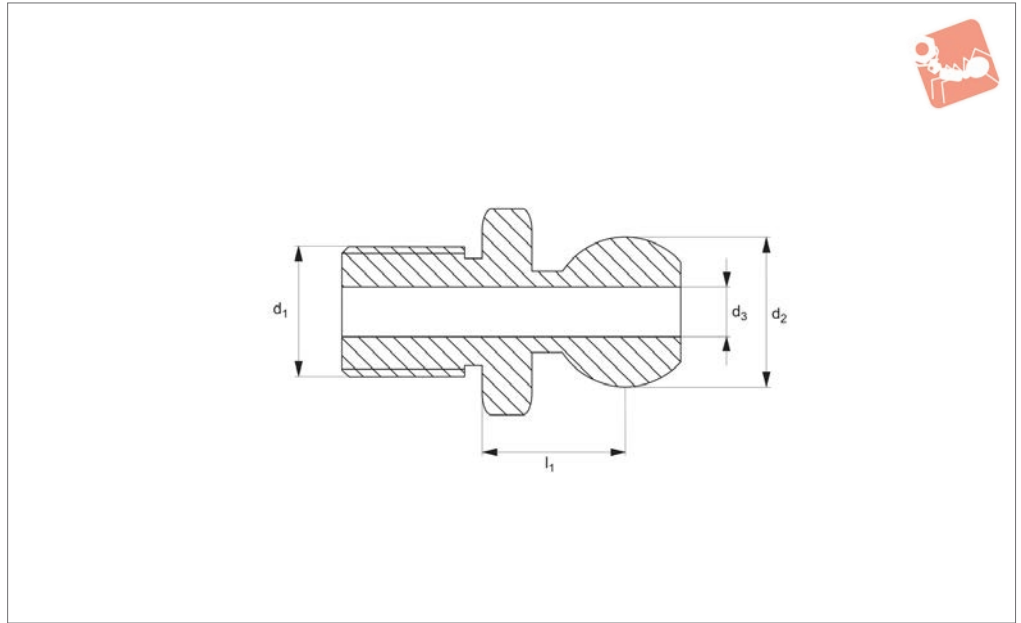
**Tips**

For use with our Swivel Max. coolant nozzle system (20051 to 20059).

Order No.	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l <sub>1</sub>
20051.W0100	10	12	5	10.2
20051.W0120	12	12	5	10.2
20051.W0140	14	12	5	10.2
20051.W0150	15	12	5	10.2
20051.W0220	22	12	5	10.2
20051.W2500	1/2"	12	5	10.2
20051.W2630	5/8"	12	5	10.2



**20052**



**Material**

Acetal.

Max. pressure: 6,7 bar.

**Tips**

For use with our Swivel Max. coolant nozzle system (20051 to 20059).

**Technical Notes**

Max. temperature: 43°C.

Order No.	Type	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l <sub>1</sub>
20052.W0100	Metric Fine	M10x1,25	12	5	10.2
20052.W0120	Metric Fine	M12x1,25	12	5	10.2
20052.W0140	Metric Fine	M14x1,00	12	5	10.2
20052.W1100	Metric Coarse	M10x1,50	12	5	10.2
20052.W1120	Metric Coarse	M12x1,75	12	5	10.2
20052.W1140	Metric Coarse	M14x2,00	12	5	10.2
20052.W2120	NPT/BSPT	1/8"	12	5	10.2
20052.W2250	NPT/BSPT	1/4"	12	5	10.2

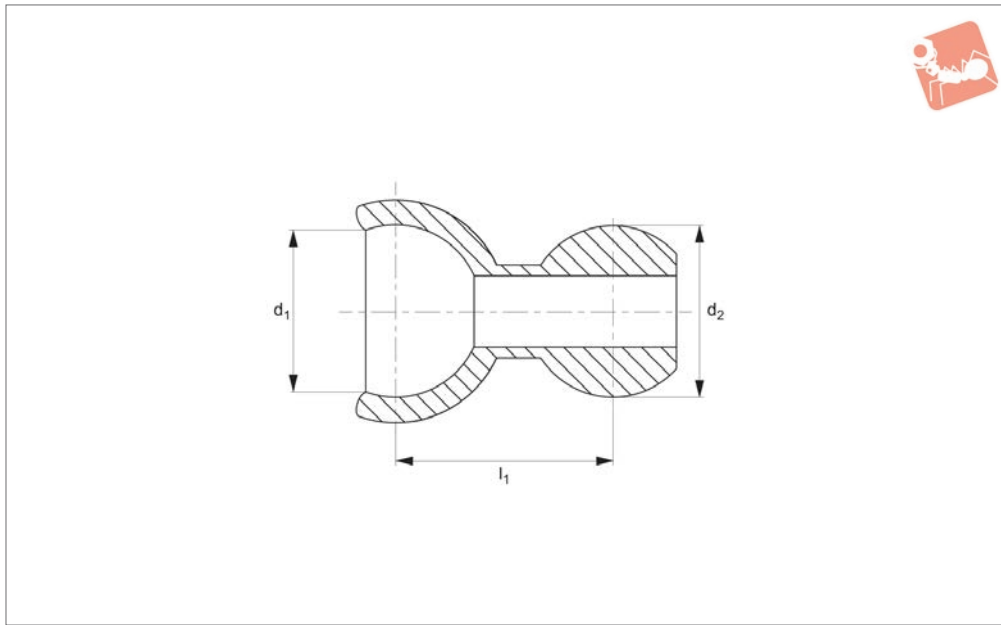


# Swivel Max. - Intermediate Links

modular coolant nozzle systems - max. 6,7 bar



## Coolant Nozzles



**20053**

COOLANT NOZZLES

**Material**  
Acetal.

Max. pressure: 6,7 bar.

For extension tube see 20090.

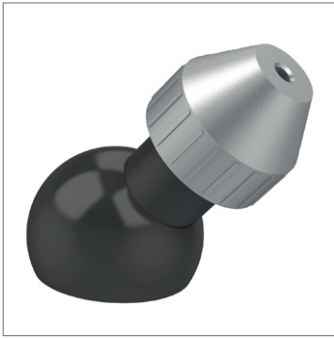
**Technical Notes**

Max. temperature: 43°C.

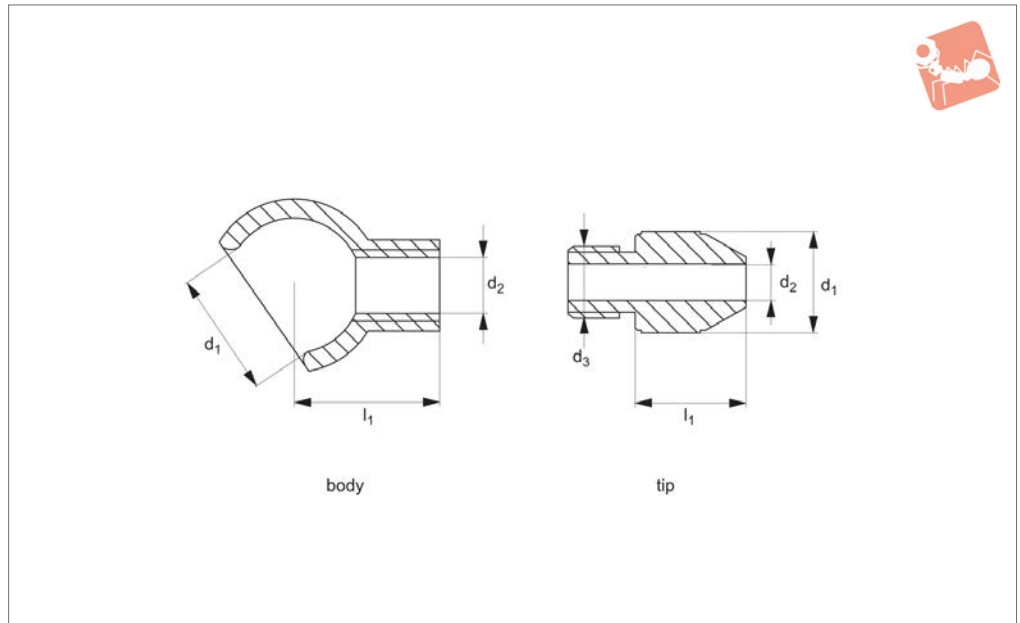
**Tips**

For use with our Swivel Max. coolant nozzle system (20051 to 20059).

Order No.	Adaptor type	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	From	To
<b>20053.W0010</b>	Standard Swivel Max Intermediate Link	12,0	12,0	15,2	Swivel Max	Swivel Max
<b>20053.W0020</b>	Reverse link to allow Swivel Max base to be used at both ends of nozzle assembly	12,0	12,0	16,5	Swivel Max	Swivel Max
<b>20053.W0120</b>	From Swivel Max to LocLine - to extend from Swivel Max link to add LocLine spray bar	12,0	6,3	15,7	Swivel Max	LocLine
<b>20053.W0130</b>	From Swivel Max to SnapLoc - to extend from Swivel Max link to add SnapLoc flare nozzle	12,0	6,3	15,7	Swivel Max	SnapLoc
<b>20053.W0140</b>	From SnapLoc to Swivel Max - to attach Swivel Max Fixed Flow Nozzle 20055 to SnapLoc	6,3	12,0	15,7	SnapLock	Swivel Max
<b>20053.W0150</b>	From LocLine to Swivel Max - to attach Swivel Max Vari Flow Nozzle 20056 to LocLine	6,3	12,0	15,7	LockLine	Swivel Max



**20055**



**Material**

Body: acetal.  
 Spray tip: aluminium.

Max. pressure: 6,7 bar.  
 Please order body and tip separately.

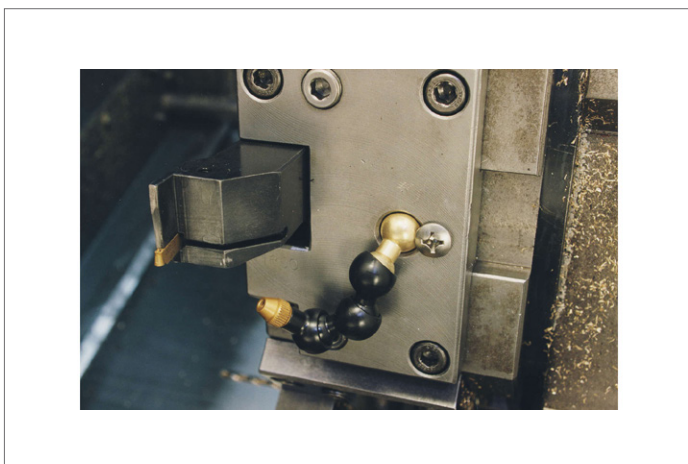
**Technical Notes**

Max. temperature: 43°C.

**Tips**

For use with our Swivel Max. coolant nozzle system (20051 to 20059).

Order No.	Type	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l <sub>1</sub>
20055.W1150	Tip	9.1	1.6	1/4"UNF	10.2
20055.W2121	Tip	9.1	2.2	1/4"UNF	10.2
20055.W2122	Tip	9.1	3.0	1/4"UNF	10.2
20055.W2123	Tip	9.1	4.0	1/4"UNF	10.2
20055.W2124	Body	12.0	1/4"UNF	-	12.7

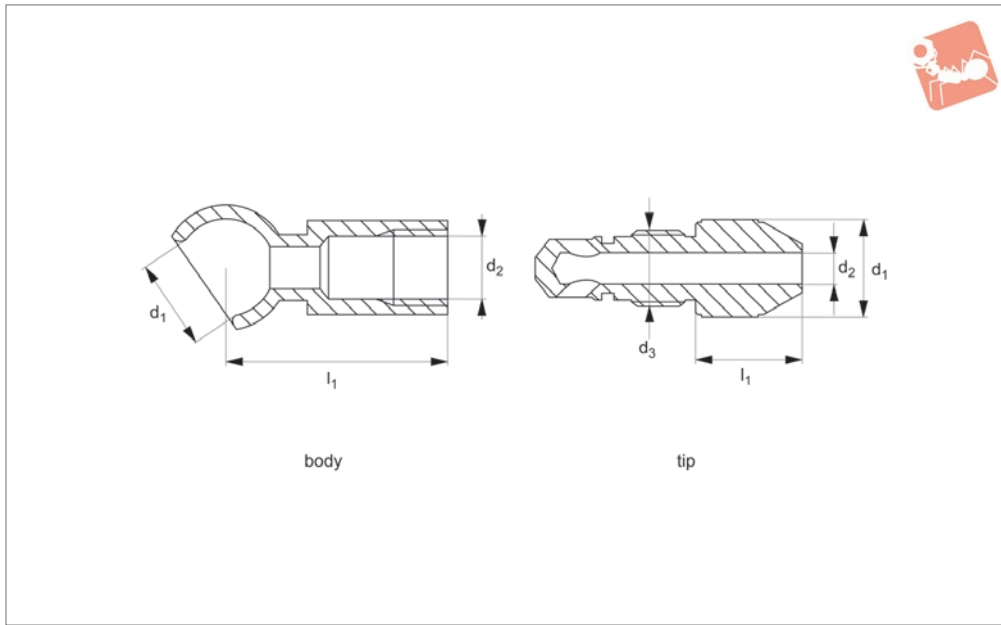




# Swivel Max. - Adjustable Spray Nozzle

modular coolant system - max. 6,7 bar

## Coolant Nozzles



**20056**

COOLANT NOZZLES

### Material

Body: acetal.  
Spray tip: aluminium.

Max. pressure: 6,7 bar.  
Please order body and tip separately.

### Tips

For use with our Swivel Max. coolant nozzle system (20051 to 20059).

### Technical Notes

Max. temperature: 43°C.

Order No.	Type	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l <sub>1</sub>
20056.W1150	Tip	12.2	2.2	3/8" UNF	12.7
20056.W2122	Tip	12.2	3.0	3/8" UNF	12.7
20056.W2123	Tip	12.2	4.0	3/8" UNF	12.7
20056.W2124	Body	12.0	3/8" UNF	-	28.5



20059



COOLANT NOZZLES

**Tips**

For use with our Swivel Max. coolant nozzle system (20051 to 20056).

**Order No.**  
20059.W0001

Type  
Assembly Pliers

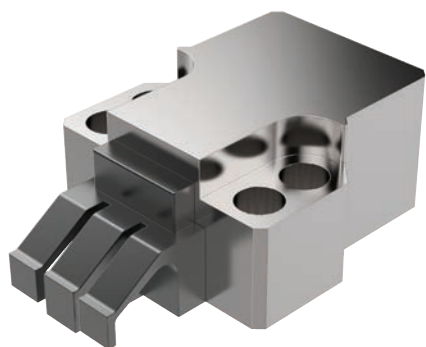


# Horizontal Clamping

up to 2.2 tons

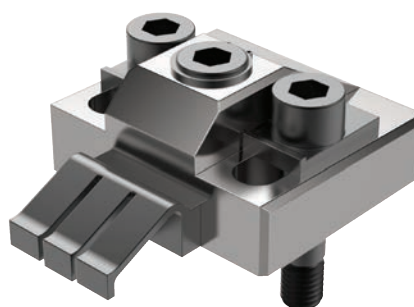
## Clamping & Height Setting

### Clamping Torque



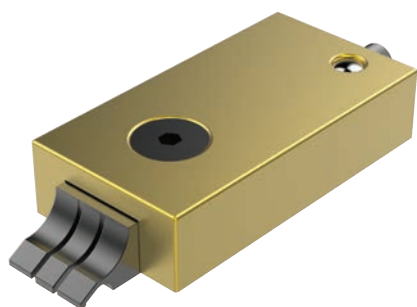
11040/CL2040

Clamping Torque N/m	Clamping Force N
50	23000
40	18000
30	12500
25	11500
20	9500



11070/CL2070

Clamping Torque N/m	Clamping Force N
60	16500
50	15000
40	12000
30	10000
25	8000
20	7000



11081/CL2081

Clamping Torque N/m	Clamping Force N
5	6600
4.5	5500
4	4900



10940/CL0030

Clamping Torque N/m	Clamping Force N
8.5	4000
8	3800
7	3400
6	3000
5	2500
4	2000

COOLANT NOZZLES

ov-W11040-A-T-W10940-A-T-horizontal-clamping-rnh - Updated - 13-10-2022



## What Flow Rate of Coolant is Required?

Choose a nozzle with an orifice size that matches your pump's capacity.

Select an orifice size too big and coolant pressure will drop off, an orifice size too small and an inadequate amount of coolant will reach the tool tip and can result in damage.

**Note:** Flow rates are based on water at 20°. Actual results may vary with fluid type, extension length and aiming angle.

System pressure (bar)	0.35	0.7	1.4	2.0	2.8	4.1	5.5
<b>Orifice diameter (mm)</b>	<b>Flow rate (litres/minute)</b>						
1.02	0.32	0.45	0.64	0.77	0.91	1.18	1.41
1.57	0.86	1.14	1.68	2	2.32	2.82	3.32
2.18	1.64	2.32	3.27	3.86	4.55	5.46	6.82
2.79	2.91	4.09	6.36	7.27	8.18	10	11.37
4.06	6.36	9.09	12.73	15.91	18.18	21.82	25.46
5.59	11.37	16.82	23.64	30.46	35.46	42.28	48.19
System pressure (bar)	6.9	10.3	13.8	20.7	34.5	69.0	103.5
<b>Orifice diameter (mm)</b>	<b>Flow rate (litres/minute)</b>						
1.02	1.59	1.86	2.09	2.77	4	5.46	6.36
1.57	3.64	4.55	5.46	6.82	9.55	13.64	17.28
2.18	7.73	9.09	10.46	12.73	16.82	23.64	28.64
2.79	14.09	16.37	18.64	23.64	29.55	40.46	49.55
4.06	28.19	34.55	41.37	49.1	63.65	90.01	110.47
5.59	53.64	65.46	75.01	89.1	114.56	161.39	197.75

## Calculating Coolant Velocity

To calculate the average coolant exit velocity (important in some grinding operations where it is often desirable to match or exceed the peripheral velocity of the wheel) refer to the formula below. Choose an orifice size that produces sufficient back pressure to achieve the desired velocity.

$$V = \frac{(17.11 \times 10^{-5}) \times F}{(d \times 10^{-3})^2}$$

Where;

V = Velocity in m/s

C = Constant of 17.11 x 10<sup>-5</sup>

F = Flow rate through orifice in litres/min (see table above)

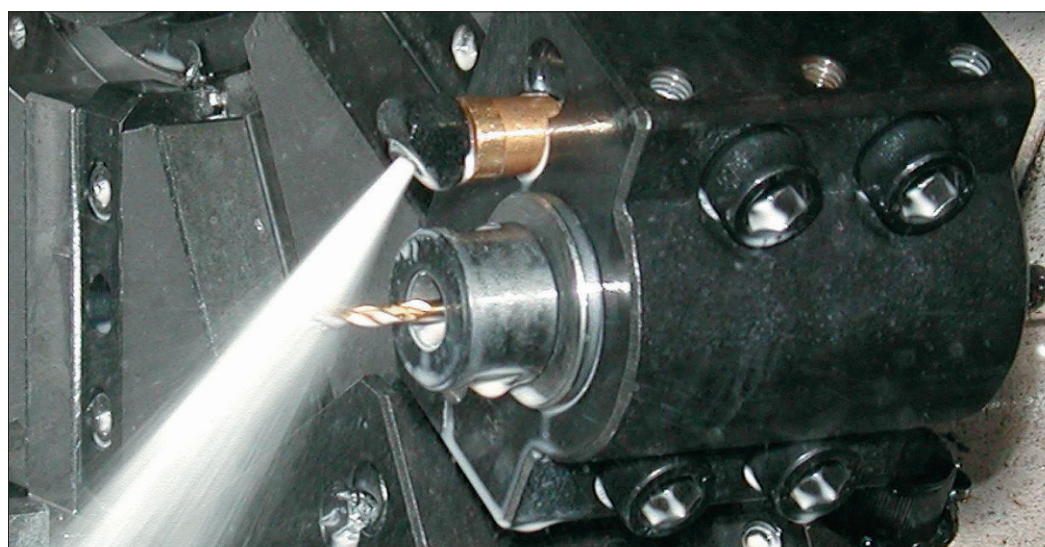
d = Orifice diameter (mm) from product tables

## Nozzle Extensions

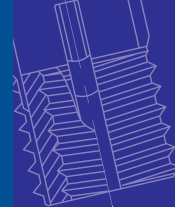
Choose a nozzle extension that suits your application. Short projections are more compact and less likely to be knocked out of position by swarf or vibration. Longer extensions are easier to aim, produce a more streamline or laminar flow and shoot further.

## A Word About Coolant Pumps

The most common coolant pump on CNC machine tools is a single stage centrifugal pump, normally designed to move high volumes of water at low pressure (typically 0.2 to 1.4 bar). Multi-stage centrifugal pumps are capable of higher pressures (typically 1.4 to 14 bar) while still producing high flow rates. Positive displacement pumps are used for very high pressure applications up to 140 bar and are generally used with small diameter orifices due to their lower flow rates.





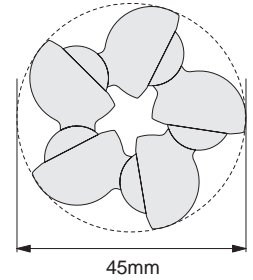


An extremely versatile system with an incredible range of motion in each joint – 72° either side of centreline! It's compact design is ideal for tight spaces. Available with fixed or variable flow nozzles and interchangeable orifices rated to 6.7 bar maximum and available with threaded or spherical bases. Vibration resistant joints provide superior reliability in CNC lathe turrets where inertial forces are high.

## Variations

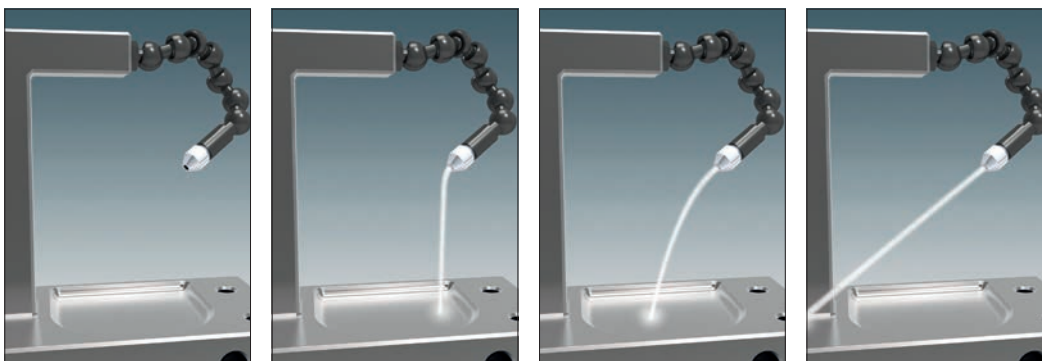


Links swivel 72° either side of centreline enabling it to come full circle within a 45mm inscribed circle.



## Applications

The Swival Max coolant nozzle system with fixed flow end nozzles is ideal for CNC lathes due to its compactness and flexibility.



Variable flow end nozzles enable infinite flow control from full shutoff to full flow with fingertip control. They are ideal for manual and CNC mills.



An extremely versatile coolant nozzle system compatible with new and existing installations.

Build your flexible system for your application.

Base



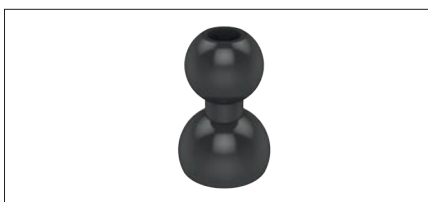
20051 - Brass Base Element  
For plain bore and screw location.

OR



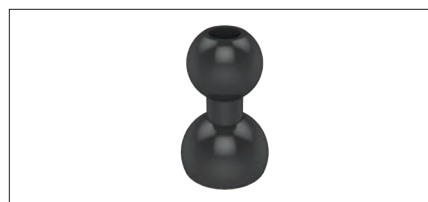
20052 - Acetal Base Element  
For easy screw in fixing.

Intermediate Links  
for Maximum  
Extension and Reach



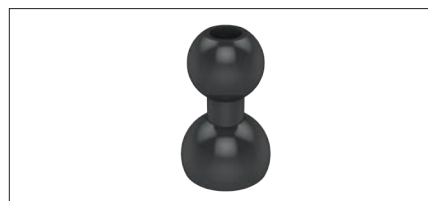
20053.W0010 - Standard Swivel Max  
Extension Links

OR



20053.W0120 - Connect from Swivel Max  
to LocLine.

OR



20053.W0130 - Connect from Swivel Max to  
SnapLoc.

Alternative Option

Alternatively, connect from  
either LocLine or SnapLoc to  
our in-expensive and versatile  
swivel Max System.



20053.W0140 - Connect from LocLine  
to Swivel Max

OR



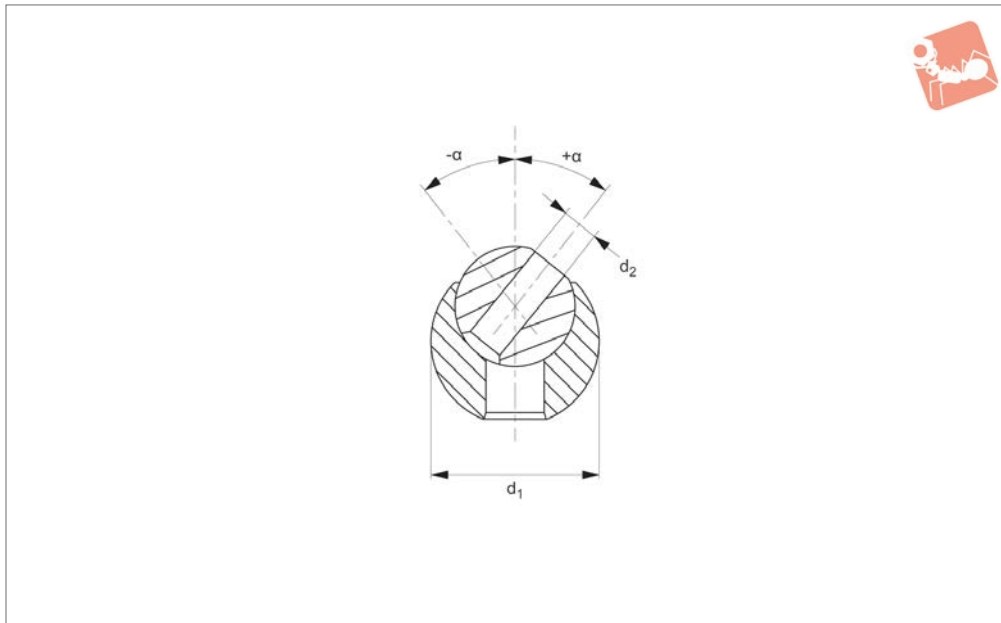
20053.W0150 - Connect from SnapLoc  
to Swivel Max.



# Coolant Nozzles - Black Eye

max. 10 bar

# Coolant Nozzles



**20000**

COOLANT NOZZLES

### Material

Body: acetal.  
Ball: stainless steel.

### Technical Notes

Max. temperature 70°C.  
Max. pressure 10 bar.  
symbol $\alpha$ /symbol is an angle of adjustment

either side of centre line.  
For extension tubes see part nos. 20090 and 20092.  
For spray tips see part nos. 20080 and 20082.

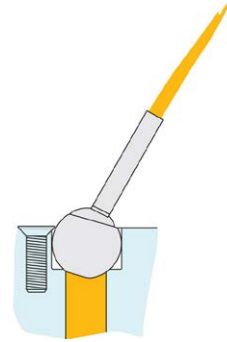
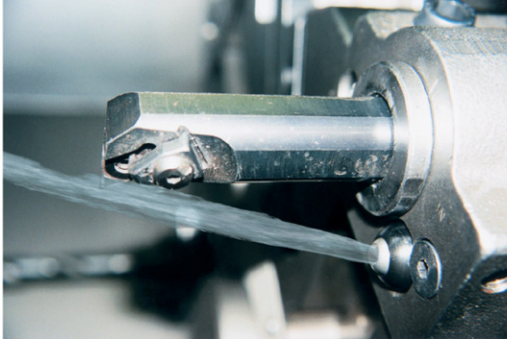
### Tips

Easy to aim replacement for basic spherical

coolant nozzles. Install, lock in place then aim the stainless steel ball with the tip of a hex key.

Choose tapped version if you need to use with extension tubes or if occasional plugging of unit is required (set screw included).

Order No.	d <sub>1</sub>	d <sub>2</sub>	Jet bore d <sub>2</sub>	$\alpha$
20000.W0100	10	2.8	Plain	±35°
20000.W0120	12	4.0	Plain	±35°
20000.W0140	14	4.0	Plain	±35°
20000.W0150	15	4.0	Plain	±35°
20000.W0180	18	4.0	Plain	±35°
20000.W0220	22	5.6	Plain	±35°
20000.W2370	3/8"	2.8	Plain	±35°
20000.W2500	1/2"	4.0	Plain	±35°
20000.W2630	5/8"	4.0	Plain	±35°
20000.W6100	10	M 3,5x0,6	Threaded	±35°
20000.W6120	12	M 4,0x0,7	Threaded	±35°
20000.W6140	14	M 4,0x0,7	Threaded	±35°
20000.W6150	15	M 4,0x0,7	Threaded	±35°
20000.W6180	18	M 5,0x0,8	Threaded	±35°
20000.W6220	22	M 6,0x1,0	Threaded	±35°
20000.W8370	3/8"	M 3,5x0,6	Threaded	±35°
20000.W8500	1/2"	M 4,0x0,7	Threaded	±35°
20000.W8630	5/8"	M 4,0x0,7	Threaded	±35°

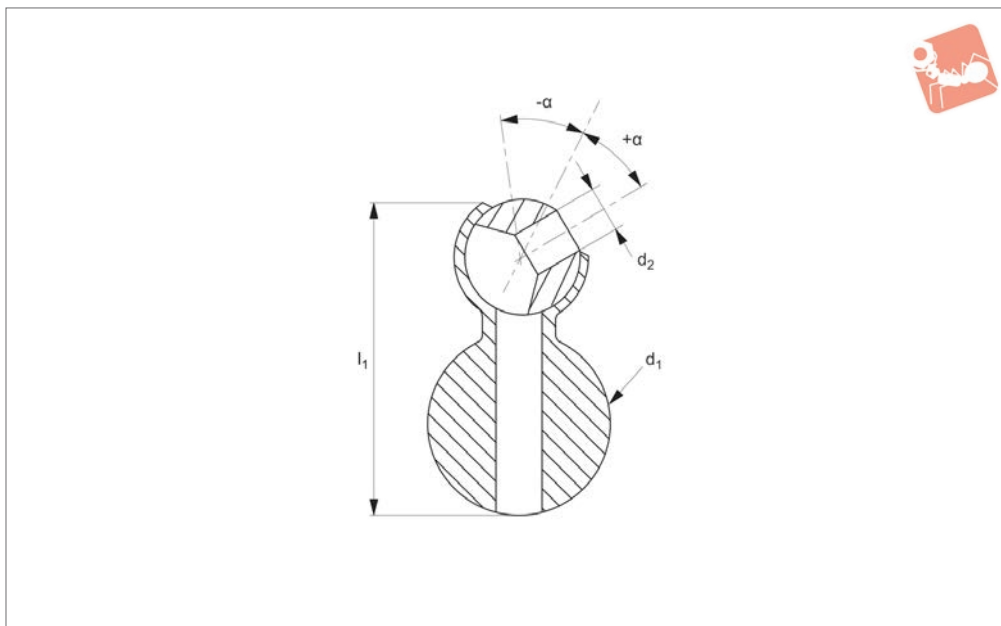




# Coolant Nozzles - Bug Eye

max. 10 bar

# Coolant Nozzles



**20002**

COOLANT NOZZLES

### Material

Body: acetal.  
Ball: stainless steel.

### Technical Notes

Max. temperature 70°C.  
Max. pressure 10 bar.

symbol  $\alpha$  is an angle of adjustment either side of centre line.

For extension tubes see part nos. 20090 and 20092.

For spray tips see part nos. 20080 and 20082.

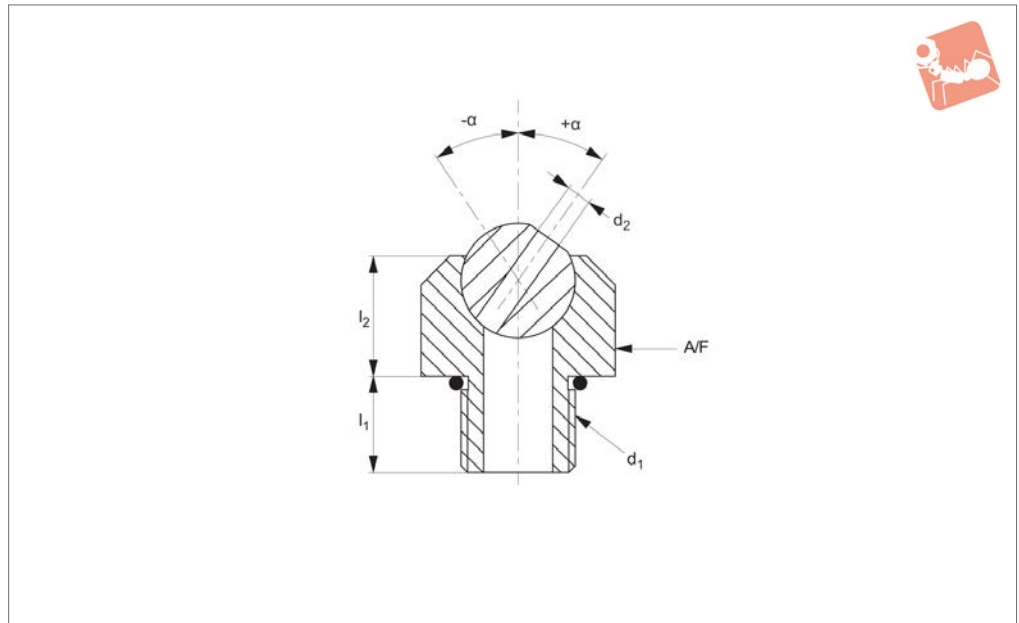
### Tips

Extended ball socket for extra „aimability“, still compact. Especially useful for short tool projections.

Order No.	d <sub>1</sub>	d <sub>2</sub>	Jet bore d <sub>2</sub>	l <sub>1</sub>	$\alpha$
20002.W0120	12	2.8	Plain	28.0	±35°
20002.W0121	12	4.0	Plain	28.0	±35°
20002.W0140	14	2.8	Plain	30.5	±35°
20002.W0141	14	4.0	Plain	30.5	±35°
20002.W0150	15	2.8	Plain	31.2	±35°
20002.W0151	15	4.0	Plain	31.2	±35°
20002.W0220	22	2.8	Plain	38.0	±35°
20002.W0221	22	4.0	Plain	38.0	±35°
20002.W2500	1/2"	2.8	Plain	28.5	±35°
20002.W2501	1/2"	4.0	Plain	28.5	±35°
20002.W2630	5/8"	2.8	Plain	31.2	±35°
20002.W2631	5/8"	4.0	Plain	31.2	±35°
20002.W6120	12	M 6 x 1,0	Threaded	28.0	±35°
20002.W6140	14	M 6 x 1,0	Threaded	30.5	±35°
20002.W6150	15	M 6 x 1,0	Threaded	31.2	±35°
20002.W6220	22	M 6 x 1,0	Threaded	38.0	±35°
20002.W8500	1/2"	M 6 x 1,0	Threaded	28.5	±35°
20002.W8630	5/8"	M 6 x 1,0	Threaded	31.2	±35°



## 20010



### Material

Body: acetal.  
Ball: stainless steel.

### Technical Notes

Max. temperature 70°C.  
Max. pressure 10 bar.  
symbol $\alpha$ /symbol is an angle of adjustment

either side of centre line.  
For extension tubes see part nos. 20090 and 20092.  
For spray tips see part nos. 20080 and 20082.

### Tips

Screws into threaded coolant ports. Large

adjustment angle.  
Choose large orifice for maximum flow.  
Choose smaller orifices when using multiple nozzles.  
Choose tapped ends if nozzle will need to be plugged (set screw included).

Order No.	Thread	d <sub>1</sub>	d <sub>2</sub>	Jet bore d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	$\alpha$	A/F
20010.W0100	Metric Fine	M10x1,25	4.0	Plain	9.1	10.4	±35°	17
20010.W0101	Metric Fine	M10x1,25	2.8	Plain	9.1	10.4	±35°	17
20010.W1101	Metric Coarse	M10x1,50	4.0	Plain	9.1	10.4	±35°	17
20010.W1102	Metric Coarse	M10x1,50	2.8	Plain	9.1	10.4	±35°	17
20010.W1120	Metric Coarse	M12x1,75	4.0	Plain	9.1	10.4	±35°	17
20010.W1121	Metric Coarse	M12x1,75	2.8	Plain	9.9	10.4	±35°	17
20010.W2130	NPT-BSPT	1/8	4.0	Plain	9.9	10.4	±35°	17
20010.W2131	NPT-BSPT	1/8	2.8	Plain	12.7	10.4	±35°	17
20010.W2250	NPT-BSPT	1/4	4.0	Plain	12.7	10.4	±35°	17
20010.W2251	NPT-BSPT	1/4	2.8	Plain	12.7	10.4	±35°	17
20010.W2380	NPT-BSPT	3/8	4.0	Plain	12.7	10.4	±35°	17
20010.W2381	NPT-BSPT	3/8	5.6	Plain	12.7	10.4	±35°	17
20010.W2382	NPT-BSPT	3/8	M 5x0,8	Threaded	9.1	10.4	±35°	17
20010.W6100	Metric Fine	M10x1,25	M 5x0,8	Threaded	9.1	10.4	±35°	17
20010.W7100	Metric Coarse	M10x1,50	M 5x0,8	Threaded	9.1	10.4	±35°	17
20010.W7120	Metric Coarse	M12x1,75	M 5x0,8	Threaded	9.9	10.4	±35°	17
20010.W8130	NPT-BSPT	1/8	M 5x0,8	Threaded	12.7	10.4	±35°	17
20010.W8131	NPT-BSPT	1/4	M 6x1,0	Threaded	12.7	10.4	±35°	17
20010.W8381	NPT-BSPT	3/8	M 6x1,0	Threaded	12.7	10.4	±35°	17

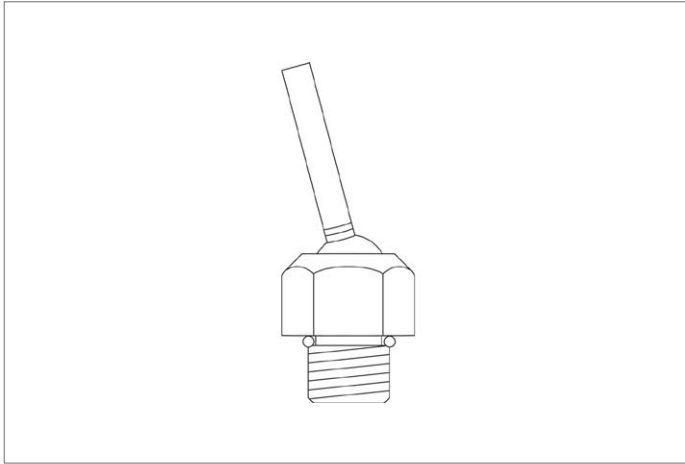


# Coolant Nozzles - Jet Bolt - Compact

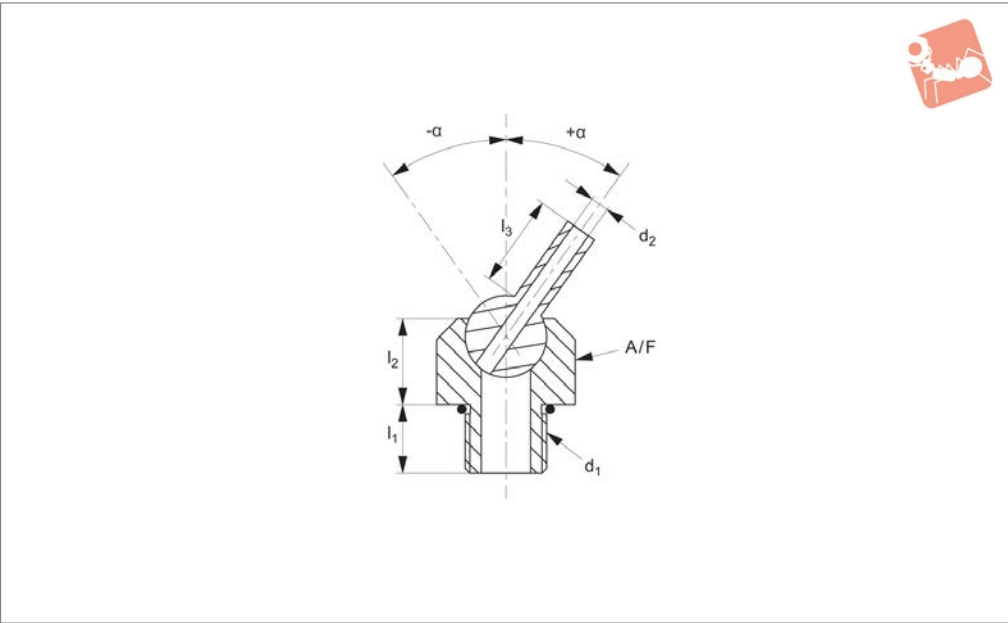
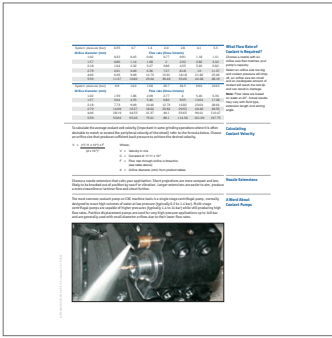
max. 10 bar



## Coolant Nozzles



COOLANT NOZZLES



COOLANT NOZZLES

## 20012

### Material

Body: acetal.  
Ball and tube: stainless steel.

### Technical Notes

Max. temperature 70°C.  
Max. pressure 10 bar.

symbola/symbol is an angle of adjustment either side of centre line.

### Tips

Screws into threaded coolant ports. Large adjustment angle.  
Choose large orifice for maximum flow.

Choose smaller orifices when using multiple nozzles.

Choose tapped ends if nozzle will need to be plugged (set screw included).

Order No.	Thread	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	α	A/F
20012.W0100	Metric Fine	M10x1,25	2.8	9.2	10.4	6.4	±35°	17
20012.W0101	Metric Fine	M10x1,25	2.8	9.2	10.4	12.7	±35°	17
20012.W0102	Metric Fine	M10x1,25	2.8	9.2	10.4	31.7	±35°	17
20012.W0103	Metric Fine	M10x1,25	4.0	9.2	10.4	12.7	±35°	17
20012.W0104	Metric Fine	M10x1,25	4.0	9.2	10.4	31.7	±35°	17
20012.W0201	Metric Fine	M20x1,50	4.0	12.7	15.2	19.0	±35°	24
20012.W0202	Metric Fine	M20x1,50	4.0	12.7	15.2	38.0	±35°	24
20012.W0203	Metric Fine	M20x1,50	5.6	12.7	15.2	19.0	±35°	24
20012.W0204	Metric Fine	M20x1,50	5.6	12.7	15.2	38.0	±35°	24
20012.W0205	Metric Fine	M20x1,50	7.1	12.7	15.2	19.0	±35°	24
20012.W0206	Metric Fine	M20x1,50	7.1	12.7	15.2	38.0	±35°	24
20012.W1100	Metric Coarse	M10x1,50	2.8	9.2	10.4	6.4	±35°	17
20012.W1101	Metric Coarse	M10x1,50	2.8	9.2	10.4	12.7	±35°	17
20012.W1102	Metric Coarse	M10x1,50	2.8	9.2	10.4	31.7	±35°	17
20012.W1103	Metric Coarse	M10x1,50	4.0	9.2	10.4	12.7	±35°	17
20012.W1104	Metric Coarse	M10x1,50	4.0	9.2	10.4	31.7	±35°	17
20012.W1121	Metric Coarse	M12x1,75	2.8	9.2	10.4	6.4	±35°	17
20012.W1122	Metric Coarse	M12x1,75	2.8	9.2	10.4	12.7	±35°	17
20012.W1123	Metric Coarse	M12x1,75	2.8	9.2	10.4	31.7	±35°	17
20012.W1124	Metric Coarse	M12x1,75	4.0	9.2	10.4	12.7	±35°	17
20012.W1125	Metric Coarse	M12x1,75	4.0	9.2	10.4	31.7	±35°	17
20012.W2130	NPT-BSPT	1/8"	2.8	9.9	10.4	6.4	±35°	17
20012.W2131	NPT-BSPT	1/8"	2.8	9.9	10.4	12.7	±35°	17
20012.W2132	NPT-BSPT	1/8"	2.8	9.9	10.4	31.7	±35°	17
20012.W2133	NPT-BSPT	1/8"	4.0	9.9	10.4	12.7	±35°	17
20012.W2134	NPT-BSPT	1/8"	4.0	9.9	10.4	31.7	±35°	17
20012.W2250	NPT-BSPT	1/4"	2.8	12.7	10.4	6.4	±35°	17
20012.W2251	NPT-BSPT	1/4"	2.8	12.7	10.4	12.7	±35°	17
20012.W2252	NPT-BSPT	1/4"	2.8	12.7	10.4	31.7	±35°	17
20012.W2253	NPT-BSPT	1/4"	4.0	12.7	10.4	12.7	±35°	17
20012.W2254	NPT-BSPT	1/4"	4.0	12.7	10.4	31.7	±35°	17
20012.W2380	NPT-BSPT	3/8"	2.8	12.7	10.4	12.7	±35°	17





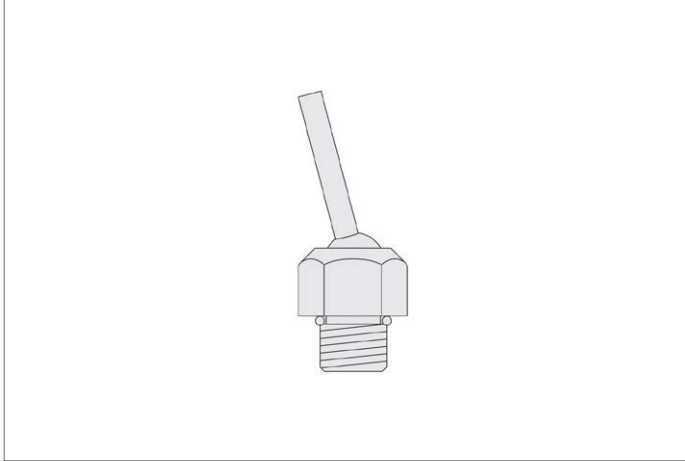
# Coolant Nozzles - Jet Bolt

with tube - max. 10 bar

## Coolant Nozzles

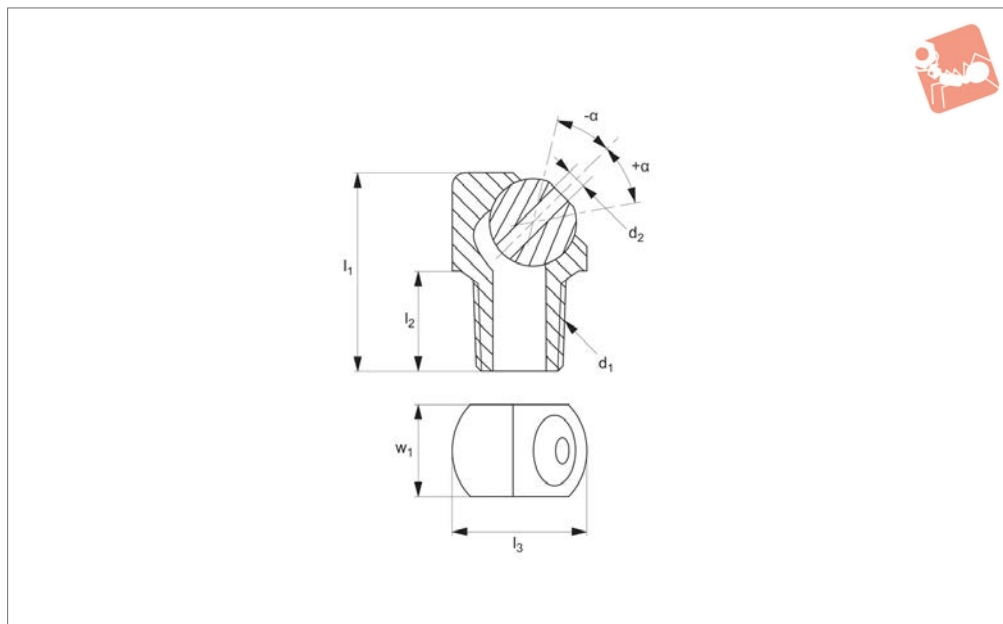


Order No.	Thread	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	α	A/F
20012.W2381	NPT-BSPT	3/8"	2.8	12.7	10.4	31.7	±35°	17
20012.W2382	NPT-BSPT	3/8"	4.0	12.7	10.4	12.7	±35°	17
20012.W2383	NPT-BSPT	3/8"	4.0	12.7	10.4	31.7	±35°	17
20012.W2384	NPT-BSPT	3/8"	5.6	12.7	10.4	12.7	±35°	17
20012.W2385	NPT-BSPT	3/8"	5.6	12.7	10.4	31.7	±35°	17





## 20016



### Material

Body: acetal.  
Ball: stainless steel.

### Technical Notes

Max. temperature 70°C.  
Max. pressure 10 bar.  
symbol $\alpha$ /symbol is an angle of adjustment either side of centre line.

For extension tubes see part nos. 20090 and 20092.

For spray tips see part nos. 20080 and 20082.

### Tips

Converts any NPT or BSPT hole to a fully adjustable nozzle.

Easy adjustment.

Choose large orifice for maximum flow and smaller orifices when using multiple nozzles.

Choose tapped tube if the nozzles needs to be plugged (set screw included).

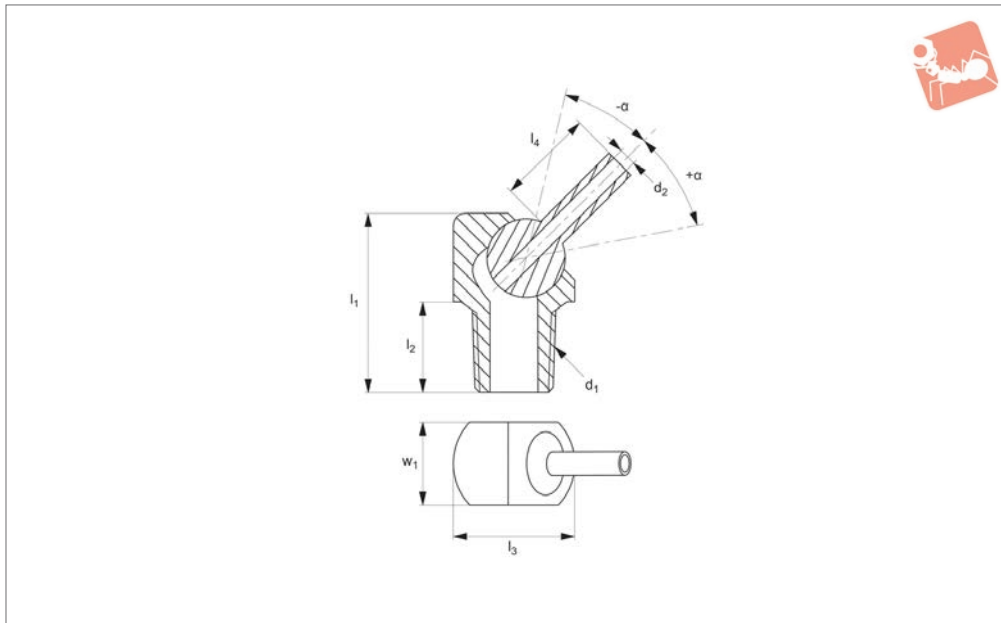
Order No.	d <sub>1</sub>	d <sub>2</sub>	Jet bore d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	w <sub>1</sub>	$\alpha$
20016.W2060	1/16" NPT/BSPT	2.8	Plain	17.5	7.9	12.7	11.2	±35°
20016.W2061	1/16" NPT/BSPT	4.0	Plain	17.5	7.9	12.7	11.2	±35°
20016.W2120	1/8" NPT/BSPT	2.8	Plain	20.8	9.7	16.0	12.7	±35°
20016.W2121	1/8" NPT/BSPT	4.0	Plain	20.8	9.7	16.0	12.7	±35°
20016.W2250	1/4" NPT/BSPT	2.8	Plain	23.9	11.2	19.1	16.0	±35°
20016.W2251	1/4" NPT/BSPT	4.0	Plain	23.9	11.2	19.1	16.0	±35°
20016.W2370	3/8" NPT/BSPT	2.8	Plain	28.7	12.7	22.4	19.1	±35°
20016.W2371	3/8" NPT/BSPT	4.0	Plain	28.7	12.7	22.4	19.1	±35°
20016.W2372	3/8" NPT/BSPT	5.6	Plain	28.7	12.7	22.4	19.1	±35°
20016.W8060	1/16" NPT/BSPT	M 4x0,7	Threaded	17.5	7.9	12.7	11.2	±35°
20016.W8120	1/8" NPT/BSPT	M 5x0,8	Threaded	20.8	9.7	16.0	12.7	±35°
20016.W8250	1/4" NPT/BSPT	M 5x0,8	Threaded	23.9	11.2	19.1	16.0	±35°
20016.W8370	3/8" NPT/BSPT	M 6x1,0	Threaded	28.7	12.7	22.4	19.1	±35°



# Coolant Nozzles - Turret Jet

with tube - max. 10 bar

## Coolant Nozzles



**20018**

COOLANT NOZZLES

### Material

Body: acetal.  
Ball and tube: stainless steel.

Max. pressure 10 bar.  
symbola/symbol is an angle of adjustment  
either side of centre line.

adjustable nozzle.  
Easy adjustment.  
Choose large orifice for maximum flow and  
smaller orifices when using multiple  
nozzles.

### Technical Notes

Max. temperature 70°C.

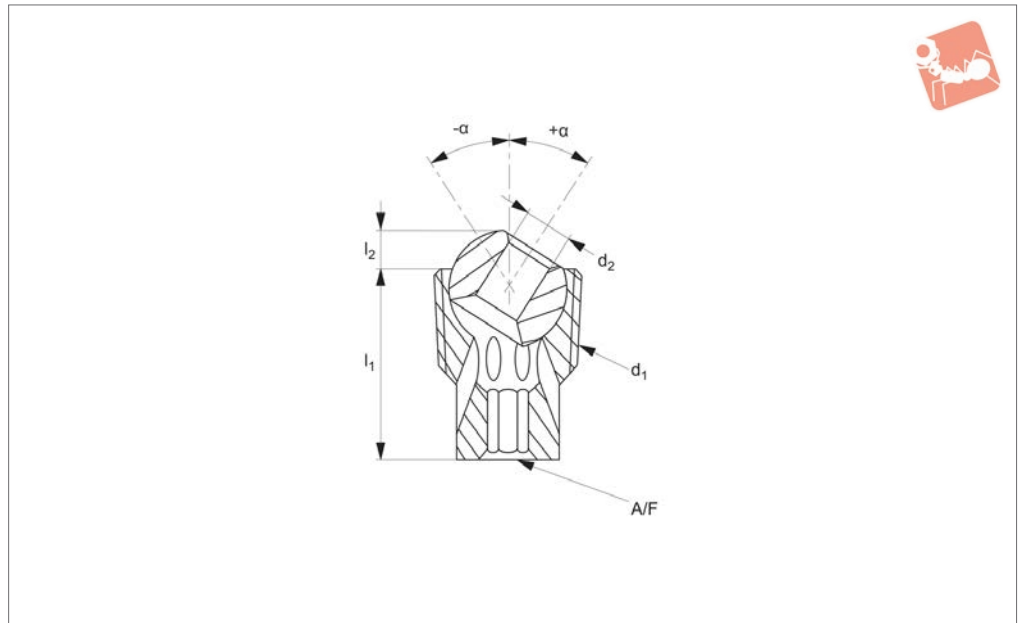
### Tips

Converts any NPT or BSPT hole to a fully

Order No.	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	w <sub>1</sub>	α
20018.W2060	1/16" NPT/BSPT	2.2	17.5	7.9	12.7	6.4	11.2	±35°
20018.W2061	1/16" NPT/BSPT	2.2	17.5	7.9	12.7	12.7	11.2	±35°
20018.W2062	1/16" NPT/BSPT	2.2	17.5	7.9	12.7	31.7	11.2	±35°
20018.W2063	1/16" NPT/BSPT	2.8	17.5	7.9	12.7	6.4	11.2	±35°
20018.W2064	1/16" NPT/BSPT	2.8	17.5	7.9	12.7	12.7	11.2	±35°
20018.W2065	1/16" NPT/BSPT	2.8	17.5	7.9	12.7	31.7	11.2	±35°
20018.W2121	1/8" NPT/BSPT	2.8	20.8	9.7	16.0	6.4	12.7	±35°
20018.W2122	1/8" NPT/BSPT	2.8	20.8	9.7	16.0	12.7	12.7	±35°
20018.W2123	1/8" NPT/BSPT	2.8	20.8	9.7	16.0	31.7	12.7	±35°
20018.W2124	1/8" NPT/BSPT	4.0	20.8	9.7	16.0	12.7	12.7	±35°
20018.W2125	1/8" NPT/BSPT	4.0	20.8	9.7	16.0	31.7	12.7	±35°
20018.W2250	1/4" NPT/BSPT	2.8	23.9	11.2	19.1	6.4	16.0	±35°
20018.W2251	1/4" NPT/BSPT	2.8	23.9	11.2	19.1	12.7	16.0	±35°
20018.W2252	1/4" NPT/BSPT	2.8	23.9	11.2	19.1	31.7	16.0	±35°
20018.W2253	1/4" NPT/BSPT	4.0	23.9	11.2	19.1	12.7	16.0	±35°
20018.W2254	1/4" NPT/BSPT	4.0	23.9	11.2	19.1	31.7	16.0	±35°
20018.W2370	3/8" NPT/BSPT	2.8	28.7	12.7	22.4	31.7	19.1	±35°
20018.W2371	3/8" NPT/BSPT	4.0	28.7	12.7	22.4	12.7	19.1	±35°
20018.W2372	3/8" NPT/BSPT	4.0	28.7	12.7	22.4	31.7	19.1	±35°
20018.W2373	3/8" NPT/BSPT	5.6	28.7	12.7	22.4	12.7	19.1	±35°
20018.W2374	3/8" NPT/BSPT	5.6	28.7	12.7	22.4	31.7	19.1	±35°



**20020**



**Material**

Body: acetal.  
Ball: stainless steel.

Max. pressure 10 bar.  
symbola/symbol is an angle of adjustment  
either side of centre line.

Insert hex. key (provided), into the top of  
the nozzle until it engages with the hex.  
socket. Screw in until the body is flush.

**Technical Notes**

Max. temperature 70°C.

**Tips**

Screw-in, flush mount coolant nozzles.

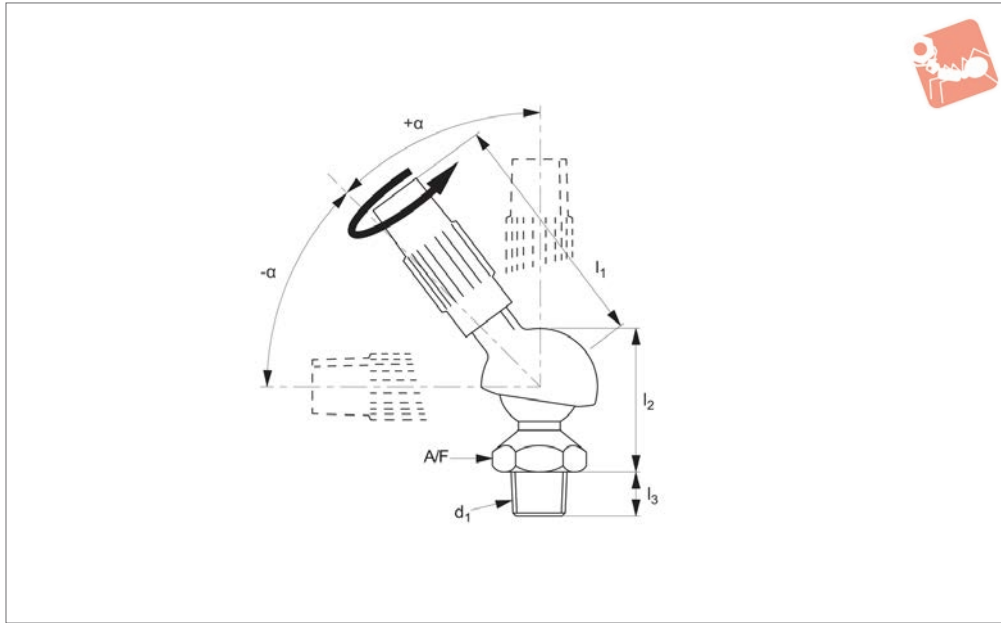
Order No.	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	α	A/F
20020.W2121	1/8" NPT	4.0	12.7	3.0	±35°	9/64"
20020.W2122	1/8" BSPT	4.0	12.7	3.0	±35°	9/64"
20020.W2250	1/4" NPT/BSPT	4.0	15.7	3.8	±40°	9/64"
20020.W2370	3/8" NPT/BSPT	5.6	19.1	4.6	±40°	3/16"



# Coolant Nozzles - Mill Jet

max. 6,7 bar

## Coolant Nozzles



**20024**

COOLANT NOZZLES

### Material

Acetal.

### Technical Notes

Max. temperature 70°C.

Max. pressure 10 bar.

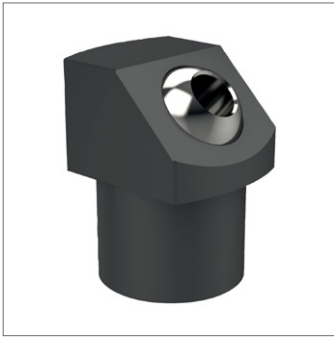
symbol  $\alpha$ /symbol is an angle of adjustment either side of centre line.

Recommended coolant filtration - 100 microns.

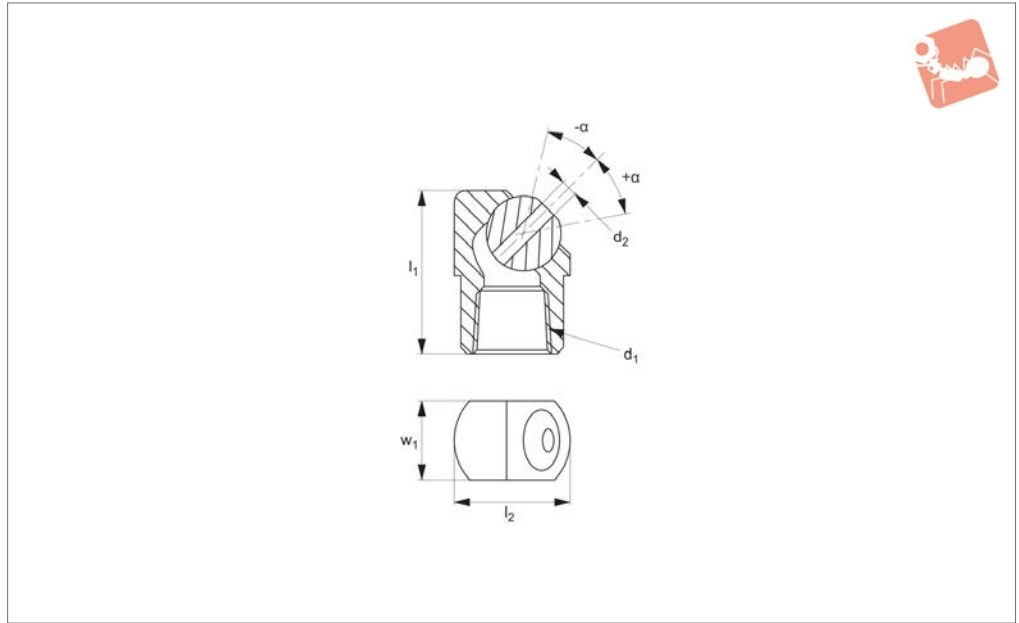
### Tips

Adjustable spray nozzle, from full shut-off to fine spray, to direct stream. Remains in position.

Order No.	Angle	Rotation	$d_1$	$l_1$	$l_2$	$l_3$	$\alpha$	A/F
20024.W2120	90°	360°	1/4" NPT/BSPT	43	27	11	$\pm 45^\circ$	16
20024.W2250	90°	360°	1/8" NPT/BSPT	43	27	11	$\pm 45^\circ$	16



## 20031



### Material

Body: acetal.  
Ball: stainless steel.

### Technical Notes

Max. temperature 70°C.  
Max. pressure 10 bar.

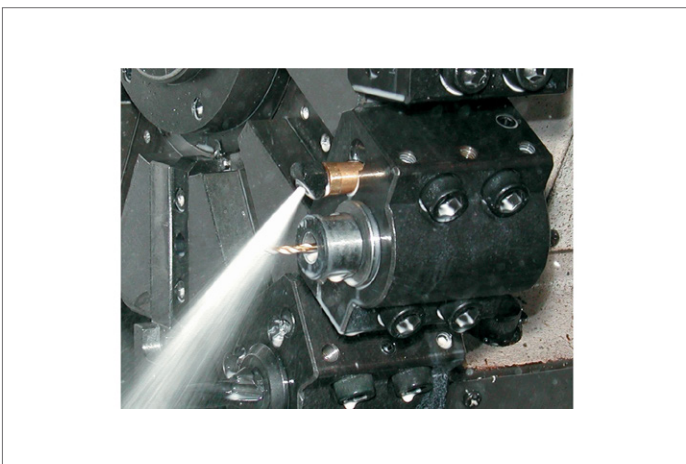
symbola/symbol is an angle of adjustment either side of centre line.  
Can be used with brass connector 20034.

### Tips

Screws onto any NPT or BSPT pipe.  
Choose large orifice for maximum flow and

smaller orifices when using multiple nozzles.  
Choose tapped tube if the nozzles needs to be plugged (set screw included).

Order No.	d <sub>1</sub>	d <sub>2</sub>	Jet bore d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	α
20031.W2120	1/8" NPT/BSPT	2.8	Plain	20.8	16.0	12.7	±35°
20031.W2121	1/8" NPT/BSPT	4.0	Plain	20.8	16.0	12.7	±35°
20031.W2250	1/4" NPT/BSPT	2.8	Plain	23.9	19.1	16.0	±35°
20031.W2251	1/4" NPT/BSPT	4.0	Plain	23.9	19.1	16.0	±35°
20031.W2370	3/8" NPT/BSPT	2.8	Plain	28.7	22.4	19.1	±35°
20031.W2371	3/8" NPT/BSPT	4.0	Plain	28.7	22.4	19.1	±35°
20031.W2372	3/8" NPT/BSPT	5.5	Plain	28.7	22.4	19.1	±35°
20031.W8120	1/8" NPT/BSPT	M 5x0,8	Threaded	20.8	16.0	12.7	±35°
20031.W8250	1/4" NPT/BSPT	M 5x0,8	Threaded	23.9	19.1	16.0	±35°
20031.W8370	3/8" NPT/BSPT	M 6x1,0	Threaded	28.7	22.4	19.1	±35°

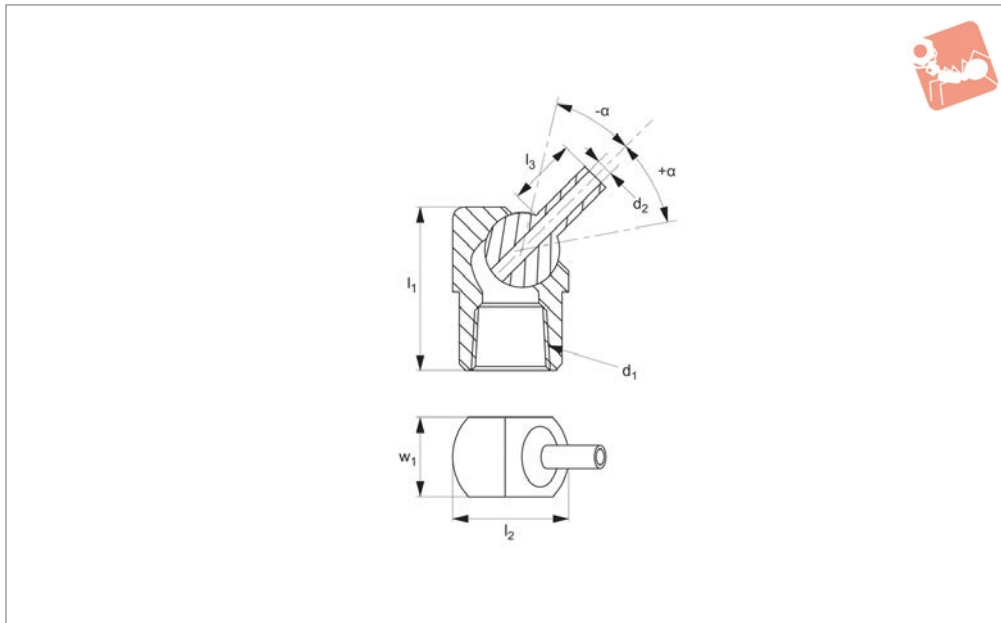




# Coolant Nozzles - Cap Jet

with tube - max. 10 bar

# Coolant Nozzles



## 20032

COOLANT NOZZLES

### Material

Body: acetal.  
Ball and tube: stainless steel.

### Technical Notes

Max. temperature 70°C.  
Max. pressure 10 bar.

symbola/symbol is an angle of adjustment either side of centre line.

Can be used with brass connector 20034.

### Tips

Screws onto any NPT or BSPT pipe.  
Choose large orifice for maximum flow and

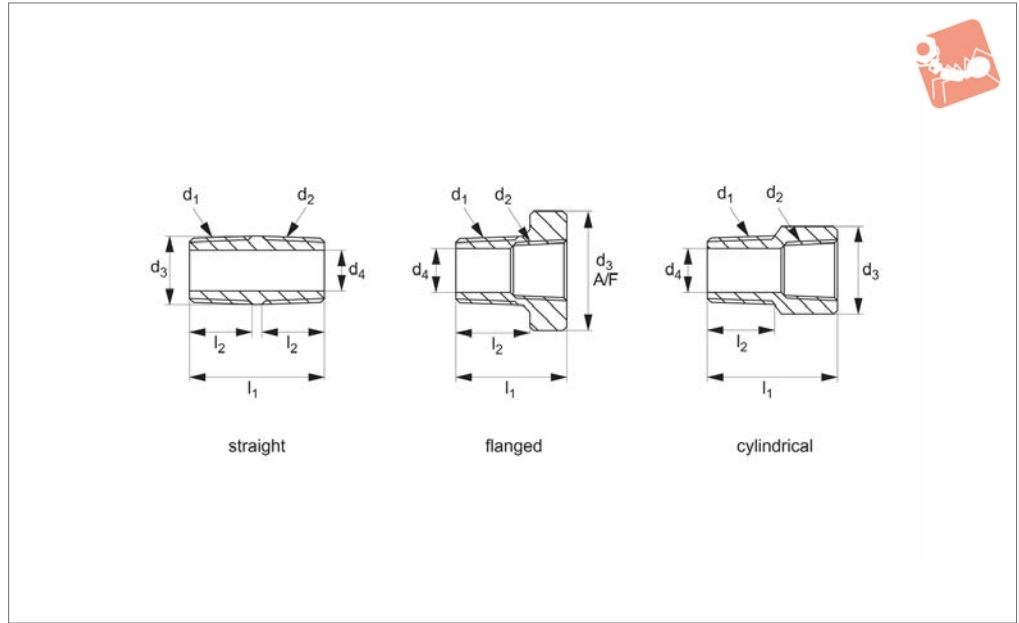
smaller orifices when using multiple nozzles.

Choose tapped tube if the nozzles needs to be plugged (set screw included).

Order No.	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	w <sub>1</sub>	α
20032.W2120	1/8" NPT/BSPT	2.8	20.8	16.0	6.4	12.7	±35°
20032.W2121	1/8" NPT/BSPT	2.8	20.8	16.0	12.7	12.7	±35°
20032.W2122	1/8" NPT/BSPT	2.8	20.8	16.0	31.7	12.7	±35°
20032.W2123	1/8" NPT/BSPT	4.0	20.8	16.0	12.7	12.7	±35°
20032.W2124	1/8" NPT/BSPT	4.0	20.8	16.0	31.7	12.7	±35°
20032.W2250	1/4" NPT/BSPT	2.8	23.9	19.1	6.4	16.0	±35°
20032.W2251	1/4" NPT/BSPT	2.8	23.9	19.1	12.7	16.0	±35°
20032.W2252	1/4" NPT/BSPT	2.8	23.9	19.1	31.7	16.0	±35°
20032.W2253	1/4" NPT/BSPT	4.0	23.9	19.1	12.7	16.0	±35°
20032.W2254	1/4" NPT/BSPT	4.0	23.9	19.1	31.7	16.0	±35°
20032.W2370	3/8" NPT/BSPT	4.0	28.7	22.4	31.7	19.1	±35°
20032.W2371	3/8" NPT/BSPT	4.0	28.7	22.4	12.7	19.1	±35°
20032.W2372	3/8" NPT/BSPT	5.6	28.7	22.4	12.7	19.1	±35°
20032.W2373	3/8" NPT/BSPT	5.6	28.7	22.4	31.7	19.1	±35°



## 20034



### Material

Body: acetal or brass.

### Technical Notes

#### Acetal Type:

Max. temperature: 70°C.

Max. pressure: 10 bar.

#### Brass Type:

Max. temperature: 150°C.

Max. pressure: 100 bar.

Connector only.

### Tips

Fits both NPT and BSPT threads - allows you to use inch or metric fittings and nozzles. Particularly useful for 20018 (turret jets) and 20032 (cap jets).

Order No.	Material	Type	d <sub>3</sub>	d <sub>4</sub>	l <sub>1</sub>	l <sub>2</sub>	Thread d <sub>1</sub>	Thread d <sub>2</sub>
20034.W3120-A	Acetal	Straight	10.4	6.4	20.0	10	1/8" NPT/BSPT	1/8" NPT/BSPT
20034.W3250-A	Acetal	Straight	13.5	7.9	22.0	11	1/4" NPT/BSPT	1/4" NPT/BSPT
20034.W3370-A	Acetal	Straight	16.8	11.2	25.0	13	3/8" NPT/BSPT	3/8" NPT/BSPT
20034.W3121-A	Acetal	Straight	10.4	6.4	38.0	9	1/8" NPT/BSPT	1/8" NPT/BSPT
20034.W3251-A	Acetal	Straight	13.5	7.9	38.0	11	1/4" NPT/BSPT	1/4" NPT/BSPT
20034.W3371-A	Acetal	Straight	16.8	11.2	38.0	13	3/8" NPT/BSPT	3/8" NPT/BSPT
20034.W4250-A	Acetal	Flanged	14.2	7.9	16.5	11	1/4" NPT/BSPT	1/8" NPT/BSPT
20034.W4370-A	Acetal	Flanged	19.0	10.7	18.5	13	3/8" NPT/BSPT	1/4" NPT/BSPT
20034.W5120-A	Acetal	Cylindrical	11.7	6.4	20.0	10	1/8" NPT/BSPT	1/8" NPT/BSPT
20034.W5250-A	Acetal	Cylindrical	15.2	7.9	24.0	13	1/4" NPT/BSPT	1/4" NPT/BSPT
20034.W5370-A	Acetal	Cylindrical	18.5	9.4	26.0	14	3/8" NPT/BSPT	3/8" NPT/BSPT
20034.W3120-B	Brass	Straight	10.4	6.3	20.0	10	1/8" NPT/BSPT	1/8" NPT/BSPT
20034.W3250-B	Brass	Straight	13.5	7.9	22.0	11	1/4" NPT/BSPT	1/4" NPT/BSPT
20034.W3370-B	Brass	Straight	16.8	11.2	25.0	13	3/8" NPT/BSPT	3/8" NPT/BSPT
20034.W3121-B	Brass	Straight	10.4	6.4	38.0	9	1/8" NPT/BSPT	1/8" NPT/BSPT
20034.W3251-B	Brass	Straight	13.5	7.9	38.0	11	1/4" NPT/BSPT	1/4" NPT/BSPT
20034.W3371-B	Brass	Straight	16.8	11.2	38.0	13	3/8" NPT/BSPT	3/8" NPT/BSPT
20034.W4120-B	Brass	Flanged	14.2	7.0	20.6	13	M12x1,75	1/8" NPT/BSPT
20034.W4140-B	Brass	Flanged	15.7	7.9	10.2	7	M14x1,00	1/8" NPT/BSPT
20034.W4250-B	Brass	Flanged	14.2	7.9	16.5	11	1/4" NPT/BSPT	1/8" NPT/BSPT
20034.W4370-B	Brass	Flanged	19.0	10.7	18.5	13	3/8" NPT/BSPT	1/4" NPT/BSPT
20034.W5120-B	Brass	Cylindrical	11.7	6.4	20.0	10	1/8" NPT/BSPT	1/8" NPT/BSPT
20034.W5250-B	Brass	Cylindrical	15.2	7.9	24.0	13	1/4" NPT/BSPT	1/4" NPT/BSPT
20034.W5370-B	Brass	Cylindrical	18.5	9.4	26.0	14	3/8" NPT/BSPT	3/8" NPT/BSPT

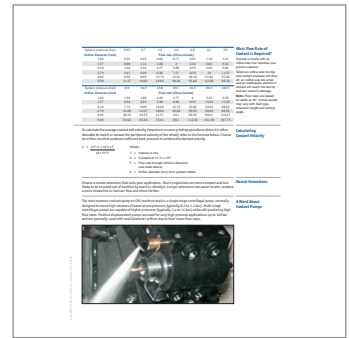
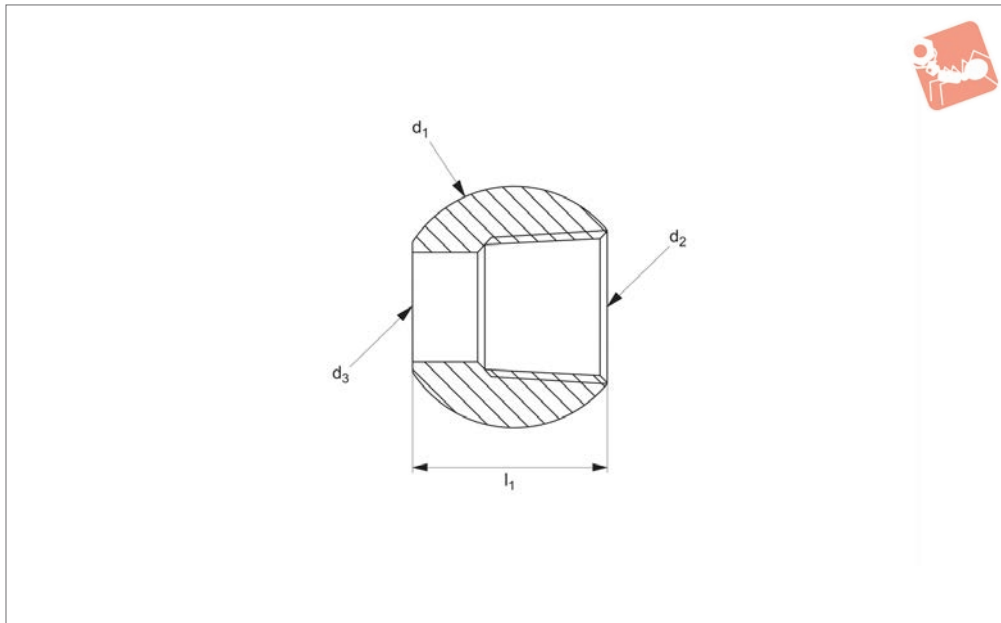




# Coolant Nozzles - Adapter Balls

max. 10 bar

## Coolant Nozzles



## 20035

COOLANT NOZZLES

### Material

Acetal or brass.

### Technical Notes

#### Acetal Type:

Max. temperature: 70°C.

Max. pressure: 10 bar.

### Brass type:

Max. temperature: 150°C.

Max. pressure: 33 bar.

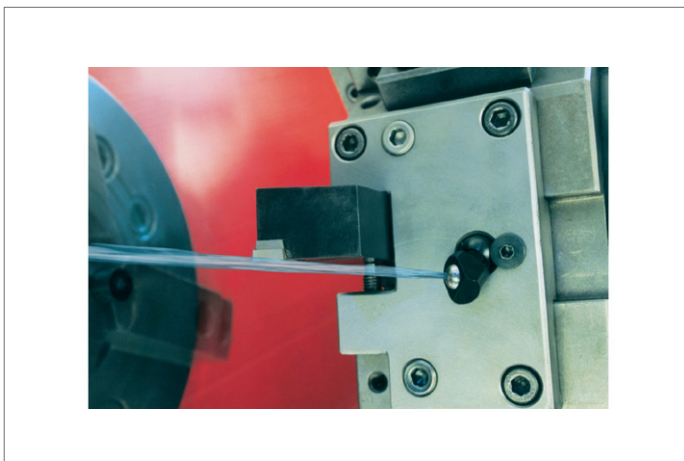
Ball adapter only.

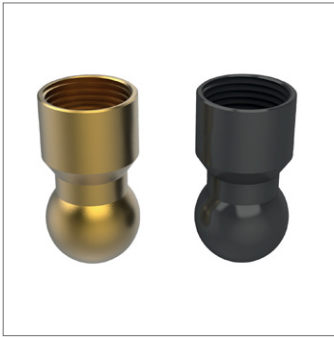
Can be used with our relevant threaded coolant nozzles.

### Tips

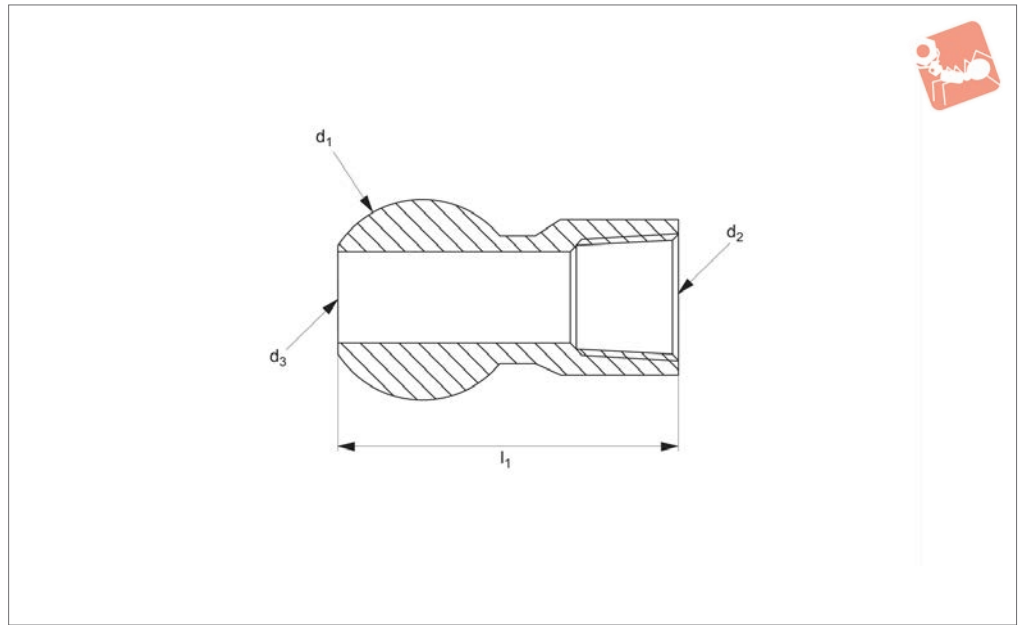
Fits both NPT and BSPT threads - allows you to use inch or metric fittings and nozzles. Particularly useful for 20018 (turret jets) and 20032 (cap jets).

Order No.	Type	d <sub>1</sub>	d <sub>3</sub>	l <sub>1</sub>	Thread d <sub>2</sub>
20035.W6140-A	Acetal	14	6.4	9.7	1/8" NPT/BSPT
20035.W6150-A	Acetal	15	6.4	10.9	1/8" NPT/BSPT
20035.W6220-A	Acetal	22	6.4	18.8	1/8" NPT/BSPT
20035.W8630-A	Acetal	5/8"	6.4	11.9	1/8" NPT/BSPT
20035.W6140-B	Brass	14	7/32" Hex.	9.9	1/8" NPT/BSPT
20035.W6150-B	Brass	15	7/32" Hex.	11.4	1/8" NPT/BSPT
20035.W6220-B	Brass	22	7/32" Hex.	19.6	1/8" NPT/BSPT
20035.W8630-B	Brass	5/8"	7/32" Hex.	12.5	1/8" NPT/BSPT





**20036**



**Material**

Acetal or brass.

Max. temp: 70°C.

Max. pressure: 10 bar.

Max. pressure: 33 bar.

Extended ball adapter only.

**Technical Notes**

**Acetal type:**

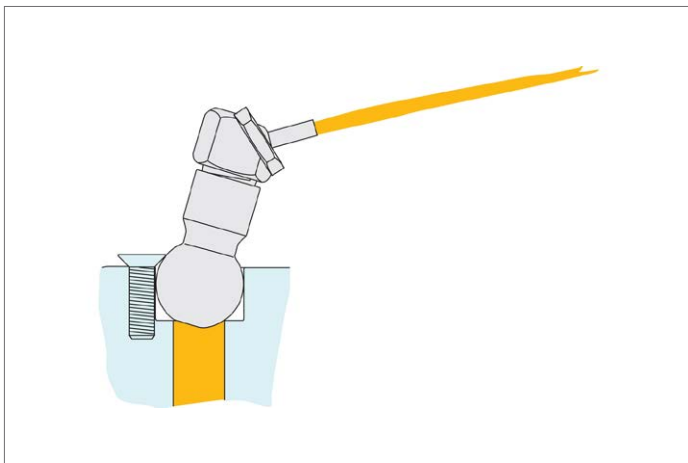
**Brass type:**

Max. temperature: 150°C.

**Tips**

Can be fitted to 1/8" NPT/BSPT fittings.

Order No.	Type	d <sub>1</sub>	d <sub>3</sub>	l <sub>1</sub>	Thread d <sub>2</sub>
20036.W6120-A	Acetal	12	6.4	23.1	1/8" NPT/BSPT
20036.W8500-A	Acetal	1/2"	6.4	23.9	1/8" NPT/BSPT
20036.W6120-B	Brass	12	7/32" Hex.	22.9	1/8" NPT/BSPT
20036.W8500-B	Brass	1/2"	7/32" Hex.	23.9	1/8" NPT/BSPT

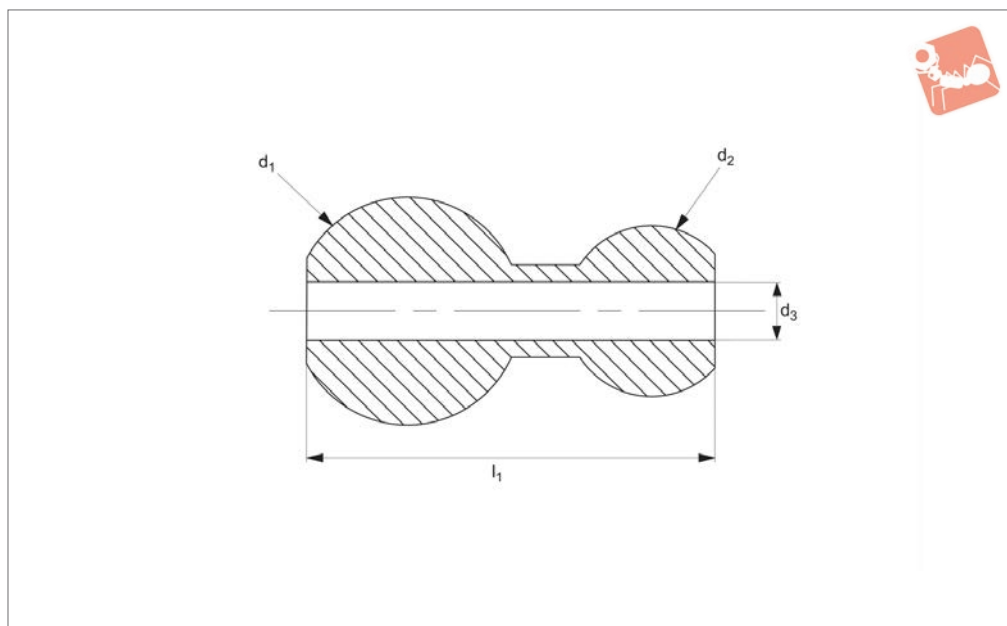




# Loc-Line Adapters

max. 10-33 bar

# Coolant Nozzles



20037

COOLANT NOZZLES

### Material

Acetal or brass.

### Technical Notes

#### Acetal type:

Max. temperature: 70°C.

Max. pressure: 10 bar.

#### Brass type:

Max. temperature: 150°C.

Max. pressure: 33 bar.

### Tips

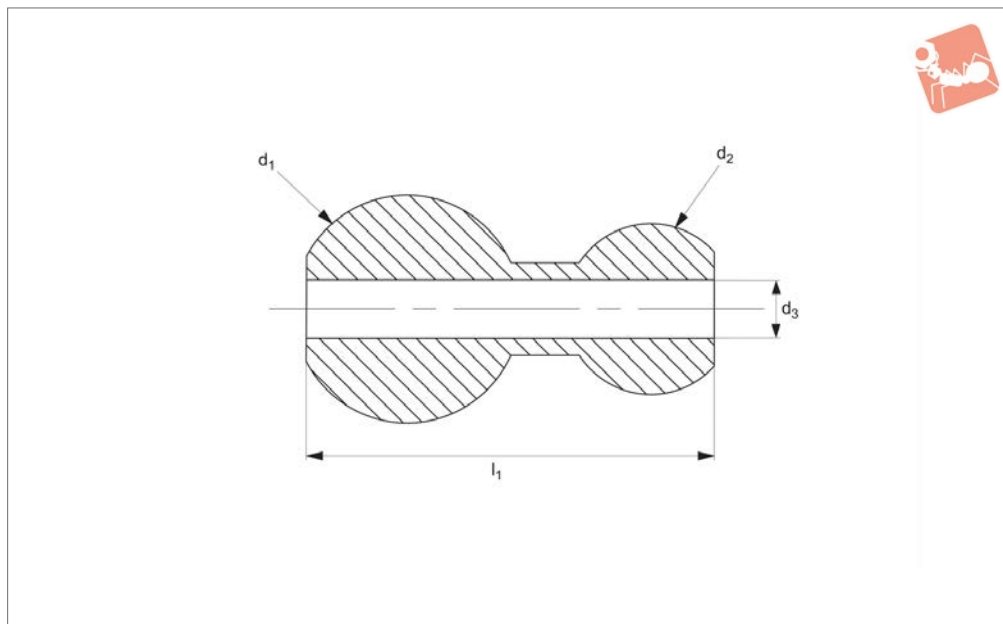
Adapters to allow Loc-Line coolant hose to be used on any machine that employs screw lock balls.

Loc-Line: a trademark of Lockwood Inc.

Order No.	Type	$d_1$	$d_2$	$d_3$	$l_1$	Pressure Bar max.
20037.W0100-A	Acetal	10	Loc-Line 1/4"	6.3	16.0	10
20037.W0120-A	Acetal	12	Loc-Line 1/4"	6.3	17.0	10
20037.W0140-A	Acetal	14	Loc-Line 1/4"	6.3	19.3	10
20037.W0150-A	Acetal	15	Loc-Line 1/4"	6.3	20.6	10
20037.W0220-A	Acetal	22	Loc-Line 1/4"	6.3	28.5	10
20037.W0250-A	Acetal	1/2"	Loc-Line 1/4"	6.3	18.0	10
20037.W0265-A	Acetal	5/8"	Loc-Line 1/4"	6.3	22.0	10
20037.W0100-B	Brass	10	Loc-Line 1/4"	6.3	16.3	33
20037.W0120-B	Brass	12	Loc-Line 1/4"	6.3	17.0	33
20037.W0140-B	Brass	14	Loc-Line 1/4"	6.3	19.6	33
20037.W0150-B	Brass	15	Loc-Line 1/4"	6.3	20.6	33
20037.W0220-B	Brass	22	Loc-Line 1/4"	6.3	29.2	33
20037.W0250-B	Brass	1/2"	Loc-Line 1/4"	6.3	18.0	33
20037.W0265-B	Brass	5/8"	Loc-Line 1/4"	6.3	22.0	33



20038



**Material**

Acetal.

Max. pressure: 10 bar.

screw lock balls.

**Technical Notes**

Max. temperature: 70°C.

**Tips**

Adapters to allow Snap-Loc coolant hose to be used on any machine that employs

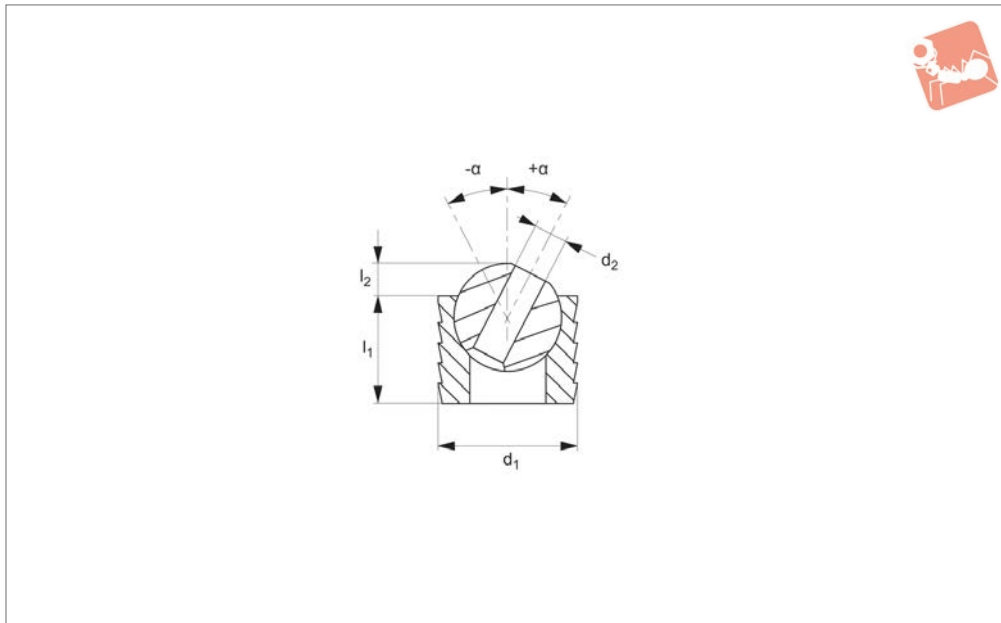
Order No.	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l <sub>1</sub>	Pressure Bar max.
20038.W0120	12	Snap-Loc 1/4"	6.3	19.3	10
20038.W0140	14	Snap-Loc 1/4"	6.3	21.3	10
20038.W0150	15	Snap-Loc 1/4"	6.3	22.6	10
20038.W0220	22	Snap-Loc 1/4"	6.3	30.5	10
20038.W0250	1/2"	Snap-Loc 1/4"	6.3	20.1	10
20038.W0263	5/8"	Snap-Loc 1/4"	6.3	24.1	10



# Coolant Nozzles - Press In

max. 10 bar

# Coolant Nozzles



**20042**

COOLANT NOZZLES

### Material

Body: acetal.  
Ball: stainless steel.

Max. pressure 10 bar.  
symbola/symbol is an angle of adjustment either side of centre line.

diameter -0, +0,05mm or -0, +0,002"inch)  
then press in the coolant nozzle until the body is flush.  
Ideal for special tooling, CNC lathe tooling etc.

### Technical Notes

Max. temperature 70°C.

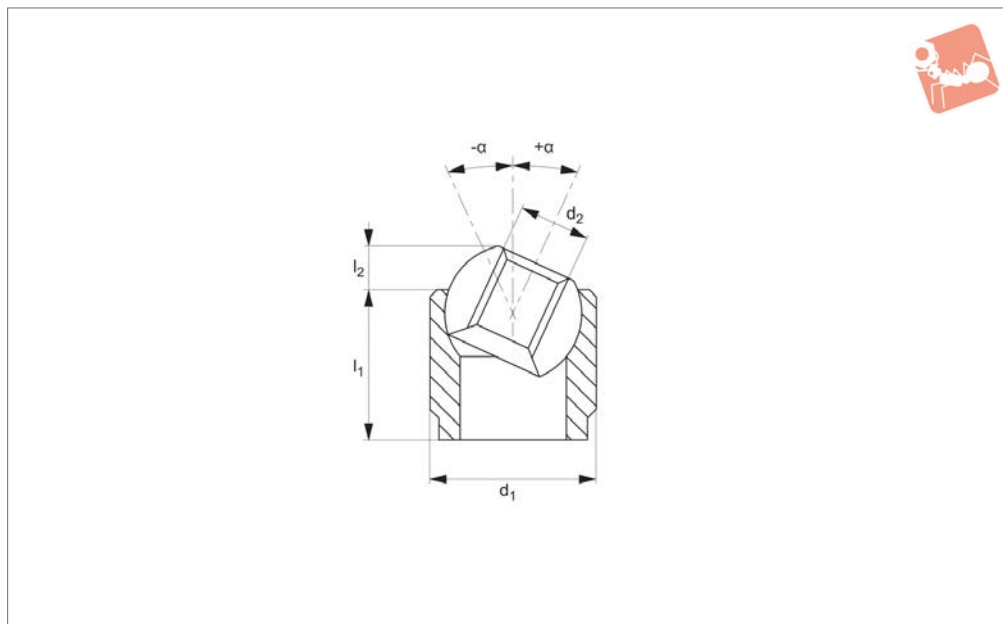
### Tips

Simply drill and ream hole (to nominal

Order No.	For install hole size	d <sub>1</sub> nom.	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	α
20042.W0060	6,00 - 6,04	6	1.5	4.8	1.3	±35°
20042.W0061	6,00 - 6,04	6	2.0	4.8	1.3	±35°
20042.W0080	8,00 - 8,05	8	2.8	6.4	1.5	±35°
20042.W0100	10,00 - 10,05	10	4.0	7.9	2.0	±35°
20042.W0120	12,00 - 12,05	12	4.0	9.2	2.5	±35°
20042.W0140	14,00 - 14,05	14	5.6	11.1	3.3	±35°
20042.W0150	15,00 - 15,05	15	5.6	11.1	3.3	±35°
20042.W2120	6,35 - 6,39	1/4"	2.0	4.8	1.3	±35°
20042.W2310	7,94 - 7,99	5/16"	2.8	6.4	1.5	±35°
20042.W2370	9,53 - 9,58	3/8"	4.0	7.9	2.0	±35°
20042.W3440	11,11 - 11,16	7/16"	4.0	9.2	2.5	±35°
20042.W3560	14,29 - 14,34	9/16"	5.6	11.1	3.3	±35°
20042.W2630	15,88 - 15,93	5/8"	5.6	11.1	3.3	±35°



## 20044



### Material

Body: acetal.  
Ball: stainless steel.

### Technical Notes

Max. temperature: 70°C.  
Max. pressure: 10 bar.

symbol  $\alpha$  / symbol is an angle of adjustment either side of centre line.

### Tips

Simply drill and ream hole (to H9) then press in the coolant nozzle until the body is flush.

The threaded hole in the top of the nozzle can be used for an extension tube (20020), a spray tip (20080 or 20082) or plugged with a set screw.

Order No.	$d_1$ tol. h9	$d_2$	$l_1$	$l_2$	$\alpha$
20044.W6080	8	M 3,5x0,60	6	1.5	$\pm 35^\circ$
20044.W6100	10	M 4,0x0,70	7	2.0	$\pm 35^\circ$
20044.W6120	12	M 5,0x0,80	8	2.5	$\pm 35^\circ$
20044.W6140	14	M 6,0x1,00	10	3.0	$\pm 35^\circ$
20044.W6150	15	M 6,0x1,00	6	3.0	$\pm 35^\circ$
20044.W6160	16	M 8,0x1,25	10	3.0	$\pm 35^\circ$

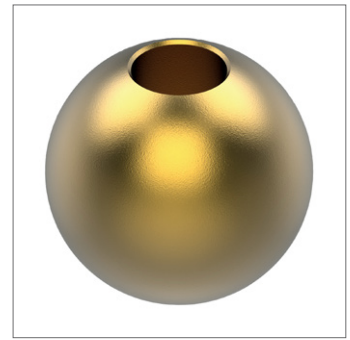
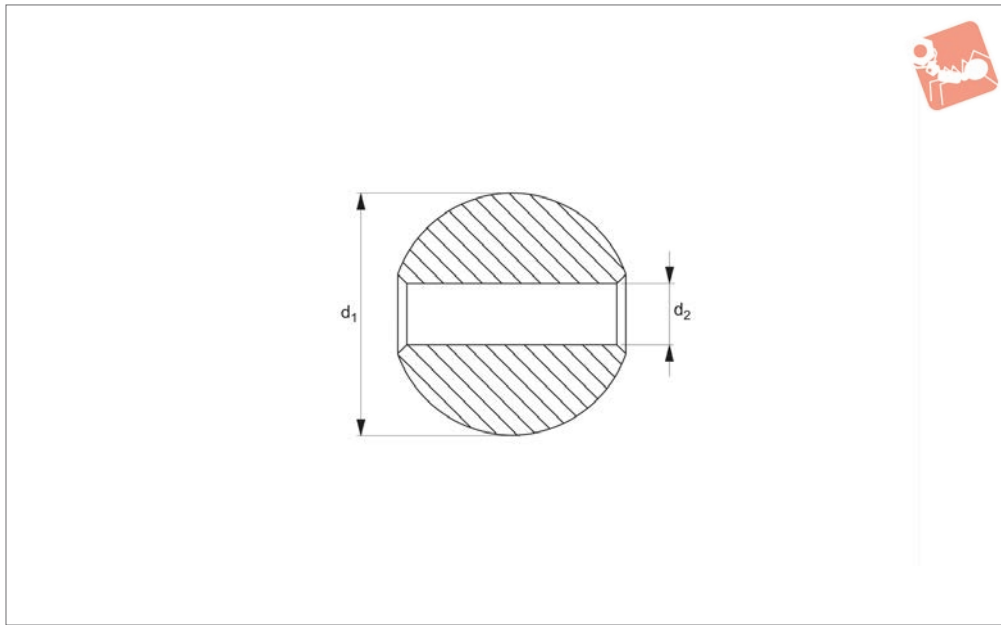




# Coolant Nozzles - Brass Ball

max. 33 bar

## Coolant Nozzles



**20070**

COOLANT NOZZLES

**Material**

Brass.

Max. pressure: 33 bar.

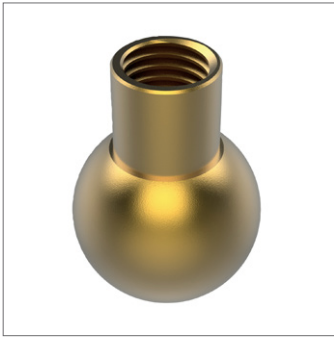
**Technical Notes**

Max. temperature: 150°C.

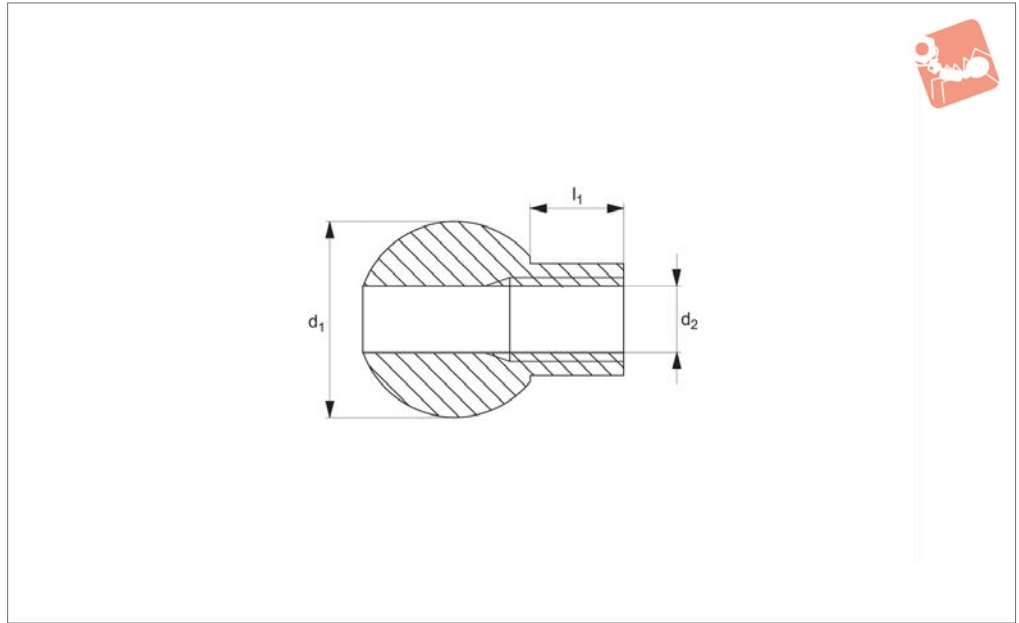
**Tips**

These are conventional brass ball nozzles.

Order No.	d <sub>1</sub>	d <sub>2</sub>
20070.W0100	10	2.8
20070.W0101	10	4.1
20070.W0110	11	2.8
20070.W0111	11	4.1
20070.W0120	12	4.1
20070.W0121	12	5.6
20070.W0140	14	4.1
20070.W0141	14	5.6
20070.W0150	15	4.1
20070.W0151	15	5.6
20070.W0180	18	4.1
20070.W0181	18	5.6
20070.W0220	22	4.1
20070.W0221	22	5.6
20070.W2500	1/2"	4.1
20070.W2501	1/2"	5.6
20070.W2630	5/8"	4.1
20070.W2631	5/8"	5.6



**20072**



**Material**

Brass.

**Technical Notes**

Max. temperature: 150°C.

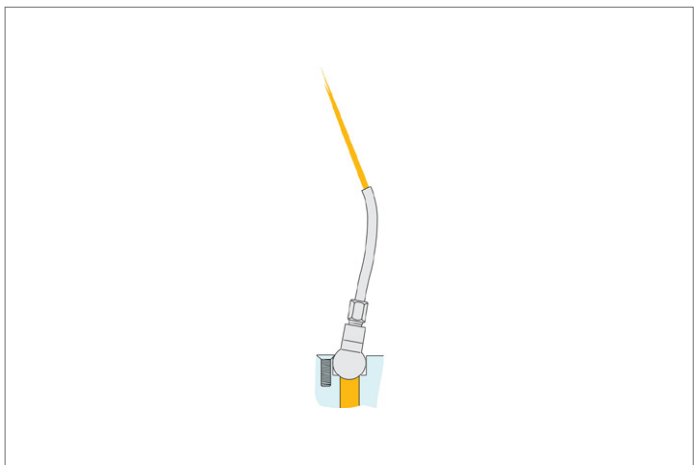
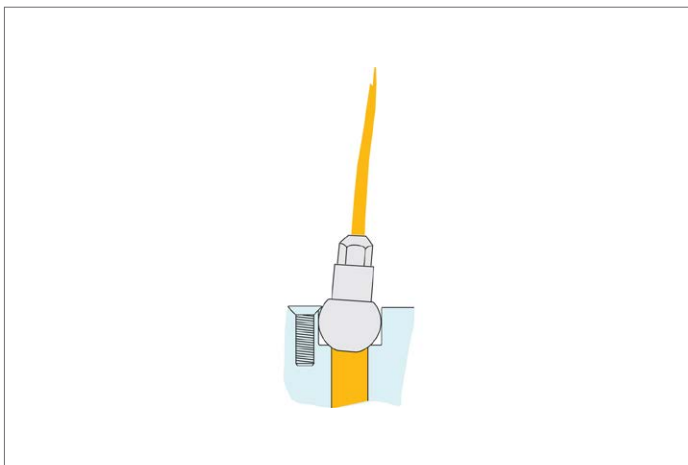
Max. pressure: 33 bar.

**Tips**

These are conventional threaded brass ball nozzles, and can be used with extension

tubes (20090 and 20092), spray tips (20080 and 20082) or can be plugged with a set screw when required.

Order No.	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>
20072.W5110	11	M 5x0,8	6.0
20072.W5120	12	M 5x0,8	6.0
20072.W6100	10	M 6x1,0	0.0
20072.W6140	14	M 6x1,0	7.9
20072.W6150	15	M 6x1,0	7.9
20072.W6180	18	M 6x1,0	7.9
20072.W6220	22	M 6x1,0	7.9
20072.W8500	1/2"	M 5x0,8	6.0
20072.W8630	5/8"	M 6x1,0	7.9





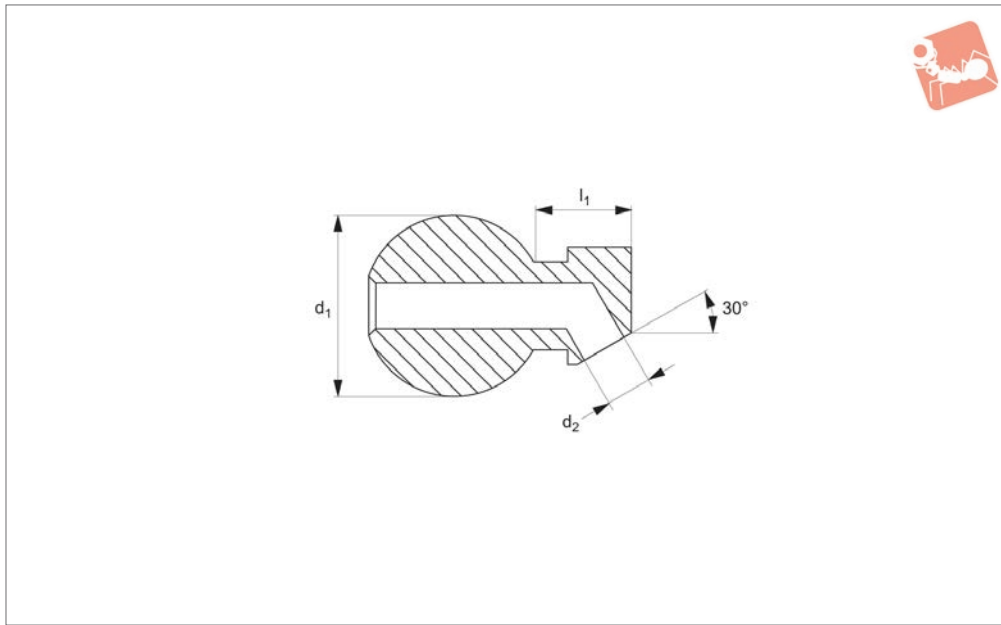


# Coolant Nozzles - Brass Ball

angled - max. 33 bar



## Coolant Nozzles



**20074**

COOLANT NOZZLES

**Material**

Brass.

Max. pressure: 33 bar.

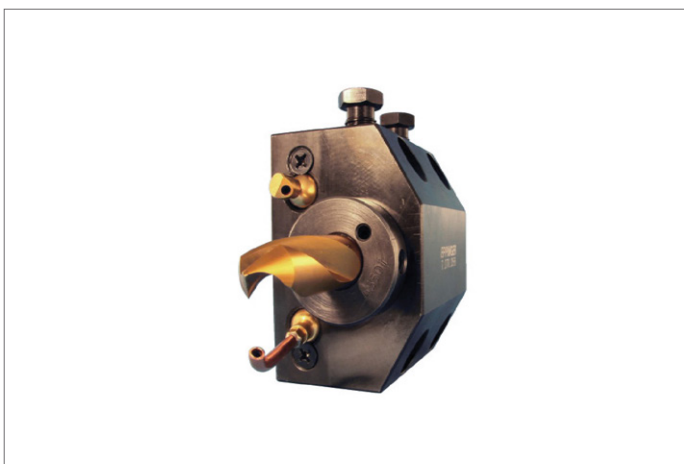
**Technical Notes**

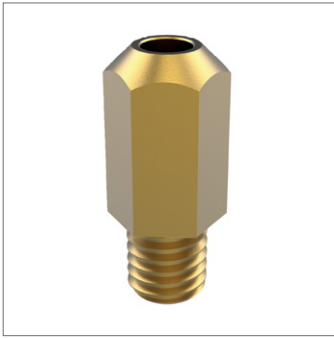
Max. temperature: 150°C.

**Tips**

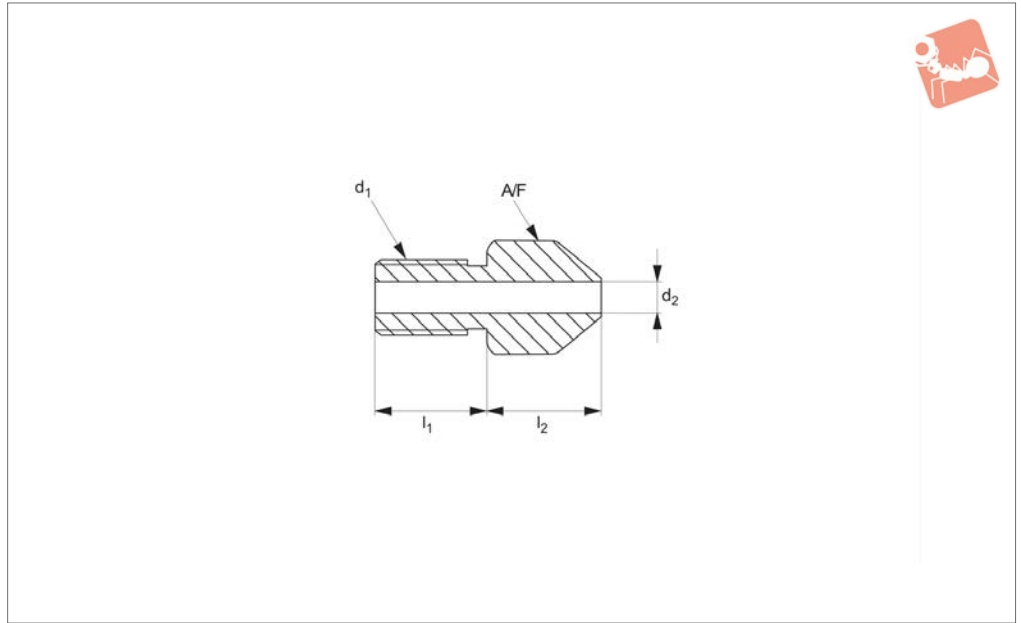
These are conventional brass ball nozzles but with an angled hole.

Order No.	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>
20074.W0100	10	2.8	6.4
20074.W0110	11	4.0	9.2
20074.W0120	12	4.0	9.2
20074.W0140	14	4.0	9.2
20074.W0150	15	4.0	9.2
20074.W0180	18	4.0	9.2
20074.W0220	22	4.0	9.2
20074.W2500	1/2"	4.0	9.2
20074.W2630	5/8"	4.0	9.2





**20080**



**Material**

Brass.

Max. pressure: 33 bar.

**Technical Notes**

Max. temperature: 150°C.

**Tips**

Can be used as stand alone units or mounted on many of our coolant nozzles.

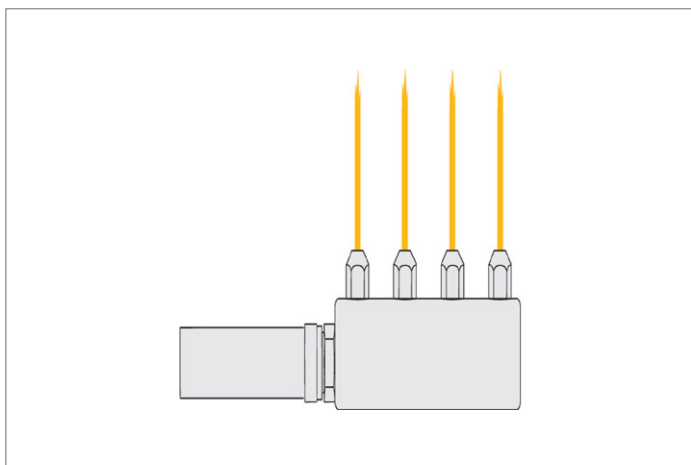
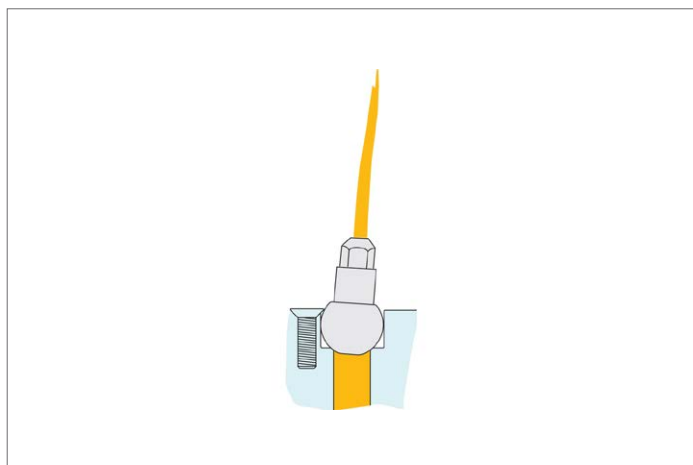
Order No.	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	A/F
20080.W0030	M 3,5x0,60	1.6	3.6	7.1	3/16"
20080.W0031	M 3,5x0,60	2.2	3.6	7.1	3/16"
20080.W0040	M 4x0,70	1.6	4.6	9.1	3/16"
20080.W0041	M 4x0,70	2.2	4.6	9.1	3/16"
20080.W0050	M 5x0,80	1.6	5.3	10.7	1/4"
20080.W0051	M 5x0,80	2.2	5.3	10.7	1/4"
20080.W0052	M 5x0,80	3.0	5.3	10.7	1/4"
20080.W0060	M 6x1,00	1.6	5.3	10.7	1/4"
20080.W0061	M 6x1,00	2.2	5.3	10.7	1/4"
20080.W0062	M 6x1,00	3.0	5.3	10.7	1/4"
20080.W0063	M 6x1,00	3.8	5.3	10.7	1/4"
20080.W0080	M 8x1,25	1.6	7.6	12.7	3/8"
20080.W0081	M 8x1,25	2.2	7.6	12.7	3/8"
20080.W0082	M 8x1,25	3.0	7.6	12.7	3/8"
20080.W0083	M 8x1,25	4.0	7.6	12.7	3/8"
20080.W0084	M 8x1,25	5.6	7.6	12.7	3/8"
20080.W2120	1/8" NPT/BSPT	1.6	9.4	13.5	1/2"
20080.W2121	1/8" NPT/BSPT	2.2	9.4	13.5	1/2"
20080.W2122	1/8" NPT/BSPT	3.0	9.4	13.5	1/2"
20080.W2123	1/8" NPT/BSPT	4.0	9.4	13.5	1/2"
20080.W2124	1/8" NPT/BSPT	5.6	9.4	13.5	1/2"
20080.W2125	1/8" NPT/BSPT	7.1	9.4	13.5	1/2"



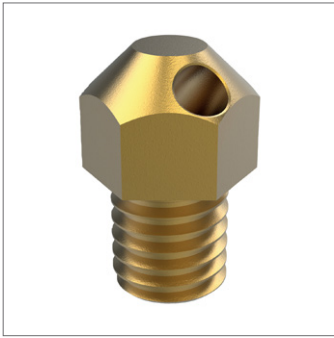
# Spray Tips

straight - max. 33 bar

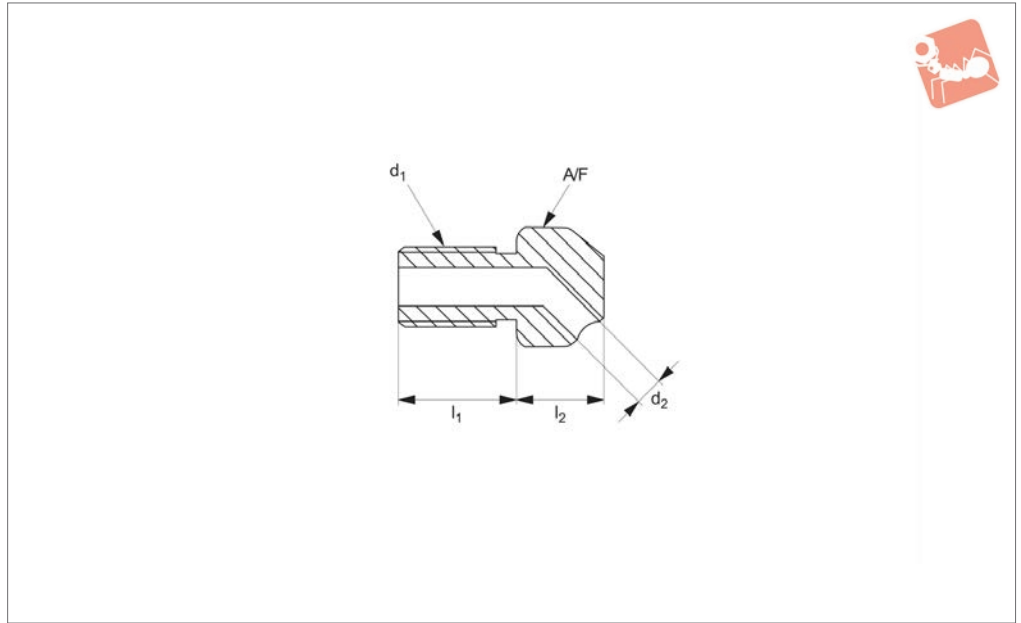
# Coolant Nozzles



COOLANT NOZZLES



**20082**



**Material**

Brass.

Max. pressure: 33 bar.

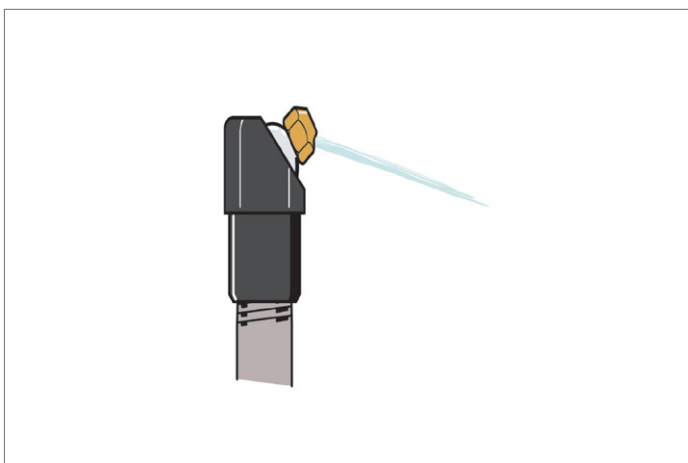
**Technical Notes**

Max. temperature: 150°C.

**Tips**

Can be used as stand alone units or mounted on many of our coolant nozzles.

Order No.	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	A/F
20082.W0030	M 3,5x0,6	1.6	3.6	4.6	3/16"
20082.W0040	M 4x0,7	1.6	4.6	4.6	3/16"
20082.W0050	M 5x0,8	2.2	5.3	5.3	1/4"
20082.W0060	M 6x1,0	2.2	5.3	5.3	1/4"
20082.W0061	M 6x1,0	3.0	5.3	5.3	1/4"

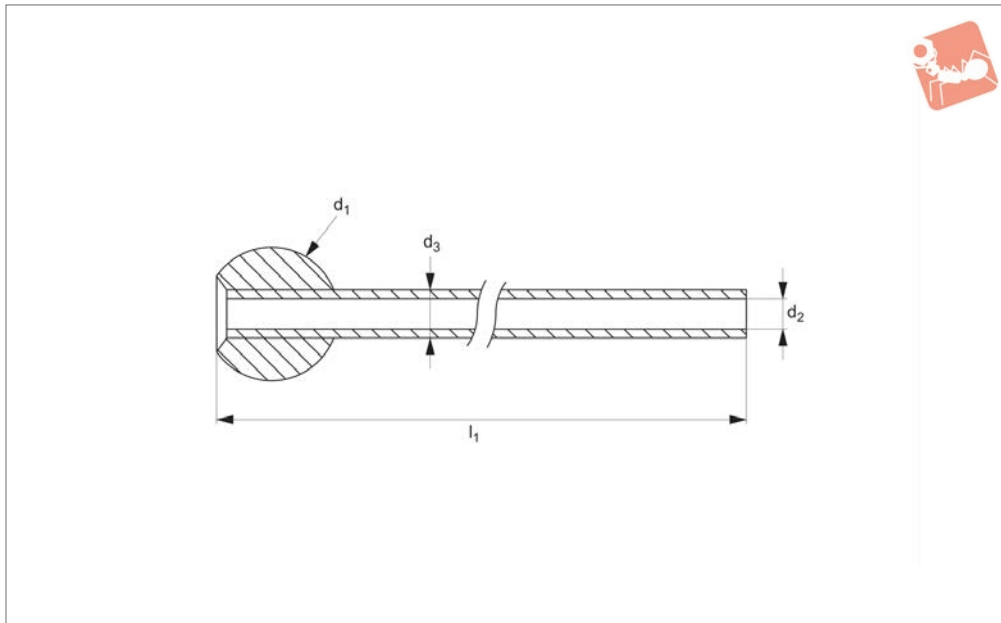




# Coolant Nozzles - Single Tube Ball

bendable tube - max. 33 bar

## Coolant Nozzles



**20084**

COOLANT NOZZLES

### Material

Ball: brass.  
Tube: copper.

Max. pressure: 33 bar.

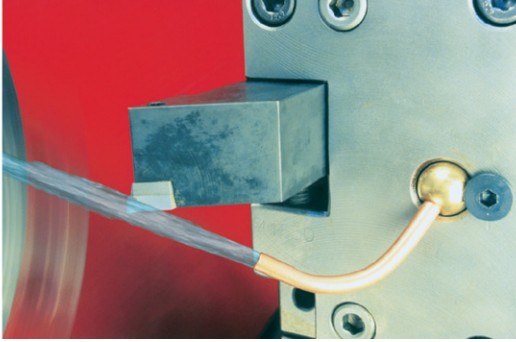
### Tips

Bendable extension tubes.

### Technical Notes

Max. temperature: 150°C.

Order No.	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l <sub>1</sub>
20084.W0090	9	3.0	4.7	152.4
20084.W0100	10	3.0	4.7	152.4
20084.W0110	11	3.0	4.7	152.4
20084.W0120	12	3.0	4.7	152.4
20084.W0121	12	4.6	6.4	152.4
20084.W0140	14	3.0	4.7	152.4
20084.W0141	14	4.6	6.4	152.4
20084.W0150	15	3.0	4.7	152.4
20084.W0151	15	4.6	6.4	152.4
20084.W0180	18	3.0	4.7	152.4
20084.W0181	18	4.6	6.4	152.4
20084.W0220	22	3.0	4.7	152.4
20084.W0221	22	4.6	6.4	152.4
20084.W2370	3/8"	3.0	4.7	152.4
20084.W2500	1/2"	3.0	4.7	152.4
20084.W2501	1/2"	4.6	6.4	152.4
20084.W2630	5/8"	3.0	4.7	152.4
20084.W2631	5/8"	4.6	6.4	152.4



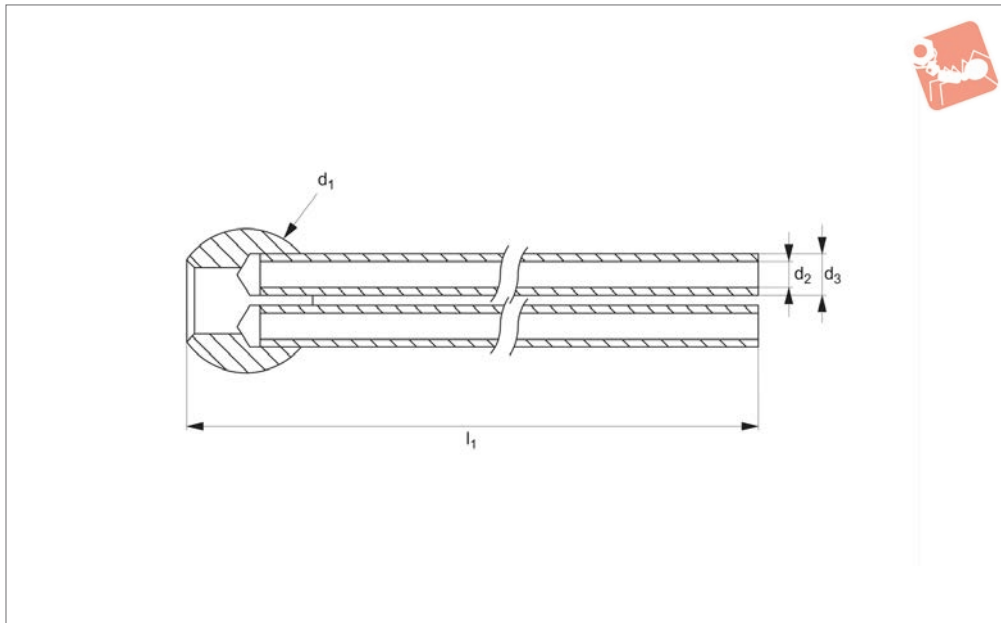


# Coolant Nozzles - Double Tube Ball

bendable tube - max. 33 bar



## Coolant Nozzles



**20085**

COOLANT NOZZLES

### Material

Ball: brass.  
Tube: copper.

Max. pressure: 33 bar.

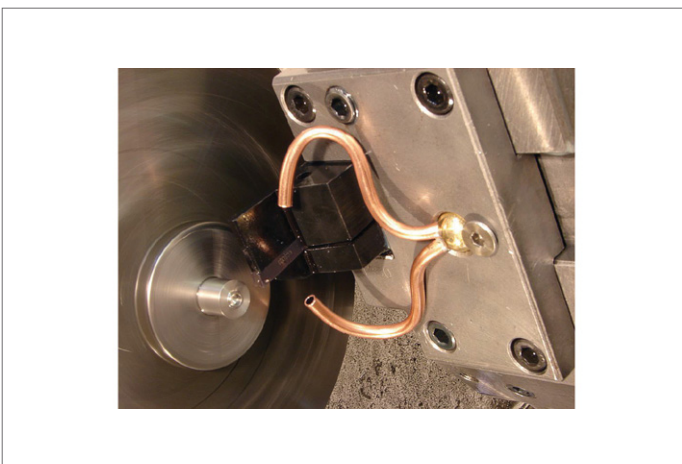
### Tips

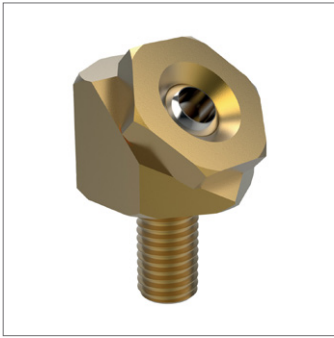
Bendable extension tubes.

### Technical Notes

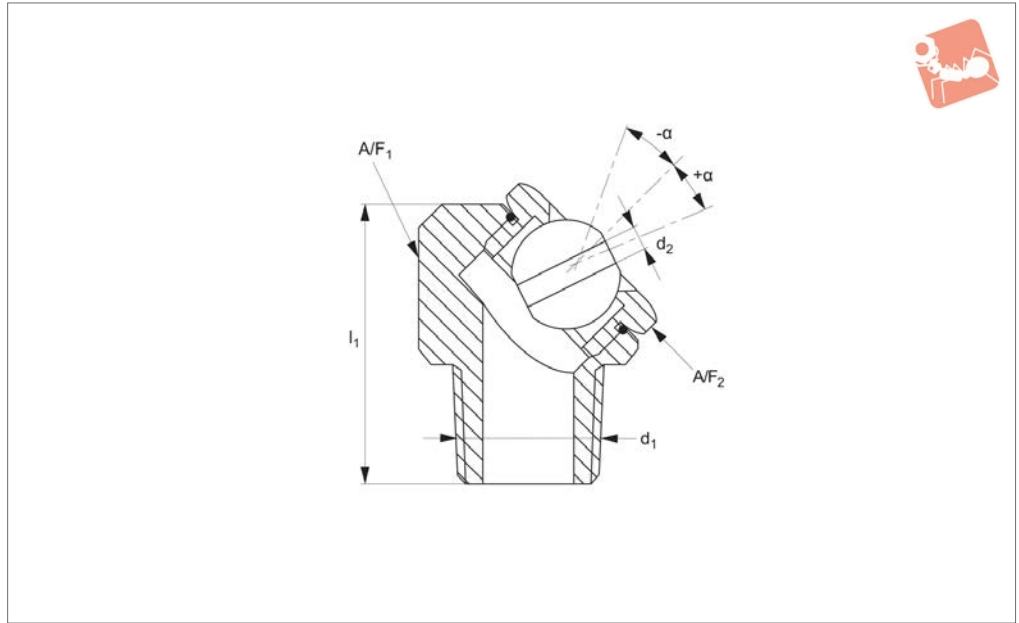
Max. temperature: 150°C.

Order No.	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l <sub>1</sub>
20085.W0120	12	3	4.8	152.4
20085.W0140	14	3	4.8	152.4
20085.W0150	15	3	4.8	152.4
20085.W0180	18	3	4.8	152.4
20085.W0220	22	3	4.8	152.4
20085.W2500	1/2"	3	4.8	152.4
20085.W2630	5/8"	3	4.8	152.4





## 20100



### Material

Body: brass or stainless steel.  
Ball and tube: stainless steel.

### Technical Notes

Max. temperature: 70°C.  
Max. pressure: 100 bar.  
symbol $\alpha$ /symbol is an angle of adjustment either side of centre line.

Choose the stainless steel body version when using cutting oils not compatible with brass (such as oils containing active sulphur).

Choose the brass versions for lower cost.

### Tips

Interchangeable spray tips available allowing the orifice diameter and extension

length to be easily changed to suit the application.

A high velocity coolant stream increases productivity and tool life.

Also useful for low pressure applications where abrasive swarf can be a problem.

Order No.	Thread	Material	A/F <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	A/F <sub>2</sub>	$\alpha$
20100.W2061-B	NPT/BSPT	Brass	7/16"	1/16"	2.2	17.5	3/8"	±36°
20100.W2120-B	NPT/BSPT	Brass	9/16"	1/8"	3.0	20.6	1/2"	±41°
20100.W2121-B	NPT/BSPT	Brass	9/16"	1/8"	4.0	20.6	1/2"	±30°
20100.W2250-B	NPT/BSPT	Brass	5/8"	1/4"	3.0	23.8	9/16"	±44°
20100.W2251-B	NPT/BSPT	Brass	5/8"	1/4"	4.0	23.8	9/16"	±36°
20100.W2310-B	UNF	Brass	7/16"	5/16"-24	1.6	17.5	3/8"	±40°
20100.W2311-B	UNF	Brass	7/16"	5/16"-24	2.2	17.5	3/8"	±36°
20100.W2370-B	NPT/BSPT	Brass	3/4"	3/8"	4.0	28.6	11/16"	±42°
20100.W2371-B	NPT/BSPT	Brass	3/4"	3/8"	5.6	28.6	11/16"	±34°
20100.W2060-S	NPT/BSPT	Stainless steel	7/16"	1/16"	1.6	17.5	3/8"	±40°
20100.W2061-S	NPT/BSPT	Stainless steel	7/16"	1/16"	2.2	17.5	3/8"	±36°
20100.W2120-S	NPT/BSPT	Stainless steel	9/16"	1/8"	3.0	20.6	1/2"	±41°
20100.W2121-S	NPT/BSPT	Stainless steel	9/16"	1/8"	4.0	20.6	1/2"	±30°
20100.W2250-S	NPT/BSPT	Stainless steel	5/8"	1/4"	3.0	23.8	9/16"	±44°
20100.W2251-S	NPT/BSPT	Stainless steel	5/8"	1/4"	4.0	23.8	9/16"	±36°
20100.W2310-S	UNF	Stainless steel	7/16"	5/16"-24	1.6	17.5	3/8"	±40°
20100.W2311-S	UNF	Stainless steel	7/16"	5/16"-24	2.2	17.5	3/8"	±36°
20100.W2370-S	NPT/BSPT	Stainless steel	3/4"	3/8"	4.0	28.6	11/16"	±42°
20100.W2371-S	NPT/BSPT	Stainless steel	3/4"	3/8"	5.6	28.6	11/16"	±34°



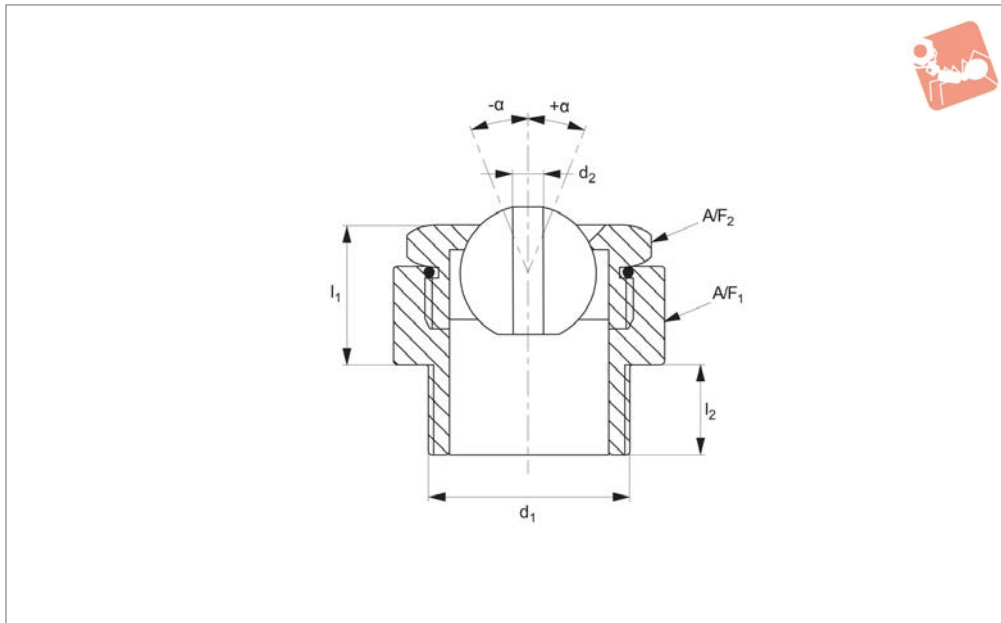


# Pressure Max - Coolant Nozzles

straight - max. 100 bar



## Coolant Nozzles



**20101**

COOLANT NOZZLES

### Material

Body: stainless steel.  
Ball: stainless steel.

### Technical Notes

Max. temperature: 70°C.  
Max. pressure: 100 bar.  
symbol $\alpha$ /symbol is an angle of adjustment

either side of centre line.  
Choose the stainless steel body version when using cutting oils not compatible with brass (such as oils containing active sulphur).

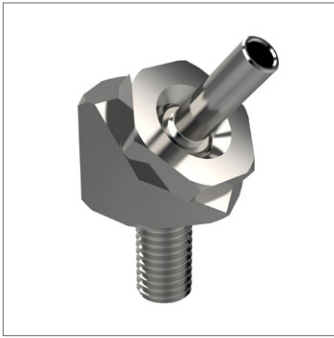
### Tips

Interchangeable spray tips available allo-

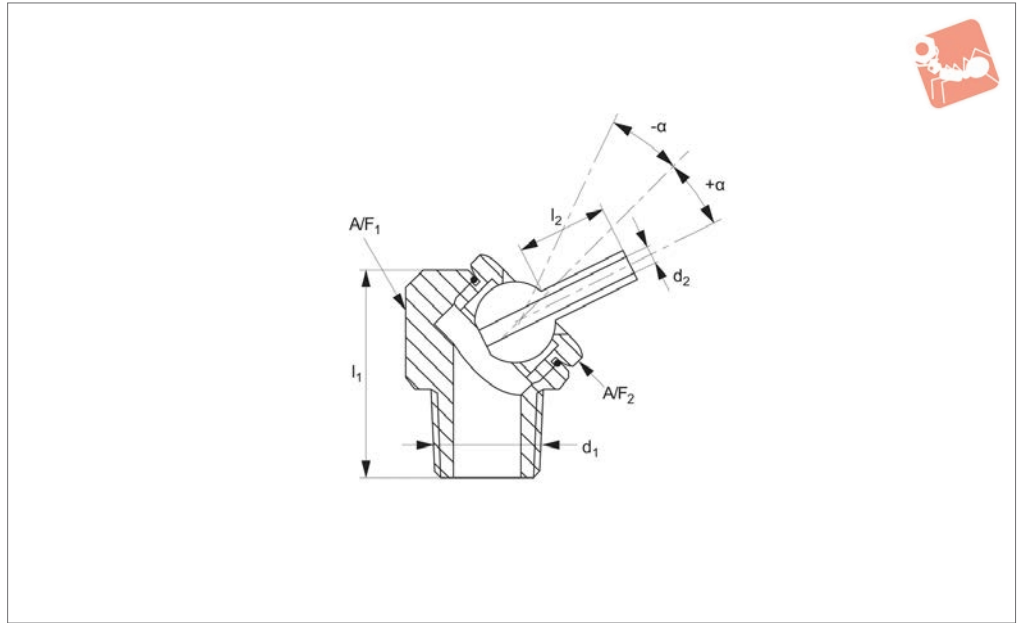
wing the orifice diameter and extension length to be easily changed to suit the application.

A high velocity coolant stream increases productivity and tool life.  
Also useful for low pressure applications where abrasive swarf can be a problem.

Order No.	Type	A/F <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	A/F <sub>2</sub>	$\alpha$
20101.W0100	Metric fine	7/16"	M10x1,25	1.6	9.5	9.1	3/8"	±40°
20101.W0101	Metric fine	7/16"	M10x1,25	2.2	9.5	9.1	3/8"	±36°
20101.W1060	Metric coarse	7/16"	M 6x1,00	1.6	9.5	7.6	3/8"	±40°
20101.W1061	Metric coarse	7/16"	M 6x1,00	2.2	9.5	7.6	3/8"	±36°
20101.W1080	Metric coarse	7/16"	M 8x1,25	1.6	9.5	8.4	3/8"	±40°
20101.W1081	Metric coarse	7/16"	M 8x1,25	2.2	9.5	8.4	3/8"	±36°
20101.W1100	Metric coarse	7/16"	M10x1,50	1.6	9.5	9.1	3/8"	±40°
20101.W1101	Metric coarse	7/16"	M10x1,50	2.2	9.5	9.1	3/8"	±36°



## 20102



### Material

Body: stainless steel or brass.  
Ball and tube: stainless steel.

### Technical Notes

Max. temperature 70°C.  
Max. pressure 100 bar.  
symbol $\alpha$ /symbol is an angle of adjustment

either side of centre line.  
Stainless steel version for use with cutting oils not compatible with brass.

### Tips

Interchangeable spray tips available allowing the orifice diameter and extension

length to be easily changed to suit the application.  
A high velocity coolant stream increases productivity and tool life.  
Also useful for low pressure applications where abrasive swarf can be a problem.

Order No.	Thread	Body material	A/F <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	A/F <sub>2</sub>	$\alpha$
20102.W2060-S	NPT/BSPT	Stainless Steel	7/16"	1/16"	1.0	11/16"	6.4	3/8"	±34°
20102.W2061-S	NPT/BSPT	Stainless Steel	7/16"	1/16"	1.6	11/16"	6.4	3/8"	±34°
20102.W2120-S	NPT/BSPT	Stainless Steel	9/16"	1/8"	1.0	20.6	6.4	1/2"	±37°
20102.W2121-S	NPT/BSPT	Stainless Steel	9/16"	1/8"	1.6	20.6	6.4	1/2"	±37°
20102.W2122-S	NPT/BSPT	Stainless Steel	9/16"	1/8"	1.6	20.6	31.7	1/2"	±26°
20102.W2123-S	NPT/BSPT	Stainless Steel	9/16"	1/8"	2.2	20.6	6.4	1/2"	±37°
20102.W2124-S	NPT/BSPT	Stainless Steel	9/16"	1/8"	2.2	20.6	31.7	1/2"	±26°
20102.W2125-S	NPT/BSPT	Stainless Steel	9/16"	1/8"	3.0	20.6	6.4	1/2"	±30°
20102.W2126-S	NPT/BSPT	Stainless Steel	9/16"	1/8"	3.0	20.6	31.7	1/2"	±26°
20102.W2250-S	NPT/BSPT	Stainless Steel	5/8"	1/4"	1.0	23.8	6.4	9/16"	±36°
20102.W2251-S	NPT/BSPT	Stainless Steel	5/8"	1/4"	1.6	23.8	6.4	9/16"	±36°
20102.W2252-S	NPT/BSPT	Stainless Steel	5/8"	1/4"	1.6	23.8	31.7	9/16"	±32°
20102.W2253-S	NPT/BSPT	Stainless Steel	5/8"	1/4"	2.2	23.8	6.4	9/16"	±36°
20102.W2254-S	NPT/BSPT	Stainless Steel	5/8"	1/4"	2.2	23.8	31.7	9/16"	±32°
20102.W2255-S	NPT/BSPT	Stainless Steel	5/8"	1/4"	3.0	23.8	6.4	9/16"	±36°
20102.W2256-S	NPT/BSPT	Stainless Steel	5/8"	1/4"	3.0	23.8	12.7	9/16"	±36°
20102.W2257-S	NPT/BSPT	Stainless Steel	5/8"	1/4"	3.0	23.8	31.7	9/16"	±32°
20102.W2258-S	NPT/BSPT	Stainless Steel	5/8"	1/4"	4.0	23.8	12.7	9/16"	±32°
20102.W2259-S	NPT/BSPT	Stainless Steel	5/8"	1/4"	4.0	23.8	31.7	9/16"	±32°
20102.W2310-S	UNF	Stainless Steel	7/16"	5/16"-24	1.0	11/16"	6.4	3/8"	±34°
20102.W2311-S	UNF	Stainless Steel	7/16"	5/16"-24	1.6	11/16"	6.4	3/8"	±34°
20102.W2370-S	NPT/BSPT	Stainless Steel	3/4"	3/8"	1.6	28.6	9.86	11/16"	±40°
20102.W2371-S	NPT/BSPT	Stainless Steel	3/4"	3/8"	1.6	28.6	31.7	11/16"	±40°
20102.W2372-S	NPT/BSPT	Stainless Steel	3/4"	3/8"	2.2	28.6	9.80	11/16"	±40°
20102.W2373-S	NPT/BSPT	Stainless Steel	3/4"	3/8"	2.2	28.6	31.7	11/16"	±40°
20102.W2374-S	NPT/BSPT	Stainless Steel	3/4"	3/8"	3.0	28.6	12.7	11/16"	±40°
20102.W2375-S	NPT/BSPT	Stainless Steel	3/4"	3/8"	3.0	28.6	31.7	11/16"	±40°
20102.W2376-S	NPT/BSPT	Stainless Steel	3/4"	3/8"	4.0	28.6	12.7	11/16"	±40°
20102.W2377-S	NPT/BSPT	Stainless Steel	3/4"	3/8"	4.0	28.6	31.7	11/16"	±40°
20102.W2379-S	NPT/BSPT	Stainless Steel	3/4"	3/8"	5.0	28.6	12.7	11/16"	±34°



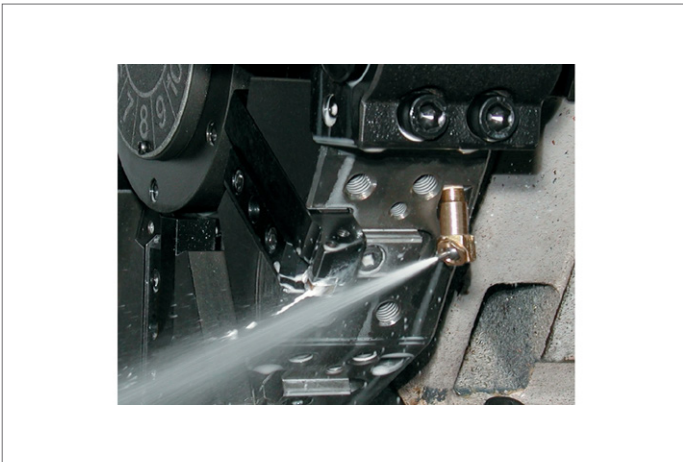
# Pressure Max - Coolant Nozzles

angled - with tube - max. 100 bar - stainless or brass

## Coolant Nozzles

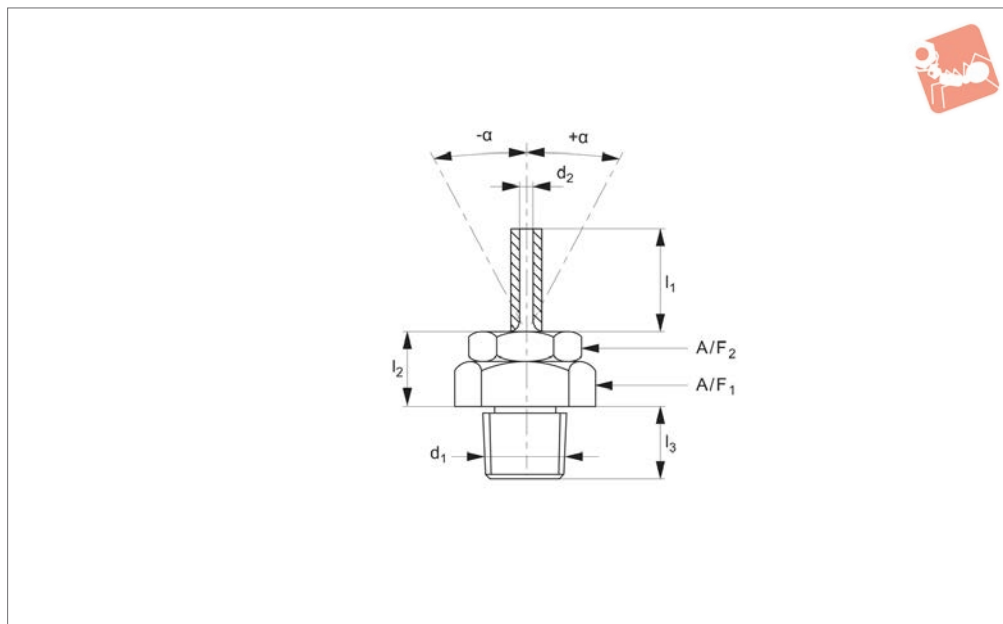
Order No.	Thread	Body material	A/F <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	A/F <sub>2</sub>	α
20102.W2380-S	NPT/BSPT	Stainless Steel	3/4"	3/8"	5.6	28.6	12.7	11/16"	±34°
20102.W2381-S	NPT/BSPT	Stainless Steel	3/4"	3/8"	5.6	28.6	31.7	11/16"	±34°
20102.W2060-B	NPT/BSPT	Brass	7/16"	1/16"	1.0	11/16"	6.4	3/8"	±34°
20102.W2061-B	NPT/BSPT	Brass	7/16"	1/16"	1.6	11/16"	6.4	3/8"	±34°
20102.W2120-B	NPT/BSPT	Brass	9/16"	1/8"	1.0	20.6	6.4	1/2"	±37°
20102.W2121-B	NPT/BSPT	Brass	9/16"	1/8"	1.6	20.6	6.4	1/2"	±37°
20102.W2122-B	NPT/BSPT	Brass	9/16"	1/8"	1.6	20.6	31.7	1/2"	±26°
20102.W2123-B	NPT/BSPT	Brass	9/16"	1/8"	2.2	20.6	6.4	1/2"	±37°
20102.W2124-B	NPT/BSPT	Brass	9/16"	1/8"	2.2	20.6	31.7	1/2"	±26°
20102.W2125-B	NPT/BSPT	Brass	9/16"	1/8"	3.0	20.6	6.4	1/2"	±30°
20102.W2126-B	NPT/BSPT	Brass	9/16"	1/8"	3.0	20.6	31.7	1/2"	±26°
20102.W2250-B	NPT/BSPT	Brass	5/8"	1/4"	1.0	23.8	6.4	9/16"	±36°
20102.W2251-B	NPT/BSPT	Brass	5/8"	1/4"	1.6	23.8	6.4	9/16"	±36°
20102.W2252-B	NPT/BSPT	Brass	5/8"	1/4"	1.6	23.8	31.7	9/16"	±32°
20102.W2253-B	NPT/BSPT	Brass	5/8"	1/4"	2.2	23.8	6.4	9/16"	±36°
20102.W2254-B	NPT/BSPT	Brass	5/8"	1/4"	2.2	23.8	31.7	9/16"	±32°
20102.W2255-B	NPT/BSPT	Brass	5/8"	1/4"	3.0	23.8	6.4	9/16"	±36°
20102.W2256-B	NPT/BSPT	Brass	5/8"	1/4"	3.0	23.8	12.7	9/16"	±36°
20102.W2257-B	NPT/BSPT	Brass	5/8"	1/4"	3.0	23.8	31.7	9/16"	±32°
20102.W2258-B	NPT/BSPT	Brass	5/8"	1/4"	4.0	23.8	12.7	9/16"	±32°
20102.W2259-B	NPT/BSPT	Brass	5/8"	1/4"	4.0	23.8	31.7	9/16"	±32°
20102.W2310-B	UNF	Brass	7/16"	5/16"-24	1.0	11/16"	6.4	3/8"	±34°
20102.W2311-B	UNF	Brass	7/16"	5/16"-24	1.6	11/16"	6.4	3/8"	±34°
20102.W2370-B	NPT/BSPT	Brass	3/4"	3/8"	1.6	28.6	9.8	11/16"	±40°
20102.W2371-B	NPT/BSPT	Brass	3/4"	3/8"	1.6	28.6	31.7	11/16"	±40°
20102.W2372-B	NPT/BSPT	Brass	3/4"	3/8"	2.2	28.6	9.8	11/16"	±40°
20102.W2373-B	NPT/BSPT	Brass	3/4"	3/8"	2.2	28.6	31.7	11/16"	±40°
20102.W2374-B	NPT/BSPT	Brass	3/4"	3/8"	3.0	28.6	12.7	11/16"	±40°
20102.W2375-B	NPT/BSPT	Brass	3/4"	3/8"	3.0	28.6	31.7	11/16"	±40°
20102.W2376-B	NPT/BSPT	Brass	3/4"	3/8"	4.0	28.6	12.7	11/16"	±40°
20102.W2377-B	NPT/BSPT	Brass	3/4"	3/8"	4.0	28.6	31.7	11/16"	±40°
20102.W2378-B	NPT/BSPT	Brass	3/4"	3/8"	5.0	28.6	12.7	11/16"	±34°
20102.W2380-B	NPT/BSPT	Brass	3/4"	3/8"	5.6	28.6	12.7	11/16"	±34°
20102.W2381-B	NPT/BSPT	Brass	3/4"	3/8"	5.6	28.6	31.7	11/16"	±34°

COOLANT NOZZLES





## 20103



### Material

Stainless steel body, ball and tube.

### Technical Notes

Max. temperature: 70°C.

Max. pressure: 100 bar.

symbol/alpha is an angle of adjustment

either side of centre line.

### Tips

Interchangeable spray tips available allowing the orifice diameter and extension length to be easily changed to suit the application.

A high velocity coolant stream increases productivity and tool life.

Also useful for low pressure applications where abrasive swarf can be a problem.

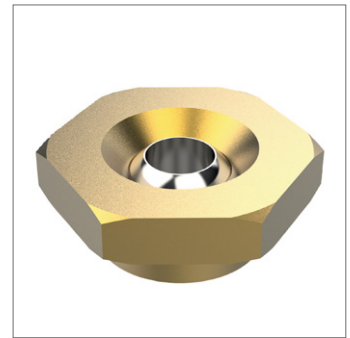
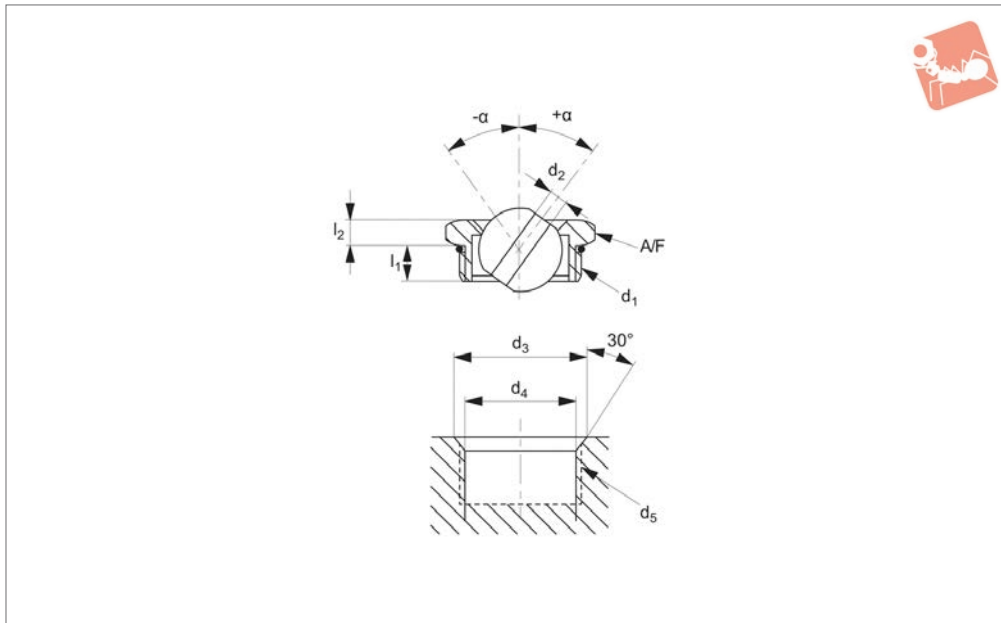
Order No.	Type	A/F <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	A/F <sub>2</sub>	α
20103.W0100	Metric Fine	7/16"	M10x1,25	1.0	6.4	9.5	9.2	3/8"	±34°
20103.W0101	Metric Fine	7/16"	M10x1,25	1.6	6.4	9.5	9.1	3/8"	±34°
20103.W1060	Metric Coarse	7/16"	M 6x1,00	1.0	6.4	9.5	7.6	3/8"	±34°
20103.W1061	Metric Coarse	7/16"	M 6x1,00	1.6	6.4	9.5	7.6	3/8"	±34°
20103.W1080	Metric Coarse	7/16"	M 8x1,25	1.0	6.4	9.5	8.4	3/8"	±34°
20103.W1081	Metric Coarse	7/16"	M 8x1,25	1.6	6.4	9.5	8.6	3/8"	±34°
20103.W1100	Metric Coarse	7/16"	M10x1,50	1.0	6.4	9.5	9.1	3/8"	±34°
20103.W1101	Metric Coarse	7/16"	M10x1,50	1.6	6.4	9.5	9.1	3/8"	±34°



# Pressure Max - Spray Tips

max. 100 bar

# Coolant Nozzles



**20104**

COOLANT NOZZLES

### Material

Body: brass or stainless steel.  
Ball and tube: stainless steel.

### Technical Notes

Max. temperature: 70°C.  
Max. pressure: 100 bar.  
symbol $\alpha$ /symbol is an angle of adjustment either side of centre line.  
Choose the stainless steel body version

when using cutting oils not compatible with brass (such as oils containing active sulphur).  
Choose the brass versions for lower cost.

### Tips

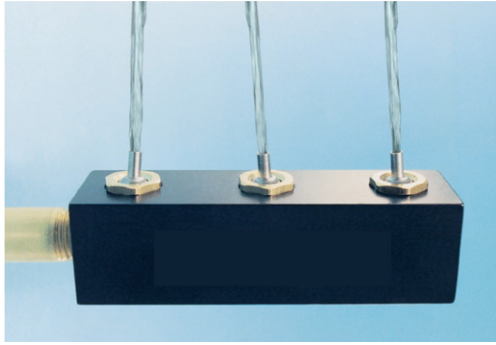
Interchangeable spray tips available allowing the orifice diameter and extension

length to be easily changed to suit the application.  
A high velocity coolant stream increases productivity and tool life.  
Also useful for low pressure applications where abrasive swarf can be a problem.

Order No.	Body material	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub> max.	d <sub>4</sub> max.	d <sub>5</sub>	l <sub>1</sub>	l <sub>2</sub>	A/F	$\alpha$
20104.W2310-B	Brass	5/16"-24 UNF	1.6	8.8	7.1	5/16"-24	3.5	2.3	3/8"	±40°
20104.W2311-B	Brass	5/16"-24 UNF	2.2	8.8	7.1	5/16"-24	3.5	2.3	3/8"	±36°
20104.W2440-B	Brass	7/16"-20 UNF	3.0	12.0	10.0	7/16"-20	4.0	2.3	1/2"	±41°
20104.W2441-B	Brass	7/16"-20 UNF	4.0	12.0	10.1	7/16"-20	4.0	2.3	1/2"	±30°
20104.W2500-B	Brass	1/2"-20 UNF	3.0	13.6	11.6	1/2"-20	4.0	2.3	9/16"	±44°
20104.W2501-B	Brass	1/2"-20 UNF	4.0	13.6	11.7	1/2"-20	4.0	2.3	9/16"	±36°
20104.W2630-B	Brass	5/8"-18 UNF	4.0	16.8	14.7	5/8"-18	5.3	2.3	11/16"	±42°
20104.W2631-B	Brass	5/8"-18 UNF	5.6	16.8	14.7	5/8"-18	5.3	2.3	11/16"	±34°
20104.W2310-S	Stainless Steel	5/16"-24 UNF	1.6	8.8	7.1	5/16"-24	3.5	2.3	3/8"	±40°
20104.W2311-S	Stainless Steel	5/16"-24 UNF	2.2	8.8	7.1	5/16"-24	3.5	2.3	3/8"	±36°
20104.W2440-S	Stainless Steel	7/16"-20 UNF	3.0	12.0	10.1	7/16"-20	4.0	2.3	1/2"	±41°
20104.W2441-S	Stainless Steel	7/16"-20 UNF	4.0	12.0	10.1	7/16"-20	4.0	2.3	1/2"	±30°
20104.W2500-S	Stainless Steel	1/2"-20 UNF	3.0	13.6	11.7	1/2"-20	4.0	2.3	9/16"	±44°
20104.W2501-S	Stainless Steel	1/2"-20 UNF	4.0	13.6	11.7	1/2"-20	4.0	2.3	9/16"	±36°
20104.W2630-S	Stainless Steel	5/8"-18 UNF	4.0	16.8	14.7	5/8"-18	5.3	2.3	11/16"	±42°
20104.W2631-S	Stainless Steel	5/8"-18 UNF	5.6	16.8	14.7	5/8"-18	5.3	2.3	11/16"	±34°



COOLANT NOZZLES

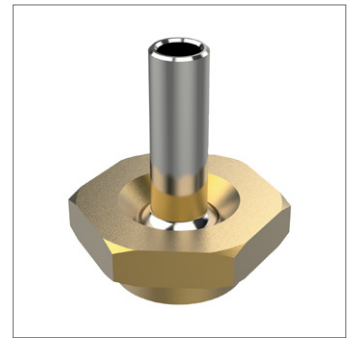




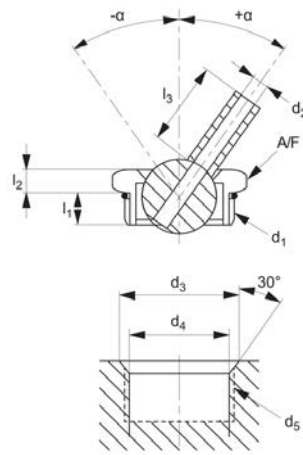
# Pressure Max - Spray Tips - Brass

with tube - max. 100 bar

## Coolant Nozzles



**20106**



COOLANT NOZZLES

### Material

Body: stainless or brass.  
Ball and tube: stainless steel.

### Technical Notes

Max. temperature: 70°C.  
Max. pressure: 100 bar.  
symbol $\alpha$ /symbol is an angle of adjustment

either side of centre line.  
Lower cost brass version.  
Stainless steel version available when using cutting oils not compatible with brass.

### Tips

Interchangeable spray tips available allo-

wing the orifice diameter and extension length to be easily changed to suit the application.

A high velocity coolant stream increases productivity and tool life.  
Also useful for low pressure applications where abrasive swarf can be a problem.

Order No.	Body material	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub> max.	d <sub>4</sub> max.	d <sub>5</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	A/F	$\alpha$
20106.W2310-B	Brass	5/16"-24 UNF	1.0	8.8	7.1	5/16"-24	3.5	2.3	6.4	3/8"	±34°
20106.W2311-B	Brass	5/16"-24 UNF	1.6	8.8	7.1	5/16"-24	3.5	2.3	6.4	3/8"	±34°
20106.W2440-B	Brass	7/16"-20 UNF	1.0	12.0	10.1	7/16"-20	4.0	2.3	6.4	1/2"	±37°
20106.W2441-B	Brass	7/16"-20 UNF	1.6	12.0	10.1	7/16"-20	4.0	2.3	6.4	1/2"	±37°
20106.W2442-B	Brass	7/16"-20 UNF	1.6	12.0	10.1	7/16"-20	4.0	2.3	31.7	1/2"	±26°
20106.W2443-B	Brass	7/16"-20 UNF	2.2	12.0	10.1	7/16"-20	4.0	2.3	6.4	1/2"	±37°
20106.W2444-B	Brass	7/16"-20 UNF	2.2	12.0	10.1	7/16"-20	4.0	2.3	31.7	1/2"	±26°
20106.W2445-B	Brass	7/16"-20 UNF	3.0	12.0	10.0	7/16"-20	4.0	2.3	6.4	1/2"	±30°
20106.W2446-B	Brass	7/16"-20 UNF	3.0	12.0	10.1	7/16"-20	4.0	2.3	31.7	1/2"	±26°
20106.W2500-B	Brass	1/2"-20 UNF	1.0	13.6	11.7	1/2"-20	4.0	2.3	6.4	9/16"	±36°
20106.W2501-B	Brass	1/2"-20 UNF	1.6	13.6	11.7	1/2"-20	4.0	2.3	6.4	9/16"	±36°
20106.W2502-B	Brass	1/2"-20 UNF	1.6	13.6	11.7	1/2"-20	4.0	2.3	31.7	9/16"	±32°
20106.W2503-B	Brass	1/2"-20 UNF	2.2	13.6	11.7	1/2"-20	4.0	2.3	6.4	9/16"	±36°
20106.W2504-B	Brass	1/2"-20 UNF	2.2	13.6	11.7	1/2"-20	4.0	2.3	31.7	9/16"	±32°
20106.W2505-B	Brass	1/2"-20 UNF	3.0	13.6	11.7	1/2"-20	4.0	2.3	6.4	9/16"	±36°
20106.W2506-B	Brass	1/2"-20 UNF	3.0	13.6	11.7	1/2"-20	4.0	2.3	12.7	9/16"	±36°
20106.W2507-B	Brass	1/2"-20 UNF	3.0	13.6	11.7	1/2"-20	4.0	2.3	31.7	9/16"	±32°
20106.W2508-B	Brass	1/2"-20 UNF	4.0	13.6	11.7	1/2"-20	4.0	2.3	12.7	9/16"	±32°
20106.W2509-B	Brass	1/2"-20 UNF	4.0	13.6	11.7	1/2"-20	4.0	2.3	31.7	9/16"	±32°
20106.W2630-B	Brass	5/8"-18 UNF	1.6	16.8	14.7	5/8"-18	5.3	2.3	9.7	11/16"	±40°
20106.W2631-B	Brass	5/8"-18 UNF	1.6	16.8	14.7	5/8"-18	5.3	2.3	31.7	11/16"	±40°
20106.W2632-B	Brass	5/8"-18 UNF	2.2	16.8	14.7	5/8"-18	5.3	2.3	9.7	11/16"	±40°
20106.W2633-B	Brass	5/8"-18 UNF	2.2	16.8	14.7	5/8"-18	5.3	2.3	31.7	11/16"	±42°
20106.W2634-B	Brass	5/8"-18 UNF	3.0	16.8	14.7	5/8"-18	5.3	2.3	12.7	11/16"	±40°
20106.W2635-B	Brass	5/8"-18 UNF	3.0	16.8	14.7	5/8"-18	5.3	2.3	31.7	11/16"	±40°
20106.W2636-B	Brass	5/8"-18 UNF	4.0	16.8	14.7	5/8"-18	5.3	2.3	12.7	11/16"	±40°
20106.W2637-B	Brass	5/8"-18 UNF	4.0	16.8	14.7	5/8"-18	5.3	2.3	31.7	11/16"	±40°
20106.W2638-B	Brass	5/8"-18 UNF	5.0	16.8	14.7	5/8"-18	5.3	2.3	12.7	11/16"	±34°
20106.W2639-B	Brass	5/8"-18 UNF	5.6	16.8	14.7	5/8"-18	5.3	2.3	12.7	11/16"	±34°
20106.W2640-B	Brass	5/8"-18 UNF	5.6	16.8	14.7	5/8"-18	5.3	2.3	31.7	11/16"	±34°



COOLANT NOZZLES

Order No.	Body material	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub> max.	d <sub>4</sub> max.	d <sub>5</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	A/F	α
20106.W2310-S	Stainless	5/16"-24 UNF	1.0	8.8	7.1	5/16"-24	3.5	2.3	6.4	3/8"	±34°
20106.W2311-S	Stainless	5/16"-24 UNF	1.6	8.8	7.1	5/16"-24	3.5	2.3	6.4	3/8"	±34°
20106.W2440-S	Stainless	7/16"-20 UNF	1.0	12.0	10.1	7/16"-20	4.0	2.3	6.4	1/2"	±37°
20106.W2441-S	Stainless	7/16"-20 UNF	1.6	12.0	10.1	7/16"-20	4.0	2.3	6.4	1/2"	±37°
20106.W2442-S	Stainless	7/16"-20 UNF	1.6	12.0	10.1	7/16"-20	4.0	2.3	31.7	1/2"	±26°
20106.W2443-S	Stainless	7/16"-20 UNF	2.2	12.0	10.0	7/16"-20	4.0	2.3	6.4	1/2"	±37°
20106.W2444-S	Stainless	7/16"-20 UNF	2.2	12.0	10.1	7/16"-20	4.0	2.3	31.7	1/2"	±26°
20106.W2445-S	Stainless	7/16"-20 UNF	3.0	12.0	10.1	7/16"-20	4.0	2.3	6.4	1/2"	±34°
20106.W2446-S	Stainless	7/16"-20 UNF	3.0	12.0	10.1	7/16"-20	4.0	2.3	31.7	1/2"	±26°
20106.W2500-S	Stainless	1/2"-20 UNF	1.0	13.6	11.7	1/2"-20	4.0	2.3	6.4	9/16"	±36°
20106.W2501-S	Stainless	1/2"-20 UNF	1.6	13.6	11.7	1/2"-20	4.0	2.3	6.4	9/16"	±36°
20106.W2502-S	Stainless	1/2"-20 UNF	1.6	13.6	11.7	1/2"-20	4.0	2.3	31.7	9/16"	±32°
20106.W2503-S	Stainless	1/2"-20 UNF	2.2	13.6	11.7	1/2"-20	4.0	2.3	6.4	9/16"	±36°
20106.W2504-S	Stainless	1/2"-20 UNF	2.2	13.6	11.7	1/2"-20	4.0	2.3	31.7	9/16"	±32°
20106.W2505-S	Stainless	1/2"-20 UNF	3.0	13.6	11.7	1/2"-20	4.0	2.3	6.4	9/16"	±36°
20106.W2506-S	Stainless	1/2"-20 UNF	3.0	13.6	11.7	1/2"-20	4.0	2.3	12.7	9/16"	±36°
20106.W2507-S	Stainless	1/2"-20 UNF	3.0	13.6	11.7	1/2"-20	4.0	2.3	31.7	9/16"	±32°
20106.W2508-S	Stainless	1/2"-20 UNF	4.0	13.6	11.7	1/2"-20	4.0	2.3	12.7	9/16"	±32°
20106.W2509-S	Stainless	1/2"-20 UNF	4.0	13.6	11.7	1/2"-20	4.0	2.3	31.7	9/16"	±32°
20106.W2630-S	Stainless	5/8"-18 UNF	1.6	16.7	14.7	5/8"-18	5.3	2.3	9.8	11/16"	±40°
20106.W2631-S	Stainless	5/8"-18 UNF	1.6	16.8	14.7	5/8"-18	5.3	2.3	31.7	11/16"	±40°
20106.W2632-S	Stainless	5/8"-18 UNF	2.2	16.8	14.7	5/8"-18	5.3	2.3	9.70	11/16"	±40°
20106.W2633-S	Stainless	5/8"-18 UNF	2.2	16.8	14.7	5/8"-18	5.3	2.3	31.7	11/16"	±40°
20106.W2634-S	Stainless	5/8"-18 UNF	3.0	16.8	14.7	5/8"-18	5.3	2.3	12.7	11/16"	±40°
20106.W2635-S	Stainless	5/8"-18 UNF	3.0	16.8	14.7	5/8"-18	5.3	2.3	31.7	11/16"	±40°
20106.W2636-S	Stainless	5/8"-18 UNF	4.0	16.8	14.7	5/8"-18	5.3	2.3	12.7	11/16"	±40°
20106.W2637-S	Stainless	5/8"-18 UNF	4.0	16.8	14.7	5/8"-18	5.3	2.3	31.7	11/16"	±40°
20106.W2638-S	Stainless	5/8"-18 UNF	5.0	16.8	14.7	5/8"-18	5.3	2.3	12.7	11/16"	±34°
20106.W2639-S	Stainless	5/8"-18 UNF	5.6	16.8	14.7	5/8"-18	5.3	2.3	12.7	11/16"	±34°
20106.W2640-S	Stainless	5/8"-18 UNF	5.6	16.8	14.7	5/8"-18	5.3	2.3	31.7	11/16"	±34°

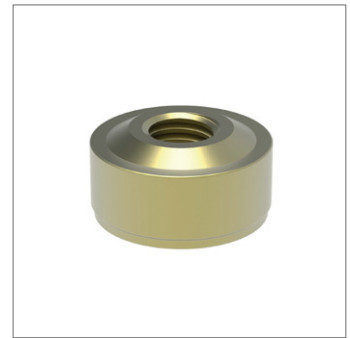
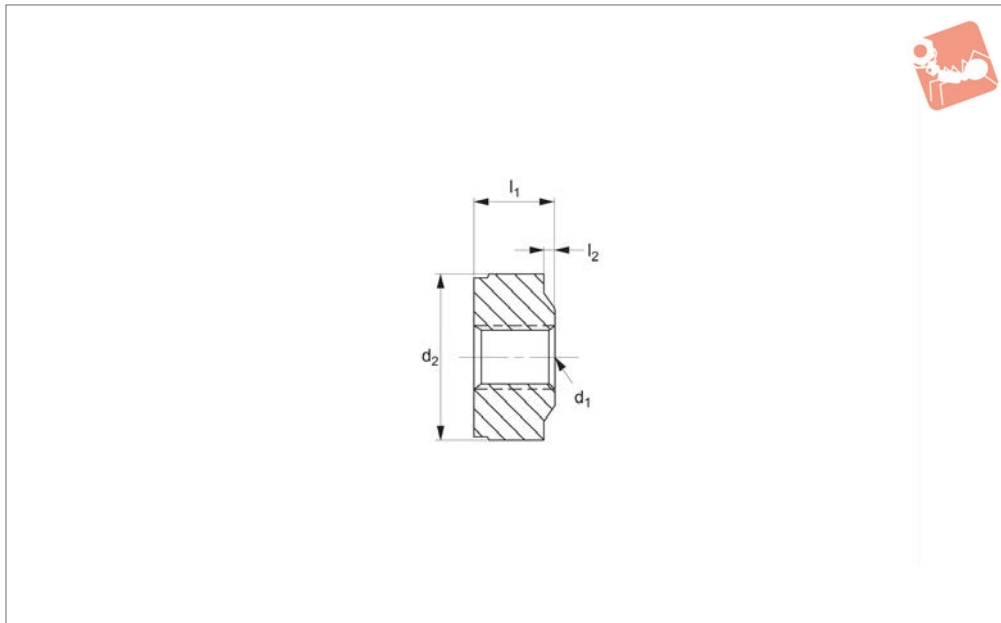




# Port Adaptors - Press Fit

high pressure - max. 100 bar

## Coolant Nozzles



**20107**

COOLANT NOZZLES

### Material

Brass.

Max. pressure: 100 bar.

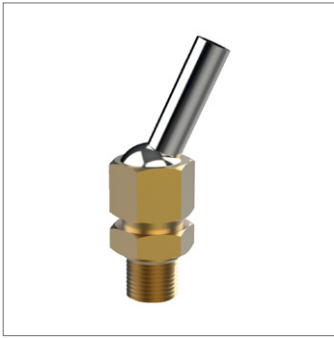
Converts low pressure screwball type parts to high pressure fixed, threaded parts.

### Technical Notes

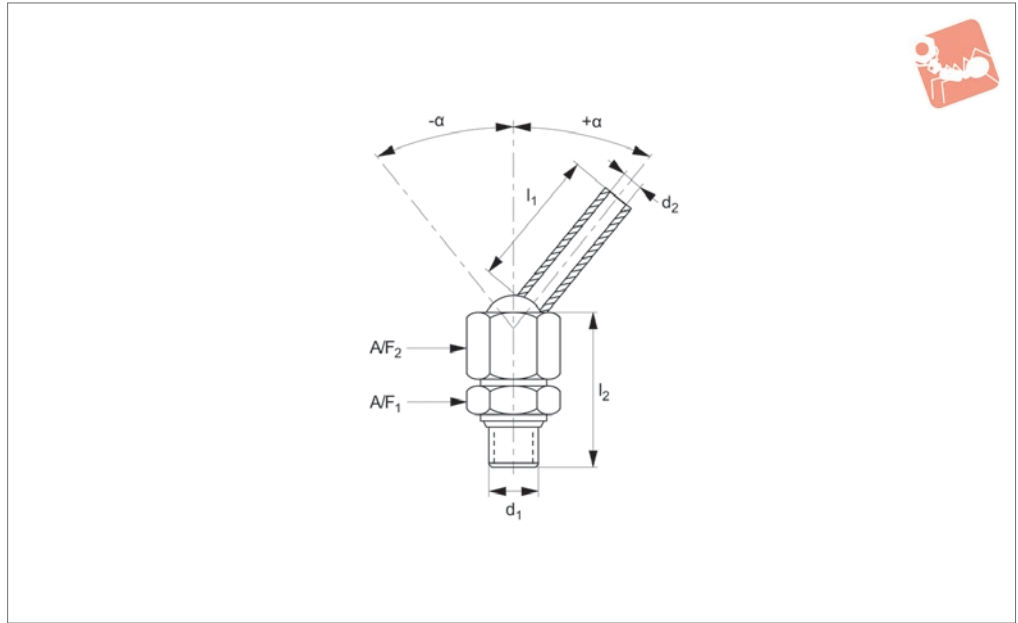
Max. temperature: 150°C.

Hole tolerance for  $d_2$ H9.

Order No.	$d_1$	$d_2$	$l_1$	$l_2$
20107.W6080	M 6x1,0	8	6.0	-
20107.W6100	M 6x1,0	10	6.0	-
20107.W6121	M 6x1,0	12	6.0	-
20107.W6141	M 6x1,0	14	7.1	1
20107.W6151	M 6x1,0	15	7.1	1
20107.W6161	M 6x1,0	16	7.1	1
20107.W6120	1/8" NPT/BSPT	12	6.0	-
20107.W6140	1/8" NPT/BSPT	14	6.0	-
20107.W6150	1/8" NPT/BSPT	15	6.0	-
20107.W6160	1/8" NPT/BSPT	16	6.0	-



## 20108



### Material

Body and nut: brass.  
Ball and extension: stainless steel.  
152,4mm long tubes brass/copper.

### Technical Notes

Max. temperature: 150°C.

Max. pressure: 100 bar.  
symbola/symbol is an angle of adjustment either side of centre line.  
These units fit both NPT and BSPT ports.  
Through tightening of nut A/F<sub>2</sub> these nozzles can be locked in position. Ideal for

applications where the nozzles could be knocked out of position.

### Tips

The balls and tube are easily interchangeable - see part no. 20109 for replacement balls and tubes.

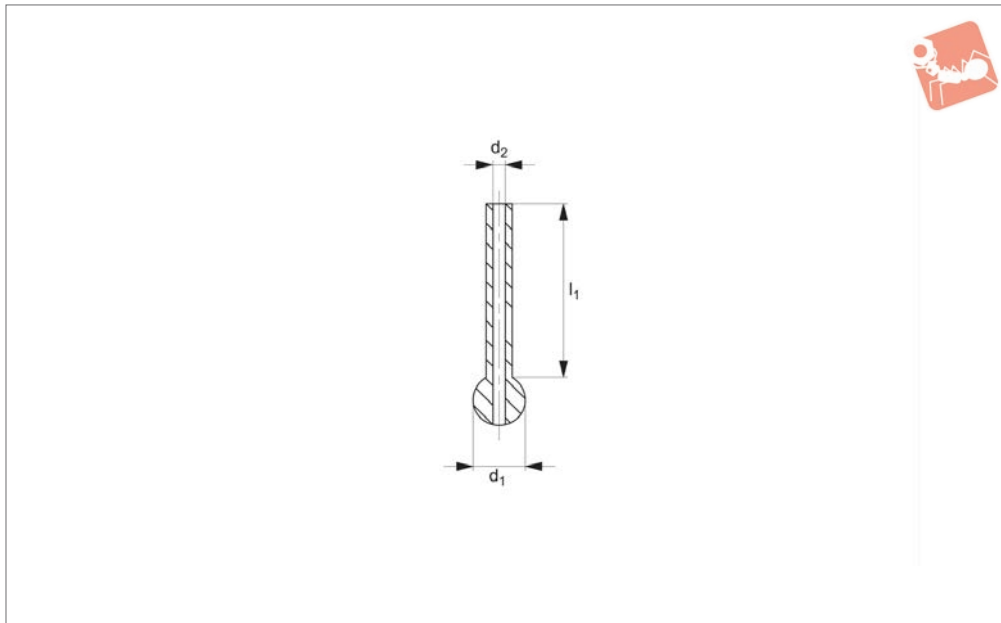
Order No.	A/F <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	A/F <sub>2</sub>	α
20108.W2120	1/2"	1/8"-NPT/BSPT	1.6	6.4	28.4	9/16"	±33°
20108.W2121	1/2"	1/8"-NPT/BSPT	1.6	31.7	28.4	9/16"	±28°
20108.W2122	1/2"	1/8"-NPT/BSPT	2.2	6.4	28.4	9/16"	±33°
20108.W2123	1/2"	1/8"-NPT/BSPT	2.2	31.7	28.4	9/16"	±28°
20108.W2124	1/2"	1/8"-NPT/BSPT	3.0	12.7	28.4	9/16"	±33°
20108.W2125	1/2"	1/8"-NPT/BSPT	3.0	31.7	28.4	9/16"	±28°
20108.W2126	1/2"	1/8"-NPT/BSPT	3.2	152.4	28.4	9/16"	±28°
20108.W2127	1/2"	1/8"-NPT/BSPT	4.0	12.7	28.4	9/16"	±28°
20108.W2128	1/2"	1/8"-NPT/BSPT	4.0	31.7	28.4	9/16"	±28°
20108.W2250	9/16"	1/4"-NPT/BSPT	1.6	9.7	31.2	5/8"	±33°
20108.W2251	9/16"	1/4"-NPT/BSPT	1.6	31.7	31.2	5/8"	±33°
20108.W2252	9/16"	1/4"-NPT/BSPT	2.2	9.7	31.2	5/8"	±33°
20108.W2253	9/16"	1/4"-NPT/BSPT	2.2	31.7	31.2	5/8"	±33°
20108.W2254	9/16"	1/4"-NPT/BSPT	3.0	12.7	31.2	5/8"	±33°
20108.W2255	9/16"	1/4"-NPT/BSPT	3.0	31.7	31.2	5/8"	±33°
20108.W2256	9/16"	1/4"-NPT/BSPT	3.2	152.4	31.2	5/8"	±33°
20108.W2257	9/16"	1/4"-NPT/BSPT	4.0	12.7	31.2	5/8"	±33°
20108.W2258	9/16"	1/4"-NPT/BSPT	4.0	31.7	31.2	5/8"	±33°
20108.W2259	9/16"	1/4"-NPT/BSPT	5.6	12.7	31.2	5/8"	±27°
20108.W2260	9/16"	1/4"-NPT/BSPT	5.6	31.7	31.2	5/8"	±27°
20108.W2370	13/16"	3/8"-NPT/BSPT	3.2	152.4	35.8	3/4"	±38°
20108.W2371	13/16"	3/8"-NPT/BSPT	4.0	19.0	35.8	3/4"	±33°
20108.W2372	13/16"	3/8"-NPT/BSPT	4.0	38.1	35.8	3/4"	±33°
20108.W2373	13/16"	3/8"-NPT/BSPT	4.8	152.4	35.8	3/4"	±33°
20108.W2374	13/16"	3/8"-NPT/BSPT	5.6	19.0	35.8	3/4"	±27°
20108.W2375	13/16"	3/8"-NPT/BSPT	5.6	38.1	35.8	3/4"	±27°
20108.W2376	13/16"	3/8"-NPT/BSPT	7.1	19.0	35.8	3/4"	±23°
20108.W2377	13/16"	3/8"-NPT/BSPT	7.1	38.1	35.8	3/4"	±23°



# Coolant Nozzles - Lock Jet

single tube ball - max.100 bar - for part 20108

## Coolant Nozzles



**20109**

COOLANT NOZZLES

### Material

Ball: stainless steel.  
Tube: copper.

Max. pressure: 100 bar.

To be used with part no. 20108 as replacement units, or to provide a wider range of use with a single lock jet unit.

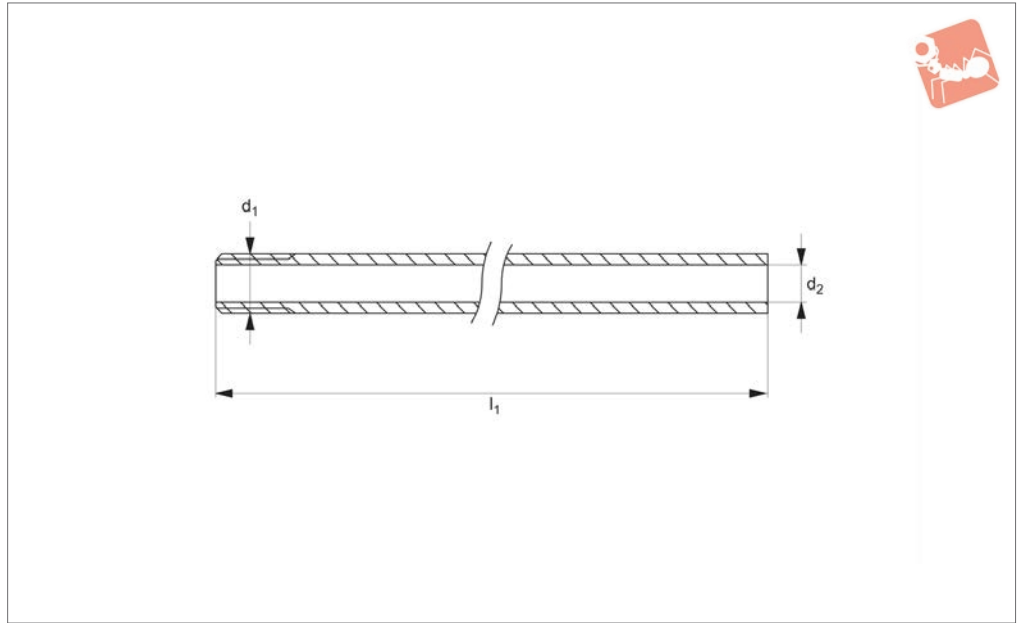
### Technical Notes

Max. temperature: 150°C.

Order No.	To suit lock jet of thread	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>
20109.W2370	1/8" - NPT/BSPT	9.5	1.6	6.4
20109.W2371	1/8" - NPT/BSPT	9.5	1.6	31.7
20109.W2372	1/8" - NPT/BSPT	9.5	2.2	6.4
20109.W2373	1/8" - NPT/BSPT	9.5	2.2	31.7
20109.W2374	1/8" - NPT/BSPT	9.5	3.0	12.7
20109.W2375	1/8" - NPT/BSPT	9.5	3.0	31.7
20109.W2376	1/8" - NPT/BSPT	9.5	4.0	12.7
20109.W2377	1/8" - NPT/BSPT	9.5	4.0	31.7
20109.W0120	1/4" - NPT/BSPT	12.0	1.6	9.7
20109.W0121	1/4" - NPT/BSPT	12.0	1.6	31.7
20109.W0122	1/4" - NPT/BSPT	12.0	2.2	9.7
20109.W0123	1/4" - NPT/BSPT	12.0	2.2	31.7
20109.W0124	1/4" - NPT/BSPT	12.0	3.0	12.7
20109.W0125	1/4" - NPT/BSPT	12.0	3.0	31.7
20109.W0126	1/4" - NPT/BSPT	12.0	4.0	12.7
20109.W0127	1/4" - NPT/BSPT	12.0	4.0	31.7
20109.W0128	1/4" - NPT/BSPT	12.0	5.6	12.7
20109.W0129	1/4" - NPT/BSPT	12.0	5.6	31.7
20109.W0150	3/8" - NPT/BSPT	15.0	4.0	19.0
20109.W0151	3/8" - NPT/BSPT	15.0	4.0	38.1
20109.W0152	3/8" - NPT/BSPT	15.0	5.6	19.0
20109.W0153	3/8" - NPT/BSPT	15.0	5.6	38.1
20109.W0154	3/8" - NPT/BSPT	15.0	7.1	19.0
20109.W0155	3/8" - NPT/BSPT	15.0	7.1	38.1



**20090**



**Material**

Brass.

Max. pressure: 33 bar.

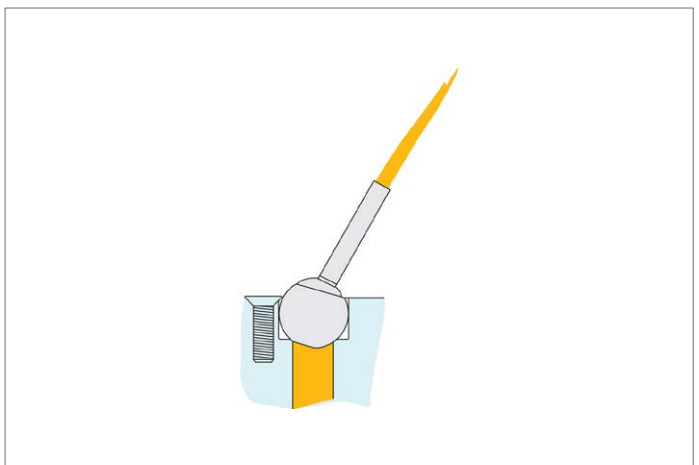
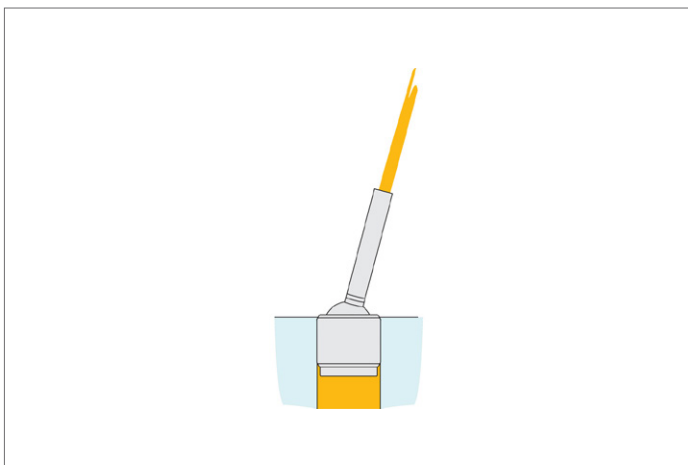
**Tips**

For use with many of our coolant nozzles, or as stand alone units.

**Technical Notes**

Max. temperature: 150°C.

Order No.	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>
20090.W0030	M 3,5x0,60	2.0	30
20090.W0040	M 4x0,70	2.0	30
20090.W0050	M 5x0,80	3.0	40
20090.W0060	M 6x1,00	4.0	50
20090.W0070	M 7x1,00	5.0	55
20090.W0080	M 8x1,25	5.5	55

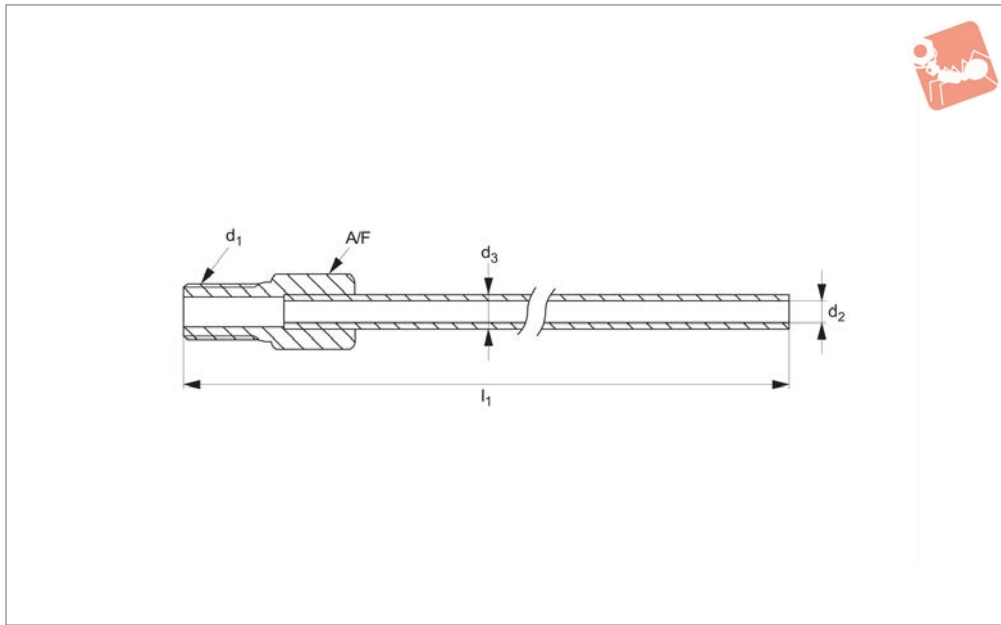




# Extension Tube - For Coolant Nozzles

bendable - max. 33 bar

## Coolant Nozzles



20092

COOLANT NOZZLES

### Material

Tube: copper.  
Connector: threaded brass.

Max. pressure: 33 bar.

Bend and cut to length as required.

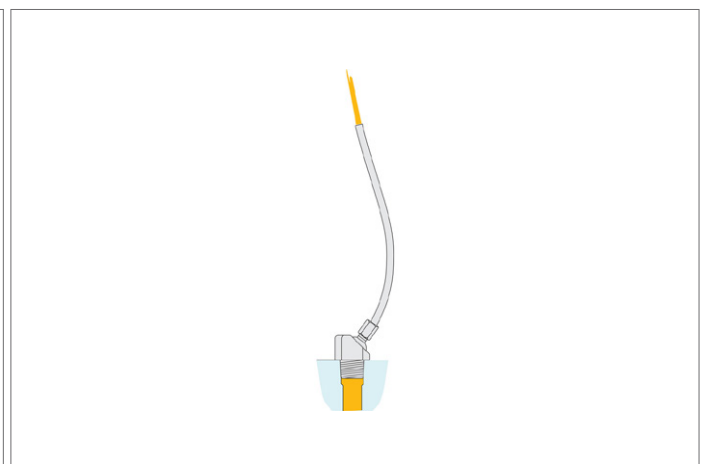
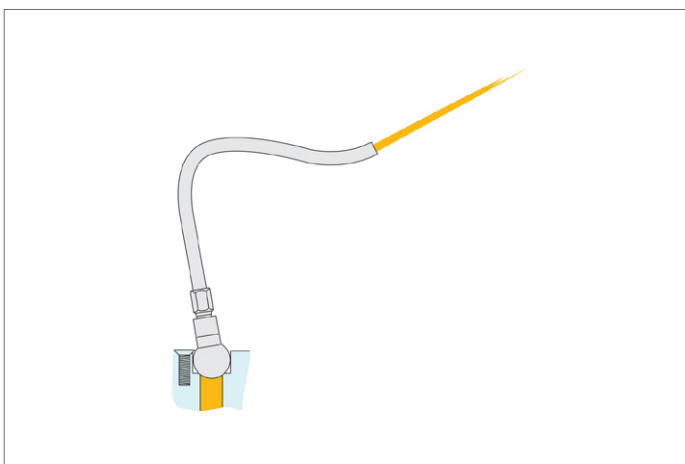
### Technical Notes

Max. temperature: 150°C.

### Tips

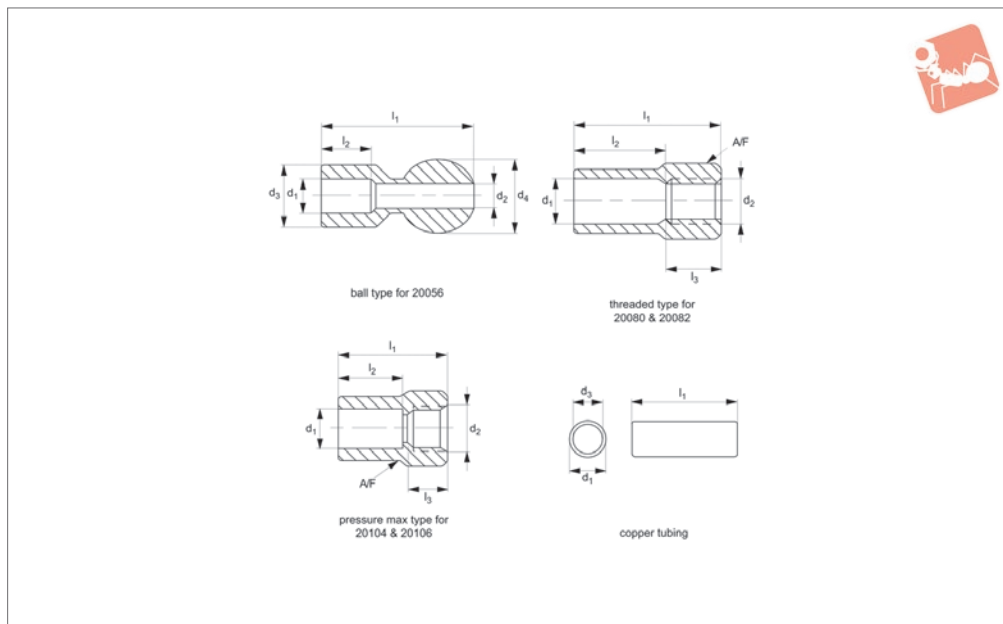
For use with many of our coolant nozzles,  
or as stand alone units.

Order No.	$d_1$	$d_2$	$d_3$	$l_1$	A/F
20092.W0030	M 3,5x0,60	1.8	3.2	155.5	3/16"
20092.W0040	M 4x0,70	1.8	3.2	155.5	3/16"
20092.W0050	M 5x0,80	3.0	4.8	155.5	1/4"
20092.W0060	M 6x1,00	3.0	4.8	155.5	1/4"
20092.W0070	M 7x1,00	4.6	6.4	155.5	5/16"
20092.W0080	M 8x1,25	4.6	6.4	155.5	5/16"
20092.W0081	M 8x0,50	3.0	4.8	155.5	6
20092.W0082	M 8x0,50	4.6	6.4	155.5	7
20092.W0100	M10x0,50	3.0	4.8	155.5	6
20092.W0101	M10x0,50	4.6	6.4	155.5	8
20092.W0120	M12x0,50	3.0	4.8	155.5	6
20092.W0121	M12x0,50	4.6	6.4	155.5	8
20092.W0122	M12x0,50	6.4	7.9	155.5	10





## 20093



### Material

Brass.

### Technical Notes

Max. temperature: 70°C.

Max. pressure: 33 bar.

### Tips

Sweat fittings allow a wide variety of coolant nozzles to be mounted to copper tubing, increasing reliability through use of short rigid hose. For use with coolant

nozzles 20056, 20080, 20082, 20104 and 20106. See table for compatibility. Easy to solder.

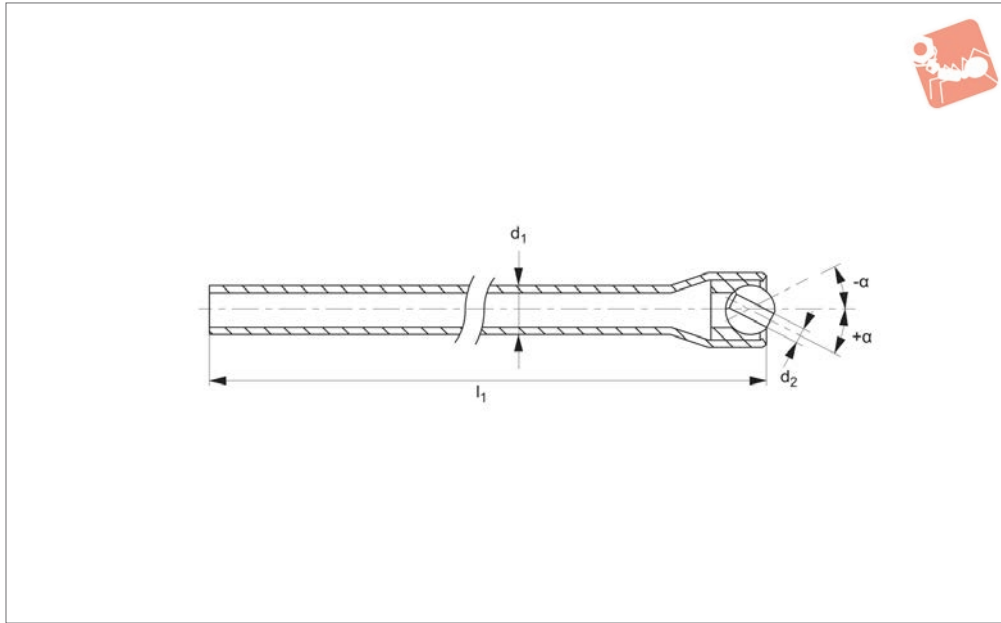
Order No.	Type	For use with	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	A/F
20093.W0250	Ball Type	20056	6.4	5.6	9.6	12	25.1	9.6	-	-
20093.W0310	Ball Type	20056	7.9	5.6	11.2	12	26.7	11.2	-	-
20093.W0370	Ball Type	20056	9.5	5.6	12.4	12	29.2	12.4	-	-
20093.W1190	Threaded Type	20080/20082	4.8	M 5x0,80	-	-	14.2	7.9	6.4	6.4
20093.W1250	Threaded Type	20080/20082	6.4	M 6x1,00	-	-	15.7	9.4	6.4	7.9
20093.W1340	Threaded Type	20080/20082	7.9	M 8x1,25	-	-	20.6	12.7	7.9	9.7
20093.W1370	Threaded Type	20080/20082	9.5	1/8" NPT/BSPT	-	-	23.9	14.2	6.4	12.7
20093.W2250	Pressure Max Type	20104/20106	6.4	5/16"-24 UNJF	-	-	17.3	9.7	5.0	11.2
20093.W2251	Pressure Max Type	20104/20106	6.4	7/16"-20 UNJF	-	-	19.0	10.7	5.0	14.2
20093.W2310	Pressure Max Type	20104/20106	7.9	7/16"-20 UNJF	-	-	19.0	11.2	5.0	14.2
20093.W2311	Pressure Max Type	20104/20106	7.9	1/2"-20 UNJF	-	-	25.4	14.2	6.3	15.7
20093.W2370	Pressure Max Type	20104/20106	9.5	7/16"-20 UNJF	-	-	19.0	11.2	5.0	14.2
20093.W2371	Pressure Max Type	20104/20106	9.5	1/2"-20 UNJF	-	-	25.4	14.2	6.3	15.7
20093.W5190	Copper Tubing	Copper Tube	4.8	-	3.0	-	3000.0	-	-	-
20093.W5250	Copper Tubing	Copper Tube	6.4	-	4.6	-	3000.0	-	-	-
20093.W5310	Copper Tubing	Copper Tube	7.9	-	6.3	-	3000.0	-	-	-
20093.W5370	Copper Tubing	Copper Tube	9.5	-	7.9	-	3000.0	-	-	-



# Directional Spray - Single Tube

bendable - max. 33 bar

## Coolant Nozzles



**20094**

COOLANT NOZZLES

**Material**

Tube: copper.  
 Inserts: acetal.  
 Ball: stainless steel.

Max. pressure: 33 bar.  
 symbola/symbol is an angle of adjustment  
 either side of centre line.

(right angle) or 20096 (straight).

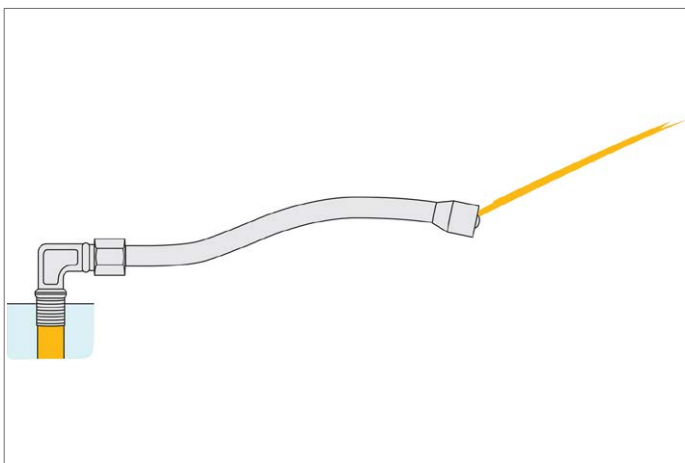
**Tips**

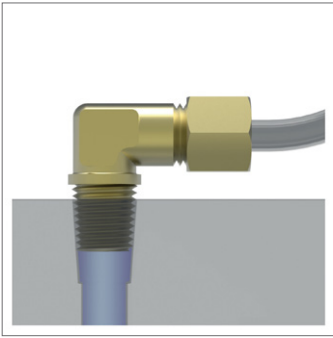
Adjustable direction ball on tip.  
 Can be combined with connectors 20095

**Technical Notes**

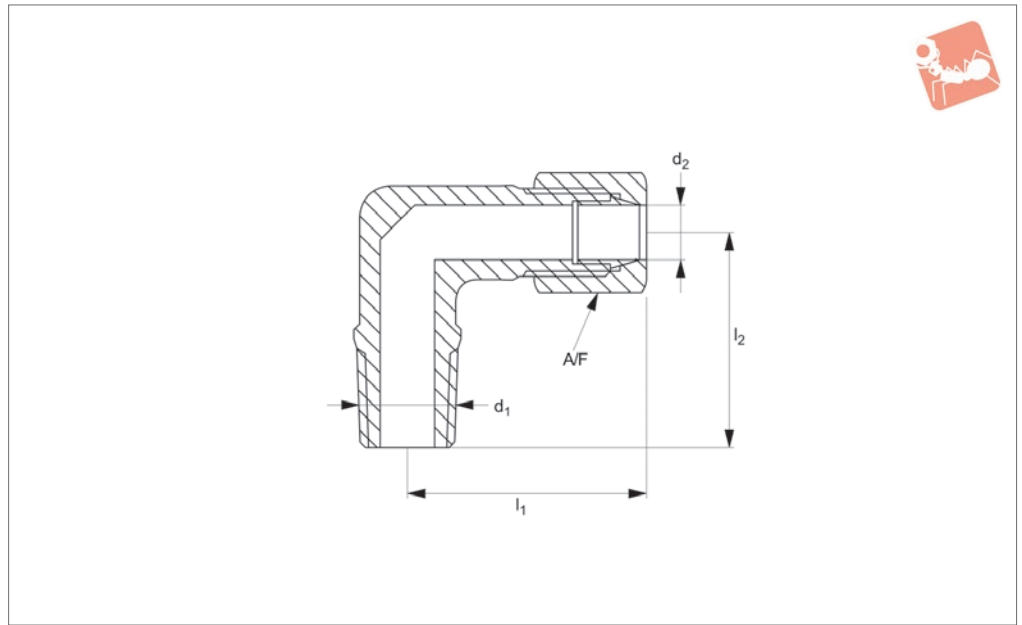
Max. temperature: 70°C.

Order No.	d <sub>1</sub>	d <sub>2</sub>	Jet bore d <sub>2</sub>	l <sub>1</sub>	α
20094.W0040	4.8	2	Plain	146.0	±35°
20094.W6060	6.4	M 3,5x0,6	Threaded	146.0	±35°
20094.W6070	7.9	M 4x0,7	Threaded	298.5	±35°
20094.W6090	9.5	M 5x0,8	Threaded	298.5	±35°





20095



**Material**

Brass connector (supplied with olive).

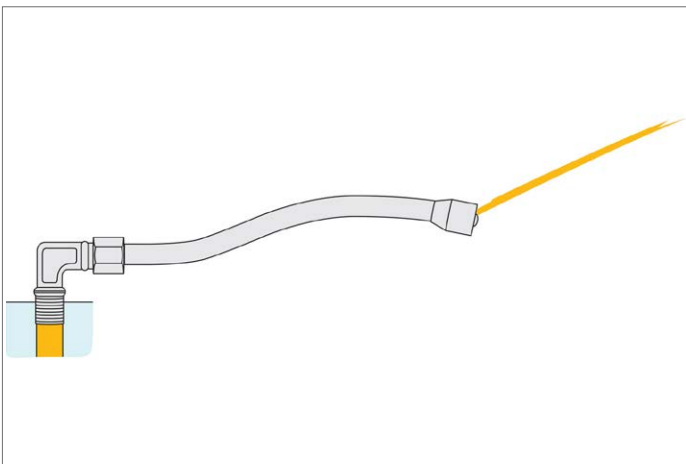
Max. pressure: 33 bar.

For use with adjustable direction spray nozzle tube 20094.

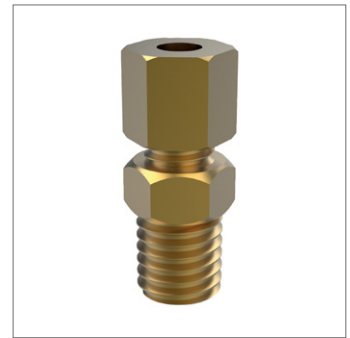
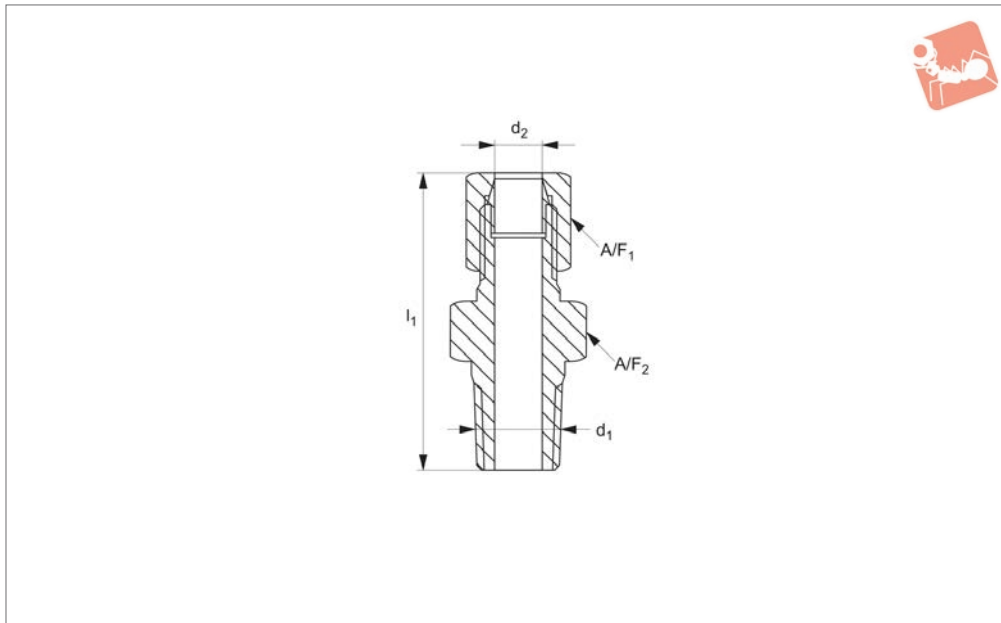
**Technical Notes**

Max. temperature: 150°C.

Order No.	Type	Tube size mm	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	A/F
20095.W1120	1/8" NPT/BSPT	3/16"	1/8"	3/8" - 24 UN	21.3	17.5	7/16"
20095.W1121	1/8" NPT/BSPT	1/4"	1/8"	7/16" - 24 UN	21.8	18.8	1/12"
20095.W1122	1/8" NPT/BSPT	5/16"	1/8"	1/2" - 24 UN	22.4	18.8	9/16"
20095.W1250	1/4" NPT/BSPT	3/16"	1/4"	3/8" - 24 UN	21.8	23.6	7/16"
20095.W1251	1/4" NPT/BSPT	1/4"	1/4"	7/16" - 24 UN	21.8	23.9	1/2"
20095.W1252	1/4" NPT/BSPT	5/16"	1/4"	1/2" - 24 UN	24.1	23.6	9/16"
20095.W1253	1/4" NPT/BSPT	3/8"	1/4"	9/24" - 24 UN	26.2	23.6	5/8"
20095.W1370	3/8" NPT/BSPT	3/8"	3/8"	9/24" - 24 UN	26.2	25.4	5/8"







**20096**

COOLANT NOZZLES

**Material**

Brass connector (supplied with olive).

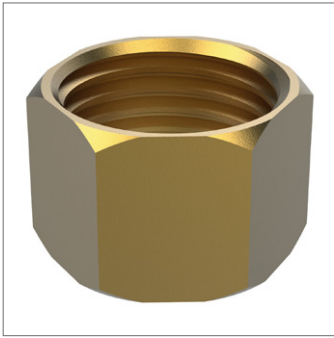
Max. pressure: 33 bar.

For use with adjustable direction spray nozzle tube 20094.

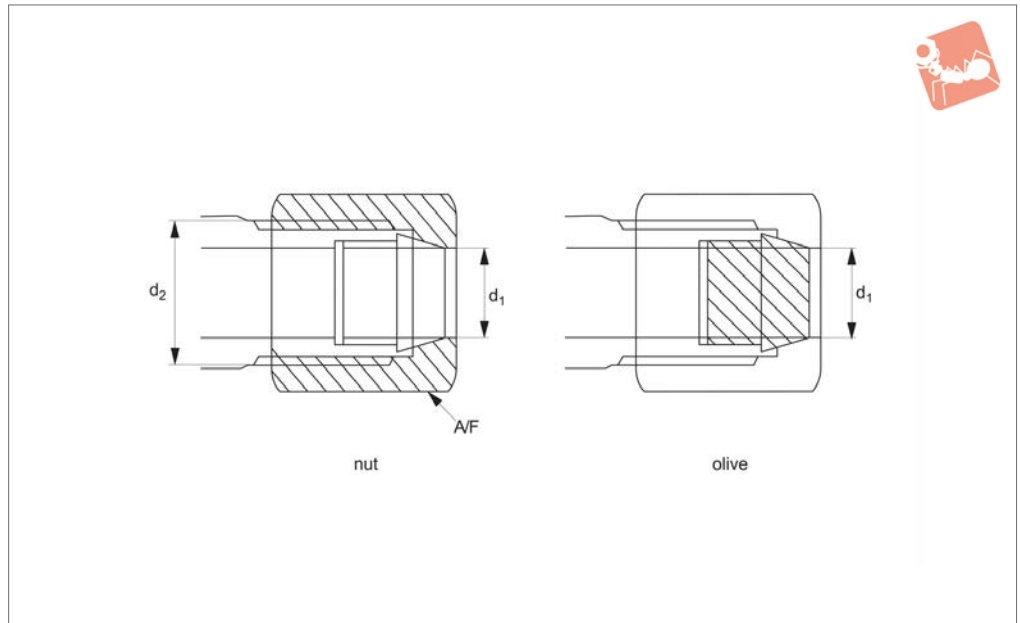
**Technical Notes**

Max. temperature: 70°C.

Order No.	Type	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	A/F <sub>1</sub>	A/F <sub>2</sub>
20096.W0080	Metric fine	M 8x1,00	4.8	28.0	7/16"	7/16"
20096.W0100	Metric fine	M10x1,25	4.8	28.7	7/16"	7/16"
20096.W1101	Metric fine	M10x1,00	4.8	28.7	7/16"	7/16"
20096.W1080	Metric coarse	M 8x1,25	4.8	28.0	7/16"	7/16"
20096.W1100	Metric coarse	M10x1,50	4.8	28.7	7/16"	7/16"
20096.W1120	Metric coarse	M12x1,75	6.4	30.5	1/2"	1/2"
20096.W2060	NPT/BSPT	1/16"	4.8	27.4	7/16"	7/16"
20096.W1130	NPT/BSPT	1/8"	4.8	27.4	7/16"	7/16"
20096.W1131	NPT/BSPT	1/8"	6.4	28.0	1/2"	7/16"
20096.W1132	NPT/BSPT	1/8"	7.9	29.2	9/16"	1/2"
20096.W1250	NPT/BSPT	1/4"	4.8	32.3	7/16"	9/16"
20096.W1251	NPT/BSPT	1/4"	6.4	33.0	1/2"	9/16"
20096.W1252	NPT/BSPT	1/4"	7.9	33.8	9/16"	9/16"
20096.W1253	NPT/BSPT	1/4"	9.5	36.0	5/8"	9/16"
20096.W1370	NPT/BSPT	3/8"	9.5	36.6	5/8"	5/8"



**20097**



**Material**

Brass.

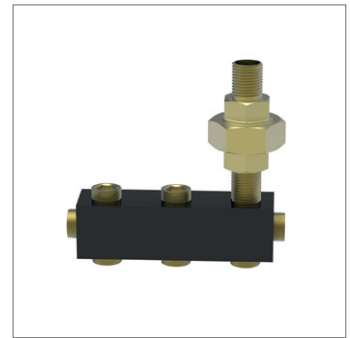
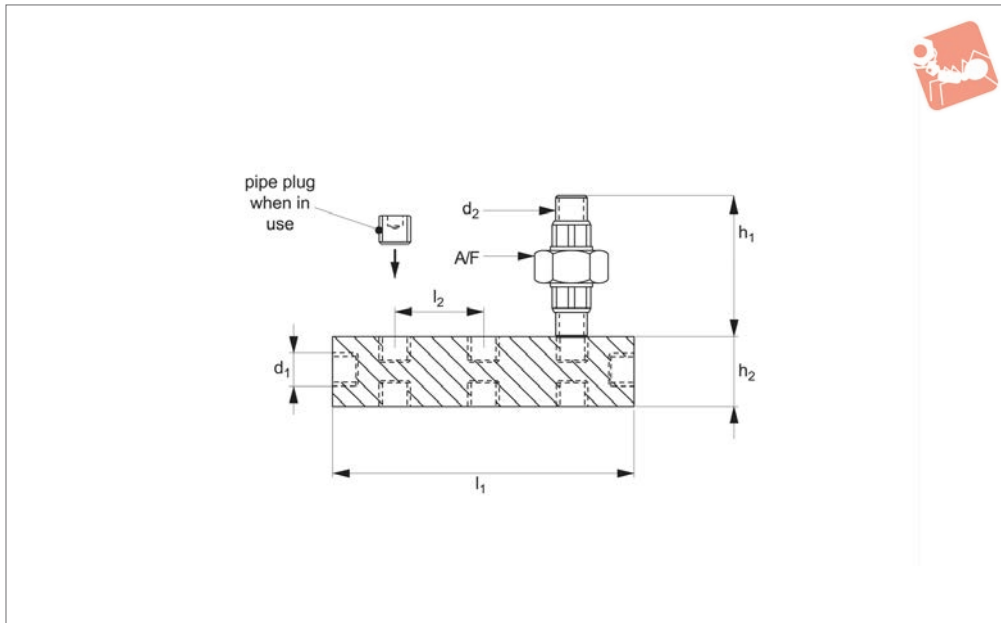
Max. pressure: 33 bar.

For angled or straight connectors 20095 and 20096.

**Technical Notes**

Max. temperature: 150°C.

Order No.	Type	d <sub>1</sub>	Internal thread d <sub>2</sub>	A/F
20097.W1040	Nut	4.8	3/8" - 24 UNF	7/16"
20097.W1060	Nut	6.4	7/16" - 24 UNF	1/2"
20097.W1070	Nut	7.9	1/2" - 24 UNF	9/16"
20097.W1090	Nut	9.5	9/16" - 24 UNF	5/8"
20097.W2040	Olive	4.8	-	-
20097.W2060	Olive	6.4	-	-
20097.W2070	Olive	7.9	-	-
20097.W2090	Olive	9.5	-	-



## 20114

COOLANT NOZZLES

### Material

Manifold: anodized aluminium.  
 Thread connectors: brass.  
 Pipe plugs: plated steel.

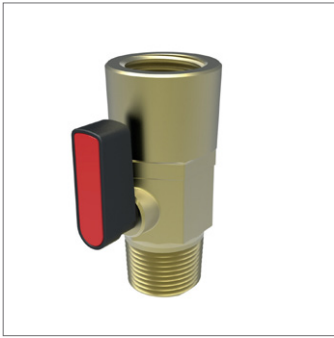
Thread union: brass.

Max. pressure: 33 bar.

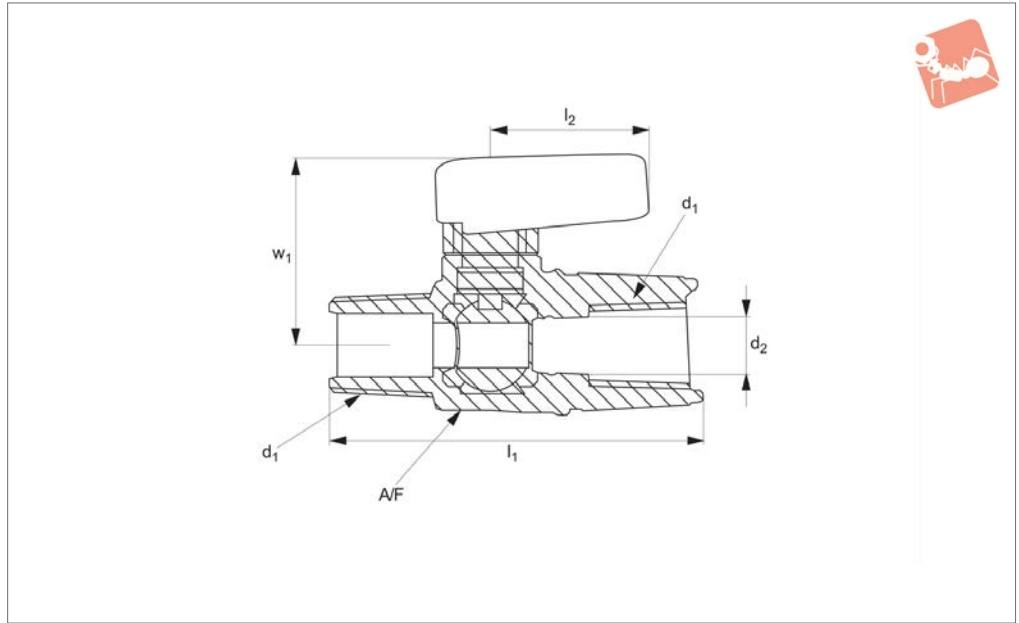
### Technical Notes

Max. temperature: 70°C.

Order No.	$d_1$	$d_2$	$h_1$	$h_2$	$l_1$	$l_2$	A/F
20114.W2250	1/4" NPT	1/4" NPT/BSPT	76.2	25.4	88.9	31.8	1-3/16"



20118



COOLANT NOZZLES

**Material**

Brass, chrome plated.  
Teflon seals.

**Technical Notes**

Max. temperature: 80°C.  
Max. pressure: 16 bar.

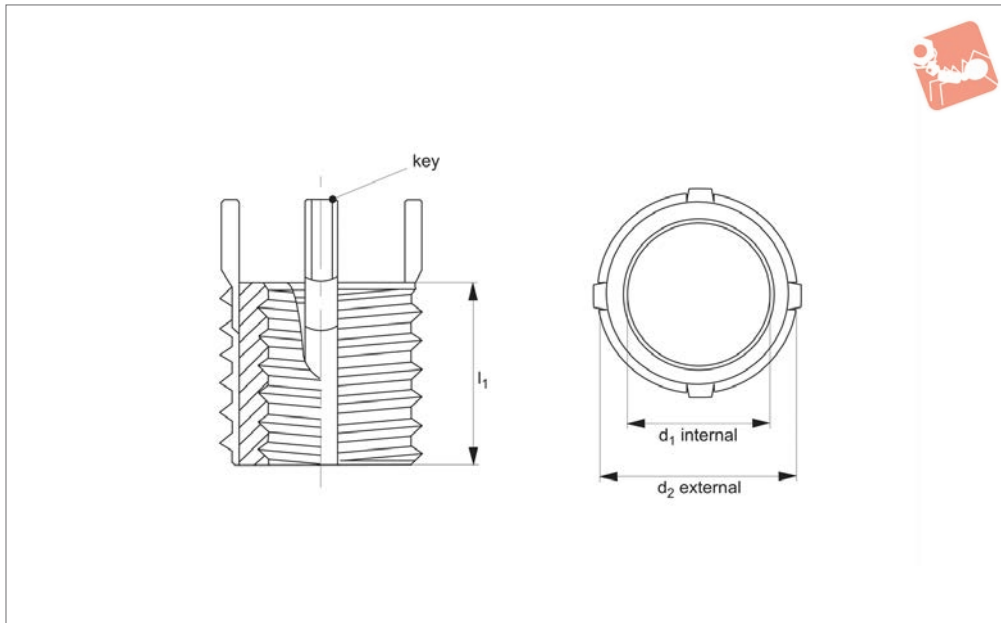
Order No.	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	A/F	Handle colour
20118.W1120	1/8" BSPT	5.3	36.0	18.8	21.8	14	Red
20118.W1250	1/4" BSPT	5.3	43.2	18.8	21.8	14	Red
20118.W1370	3/8" BSPT	7.9	46.0	18.8	23.4	18	Red
20118.W3120	1/8" NPTF	5.3	36.8	18.8	21.8	14	Blue
20118.W3250	1/4" NPTF	5.3	43.2	18.8	21.8	14	Blue
20118.W3370	3/8" NPTF	7.9	48.0	18.8	23.4	18	Blue



# Threaded Insert - Metric - Inch heavy duty - carbon steel



## Threaded Inserts



### 22010

THREADED INSERTS

#### Material

Inserts: carbon steel (C1215) or equivalent. Zinc phosphate.

Keys: stainless steel (302 CRES) or equivalent. Passivated.

#### Technical Notes

##### General tolerances:

± 0,010" unless specified.

##### Tap drill hole tolerances:

0,234 to 0,500 = +0,004/-0,001".

0,500 and over = +0,005/-0,001".

#### Tips

Order installation tool separately, as identified by „Inst. tool ref.“ in table.

#### Important Notes

Four locking keys on internal threads M8 and over. Two locking keys on internal

threads smaller than M8.

Installation (Inst.) drill size, countersink, thread tap and thread depth as specified in table.

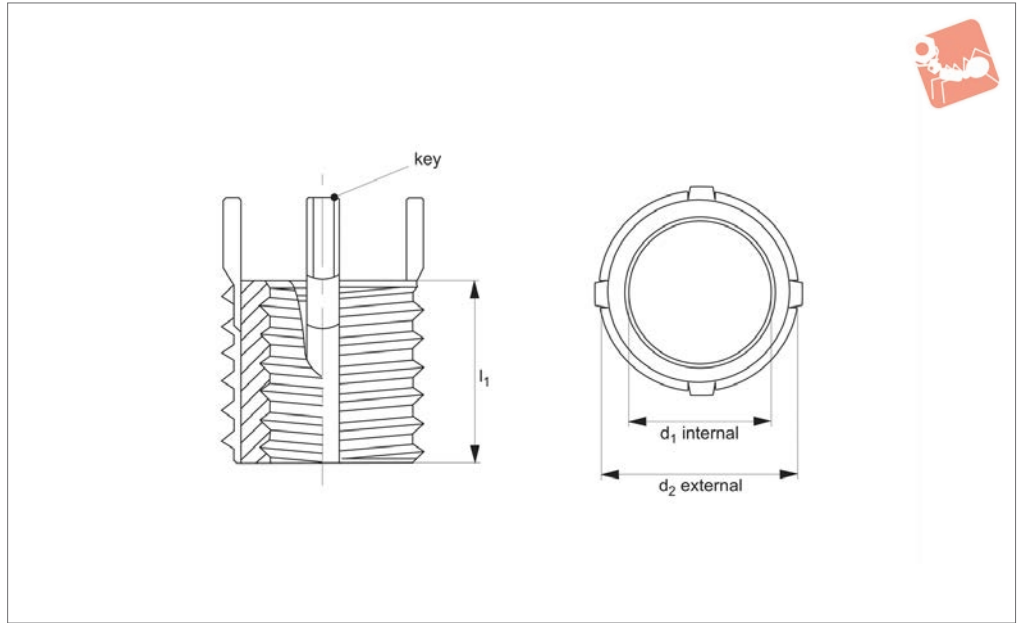
Removal drill size and drill depth as specified in table.

**Internal thread in metric. External thread in inches.**

Order No.	Int. d <sub>1</sub> tol. 6H	Int. thread type d <sub>1</sub>	Ext. d <sub>2</sub> tol. 2A	Ext. thread type d <sub>2</sub>	l <sub>1</sub>	Inst. tool ref. 22064	Inst. tap drill size	Inst. c'sink dia. +0.010 - 0.000	Inst. thread tap tol. 2B	Inst. thread depth min.	Removal drill size	Removal drill depth
<b>22010.W0430</b>	M 6x1,00	Coarse	3/8"-16	UNC	0,31	.W0430	21/64"	0,38	3/8"-16	0,37	9/32"	1/8"
<b>22010.W0440</b>	M 8x1,25	Coarse	1/2"-13	UNC	0,43	.W0440	29/64"	0,51	1/2"-13	0,50	13/32"	3/16"
<b>22010.W0450</b>	M10x1,50	Coarse	5/8"-11	UNC	0,50	.W0450	37/64"	0,63	5/8"-11	0,56	17/32"	3/16"
<b>22010.W0470</b>	M12x1,75	Coarse	3/4"-16	UNF	0,62	.W0470	45/64"	0,76	3/4"-16	0,68	21/32"	3/16"
<b>22010.W0480</b>	M14x2,00	Coarse	7/8"-14	UNF	0,81	.W0480	53/64"	0,88	7/8"-14	0,94	25/32"	5/16"
<b>22010.W0490</b>	M16x2,00	Coarse	1"-12	UNF	0,87	.W0490	15/16"	1,02	1"-12	1,00	27/32"	5/16"



## 22012



### Material

Inserts: stainless steel (AISI 303) or equivalent. Passivated.

Keys: stainless steel (302 CRES) or equivalent. Passivated.

### Technical Notes

#### General tolerances:

±0,010" unless specified.

#### Tap drill hole tolerances:

0,234 to 0,500 = +0,004/-0,001"  
0,500 and over = +0,005/-0,001"

### Tips

Order installation tool separately, as identified by „Inst. Tool ref.“ in table.

### Important Notes

Four locking keys on internal threads M8 and over. Two locking keys on internal

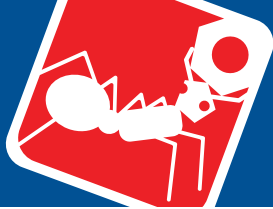
threads smaller than M8.

Installation (Inst.) drill size, countersink, thread tap and thread depth as specified in table.

Removal drill size and drill depth as specified in table.

**Internal thread in metric. External thread in inches.**

Order No.	Int. d <sub>1</sub> tol. 6H	Int. thread type d <sub>1</sub>	Ext. d <sub>2</sub> tol. 2A	Ext. thread type d <sub>2</sub>	l <sub>1</sub>	Inst. tool ref. 22064	Inst. tap drill size	Inst. c'sink dia. +0.010 - 0.000	Inst. thread tap tol. 2B	Inst. thread depth min.	Removal drill size	Removal drill depth
<b>22012.W5430</b>	M 6x1,00	Coarse	3/8"-16	UNC	0,3	.W0430	21/64"	0,38	3/8"-16	0,37	9/32"	1/8"
<b>22012.W5440</b>	M 8x1,25	Coarse	1/2"-13	UNC	0,4	.W0440	29/64"	0,51	1/2"-13	0,50	13/32"	3/16"
<b>22012.W5450</b>	M10x1,50	Coarse	5/8"-11	UNC	0,5	.W0450	37/64"	0,63	5/8"-11	0,56	17/32"	3/16"
<b>22012.W5470</b>	M12x1,75	Coarse	3/4"-16	UNF	0,6	.W0470	45/64"	0,76	3/4"-16	0,68	21/32"	3/16"
<b>22012.W5480</b>	M14x2,00	Coarse	7/8"-14	UNF	0,8	.W0480	53/64"	0,88	7/8"-14	0,94	25/32"	5/16"
<b>22012.W5490</b>	M16x2,00	Coarse	1"-12	UNF	0,9	.W0490	15/16"	1,02	1"-12	1,00	27/32"	5/16"



Threaded inserts are used to quickly repair stripped, damaged or worn out threads with new stronger threads, or are used in original equipment to guarantee stronger thread connections.

Wixroyd inserts are easy to install and remove, without the need for special drills, taps or pre-winder tools. The 'locking keys' on threaded inserts are easily driven down into the thread of the surrounding base material – locking the insert securely in place.



Carbon steel inserts



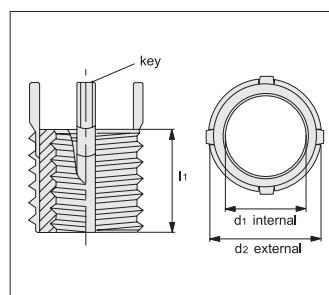
Stainless steel inserts



Solid inserts

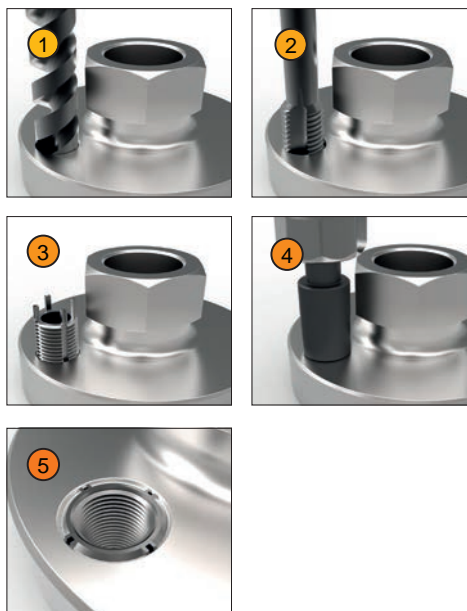
## Key Features

- Solid, one-piece construction providing high pull-out strengths.
- Locking "keys" provide a positive mechanical lock against rotation of the insert.
- Easy installation and removal.
- Installation with standard drills and taps.
- No pre-winder tools required.
- No tangs to break off and account for in the assembly.
- For use in a wide variety of materials.
- Both metric and imperial sizes available in coarse and fine pitches.



## Installation and Removal

- 1 Select desired threaded insert, and from the product data table identify the installation drill and tap sizes (note the drill is slightly oversized deliberately). Drill with standard tap drill as per product data table, and countersink with standard 82-100° countersink.
- 2 Tap new threads with standard tap – as specified in product data table.
- 3 Screw in the insert until it is 0.25 to 0.75mm (0.010 to 0.030 inch) below the surface.
- 4 Drive locking keys down with several hammer taps on the installation tool – see product data table for correct tool.
- 5 Insert is installed.



### Installation

Wixroyd threaded inserts, can be removed (if required) without damage to the surrounding material.

- 1 Refer to product data tables to identify the drill size and drill depth required for removal. Drill out the material between the insert keys and the internal thread to specified depth.

- 2 Bend the locking keys inward and break off.
- 3 Remove the old insert using a screw extractor.
- 4 Install a replacement insert into the original tapped hole.

### Removal



### Stainless Steel



**22000** - Thinwall - Metric  
Use installation tool no. 22060.



**22002** - Heavy Duty - Metric.  
Use installation tool no. 22062.



**22012** - Heavy Duty - Metric - Inch.  
Use installation tool no. 22064.



**22020, 22022, 22024** - Inch - Thinwall - Heavy Duty - Extra Heavy Duty.  
Use installation tool no. 22054-58.

### Carbon Steel



**22004** - Thinwall - Metric  
Use installation tool no. 22060.



**22006** - Heavy Duty - Metric  
Use installation tool no. 22062.



**22010** - Heavy Duty - Metric - Inch.  
Use installation tool no. 22064.



**22030 - 22034** - Inch - Thinwall - Heavy Duty - Extra Heavy Duty  
Use installation tool no. 22054, 20058.

### Solid



**22040** - Metric - Carbon  
Use installation tool no. 22052.



**22042** - Metric - Stainless Steel  
Use installation tool no. 22052.



**22044** - Inch - Carbon  
Use installation tool no. 22050.



**22046** - Inch - Stainless Steel  
Use installation tool no. 22050.

### Installation Tools



**22050** for 22044 & 22046



**22052** for 22040 & 22042



**22054, 22058** for 22020, 22024, 22030, 22034,



**22060** for 22000 & 22004



**22062** for 22002 & 22006



**22064** for 22010 & 22012



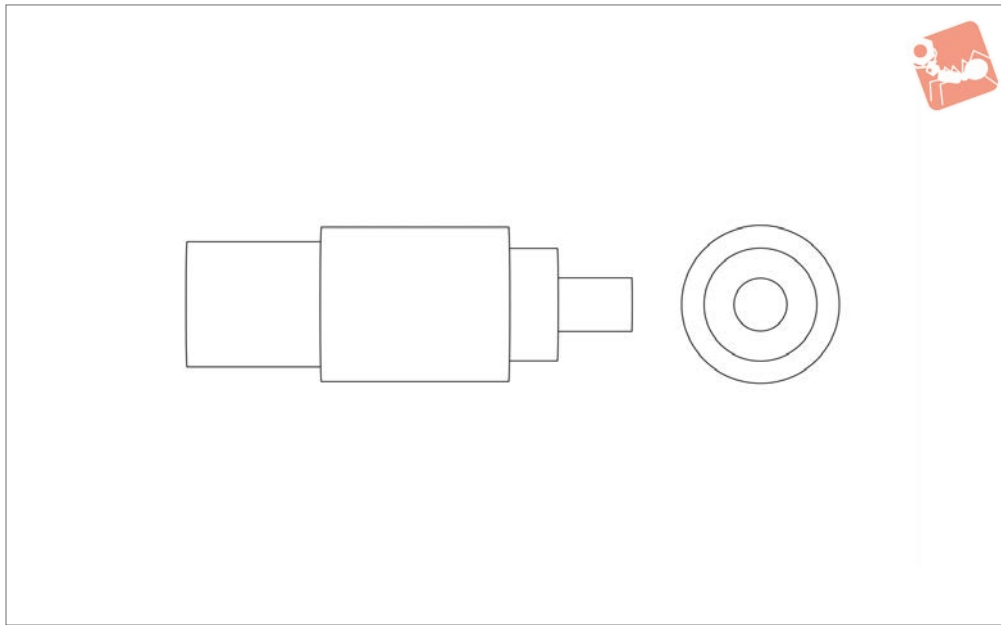


# Installation Tool - Inch - Heavy Duty

for threaded inserts 22010 & 22012



## Threaded Inserts



**22064**

THREADED INSERTS

**Material**

Steel, blackened.

**Tips**

For use with inch heavy duty threaded

**inserts 22010 and 22012.**

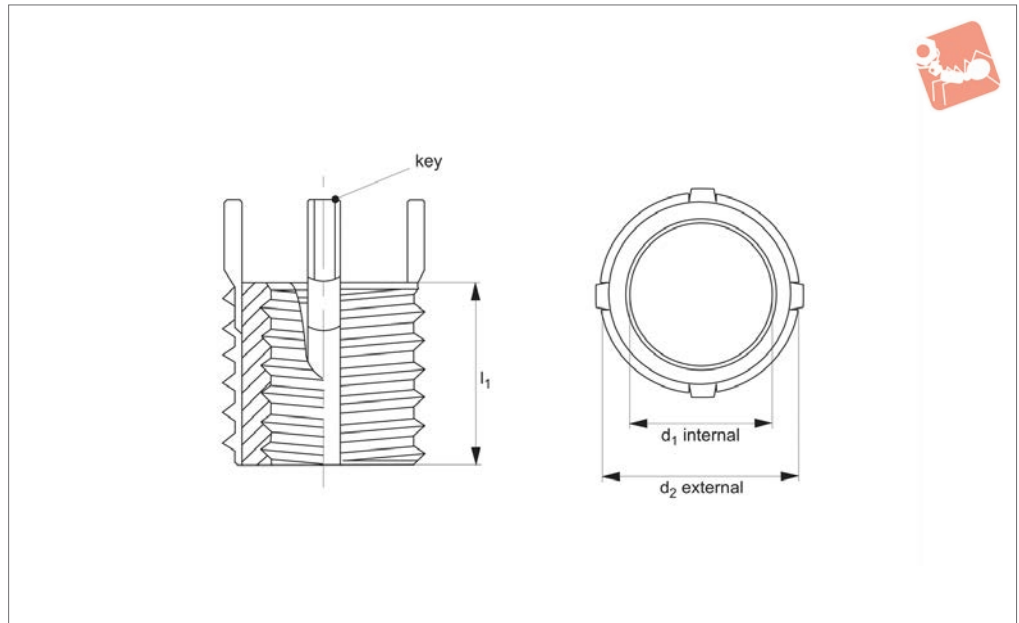
Select installation tool of corresponding insert internal thread  $d_1$  and external thread  $d_2$ . If in doubt refer to data tables of

insert where correct „Inst. tool ref.“ is stated.

Order No.	For insert of internal thread = $d_1$	For insert of external thread = $d_2$
22064.W0430	M 6x1,00	3/8"-16
22064.W0440	M 8x1,25	1/2"-13
22064.W0450	M10x1,50	5/8"-11
22064.W0470	M12x1,75	3/4"-16
22064.W0480	M14x2,00	7/8"-14
22064.W0490	M16x2,00	1"-12



**22000**



**Material**

Inserts: stainless steel (AISI 303) or equivalent. Passivated.  
 Keys: stainless steel (302 CRES) or equivalent. Passivated.

**Technical Notes**

**General tolerances:**

±0,25, unless specified.

**Tap drill hole tolerances:**

6,9 to 10,8 = +0,10/-0,025.  
 12,8 and over = +0,13/-0,025.

**Tips**

Order installation tool separately, as identified by „Inst. tool ref.“ in table.

**Important Notes**

Four locking keys on internal threads M 8 and over. Two locking keys on internal threads smaller than M 8.  
 Installation (Inst.) drill size, countersink, thread tap and thread depth as specified in table.  
 Removal drill size and drill depth as speci-

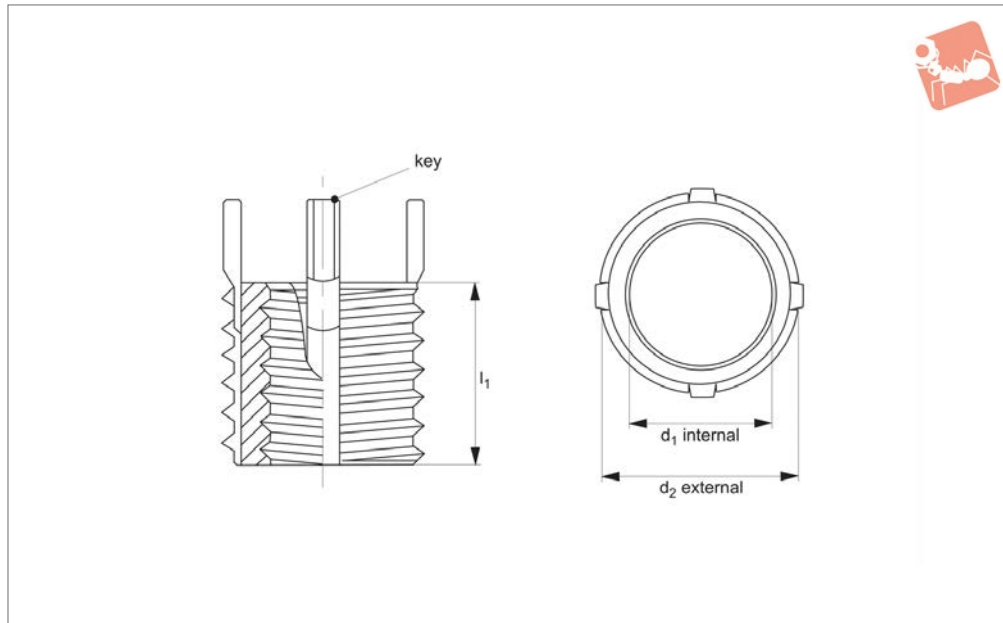
Order No.	Int. d <sub>1</sub> tol. 6H	Int. thread type d <sub>1</sub>	Ext. d <sub>2</sub> tol. 6g	Ext. thread type d <sub>2</sub>	l <sub>1</sub>	Inst. tap drill size	Inst. tool ref. 22060	Inst. c'sink dia. ±0.25 ± 0.000	Inst. thread tap tol. 6H	Inst. thread depth min.	Removal drill size	Removal drill depth
<b>22000.W5510</b>	M 5x0,80	Coarse	M 8x1,25	Coarse	8	6,9	.W0510	8,3	M 8x1,25	9,5	5,5	4,0
<b>22000.W5520</b>	M 6x1,00	Coarse	M10x1,25	Fine	10	8,8	.W0520	10,3	M10x1,25	11,5	7,5	4,8
<b>22000.W5530</b>	M 8x1,25	Coarse	M12x1,25	Fine	12	10,8	.W0530	12,3	M12x1,25	13,5	9,5	4,8
<b>22000.W5531</b>	M 8x1,00	Fine	M12x1,25	Fine	12	10,8	.W0530	12,3	M12x1,25	13,5	9,5	4,8
<b>22000.W5550</b>	M10x1,50	Coarse	M14x1,50	Fine	14	12,8	.W0550	14,3	M14x1,50	15,5	11,5	4,8
<b>22000.W5551</b>	M10x1,25	Fine	M14x1,50	Fine	14	12,8	.W0550	14,3	M14x1,50	15,5	11,5	4,8
<b>22000.W5560</b>	M12x1,75	Coarse	M16x1,50	Fine	16	14,2	.W0560	14,3	M16x1,50	17,5	13,5	4,8
<b>22000.W5561</b>	M12x1,25	Fine	M16x1,50	Fine	16	14,8	.W0560	16,3	M16x1,50	17,5	13,5	4,8



# Threaded Insert - Metric thinwall - carbon steel



## Threaded Inserts



**22004**

THREADED INSERTS

### Material

Inserts: carbon steel (C1215) or equivalent. Zinc phosphate.

Keys: stainless steel (302 CRES) or equivalent. Passivated.

### Technical Notes

#### General tolerances:

±0,25, unless specified.

### Tap drill hole tolerances:

6,9 to 10,8 = +0,10/-0,025.

12,8 and over = +0,13/-0,025.

### Tips

Order installation tool separately, as identified by „Inst. tool ref.“ in table.

### Important Notes

Four locking keys on internal threads M 8 and over. Two locking keys on internal threads smaller than M 8.

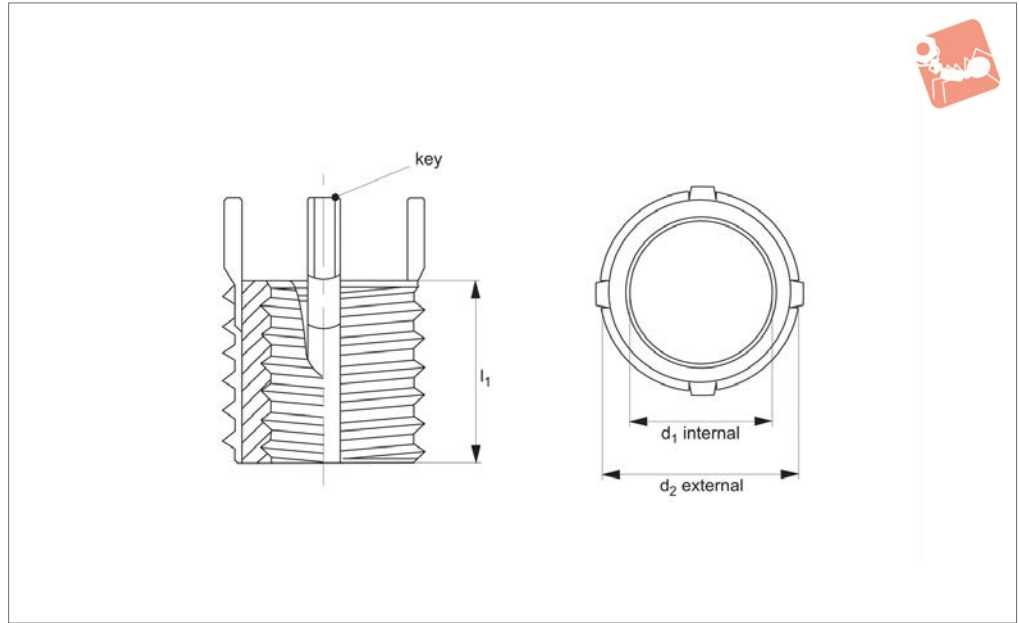
Installation (Inst.) drill size, countersink, thread tap and thread depth as specified in table.

Removal drill size and drill depth as speci-

Order No.	Int. d <sub>1</sub> tol. 6H	Int. thread type d <sub>1</sub>	Ext. d <sub>2</sub> tol. 6g	Ext. thread type d <sub>2</sub>	l <sub>1</sub>	Inst. tap drill size	Inst. tool ref. 22060	Inst. c'sink dia. ±0,25   ± 0,000	Inst. thread tap tol. 6H	Inst. thread depth min.	Removal drill size	Removal drill depth
<b>22004.W0510</b>	M 5x0,80	Coarse	M 8x1,25	Coarse	8	6,9	.W0510	8,3	M 8x1,25	9,5	5,5	4,0
<b>22004.W0520</b>	M 6x1,00	Coarse	M10x1,25	Fine	10	8,8	.W0520	10,3	M10x1,25	11,5	7,5	4,8
<b>22004.W0530</b>	M 8x1,25	Coarse	M12x1,25	Fine	12	10,8	.W0530	12,3	M12x1,25	13,5	9,5	4,8
<b>22004.W0531</b>	M 8x1,00	Fine	M12x1,25	Fine	12	10,8	.W0530	12,3	M12x1,25	13,5	9,5	4,8
<b>22004.W0550</b>	M10x1,50	Coarse	M14x1,50	Fine	14	12,8	.W0550	14,3	M14x1,50	15,5	11,5	4,8
<b>22004.W0551</b>	M10x1,25	Fine	M14x1,50	Fine	14	12,8	.W0550	14,3	M14x1,50	15,5	11,5	4,8
<b>22004.W0560</b>	M12x1,75	Coarse	M16x1,50	Fine	16	14,8	.W0560	16,3	M16x1,50	17,5	13,5	4,8
<b>22004.W0561</b>	M12x1,25	Fine	M16x1,50	Fine	16	14,8	.W0560	16,3	M16x1,50	17,5	13,5	4,8



## 22020



### Material

Inserts: stainless steel (AISI 303) or equivalent. Passivated.

Keys: stainless steel (302 CRES) or equivalent. Passivated.

### Technical Notes

All dimensions in inches.

### General tolerances:

± 0,010" unless specified.

### Tap drill hole tolerances:

0,234 to 0,500 = +0,004/-0,001"

0,500 and over = +0,005/-0,001"

### Tips

Order installation tool separately, as identified by „Inst. tool ref.“ in table.

### Important Notes

Four locking keys on internal threads 5/

16" and over. Two locking keys on internal threads smaller than 5/16".

Installation (Inst.) drill size, countersink, thread tap and thread depth as specified in table.

Removal drill size and drill depth as specified in table.

**All dimensions in inches.**

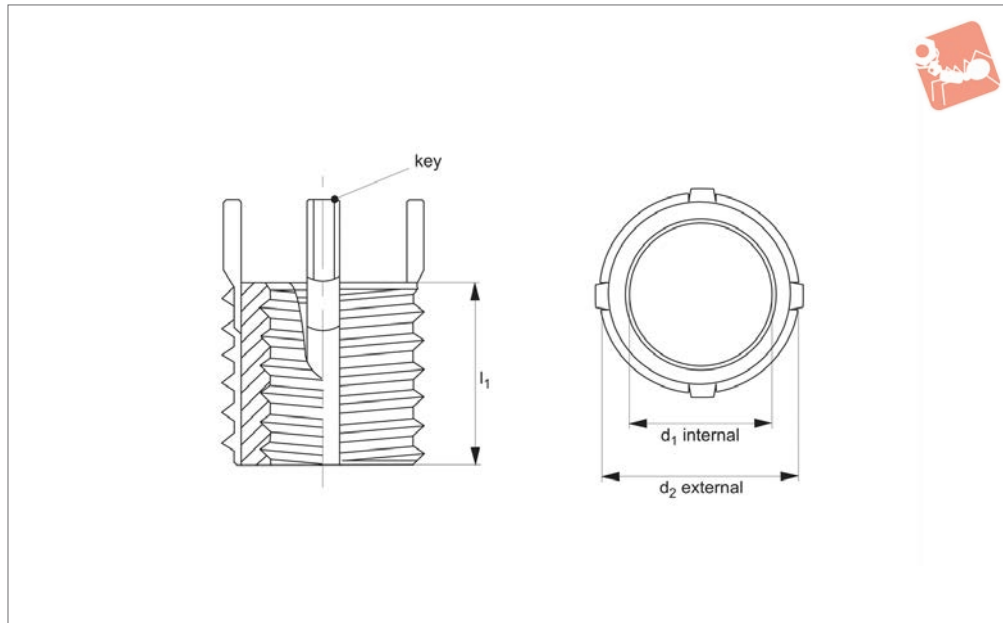
Order No.	Int. d <sub>1</sub> tol. 2B	Int. thread type d <sub>1</sub>	Ext. d <sub>2</sub> tol. 2A	Ext. thread type d <sub>2</sub>	l <sub>1</sub>	Inst. tap drill size	Inst. tool ref. 22054	Inst. c'sink dia. +0.010 - 0.000	Inst. thread tap tol. 2B	Inst. thread depth min.	Removal drill size	Removal drill depth
22020.W5210	10-24	UNC	5/16"-18	UNC	0,31	17/64"	.W0210	0,32	5/16"-18	0,37	7/32"	1/8"
22020.W5211	10-32	UNF	5/16"-18	UNC	0,31	17/64"	.W0210	0,32	5/16"-18	0,37	7/32"	1/8"
22020.W5220	1/4"-20	UNC	3/8"-16	UNC	0,37	21/64"	.W0220	0,38	3/8"-16	0,43	9/32"	3/16"
22020.W5221	1/4"-28	UNF	3/8"-16	UNC	0,37	21/64"	.W0220	0,38	3/8"-16	0,43	9/32"	3/16"
22020.W5230	5/16"-18	UNC	7/16"-14	UNC	0,43	25/64"	.W0230	0,44	7/16"-14	0,50	11/32"	3/16"
22020.W5231	5/16"-24	UNF	7/16"-14	UNC	0,43	25/64"	.W0230	0,44	7/16"-14	0,50	11/32"	3/16"
22020.W5240	3/8"-16	UNC	1/2"-13	UNC	0,50	29/64"	.W0240	0,51	1/2"-13	0,56	13/32"	3/16"
22020.W5241	3/8"-16	UNF	1/2"-13	UNC	0,50	29/64"	.W0240	0,51	1/2"-13	0,56	13/32"	3/16"
22020.W5250	7/16"-14	UNC	9/16"-12	UNC	0,56	33/64"	.W0250	0,57	9/16"-12	0,62	15/32"	3/16"
22020.W5251	7/16"-20	UNF	9/16"-12	UNC	0,56	33/64"	.W0250	0,57	9/16"-12	0,62	15/32"	3/16"
22020.W5260	1/2"-13	UNC	5/8"-11	UNC	0,62	37/64"	.W0260	0,63	5/8"-11	0,68	17/32"	3/16"
22020.W5261	1/2"-20	UNF	5/8"-11	UNC	0,62	37/64"	.W0260	0,63	5/8"-11	0,68	17/32"	3/16"



# Threaded Insert - Inch thinwall - carbon steel



## Threaded Inserts



### 22030

THREADED INSERTS

#### Material

Inserts: carbon steel (C1215) or equivalent. Zinc phosphate.

Keys: stainless steel (302 CRES) or equivalent. Passivated.

#### Technical Notes

##### General tolerances:

± 0,010" unless specified.

##### Tap drill hole tolerances:

0,234 to 0,500 = +0,004/-0,001".

0,500 and over = +0,005/-0,001".

#### Tips

Order installation tool separately, as identified by „Inst. tool ref.“ in table.

#### Important Notes

Four locking keys on internal threads 5/16" and over. Two locking keys on internal

threads smaller than 5/16".

Installation (Inst.) drill size, countersink, thread tap and thread depth as specified in table.

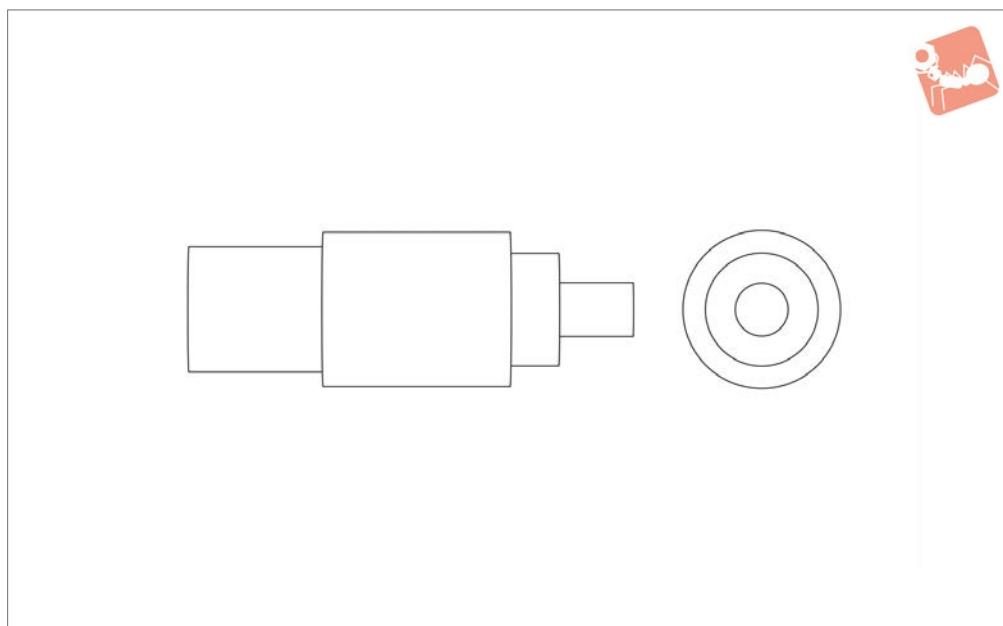
Removal drill size and drill depth as specified in table.

**All dimensions in inches.**

Order No.	Int. d <sub>1</sub> tol. 2B	Int. thread type d <sub>1</sub>	Ext. d <sub>2</sub> tol. 2A	Ext. thread type d <sub>2</sub>	l <sub>1</sub>	Inst. tap drill size	Inst. tool ref. 22054	Inst. c'sink dia. +0.010 - 0.000	Inst. thread tap tol. 2B	Inst. thread depth min.	Removal drill size	Removal drill depth
22030.W0210	10-24	UNC	5/16"-18	UNC	0,31	17/64"	.W0210	0,32	5/16"-18	0,37	7/32"	1/8"
22030.W0211	10-32	UNF	5/16"-18	UNC	0,31	17/64"	.W0210	0,32	5/16"-18	0,37	7/32"	1/8"
22030.W0220	1/4"-20	UNC	3/8"-16	UNC	0,37	21/64"	.W0220	0,38	3/8"-16	0,43	9/32"	3/16"
22030.W0221	1/4"-28	UNF	3/8"-16	UNC	0,37	21/64"	.W0220	0,38	3/8"-16	0,43	9/32"	3/16"
22030.W0230	5/16"-18	UNC	7/16"-14	UNC	0,43	25/64"	.W0230	0,44	7/16"-14	0,50	11/32"	3/16"
22030.W0231	5/16"-24	UNF	7/16"-14	UNC	0,43	25/64"	.W0230	0,44	7/16"-14	0,50	11/32"	3/16"
22030.W0240	3/8"-16	UNC	1/2"-13	UNC	0,50	29/64"	.W0240	0,51	1/2"-13	0,56	13/32"	3/16"
22030.W0241	3/8"-24	UNF	1/2"-13	UNC	0,50	29/64"	.W0240	0,51	1/2"-13	0,56	13/32"	3/16"
22030.W0250	7/16"-14	UNC	9/16"-12	UNC	0,56	33/64"	.W0250	0,57	9/16"-12	0,62	15/32"	3/16"
22030.W0251	7/16"-20	UNF	9/16"-12	UNC	0,56	33/64"	.W0250	0,57	9/16"-12	0,62	15/32"	3/16"
22030.W0260	1/2"-13	UNC	5/8"-11	UNC	0,62	37/64"	.W0260	0,63	5/8"-11	0,68	17/32"	3/16"
22030.W0261	1/2"-20	UNF	5/8"-11	UNC	0,62	37/64"	.W0260	0,63	5/8"-11	0,68	17/32"	3/16"



**22054**



**Material**

Steel, blackened.

**Tips**

For use with inch thinwall threaded

**inserts 22020 and 22030.** Select installation tool of corresponding insert internal thread  $d_1$  and external thread  $d_2$ . If in doubt refer to data tables of insert where

correct „Inst. tool ref.“ is stated.

Order No.	For insert of internal thread = $d_1$	For insert of external thread = $d_2$
22054.W0210	10-24/10"-32	5/16"-18
22054.W0220	1/4"-20 / 1/4"-28	3/8"-16
22054.W0230	5/16"-18/ 5/16"-24	7/16"-14
22054.W0240	3/8"-16/ 3/8"-24	1/2"-13
22054.W0250	7/16"-14/ 7/16"-20	9/16"-12
22054.W0260	1/2"-13/ 1/2"-20	5/8"-11

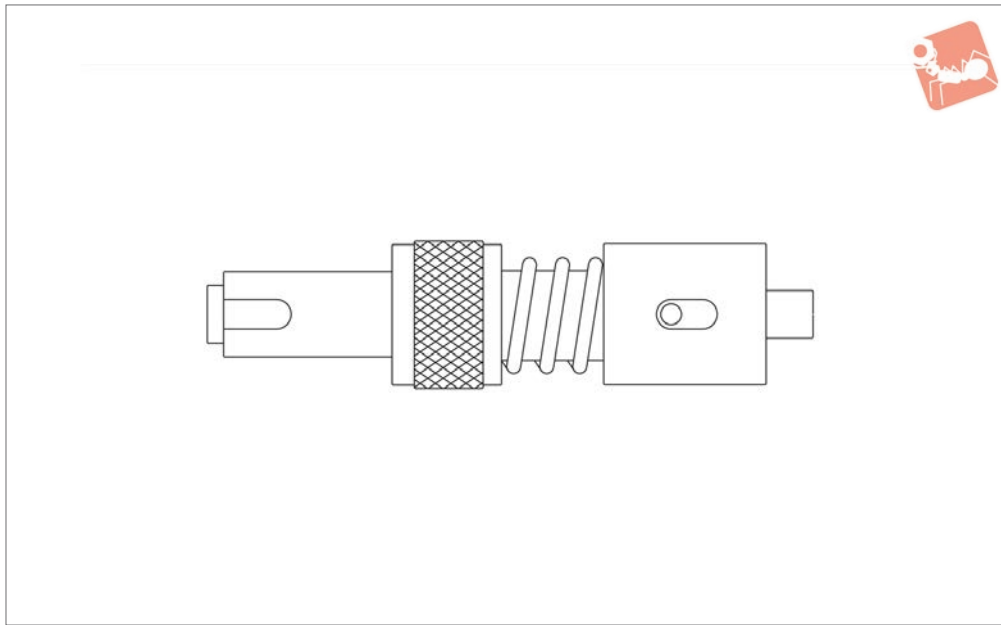


# Installation Tool - Solid - Metric

for threaded inserts 22040 & 22042



## Threaded Inserts



**22052**

THREADED INSERTS

### Material

Steel, blackened.

### Tips

For use with metric solid inserts 22040

### and 22042.

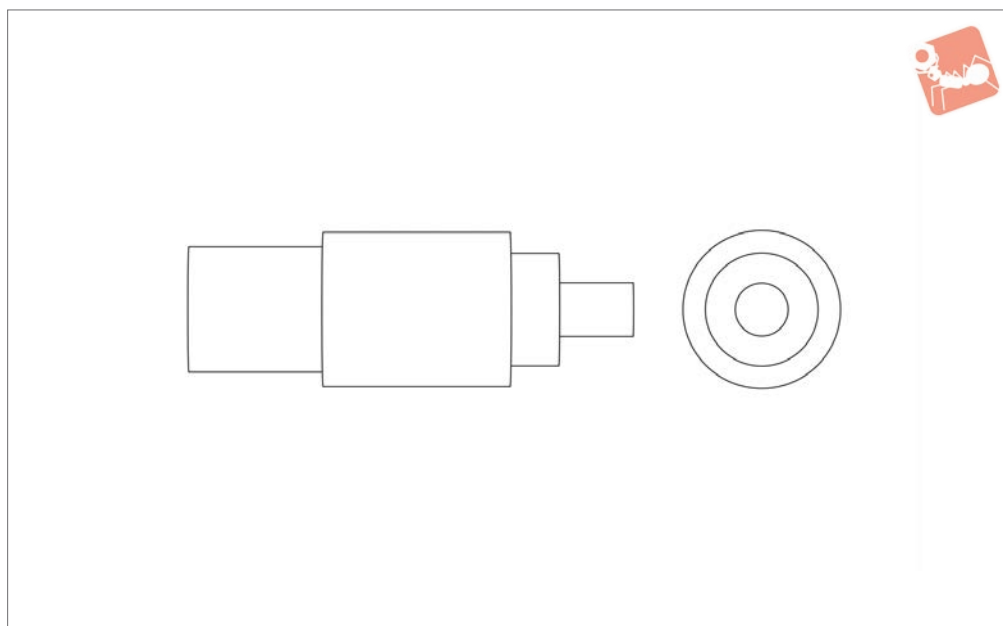
Select installation tool of corresponding insert external thread  $d_1$ . If in doubt refer to data tables of insert where correct „Inst.

tool ref.“ is stated.

Order No.	For insert of external thread = $d_1$	Thread type $d_1$
22052.W0210	M 8x1,25	Coarse
22052.W0220	M10x1,25	Fine
22052.W0230	M12x1,25	Fine
22052.W0240	M14x1,50	Fine
22052.W0250	M16x1,50	Fine
22052.W0260	M18x1,50	Fine
22052.W0270	M20x1,50	Fine
22052.W0280	M22x1,50	Fine
22052.W0290	M24x1,50	Fine
22052.W0300	M30x2,00	Non-Std
22052.W0310	M32x2,00	Non-Std
22052.W0320	M33x2,00	Non-Std



**22060**



**Material**

Steel, blackened.

**Tips**

For use with metric thinwall threaded

**inserts 22000 and 22004.**

Select installation tool of corresponding insert internal thread  $d_1$  and external thread  $d_2$ . If in doubt refer to data tables of

insert where correct „Inst. tool ref.“ is stated.

Order No.	For insert of internal thread = $d_1$	For insert of external thread = $d_2$
22060.W0510	M 5x0,75	M 8x1,25
22060.W0520	M 6x1,00	M10x1,25
22060.W0530	M 8x1,25/ M 8x1,00	M12x1,25
22060.W0550	M10x1,50/ M10x1,25	M14x1,50
22060.W0560	M12x1,75/ M12x1,25	M16x1,50

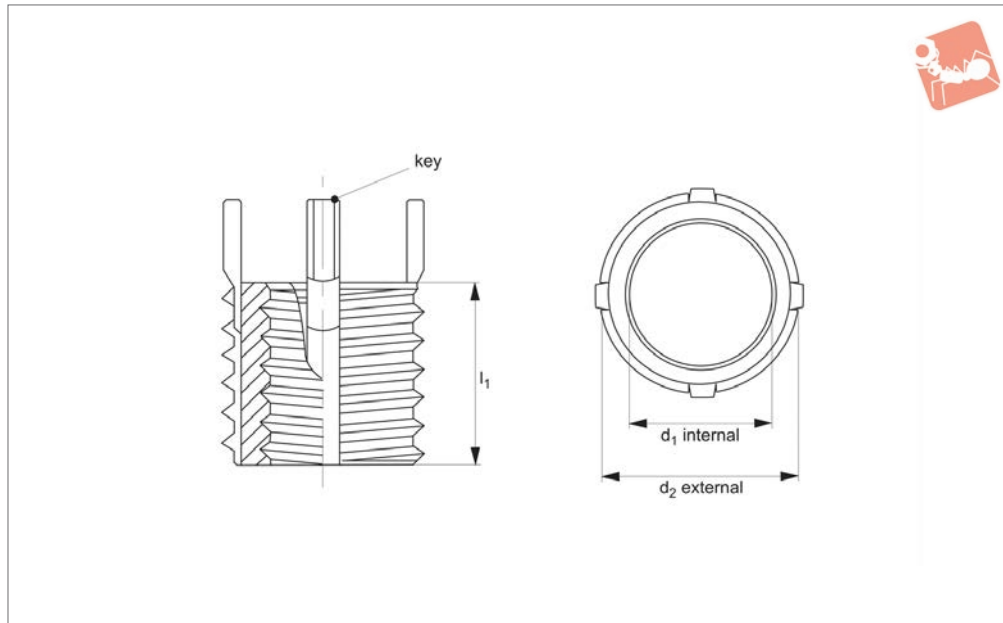




# Threaded Insert - Metric heavy duty - stainless steel



## Threaded Inserts



**22002**

THREADED INSERTS

### Material

Inserts: stainless steel (AISI 303) or equivalent. Passivated.

Keys: stainless steel (302 CRES) or equivalent. Passivated.

### Technical Notes

#### General tolerances:

±0,25, unless specified.

### Tap drill hole tolerances:

6,9 to 10,8 = +0,10/-0,025.

12,8 and over = +0,13/-0,025.

### Tips

Order installation tool separately, as identified by „Inst. tool ref.“ in table.

### Important Notes

Four locking keys on internal threads M 8 and over. Two locking keys on internal threads smaller than M 8.

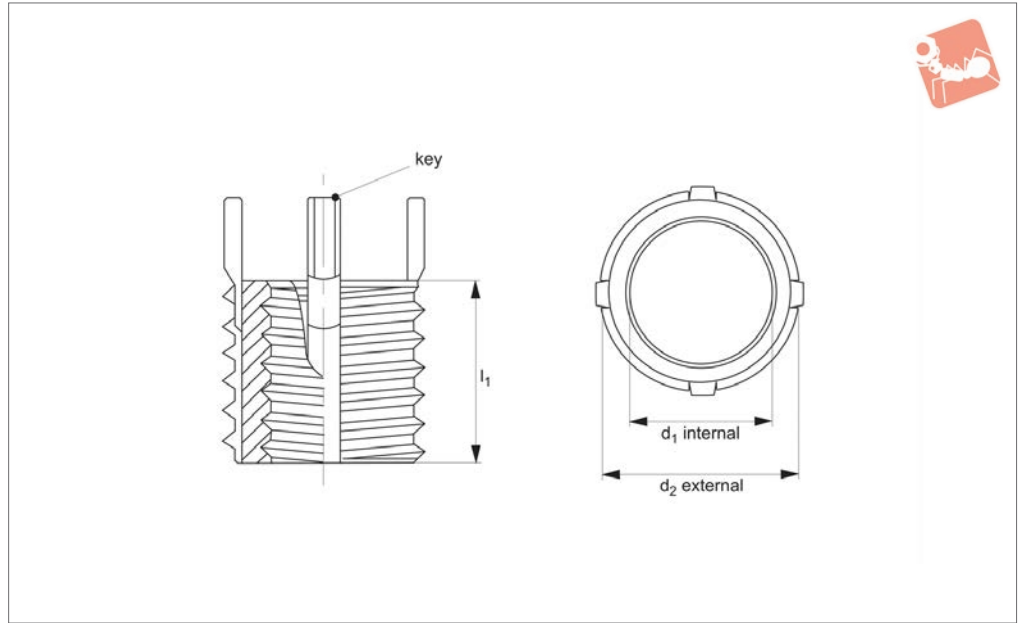
Installation (Inst.) drill size, countersink, thread tap and thread depth as specified in table.

Removal drill size and drill depth as speci-

Order No.	Int. d <sub>1</sub> tol. 6H	Int. thread type d <sub>1</sub>	Ext. d <sub>2</sub> tol. 6g	Ext. thread type d <sub>2</sub>	l <sub>1</sub>	Inst. tool ref. <b>22062</b>	Inst. tap drill size	Inst. c'sink dia. ±0.25   ± 0.000	Inst. thread tap tol. 6H	Inst. thread depth min.	Removal drill size	Removal drill depth
<b>22002.W5630</b>	M 4x0,70	Coarse	M 8x1,25	Coarse	8	.W0630	6,9	8,3	M 8x1,25	9,5	5,5	4,0
<b>22002.W5640</b>	M 5x0,80	Coarse	M10x1,25	Fine	10	.W0640	8,8	10,3	M10x1,25	12,5	7,5	4,8
<b>22002.W5650</b>	M 6x1,00	Coarse	M12x1,25	Fine	12	.W0650	10,8	12,3	M12x1,25	14,5	9,5	4,8
<b>22002.W5660</b>	M 8x1,25	Coarse	M14x1,50	Fine	14	.W0660	12,8	14,3	M14x1,50	16,5	11,5	4,8
<b>22002.W5661</b>	M 8x1,00	Fine	M14x1,50	Fine	14	.W0660	12,8	14,3	M14x1,50	16,5	11,5	4,8
<b>22002.W5670</b>	M10x1,50	Coarse	M16x1,50	Fine	16	.W0670	14,8	16,3	M16x1,50	18,5	13,5	4,8
<b>22002.W5671</b>	M10x1,25	Fine	M16x1,50	Fine	16	.W0670	14,8	16,3	M16x1,50	18,5	13,5	4,8
<b>22002.W5690</b>	M12x1,75	Coarse	M18x1,50	Fine	18	.W0690	16,8	18,3	M18x1,50	20,5	15,5	4,8
<b>22002.W5691</b>	M12x1,25	Fine	M18x1,50	Fine	18	.W0690	16,8	18,3	M18x1,50	20,5	15,5	4,8
<b>22002.W5700</b>	M14x2,00	Coarse	M20x1,50	Fine	20	.W0700	18,8	20,3	M20x1,50	22,5	17,5	4,8
<b>22002.W5701</b>	M14x1,50	Fine	M20x1,50	Fine	20	.W0700	18,8	20,3	M20x1,50	22,5	17,5	4,8
<b>22002.W5710</b>	M16x2,00	Coarse	M22x1,50	Fine	22	.W0710	20,5	22,3	M22x1,50	24,5	17,8	6,4
<b>22002.W5711</b>	M16x1,50	Fine	M22x1,50	Fine	22	.W0710	20,5	22,3	M22x1,50	24,5	17,8	6,4
<b>22002.W5720</b>	M18x1,50	Fine	M24x1,50	Fine	24	.W0720	22,5	24,3	M24x1,50	26,5	19,8	6,4
<b>22002.W5730</b>	M20x2,50	Coarse	M30x2,00	Non-Std	30	.W0730	28,0	30,3	M30x2,00	34,5	25,8	6,4
<b>22002.W5731</b>	M20x1,50	Fine	M30x2,00	Non-Std	30	.W0730	28,0	30,3	M30x2,00	34,5	25,8	6,4
<b>22002.W5740</b>	M22x1,50	Fine	M32x2,00	Non-Std	32	.W0740	30,0	32,3	M32x2,00	36,5	27,8	6,4
<b>22002.W5750</b>	M24x3,00	Coarse	M33x2,00	Non-Std	33	.W0750	31,0	33,3	M33x2,00	37,5	28,8	6,4
<b>22002.W5751</b>	M24x2,00	Fine	M33x2,00	Non-Std	33	.W0750	31,0	33,3	M33x2,00	37,5	28,8	6,4



## 22006



### Material

Inserts: carbon steel (C1215) or equivalent. Zinc phosphate.

Keys: stainless steel (302 CRES) or equivalent. Passivated.

### Technical Notes

#### General tolerances:

±0,25, unless specified.

### Tap drill hole tolerances:

6,9 to 10,8 = +0,10/-0,025.

12,8 and over = +0,13/-0,025.

### Tips

Order installation tool separately, as identified by „Inst. tool ref.“ in table.

### Important Notes

Four locking keys on internal threads M 8 and over. Two locking keys on internal threads smaller than M 8.

Installation (Inst.) drill size, countersink, thread tap and thread depth as specified in table.

Removal drill size and drill depth as speci-

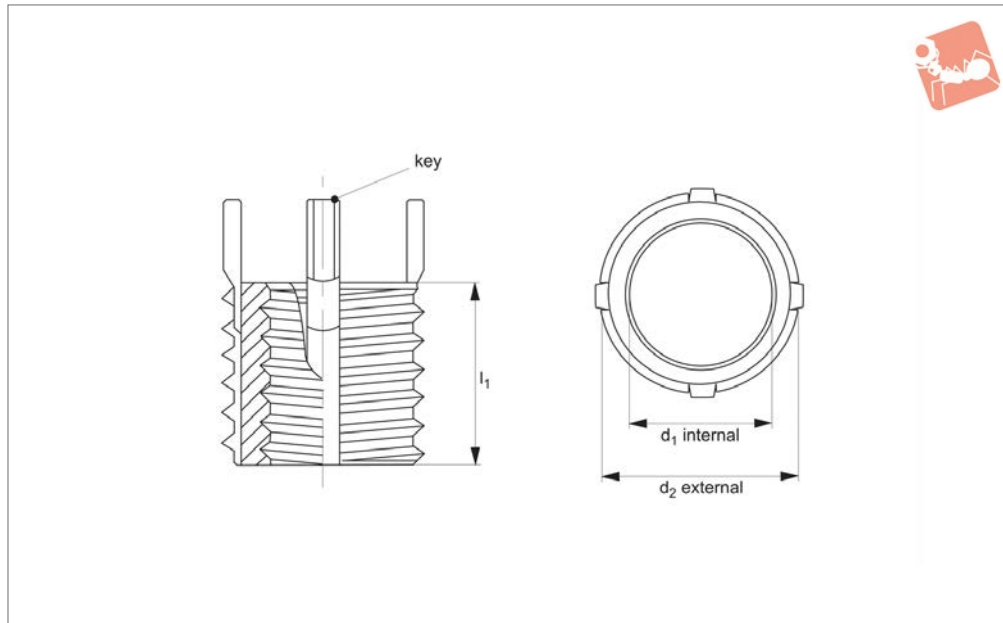
Order No.	Int. d <sub>1</sub> tol. 6H	Int. thread type d <sub>1</sub>	Ext. d <sub>2</sub> tol. 6g	Ext. thread type d <sub>2</sub>	l <sub>1</sub>	Inst. tool ref. 22062	Inst. tap drill size	Inst. c'sink dia. ±0.25   ± 0.000	Inst. thread tap tol. 6H	Inst. thread depth min.	Removal drill size	Removal drill depth
22006.W0630	M 4x0,70	Coarse	M 8x1,25	Coarse	8	.W0630	6,9	8,3	M 8x1,25	9,5	5,5	4,0
22006.W0640	M 5x0,80	Coarse	M10x1,25	Fine	10	.W0640	8,8	10,3	M10x1,25	12,5	7,5	4,8
22006.W0650	M 6x1,00	Coarse	M12x1,25	Fine	12	.W0650	10,8	12,3	M12x1,25	14,5	9,5	4,8
22006.W0660	M 8x1,25	Coarse	M14x1,50	Fine	14	.W0660	12,8	14,3	M14x1,50	16,5	11,5	4,8
22006.W0661	M 8x1,00	Fine	M14x1,50	Fine	14	.W0660	12,8	14,3	M14x1,50	16,5	11,5	4,8
22006.W0670	M10x1,50	Coarse	M16x1,50	Fine	16	.W0670	14,8	16,3	M16x1,50	18,5	13,5	4,8
22006.W0671	M10x1,25	Fine	M16x1,50	Fine	16	.W0670	14,8	16,3	M16x1,50	18,5	13,5	4,8
22006.W0690	M12x1,75	Coarse	M18x1,50	Fine	18	.W0690	16,8	18,3	M18x1,50	20,5	15,5	4,8
22006.W0691	M12x1,25	Fine	M18x1,50	Fine	18	.W0690	16,8	18,3	M18x1,50	20,5	15,5	4,8
22006.W0700	M14x2,00	Coarse	M20x1,50	Fine	20	.W0700	18,8	20,3	M20x1,50	22,5	17,5	4,8
22006.W0701	M14x1,50	Fine	M20x1,50	Fine	20	.W0700	18,8	20,3	M20x1,50	22,5	17,5	4,8
22006.W0710	M16x2,00	Coarse	M22x1,50	Fine	22	.W0710	20,5	22,3	M22x1,50	24,5	17,8	6,4
22006.W0711	M16x1,50	Fine	M22x1,50	Fine	22	.W0710	20,5	22,3	M22x1,50	24,5	17,8	6,4
22006.W0720	M18x1,50	Fine	M24x1,50	Fine	24	.W0720	22,5	24,3	M24x1,50	26,5	19,8	6,4
22006.W0730	M20x2,50	Coarse	M30x2,00	Non-Std	30	.W0730	28,0	30,3	M30x2,00	34,5	25,8	6,4
22006.W0731	M20x1,50	Fine	M30x2,00	Non-Std	30	.W0730	28,0	30,3	M30x2,00	34,5	25,8	6,4
22006.W0740	M22x1,50	Fine	M32x2,00	Non-Std	32	.W0740	30,0	32,3	M32x2,00	36,5	27,8	6,4
22006.W0750	M24x3,00	Coarse	M33x2,00	Non-Std	33	.W0750	31,0	33,3	M33x2,00	37,5	28,8	6,4
22006.W0751	M24x2,00	Fine	M33x2,00	Non-Std	33	.W0750	31,0	33,3	M33x2,00	37,5	28,8	6,4



# Threaded Insert - Inch heavy duty - stainless steel



## Threaded Inserts



### 22022

THREADED INSERTS

#### Material

Inserts: stainless steel (AISI 303) or equivalent. Passivated.

Keys: stainless steel (302 CRES) or equivalent. Passivated.

#### Technical Notes

##### General tolerances:

± 0,010" unless specified.

##### Tap drill hole tolerances:

0,234 to 0,500 = +0,004/-0,001".

0,500 and over = +0,005/-0,001".

#### Tips

Order installation tool separately, as identified by „Inst. tool ref.“ in table.

#### Important Notes

Four locking keys on internal threads 5/16" and over. Two locking keys on internal

threads smaller than 5/16".

Installation (Inst.) drill size, countersink, thread tap and thread depth as specified in table.

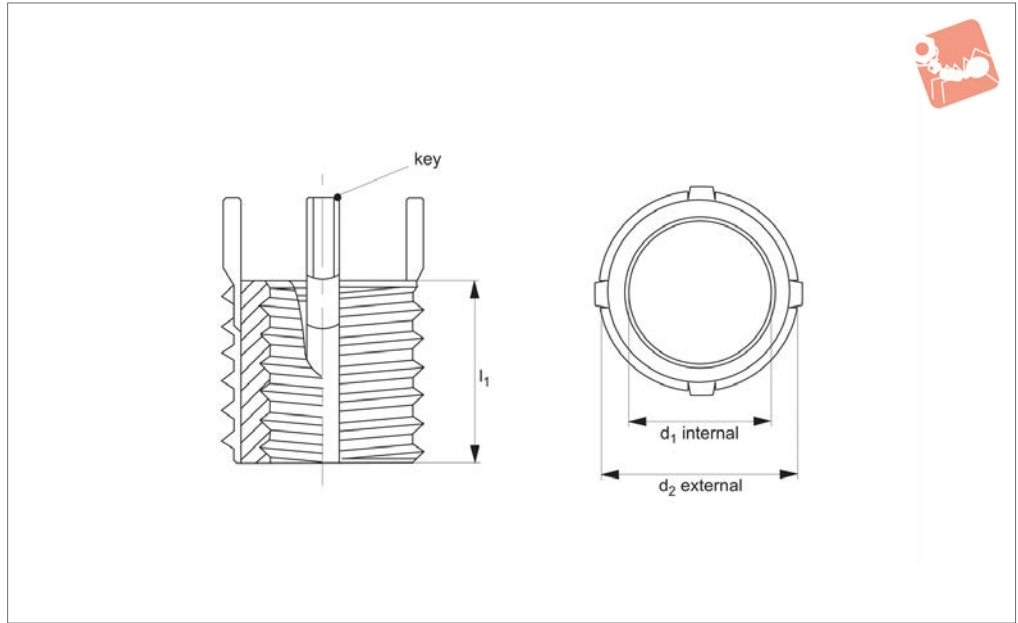
Removal drill size and drill depth as specified in table.

**All dimensions in inches.**

Order No.	Int. d <sub>1</sub> tol. 2B	Int. thread type d <sub>1</sub>	Ext. d <sub>2</sub> tol. 2A	Ext. thread type d <sub>2</sub>	l <sub>1</sub>	Inst. tool ref. 22056	Inst. tap drill size	Inst. c'sink dia. +0.010 - 0.000	Inst. thread tap tol. 2B	Inst. thread depth min.	Removal drill size	Removal drill depth
22022.W5000	8-32	UNC	5/16"-18	UNC	0,31	.W0000	17/64"	0,32	5/16"-18	0,37	7/32"	1/8"
22022.W5010	10-24	UNC	3/8"-16	UNC	0,31	.W0010	21/64"	0,38	3/8"-16	0,37	9/32"	1/8"
22022.W5011	10-32	UNF	3/8"-16	UNC	0,31	.W0010	21/64"	0,38	3/8"-16	0,37	9/32"	1/8"
22022.W5020	1/4"-20	UNC	7/16"-14	UNC	0,37	.W0020	25/64"	0,44	7/16"-14	0,43	11/32"	3/16"
22022.W5021	1/4"-28	UNF	7/16"-14	UNC	0,37	.W0020	25/64"	0,44	7/16"-14	0,43	11/32"	3/16"
22022.W5030	5/16"-18	UNC	1/2"-13	UNC	0,43	.W0030	29/64"	0,51	1/2"-13	0,50	13/32"	3/16"
22022.W5031	5/16"-24	UNF	1/2"-13	UNC	0,43	.W0030	29/64"	0,51	1/2"-13	0,50	13/32"	3/16"
22022.W5040	3/8"-16	UNC	9/16"-12	UNC	0,50	.W0040	33/64"	0,57	9/16"-12	0,56	15/32"	3/16"
22022.W5041	3/8"-24	UNF	9/16"-12	UNC	0,50	.W0040	33/64"	0,57	9/16"-12	0,56	15/32"	3/16"
22022.W5050	7/16"-14	UNC	5/8"-11	UNC	0,62	.W0050	37/64"	0,63	5/8"-11	0,68	17/32"	3/16"
22022.W5051	7/16"-20	UNF	5/8"-11	UNC	0,62	.W0050	37/64"	0,63	5/8"-11	0,68	17/32"	3/16"
22022.W5060	1/2"-13	UNC	3/4"-16	UNF	0,62	.W0060	45/64"	0,76	3/4"-16	0,68	21/32"	3/16"
22022.W5061	1/2"-20	UNF	3/4"-16	UNF	0,62	.W0060	45/64"	0,76	3/4"-16	0,68	21/32"	3/16"
22022.W5070	9/16"-12	UNC	3/4"-16	UNF	0,81	.W0070	45-64"	0,76	3/4"-16	0,94	21/32"	3/16"
22022.W5071	9/16"-18	UNF	3/4"-16	UNF	0,81	.W0070	45-64"	0,76	3/4"-16	0,94	21/32"	3/16"
22022.W5080	5/8"-11	UNC	7/8"-14	UNF	0,87	.W0080	53/64"	0,88	7/8"-14	1,00	25/32"	5/16"
22022.W5081	5/8"-18	UNF	7/8"-14	UNF	0,87	.W0080	53/64"	0,88	7/8"-14	1,00	25/32"	5/16"
22022.W5090	3/4"-10	UNC	1-1/8"-12	UNF	1,12	.W0090	1-1/16"	1,14	1-1/8"-12	1,31	31/32"	5/16"
22022.W5091	3/4"-16	UNF	1-1/8"-12	UNF	1,12	.W0090	1-1/16"	1,14	1-1/8"-12	1,31	31/32"	5/16"
22022.W5100	7/8"-9	UNC	1-1/4"-12	UNF	1,25	.W0100	1-3/16"	1,27	1-1/4"-12	1,44	1-3/32"	5/16"
22022.W5101	7/8"-14	UNF	1-1/4"-12	UNF	1,25	.W0100	1-3/16"	1,27	1-1/4"-12	1,44	1-3/32"	5/16"
22022.W5110	1"-8	UNC	1-3/8"-12	UNF	1,37	.W0110	1-5/16"	1,39	1-3/8"-12	1,56	1-7/32"	5/16"
22022.W5111	1"-12	UNF	1-3/8"-12	UNF	1,37	.W0110	1-5/16"	1,39	1-3/8"-12	1,56	1-7/32"	5/16"



## 22032



### Material

Inserts: carbon steel (C1215) or equivalent. Zinc phosphate.

Keys: stainless steel (302 CRES) or equivalent. Passivated.

### Technical Notes

#### General tolerances:

± 0,010" unless specified.

#### Tap drill hole tolerances:

0,234 to 0,500 = +0,004/-0,001"  
0,500 and over = +0,005/-0,001"

### Tips

Order installation tool separately, as identified by „Inst. tool ref.“ in table.

### Important Notes

Four locking keys on internal threads 5/16" and over. Two locking keys on internal

threads smaller than 5/16".

Installation (Inst.) drill size, countersink, thread tap and thread depth as specified in table.

Removal drill size and drill depth as specified in table.

**All dimensions in inches.**

Order No.	Int. d <sub>1</sub> tol. 2B	Int. thread type d <sub>1</sub>	Ext. d <sub>2</sub> tol. 2A	Ext. thread type d <sub>2</sub>	l <sub>1</sub>	Inst. tool ref. 22056	Inst. tap drill size	Inst. c'sink dia. +0.010 - 0.000	Inst. thread tap tol. 2B	Inst. thread depth min.	Removal drill size	Removal drill depth
22032.W0000	8-32	UNC	5/16"-18	UNC	0,31	.W0000	17/64"	0,32	5/16"-18	0,37	7/32"	1/8"
22032.W0010	10-24	UNC	3/8"-16	UNC	0,31	.W0010	21/64"	0,38	3/8"-16	0,37	9/32"	1/8"
22032.W0011	10-32	UNF	3/8"-16	UNC	0,31	.W0010	21/64"	0,38	3/8"-16	0,37	9/32"	1/8"
22032.W0020	1/4"-20	UNC	7/16"-14	UNC	0,37	.W0020	25/64"	0,44	7/16"-14	0,43	11/32"	3/16"
22032.W0021	1/4"-28	UNF	7/16"-14	UNC	0,37	.W0020	25/64"	0,44	7/16"-14	0,43	11/32"	3/16"
22032.W0030	5/16"-18	UNC	1/2"-13	UNC	0,43	.W0030	29/64"	0,51	1/2"-13	0,50	13/32"	3/16"
22032.W0031	5/16"-24	UNF	1/2"-13	UNC	0,43	.W0030	29/64"	0,51	1/2"-13	0,50	13/32"	3/16"
22032.W0040	3/8"-16	UNC	9/16"-12	UNC	0,50	.W0040	33/64"	0,57	9/16"-12	0,56	15/32"	3/16"
22032.W0041	3/8"-24	UNF	9/16"-12	UNC	0,50	.W0040	33/64"	0,57	9/16"-12	0,56	15/32"	3/16"
22032.W0050	7/16"-14	UNC	5/8"-11	UNC	0,62	.W0050	37/64"	0,63	5/8"-11	0,68	17/32"	3/16"
22032.W0051	7/16"-20	UNF	5/8"-11	UNC	0,62	.W0050	37/64"	0,63	5/8"-11	0,68	17/32"	3/16"
22032.W0060	1/2"-13	UNC	3/4"-16	UNF	0,62	.W0060	45/64"	0,76	3/4"-16	0,68	21/32"	3/16"
22032.W0061	1/2"-20	UNF	3/4"-16	UNF	0,62	.W0060	45/64"	0,76	3/4"-16	0,68	21/32"	3/16"
22032.W0070	9/16"-12	UNC	3/4"-16	UNF	0,81	.W0070	45-64"	0,76	3/4"-16	0,94	21/32"	3/16"
22032.W0071	9/16"-18	UNF	3/4"-16	UNF	0,81	.W0070	45-64"	0,76	3/4"-16	0,94	21/32"	3/16"
22032.W0080	5/8"-11	UNC	7/8"-14	UNF	0,87	.W0080	53/64"	0,88	7/8"-14	1,00	25/32"	5/16"
22032.W0081	5/8"-18	UNF	7/8"-14	UNF	0,87	.W0080	53/64"	0,88	7/8"-14	1,00	25/32"	5/16"
22032.W0090	3/4"-10	UNC	1-1/8"-12	UNF	1,12	.W0090	1-1/16"	1,14	1-1/8"-12	1,31	31/32"	5/16"
22032.W0091	3/4"-16	UNF	1-1/8"-12	UNF	1,12	.W0090	1-1/16"	1,14	1-1/8"-12	1,31	31/32"	5/16"
22032.W0100	7/8"-9	UNC	1-1/4"-12	UNF	1,25	.W0100	1-3/16"	1,27	1-1/4"-12	1,44	1-3/32"	5/16"
22032.W0101	7/8"-14	UNF	1-1/4"-12	UNF	1,25	.W0100	1-3/16"	1,27	1-1/4"-12	1,44	1-3/32"	5/16"
22032.W0110	1"-8	UNC	1-3/8"-12	UNF	1,37	.W0110	1-5/16"	1,39	1-3/8"-12	1,56	1-7/32"	5/16"
22032.W0111	1"-12	UNF	1-3/8"-12	UNF	1,37	.W0110	1-5/16"	1,39	1-3/8"-12	1,56	1-7/32"	5/16"
22032.W0120	1"-14	UNF	1-3/8"-12	UNF	1,37	.W0110	1-5/16"	1,39	1-3/8"-12	1,56	1-7/32"	5/16"
22032.W0130	1-1/8"-7	UNC	1-1/2"-12	UNF	1,62	.W0130	1-7/16"	1,52	1-1/2"-12	1,84	1-11/32"	5/16"
22032.W0131	1-1/8"-12	UNF	1-1/2"-12	UNF	1,62	.W0130	1-7/16"	1,52	1-1/2"-12	1,84	1-11/32"	5/16"



# Threaded Insert - Inch heavy duty - carbon steel



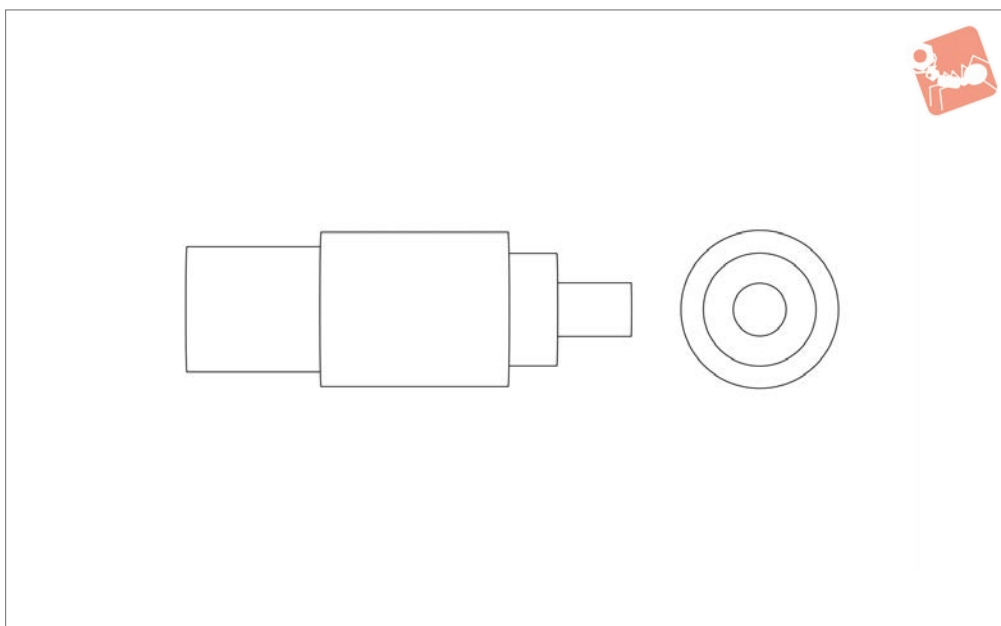
## Threaded Inserts

Order No.	Int. d <sub>1</sub> tol. 2B	Int. thread type d <sub>1</sub>	Ext. d <sub>2</sub> tol. 2A	Ext. thread type d <sub>2</sub>	l <sub>1</sub>	Inst. tool ref. <b>22056</b>	Inst. tap drill size	Inst. c'sink dia. +0.010 - 0.000	Inst. thread tol. 2B	Inst. thread depth min.	Removal drill size	Removal drill depth
<b>22032.W0140</b>	1-1/4"-7	UNC	1-5/8"-12	UNF	1,81	.W0140	1-9/16"	1,64	1-5/8"-12	2,06	1-15/32"	5/16"
<b>22032.W0141</b>	1-1/4"-12	UNF	1-5/8"-12	UNF	1,81	.W0140	1-9/16"	1,64	1-5/8"-12	2,06	1-15/32"	5/16"
<b>22032.W0160</b>	1-1/2"-6	UNC	1-7/8"-12	UNF	2,00	.W0160	1-13/16"	1,89	1-7/8"-12	2,28	1-23/32"	5/16"
<b>22032.W0161</b>	1-1/2"-12	UNF	1-7/8"-12	UNF	2,00	.W0160	1-13/16"	1,89	1-7/8"-12	2,28	1-23/32"	5/16"

THREADED INSERTS



## 22056



### Material

Steel, blackened.

### Tips

For use with inch heavy duty threaded

### inserts 22022 and 22032.

Select installation tool of corresponding insert internal thread  $d_1$  and external thread  $d_2$ . If in doubt refer to data tables of

insert where correct „Inst. tool ref.“ is stated.

Order No.	For insert of internal thread = $d_1$	For insert of external thread = $d_2$
22056.W0000	8-32	5/16"-18
22056.W0010	10-24/ 10-32	3/8"-16
22056.W0020	1/4"-20/ 1/4"-28	7/16"-14
22056.W0030	5/16"-18/ 5/16"-24	1/2"-13
22056.W0040	3/8"-16/ 3/8"-24	9/16"-12
22056.W0050	7/16"-14/ 7/16"-20	5/8"-11
22056.W0060	1/2"-13/ 1/2"-20	3/4"-16
22056.W0070	9/16"-12/ 9/16"-18	3/4"-16
22056.W0080	5/8"-11/ 5/8"-18	7/8"-14
22056.W0090	3/4"-10/ 3/4"-16	1-1/8"-12
22056.W0100	7/8"-9/ 7/8"-14	1-1/4"-12
22056.W0110	1"-8/ 1"-12/ 1"-14	1-3/8"-12
22056.W0130	1-1/8"-7/ 1-1/8"-12	1-1/2"-12
22056.W0140	1-1/4"-7/ 1-1/4"-12	1-5/8"-12
22056.W0160	1-1/2"-6/ 1-1/2"-12	1-7/8"-12

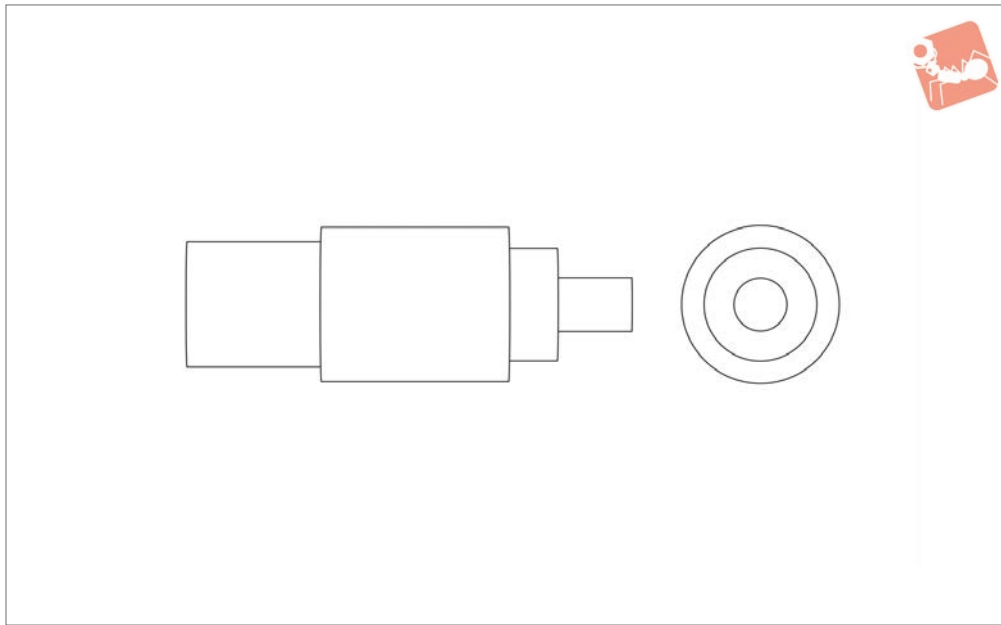


# Installation Tool - Metric - Heavy Duty

for threaded inserts 22002 & 22006



## Threaded Inserts



**22062**

THREADED INSERTS

### Material

Steel, blackened.

### inserts 22002 and 22006.

Select installation tool of corresponding insert internal thread  $d_1$  and external thread  $d_2$ . If in doubt refer to data tables of

insert where correct „Inst. tool ref.“ is stated.

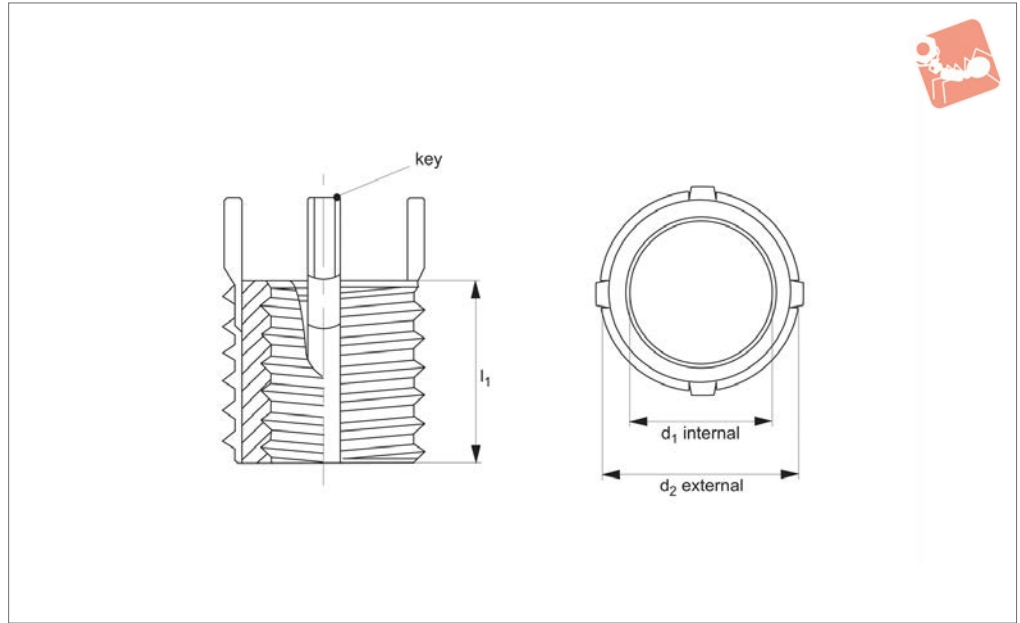
### Tips

For use with metric heavy duty threaded

Order No.	For insert of internal thread = $d_1$	For insert of external thread = $d_2$
22062.W0630	M 4x0,70	M 8x1,25
22062.W0640	M 5x0,75	M10x1,30
22062.W0650	M 6x1,00	M12x1,25
22062.W0660	M 8x1,25/ M 8x1,00	M14x1,50
22062.W0670	M10x1,50/ M10x1,25	M16x1,50
22062.W0690	M12x1,75/ M12x1,25	M18x1,50
22062.W0700	M14x2,00/ M14x1,50	M20x1,50
22062.W0710	M16x2,00/ M16x1,50	M22x1,50
22062.W0720	M18x1,50	M24x1,50
22062.W0730	M20x2,50/ M20x1,50	M30x2,00
22062.W0740	M22x1,50	M32x2,00
22062.W0750	M24x3,00/ M24x2,00	M33x2,00



## 22024



### Material

Inserts: stainless steel (AISI 303) or equivalent. Passivated.

Keys: stainless steel (302 CRES) or equivalent. Passivated.

### Technical Notes

#### General tolerances:

± 0,010" unless specified.

#### Tap drill hole tolerances:

0,234 to 0,500 = +0,004/-0,001"  
0,500 and over = +0,005/-0,001"

### Tips

Order installation tool separately, as identified by „Inst. tool ref.“ in table.

### Important Notes

Four locking keys on internal threads 5/16" and over. Two locking keys on internal

threads smaller than 5/16".

Installation (Inst.) drill size, countersink, thread tap and thread depth as specified in table.

Removal drill size and drill depth as specified in table.

**All dimensions in inches.**

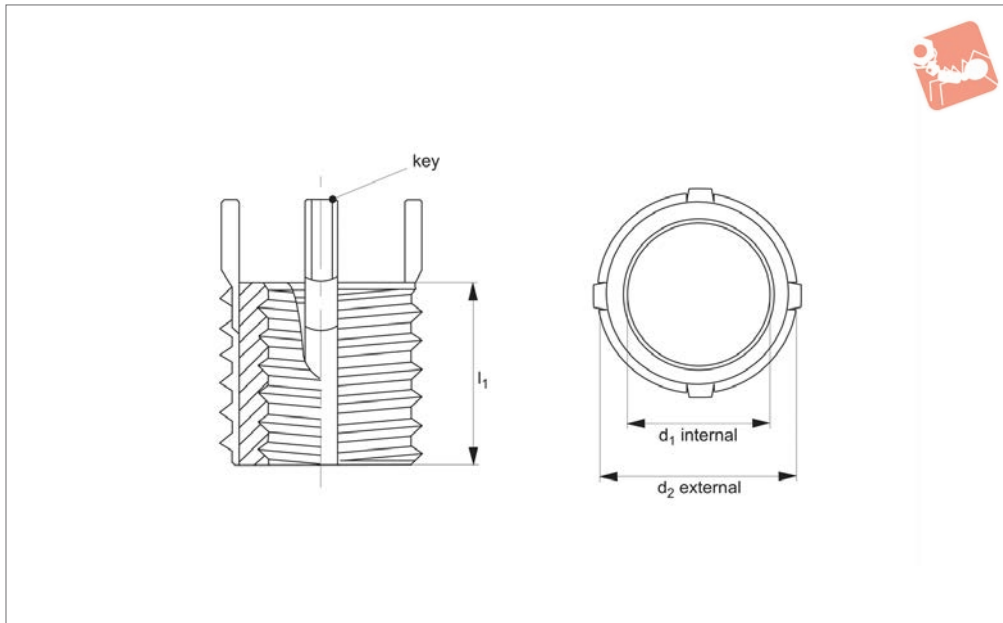
Order No.	Int. d <sub>1</sub> tol. 2B	Int. thread type d <sub>1</sub>	Ext. d <sub>2</sub> (mod.) class 2A	Ext. thread type d <sub>2</sub>	l <sub>1</sub>	Inst. c'sink dia. +0.010 - 0.000	Inst. tap drill size	Inst. thread depth min.	Inst. thread tap tol. 2B	Inst. tool ref. 22058	Removal drill size	Removal drill depth
22024.W5310	6 - 32	UNC	5/16" - 18	UNC	0,31	0,32	17/64"	0,37	5/16"-18	.W0310	7/32"	1/8"
22024.W5320	8 - 32	UNC	3/8" - 16	UNC	0,31	0,38	21/64"	0,37	3/8"-16	.W0320	9/32"	1/8"
22024.W5330	10 - 24	UNC	7/16" - 14	UNC	0,31	0,44	25/64"	0,37	7/16"-14	.W0330	11/32"	3/16"
22024.W5331	10 - 32	UNF	7/16" - 14	UNC	0,31	0,44	25/64"	0,37	7/16"-14	.W0330	11/32"	3/16"
22024.W5340	1/4" - 20	UNC	1/2" - 13	UNC	0,37	0,51	29/64"	0,43	1/2"-13	.W0340	13/32"	3/16"
22024.W5341	1/4" - 28	UNF	1/2" - 13	UNC	0,37	0,51	29/64"	0,43	1/2"-13	.W0340	13/32"	3/16"
22024.W5350	5/16" -	UNC	9/16" - 12	UNC	0,43	0,57	33/64"	0,50	9/16"-12	.W0350	15/32"	3/16"
22024.W5351	5/16" -	UNF	9/16" - 12	UNC	0,43	0,57	33/64"	0,50	9/16"-12	.W0350	15/32"	3/16"
22024.W5360	3/8" - 16	UNC	5/8" - 11	UNC	0,50	0,63	37/64"	0,56	5/8"-11	.W0360	17/32"	3/16"
22024.W5361	3/8" - 24	UNF	5/8" - 11	UNC	0,50	0,63	37/64"	0,56	5/8"-11	.W0360	17/32"	3/16"
22024.W5370	7/16" -	UNC	3/4" - 16	UNF	0,62	0,76	45/64"	0,68	3/4"-16	.W0370	21/32"	3/16"
22024.W5371	7/16" -	UNF	3/4" - 16	UNF	0,62	0,76	45/64"	0,68	3/4"-16	.W0370	21/32"	3/16"
22024.W5380	1/2" - 13	UNC	7/8" - 14	UNF	0,68	0,88	53/64"	0,75	7/8"-14	.W0380	25/32"	5/16"
22024.W5381	1/2" - 20	UNF	7/8" - 14	UNF	0,68	0,88	53/64"	0,75	7/8"-14	.W0380	25/32"	5/16"
22024.W5390	9/16" -	UNC	7/8" - 14	UNF	0,81	0,88	53/64"	0,94	7/8"-14	.W0390	25/32"	5/16"
22024.W5391	9/16" -	UNF	7/8" - 14	UNF	0,81	0,88	53/64"	0,94	7/8"-14	.W0390	25/32"	5/16"
22024.W5400	5/8" - 11	UNC	1" - 12	UNF	0,87	1,02	15/16"	1,00	1"-12	.W0400	27/32"	5/16"
22024.W5401	5/8" - 18	UNF	1" - 12	UNF	0,87	1,02	15/16"	1,00	1"-12	.W0400	27/32"	5/16"
22024.W5410	3/4" - 10	UNC	1 - 1/4" - 12	UNF	1,12	1,27	1-3/16"	1,31	1-1/4"-12	.W0410	1-3/32"	5/16"
22024.W5411	3/4" - 16	UNF	1 - 1/4" - 12	UNF	1,12	1,27	1-3/16"	1,31	1-1/4"-12	.W0410	1-3/32"	5/16"
22024.W5420	7/8" - 9	UNC	1 - 3/8" - 12	UNF	1,25	1,39	1-5/16"	1,44	1-3/8"-12	.W0420	1-7/32"	5/16"
22024.W5421	7/8" - 14	UNF	1 - 3/8" - 12	UNF	1,25	1,39	1-5/16"	1,44	1-3/8"-12	.W0420	1-7/32"	5/16"
22024.W5430	1" - 8	UNC	1 - 1/2" - 12	UNF	1,37	1,52	1-7/16"	1,56	1-1/2"-12	.W0430	1-11/32"	5/16"
22024.W5431	1" - 12	UNF	1 - 1/2" - 12	UNF	1,37	1,52	1-7/16"	1,56	1-1/2"-12	.W0430	1-11/32"	5/16"





# Threaded Insert - Inch

extra heavy duty - carbon steel



**22034**

THREADED INSERTS

### Material

Inserts: carbon steel (C1215) or equivalent. Zinc phosphate.

Keys: stainless steel (302 CRES) or equivalent. Passivated.

### Technical Notes

#### General tolerances:

± 0,010" unless specified.

#### Tap drill hole tolerances:

0,234 to 0,500 = +0,004/-0,001".

0,500 and over = +0,005/-0,001".

### Tips

Order installation tool separately, as identified by „Inst. tool ref.“ in table.

### Important Notes

Four locking keys on internal threads 5/16" and over. Two locking keys on internal

threads smaller than 5/16".

Installation (Inst.) drill size, countersink, thread tap and thread depth as specified in table.

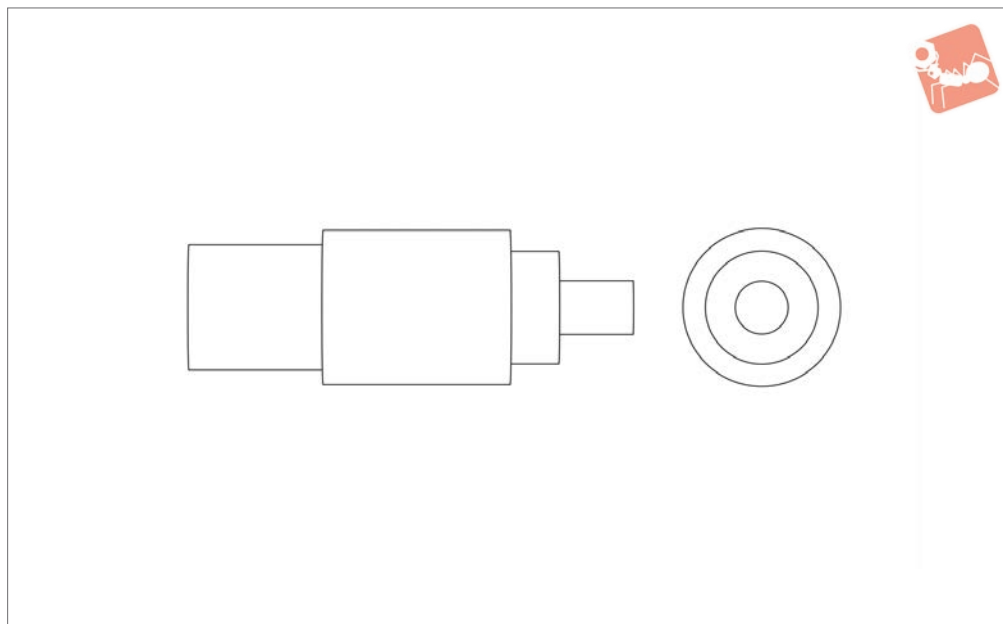
Removal drill size and drill depth as specified in table.

**All dimensions in inches.**

Order No.	Int. d <sub>1</sub> tol. 2B	Int. thread type d <sub>1</sub>	Ext. d <sub>2</sub> (mod.) class 2A	Ext. thread type d <sub>2</sub>	l <sub>1</sub>	Inst. c'sink dia. +0.010 - 0.000	Inst. tap drill size	Inst. thread depth min.	Inst. thread tap tol. 2B	Inst. tool ref. <b>22058</b>	Removal drill size	Removal drill depth
22034.W0310	6 - 32	UNC	5/16" - 18	UNC	0,31	0,32		0,37	5/16"-18	.W0310	7/32"	1/8"
22034.W0320	8 - 32	UNC	3/8" - 16	UNC	0,31	0,38		0,37	3/8"-16	.W0320	9/32"	1/8"
22034.W0330	10 - 24	UNC	7/16" - 14	UNC	0,31	0,44		0,37	7/16"-14	.W0330	11/32"	3/16"
22034.W0331	10 - 32	UNF	7/16" - 14	UNC	0,31	0,44		0,37	7/16"-14	.W0330	11/32"	3/16"
22034.W0340	1/4" - 20	UNC	1/2" - 13	UNC	0,37	0,51	29/64"	0,43	1/2"-13	.W0340	13/32"	3/16"
22034.W0341	1/4" - 28	UNF	1/2" - 13	UNC	0,37	0,51	29/64"	0,43	1/2"-13	.W0340	13/32"	3/16"
22034.W0350	5/16" - 18	UNC	9/16" - 12	UNC	0,43	0,57	33/64"	0,50	9/16"-12	.W0350	15/32"	3/16"
22034.W0351	5/16" - 24	UNF	9/16" - 12	UNC	0,43	0,57	33/64"	0,50	9/16"-12	.W0350	15/32"	3/16"
22034.W0360	3/8" - 16	UNC	5/8" - 11	UNC	0,50	0,63	37/64"	0,56	5/8"-11	.W0360	17/32"	3/16"
22034.W0361	3/8" - 24	UNF	5/8" - 11	UNC	0,50	0,63	37/64"	0,56	5/8"-11	.W0360	17/32"	3/16"
22034.W0370	7/6" - 14	UNC	3/4" - 16	UNF	0,62	0,76	45/64"	0,68	3/4"-16	.W0370	21/32"	3/16"
22034.W0371	7/6" - 20	UNF	3/4" - 16	UNF	0,62	0,76	45/64"	0,68	3/4"-16	.W0370	21/32"	3/16"
22034.W0380	1/2" - 13	UNC	7/8" - 14	UNF	0,68	0,88	53/64"	0,75	7/8"-14	.W0380	25/32"	5/16"
22034.W0381	1/2" - 13	UNF	7/8" - 14	UNF	0,68	0,88	53/64"	0,75	7/8"-14	.W0380	25/32"	5/16"
22034.W0390	9/16" - 12	UNC	7/8" - 14	UNF	0,81	0,88	53/64"	0,94	7/8"-14	.W0390	25/32"	5/16"
22034.W0391	9/16" - 18	UNF	7/8" - 14	UNF	0,81	0,88	53/64"	0,94	7/8"-14	.W0390	25/32"	5/16"
22034.W0400	5/8" - 11	UNC	1" - 12	UNF	0,87	1,02	15/16"	1,00	1"-12	.W0400	27/32"	5/16"
22034.W0401	5/8" - 18	UNF	1" - 12	UNF	0,87	1,02	15/16"	1,00	1"-12	.W0400	27/32"	5/16"
22034.W0410	3/4" - 10	UNC	1 - 1/4" - 12	UNF	1,12	1,27	1-3/16"	1,31	1-1/4"-12	.W0410	1-3/32"	5/16"
22034.W0411	3/4" - 16	UNF	1 - 1/4" - 12	UNF	1,12	1,27	1-3/16"	1,31	1-1/4"-12	.W0410	1-3/32"	5/16"
22034.W0420	7/8" - 9	UNC	1 - 3/8" - 12	UNF	1,25	1,39	1-5/16"	1,44	1-3/8"-12	.W0420	1-7/32"	5/16"
22034.W0421	7/8" - 14	UNF	1 - 3/8" - 12	UNF	1,25	1,39	1-5/16"	1,44	1-3/8"-12	.W0420	1-7/32"	5/16"
22034.W0430	1" - 8	UNC	1 - 1/2" - 12	UNF	1,37	1,52	1-7/16"	1,56	1-1/2"-12	.W0430	1-11/32"	5/16"
22034.W0431	1" - 12	UNF	1 - 1/2" - 12	UNF	1,37	1,52	1-7/16"	1,56	1-1/2"-12	.W0430	1-11/32"	5/16"



**22058**



**Material**

Steel, blackened.

**Tips**

For use with metric extra heavy duty

**threaded inserts 22024 and 22034.**

Select installation tool of corresponding insert internal thread  $d_1$  and external thread  $d_2$ . If in doubt refer to data tables of

solid insert where correct „Inst. tool ref.“ is stated.

Order No.	For insert of internal thread = $d_1$	For insert of external thread = $d_2$
22058.W0310	6-32	5/16"-18
22058.W0320	8-32	3/8"-16
22058.W0330	10-24/ 10-32	7/16"-14
22058.W0340	1/4"-20/ 1/4"-28	1/2"-13
22058.W0350	5/16"-18/ 5/16"-24	9/16"-12
22058.W0360	3/8"-16/ 3/8"-24	5/8"-11
22058.W0370	7/16"-14/ 7/16"-20	3/4"-16
22058.W0380	1/2"-13/ 1/2"-20	7/8"-14
22058.W0390	9/16"-12/ 9/16"-18	7/8"-14
22058.W0400	5/8"-11/ 5/8"-18	1"-12
22058.W0410	3/4"-10/ 3/4"-16	1-1/4"-12
22058.W0420	7/8"-9/ 7/8"-14	1-3/8"-12
22058.W0430	1"-8/ 1"-12	1-1/2"-12

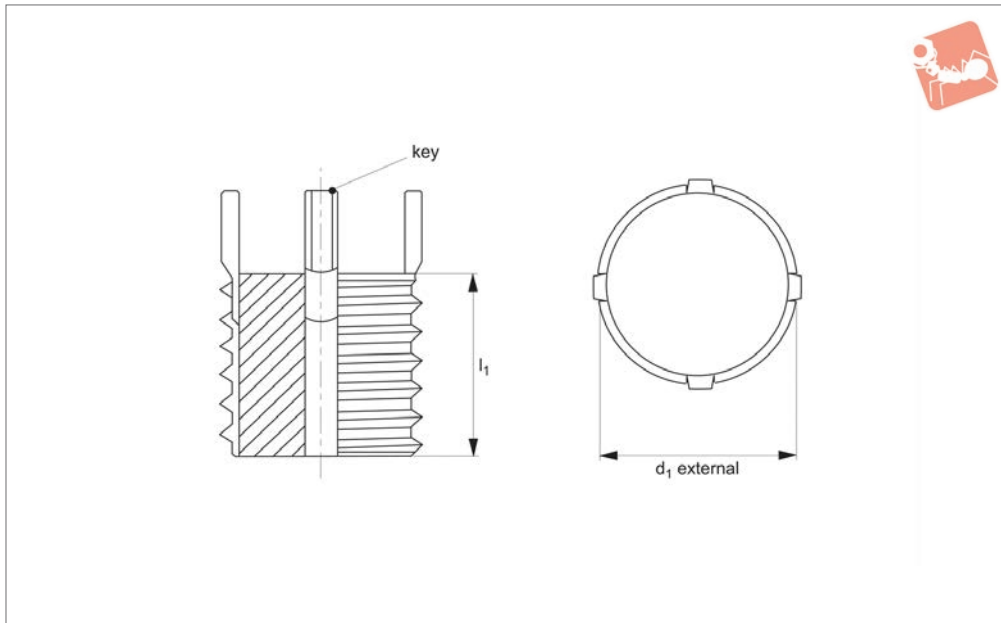


# Threaded Insert - Solid - Metric

carbon steel



## Threaded Inserts



**22040**

THREADED INSERTS

### Material

Inserts: carbon steel (C1215) or equivalent. Zinc phosphate.

Keys: stainless steel (302 CRES) or equivalent. Passivated.

### Technical Notes

#### General tolerances:

± 0,25" unless specified.

#### Tap drill hole tolerances:

6,9 to 10,8 = +0,10/-0,025".

12,8 and over = +0,13/-0,025".

### Tips

Order installation tool separately, as identified by „Inst. tool ref.“ in table.

### Important Notes

Four locking keys on external threads M12 and over. Two locking keys on external

threads smaller than M12.

Installation (Inst.) drill size, countersink, thread tap and thread depth as specified in table.

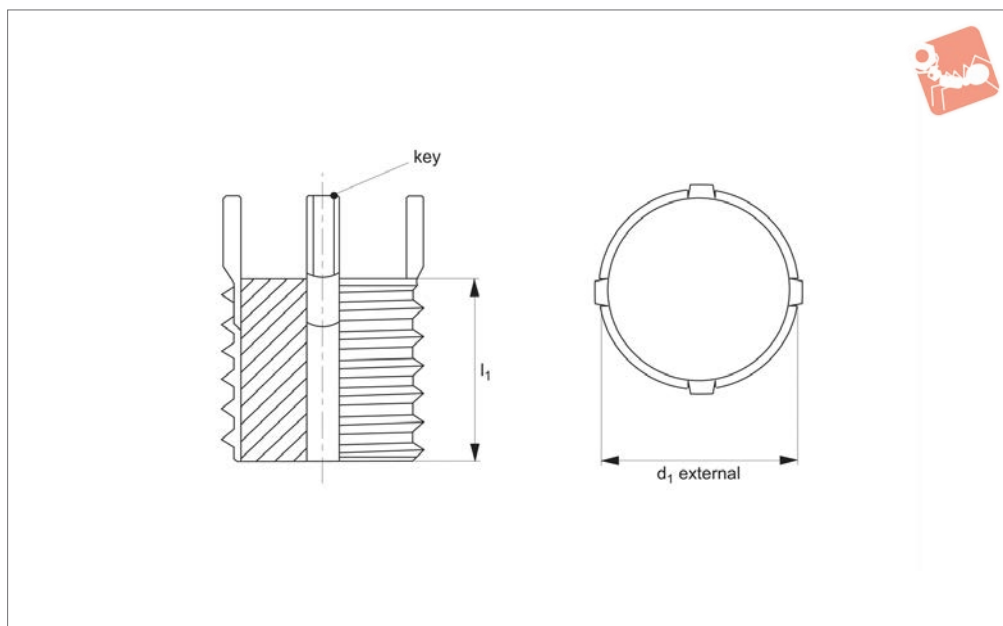
Removal drill size and drill depth as specified in table.

External metric thread allows you to machine your internal thread.

Order No.	d <sub>1</sub> tol. 6g	Thread type d <sub>1</sub>	l <sub>1</sub>	Inst. tool ref. <b>22052</b>	Inst. tap drill size	Inst. c'sink dia. +0.25 -0.00	Inst. thread tap tol. 6H	Inst. thread depth min.	Removal drill size	Removal drill depth
<b>22040.W0210</b>	M 8x1,25	Coarse	8	.W0210	6,90	8,3	M 8x1,25	9,5	5,5	4,0
<b>22040.W0220</b>	M10x1,25	Fine	10	.W0220	8,80	10,3	M10x1,25	12,5	7,5	4,8
<b>22040.W0230</b>	M12x1,25	Fine	12	.W0230	10,80	12,3	M12x1,25	14,5	9,5	4,8
<b>22040.W0240</b>	M14x1,50	Fine	14	.W0240	12,80	14,3	M14x1,50	16,5	11,5	4,8
<b>22040.W0250</b>	M16x1,50	Fine	16	.W0250	14,75	16,3	M16x1,50	18,5	13,5	4,8
<b>22040.W0260</b>	M18x1,50	Fine	18	.W0260	16,75	18,3	M18x1,50	20,5	15,5	4,8
<b>22040.W0270</b>	M20x1,50	Fine	20	.W0270	18,75	20,3	M20x1,50	22,5	17,5	4,8
<b>22040.W0280</b>	M22x1,50	Fine	22	.W0280	20,50	22,3	M22x1,50	24,5	17,8	6,4
<b>22040.W0290</b>	M24x1,50	Fine	24	.W0290	22,50	24,3	M24x1,50	26,5	19,8	6,4
<b>22040.W0300</b>	M30x2,00	Fine	30	.W0300	28,00	30,3	M30x2,00	34,5	25,8	6,4
<b>22040.W0310</b>	M32x2,00	Non-Std	32	.W0310	30,00	32,3	M32x2,00	36,5	27,8	6,4
<b>22040.W0320</b>	M33x2,00	Non-Std	33	.W0320	31,00	33,3	M33x2,00	37,5	28,8	6,4



## 22042



### Material

Inserts: stainless steel (AISI 303) or equivalent. Passivated.

Keys: stainless steel (302 CRES) or equivalent. Passivated.

### Technical Notes

#### General tolerances:

± 0,25 unless specified.

#### Tap drill hole tolerances:

6,9 to 10,8 = +0,10/-0,025.

12,8 and over = +0,13/-0,025.

### Tips

Order installation tool separately, as identified by „Inst. tool ref.“ in table.

### Important Notes

Four locking keys on external threads M12 and over. Two locking keys on external

threads smaller than M12.

Installation (Inst.) drill size, countersink, thread tap and thread depth as specified in table.

Removal drill size and drill depth as specified in table.

External metric thread allows you to machine your internal thread.

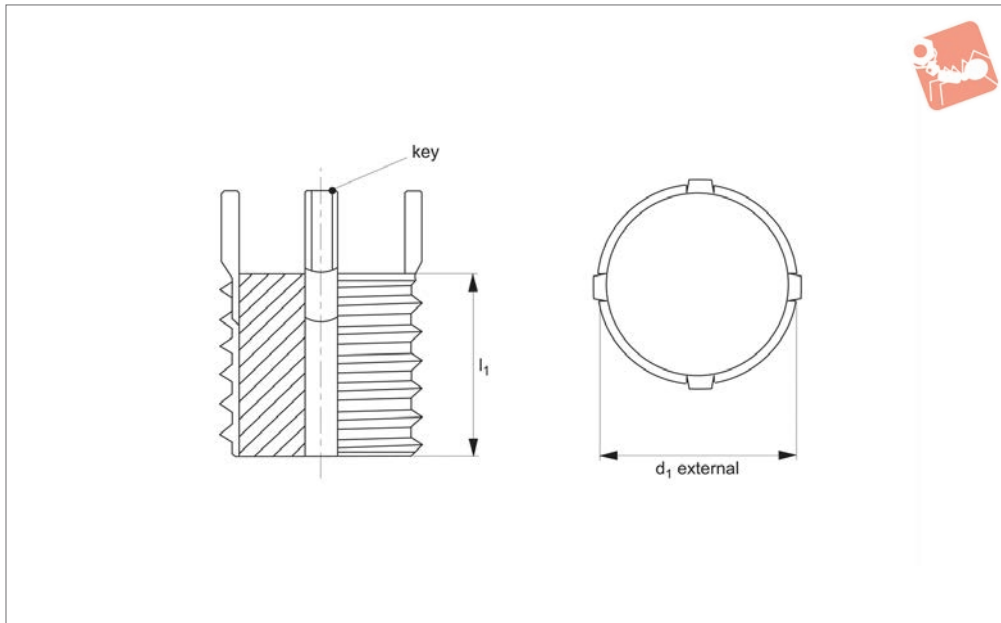
Order No.	d <sub>1</sub>	Thread type d <sub>1</sub>	l <sub>1</sub>	Inst. tool ref. 22052	Inst. tap drill size	Inst. c'sink dia.	Inst. thread tap	Inst. thread tap depth	Removal drill size	Removal drill depth
22042.W0210	M 8x1,2 5	Coarse	8	.W0210	6.9	8.3	M 8x1,25	9.5	5.50	4.0
22042.W0220	M10x 1,25	Fine	10	.W0220	8.8	10.3	M10x1,25	12.5	7.50	4.8
22042.W0230	M12x 1,25	Fine	12	.W0230	10.8	12.3	M12x1,25	14.5	9.50	4.8
22042.W0240	M14x 1,50	Fine	14	.W0240	12.8	14.3	M14x1,50	16.5	11.50	4.8
22042.W0250	M16x 1,50	Fine	16	.W0250	14.8	16.3	M16x1,50	18.5	13.50	4.8
22042.W0260	M18x 1,50	Fine	18	.W0260	16.8	18.3	M18x1,50	20.5	15.50	4.8
22042.W0270	M20x 1,50	Fine	20	.W0270	18.8	20.3	M20x1,50	22.5	17.50	4.8
22042.W0280	M22x 1,50	Fine	22	.W0280	20.5	22.3	M22x1,50	24.5	17.75	6.4
22042.W0290	M24x 1,50	Fine	24	.W0290	22.5	24.3	M24x1,50	26.5	19.75	6.4
22042.W0300	M30x 2,00	Non-Std	30	.W0300	28.0	30.3	M30x2,00	34.5	25.75	6.4
22042.W0310	M32x 2,00	Non-Std	32	.W0310	30.0	32.3	M32x2,00	36.5	27.75	6.4
22042.W0320	M33x 2,00	Non-Std	33	.W0320	31.0	33.3	M33x2,00	37.5	28.75	6.4



# Threaded Insert - Solid - Inch carbon steel



## Threaded Inserts



### 22044

THREADED INSERTS

#### Material

Inserts: carbon steel (C1215) or equivalent. Zinc phosphate.

Keys: stainless steel (302 CRES) or equivalent. Passivated.

#### Technical Notes

##### General tolerances:

± 0,010" unless specified.

##### Tap drill hole tolerances:

0,234 to 0,500 = +0,004/-0,001".

0,500 and over = +0,005/-0,001".

#### Tips

Order installation tool separately, as identified by „Inst. tool ref.“ in table.

#### Important Notes

Four locking keys on external threads

7/16" and over. Two locking keys on

external threads smaller than 7/16".

Installation (Inst.) drill size, countersink, thread tap and thread depth as specified in table.

Removal drill size and drill depth as specified in table.

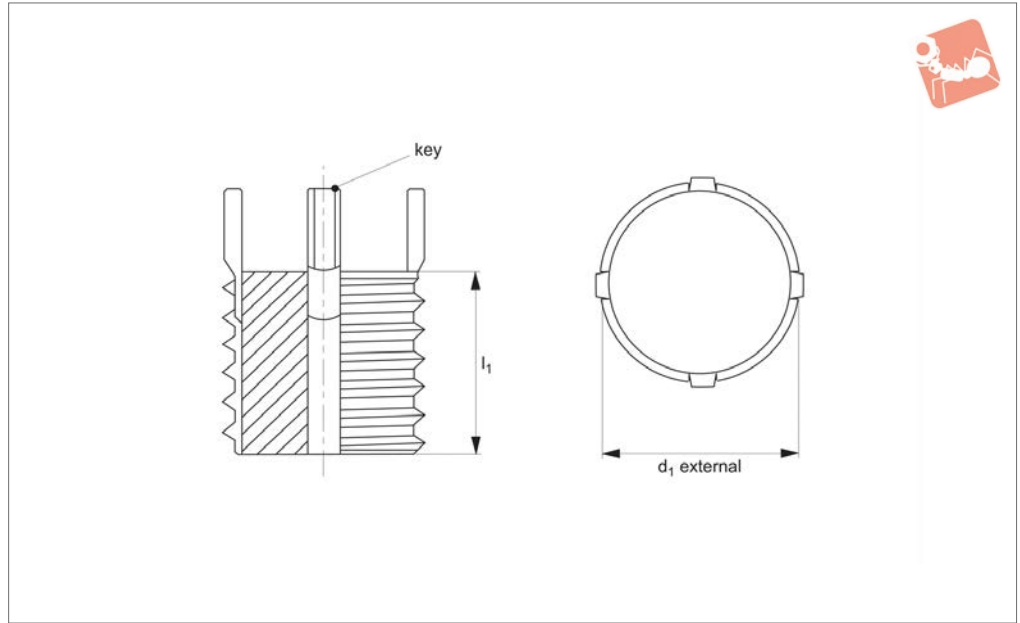
External inch thread allows you to machine your internal thread.

**All dimensions in inches.**

Order No.	d <sub>1</sub> (mod.) tol. 2A	Thread type d <sub>1</sub>	l <sub>1</sub>	Inst. tool ref. 22050	Inst. tap drill size	Inst. c'sink dia. +0.010 - 0.000	Inst. thread tap tol. 2B	Inst. thread tap depth min.	Removal drill size	Removal drill depth
22044.W0010	5/16"-18	UNC	0,31	.W0010	0,27	0,32	5/16"-18	0,37	7/32"	1/8"
22044.W0020	3/8"-16	UNC	0,31	.W0020	0,33	0,38	3/8"-16	0,37	9/32"	1/8"
22044.W0030	7/16"-14	UNC	0,37	.W0030	0,40	0,44	7/16"-14	0,43	11/32"	3/16"
22044.W0040	1/2"-13	UNC	0,43	.W0040	0,45	0,51	1/2"-13	0,50	13/32"	3/16"
22044.W0050	9/16"-12	UNC	0,50	.W0050	0,52	0,57	9/16"-12	0,56	15/32"	3/16"
22044.W0060	5/8"-11	UNC	0,62	.W0060	0,58	0,63	5/8"-11	0,68	17/32"	3/16"
22044.W0070	3/4"-16	UNF	0,68	.W0070	0,70	0,76	3/4"-16	0,75	21/32"	3/16"
22044.W0080	7/8"-14	UNF	0,87	.W0080	0,83	0,88	7/8"-14	1,00	25/32"	5/16"
22044.W0090	1"-12	UNF	0,87	.W0090	0,94	1,02	1"-12	1,00	27/32"	5/16"
22044.W0100	1-1/8"-12	UNF	1,12	.W0100	1,06	1,14	1-1/8"-12	1,31	31/32"	5/16"
22044.W0110	1-1/4"-12	UNF	1,25	.W0110	1,19	1,27	1-1/4"-12	1,44	1-3/32"	5/16"
22044.W0120	1-3/8"-12	UNF	1,37	.W0120	1,31	1,39	1-3/8"-12	1,56	1-7/32"	5/16"



## 22046



### Material

Inserts: stainless steel (AISI 303) or equivalent. Passivated.

Keys: stainless steel (302 CRES) or equivalent. Passivated.

### Technical Notes

#### General tolerances:

± 0,010" unless specified.

#### Tap drill hole tolerances:

0,234 to 0,500 = +0,004/-0,001".

0,500 and over = +0,005/-0,001".

### Tips

Order installation tool separately, as identified by „Inst. tool ref.“ in table.

### Important Notes

Four locking keys on external threads

7/16" and over. Two locking keys on

external threads smaller than 7/16".

Installation (Inst.) drill size, countersink,

thread tap and thread depth as specified in table.

Removal drill size and drill depth as specified in table.

External inch thread allows you to machine your internal thread.

\*Unified special pitch thread.

**All dimensions in inches.**

Order No.	d <sub>1</sub> (mod.) tol. 2A	Thread type d <sub>1</sub>	l <sub>1</sub>	Inst. tool ref. 22050	Inst. tap drill size	Inst. c'sink dia. +0.010 - 0.000	Inst. thread tap tol. 2B	Inst. thread tap depth min.	Removal drill size	Removal drill depth
22046.W0010	5/16"-18	UNC	0,31	.W0010	0,272	0,32	5/16"-18	0,37	7/32"	1/8"
22046.W0020	3/8"-16	UNC	0,31	.W0020	0,332	0,38	3/8"-16	0,37	9/32"	1/8"
22046.W0030	7/16"-14	UNC	0,37	.W0030	0,397	0,44	7/16"-14	0,43	11/32"	3/16"
22046.W0040	1/2"-13	UNC	0,43	.W0040	0,453	0,51	1/2"-13	0,50	13/32"	3/16"
22046.W0050	9/16"-12	UNC	0,50	.W0050	0,516	0,57	9/16"-12	0,56	15/32"	3/16"
22046.W0060	5/8"-11	UNC	0,62	.W0060	0,578	0,63	5/8"-11	0,68	17/32"	3/16"
22046.W0065	11/16"-11*	UNS	0,68	.W0065	0,641	0,70	11/16"-11*	0,75	19/32"	3/16"
22046.W0070	3/4"-16	UNF	0,68	.W0070	0,703	0,76	3/4"-16	0,75	21/32"	3/16"
22046.W0075	13/16"-16	UNF	0,81	.W0075	0,766	0,82	13/16"-16	0,94	23/32"	3/16"
22046.W0080	7/8"-14	UNF	0,87	.W0080	0,828	0,88	7/8"-14	1,00	25/32"	5/16"
22046.W0090	1"-12	UNF	0,87	.W0090	0,937	1,02	1"-12	1,00	27/32"	5/16"
22046.W0100	1-1/8"-12	UNF	1,12	.W0100	1,062	1,14	1-1/8"-12	1,31	31/32"	5/16"
22046.W0110	1-1/4"-12	UNF	1,25	.W0110	1,187	1,27	1-1/4"-12	1,44	1-3/32"	5/16"
22046.W0120	1-3/8"-12	UNF	1,37	.W0120	1,312	1,39	1-3/8"-12	1,56	1-7/32"	5/16"
22046.W0130	11/16"-11*	UNS	0,68	.W0065	0,641	0,70	11/16"-11*	0,75	19/32"	5/16"
22046.W0140	13/16"-16	UNF	0,81	.W0075	0,766	0,82	13/16"-16	0,94	23/32"	5/16"

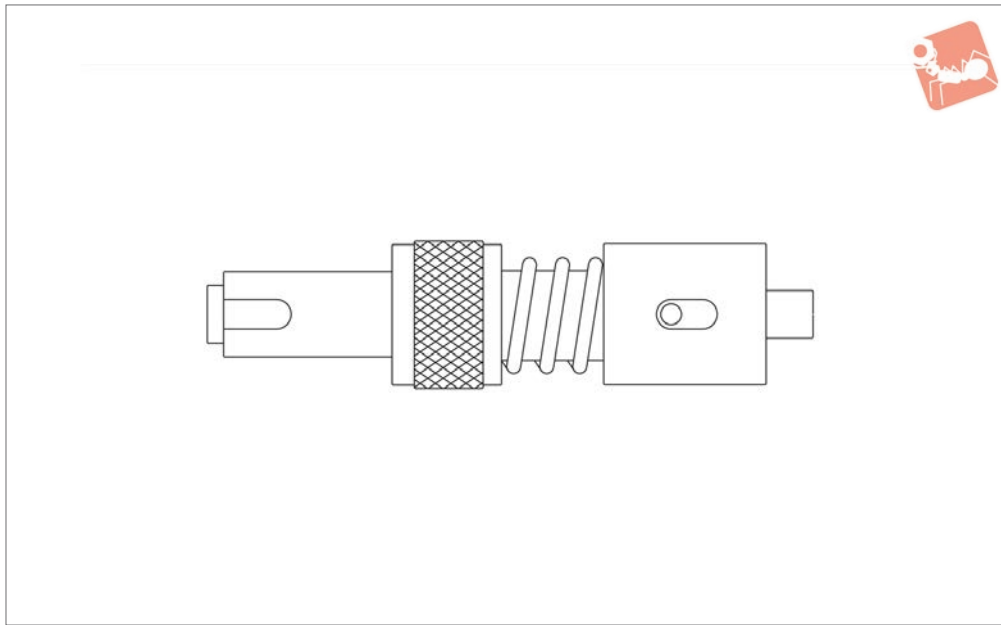


# Installation Tool - Solid - Inch

for threaded inserts 22044 & 22046



## Threaded Inserts



**22050**

THREADED INSERTS

**Material**

Steel, blackened.

**Tips**

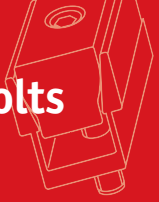
For use with inch solid inserts 22044 and

**22046.**

Select installation tool of corresponding insert external thread  $d_1$ . If in doubt refer to data tables of insert where correct „Inst.

tool ref.“ is stated.

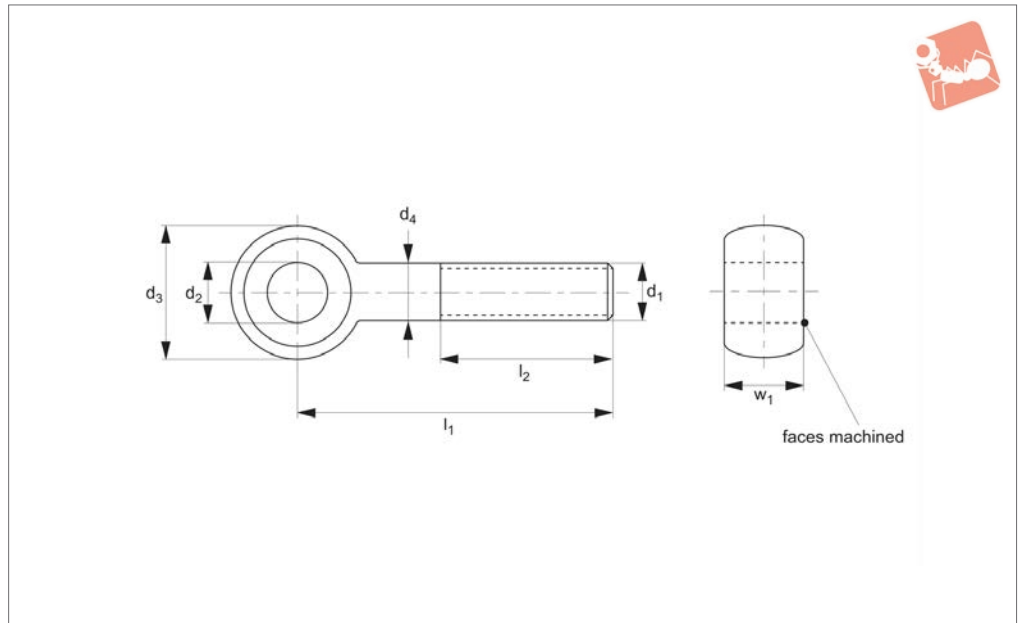
Order No.	For insert of external thread = $d_1$	Thread type $d_1$
22050.W0010	5/16"-18	UNC
22050.W0020	3/8"-16	UNC
22050.W0030	7/16"-14	UNC
22050.W0040	1/2"-13	UNC
22050.W0050	9/16"-12	UNC
22050.W0060	5/8"-11	UNC
22050.W0065	11/16"-11NS	UNF
22050.W0070	3/4"-16	UNF
22050.W0075	13/16"-16	UNF
22050.W0080	7/8"-14	UNF
22050.W0090	1"-12	UNF
22050.W0100	1-1/8"-12	UNF
22050.W0110	1-1/4"-12	UNF
22050.W0120	1-3/8"-12	UNF



SWING BOLTS



## 18820



### Material

Steel, heat-treated steel, blackened, quality thread 8.8.  
 Rolled thread, shaft  $\varnothing$  = roll  $\varnothing$ , faces machined.

### Technical Notes

Produced to DIN 444B.

### Important Notes

**These parts offer a high precision bore  $d_2$  to tolerance H7, with faces  $w_1$  machined flat.**

For similar DIN 444 swing bolts for a standard tolerance see our part 18822.

Order No.	$d_1$	$l_1$	$d_2$ tol. H7	$d_3$	$l_2$	$d_4$	$w_1$	Weight g
18820.W0060	M 5	50	5	12	32	5	6	10
18820.W0061	M 6	50	6	14	32	6	7	14
18820.W0062	M 6	75	6	14	32	6	7	19
18820.W0081	M 8	40	8	18	22	8	9	22
18820.W0084	M 8	60	8	18	22	8	9	28
18820.W0103	M10	50	10	20	26	10	12	38
18820.W0106	M10	75	10	20	26	10	12	50
18820.W0108	M10	100	10	20	26	10	12	62
18820.W0122	M12	60	12	25	30	12	14	70
18820.W0125	M12	80	12	25	30	12	14	84
18820.W0128	M12	120	12	25	30	12	14	113
18820.W0163	M16	80	16	32	38	16	17	153
18820.W0168	M16	150	16	32	44	16	17	245
18820.W0201	M20	100	18	40	63	20	22	305
18820.W0202	M20	130	18	40	63	20	22	370
18820.W0203	M20	160	18	40	63	20	22	440





## Swing Bolts - Overview



### Swing Bolts - High Tolerance

18820

- Form B - DIN 444.
- Heat-treated steel, quality 8.8, blackened.
- Rolled thread, shaft  $\varnothing$  = thread  $\varnothing$ , faces machined.
- These parts offer a high precision bore  $d_2$  to tolerance H7, with faces 'w<sub>1</sub>' machined flat.



### Swing Bolts - Standard Tolerance

18822

- Form B, DIN 444.
- Heat-treated steel, tempered, quality 8.8, black
- These parts have a bore  $d_2$  with a standard tolerance H9 (faces 'w<sub>1</sub>' are not machined).



### Stainless Swing Bolts - High Tolerance

18830

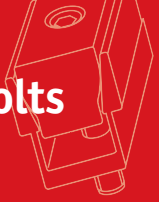
- DIN 444.
- Stainless steel 1.4305 (AISI 304). Turned, thread rolled. Matt shot blasted.
- These parts offer a high precision bore  $d_2$  to tolerance H7, with faces 'w<sub>1</sub>' machined flat.



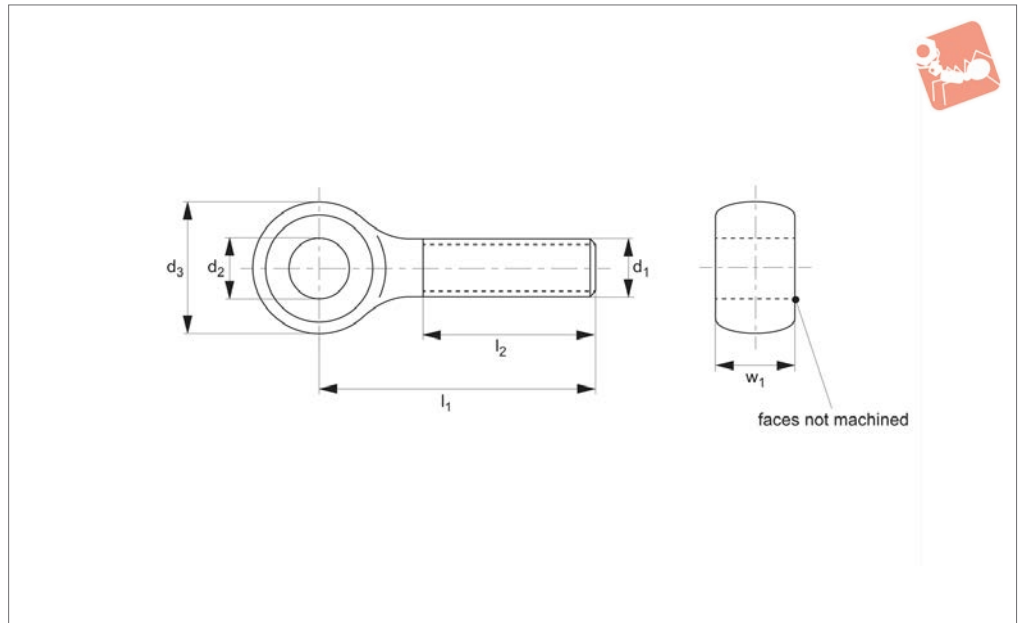
### Stainless Swing Bolts - Standard Tolerance

18832

- DIN 444.
- Stainless steel 1.4301.
- These parts have a bore  $d_2$  with a standard tolerance H9 (faces 'w<sub>1</sub>' are not machined).



## 18822



### Material

Steel, heat-treated and tempered, quality 8.8, black.

### Technical Notes

DIN 444.

### Important Notes

**These parts have a bore  $d_2$  standard tolerance H9 (faces are not machined).**

For similar parts to DIN 444 with high tolerance see our part 18820.

Order No.	$d_1$	$l_1$	$d_2$ tol. h9	$d_3$	$l_2$	$w_1$	Weight g
18822.W0202	M 5	25	5	12	16	6	5.6
18822.W0203	M 5	30	5	12	16	6	6.4
18822.W0204	M 5	35	5	12	16	6	7.1
18822.W0205	M 5	40	5	12	16	6	7.9
18822.W0212	M 6	30	6	14	18	7	9.5
18822.W0214	M 6	40	6	14	18	7	12.0
18822.W0216	M 6	50	6	14	18	7	14.0
18822.W0218	M 6	60	6	14	18	7	16.0
18822.W0222	M 6	80	6	14	18	7	20.0
18822.W0232	M 8	40	8	18	22	9	22.0
18822.W0234	M 8	50	8	18	22	9	25.0
18822.W0236	M 8	60	8	18	22	9	29.0
18822.W0240	M 8	80	8	18	22	9	37.0
18822.W0244	M 8	100	8	18	22	9	44.0
18822.W0252	M10	50	10	20	26	12	37.0
18822.W0254	M10	60	10	20	26	12	43.0
18822.W0257	M10	75	10	20	26	12	52.0
18822.W0262	M10	100	10	20	26	12	67.0
18822.W0266	M10	120	10	20	26	12	72.0
18822.W0272	M12	50	12	25	30	14	59.0
18822.W0274	M12	60	12	25	30	14	68.0
18822.W0278	M12	80	12	25	30	14	85.0
18822.W0282	M12	100	12	25	30	14	102.0
18822.W0286	M12	120	12	25	30	14	119.0
18822.W0292	M16	60	16	32	38	17	128.0
18822.W0294	M16	80	16	32	38	17	158.0
18822.W0298	M16	100	16	32	38	17	190.0
18822.W0302	M16	120	16	32	38	17	220.0
18822.W0308	M16	150	16	32	44	17	265.0
18822.W0312	M20	100	18	40	46	22	329.0
18822.W0316	M20	120	18	40	46	22	371.0
18822.W0324	M20	160	18	40	52	22	466.0



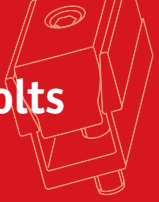
# Swing Bolts - Standard Tolerance form B



## Swing Bolts

Order No.	d <sub>1</sub>	l <sub>1</sub>	d <sub>2</sub> tol. h9	d <sub>3</sub>	l <sub>2</sub>	w <sub>1</sub>	Weight g
<b>18822.W0332</b>	M20	200	18	40	52	22	562.0
<b>18822.W0342</b>	M24	100	22	45	54	25	442.0
<b>18822.W0346</b>	M24	120	22	45	54	25	512.0
<b>18822.W0354</b>	M24	160	22	45	60	25	649.0
<b>18822.W0362</b>	M24	200	22	45	60	25	787.0

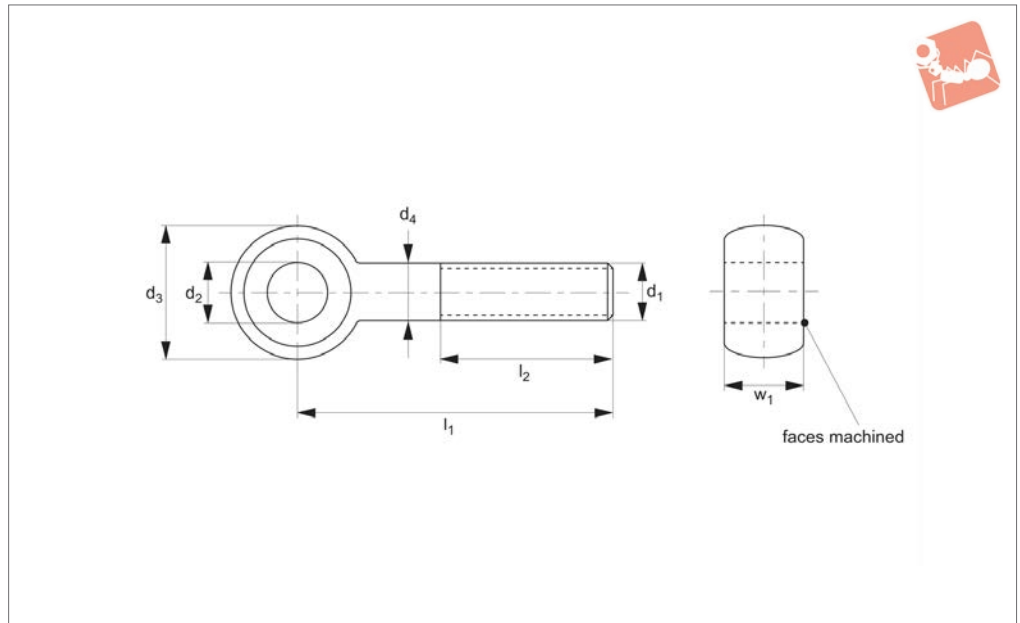
SWING BOLTS



SWING BOLTS



## 18830



### Material

Turned, thread rolled. Matt shot blasted.

### Technical Notes

Produced to DIN 444.

Stainless steel 1.4305 (AISI 304).

### Important Notes

**These parts offer a high precision bore  $d_2$  to tolerance H7, with faces  $w_1$  machined flat.**

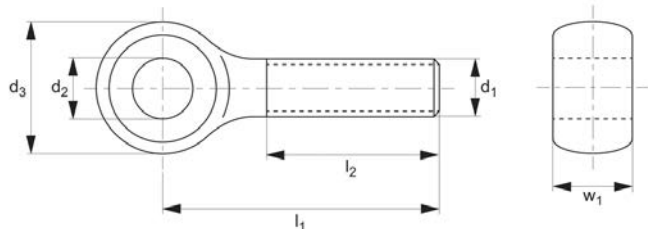
For similar DIN 444 swing bolts to a standard tolerance see our part 18832.

Order No.	$d_1$	$l_1$	$d_2$ tol. H7	$d_3$	$l_2$	$d_4$	$w_1$ -0.15	Weight g
18830.W0051	M 5	50	5	12	32	5	6	10
18830.W0052	M 5	75	5	12	32	5	6	20
18830.W0061	M 6	50	6	14	32	6	7	14
18830.W0062	M 6	75	6	14	32	6	7	19
18830.W0081	M 8	50	8	18	32	8	9	26
18830.W0082	M 8	75	8	18	32	8	9	36
18830.W0101	M10	50	10	20	40	10	12	38
18830.W0102	M10	75	10	20	40	10	12	53
18830.W0103	M10	100	10	20	40	10	12	60
18830.W0121	M12	75	12	25	40	12	14	83
18830.W0122	M12	100	12	25	40	12	14	105
18830.W0123	M12	130	12	25	40	12	14	132
18830.W0161	M16	75	16	32	50	16	17	146
18830.W0162	M16	100	16	32	50	16	17	183
18830.W0163	M16	130	16	32	50	16	17	220
18830.W0164	M20	100	18	40	63	20	22	322

# Stainless Swing Bolts

standard tolerance

## Swing Bolts



### 18832

SWING BOLTS

#### Material

Stainless steel 1.4301.

#### Technical Notes

DIN 444.

#### Important Notes

These parts have a bore  $d_2$  to standard tolerance H9 (faces  $w_1$  are not machined).

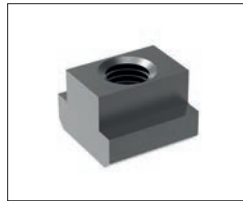
For similar parts to DIN 444 with high tolerance see our part 18830.

Order No.	$d_1$	$l_1$	$d_2$ tol. h9	$d_3$	$l_2$	$w_1$	Weight g
18832.W0402	M 5	25	5	12	16	6	5.6
18832.W0403	M 5	30	5	12	16	6	6.4
18832.W0404	M 5	35	5	12	16	6	7.1
18832.W0405	M 5	40	5	12	16	6	7.9
18832.W0412	M 6	30	6	14	18	7	9.5
18832.W0414	M 6	40	6	14	18	7	12.0
18832.W0416	M 6	50	6	14	18	7	14.0
18832.W0418	M 6	60	6	14	18	7	16.0
18832.W0422	M 6	80	6	14	18	7	20.0
18832.W0432	M 8	40	8	18	22	9	22.0
18832.W0434	M 8	50	8	18	22	9	25.0
18832.W0436	M 8	60	8	18	22	9	29.0
18832.W0440	M 8	80	8	18	22	9	37.0
18832.W0444	M 8	100	8	18	22	9	44.0
18832.W0452	M10	50	10	20	26	12	37.0
18832.W0454	M10	60	10	20	26	12	43.0
18832.W0457	M10	75	10	20	26	12	52.0
18832.W0462	M10	100	10	20	26	12	67.0
18832.W0466	M10	120	10	20	26	12	72.0
18832.W0472	M12	50	12	25	30	14	59.0
18832.W0474	M12	60	12	25	30	14	68.0
18832.W0478	M12	80	12	25	30	14	85.0
18832.W0482	M12	100	12	25	30	14	102.0
18832.W0486	M12	120	12	25	30	14	119.0
18832.W0502	M16	120	16	32	38	17	220.0
18832.W0508	M16	150	16	32	44	17	265.0
18832.W0512	M20	100	18	40	46	22	329.0
18832.W0516	M20	120	18	40	46	22	371.0
18832.W0524	M20	160	18	40	52	22	466.0
18832.W0532	M20	200	18	40	52	22	562.0
18832.W0542	M24	100	22	45	54	25	442.0
18832.W0546	M24	120	22	45	54	25	512.0
18832.W0554	M24	160	22	45	60	25	649.0
18832.W0562	M24	200	22	45	60	25	787.0

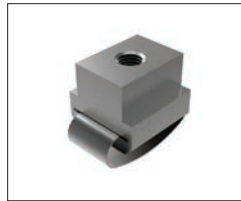


**Nuts**

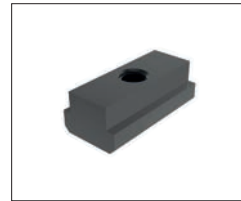
Available in heat treated steel, unless stated otherwise.



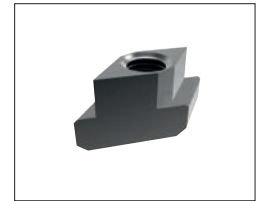
**24000** T-Nut, Strength Class 10 DIN 508.



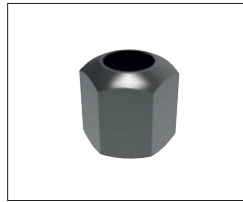
**24010** T-Nut with Anti-Slip Device.



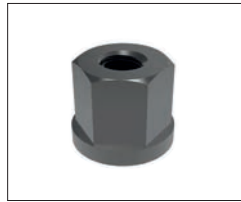
**24100** Extended T-Nut. Strength Class 10.



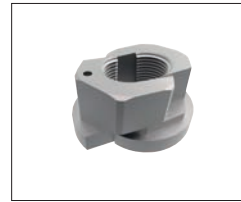
**24120** Rhombus T-Nuts



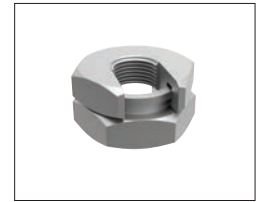
**24300** Fixture Nuts. Strength Class 10 - DIN 6330B



**24400** Collar Nuts, DIN 6331



**24502** Fast Nut - With Collar Rapid Assembly Nut



**24520 - Steel** Slip-On Lock Nuts - Rapid Assembly Nut.



**24600** Extension Nuts Strength Class 10.



**24620** Swivel Nuts, Conical Seat

**Washers**

Available in a range of steel types - see product for details.



**25000** - Hardened Steel - Plain Washers. DIN 6340.



**25100** - Case Hardened Steel - Spherical Seat Washers. Type C - DIN 6319C.



**25400** - Case Hardened Steel - Dished Washers, Type D - DIN 6319D.



**25700** - Tempered Steel - Dished Washers, Type G - DIN 6319G.

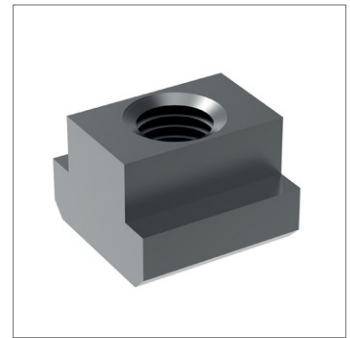
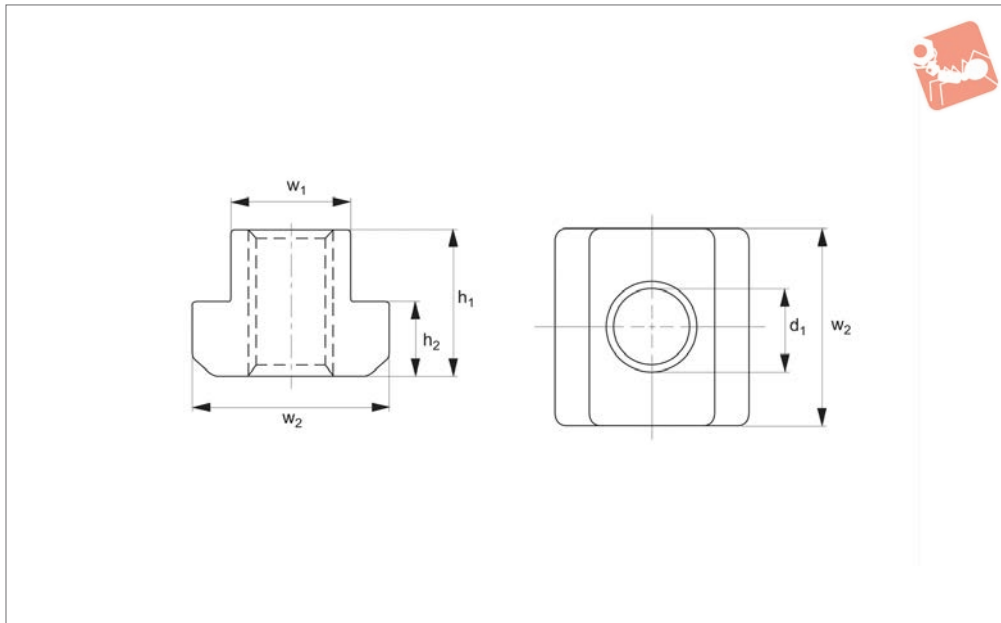


**25900** - Stainless Steel Compact Spherical Washer, Conical Seat, similar to DIN6319



# T-Nuts

steel - strength class 10



**24000**

T-NUTS & T-BOLTS

### Material

Steel, heat-treated, to tensile strength class 10.

### Technical Notes

T-nuts to DIN 508.

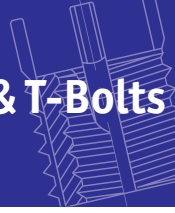
Further T-nut sizes and qualities on request.

Please note T-nuts are square, length and width are both equal to dimension  $w_2$ .

### Important Notes

Full load capacity of T-nut can only be achieved if 100% of T-nut's thread is in use.

Order No.	$d_1 \times$ T-Slot	$w_1$	$w_2$	$h_1$	$h_2$	Testing force to DIN 508 kN	Weight g
24000.W0041	M 4x5	4.6	9	6.5	3	7.0	2
24000.W0061	M 5x6	5.7	10	8.0	4	11.4	3
24000.W0081	M 6x8	7.7	13	10.0	6	16.0	8
24000.W0091	M 6x10	9.6	15	12.0	6	16.0	14
24000.W0101	M 8x10	9.7	15	12.0	6	29.0	13
24000.W0121	M 8x12	11.7	18	14.0	7	29.0	23
24000.W0122	M10x12	11.7	18	14.0	7	46.0	20
24000.W0141	M 8x14	13.7	22	16.0	8	29.0	41
24000.W0142	M10x14	13.7	22	16.0	8	46.0	37
24000.W0143	M12x14	13.7	22	16.0	8	67.0	34
24000.W0161	M 8x16	15.7	25	18.0	9	29.0	50
24000.W0162	M10x16	15.7	25	18.0	9	46.0	60
24000.W0163	M12x16	15.7	25	18.0	9	67.0	54
24000.W0164	M14x16	15.7	25	18.0	9	-	49
24000.W0181	M 8x18	17.7	28	20.0	10	29.0	91
24000.W0182	M10x18	17.7	28	20.0	10	46.0	87
24000.W0183	M12x18	17.7	28	20.0	10	67.0	82
24000.W0184	M14x18	17.7	28	20.0	10	-	74
24000.W0185	M16x18	17.7	28	20.0	10	128.0	68
24000.W0200	M12x20	19.6	32	24.0	12	67.0	107
24000.W0201	M16x20	19.7	32	24.0	12	128.0	110
24000.W0202	M18x20	19.7	32	24.0	12	-	108
24000.W0220	M12x22	21.6	35	28.0	14	67.0	189
24000.W0221	M16x22	21.7	35	28.0	14	128.0	176
24000.W0222	M18x22	21.7	35	28.0	14	-	163
24000.W0223	M20x22	21.7	35	28.0	14	196.0	155
24000.W0241	M16x24	23.7	40	32.0	16	128.0	260
24000.W0242	M20x24	23.7	40	32.0	16	196.0	235
24000.W0243	M22x24	23.7	40	32.0	16	-	220
24000.W0281	M16x28	27.7	44	36.0	18	128.0	383
24000.W0282	M20x28	27.7	44	36.0	18	196.0	355
24000.W0283	M22x28	27.7	44	36.0	18	-	340



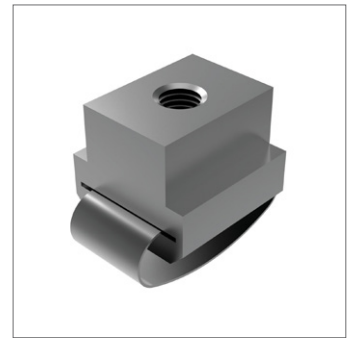
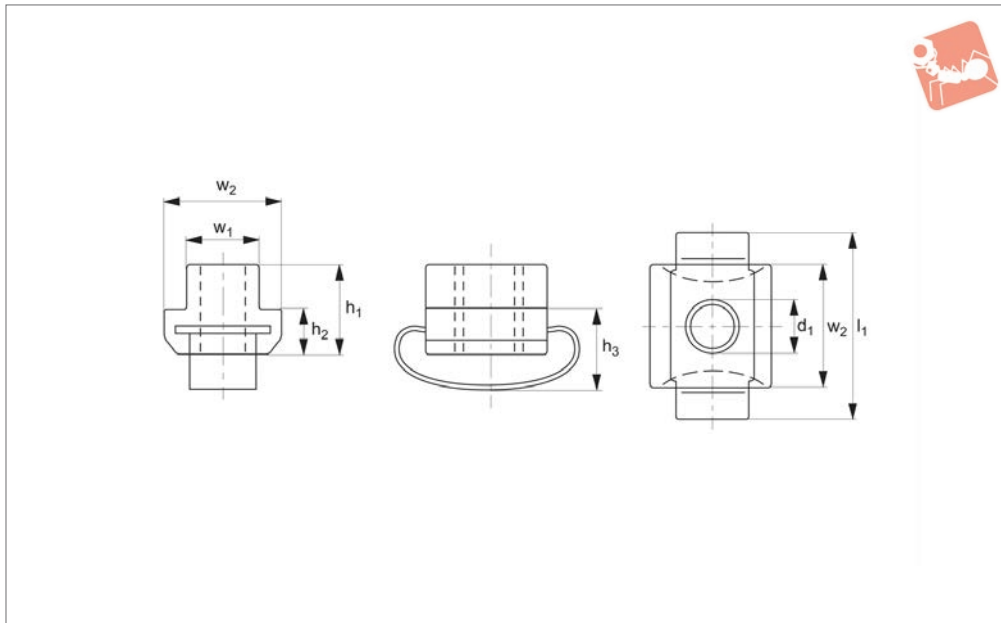
Order No.	d <sub>1</sub> x T-Slot	w <sub>1</sub>	w <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	Testing force to DIN 508 kN	Weight g
24000.W0284	M24x28	27.7	44	36.0	18	282.0	322
24000.W0301	M24x30	29.7	48	38.0	19	-	440
24000.W0321	M27x32	31.6	50	40.0	20	-	460
24000.W0361	M24x36	35.6	54	44.0	22	282.0	700
24000.W0362	M30x36	35.6	54	44.0	22	448.0	590
24000.W0421	M30x42	41.6	65	52.0	26	-	1150
24000.W0422	M36x42	41.6	65	52.0	26	653.0	1010
24000.W0481	M42x48	47.6	75	60.0	30	653.0	1600
24000.W0541	M48x54	53.6	85	70.0	34	653.0	2300





# T-Nuts with anti-slip device

# T-Nuts & T-Bolts



## 24010

T-NUTS & T-BOLTS

### Material

Steel, heat-treated, quality 10, black.  
Spring element: stainless steel.

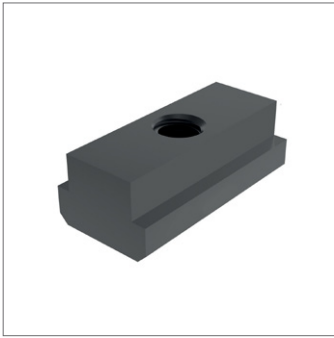
### Technical Notes

The spring element prevents horizontal and vertical slipping of T-nut. Please note

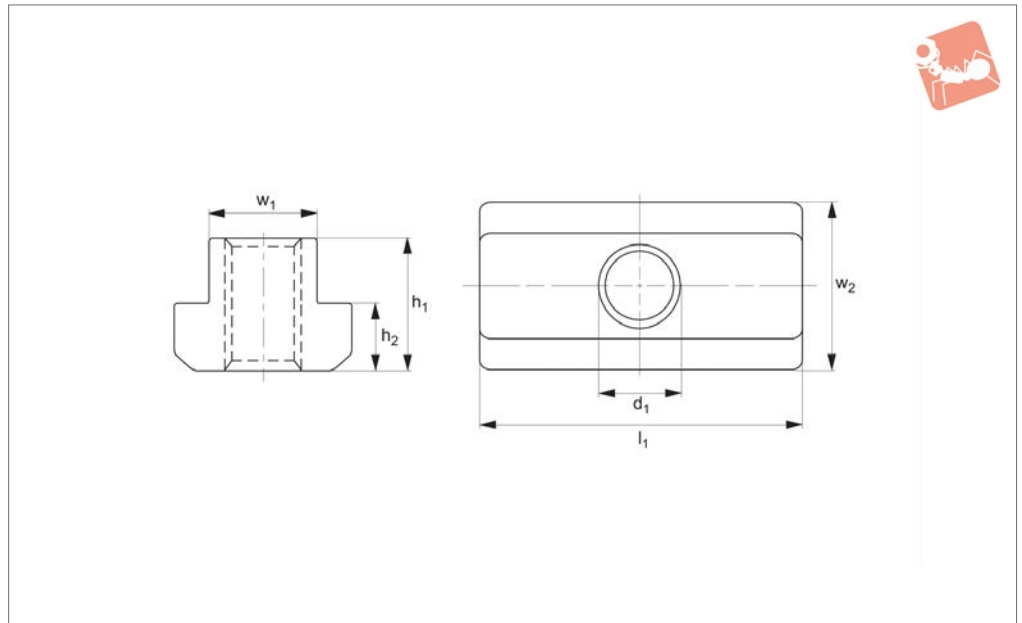
T-nuts are square, length and width are both equal to dimension  $w_2$ .

Order No.	$d_1$ x T-Slot	$w_1$	$w_2$	$h_1$	$h_2$	$h_3$	$l_1$	Weight g
24010.W0121	M 8x12	11.7	18	14	7	12.5	31	24
24010.W0122	M10x12	11.7	18	14	7	12.5	31	21
24010.W0141	M 8x14	13.7	22	16	8	13.5	33	42
24010.W0142	M10x14	13.7	22	16	8	13.5	33	38
24010.W0143	M12x14	13.7	22	16	8	13.5	33	34
24010.W0161	M 8x16	15.7	25	18	9	15.5	42	63
24010.W0162	M10x16	15.7	25	18	9	15.5	42	60
24010.W0182	M10x18	17.7	28	20	10	17.5	43	87
24010.W0185	M16x18	17.7	28	20	10	17.5	43	70
24010.W0223	M20x22	21.7	35	28	14	21.5	56	153





### 24100



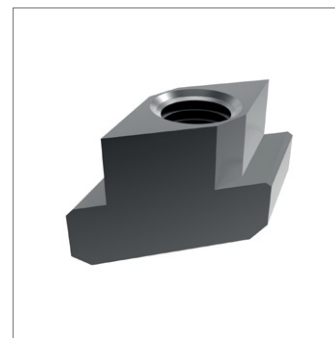
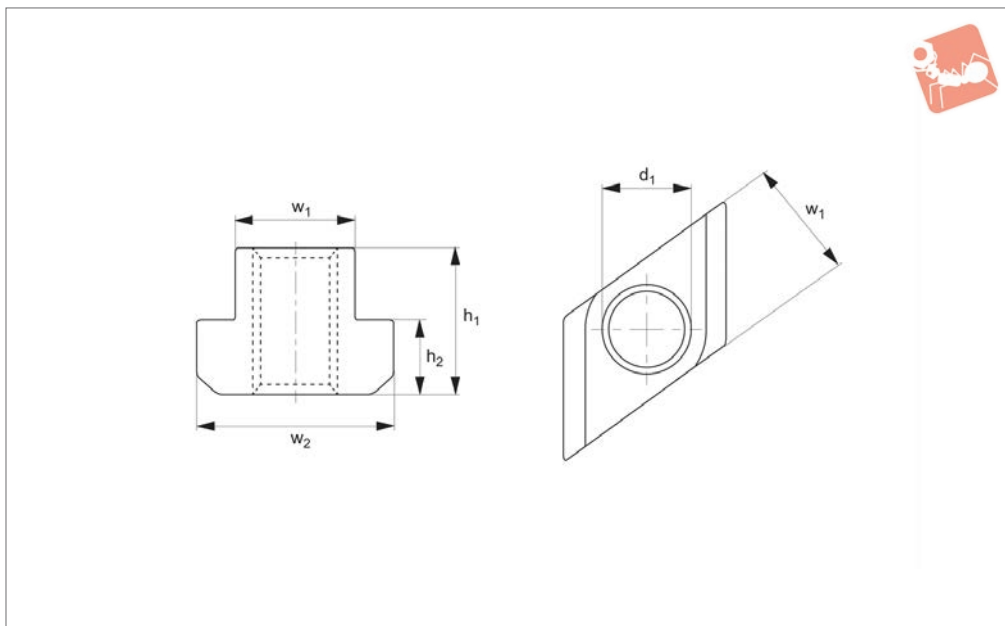
#### Material

Steel, heat treated.  
Tensile strength class 10.

#### Technical Notes

The extended length of the T-nut protects  
T-slots from damage.

Order No.	d <sub>1</sub> x T-Slot	w <sub>1</sub>	w <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	Weight g
24100.W0060	M 5x6	5.7	10	8	4	20	8
24100.W0080	M 6x8	7.7	13	10	6	26	14
24100.W0100	M 8x10	9.7	15	12	6	30	30
24100.W0120	M10x12	11.7	18	14	7	36	49
24100.W0140	M12x14	13.7	22	16	8	44	82
24100.W0160	M14x16	15.7	25	18	9	50	120
24100.W0180	M16x18	17.7	28	20	10	56	170
24100.W0200	M18x20	19.7	32	24	12	64	260
24100.W0220	M20x22	21.7	35	28	14	70	360
24100.W0280	M24x28	27.7	44	36	18	88	730
24100.W0360	M30x36	35.6	54	44	22	108	1390



## 24120

T-NUTS & T-BOLTS

### Material

Steel, heat-treated.

### Technical Notes

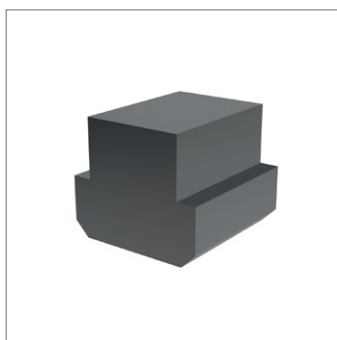
Can be fitted into T-slots from above.

### Tips

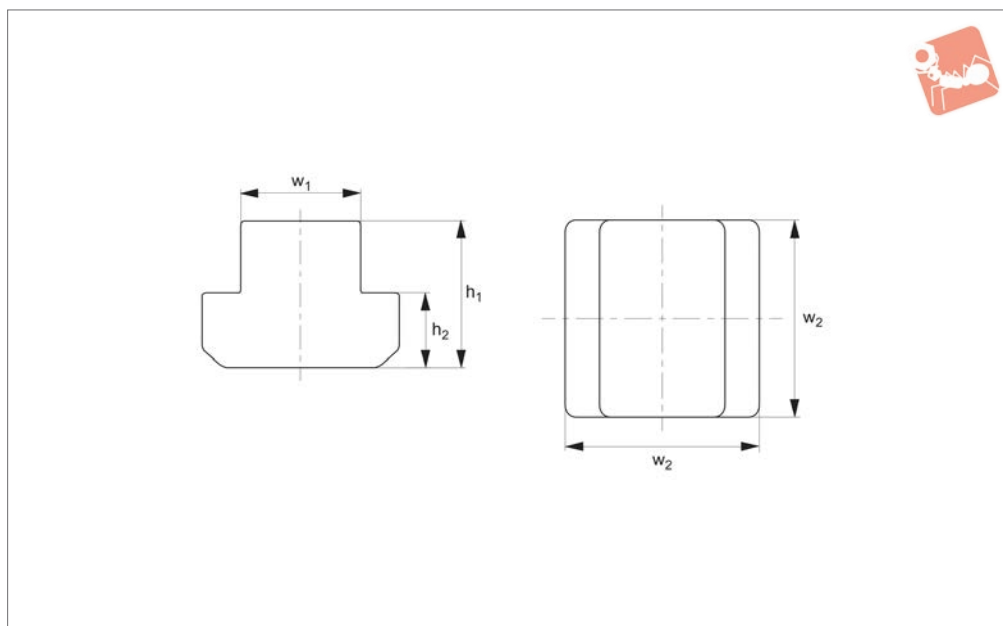
Very useful on long T-slots or where work-piece layout prohibits the introduction of bolts or nuts from the end of the T-slot.

Keep slots clean to ensure accurate fit.

Order No.	d <sub>1</sub> x T-Slot	Strength class	w <sub>1</sub>	w <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	Weight g
24120.W0060	M 5x6	10	5.7	10	8	4	2
24120.W0080	M 6x8	10	7.6	13	10	6	5
24120.W0100	M 8x10	10	9.6	15	12	6	9
24120.W0120	M10x12	8	11.7	18	14	7	14
24120.W0140	M10x14	8	13.7	22	16	8	23
24120.W0160	M14x16	6	15.7	25	18	9	33
24120.W0181	M16x18	6	17.7	28	20	10	46
24120.W0201	M18x20	6	19.7	32	24	12	69
24120.W0221	M20x22	6	21.7	35	28	14	98
24120.W0281	M24x28	6	27.7	44	36	18	213
24120.W0360	M30x36	6	35.6	54	44	22	430
24120.W0420	M36x42	6	41.6	65	52	26	690



24160



**Material**

Carbon steel, 0,35 - 0,45%C.

**Technical Notes**

DIN 508.

After machining thread, heat treat to

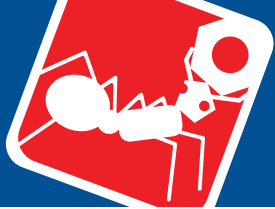
tensile strength class 10. Heat to 880°C for 45 minutes, quench in oil at 75°C and temper at 550°C for two hours.

Please note T-nuts are square, length and width are both equal to dimension  $w_2$ .

**Tips**

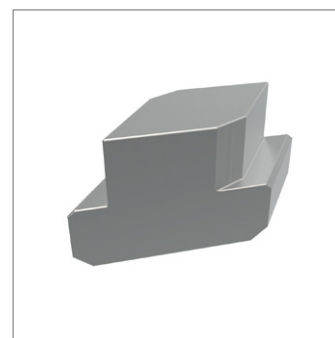
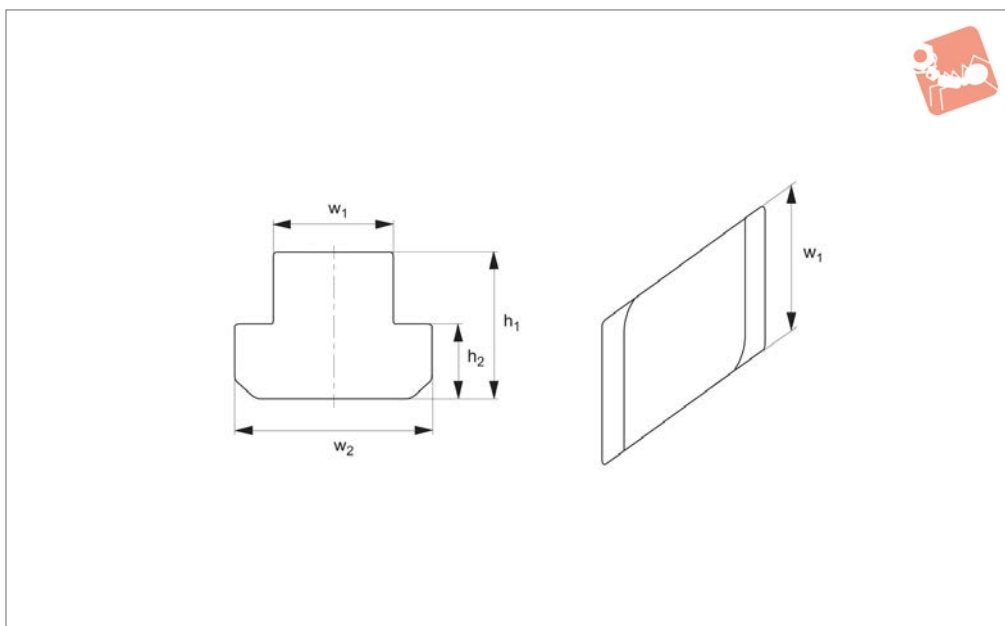
Useful for machining unusual thread sizes or imperial threads.

Order No.	T-slot size	$w_1$	$w_2$	$h_1$	$h_2$	Weight g
24160.W0060	6	5.7	10	8	4	4
24160.W0080	8	7.7	13	10	6	10
24160.W0100	10	9.7	15	12	6	16
24160.W0120	12	11.7	18	14	7	27
24160.W0140	14	13.7	22	16	8	50
24160.W0160	16	15.7	25	18	9	70
24160.W0180	18	17.7	28	20	10	95
24160.W0200	20	19.7	32	24	12	150
24160.W0220	22	21.7	35	28	14	210
24160.W0240	24	23.7	40	32	16	300
24160.W0280	28	27.7	44	36	18	430
24160.W0320	32	31.7	50	40	20	630
24160.W0360	36	35.6	54	44	22	800
24160.W0420	42	41.6	65	52	26	1400
24160.W0480	48	47.6	75	60	30	2100
24160.W0540	54	53.6	85	70	34	3150



# Rhombus T-Nuts semi-finished

## T-Nuts & T-Bolts



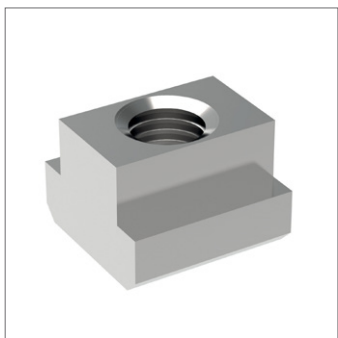
**24190**

T-NUTS & T-BOLTS

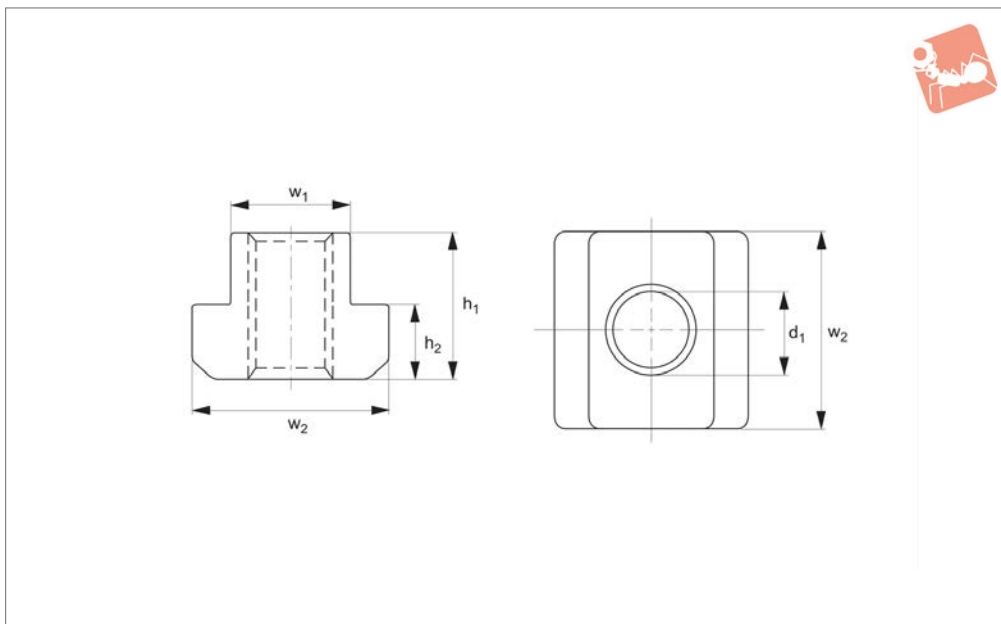
### Material

Steel, heat-treated, bright.

Order No.	T-slot size	w <sub>1</sub>	w <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	Weight g
24190.W0561	6	5.7	10	8	4	3
24190.W0581	8	7.6	13	10	6	7
24190.W0601	10	9.6	15	12	6	13
24190.W0621	12	11.6	18	14	7	21
24190.W0641	14	13.6	22	16	8	35
24190.W0661	16	15.6	25	18	9	52
24190.W0681	18	17.6	28	20	10	73
24190.W0701	20	19.6	32	24	12	110
24190.W0721	22	21.6	35	28	14	158
24190.W0781	28	27.6	44	36	18	324
24190.W0861	36	35.5	54	44	22	635



**24020**



**Material**

Stainless steel (AISI 304, 1.4301).

Please note T-nuts are square, length and width are both equal to dimension  $w_2$ .

**Technical Notes**

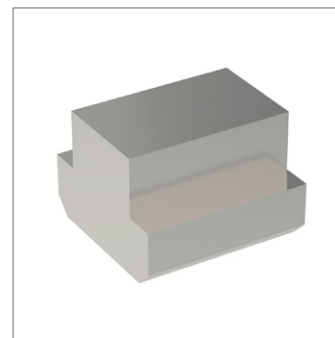
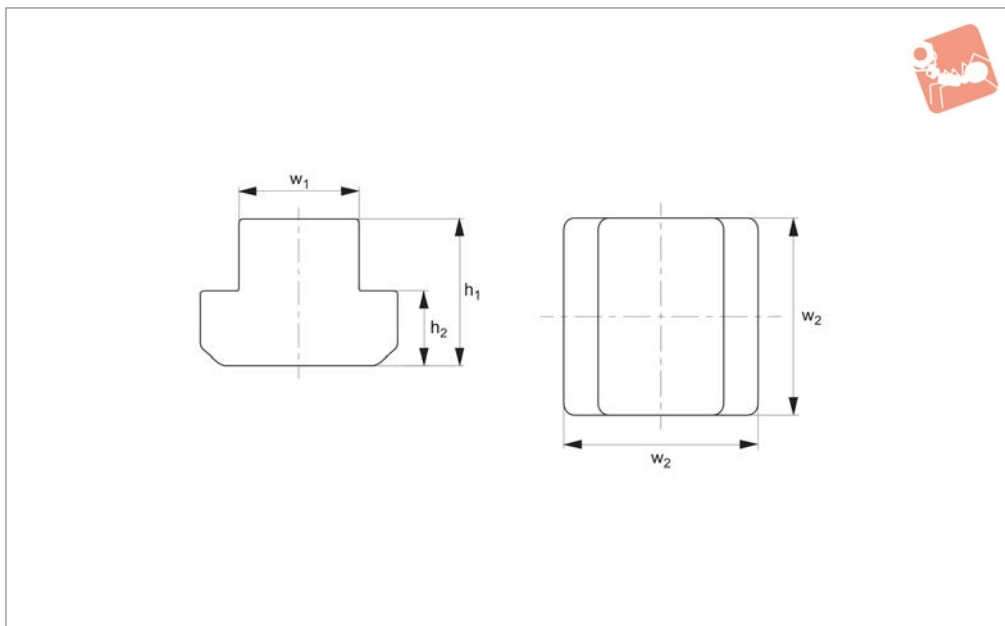
T-nuts to DIN 508.

Order No.	$d_1$ x T-Slot	$w_1$	$w_2$	$h_1$	$h_2$	Weight g
24020.W0081	M 6 x 8	7.6	13	10	6	8
24020.W0101	M 8 x 10	9.6	15	12	6	13
24020.W0121	M10 x 12	11.6	18	14	7	20
24020.W0141	M12 x 14	13.6	22	16	8	34
24020.W0161	M14 x 16	15.6	25	18	9	49
24020.W0181	M16 x 18	17.6	28	20	10	68



# T-Nuts - Semi Finished stainless steel

## T-Nuts & T-Bolts



### 24180

T-NUTS & T-BOLTS

#### Material

Stainless steel (AISI 304, 1.4301).

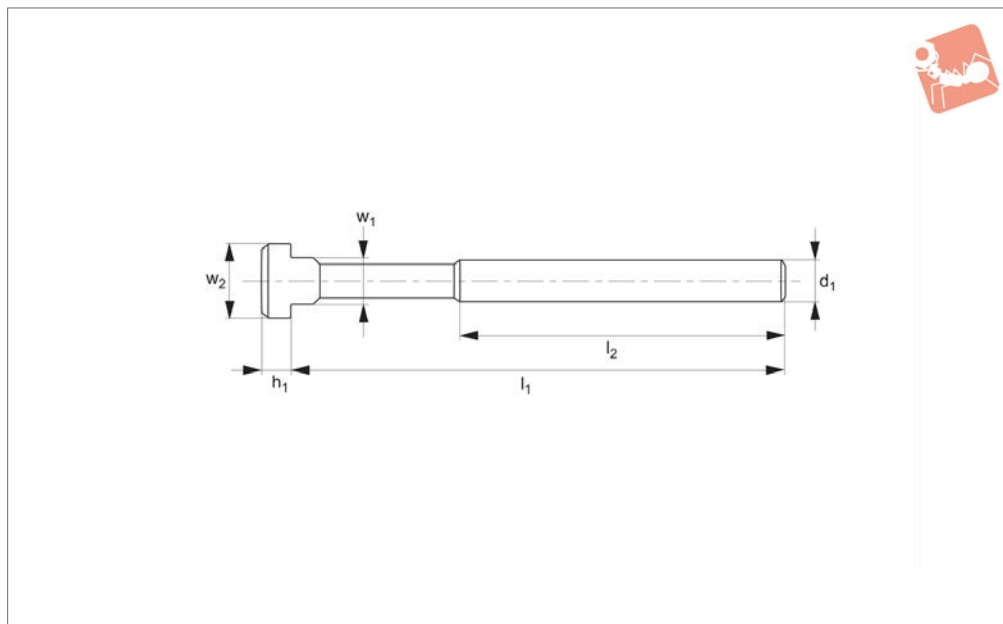
#### Technical Notes

Please note T-nuts are square, length and width are both equal to  $w_2$ .

Order No.	T-slot size	$w_1$	$w_2$	$h_1$	$h_2$	Weight g
24180.W0080	8	7.6	13	10	6	10
24180.W0100	10	9.6	15	12	6	17
24180.W0120	12	11.6	18	14	7	27
24180.W0124	14	13.6	22	16	8	46
24180.W0160	16	15.6	25	18	9	68
24180.W0180	18	17.6	28	20	10	95



## 21000



### Material

Forged steel, rolled thread.  
Milled T-slot flat faces.

Sizes M 6-M12 strength class 10.9.  
Sizes M14-M42 strength class 8.8.

sent by  $w_2$ .

### Technical Notes

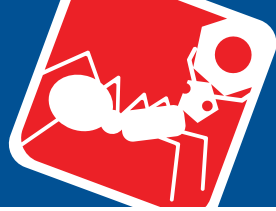
Produced to DIN787.

### Tips

The T-nut element of all T-slot bolts are square, the dimension of which is repre-

Order No.	$d_1 \times \text{T-Slot} \times l_1$	$l_2$	$w_1$	$w_2$	$h_1$	Weight g
21000.W0061	M 6x6x25	15	5.7	10	4	9
21000.W0062	M 6x6x40	28	5.7	10	4	12
21000.W0081	M 8x8x32	22	7.7	13	6	20
21000.W0082	M 8x8x50	35	7.7	13	6	25
21000.W0083	M 8x8x80	50	7.7	13	6	30
21000.W0101	M10x10x40	30	9.7	15	6	30
21000.W0102	M10x10x63	45	9.7	15	6	50
21000.W0103	M10x10x100	60	9.7	15	6	70
21000.W0104	M10x10x80	50	9.7	15	6	60
21000.W0121	M12x12x50	33	11.7	18	7	60
21000.W0122	M12x12x63	40	11.7	18	7	65
21000.W0123	M12x12x80	55	11.7	18	7	75
21000.W0124	M12x12x125	75	11.7	18	7	110
21000.W0126	M12x12x100	65	11.7	18	7	90
21000.W0127	M12x12x160	100	11.7	18	7	135
21000.W0125	M12x12x200	120	11.7	18	7	160
21000.W0141	M12x14x50	33	13.7	22	8	70
21000.W0142	M12x14x63	45	13.7	22	8	80
21000.W0143	M12x14x80	55	13.7	22	8	100
21000.W0144	M12x14x125	75	13.7	22	8	120
21000.W0145	M12x14x200	120	13.7	22	8	180
21000.W0146	M12x14x100	65	13.7	22	8	110
21000.W0147	M12x14x160	100	13.7	22	8	150
21000.W0159	M14x16x80	55	15.7	25	9	130
21000.W0160	M14x16x125	75	15.7	25	9	180
21000.W0161	M14x16x63	45	15.7	25	9	115
21000.W0162	M14x16x100	65	15.7	25	9	150
21000.W0163	M14x16x160	100	15.7	25	9	220
21000.W0164	M14x16x250	150	15.7	25	9	300
21000.W0165	M16x16x63	45	15.7	25	9	140
21000.W0166	M16x16x80	55	15.7	25	9	160
21000.W0167	M16x16x100	65	15.7	25	9	180





# T-Slot Bolts

strength class 8,8/10,9

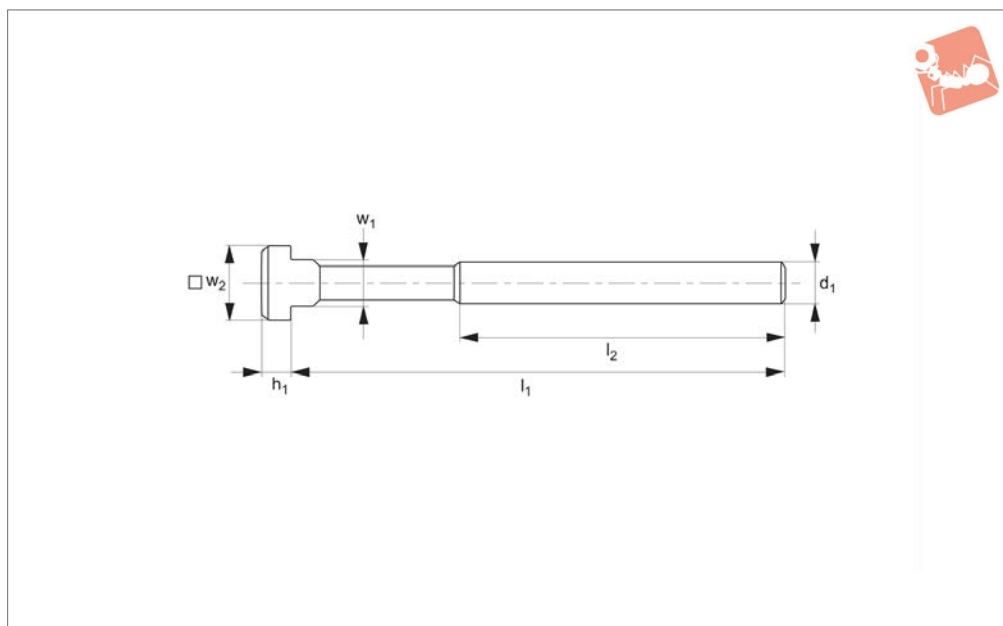


# T-Nuts & T-Bolts

Order No.	d <sub>1</sub> x T-Slot x l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	w <sub>2</sub>	h <sub>1</sub>	Weight g
21000.W0168	M16x16x160	100	15.7	25	9	270
21000.W0169	M16x16x200	125	15.7	25	9	315
21000.W0170	M16x16x250	150	15.7	25	9	380
21000.W0171	M16x16x125	85	15.7	25	9	225
21000.W0181	M16x18x63	45	17.7	28	10	160
21000.W0182	M16x18x80	55	17.7	28	10	185
21000.W0183	M16x18x100	65	17.7	28	10	203
21000.W0187	M16x18x125	85	17.7	28	10	245
21000.W0184	M16x18x160	100	17.7	28	10	280
21000.W0185	M16x18x200	125	17.7	28	10	330
21000.W0186	M16x18x250	150	17.7	28	10	430
21000.W0201	M20x20x80	55	19.7	32	12	290
21000.W0202	M20x20x100	65	19.7	32	12	340
21000.W0203	M20x20x125	85	19.7	32	12	390
21000.W0204	M20x20x160	110	19.7	32	12	470
21000.W0205	M20x20x200	125	19.7	32	12	550
21000.W0206	M20x20x250	150	19.7	32	12	670
21000.W0207	M20x20x315	190	19.7	32	12	800
21000.W0221	M20x22x80	55	21.7	35	14	330
21000.W0222	M20x22x100	65	21.7	35	14	370
21000.W0223	M20x22x125	85	21.7	35	14	428
21000.W0224	M20x22x160	110	21.7	35	14	500
21000.W0225	M20x22x200	125	21.7	35	14	570
21000.W0226	M20x22x250	150	21.7	35	14	680
21000.W0227	M20x22x315	190	21.7	35	14	820
21000.W0241	M24x24x100	70	23.7	40	16	540
21000.W0242	M24x24x125	85	23.7	40	16	600
21000.W0243	M24x24x160	110	23.7	40	16	770
21000.W0244	M24x24x200	125	23.7	40	16	900
21000.W0245	M24x24x250	150	23.7	40	16	960
21000.W0246	M24x24x315	190	23.7	40	16	1270
21000.W0247	M24x24x400	240	23.7	40	16	1410
21000.W0281	M24x28x100	70	27.7	44	18	650
21000.W0282	M24x28x125	85	27.7	44	18	720
21000.W0283	M24x28x160	110	27.7	44	18	800
21000.W0284	M24x28x200	125	27.7	44	18	950
21000.W0285	M24x28x250	150	27.7	44	18	1120
21000.W0286	M24x28x315	190	27.7	44	18	1350
21000.W0287	M24x28x400	240	27.7	44	18	1490
21000.W0288	M27x32x160	100	31.6	50	20	1168
21000.W0289	M27x32x200	135	31.6	50	20	1245
21000.W0290	M27x32x315	200	31.6	50	20	1828
21000.W0361	M30x36x125	80	35.6	54	22	1250
21000.W0362	M30x36x160	110	35.6	54	22	1440
21000.W0363	M30x36x200	135	35.6	54	22	1630
21000.W0364	M30x36x250	150	35.6	54	22	1920
21000.W0365	M30x36x315	200	35.6	54	22	2100
21000.W0366	M30x36x500	300	35.6	54	22	3300
21000.W0421	M36x42x160	100	41.6	65	26	2200
21000.W0422	M36x42x250	175	41.6	65	26	2820
21000.W0423	M36x42x400	250	41.6	65	26	3930
21000.W0424	M36x42x600	340	41.6	65	26	5480
21000.W0481	M42x48x160	100	47.6	75	30	3400
21000.W0482	M42x48x250	175	47.6	75	30	4300
21000.W0483	M42x48x400	250	47.6	75	30	5800



## 21050



### Material

Forged steel, rolled threads.  
T-slot guide faces milled.  
Strength class 12.9 punched into head.

### Tips

For use where higher clamping forces are required. The T-nut element of all T-slot bolts are square, the dimension of which is

represented by  $w_2$ .

Order No.	$d_1 \times \text{slot} \times l_1$	$l_2$	$w_1$	$w_2$	$h_1$	Weight g
21050.W0101	M10x10x40	30	9.7	15	6	30
21050.W0102	M10x10x50	35	9.7	15	6	40
21050.W0103	M10x10x80	50	9.7	15	6	60
21050.W0104	M10x10x100	60	9.7	15	6	70
21050.W0121	M12x12x50	35	11.7	18	7	60
21050.W0126	M12x12x63	40	11.7	18	7	65
21050.W0122	M12x12x80	55	11.7	18	7	75
21050.W0127	M12x12x100	65	11.7	18	7	90
21050.W0123	M12x12x125	75	11.7	18	7	110
21050.W0128	M12x14x160	100	11.7	18	7	135
21050.W0124	M12x12x200	120	11.7	18	7	160
21050.W0141	M12x14x50	35	13.7	22	8	70
21050.W0146	M12x14x63	45	13.7	22	8	80
21050.W0142	M12x14x80	55	13.7	22	8	100
21050.W0147	M12x14x100	65	13.7	22	8	110
21050.W0143	M12x14x125	75	13.7	22	8	120
21050.W0148	M12x14x160	100	13.7	22	8	150
21050.W0144	M12x14x200	120	13.7	22	8	180
21050.W0161	M16x16x63	45	15.7	25	9	140
21050.W0165	M16x16x80	55	15.7	25	9	160
21050.W0162	M16x16x100	65	15.7	25	9	180
21050.W0166	M16x16x125	85	15.7	25	9	225
21050.W0163	M16x16x160	100	15.7	25	9	270
21050.W0167	M16x16x200	125	15.7	25	9	315
21050.W0164	M16x16x250	150	15.7	25	9	380
21050.W0181	M16x18x63	45	17.7	28	10	160
21050.W0186	M16x18x80	55	17.7	28	10	185
21050.W0182	M16x18x100	65	17.7	28	10	203
21050.W0187	M16x18x125	85	17.7	28	10	230
21050.W0183	M16x18x160	100	17.7	28	10	280
21050.W0188	M16x18x200	125	17.7	28	10	330
21050.W0184	M16x18x250	150	17.7	28	10	430
21050.W0201	M20x20x80	55	19.7	32	12	290
21050.W0202	M20x20x125	85	19.7	32	12	390



# T-Slot Bolts

extra strength - class 12,9

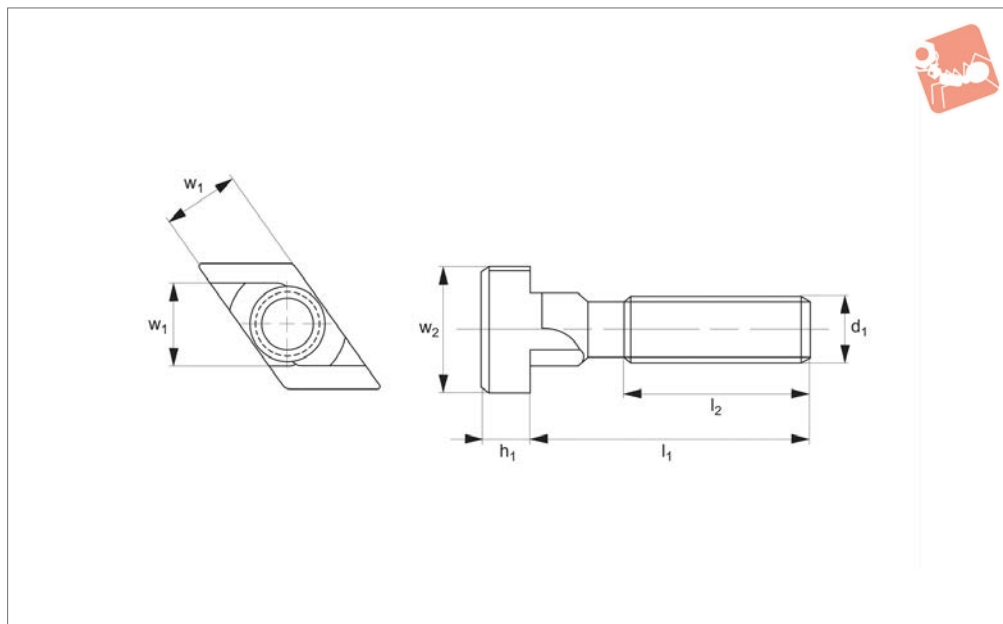
# T-Nuts & T-Bolts



Order No.	d <sub>1</sub> x slot x l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	w <sub>2</sub>	h <sub>1</sub>	Weight g
21050.W0205	M20x20x160	110	19.7	32	12	470
21050.W0203	M20x20x200	125	19.7	32	12	550
21050.W0206	M20x20x250	150	19.7	32	12	670
21050.W0204	M20x20x315	190	19.7	32	12	800
21050.W0221	M20x22x80	55	21.7	35	14	330
21050.W0222	M20x22x125	85	21.7	35	14	428
21050.W0225	M20x22x160	110	21.7	35	14	500
21050.W0223	M20x22x200	125	21.7	35	14	570
21050.W0226	M20x22x250	150	21.7	35	14	680
21050.W0224	M20x22x315	190	21.7	35	14	820
21050.W0241	M24x24x100	70	23.7	40	16	540
21050.W0242	M24x24x160	110	23.7	40	16	770
21050.W0245	M24x24x200	125	23.7	40	16	900
21050.W0243	M24x24x250	150	23.7	40	16	960
21050.W0244	M24x24x400	240	23.7	40	16	1410
21050.W0281	M24x28x100	70	27.7	44	18	650
21050.W0282	M24x28x160	110	27.7	44	18	800
21050.W0285	M24x28x200	125	27.7	44	18	950
21050.W0283	M24x28x250	150	27.7	44	18	1120
21050.W0284	M24x28x400	240	27.7	44	18	1490
21050.W0361	M30x36x160	110	35.6	54	22	1950
21050.W0362	M30x36x200	135	35.6	54	22	2230
21050.W0363	M30x36x250	150	35.6	54	22	2555
21050.W0364	M30x36x315	200	35.6	54	22	2950



## 21060



### Material

Forged steel, rolled thread, heat-treated.

### Technical Notes

Tensile strength 8,8.

### Tips

This unique T-slot bolt combines the integral strength of a one piece T-bolt, with the functionality of a rhombus type nut to

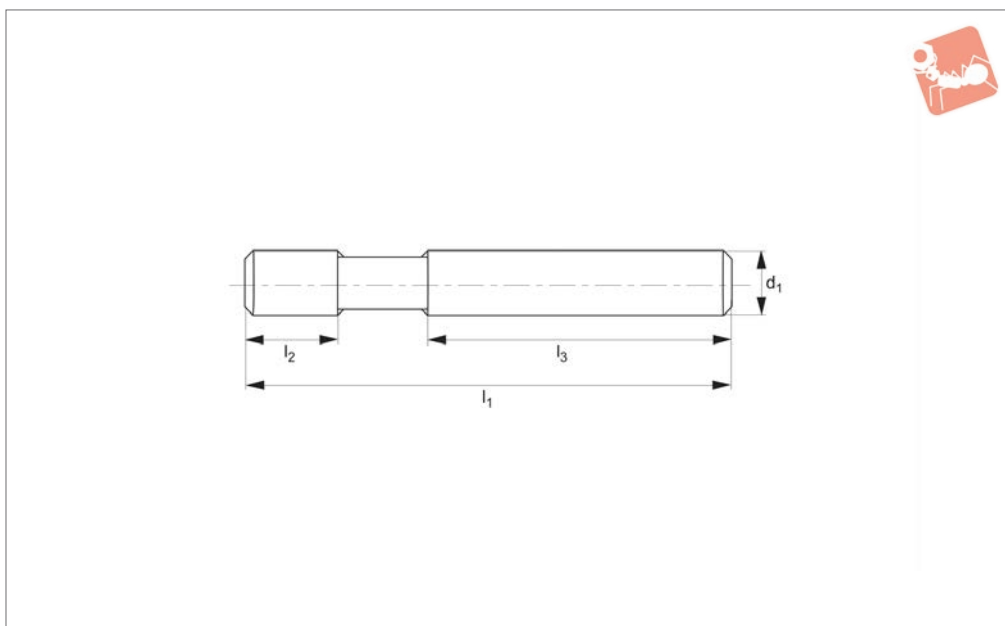
provide access to T-slots where workpiece layout prohibits the introduction of standard T-slot bolts no. 21000.

Order No.	$d_1 \times \text{T-Slot} \times l_1$	$l_2$	$w_1$	$w_2$	$h_1$	Weight g
21060.W0141	M12x14x50	35	13.7	22	8	70
21060.W0142	M12x14x80	55	13.7	22	8	100
21060.W0143	M12x14x125	75	13.7	22	8	120
21060.W0181	M16x18x63	45	17.7	28	10	160
21060.W0182	M16x18x100	65	17.7	28	10	220
21060.W0183	M16x18x160	100	17.7	28	10	280
21060.W0221	M20x22x80	55	21.7	35	14	330
21060.W0223	M20x22x125	85	21.7	35	14	430
21060.W0225	M20x22x200	120	21.7	35	14	570
21060.W0282	M24x28x125	85	27.7	44	18	770
21060.W0285	M24x28x250	150	27.7	44	18	1120



# Studs

strength class 8,8/10,9



**21100**

T-NUTS & T-BOLTS

**Material**

Forged steel, rolled thread, heat-treated.

M 6-M12 - tensile strength class 10,9.  
M14-M42 tensile strength class 8,8.

and 25000 for appropriate T-nuts, fixture nuts, collar nuts and washers.

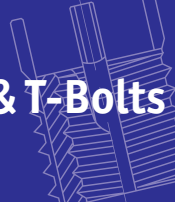
**Technical Notes**

Produced to DIN 6379.

**Tips**

Please refer to nos. 24000, 24300, 24400

Order No.	$d_1 \times l_1$	$l_2$	$l_3$	Weight g
21100.W0061	M 6x32	9	16	8
21100.W0062	M 6x40	9	20	9
21100.W0063	M 6x50	9	30	11
21100.W0064	M 6x63	9	40	14
21100.W0065	M 6x80	9	50	18
21100.W0081	M 8x40	11	20	10
21100.W0082	M 8x63	11	40	20
21100.W0083	M 8x80	11	50	25
21100.W0084	M 8x100	11	63	30
21100.W0085	M 8x160	11	100	45
21100.W0086	M 8x125	11	75	36
21100.W0101	M10x50	13	25	25
21100.W0102	M10x80	13	50	40
21100.W0103	M10x100	13	75	50
21100.W0104	M10x125	13	75	62
21100.W0105	M10x160	13	100	80
21100.W0106	M10x200	13	125	100
21100.W0121	M12x50	15	25	37
21100.W0122	M12x63	15	32	45
21100.W0123	M12x80	15	50	55
21100.W0124	M12x100	15	63	70
21100.W0125	M12x125	15	75	90
21100.W0126	M12x160	15	100	113
21100.W0127	M12x200	15	125	140
21100.W0141	M14x63	17	32	80
21100.W0142	M14x100	17	63	90
21100.W0143	M14x160	17	100	150
21100.W0144	M14x200	17	125	195
21100.W0145	M14x250	17	160	240
21100.W0146	M14x80	17	50	85
21100.W0147	M14x125	17	75	120
21100.W0161	M16x63	19	32	85
21100.W0162	M16x80	19	50	105
21100.W0163	M16x100	19	63	130



Order No.	$d_1 \times l_1$	$l_2$	$l_3$	Weight g
21100.W0164	M16x125	19	75	160
21100.W0165	M16x160	19	100	218
21100.W0166	M16x200	19	125	280
21100.W0167	M16x250	19	160	325
21100.W0168	M16x315	19	180	425
21100.W0169	M16x500	19	315	650
21100.W0181	M18x80	23	50	130
21100.W0182	M18x125	23	75	200
21100.W0183	M18x160	23	100	255
21100.W0184	M18x200	23	125	320
21100.W0185	M18x250	23	150	400
21100.W0186	M18x315	23	180	500
21100.W0201	M20x80	27	32	185
21100.W0202	M20x125	27	70	255
21100.W0203	M20x160	27	100	330
21100.W0204	M20x200	27	125	410
21100.W0205	M20x250	27	160	510
21100.W0206	M20x315	27	200	640
21100.W0207	M20x400	27	250	815
21100.W0208	M20x500	27	315	1020
21100.W0221	M22x100	31	45	270
21100.W0222	M22x160	31	100	430
21100.W0223	M22x200	31	125	500
21100.W0224	M22x250	31	160	670
21100.W0225	M22x315	31	180	790
21100.W0226	M22x400	31	250	1070
21100.W0241	M24x100	35	45	290
21100.W0242	M24x125	35	70	380
21100.W0243	M24x160	35	100	470
21100.W0244	M24x200	35	125	580
21100.W0245	M24x250	35	160	730
21100.W0246	M24x315	35	200	920
21100.W0247	M24x400	35	250	1160
21100.W0248	M24x500	35	315	1460
21100.W0249	M24x630	35	315	1850
21100.W0271	M27x125	39	56	485
21100.W0272	M27x200	39	125	770
21100.W0273	M27x315	39	200	1110
21100.W0274	M27x400	39	250	1535
21100.W0275	M27x500	39	315	1930
21100.W0301	M30x125	43	56	590
21100.W0302	M30x200	43	125	950
21100.W0303	M30x315	43	200	1490
21100.W0304	M30x500	43	315	2360
21100.W0305	M30x700	43	400	3300
21100.W0306	M30x1000	43	400	4700
21100.W0361	M36x160	51	80	1100
21100.W0362	M36x200	51	125	1340
21100.W0363	M36x250	51	160	1710
21100.W0364	M36x315	51	200	2150
21100.W0365	M36x400	51	250	2700
21100.W0366	M36x500	51	315	3450
21100.W0367	M36x700	51	400	4750
21100.W0421	M42x315	59	200	2950
21100.W0422	M42x400	59	250	3750



# Studs

strength class 8,8/10,9



# T-Nuts & T-Bolts

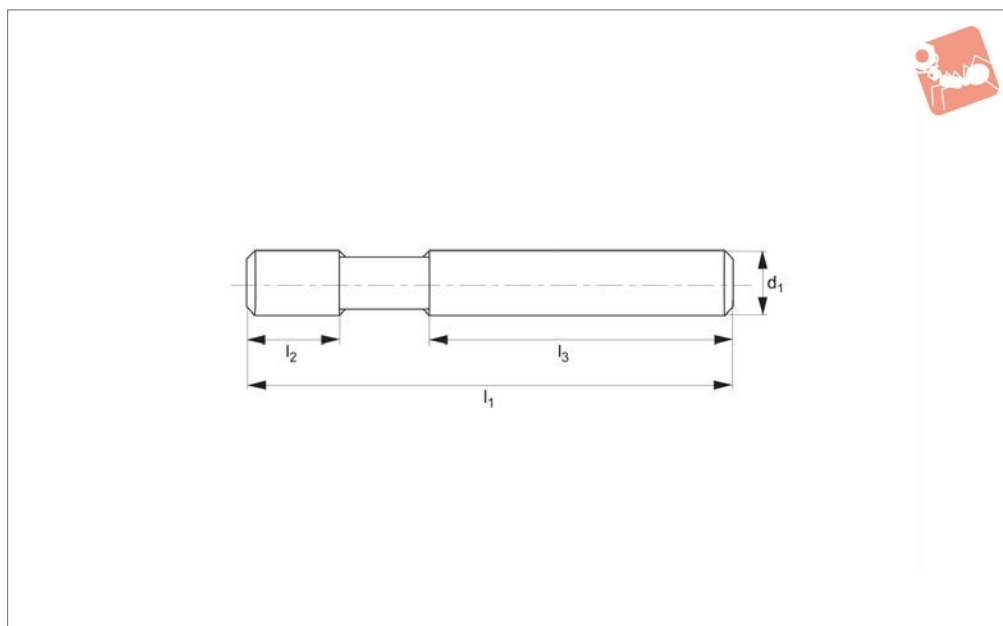
Order No.	$d_1 \times l_1$	$l_2$	$l_3$	Weight g
21100.W0423	M42x500	59	315	4690



T-NUTS & T-BOLTS



## 21120



### Material

Forged steel, rolled thread, heat treated to tensile strength 12,9.

please refer to part no. 21100.

### Tips

Please refer to Nos. 24000, 24300, 24400 and 25000 for appropriate T-nuts, fixture nuts, collar nuts and washers.

### Technical Notes

For studs of tensile strength 8,8 and 10,9

Order No.	$d_1 \times l_1$	$l_2$	$l_3$	Weight g
21120.W0123	M12x80	15	50	55
21120.W0124	M12x100	15	63	70
21120.W0125	M12x125	15	75	90
21120.W0126	M12x160	15	100	113
21120.W0162	M16 x 80	19	50	105
21120.W0163	M16x100	19	63	130
21120.W0164	M16x125	19	75	160
21120.W0165	M16x160	19	100	218
21120.W0166	M16x200	19	125	280
21120.W0167	M16x250	19	160	325
21120.W0202	M20x125	27	70	255
21120.W0203	M20x160	27	100	330
21120.W0204	M20x200	27	125	410
21120.W0205	M20x250	27	160	510
21120.W0206	M20x315	27	200	640
21120.W0208	M20x500	27	315	1020
21120.W0243	M24x160	35	100	470
21120.W0244	M24x200	35	125	580
21120.W0245	M24x250	35	160	730
21120.W0246	M24x315	35	200	920
21120.W0247	M24x400	35	250	1160
21120.W0248	M24x500	35	315	1460

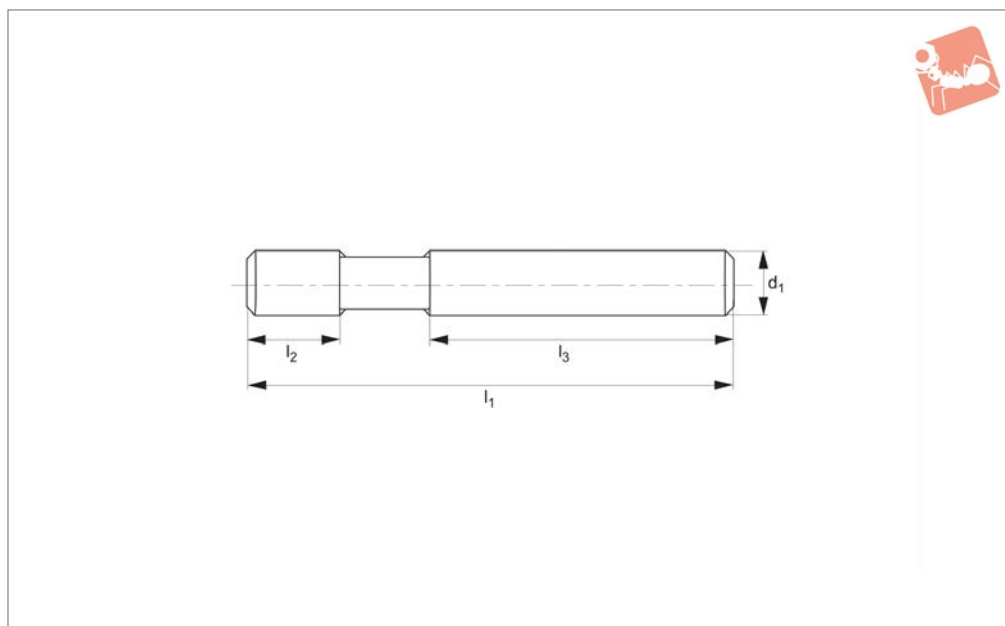




# Studs

$l_2$  longer than DIN 6379 version

# T-Nuts & T-Bolts



## 21150

T-NUTS & T-BOLTS

### Material

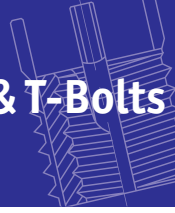
Heat treated steel, blackened.  
Strength class 10,9 for M6- M12.  
Strength class 8,8 for M16.

### Technical Notes

$l_2$  longer than DIN 6379 version, part no. 21100. Longer thread length provides added security.

Items marked \* have full length threaded (hence  $l_2$  and  $l_3$  no longer valid).

Order No.	$d_1 \times l_1$	$l_2$	$l_3$	Weight g
21150.W1202	M20x125*	-	-	305
21150.W1207	M20x160*	-	-	328
21150.W1203	M20x200	55	100	404
21150.W1204	M20x250	55	125	585
21150.W1205	M20x315	55	180	740
21150.W1208	M20x400	55	250	943
21150.W1206	M20x500	55	315	1175
21150.W1246	M24x125*	-	-	365
21150.W1242	M24x160*	-	-	467
21150.W1247	M24x200*	-	-	585
21150.W1243	M24x250*	-	-	733
21150.W1248	M24x315	70	180	1075
21150.W1244	M24x400	70	250	1366
21150.W1249	M24x500	70	315	1700
21150.W0562	M 6x50	15	30	8
21150.W0563	M 6x63	15	40	11
21150.W0564	M 6x80	15	50	14
21150.W0582	M 8x63	20	40	19
21150.W0583	M 8x100	20	63	31
21150.W0584	M 8x160	20	100	49
21150.W0602	M10x80	25	50	39
21150.W0603	M10x100	25	75	49
21150.W0604	M10x125	25	75	61
21150.W0605	M10x160	25	100	78
21150.W0606	M10x200	25	125	98
21150.W0622	M12x63*	-	-	44
21150.W0623	M12x80*	-	-	56
21150.W0624	M12x100	30	63	70
21150.W0625	M12x125	30	75	88
21150.W0626	M12x160	30	100	112
21150.W0627	M12x200	30	125	140
21150.W0662	M16x80*	-	-	103
21150.W0664	M16x125	40	63	161
21150.W0665	M16x160	40	75	207



## Studs

$l_2$  longer than DIN 6379 version



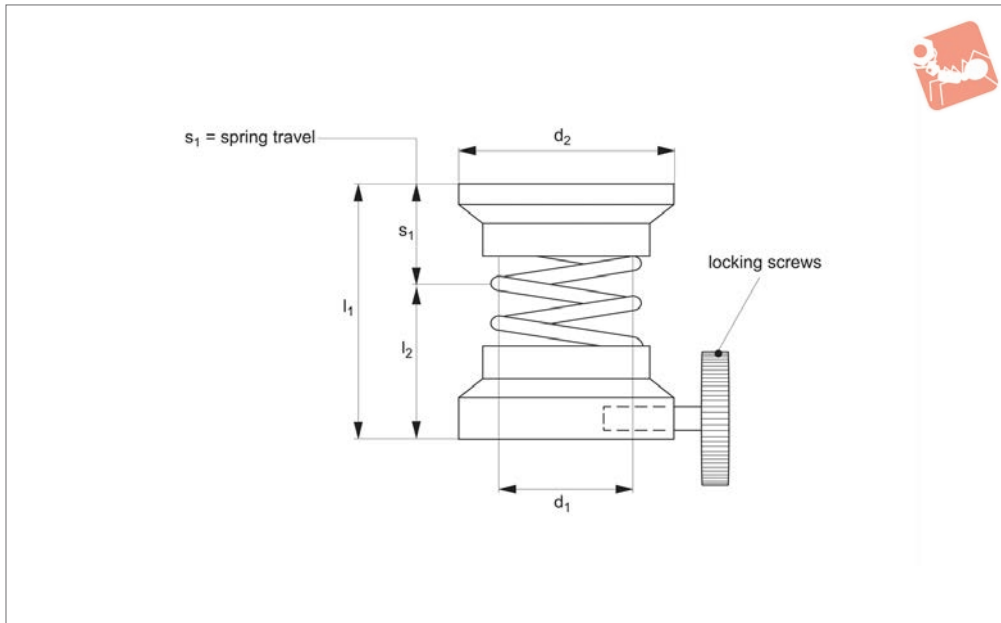
Order No.	$d_1 \times l_1$	$l_2$	$l_3$	Weight g
21150.W0666	M16x200	40	100	260
21150.W0667	M16x250	40	125	325



# Clamp Supports - Spring Type

with brass locking screw

## T-Nuts & T-Bolts



**26000**

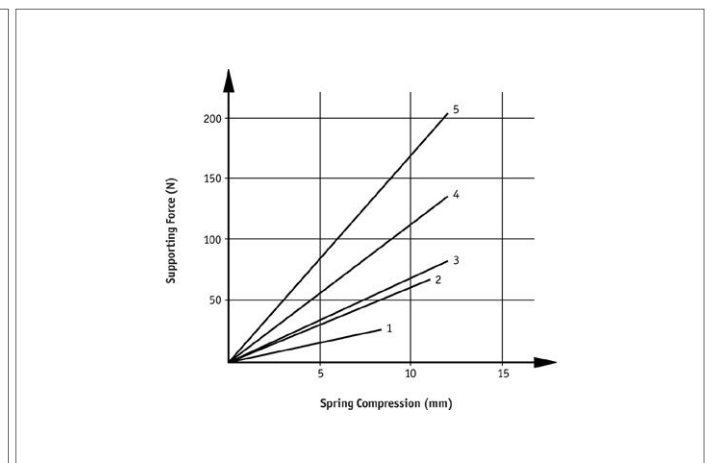
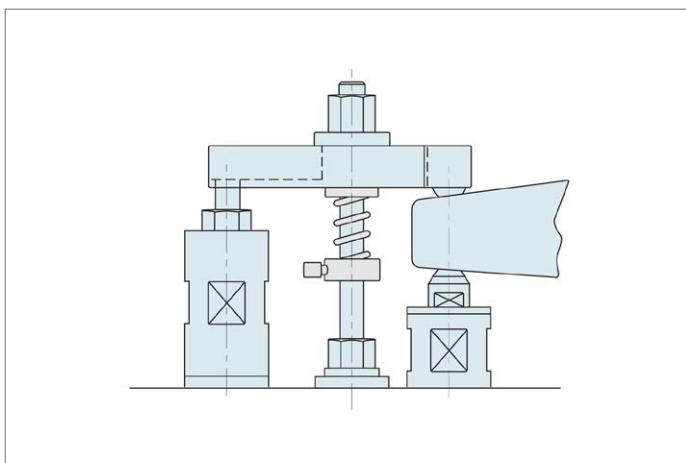
T-NUTS & T-BOLTS

### Technical Notes

With brass locking screw.

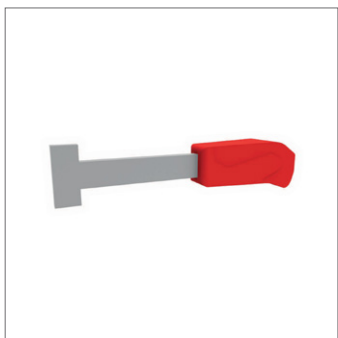
Used as clamp support to prevent the clamp falling when parts are unclamped.

Order No.	For thread	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	Spring travel s <sub>1</sub>	Weight g
26000.W0101	M 8-M10	10.5	22	30	22	8	41
26000.W0102	M12-M14	14.5	26	32	22	10	55
26000.W0103	M16-M18	18.5	32	38	26	12	89
26000.W0104	M20-M22	22.5	38	40	28	12	133
26000.W0105	M24-M27	27.5	45	44	32	12	177

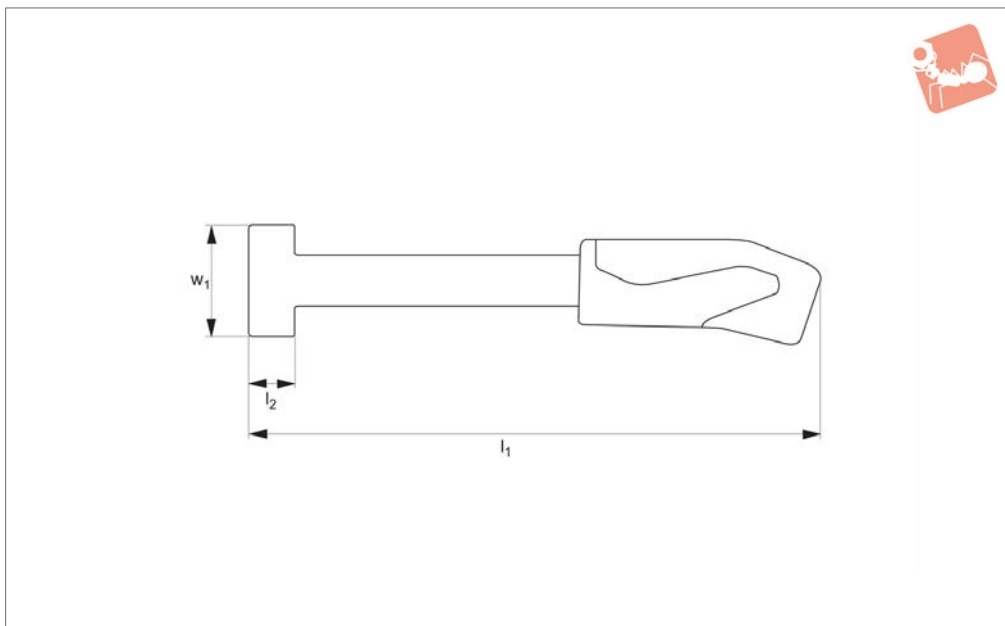




T-NUTS & T-BOLTS



26300



**Material**

Metal scraper: steel, zinc plated.  
 Handle: ergonomic grip from oil resistant

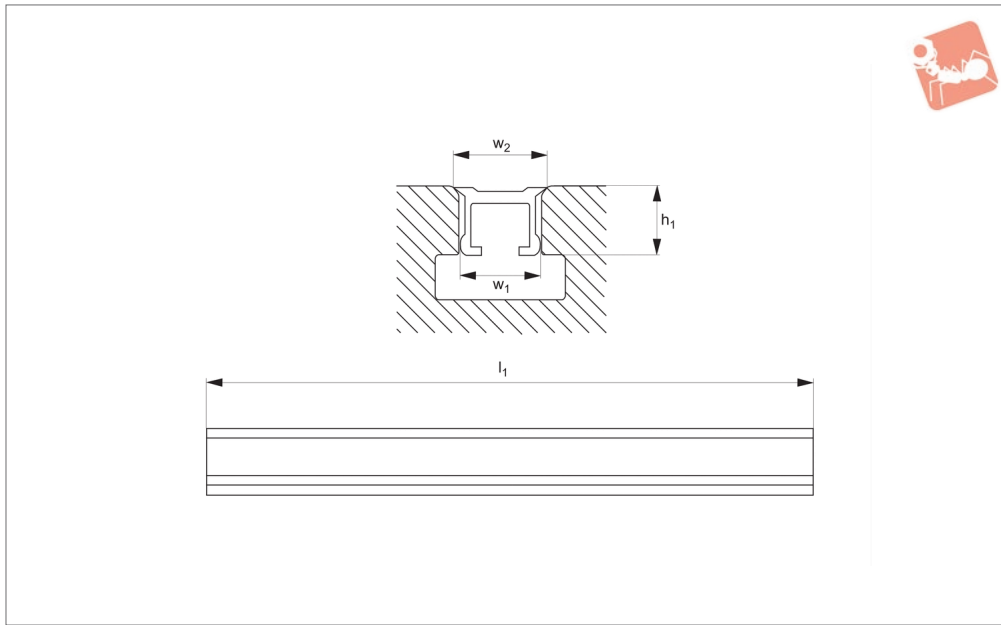
plastic.

hand grip.

**Technical Notes**

Part number 26300.W0120 does not have

Order No.	T-slot size	w <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	Weight g
26300.W0120	14-20	22.5	142	8.5	105
26300.W0132	22-32	35.0	184	14.5	170
26300.W0154	36-54	54.0	260	23.0	525



## 26500

T-NUTS & T-BOLTS

### Material

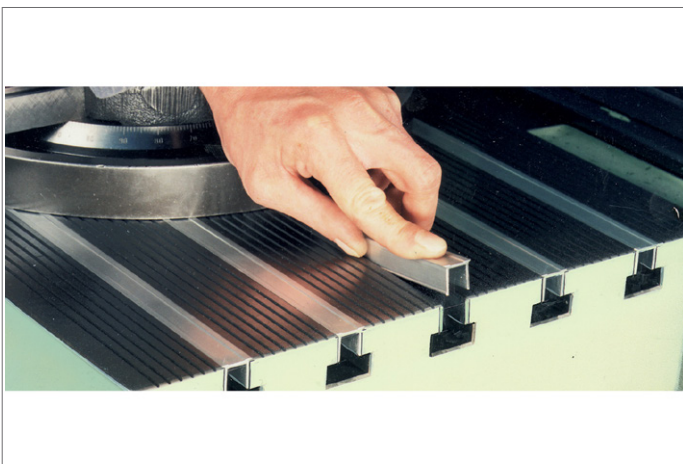
Aluminium profile.

protect T-slots from swarf and other dirt build up.

### Technical Notes

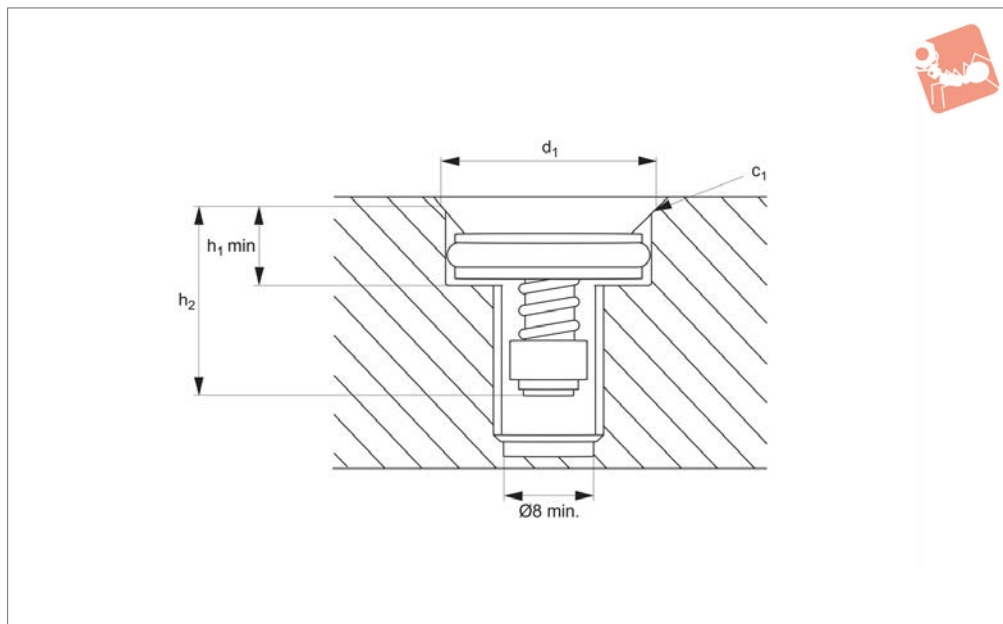
Easily sawn to length. Extremely useful to

Order No.	T-slot $w_1$	$w_2$	$h_1$	$l_1$	Weight g
26500.W0112	12	13.0	10.5	1000	88
26500.W0114	14	15.5	11.5	1000	100
26500.W0116	16	17.5	14.0	1000	120
26500.W0118	18	19.5	15.0	1000	135
26500.W0120	20	21.5	16.5	1000	150
26500.W0122	22	23.5	18.0	1000	165
26500.W0124	24	25.5	20.0	1000	170
26500.W0128	28	29.5	22.0	1000	200
26500.W0136	36	38.0	22.0	1000	220





26502



**Material**

Aluminium with rubber O-ring.

**Technical Notes**

An O-ring holds the aluminium plug in place in the bore hole. The plugs do not

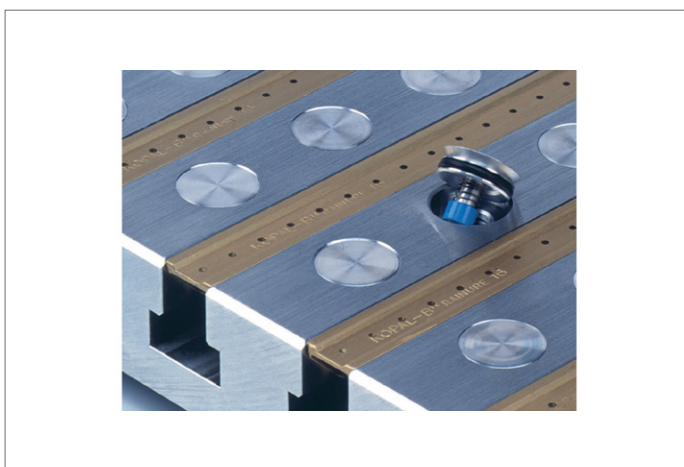
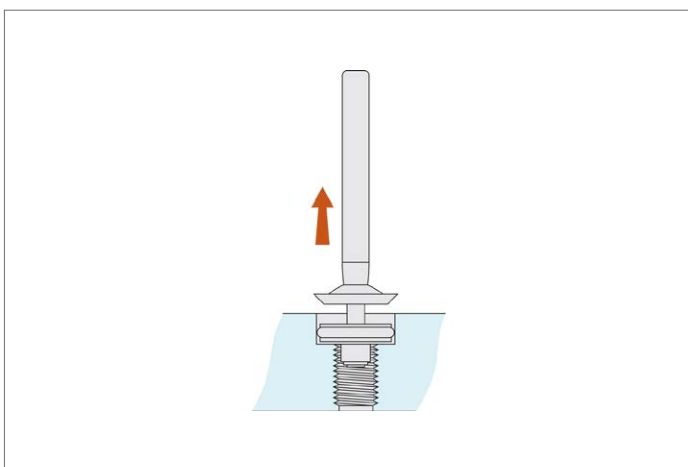
protrude above the table and so can remain installed when using clamps, vices etc.

They are easily installed and removed using the assembly tool.

**Tips**

Allows machine table areas to be kept clean of dirt, swarf and lubricant.

Order No.	For hole $d_1$	$h_1$ min.	$h_2$	Chamfer $c_1$ min.
26502.W0005	12	4.3	19.5	0,8x45°
26502.W0010	16	4.9	19.5	1,3x45°
26502.W0015	18	5.0	19.5	1,3x45°
26502.W0020	20	5.5	19.5	1,3x45°
26502.W0025	22	6.5	20.5	1,3x45°
26502.W0030	24	6.5	20.5	1,5x45°
26502.W0035	26	6.5	20.5	1,8x45°
26502.W0040	Assembly Tool	-	-	-



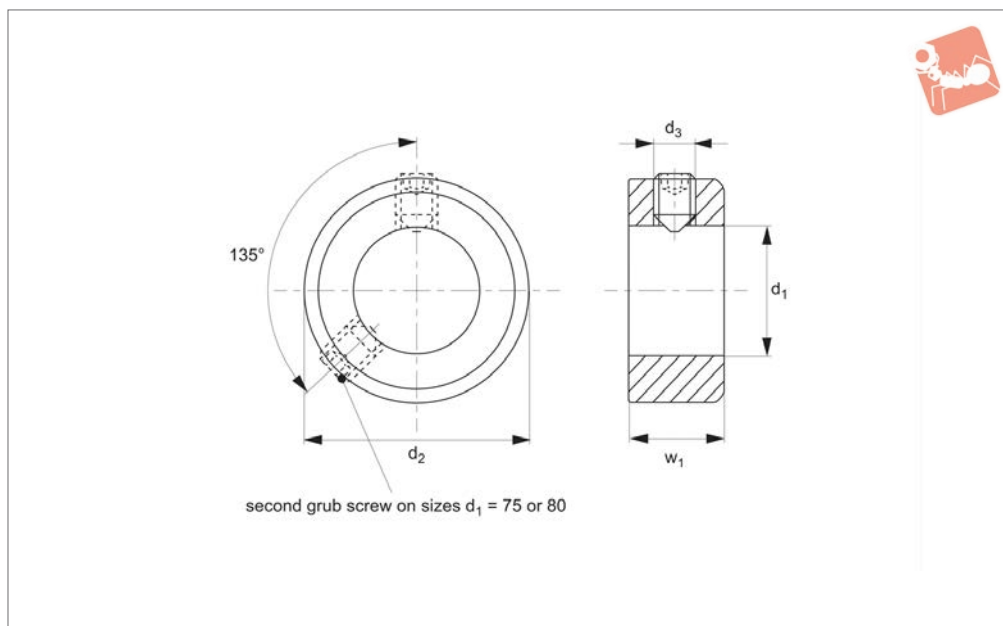


# Set Collar

steel - blackened



# Set Collars



## 38500

SET COLLARS

### Material

Turned steel, blackened.

Grub screw fitted (either slotted or internal hex). Second grub screw fitted from size  $d_1 = 75$ .

### Technical Notes

Produced to DIN 705.

Order No.	$d_1$ tol. H8	Fixing screw	$d_2$	$d_3$	$w_1$ tol. js14
38500.W0005	5	Slotted DIN 533	10	M 3x4	6
38500.W0006	6	Slotted DIN 533	10	M 3x4	6
38500.W0007	7	Slotted DIN 533	12	M 4x5	8
38500.W0008	8	Slotted DIN 533	12	M 4x5	8
38500.W0009	9	Slotted DIN 533	12	M 4x5	8
38500.W0010	10	Slotted DIN 533	12	M 4x5	8
38500.W0011	11	Slotted DIN 533	16	M 4x6	8
38500.W0012	12	Slotted DIN 533	16	M 4x6	8
38500.W0013	13	Slotted DIN 533	18	M 5x8	10
38500.W0014	14	Slotted DIN 533	18	M 5x8	10
38500.W0015	15	Slotted DIN 533	20	M 5x8	10
38500.W0016	16	Slotted DIN 533	20	M 5x8	10
38500.W0018	18	Slotted DIN 533	20	M 5x8	10
38500.W0020	20	Slotted DIN 533	20	M 5x8	10
38500.W0022	22	Slotted DIN 533	22	M 6x8	12
38500.W0024	24	Slotted DIN 533	22	M 6x8	12
38500.W0025	25	Slotted DIN 533	22	M 6x8	12
38500.W0026	26	Slotted DIN 533	22	M 6x8	12
38500.W0028	28	Slotted DIN 533	25	M 6x8	12
38500.W0030	30	Slotted DIN 533	25	M 6x8	12
38500.W0032	32	Slotted DIN 533	25	M 6x8	12
38500.W0034	34	Slotted DIN 533	25	M 6x8	12
38500.W0035	35	Slotted DIN 533	28	M 6x8	12
38500.W0036	36	Slotted DIN 533	28	M 6x8	12
38500.W0038	38	Slotted DIN 533	32	M 6x8	14
38500.W0040	40	Slotted DIN 533	32	M 6x8	14
38500.W0042	42	Slotted DIN 533	32	M 6x8	14
38500.W0045	45	Slotted DIN 533	32	M 6x8	14
38500.W0048	48	Slotted DIN 533	36	M 6x10	14
38500.W0050	50	Slotted DIN 533	36	M 6x10	14
38500.W0052	52	Slotted DIN 533	40	M 8x10	16
38500.W0055	55	Slotted DIN 533	40	M 8x10	16
38500.W0060	60	Slotted DIN 533	40	M 8x10	16
38500.W0065	65	Slotted DIN 533	40	M 8x10	16



Order No.	d <sub>1</sub> tol. H8	Fixing screw	d <sub>2</sub>	d <sub>3</sub>	w <sub>1</sub> tol. js14
38500.W0070	70	Slotted DIN 533	40	M 8x10	16
38500.W0075	75	Slotted DIN 533	40	M 8x10	16
38500.W0080	80	Slotted DIN 533	45	M 8x12	16
38500.W0205	5	Hex DIN 914	45	M 8x12	16
38500.W0206	6	Hex DIN 914	45	M 8x10	16
38500.W0207	7	Hex DIN 914	45	M 8x10	16
38500.W0208	8	Hex DIN 914	50	M 8x12	16
38500.W0209	9	Hex DIN 914	50	M 8x12	16
38500.W0210	10	Hex DIN 914	50	M 8x12	16
38500.W0211	11	Hex DIN 914	50	M 8x12	16
38500.W0212	12	Hex DIN 914	56	M 8x12	16
38500.W0213	13	Hex DIN 914	56	M 8x12	16
38500.W0214	14	Hex DIN 914	56	M 8x12	16
38500.W0215	15	Hex DIN 914	56	M 8x12	16
38500.W0216	16	Hex DIN 914	56	M 8x12	16
38500.W0218	18	Hex DIN 914	56	M 8x12	16
38500.W0220	20	Hex DIN 914	63	M10x16	18
38500.W0222	22	Hex DIN 914	63	M10x16	18
38500.W0224	24	Hex DIN 914	63	M10x16	18
38500.W0225	25	Hex DIN 914	63	M10x16	18
38500.W0226	26	Hex DIN 914	70	M10x16	18
38500.W0228	28	Hex DIN 914	70	M10x16	18
38500.W0230	30	Hex DIN 914	70	M10x16	18
38500.W0232	32	Hex DIN 914	70	M10x16	18
38500.W0234	34	Hex DIN 914	80	M10x16	18
38500.W0235	35	Hex DIN 914	80	M10x16	18
38500.W0236	36	Hex DIN 914	80	M10x16	18
38500.W0238	38	Hex DIN 914	80	M10x16	18
38500.W0240	40	Hex DIN 914	80	M10x16	18
38500.W0242	42	Hex DIN 914	80	M10x16	18
38500.W0245	45	Hex DIN 914	90	M10x16	20
38500.W0248	48	Hex DIN 914	90	M10x16	20
38500.W0250	50	Hex DIN 914	100	M10x20	20
38500.W0252	52	Hex DIN 914	100	M10x20	20
38500.W0255	55	Hex DIN 914	100	M10x20	20
38500.W0260	60	Hex DIN 914	100	M10x20	20
38500.W0265	65	Hex DIN 914	110	M12x20	22
38500.W0270	70	Hex DIN 914	110	M12x20	22
38500.W0275	75	Hex DIN 914	110	M12x20	22
38500.W0280	80	Hex DIN 914	110	M12x20	22

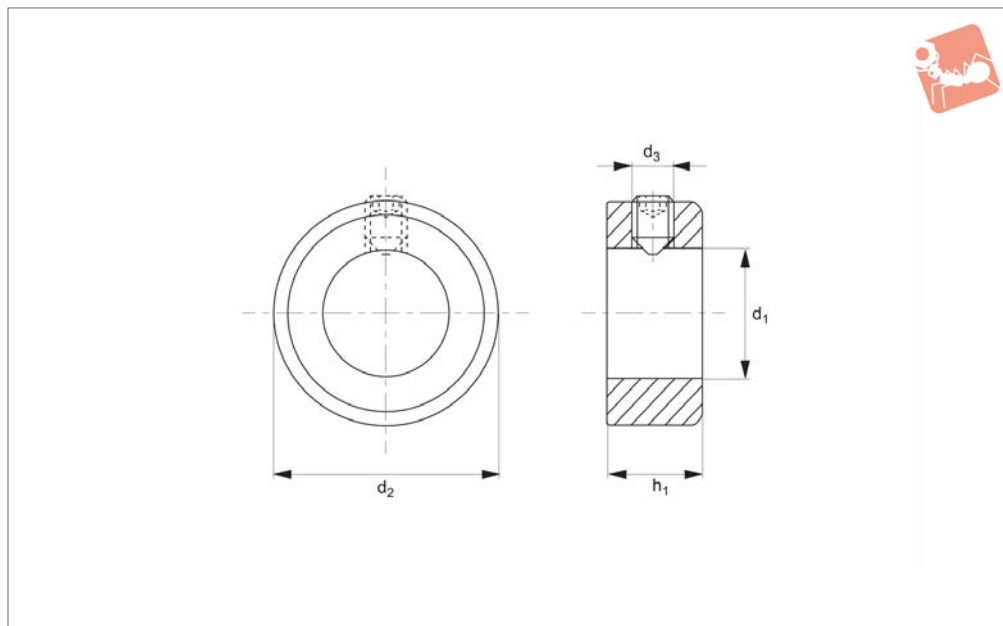




# Set Collar stainless steel



# Set Collars



## 38600

SET COLLARS

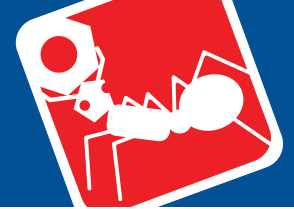
### Material

Stainless steel (AISI 303, 1.4305).

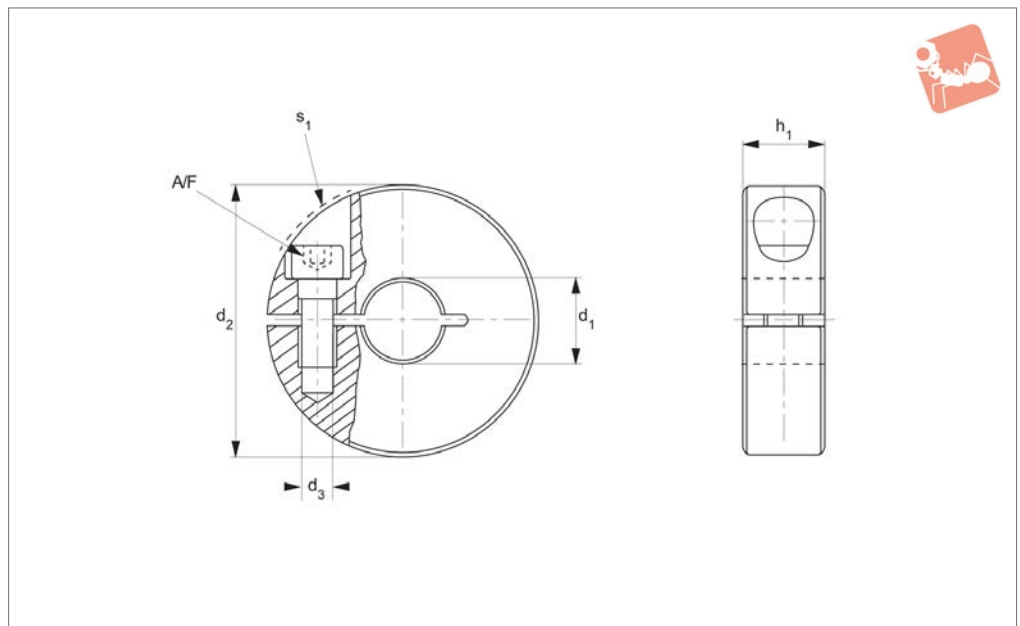
### Technical Notes

Grub/set screw fitted and is supplied with the set collar. The screw has a hex drive.

Order No.	$d_1$ tol. H8	$d_2$	$d_3$	$h_1$
38600.W0005	5	10	M 3x4	6
38600.W0006	6	12	M 4x5	8
38600.W0008	8	16	M 4x6	8
38600.W0009	9	18	M 5x8	10
38600.W0010	10	20	M 5x8	10
38600.W0011	11	20	M 5x8	10
38600.W0012	12	22	M 6x8	12
38600.W0013	13	22	M 6x8	12
38600.W0014	14	25	M 6x8	12
38600.W0015	15	25	M 6x8	12
38600.W0016	16	28	M 6x8	12
38600.W0018	18	32	M 6x8	14
38600.W0020	20	32	M 6x8	14
38600.W0022	22	36	M 6x10	14
38600.W0024	24	40	M 8x12	16
38600.W0025	25	40	M 8x10	16
38600.W0026	26	40	M 8x10	16
38600.W0028	28	45	M 8x12	16
38600.W0030	30	45	M 8x10	16
38600.W0032	32	50	M 8x12	16
38600.W0034	34	50	M 8x12	16
38600.W0035	35	56	M 8x12	16
38600.W0036	36	56	M 8x12	16
38600.W0038	38	56	M 8x12	16
38600.W0040	40	63	M10x16	18
38600.W0045	45	70	M10x16	18
38600.W0050	50	80	M10x16	18



## 38620



### Material

#### Steel type:

Steel, black, steam oxidized.

#### Stainless steel type:

Stainless steel (AISI 316, 1.4404).

### Technical Notes

Slotted set collars with strong clamping

force. Universal applicability: e.g as a fixed collar. stop. The stainless steel type is extremely resistant to corrosive environments. Also available in divided finish - see part no. 38624.

Dimension  $s_1$  indicates the max. stroke or movement of  $d_2$  during tightening of the

Order No.	Material	$d_1$ tol. H10	$d_2$	$d_3$	$h_1$	A/F	Stroke $s_1$ max.	Weight g
38620.W0006	Steel	6	20	M 3	9	3	1.2	20
38620.W0008	Steel	8	22	M 3	9	3	1.0	18
38620.W0010	Steel	10	26	M 4	11	3	1.6	33
38620.W0012	Steel	12	30	M 4	11	3	0.7	42
38620.W0014	Steel	14	32	M 4	11	3	0.7	40
38620.W0015	Steel	15	36	M 5	13	4	1.4	73
38620.W0016	Steel	16	36	M 5	13	4	1.4	66
38620.W0018	Steel	18	42	M 5	15	4	0.6	120
38620.W0020	Steel	20	42	M 5	15	4	0.6	104
38620.W0022	Steel	22	48	M 5	15	4	0.0	139
38620.W0025	Steel	25	48	M 5	15	4	0.0	130
38620.W0028	Steel	28	55	M 6	15	5	0.5	171
38620.W0030	Steel	30	55	M 6	15	5	0.5	162
38620.W0032	Steel	32	60	M 6	15	5	0.4	196
38620.W0035	Steel	35	60	M 6	15	5	0.4	180
38620.W0040	Steel	40	65	M 6	15	5	0.5	183
38620.W0106	Stainless	6	20	M 3	9	3	1.2	20
38620.W0108	Stainless	8	22	M 3	9	3	1.0	18
38620.W0110	Stainless	10	26	M 4	11	3	1.6	33
38620.W0112	Stainless	12	30	M 4	11	3	0.7	42
38620.W0114	Stainless	14	32	M 4	11	3	0.7	40
38620.W0115	Stainless	15	36	M 5	13	4	1.4	73
38620.W0116	Stainless	16	36	M 5	13	4	1.4	66
38620.W0118	Stainless	18	42	M 5	15	4	0.6	120
38620.W0120	Stainless	20	42	M 5	15	4	0.6	104
38620.W0122	Stainless	22	48	M 5	15	4	0.0	139
38620.W0125	Stainless	25	48	M 5	15	4	0.0	130
38620.W0128	Stainless	28	55	M 6	15	5	0.5	171
38620.W0130	Stainless	30	55	M 6	15	5	0.5	162
38620.W0132	Stainless	32	60	M 6	15	5	0.4	196



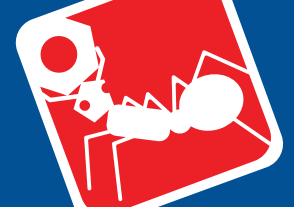
## Set Collars

one piece - slotted

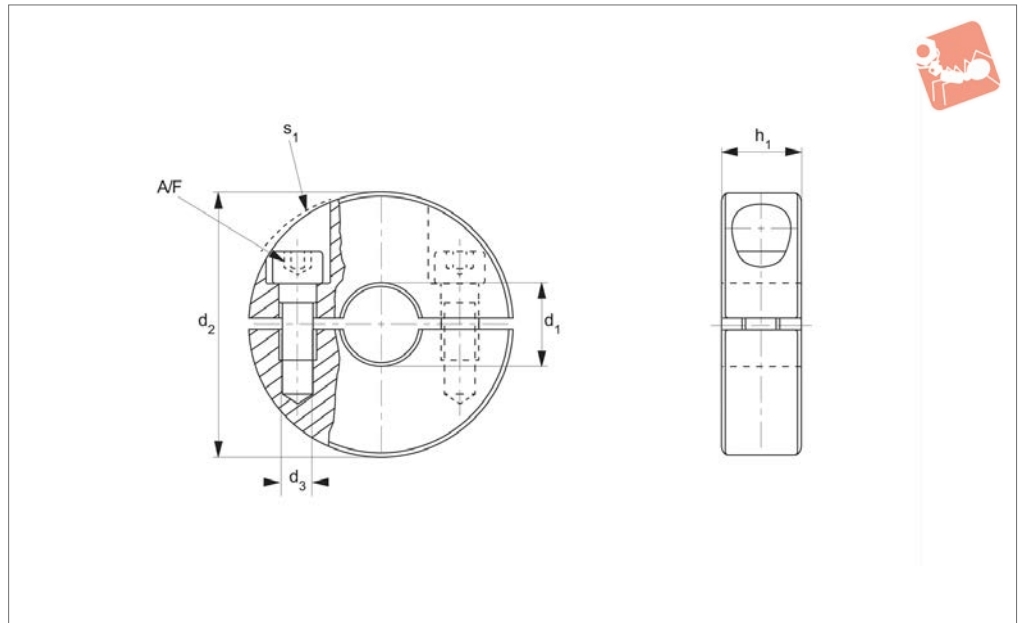


## Set Collars

Order No.	Material	$d_1$ tol. H10	$d_2$	$d_3$	$h_1$	A/F	Stroke $s_1$ max.	Weight g
<b>38620.W0135</b>	Stainless	35	60	M 6	15	5	0.4	180
<b>38620.W0140</b>	Stainless	40	65	M 6	15	5	0.5	182



## 38624



### Material

#### Steel type:

Steel, black, steam oxidized.

#### Stainless steel type:

Stainless steel (AISI 316, 1.4404).

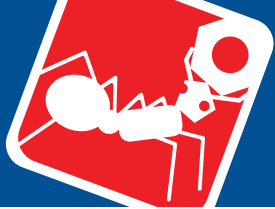
### Technical Notes

Divided set collars with strong clamping

force. Universal applicability: e.g as a fixed collar. stop. The stainless steel type is extremely resistant to corrosive environments. Also available in slotted finish - see part no. 38620.

Dimension  $s_1$  indicates the max. stroke or movement of  $d_2$  during tightening of the

Order No.	Material	$d_1$ tol. H10	$d_2$	$d_3$	$h_1$	A/F	Stroke $s_1$ max.	Weight g
38624.W0206	Steel	6	20	M 3	9	3	1.2	18
38624.W0208	Steel	8	22	M 3	9	3	1.0	20
38624.W0210	Steel	10	26	M 4	11	3	1.6	20
38624.W0212	Steel	12	30	M 4	11	3	0.7	39
38624.W0214	Steel	14	32	M 4	11	3	0.7	43
38624.W0215	Steel	15	36	M 5	13	4	1.4	65
38624.W0216	Steel	16	36	M 5	13	4	1.4	64
38624.W0218	Steel	18	42	M 5	15	4	0.6	103
38624.W0220	Steel	20	42	M 5	15	4	0.6	100
38624.W0222	Steel	22	48	M 5	15	4	0.0	135
38624.W0225	Steel	25	48	M 5	15	4	0.0	125
38624.W0228	Steel	28	55	M 6	15	5	0.5	165
38624.W0230	Steel	30	55	M 6	15	5	0.5	156
38624.W0232	Steel	32	60	M 6	15	5	0.4	187
38624.W0235	Steel	35	60	M 6	15	5	0.4	170
38624.W0240	Steel	40	65	M 6	15	5	0.5	189
38624.W0306	Stainless	6	20	M 3	9	3	1.2	18
38624.W0308	Stainless	8	22	M 3	9	3	1.0	20
38624.W0310	Stainless	10	26	M 4	11	3	1.6	20
38624.W0312	Stainless	12	30	M 4	11	3	0.7	39
38624.W0314	Stainless	14	32	M 4	11	3	0.7	43
38624.W0315	Stainless	15	36	M 5	13	4	1.4	65
38624.W0316	Stainless	16	36	M 5	13	4	1.4	64
38624.W0318	Stainless	18	42	M 5	15	4	0.6	103
38624.W0320	Stainless	20	42	M 5	15	4	0.6	100
38624.W0322	Stainless	22	48	M 5	15	4	0.0	135
38624.W0325	Stainless	25	48	M 5	15	4	0.0	125
38624.W0328	Stainless	28	55	M 6	15	5	0.5	165
38624.W0330	Stainless	30	55	M 6	15	5	0.5	156
38624.W0332	Stainless	32	60	M 6	15	5	0.4	187



## Set Collars

two piece - divided

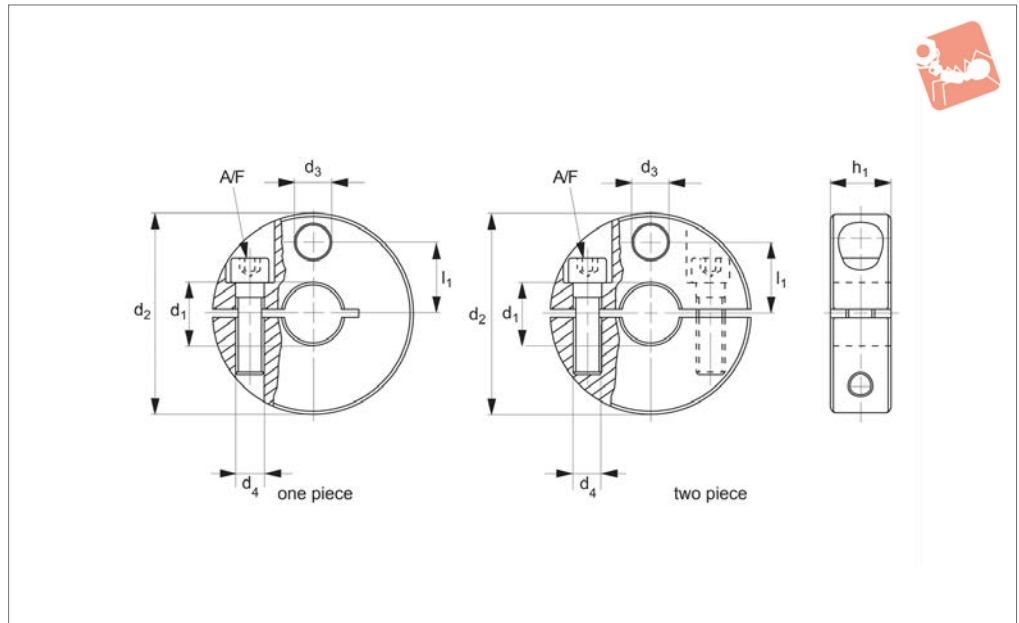


## Set Collars

Order No.	Material	$d_1$ tol. H10	$d_2$	$d_3$	$h_1$	A/F	Stroke $s_1$ max.	Weight g
<b>38624.W0335</b>	Stainless	35	60	M 6	15	5	0.4	170
<b>38624.W0340</b>	Stainless	40	65	M 6	15	5	0.5	189



## 38650



### Material

Set collar and screw: stainless steel (AISI 420, 1.4021).

### Technical Notes

Clamping ring made of stainless steel with

strong clamping force. Available in two versions, slotted (one piece) and divided (two piece). Clamping rings with  $d_1 > 10\text{mm}$  supplied with fixing hole ( $d_3$ ) for the mounting of sensors, switches etc.

Order No.	Type	$d_1$ tol. H8	$d_2$ -0.5	$d_3$	$d_4$	$l_1$	$h_1$	A/F	Weight g
38650.W0010	One piece	10	40	6.5	M 5	14.5	12	4	99
38650.W0012	One piece	12	40	6.5	M 5	14.5	12	4	94
38650.W0014	One piece	14	45	9.0	M 6	16.5	13	5	125
38650.W0015	One piece	15	45	9.0	M 6	16.5	13	5	122
38650.W0016	One piece	16	45	9.0	M 6	16.5	13	5	120
38650.W0018	One piece	18	50	9.0	M 6	18.5	13	5	151
38650.W0020	One piece	20	50	9.0	M 6	18.5	13	5	144
38650.W0022	One piece	22	65	13.0	M 8	23.5	18	6	359
38650.W0024	One piece	24	65	13.0	M 8	23.5	18	6	349
38650.W0025	One piece	25	65	13.0	M 8	23.5	18	6	345
38650.W0030	One piece	30	75	13.0	M 8	27.0	20	6	108
38650.W0032	One piece	32	80	13.0	M 8	30.0	20	6	588
38650.W0035	One piece	35	80	13.0	M 8	30.0	20	6	566
38650.W0110	Two piece	10	40	6.5	M 5	14.5	12	4	94
38650.W0112	Two piece	12	40	6.5	M 5	14.5	12	4	90
38650.W0114	Two piece	14	45	9.0	M 6	16.5	13	5	114
38650.W0115	Two piece	15	45	9.0	M 6	16.5	13	5	112
38650.W0116	Two piece	16	45	9.0	M 6	16.5	13	5	110
38650.W0118	Two piece	18	50	9.0	M 6	18.5	13	5	142
38650.W0120	Two piece	20	50	9.0	M 6	18.5	13	5	139
38650.W0122	Two piece	22	65	13.0	M 8	23.5	18	6	341
38650.W0124	Two piece	24	65	13.0	M 8	23.5	18	6	330
38650.W0125	Two piece	25	65	13.0	M 8	23.5	18	6	330
38650.W0130	Two piece	30	75	13.0	M 8	27.0	20	6	488
38650.W0132	Two piece	32	80	13.0	M 8	30.0	20	6	564
38650.W0135	Two piece	35	80	13.0	M 8	30.0	20	6	542

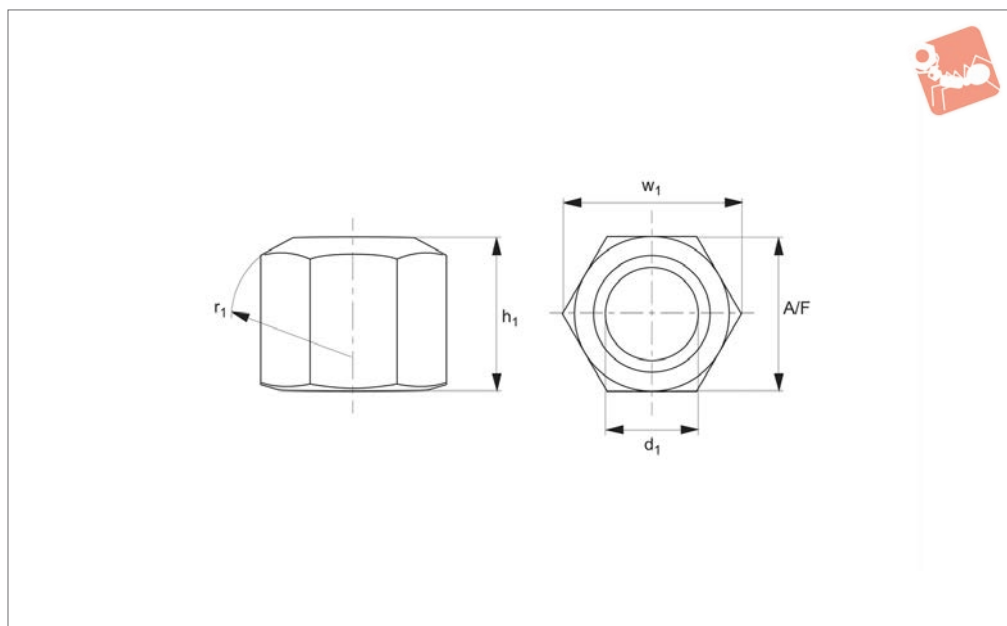


# Fixture Nuts

strength class 10



## Nuts



**24300**

NUTS

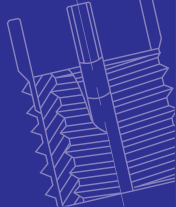
### Material

Steel, heat treated.  
Tensile strength class 10.

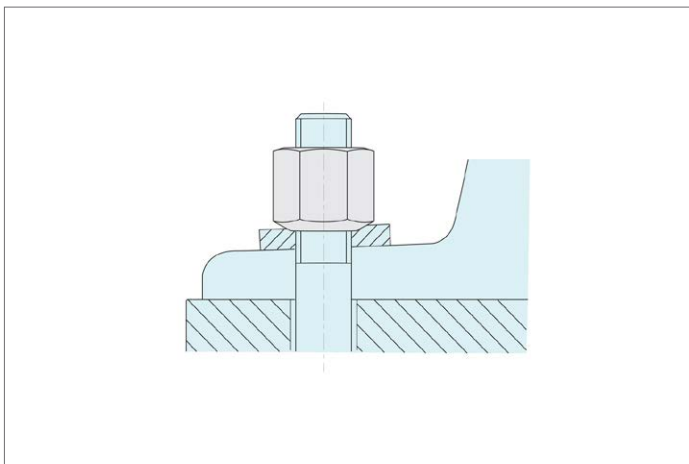
### Technical Notes

Produced to DIN 6330B.

Order No.	d <sub>1</sub>	w <sub>1</sub>	h <sub>1</sub> = 1,5 x d <sub>1</sub>	r <sub>1</sub>	A/F	Weight g
24300.W0106	M 6	11.1	9	9	10	5
24300.W0108	M 8	14.4	12	12	13	9
24300.W0110	M10	17.8	15	15	16	14
24300.W0111	M10	18.9	15	15	17	20
24300.W0112	M12	20.0	18	17	18	20
24300.W0113	M12	21.1	18	17	19	28
24300.W0114	M14	23.4	21	20	21	34
24300.W0115	M14	24.5	21	20	22	45
24300.W0116	M16	26.8	24	22	24	58
24300.W0118	M18	30.1	27	24	27	83
24300.W0120	M20	33.5	30	27	30	110
24300.W0122	M22	37.7	33	30	34	185
24300.W0123	M22	35.7	33	30	32	130
24300.W0124	M24	40.0	36	32	36	195
24300.W0127	M27	45.6	40	36	41	280
24300.W0130	M30	51.3	45	41	46	405
24300.W0136	M36	61.3	54	50	55	715
24300.W0142	M42	72.6	63	58	65	1170
24300.W0148	M48	83.9	72	67	75	1800



NUTS





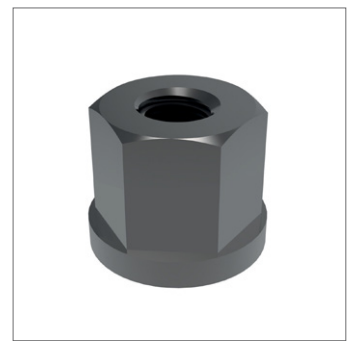
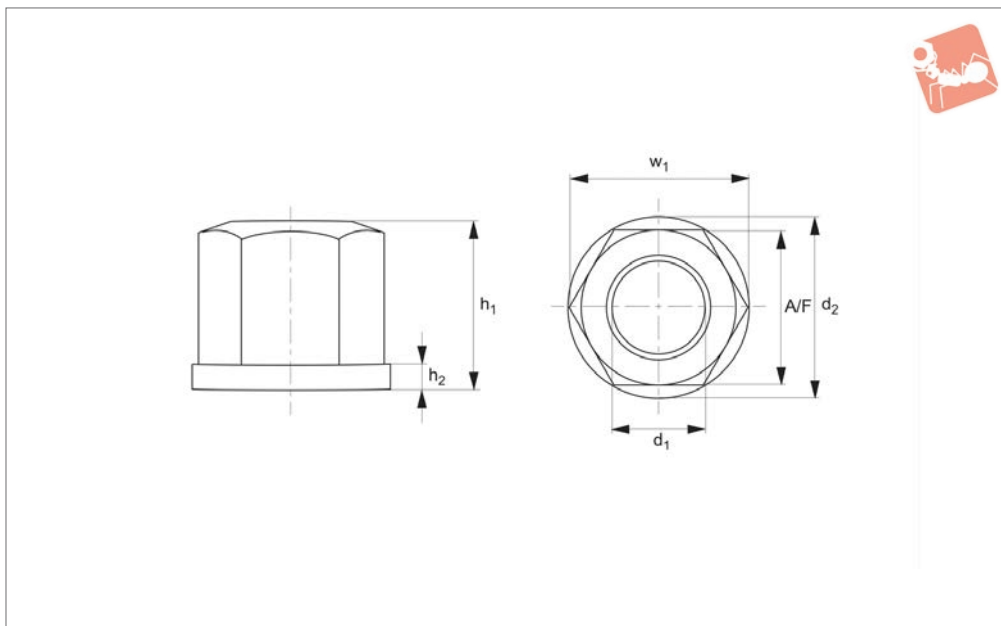


# Collar Nuts

strength class 10



## Nuts



**24400**

NUTS

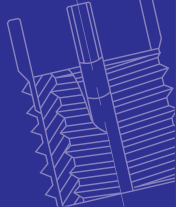
### Material

Steel, heat treated. Tensile strength class 10. Turned and milled.

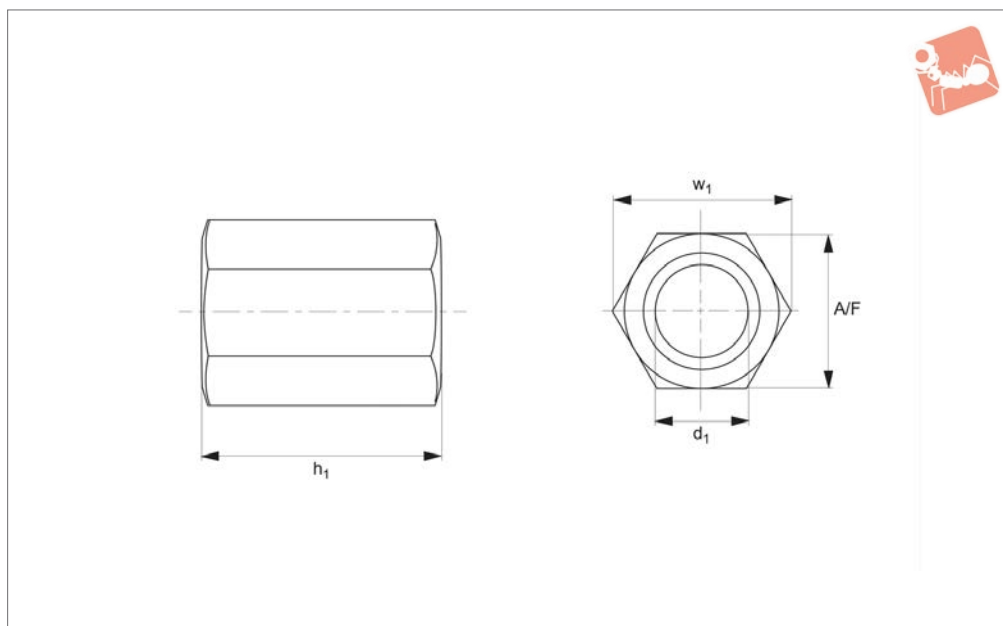
### Technical Notes

Produced to DIN 6331.

Order No.	$d_1$	$w_1$	$h_1 = 1,5 \times d_1$	$d_2$	$h_2$	A/F	Weight g
24400.W0106	M 6	11.1	9	14	3.0	10	6
24400.W0108	M 8	14.4	12	18	3.5	13	12
24400.W0110	M10	17.8	15	22	4.0	16	21
24400.W0111	M10	18.9	15	22	4.0	17	25
24400.W0112	M12	20.0	18	25	4.0	18	30
24400.W0113	M12	21.1	18	25	4.0	19	36
24400.W0114	M14	23.4	21	28	4.5	21	43
24400.W0115	M14	24.5	21	28	4.5	22	51
24400.W0116	M16	26.8	24	31	5.0	24	70
24400.W0118	M18	30.1	27	34	5.0	27	95
24400.W0120	M20	33.5	30	37	6.0	30	130
24400.W0122	M22	37.7	33	40	6.0	34	200
24400.W0123	M22	35.7	33	40	6.0	32	160
24400.W0124	M24	40.0	36	45	6.0	36	230
24400.W0127	M27	45.6	40	50	8.0	41	320
24400.W0130	M30	51.3	45	58	8.0	46	470
24400.W0136	M36	61.3	54	68	10.0	55	800
24400.W0142	M42	72.6	63	80	12.0	65	1340
24400.W0148	M48	83.9	72	92	14.0	75	2040



## 24600



### Material

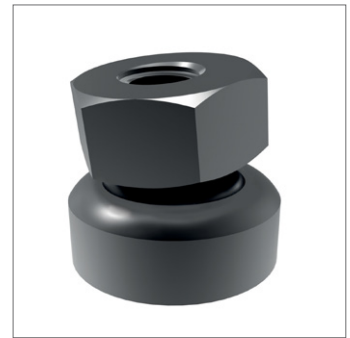
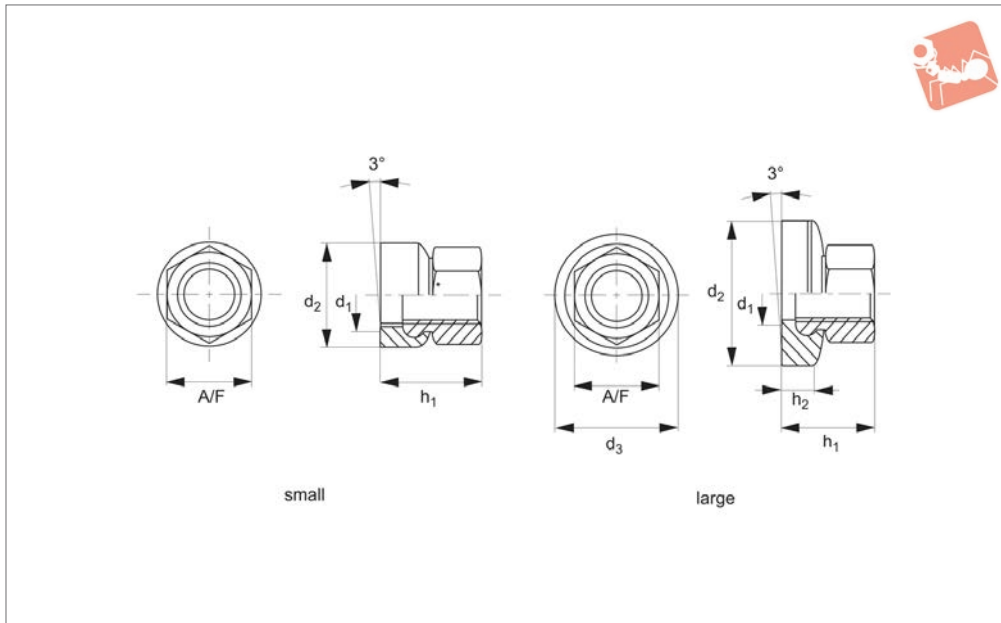
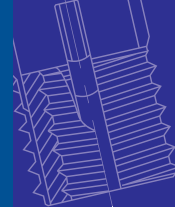
Steel heat-treated.  
Tensile strength class 10.

### Technical Notes

Produced to DIN 6334.

Used for joining T-bolts and studs together. For safety the T-bolts/studs should be screwed half the length of the coupling nut either side. Minimum screwed in thread length should be 1 x diameter.

Order No.	$d_1$	$w_1$	$h_1 = 3 \times d_1$	A/F	Weight g
24600.W0106	M 6	11.1	18	10	8
24600.W0108	M 8	14.4	24	13	19
24600.W0110	M10	17.8	30	16	30
24600.W0112	M12	20.0	36	18	48
24600.W0114	M14	23.4	42	21	73
24600.W0116	M16	26.8	48	24	120
24600.W0118	M18	30.1	54	27	170
24600.W0120	M20	33.5	60	30	240
24600.W0122	M22	37.7	66	34	390
24600.W0124	M24	40.0	72	36	400
24600.W0127	M27	45.6	81	41	600
24600.W0130	M30	51.3	90	46	850
24600.W0136	M36	61.3	108	55	1470
24600.W0142	M42	72.6	126	65	2340
24600.W0148	M48	83.9	144	75	3600



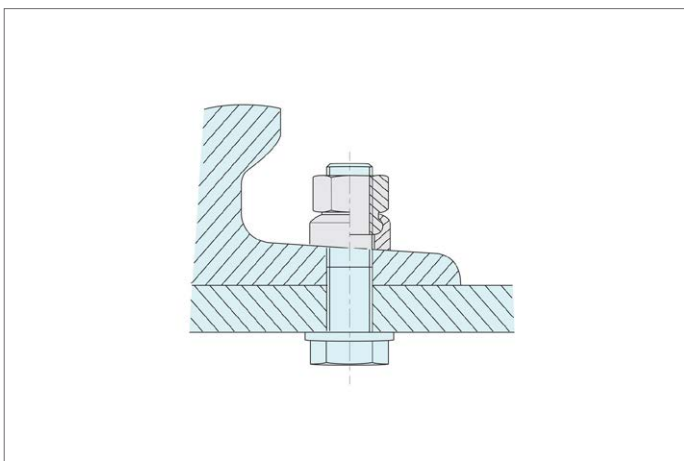
## 24620

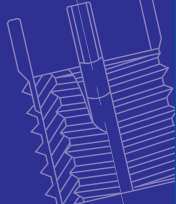
NUTS

### Material

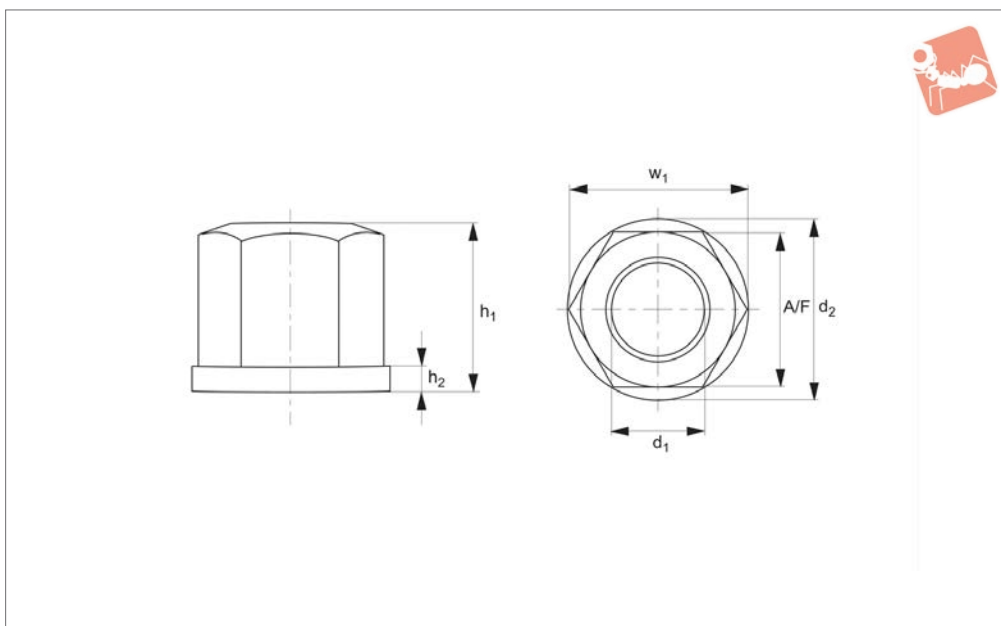
Steel, heat-treated steel, tempered, blackened.

Order No.	Type	d <sub>1</sub>	h <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>2</sub>	A/F	Weight g
24620.W0508	Small	M 8	14.0	17	-	-	13	13
24620.W0510	Small	M10	17.5	21	-	-	16	24
24620.W0512	Small	M12	21.5	24	-	-	18	38
24620.W0516	Small	M16	28.0	30	-	-	24	75
24620.W0520	Small	M20	35.0	36	-	-	30	143
24620.W0524	Small	M24	42.5	44	-	-	36	261
24620.W0530	Small	M30	56.0	55	-	-	46	557
24620.W0608	Large	M 8	14.0	24	17.8	4.0	13	13
24620.W0610	Large	M10	17.5	30	21.2	5.5	16	16
24620.W0612	Large	M12	21.5	36	25.2	7.0	18	18
24620.W0616	Large	M16	28.0	44	30.9	8.0	24	24
24620.W0620	Large	M20	35.0	50	39.9	9.5	30	30
24620.W0624	Large	M24	42.5	60	49.6	11.0	36	36
24620.W0630	Large	M30	56.0	68	61.3	14.0	40	40





24420



**Material**

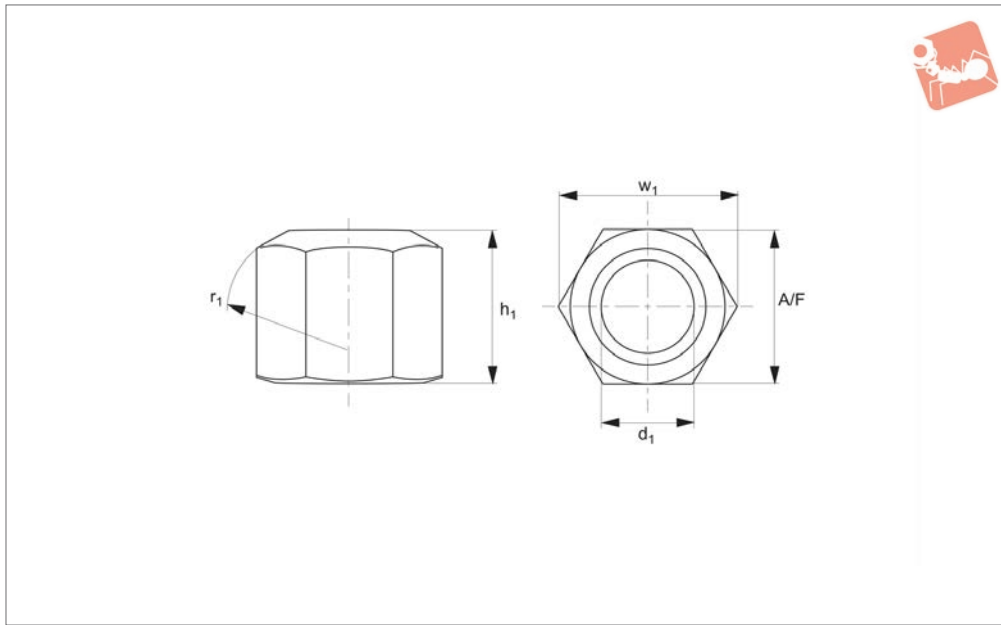
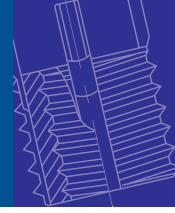
Stainless steel (AISI 303, 1.4305).

\*DIN standards do not include these dimensions.

**Technical Notes**

Produced to DIN 6331.

Order No.	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	w <sub>1</sub>	A/F	Weight g
24420.W0108	M 8	18	12	3.5	15.0	13	12
24420.W0110	M10	22	15	4.0	18.5	17*	22
24420.W0112	M12	25	18	4.0	20.8	19*	30
24420.W0116	M16	31	24	5.0	27.7	24	67
24420.W0120	M20	37	30	6.0	34.6	30	129



## 24320

NUTS

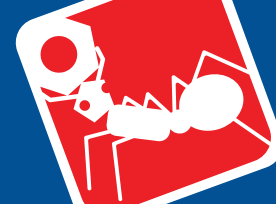
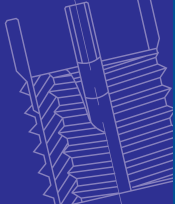
### Material

Stainless steel (AISI 303, 1.4305).

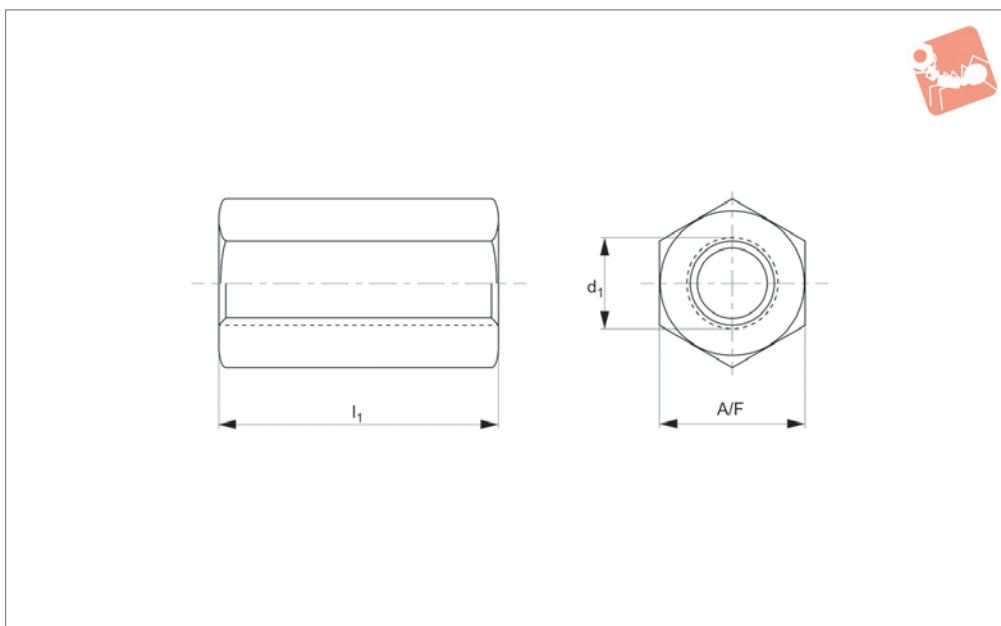
### Technical Notes

Produced to DIN 6330B.

Order No.	d <sub>1</sub>	h <sub>1</sub>	r <sub>1</sub>	w <sub>1</sub>	A/F	Weight g
24320.W0106	M 6	9	9	11.5	10	4
24320.W0108	M 8	12	11	15.0	13	8
24320.W0110	M10	15	15	18.5	17	17
24320.W0112	M12	18	17	20.8	19	24
24320.W0116	M16	24	22	27.7	24	55
24320.W0120	M20	30	27	34.6	30	110



**24602**



**Material**

Stainless steel (A2 & A4)

Order No.	$d_1$	$l_1$	A/F	Material
24602.W2006	M 6	20	10	A2 s/s
24602.W2008	M 8	25	13	A2 s/s
24602.W2010	M10	30	17	A2 s/s
24602.W2012	M12	35	19	A2 s/s
24602.W2016	M16	40	24	A2 s/s
24602.W2020	M20	50	30	A2 s/s
24602.W2024	M24	50	36	A2 s/s
24602.W4006	M 6	20	10	A4 s/s
24602.W4008	M 8	25	13	A4 s/s
24602.W4010	M10	30	17	A4 s/s
24602.W4012	M12	35	19	A4 s/s
24602.W4016	M16	40	24	A4 s/s
24602.W4020	M20	50	30	A4 s/s
24602.W4024	M24	50	36	A4 s/s

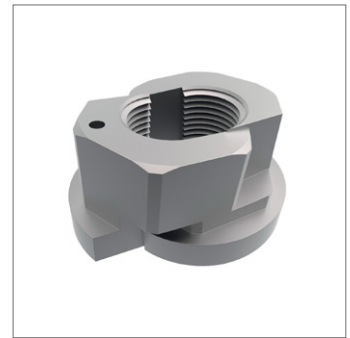
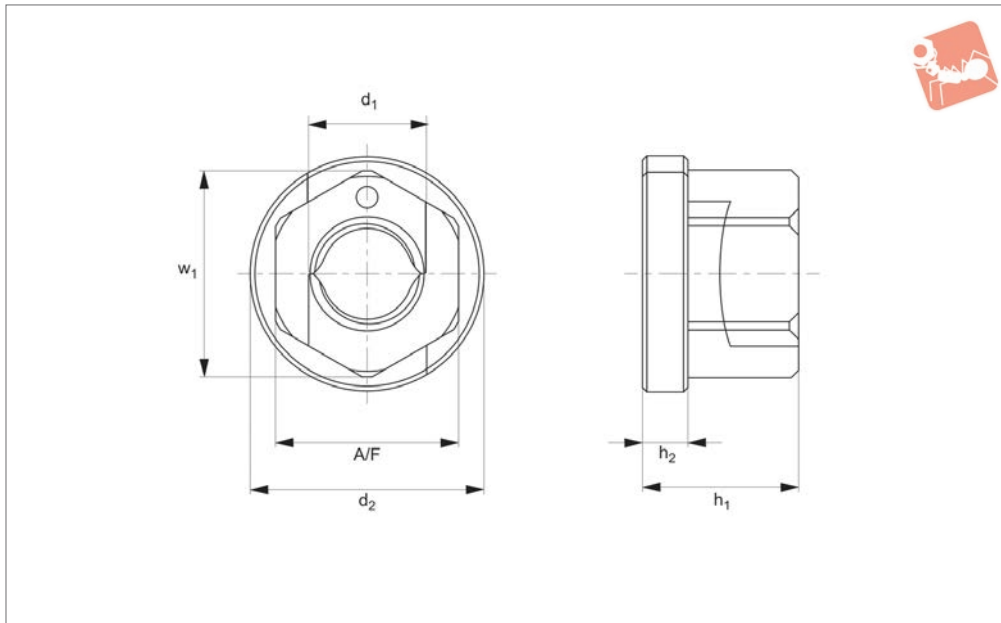


# Fast Nut - With Collar

rapid assembly nut



## Nuts



**24502**

NUTS

### Material

Steel, heat treated.

### Technical Notes

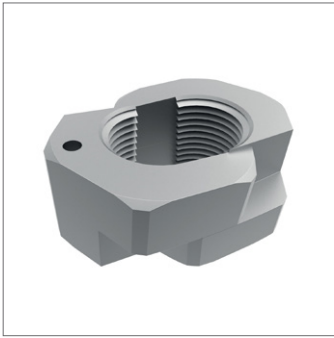
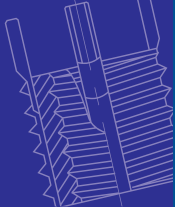
For rapid mounting and dismounting of nuts over long or damaged studding, and

even a studding bent by up to 20°. Where nut components are held together and are unattachable - simply push over thread, engage and a quarter or half turn is adequate for locking.

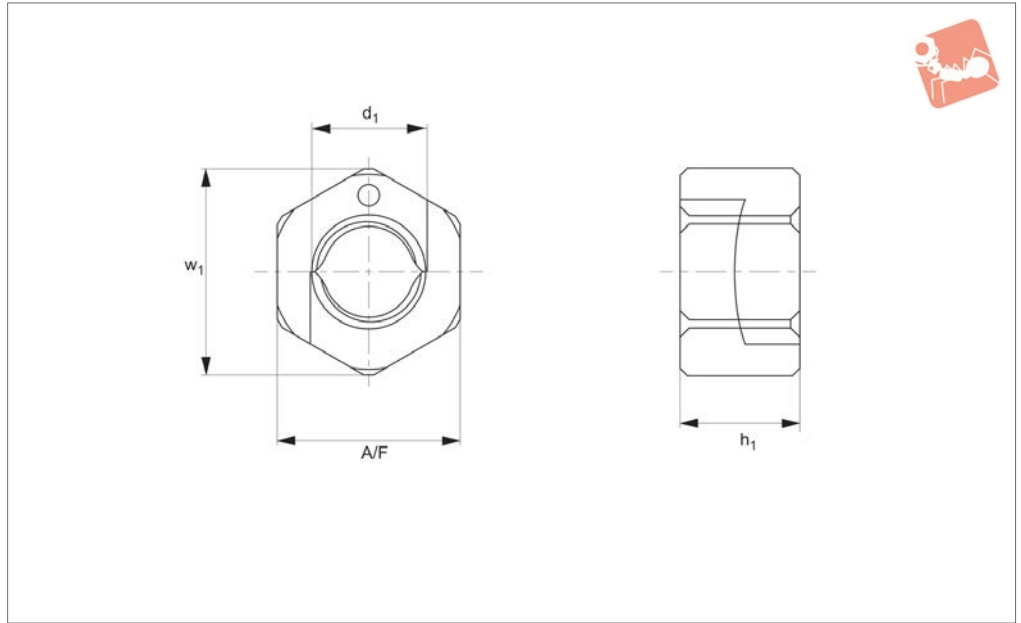
Provides clamping similar to solid nuts of the same thread size. Time saving when dealing with long or damaged studding.

Order No.	d <sub>1</sub>	d <sub>2</sub>	w <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	A/F	Weight g
24502.W0106	M 6	14	11	9	3.0	10	5
24502.W0108	M 8	18	14	12	3.5	13	12
24502.W0110	M10	22	19	14	4.0	17	24
24502.W0112	M12	25	21	16	4.0	19	33
24502.W0116	M16	31	27	21	5.0	24	62
24502.W0120	M20	37	33	26	6.0	30	114
24502.W0124	M24	45	40	30	6.0	36	188





### 24504



#### Material

Steel, heat treated, zinc plated.  
Strength class 10.

#### Technical Notes

For rapid mounting and dismounting of

nuts over long or damaged studding, and even a studding bent by up to 20°. Where nut components are held together and are unattachable - simply push over thread, engage and a quarter or half turn is

adequate for locking. Provides clamping similar to solid nuts of the same thread size. Time saving when dealing with long or damaged studding.

Order No.	$d_1$	$w_1$	$h_1$	A/F	Weight g
24504.W0106	M 6	11	6	10	3
24504.W0108	M 8	14	8	13	6
24504.W0110	M10	19	10	17	14
24504.W0112	M12	21	12	19	20
24504.W0116	M16	27	16	24	39
24504.W0120	M20	33	20	30	75
24504.W0124	M24	40	24	36	131







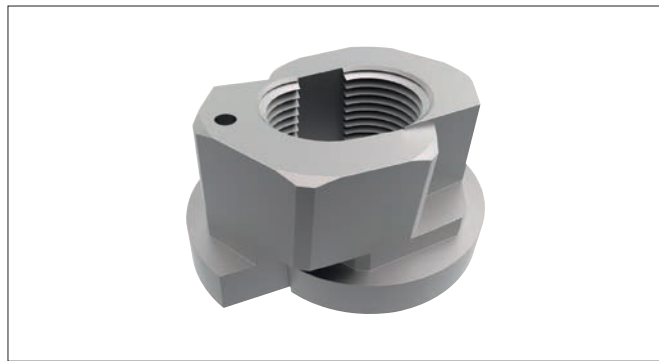
# Wixroyd Fast Nut

fast assembly nut, no loss of performance

24502 - 24504

Fixing Elements

The Fast Nut is quickly assembled, simply pull apart the segments to open - slide nut over thread to required location. Push the two threaded segments together to engage on thread. Lock the nut in place with a simple quarter to half turn of a standard spanner.



- There are no problems if the top of a threaded rod is damaged, the Fast Nut can slip over the damaged section.
- There are no issue of cross threading.
- Easy assembly in confined spaces.
- Flexibility to leave clamping to the last moment.

## Quick Fastening

Ease the nut off a quarter turn with a spanner, unlock the Fast Nut and remove from the thread.

## Disassembly

- For quick release and disassembly of the nut simply pull apart the nut casing to release.
- Zinc plated for a degree of rust protection.
- The Fast Nut simply slips over a rusted or paint covered thread to the fixing area.
- No issue of thread seizing.
- Time saving, yet just as high holding force!
- Can slip over damaged or bent studding up to an angle of approx. 20°.

## Quick Release

- M6, M8, M10, M12, M16, M20, M24.

## Available Sizes

- Construction industry.
- Temporary buildings, scaffolding.
- Automotive.
- Flange and instrument fittings.
- Jig and fixture builds.
- Mechanical applications.

## Applications

- Up to 50% faster assembly and disassembly (up to 500% in difficult and confined environments).
- One piece, so individual parts can't be lost
- Maintenance free and re-usable.
- Corrosion resistant, ideal for outdoors.

## Saving Time, Effort and Cost

- Two part construction, with parts retained (und detachable).
- Tempering and surface protection to DIN/ISO standards as for a normal nut.
- Thread interference up to 180% of a standard nut.
- No need for a special spanner.

## Technical Data

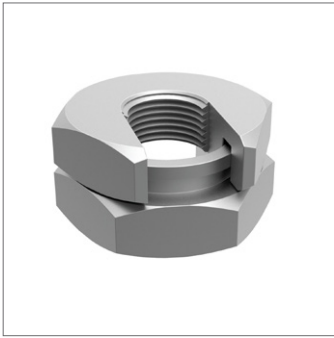
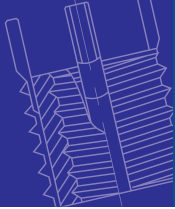
- Heat treated steel, zinc plated.
- Strength class 10 = 1060 N/mm<sup>2</sup>.
- Temperature resistant to +150°C.

## Material

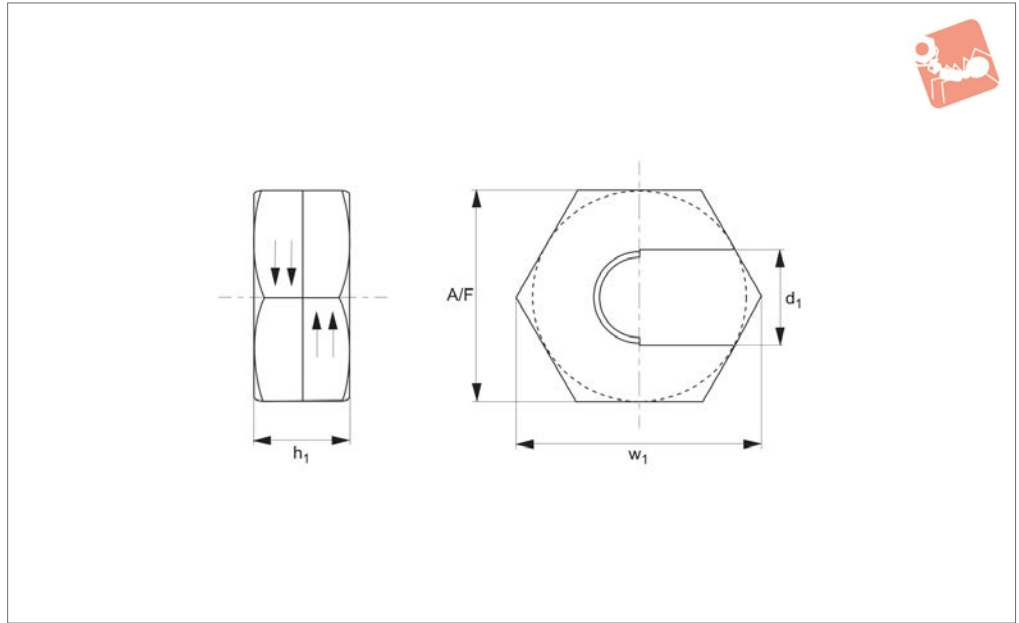


NUTS

ov-W24502-A-T-W24504-A-T-wixroyd-fast-nut-a-rmh- Updated - 26-10-2022



24520



**Material**

Steel, strength class 6, hardened and zinc plated.  
Coarse thread.

**Technical Notes**

Avoid time consuming winding & unwinding on long threads and overcome issues of damaging threads. The slip-on lock nut is easy to position at any point on a thread. Just open the lock nut, position where required, twist the lock nut closed and tighten with a spanner. Still with high load

forces. Safety factor of 2.5 times in load recommendations. Tested from 5 to 2000 Hz over a 10 minute period with no evidence of loosening.

Order No.	d <sub>1</sub>	w <sub>1</sub>	h <sub>1</sub>	A/F	Load kN max.	Torque to Nm max.	Weight g
24520.W0106	M 6	18.2	9.5	16	2.9	8-11	9
24520.W0108	M 8	22.0	9.5	19	-	18-25	15
24520.W0110	M10	25.7	12.4	22	8.9	26-34	25
24520.W0112	M12	31.1	15.9	27	17.8	68-81	45
24520.W0114	M14	31.1	15.9	27	17.8	68-81	45
24520.W0116	M16	38.5	16.5	33	22.2	136-271	71
24520.W0118	M18	38.5	16.5	33	22.2	136-271	71
24520.W0120	M20	47.7	20.3	41	35.6	244-271	141
24520.W0122	M22	58.6	25.4	51	-	-	259
24520.W0124	M24	58.6	25.4	51	-	-	249



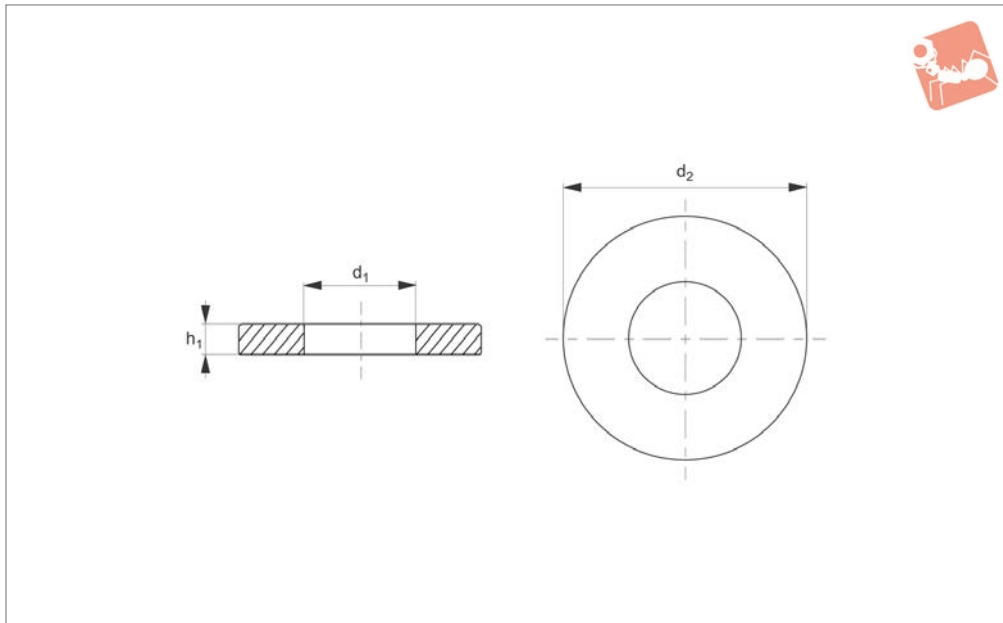


# Plain Washers

steel



# Washers



## 25000

WASHERS

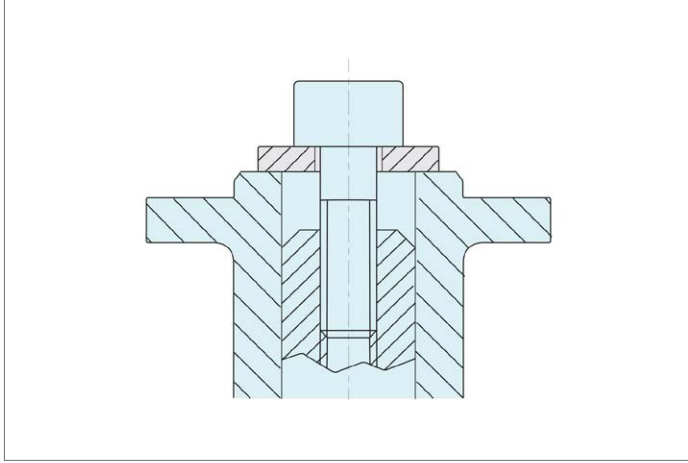
### Material

Tempered steel (350+80 HV30), (1200-1400N/mm<sup>2</sup> tensile strength).

### Technical Notes

Produced to DIN 6340.

Order No.	For thread	For thread inch	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	Weight g
25000.W0106	M 6	1/4"	6.4	17	3	5
25000.W0108	M 8	5/16"	8.4	23	4	10
25000.W0110	M10	3/8"	10.5	28	4	16
25000.W0112	M12	1/2"	13.0	35	5	35
25000.W0114	M14	-	15.0	40	5	40
25000.W0116	M16	5/8"	17.0	45	6	60
25000.W0118	M18	-	19.0	45	6	60
25000.W0120	M20	3/4"	21.0	50	6	73
25000.W0122	M22	7/8"	23.0	50	8	92
25000.W0124	M24	7/8"	25.0	60	8	170
25000.W0127	M27	1-1/16"	28.0	68	10	210
25000.W0130	M30	1-1/8", 1-3/16"	31.0	68	10	230
25000.W0136	M36	1-1/4", 1-3/8"	38.0	80	10	350
25000.W0142	M42	1-1/2"	44.0	100	15	670
25000.W0148	M48	1-3/4"	50.0	108	17	920

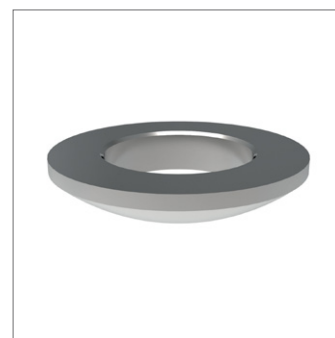
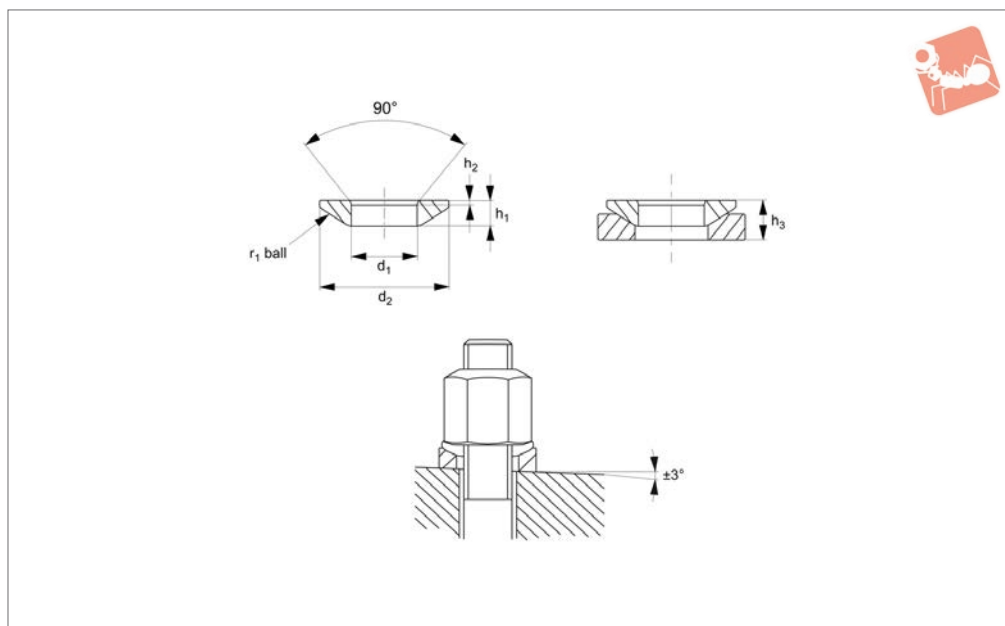




# Washers - Spherical Seat type C



## Washers



### 25100

WASHERS

#### Material

Steel, case-hardened.

#### Technical Notes

Produced to DIN 6319C.

Used with dished washers no. 25400 (type

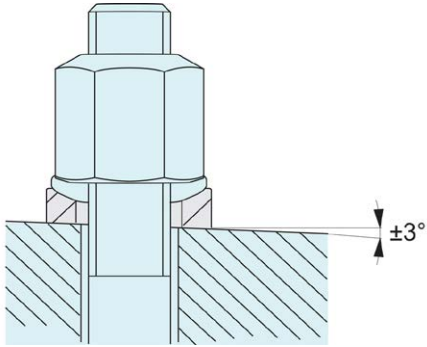
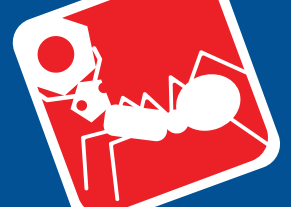
D) and no. 25700 (type G). Dimensions marked \* not available in DIN standard.

#### Tips

When clamping over holes or slots which do not provide full surface contact to the

washer, only use no. 25100 in combination with washer no. 25700 (type G). Do not use in combination with no. 25400 (type D) in such situations.

Order No.	For thread	For thread inch	d <sub>1</sub> tol. H13	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	r <sub>1</sub>	Load capacity for static load kN max.	With 25400 h <sub>3</sub>	With 25700 h <sub>3</sub>	Weight g
25100.W0106	M 6	1/4"	6,4	12	2,3	0,7	9,0	9	4,2	5,4	1
25100.W0108	M 8	5/16"	8,4	17	3,2	0,6	12,0	17	5,6	7,1	3
25100.W0110	M10	3/8"	10,5	21	4,0	0,8	15,0	26	6,5	7,3	5
25100.W0112	M12	1/2"	13,0	24	4,6	1,1	17,0	38	8,0	9,0	8
25100.W0114	M14		15,0	28	5,0	1,4	22,0	53	8,5	9,5	12
25100.W0116	M16	5/8"	17,0	30	5,3	1,3	22,0	73	9,6	10,4	13
25100.W0120	M20	3/4"	21,0	36	6,3	2,0	27,0	117	11,7	12,2	23
25100.W0122	M22	7/8"	23,0*	40	7,6	2,5	29,5	146	13,5		34
25100.W0124	M24	7/8"	25,0	44	8,2	2,4	32,0	168	15,2	15,7	45
25100.W0127	M27	11/16"	28,0*	50	10,2	3,3	36,0	221	17,0		74
25100.W0130	M30	1-1/8", 1-3/16"	31,0	56	11,2	3,6	41,0	269	19,2	19,7	101
25100.W0133	M33		34,0*	62	13,0	4,4	45,0	326	21,8		150
25100.W0136	M36	1-1/4", 1-3/8"	37,0	68	14,0	4,6	50,0	394	23,5		190
25100.W0139	M39		40,0*	75	16,0	5,6	54,0	460	26,8		218
25100.W0142	M42	1-1/2"	43,0	78	17,0	6,5	58,0	542	29,0		310
25100.W0148	M48	1-3/4"	50,0	92	21,0	8,0	67,0	714	35,5		540
25100.W0152	M52		54,0*	96	22,0	9,3	72,0	832	38,3		620
25100.W0156	M56	2"	58,0*	103	23,0	9,8	79,0	960	39,3		760
25100.W0160	M60		62,0*	112	25,0	11,0	86,0	1122	43,6		990
25100.W0164	M64	2-1/4"	66,0*	120	27,0	12,0	93,0	1269	46,6		1220

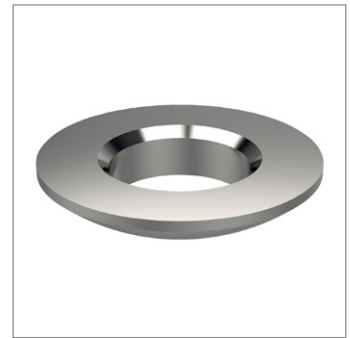
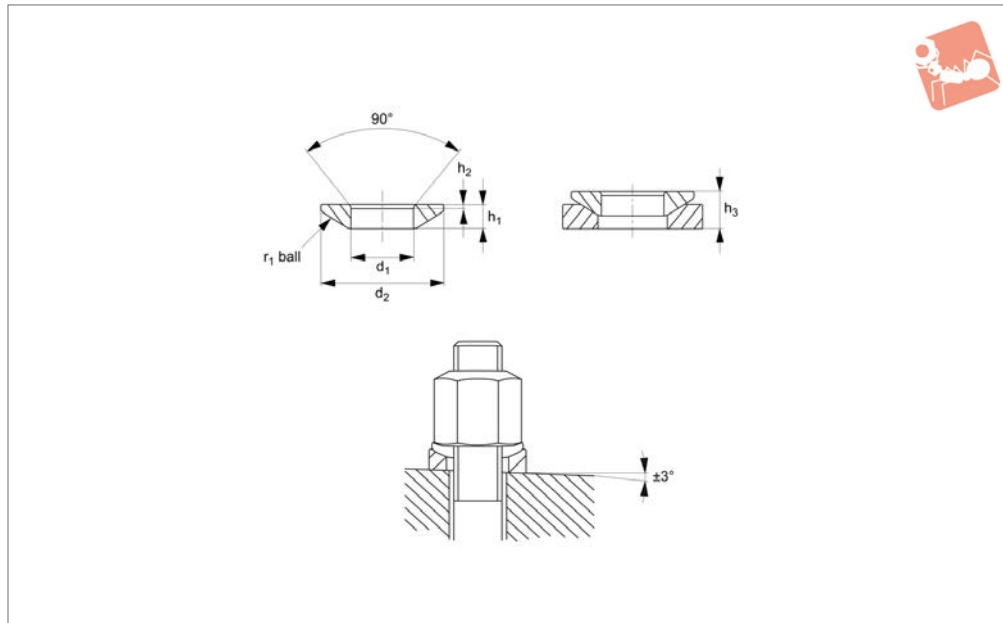




# Washers - Spherical Seat stainless steel 316



## Washers



**25205**

WASHERS

### Material

Stainless steel (AISI 316, 1.4401).

### Technical Notes

Similar to DIN 6319C.

Used with dished washers no. 25505 (type

D), and no. 25805 (type G).

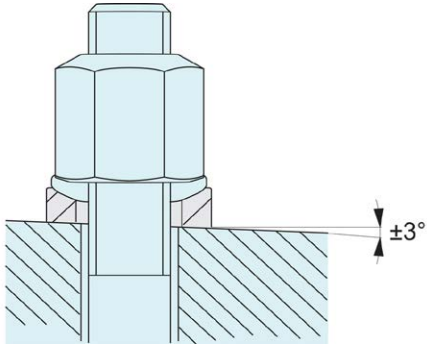
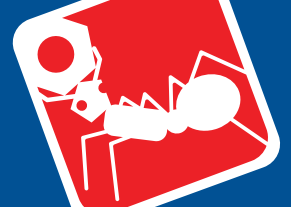
### Tips

When clamping over holes or slots which do not provide full surface contact to the washer, only use no. 25205 in combination

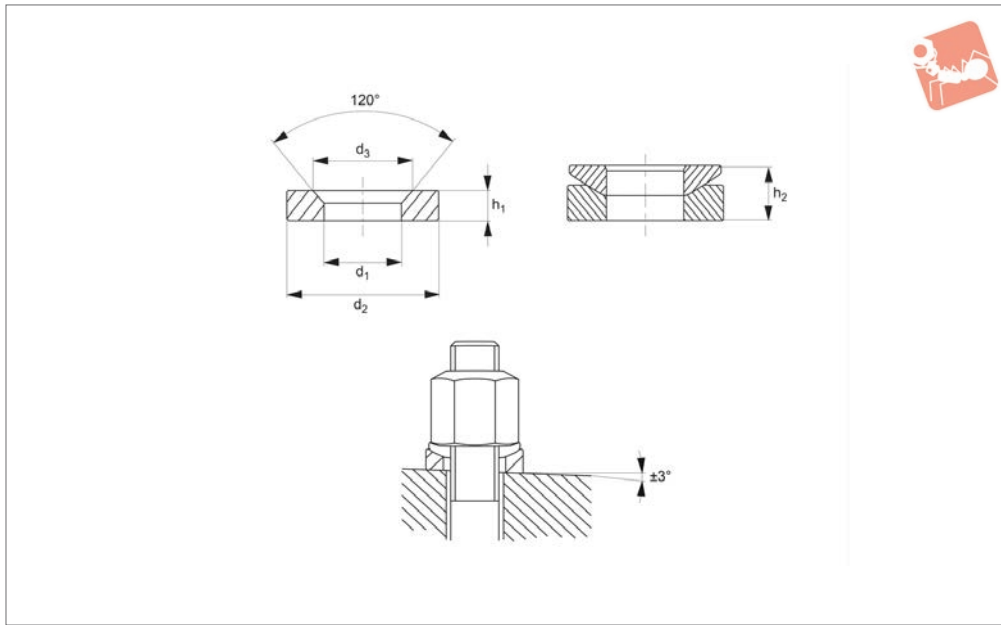
with washer no. 25805 (type G) - do not use in combination with no. 25505 (type D) in such circumstances.

\*Torques for screws A2-70 are approximate values.

Order No.	For thread	For thread inch	d <sub>1</sub> tol. H13	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	r <sub>1</sub>	Static load kN max.	Torque for screwed connectors Nm max.	With 25505 h <sub>3</sub>	With 25805 h <sub>3</sub>	Weight g
25205.W0306	M 6	1/4"	6,4	12	2,3	0,7	9	6	6	4,0	5,2	1
25205.W0308	M 8	5/16"	8,4	17	3,2	0,6	12	12	16	5,3	6,8	3
25205.W0310	M10	3/8"	10,5	21	4,0	0,8	15	16	32	6,3	7,1	5
25205.W0312	M12	1/2"	13,0	24	4,6	1,1	17	24	56	7,9	8,9	8
25205.W0316	M16	5/8"	17,0	30	5,3	1,3	22	45	135	9,3	10,1	13
25205.W0320	M20	3/4"	21,0	36	6,3	2,0	27	71	280	11,6	12,1	23
25205.W0324	M24	7/8"	25,0	44	8,2	2,4	32	105	455	14,9	15,4	46
25205.W0330	M30	1-1/8", 1-3/16"	31,0	56	11,2	3,6	41	191	1050	18,8	18,8	104
25205.W0336	M36	1-1/4", 1-3/8"	37,0	68	14,0	4,6	50			23,4		193
25205.W0342	M42	1-1/2"	43,0	78	17,0	6,5	58			28,3		313
25205.W0348	M48	1-3/4"	50,0	92	21,0	8,0	67			35,0		545







## 25400

WASHERS

### Material

Steel, case-hardened.

### Technical Notes

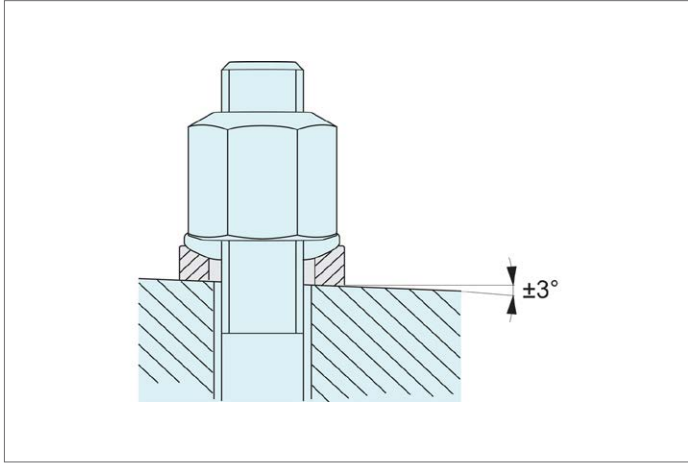
Produced to DIN 6319D.

### Tips

Do not use no. 25400 (type D) for clamping over holes or slots which do not provide full surface contact to the washer. In such

cases use no. 25700 (type G). Dimensions marked \* not available in DIN standard.

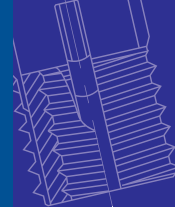
Order No.	For thread	For thread inch	d <sub>1</sub> tol. H13	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	Load capacity for static load kN max.	With 25100 h <sub>3</sub>	Weight g
25400.W0106	M 6	1/4"	7.1	12	11.0	2.8	9	4.2	1
25400.W0108	M 8	5/16"	9.6	17	14.5	3.5	17	5.6	2
25400.W0110	M10	3/8"	12.0	21	18.5	4.2	26	6.5	7
25400.W0112	M12	1/2"	14.2	24	20.0	5.0	38	8.0	10
25400.W0114	M14	-	16.5	28	24.8	5.6	53	-	15
25400.W0116	M16	5/8"	19.0	30	26.0	6.2	73	9.6	18
25400.W0120	M20	3/4"	23.2	36	31.0	7.5	117	11.7	30
25400.W0122	M22	-	26,0*	40	34.0	8.5	146	-	44
25400.W0124	M24	7/8"	28.0	44	37.0	9.5	168	15.2	61
25400.W0127	M27	-	31,5*	50	43.0	10.5	221	-	90
25400.W0130	M30	1-1/8", 1-3/16"	35.0	56	49.0	12.0	269	19.2	124
25400.W0133	M33	-	38,5*	62	55.0	14.0	326	-	180
25400.W0136	M36	1-1/4", 1-3/8"	42.0	68	60.0	15.0	394	23.5	230
25400.W0139	M39	-	45,0*	75	67.0	17.0	460	-	339
25400.W0142	M42	1-1/2"	49.0	78	70.0	18.0	542	29.0	360
25400.W0148	M48	1-3/4"	56.0	92	82.0	22.0	714	35.5	640
25400.W0152	M52	-	60,0*	96	85.0	24.0	832	-	740
25400.W0156	M56	-	65,0*	103	93.0	25.0	960	-	900
25400.W0160	M60	-	70,0*	112	102.0	28.0	1122	-	1165
25400.W0164	M64	-	75,0*	120	110.0	30.0	1269	-	1430



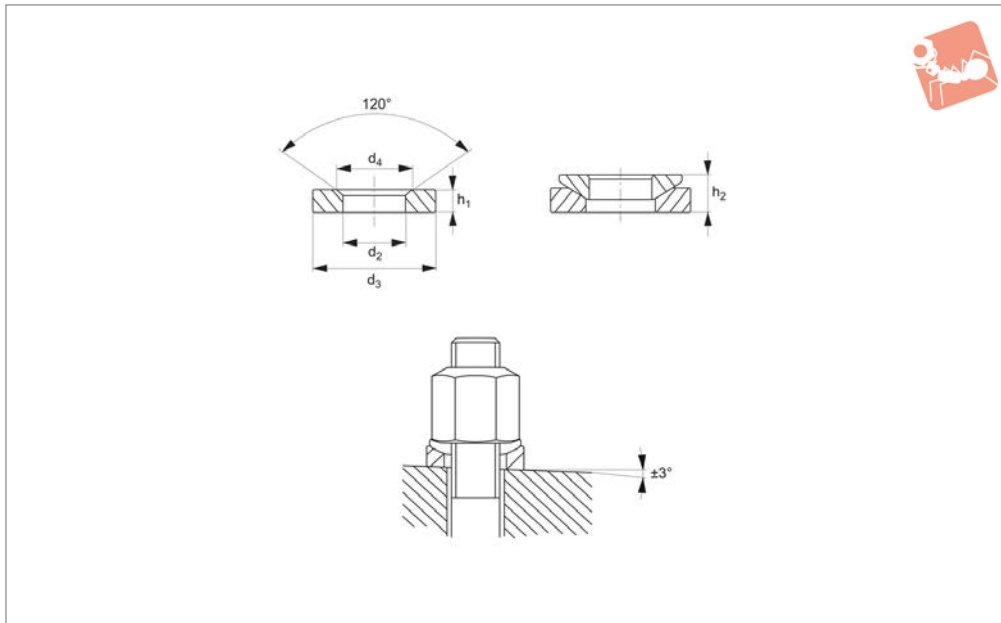


# Dished Washers

stainless steel 316



# Washers



## 25505

WASHERS

### Material

Stainless steel (AISI 316, 1.4401).

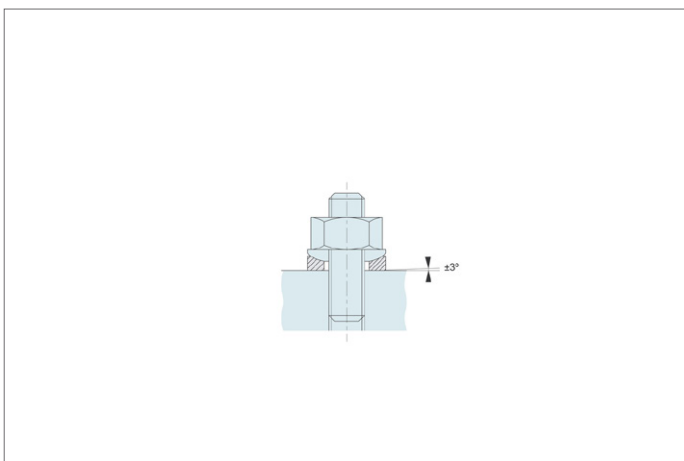
Use with spherical seat washer no. 25205 0,12.  
(type C). Torque values are approximate.

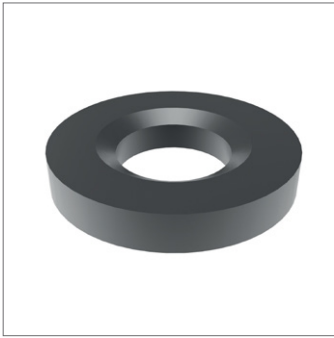
### Technical Notes

Similar to DIN 6319D.

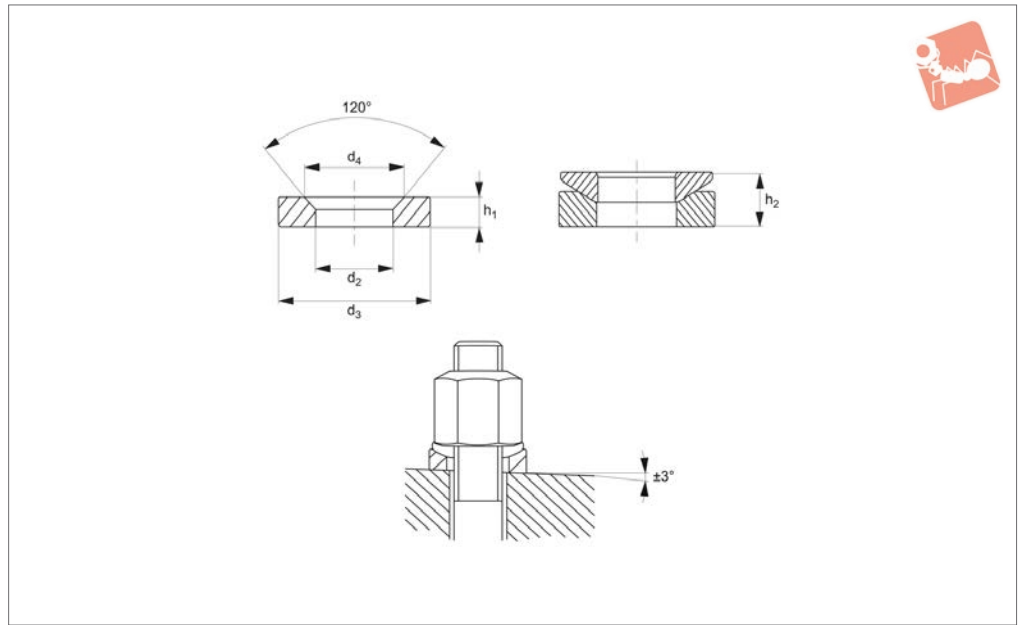
Please consider the actual preloads in your application and a coefficient of friction of

Order No.	For metric thread d <sub>1</sub>	For thread d <sub>1</sub> inch	d <sub>2</sub> tol. H13	d <sub>3</sub>	d <sub>4</sub>	h <sub>1</sub>	Torque Nm max.	Load capacity for static load kN max.	With 25205 h <sub>2</sub>	Weight g
<b>25505.W0406</b>	M 6	1/4"	7,1	12	11,0	2,8	6	6	4,0	1
<b>25505.W0408</b>	M 8	5/16"	9,6	17	14,5	3,5	16	12	5,3	4
<b>25505.W0410</b>	M10	3/8"	12,0	21	18,5	4,2	32	16	6,3	7
<b>25505.W0412</b>	M12	1/2"	14,2	24	20,0	5,0	56	24	7,9	11
<b>25505.W0416</b>	M16	5/8"	19,0	30	26,0	6,2	135	45	9,3	19
<b>25505.W0420</b>	M20	3/4"	23,2	36	31,0	7,5	280	71	11,6	32
<b>25505.W0424</b>	M24	7/8"	28,0	44	37,0	9,5	455	105	14,9	63
<b>25505.W0430</b>	M30	1-1/8", 1-3/16"	35,0	56	49,0	12,0	1050	191	18,8	127
<b>25505.W0436</b>	M36	1-1/4", 1-3/8"	42,0	68	60,0	15,0			23,4	234
<b>25505.W0442</b>	M42	1-1/2"	49,0	78	70,0	18,0			28,3	362
<b>25505.W0448</b>	M48	1-3/4"	56,0	92	82,0	22,0			35,0	642





25700



**Material**

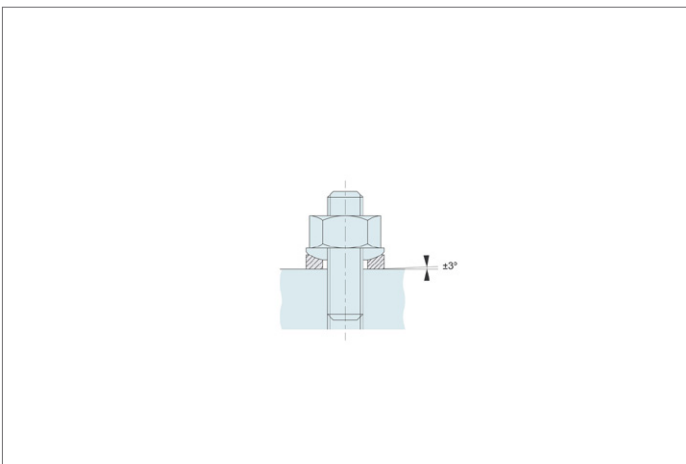
Steel, punched, trued and tempered.

Their large diameter makes them suitable to bridge the slots of clamps.

**Technical Notes**

Produced to DIN 6319G.

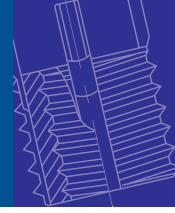
Order No.	For metric thread d <sub>1</sub>	For thread d <sub>1</sub> inch	d <sub>2</sub> tol. H13	d <sub>3</sub>	d <sub>4</sub>	h <sub>1</sub>	Load capacity for static load kN max.	With 25100 h <sub>2</sub>	Weight g
25700.W0106	M 6	1/4"	7.1	17	11.0	4	9	5.4	6
25700.W0108	M 8	5/16"	9.6	24	14.5	5	17	7.1	13
25700.W0110	M10	3/8"	12.0	30	18.5	5	26	7.3	19
25700.W0112	M12	1/2"	14.2	36	20.0	6	38	9.0	32
25700.W0114	M14	-	16.5	40	24.8	6	53	9.5	48
25700.W0116	M16	5/8"	19.0	44	26.0	7	73	10.4	56
25700.W0120	M20	3/4"	23.2	50	31.0	8	117	12.2	94
25700.W0124	M24	7/8"	28.0	60	37.0	10	168	15.7	169
25700.W0130	M30	1-1/8", 1-3/16"	35.0	68	49.0	12	269	19.7	230
25700.W0136	M36	1-1/4", 1-3/18"	42.0	80	60.0	12	394	-	350
25700.W0142	M42	1-1/2"	49.0	100	70.0	15	-	-	640
25700.W0148	M48	1-3/4"	56.0	108	82.0	17	-	-	830



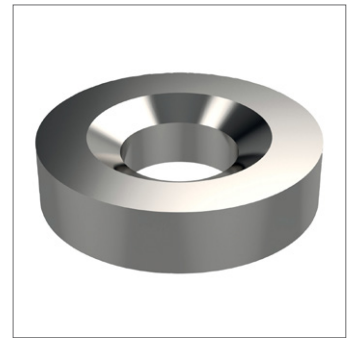
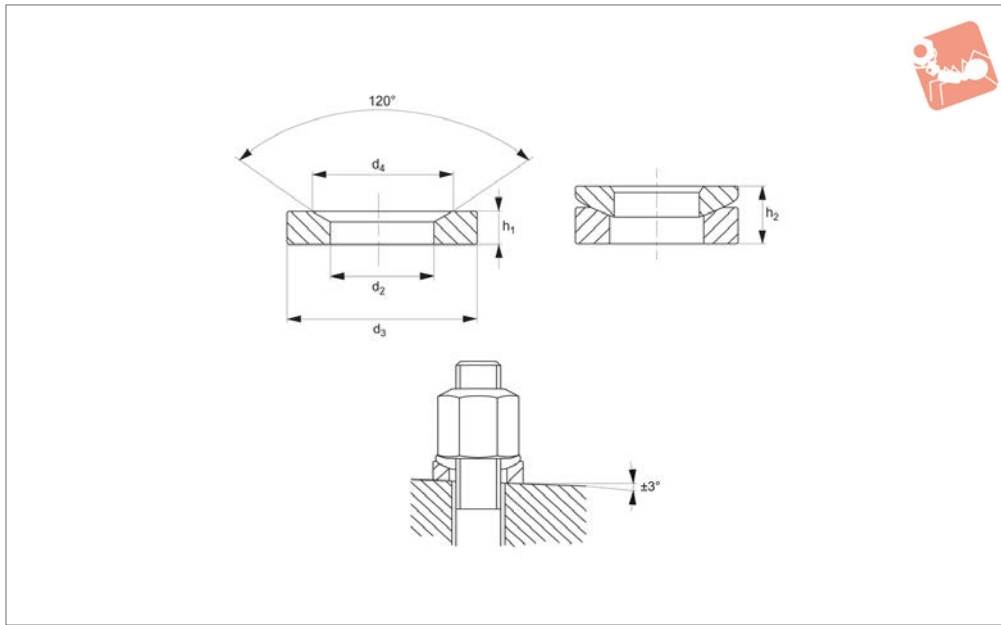


# Dished Washers

stainless steel 316



# Washers



**25805**

WASHERS

**Material**

Stainless steel (AISI 316, 1.4401).

Their large diameter makes them suitable to bridge wide slots.

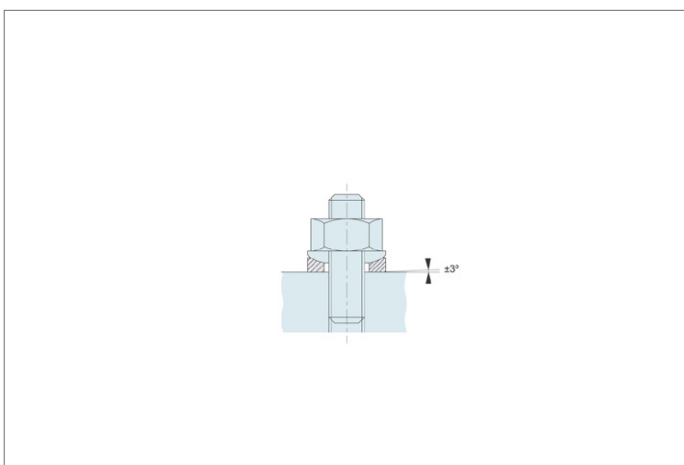
be considered, coefficient of friction  $\mu_{total}$  0,12.

**Technical Notes**

Produced to DIN 6319G.

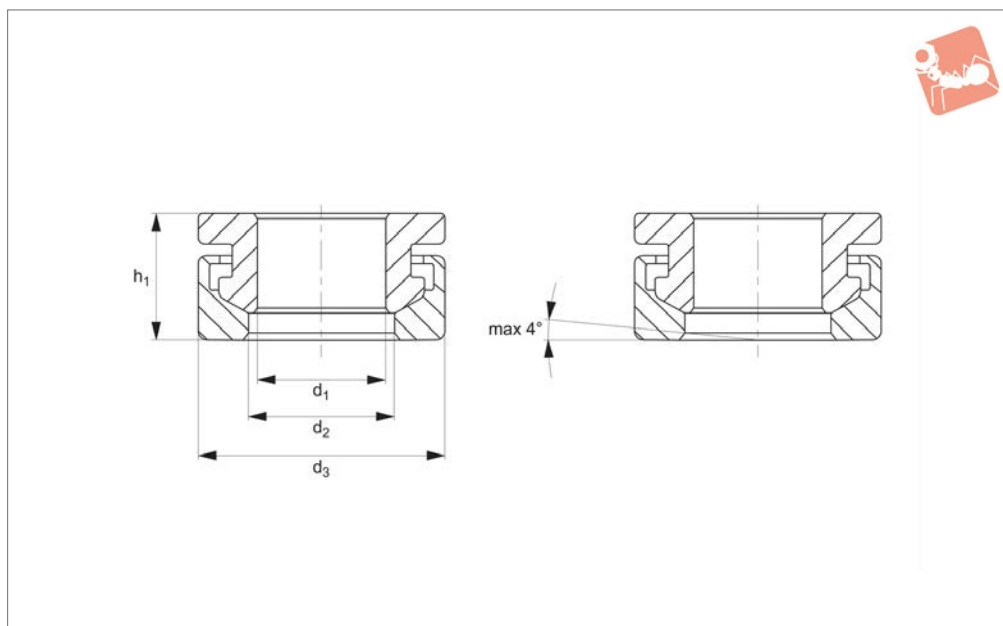
\*Torque values of screwed connector A2-70 are approximate. Actual preloads should

Order No.	For metric thread $d_1$	For thread $d_1$ inch	$d_2$ tol. H13	$d_3$	$d_4$	$h_1$	Torque Nm max.	Load capacity for static load kN max.	With 25205 $h_2$	Weight g
25805.W0106	M 6	1/4"	7,1	17	11,0	4	6	6	5,2	6
25805.W0108	M 8	5/16"	9,6	24	14,5	5	16	12	6,8	15
25805.W0110	M10	3/8"	12,0	30	18,5	5	32	16	7,1	22
25805.W0112	M12	1/2"	14,2	36	20,0	6	56	24	8,9	40
25805.W0116	M16	5/8"	19,0	44	26,0	7	135	45	10,1	66
25805.W0120	M20	3/4"	23,2	50	31,0	8	280	71	12,1	95
25805.W0124	M24	7/8"	28,0	60	37,0	10	455	105	15,4	171
25805.W0130	M30	1-1/8", 1-3/16"	35,0	68	49,0	12	1050	191	18,8	236





25900



**Material**

Seat washer: steel, heat treated or stainless steel (AISI 303, 1.4305)  
Spherical washer: steel, case-hardened or stainless steel (AISI 303, 1.4305)

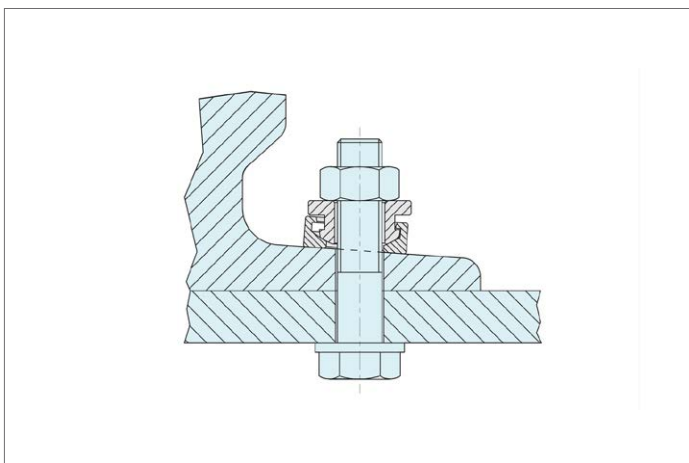
**Technical Notes**

Similar to DIN 6319.  
A permanently fastened spherical washer and conical seat offering increased safety, quick assembly and security against loss.

Max. swivel range  $\pm 4^\circ$ .

**\*Load capacity relates to steel version only.**

Order No.	Material	For thread	d <sub>1</sub> tol. H13	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	Load kN max.	Weight g
25900.W0506	Steel	M 6	6.4	7.4	13	7.0	9	4
25900.W0508	Steel	M 8	8.4	9.7	17	8.5	17	9
25900.W0510	Steel	M10	10.5	12.0	21	10.4	26	17
25900.W0512	Steel	M12	13.0	14.8	25	13.1	38	34
25900.W0516	Steel	M16	17.0	19.7	32	17.0	73	61
25900.W0520	Steel	M20	21.0	24.6	40	20.3	117	113
25900.W0556	Stainless Steel	M 6	6.4	7.4	13	7.0	9	4
25900.W0558	Stainless Steel	M 8	8.4	9.7	17	8.5	17	9
25900.W0560	Stainless Steel	M10	10.5	12.0	21	10.4	26	17
25900.W0562	Stainless Steel	M12	13.0	14.8	25	13.1	38	34
25900.W0566	Stainless Steel	M16	17.0	19.7	32	17.0	73	61
25900.W0570	Stainless Steel	M20	21.0	24.6	40	20.3	117	113

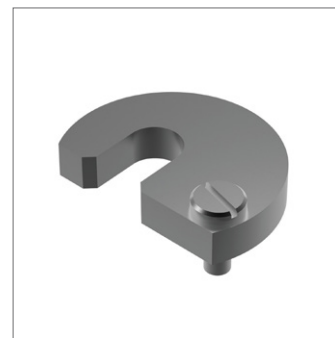
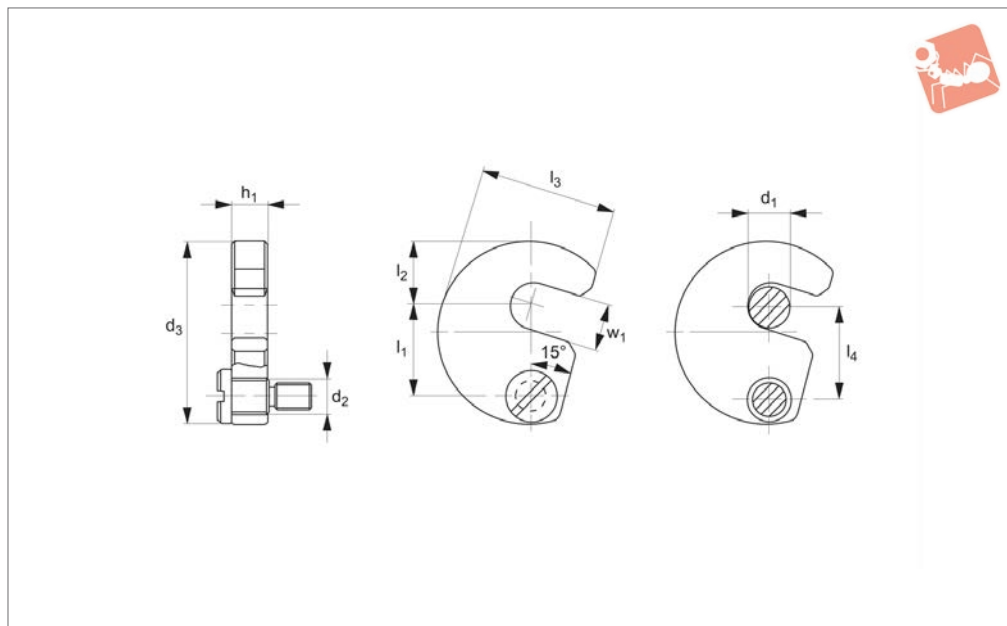




# Captive C Washers shoulder bolt



## Washers



**36620**

WASHERS

### Material

Heat-treated steel (DIN 6371), blackened and tempered.

Shoulder bolt: steel, strength class 5.8,

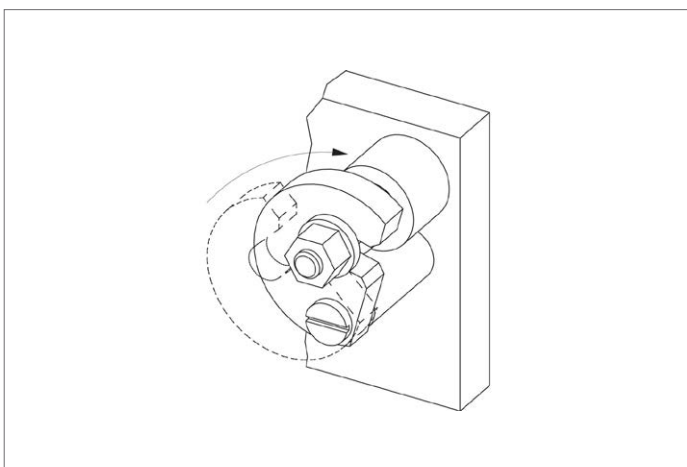
blackened.

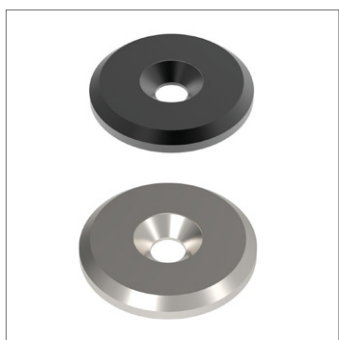
provided.

### Technical Notes

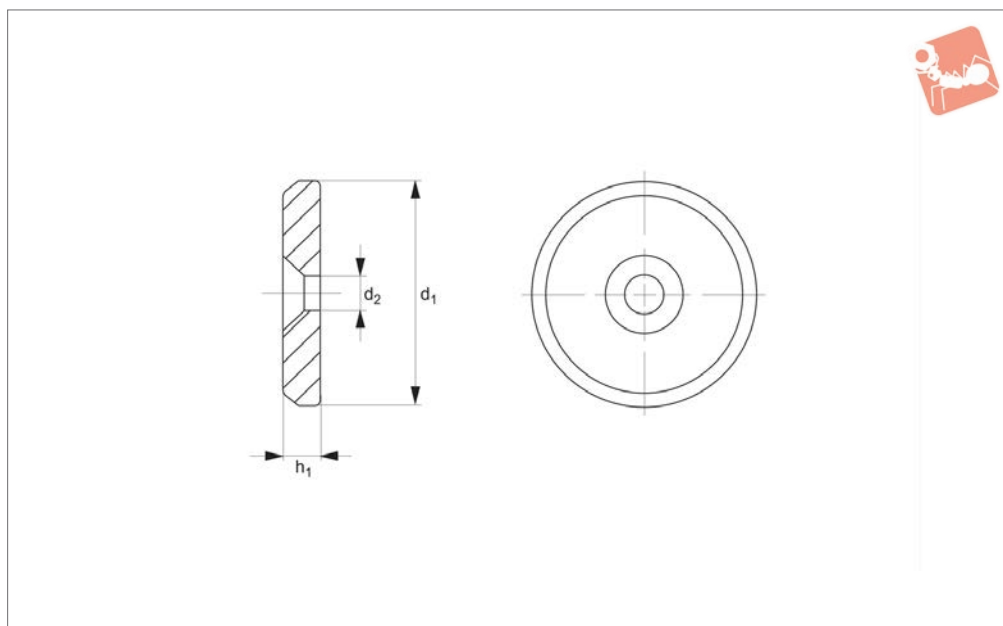
Shoulder bolt no. 36700 (DIN 923)

Order No.	Size	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub> -0.2	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	w <sub>1</sub>	Matching screw DIN 923	Weight g
<b>36620.W0006</b>	6	6	9	38	9.8	19.6	11	29.0	19	7.5	M 6x10	66
<b>36620.W0008</b>	8	8	9	43	9.8	21.6	14	32.5	21	9.5	M 6x10	81
<b>36620.W0010</b>	10	10	9	48	9.8	23.6	17	36.5	23	11.5	M 6x10	99
<b>36620.W0012</b>	12	12	11	61	11.8	29.6	22	45.0	29	13.5	M 8x12	194
<b>36620.W0016</b>	16	16	11	68	11.8	33.6	25	50.0	33	17.5	M 8x12	229
<b>36620.W0020</b>	20	20	11	74	11.8	36.6	28	55.0	36	21.5	M 8x12	265
<b>36620.W0024</b>	24	24	11	82	15.8	40.6	32	62.0	40	25.5	M 8x16	430
<b>36620.W0030</b>	30	30	11	97	15.8	49.0	39	73.0	48	32.0	M 8x16	584





## 36720



### Material

#### Free cutting steel type:

Free cutting steel, unhardened, blackened.

#### Stainless steel type:

Stainless steel (AISI 303, 1.4305).

#### Technical Notes

They can be pinned with a cylindrical pin to

prevent them turning or becoming loose.

Secure with screws.

Order No.	Material	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	Matching screws DIN 963 and DIN 7991	Weight g
36720.W0016	Steel	16	4.5	3.0	M 4	3.6
36720.W0020	Steel	20	4.5	3.0	M 4	6.1
36720.W0022	Steel	22	5.5	3.5	M 5	8.1
36720.W0025	Steel	25	5.5	3.5	M 5	11
36720.W0028	Steel	28	5.5	3.5	M 5	14
36720.W0032	Steel	32	6.6	4.0	M 6	22
36720.W0036	Steel	36	6.6	4.0	M 6	28
36720.W0040	Steel	40	6.6	5.0	M 6	44
36720.W0045	Steel	45	6.6	6.0	M 6	66
36720.W0052	Steel	52	6.6	6.0	M 6	91
36720.W0516	Stainless	16	4.5	3.0	M 4	3.6
36720.W0520	Stainless	20	4.5	3.0	M 4	6.1
36720.W0522	Stainless	22	5.5	3.5	M 5	8.1
36720.W0525	Stainless	25	5.5	3.5	M 5	11
36720.W0528	Stainless	28	5.5	3.5	M 5	14
36720.W0532	Stainless	32	6.6	4.0	M 6	22
36720.W0536	Stainless	36	6.6	4.0	M 6	28
36720.W0540	Stainless	40	6.6	5.0	M 6	44
36720.W0545	Stainless	45	6.6	6.0	M 6	66
36720.W0552	Stainless	52	6.6	6.0	M 6	91

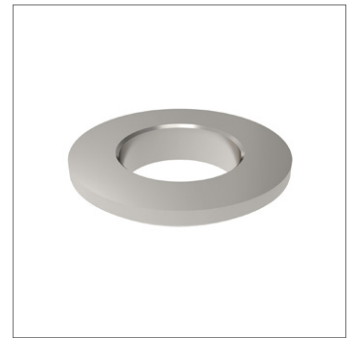
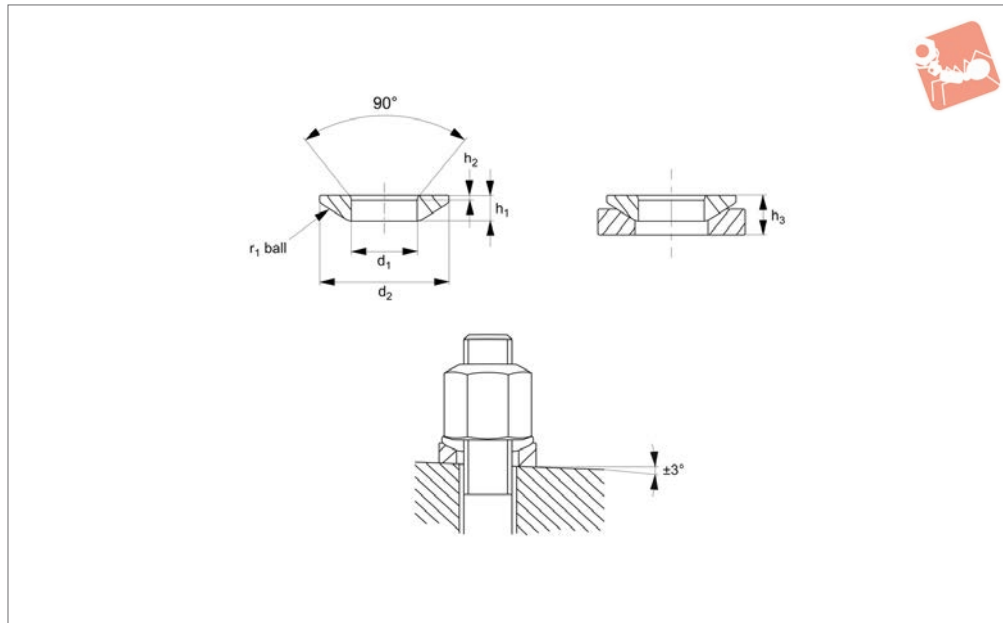




# Washers - Spherical Seat stainless steel 303



## Washers



**25200**

WASHERS

### Material

Stainless steel (AISI 303, 1.4305), A2-70.

### Technical Notes

Similar to DIN 6319C.

Used with dished washers no. 25500 (type

D), and no. 25800 (type G).

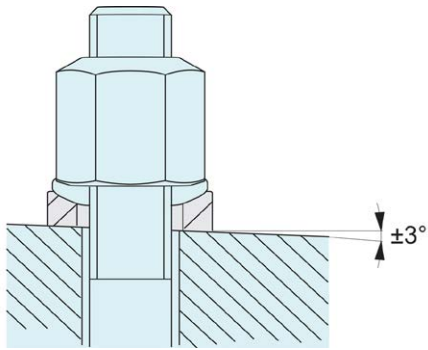
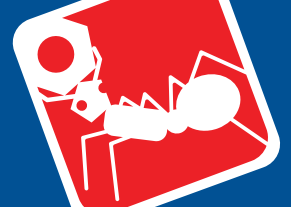
### Tips

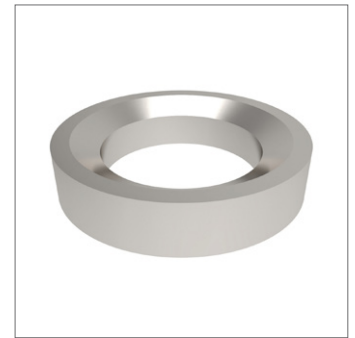
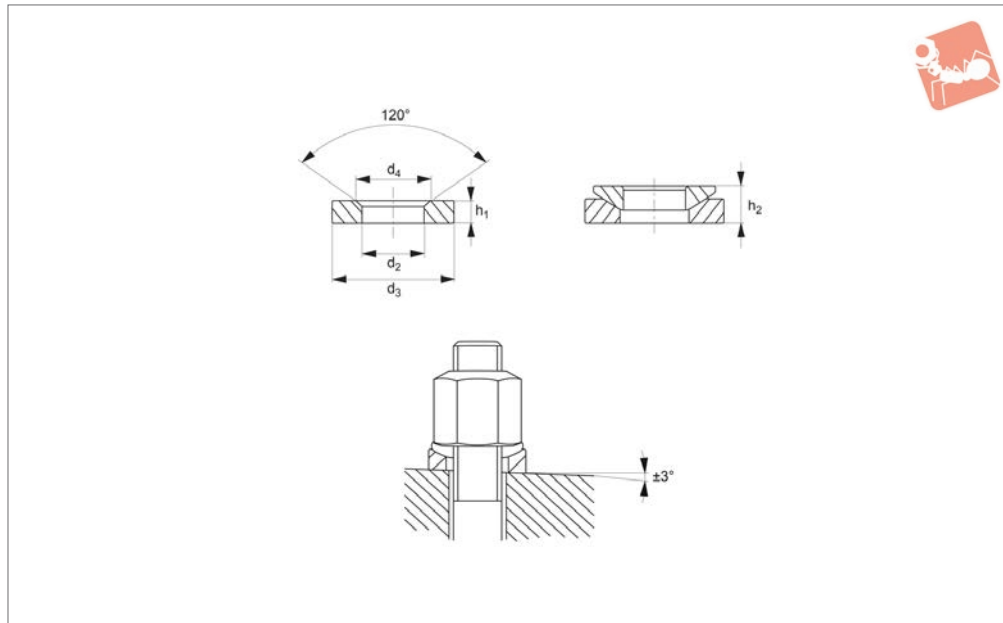
When clamping over holes or slots which do not provide full surface contact to the washer, only use no. 25200 in combination

with washer no. 25800 (type G)- do not use in combination with no. 25500 (type D) in such situations.

\*Torques for screws A2-70 are approximate values.

Order No.	For thread	For thread inch	d <sub>1</sub> tol. H13	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	r <sub>1</sub>	Static load kN max.	Torque for screwed connectors Nm max.	With 25500 h <sub>3</sub>	With 25800 h <sub>3</sub>	Weight g
<b>25200.W0306</b>	M 6	1/4"	6,4	12	2,3	0,7	9	6	6	4,0	5,2	1
<b>25200.W0308</b>	M 8	5/16"	8,4	17	3,2	0,6	12	12	16	5,3	6,8	3
<b>25200.W0310</b>	M10	3/8"	10,5	21	4,0	0,8	15	16	32	6,3	7,1	5
<b>25200.W0312</b>	M12	1/2"	13,0	24	4,6	1,1	17	24	56	7,9	8,9	8
<b>25200.W0316</b>	M16	5/8"	17,0	30	5,3	1,3	22	45	135	9,3	10,1	13
<b>25200.W0320</b>	M20	3/4"	21,0	36	6,3	2,0	27	71	280	11,6	12,1	23
<b>25200.W0324</b>	M24	7/8"	25,0	44	8,2	2,4	32	105	455	14,9	15,4	46
<b>25200.W0330</b>	M30	1-1/8", 1-3/16"	31,0	56	11,2	3,6	41	191	1050	18,8	18,8	104
<b>25200.W0336</b>	M36	1-1/4", 1-3/8"	37,0	68	14,0	4,6	50			23,4		193
<b>25200.W0342</b>	M42	1-1/2"	43,0	78	17,0	6,5	58			28,3		313
<b>25200.W0348</b>	M48	1-3/4"	50,0	92	21,0	8,0	67			35,0		545





## 25500

WASHERS

### Material

Stainless steel (AISI 303, 1.4305).

Use with spherical seat washer no. 25200 (type C).

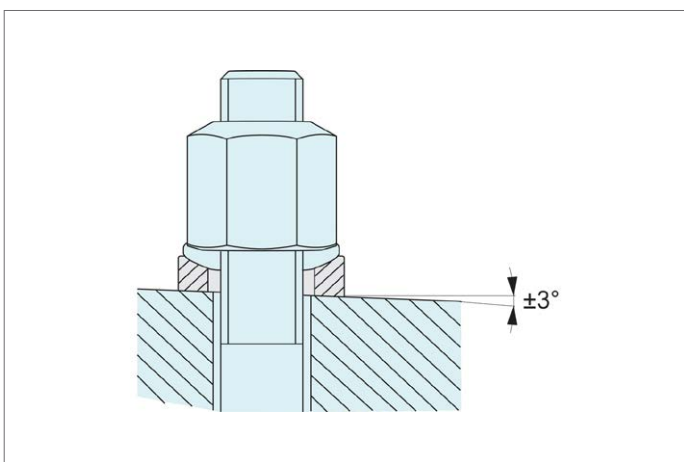
and also the coefficient of friction at  $\mu 0,12$ .

### Technical Notes

Similar to DIN 6319D.

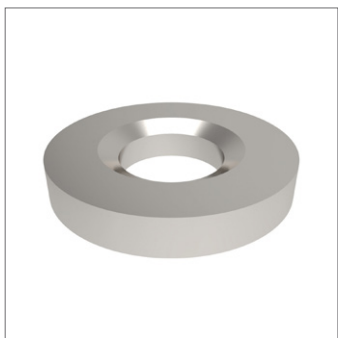
Torque values are approximate. Please consider the actual preloads in your appli-

Order No.	For metric thread $d_1$	For thread $d_1$ inch	$d_2$ tol. H13	$d_3$	$h_1$	$d_4$	Load capacity for static load		With 25200 $h_2$	Weight g
							kN max.	Torque Nm max.		
25500.W0406	M 6	1/4"	7,1	12	2,8	11,0	6	6	4,0	1
25500.W0408	M 8	5/16"	9,6	17	3,5	14,5	12	16	5,3	4
25500.W0410	M10	3/8"	12,0	21	4,2	18,5	16	32	6,3	7
25500.W0412	M12	1/2"	14,2	24	5,0	20,0	24	56	7,9	11
25500.W0416	M16	5/8"	19,0	30	6,2	26,0	45	135	9,3	19
25500.W0420	M20	3/4"	23,2	36	7,5	31,0	71	280	11,6	32
25500.W0424	M24	7/8"	28,0	44	9,5	37,0	105	455	14,9	63
25500.W0430	M30	1-1/8", 1-3/16"	35,0	56	12,0	49,0	191	1050	18,8	127
25500.W0436	M36	1-1/4", 1-3/8"	42,0	68	15,0	60,0			23,4	234
25500.W0442	M42	1-1/2"	49,0	78	18,0	70,0			28,3	362
25500.W0448	M48	1-3/4"	56,0	92	22,0	82,0			35,0	642

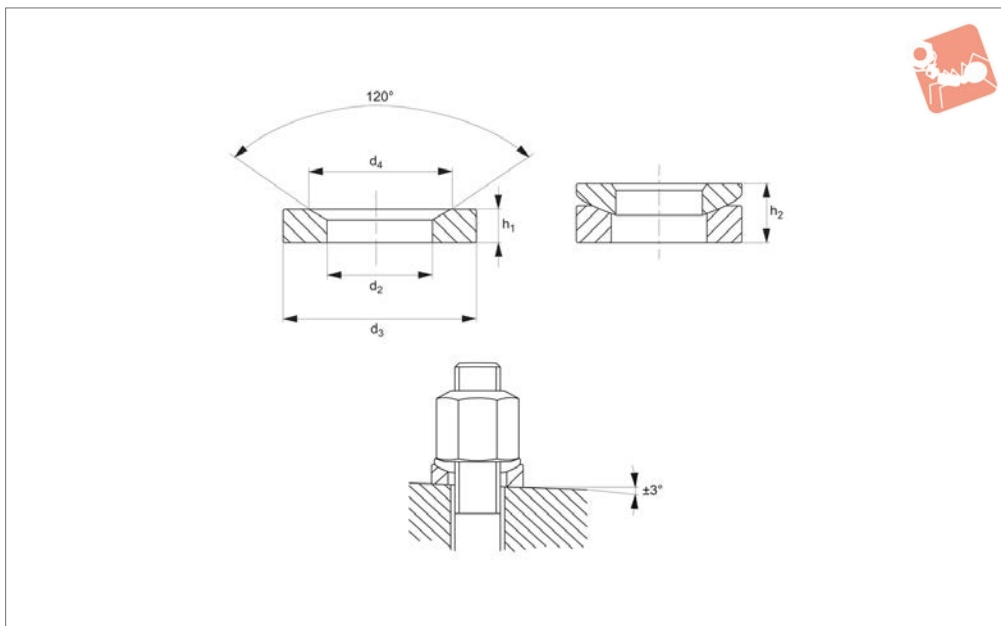




WASHERS



**25800**



**Material**

Stainless steel 1.4305 (AISI 303).

Their large diameter makes them suitable to bridge wide slots.

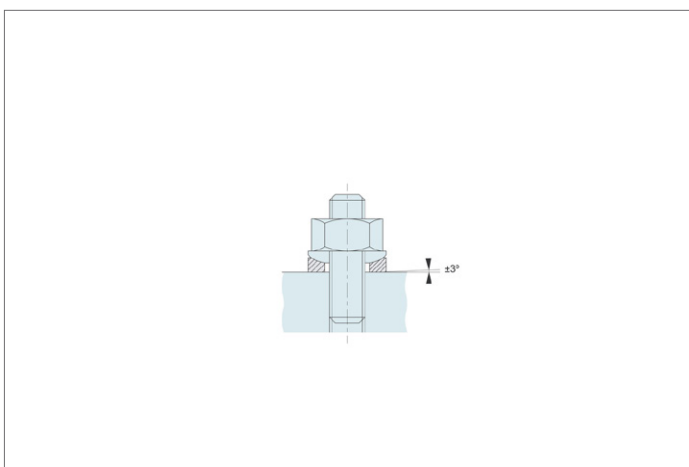
be considered, coefficient of friction  $\mu$  total 0,12.

**Technical Notes**

Similar to DIN 6319G.

\*Torque values of screwed connector A2-70 are approximate. Actual preloads should

Order No.	For metric thread d <sub>1</sub>	For thread d <sub>1</sub> inch	d <sub>2</sub> tol. H13	d <sub>3</sub>	h <sub>1</sub>	d <sub>4</sub>	Load capacity for static load		With 25200 h <sub>2</sub>	Weight g
							kN max.	Torque Nm max.		
25800.W0106	M 6	1/4"	7,1	17	4	11,0	6	6	5,2	6
25800.W0108	M 8	5/16"	9,6	24	5	14,5	12	16	6,8	15
25800.W0110	M10	3/8"	12,0	30	5	18,5	16	32	7,1	22
25800.W0112	M12	1/2"	14,2	36	6	20,0	24	56	8,9	40
25800.W0116	M16	5/8"	19,0	44	7	26,0	45	135	10,1	66
25800.W0120	M20	3/4"	23,2	50	8	31,0	71	280	12,1	95
25800.W0124	M24	7/8"	28,0	60	10	37,0	105	455	15,4	171
25800.W0130	M30	1-1/8", 1-3/16"	35,0	68	12	49,0	191	1050	18,8	236

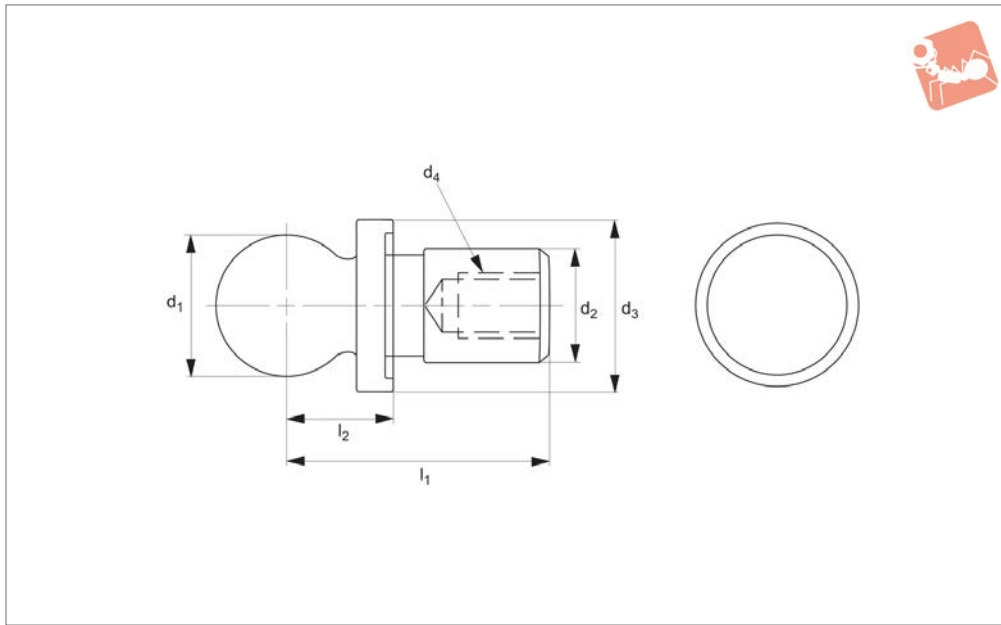




# Inspection Balls - Imperial

short shank - one piece construction

## Gauging & Inspection



**20500**

GAUGING & INSPECTION

### Material

Steel (AISI 8620).

### Technical Notes

Case hardened.

Concentricity of ball to shank ,0001 T.I.R.

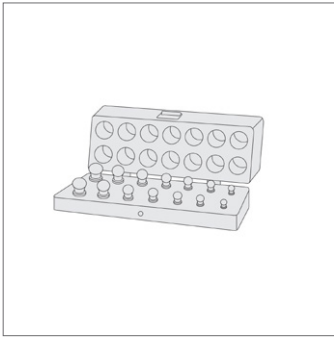
### Important Notes

Used as reference points for inspection applications in conjunction with CMMs to

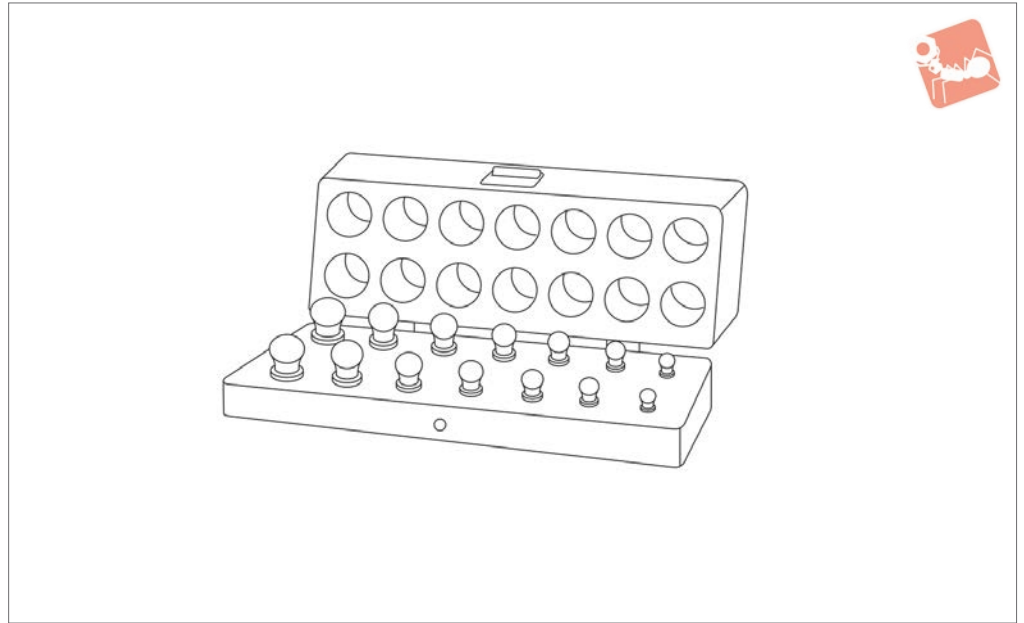
accurately measure the workpiece.

**All dimensions in inches.**

Order No.	$d_1$ +0.0000 -0.0002	$d_2$ +0.0000 -0.0002	$d_3$	$d_4$	$l_1$	$l_2$ $\pm 0.0002$	Weight oz
20500.W0025I	0.250	0.125	1/4"	-	0.58	0.200	0.16
20500.W0037I	0.375	0.187	3/8"	-	0.74	0.300	0.16
20500.W0038I	0.375	0.313	1/2"	8-32	0.74	0.300	0.48
20500.W0050I	0.500	0.250	1/2"	6-32	0.63	0.313	0.48
20500.W0051I	0.500	0.250	1/2"	6-32	0.93	0.400	0.48
20500.W0052I	0.500	0.250	1/2"	6-32	0.88	0.500	0.48
20500.W0053I	0.500	0.375	5/8"	10-24	1.31	0.375	0.96
20500.W0063I	0.625	0.312	5/8"	8-32	1.08	0.450	0.96
20500.W0064I	0.625	0.375	5/8"	10-24	1.42	0.450	1.12
20500.W0068I	0.688	0.375	3/4"	10-24	1.47	0.500	1.44
20500.W0075I	0.750	0.375	3/4"	10-24	1.53	0.562	2.08
20500.W0100I	1.000	0.500	1"	10-24	1.64	0.700	4.00



**20501**



**Material**

Steel (AISI 8620).

**Important Notes**

For individual part dimensions see 20500.

**Order No.**

**20501.W0001I**

**Set contents**

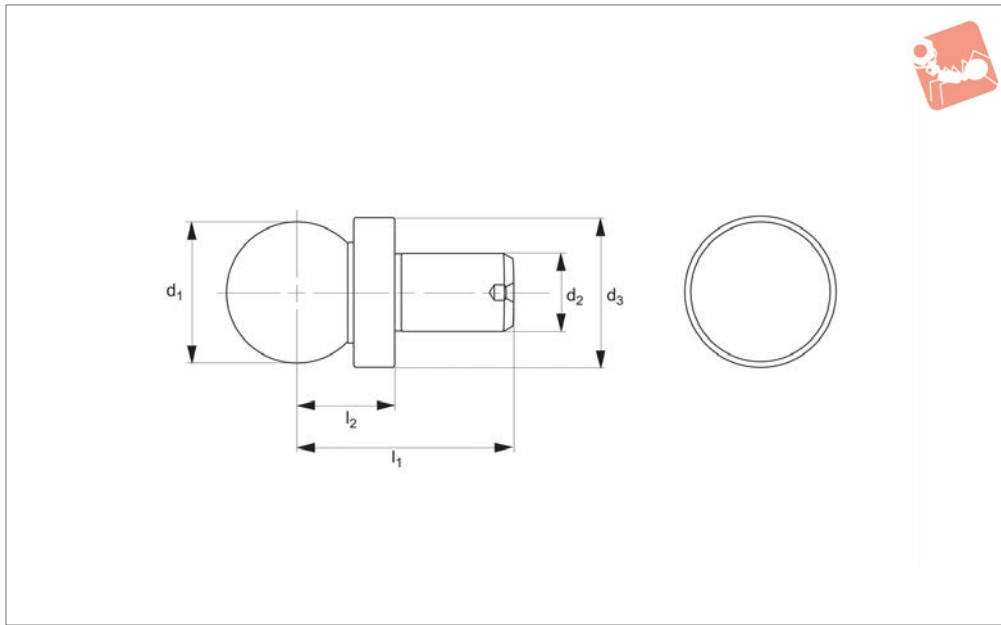
- 2 x 20500.W0025I
- 2 x 20500.W0037I
- 2 x 20500.W0038I
- 2 x 20500.W0050I
- 2 x 20500.W0051I



# Precision Balls - Imperial

slip-fit - shoulder type

## Gauging & Inspection



**20504**

GAUGING & INSPECTION

### Material

Hardened and ground steel (440 stainless).

### Technical Notes

Concentricity of ball to shank: ,0002 T.I.R.

### Important Notes

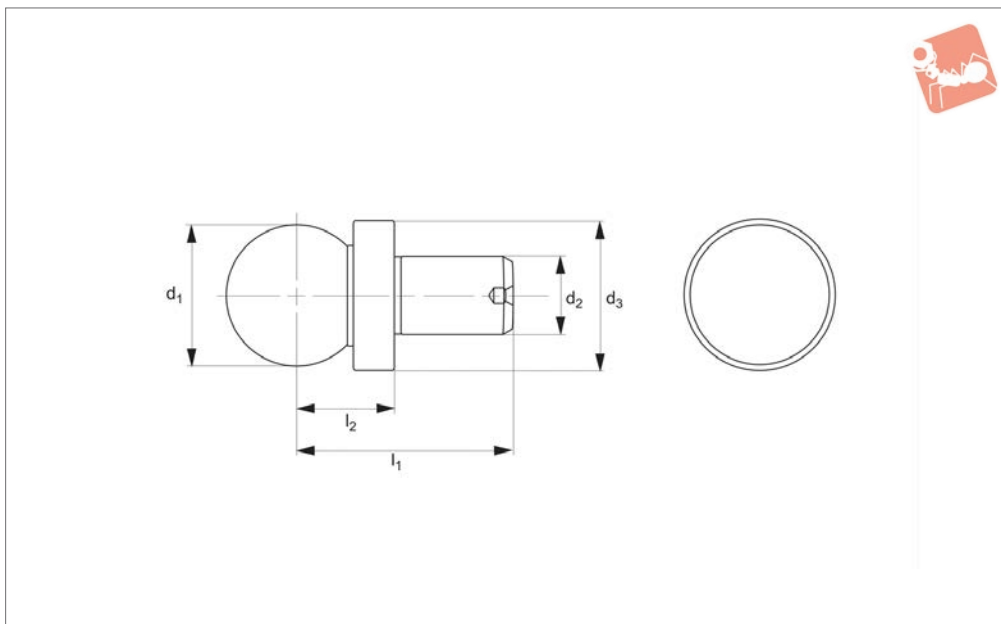
Used as reference points for inspection applications in conjunction with CMMs to accurately measure the work piece.

**All dimensions in inches.**

Order No.	$d_1$ $\pm 0.0005$	$d_2$ $+0.0000 \mid -0.0002$	$d_3$	$l_1$	$l_2$ $\pm 0.0002$	Weight oz
20504.W0025I	0.250	0.150	1/4"	9/16"	0.200	0.16
20504.W0037I	0.375	0.187	3/8"	3/4"	0.300	0.16
20504.W0050I	0.500	0.250	1/2"	15/16"	0.400	0.48
20504.W0063I	0.625	0.312	5/8"	1-1/16"	0.450	0.96
20504.W0075I	0.750	0.375	3/4"	1-1/4"	0.500	1.60
20504.W0088I	0.875	0.437	7/8"	1-7/16"	0.600	1.12
20504.W0100I	1.000	0.500	1"	1-5/8"	0.700	3.48



## 20508



### Material

Hardened and ground steel (8620 steel).

### Technical Notes

Concentricity of ball to shank:  $.0002$  T.I.R.

### Important Notes

Used as reference points for inspection applications in conjunction with CMMs to accurately measure the work piece.

**All dimensions in inches.**

**For Press Fit  $d_2$  tolerance is  $+.0003, - .0000$ .**

**For Slip Fit  $d_2$  tolerance is  $+.0000, - .0004$ .**

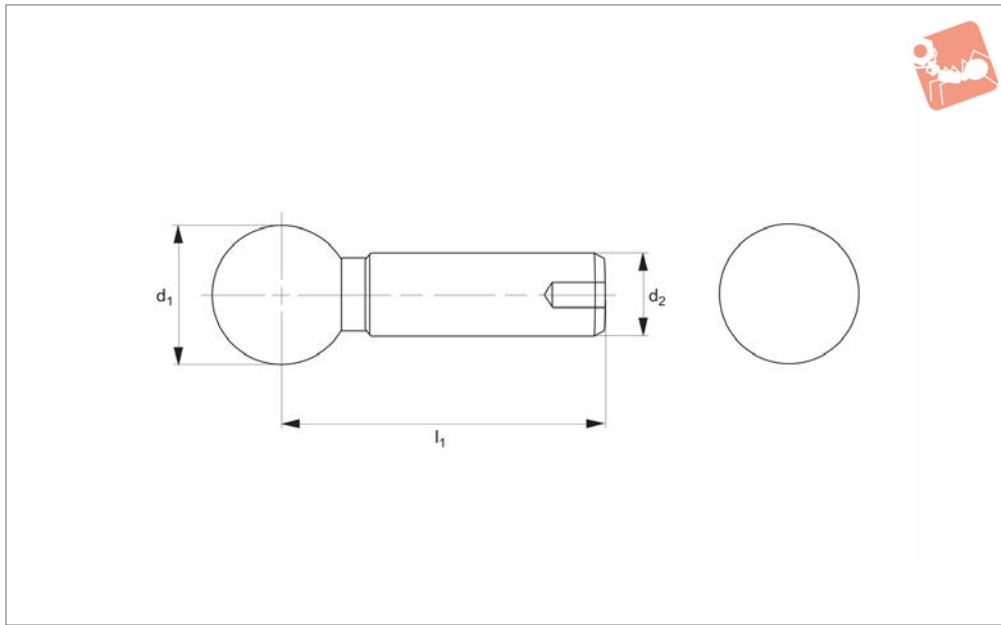
Order No.	Type	$d_1$ $\pm 0.0002$	$d_2$ $+0.0003   -0.0000$	$d_3$	$l_1$	$l_2$ $\pm 0.0002$	Weight oz
20508.W0025I	Slip Fit	0.250	0.125	1/4"	9/16"	0.200	0.16
20508.W0037I	Slip Fit	0.375	0.188	3/8"	3/4"	0.300	0.16
20508.W0050I	Slip Fit	0.500	0.250	1/2"	15/16"	0.400	0.48
20508.W0051I	Slip Fit	0.500	0.250	1/2"	1-3/8"	0.500	0.64
20508.W0075I	Slip Fit	0.750	0.375	3/4"	1-1/4"	0.500	1.60
20508.W0125I	Press Fit	0.250	0.125	1/4"	9/16"	0.200	0.16
20508.W0137I	Press Fit	0.375	0.188	3/8"	3/4"	0.300	0.16
20508.W0150I	Press Fit	0.500	0.250	1/2"	15/16"	0.400	0.48
20508.W0151I	Press Fit	0.500	0.250	1/2"	1-3/8"	0.500	0.64
20508.W0175I	Press Fit	0.750	0.375	3/4"	1-1/4"	0.500	1.60





# Tooling Balls - Imperial standard - one piece construction

## Gauging & Inspection



### 20510

GAUGING & INSPECTION

#### Material

Hardened and ground steel (8620 steel).

#### Technical Notes

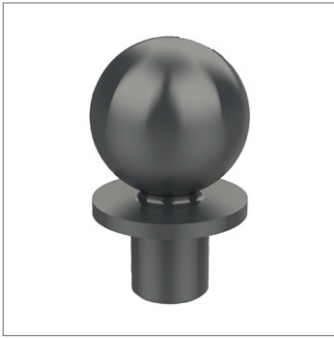
Concentricity of ball to shank: ,0002 T.I.R.

#### Important Notes

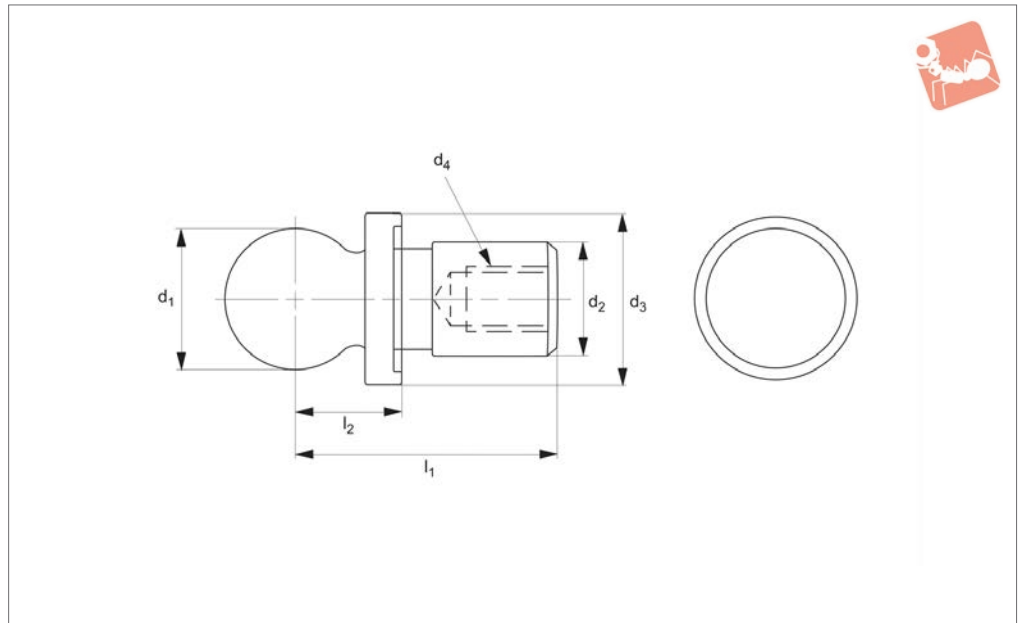
Used as reference points for inspection applications in conjunction with CMMs to accurately measure the work piece.

All dimensions in inches.

Order No.	Type	d <sub>1</sub> ±0.0002	d <sub>2</sub> +0.0000 -0.0004	l <sub>1</sub>	Weight oz
20510.W0025I	Slip Fit	0.250	0.125	9/16"	1
20510.W0037I	Slip Fit	0.375	0.188	3/4"	1
20510.W0050I	Slip Fit	0.500	0.250	15/16"	3
20510.W0051I	Slip Fit	0.500	0.250	1-1/2"	3
20510.W0052I	Slip Fit	0.500	0.375	1-1/2"	10



**20512**



GAUGING & INSPECTION

**Material**

Hardened and ground steel (8620 steel).

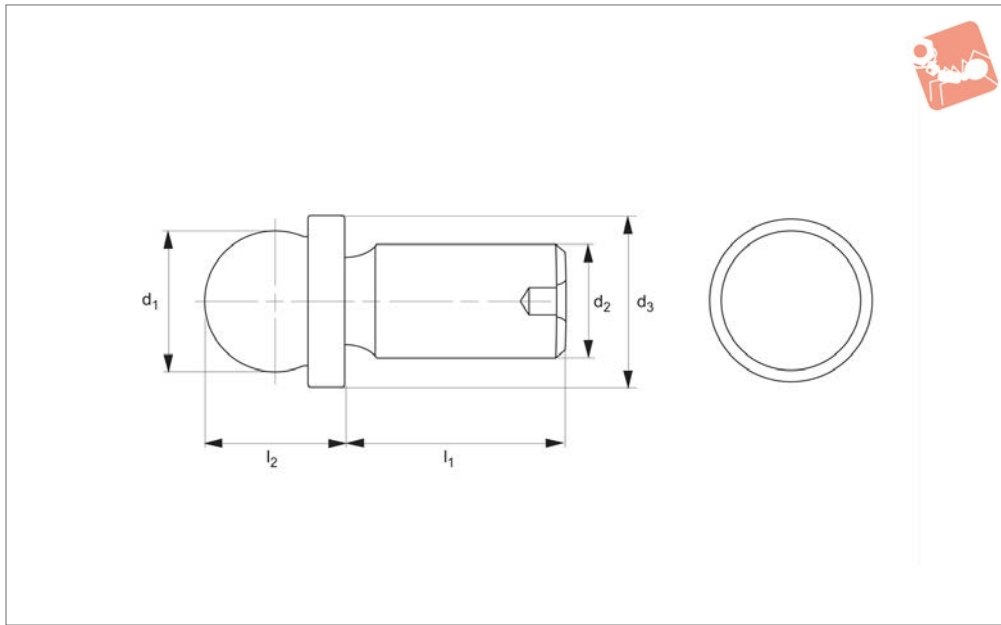
**Technical Notes**

Concentricity of ball to shank: ,0002 T.I.R.

**Important Notes**

Used as reference points for inspection applications in conjunction with CMMs to accurately measure the work piece.

Order No.	Type	d <sub>1</sub> inch ±0.0002 in   ±0.005 mm	d <sub>2</sub> +0.0000 in   -0.0004 in. +0.000 mm   -0.010 mm	d <sub>3</sub>	d <sub>4</sub> UNC-2B	l <sub>1</sub>	l <sub>2</sub> ±0.0002 in   ±0.005 mm	Weight g
20512.W0006	Inch	0,500	0,250	1/2"	6-32x3/16"	5/8"	0,313	13,6
20512.W0010	Inch	0,500	0,250	1/2"		5/8"	0,313	13,6
20512.W0012	Metric	6	3	6		16	6	4,5
20512.W0050	Metric	10	5	10		20	10	13,6
20512.W0051	Metric	12	6	12		22	12	13,6



20513

GAUGING & INSPECTION

**Material**

Ball: carbide.  
Shank: 440 stainless steel.

**Important Notes**

Used as reference points for inspection applications in conjunction with CMMs to accurately measure the work piece.

**All dimensions in inches.**

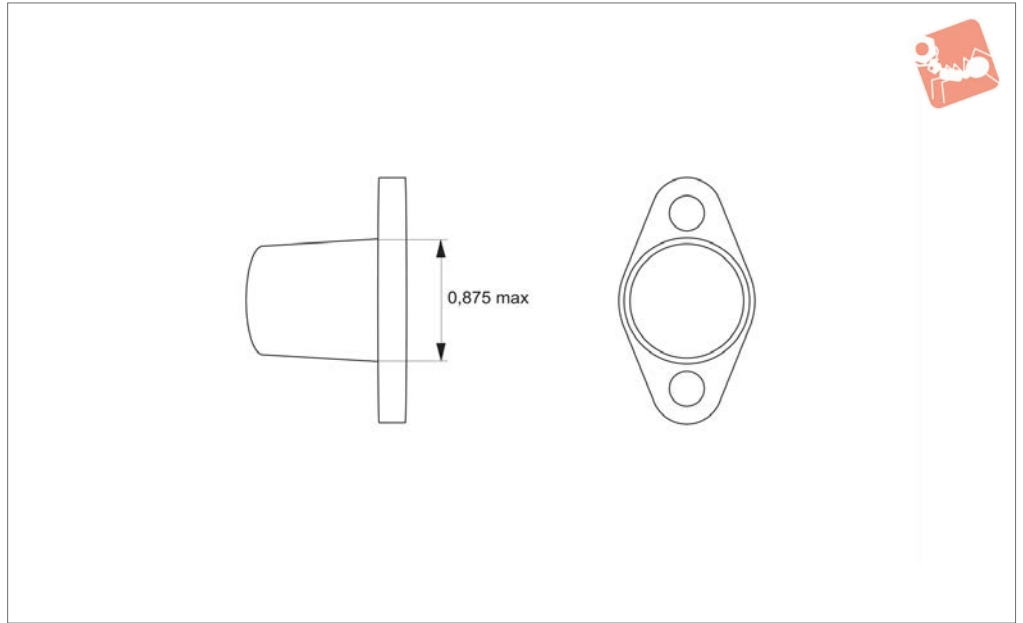
**Technical Notes**

Concentricity of ball to shank: ,0002 T.I.R.

Order No.	$d_1$	$d_2$	$d_3$	$l_1$	$l_2$
20513.W0012I	$\pm 0.0003$ 0.125	$\pm 0.0002$ 0.126	0.19	0.28	$\pm 0.0002$ 0.156



**20515**



**Material**

Durable, high impact resistant polymer.

**Technical Notes**

Mounts over 0,875" diameter or smaller

tooling ball directly into jig fixture with two number 10 screws.

**Important Notes**

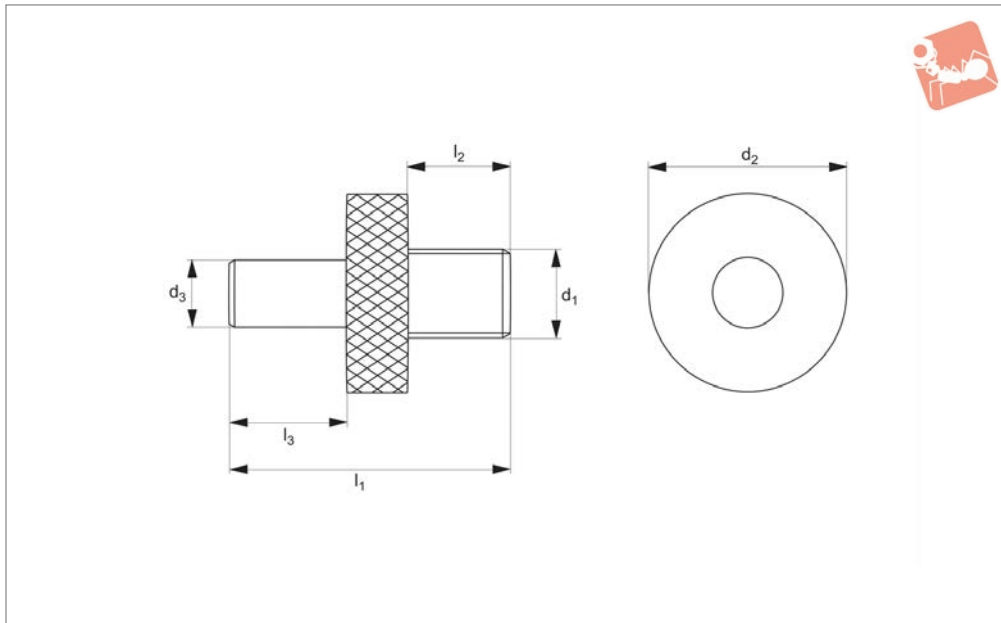
Protects tooling and inspections balls from

damage between operations.  
**All dimensions in inches.**

**Order No.**

20515.W0088I

Tooling ball diameter  
max.  
0.875



**20530**

GAUGING & INSPECTION

### Material

Body: 52100 steel.  
Collar: 12L14 steel, blackened.

spread - all diameters are concentric within .0002 T.I.R.  
Thread: class 3A.

holes in a workpiece.  
**All dimensions in inches.**

### Technical Notes

Shaft size  $l_3$  is the same diameter on all gauges to simplify calculation of the hole

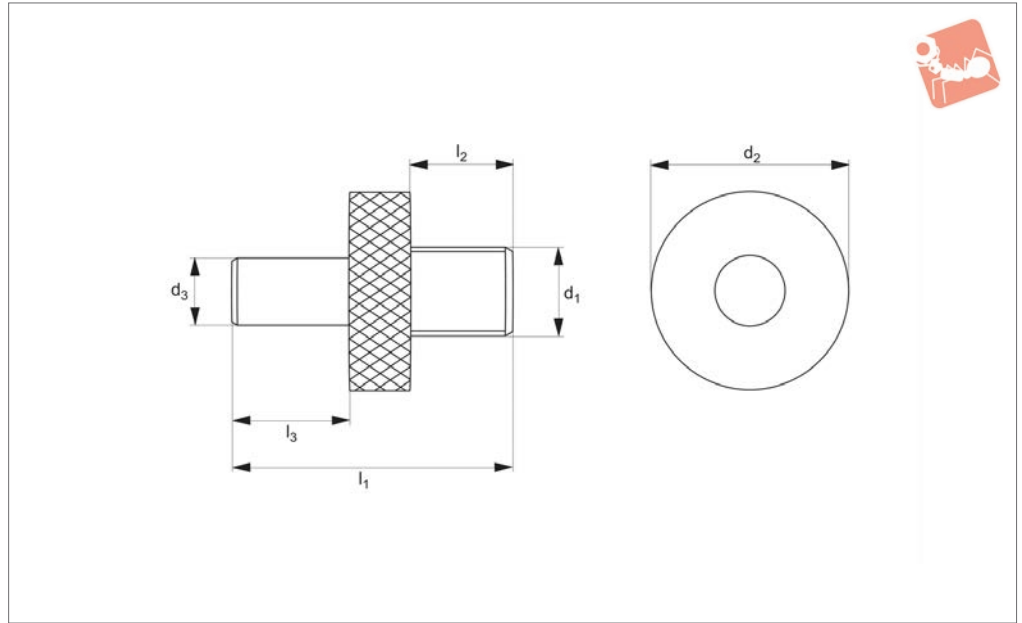
### Important Notes

Two piece construction. Use to accurately measure the distance between two tapped

Order No.	Type	$d_1$ tol. 3A	$d_2$	$d_3$ +0.0002 -0.0000	$l_1$	$l_2$	$l_3$	Weight g
20530.W0014I	UNF	6-40	5/16"	0.25	7/8"	1/4"	0.38	4.5
20530.W0019I	UNF	10-32	5/16"	0.25	7/8"	1/4"	0.38	4.5
20530.W0025I	UNF	1/4"-28	3/8"	0.25	1"	3/8"	0.38	9.1
20530.W0031I	UNF	5/16"-24	1/2"	0.25	1"	3/8"	0.38	13.6
20530.W0037I	UNF	3/8"-24	1/2"	0.25	1"	3/8"	0.38	13.6
20530.W0043I	UNF	7/16"-20	7/8"	0.25	1"	3/8"	0.38	18.1
20530.W0050I	UNF	1/2"-20	7/8"	0.25	1"	3/8"	0.38	27.2
20530.W0063I	UNF	5/8"-18	7/8"	0.25	1"	3/8"	0.38	27.2
20530.W0108I	UNC	2-56	5/16"	0.25	7/8"	5/16"	0.38	4.5
20530.W0111I	UNC	4-40	5/16"	0.25	7/8"	5/16"	0.38	4.5
20530.W0112I	UNC	5-40	5/16"	0.25	7/8"	5/16"	0.38	4.5
20530.W0114I	UNC	6-32	5/16"	0.25	7/8"	5/16"	0.38	4.5
20530.W0116I	UNC	8-32	5/16"	0.25	7/8"	5/16"	0.38	4.5
20530.W0119I	UNC	10-24	5/16"	0.25	7/8"	5/16"	0.38	4.5
20530.W0125I	UNC	1/4"-20	3/8"	0.25	1"	3/8"	0.38	13.6
20530.W0131I	UNC	5/16"-18	1/2"	0.25	1"	3/8"	0.38	13.6
20530.W0137I	UNC	3/8"-16	1/2"	0.25	1"	3/8"	0.38	13.6
20530.W0143I	UNC	7/16"-14	7/8"	0.25	1"	3/8"	0.38	13.0
20530.W0150I	UNC	1/2"-13	7/8"	0.25	1"	3/8"	0.38	27.2
20530.W0163I	UNC	5/8"-11	7/8"	0.25	1"	3/8"	0.38	27.2
20530.W0175I	UNC	3/4"-10	1"	0.25	1-1/8"	1/2"	0.38	54.4



## 20531



### Material

Body: 52100 steel.  
Collar: 12L14 steel, blackened.

gauges to simplify calculation of the hole spread - all diameters are concentric within .0002 T.I.R. Thread class 6G

measure the distance between two tapped holes in a workpiece.

### Technical Notes

Shaft size  $l_3$  is the same diameter on all

### Important Notes

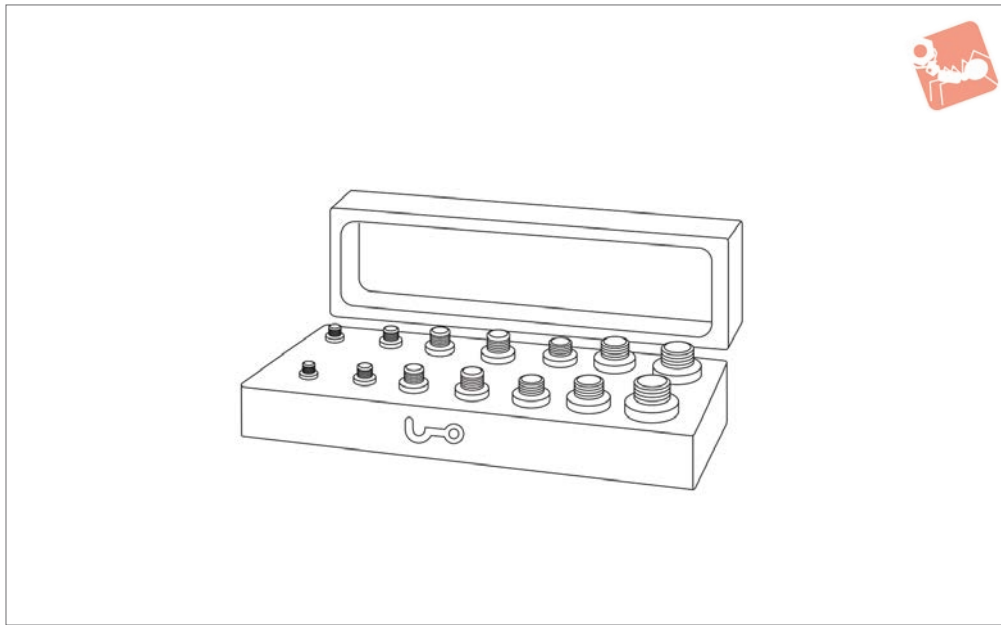
Two piece construction. Use to accurately

Order No.	$d_1$ tol. 6G	$d_2$	$d_3$ +0.0002 -0.0000	$l_1$	$l_2$	$l_3$	Weight g
20531.W0001	M 1,6x0,35	7.95	6.4	22	6.4	9.5	4.5
20531.W0002	M 2x0,40	7.95	6.4	22	6.4	9.5	4.5
20531.W0003	M 2,5x0,45	7.95	6.4	22	6.4	9.5	4.5
20531.W0004	M 3x0,50	7.95	6.4	22	6.4	9.5	4.5
20531.W0005	M 4x0,70	7.95	6.4	22	6.4	9.5	4.5
20531.W0006	M 5x0,80	9.53	6.4	22	6.4	9.5	0.2
20531.W0008	M 6x1,00	9.53	6.4	22	6.4	9.5	6.2
20531.W0010	M 8x1,25	12.70	6.4	28	12.7	9.5	12.2
20531.W0012	M10x1,50	12.70	6.4	28	12.7	9.5	20.4
20531.W0016	M12x1,75	22.23	6.4	28	12.7	9.5	24.9
20531.W0020	M16x2,00	22.23	6.4	28	12.7	9.5	34.0
20531.W2508	M20x2,50	25.40	6.4	28	12.7	9.5	45.4



# Location Gauges - Tapped Hole - Set imperial

## Gauging & Inspection



### 20532

GAUGING & INSPECTION

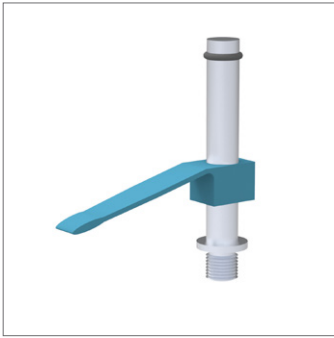
#### Material

Body: 52100 steel.  
Collar: 12L14 steel, blackened.

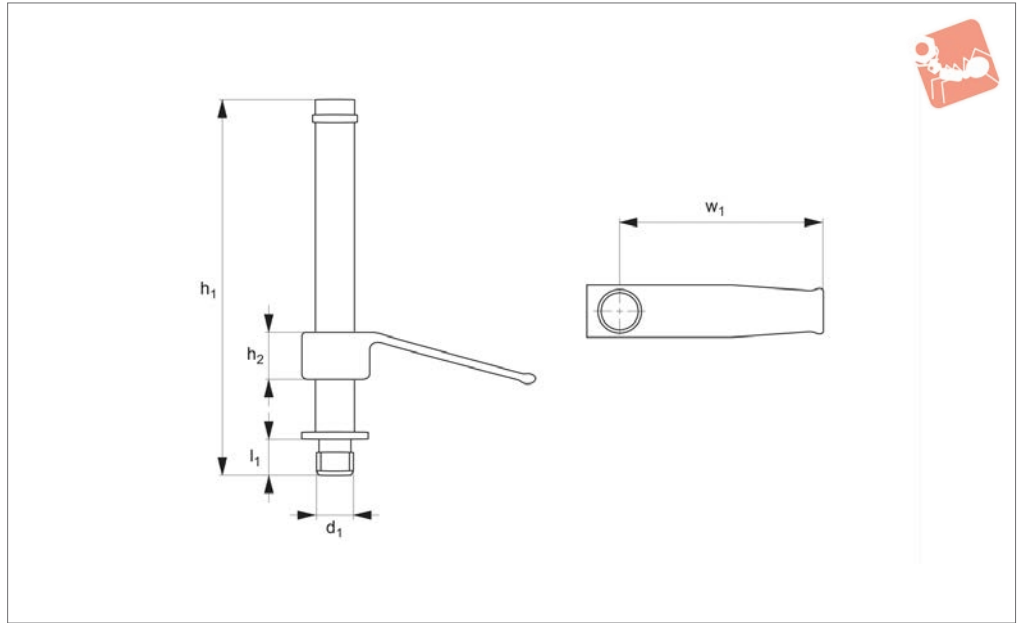
#### Important Notes

For individual part dimensions see 20530.

Order No.	Set contents	Type	Weight g
20532.W0001I	2 x 20530.W0019I 2 x 20530.W0025I 2 x 20530.W0031I 2 x 20530.W0037I 2 x 20530.W0043I	UNF	454
20532.W0002I	2 x 20530.W0119I 2 x 20530.W0125I 2 x 20530.W0131I 2 x 20530.W0137I 2 x 20530.W0143I	UNC	454
20532.W0003I	2 x 20530.W0108I 2 x 20530.W0111I 2 x 20530.W0112I 2 x 20530.W0114I 2 x 20530.W0014I	UNC	454



19320



GAUGING & INSPECTION

**Material**

Aluminium.

**Technical Notes**

For fixturing on CMMs only, not recom-

mended for machining.

**Tips**

Optional rubber coated tip helps prevent marring of parts during inspection.

**Important Notes**

Ideal for light pressure clamping, actuated by finger pressure.

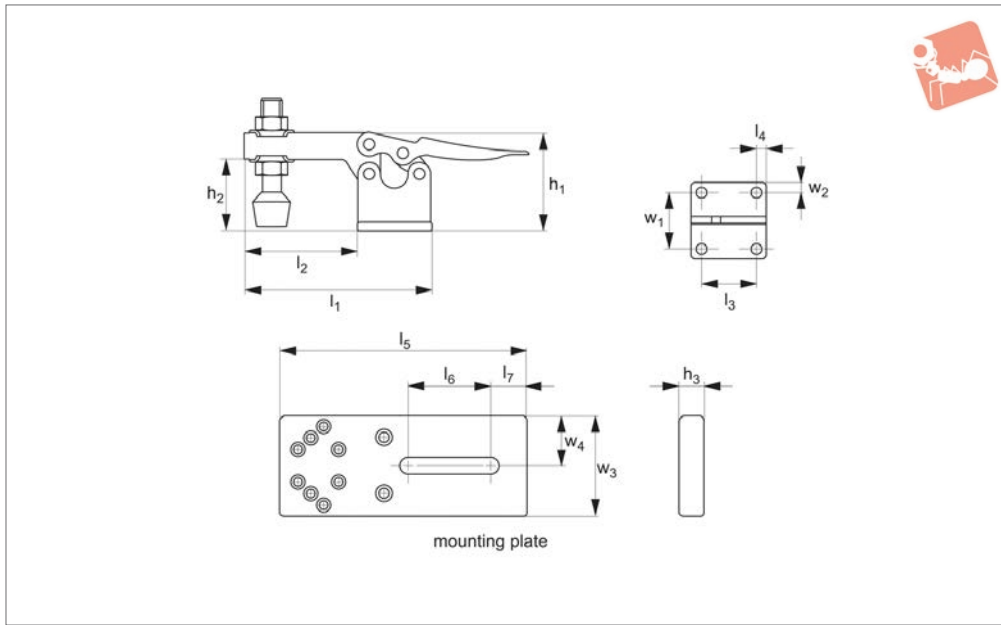
Order No.	Type	d <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	w <sub>1</sub>	Weight g
19320.W0008	Standard	M 8	75	8	6.37	39.0	68
19320.W0012	Standard	M 8	75	12	6.37	58.7	92
19320.W0108	Rubber coated tip	M 8	75	8	6.37	39.0	68
19320.W0112	Rubber coated tip	M 8	75	12	6.37	58.7	92





# CMM Fixturing Toggle Clamp with mounting plate

## Gauging & Inspection



# 19322

GAUGING & INSPECTION

### Material

Single toggle clamp supplied with matching mounting plate.

mounting base for easy adjustment and positioning.

### Technical Notes

Hold parts for probing on CMMs. Sliding

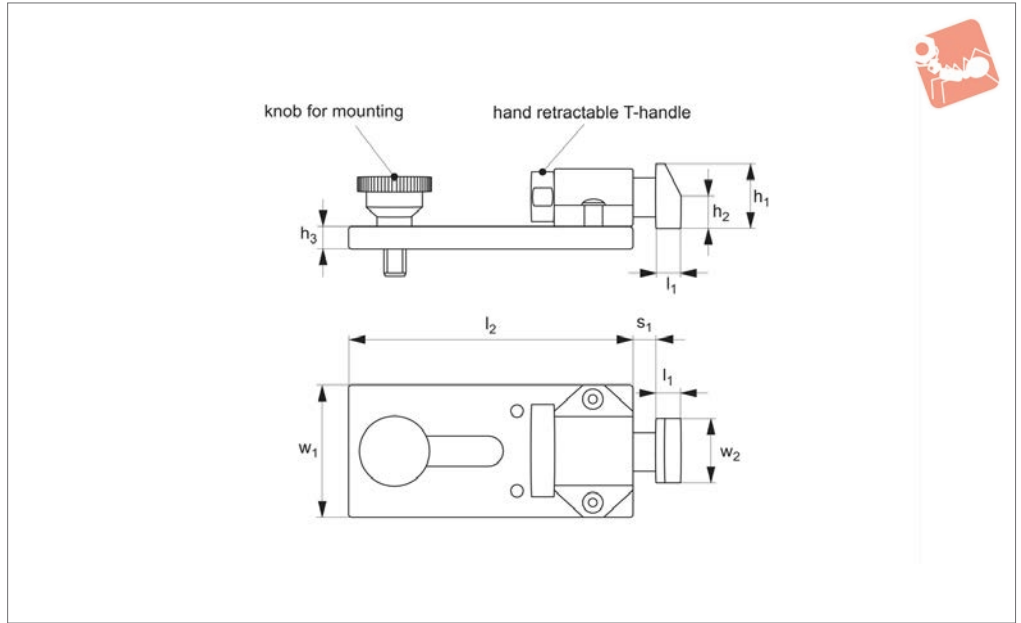
### Tips

Supplied with thumb screws to locate toggle clamp mounting plate.

Order No.	$h_1$	$h_2$	$h_3$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$l_7$	$w_1$	$w_2$	$w_3$	$w_4$	Weight g
19322.W0075	19.05	7.9	6.3	67.5	17.46	15.9	7.9	80	25	13	15.9	3.97	38	19	591
19322.W0150	38.1	25.4	6.3	138.1	57.1	26.9	4.7	80	25	13	22.2	6.7	38	19	1000



## 19324



GAUGING & INSPECTION

### Material

Steel.

allows for quick part changeover. Sliding mounting base for easy adjustment and positioning.

### Important Notes

Provides horizontal clamping. T-handle

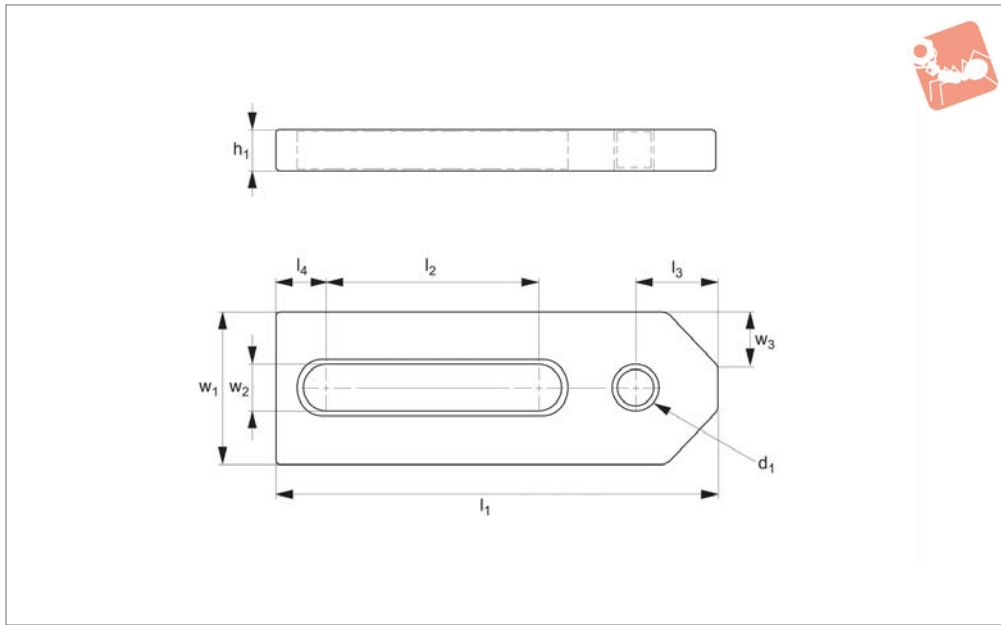
Order No.	Stroke $s_1$	$h_1$	$h_2$	$h_3$	$l_1$	$l_2$	$w_1$	$w_2$	Weight g
19324.W0025	4.8	15.9	7.9	6.35	6.4	80	38	15.9	682



# CMM Fixturing Adjustable Stops

M 8 threads

## Gauging & Inspection



**19326**

GAUGING & INSPECTION

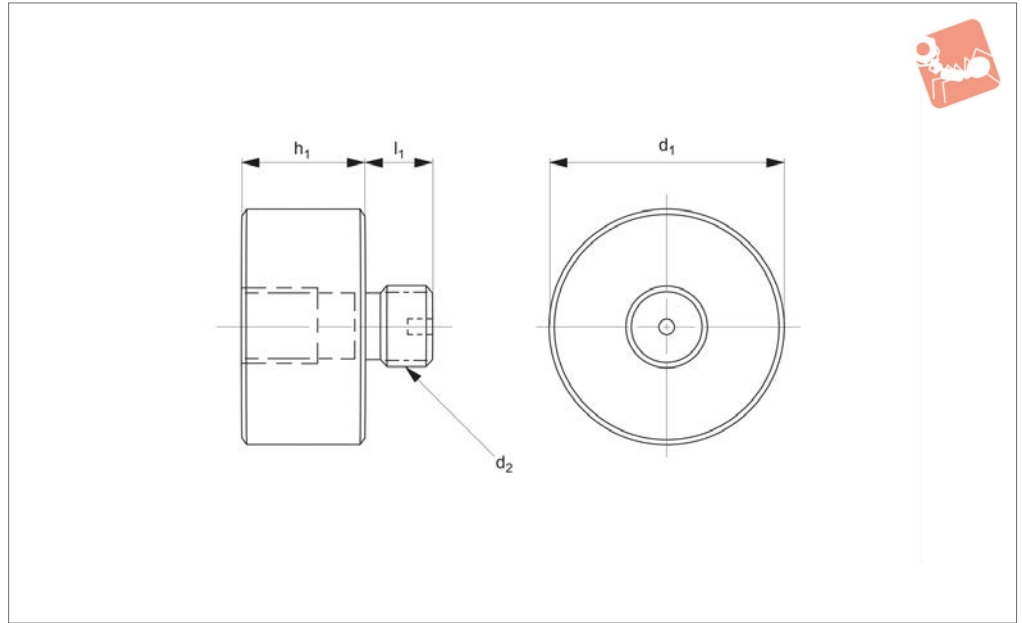
### Important Notes

Sliding mounting base for easy adjustment and positioning. Thumb screw included.

Order No.	d <sub>1</sub>	h <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>  45° ±0.2	Weight g
<b>19326.W0050</b>	M 8	6.4	51	22	5.0	8	15	8.75	5.0	96
<b>19326.W0075</b>	M 8	6.4	76	45	6.4	8	25	8.75	6.4	150



**19330**



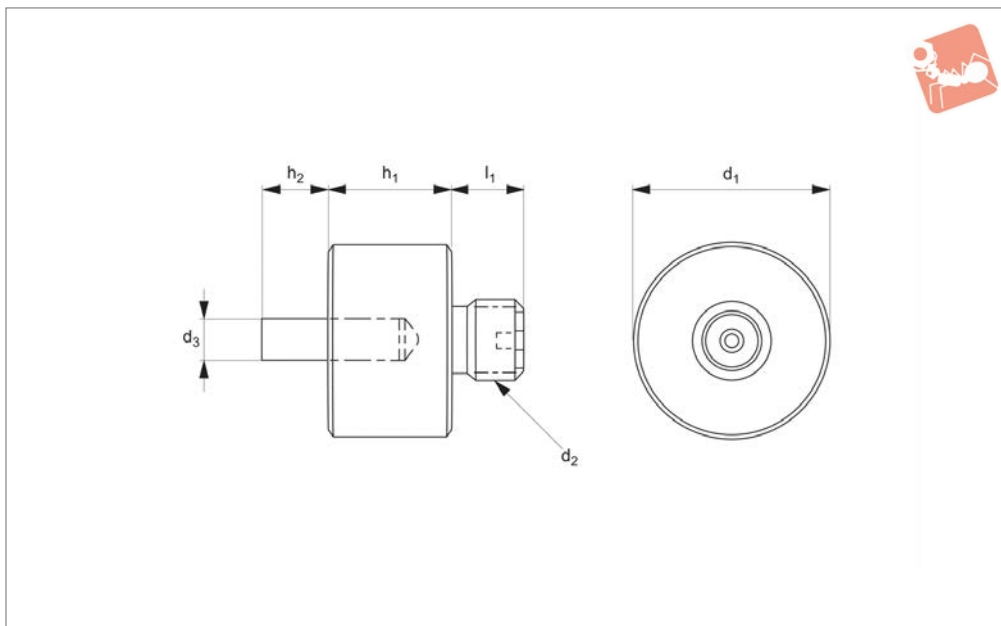
**Material**

Carbon steel.

**Important Notes**

Provides resting point to raise part for probing.

Order No.	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	l <sub>1</sub>	Weight g
19330.W1315	13	M 8	15	8	91
19330.W1320	13	M 8	20	8	136
19330.W1325	13	M 8	25	8	182
19330.W1350	13	M 8	50	8	364
19330.W1375	13	M 8	75	8	409
19330.W1915	19	M 8	15	8	136
19330.W1920	19	M 8	20	8	182
19330.W1925	19	M 8	25	8	227
19330.W1950	19	M 8	50	8	454
19330.W1975	19	M 8	75	8	591
19330.W2515	25	M 8	15	8	182
19330.W2520	25	M 8	20	8	227
19330.W2525	25	M 8	25	8	272
19330.W2550	25	M 8	50	8	500
19330.W2575	25	M 8	75	8	727



### 19331

GAUGING & INSPECTION

#### Material

Carbon steel.

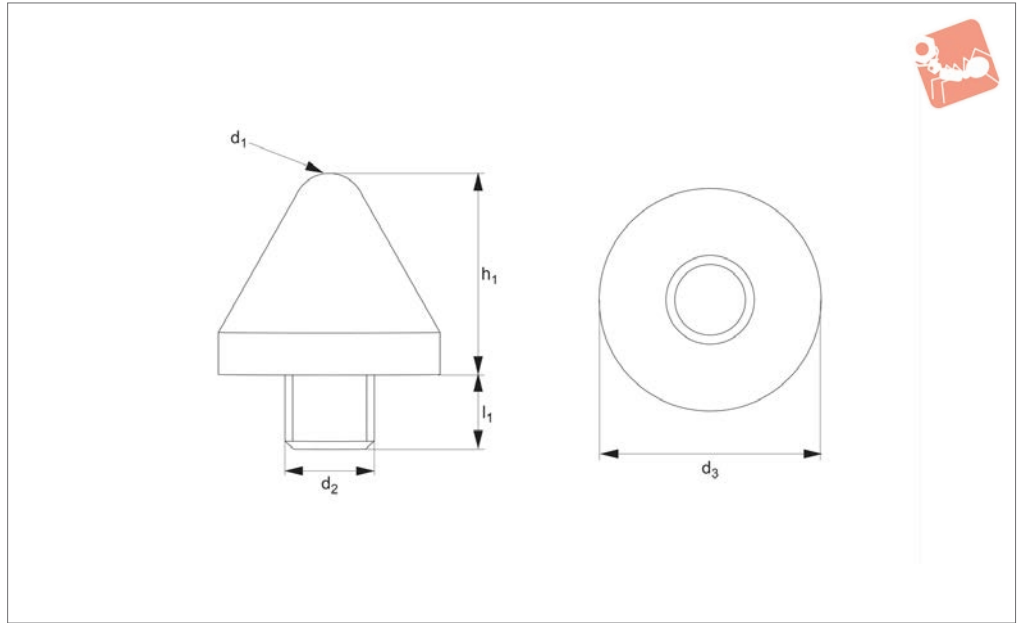
#### Important Notes

Provides point of rest and side stop for locating.

Order No.	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	Weight g
19331.W1325	13	M 8	3	25	6	6.4	91
19331.W1925	19	M 8	3	25	6	6.4	136



**19332**



GAUGING & INSPECTION

**Material**

Cone: thermoplastic.  
Stud: steel.

**Important Notes**

For resting cylindrical or curved parts.  
Thermoplastic, offers non-marring attri-

bute.

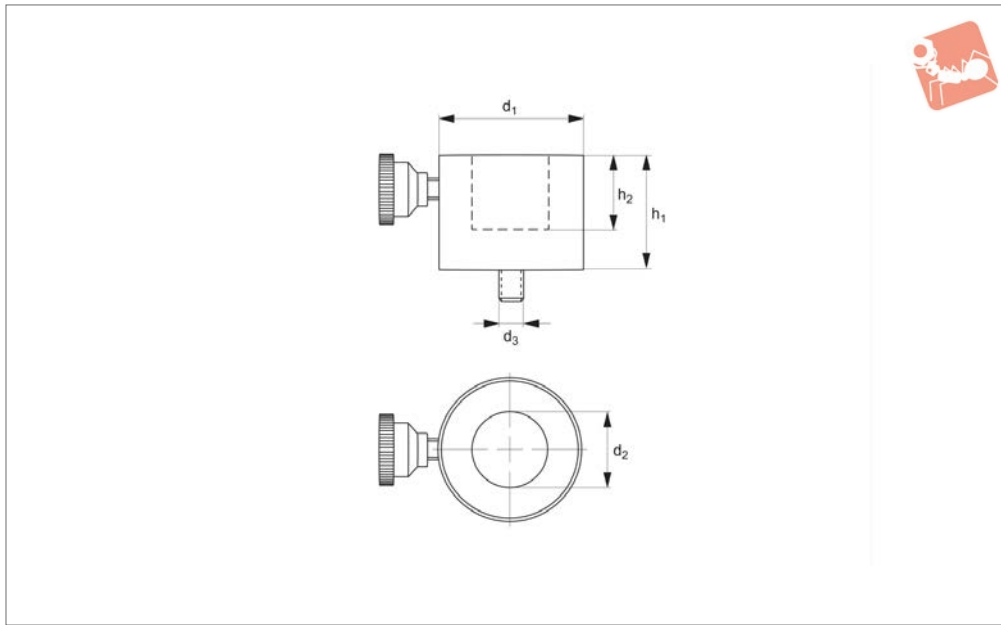
Order No.	$d_1$	$d_2$	$d_3$	$h_1$	$l_1$	Weight g
19332.W1613	4	M 8	16	13	6.4	114



# CMM Fixturing Magnetic Stand off

M 8 threads

## Gauging & Inspection



**19333**

GAUGING & INSPECTION

### Material

Thermoplastic.

hold cylindrical parts. Use with magnetic vee, part 19338.

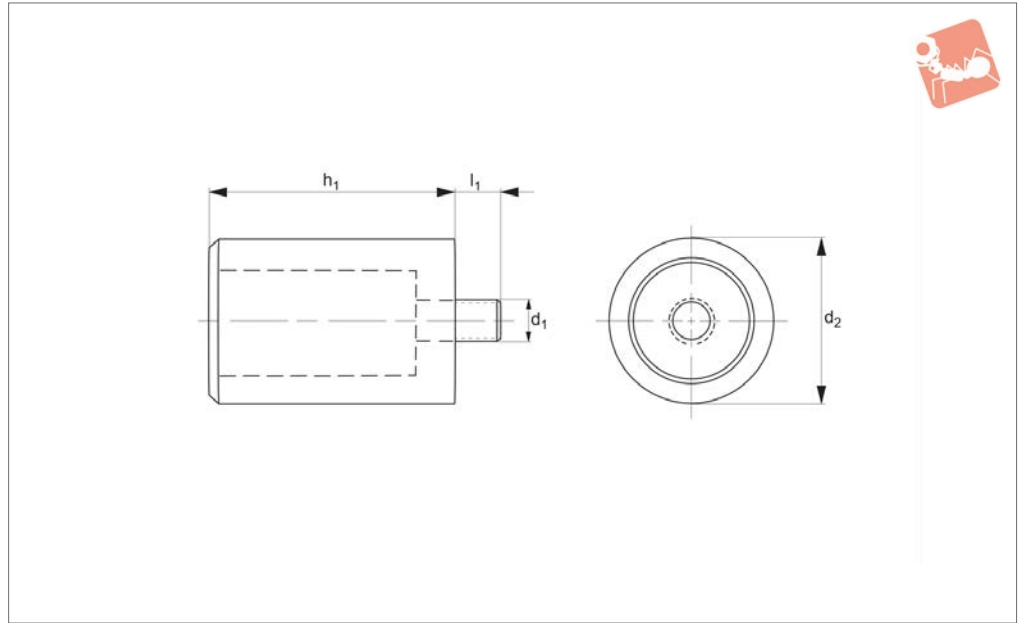
### Important Notes

For aligning multiple magnetic vees to

Order No.	$d_1$	$d_2$	$d_3$	$h_1$ max.	$h_2$ stroke	Weight g
19333.W2832	28	13.5	M 8	32	15.8	91
19333.W3532	35	19.5	M 8	32	15.8	136
19333.W4132	41	25.4	M 8	32	13.0	182



19336



**Material**

AL NICO magnet in brass sleeve.

**Important Notes**

For fixturing steel or iron parts. Magnetic force holds parts during probing.

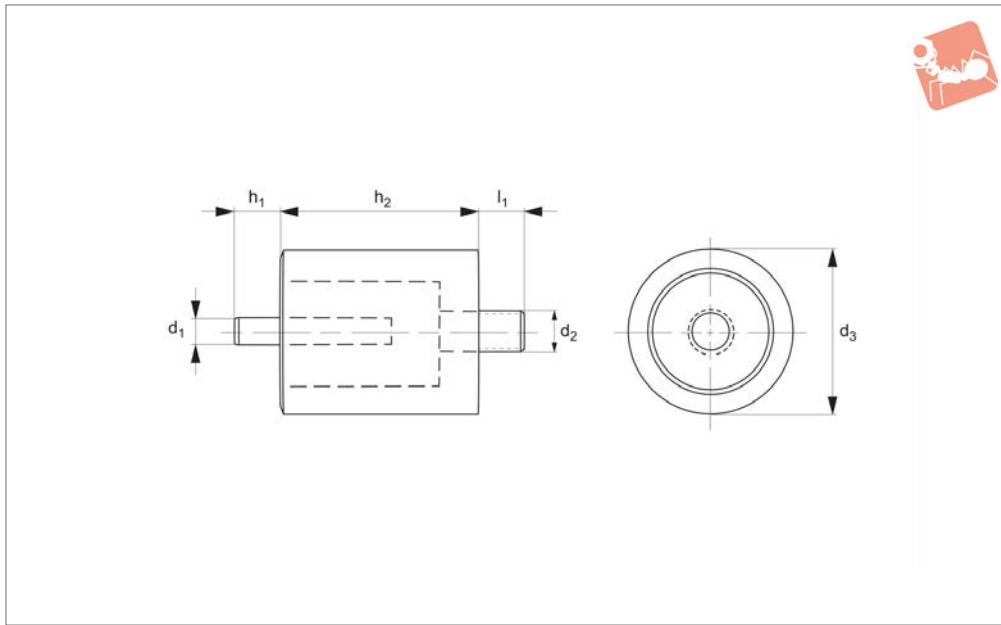
Order No.	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	l <sub>1</sub>	Weight g
19336.W1325	M 8	12.7	25	8	91
19336.W1925	M 8	19.0	25	8	227
19336.W2525	M 8	25.4	25	8	273





# CMM Fixturing Magnetic Stand off with pin, for M 8 threads

## Gauging & Inspection



**19337**

GAUGING & INSPECTION

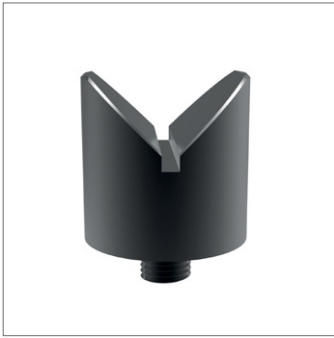
### Material

AL NICO magnet in brass sleeve.

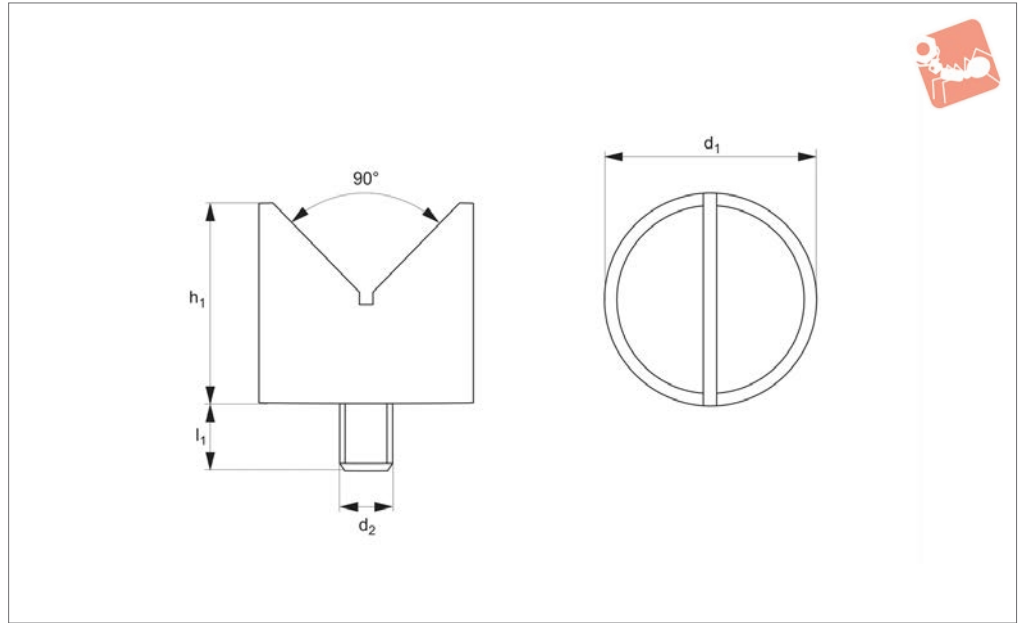
### Important Notes

For fixturing steel or iron parts. Magnetic force holds parts during probing.

Order No.	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>
19337.W1325	3	M 8	12.7	6	25	8
19337.W1925	3	M 8	19.0	6	25	8
19337.W2525	3	M 8	25.4	6	25	8



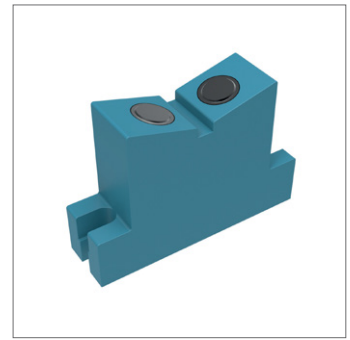
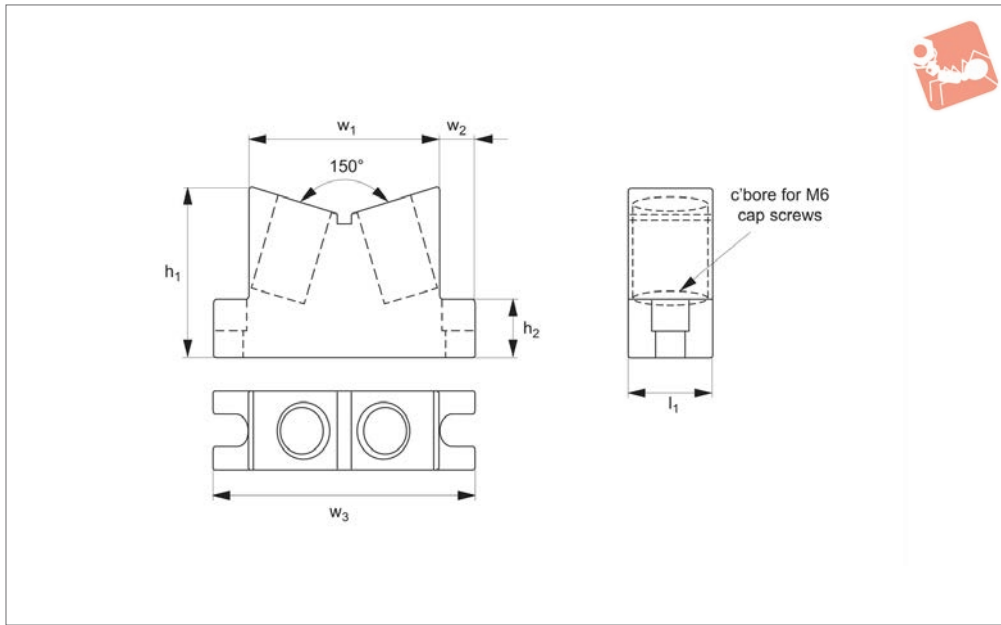
**19338**



**Important Notes**

For fixturing cylindrical steel or iron parts.  
Magnetic force holds parts during probing.

Order No.	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	l <sub>1</sub>	Holding dia.	Weight g
19338.W1325	12.7	M 8	25.4	6.4	3-16	68
19338.W2525	25.4	M 8	25.4	6.4	3-40	182



### 19339

GAUGING & INSPECTION

#### Important Notes

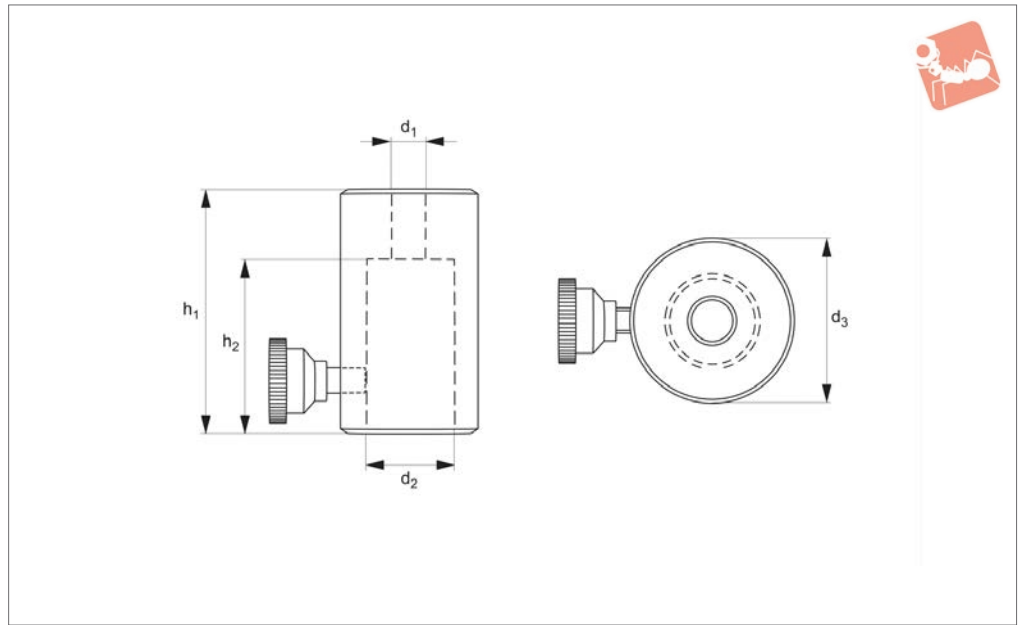
For holding large cylindrical steel or iron parts. Includes two cap screws to fasten to

plate.

Order No.	$h_1$	$h_2$	$l_1$	$w_1$	$w_2$	$w_3$	For holding dia.	Weight g
19339.W0050	42	22	25	63.4	14	92	50-160	454



**19350**



**Material**

Thermoplastic.

**Important Notes**

Slips over Ø12,7 standoffs. Knurled knob quickly tightens for height adjustment.

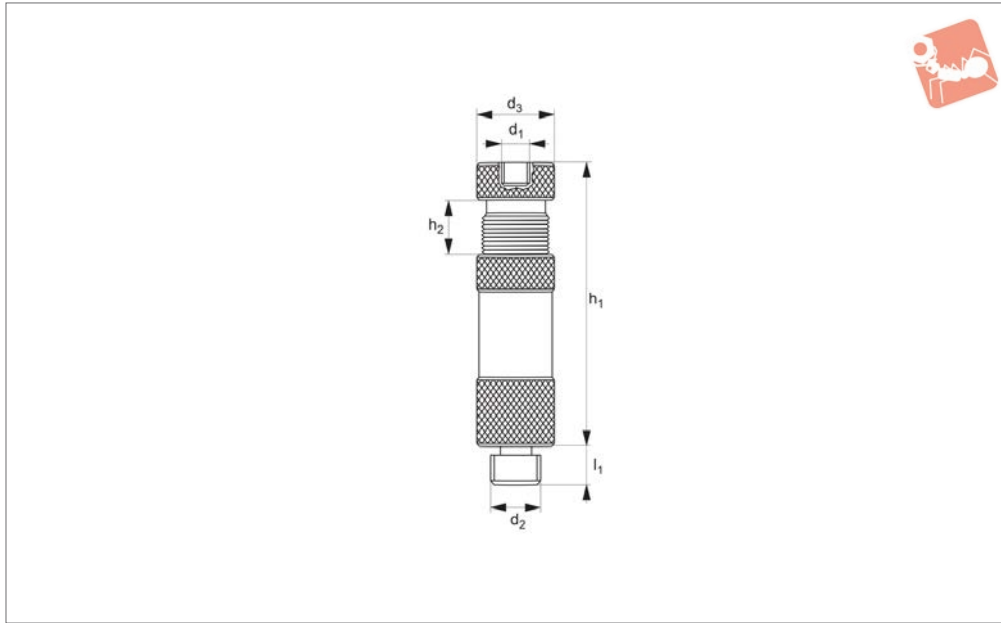
Order No.	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	Weight g
19350.W0028	M 8	12.7	28	50	38	70



# CMM Fixturing Screws Jacks

M 8 threads

## Gauging & Inspection



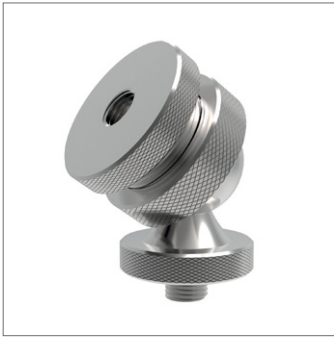
**19352**

GAUGING & INSPECTION

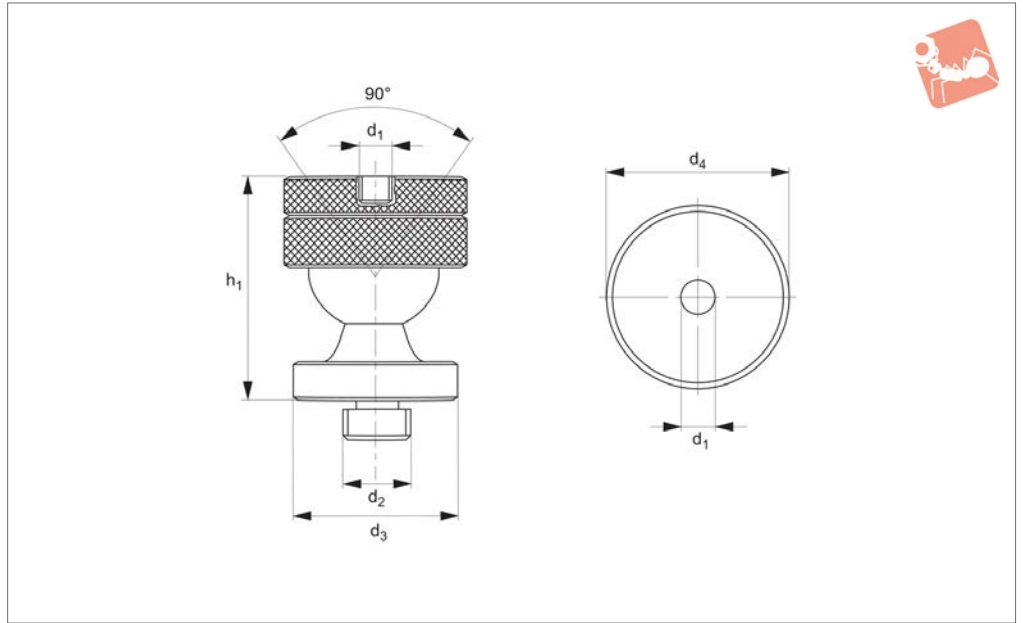
**Material**  
Aluminium.

**Important Notes**  
Allows for fine height adjustment during CMM probing.

Order No.	$d_1$	$d_2$	$d_3$	$h_1$ max.	$h_2$ stroke	$l_1$	Weight g
19352.W1945	M 8	M 8	19	44.5	8	6.4	88



19354



GAUGING & INSPECTION

**Material**

Ball: steel.

All other components: aluminium 6160.

**Technical Notes**

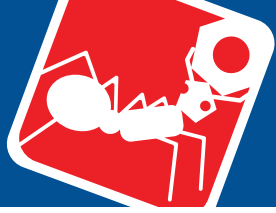
Pivots approximatively 45° from horizontal

in every direction.

**Important Notes**

For holding parts at an angle. Collar easily tightens on ball at variable angles.

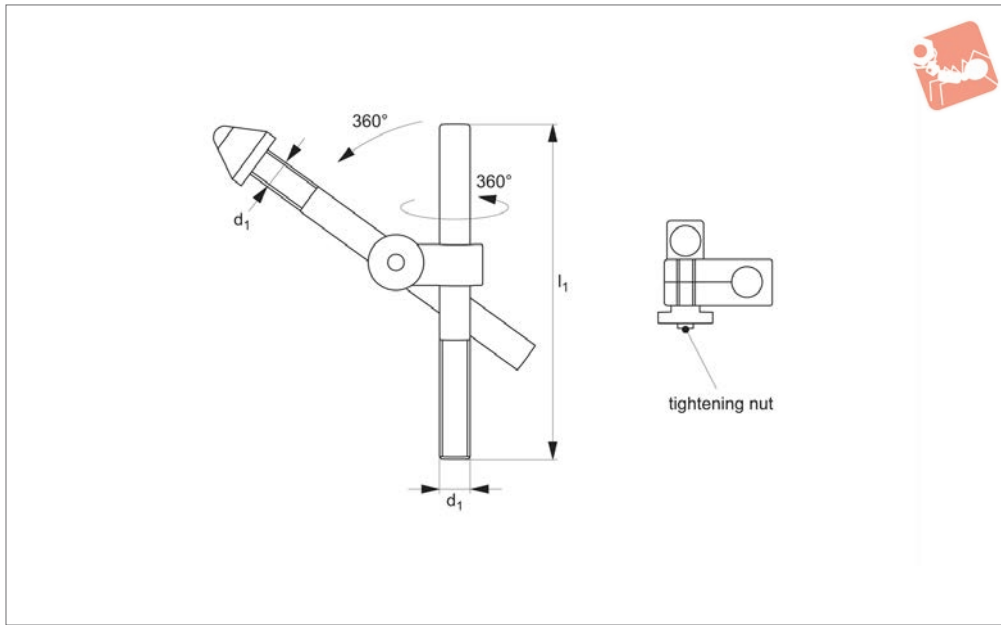
Order No.	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	h <sub>1</sub>	Weight g
19354.W2835	M 8	M 8	25	28.5	34	95



# CMM Swivel Joint

M 8 threads

## Gauging & Inspection



### 19358

GAUGING & INSPECTION

#### Technical Notes

Fully articulated adjustable stop, rotates in 360° in both horizontal, vertical plains. Fully XYZ adjustable.

#### Important Notes

Rotates from side-to-side and up and down. Arm extends and retracts. Rotating arm features thermoplastic cone for posi-

tioning a part without marring its surface.

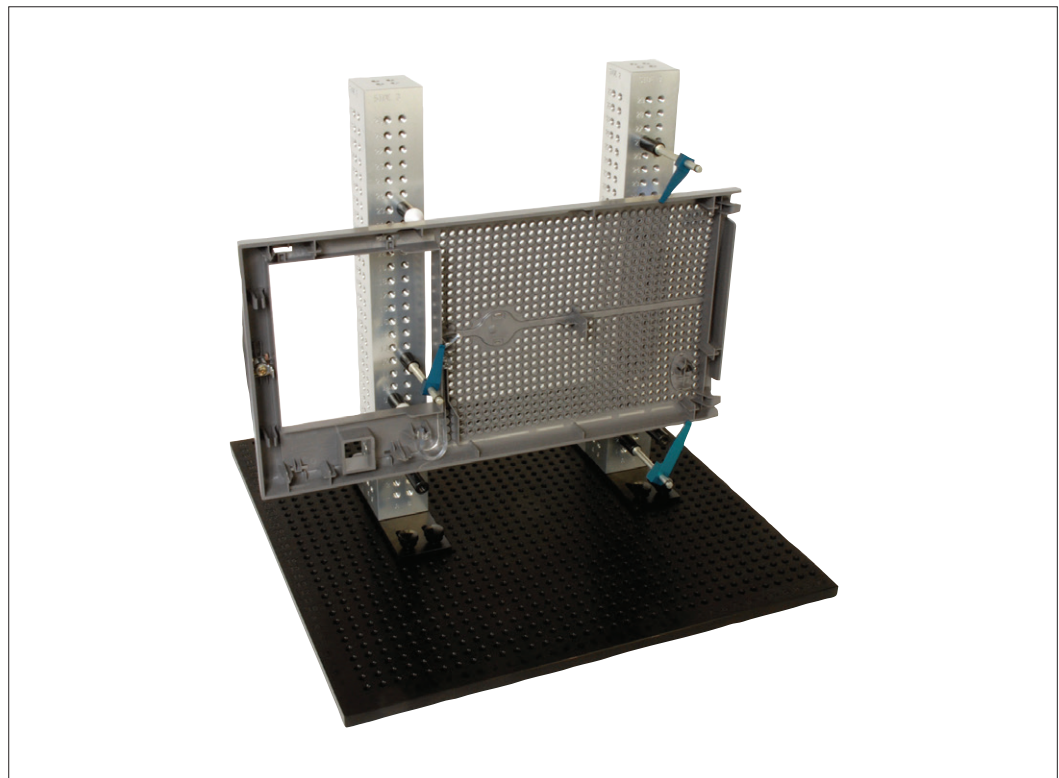
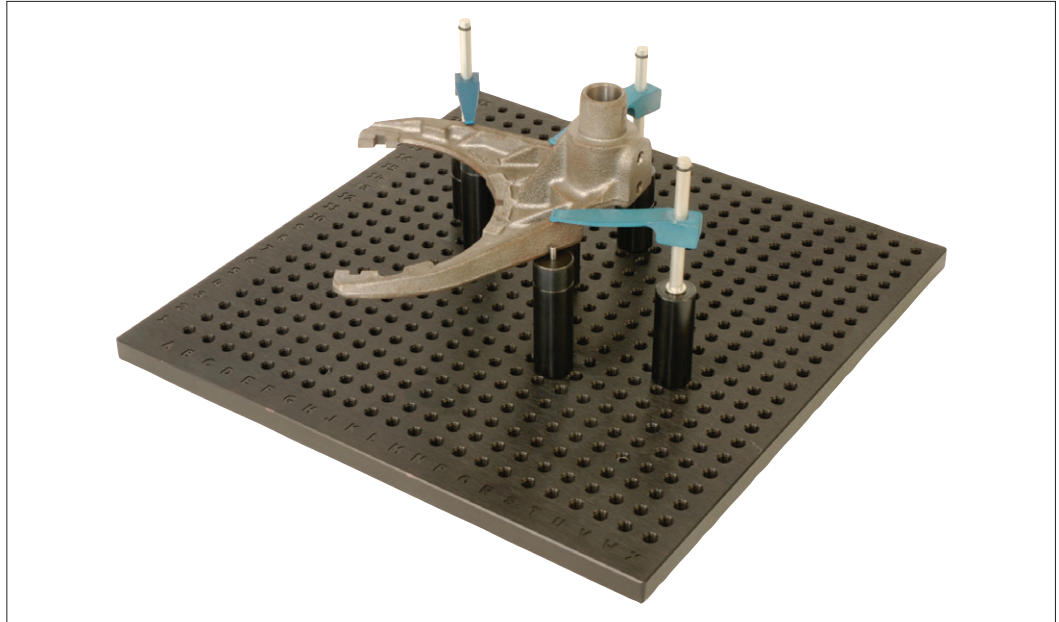
Order No.	d <sub>1</sub>	l <sub>1</sub>	Weight g
19358.W0008	M 8	100	134



Wixroyd's CMM fixturing system is designed for easy assembly and high repeatability, eliminating the need to build dedicated fixtures. The system offers a highly accurate and flexible solution of holding parts while probing on CMMs.

### Flexible

A variety of component parts as well as complete kits are available; to enable setup of fixtures in minutes.



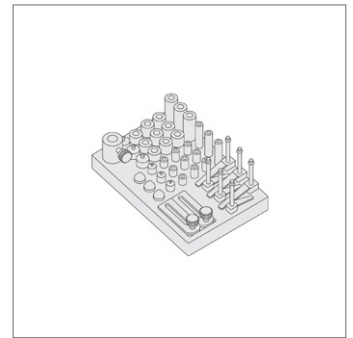
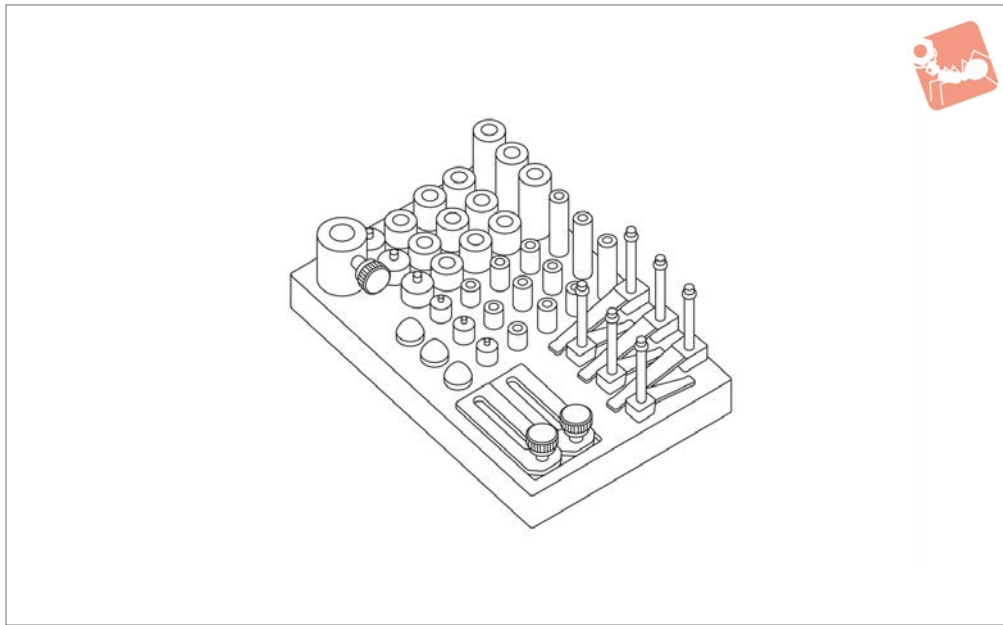
- Aluminium base plates – hole based system with alpha-numeric labelling for easy set-up and recording of fixture positions.
- Fixture towers – ideal for fixturing of large vertical components.
- Soft-touch clamps – non-marking clamps providing the ideal force for holding parts during CMM probing.
- Locating components – rest pads, vee pads for cylindrical parts, pin rests etc.





# Basic CMM Fixturing Set for M 8 threads

## Gauging & Inspection



**19310**

GAUGING & INSPECTION

### Technical Notes

Designed for clamping non-magnetic parts on CMM tables.

### Important Notes

M 8 coarse thread. Basic set of workholding

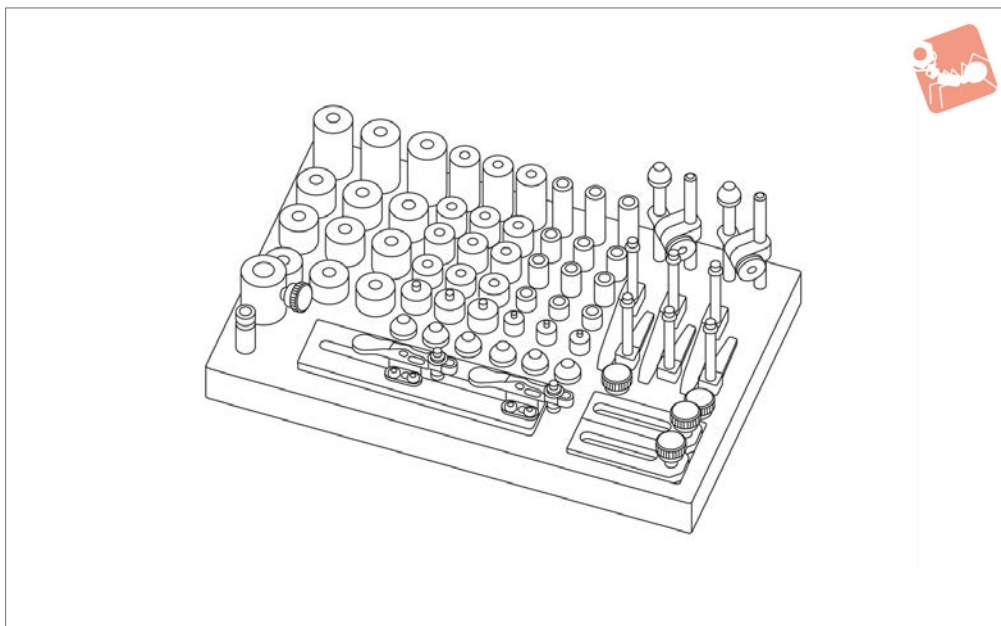
components for fixturing of components on CMMs. Components are of lightweight materials: aluminium, plastic etc. to avoid damage to components. Supplied on wooden holder for easy and tidy storage.

For CMM fixturing plates and towers see 19300 and 19302.

Order No.	Soft touch clamp <b>19320</b>	CMM fixturing stand-off <b>19330</b>		CMM fixturing stand-off with pin <b>19331</b>	CMM fixturing positioning cone <b>19332</b>	CMM fixturing adj. positioner <b>19354</b>	CMM fixturing stand-off adjustable <b>19350</b>	Weight g
<b>19310.W0008</b>	.W0008 x 3pcs .W0012 x 3pcs	.W1320 x 3pcs .W1350 x 3pcs .W1925 x 6pcs	.W1325 x 6pcs .W1920 x 3pcs .W1950 x 3pcs	.W1325 x 3pcs .W1925 x 3pcs	.W001613 x 3pcs	.W2835 x 2pcs	.W0028 x 1pc	2800



## 19312



### Technical Notes

M8 coarse thread. Comprehensive set of workholding components for fixturing

components on CMMs. Components are of lightweight materials; aluminium, plastic etc. to avoid damage of workpieces. Supp-

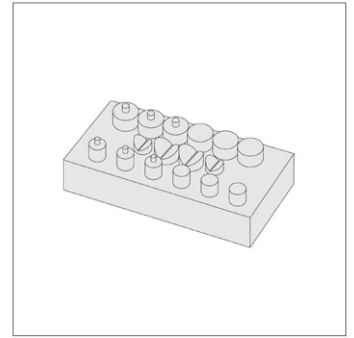
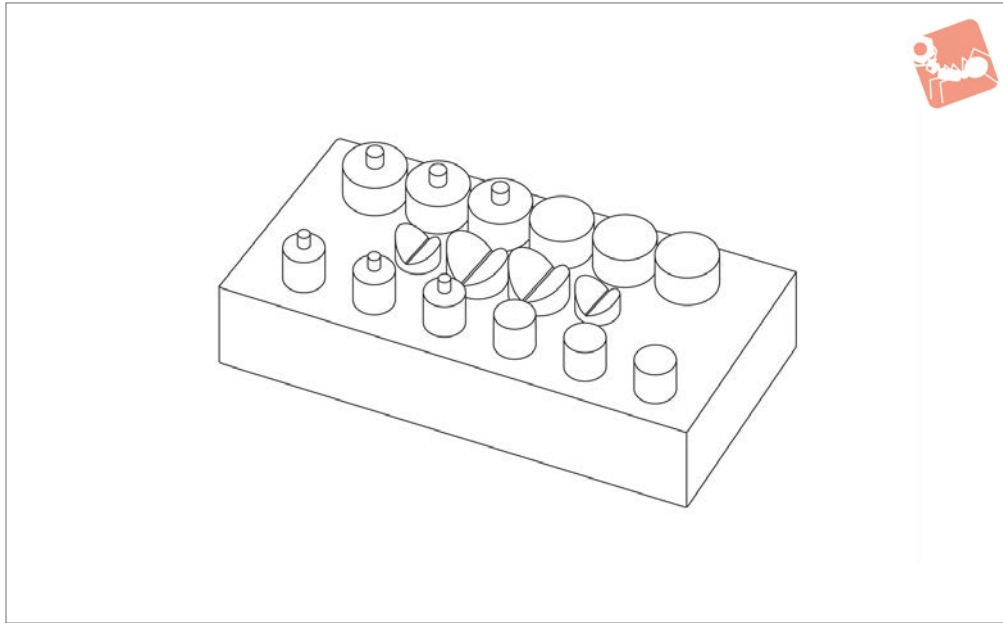
plied on a wooden holder for easy and tidy storage. For CMM fixturing plates and towers see parts 19300 and 19302.

Order No.	Soft touch clamp <b>19320</b>	CMM fixturing stand-off <b>19330</b>			Toggle clamp <b>19322</b>	Weight g
<b>19312.W0008</b>	.W0008 x 3pcs .W0012 x 3pcs	.W1320 x 3pcs .W1325 x 6pcs .W1350 x 3pcs .W1920 x 3pcs .W1925 x 6pcs .W1950 x 3pcs .W2520 x 3pcs .W2525 x 6pcs .W2550 x 3pcs			.W0075 x 2pcs	4600
Order No.	CMM fixturing stand-off with pin <b>19331</b>	CMM fixturing positioning cone <b>19332</b>	CMM fixturing adj. positioner <b>19354</b>	CMM fixturing stand-off adjustable <b>19350</b>	CMM fixturing screw jack <b>19352</b>	CMM fixturing adjustable stop <b>19358</b>
<b>19312.W0008</b>	.W1325 x 3pcs .W1925 x 3pcs	.W001613 x 3pcs	.W2835 x 2pcs	.W0028 x 1pc	.W1945 x 1pc	.W0008 x 2pcs



# CMM Fixturing Magnetic Stand-off Set for M 8 threads

## Gauging & Inspection



**19314**

GAUGING & INSPECTION

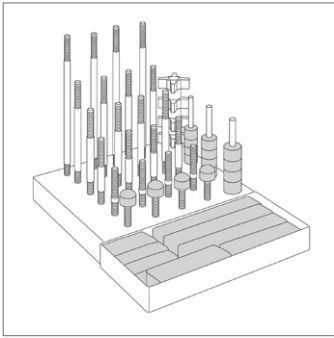
### Material

Magnets in brass sleeves, in wooden holder.

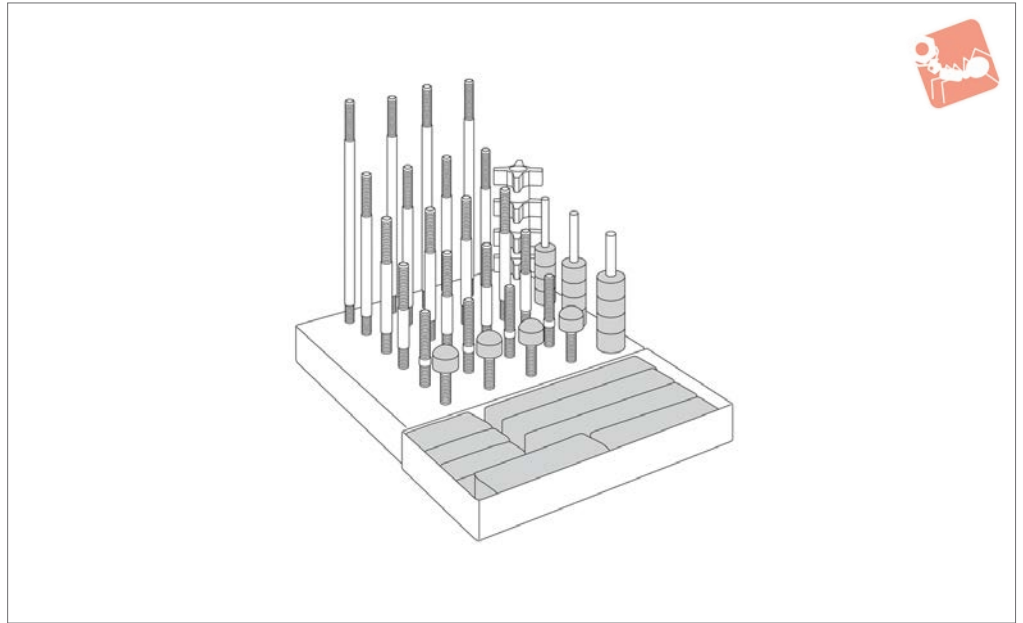
### Tips

Use with steel and iron components.

Order No.	CMM fixturing magnetic rest buttons <b>19336</b>	CMM fixturing magnetic stand-off with pin <b>19337</b>	CMM fixturing magnetic vee stand-off <b>19338</b>
<b>19314.W0008</b>	.W1325 x 3pcs .W1925 x 3pcs	.W1325 x 3pcs .W1925 x 3pcs	.W1325 x 2pcs .W2525 x 2pcs



## 19370



### Material

Clamps, rest feet: nylon 101.  
 Studs, coupling nuts and washers: steel.  
 Supplied in metal tray for improved organi-

sation.

### Tips

Lightweight components reduce risk of

damage to the CMM table.

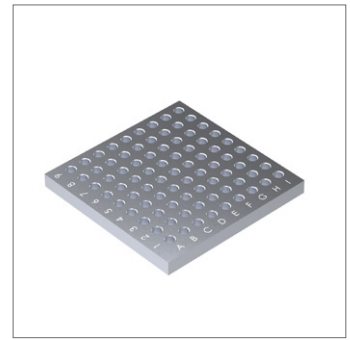
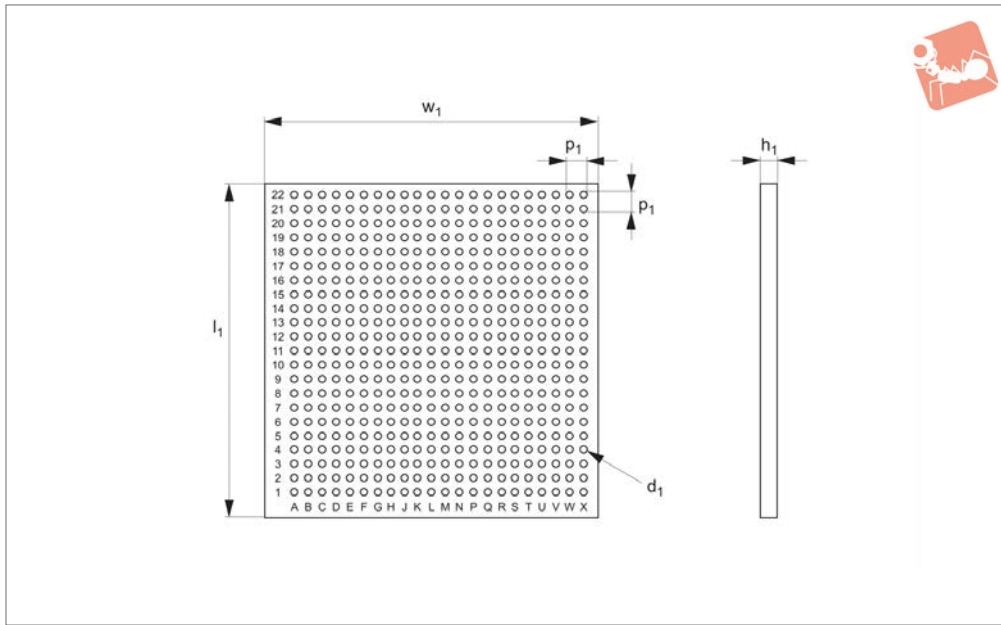
Order No.	Thread size	Studs	Nylon clamps	Extension nuts	Nylon star knob	Support feet	Nylon washers	Weight g
<b>19370.W0008</b>	M 8	50mm x 4pcs	63mm x 4pcs 90mm x 4pcs 115mm x 4pcs	M 8 x 4pcs	M 8 x 4pcs	M 8 x 4pcs	for M 8 x 8pcs	2495
		75mm x 4pcs						
		100mm x 4pcs						
		125mm x 4pcs						
		150mm x 4pcs						
<b>19370.W0010</b>	M10	50mm x 4pcs	63mm x 4pcs 100mm x 4pcs 150mm x 4pcs	M10 x 4pcs	M10 x 4pcs	M10 x 4pcs	for M10 x 8pcs	2857
		75mm x 4pcs						
		100mm x 4pcs						
		125mm x 4pcs						
		150mm x 4pcs						
<b>19370.W0012</b>	M12	50mm x 4pcs	63mm x 4pcs 100mm x 4pcs 150mm x 4pcs	M12 x 4pcs	M12 x 4pcs	M12 x 4pcs	for M12 x 8pcs	4991
		75mm x 4pcs						
		100mm x 4pcs						
		125mm x 4pcs						
		150mm x 4pcs						



# Fixture Plates for CMMs

M 8 threads

## Gauging & Inspection



19300

GAUGING & INSPECTION

### Material

Aluminium, hard anodized (black).

### Technical Notes

CMM fixture plates can be mounted to the

surface plate of your CMM by using step blocks and clamps or by drilling mounting holes into the plate which correspond to the inserts on your surface plate.

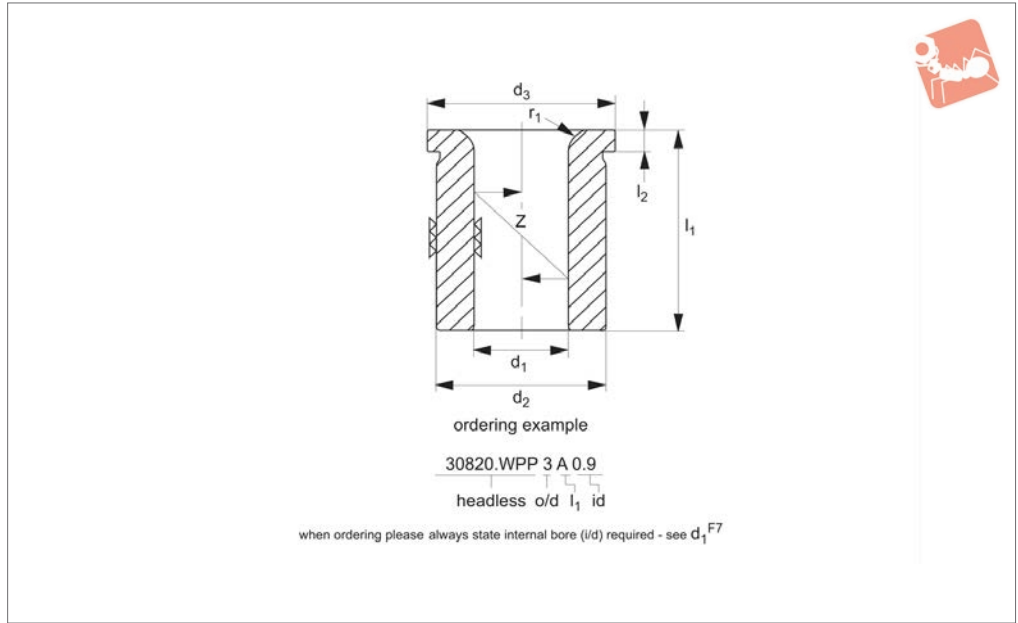
### Tips

Soft touch clamps 19320 are perfect for clamping in CMM fixturing applications.

Order No.	$l_1$	$d_1$	$w_1$	$p_1$	$h_1$
19300.W3030	300	M 8	300	15	13
19300.W4545	450	M 8	450	15	13
19300.W6060	600	M 8	600	15	19



## 30820.1



### Material

High grade steel. Hardened 740 +HV10.  
Hole, d<sub>1</sub> ground ISO tolerance F7.  
o/d-d<sub>2</sub> ground ISO tolerance n6, to fit standard hole tolerance H<sub>7</sub>. Length l<sub>1</sub> to ±0,2 for lengths 6 to 30mm.

### Technical Notes

d<sub>1</sub> dimension tolerance to F7.

Key to dimensions l<sub>1</sub>:

- l<sub>1</sub> short
- l<sub>1</sub> medium
- l<sub>1</sub> long

Table of lengths l<sub>1</sub>:

- A- 6mm
- B- 8mm

- C- 9mm
- D- 10mm
- E- 12mm
- F- 16mm
- H- 20mm
- J- 25mm
- K- 28mm
- L- 30mm
- M- 35mm
- N- 36mm
- P- 40mm
- R- 45mm
- S- 56mm
- T- 67mm
- W- 78mm

### Tips

Sizes 48,0 i/d and above are made to order

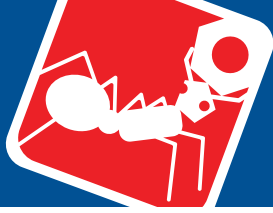
Please note sizes d<sub>1</sub> <0,9 prices available on request.

### Important Notes

Drill bushes produced to standard DIN increments for internal bores:  
i/d's 0,9mm to 15,0mm - 0,1mm increments e.g. 1,1 mm, 1,2mm etc.  
i/d's 15,1mm and over -0,5mm increments.

Ordering drill bushes to DIN standard increments offers a cost advantage, as non-standard bores are machined to order as specials.

Order No.	i/d - d <sub>1</sub>	Length gen	Length letter	Length mm	d <sub>2</sub>	r <sub>1</sub>	d <sub>3</sub>	l <sub>2</sub>
30820.WPH3A0.9	0.9	short	A	6	3	1	6	2
30820.WPH3A1.0	1.0	short	A	6	3	1	6	2
30820.WPH4A1.1	1.1	short	A	6	4	1	7	2
30820.WPH4A1.2	1.2	short	A	6	4	1	7	2
30820.WPH4A1.3	1.3	short	A	6	4	1	7	2
30820.WPH4A1.4	1.4	short	A	6	4	1	7	2
30820.WPH4A1.5	1.5	short	A	6	4	1	7	2
30820.WPH4A1.6	1.6	short	A	6	4	1	7	2
30820.WPH4A1.7	1.7	short	A	6	4	1	7	2
30820.WPH4A1.8	1.8	short	A	6	4	1	7	2
30820.WPH5A2.0	2.0	short	A	6	5	1	8	2
30820.WPH5A2.1	2.1	short	A	6	5	1	8	2
30820.WPH5A2.2	2.2	short	A	6	5	1	8	2
30820.WPH5A2.3	2.3	short	A	6	5	1	8	2
30820.WPH5A2.4	2.4	short	A	6	5	1	8	2
30820.WPH5A2.5	2.5	short	A	6	5	1	8	2
30820.WPH5A2.6	2.6	short	A	6	5	1	8	2
30820.WPH6B2.7	2.7	short	B	8	6	1	9	2.5



# Headed Drill Bushes - DIN 172A

short



## Tenons, Locating Pads & Drill

Order No.	i/d - d <sub>1</sub>	Length gen	Length letter	Length mm	d <sub>2</sub>	r <sub>1</sub>	d <sub>3</sub>	l <sub>2</sub>
30820.WPH6B2.8	2.8	short	B	8	6	1	9	2.5
30820.WPH6B2.9	2.9	short	B	8	6	1	9	2.5
30820.WPH6B3.0	3.0	short	B	8	6	1	9	2.5
30820.WPH6B3.1	3.1	short	B	8	6	1	9	2.5
30820.WPH6B3.2	3.2	short	B	8	6	1	9	2.5
30820.WPH6B3.3	3.3	short	B	8	6	1	9	2.5
30820.WPH7B3.4	3.4	short	B	8	7	1	10	2.5
30820.WPH7B3.5	3.5	short	B	8	7	1	10	2.5
30820.WPH7B3.6	3.6	short	B	8	7	1	10	2.5
30820.WPH7B3.7	3.7	short	B	8	7	1	10	2.5
30820.WPH7B3.8	3.8	short	B	8	7	1	10	2.5
30820.WPH7B3.9	3.9	short	B	8	7	1	10	2.5
30820.WPH7B4.0	4.0	short	B	8	7	1	10	2.5
30820.WPH8B4.1	4.1	short	B	8	8	1	11	2.5
30820.WPH8B4.2	4.2	short	B	8	8	1	11	2.5
30820.WPH8B4.3	4.3	short	B	8	8	1	11	2.5
30820.WPH8B4.4	4.4	short	B	8	8	1	11	2.5
30820.WPH8B4.5	4.5	short	B	8	8	1	11	2.5
30820.WPH8B4.6	4.6	short	B	8	8	1	11	2.5
30820.WPH8B4.7	4.7	short	B	8	8	1	11	2.5
30820.WPH8B4.8	4.8	short	B	8	8	1	11	2.5
30820.WPH8B4.9	4.9	short	B	8	8	1	11	2.5
30820.WPH8B5.0	5.0	short	B	8	8	1	11	2.5
30820.WPH10D5.1	5.1	short	D	10	10	1.5	13	3
30820.WPH10D5.2	5.2	short	D	10	10	1.5	13	3
30820.WPH10D5.3	5.3	short	D	10	10	1.5	13	3
30820.WPH10D5.4	5.4	short	D	10	10	1.5	13	3
30820.WPH10D5.5	5.5	short	D	10	10	1.5	13	3
30820.WPH10D5.6	5.6	short	D	10	10	1.5	13	3
30820.WPH10D5.7	5.7	short	D	10	10	1.5	13	3
30820.WPH10D5.8	5.8	short	D	10	10	1.5	13	3
30820.WPH10D5.9	5.9	short	D	10	10	1.5	13	3
30820.WPH10D6.0	6.0	short	D	10	10	1.5	13	3
30820.WPH12D6.1	6.1	short	D	10	12	1.5	15	3
30820.WPH12D6.2	6.2	short	D	10	12	1.5	15	3
30820.WPH12D6.3	6.3	short	D	10	12	1.5	15	3
30820.WPH12D6.4	6.4	short	D	10	12	1.5	15	3
30820.WPH12D6.5	6.5	short	D	10	12	1.5	15	3
30820.WPH12D6.6	6.6	short	D	10	12	1.5	15	3
30820.WPH12D6.7	6.7	short	D	10	12	1.5	15	3
30820.WPH12D6.8	6.8	short	D	10	12	1.5	15	3
30820.WPH12D6.9	6.9	short	D	10	12	1.5	15	3
30820.WPH12D7.0	7.0	short	D	10	12	1.5	15	3
30820.WPH12D7.1	7.1	short	D	10	12	1.5	15	3
30820.WPH12D7.2	7.2	short	D	10	12	1.5	15	3
30820.WPH12D7.3	7.3	short	D	10	12	1.5	15	3
30820.WPH12D7.4	7.4	short	D	10	12	1.5	15	3
30820.WPH12D7.5	7.5	short	D	10	12	1.5	15	3
30820.WPH12D7.6	7.6	short	D	10	12	1.5	15	3
30820.WPH12D7.7	7.7	short	D	10	12	1.5	15	3
30820.WPH12D7.8	7.8	short	D	10	12	1.5	15	3
30820.WPH12D7.9	7.9	short	D	10	12	1.5	15	3
30820.WPH12D8.0	8.0	short	D	10	12	1.5	15	3
30820.WPH15E8.1	8.1	short	E	12	15	2	18	3
30820.WPH15E8.2	8.2	short	E	12	15	2	18	3
30820.WPH15E8.3	8.3	short	E	12	15	2	18	3
30820.WPH15E8.4	8.4	short	E	12	15	2	18	3
30820.WPH15E8.5	8.5	short	E	12	15	2	18	3
30820.WPH15E8.6	8.6	short	E	12	15	2	18	3
30820.WPH15E8.7	8.7	short	E	12	15	2	18	3
30820.WPH15E8.8	8.8	short	E	12	15	2	18	3
30820.WPH15E8.9	8.9	short	E	12	15	2	18	3
30820.WPH15E9.0	9.0	short	E	12	15	2	18	3
30820.WPH15E9.1	9.1	short	E	12	15	2	18	3
30820.WPH15E9.2	9.2	short	E	12	15	2	18	3
30820.WPH15E9.3	9.3	short	E	12	15	2	18	3
30820.WPH15E9.4	9.4	short	E	12	15	2	18	3
30820.WPH15E9.5	9.5	short	E	12	15	2	18	3

TENONS, LOCATING PADS & DRILL BUSHES



Order No.	i/d - d <sub>1</sub>	Length gen	Length letter	Length mm	d <sub>2</sub>	r <sub>1</sub>	d <sub>3</sub>	l <sub>2</sub>
30820.WPH15E9.6	9.6	short	E	12	15	2	18	3
30820.WPH15E9.7	9.7	short	E	12	15	2	18	3
30820.WPH15E9.8	9.8	short	E	12	15	2	18	3
30820.WPH15E9.9	9.9	short	E	12	15	2	18	3
30820.WPH15E10.0	10.0	short	E	12	15	2	18	3
30820.WPH18E10.1	10.1	short	E	12	18	2	22	4
30820.WPH18E10.2	10.2	short	E	12	18	2	22	4
30820.WPH18E10.3	10.3	short	E	12	18	2	22	4
30820.WPH18E10.4	10.4	short	E	12	18	2	22	4
30820.WPH18E10.5	10.5	short	E	12	18	2	22	4
30820.WPH18E10.6	10.6	short	E	12	18	2	22	4
30820.WPH18E10.7	10.7	short	E	12	18	2	22	4
30820.WPH18E10.8	10.8	short	E	12	18	2	22	4
30820.WPH18E10.9	10.9	short	E	12	18	2	22	4
30820.WPH18E11.0	11.0	short	E	12	18	2	22	4
30820.WPH18E11.1	11.1	short	E	12	18	2	22	4
30820.WPH18E11.2	11.2	short	E	12	18	2	22	4
30820.WPH18E11.3	11.3	short	E	12	18	2	22	4
30820.WPH18E11.4	11.4	short	E	12	18	2	22	4
30820.WPH18E11.5	11.5	short	E	12	18	2	22	4
30820.WPH18E11.6	11.6	short	E	12	18	2	22	4
30820.WPH18E11.7	11.7	short	E	12	18	2	22	4
30820.WPH18E11.8	11.8	short	E	12	18	2	22	4
30820.WPH18E11.9	11.9	short	E	12	18	2	22	4
30820.WPH18E12.0	12.0	short	E	12	18	2	22	4
30820.WPH22F12.1	12.1	short	F	16	22	2	26	4
30820.WPH22F12.2	12.2	short	F	16	22	2	26	4
30820.WPH22F12.3	12.3	short	F	16	22	2	26	4
30820.WPH22F12.4	12.4	short	F	16	22	2	26	4
30820.WPH22F12.5	12.5	short	F	16	22	2	26	4
30820.WPH22F12.6	12.6	short	F	16	22	2	26	4
30820.WPH22F12.7	12.7	short	F	16	22	2	26	4
30820.WPH22F12.8	12.8	short	F	16	22	2	26	4
30820.WPH22F12.9	12.9	short	F	16	22	2	26	4
30820.WPH22F13.0	13.0	short	F	16	22	2	26	4
30820.WPH22F13.1	13.1	short	F	16	22	2	26	4
30820.WPH22F13.2	13.2	short	F	16	22	2	26	4
30820.WPH22F13.3	13.3	short	F	16	22	2	26	4
30820.WPH22F13.4	13.4	short	F	16	22	2	26	4
30820.WPH22F13.5	13.5	short	F	16	22	2	26	4
30820.WPH22F13.6	13.6	short	F	16	22	2	26	4
30820.WPH22F13.7	13.7	short	F	16	22	2	26	4
30820.WPH22F13.8	13.8	short	F	16	22	2	26	4
30820.WPH22F13.9	13.9	short	F	16	22	2	26	4
30820.WPH22F14.0	14.0	short	F	16	22	2	26	4
30820.WPH22F14.1	14.1	short	F	16	22	2	26	4
30820.WPH22F14.2	14.2	short	F	16	22	2	26	4
30820.WPH22F14.3	14.3	short	F	16	22	2	26	4
30820.WPH22F14.4	14.4	short	F	16	22	2	26	4
30820.WPH22F14.5	14.5	short	F	16	22	2	26	4
30820.WPH22F14.6	14.6	short	F	16	22	2	26	4
30820.WPH22F14.7	14.7	short	F	16	22	2	26	4
30820.WPH22F14.8	14.8	short	F	16	22	2	26	4
30820.WPH22F14.9	14.9	short	F	16	22	2	26	4
30820.WPH22F15.0	15.0	short	F	16	22	2	26	4
30820.WPH26F15.5	15.5	short	F	16	26	2	30	4
30820.WPH26F16.0	16.0	short	F	16	26	2	30	4
30820.WPH26F16.5	16.5	short	F	16	26	2	30	4
30820.WPH26F17.0	17.0	short	F	16	26	2	30	4
30820.WPH26F17.5	17.5	short	F	16	26	2	30	4
30820.WPH26F18.0	18.0	short	F	16	26	2	30	4
30820.WPH30H18.5	18.5	short	H	20	30	3	34	5
30820.WPH30H19.0	19.0	short	H	20	30	3	34	5
30820.WPH30H19.5	19.5	short	H	20	30	3	34	5
30820.WPH30H20.0	20.0	short	H	20	30	3	34	5
30820.WPH30H20.5	20.5	short	H	20	30	3	34	5
30820.WPH30H21.0	21.0	short	H	20	30	3	34	5
30820.WPH30H21.5	21.5	short	H	20	30	3	34	5





# Headed Drill Bushes - DIN 172A

short



Order No.	i/d - d <sub>1</sub>	Length gen	Length letter	Length mm	d <sub>2</sub>	r <sub>1</sub>	d <sub>3</sub>	l <sub>2</sub>
30820.WPH30H22.0	22.0	short	H	20	30	3	34	5
30820.WPH35H22.5	22.5	short	H	20	35	3	39	5
30820.WPH35H23.0	23.0	short	H	20	35	3	39	5
30820.WPH35H23.5	23.5	short	H	20	35	3	39	5
30820.WPH35H24.0	24.0	short	H	20	35	3	39	5
30820.WPH35H24.5	24.5	short	H	20	35	3	39	5
30820.WPH35H25.0	25.0	short	H	20	35	3	39	5
30820.WPH35H25.5	25.5	short	H	20	35	3	39	5
30820.WPH35H26.0	26.0	short	H	20	35	3	39	5
30820.WPH42J26.5	26.5	short	J	25	42	3	46	5
30820.WPH42J27.0	27.0	short	J	25	42	3	46	5
30820.WPH42J27.5	27.5	short	J	25	42	3	46	5
30820.WPH42J28.0	28.0	short	J	25	42	3	46	5
30820.WPH42J28.5	28.5	short	J	25	42	3	46	5
30820.WPH42J29.0	29.0	short	J	25	42	3	46	5
30820.WPH42J29.5	29.5	short	J	25	42	3	46	5
30820.WPH42J30.0	30.0	short	J	25	42	3	46	5
30820.WPH48J30.5	30.5	short	J	25	48	3	52	5
30820.WPH48J31.0	31.0	short	J	25	48	3	52	5
30820.WPH48J31.5	31.5	short	J	25	48	3	52	5
30820.WPH48J32.0	32.0	short	J	25	48	3	52	5
30820.WPH48J32.5	32.5	short	J	25	48	3	52	5
30820.WPH48J33.0	33.0	short	J	25	48	3	52	5
30820.WPH48J33.5	33.5	short	J	25	48	3	52	5
30820.WPH48J34.0	34.0	short	J	25	48	3	52	5
30820.WPH48J34.5	34.5	short	J	25	48	3	52	5
30820.WPH48J35.0	35.0	short	J	25	48	3	52	5
30820.WPH62L42.5	42.5	short	L	30	62	3.5	66	6
30820.WPH62L43.0	43.0	short	L	30	62	3.5	66	6
30820.WPH62L43.5	43.5	short	L	30	62	3.5	66	6
30820.WPH62L44.0	44.0	short	L	30	62	3.5	66	6
30820.WPH62L44.5	44.5	short	L	30	62	3.5	66	6
30820.WPH62L45.0	45.0	short	L	30	62	3.5	66	6
30820.WPH62L45.5	45.5	short	L	30	62	3.5	66	6
30820.WPH62L46.0	46.0	short	L	30	62	3.5	66	6
30820.WPH62L46.5	46.5	short	L	30	62	3.5	66	6
30820.WPH62L47.0	47.0	short	L	30	62	3.5	66	6
30820.WPH62L47.5	47.5	short	L	30	62	3.5	66	6
30820.WPH62L48.0	48.0	short	L	30	62	3.5	66	6
30820.WPH70L48.5	48.5	short	L	30	70	3.5	74	6
30820.WPH70L49.0	49.0	short	L	30	70	3.5	74	6
30820.WPH70L49.5	49.5	short	L	30	70	3.5	74	6
30820.WPH70L50.0	50.0	short	L	30	70	3.5	74	6
30820.WPH70L50.5	50.5	short	L	30	70	3.5	74	6
30820.WPH70L51.0	51.0	short	L	30	70	3.5	74	6
30820.WPH70L51.5	51.5	short	L	30	70	3.5	74	6
30820.WPH70L52.0	52.0	short	L	30	70	3.5	74	6
30820.WPH70L52.5	52.5	short	L	30	70	3.5	74	6
30820.WPH70L53.0	53.0	short	L	30	70	3.5	74	6
30820.WPH70L53.5	53.5	short	L	30	70	3.5	74	6
30820.WPH70L54.0	54.0	short	L	30	70	3.5	74	6
30820.WPH70L54.5	54.5	short	L	30	70	3.5	74	6
30820.WPH70L55.0	55.0	short	L	30	70	3.5	74	6
30820.WPH78M55.5	55.5	short	M	35	78	4	82	6
30820.WPH78M56.0	56.0	short	M	35	78	4	82	6
30820.WPH78M56.5	56.5	short	M	35	78	4	82	6
30820.WPH78M57.0	57.0	short	M	35	78	4	82	6
30820.WPH78M57.5	57.5	short	M	35	78	4	82	6
30820.WPH78M58.0	58.0	short	M	35	78	4	82	6
30820.WPH78M58.5	58.5	short	M	35	78	4	82	6
30820.WPH78M59.0	59.0	short	M	35	78	4	82	6
30820.WPH78M59.5	59.5	short	M	35	78	4	82	6
30820.WPH78M60.0	60.0	short	M	35	78	4	82	6
30820.WPH78M60.5	60.5	short	M	35	78	4	82	6
30820.WPH78M61.0	61.0	short	M	35	78	4	82	6
30820.WPH78M61.5	61.5	short	M	35	78	4	82	6
30820.WPH78M62.0	62.0	short	M	35	78	4	82	6
30820.WPH78M62.5	62.5	short	M	35	78	4	82	6

TENONS, LOCATING PADS & DRILL BUSHES

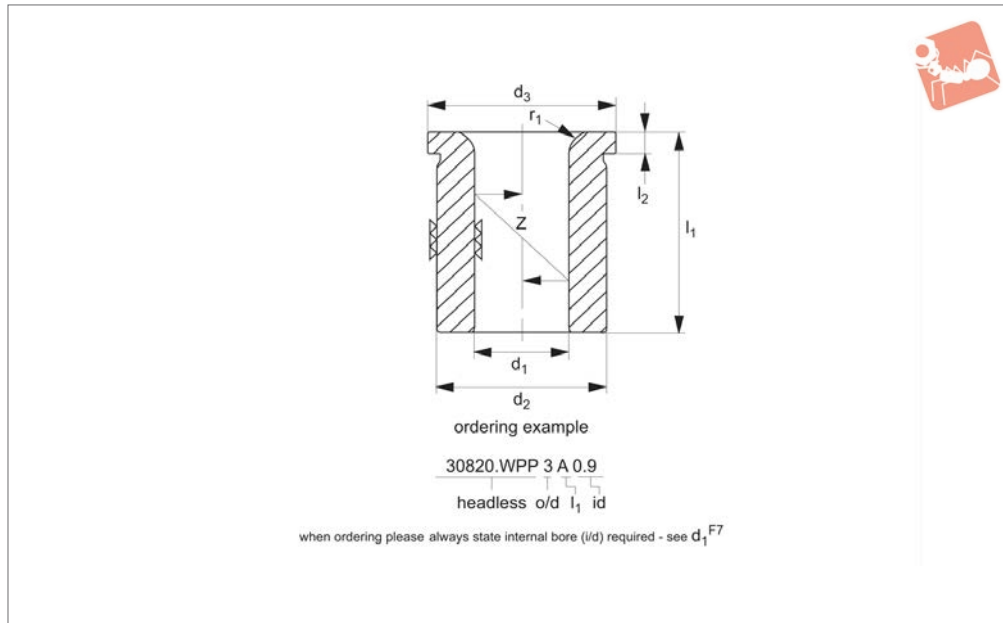


Order No.	i/d - d <sub>1</sub>	Length gen	Length letter	Length mm	d <sub>2</sub>	r <sub>1</sub>	d <sub>3</sub>	l <sub>2</sub>
30820.WPH78M63.0	63.0	short	M	35	78	4	82	6



# Headed Drill Bushes - DIN 172A medium

## Tenons, Locating Pads & Drill



### 30820.2

TENONS, LOCATING PADS & DRILL BUSHES

#### Material

High grade steel. Hardened 740 +HV10.  
Hole, d<sub>1</sub> ground ISO tolerance F7.  
o/d-d<sub>2</sub> ground ISO tolerance n6, to fit standard hole tolerance H<sub>7</sub>. Length l<sub>1</sub> to ±0,2 for lengths 6 to 30mm.

#### Technical Notes

d<sub>1</sub> dimension tolerance to F7.

Key to dimensions l<sub>1</sub>:

- l<sub>1</sub> short
- l<sub>1</sub> medium
- l<sub>1</sub> long

Table of lengths l<sub>1</sub>:

- A- 6mm
- B- 8mm

- C- 9mm
- D- 10mm
- E- 12mm
- F- 16mm
- H- 20mm
- J- 25mm
- K- 28mm
- L- 30mm
- M- 35mm
- N- 36mm
- P- 40mm
- R- 45mm
- S- 56mm
- T- 67mm
- W- 78mm

#### Tips

Sizes 48,0 i/d and above are made to order

Please note sizes d<sub>1</sub> <0,9 prices available on request.

#### Important Notes

Drill bushes produced to standard DIN increments for internal bores:  
i/d's 0,9mm to 15,0mm - 0,1mm increments e.g. 1,1 mm, 1,2mm etc.  
i/d's 15,1mm and over -0,5mm increments.

Ordering drill bushes to DIN standard increments offers a cost advantage, as non-standard bores are machined to order as specials.

Order No.	i/d - d <sub>1</sub>	Length gen	Length letter	Length mm	d <sub>2</sub>	r <sub>1</sub>	d <sub>3</sub>	l <sub>2</sub>
30820.WPH3C0.9	0.9	medium	C	9	3	1	6	2
30820.WPH3C1.0	1.0	medium	C	9	3	1	6	2
30820.WPH4C1.1	1.1	medium	C	9	4	1	7	2
30820.WPH4C1.2	1.2	medium	C	9	4	1	7	2
30820.WPH4C1.3	1.3	medium	C	9	4	1	7	2
30820.WPH4C1.4	1.4	medium	C	9	4	1	7	2
30820.WPH4C1.5	1.5	medium	C	9	4	1	7	2
30820.WPH4C1.6	1.6	medium	C	9	4	1	7	2
30820.WPH4C1.7	1.7	medium	C	9	4	1	7	2
30820.WPH4C1.8	1.8	medium	C	9	4	1	7	2
30820.WPH5C1.9	1.9	medium	C	9	5	1	8	2
30820.WPH5C2.0	2.0	medium	C	9	5	1	8	2
30820.WPH5C2.1	2.1	medium	C	9	5	1	8	2
30820.WPH5C2.2	2.2	medium	C	9	5	1	8	2
30820.WPH5C2.3	2.3	medium	C	9	5	1	8	2
30820.WPH5C2.4	2.4	medium	C	9	5	1	8	2
30820.WPH5C2.5	2.5	medium	C	9	5	1	8	2
30820.WPH5C2.6	2.6	medium	C	9	5	1	8	2



Order No.	i/d - d <sub>1</sub>	Length gen	Length letter	Length mm	d <sub>2</sub>	r <sub>1</sub>	d <sub>3</sub>	l <sub>2</sub>
30820.WPH6E2.7	2.7	medium	E	12	6	1	9	2.5
30820.WPH6E2.8	2.8	medium	E	12	6	1	9	2.5
30820.WPH6E2.9	2.9	medium	E	12	6	1	9	2.5
30820.WPH6E3.0	3.0	medium	E	12	6	1	9	2.5
30820.WPH6E3.1	3.1	medium	E	12	6	1	9	2.5
30820.WPH6E3.2	3.2	medium	E	12	6	1	9	2.5
30820.WPH6E3.3	3.3	medium	E	12	6	1	9	2.5
30820.WPH7E3.4	3.4	medium	E	12	7	1	10	2.5
30820.WPH7E3.5	3.5	medium	E	12	7	1	10	2.5
30820.WPH7E3.6	3.6	medium	E	12	7	1	10	2.5
30820.WPH7E3.7	3.7	medium	E	12	7	1	10	2.5
30820.WPH7E3.8	3.8	medium	E	12	7	1	10	2.5
30820.WPH7E3.9	3.9	medium	E	12	7	1	10	2.5
30820.WPH7E4.0	4.0	medium	E	12	7	1	10	2.5
30820.WPH8E4.1	4.1	medium	E	12	8	1	11	2.5
30820.WPH8E4.2	4.2	medium	E	12	8	1	11	2.5
30820.WPH8E4.3	4.3	medium	E	12	8	1	11	2.5
30820.WPH8E4.4	4.4	medium	E	12	8	1	11	2.5
30820.WPH8E4.5	4.5	medium	E	12	8	1	11	2.5
30820.WPH8E4.6	4.6	medium	E	12	8	1	11	2.5
30820.WPH8E4.7	4.7	medium	E	12	8	1	11	2.5
30820.WPH8E4.8	4.8	medium	E	12	8	1	11	2.5
30820.WPH8E4.9	4.9	medium	E	12	8	1	11	2.5
30820.WPH8E5.0	5.0	medium	E	12	8	1	11	2.5
30820.WPH10F5.1	5.1	medium	F	16	10	1.5	13	3
30820.WPH10F5.2	5.2	medium	F	16	10	1.5	13	3
30820.WPH10F5.3	5.3	medium	F	16	10	1.5	13	3
30820.WPH10F5.4	5.4	medium	F	16	10	1.5	13	3
30820.WPH10F5.5	5.5	medium	F	16	10	1.5	13	3
30820.WPH10F5.6	5.6	medium	F	16	10	1.5	13	3
30820.WPH10F5.7	5.7	medium	F	16	10	1.5	13	3
30820.WPH10F5.8	5.8	medium	F	16	10	1.5	13	3
30820.WPH10F5.9	5.9	medium	F	16	10	1.5	13	3
30820.WPH10F6.0	6.0	medium	F	16	10	1.5	13	3
30820.WPH12F6.1	6.1	medium	F	16	12	1.5	15	3
30820.WPH12F6.2	6.2	medium	F	16	12	1.5	15	3
30820.WPH12F6.3	6.3	medium	F	16	12	1.5	15	3
30820.WPH12F6.4	6.4	medium	F	16	12	1.5	15	3
30820.WPH12F6.5	6.5	medium	F	16	12	1.5	15	3
30820.WPH12F6.6	6.6	medium	F	16	12	1.5	15	3
30820.WPH12F6.7	6.7	medium	F	16	12	1.5	15	3
30820.WPH12F6.8	6.8	medium	F	16	12	1.5	15	3
30820.WPH12F6.9	6.9	medium	F	16	12	1.5	15	3
30820.WPH12F7.0	7.0	medium	F	16	12	1.5	15	3
30820.WPH12F7.1	7.1	medium	F	16	12	1.5	15	3
30820.WPH12F7.2	7.2	medium	F	16	12	1.5	15	3
30820.WPH12F7.3	7.3	medium	F	16	12	1.5	15	3
30820.WPH12F7.4	7.4	medium	F	16	12	1.5	15	3
30820.WPH12F7.5	7.5	medium	F	16	12	1.5	15	3
30820.WPH12F7.6	7.6	medium	F	16	12	1.5	15	3
30820.WPH12F7.7	7.7	medium	F	16	12	1.5	15	3
30820.WPH12F7.8	7.8	medium	F	16	12	1.5	15	3
30820.WPH12F7.9	7.9	medium	F	16	12	1.5	15	3
30820.WPH12F8.0	8.0	medium	F	16	12	1.5	15	3
30820.WPH15H8.1	8.1	medium	H	20	15	2	18	3
30820.WPH15H8.2	8.2	medium	H	20	15	2	18	3
30820.WPH15H8.3	8.3	medium	H	20	15	2	18	3
30820.WPH15H8.4	8.4	medium	H	20	15	2	18	3
30820.WPH15H8.5	8.5	medium	H	20	15	2	18	3
30820.WPH15H8.6	8.6	medium	H	20	15	2	18	3
30820.WPH15H8.7	8.7	medium	H	20	15	2	18	3
30820.WPH15H8.8	8.8	medium	H	20	15	2	18	3
30820.WPH15H8.9	8.9	medium	H	20	15	2	18	3
30820.WPH15H9.0	9.0	medium	H	20	15	2	18	3
30820.WPH15H9.1	9.1	medium	H	20	15	2	18	3
30820.WPH15H9.2	9.2	medium	H	20	15	2	18	3
30820.WPH15H9.3	9.3	medium	H	20	15	2	18	3
30820.WPH15H9.4	9.4	medium	H	20	15	2	18	3



# Headed Drill Bushes - DIN 172A

medium



Order No.	i/d - d <sub>1</sub>	Length gen	Length letter	Length mm	d <sub>2</sub>	r <sub>1</sub>	d <sub>3</sub>	l <sub>2</sub>
30820.WPH15H9.5	9.5	medium	H	20	15	2	18	3
30820.WPH15H9.6	9.6	medium	H	20	15	2	18	3
30820.WPH15H9.7	9.7	medium	H	20	15	2	18	3
30820.WPH15H9.8	9.8	medium	H	20	15	2	18	3
30820.WPH15H9.9	9.9	medium	H	20	15	2	18	3
30820.WPH15H10.0	10.0	medium	H	20	15	2	18	3
30820.WPH18H10.1	10.1	medium	H	20	18	2	22	4
30820.WPH18H10.2	10.2	medium	H	20	18	2	22	4
30820.WPH18H10.3	10.3	medium	H	20	18	2	22	4
30820.WPH18H10.4	10.4	medium	H	20	18	2	22	4
30820.WPH18H10.5	10.5	medium	H	20	18	2	22	4
30820.WPH18H10.6	10.6	medium	H	20	18	2	22	4
30820.WPH18H10.7	10.7	medium	H	20	18	2	22	4
30820.WPH18H10.8	10.8	medium	H	20	18	2	22	4
30820.WPH18H10.9	10.9	medium	H	20	18	2	22	4
30820.WPH18H11.0	11.0	medium	H	20	18	2	22	4
30820.WPH18H11.1	11.1	medium	H	20	18	2	22	4
30820.WPH18H11.2	11.2	medium	H	20	18	2	22	4
30820.WPH18H11.3	11.3	medium	H	20	18	2	22	4
30820.WPH18H11.4	11.4	medium	H	20	18	2	22	4
30820.WPH18H11.5	11.5	medium	H	20	18	2	22	4
30820.WPH18H11.6	11.6	medium	H	20	18	2	22	4
30820.WPH18H11.7	11.7	medium	H	20	18	2	22	4
30820.WPH18H11.8	11.8	medium	H	20	18	2	22	4
30820.WPH18H11.9	11.9	medium	H	20	18	2	22	4
30820.WPH18H12.0	12.0	medium	H	20	18	2	22	4
30820.WPH22K12.1	12.1	medium	K	28	22	2	26	4
30820.WPH22K12.2	12.2	medium	K	28	22	2	26	4
30820.WPH22K12.3	12.3	medium	K	28	22	2	26	4
30820.WPH22K12.4	12.4	medium	K	28	22	2	26	4
30820.WPH22K12.5	12.5	medium	K	28	22	2	26	4
30820.WPH22K12.6	12.6	medium	K	28	22	2	26	4
30820.WPH22K12.7	12.7	medium	K	28	22	2	26	4
30820.WPH22K12.8	12.8	medium	K	28	22	2	26	4
30820.WPH22K12.9	12.9	medium	K	28	22	2	26	4
30820.WPH22K13.0	13.0	medium	K	28	22	2	26	4
30820.WPH22K13.1	13.1	medium	K	28	22	2	26	4
30820.WPH22K13.2	13.2	medium	K	28	22	2	26	4
30820.WPH22K13.3	13.3	medium	K	28	22	2	26	4
30820.WPH22K13.4	13.4	medium	K	28	22	2	26	4
30820.WPH22K13.5	13.5	medium	K	28	22	2	26	4
30820.WPH22K13.6	13.6	medium	K	28	22	2	26	4
30820.WPH22K13.7	13.7	medium	K	28	22	2	26	4
30820.WPH22K13.8	13.8	medium	K	28	22	2	26	4
30820.WPH22K13.9	13.9	medium	K	28	22	2	26	4
30820.WPH22K14.0	14.0	medium	K	28	22	2	26	4
30820.WPH22K14.1	14.1	medium	K	28	22	2	26	4
30820.WPH22K14.2	14.2	medium	K	28	22	2	26	4
30820.WPH22K14.3	14.3	medium	K	28	22	2	26	4
30820.WPH22K14.4	14.4	medium	K	28	22	2	26	4
30820.WPH22K14.5	14.5	medium	K	28	22	2	26	4
30820.WPH22K14.6	14.6	medium	K	28	22	2	26	4
30820.WPH22K14.7	14.7	medium	K	28	22	2	26	4
30820.WPH22K14.8	14.8	medium	K	28	22	2	26	4
30820.WPH22K14.9	14.9	medium	K	28	22	2	26	4
30820.WPH22K15.0	15.0	medium	K	28	22	2	26	4
30820.WPH26K15.5	15.5	medium	K	28	26	2	30	4
30820.WPH26K16.0	16.0	medium	K	28	26	2	30	4
30820.WPH26K16.5	16.5	medium	K	28	26	2	30	4
30820.WPH26K17.0	17.0	medium	K	28	26	2	30	4
30820.WPH26K17.5	17.5	medium	K	28	26	2	30	4
30820.WPH26K18.0	18.0	medium	K	28	26	2	30	4
30820.WPH30N18.5	18.5	medium	N	36	30	3	34	5
30820.WPH30N19.0	19.0	medium	N	36	30	3	34	5
30820.WPH30N19.5	19.5	medium	N	36	30	3	34	5
30820.WPH30N20.0	20.0	medium	N	36	30	3	34	5
30820.WPH30N20.5	20.5	medium	N	36	30	3	34	5
30820.WPH30N21.0	21.0	medium	N	36	30	3	34	5

TENONS, LOCATING PADS & DRILL BUSHES



Order No.	i/d - d <sub>1</sub>	Length gen	Length letter	Length mm	d <sub>2</sub>	r <sub>1</sub>	d <sub>3</sub>	l <sub>2</sub>
30820.WPH30N21.5	21.5	medium	N	36	30	3	34	5
30820.WPH30N22.0	22.0	medium	N	36	30	3	34	5
30820.WPH35N22.5	22.5	medium	N	36	35	3	39	5
30820.WPH35N23.0	23.0	medium	N	36	35	3	39	5
30820.WPH35N23.5	23.5	medium	N	36	35	3	39	5
30820.WPH35N24.0	24.0	medium	N	36	35	3	39	5
30820.WPH35N24.5	24.5	medium	N	36	35	3	39	5
30820.WPH35N25.0	25.0	medium	N	36	35	3	39	5
30820.WPH35N25.5	25.5	medium	N	36	35	3	39	5
30820.WPH35N26.0	26.0	medium	N	36	35	3	39	5
30820.WPH42R26.5	26.5	medium	R	45	42	3	46	5
30820.WPH42R27.0	27.0	medium	R	45	42	3	46	5
30820.WPH42R27.5	27.5	medium	R	45	42	3	46	5
30820.WPH42R28.0	28.0	medium	R	45	42	3	46	5
30820.WPH42R28.5	28.5	medium	R	45	42	3	46	5
30820.WPH42R29.0	29.0	medium	R	45	42	3	46	5
30820.WPH42R29.5	29.5	medium	R	45	42	3	46	5
30820.WPH42R30.0	30.0	medium	R	45	42	3	46	5
30820.WPH48R30.5	30.5	medium	R	45	48	3	52	5
30820.WPH48R31.0	31.0	medium	R	45	48	3	52	5
30820.WPH48R31.5	31.5	medium	R	45	48	3	52	5
30820.WPH48R32.0	32.0	medium	R	45	48	3	52	5
30820.WPH48R32.5	32.5	medium	R	45	48	3	52	5
30820.WPH48R33.0	33.0	medium	R	45	48	3	52	5
30820.WPH48R33.5	33.5	medium	R	45	48	3	52	5
30820.WPH48R34.0	34.0	medium	R	45	48	3	52	5
30820.WPH48R34.5	34.5	medium	R	45	48	3	52	5
30820.WPH48R35.0	35.0	medium	R	45	48	3	52	5
30820.WPH55S35.5	35.5	medium	S	56	55	3.5	59	5
30820.WPH55S36.5	36.5	medium	S	56	55	3.5	59	5
30820.WPH55S37.0	37.0	medium	S	56	55	3.5	59	5
30820.WPH55S37.5	37.5	medium	S	56	55	3.5	59	5
30820.WPH55S38.0	38.0	medium	S	56	55	3.5	59	5
30820.WPH55S38.5	38.5	medium	S	56	55	3.5	59	5
30820.WPH55S39.0	39.0	medium	S	56	55	3.5	59	5
30820.WPH55S39.5	39.5	medium	S	56	55	3.5	59	5
30820.WPH55S40.5	40.5	medium	S	56	55	3.5	59	5
30820.WPH55S41.5	41.5	medium	S	56	55	3.5	59	5
30820.WPH62S42.5	42.5	medium	S	56	62	3.5	66	6
30820.WPH62S43.0	43.0	medium	S	56	62	3.5	66	6
30820.WPH62S43.5	43.5	medium	S	56	62	3.5	66	6
30820.WPH62S44.0	44.0	medium	S	56	62	3.5	66	6
30820.WPH62S44.5	44.5	medium	S	56	62	3.5	66	6
30820.WPH62S45.0	45.0	medium	S	56	62	3.5	66	6
30820.WPH62S45.5	45.5	medium	S	56	62	3.5	66	6
30820.WPH62S46.0	46.0	medium	S	56	62	3.5	66	6
30820.WPH62S46.5	46.5	medium	S	56	62	3.5	66	6
30820.WPH62S47.0	47.0	medium	S	56	62	3.5	66	6
30820.WPH62S47.5	47.5	medium	S	56	62	3.5	66	6
30820.WPH62S48.0	48.0	medium	S	56	62	3.5	66	6
30820.WPH70S48.5	48.5	medium	S	56	70	3.5	74	6
30820.WPH70S49.0	49.0	medium	S	56	70	3.5	74	6
30820.WPH70S49.5	49.5	medium	S	56	70	3.5	74	6
30820.WPH70S50.0	50.0	medium	S	56	70	3.5	74	6
30820.WPH70S50.5	50.5	medium	S	56	70	3.5	74	6
30820.WPH70S51.0	51.0	medium	S	56	70	3.5	74	6
30820.WPH70S51.5	51.5	medium	S	56	70	3.5	74	6
30820.WPH70S52.0	52.0	medium	S	56	70	3.5	74	6
30820.WPH70S52.5	52.5	medium	S	56	70	3.5	74	6
30820.WPH70S53.0	53.0	medium	S	56	70	3.5	74	6
30820.WPH70S53.5	53.5	medium	S	56	70	3.5	74	6
30820.WPH70S54.0	54.0	medium	S	56	70	3.5	74	6
30820.WPH70S54.5	54.5	medium	S	56	70	3.5	74	6
30820.WPH70S55.0	55.0	medium	S	56	70	3.5	74	6
30820.WPH78T55.5	55.5	medium	T	67	78	4	82	6
30820.WPH78T56.0	56.0	medium	T	67	78	4	82	6
30820.WPH78T56.5	56.5	medium	T	67	78	4	82	6
30820.WPH78T57.0	57.0	medium	T	67	78	4	82	6



# Headed Drill Bushes - DIN 172A medium

Tenons, Locating Pads & Drill

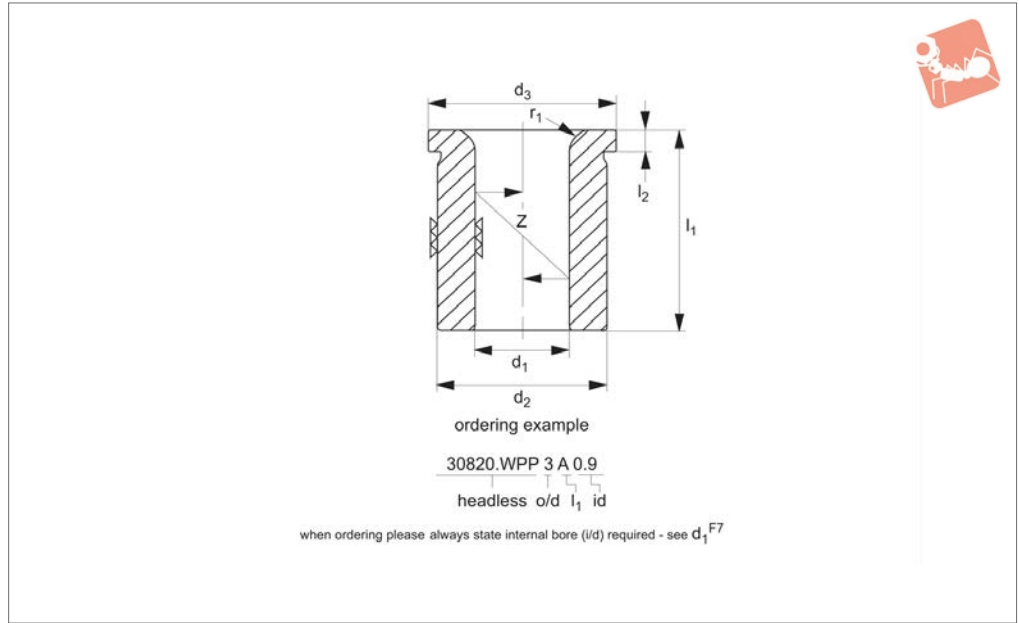


Order No.	i/d - d <sub>1</sub>	Length gen	Length letter	Length mm	d <sub>2</sub>	r <sub>1</sub>	d <sub>3</sub>	l <sub>2</sub>
30820.WPH78T57.5	57.5	medium	T	67	78	4	82	6
30820.WPH78T58.0	58.0	medium	T	67	78	4	82	6
30820.WPH78T58.5	58.5	medium	T	67	78	4	82	6
30820.WPH78T59.0	59.0	medium	T	67	78	4	82	6
30820.WPH78T59.5	59.5	medium	T	67	78	4	82	6
30820.WPH78T60.0	60.0	medium	T	67	78	4	82	6
30820.WPH78T60.5	60.5	medium	T	67	78	4	82	6
30820.WPH78T61.0	61.0	medium	T	67	78	4	82	6
30820.WPH78T61.5	61.5	medium	T	67	78	4	82	6
30820.WPH78T62.0	62.0	medium	T	67	78	4	82	6
30820.WPH78T62.5	62.5	medium	T	67	78	4	82	6
30820.WPH78T63.0	63.0	medium	T	67	78	4	82	6

TENONS, LOCATING PADS & DRILL BUSHES



## 30820.3



### Material

High grade steel. Hardened 740 +HV10.  
Hole, d<sub>1</sub> ground ISO tolerance F7.  
o/d-d<sub>2</sub> ground ISO tolerance n6, to fit standard hole tolerance H<sub>7</sub>. Length l<sub>1</sub> to ±0,2 for lengths 6 to 30mm.

### Technical Notes

d<sub>1</sub> dimension tolerance to F7.

Key to dimensions l<sub>1</sub>:

- l<sub>1</sub> short
- l<sub>1</sub> medium
- l<sub>1</sub> long

Table of lengths l<sub>1</sub>:

- A- 6mm
- B- 8mm

- C- 9mm
- D- 10mm
- E- 12mm
- F- 16mm
- H- 20mm
- J- 25mm
- K- 28mm
- L- 30mm
- M- 35mm
- N- 36mm
- P- 40mm
- R- 45mm
- S- 56mm
- T- 67mm
- W- 78mm

### Tips

Sizes 48,0 i/d and above are made to order

Please note sizes d<sub>1</sub> <0,9 prices available on request.

### Important Notes

Drill bushes produced to standard DIN increments for internal bores:  
i/d's 0,9mm to 15,0mm - 0,1mm increments e.g. 1,1 mm, 1,2mm etc.  
i/d's 15,1mm and over -0,5mm increments.

Ordering drill bushes to DIN standard increments offers a cost advantage, as non-standard bores are machined to order as specials.

Order No.	i/d - d <sub>1</sub>	Length gen	Length letter	Length mm	d <sub>2</sub>	r <sub>1</sub>	d <sub>3</sub>	l <sub>2</sub>
30820.WPH6F2.7	2.7	long	F	16	6	1	9	2.5
30820.WPH6F2.8	2.8	long	F	16	6	1	9	2.5
30820.WPH6F2.9	2.9	long	F	16	6	1	9	2.5
30820.WPH6F3.0	3.0	long	F	16	6	1	9	2.5
30820.WPH6F3.1	3.1	long	F	16	6	1	9	2.5
30820.WPH6F3.2	3.2	long	F	16	6	1	9	2.5
30820.WPH6F3.3	3.3	long	F	16	6	1	9	2.5
30820.WPH7F3.4	3.4	long	F	16	7	1	10	2.5
30820.WPH7F3.5	3.5	long	F	16	7	1	10	2.5
30820.WPH7F3.6	3.6	long	F	16	7	1	10	2.5
30820.WPH7F3.7	3.7	long	F	16	7	1	10	2.5
30820.WPH7F3.8	3.8	long	F	16	7	1	10	2.5
30820.WPH7F3.9	3.9	long	F	16	7	1	10	2.5
30820.WPH7F4.0	4.0	long	F	16	7	1	10	2.5
30820.WPH8F4.1	4.1	long	F	16	8	1	11	2.5
30820.WPH8F4.2	4.2	long	F	16	8	1	11	2.5
30820.WPH8F4.3	4.3	long	F	16	8	1	11	2.5
30820.WPH8F4.4	4.4	long	F	16	8	1	11	2.5





# Headed Drill Bushes - DIN 172A

long



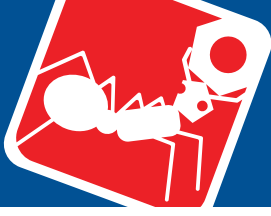
## Tenons, Locating Pads & Drill

Order No.	i/d - d <sub>1</sub>	Length gen	Length letter	Length mm	d <sub>2</sub>	r <sub>1</sub>	d <sub>3</sub>	l <sub>2</sub>
30820.WPH8F4.5	4.5	long	F	16	8	1	11	2.5
30820.WPH8F4.6	4.6	long	F	16	8	1	11	2.5
30820.WPH8F4.7	4.7	long	F	16	8	1	11	2.5
30820.WPH8F4.8	4.8	long	F	16	8	1	11	2.5
30820.WPH8F4.9	4.9	long	F	16	8	1	11	2.5
30820.WPH8F5.0	5.0	long	F	16	8	1	11	2.5
30820.WPH10H5.1	5.1	long	H	20	10	1.5	13	3
30820.WPH10H5.2	5.2	long	H	20	10	1.5	13	3
30820.WPH10H5.3	5.3	long	H	20	10	1.5	13	3
30820.WPH10H5.4	5.4	long	H	20	10	1.5	13	3
30820.WPH10H5.5	5.5	long	H	20	10	1.5	13	3
30820.WPH10H5.6	5.6	long	H	20	10	1.5	13	3
30820.WPH10H5.7	5.7	long	H	20	10	1.5	13	3
30820.WPH10H5.8	5.8	long	H	20	10	1.5	13	3
30820.WPH10H5.9	5.9	long	H	20	10	1.5	13	3
30820.WPH10H6.0	6.0	long	H	20	10	1.5	13	3
30820.WPH12H6.1	6.1	long	H	20	12	1.5	15	3
30820.WPH12H6.2	6.2	long	H	20	12	1.5	15	3
30820.WPH12H6.3	6.3	long	H	20	12	1.5	15	3
30820.WPH12H6.4	6.4	long	H	20	12	1.5	15	3
30820.WPH12H6.5	6.5	long	H	20	12	1.5	15	3
30820.WPH12H6.6	6.6	long	H	20	12	1.5	15	3
30820.WPH12H6.7	6.7	long	H	20	12	1.5	15	3
30820.WPH12H6.8	6.8	long	H	20	12	1.5	15	3
30820.WPH12H6.9	6.9	long	H	20	12	1.5	15	3
30820.WPH12H7.0	7.0	long	H	20	12	1.5	15	3
30820.WPH12H7.1	7.1	long	H	20	12	1.5	15	3
30820.WPH12H7.2	7.2	long	H	20	12	1.5	15	3
30820.WPH12H7.3	7.3	long	H	20	12	1.5	15	3
30820.WPH12H7.4	7.4	long	H	20	12	1.5	15	3
30820.WPH12H7.5	7.5	long	H	20	12	1.5	15	3
30820.WPH12H7.6	7.6	long	H	20	12	1.5	15	3
30820.WPH12H7.7	7.7	long	H	20	12	1.5	15	3
30820.WPH12H7.8	7.8	long	H	20	12	1.5	15	3
30820.WPH12H7.9	7.9	long	H	20	12	1.5	15	3
30820.WPH12H8.0	8.0	long	H	20	12	1.5	15	3
30820.WPH15J8.1	8.1	long	J	25	15	2	18	3
30820.WPH15J8.2	8.2	long	J	25	15	2	18	3
30820.WPH15J8.3	8.3	long	J	25	15	2	18	3
30820.WPH15J8.4	8.4	long	J	25	15	2	18	3
30820.WPH15J8.5	8.5	long	J	25	15	2	18	3
30820.WPH15J8.6	8.6	long	J	25	15	2	18	3
30820.WPH15J8.7	8.7	long	J	25	15	2	18	3
30820.WPH15J8.8	8.8	long	J	25	15	2	18	3
30820.WPH15J8.9	8.9	long	J	25	15	2	18	3
30820.WPH15J9.0	9.0	long	J	25	15	2	18	3
30820.WPH15J9.1	9.1	long	J	25	15	2	18	3
30820.WPH15J9.2	9.2	long	J	25	15	2	18	3
30820.WPH15J9.3	9.3	long	J	25	15	2	18	3
30820.WPH15J9.4	9.4	long	J	25	15	2	18	3
30820.WPH15J9.5	9.5	long	J	25	15	2	18	3
30820.WPH15J9.6	9.6	long	J	25	15	2	18	3
30820.WPH15J9.7	9.7	long	J	25	15	2	18	3
30820.WPH15J9.8	9.8	long	J	25	15	2	18	3
30820.WPH15J9.9	9.9	long	J	25	15	2	18	3
30820.WPH15J10.0	10.0	long	J	25	15	2	18	3
30820.WPH18J10.1	10.1	long	J	25	18	2	22	4
30820.WPH18J10.2	10.2	long	J	25	18	2	22	4
30820.WPH18J10.3	10.3	long	J	25	18	2	22	4
30820.WPH18J10.4	10.4	long	J	25	18	2	22	4
30820.WPH18J10.5	10.5	long	J	25	18	2	22	4
30820.WPH18J10.6	10.6	long	J	25	18	2	22	4
30820.WPH18J10.7	10.7	long	J	25	18	2	22	4
30820.WPH18J10.8	10.8	long	J	25	18	2	22	4
30820.WPH18J10.9	10.9	long	J	25	18	2	22	4
30820.WPH18J11.0	11.0	long	J	25	18	2	22	4
30820.WPH18J11.1	11.1	long	J	25	18	2	22	4
30820.WPH18J11.2	11.2	long	J	25	18	2	22	4

TENONS, LOCATING PADS & DRILL BUSHES



Order No.	i/d - d <sub>1</sub>	Length gen	Length letter	Length mm	d <sub>2</sub>	r <sub>1</sub>	d <sub>3</sub>	l <sub>2</sub>
30820.WPH18J11.3	11.3	long	J	25	18	2	22	4
30820.WPH18J11.4	11.4	long	J	25	18	2	22	4
30820.WPH18J11.5	11.5	long	J	25	18	2	22	4
30820.WPH18J11.6	11.6	long	J	25	18	2	22	4
30820.WPH18J11.7	11.7	long	J	25	18	2	22	4
30820.WPH18J11.8	11.8	long	J	25	18	2	22	4
30820.WPH18J11.9	11.9	long	J	25	18	2	22	4
30820.WPH18J12.0	12.0	long	J	25	18	2	22	4
30820.WPH22N12.1	12.1	long	N	36	22	2	26	4
30820.WPH22N12.2	12.2	long	N	36	22	2	26	4
30820.WPH22N12.3	12.3	long	N	36	22	2	26	4
30820.WPH22N12.4	12.4	long	N	36	22	2	26	4
30820.WPH22N12.5	12.5	long	N	36	22	2	26	4
30820.WPH22N12.6	12.6	long	N	36	22	2	26	4
30820.WPH22N12.7	12.7	long	N	36	22	2	26	4
30820.WPH22N12.8	12.8	long	N	36	22	2	26	4
30820.WPH22N12.9	12.9	long	N	36	22	2	26	4
30820.WPH22N13.0	13.0	long	N	36	22	2	26	4
30820.WPH22N13.1	13.1	long	N	36	22	2	26	4
30820.WPH22N13.2	13.2	long	N	36	22	2	26	4
30820.WPH22N13.3	13.3	long	N	36	22	2	26	4
30820.WPH22N13.4	13.4	long	N	36	22	2	26	4
30820.WPH22N13.5	13.5	long	N	36	22	2	26	4
30820.WPH22N13.6	13.6	long	N	36	22	2	26	4
30820.WPH22N13.7	13.7	long	N	36	22	2	26	4
30820.WPH22N13.8	13.8	long	N	36	22	2	26	4
30820.WPH22N13.9	13.9	long	N	36	22	2	26	4
30820.WPH22N14.0	14.0	long	N	36	22	2	26	4
30820.WPH22N14.1	14.1	long	N	36	22	2	26	4
30820.WPH22N14.2	14.2	long	N	36	22	2	26	4
30820.WPH22N14.3	14.3	long	N	36	22	2	26	4
30820.WPH22N14.4	14.4	long	N	36	22	2	26	4
30820.WPH22N14.5	14.5	long	N	36	22	2	26	4
30820.WPH22N14.6	14.6	long	N	36	22	2	26	4
30820.WPH22N14.7	14.7	long	N	36	22	2	26	4
30820.WPH22N14.8	14.8	long	N	36	22	2	26	4
30820.WPH22N14.9	14.9	long	N	36	22	2	26	4
30820.WPH22N15.0	15.0	long	N	36	22	2	26	4
30820.WPH26N15.5	15.5	long	N	36	26	2	30	4
30820.WPH26N16.0	16.0	long	N	36	26	2	30	4
30820.WPH26N16.5	16.5	long	N	36	26	2	30	4
30820.WPH26N17.0	17.0	long	N	36	26	2	30	4
30820.WPH26N17.5	17.5	long	N	36	26	2	30	4
30820.WPH26N18.0	18.0	long	N	36	26	2	30	4
30820.WPH30R18.5	18.5	long	R	45	30	3	34	5
30820.WPH30R19.0	19.0	long	R	45	30	3	34	5
30820.WPH30R19.5	19.5	long	R	45	30	3	34	5
30820.WPH30R20.0	20.0	long	R	45	30	3	34	5
30820.WPH30R20.5	20.5	long	R	45	30	3	34	5
30820.WPH30R21.0	21.0	long	R	45	30	3	34	5
30820.WPH30R21.5	21.5	long	R	45	30	3	34	5
30820.WPH30R22.0	22.0	long	R	45	30	3	34	5
30820.WPH35R22.5	22.5	long	R	45	35	3	39	5
30820.WPH35R23.0	23.0	long	R	45	35	3	39	5
30820.WPH35R23.5	23.5	long	R	45	35	3	39	5
30820.WPH35R24.0	24.0	long	R	45	35	3	39	5
30820.WPH35R24.5	24.5	long	R	45	35	3	39	5
30820.WPH35R25.0	25.0	long	R	45	35	3	39	5
30820.WPH35R25.5	25.5	long	R	45	35	3	39	5
30820.WPH35R26.0	26.0	long	R	45	35	3	39	5
30820.WPH42S26.5	26.5	long	S	56	42	3	46	5
30820.WPH42S27.0	27.0	long	S	56	42	3	46	5
30820.WPH42S27.5	27.5	long	S	56	42	3	46	5
30820.WPH42S28.0	28.0	long	S	56	42	3	46	5
30820.WPH42S28.5	28.5	long	S	56	42	3	46	5
30820.WPH42S29.0	29.0	long	S	56	42	3	46	5
30820.WPH42S29.5	29.5	long	S	56	42	3	46	5
30820.WPH42S30.0	30.0	long	S	56	42	3	46	5



# Headed Drill Bushes - DIN 172A

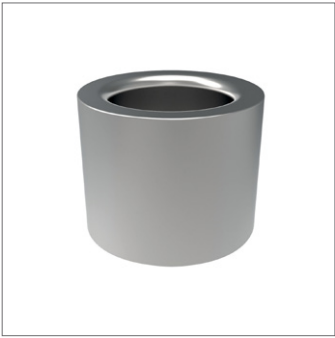
long



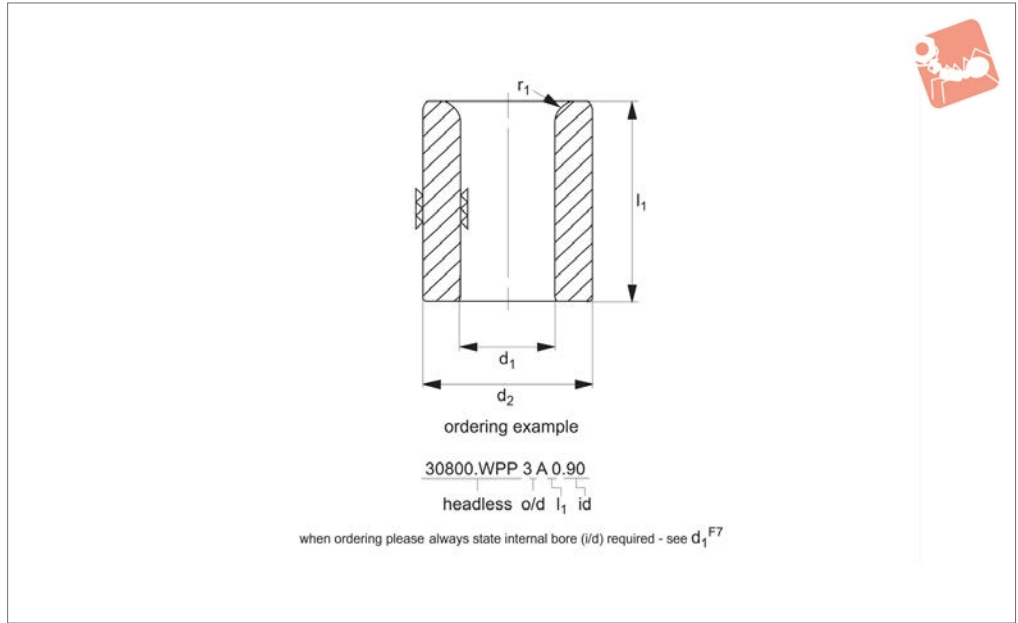
## Tenons, Locating Pads & Drill

Order No.	i/d - d <sub>1</sub>	Length gen	Length letter	Length mm	d <sub>2</sub>	r <sub>1</sub>	d <sub>3</sub>	l <sub>2</sub>
30820.WPH48S30.5	30.5	long	S	56	48	3	52	5
30820.WPH48S31.0	31.0	long	S	56	48	3	52	5
30820.WPH48S31.5	31.5	long	S	56	48	3	52	5
30820.WPH48S32.0	32.0	long	S	56	48	3	52	5
30820.WPH48S32.5	32.5	long	S	56	48	3	52	5
30820.WPH48S33.0	33.0	long	S	56	48	3	52	5
30820.WPH48S33.5	33.5	long	S	56	48	3	52	5
30820.WPH48S34.0	34.0	long	S	56	48	3	52	5
30820.WPH48S34.5	34.5	long	S	56	48	3	52	5
30820.WPH48S35.0	35.0	long	S	56	48	3	52	5
30820.WPH55T35.5	35.5	long	T	67	55	3.5	59	5
30820.WPH55T36.0	36.0	long	T	67	55	3.5	59	5
30820.WPH55T36.5	36.5	long	T	67	55	3.5	59	5
30820.WPH55T37.0	37.0	long	T	67	55	3.5	59	5
30820.WPH55T37.5	37.5	long	T	67	55	3.5	59	5
30820.WPH55T38.0	38.0	long	T	67	55	3.5	59	5
30820.WPH55T38.5	38.5	long	T	67	55	3.5	59	5
30820.WPH55T39.0	39.0	long	T	67	55	3.5	59	5
30820.WPH55T39.5	39.5	long	T	67	55	3.5	59	5
30820.WPH55T40.0	40.0	long	T	67	55	3.5	59	5
30820.WPH55T40.5	40.5	long	T	67	55	3.5	59	5
30820.WPH55T41.5	41.5	long	T	67	55	3.5	59	5
30820.WPH55T42.0	42.0	long	T	67	55	3.5	59	5
30820.WPH62T42.5	42.5	long	T	67	62	3.5	66	6
30820.WPH62T43.0	43.0	long	T	67	62	3.5	66	6
30820.WPH62T43.5	43.5	long	T	67	62	3.5	66	6
30820.WPH62T44.0	44.0	long	T	67	62	3.5	66	6
30820.WPH62T44.5	44.5	long	T	67	62	3.5	66	6
30820.WPH62T45.0	45.0	long	T	67	62	3.5	66	6
30820.WPH62T45.5	45.5	long	T	67	62	3.5	66	6
30820.WPH62T46.0	46.0	long	T	67	62	3.5	66	6
30820.WPH62T46.5	46.5	long	T	67	62	3.5	66	6
30820.WPH62T47.0	47.0	long	T	67	62	3.5	66	6
30820.WPH62T47.5	47.5	long	T	67	62	3.5	66	6
30820.WPH62T48.0	48.0	long	T	67	62	3.5	66	6
30820.WPH70T48.5	48.5	long	T	67	70	3.5	74	6
30820.WPH70T49.0	49.0	long	T	67	70	3.5	74	6
30820.WPH70T49.5	49.5	long	T	67	70	3.5	74	6
30820.WPH70T50.0	50.0	long	T	67	70	3.5	74	6
30820.WPH70T50.5	50.5	long	T	67	70	3.5	74	6
30820.WPH70T51.0	51.0	long	T	67	70	3.5	74	6
30820.WPH70T51.5	51.5	long	T	67	70	3.5	74	6
30820.WPH70T52.0	52.0	long	T	67	70	3.5	74	6
30820.WPH70T52.5	52.5	long	T	67	70	3.5	74	6
30820.WPH70T53.0	53.0	long	T	67	70	3.5	74	6
30820.WPH70T53.5	53.5	long	T	67	70	3.5	74	6
30820.WPH70T54.0	54.0	long	T	67	70	3.5	74	6
30820.WPH70T54.5	54.5	long	T	67	70	3.5	74	6
30820.WPH70T55.0	55.0	long	T	67	70	3.5	74	6
30820.WPH78W55.5	55.5	long	W	78	78	4	82	6
30820.WPH78W56.0	56.0	long	W	78	78	4	82	6
30820.WPH78W56.5	56.5	long	W	78	78	4	82	6
30820.WPH78W57.0	57.0	long	W	78	78	4	82	6
30820.WPH78W57.5	57.5	long	W	78	78	4	82	6
30820.WPH78W58.0	58.0	long	W	78	78	4	82	6
30820.WPH78W58.5	58.5	long	W	78	78	4	82	6
30820.WPH78W59.0	59.0	long	W	78	78	4	82	6
30820.WPH78W59.5	59.5	long	W	78	78	4	82	6
30820.WPH78W60.0	60.0	long	W	78	78	4	82	6
30820.WPH78W60.5	60.5	long	W	78	78	4	82	6
30820.WPH78W61.0	61.0	long	W	78	78	4	82	6
30820.WPH78W61.5	61.5	long	W	78	78	4	82	6
30820.WPH78W62.0	62.0	long	W	78	78	4	82	6
30820.WPH78W62.5	62.5	long	W	78	78	4	82	6
30820.WPH78W63.0	63.0	long	W	78	78	4	82	6

TENONS, LOCATING PADS & DRILL BUSHES



## 30800.1



### Material

High grade steel. Hardened 740 +HV10.  
 Hole, d<sub>1</sub> ground ISO tolerance F7.  
 o/d-d<sub>2</sub> ground ISO tolerance n6, to fit standard hole tolerance H<sub>7</sub>. Length l<sub>1</sub> to ±0,2 for lengths 6 to 30mm.

### Technical Notes

d<sub>1</sub> dimension tolerance to F7.  
 Key to dimensions l<sub>1</sub>:  
 - l<sub>1</sub> short  
 - l<sub>1</sub> medium  
 - l<sub>1</sub> long

Table of lengths l<sub>1</sub>:

- A- 6mm
- B- 8mm
- C- 9mm
- D- 10mm
- E- 12mm
- F- 16mm
- H- 20mm
- J- 25mm
- K- 28mm
- L- 30mm
- M- 35mm
- N- 36mm
- P- 40mm
- R- 45mm
- S- 56mm

- T- 67mm
- W- 78mm

### Tips

Sizes 48,0 i/d and above are made to order.  
 Please note sizes d<sub>1</sub> <0,9 prices available on request.

### Important Notes

Drill bushes produced to standard DIN increments for internal bores:  
 i/d's 0,9mm to 15,0mm - 0,1mm increments e.g. 1,1 mm, 1,2mm etc.  
 i/d's 15,1mm and over -0,5mm increments.

Order No.	i/d - d <sub>1</sub> tol. F7	Length gen	Length letter	l <sub>1</sub> ±0.2	d <sub>2</sub> tol. N6	r <sub>1</sub>
30800.WPP3A0.9	0.9	short	A	6	3	1
30800.WPP3A1.0	1.0	short	A	6	3	1
30800.WPP4A1.1	1.1	short	A	6	4	1
30800.WPP4A1.2	1.2	short	A	6	4	1
30800.WPP4A1.3	1.3	short	A	6	4	1
30800.WPP4A1.4	1.4	short	A	6	4	1
30800.WPP4A1.5	1.5	short	A	6	4	1
30800.WPP4A1.6	1.6	short	A	6	4	1
30800.WPP4A1.7	1.7	short	A	6	4	1
30800.WPP4A1.8	1.8	short	A	6	4	1
30800.WPP5A1.9	1.9	short	A	6	5	1
30800.WPP5A2.0	2.0	short	A	6	5	1
30800.WPP5A2.1	2.1	short	A	6	5	1
30800.WPP5A2.2	2.2	short	A	6	5	1
30800.WPP5A2.3	2.3	short	A	6	5	1
30800.WPP5A2.4	2.4	short	A	6	5	1
30800.WPP5A2.5	2.5	short	A	6	5	1
30800.WPP5A2.6	2.6	short	A	6	5	1
30800.WPP6B2.7	2.7	short	B	8	6	1
30800.WPP6B2.8	2.8	short	B	8	6	1



# Headless Drill Bushes - DIN 179

short

## Tenons, Locating Pads & Drill



Order No.	i/d - d <sub>1</sub> tol. F7	Length gen	Length letter	l <sub>1</sub> ±0.2	d <sub>2</sub> tol. N6	r <sub>1</sub>
30800.WPP6B2.9	2.9	short	B	8	6	1
30800.WPP6B3.0	3.0	short	B	8	6	1
30800.WPP6B3.1	3.1	short	B	8	6	1
30800.WPP6B3.2	3.2	short	B	8	6	1
30800.WPP6B3.3	3.3	short	B	8	6	1
30800.WPP7B3.4	3.4	short	B	8	7	1
30800.WPP7B3.5	3.5	short	B	8	7	1
30800.WPP7B3.6	3.6	short	B	8	7	1
30800.WPP7B3.7	3.7	short	B	8	7	1
30800.WPP7B3.8	3.8	short	B	8	7	1
30800.WPP7B3.9	3.9	short	B	8	7	1
30800.WPP7B4.0	4.0	short	B	8	7	1
30800.WPP8B4.1	4.1	short	B	8	8	1
30800.WPP8B4.2	4.2	short	B	8	8	1
30800.WPP8B4.3	4.3	short	B	8	8	1
30800.WPP8B4.4	4.4	short	B	8	8	1
30800.WPP8B4.5	4.5	short	B	8	8	1
30800.WPP8B4.6	4.6	short	B	8	8	1
30800.WPP8B4.7	4.7	short	B	8	8	1
30800.WPP8B4.8	4.8	short	B	8	8	1
30800.WPP8B4.9	4.9	short	B	8	8	1
30800.WPP8B5.0	5.0	short	B	8	8	1
30800.WPP10D5.1	5.1	short	D	10	10	1.5
30800.WPP10D5.2	5.2	short	D	10	10	1.5
30800.WPP10D5.3	5.3	short	D	10	10	1.5
30800.WPP10D5.4	5.4	short	D	10	10	1.5
30800.WPP10D5.5	5.5	short	D	10	10	1.5
30800.WPP10D5.6	5.6	short	D	10	10	1.5
30800.WPP10D5.7	5.7	short	D	10	10	1.5
30800.WPP10D5.8	5.8	short	D	10	10	1.5
30800.WPP10D5.9	5.9	short	D	10	10	1.5
30800.WPP10D6.0	6.0	short	D	10	10	1.5
30800.WPP12D6.1	6.1	short	D	10	12	1.5
30800.WPP12D6.2	6.2	short	D	10	12	1.5
30800.WPP12D6.3	6.3	short	D	10	12	1.5
30800.WPP12D6.4	6.4	short	D	10	12	1.5
30800.WPP12D6.5	6.5	short	D	10	12	1.5
30800.WPP12D6.6	6.6	short	D	10	12	1.5
30800.WPP12D6.7	6.7	short	D	10	12	1.5
30800.WPP12D6.8	6.8	short	D	10	12	1.5
30800.WPP12D6.9	6.9	short	D	10	12	1.5
30800.WPP12D7.0	7.0	short	D	10	12	1.5
30800.WPP12D7.1	7.1	short	D	10	12	1.5
30800.WPP12D7.2	7.2	short	D	10	12	1.5
30800.WPP12D7.3	7.3	short	D	10	12	1.5
30800.WPP12D7.4	7.4	short	D	10	12	1.5
30800.WPP12D7.5	7.5	short	D	10	12	1.5
30800.WPP12D7.6	7.6	short	D	10	12	1.5
30800.WPP12D7.7	7.7	short	D	10	12	1.5
30800.WPP12D7.8	7.8	short	D	10	12	1.5
30800.WPP12D7.9	7.9	short	D	10	12	1.5
30800.WPP12D8.0	8.0	short	D	10	12	1.5
30800.WPP15E8.1	8.1	short	E	12	15	2
30800.WPP15E8.2	8.2	short	E	12	15	2
30800.WPP15E8.3	8.3	short	E	12	15	2
30800.WPP15E8.4	8.4	short	E	12	15	2
30800.WPP15E8.5	8.5	short	E	12	15	2
30800.WPP15E8.6	8.6	short	E	12	15	2
30800.WPP15E8.7	8.7	short	E	12	15	2
30800.WPP15E8.8	8.8	short	E	12	15	2
30800.WPP15E8.9	8.9	short	E	12	15	2
30800.WPP15E9.0	9.0	short	E	12	15	2
30800.WPP15E9.1	9.1	short	E	12	15	2
30800.WPP15E9.2	9.2	short	E	12	15	2
30800.WPP15E9.3	9.3	short	E	12	15	2
30800.WPP15E9.4	9.4	short	E	12	15	2
30800.WPP15E9.5	9.5	short	E	12	15	2
30800.WPP15E9.6	9.6	short	E	12	15	2



Order No.	i/d - d <sub>1</sub> tol. F7	Length gen	Length letter	l <sub>1</sub> ±0.2	d <sub>2</sub> tol. N6	r <sub>1</sub>
30800.WPP15E9.7	9.7	short	E	12	15	2
30800.WPP15E9.8	9.8	short	E	12	15	2
30800.WPP15E9.9	9.9	short	E	12	15	2
30800.WPP15E10.0	10.0	short	E	12	15	2
30800.WPP18E10.1	10.1	short	E	12	18	2
30800.WPP18E10.2	10.2	short	E	12	18	2
30800.WPP18E10.3	10.3	short	E	12	18	2
30800.WPP18E10.4	10.4	short	E	12	18	2
30800.WPP18E10.5	10.5	short	E	12	18	2
30800.WPP18E10.6	10.6	short	E	12	18	2
30800.WPP18E10.7	10.7	short	E	12	18	2
30800.WPP18E10.8	10.8	short	E	12	18	2
30800.WPP18E10.9	10.9	short	E	12	18	2
30800.WPP18E11.0	11.0	short	E	12	18	2
30800.WPP18E11.1	11.1	short	E	12	18	2
30800.WPP18E11.2	11.2	short	E	12	18	2
30800.WPP18E11.3	11.3	short	E	12	18	2
30800.WPP18E11.4	11.4	short	E	12	18	2
30800.WPP18E11.5	11.5	short	E	12	18	2
30800.WPP18E11.6	11.6	short	E	12	18	2
30800.WPP18E11.7	11.7	short	E	12	18	2
30800.WPP18E11.8	11.8	short	E	12	18	2
30800.WPP18E11.9	11.9	short	E	12	18	2
30800.WPP18E12.0	12.0	short	E	12	18	2
30800.WPP22F12.1	12.1	short	F	16	22	2
30800.WPP22F12.2	12.2	short	F	16	22	2
30800.WPP22F12.3	12.3	short	F	16	22	2
30800.WPP22F12.4	12.4	short	F	16	22	2
30800.WPP22F12.5	12.5	short	F	16	22	2
30800.WPP22F12.6	12.6	short	F	16	22	2
30800.WPP22F12.7	12.7	short	F	16	22	2
30800.WPP22F12.8	12.8	short	F	16	22	2
30800.WPP22F12.9	12.9	short	F	16	22	2
30800.WPP22F13.0	13.0	short	F	16	22	2
30800.WPP22F13.1	13.1	short	F	16	22	2
30800.WPP22F13.2	13.2	short	F	16	22	2
30800.WPP22F13.3	13.3	short	F	16	22	2
30800.WPP22F13.4	13.4	short	F	16	22	2
30800.WPP22F13.5	13.5	short	F	16	22	2
30800.WPP22F13.6	13.6	short	F	16	22	2
30800.WPP22F13.7	13.7	short	F	16	22	2
30800.WPP22F13.8	13.8	short	F	16	22	2
30800.WPP22F13.9	13.9	short	F	16	22	2
30800.WPP22F14.0	14.0	short	F	16	22	2
30800.WPP22F14.1	14.1	short	F	16	22	2
30800.WPP22F14.2	14.2	short	F	16	22	2
30800.WPP22F14.3	14.3	short	F	16	22	2
30800.WPP22F14.4	14.4	short	F	16	22	2
30800.WPP22F14.5	14.5	short	F	16	22	2
30800.WPP22F14.6	14.6	short	F	16	22	2
30800.WPP22F14.7	14.7	short	F	16	22	2
30800.WPP22F14.8	14.8	short	F	16	22	2
30800.WPP22F14.9	14.9	short	F	16	22	2
30800.WPP22F15.0	15.0	short	F	16	22	2
30800.WPP26F15.5	15.5	short	F	16	26	2
30800.WPP26F16.0	16.0	short	F	16	26	2
30800.WPP26F16.5	16.5	short	F	16	26	2
30800.WPP26F17.0	17.0	short	F	16	26	2
30800.WPP26F17.5	17.5	short	F	16	26	2
30800.WPP26F18.0	18.0	short	F	16	26	2
30800.WPP30H18.5	18.5	short	H	20	30	3
30800.WPP30H19.0	19.0	short	H	20	30	3
30800.WPP30H19.5	19.5	short	H	20	30	3
30800.WPP30H20.0	20.0	short	H	20	30	3
30800.WPP30H20.5	20.5	short	H	20	30	3
30800.WPP30H21.0	21.0	short	H	20	30	3
30800.WPP30H21.5	21.5	short	H	20	30	3
30800.WPP30H22.0	22.0	short	H	20	30	3



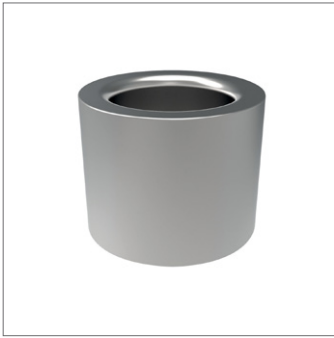
# Headless Drill Bushes - DIN 179 short

Tenons, Locating Pads & Drill

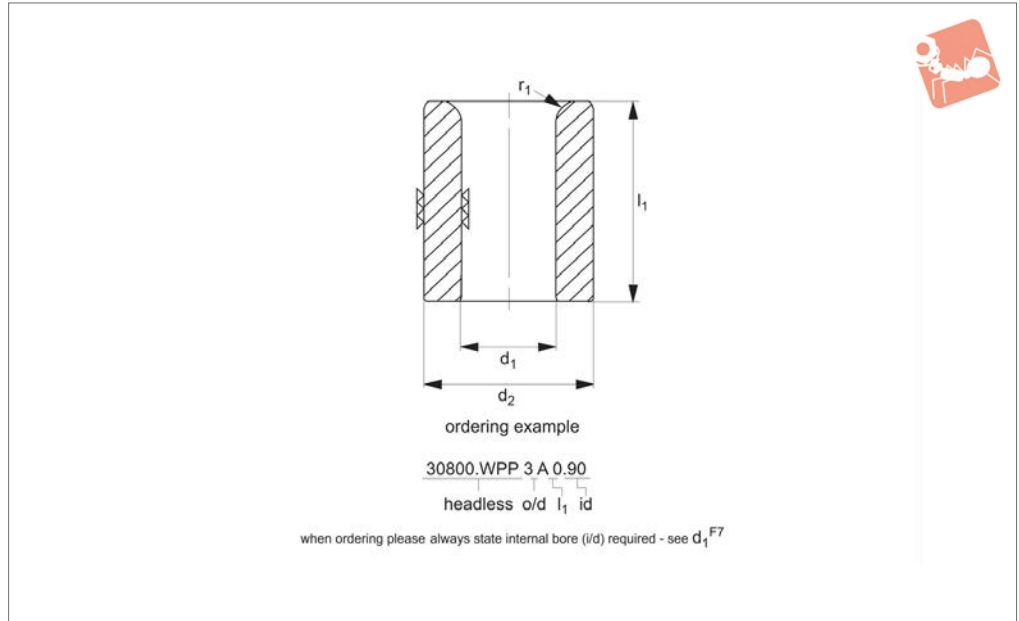


Order No.	i/d - d <sub>1</sub> tol. F7	Length gen	Length letter	l <sub>1</sub> ±0.2	d <sub>2</sub> tol. N6	r <sub>1</sub>
30800.WPP35H22.5	22.5	short	H	20	35	3
30800.WPP35H23.0	23.0	short	H	20	35	3
30800.WPP35H23.5	23.5	short	H	20	35	3
30800.WPP35H24.0	24.0	short	H	20	35	3
30800.WPP35H24.5	24.5	short	H	20	35	3
30800.WPP35H25.0	25.0	short	H	20	35	3
30800.WPP35H25.5	25.5	short	H	20	35	3
30800.WPP35H26.0	26.0	short	H	20	35	3
30800.WPP42J26.5	26.5	short	J	25	42	3
30800.WPP42J27.0	27.0	short	J	25	42	3
30800.WPP42J27.5	27.5	short	J	25	42	3
30800.WPP42J28.0	28.0	short	J	25	42	3
30800.WPP42J28.5	28.5	short	J	25	42	3
30800.WPP42J29.0	29.0	short	J	25	42	3
30800.WPP42J29.5	29.5	short	J	25	42	3
30800.WPP42J30.0	30.0	short	J	25	42	3
30800.WPP48J30.5	30.5	short	J	25	48	3
30800.WPP48J31.0	31.0	short	J	25	48	3
30800.WPP48J31.5	31.5	short	J	25	48	3
30800.WPP48J32.0	32.0	short	J	25	48	3
30800.WPP48J32.5	32.5	short	J	25	48	3
30800.WPP48J33.0	33.0	short	J	25	48	3
30800.WPP48J33.5	33.5	short	J	25	48	3
30800.WPP48J34.0	34.0	short	J	25	48	3
30800.WPP48J34.5	34.5	short	J	25	48	3
30800.WPP48J35.0	35.0	short	J	25	48	3
30800.WPP70L55.0	55.0	short	L	30	70	3.5
30800.WPP78M55.5	55.5	short	M	35	78	4
30800.WPP78M56.0	56.0	short	M	35	78	4

TENONS, LOCATING PADS & DRILL BUSHES



## 30800.2



### Material

High grade steel. Hardened 740 +HV10.  
Hole, d<sub>1</sub> ground ISO tolerance F7.  
o/d-d<sub>2</sub> ground ISO tolerance n6, to fit standard hole tolerance H<sub>7</sub>. Length l<sub>1</sub> to ±0,2 for lengths 6 to 30mm.

### Technical Notes

d<sub>1</sub> dimension tolerance to F7.

Key to dimensions l<sub>1</sub>:

- l<sub>1</sub> short
- l<sub>1</sub> medium
- l<sub>1</sub> long

Table of lengths l<sub>1</sub>:

- A- 6mm
- B- 8mm
- C- 9mm
- D- 10mm
- E- 12mm
- F- 16mm
- H- 20mm
- J- 25mm
- K- 28mm
- L- 30mm
- M- 35mm
- N- 36mm
- P- 40mm
- R- 45mm
- S- 56mm

- T- 67mm
- W- 78mm

### Tips

Sizes 48,0 i/d and above are made to order.

Please note sizes d<sub>1</sub> <0,9 prices available on request.

### Important Notes

Drill bushes produced to standard DIN increments for internal bores:

i/d's 0,9mm to 15,0mm - 0,1mm increments e.g. 1,1 mm, 1,2mm etc.

i/d's 15,1mm and over -0,5mm increments.

Order No.	i/d - d <sub>1</sub> tol. F7	Length gen	Length letter	l <sub>1</sub> ±0.2	d <sub>2</sub> tol. N6	r <sub>1</sub>
30800.WPP3C0.9	0.9	medium	C	9	3	1
30800.WPP3C1.0	1.0	medium	C	9	3	1
30800.WPP4C1.1	1.1	medium	C	9	4	1
30800.WPP4C1.2	1.2	medium	C	9	4	1
30800.WPP4C1.3	1.3	medium	C	9	4	1
30800.WPP4C1.4	1.4	medium	C	9	4	1
30800.WPP4C1.5	1.5	medium	C	9	4	1
30800.WPP4C1.6	1.6	medium	C	9	4	1
30800.WPP4C1.7	1.7	medium	C	9	4	1
30800.WPP4C1.8	1.8	medium	C	9	4	1
30800.WPP5C1.9	1.9	medium	C	9	5	1
30800.WPP5C2.0	2.0	medium	C	9	5	1
30800.WPP5C2.1	2.1	medium	C	9	5	1
30800.WPP5C2.2	2.2	medium	C	9	5	1
30800.WPP5C2.3	2.3	medium	C	9	5	1
30800.WPP5C2.4	2.4	medium	C	9	5	1
30800.WPP5C2.5	2.5	medium	C	9	5	1
30800.WPP5C2.6	2.6	medium	C	9	5	1
30800.WPP6E2.7	2.7	medium	E	12	6	1
30800.WPP6E2.8	2.8	medium	E	12	6	1





# Headless Drill Bushes - DIN 179

medium



Order No.	i/d - d <sub>1</sub> tol. F7	Length gen	Length letter	l <sub>1</sub> ±0.2	d <sub>2</sub> tol. N6	r <sub>1</sub>
30800.WPP6E2.9	2.9	medium	E	12	6	1
30800.WPP6E3.0	3.0	medium	E	12	6	1
30800.WPP6E3.1	3.1	medium	E	12	6	1
30800.WPP6E3.2	3.2	medium	E	12	6	1
30800.WPP6E3.3	3.3	medium	E	12	6	1
30800.WPP7E3.4	3.4	medium	E	12	7	1
30800.WPP7E3.5	3.5	medium	E	12	7	1
30800.WPP7E3.6	3.6	medium	E	12	7	1
30800.WPP7E3.7	3.7	medium	E	12	7	1
30800.WPP7E3.8	3.8	medium	E	12	7	1
30800.WPP7E3.9	3.9	medium	E	12	7	1
30800.WPP7E4.0	4.0	medium	E	12	7	1
30800.WPP8E4.1	4.1	medium	E	12	8	1
30800.WPP8E4.2	4.2	medium	E	12	8	1
30800.WPP8E4.3	4.3	medium	E	12	8	1
30800.WPP8E4.4	4.4	medium	E	12	8	1
30800.WPP8E4.5	4.5	medium	E	12	8	1
30800.WPP8E4.6	4.6	medium	E	12	8	1
30800.WPP8E4.7	4.7	medium	E	12	8	1
30800.WPP8E4.8	4.8	medium	E	12	8	1
30800.WPP8E4.9	4.9	medium	E	12	8	1
30800.WPP8E5.0	5.0	medium	E	12	8	1
30800.WPP10F5.1	5.1	medium	F	16	10	1.5
30800.WPP10F5.2	5.2	medium	F	16	10	1.5
30800.WPP10F5.3	5.3	medium	F	16	10	1.5
30800.WPP10F5.4	5.4	medium	F	16	10	1.5
30800.WPP10F5.5	5.5	medium	F	16	10	1.5
30800.WPP10F5.6	5.6	medium	F	16	10	1.5
30800.WPP10F5.7	5.7	medium	F	16	10	1.5
30800.WPP10F5.8	5.8	medium	F	16	10	1.5
30800.WPP10F5.9	5.9	medium	F	16	10	1.5
30800.WPP10F6.0	6.0	medium	F	16	10	1.5
30800.WPP12F6.1	6.1	medium	F	16	12	1.5
30800.WPP12F6.2	6.2	medium	F	16	12	1.5
30800.WPP12F6.3	6.3	medium	F	16	12	1.5
30800.WPP12F6.4	6.4	medium	F	16	12	1.5
30800.WPP12F6.5	6.5	medium	F	16	12	1.5
30800.WPP12F6.6	6.6	medium	F	16	12	1.5
30800.WPP12F6.7	6.7	medium	F	16	12	1.5
30800.WPP12F6.8	6.8	medium	F	16	12	1.5
30800.WPP12F6.9	6.9	medium	F	16	12	1.5
30800.WPP12F7.0	7.0	medium	F	16	12	1.5
30800.WPP12F7.1	7.1	medium	F	16	12	1.5
30800.WPP12F7.2	7.2	medium	F	16	12	1.5
30800.WPP12F7.3	7.3	medium	F	16	12	1.5
30800.WPP12F7.4	7.4	medium	F	16	12	1.5
30800.WPP12F7.5	7.5	medium	F	16	12	1.5
30800.WPP12F7.6	7.6	medium	F	16	12	1.5
30800.WPP12F7.7	7.7	medium	F	16	12	1.5
30800.WPP12F7.8	7.8	medium	F	16	12	1.5
30800.WPP12F7.9	7.9	medium	F	16	12	1.5
30800.WPP12F8.0	8.0	medium	F	16	12	1.5
30800.WPP15H8.1	8.1	medium	H	20	15	2
30800.WPP15H8.2	8.2	medium	H	20	15	2
30800.WPP15H8.3	8.3	medium	H	20	15	2
30800.WPP15H8.4	8.4	medium	H	20	15	2
30800.WPP15H8.5	8.5	medium	H	20	15	2
30800.WPP15H8.6	8.6	medium	H	20	15	2
30800.WPP15H8.7	8.7	medium	H	20	15	2
30800.WPP15H8.8	8.8	medium	H	20	15	2
30800.WPP15H8.9	8.9	medium	H	20	15	2
30800.WPP15H9.0	9.0	medium	H	20	15	2
30800.WPP15H9.1	9.1	medium	H	20	15	2
30800.WPP15H9.2	9.2	medium	H	20	15	2
30800.WPP15H9.3	9.3	medium	H	20	15	2
30800.WPP15H9.4	9.4	medium	H	20	15	2
30800.WPP15H9.5	9.5	medium	H	20	15	2
30800.WPP15H9.6	9.6	medium	H	20	15	2



Order No.	i/d - d <sub>1</sub> tol. F7	Length gen	Length letter	l <sub>1</sub> ±0.2	d <sub>2</sub> tol. N6	r <sub>1</sub>
30800.WPP15H9.7	9.7	medium	H	20	15	2
30800.WPP15H9.8	9.8	medium	H	20	15	2
30800.WPP15H9.9	9.9	medium	H	20	15	2
30800.WPP15H10.0	10.0	medium	H	20	15	2
30800.WPP18H10.1	10.1	medium	H	20	18	2
30800.WPP18H10.2	10.2	medium	H	20	18	2
30800.WPP18H10.3	10.3	medium	H	20	18	2
30800.WPP18H10.4	10.4	medium	H	20	18	2
30800.WPP18H10.5	10.5	medium	H	20	18	2
30800.WPP18H10.6	10.6	medium	H	20	18	2
30800.WPP18H10.7	10.7	medium	H	20	18	2
30800.WPP18H10.8	10.8	medium	H	20	18	2
30800.WPP18H10.9	10.9	medium	H	20	18	2
30800.WPP18H11.0	11.0	medium	H	20	18	2
30800.WPP18H11.1	11.1	medium	H	20	18	2
30800.WPP18H11.2	11.2	medium	H	20	18	2
30800.WPP18H11.3	11.3	medium	H	20	18	2
30800.WPP18H11.4	11.4	medium	H	20	18	2
30800.WPP18H11.5	11.5	medium	H	20	18	2
30800.WPP18H11.6	11.6	medium	H	20	18	2
30800.WPP18H11.7	11.7	medium	H	20	18	2
30800.WPP18H11.8	11.8	medium	H	20	18	2
30800.WPP18H11.9	11.9	medium	H	20	18	2
30800.WPP18H12.0	12.0	medium	H	20	18	2
30800.WPP22K12.1	12.1	medium	K	28	22	2
30800.WPP22K12.2	12.2	medium	K	28	22	2
30800.WPP22K12.3	12.3	medium	K	28	22	2
30800.WPP22K12.4	12.4	medium	K	28	22	2
30800.WPP22K12.5	12.5	medium	K	28	22	2
30800.WPP22K12.6	12.6	medium	K	28	22	2
30800.WPP22K12.7	12.7	medium	K	28	22	2
30800.WPP22K12.8	12.8	medium	K	28	22	2
30800.WPP22K12.9	12.9	medium	K	28	22	2
30800.WPP22K13.0	13.0	medium	K	28	22	2
30800.WPP22K13.1	13.1	medium	K	28	22	2
30800.WPP22K13.2	13.2	medium	K	28	22	2
30800.WPP22K13.3	13.3	medium	K	28	22	2
30800.WPP22K13.4	13.4	medium	K	28	22	2
30800.WPP22K13.5	13.5	medium	K	28	22	2
30800.WPP22K13.6	13.6	medium	K	28	22	2
30800.WPP22K13.7	13.7	medium	K	28	22	2
30800.WPP22K13.8	13.8	medium	K	28	22	2
30800.WPP22K13.9	13.9	medium	K	28	22	2
30800.WPP22K14.0	14.0	medium	K	28	22	2
30800.WPP22K14.1	14.1	medium	K	28	22	2
30800.WPP22K14.2	14.2	medium	K	28	22	2
30800.WPP22K14.3	14.3	medium	K	28	22	2
30800.WPP22K14.4	14.4	medium	K	28	22	2
30800.WPP22K14.5	14.5	medium	K	28	22	2
30800.WPP22K14.6	14.6	medium	K	28	22	2
30800.WPP22K14.7	14.7	medium	K	28	22	2
30800.WPP22K14.8	14.8	medium	K	28	22	2
30800.WPP22K14.9	14.9	medium	K	28	22	2
30800.WPP22K15.0	15.0	medium	K	28	22	2
30800.WPP26K15.5	15.5	medium	K	28	26	2
30800.WPP26K16.0	16.0	medium	K	28	26	2
30800.WPP26K16.5	16.5	medium	K	28	26	2
30800.WPP26K17.0	17.0	medium	K	28	26	2
30800.WPP26K17.5	17.5	medium	K	28	26	2
30800.WPP26K18.0	18.0	medium	K	28	26	2
30800.WPP30N18.5	18.5	medium	N	36	30	3
30800.WPP30N19.0	19.0	medium	N	36	30	3
30800.WPP30N19.5	19.5	medium	N	36	30	3
30800.WPP30N20.0	20.0	medium	N	36	30	3
30800.WPP30N20.5	20.5	medium	N	36	30	3
30800.WPP30N21.0	21.0	medium	N	36	30	3
30800.WPP30N21.5	21.5	medium	N	36	30	3
30800.WPP30N22.0	22.0	medium	N	36	30	3



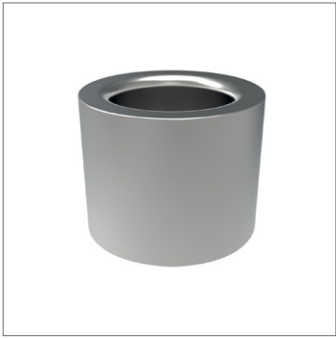
# Headless Drill Bushes - DIN 179 medium



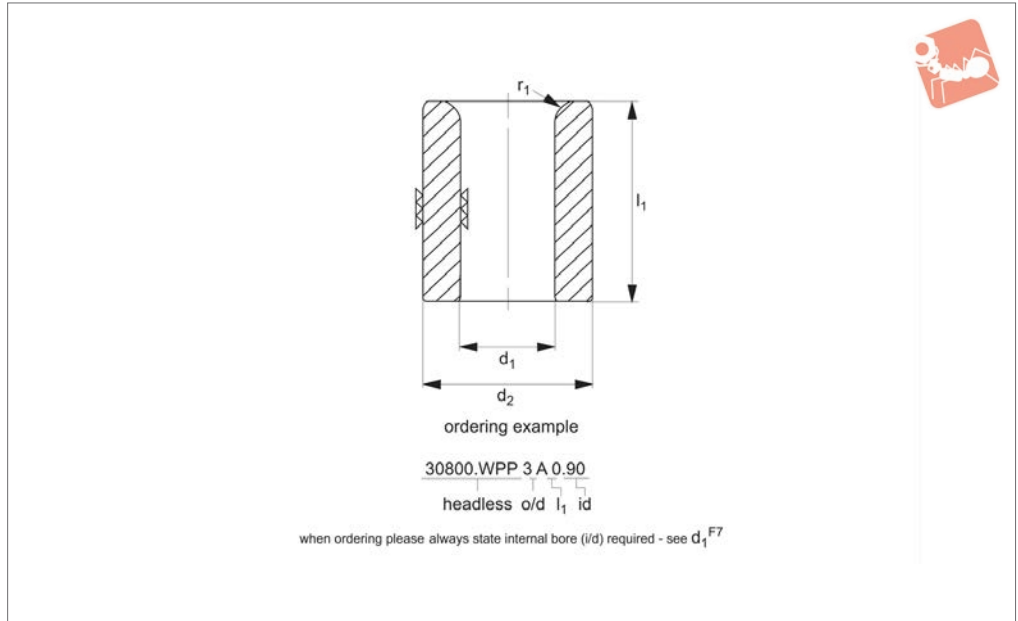
## Tenons, Locating Pads & Drill

Order No.	i/d - d <sub>1</sub> tol. F7	Length gen	Length letter	l <sub>1</sub> ±0.2	d <sub>2</sub> tol. N6	r <sub>1</sub>
30800.WPP35N22.5	22.5	medium	N	36	35	3
30800.WPP35N23.0	23.0	medium	N	36	35	3
30800.WPP35N23.5	23.5	medium	N	36	35	3
30800.WPP35N24.0	24.0	medium	N	36	35	3
30800.WPP35N24.5	24.5	medium	N	36	35	3
30800.WPP35N25.0	25.0	medium	N	36	35	3
30800.WPP35N25.5	25.5	medium	N	36	35	3
30800.WPP35N26.0	26.0	medium	N	36	35	3
30800.WPP42R26.5	26.5	medium	R	45	42	3
30800.WPP42R27.0	27.0	medium	R	45	42	3
30800.WPP42R27.5	27.5	medium	R	45	42	3
30800.WPP42R28.0	28.0	medium	R	45	42	3
30800.WPP42R28.5	28.5	medium	R	45	42	3
30800.WPP42R29.0	29.0	medium	R	45	42	3
30800.WPP42R29.5	29.5	medium	R	45	42	3
30800.WPP42R30.0	30.0	medium	R	45	42	3
30800.WPP48R30.5	30.5	medium	R	45	48	3
30800.WPP48R31.0	31.0	medium	R	45	48	3
30800.WPP48R31.5	31.5	medium	R	45	48	3
30800.WPP48R32.0	32.0	medium	R	45	48	3
30800.WPP48R32.5	32.5	medium	R	45	48	3
30800.WPP48R33.0	33.0	medium	R	45	48	3
30800.WPP48R33.5	33.5	medium	R	45	48	3
30800.WPP48R34.0	34.0	medium	R	45	48	3
30800.WPP48R34.5	34.5	medium	R	45	48	3
30800.WPP48R35.0	35.0	medium	R	45	48	3
30800.WPP78T55.5	55.5	medium	T	67	78	4
30800.WPP78T56.0	56.0	medium	T	67	78	4
30800.WPP78T56.5	56.5	medium	T	67	78	4
30800.WPP78T57.0	57.0	medium	T	67	78	4
30800.WPP78T57.5	57.5	medium	T	67	78	4
30800.WPP78T58.0	58.0	medium	T	67	78	4
30800.WPP78T58.5	58.5	medium	T	67	78	4
30800.WPP78T59.0	59.0	medium	T	67	78	4
30800.WPP78T59.5	59.5	medium	T	67	78	4
30800.WPP78T60.0	60.0	medium	T	67	78	4
30800.WPP78T60.5	60.5	medium	T	67	78	4
30800.WPP78T61.0	61.0	medium	T	67	78	4
30800.WPP78T61.5	61.5	medium	T	67	78	4
30800.WPP78T62.0	62.0	medium	T	67	78	4
30800.WPP78T62.5	62.5	medium	T	67	78	4
30800.WPP78T63.0	63.0	medium	T	67	78	4

TENONS, LOCATING PADS & DRILL BUSHES



## 30800.3



### Material

High grade steel. Hardened 740 +HV10.  
Hole, d<sub>1</sub> ground ISO tolerance F7.  
o/d-d<sub>2</sub> ground ISO tolerance n6, to fit standard hole tolerance H<sub>7</sub>. Length l<sub>1</sub> to ±0,2 for lengths 6 to 30mm.

### Technical Notes

d<sub>1</sub> dimension tolerance to F7.

Key to dimensions l<sub>1</sub>:

- l<sub>1</sub> short
- l<sub>1</sub> medium
- l<sub>1</sub> long

Table of lengths l<sub>1</sub>:

- A- 6mm
- B- 8mm
- C- 9mm
- D- 10mm
- E- 12mm
- F- 16mm
- H- 20mm
- J- 25mm
- K- 28mm
- L- 30mm
- M- 35mm
- N- 36mm
- P- 40mm
- R- 45mm
- S- 56mm

- T- 67mm
- W- 78mm

### Tips

Sizes 48,0 i/d and above are made to order.

Please note sizes d<sub>1</sub> <0,9 prices available on request.

### Important Notes

Drill bushes produced to standard DIN increments for internal bores:  
i/d's 0,9mm to 15,0mm - 0,1mm increments e.g. 1,1 mm, 1,2mm etc.  
i/d's 15,1mm and over -0,5mm increments.

Order No.	i/d - d <sub>1</sub> tol. F7	Length gen	Length letter	l <sub>1</sub> ±0.2	d <sub>2</sub> tol. N6	r <sub>1</sub>
30800.WPP6F2.7	2.7	long	F	16	6	1
30800.WPP6F2.8	2.8	long	F	16	6	1
30800.WPP6F2.9	2.9	long	F	16	6	1
30800.WPP6F3.0	3.0	long	F	16	6	1
30800.WPP6F3.1	3.1	long	F	16	6	1
30800.WPP6F3.2	3.2	long	F	16	6	1
30800.WPP6F3.3	3.3	long	F	16	6	1
30800.WPP7F3.4	3.4	long	F	16	7	1
30800.WPP7F3.5	3.5	long	F	16	7	1
30800.WPP7F3.6	3.6	long	F	16	7	1
30800.WPP7F3.7	3.7	long	F	16	7	1
30800.WPP7F3.8	3.8	long	F	16	7	1
30800.WPP7F3.9	3.9	long	F	16	7	1
30800.WPP7F4.0	4.0	long	F	16	7	1
30800.WPP8F4.1	4.1	long	F	16	8	1
30800.WPP8F4.2	4.2	long	F	16	8	1
30800.WPP8F4.3	4.3	long	F	16	8	1
30800.WPP8F4.4	4.4	long	F	16	8	1
30800.WPP8F4.5	4.5	long	F	16	8	1
30800.WPP8F4.6	4.6	long	F	16	8	1



# Headless Drill Bushes - DIN 179 long

Tenons, Locating Pads & Drill



Order No.	i/d - d <sub>1</sub> tol. F7	Length gen	Length letter	l <sub>1</sub> ±0.2	d <sub>2</sub> tol. N6	r <sub>1</sub>
30800.WPP8F4.7	4.7	long	F	16	8	1
30800.WPP8F4.8	4.8	long	F	16	8	1
30800.WPP8F4.9	4.9	long	F	16	8	1
30800.WPP8F5.0	5.0	long	F	16	8	1
30800.WPP10H5.1	5.1	long	H	20	10	1.5
30800.WPP10H5.2	5.2	long	H	20	10	1.5
30800.WPP10H5.3	5.3	long	H	20	10	1.5
30800.WPP10H5.4	5.4	long	H	20	10	1.5
30800.WPP10H5.5	5.5	long	H	20	10	1.5
30800.WPP10H5.6	5.6	long	H	20	10	1.5
30800.WPP10H5.7	5.7	long	H	20	10	1.5
30800.WPP10H5.8	5.8	long	H	20	10	1.5
30800.WPP10H5.9	5.9	long	H	20	10	1.5
30800.WPP10H6.0	6.0	long	H	20	10	1.5
30800.WPP12H6.1	6.1	long	H	20	12	1.5
30800.WPP12H6.2	6.2	long	H	20	12	1.5
30800.WPP12H6.3	6.3	long	H	20	12	1.5
30800.WPP12H6.4	6.4	long	H	20	12	1.5
30800.WPP12H6.5	6.5	long	H	20	12	1.5
30800.WPP12H6.6	6.6	long	H	20	12	1.5
30800.WPP12H6.7	6.7	long	H	20	12	1.5
30800.WPP12H6.8	6.8	long	H	20	12	1.5
30800.WPP12H6.9	6.9	long	H	20	12	1.5
30800.WPP12H7.0	7.0	long	H	20	12	1.5
30800.WPP12H7.1	7.1	long	H	20	12	1.5
30800.WPP12H7.2	7.2	long	H	20	12	1.5
30800.WPP12H7.3	7.3	long	H	20	12	1.5
30800.WPP12H7.4	7.4	long	H	20	12	1.5
30800.WPP12H7.5	7.5	long	H	20	12	1.5
30800.WPP12H7.6	7.6	long	H	20	12	1.5
30800.WPP12H7.7	7.7	long	H	20	12	1.5
30800.WPP12H7.8	7.8	long	H	20	12	1.5
30800.WPP12H7.9	7.9	long	H	20	12	1.5
30800.WPP12H8.0	8.0	long	H	20	12	1.5
30800.WPP15J8.1	8.1	long	J	25	15	2
30800.WPP15J8.2	8.2	long	J	25	15	2
30800.WPP15J8.3	8.3	long	J	25	15	2
30800.WPP15J8.4	8.4	long	J	25	15	2
30800.WPP15J8.5	8.5	long	J	25	15	2
30800.WPP15J8.6	8.6	long	J	25	15	2
30800.WPP15J8.7	8.7	long	J	25	15	2
30800.WPP15J8.8	8.8	long	J	25	15	2
30800.WPP15J8.9	8.9	long	J	25	15	2
30800.WPP15J9.0	9.0	long	J	25	15	2
30800.WPP15J9.1	9.1	long	J	25	15	2
30800.WPP15J9.2	9.2	long	J	25	15	2
30800.WPP15J9.3	9.3	long	J	25	15	2
30800.WPP15J9.4	9.4	long	J	25	15	2
30800.WPP15J9.5	9.5	long	J	25	15	2
30800.WPP15J9.6	9.6	long	J	25	15	2
30800.WPP15J9.7	9.7	long	J	25	15	2
30800.WPP15J9.8	9.8	long	J	25	15	2
30800.WPP15J9.9	9.9	long	J	25	15	2
30800.WPP15J10.0	10.0	long	J	25	15	2
30800.WPP18J10.1	10.1	long	J	25	18	2
30800.WPP18J10.2	10.2	long	J	25	18	2
30800.WPP18J10.3	10.3	long	J	25	18	2
30800.WPP18J10.4	10.4	long	J	25	18	2
30800.WPP18J10.5	10.5	long	J	25	18	2
30800.WPP18J10.6	10.6	long	J	25	18	2
30800.WPP18J10.7	10.7	long	J	25	18	2
30800.WPP18J10.8	10.8	long	J	25	18	2
30800.WPP18J10.9	10.9	long	J	25	18	2
30800.WPP18J11.0	11.0	long	J	25	18	2
30800.WPP18J11.1	11.1	long	J	25	18	2
30800.WPP18J11.2	11.2	long	J	25	18	2
30800.WPP18J11.3	11.3	long	J	25	18	2
30800.WPP18J11.4	11.4	long	J	25	18	2

TENONS, LOCATING PADS & DRILL BUSHES



Order No.	i/d - d <sub>1</sub> tol. F7	Length gen	Length letter	l <sub>1</sub> ±0.2	d <sub>2</sub> tol. N6	r <sub>1</sub>
30800.WPP18J11.5	11.5	long	J	25	18	2
30800.WPP18J11.6	11.6	long	J	25	18	2
30800.WPP18J11.7	11.7	long	J	25	18	2
30800.WPP18J11.8	11.8	long	J	25	18	2
30800.WPP18J11.9	11.9	long	J	25	18	2
30800.WPP18J12.0	12.0	long	J	25	18	2
30800.WPP22N12.1	12.1	long	N	36	22	2
30800.WPP22N12.2	12.2	long	N	36	22	2
30800.WPP22N12.3	12.3	long	N	36	22	2
30800.WPP22N12.4	12.4	long	N	36	22	2
30800.WPP22N12.5	12.5	long	N	36	22	2
30800.WPP22N12.6	12.6	long	N	36	22	2
30800.WPP22N12.7	12.7	long	N	36	22	2
30800.WPP22N12.8	12.8	long	N	36	22	2
30800.WPP22N12.9	12.9	long	N	36	22	2
30800.WPP22N13.0	13.0	long	N	36	22	2
30800.WPP22N13.1	13.1	long	N	36	22	2
30800.WPP22N13.2	13.2	long	N	36	22	2
30800.WPP22N13.3	13.3	long	N	36	22	2
30800.WPP22N13.4	13.4	long	N	36	22	2
30800.WPP22N13.5	13.5	long	N	36	22	2
30800.WPP22N13.6	13.6	long	N	36	22	2
30800.WPP22N13.7	13.7	long	N	36	22	2
30800.WPP22N13.8	13.8	long	N	36	22	2
30800.WPP22N13.9	13.9	long	N	36	22	2
30800.WPP22N14.0	14.0	long	N	36	22	2
30800.WPP22N14.1	14.1	long	N	36	22	2
30800.WPP22N14.2	14.2	long	N	36	22	2
30800.WPP22N14.3	14.3	long	N	36	22	2
30800.WPP22N14.4	14.4	long	N	36	22	2
30800.WPP22N14.5	14.5	long	N	36	22	2
30800.WPP22N14.6	14.6	long	N	36	22	2
30800.WPP22N14.7	14.7	long	N	36	22	2
30800.WPP22N14.8	14.8	long	N	36	22	2
30800.WPP22N14.9	14.9	long	N	36	22	2
30800.WPP22N15.0	15.0	long	N	36	22	2
30800.WPP26N15.5	15.5	long	N	36	26	2
30800.WPP26N16.0	16.0	long	N	36	26	2
30800.WPP26N16.5	16.5	long	N	36	26	2
30800.WPP26N17.0	17.0	long	N	36	26	2
30800.WPP26N17.5	17.5	long	N	36	26	2
30800.WPP26N18.0	18.0	long	N	36	26	2
30800.WPP30R18.5	18.5	long	R	45	30	3
30800.WPP30R19.0	19.0	long	R	45	30	3
30800.WPP30R19.5	19.5	long	R	45	30	3
30800.WPP30R20.0	20.0	long	R	45	30	3
30800.WPP30R20.5	20.5	long	R	45	30	3
30800.WPP30R21.0	21.0	long	R	45	30	3
30800.WPP30R21.5	21.5	long	R	45	30	3
30800.WPP30R22.0	22.0	long	R	45	30	3
30800.WPP35R22.5	22.5	long	R	45	35	3
30800.WPP35R23.0	23.0	long	R	45	35	3
30800.WPP35R23.5	23.5	long	R	45	35	3
30800.WPP35R24.0	24.0	long	R	45	35	3
30800.WPP35R24.5	24.5	long	R	45	35	3
30800.WPP35R25.0	25.0	long	R	45	35	3
30800.WPP35R25.5	25.5	long	R	45	35	3
30800.WPP35R26.0	26.0	long	R	45	35	3
30800.WPP42S26.5	26.5	long	S	56	42	3
30800.WPP42S27.0	27.0	long	S	56	42	3
30800.WPP42S27.5	27.5	long	S	56	42	3
30800.WPP42S28.0	28.0	long	S	56	42	3
30800.WPP42S28.5	28.5	long	S	56	42	3
30800.WPP42S29.0	29.0	long	S	56	42	3
30800.WPP42S29.5	29.5	long	S	56	42	3
30800.WPP42S30.0	30.0	long	S	56	42	3
30800.WPP48S30.5	30.5	long	S	56	48	3
30800.WPP48S31.0	31.0	long	S	56	48	3



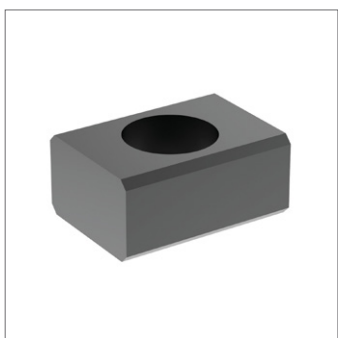
# Headless Drill Bushes - DIN 179 long

Tenons, Locating Pads & Drill

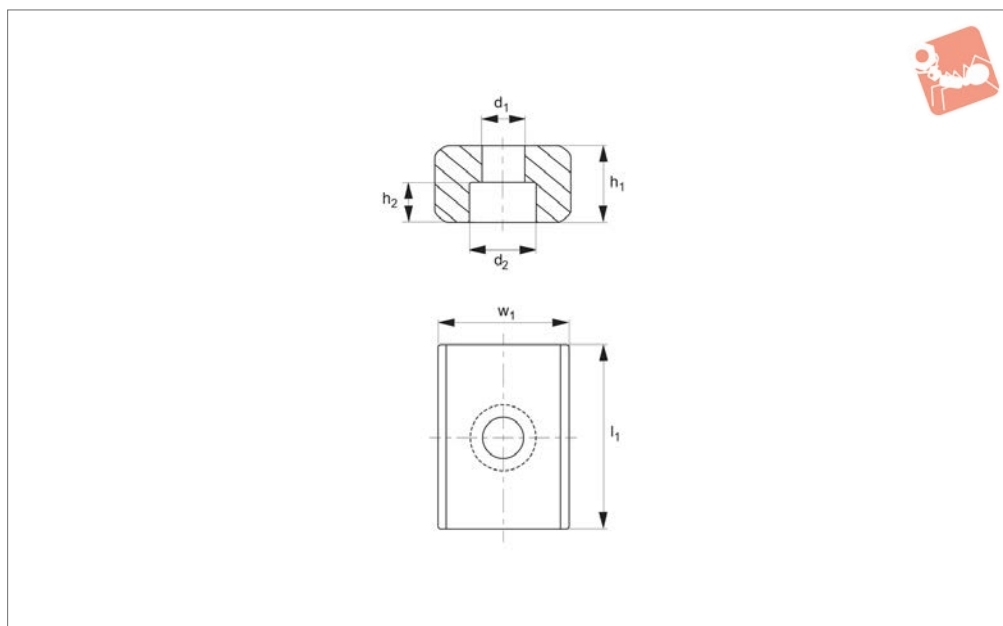


Order No.	i/d - d <sub>1</sub> tol. F7	Length gen	Length letter	l <sub>1</sub> ±0.2	d <sub>2</sub> tol. N6	r <sub>1</sub>
30800.WPP48S31.5	31.5	long	S	56	48	3
30800.WPP48S32.0	32.0	long	S	56	48	3
30800.WPP48S32.5	32.5	long	S	56	48	3
30800.WPP48S33.0	33.0	long	S	56	48	3
30800.WPP48S33.5	33.5	long	S	56	48	3
30800.WPP48S34.0	34.0	long	S	56	48	3
30800.WPP48S34.5	34.5	long	S	56	48	3
30800.WPP48S35.0	35.0	long	S	56	48	3
30800.WPP78W63.0	63.0	long	W	78	78	4

TENONS, LOCATING PADS & DRILL BUSHES



### 30020



#### Material

Steel, case-hardened (C15), blackened and ground.

#### Technical Notes

Used for locating fixtures and clamping

elements onto machine tables.

#### Tips

For especially heavy duty applications we recommend tenons no. 30040.

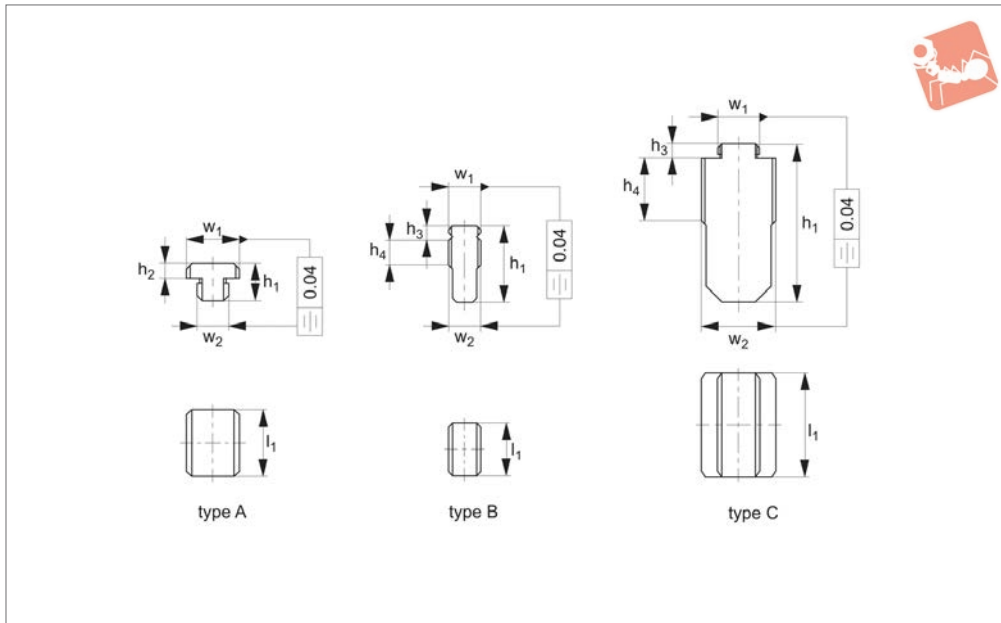
Order No.	$l_1$	$w_1$ tol. h6	$d_1$	$d_2$	$h_1$	$h_2$	For screws DIN 84 & DIN 912	Weight g
30020.W0010	20	10	4.5	8	8	4.3	M 4x10	15
30020.W0012	20	12	5.5	10	8	5.3	M 5x12	19
30020.W0014	22	14	6.6	11	10	6.3	M 6x16	21
30020.W0016	22	16	6.6	11	10	6.3	M 6x16	26
30020.W0018	22	18	6.6	11	10	6.3	M 6x16	30
30020.W0020	22	20	6.6	11	10	6.3	M 6x16	34
30020.W0022	32	22	6.6	11	12	6.3	M 6x16	55
30020.W0024	32	24	6.6	11	12	6.3	M 6x16	62





# Loose Slot Tenons for machine tool spindles

# Tenons, Locating Pads & Drill



## 30040

TENONS, LOCATING PADS & DRILL BUSHES

### Material

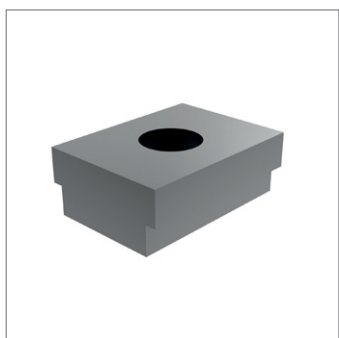
Steel, case-hardened (C15), blackened and ground.

Used for locating fixtures and clamping elements onto machine tables. Simply push into position after fixture or clamping element has been roughly positioned.

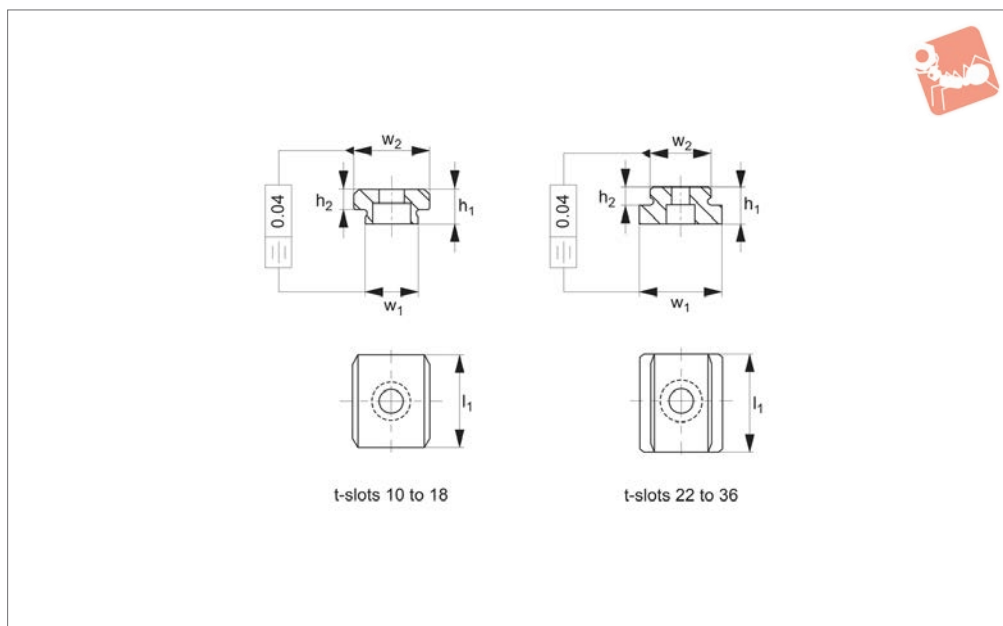
### Technical Notes

Produced to DIN 6323.

Order No.	Type	Machine slot size $w_2$ tol. h6	$l_1$	Fixture slot size $w_1$ tol. h6	$h_1$	$h_2$	$h_3$	$h_4$	Weight g
30040.W0010	Type A	10	20	12	12.0	3.6	-	-	20
30040.W0012	Type A	12	32	20	14.0	5.5	-	-	50
30040.W0014	Type A	14	32	20	14.0	5.5	-	-	55
30040.W0016	Type A	16	32	20	14.0	5.5	-	-	60
30040.W0018	Type A	18	32	20	14.0	5.5	-	-	65
30040.W0011	Type B	12	20	12	28.6	-	5.5	9	45
30040.W0020	Type B	20	32	20	45.5	-	7.0	16	200
30040.W0022	Type C	22	40	20	50.5	-	7.0	18	290
30040.W0024	Type C	24	40	20	55.5	-	7.0	20	350
30040.W0028	Type C	28	40	20	61.5	-	7.0	24	460
30040.W0036	Type C	36	50	20	76.5	-	7.0	30	940



### 30060



#### Material

Steel, case-hardened (C15), blackened and ground.

#### Technical Notes

Fixed type tenons, used in pairs, are

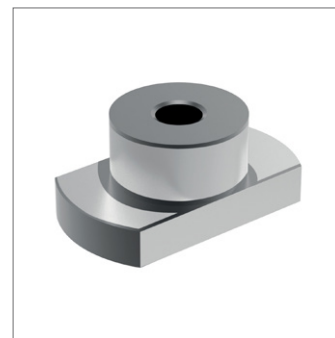
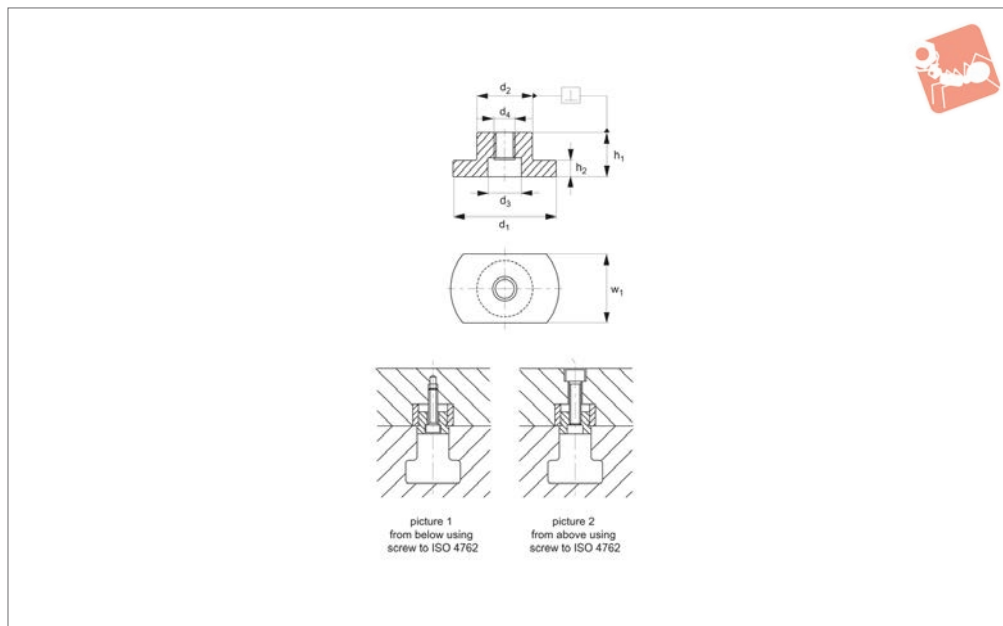
screwed onto the bases of vices and fixtures having standard slot sizes of 20mm. The tenon interfaces into machine T-slots of varying widths. For heavy fixtures use loose tenons no. 30040.

Order No.	Machine slot Size $w_1$ tol. h6	$l_1$	Fixture slot size $w_2$ tol. h6	$h_1$	$h_2$	For screws DIN 84 & DIN 912	Weight g
30060.W0010	10	22	20	10	5.5	M 6x10	20
30060.W0012	12	22	20	10	5.5	M 6x10	25
30060.W0014	14	25	20	10	5.5	M 6x16	28
30060.W0016	16	25	20	10	5.5	M 6x16	30
30060.W0018	18	25	20	10	5.5	M 6x16	30
30060.W0022	22	32	20	12	5.5	M 6x16	50
30060.W0024	24	32	20	12	5.5	M 6x16	55
30060.W0028	28	32	20	12	5.5	M 6x16	60
30060.W0036	36	32	20	12	5.5	M 6x16	75



# Fixed Slot Tenons with cylindrical position

# Tenons, Locating Pads & Drill



**30080**

TENONS, LOCATING PADS & DRILL BUSHES

### Material

Steel, heat-treated, case-hardened, blackened and ground.

### Technical Notes

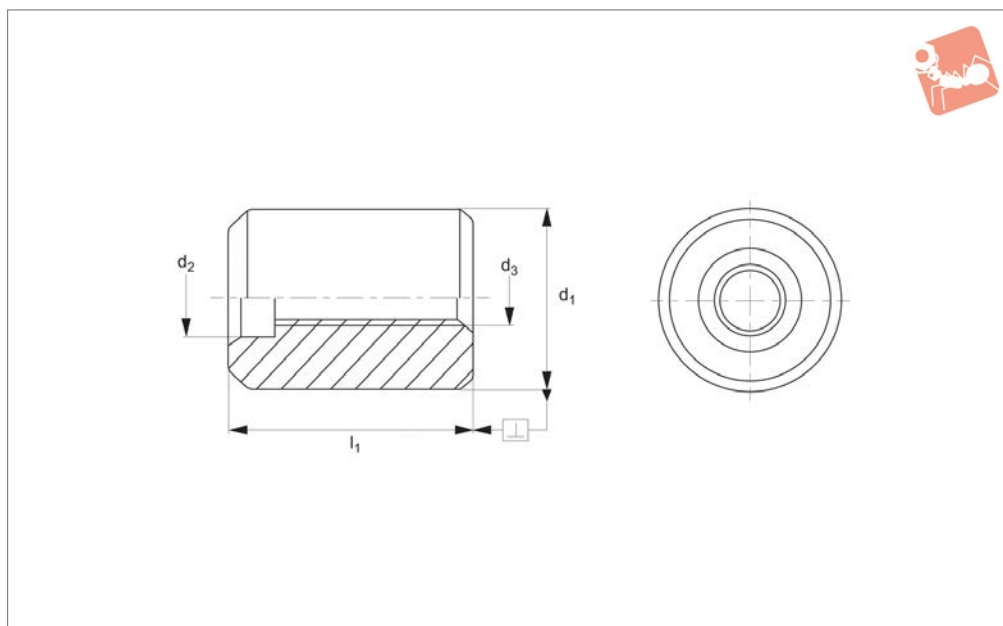
Used for locating fixtures and clamping elements on mounting pallets with cylindrical location holes. They can also be inserted into bored holes and T-slots.

dricul location holes. They can also be inserted into bored holes and T-slots.

Order No.	Machine slot Size $w_1$ tol. h6	$d_1$	Fixture slot size $d_2$ tol. h6	$d_3$	$h_1$	$h_2$	For screws ISO 4762 picture 1	For screws ISO 4762 picture 2 $d_4$	Weight g
30080.W0110	10	30	20	11	15,5	5,8	M 6x10	M 8	28
30080.W0112	12	30	20	11	15,5	5,8	M 6x10	M 8	39
30080.W0114	14	30	20	11	15,5	5,8	M 6x16	M 8	41
30080.W0116	16	30	20	11	15,5	5,8	M 6x16	M 8	36
30080.W0118	18	30	20	11	15,5	5,8	M 6x16	M 8	45
30080.W0120	20	36	20	11	15,5	5,8	M 6x16	M 8	48
30080.W0122	22	40	20	11	15,5	5,8	M 6x16	M 8	54
30080.W0128	28	42	20	11	15,5	5,8	M 6x16	M 8	65
30080.W0136	36	48	20	11	15,5	5,8	M 6x16	M 8	86



**30090**



**Material**

Steel, alloyed, case-hardened, ground.

**Technical Notes**

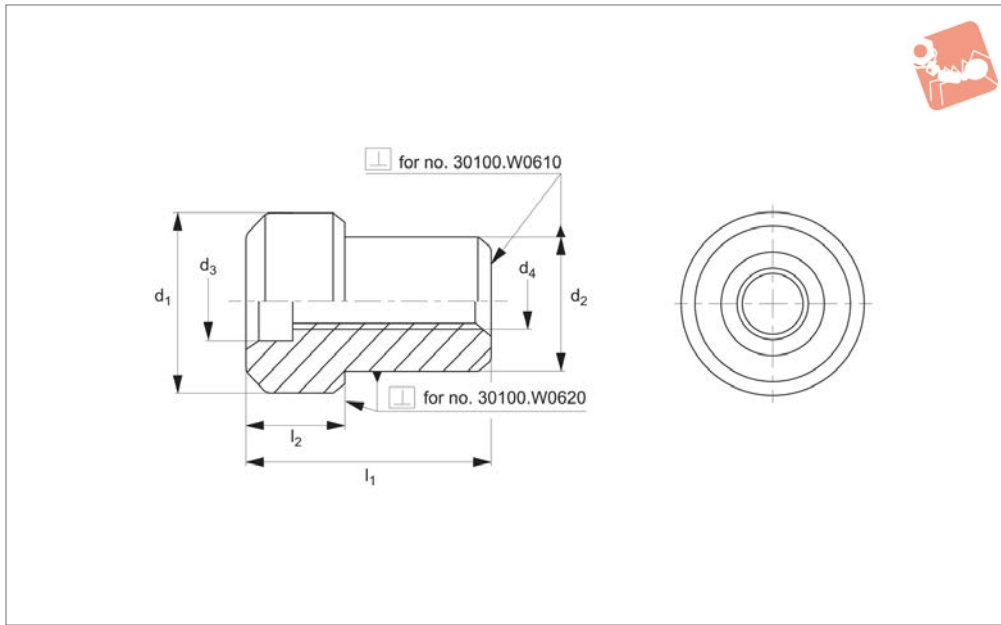
Used for centering fixtures on pallets.

Order No.	$l_1$	$d_1$ tol. h6	$d_2$	$d_3$	Weight g
30090.W0510	31	20	11	M 8	70
30090.W0520	35	25	11	M 8	118
30090.W0530	31	50	11	M 8	473
30090.W0540	45	50	11	M 8	672



# Centering Pins - Stepped for fixtures and pallets

## Tenons, Locating Pads & Drill



**30100**

TENONS, LOCATING PADS & DRILL BUSHES

### Material

Steel, alloyed, case-hardened, ground.

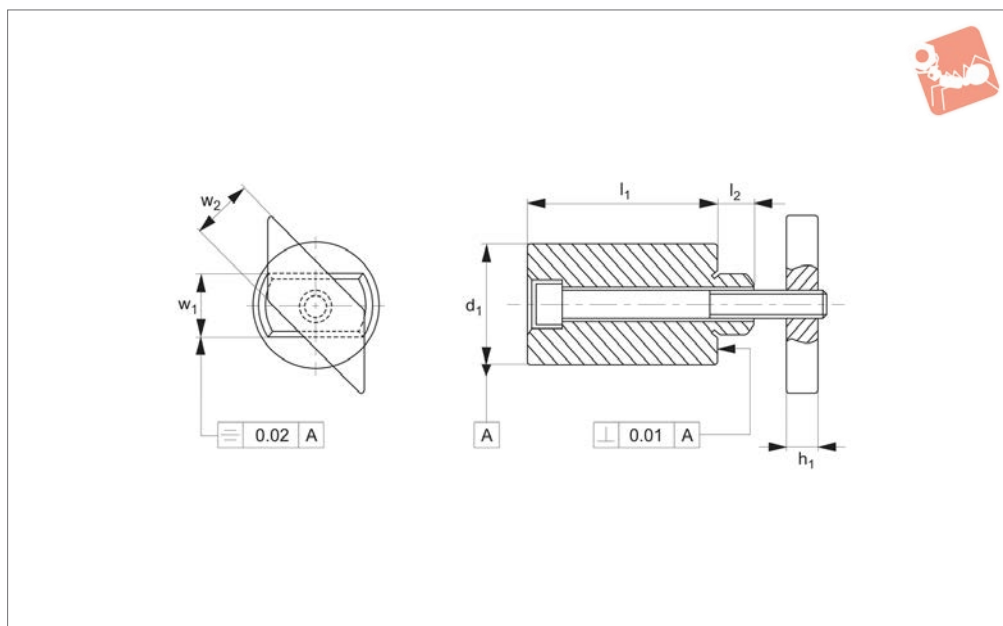
### Technical Notes

Used for centering fixtures on pallets.

Order No.	$l_1$	$l_2$	$d_1$ tol. h6	$d_2$ tol. h6	$d_3$	$d_4$	Weight g
30100.W0610	35	12	25	20	11	M 8	87
30100.W0620	35	20	50	20	11	M 8	330



## 30200



### Material

Cylindrical stop: steel, case-hardened and ground.

Holding plate: steel, blackened.

Screw: DIN 912, quality 8.8.

### Technical Notes

Used as workpiece stops on machine

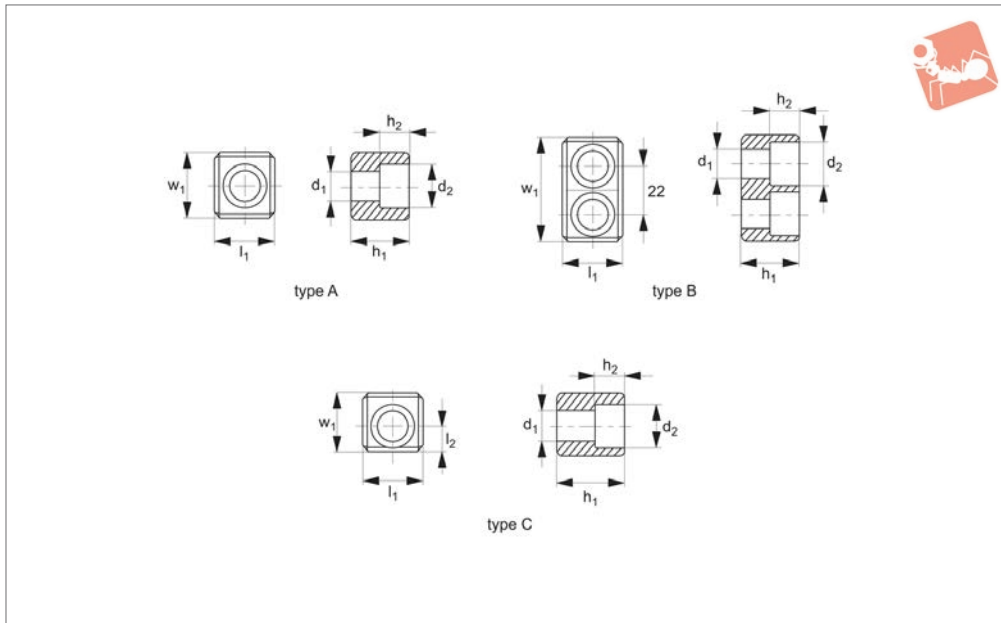
tables, and as datum points. The short form is ground to a height tolerance of  $\pm 0,01\text{mm}$  and can also be used as a seating element.

Order No.	Short $l_1$ $\pm 0.01$	Long $l_1$ $\pm 0.2$	$l_2$	$w_2$ -0.6	$d_1$ $\pm 0.01$	$h_1$	Screw DIN 912	T-slot $w_1$ tol. h6	Weight g
30200.W0110	15	-	8	10	20	6	M 6x25	10	53
30200.W0112	15	-	8	12	20	6	M 6x25	12	58
30200.W0114	25	-	9	14	32	8	M 8x35	14	202
30200.W0116	25	-	10	16	32	8	M 8x45	16	221
30200.W0118	25	-	15	18	40	10	M10x50	18	371
30200.W0122	25	-	15	20	40	14	M10x55	22	435
30200.W0128	25	-	20	22	46	16	M12x60	28	661
30200.W0210	-	25	8	10	20	6	M 6x35	10	76
30200.W0212	-	25	8	12	20	6	M 6x35	12	83
30200.W0214	-	50	9	14	32	8	M 8x60	14	357
30200.W0216	-	50	10	16	32	8	M 8x70	16	371
30200.W0218	-	50	15	18	40	10	M10x75	18	613
30200.W0222	-	50	15	20	40	14	M10x80	22	679
30200.W0228	-	50	20	22	46	16	M12x90	28	985



# Drive Blocks for machine tool spindles

# Tenons, Locating Pads & Drill



**30300**

TENONS, LOCATING PADS & DRILL BUSHES

### Material

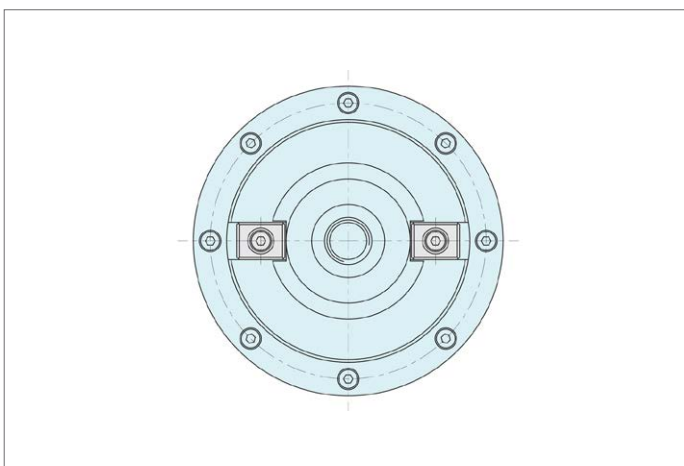
Steel, alloyed, case-hardened, blackened and ground.

### Technical Notes

Produced to DIN 2079.  
Used on machine tool spindle heads for

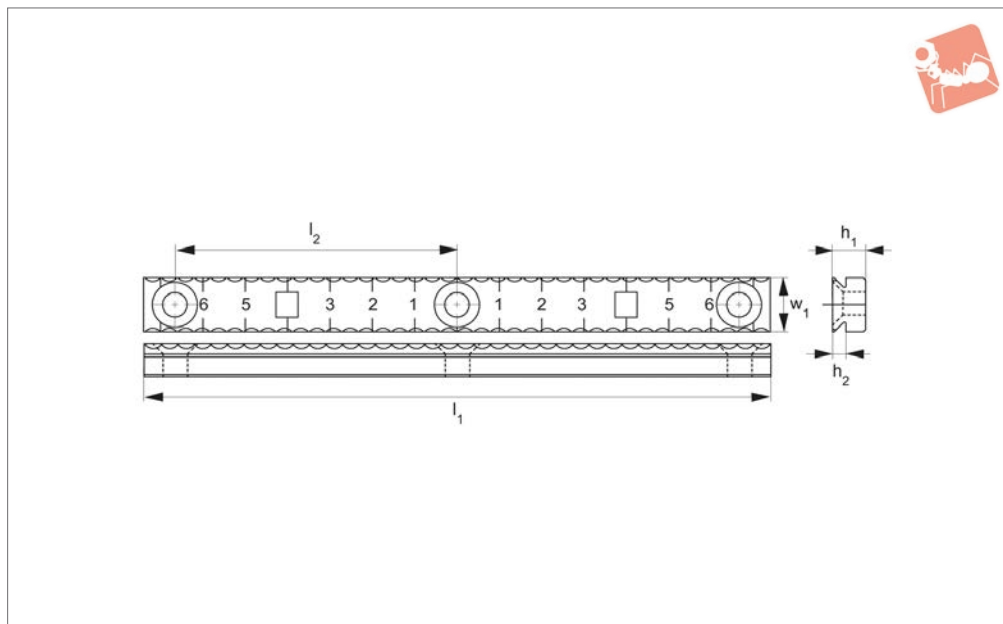
positioning and locking of spindle head.

Order No.	Type	$l_1$ tol. h5	$l_2$ $\pm 0.1$	$w_1$	$d_1$	$d_2$	$h_1$	$h_2$	For spindle head no.	Matching screw DIN 912	Weight g
30300.W0030	A	15.9	-	16.5	6.4	10.4	16.0	6.2	30	M 6x16	25
30300.W0040	A	15.9	-	19.5	6.4	10.4	16.0	6.2	40	M 6x16	31
30300.W0045	A	19.0	-	19.5	8.4	13.5	19.0	8.3	45	M 8x20	38
30300.W0050	A	25.4	-	26.5	13.0	19.0	25.0	12.3	50-55	M12x25	85
30300.W0060	A	25.4	-	45.5	13.0	19.0	25.0	12.3	60	M12x25	179
30300.W0160	B	25.4	-	45.5	13.0	19.0	25.0	12.3	60	M12x25	140
30300.W0230	C	15.9	5.5	13.5	6.4	10.4	24.5	6.2	30	M 6x25	30
30300.W0240	C	15.9	7.0	16.5	6.4	10.4	24.5	6.2	40	M 6x25	39
30300.W0245	C	19.0	7.5	17.5	8.4	13.5	26.0	10.0	45	M 8x25	47
30300.W0250	C	25.4	11.0	24.0	13.0	19.0	29.0	12.3	50	M12x30	89





## 12030



### Material

Steel (S7), heat-treated, black oxide.

### Technical Notes

Installation instructions:

1. Set grip in Talongrip jaw, install with screws provided. For fixture, machine slot 0,025mm-0,075mm larger than dimension  $w_1$ , drill and tap.
2. Torque screws to 6,1 Nm. for standard

cap screw and 3,3 Nm. for low head cap screw.

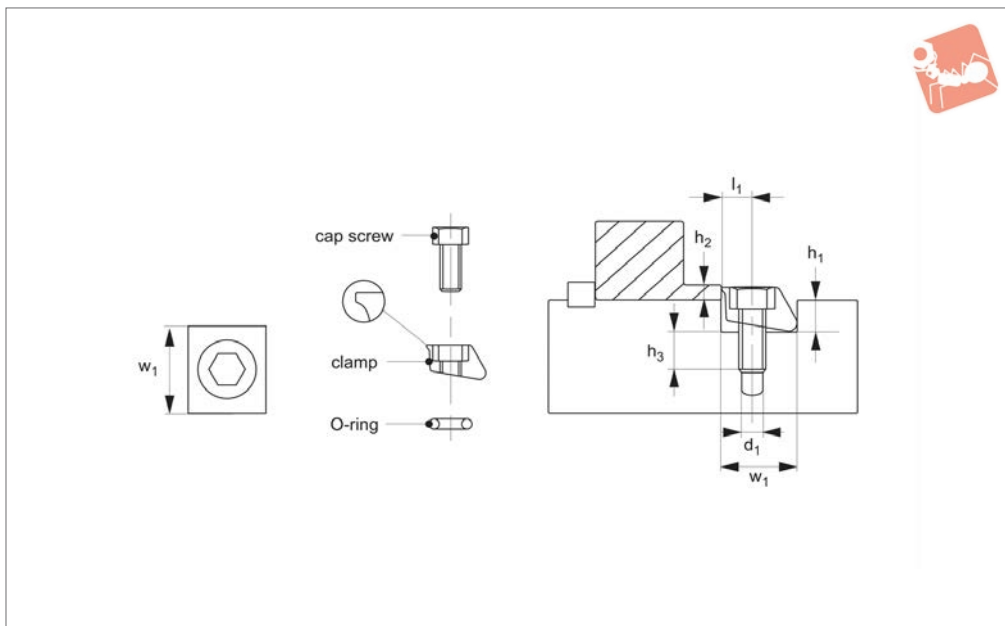
3. Tighten vice until penetration is felt. As a general rule, an additional 1/4-3/4 turn of vice handle is needed to secure the workpiece dependent on material type and vice model. Recommended penetration is 0,15mm-0,40mm.

### Tips

M 5x12 screws provided, as well as 10-32x1/2". Either can be used in M 5 threaded holes as long as they do not exceed 25mm in length. The 10-32 screws sit better in the gripper rail and are less likely to bind during removal.

Order No.	Qty/pack	$h_1$	$l_1$	$l_2$	$w_1$	Fits Wixroyd jaw set	Gripping height $h_2$	Weight g
12030.W0052	2	9.3	50.0	38.1	19.1	12035 & 12464	1,3-4,1	113
12030.W0054	2	7.8	98.8	41.3	12.7	12035	1,3-3,2	181
12030.W0056	2	7.8	148.1	66.7	12.7	12035	1,3-3,2	259





### 12031.1

LOW PROFILE SIDE CLAMPING

#### Material

Tool: steel (HRC 43-45) or brass.  
Screw: steel and oil resistant nitrile rubber.  
O-ring: plastic.

#### Technical Notes

Provides positive down force and a very low grip height. High vertical and horizontal clamping forces. The O-ring lifts the clamp when unclamping.  
Hardness: approx. HRC 45.  
Temperature range -30°C to +80°C.  
Clamps sold by pack quantity.

#### Tips

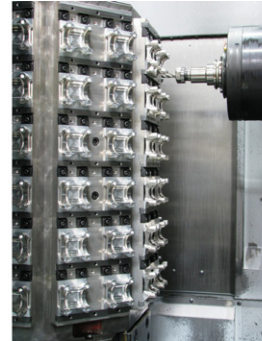
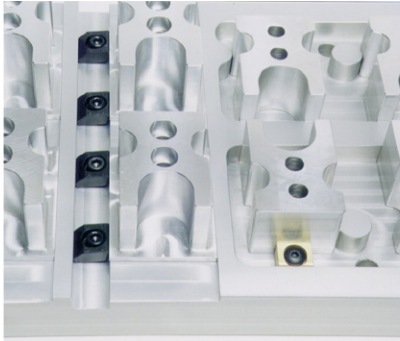
The tool steel blunt edge is less likely to mark workpieces, whilst the knife edge version bites into the material for more aggressive machining requirements. Often used with 12034 Talongrip or 12036 Versagrip. Location rails are ideal for use with pitbull clamps.

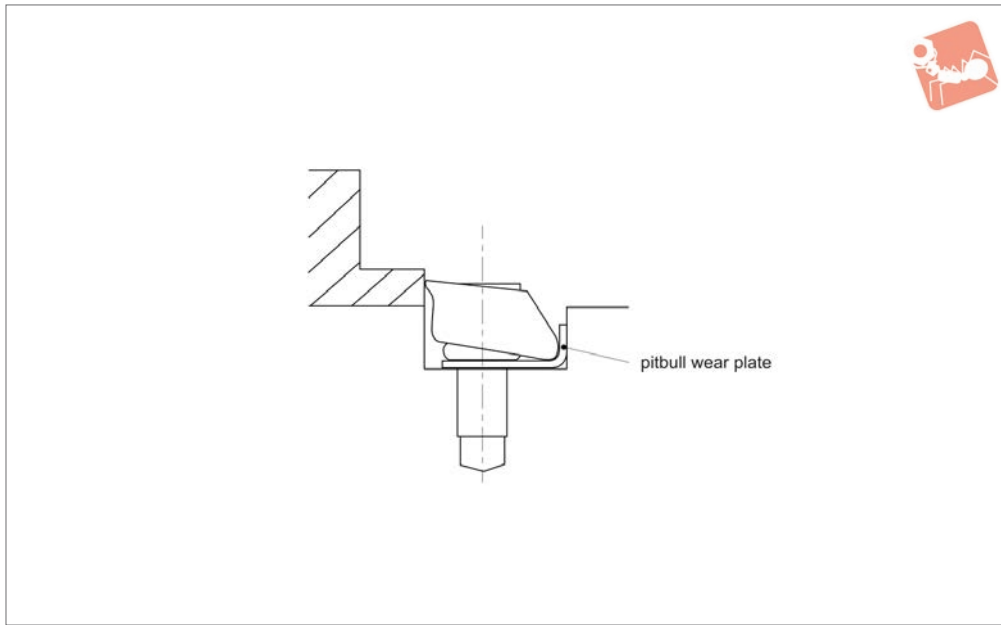
#### Important Notes

1. Machine a slot for the Pitbull clamp in the fixture according to dimensions „w<sub>1</sub>“ and „h<sub>1</sub>“.

2. Drill and tap a fixing hole to match screw size- refer to dimension „l<sub>1</sub>“ for distance of hole from the component.  
3. Assemble clamp as shown in the diagram above.  
4. Position the clamp, and loosely screw to fixture.  
5. Load the component and tighten screw cap.  
Dimension „h<sub>2</sub>“ is the minimum recommended clamping height.

Order No.	Material	Type	Qty/pack	d <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub>	Stroke s <sub>1</sub>	w <sub>1</sub>	Torque to Nm max.	Holding force kN	Weight g
12031.W0015	Brass	Blunt Edge	8	M 2,5	3.6	1.9	5.6	3.8	0.2	9.5	0.6	0.9	45
12031.W0040	Brass	Blunt Edge	8	M 4	4.8	2.6	8.6	5.1	0.4	12.7	2.8	1.8	64
12031.W0065	Brass	Blunt Edge	6	M 6	7.1	3.8	11.2	7.6	0.6	19.0	5.6	4.2	163
12031.W0005	Tool Steel	Knife Edge	8	M 2,5	3.6	1.9	6.6	3.8	0.2	9.5	1.8	2.8	32
12031.W0010	Tool Steel	Blunt Edge	8	M 2,5	3.6	1.9	6.6	3.8	0.2	9.5	1.8	2.8	45
12031.W0020	Tool Steel	Knife Edge	8	M 4	4.8	2.6	9.9	5.1	0.4	12.7	5.6	6.6	64
12031.W0030	Tool Steel	Blunt Edge	8	M 4	4.8	2.6	9.9	5.1	0.4	12.7	5.6	6.6	64
12031.W0050	Tool Steel	Knife Edge	6	M 6	7.1	3.8	14.5	7.6	0.6	19.0	22.5	16.0	136
12031.W0060	Tool Steel	Blunt Edge	6	M 6	7.1	3.8	14.5	7.6	0.6	19.0	22.5	16.0	132
12031.W0070	Tool Steel	Knife Edge	4	M10	11.4	6.4	18.0	10.2	1.3	25.4	40.6	26.0	256
12031.W0075	Tool Steel	Blunt Edge	4	M10	11.4	6.4	18.0	10.2	1.3	25.4	40.6	26.0	277
12031.W0080	Tool Steel	Knife Edge	2	M12	16.3	9.5	19.6	15.2	1.9	38.1	145.0	50.0	408
12031.W0085	Tool Steel	Blunt Edge	2	M12	16.3	9.5	19.6	15.2	1.9	38.1	145.0	50.0	408





### 12031.2

LOW PROFILE SIDE CLAMPING

#### Technical Notes

Provides a hard barrier between pitbull clamp and fixture, preventing distortion of back wall when using aluminium or mild

steel fixtures.

#### Tips

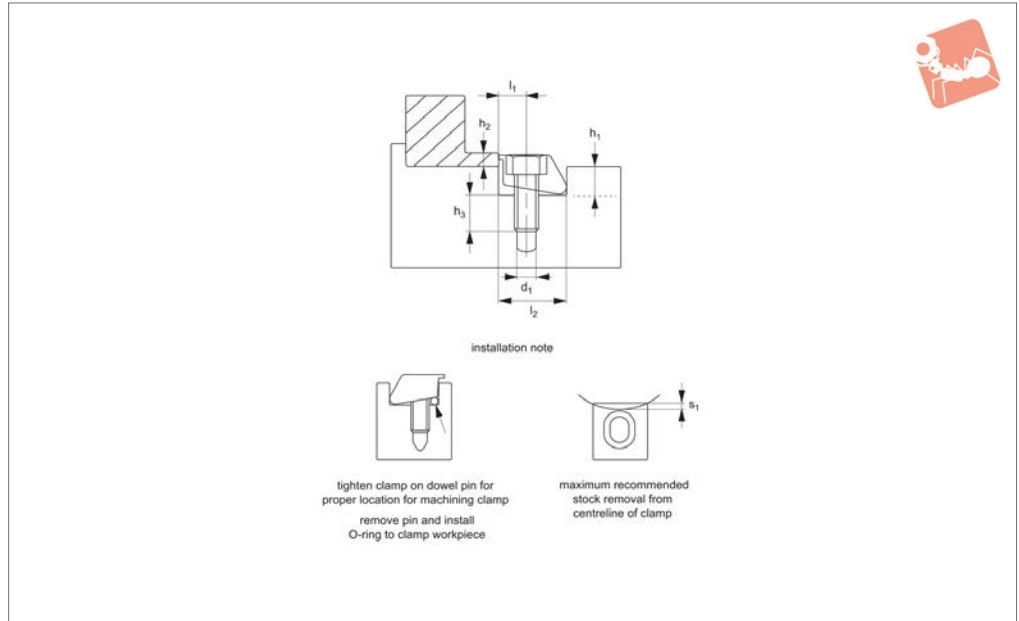
To keep fixtures light, maintain full clamp

travel and holding forces at max. pressure. Refurbish old fixtures or add to existing aluminium fixtures to maximise machining capabilities.

Order No.	Screw	Part number	Qty/pack
12031.W0615	M 2,5	12031.W0005, 12031.W0010, 12031.W0015	8
12031.W0640	M 4	12031.W0020, 12031.W0030, 12031.W0040	8
12031.W0665	M 6	12031.W0050, 12031.W0060, 12031.W0065	6
12031.W0670	M10	12031.W0070, 12031.W0075, 12032.W0570	4
12031.W0680	M12	12031.W0080, 12031.W0085, 12032.W0580	2



## 12032



### Material

Tool: steel, heat treated to HRc 43, machinable.

Screw: steel and oil resistant nitrile rubber.

O-ring: plastic.

### Technical Notes

A machinable version of the standard pitbull clamps.

Provides positive down force and a very low grip height.

High vertical and horizontal clamping forces.

Hardness: approx. 45HRC

### Tips

There is additional material of the clam-

ping face to allow machining of a radius.

Often used with part no. 12034 Talongrip or part no. 12036 Versagrip.

### Important Notes

Installation:

1. Machine face of clamp to suit profile of component, taking note of dimension „ $s_1$ “ as the max. recommended stock removal. A dowel pin is included in each pack to locate the clamp whilst machining the face. After machining of face, remove pin and install O-ring to clamp workpiece.
2. Machine a slot for the pitbull clamp in the fixture, according to dimensions „ $l_2$ “ and „ $h_2$ “.
3. Drill and tap a fixing hole to match

screw size, refer to dimension „ $l_1$ “ for distance of hole from the component.

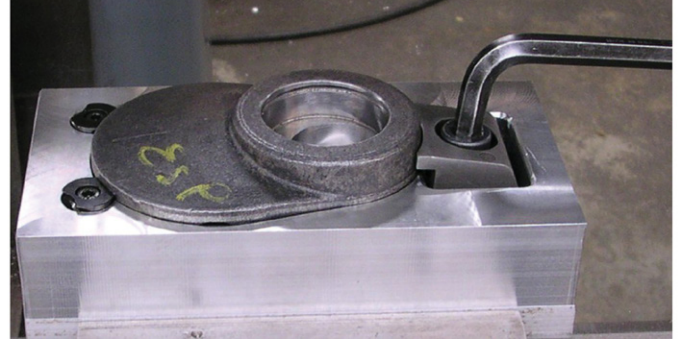
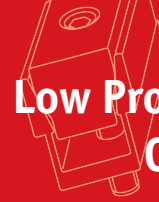
4. Assemble clamp as shown in the diagram above.

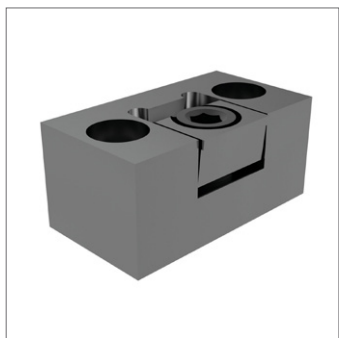
5. Position the clamp, and loosely screw to fix.

6. Load the component and tighten the cap screw.

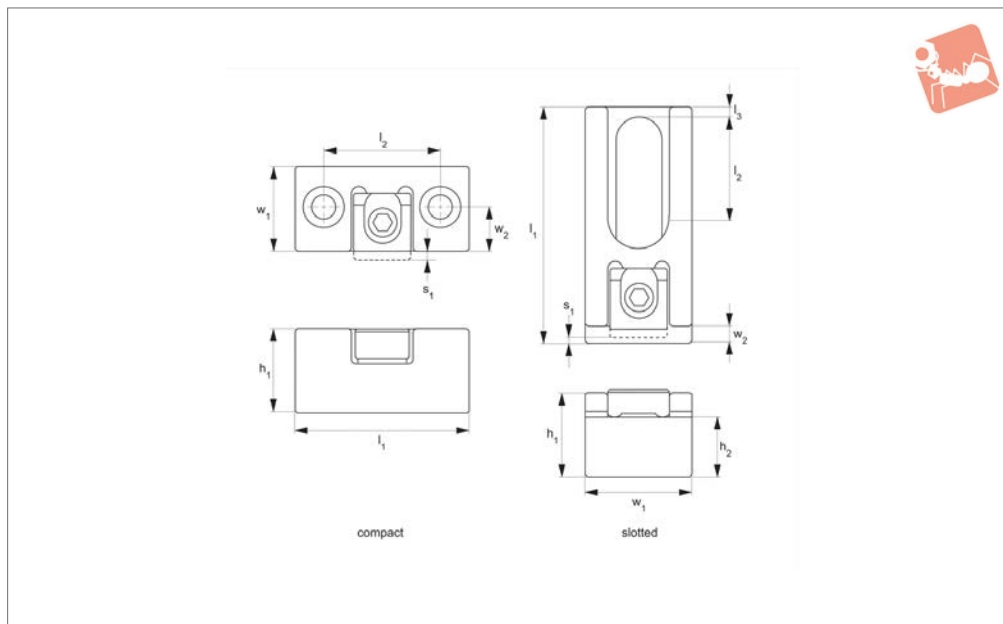
Dimension „ $h_2$ “ is the minimum recommended clamping height.

Order No.	Qty/pack	$d_1$	Stroke max.	$h_1$	$h_2$	$h_3$	$l_1$	$l_2$	$s_1$	Dowel pin dia.	Torque to Nm max.	Holding force kN	Weight g
12032.W0570	4	M10	1.27	11.43	6.4	18.0	10.16	25.4	1.5	3.18	40	26	263
12032.W0580	2	M12	1.90	16.26	9.5	19.6	15.24	38.1	4.5	6.35	145	50	463





## 12033.1



### Material

Body: steel hardened and ground with pitbull clamps insert (part no. 12031).

### Technical Notes

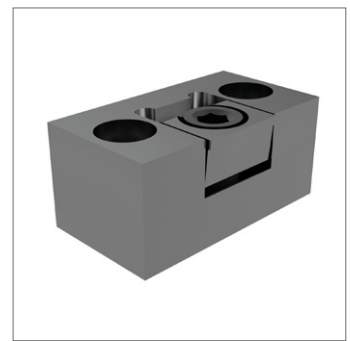
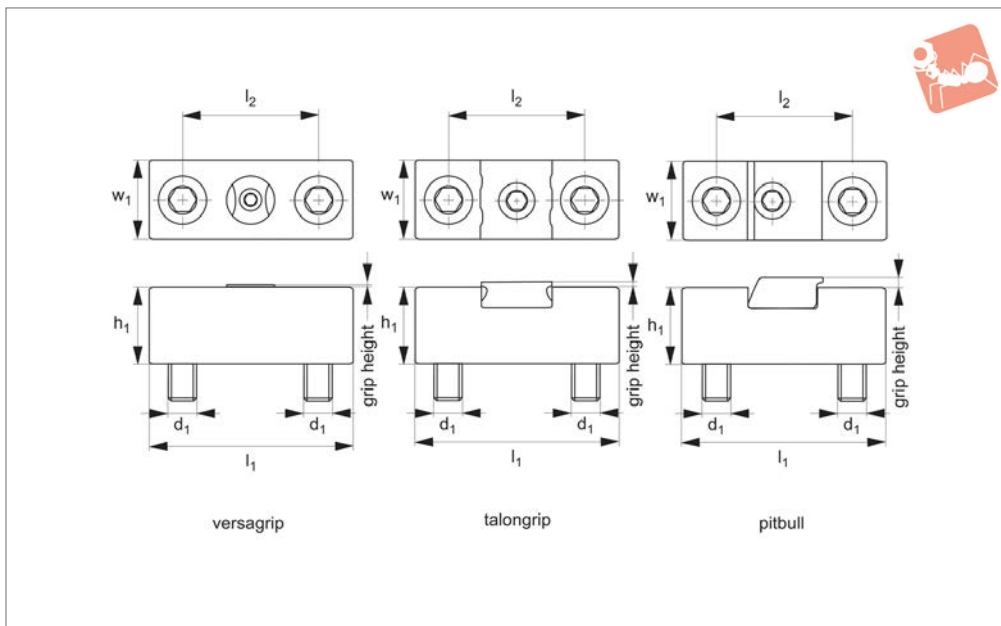
Designed to be used in fixtures, on cubes etc.

The slotted version has a clamp step to support the workpiece off the machine table for through milling or drilling. The height of the clamp can be adjusted by varying the depth of the milled slot used to locate the clamp.

### Tips

The compact version is ideal for clamping workpieces in series using the back surface of clamp to locate the next workpiece. Back of clamp is ground square to the bottom for precise part location.

Order No.	Body type	Clamp type	$h_1$	$h_2$ +0.000 -0.013	$l_1$	$l_2$	$l_3$	Stroke $s_1$	$w_1$	$w_2$	Torque to Nm max.	Clamping force kN max.	Mounting screw	Replacement clamps 12031	Weight g
<b>12033.W0020</b>	Compact	Knife	25,1		57,1	38,1		0,6	31,2	15,7	22,5	16	M 8	.W0050	
<b>12033.W0025</b>	Compact	Blunt	25,1		57,1	38,1		0,6	31,2	15,7	22,5	16	M 8	.W0060	
<b>12033.W0030</b>	Compact	Knife	31,5		68,6	47,0		1,3	37,6	18,8	40,6	26	M10	.W0070	
<b>12033.W0035</b>	Compact	Blunt	31,5		68,6	47,0		1,3	37,6	18,8	40,6	26	M10	.W0075	
<b>12033.W0040</b>	Slotted	Knife	25,1	18,5	103,6	43,2	12,7	0,6	31,7	9,1	22,5	16	M12	.W0050	12,7
<b>12033.W0045</b>	Slotted	Blunt	25,1	18,5	103,6	43,2	12,7	0,6	31,7	9,1	22,5	16	M12	.W0060	12,7
<b>12033.W0050</b>	Slotted	Knife	40,9	35,0	107,0	37,6	10,9	1,3	38,1	9,1	40,6	26	M16	.W0075	10,9
<b>12033.W0055</b>	Slotted	Blunt	40,9	35,0	107,0	37,6	10,9	1,3	38,1	9,1	40,6	26	M16	.W0075	10,9



### 12033.2

LOW PROFILE SIDE CLAMPING

#### Material

Hardened and ground steel bodies with pitbull clamps insert (part no. 12031).

#### Technical Notes

Designed to be used in fixtures, on cubes etc.

The slotted version has a clamp step to

support the workpiece off the machine table for through milling or drilling. The height of the clamp can be adjusted by varying the depth of the milled slot used to locate the clamp.

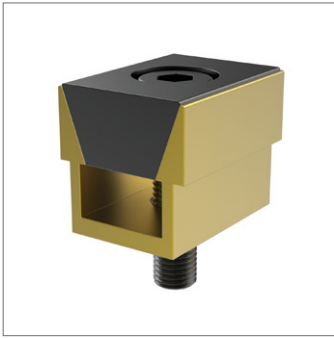
#### Tips

The compact version is ideal for clamping

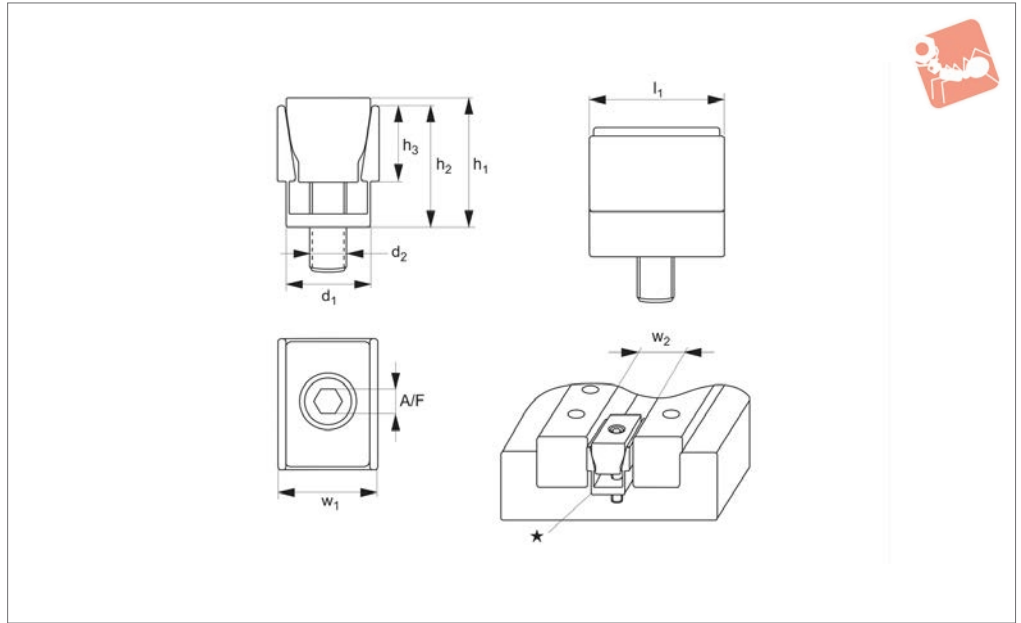
workpieces in series, using the back surface of the clamp to locate the next workpiece.

Back of clamp is ground square to the bottom for precise part location.

Order No.	Clamp type	d <sub>1</sub>	h <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	Grip height	Replacement clamps
12033.W0150	Versagrip	M12	35	76.2	50	25.4	1,5 to 3,0	12036.W0175
12033.W0155	Talongrip	M12	35	76.2	50	25.4	1,5 to 3,0	12034.W0050
12033.W0160	Pitbull - Knife	M12	35	76.2	50	25.4	6.4	12031.W0060
12033.W0165	Pitbull - Blunt	M12	35	76.2	50	25.4	6.4	12031.W0070
12033.W0170	Pitbull - Mach.	M12	35	76.2	50	25.4	6.4	12032.W0570



## 12130



### Material

Channel: aluminium, anodised (7075-T6).  
Wedge and screw: steel, hardened and blackened.

### Technical Notes

Holds two parts with an equal clamping action. Very effective for multiple workpiece clamping. Can easily be used with hydraulic pull cylinders. Can be used to

clamp round bar, as long as centre line of clamp is above the centre line of the workpiece.

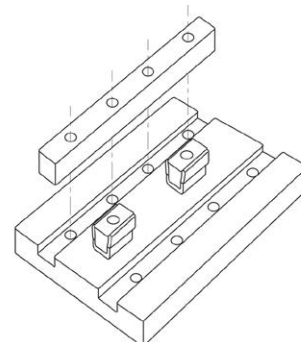
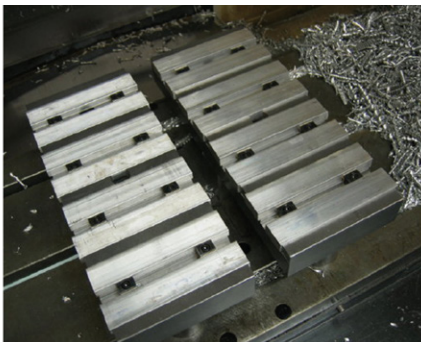
### Tips

Clockwise rotation is recommended. The workpiece should be on the right of the clamp. For replacement cam screws see parts 12112.

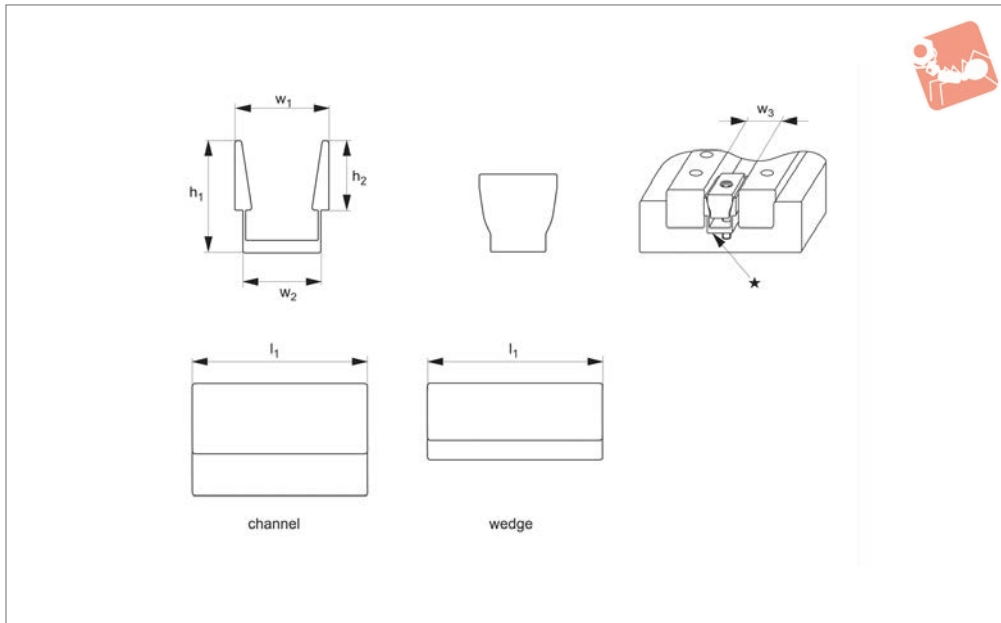
### Important Notes

Dimension  $w_2$  is the distance needed between workpieces for clamp clearance. Drill and tap mounting hole on the centre of this dimension.  
\*\* a milled slot wider than  $d_1$  will ensure the clamp remains in line with the workpiece. Clamp sides should not come into contact with slot walls during expansion.

Order No.	$d_1$	$d_2$	$h_1$	$h_2$	$h_3$	$l_1$	$w_1$	$w_2$	Spread max.	A/F	Torque to Nm max.	Qty/pack	Holding force kN	Weight g
12130.W0001	5.3	M 2	6.9	6.40	3.6	8.1	6.1	6.4	6.7	1.5	0.7	6	0.88	45
12130.W0002	7.9	M2,5	9.7	9.50	4.7	11.9	9.1	9.5	10.0	2.0	1.5	6	1.35	68
12130.W0004	10.4	M 4	14.5	12.70	5.6	15.9	12.3	12.7	13.2	3.0	3.4	8	2.23	100
12130.W0006	16.1	M 6	19.0	19.05	9.5	23.8	18.6	19.0	20.3	5.0	13.5	6	6.68	222
12130.W0008	20.8	M 8	25.9	25.40	12.7	31.7	24.8	25.4	26.9	6.0	25.0	4	11.13	340
12130.W0012	30.8	M12	38.6	38.10	19.0	47.6	37.3	38.1	39.9	10.0	38.4	2	15.58	612
12130.W0016	41.2	M16	51.5	50.80	25.4	63.5	49.7	50.8	53.0	14.0	74.6	2	26.70	1404







## 12131

LOW PROFILE SIDE CLAMPING

### Material

Channel: aluminium (7075-T6).

Wedge: steel.

### Technical Notes

Standard length of 508mm supplied, to allow machining to your own requirements.

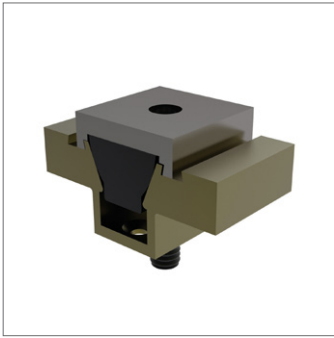
No drilled holes.

### Important Notes

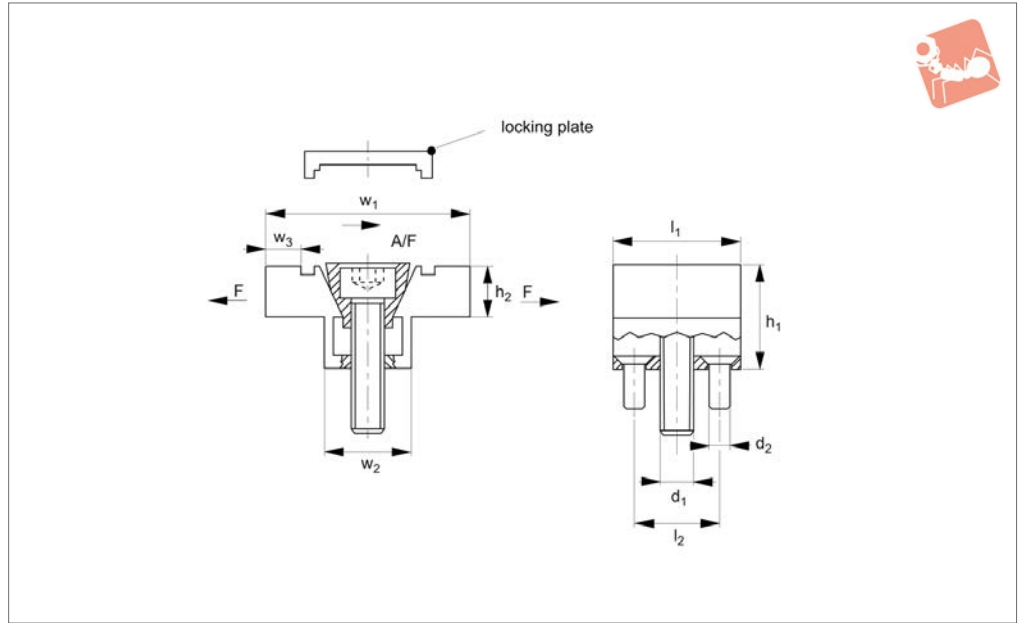
Dimension „w<sub>3</sub>“ is distance needed between workpieces for clamp clearance. Drill and tap mounting hole on centre of this dimension.  
 „\*“ a milled slot wider than w<sub>2</sub> will ensure

clamp remains in line with workpiece. Clamp sides should not come into contact with slot wall during expansion. Channel and wedge supplied separately. If both parts are required please order them separately.

Order No.	Part	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	Spread max.
12131.W0001	Channel	6.4	3.6	508	6.1	5.3	6.4	6.7
12131.W0002	Channel	9.5	4.7	508	9.1	7.9	9.5	10.0
12131.W0004	Channel	12.7	5.6	508	12.3	10.4	12.7	13.2
12131.W0006	Channel	19.1	9.5	508	18.6	16.1	19.0	20.3
12131.W0008	Channel	25.4	12.7	508	24.8	20.8	25.4	26.9
12131.W0012	Channel	38.1	19.0	508	37.3	30.8	38.1	39.9
12131.W0016	Channel	50.8	25.4	508	49.7	41.2	50.8	53.0
12131.W0201	Wedge	-	-	508	6.1	-	-	-
12131.W0202	Wedge	-	-	508	9.1	-	-	-
12131.W0204	Wedge	-	-	508	12.3	-	-	-
12131.W0206	Wedge	-	-	508	18.6	-	-	-
12131.W0208	Wedge	-	-	508	24.8	-	-	-
12131.W0212	Wedge	-	-	508	37.3	-	-	-
12131.W0216	Wedge	-	-	508	49.7	-	-	-



## 12140



### Material

Channel: aluminium, anodised (7075-T6).  
Wedge and screw: steel, hardened, blackened.

### Technical Notes

Extra material on the clamp jaws can be machined away to suit the shape of your workpiece.  
The specially designed steel wedge spreads

the clamp force uniformly across both sides of the clamp.

### Tips

The locking plate should be used to machine the jaws, and removed after this process to enable workpiece clamping.  
When the clamp is used to machine flat faced parts, use the locking plates to machine the faces parallel.

Full clamping cannot be achieved if locking plate has not been removed.

### Important Notes

$w_1$  is the distance needed between workpieces for clamp clearance. Drill and tap mounting holes on the centre of this dimension.  
 $w_3$  is the amount of machinable stock on the jaws.

Order No.	$d_1$	$d_2$	$h_1$	$h_2$	$l_1$	$l_2$	$w_1$	$w_2$	$w_3$	Torque to Nm max.	Holding force F kN	Weight g
12140.W0050	M 4	M 2	12.7	6.3	15.7	10.2	28.6	10.7	4.6	3.4	2.2	18
12140.W0075	M 6	M 4	19.1	9.4	23.9	15.9	38.1	16.1	6.6	13.5	6.6	25
12140.W0100	M 8	M 4	25.4	12.7	31.8	20.6	50.8	20.8	9.9	25.0	11.1	13
12140.W0150	M12	M 5	38.1	19.1	47.5	30.5	76.2	30.9	15.7	38.4	15.5	93
12140.W0200	M16	M 6	50.8	25.4	63.5	41.3	101.6	41.3	20.3	74.6	26.7	1000

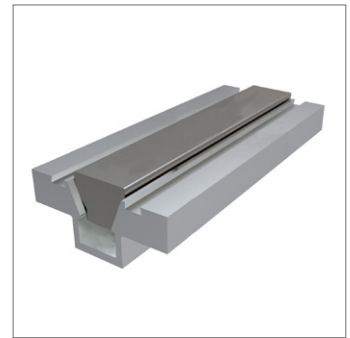
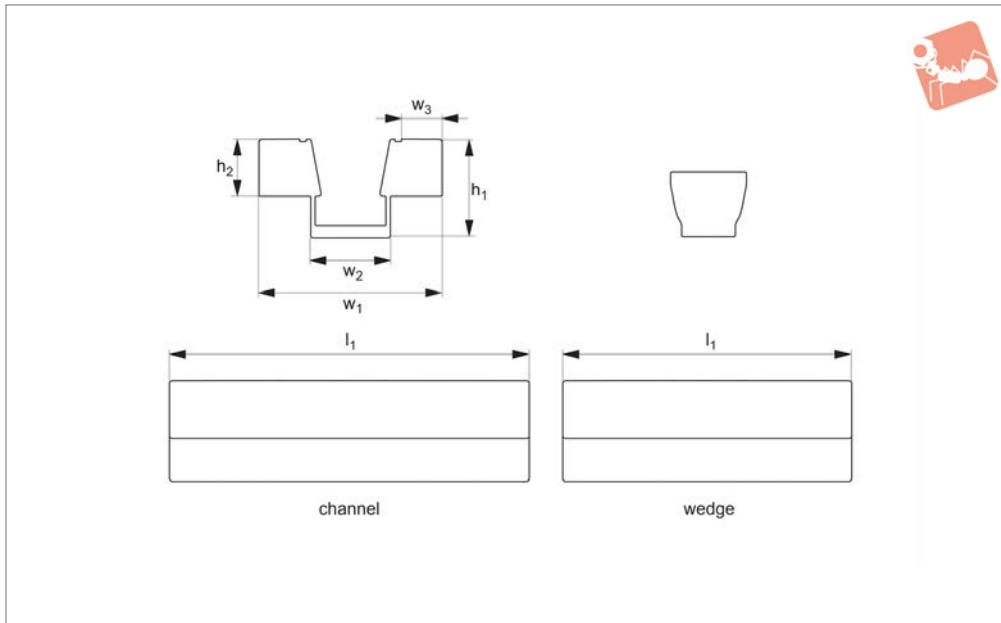




# Machinable Uniforce Clamps

long length

## Low Profile Side Clamping



# 12145

LOW PROFILE SIDE CLAMPING

### Material

Channel: aluminium, anodised (7075-T6).  
Wedge: steel.

### Technical Notes

The specially designed steel wedge spreads the clamp force uniformly across both sides of the clamp.  
Channel supplied with 4 mounting screws.

Wedge supplied with 3 drive bolts.

### Tips

Standard length of 190mm supplied to allow machining to your own requirements.

### Important Notes

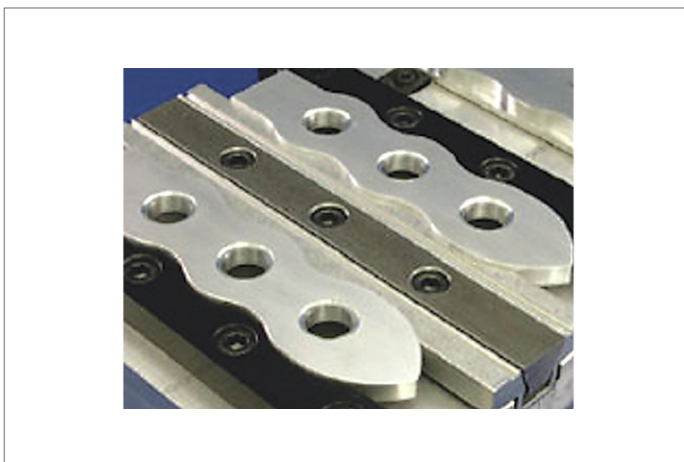
$w_1$  is the distance needed between work-

pieces for clamp clearance. Drill and tap mounting holes on the centre of this dimension.

$w_3$  is the amount of machinable stock on the jaws.

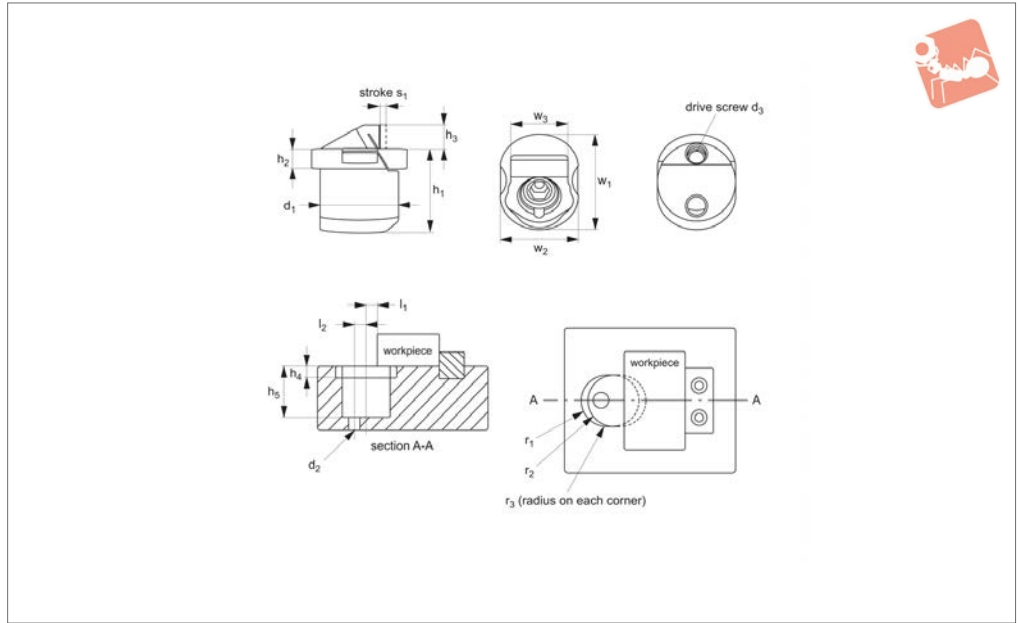
Channel and wedge supplied separately. If both parts are required please order them separately.

Order No.	Part	$h_1$	$h_2$	$l_1$	$w_1$	$w_2$	$w_3$	Screw	Torque to Nm max.	Holding force kN	Weight g
12145.W0550	Channel	12.7	6.3	190	28.6	10.67	4.6	M 2	3.4	2.2	91
12145.W0575	Channel	19.1	9.4	190	38.1	16.05	6.6	M 4	14.6	6.6	172
12145.W0600	Channel	25.4	12.7	190	50.8	20.83	9.9	M 4	14.1	8.9	299
12145.W0650	Channel	38.1	19.1	190	76.2	30.86	15.7	M 5	38.4	15.5	376
12145.W0850	Wedge	-	-	190	28.6	-	-	M 4	-	-	114
12145.W0875	Wedge	-	-	190	38.1	-	-	M 6	-	-	231
12145.W0900	Wedge	-	-	190	50.8	-	-	M 8	-	-	403
12145.W0950	Wedge	-	-	190	76.2	-	-	M12	-	-	874





## 12010



### Material

Stainless steel (17-4 PH, AISI 630).  
Smooth faced jaws (34 HRC), serrated jaws (44 HRC).

### Technical Notes

Very low profile, compact design, strong clamping. With smooth or serrated faces. The clamp jaw slides on an angle for positive downhold force - the down force is approx. 25% of the holding force.

The support surface of the clamp is wire-cut to ensure accurate positioning.

### Tips

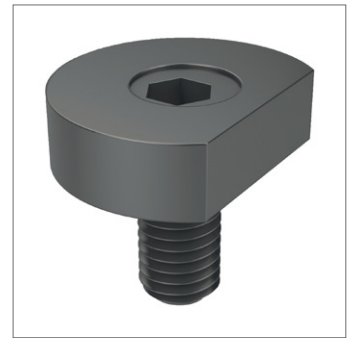
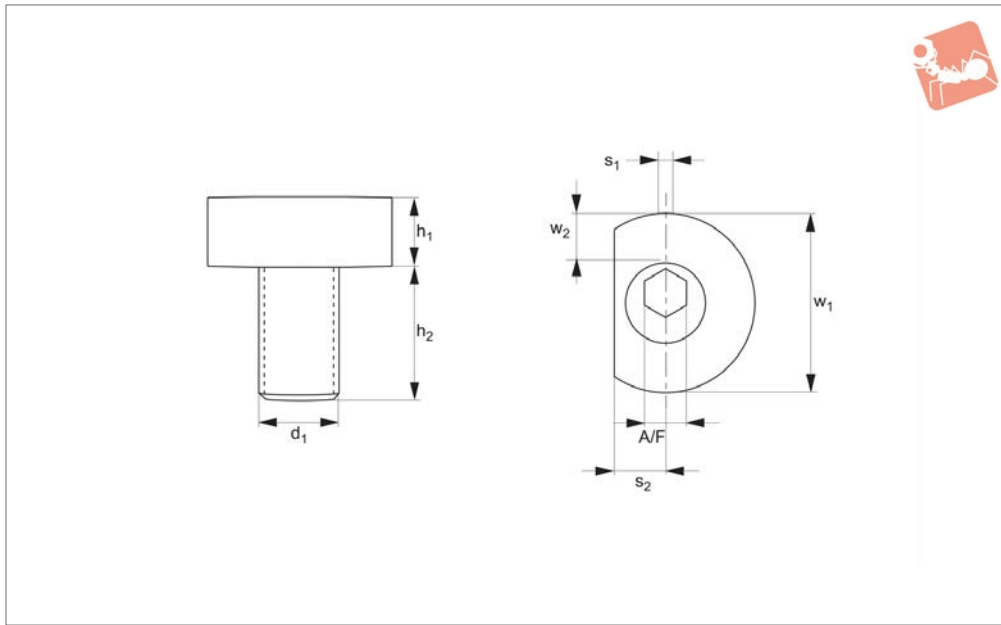
The support surface of the clamp can be installed flush with the fixture plate or raised to allow through drilling. Often used in conjunction with our Talongrips, part no. 12034.

### Important Notes

1. Bore installation hole  $d_1$ , with a centre-line at distance  $l_1$  (tol. M8) from edge of workpiece.
2. Drill and tap „ $d_2$ “ to mount the clamp in the pocket.
3. Machine counterbore „ $h_4$ “ if recessing the clamp into the fixture.
4. Provide a back stop to locate the part.

Order No.	Jaw type	$d_1$	$d_2$	Drive screw $d_3$	$h_1$	$h_2$	$h_3$ min.	$h_3$ opt.	$h_3$ max.	$h_4$	$h_5$ +0.1 -0.1	$l_1$ +0.1 -0.1	$l_2$	$r_1$ +0.1 -0.0	Weight g
12010.W0014	Smooth	20	M 5	M 6x12	19.0	4.5	3.3	5.0	6.8	4.5	20	4.9	5.0	25	54
12010.W0018	Serrated	20	M 5	M 6x12	19.0	4.5	3.3	5.0	6.8	4.5	20	4.9	5.0	25	54
12010.W0020	Smooth	25	M 6	M 8x16	24.0	5.0	4.5	6.5	8.3	5.0	25	5.6	6.0	30	100
12010.W0022	Serrated	25	M 6	M 8x16	24.0	5.0	4.5	6.5	8.3	5.0	25	5.6	6.0	30	100
12010.W0024	Smooth	30	M 8	M10x18	29.0	7.0	4.5	7.5	10.8	7.0	30	7.1	7.5	38	159
12010.W0028	Serrated	30	M 8	M10x18	29.0	7.0	4.5	7.5	10.8	7.0	30	7.1	7.5	38	159

Order No.	$r_2$ +0.1 -0.0	$R_3$	Stroke $s_1$	$w_1$	$w_2$	$w_3$	Torque to Nm max.	Key size A/F	Holding force kN
12010.W0014	20	6.0	2.0	24.9	19.9	13.5	10	5	8.8
12010.W0018	20	6.0	2.0	24.9	19.9	13.5	10	5	8.8
12010.W0020	25	6.5	2.2	29.9	24.9	15.0	24	6	11.5
12010.W0022	25	6.5	2.2	29.9	24.9	15.0	24	6	11.5
12010.W0024	30	8.0	3.8	37.9	29.9	20.0	42	8	14.2
12010.W0028	30	8.0	3.8	37.9	29.9	20.0	42	8	14.2



**12020**

LOW PROFILE SIDE CLAMPING

### Material

Steel, mild.

### Technical Notes

Used to machine and hold irregular or round parts.

Dimension „w<sub>2</sub>“ is the amount of machinable stock. Dimension „s<sub>2</sub>“ is the distance to drill and tap hole from edge of workpiece to use flat face.

### Tips

Suitable for holding flat, round or irregular shaped workpieces, the mild steel washer

can easily be machined to match the profile of a component.

Supplied with cam screws, and one machining screw to hold clamp during machining of clamp face to fit profile of the component.

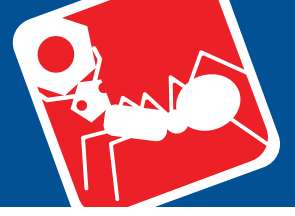
### Important Notes

1. Drill and tap hole in required location, refer to dimension „s<sub>2</sub>“ if using the clamp flat face.
2. Clear drill 1,5mm deep.
3. Using the special machining screw

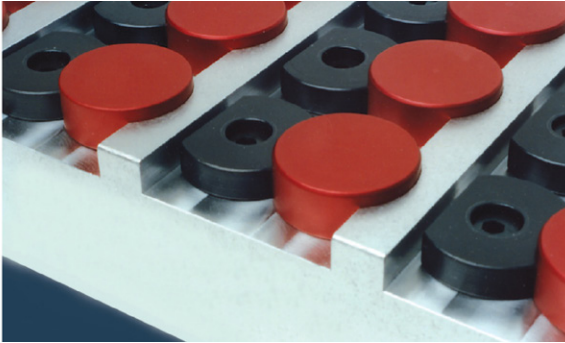
supplied (identifiable by NOT having a cam action), insert and tighten the steel washer.

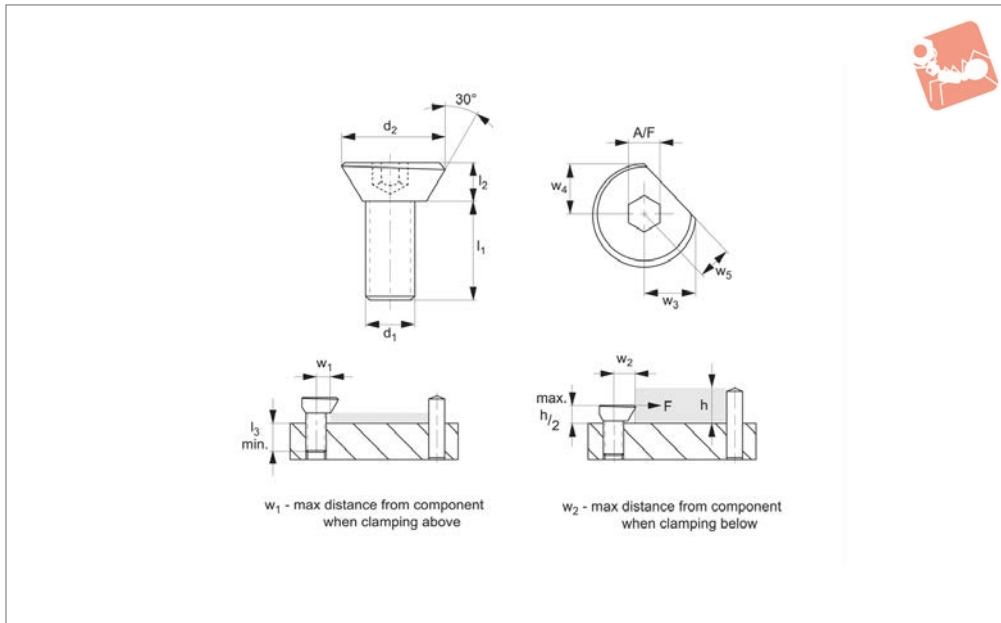
4. Machine the washer to conform with profile of the workpiece.
5. Exchange the machining screw for a cam screw, load the component and clamp with cam screw.
6. CAUTION: Never assume clamp is tight, always check the tightened clamp prior to machining.

Order No.	d <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	Clamping force kN max.	Stroke s <sub>1</sub>	Stroke s <sub>2</sub>	w <sub>1</sub>	w <sub>2</sub>	A/F	Torque to Nm max.	Qty/pack	Weight g
12020.W0006	M 6	6.4	11.9	3.4	1.0	7.8	24.9	6.4	4	8.5	4	100
12020.W0010	M10	8.9	18.0	8.9	1.5	10.2	31.2	7.0	7	28.0	4	236
12020.W0012	M12	11.4	22.9	17.8	2.0	12.7	37.6	7.6	8	88.0	4	435
12020.W0016	M16	14.0	28.6	26.7	2.5	15.0	43.9	8.9	12	135.0	4	748



LOW PROFILE SIDE CLAMPING





### 12111

LOW PROFILE SIDE CLAMPING

#### Material

Steel, hardened and blue zinc coated.

#### Technical Notes

Single piece clamping screw. Unique eccentric side profile of the clamp ensures

both downhold and side clamping action.

„ $w_1$ “ = max. distance from component when clamping above component surface.

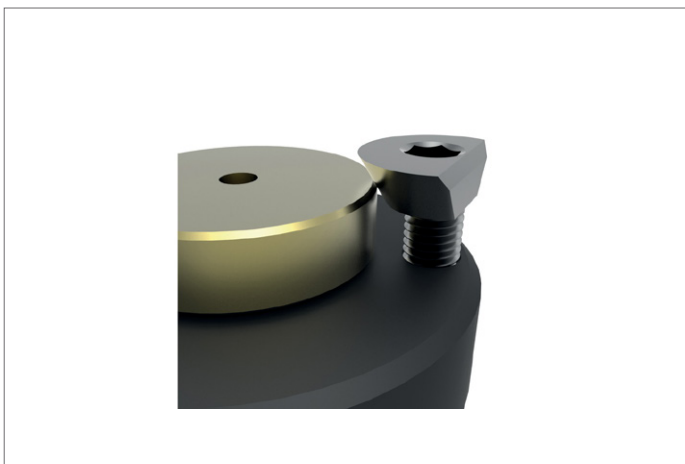
„ $w_2$ “ = max. distance from component when clamping below component surface.

„ $h$ “ - workpiece height.

„ $l_3$ “ - min. suggested thread engagement.

**Clamping stroke achieved via 120° turn of clamping screw.**

Order No.	$d_1$	$d_2$	$l_1$	$l_2$	$l_3$ min.	$w_1$	$w_2 \pm 0.2$	$w_3$	$w_4$	$w_5$	A/F	Torque to Nm max.	Holding force F kN	Weight g
12111.W0003	M 3	6.7	6	2	3	3.0	3.2	3.5	2.9	2.2	2.0	1.0	0.05	0.57
12111.W0004	M 4	8.7	8	3	4	3.5	4.2	4.6	4.0	3.0	2.5	1.5	0.09	1.43
12111.W0005	M 5	10.9	10	4	5	4.2	5.2	5.7	5.0	3.5	3.0	2.0	0.10	2.84
12111.W0006	M 6	13.5	12	5	6	5.4	6.4	7.1	6.1	4.5	4.0	4.5	0.30	4.95
12111.W0008	M 8	16.9	16	6	8	6.6	8.0	8.9	7.7	5.5	5.0	20.0	2.70	9.10
12111.W0010	M10	20.9	20	7	10	8.3	9.8	11.1	9.4	6.5	6.0	30.0	4.00	17.0
12111.W0012	M12	26.1	24	9	12	10.1	12.0	13.5	11.6	8.0	8.0	44.0	5.40	31.0

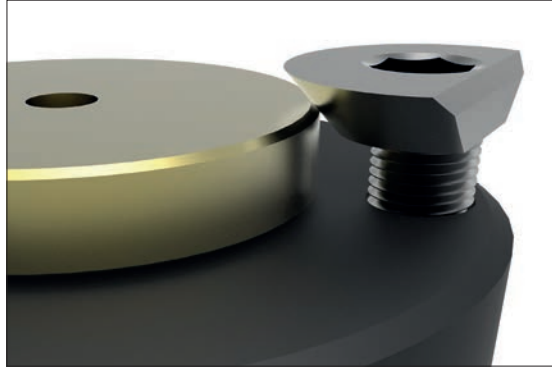




A unique one-piece eccentric pull down clamping screw with compact design is an ideal solution for providing both pull down and side clamping forces in applications where space is limited. Our eccentric Pull Down Clamping Screw, uniquely combines a tapered cone and an offset eccentric thread to provide clamping above or below a component's surface.

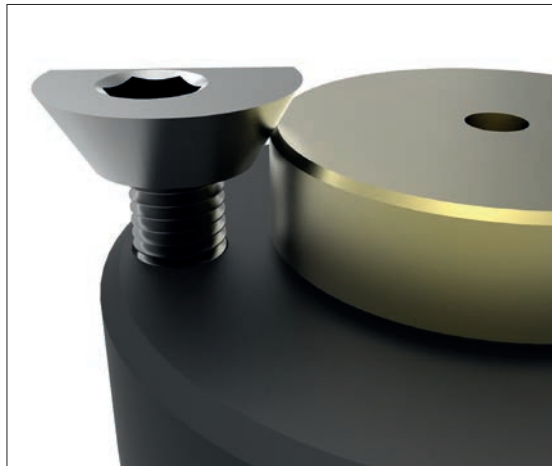
## Unique Solution

### Advantages

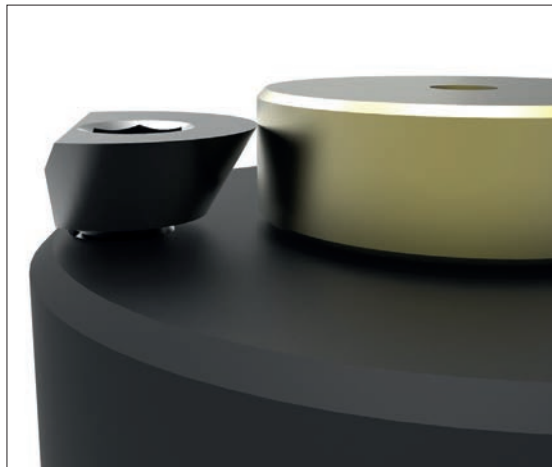


- Durable, stable, compact design.
- Unaffected by swarf ingress.
- Easily actuated.
- Effective pull down and side thrust clamping.
- High clamping force.
- Small installation footprint, ideal for multi-component clamping.
- Low height clamping solution.

### Installation

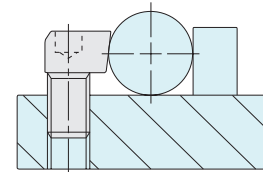


Clamping above component.

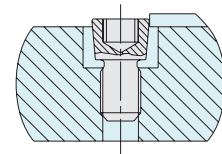


Clamping below component surface.

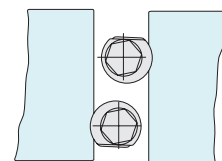
1. Drill and tap hole for required clamp size.
2. Install screw into the hole, and lower to the desired height of the component.
3. Ensure the flat side of the clamp is facing the workpiece - to allow for easy installation of component.
4. Once the clamping screw is installed, insert workpiece/ component.
5. Make a 120° turn of the screw to clamp the component.
6. A simple 120° reverse turn of the screw unclamps the component.



clamping round components



ultra low height clamping solution



multi-component clamping

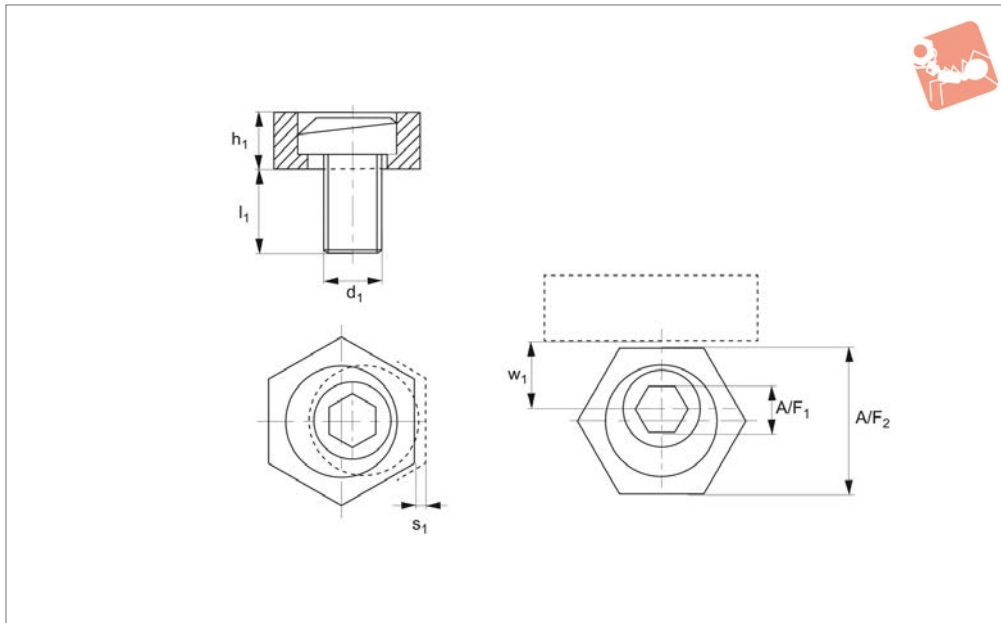




# Eccentric Fixture Clamps

low profile

## Low Profile Side Clamping



**12112**

LOW PROFILE SIDE CLAMPING

### Material

Hexagonal clamp: brass.  
Screw: steel, hardened, strength class 10,9.

### Technical Notes

Cam action provides fast, strong clamping.  
Small size allows more parts per load.

Workpiece stop is on the right hand side of the clamp.

### Tips

Clockwise rotation is recommended. The workpiece stop should be to the right of the clamp. Replacement cam screws are suitable for all clamp parts 12112, 12120,

12020 and 12150. For stainless steel version, see 12113.

### Important Notes

$w_1$  - is the location to drill and tap from the edge of workpiece.

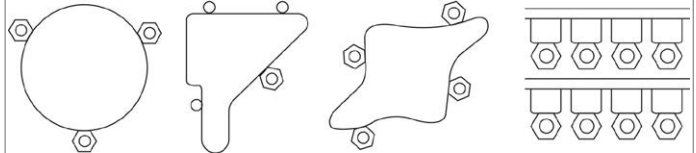
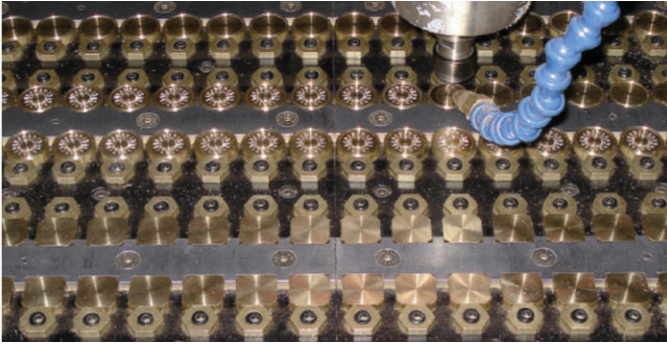
Order No.	Type	$d_1$	$h_1$	$l_1$	Clamping force kN	Stroke $s_1$	$w_1$	$A/F_1$	$A/F_2$	Torque to Nm max.	Qty/pack	Weight g
<b>12112.W0004</b>	Brass Clamp	M 4x0,7	2.80	9.6	0.9	0.76	3.8	3	7.93	2.5	10	3.0
<b>12112.W0006</b>	Brass Clamp	M 6x1	4.75	11.2	3.5	1.01	7.8	4	15.86	10.0	10	11.0
<b>12112.W0008</b>	Brass Clamp	M 8x1,25	4.55	15.0	3.5	1.01	10.2	5	20.60	18.0	12	18.0
<b>12112.W0010</b>	Brass Clamp	M10x1,5	6.35	19.0	8.8	1.27	10.2	7	20.60	26.0	10	27.0
<b>12112.W0012</b>	Brass Clamp	M12x1,75	9.52	22.8	17.7	2.03	12.7	8	25.38	75.0	8	53.0
<b>12112.W0016</b>	Brass Clamp	M16x2	12.70	28.5	26.6	2.54	15.0	12	30.13	120.0	4	103.0
<b>12112.W0504</b>	Replacement Screw	M 4x0,7	-	-	-	-	-	-	-	-	-	-
<b>12112.W0506</b>	Replacement Screw	M 6x1	-	-	-	-	-	-	-	-	-	-
<b>12112.W0508</b>	Replacement Screw	M 8x1,25	-	-	-	-	-	-	-	-	-	-
<b>12112.W0510</b>	Replacement Screw	M10x1,5	-	-	-	-	-	-	-	-	-	-
<b>12112.W0512</b>	Replacement Screw	M12x1.75	-	-	-	-	-	-	-	-	-	-
<b>12112.W0516</b>	Replacement Screw	M16x2	-	-	-	-	-	-	-	-	-	-

# Low Profile Side Clamping

## Eccentric Fixture Clamps low profile



LOW PROFILE SIDE CLAMPING

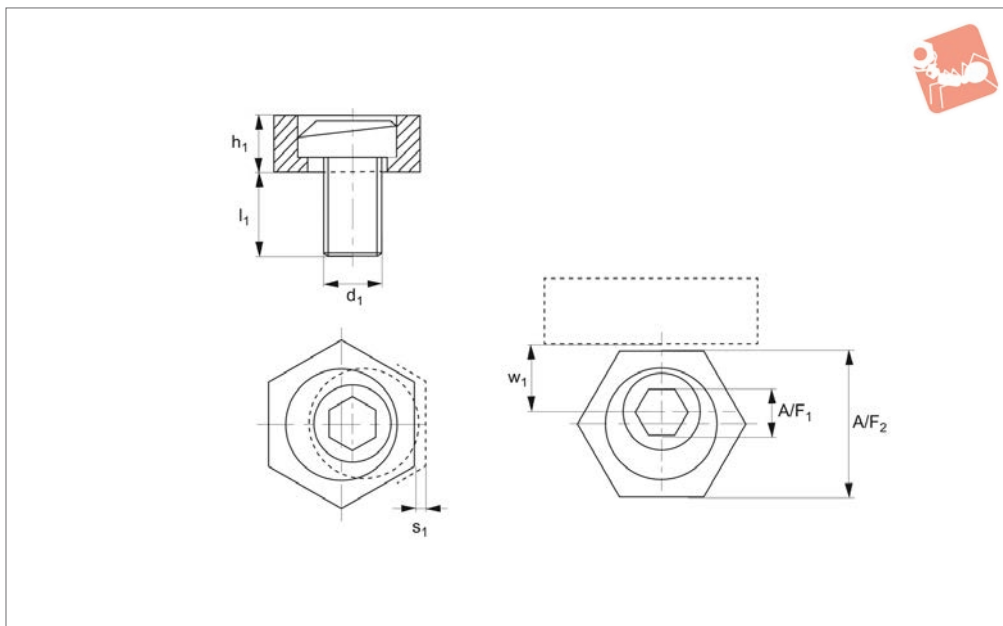




# Eccentric Fixture Clamps

low profile - stainless steel

## Low Profile Side Clamping



**12113**

LOW PROFILE SIDE CLAMPING

### Material

Hexagonal clamp: stainless steel.  
Eccentric clamp screw and washer: stainless steel.

### Technical Notes

Clockwise rotation is recommended. Work-

piece stop is on the right hand side of the clamp. For non-stainless steel versions of 12112.

### Tips

Compact size and fast, strong clamping allows maximum number of parts to be

clamped.

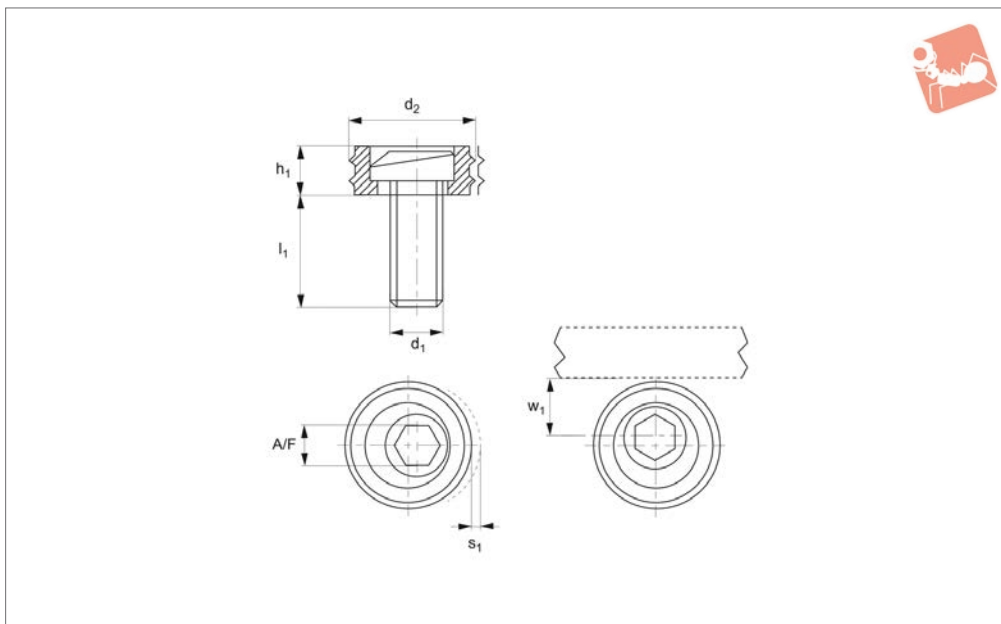
### Important Notes

$w_1$  - is the location to drill and tap from the edge of workpiece.

Order No.	Type	$d_1$	$h_1$	$l_1$	Stroke $s_1$	$w_1$	$A/F_1$	$A/F_2$	Clamp force kN	Torque to Nm max.	Qty/pack	Weight g
<b>12113.W0525</b>	Stainless Screw	M 4 x 0,7	-	-	-	-	-	-	-	-	4	-
<b>12113.W0205</b>	Stainless Clamp	M 4x0,7	2.80	9.6	0.76	3.80	3	7.93	0.9	2.0	4	3.0
<b>12113.W0206</b>	Stainless Clamp	M 6x1	4.75	11.2	1.01	7.80	4	15.86	3.5	8.5	4	11.0
<b>12113.W0208</b>	Stainless Clamp	M 8x1,25	6.35	15.0	1.01	10.20	5	20.60	3.5	11.3	4	18.0
<b>12113.W0526</b>	Stainless Screw	M 6x1	-	-	-	-	-	-	-	-	4	-
<b>12113.W0528</b>	Stainless Screw	M 8x1,25	-	-	-	-	-	-	-	-	4	-



## 12120



### Material

Ribbed face steel, hardened and plated.  
Screw steel hardened, strength class 10,9.

### Technical Notes

For clamping workpieces with uneven

surfaces, this clamp provides serrations to help the clamp grip the workpiece.

### Tips

Clockwise rotation is recommended. The workpiece should be to the right of the

clamp. For replacement cam screws see parts 12112.

### Important Notes

$w_1$  is distance to drill and tap from edge of workpiece.

Order No.	$d_1$	$d_2$	$h_1$	$l_1$	Clamping force kN	Stroke $s_1$	$w_1$	A/F	Torque to Nm max.	Qty/pack	Weight g
12120.W0020	M10x1,5	20.60	6.35	19.0	8.8	1.22	10.2	7	28	8	40
12120.W0025	M12x1,75	25.40	9.52	22.8	17.7	2.03	12.7	8	88	8	45
12120.W0030	M16x2	30.15	12.70	28.5	26.6	2.54	15.0	12	135	4	90

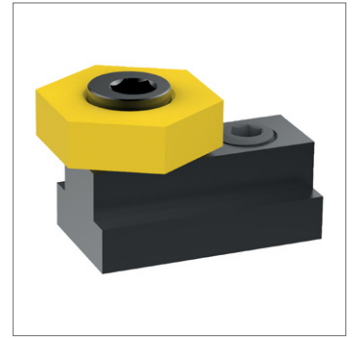




# Standard Eccentric Clamp Kit

clamp no. 12150 for T- slots

Low Profile Side Clamping



**12170**

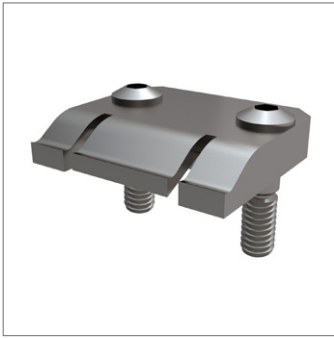
LOW PROFILE SIDE CLAMPING

**Material**

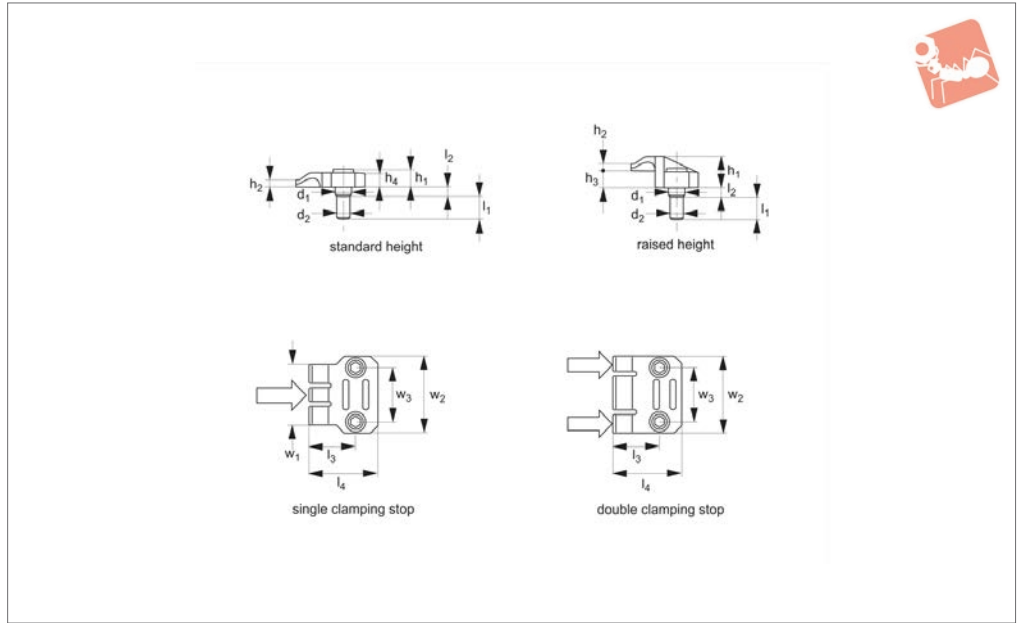
Clamping kits comprising no.12150 clamps.

Please see no. 12150 for dimensions.

Order No.	Slot size	Contents
12170.W0008	8	6 Clamps (12150.W0008), 4 T-nuts, 2 Hex keys
12170.W0010	10	6 Clamps (12150.W0010), 4 T-nuts, 2 Hex keys
12170.W0012	12	6 Clamps (12150.W0012), 4 T-nuts, 2 Hex keys
12170.W0014	14	6 Clamps (12150.W0014), 4 T-nuts, 2 Hex keys
12170.W0016	16	6 Clamps (12150.W0016), 4 T-nuts, 2 Hex keys
12170.W0018	18	6 Clamps (12150.W0018), 4 T-nuts, 2 Hex keys
12170.W0020	20	6 Clamps (12150.W0020), 4 T-nuts, 2 Hex keys
12170.W0022	22	6 Clamps (12150.W0022), 4 T-nuts, 2 Hex keys



## 10900



**Material**  
Spring steel.

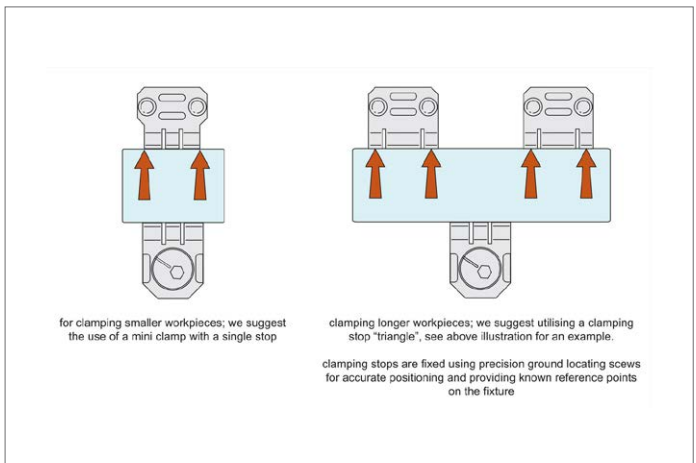
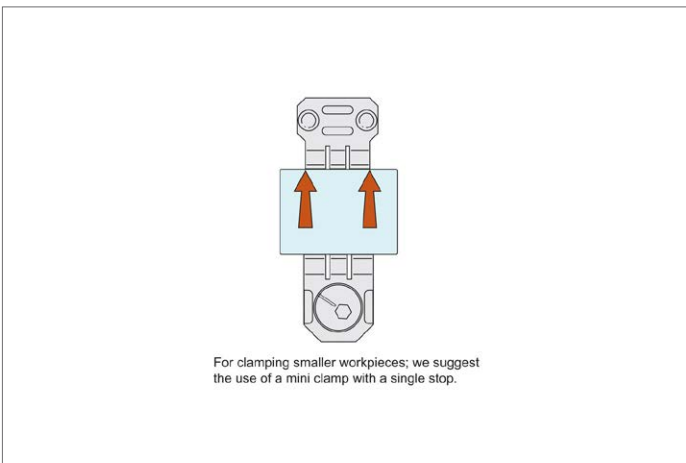
**Technical Notes**  
Fixed in place with special screws allowing

the precise location and re-positioning of parts.

**Tips**  
Single or double version stops.

Use double clamping stop version on long, slender or flexible parts.  
Use if possible with our mini finger clamp, part no. 10940.

Order No.	Type	Clamp height	$h_1$	$h_2$	$h_3$	$h_4$	$l_1$	$l_2$	$l_3$	$l_4$	$w_1$	$w_2$	$w_3$ $\pm 0.01$	$d_1$	$d_2$ tol. H7
10900.W0105	Single - standard	2.5	6.5	2.5	-	5	12	3.5	15	22	20	25	18	M 4	4.2
10900.W0110	Double - standard	2.5	6.5	2.5	-	5	12	3.5	15	22	-	25	18	M 4	4.2
10900.W0115	Single - raised	7.5	10	2.5	5	-	12	3.5	15	22	20	25	18	M 4	4.2
10900.W0120	Double - raised	7.5	10	2.5	5	-	12	3.5	15	22	-	25	18	M 4	4.2

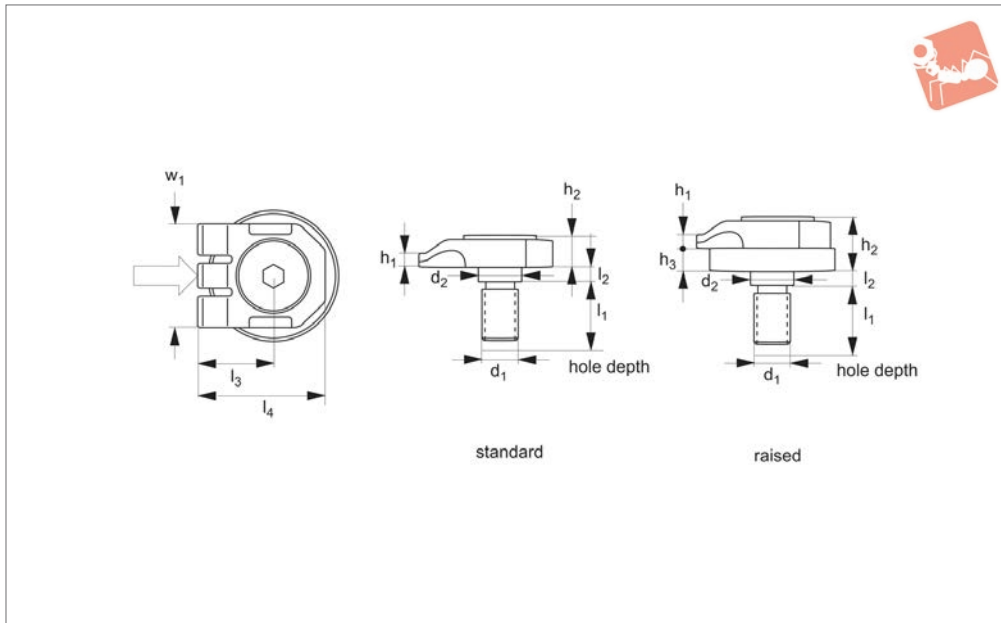




# Mini Finger Clamp Swivel Stops

single point - for 10940

## Low Profile Side Clamping



**10920**

LOW PROFILE SIDE CLAMPING

### Material

Spring steel.

allowing the precise location and re-positioning of parts.

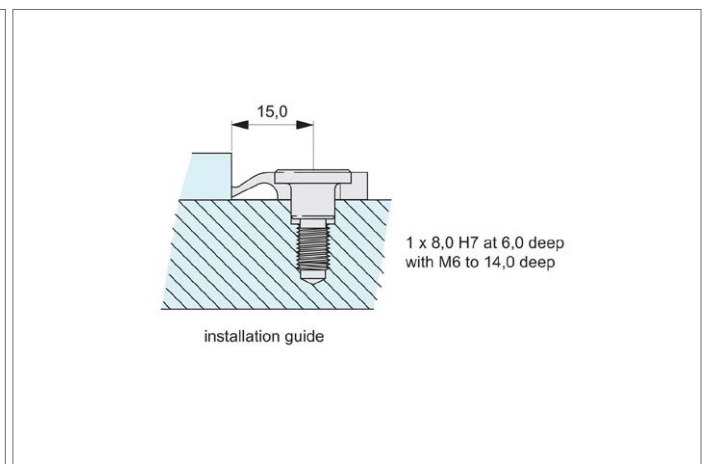
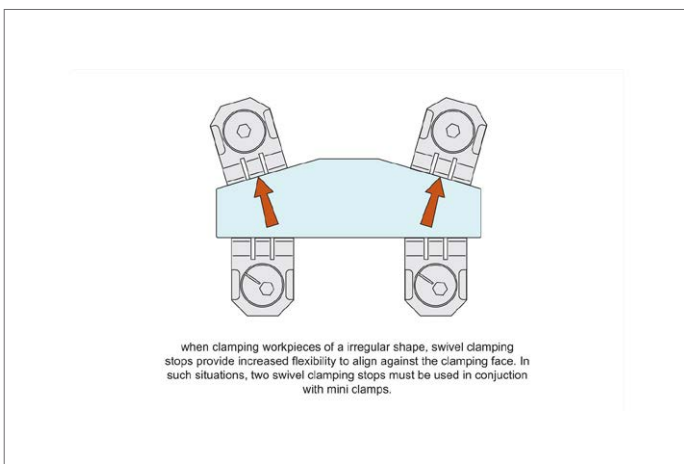
### Technical Notes

Fixed in place with special locking screws

### Tips

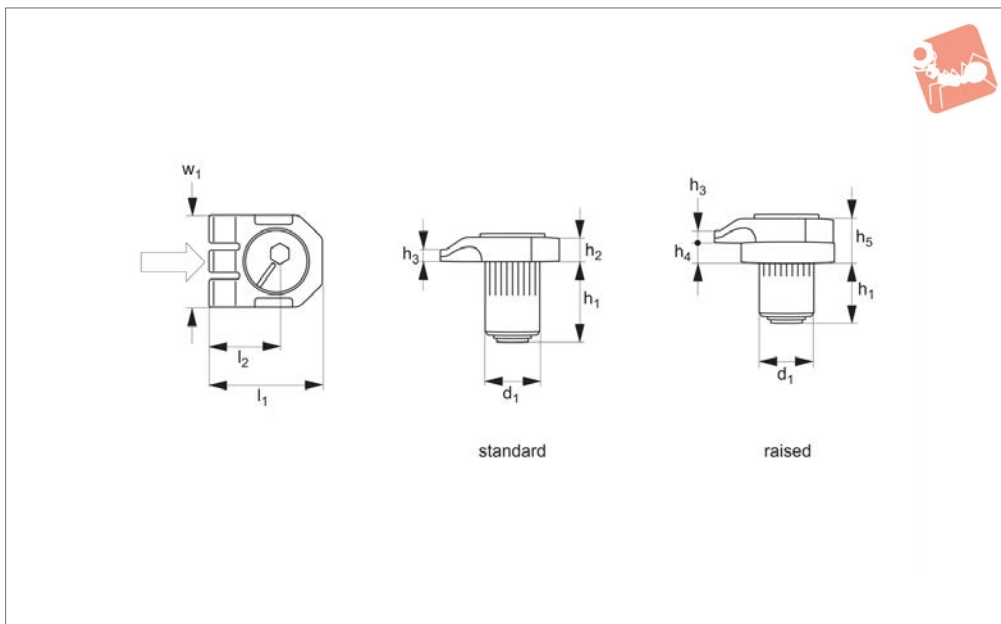
Use with our mini clamp, part no. 10940.

Order No.	Type	Grip height	$h_1$	$h_2$	$h_3$	$l_1$	$l_2$	$l_3$	$l_4$	$w_1$	$d_1$	$d_2$ tol. H7
<b>10920.W0125</b>	Standard	2.5	2.5	5	-	14	6	15	25	20	M 6	8
<b>10920.W0130</b>	Raised	7.5	2.5	10	5	14	6	15	25	20	M 6	8





## 10940



**Material**  
Spring steel.

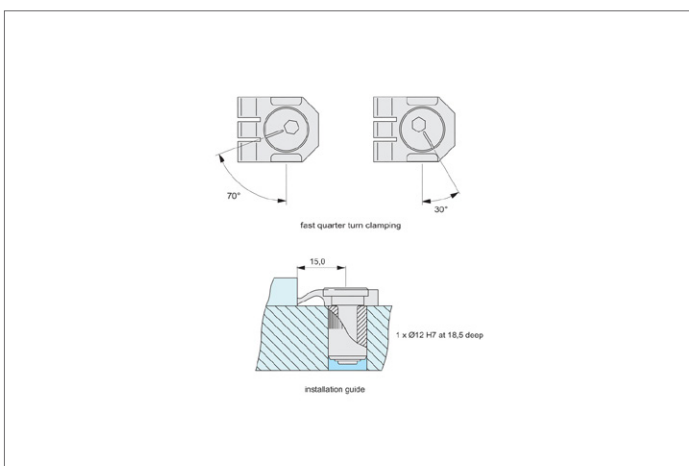
**Technical Notes**  
Simple, very heavy-duty, low profile clamping. A quarter turn of the clamping screw generates up to 4000 N clamping force.

They have a swivel facility to allow clamping in any direction.

**Tips**  
The clamps have unique „fingers“ that push the workpiece down before clamping - even on castings with a negative draft.

**Important Notes**  
These clamps achieve a positive downforce on both faces of the workpiece when used in conjunction with fixed stop, part nos. 10900 or 10920.

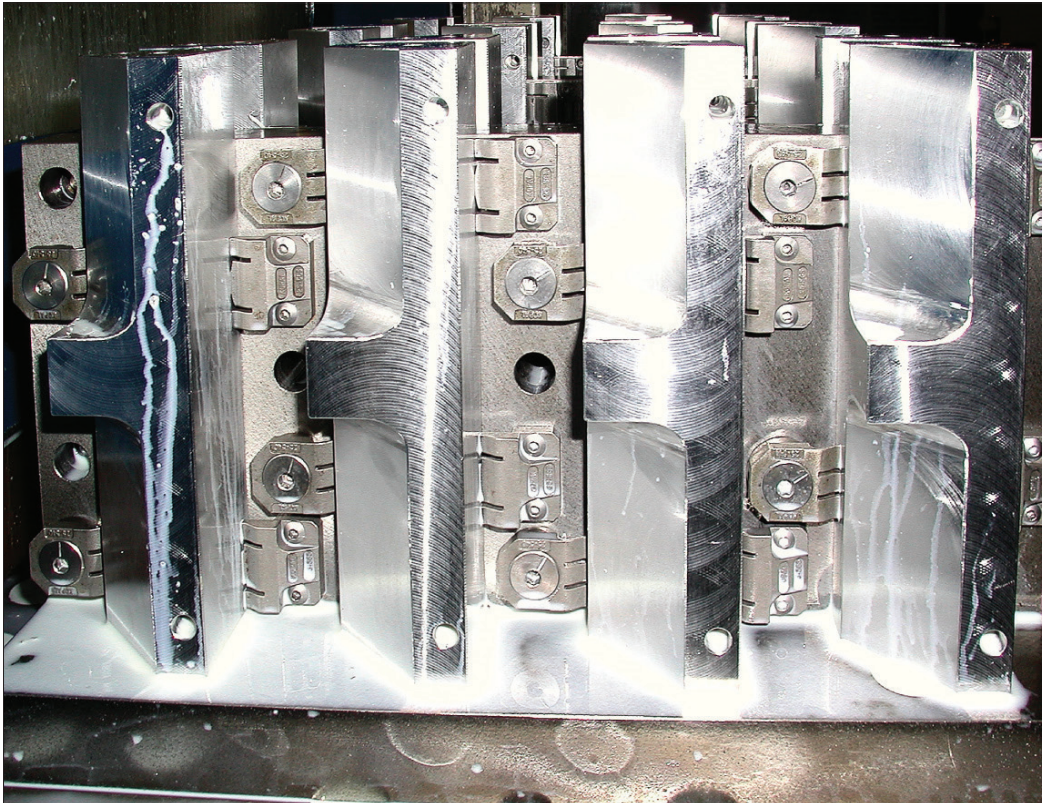
Order No.	Type	Clamp height	Clamp stroke	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$l_1$	$l_2$	$w_1$	$d_1$	Torque to Nm max.	Clamping force kN max.
10940.W0210	Standard	2.5	1.2	18	5	2.5	-	-	25	15	20	12	9	4
10940.W0215	Raised	7.5	1.2	18	-	2.5	5	10	25	15	20	12	9	4







### Application



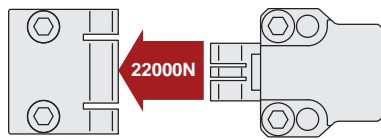
LOW PROFILE SIDE CLAMPING

### Unique Horizontal Clamping Set-Ups

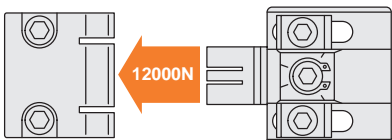
**Part No. 10900, 10920, 10940**  
T-slot table and special machining set-ups



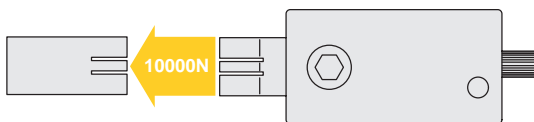
**Part No. 11040, 11041, 11042, 11043**  
Supports and special machining set-ups



**Part No. 11070, 11071**  
Supports and special machining set-ups



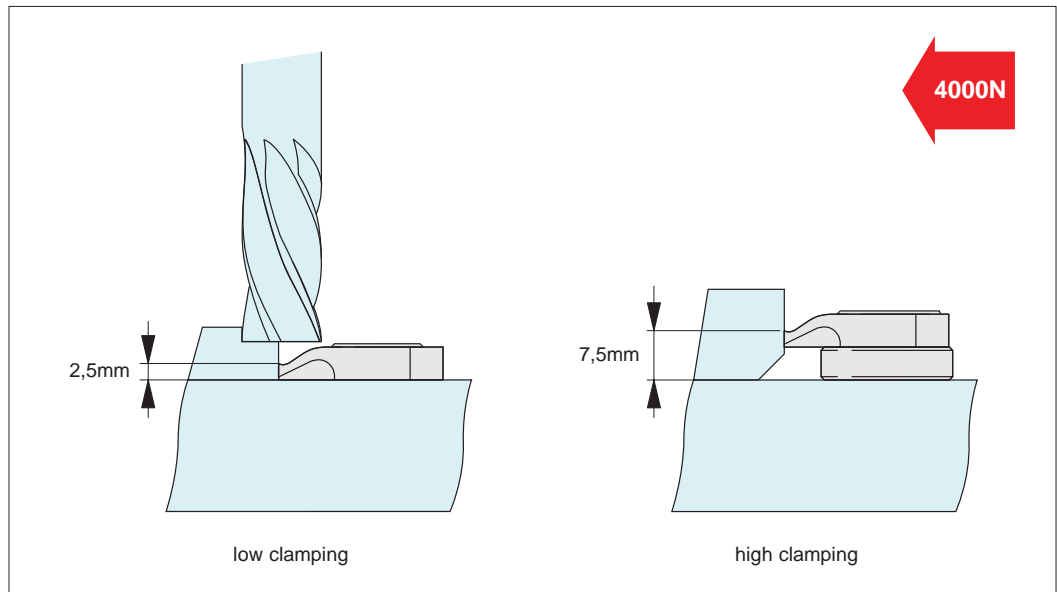
**Part No. 11080, 11081, 11083**  
T-slot table, supports and special machining set-ups



ov-W10920-A-T-W10940-b-rmh - Updated - 20-10-2022

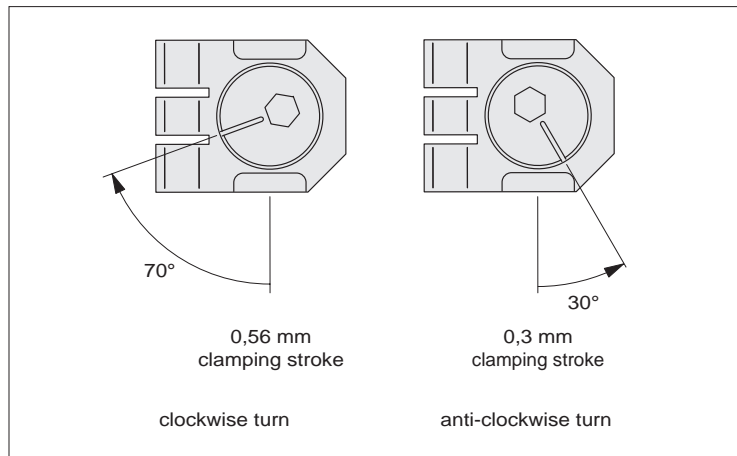


Mini finger clamps operate using our unique “three finger” clamping action – providing unmatched levels of pull down force and side clamping, for maximum component stability during machining.



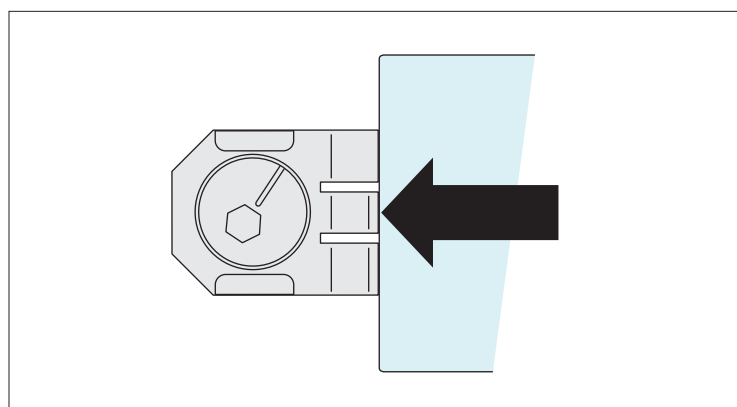
With a height of less than 6mm and a length of just 20mm mini finger clamps are ideal for multi-component clamping, while maximising access of the tooling. The clamp body is made from spring steel and the eccentric and screw from heat-treated steel. For quick, precise and high clamping forces up to 4000 Newtons.

## Actuation



The finger clamps pivot around an eccentric axis, with clamping via either a right (30°) or left (70°) actuation of the eccentric screw.

## Clamping



Mini finger clamps can position as well as clamp the workpiece – putting pressure against the stops and pulling the workpiece onto the reference surface in one motion.

Often just a single mini clamp can achieve workpiece positioning and clamping against its stops.

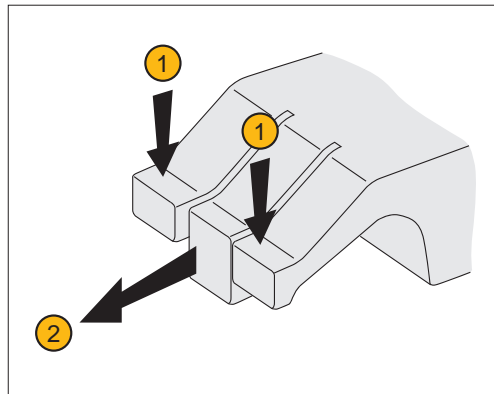


## Unique Action - "three finger" Clamping

Our horizontal clamps have a unique "three finger" arrangement ensuring components are both pulled down and clamped in the same motion. The face of the clamp is made of three parts or "fingers":

- Two outer flexible fingers (1); for pulling down the component to the work table.
- One solid central finger (2), to provide direct clamping action.

Available in two styles – smooth and serrated face. They can also cater for workpieces with an adverse angle on the clamping face – for example flame cut steel blanks.



Pull down AND clamp with the highest of clamping forces – from 0,4 tons to 2,2 tons!

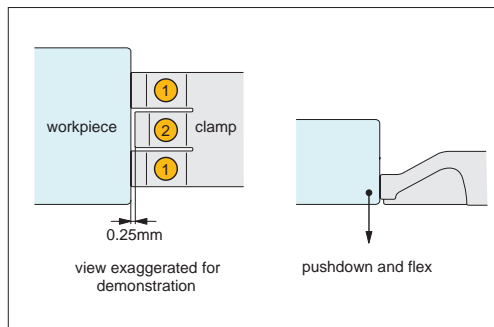
Used in our clamping series:

**10900, 10940, 10880, 10920, 11040, 11041, 11042, 11043, 11070, 11071, 11080, 11081, 11082, 11083**

## Clamping Action

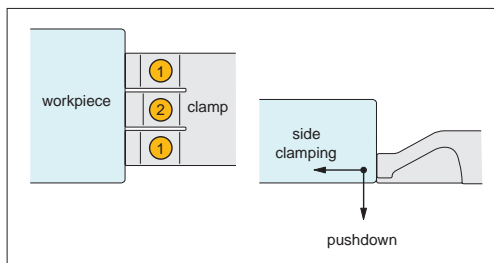
The clamps outer flexible fingers (1) are approx. 0,25mm longer than the solid central finger/clamping stop (2), this slight difference in length means it is the flexible fingers which first come into contact with the workpiece.

As initial contact is made with the work-piece the flexible fingers (1) apply downward pressure forcing the workpiece down against the work table, the flexible fingers are compressed until they are the same length as the solid central finger/clamping stop (2).



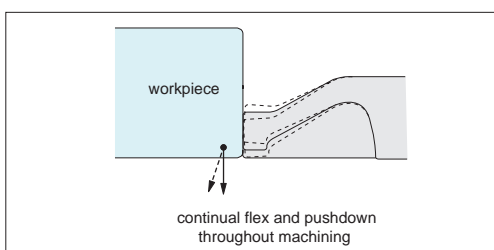
## Contact

As the solid central finger/clamping stop (2) comes into contact with the work-piece it applies high side clamping pressure to achieve clamping forces up to 2,2 tons (dependent upon clamping model selected).



## Clamping

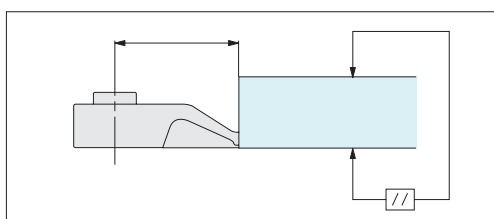
During machining the uniquely designed flexible fingers (1) continue to flex and twist applying downward pressure to keep the workpiece flat to the work table throughout.



## Machining

## Precision Positioning

The unique clamping action achieves precision positioning of workpieces – ensuring the workpiece remains parallel to the reference surface.





## Unique Action - "three finger" Clamping

11040/41/42/43

22000N

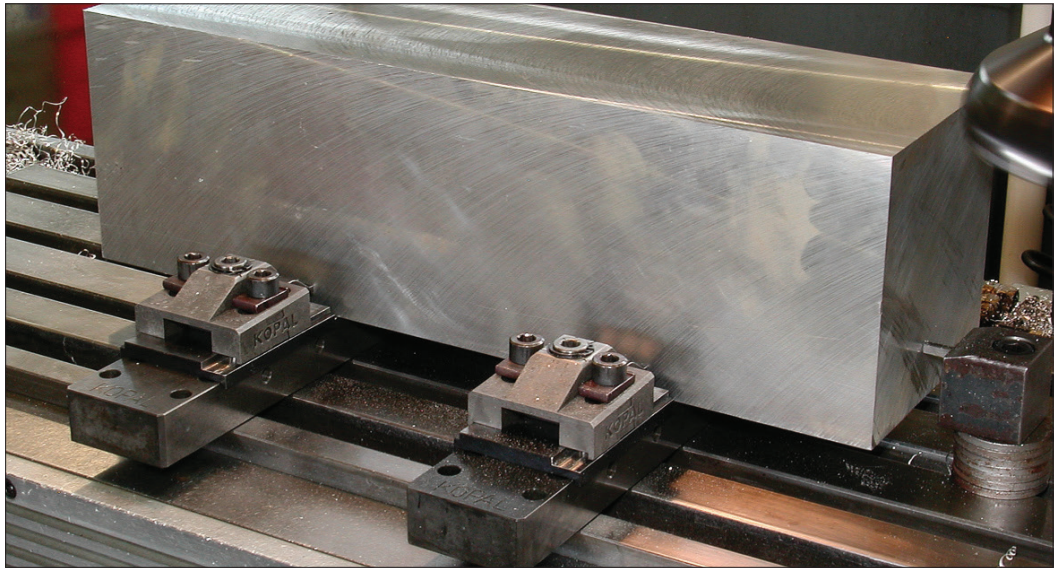
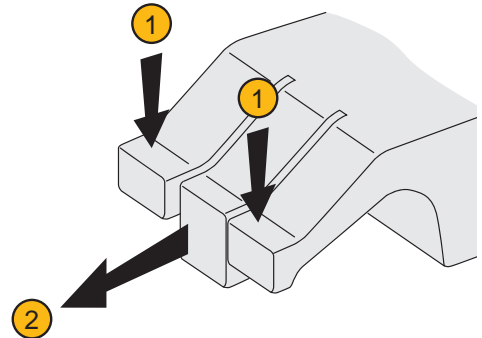
11070/71

12000N

Our horizontal clamps have a unique "three finger" arrangement ensuring components are both pulled down and clamped in the same motion. The face of the clamp is made of three parts or "fingers":

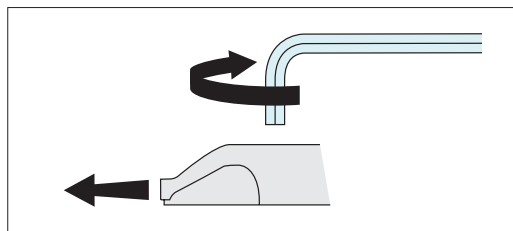
- Two outer flexible fingers ①; for pulling down the component to the work table.
- One solid central finger ②, to provide direct clamping action.

Available in two styles – smooth and serrated face. They can also cater for workpieces with an adverse angle on the clamping face – for example flame cut steel blanks.

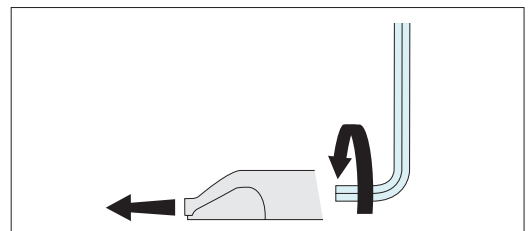


## Options

### Actuation

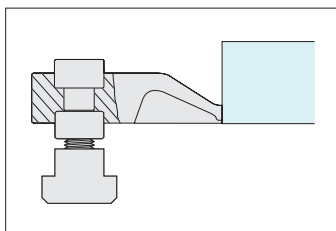


Quick 1/4 turn eccentric clamping – on models offering 4000 and 12000 Newtons clamping force.

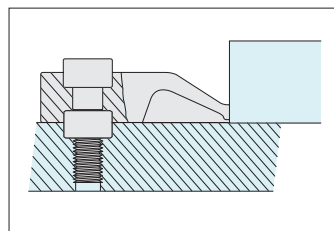


Rear screw clamping – on models offering 6500, 10000 and 22000 Newtons clamping force.

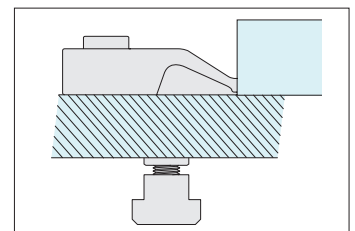
### Mounting



T-Slotted tables



Dedicated fixturing

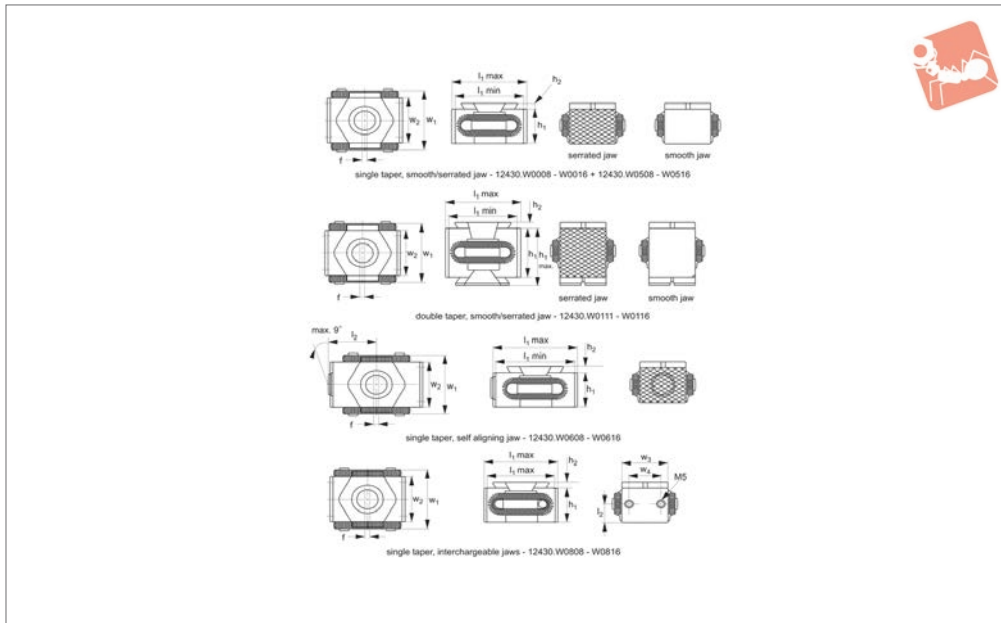


Modular fixturing



# Taper Clamps with downhold action

# Low Profile Side Clamping



## 12430

LOW PROFILE SIDE CLAMPING

### Material

Body: tool steel, hardened, bright.  
Clamping segments: tool steel, hardened, ground and blackened.  
Spring: steel, screw grade 12,9.

### Technical Notes

Ideal for horizontal or vertical clamping of multiple parts. Tighten the socket head cap screw to move clamping segments outwards to press the workpiece(s) against a fixed stop. Can be mounted in a threaded

hole or T-slot.

„f\*“ is the float around the clamping screw centre.

### Tips

**Double taper clamps provide higher clamping force.**

Taper clamps with interchangeable jaws are ideal where short runs of different parts are required. Economies can be achieved through changing only the jaw, rather than the whole clamp.

### Important Notes

Jaw Hardness-12430.W0008 to .W0116: 48-52 HRC.  
12430.W0608 and .W0616: X=30-34, Y=48-52 HRC.  
12430.W0508 to .W0516 and 12430.W808 to .W0816: 30-34 HRC.

**Taper surfaces ground, for increased precision.**

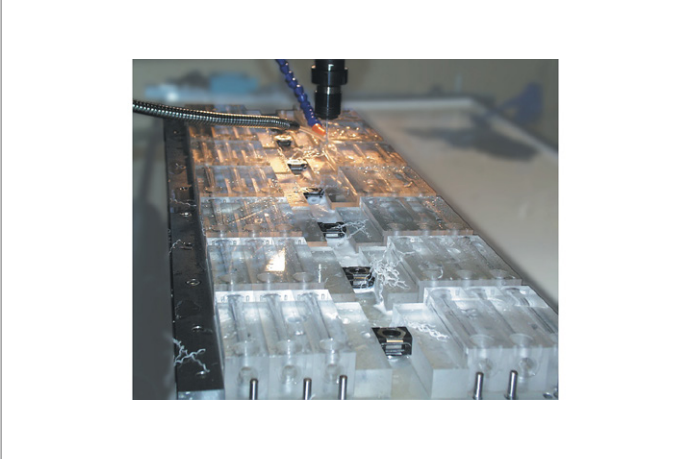
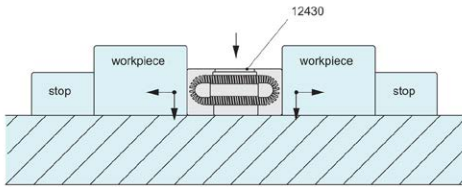
Order No.	Taper	Jaw type	$l_1$ min.	$l_1$ max.	$l_2$	$d_1$	$h_1$	$h_1$ max.	$h_2$	$w_1$	$w_2$	$w_3$	$w_4$	f max.	Clamping force kN max.	Torque to Nm max.	Weight g
12430.W0008	Single	Smooth	27	31		M 8	15		2,5	29	21			1	20	44	55
12430.W0009	Single	Serrated	27	31		M 8	15		2,5	29	21			1	20	44	55
12430.W0011	Single	Smooth	42	49		M12	22		4,0	41	30			2	30	85	180
12430.W0012	Single	Serrated	42	49		M12	22		4,0	41	30			2	30	85	180
12430.W0015	Single	Smooth	57	64		M16	29		5,0	56	42			3	50	210	465
12430.W0016	Single	Serrated	57	65		M16	29		5,0	56	42			3	50	210	465
12430.W0111	Double	Smooth	41	48		M12	30	36	5,0	41	30			2	50	85	275
12430.W0112	Double	Serrated	42	49		M12	30	36	5,0	41	30			2	50	85	275
12430.W0115	Double	Smooth	58	66		M16	42	50	5,0	56	52			3	80	210	730
12430.W0116	Double	Serrated	58	66		M16	42	50	5,0	56	52			3	80	210	730
12430.W0508	Single	Machinable	33	37		M 8	15		2,5	29	21			1	20	44	70
12430.W0512	Single	Machinable	52	59		M12	22		4,0	41	30			2	30	85	235
12430.W0516	Single	Machinable	67	75		M16	29		5,0	56	42			3	60	210	550
12430.W0608	Single	Self-Aligning	33	37	19,5	M 8	15		2,5	29	21		21,5	1	20	44	64
12430.W0616	Single	Self-Aligning	52	59	31,0	M12	22		4,0	41	30		34,5	2	30	85	212
12430.W0808	Single	Interchange	33	37	7,5	M 8	15		2,5	29	21	21	12	1	20	44	60
12430.W0812	Single	Interchange	46	53	11	M12	22		4,0	41	30	28	18	2	30	85	200
12430.W0816	Single	Interchange	61	69	14,5	M16	29		5,0	56	42	40	26	3	60	210	480

# Low Profile Side Clamping

## Taper Clamps with downhold action



LOW PROFILE SIDE CLAMPING

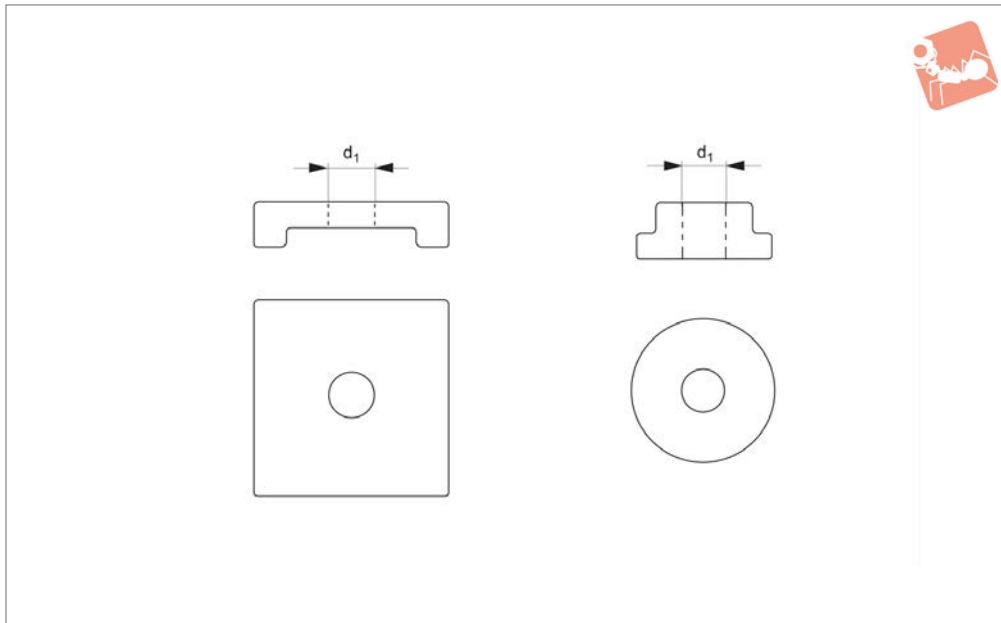




# Single Taper Adapter Set

for 12430, 12440 and 12450

Low Profile Side Clamping



12432

LOW PROFILE SIDE CLAMPING

### Material

Fixing plate and bush: tool steel, hardened.

### Technical Notes

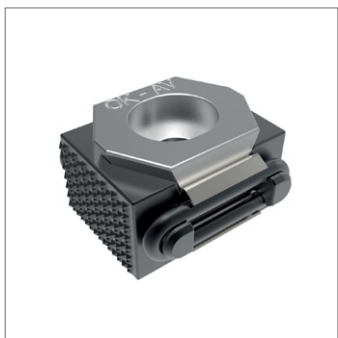
With the adapter set a single taper clamp

can be adapted to act as a double taper clamp, i.e. to pull down components as well as clamp sideways. Simply invert your existing single taper models, fit the adapter set and clamp as normal.

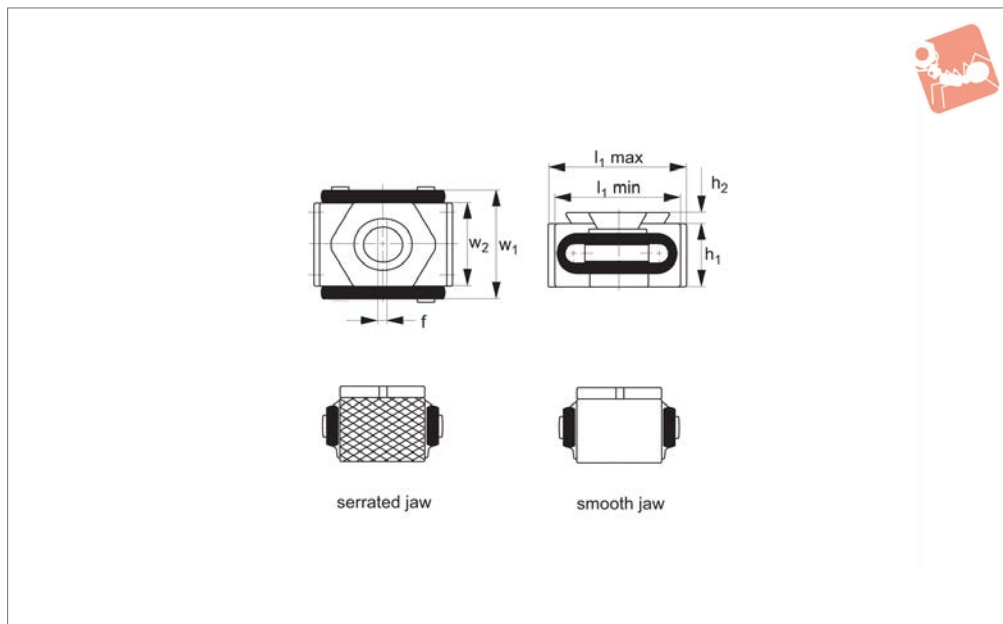
### Important Notes

For use with „single taper“ clamps 12430, 12440 and 12450 only - not for use with „double taper“ clamps. Clamping screw not supplied.

Order No.	Description	To suit taper clamp of thread $d_1$
12432.W0008	Single Taper Adapter Set	M 8
12432.W0012	Single Taper Adapter Set	M12
12432.W0016	Single Taper Adapter Set	M16



## 12440



### Material

Body: tool steel, hardened, bright.  
Clamping segments: tool steel, hardened to 48-52 HRC, ground and blackened.  
Spring: rubber o-ring (12440.W0005) or steel (12440.W0008 and .W0009).

### Technical Notes

Ideal for horizontal or vertical clamping of

multiple parts. Tighten the socket head cap screw to move clamping segments outwards to press the workpiece(s) against a fixed stop. Can be mounted in a threaded hole or T-slot.  
„f\*“ is the float around the clamping screw centre. Only bottom of jaw is ground.

### Tips

OK-VISE is a registered trademark of OK-VISE OY.

**For suitable T-nuts see no. 24000**

Order No.	Taper	Jaw type	$l_1$ min.	$l_1$ max.	$d_1$	$h_1$	$h_2$	$w_1$	$w_2$	f max.	Clamping force kN max.	Torque to Nm max.	Weight g
12440.W0005	Single	Smooth	20	25	M 5	11	4.2	22	15	0.5	10	10	22
12440.W0008	Single	Serrated	28	32	M 8	15	4.0	29	21	1.0	15	25	55
12440.W0009	Single	Smooth	28	32	M 8	15	3.5	29	21	1.0	15	25	55

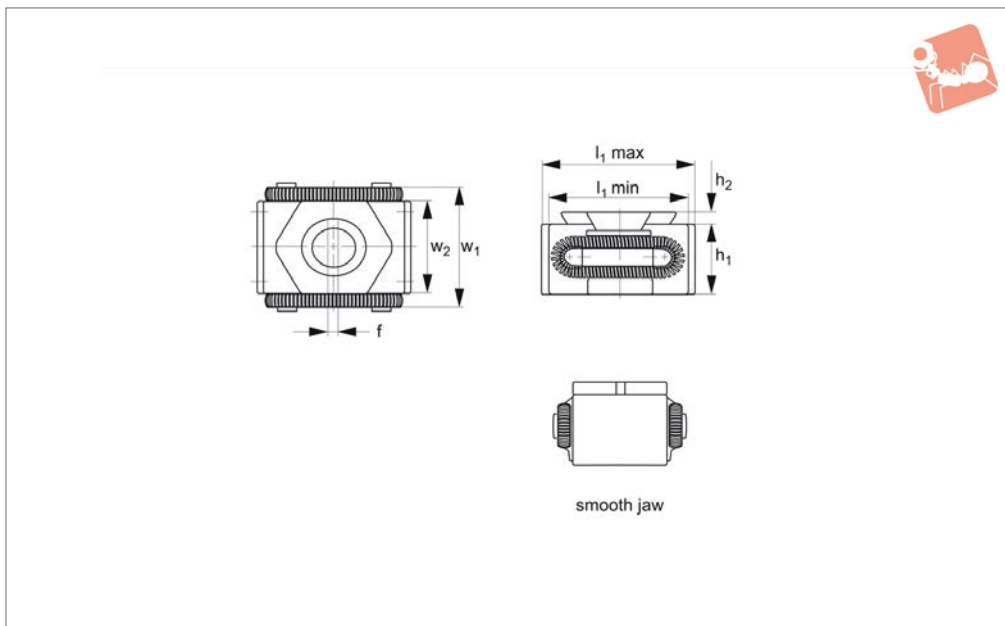




# Stainless Taper Clamps

stainless steel

## Low Profile Side Clamping



**12450**

LOW PROFILE SIDE CLAMPING

### Material

Body: stainless steel.  
Clamping segment and spring: stainless steel.

### Technical Notes

Ideal for wire EDM applications to clamp

multiple parts. Tighten the socket head cap screw to move clamping segments outwards to press the workpiece(s) against a fixed stop. Can be mounted in a threaded hole or T-slot.

„f\*“ is the float around the clamping screw

centre. Only the bottom of jaw is ground.

### Tips

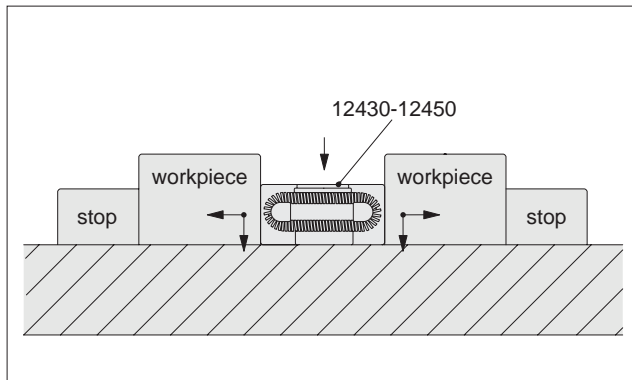
OK-VISE is a registered trademark of OK-VISE OY.

Order No.	Taper	Jaw type	$l_1$ min.	$l_1$ max.	$d_1$	$h_1$	$h_2$	$w_1$	$w_2$	f max.	Clamping force kN max.	Torque to Nm max.	Weight g
12450.W0008	Single	Smooth	27	31	M 8	15	2.5	29	21	1.0	25	44	55



Our low-profile taper clamps can be used on stand alone machines just as successfully as on large, flexible manufacturing systems. Working on the principle that, when tightened, they expand to simultaneously pull down and clamp the workpiece against stops, preventing any movement or play, they can produce clamping forces of up to 150 kN. With faces hardened to 48-52 HRC they are ideal for a range of clamping applications.

## Operating Principle



When tightening the clamping screw, the clamp's tapers expand simultaneously, pushing components against the fixture stops as well as exerting a pull-down force, pulling components to the fixture base (double taper models only).

With excellent clamping forces of up to 150 kN, these clamps generate high enough forces for workpieces to be safely clamped.



## Models Available



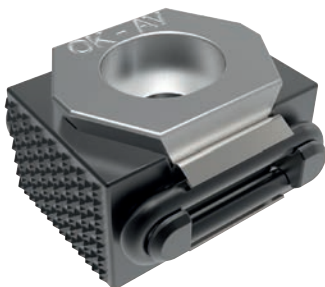
### Single Taper

Providing horizontal clamping forces, holding workpieces solidly in place.



### Single Taper Adapter Set

Single taper clamps can be adapted to perform as a double taper model. Simply invert your existing single taper models, fit our adapter set and clamp as normal.



### Economy Model

When ultra precision and the highest clamping forces are not necessary, our economy models offer a cost-effective choice. Ground only on the bottom jaw of the clamp for a cost saving.



### Stainless Steel

Designed with the demands of wire EDM clamping applications in mind.



### Double Taper

Horizontal clamping and pull-down action, ensuring full contact of workpiece with fixture base.



# Single Taper Clamps

small in size, yet big in clamping

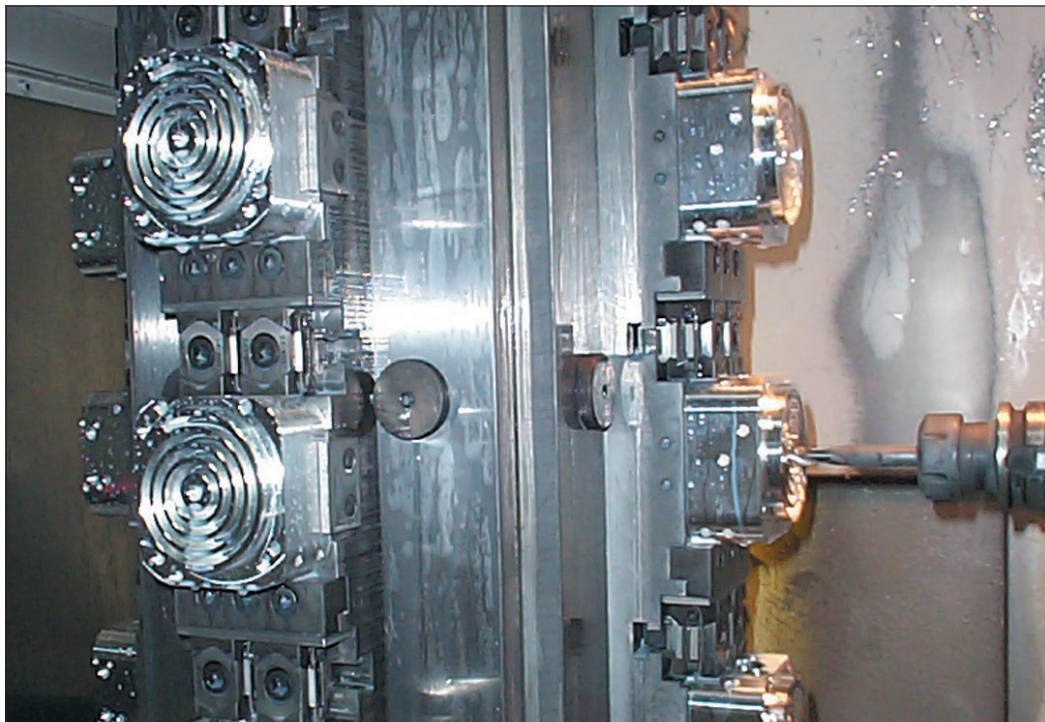


## Clamping & Height Setting

- Compact with small clamping footprint for multi-component clamping.
  - Powerful clamping, up to 150 kN.
  - Low profile with no obstruction of tooling path.
  - Maximum clamping stability.
  - Pulls down and clamps.
- 
- Quick set-up and clamping.
  - Maximise workpieces per fixture.
  - Enables three-dimensional machining of components in a single operation, improving accuracy and quality.

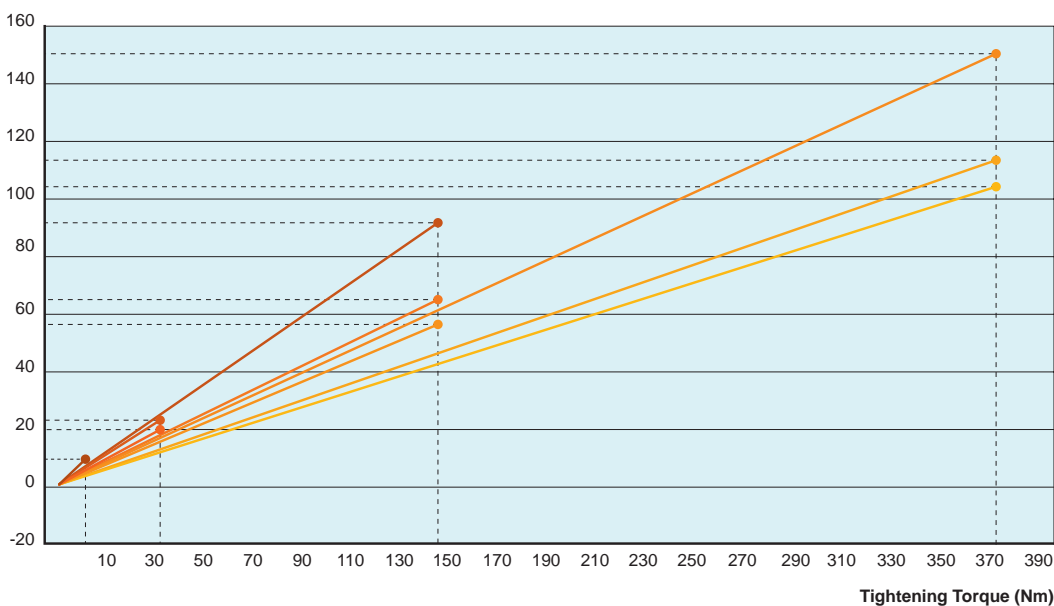
### Features

### Benefits



LOW PROFILE SIDE CLAMPING

Clamping Force (kN)



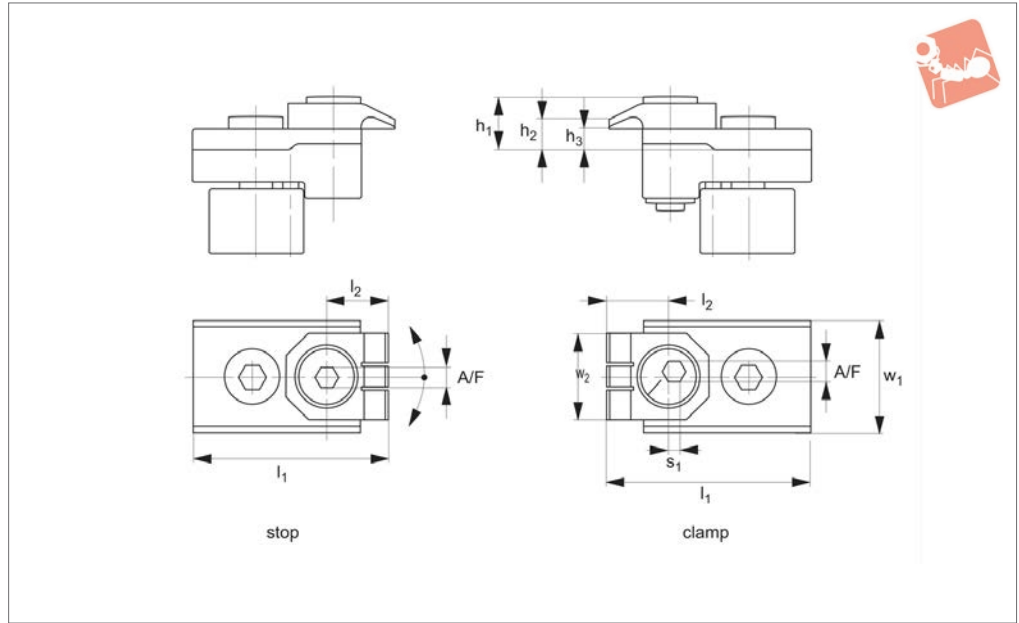
Horizontal Forces of Wixroyd Low Profile Clamps 12430 to 12450

Product no./graph key	Force up to (kN)
12440.W0005	10
12430.W0009	25
12430.W0508	20
12430.W0608	25
12440.W0008	25
12430.W0008	25
12440.W0009	25
12450.W0008	25
12430.W0808	25
12430.W0012	65
12430.W0512	55
12430.W0616	65
12430.W0011	65
12430.W0812	65
12430.W0112	90
12430.W0111	90
12430.W0016	110
12430.W0516	105
12430.W0015	110
12430.W0816	110
12430.W0116	150
12430.W0115	150

ov-W12.111-A-T-eccentric-pull-down-clamping-screw-rnh - Updated -24-10-2022



## 10960



### Material

Clamp: spring steel.  
Block: steel.

### Technical Notes

The clamping point is 5mm above the machine table. Risers can be used to allow

for through machining and drilling.

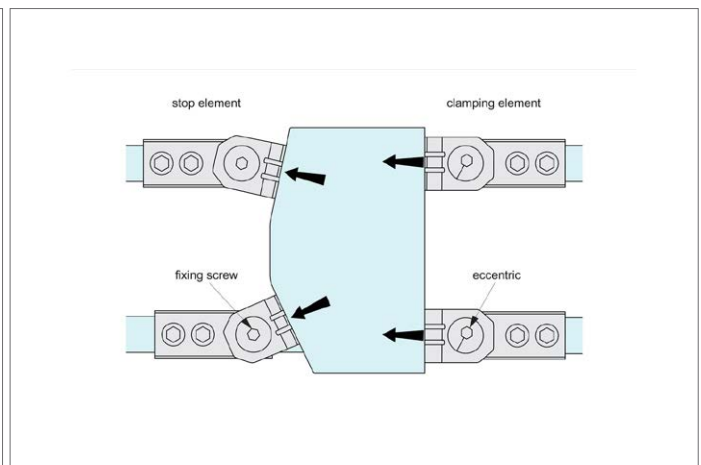
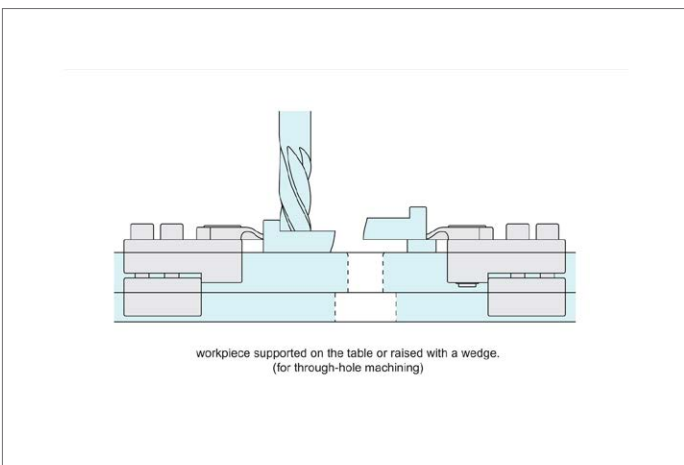
**Supplied as a set: one-piece clamp, one-piece stop.**

### Tips

These low-profile clamps and stops have a holding force of 4000 N. The fingers push

the workpiece down before clamping. The small height of the clamps eliminate any risk of collision between clamp and tooling- ideal for machining small and low profile components.

Order No.	Type	Clamping stroke $s_1$	For T-slot	Clamping height min.	$l_1$	$l_2$	$h_1$	$h_2$	$h_3$	$w_1$	$w_2$	Torque to Nm max.	A/F	Clamping force kN max.	Weight g
<b>10960.W0260</b>	Clamp + Stop	1,2	10	5	46	15	10,5	7,5	5	18	20	9	4	4	140
<b>10960.W0262</b>	Clamp + Stop	1,2	12	5	48	15	10,5	7,5	5	18	20	9	4	4	150
<b>10960.W0264</b>	Clamp + Stop	1,2	14	5	52	15	10,5	7,5	5	22	20	9	4	4	162
<b>10960.W0266</b>	Clamp + Stop	1,2	16	5	48	15	10,5	7,5	5	25	20	9	4	4	178
<b>10960.W0268</b>	Clamp + Stop	1,2	18	5	48	15	10,5	7,5	5	25	20	9	4	4	190

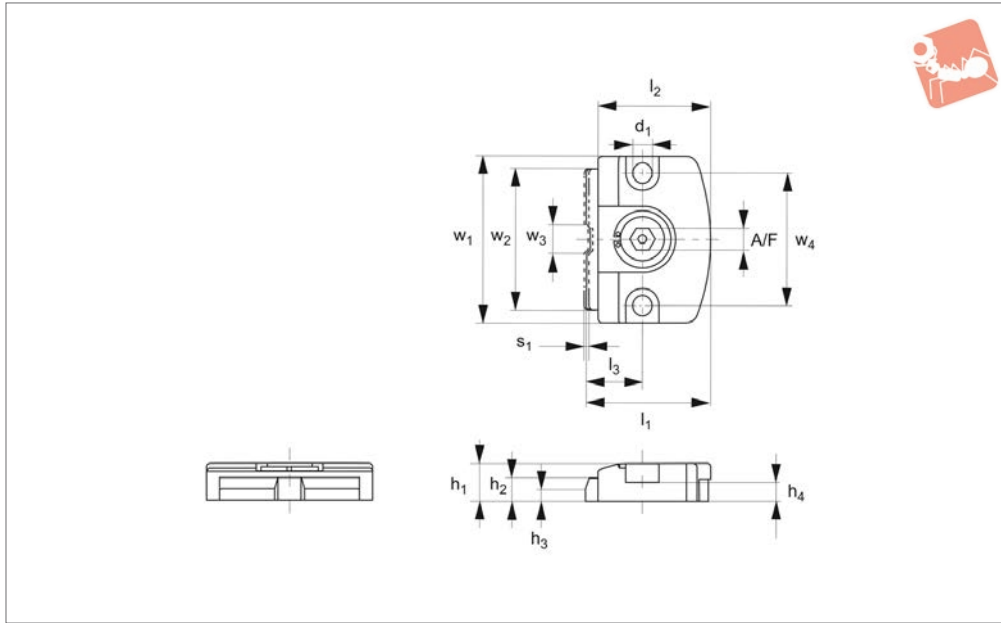




# Low Profile Cam Edge Clamps

hex drive

# Low Profile Side Clamping



**10980.1**

LOW PROFILE SIDE CLAMPING

**Material**

Body: steel (C45), black oxide finish.  
 Jaw/cam: steel (42CrMo), tempered, black oxide finish.

Turning the wrench allows the cam to move the jaw forward for clamping. When the wrench is turned back for unclamping, the loaded spring allows the jaw to return to the original position.

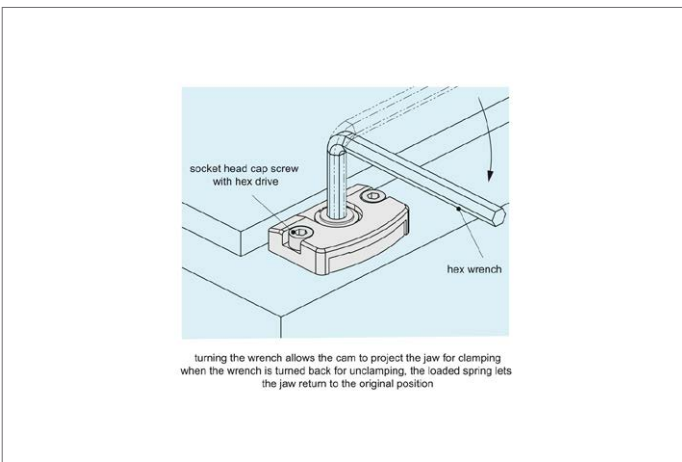
**Tips**

Ensure that mounting surfaces are finished to 6.3a or better, without any scratches or dents.

**Technical Notes**

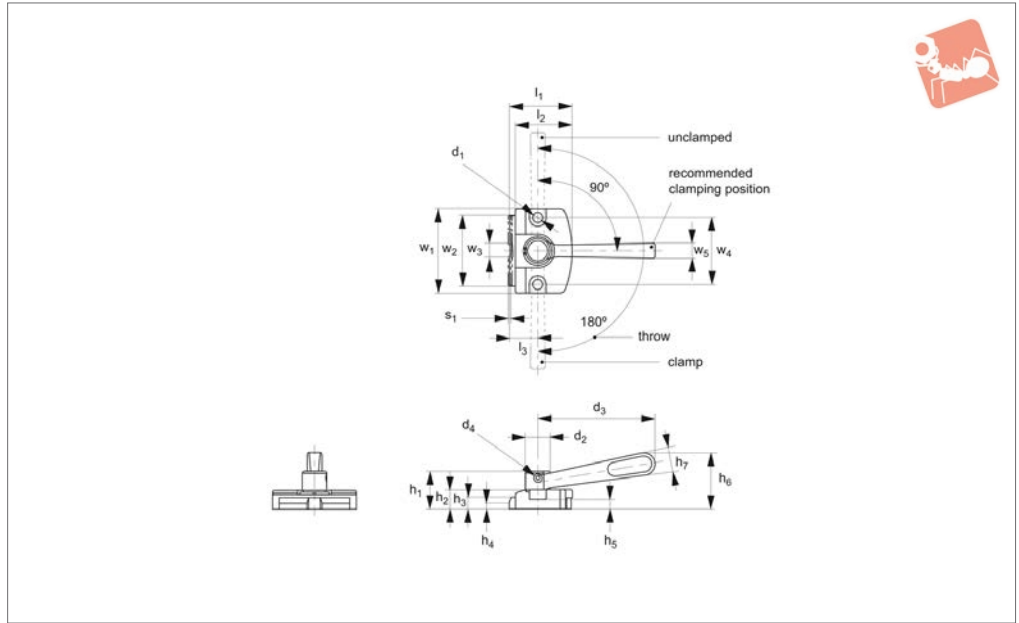
Designed to prevent part lift.

Order No.	Clamping stroke $s_1$	$d_1$	$l_1$	$l_2$	$l_3$	$h_1$	$h_2$	$h_3$	$h_4$	$w_1$	$w_2$	$w_3$	$w_4$	Torque to Nm max.	A/F	Clamping force kN max.	Weight g
10980.W0038	1	5.2	33.5	30.5	15	10	6	3	5	45	38	8	36	10	6	4	85
10980.W0060	2	8.2	50.0	46.0	22	15	9	5	7	70	60	12	55	27	10	6	290





## 10980.2



### Material

Body: steel (C45), black oxide finish.  
 Jaw/cam: steel (42CrMo), tempered, black oxide finish.  
 Handle: steel (C45), tempered, black oxide finish.

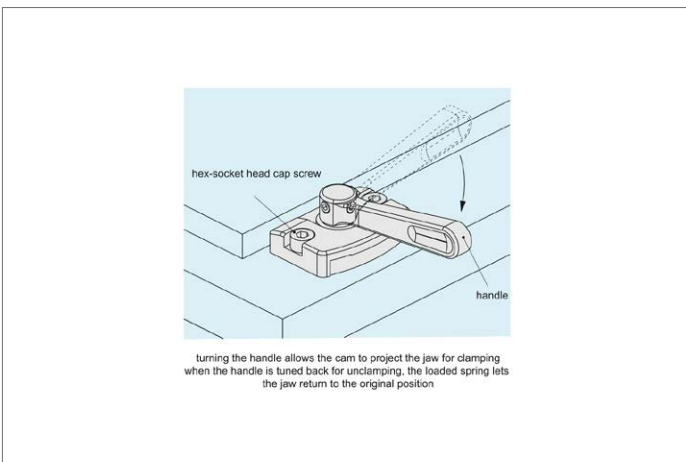
Turning the wrench allows the cam to move the jaw forward for clamping. When the wrench is turned back for unclamping, the loaded spring allows the jaw to return to the original position.

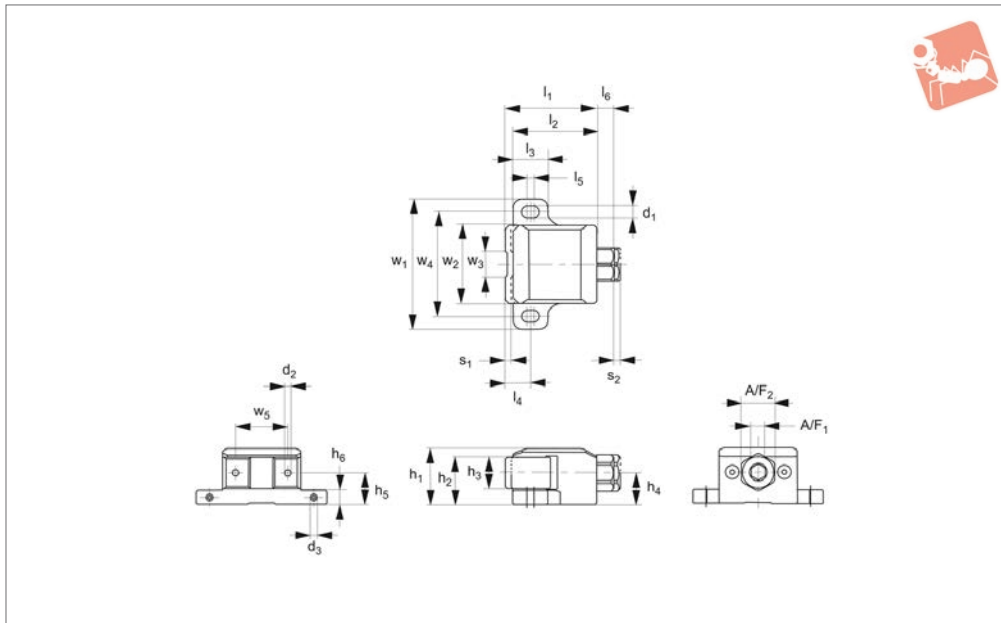
### Tips

Ensure that mounting surfaces are finished to 6.3a or better, without any scratches or

Order No.	Clamping stroke $s_1$	$d_1$	$d_2$	$d_3$	$d_4$	$l_1$	$l_2$	$l_3$	Weight g
10980.W0138	1	5.2	13	63	M 4x0,7-4L	33.5	30.5	15	130
10980.W0160	2	8.2	19	100	M 5x0,8-5L	50.0	46.0	22	440

Order No.	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$h_6$	$h_7$	$w_1$	$w_2$	$w_3$	$w_4$	$w_5$	Torque to Nm max.	Clamping force kN max.
10980.W0138	20	10	6	3	5	30	12	45	38	8	36	8	17	4
10980.W0160	30	15	9	5	7	46	18	70	60	12	55	12	28	6





## 10982.1

LOW PROFILE SIDE CLAMPING

### Material

Body: steel (C45), black oxide finish.  
 Jaw: steel (42CrMo), tempered. Black oxide finish. Precision ground.  
 Shaft: steel (42CrMo), black oxide finish.

long clamping stroke and firm clamping. The precision-ground jaw is perfect for clamping the workpiece on its finished surface. The jaw provides downward force to prevent part lift.

### Tips

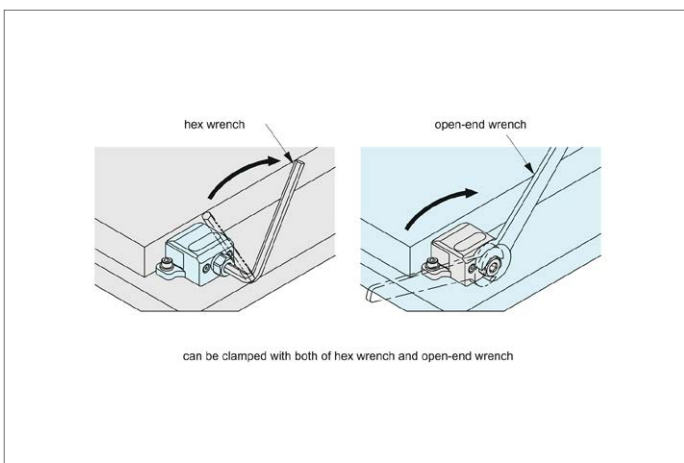
Can be clamped with both hex wrench and spanner.

### Technical Notes

A screw type clamping mechanism allows a

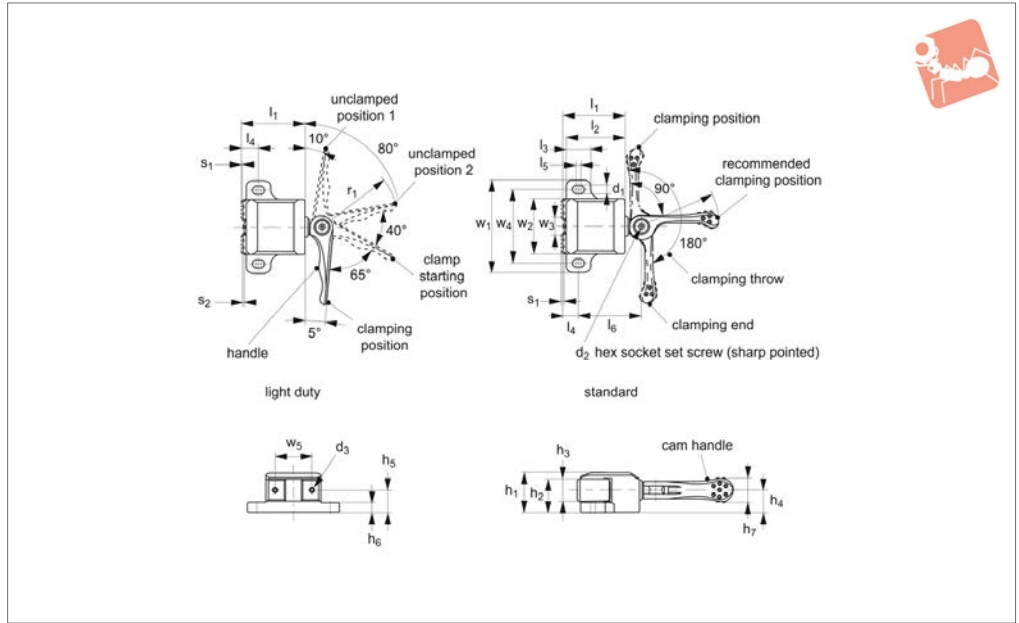
Order No.	Clamping stroke $s_1$	$d_1$	$d_2$	$d_3$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$h_1$	$h_2$	$h_3$	Weight g
10982.W0045	3	6.6	M 4x0,7 Depth 6	M 4x0,7-6L	52	48	20	14	3	10	32	27	18	560
10982.W0060	4	8.6	M 5x0,8 Depth 8	M 5x0,8-8L	69	63	26	19	4	13	40	33	22	1240

Order No.	$h_4$	$h_5$	$h_6$	$w_1$	$w_2$	$w_3$	$w_4$	$w_5$	$s_2$	Torque to Nm max.	$A/F_1$	$A/F_2$	Clamping force kN max.
10982.W0045	18	18	8	75	45	15	60	30	3	25	8	19	9
10982.W0060	22	22	10	100	60	20	80	40	4	50	10	24	14





## 10982.2



LOW PROFILE SIDE CLAMPING

### Material

Body: steel (C45), black oxide finish.  
 Jaw/handle shaft: steel (C45), tempered.  
 Black oxide finish, precision-ground.  
 Handle: steel (42CrMo), tempered. Electroless nickel plated (light-duty type), black

oxide finish (standard type).

### Technical Notes

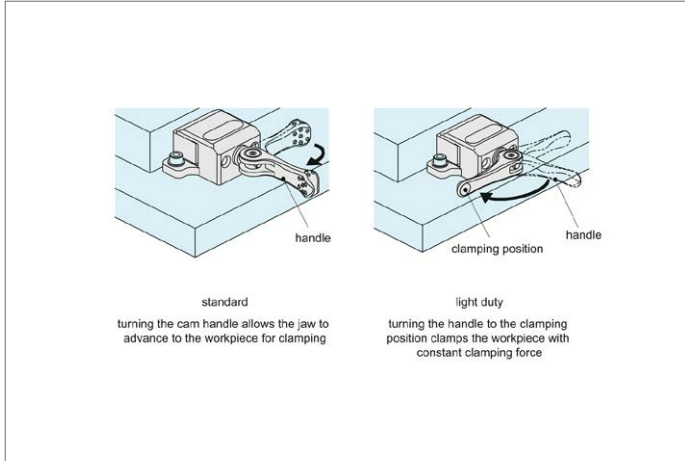
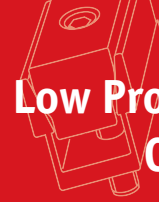
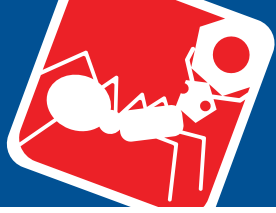
The cam handle allows fast clamping in a single operation. Spring-loaded light duty version distributes constant clamping

force. Standard version allows the adjustment of clamping force depending on operating loads. Precision-ground jaw is perfect for clamping the workpiece on its finished surface. The jaw provides downward force to prevent part lift.

Order No.	Type	Clamping stroke $s_1$	$d_1$	$d_2$	$d_3$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$h_1$	$h_2$	Weight g
10982.W0145	Light Duty	0.3	-	-	-	-	-	-	-	-	-	-	-	600
10982.W0160	Light Duty	0.4	-	-	-	-	-	-	-	-	-	-	-	1320
10982.W0245	Standard	1.6	6.6	M 4x0,7 Depth 6	M 4x0,7-5L	51	48	20	13	3	51.5	32	27	620
10982.W0260	Standard	2.2	8.6	M 4x0,7 Depth 8	M 5x0,8-6L	67	63	25	17	4	67.0	40	33	1360

Order No.	$h_3$	$h_4$	$h_5$	$h_6$	$h_7$	$w_1$	$w_2$	$w_3$	$w_4$	$w_5$	$r_1$	Advance stroke $s_2$	Clamping force kN max.	Operating load N max.
10982.W0145	-	-	-	-	14	-	-	-	-	-	-	0.8	0.6	40
10982.W0160	-	-	-	-	18	-	-	-	-	-	-	0.8	1.2	50
10982.W0245	18	18	18	8	19	75	45	15	60	30	63	-	2.0	150
10982.W0260	22	22	22	10	24	100	60	20	80	40	80	-	3.0	200

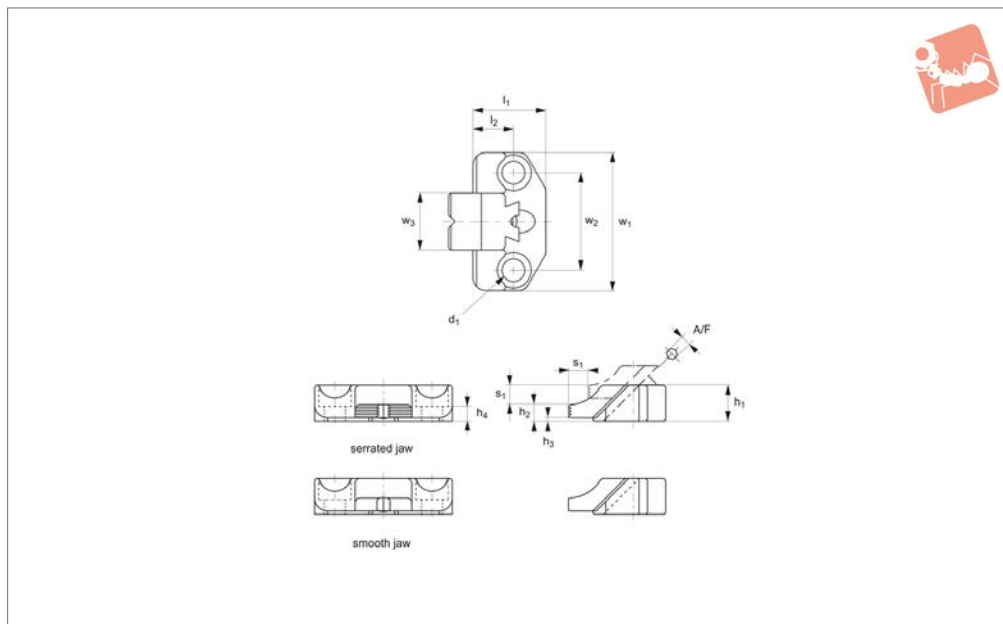




LOW PROFILE SIDE CLAMPING



## 10988

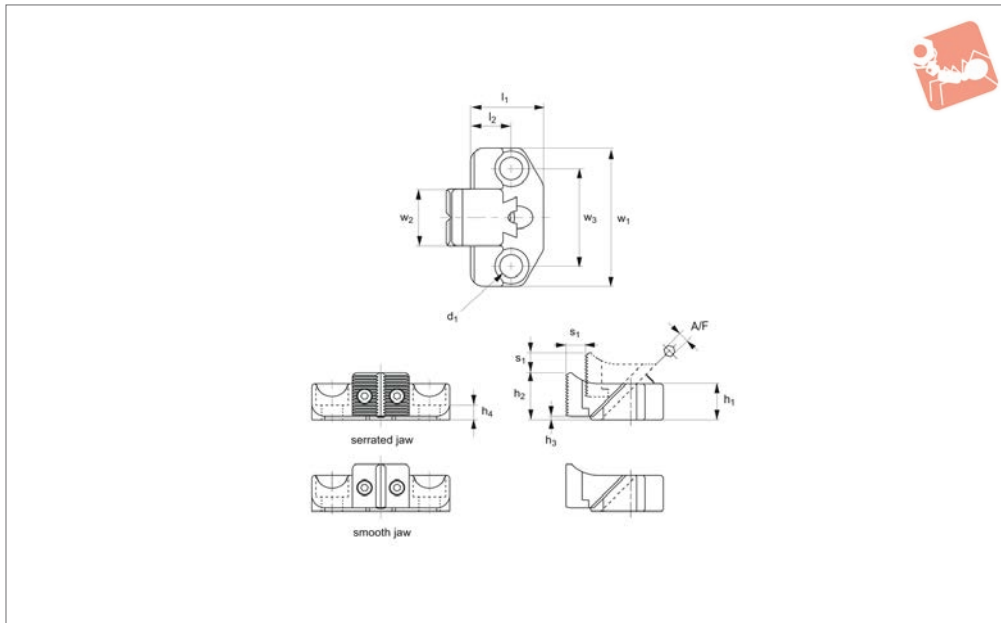


### Material

Body: steel (42CrMo), tempered. Black oxide finish.

Jaw: steel (42CrMo), induction hardened (clamping face). Black oxide finish. Precision ground (smooth jaw).

Order No.	Type	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	Torque to Nm max.	Stroke s <sub>1</sub>	A/F	Clamping force kN max.	Weight g
<a href="#">10988.W0025</a>	Serrated	M 8	39.5	25	16	7.5	1.5	7	65	45	25	8	7	4	4	160
<a href="#">10988.W0035</a>	Serrated	M12	60.0	40	22	10.0	2.0	9	85	60	35	26	12	6	9	450
<a href="#">10988.W0040</a>	Serrated	M16	77.0	50	30	14.0	2.0	13	100	70	40	60	14	8	17	900
<a href="#">10988.W0125</a>	Smooth	M 8	39.5	25	16	7.5	1.5	7	65	45	25	8	7	4	4	160
<a href="#">10988.W0135</a>	Smooth	M12	60.0	40	22	10.0	2.0	9	85	60	35	26	12	6	9	450
<a href="#">10988.W0140</a>	Smooth	M16	77.0	50	30	14.0	2.0	13	100	70	40	60	14	8	17	900



## 10990

LOW PROFILE SIDE CLAMPING

### Material

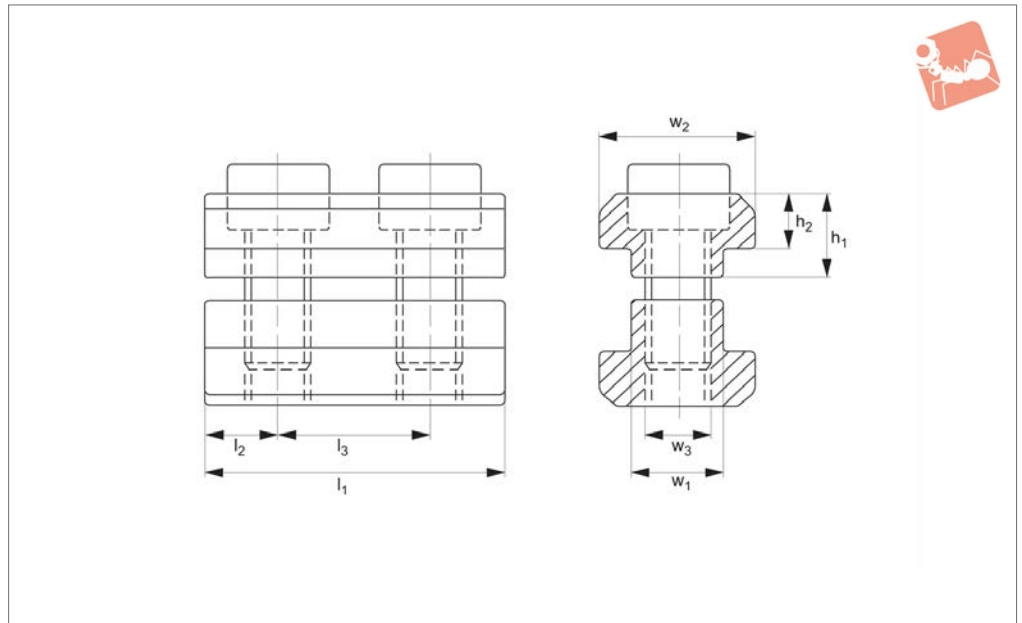
Body: steel (42CrMo), tempered. Black oxide finish.

Jaw: steel (42CrMo), tempered, black oxide finish. Precision ground (smooth jaw).

Order No.	Type	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	s <sub>1</sub>	Torque to Nm max.	A/F	Clamping force kN max.	Weight g
<b>10990.W0025</b>	Serrated	M 8	39.5	25	16	19.5	1.5	7	65	25	45	7	8	4	4	180
<b>10990.W0035</b>	Serrated	M12	60.0	40	22	29.0	2.0	9	85	35	60	12	26	6	9	500
<b>10990.W0040</b>	Serrated	M16	77.0	50	30	38.0	2.0	13	100	40	70	14	60	8	17	1010
<b>10990.W0125</b>	Smooth	M 8	39.5	25	16	19.5	1.5	7	65	25	45	7	8	4	4	180
<b>10990.W0135</b>	Smooth	M12	60.0	40	22	29.0	2.0	9	85	35	60	12	26	6	9	510
<b>10990.W0140</b>	Smooth	M16	77.0	50	30	38.0	2.0	13	100	40	70	14	60	8	17	1020



## 12000



### Material

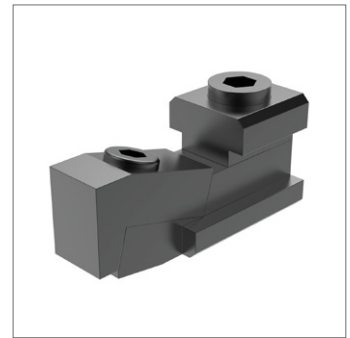
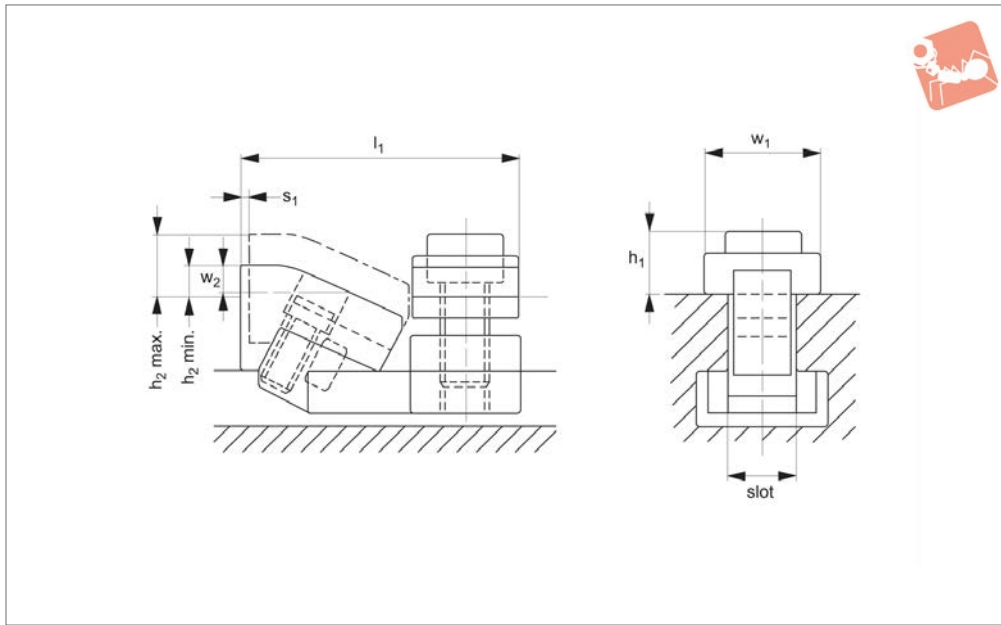
Tempered steel, burnished.

transverse direction. Their low overall height allows use in applications with flat workpieces.

### Technical Notes

The stops can be used in a longitudinal or

Order No.	Slot size	$l_1$	$l_2$	$l_3$	$h_1$	$h_2$	$w_1$	$w_2$	$w_3$	Weight g
12000.W0012	12	36	9.0	18	12	7	11.7	18	M 8	100
12000.W0014	14	44	11.0	22	12	8	13.7	22	M 8	140
12000.W0016	16	50	12.5	25	15	9	15.7	25	M12	240
12000.W0018	18	56	14.0	28	16	10	17.7	28	M12	340
12000.W0020	20	64	16.0	32	19	12	19.7	32	M16	520
12000.W0022	22	70	17.5	35	21	14	21.7	35	M16	720
12000.W0024	24	80	20.0	40	23	16	23.7	40	M20	880
12000.W0028	28	88	22.0	44	24	18	27.7	44	M20	1460



### 12100

LOW PROFILE SIDE CLAMPING

#### Material

Steel, heat-treated, blackened.

The clamps produce a downwards and forwards clamping force.

up to dimension „w<sub>2</sub>“, via grinding.  
**Sold in pairs.**

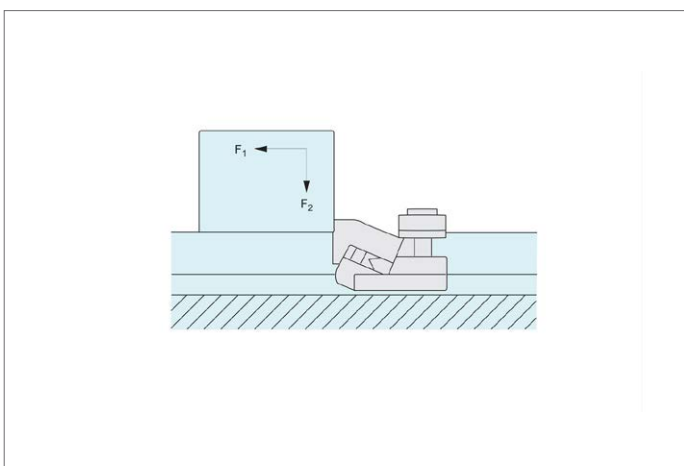
#### Technical Notes

Ideal for clamping low profile plates.

#### Tips

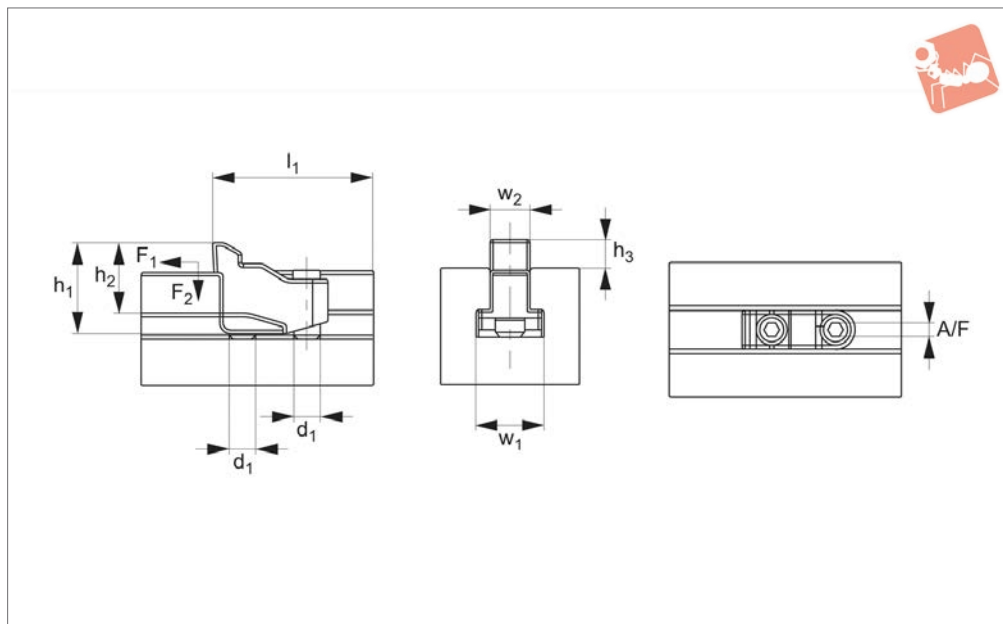
The clamp height can be further reduced by

Order No.	Slot size	F <sub>1</sub> kN	F <sub>2</sub> kN	l <sub>1</sub> max.	h <sub>1</sub>	h <sub>2</sub> min.	h <sub>2</sub> max.	w <sub>1</sub>	w <sub>2</sub>	Stroke s <sub>1</sub>	Weight g
12100.W0012	12	5.0	0.6	52	11	2.5	13.5	18	5	1.8	300
12100.W0014	14	5.5	0.7	55	11	1.5	13.5	22	5	1.8	380
12100.W0016	16	8.0	0.9	68	15	2.5	17.0	25	6	2.5	700
12100.W0018	18	9.0	1.0	71	15	1.5	16.0	28	6	2.5	830
12100.W0022	22	16.0	1.9	89	20	4.5	21.5	35	9	3.0	1740





## 12105



### Material

Clamp: steel (AISI 4140), HRC 33-39, blackened.

Plate: stainless steel (AISI 304, 1.4301).

### Technical Notes

Extremely small and low height cam clamp offering up to 14 kN. clamping force. Ideal for multi-component fixtures.

Clamp is actuated with use of a hexagon key.

To avoid any deformation to workpiece

during clamping, select our clamping plate type.

Also available with an easy to actuate clamping handle model - see parts 12108.W2012 through .W2116.

Spare clamping plates can be ordered separately, see part no. 12108.W5010 through .W5016.

Dimension  $w_5$  is the recommended distance between mounting hole and workpiece.

Note:  $w_5 + 1$  is required distance when

using clamping plates.

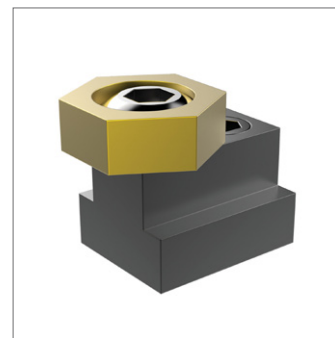
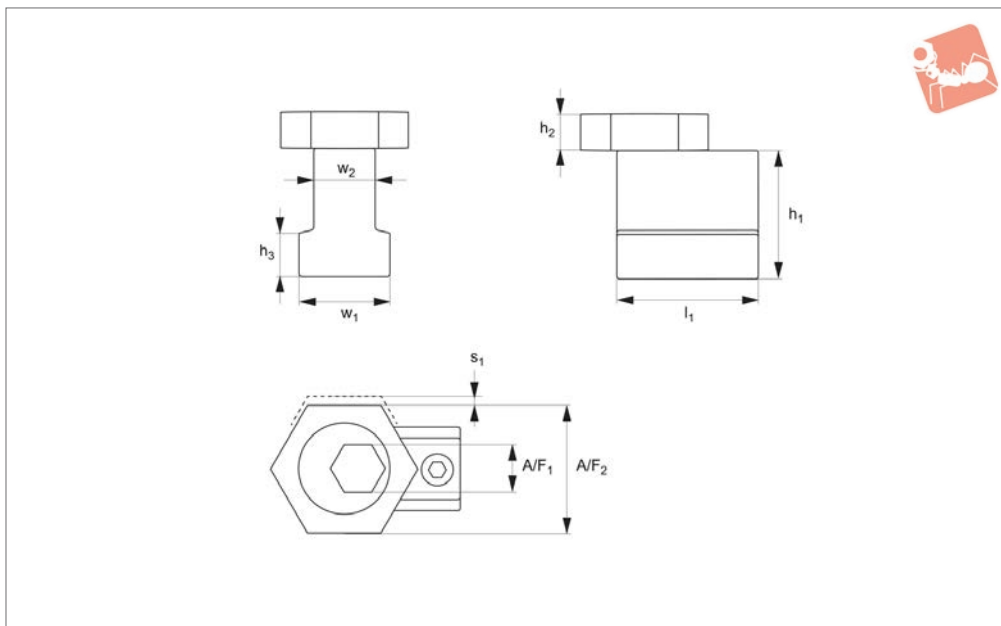
### Tips

To install, drill and tap required hole to dimensions  $d_2$  and space hole to dimension  $w_5$  away from workpiece surface (or  $w_5 + 1$  if using clamping plate).

Fully tighten spiral clamp, then slacken off by one turn. Mount workpiece and then re-tighten clockwise to clamp workpiece.

Place a stop to the right of the workpiece to prevent movement.

Order No.	Slot size	$d_1$	$F_1$ kN	$F_2$ kN	$l_1$	$h_1$	$h_2$	$h_3$	$w_1$	$w_2$	A/F	Weight g
12105.W0012	12	M10	7	3.5	40	31	24	10	22	13.6	5	91
12105.W0016	16	M12	10	5.0	49	39	30	12	28	17.4	6	188
12105.W0020	18	M16	16	8.0	63	50	37	15	35	21.5	8	363



## 12150

LOW PROFILE SIDE CLAMPING

### Material

Clamp: brass.  
Body: steel heat treated.

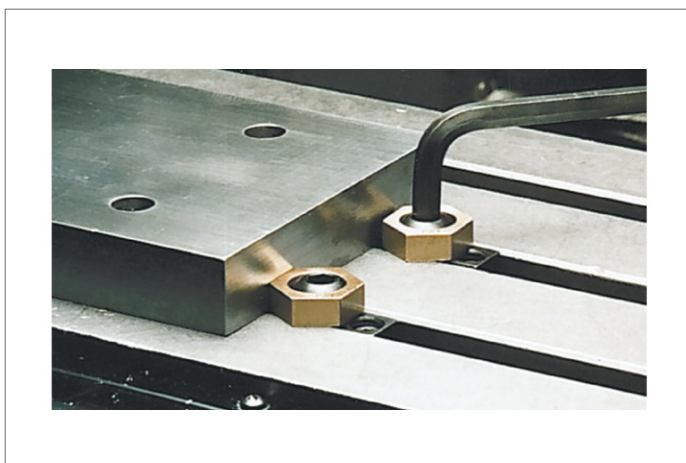
### Tips

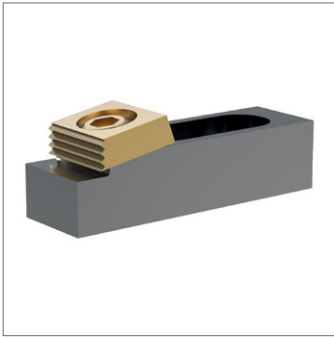
For replacement clamping screws see 12112.  
Hex. key not included.  
**Sold in packs of 2.**

### Technical Notes

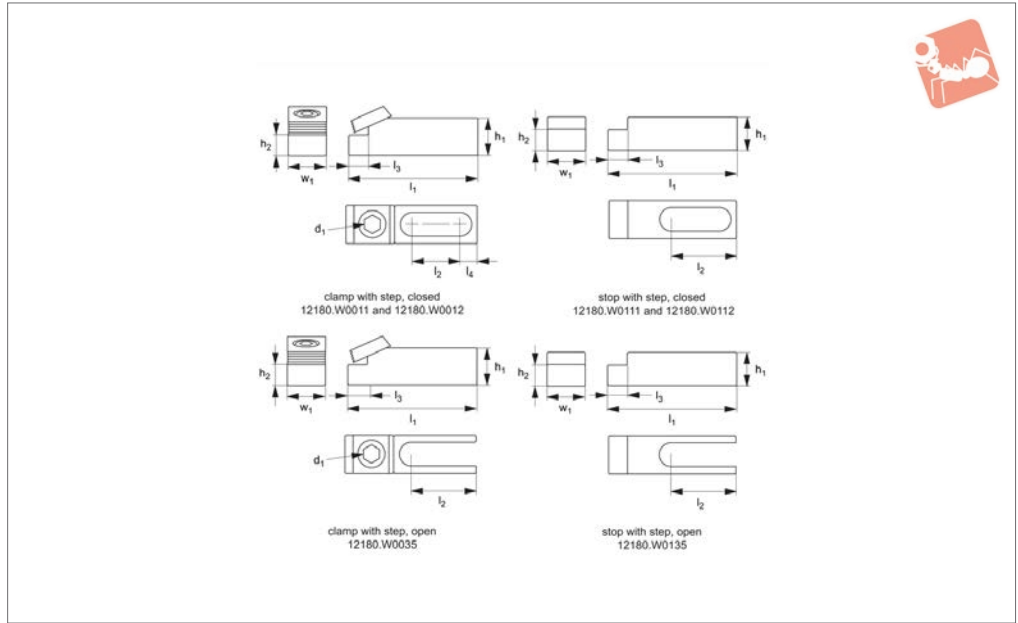
For use in T-slots of machine tables.

Order No.	For T-slot	Cam screw	$l_1$	$h_1$	$h_2$	$h_3$	$w_1$	$w_2$	Torque to Nm max.	Stroke $s_1$	$A/F_1$	$A/F_2$	Holding force kN
<b>12150.W0008</b>	8	M 6x1,00	23.2	9.5	4.8	4.6	12.7	8	8.5	1.01	5	15.9	3.5
<b>12150.W0010</b>	10	M 6x1,00	23.2	14.2	4.8	4.3	14.2	10	8.5	1.01	5	15.9	3.5
<b>12150.W0012</b>	12	M 8x1,25	27.9	15.9	4.8	6.4	15.9	12	11.3	1.01	5	20.6	3.3
<b>12150.W0014</b>	14	M10x1,50	30.5	22.2	6.4	8.5	22.4	14	28.0	1.52	7	20.6	8.9
<b>12150.W0016</b>	16	M12x1,75	30.9	22.2	9.5	9.2	25.4	16	61.0	2.03	8	25.4	13.3
<b>12150.W0018</b>	18	M12x1,75	34.7	28.6	9.5	10.5	28.6	18	61.0	2.03	8	25.4	13.3
<b>12150.W0020</b>	20	M16x2,00	39.2	31.8	12.7	12.6	31.8	20	135.0	2.54	12	30.2	26.7
<b>12150.W0022</b>	22	M16x2,00	44.3	41.3	12.7	12.5	34.9	22	135.0	2.54	12	30.2	26.7





## 12180.1



### Material

Body: steel, hardened.  
Clamp: brass.

threaded holes and in T-slots. Can be mounted vertically or horizontally. Typically used as a clamp and stop pair - please order separately.

### Technical Notes

Enables flexible setups. For use in both

Order No.	Type	Slot type	Mounting screw	d <sub>1</sub> cam screw	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	h <sub>1</sub>	h <sub>2</sub> +0.0 -0.013	w <sub>1</sub>	Torque to Nm max.	Stroke	For use with	Holding force kN
<b>12180.W0011</b>	Clamp - With Step	Closed	M 8	M 8	63,5	21,1	8,0	13,5	15,8	11,68	19,1	28	1,6	12180.W0111	8,9
<b>12180.W0012</b>	Clamp - With Step	Closed	M12	M12	95,3	42,7	9,4	12,7	15,8	12,19	28,5	88	2,0	12180.W0112	17,8
<b>12180.W0035</b>	Clamp - With Step	Open	M16	M16	107,0	46,2	9,4		41,2	35,0	38,1	135	2,5	12180.W0135	26,7
<b>12180.W0111</b>	Stop - With Step	Closed	M 8		63,5	28,2	8,0	13,5	19,1	11,68	19,1			12180.W0011	
<b>12180.W0112</b>	Stop - With Step	Closed	M12		95,3	42,7	9,4	12,7	22,1	12,19	28,5			12180.W0012	
<b>12180.W0135</b>	Stop - With Step	Open	M16		107,0	46,2	9,4		50,8	35,0	38,1			12180.W0035	

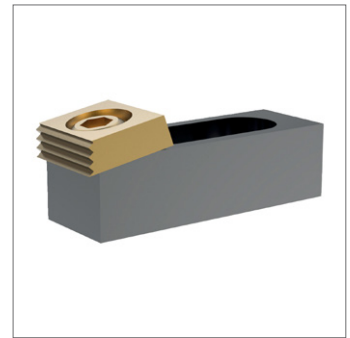
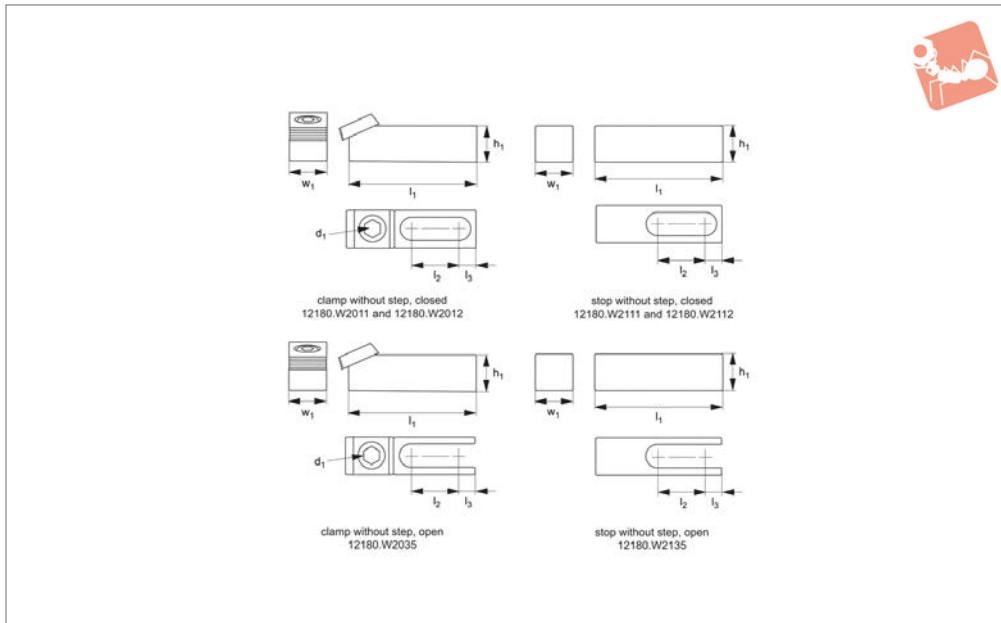






# Multi-Fixture Clamps and Stops without locating step

## Low Profile Side Clamping



**12180.2**

LOW PROFILE SIDE CLAMPING

### Material

Body: steel, hardened.  
Clamp: brass.

threaded holes and in T-slots. Can be mounted vertically or horizontally. Typically used as a clamp and stop pair - please order separately.

### Technical Notes

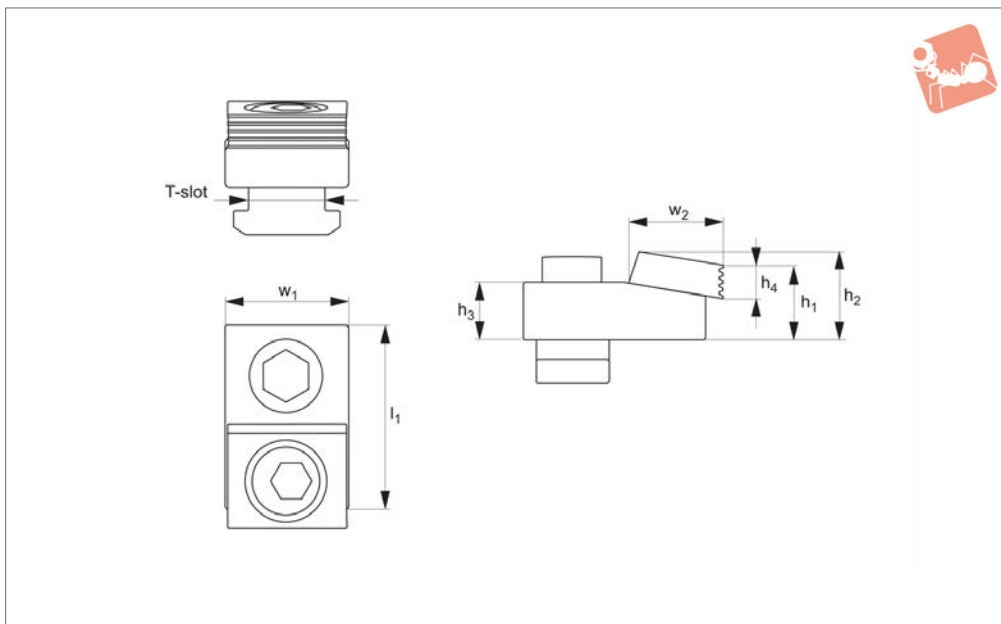
Enables flexible setups. For use in both

Order No.	Type	Slot type	Mounting screw	Cam screw $d_1$	$l_1$	$l_2$	$l_3$	$h_1$	$w_1$	Torque to Stroke Nm max.	For use with	Holding force kN	
<b>12180.W2011</b>	Clamp - w/o Step	Closed	M 8	M 8	54,9	21,1	13,5	15,8	19,1	28	1,6	12180.W2111	8,9
<b>12180.W2012</b>	Clamp - w/o Step	Closed	M12	M12	58,6	42,7	12,7	15,8	28,5	88	2,0	12180.W2112	17,8
<b>12180.W2035</b>	Clamp - w/o Step	Open	M16	M16	96,5	46,2		41,2	38,1	135	2,5	12180.W2135	26,7
<b>12180.W2111</b>	Stop - w/o Step	Closed			55,9	28,2	13,5	19,1	19,1			12180.W2011	
<b>12180.W2112</b>	Stop - w/o Step	Closed			83,5	42,7	12,7	22,1	28,5			12180.W2012	
<b>12180.W2135</b>	Stop - w/o Step	Open			83,8	46,2		50,8	38,1			12180.W2035	





## 12191



### Material

Steel hardened face.

### Technical Notes

Designed to be used in the T-slots of machine tables.

The clamp has both a smooth face (for machined workpieces) and a serrated face (for rougher work).

Provides a positive downhold action whilst maintaining a low profile.

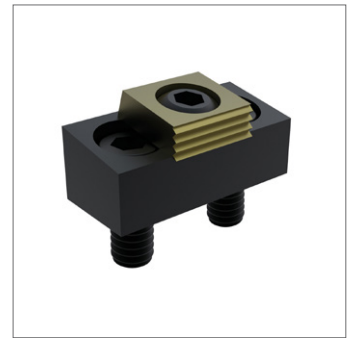
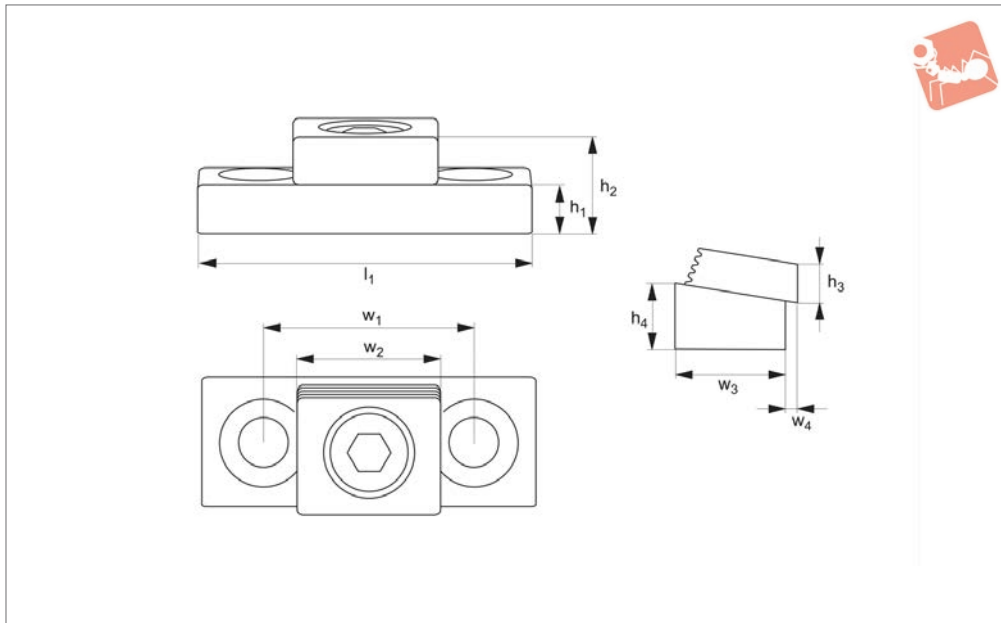
### Tips

Torque screw for T-slot nut to 150 Nm.

\*Not supplied with T-nut or mounting screw.

Order No.	T-slot size	$l_1$	$h_1$	$h_2$	$h_3$	$h_4$	$w_1$	$w_2$	Torque to Nm max.	Stroke $s_1$	Holding force kN
12191.W0000	*	50	25.4	22.2	15.7	9.6	28.5	25.4	88	1.6	17.8
12191.W0014	14	50	25.4	22.2	15.7	9.6	28.5	25.4	88	1.6	17.8
12191.W0016	16	50	25.4	22.2	15.7	9.6	28.5	25.4	88	1.6	17.8
12191.W0018	18	50	25.4	22.2	15.7	9.6	28.5	25.4	88	1.6	17.8





### 12193

LOW PROFILE SIDE CLAMPING

#### Material

Clamping face: steel, hardened.  
Body: mild steel, blackened.

#### Technical Notes

The clamp has both a smooth face (for machined workpieces) and a serrated face (for rougher work).

Provides a positive downhold action whilst maintaining a low profile.

#### Tips

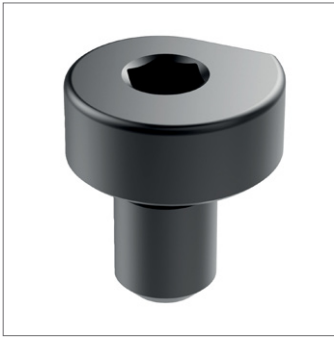
The height of the clamp can be varied by milling the slot deeper into the fixture.

#### Important Notes

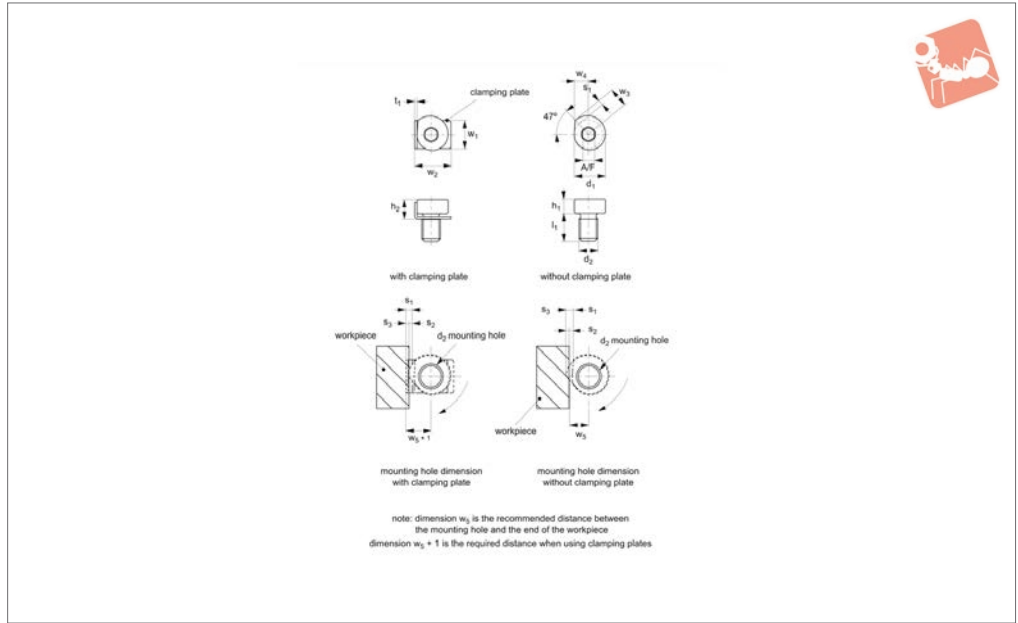
$w_3$  - the distance between the front of the clamp base and the workpiece. Drill and tap the centreline of „ $w_1$ “ for mounting holes.  
For replacement cam screws see part 12112.

Order No.	Clamp screw	Mounting screw	$l_1$	$h_1$	$h_2$	$h_3$	$h_4$	$w_1$	$w_2$	$w_3$	$w_4$	Torque to Nm max.	Stroke	Holding force kN
12193.W0110	M 8	M 8	43.2	12.7	21.5	6.4	15.75	25.4	19.0	19.0	2.3	28	1.6	8.9
12193.W0112	M10	M10	54.0	11.4	24.4	9.7	15.75	33.5	25.4	25.4	2.8	88	2.0	17.8
12193.W0116	M12	M12	75.0	25.2	43.2	12.7	31.75	50.8	38.1	38.1	3.3	135	2.5	26.7





## 12108.1



### Material

Clamp: steel AISI 4140, HRc 33-39, blackened.

Plate: stainless steel (AISI 304, 1.4301).

### Technical Notes

Extremely small and low height cam clamp offering upto 14 kN. clamping force. Ideal for multi-component fixtures.

Clamp is actuated with use of a hexagon key.

To avoid any deformation to work piece during clamping, select our clamping plate type.

Also available with an easy to actuate clamping handle model - see parts 12108.W2012 through .W2116.

Spare clamping plates can be ordered separately, see part no. 12108.W5010 through .W5016.

### Tips

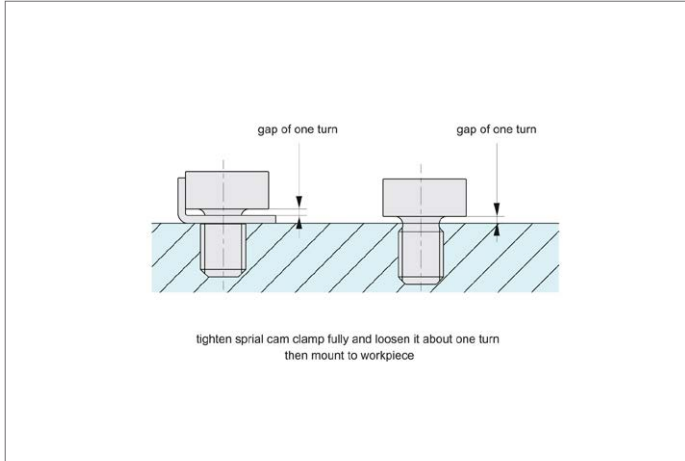
To install, drill and tap required hole to dimension  $d_2$  and space hole to dimension  $w_5$  away from workpiece surface (or  $w_5 + 1$  if using clamping plate).

Fully tighten spiral clamp, then slacken off by one turn. Mount workpiece and then re-tighten clockwise to clamp workpiece.

Place a stop to the right of the workpiece to prevent movement.

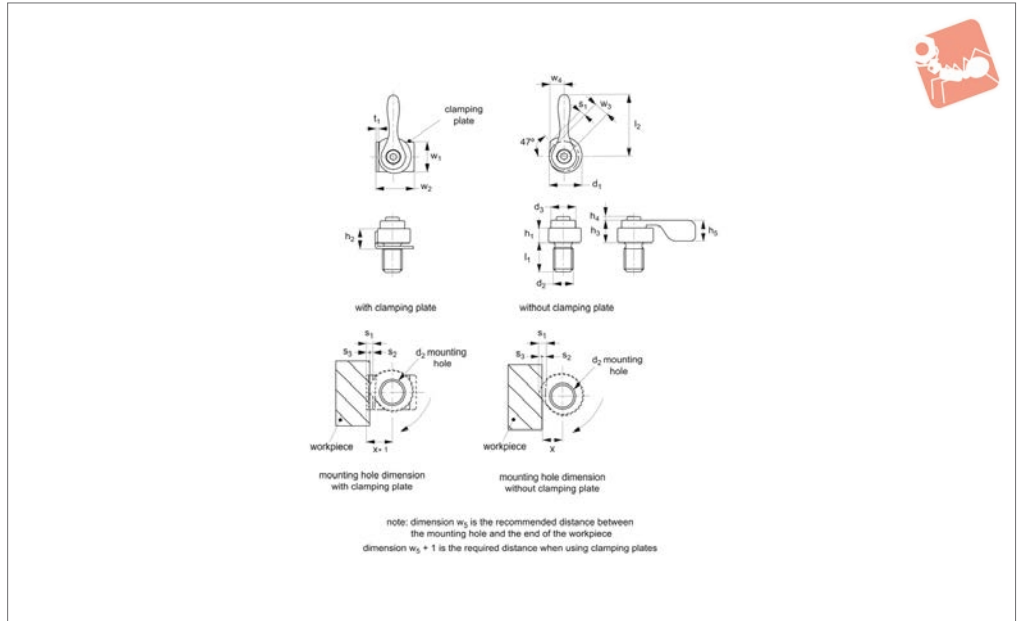
Order No.	Type	$d_1$	$d_2$	$h_1$	$h_2$	$l_1$	$w_1$	$w_2$	Weight g
12108.W0010	W/o Clamping Plate	10	M 6x1,00	5	-	9	-	-	6
12108.W0012	W/o Clamping Plate	12	M 8x1,25	6	-	12	-	-	11
12108.W0014	W/o Clamping Plate	14	M10x1,50	7	-	15	-	-	19
12108.W0016	W/o Clamping Plate	16	M12x1,75	8	-	18	-	-	30
12108.W0110	With Clamping Plate	10	M 6x1,00	5	6	9	10	13.0	7
12108.W0112	With Clamping Plate	12	M 8x1,25	6	7	12	12	15.5	13
12108.W0114	With Clamping Plate	14	M10x1,50	7	8	15	14	18.0	21
12108.W0116	With Clamping Plate	16	M12x1,75	8	9	18	16	20.0	33

Order No.	$w_3$	$w_4$	$w_5$	Stroke $s_1$	Stroke $s_2$	Stroke $s_3$	$t_1$	A/F	Torque to Nm max.	Clamping force kN max.
12108.W0010	6.8	5	5.9	1.8	0.9	0.9	-	4	7.4	2.2
12108.W0012	8.2	6	7.1	2.2	1.1	1.1	-	5	18.0	4.7
12108.W0014	9.5	7	8.3	2.5	1.3	1.2	-	6	35.0	7.9
12108.W0016	10.9	8	9.5	2.9	1.5	1.4	-	8	60.0	14.0
12108.W0110	6.8	5	5.9	1.8	0.9	0.9	1	4	7.4	2.2
12108.W0112	8.2	6	7.1	2.2	1.1	1.1	1	5	18.0	4.7
12108.W0114	9.5	7	8.3	2.5	1.3	1.2	1	6	35.0	7.9
12108.W0116	10.9	8	9.5	2.9	1.5	1.4	1	8	60.0	14.0





## 12108.2



### Material

Clamp: steel (AISI 4140), HRC 33-39, blackened.

Plate: stainless steel (AISI 304, 1.4301).

### Technical Notes

Extremely small and low height cam clamp offering upto 14 kN. clamping force. Ideal for multi-component fixtures.

Clamp is actuated via small handle/lever.

To avoid any deformation to workpiece

during clamping, select our with clamping plate type.

Also available in model actuated with use of hexagon key - see parts 12108.W0010 through .W0116.

Spare clamping plates can be ordered separately, see part no. 12108.W5010 through .W5016.

### Tips

To install, drill and tap required hole to

dimension  $d_2$  and space hole to dimension  $w_5$  away from workpiece surface (or  $w_5 + 1$  if using clamping plate).

Fully tighten spiral clamp, then slacken off by one turn. Mount workpiece and then re-tighten clockwise to clamp workpiece.

Place a stop to the right of the workpiece to prevent movement.

Order No.	Type	$d_1$	$d_2$	$d_3$	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$l_1$	Weight g
12108.W2012	W/o Clamping Plate	12	M 8x1,25	10	6	-	9	1.5	8.5	12	17
12108.W2014	W/o Clamping Plate	14	M10x1,50	12	7	-	11	1.8	10.0	15	30
12108.W2016	W/o Clamping Plate	16	M12x1,75	14	8	-	13	2.2	12.0	18	51
12108.W2112	With Clamping Plate	12	M 8x1,25	10	6	7	9	1.5	8.5	12	19
12108.W2114	With Clamping Plate	14	M10x1,50	12	7	8	11	1.8	10.0	15	32
12108.W2116	With Clamping Plate	16	M12x1,75	14	8	9	13	2.2	12.0	18	54

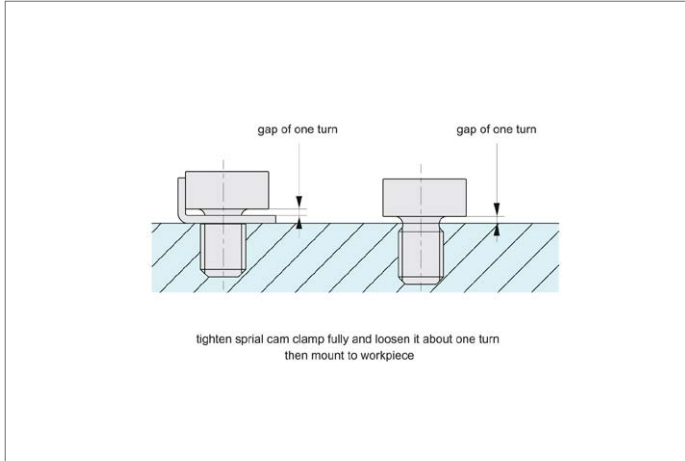
Order No.	$l_2$	$w_1$	$w_2$	$w_3$	$w_4$	$w_5$	Stroke $s_1$	Stroke $s_2$	Stroke $s_3$	$t_1$	Torque to Nm max.	Clamping force kN max.
12108.W2012	25	-	-	8.2	6	7.1	2.2	1.1	1.1	-	18	4.7
12108.W2014	30	-	-	9.5	7	8.3	2.5	1.3	1.2	-	35	7.9
12108.W2016	40	-	-	10.9	8	9.5	2.9	1.5	1.4	-	60	14.0
12108.W2112	25	12	15.5	8.2	6	7.1	2.2	1.1	1.1	1	18	4.7
12108.W2114	30	14	18.0	9.5	7	8.3	2.5	1.3	1.2	1	35	7.9
12108.W2116	40	16	20.0	10.9	8	9.5	2.9	1.5	1.4	1	60	14.0



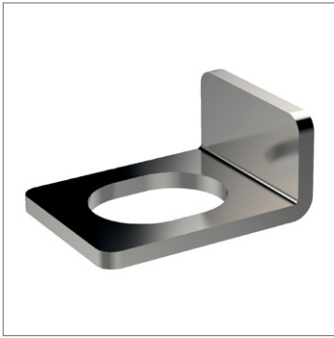
# Spiral Cam Clamps

actuating handle

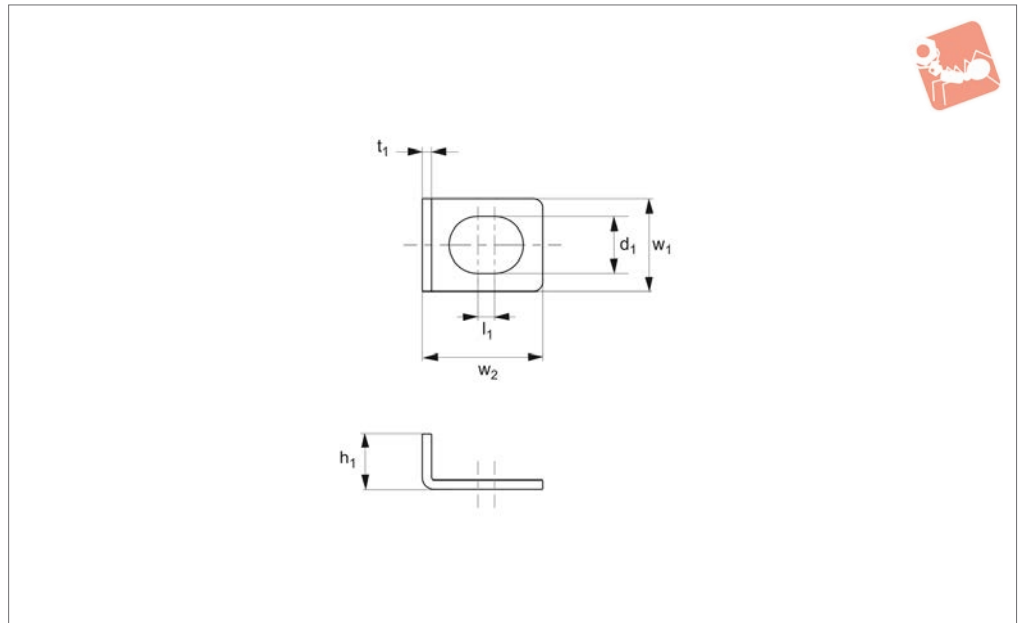
# Low Profile Side Clamping



LOW PROFILE SIDE CLAMPING



## 12108.3



### Material

Stainless steel (AISI 304, 1.4301).

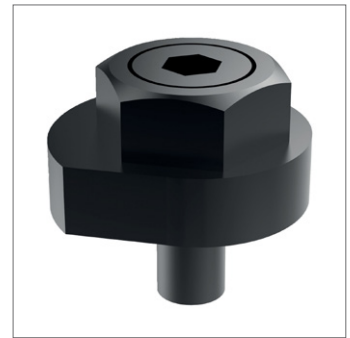
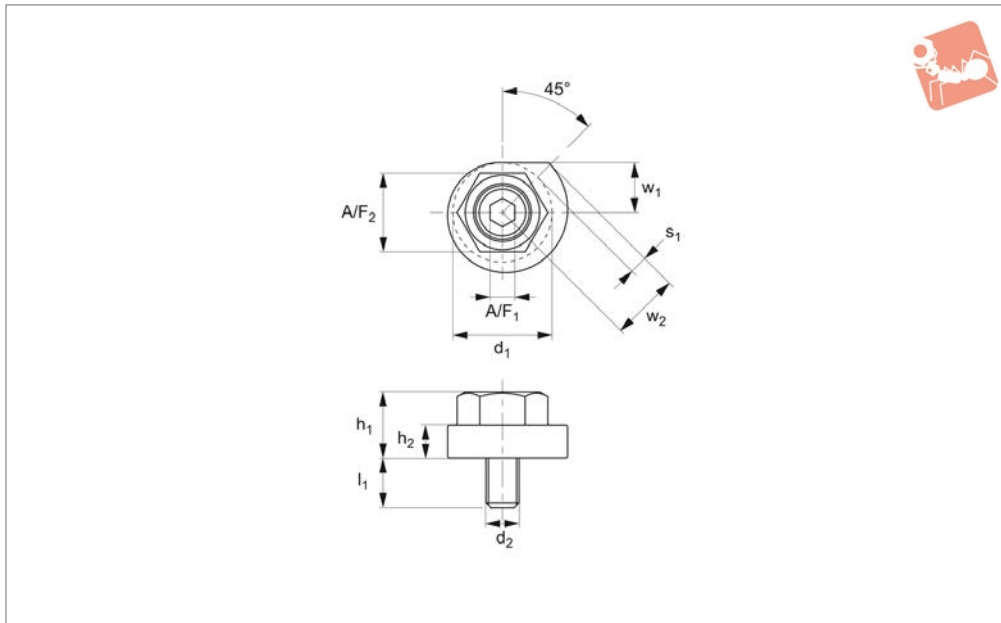
no. 12108. Use plates to avoid any deformation to workpiece during clamping.

### Technical Notes

Clamping plates for spiral cam clamp, part

Order No.	d <sub>1</sub>	For spiral clamp size d <sub>2</sub>	h <sub>1</sub>	l <sub>1</sub>	w <sub>1</sub>	w <sub>2</sub>	t <sub>1</sub>	Weight g
<a href="#">12108.W5010</a>	6.2	10	6	1.8	10	13.0	1	17
<a href="#">12108.W5012</a>	8.2	12	7	2.2	12	15.5	1	17
<a href="#">12108.W5014</a>	10.2	14	8	2.6	14	18.0	1	30
<a href="#">12108.W5016</a>	12.2	16	9	2.9	16	20.0	1	51





## 12109

LOW PROFILE SIDE CLAMPING

### Material

Steel (AISI 4140), HRC 33-39, blackened.

### Technical Notes

Simple and robust cam clamp. Easy to

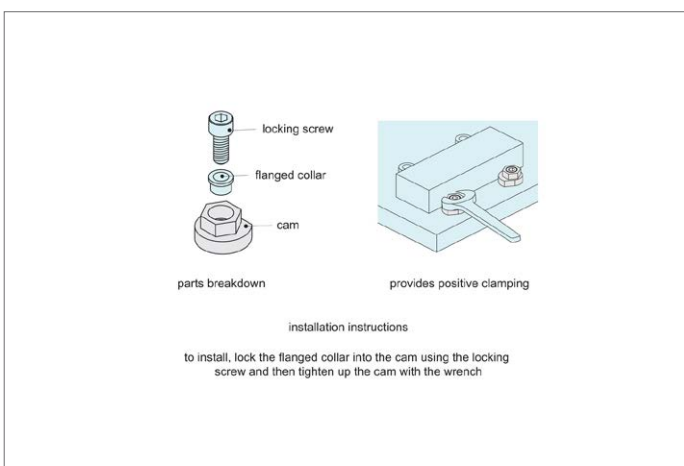
install. Actuated with spanner.

### Tips

To install: insert flanged collar and locking screw into cam body. Tighten locking screw

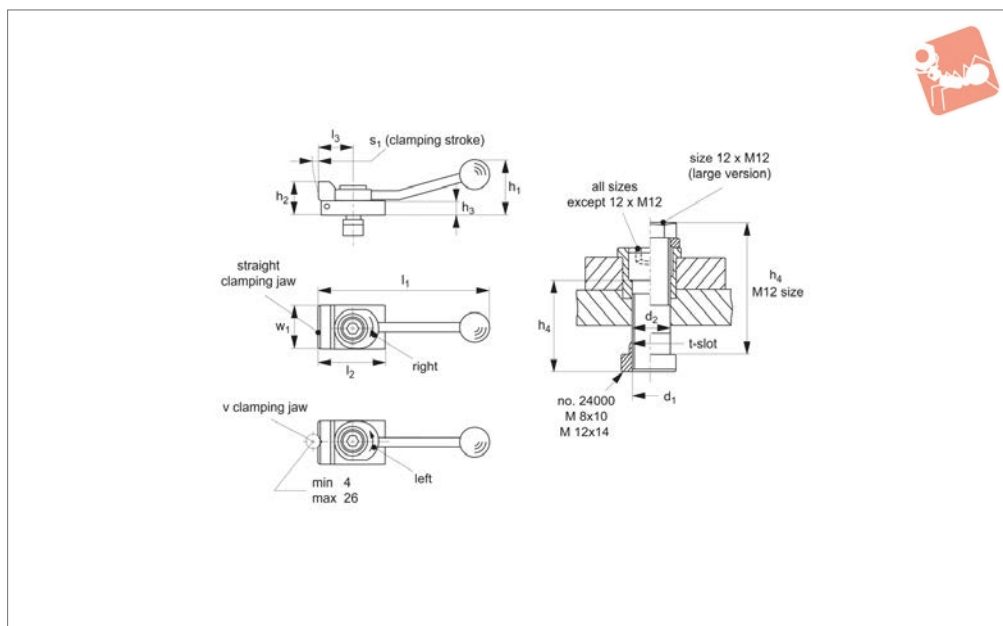
to fix cam in position. Load component, then use spanner to turn and actuate cam to clamp up to workpiece surface.

Order No.	$d_1$	$d_2$	$h_1$	$h_2$	$l_1$	$w_1$	$w_2$	Stroke $s_1$	$A/F_1$	$A/F_2$	Torque to Nm max.	Clamping force kN max.	Weight g
12109.W0024	24	M 8x1,25	16	8	12	12	16.4	4.4	6	19	50	5.2	55
12109.W0030	30	M10x1,50	20	10	15	15	20.5	5.5	8	24	75	8.0	110
12109.W0034	34	M12x1,75	24	12	18	17	23.2	6.2	10	27	90	9.3	185





## 12400



### Material

Steel, case-hardened, blackened.

### Technical Notes

For quick clamping from the side. The clamps give forwards and downwards clamping forces.

### Tips

Can bridge T-slots when used with holding plate no. 12410. The clamps low profile enables full-face machining. Often used in conjunction with cylindrical stops and bedding supports.

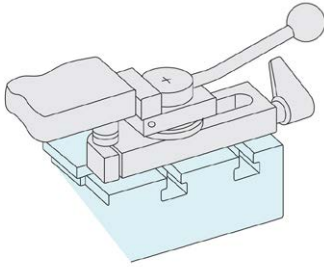
Supplied with standard T-nut. Clamps can be used in other T-slot sizes by selecting T-nuts no. 24000 as required, e.g. M 8x12, M 8x14, M12x16, M12x18.

Order No.	For T-slot	Type	$h_1$	$h_2$	$h_3$	$h_4$	$l_1$	$l_2$	$l_3$	$d_1$	$d_2$	Stroke $s_1$	$w_1$	Clamping force horizontal kN max.	Weight g
12400.W0101	10	Straight Jaw, Clamps Right	20	30	8	40	132	50	32	M 8	8,4	3	32	3,5	262
12400.W0321	12	Straight Jaw, Clamps Right	38	60	16	62	190	72	40	M12	12,5	4	48	7,0	870
12400.W0341	14	Straight Jaw, Clamps Right	38	40	16	62	190	72	40	M12	12,5	4	48	7,0	845
12400.W0105	10	Straight Jaw, Clamps Left	20	30	8	40	132	50	32	M 8	8,4	3	32	3,5	262
12400.W0325	12	Straight Jaw, Clamps Left	38	60	16	62	190	72	40	M12	12,5	4	48	7,0	868
12400.W0345	14	Straight Jaw, Clamps Left	38	40	16	62	190	72	40	M12	12,5	4	48	7,0	847
12400.W0102	10	V-Jaw, Clamps Right	20	30	8	40	132	50	32	M 8	8,4	3	32	3,5	263
12400.W0322	12	V-Jaw, Clamps Right	38	60	16	62	190	72	40	M12	12,5	4	48	7,0	893
12400.W0342	14	V-Jaw, Clamps Right	38	40	16	62	190	72	40	M12	12,5	4	48	7,0	838
12400.W0106	10	V-Jaw, Clamps Left	20	30	8	40	132	50	32	M 8	8,4	3	32	3,5	264
12400.W0326	12	V-Jaw, Clamps Left	38	60	16	62	190	72	40	M12	12,5	4	48	7,0	900
12400.W0346	14	V-Jaw, Clamps Left	38	40	16	62	190	72	40	M12	12,5	4	48	7,0	841



# Downhold Clamps with cranked clamping lever

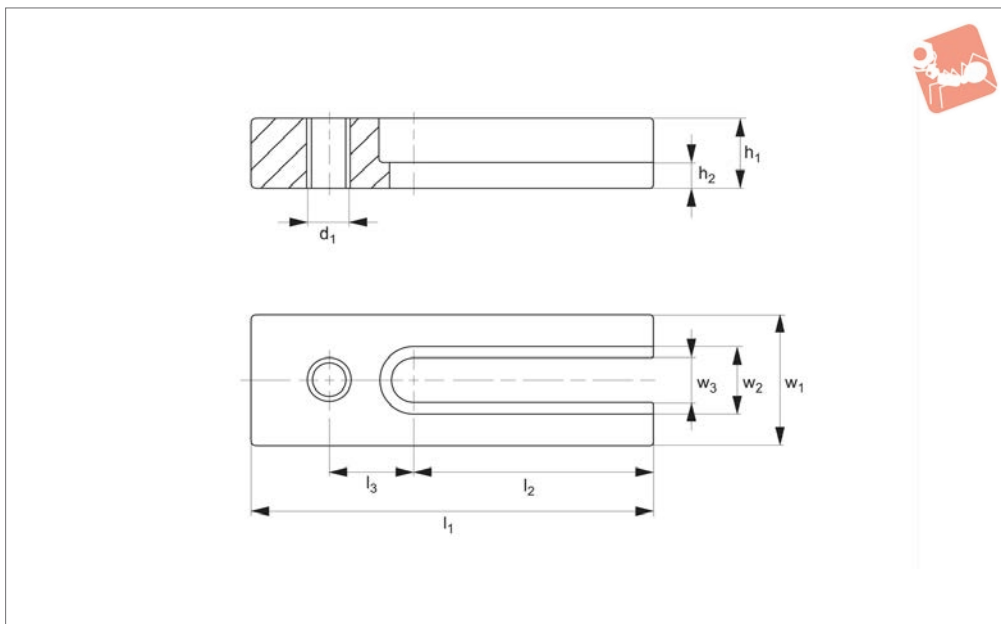
# Low Profile Side Clamping



LOW PROFILE SIDE CLAMPING



## 12410



### Material

Steel, heat treated, blackened.

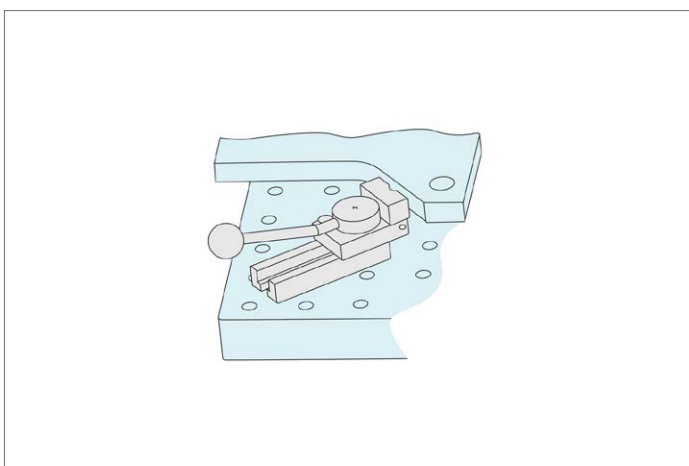
### Technical Notes

For use with clamps nos. 12400 and 12420.

### Tips

Allows downhold clamps to be placed in any desired position, across T-slots etc.

Order No.	$h_1$ -0.4	$h_2$	$l_1$	$l_2$	$l_3$	$d_1$	$w_1$	$w_2$	$w_3$	Weight g
12410.W0730	15	6.5	100	63	20	M 8	30	15	9	246
12410.W0740	20	7.5	120	72	25	M12	40	20	13	515
12410.W0760	30	13.0	140	80	30	M16	60	26	17	1456
12410.W0770	40	18.0	200	110	50	M20	80	32	21	3900
12410.W0780	50	24.0	220	130	55	M24	90	38	25	5850

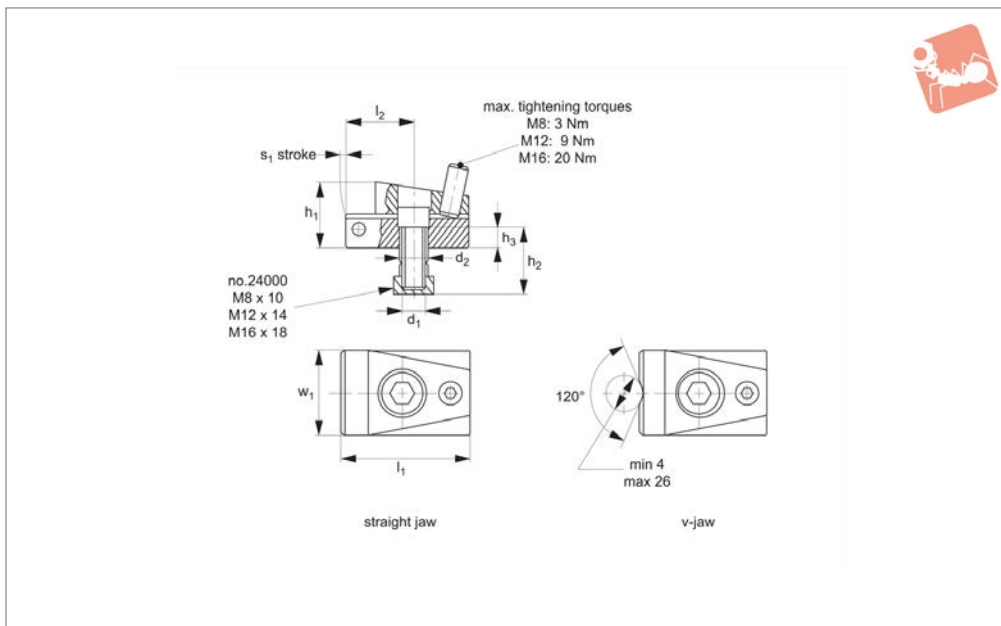




# Downhold Clamps

small footprint

# Low Profile Side Clamping



## 12420

LOW PROFILE SIDE CLAMPING

### Material

Steel, ground, case-hardened and blackened.

### Technical Notes

Actuate by self-aligning screw on top, rear of the clamp. Extremely high clamping

forces, as the clamp pivots forwards and downwards to securely hold the workpiece. **T-nuts no. 24000 allow the clamps to be used in a variety of T slot sizes.**

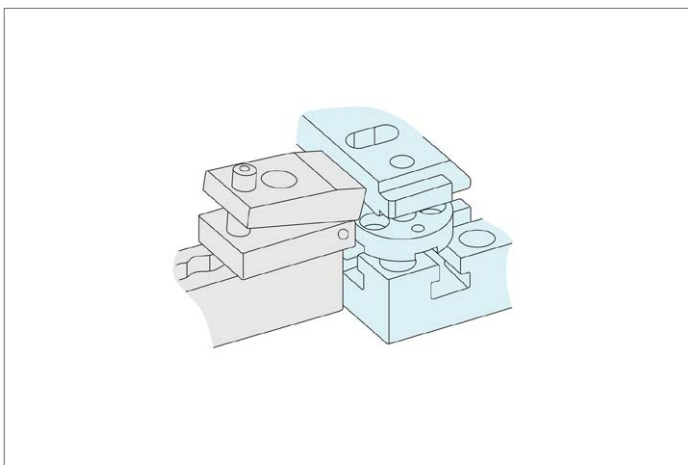
### Tips

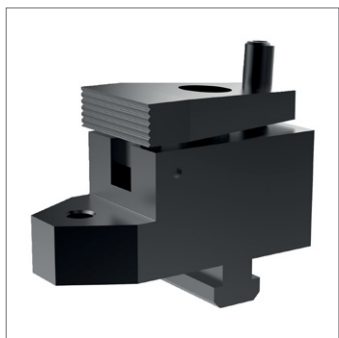
**Do not over torque clamping screw as**

**this can result in the stripping of the thread. For recommended torques - please see table.**

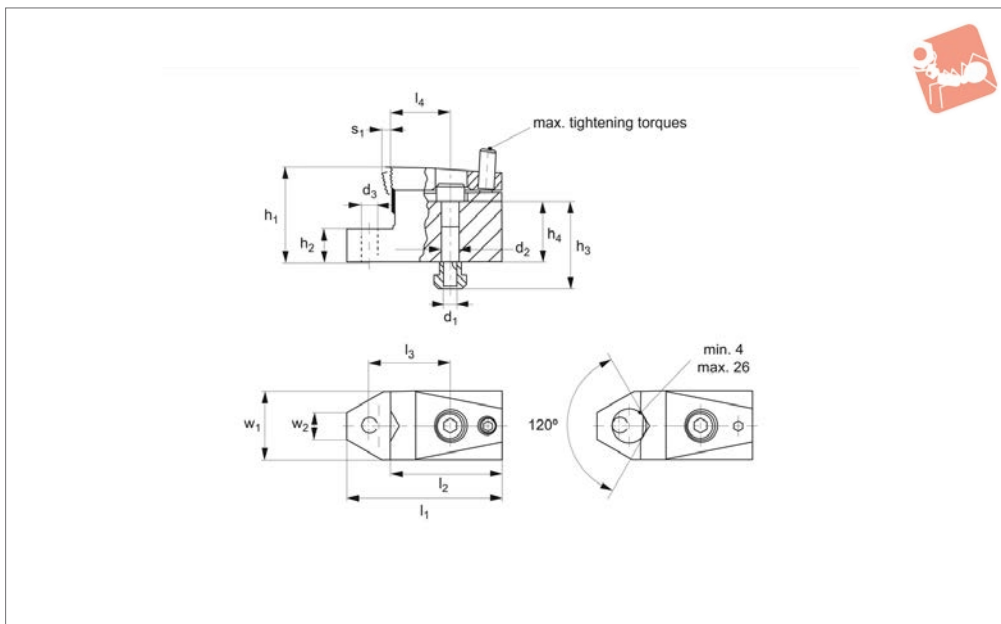
May be used with holding plate no. 12410.

Order No.	For T-slot	Type	$h_1$	$h_2$	$h_3$	$l_1$	$l_2$	$d_1$	$d_2$	Stroke $s_1$	$w_1$	Clamping force horizontal kN max.	Torque to Nm max.	Weight g
<b>12420.W0501</b>	10	Straight Jaw	24	20	8	52	28,0	M 8	8,4	3	32	7,0	3	276
<b>12420.W0521</b>	14	Straight Jaw	37	30	11	72	40,0	M12	12,5	4	48	15,0	9	831
<b>12420.W0541</b>	18	Straight Jaw	47	35	13	86	41,0	M16	16,5	7	68	21,5	20	1749
<b>12420.W0502</b>	10	V-Jaw	24	20	8	52	28,0	M 8	8,4	3	32	7,0	3	266
<b>12420.W0522</b>	14	V-Jaw	37	30	11	72	40,0	M12	12,5	4	48	15,0	9	833
<b>12420.W0542</b>	18	V-Jaw	47	35	13	86	41,0	M16	16,5	7	68	21,5	20	1730





## 12422



### Material

Steel, case-hardened, blackened, ground.

### Technical Notes

By tightening the ball-ended thrust screw the workpiece is simultaneously pressed towards the stops and fixture plate. This

pivoting action enables high horizontal clamping forces. The integrated support has a thread suitable for rest buttons.

### Tips

**Do not over torque clamping screw as this can result in the stripping of the**

**thread. For recommended torques - please see table.**

May be used with holding plate no. 12410.

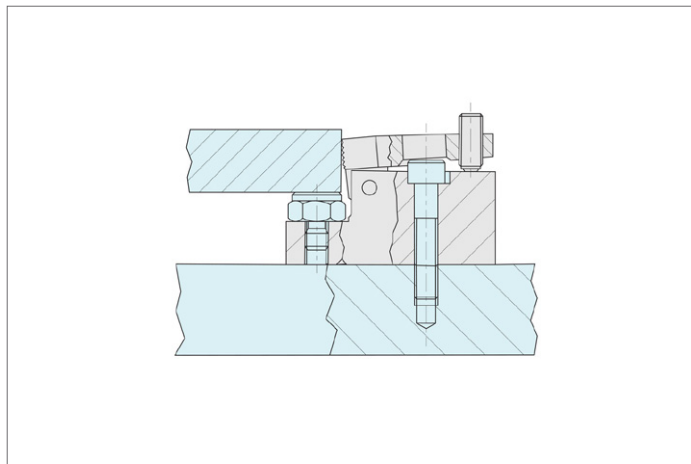
Order No.	For T-slot	Jaw type	$h_1$	$h_2$ $\pm 0.01$	$h_3$ $\approx$	$h_4$ $\approx$	$l_1$	$l_2$	Weight g
12422.W0051	10	Straight Jaw	44	15	40	28	52	28	556
12422.W0061	14	Straight Jaw	53	15	45	27	72	40	1342
12422.W0071	18	Straight Jaw	72	20	60	38	86	41	3149
12422.W0052	10	V- Jaw	44	15	40	28	52	28	553
12422.W0062	14	V- Jaw	53	15	45	27	72	40	1324
12422.W0072	18	V- Jaw	72	20	60	38	86	41	3100

Order No.	$l_3$	$l_4$	$d_1$	$d_2$	$d_3$	Stroke $s_1$	$w_1$	$w_2$	Clamping force horizontal kN max.	Tightening torque Nm max.
12422.W0051	72.5	38	M 8	8.4	M 8	3	32	12.1	7.0	3
12422.W0061	100.0	55	M12	13.0	M12	4	48	16.0	15.0	9
12422.W0071	126.0	63	M16	17.0	M16	7	68	18.8	21.5	20
12422.W0052	72.5	38	M 8	8.4	M 8	3	32	12.1	7.0	3
12422.W0062	100.0	55	M12	13.0	M12	4	48	16.0	15.0	9
12422.W0072	126.0	63	M16	17.0	M16	7	68	18.8	21.5	20



# Downhold Clamps with support ledge

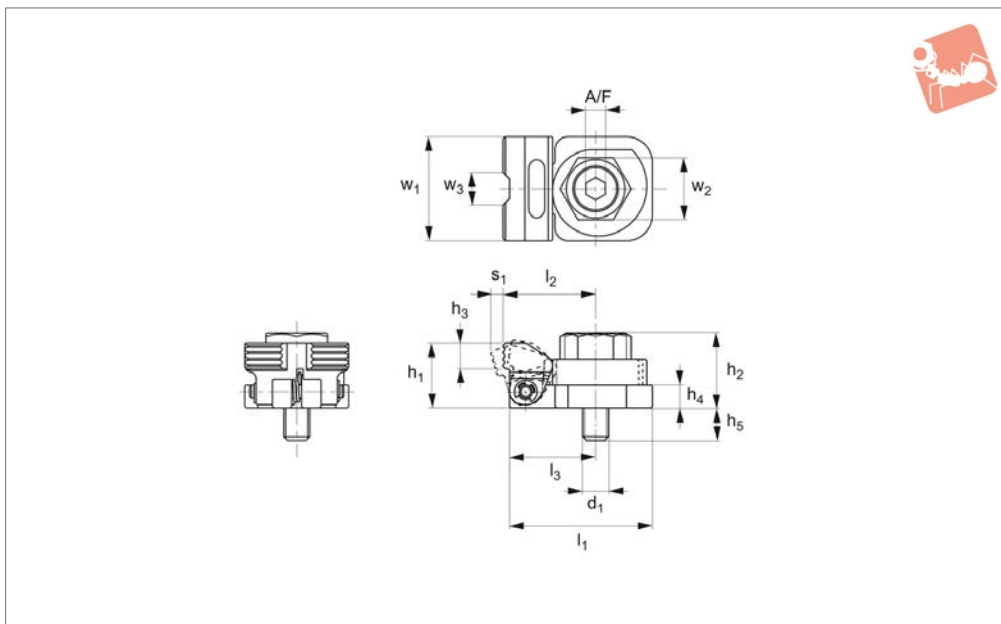
# Low Profile Side Clamping



LOW PROFILE SIDE CLAMPING



## 12426



### Material

Body/jaw: steel (42CrMo), tempered and black oxide finish.

Cam: steel (C45), tempered and black

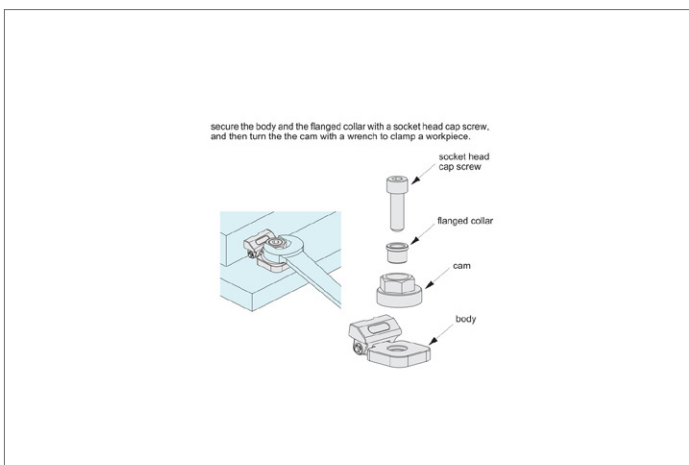
oxide finish.

### Technical Notes

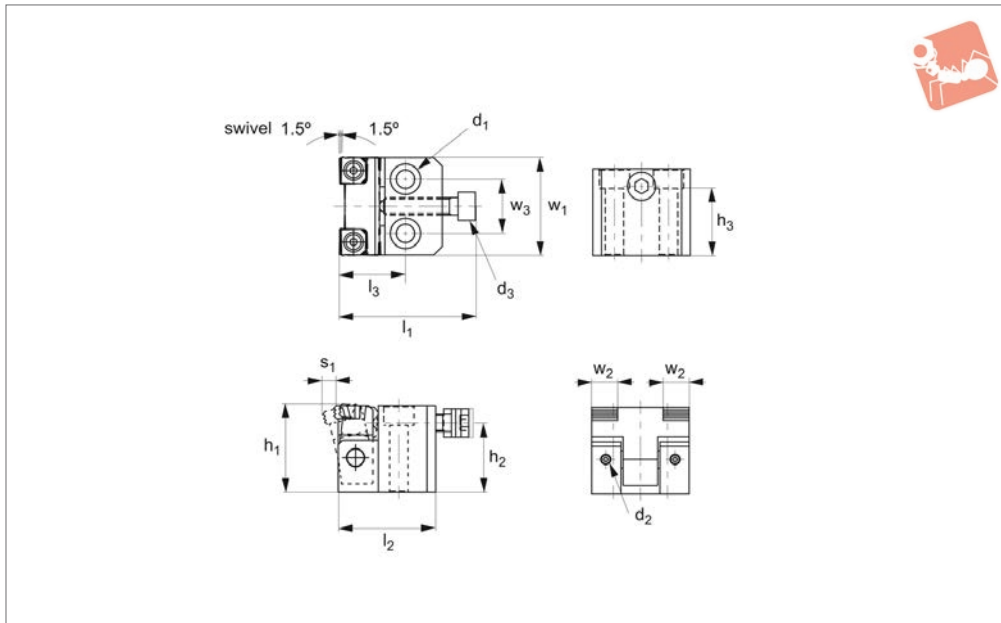
Secure the body and the flanged collar

with a socket head cap screw. Turn the cam with a wrench to clamp a workpiece.

Order No.	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$l_1$	$l_2$	$l_3$	$d_1$	Stroke $s_1$	$w_1$	$w_2$	$w_3$	$A/F$	Clamping force kN max.	Torque to Nm max.	Weight g
12426.W0032	20	23	8	7	15	44	28,5	26,5	M 8x30	4,0	32	19	10	6	3,5	45	160
12426.W0040	25	29	10	9	16	54	35,0	33,0	M10x35	5,0	40	24	12	8	5,5	55	310
12426.W0046	30	35	12	11	17	62	39,5	37,5	M12x40	5,5	46	27	14	10	7,0	70	490







## 12428

LOW PROFILE SIDE CLAMPING

### Material

Body: steel (C45), black oxide finish.  
 Arm: steel (C45), tempered and black oxide finish.  
 Jaw: steel (SKH51), tempered and black oxide finish.

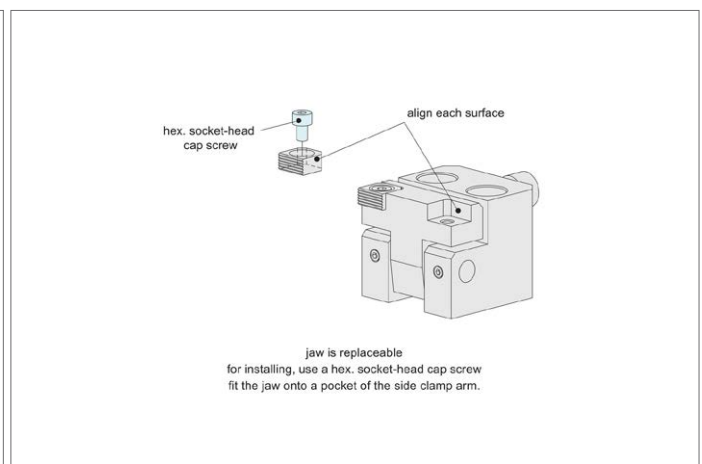
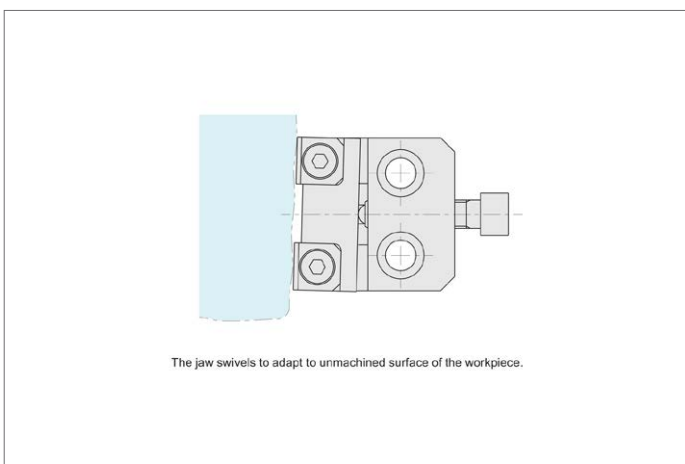
### Technical Notes

The jaw swivels to align to an unmachined surface of the workpiece. The jaw is replaceable.  
 For mounting, use a cap screw to suit  $d_1$

### Tips

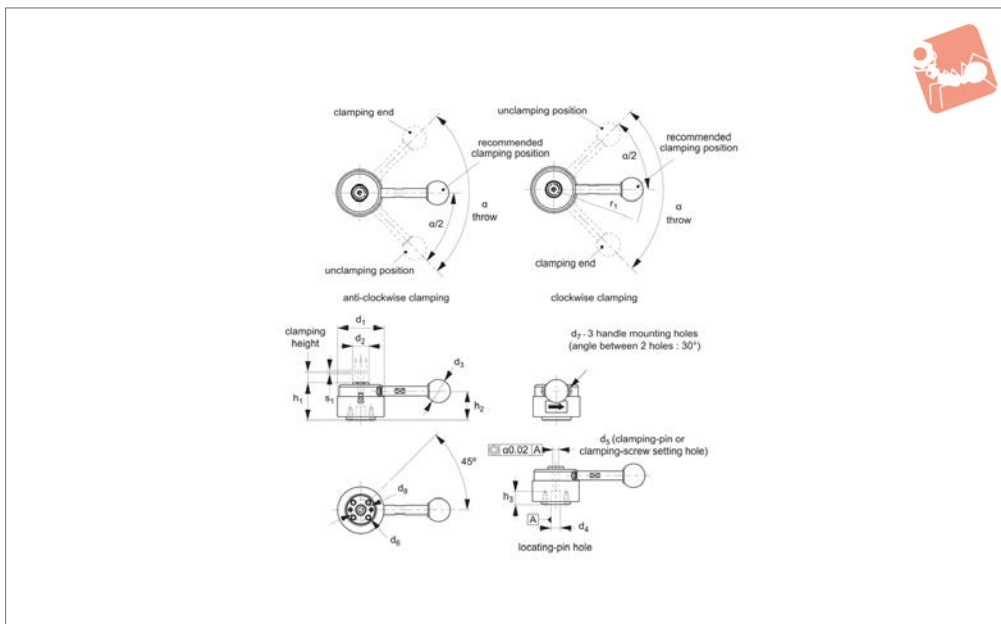
For replacement jaws, see part nos. 35520.W0303, 35520.W0306 and 35520.W0310.

Order No.	$h_1$	$h_2$	$h_3$	$l_1$	$l_2$	$l_3$	$d_1$	$d_2$	$d_3$	Stroke $s_1$	$w_1$	$w_2$	$w_3$	Clamping force kN max.	Torque to Nm max.	Weight g
12428.W0012	40	32	31	62.5	45	30	M 8	M 4x4	M 8x35	5.3	45	12	25	15	25	0.6
12428.W0016	50	40	39	74.0	55	40	M10	M 4x4	M10x40	7.1	55	16	30	27	50	1.0
12428.W0020	60	48	47	91.0	65	45	M12	M 5x5	M12x50	8.0	65	20	35	38	90	1.7





## 12620.1



### Material

Body: steel (42CrMo), quenched and tempered, black oxide finish.

Handle shank: steel (C43), black oxide finish.

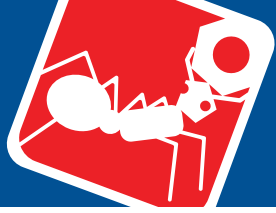
Ball knob: ABS resin, black.

Order No.	Type	$s_1$	$h_1$ $\pm 0.01$	$h_2$	$h_3$	$d_1$	$d_2$	$d_3$	$d_4$ tol. G6	$d_5$ tol. H7	Weight g
12620.W0005	Clockwise	1.5	32	24.5	10	40	13.5	20	8	5	245
12620.W0105	Anti Clockwise	1.5	32	24.5	10	40	13.5	20	8	5	245
12620.W0008	Clockwise	2.0	40	30.7	13	50	18	25	12	8	470
12620.W0108	Anti Clockwise	2.0	40	30.7	13	50	18	25	12	8	470

Order No.	$d_6$	$d_7$	$d_8$	$r_1$	$\alpha$	Recommended workpiece thickness tolerance	Clamping mechanism	Handle load N max.	Clamping force kN max.
12620.W0005	M4x8	M5x0,8	18	76.5	90°	$\pm 0,3$	Spiral Cam, 4°	150	0.9
12620.W0105	M4x8	M5x0,8	18	76.5	90°	$\pm 0,3$	Spiral Cam, 4°	150	0.9
12620.W0008	M6x9	M6x1	25	111.5	110°	$\pm 0,5$	Spiral Cam, 4°	200	2.5
12620.W0108	M6x9	M6x1	25	111.5	110°	$\pm 0,5$	Spiral Cam, 4°	200	2.5

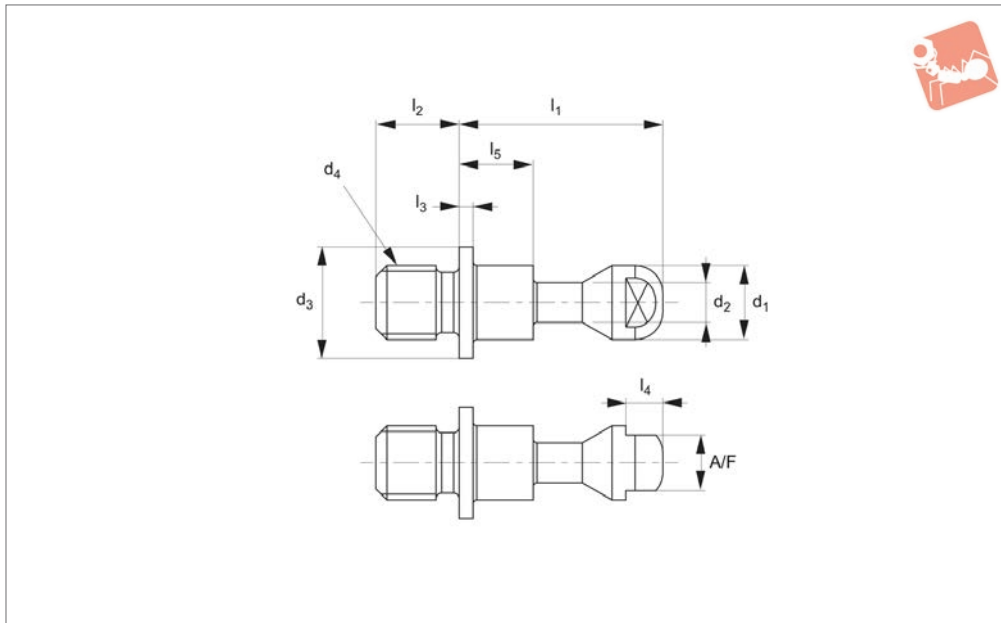
type	allowable force to workpiece bottom
12620.W0005 - W0105	max. 2kN
12620.W0008 - W0108	max. 5.5kN

ensure that a force more than indicated in the table above is not applied to the underside of the workpiece



# Clamping Screws for pull clamps

## Low Profile Side Clamping



**12620.2**

LOW PROFILE SIDE CLAMPING

### Material

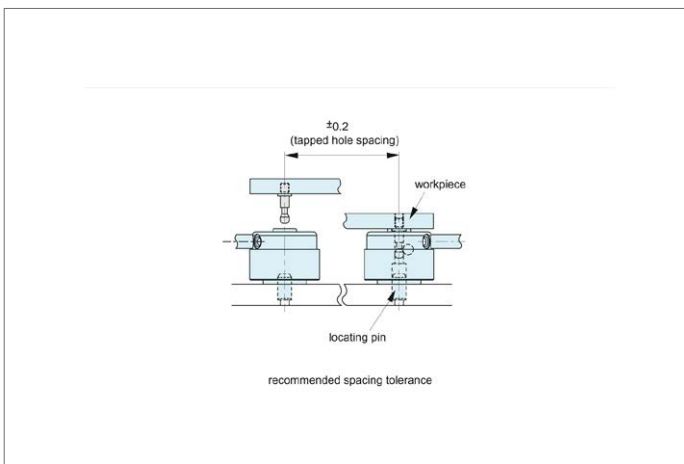
Steel (35CrMo), tempered and black oxide finish.

### Technical Notes

Used with Pull clamp 12620.W0005- . W0108.

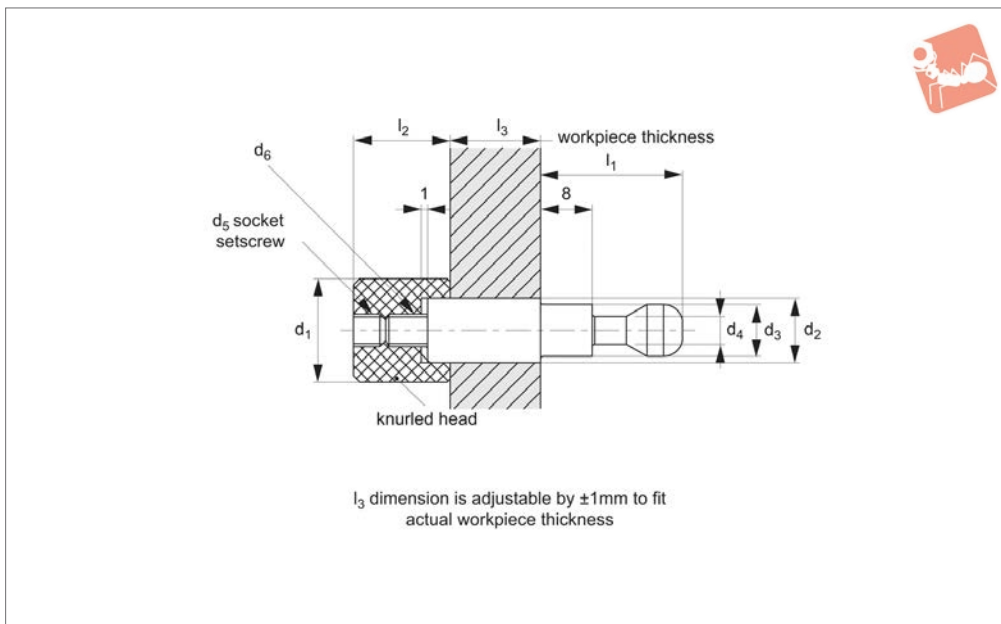
Recommended spacing tolerance between clamping screws  $\pm 0,2$ .

Order No.	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	A/F	Weight g
<b>12620.W0351</b>	5	3.0	8	M 5x0,8	17	6	1.2	2.5	4	3
<b>12620.W0352</b>	5	3.0	8	M 6x1	17	7	1.2	2.5	4	4
<b>12620.W0381</b>	8	4.3	12	M 8x1,25	22	9	1.5	4.0	6	10
<b>12620.W0382</b>	8	4.3	12	M10x1,5	22	11	1.5	4.0	6	13





## 12620.3



### Material

Shank: steel (35CrMo), induction hardened (taper seat), precision ground.  
 Head: steel (C45), tempered and black oxide finish.

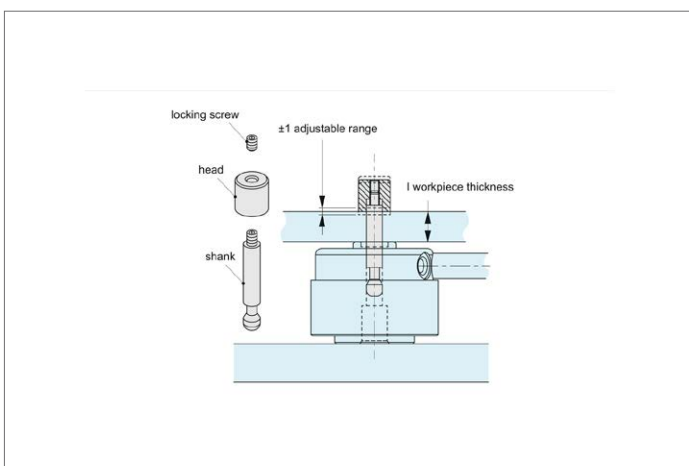
### Technical Notes

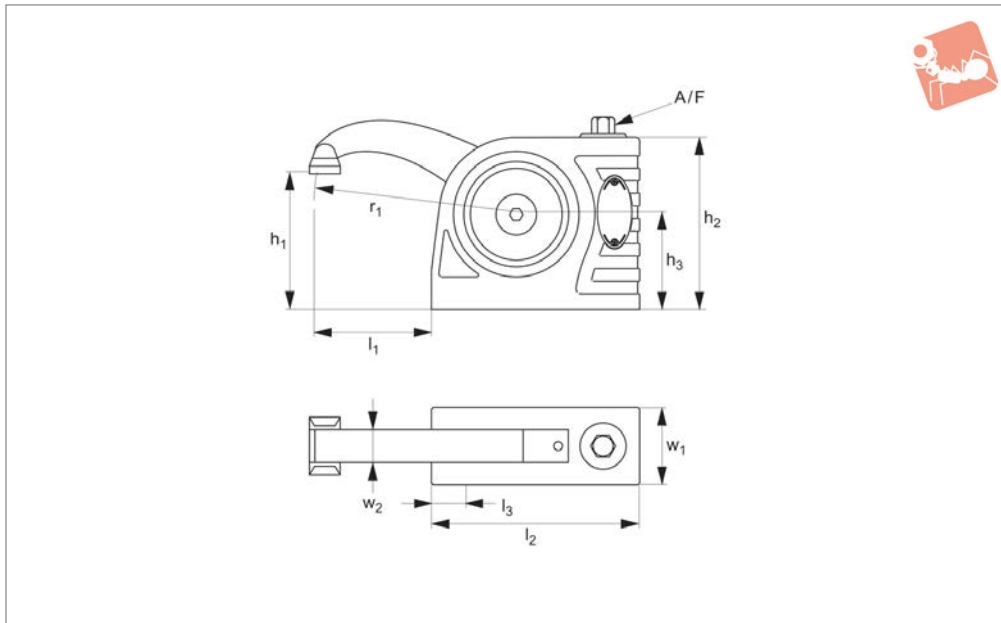
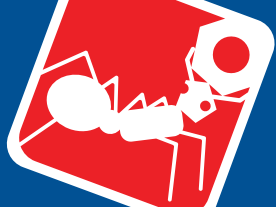
The length  $l_3$  should be decided depending on the workpiece thickness, adjustable by  $\pm 1$ mm.

### Tips

In the order table replace XX with  $l_3$  length required to suit workpiece (in mm).

Order No.	$d_1$	$d_2$ tol. f7	$d_3$ tol. f7	$d_4$	$d_5$	$d_6$	$l_1$	$l_2$	$l_3$	Weight g
12620.W0551-XX	10	5	5	3	M 3x4	M 3x0,5	17	10	$3 < l_3 < 50$	8~16
12620.W0552-XX	10	6	5	3	M 3x4	M 3x0,5	17	10	$3 < l_3 < 50$	8~19
12620.W0581-XX	16	8	8	4.3	M 5x5	M 5x0,8	22	15	$4 < l_3 < 80$	30~60
12620.W0582-XX	16	10	8	4.3	M 5x5	M 5x0,8	22	15	$4 < l_3 < 80$	31~77





## 10650

ADJUSTABLE VERTICAL CLAMPS

### Material

Aluminium body, steel arm and screw.  
Aluminium clamping pad.

### Technical Notes

Can be used with our stackable riser elements to increase the clamping height

if required (see part 10651).

Supplied with clamping key (10651. W1140). Clamping screws for mounting to machine bed etc. supplied separately, see part no. 10654.

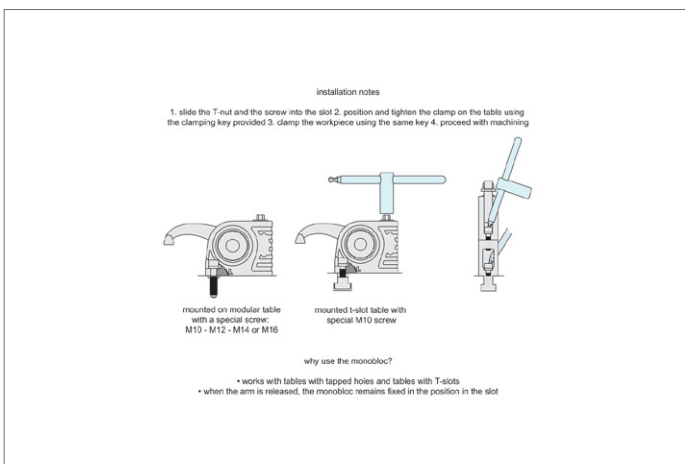
### Tips

Can be used on T-slot tables or tapped holes.

### Important Notes

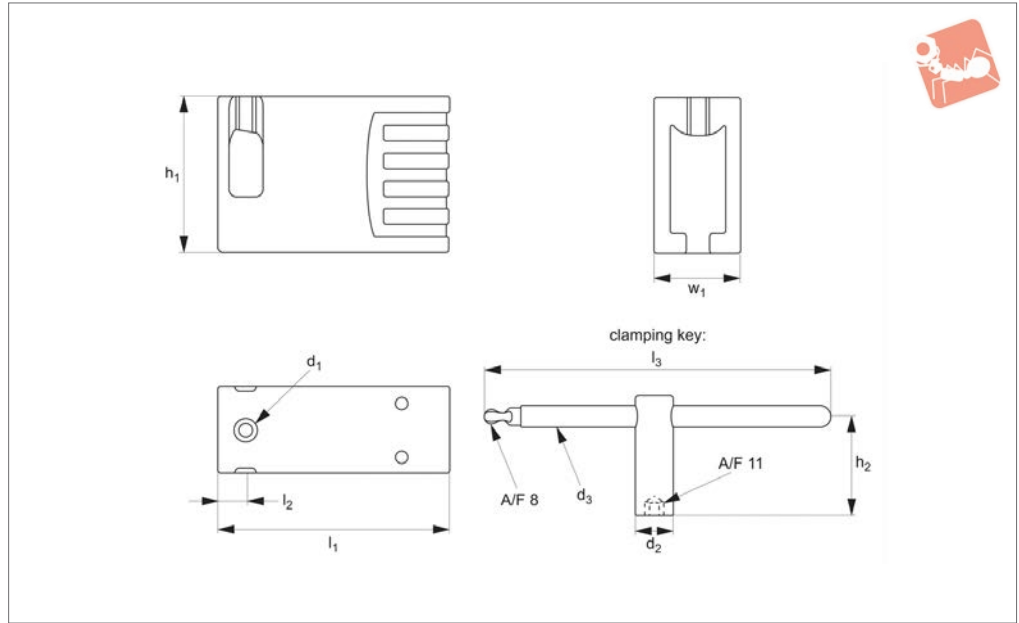
Available as a box set, see part 10653.

Order No.	Arm type	Clamp reach $l_1$	Clamping force kN max.	Clamping height $h_1$	$h_2$	$h_3$	$l_2$	$l_3$	$r_1$	$w_1$	$w_2$	A/F	Torque to Nm max.
10650.W0020	Short	33	16	0 to 80	89	49	108	12.5	r 77	40	16	11	80
10650.W0030	Long	61	12	-8 to 102	89	49	108	12.5	r105	40	16	11	80
10650.W0035	Extra Long	132	8	-43 to 155	89	49	108	12.5	r176	40	16	11	80





## 10651



### Material

Spacer elements: aluminium. Supplied with clamping screw.  
Clamping key: red plastic coated or nickel

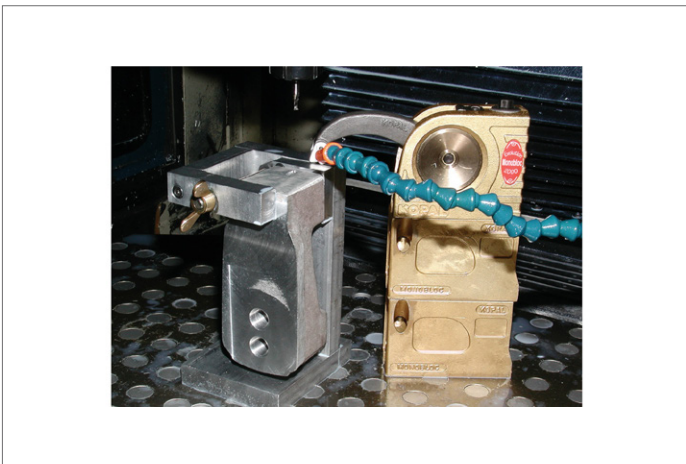
plated.

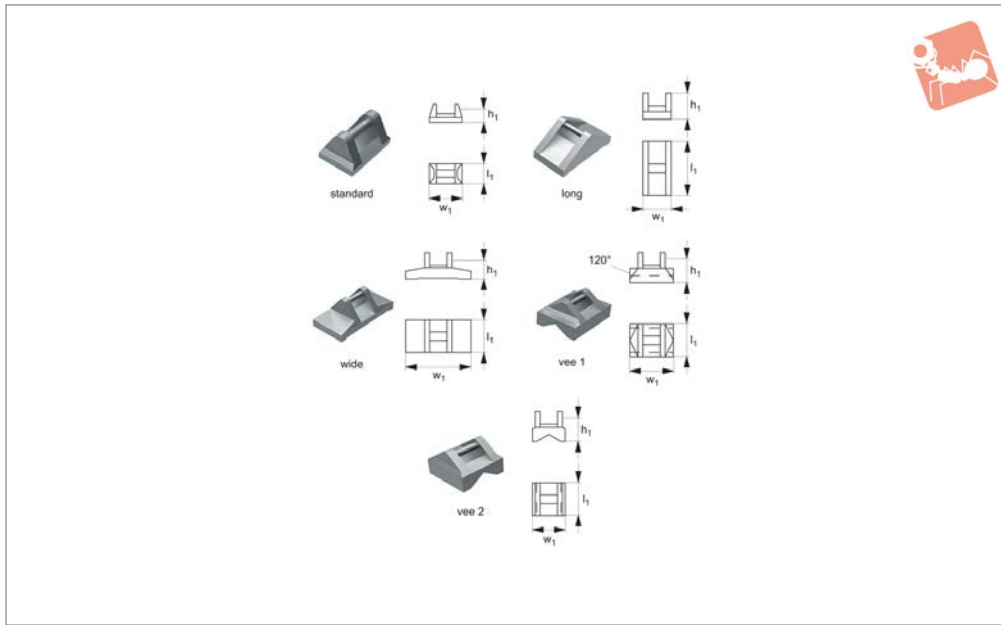
### Technical Notes

Can be used to increase the clamping

height of most of our vertical clamping systems (10650, 10660).

Order No.	Type	$h_1$	$h_2$	$d_1$	$d_2$	$d_3$	$l_1$	$l_2$	$l_3$	$w_1$
<b>10651.W0050</b>	Spacer element	74	-	M10	-	-	108	12.5	-	40
<b>10651.W0160</b>	Key - coated	-	58	-	24	14	-	-	200	-
<b>10651.W0325</b>	Key - plated	-	88	-	20	10	-	-	200	-





## 10652

ADJUSTABLE VERTICAL CLAMPS

**Material**  
Aluminium.

shapes. For use with clamps 10650, 10655, 10660.

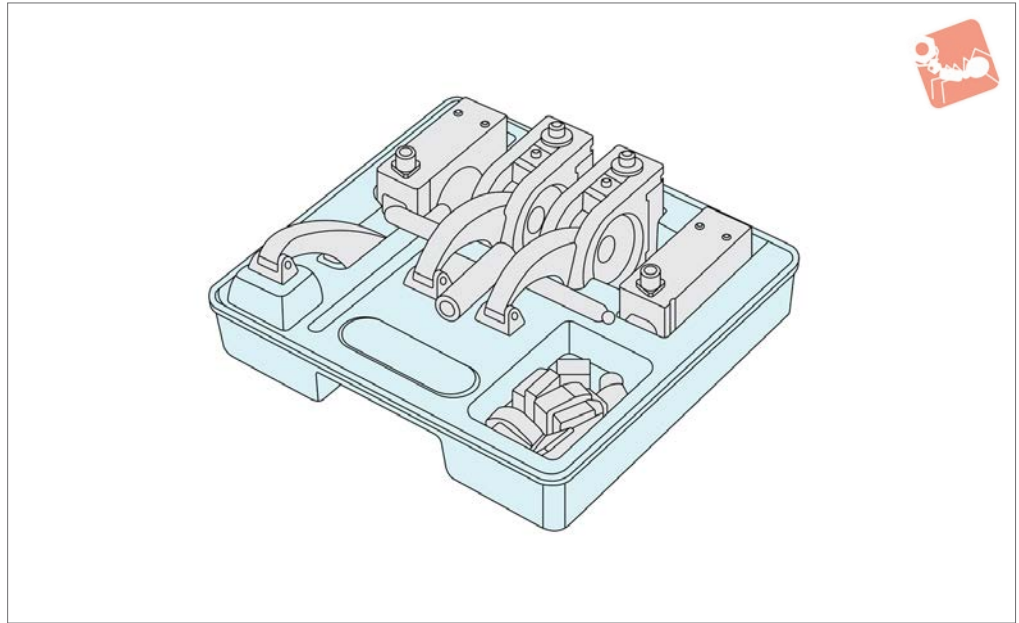
**Technical Notes**

Clamping pads to suit differing workpiece

Order No.	Pad type	$h_1$	$l_1$	$w_1$
10652.W0565	Standard	11	18	30
10652.W0802	Long	17	50	26
10652.W0803	Wide	18	30	60
10652.W0804	Vee 1	14	30	40
10652.W0805	Vee 2	14	30	30
10652.W1150	Set of 4 (Long, Wide, Vee 1, Vee 2)	-	-	-



## 10653



### Technical Notes

Comprises of two monobloc clamps (short 10650.W0020 and long 10650.W0030), two spacer elements (2 x 10651.W0050), one clamping key (10651.W0160 or 10651.

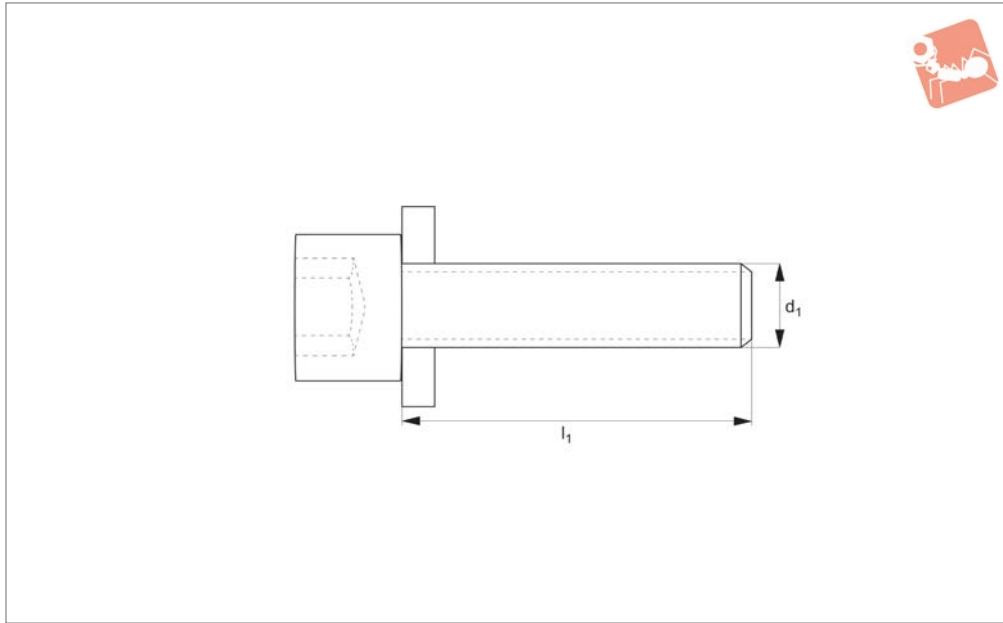
W0325), one extra long arm (available with clamp in 10650.W0035), 4xM10 screws (10654.W0080 and 10654.W0085) and 6xM10 T-nuts (with spring) for 14, 16 and 18mm slots.

### Tips

Clamp heights shown with the use of the riser blocks.

Order No.	Description	Clamp reach	Clamping force kN max.	Clamping height min.   max.
10653.W0100	Long Arm Set	61	12	-8 to 176
10653.W0110	Short Arm Set	33	16	0 to 154





## 10654

ADJUSTABLE VERTICAL CLAMPS

### Material

Steel.

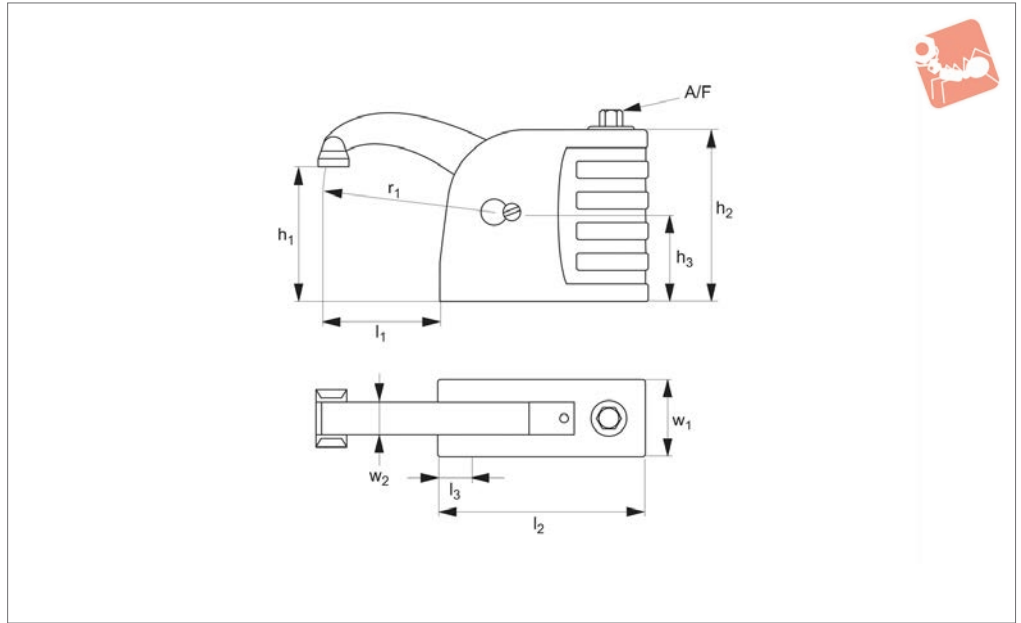
### Technical Notes

Please order T-nuts separately, see part no. 24000.

Order No.	Type	For thread	For T-slot	$d_1 \times l_1$
10654.W0080	For T-slots	-	12 & 14	M10x35
10654.W0085	For T-slots	-	16 & 18	M10x40
10654.W0090	For T-slots	-	20 & 22	M10x45
10654.W0065	For threads	M12	-	M12x40
10654.W0070	For threads	M14	-	M14x45
10654.W0075	For threads	M16	-	M16x45



## 10655



### Material

Aluminium body, steel arm and screw.  
Aluminium thrust product.

ping force. Supplied with key and clamping screw (M8 x 30mm) for mounting to machine bed.

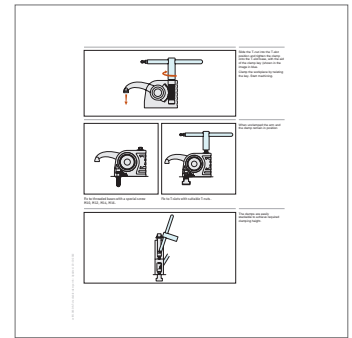
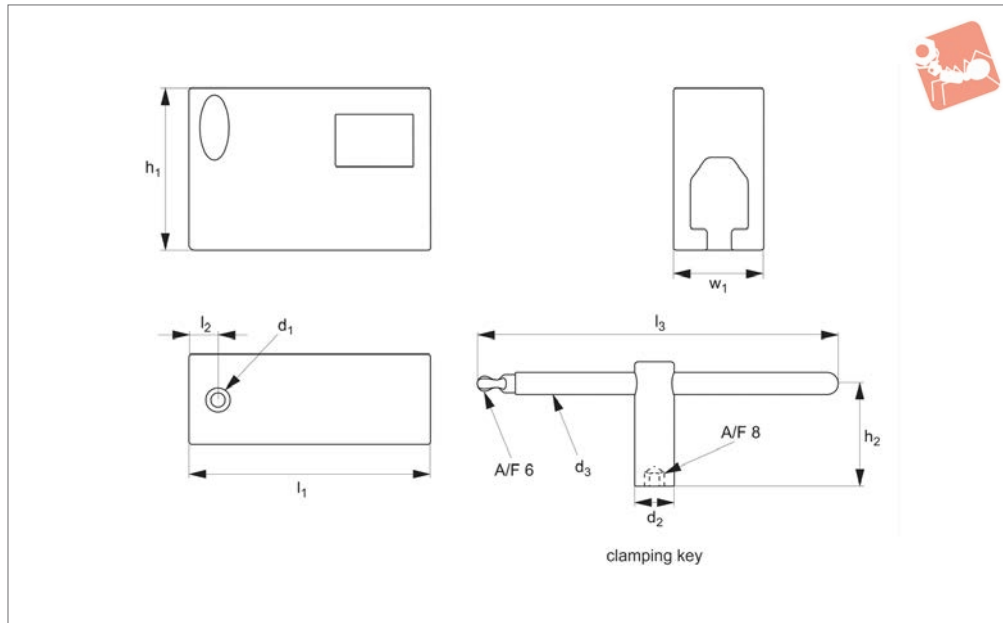
### Technical Notes

Small clamping footprint with high clam-

For spacer elements see part no. 10656.

Order No.	Arm type	Clamp reach $l_1$	Clamping force kN max.	Clamping height $h_1$ min.   max.	$h_2$	$h_3$	$l_2$	$l_3$	$r_1$	$w_1$	$w_2$	A/F	Torque to Nm max.
<b>10655.W0020</b>	Short	54	6.5	-15 to 58	62.5	31	73	11	r 76	32	16	8	30
<b>10655.W0025</b>	Long	100	4.2	-40 to 90	62.5	31	73	11	r122	32	16	8	30





## 10656

ADJUSTABLE VERTICAL CLAMPS

### Material

Aluminium body, supplied with clamping screw.

Clamping body key: nickel plated steel.

### Technical Notes

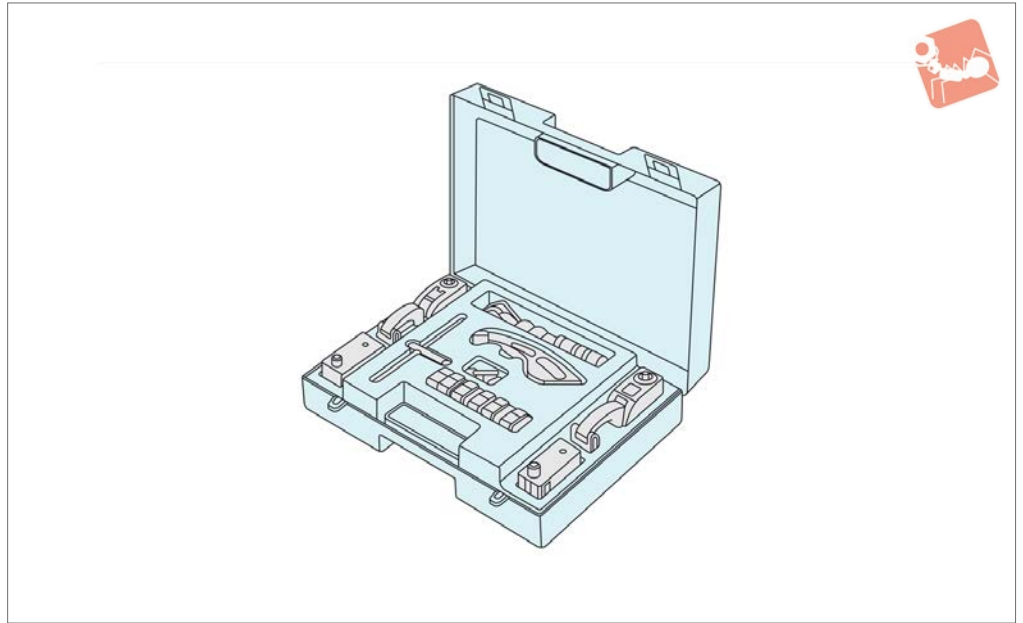
Can be used to increase the clamping

height of our vertical clamping systems 10655.

Order No.	Type	$h_1$	$h_2$	$d_1$	$d_2$	$d_3$	$l_1$	$l_2$	$l_3$	$w_1$
10656.W0030	Spacer	60	-	M8	-	-	73	11	-	32
10656.W0180	Key	-	38	-	16	7	-	-	140	-



**10657**



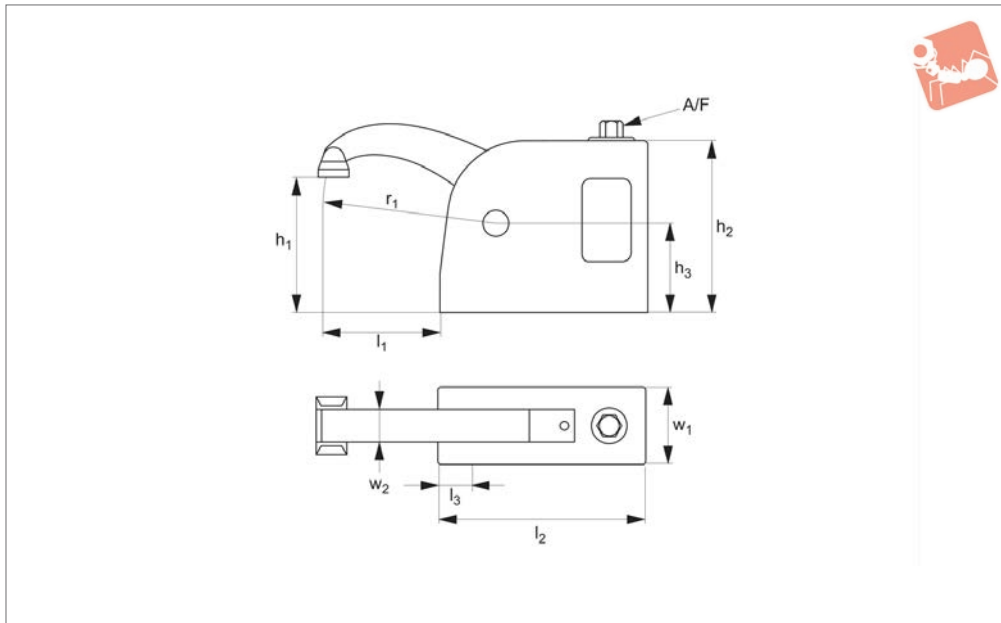
**Technical Notes**

Comprises of two piccolo clamping elements (short 10655.W0020 and long

10655.W0025), two spacer elements (2 x 10656.W0030), one clamping key (10656.W0180), one extra long arm, four M10

screws and six M10 T-nuts (with spring) for 14, 16 and 18mm slots.

Order No.	Description	Clamp reach	Clamping force kN max.	Clamping height min.   max.
10657.W0100	Piccolo Clamp Set	54	6.5	0 to 118



## 10658

ADJUSTABLE VERTICAL CLAMPS

### Material

Aluminium body, steel arm and screw.  
Aluminium clamp thrust product.

### Technical Notes

The only clamp specially designed for

electro-discharge (EDM) machines. The body has a large opening to ensure free flow of fluid.

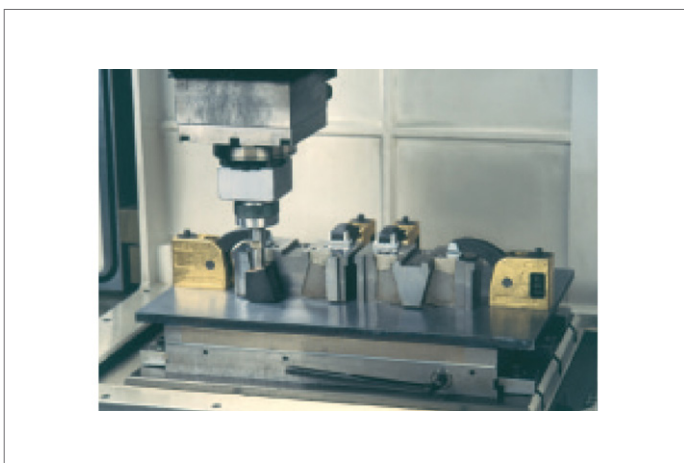
These clamps are easily disassembled without tools, cleaned, greased and re-

assembled.

### Important Notes

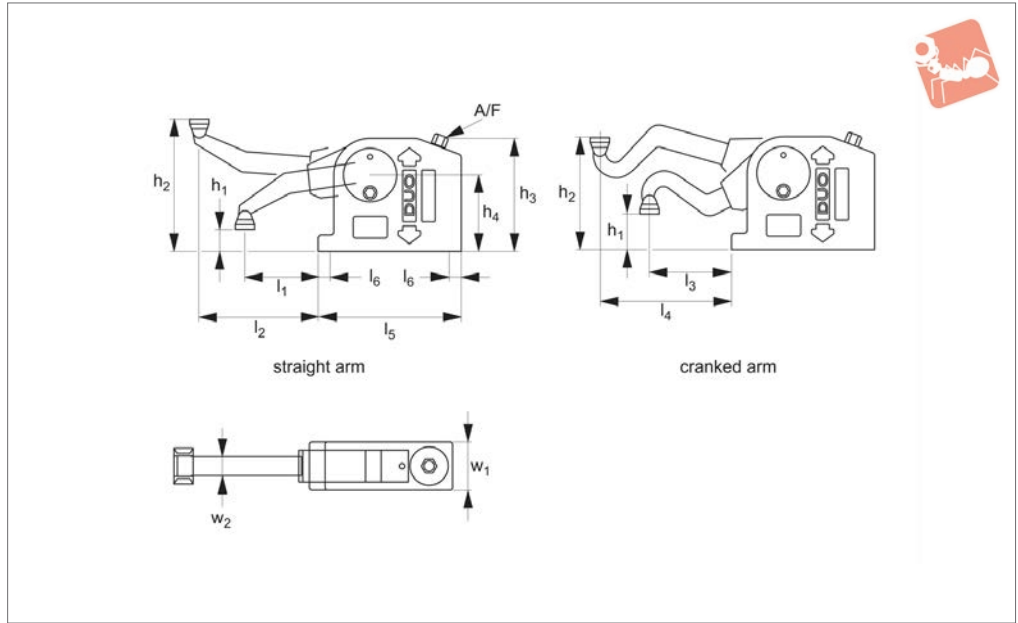
Supplied with clamping key and clamping screw (M8 x 30mm) for mounting to machine bed.

Order No.	Arm type	Clamp reach $l_1$	Clamping force kN max.	Clamping height $h_1$ min.   max.	$h_2$	$h_3$	$l_2$	$l_3$	$r_1$	$w_1$	$w_2$	A/F	Torque to Nm max.
<b>10658.W0022</b>	Short	54	6	-15 to 58	62.5	31	73	11	r 76	32	16	8	80
<b>10658.W0023</b>	Long	100	4	-40 to 90	62.5	31	73	11	r122	32	16	8	30





## 10660



### Material

Aluminium body, steel arm and screw.  
Aluminium clamp thrust product.

### Technical Notes

Fully adjustable clamping range that can be used with our standard stackable riser

elements (see part no. 10651).

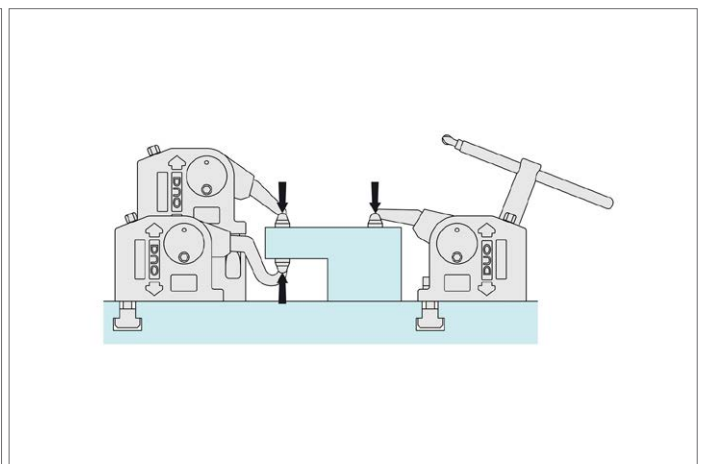
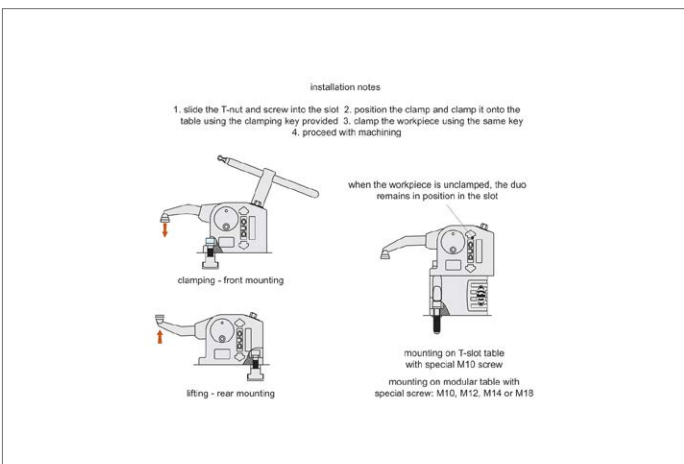
Has both clamping and lifting capability, aided by two different interchangeable arms.

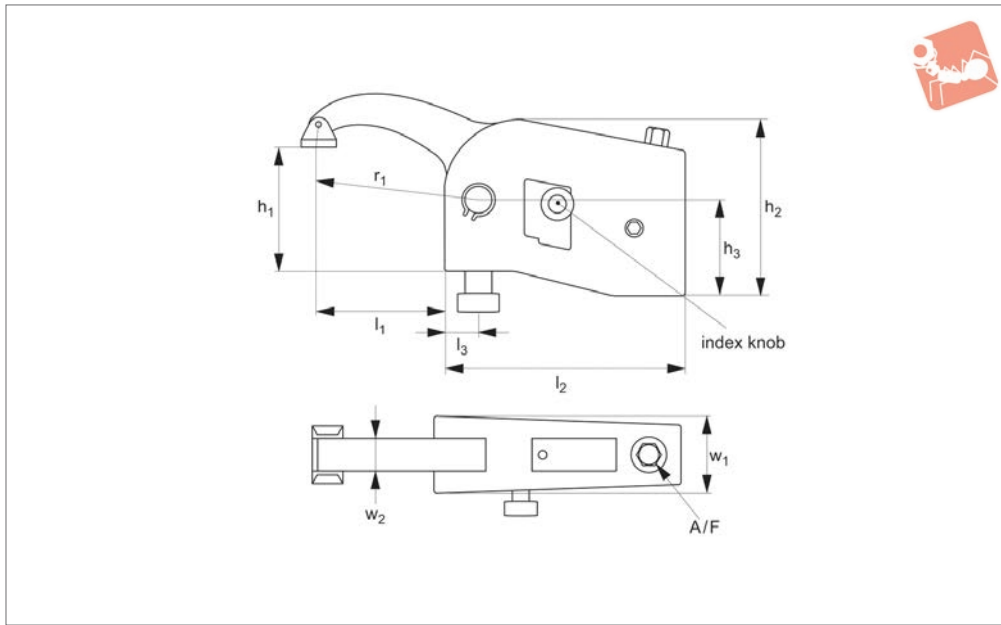
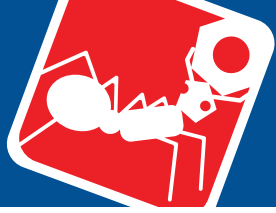
Supplied with operating key.

### Tips

**Two different clamping arm shapes provided: straight and cranked.** See table below for clamping and lifting heights of each arm.

Order No.	Clamp reach $l_1$ - $l_2$	Clamp reach $l_3$ - $l_4$	Clamping force kN max.	Clamping height $h_1$ min.   max.	Lifting height $h_2$ min.   max.	$h_1$ min.   max.	$h_2$ min.   max.	$h_3$	$h_3$ min.   max.	$h_4$ min.   max.	$l_5$	$l_6$	$w_1$	$w_2$	Clamping arm	
10660.W0020	46-88	48-91	11	0-129	4-142	0-80	52-142	95	38-125	65	4-94	120	10	40	14	Straight





## 10661

ADJUSTABLE VERTICAL CLAMPS

### Material

Aluminium body, steel arm and screw.  
Aluminium thrust product.

### Technical Notes

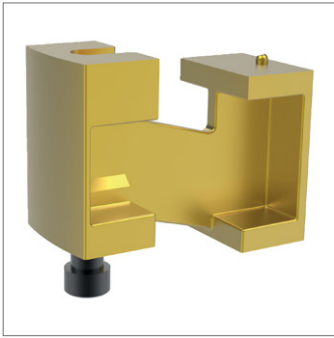
Quick and easy clamping of different clam-

ping heights. The index pin knob allows rapid adjustment to five set positions. Can be used with stackable riser elements to achieve required clamping heights. See part 10662.

Supplied with clamping key.

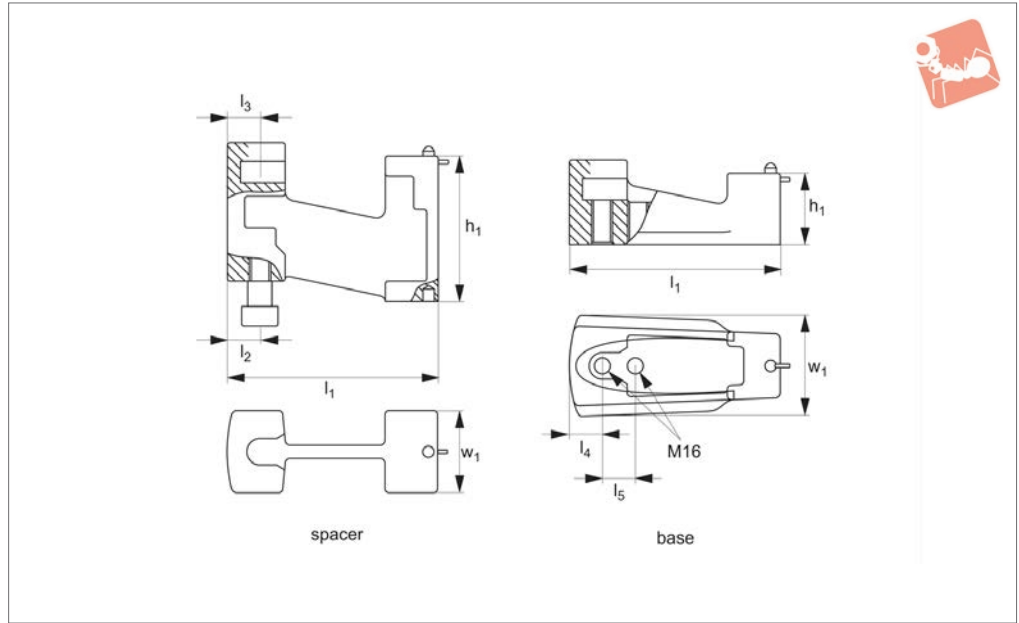
Order No.	Description	Clamp reach $l_1$	Clamping force kN max.	Clamping height $h_1$ min.   max.	$h_2$	$h_3$	$l_2$	$l_3$	$r_1$	$w_1$	$w_2$	A/F	Torque to Nm max.
<b>10661.W0020</b>	Short	50	40	12 to 80	105	60	162	25	r 75	60	30	11	70
<b>10661.W0030</b>	Standard	95	28	-12 to 100	105	60	162	25	r120	60	30	11	70
<b>10661.W0035</b>	Long	145	20	-18 to 135	105	60	162	25	r170	60	30	11	70
<b>10661.W0038</b>	Extra Long	245	14	-50 to 155	105	60	162	25	r270	60	30	11	70





## 10662

ADJUSTABLE VERTICAL CLAMPS



### Material

Aluminium.

### Technical Notes

Base and spacer elements. For use with big block clamping system (part no. 10661).

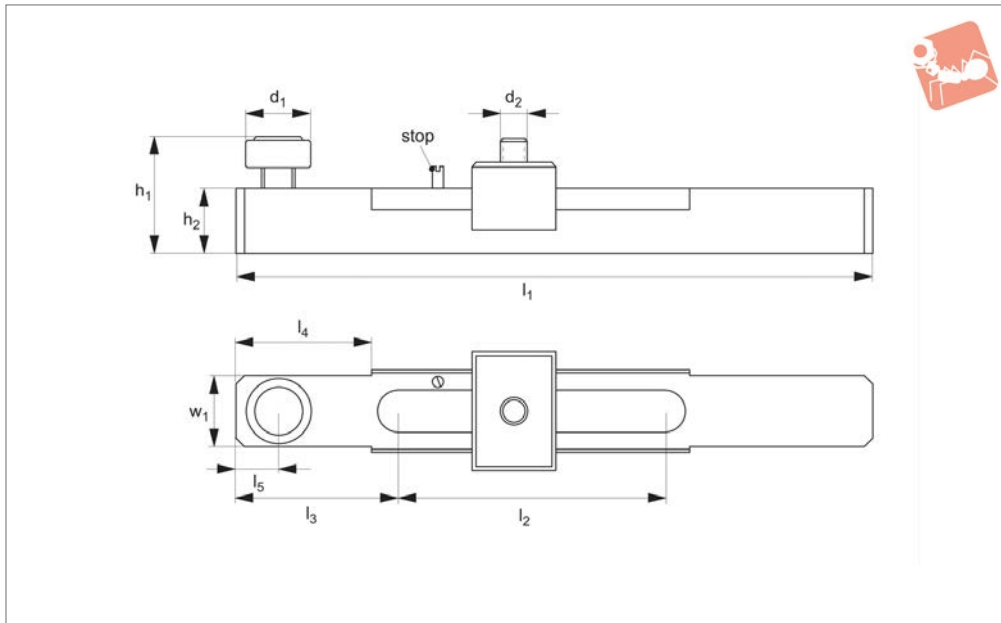
Order No.	Type	$h_1$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$w_1$
10662.W0040	Base	55	162	-	-	25	25	75
10662.W0045	Spacer	55	162	25	25	-	-	75
10662.W0050	Spacer	110	162	25	25	-	-	75
10662.W0055	Spacer	330	162	25	25	-	-	75





# Mounting Bar - Sliding for big block clamps no. 10661

# Adjustable Vertical Clamps



**10663**

ADJUSTABLE VERTICAL CLAMPS

**Material**  
Steel.

with big block clamping system (part no. 10661).

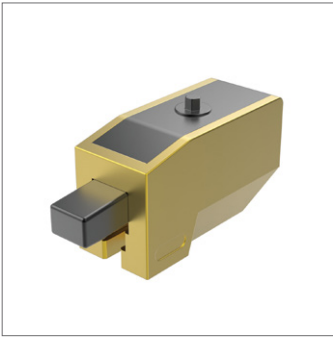
**Technical Notes**

Easy 152mm retraction of clamps. For use

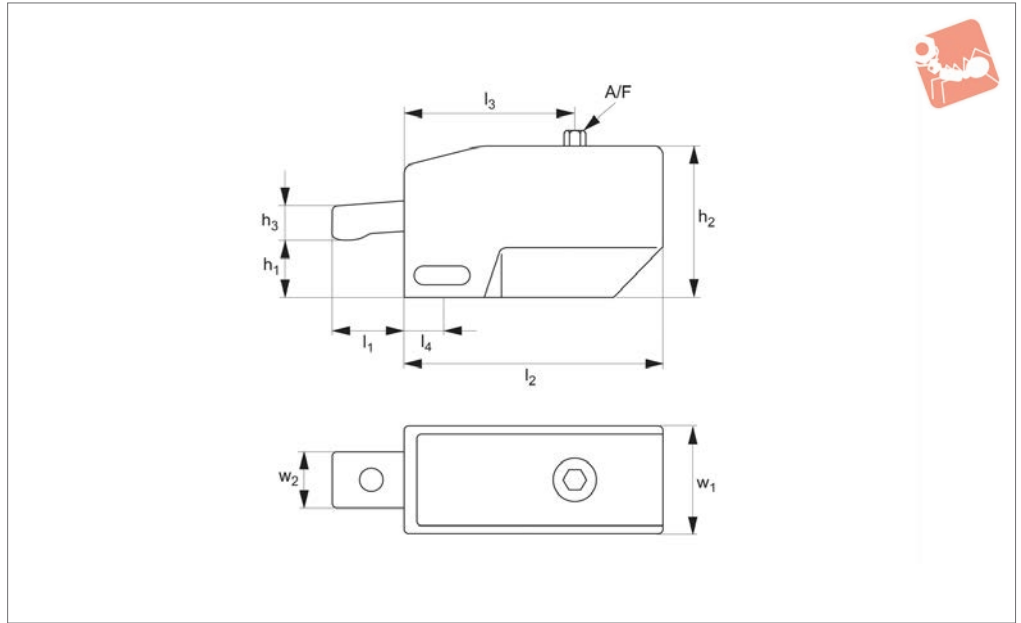
Order No.	Type	$h_1$	$h_2$	$d_1$	$d_2$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	Travel max.	$w_1$
10663.W0180	Base	61 - 85	28	28	M16	382	160	95	80	25	152	48



ADJUSTABLE VERTICAL CLAMPS



## 10670



### Material

Body: aluminium.  
Clamping piece: steel.

### Technical Notes

Unique double action, moves forward and

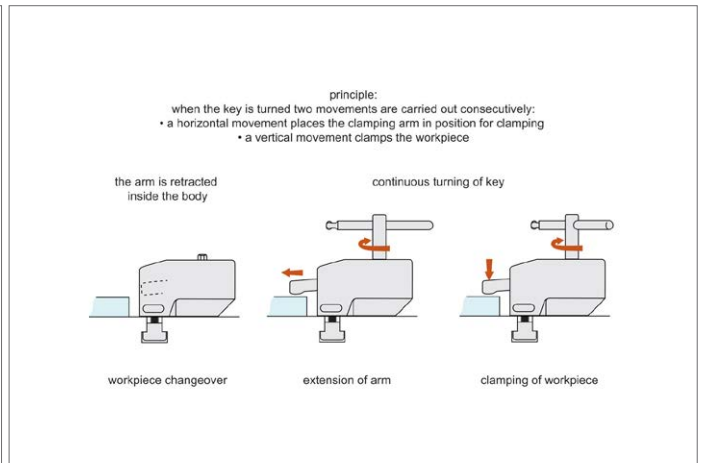
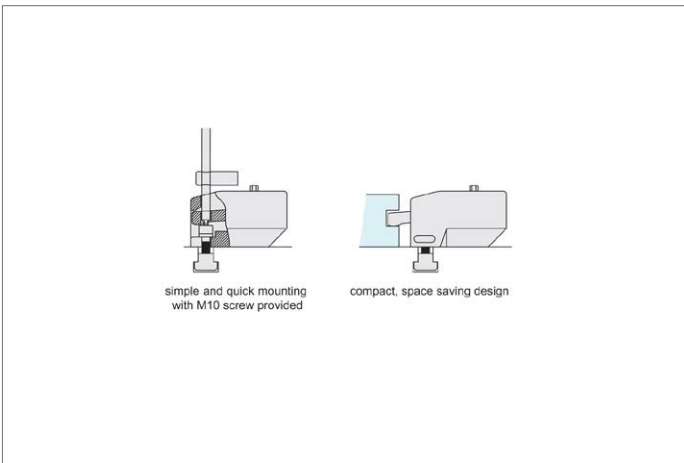
downward simply with a turn of the hex key.  
Very compact, powerful and quick acting.

### Tips

Clamping height can be easily adjusted by

using a spacer element or using our standard spacers (see part no. 10671).  
Supplied with clamping key and clamping screw (M10 x 35mm).

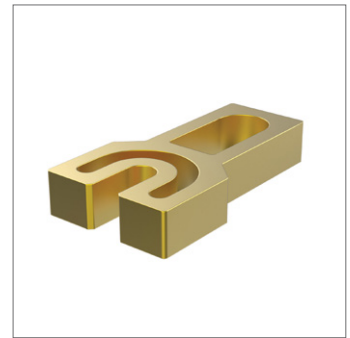
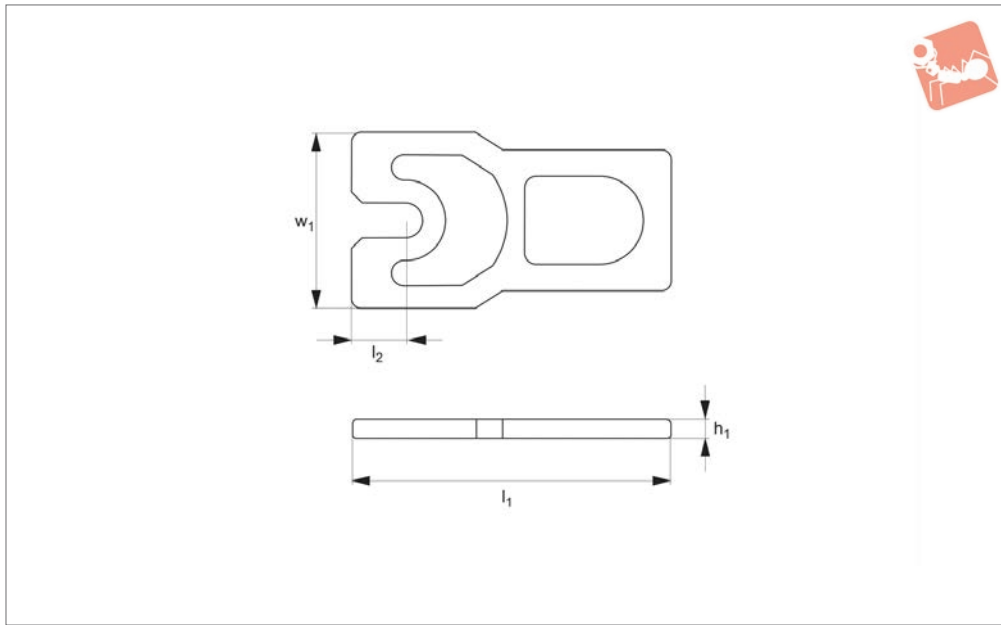
Order No.	Clamping force kN max.	Clamping height $h_1$ min.   max.	Clamping reach $l_1$	$h_2$	$h_3$	$l_2$	$l_3$	$l_4$	$w_1$	$w_2$	A/F	Torque to Nm max.
10670.W0020	11	22 to 26	30	67	16.5	115	65	18	50	25	8	20





# Spacer Elements for retractable arm clamp 10670

# Adjustable Vertical Clamps



**10671**

ADJUSTABLE VERTICAL CLAMPS

**Material**

Aluminium.

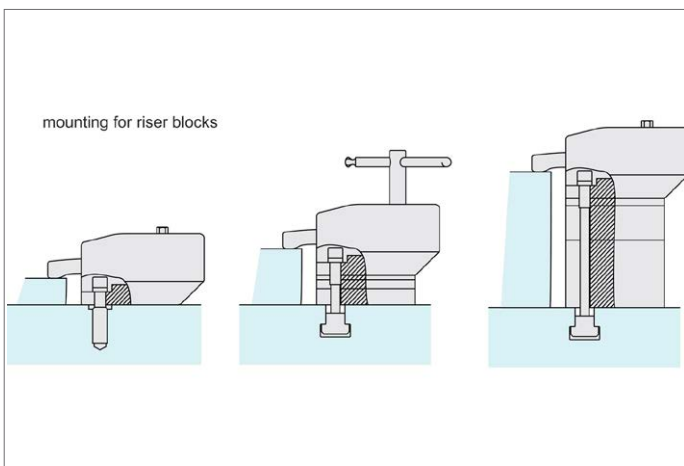
thicknesses. Suitable mounting screws also supplied. For use with clamp 10670.

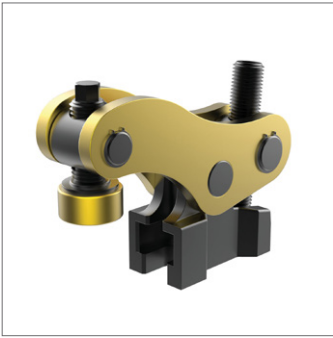
**Technical Notes**

Supplied as set of six different spacer

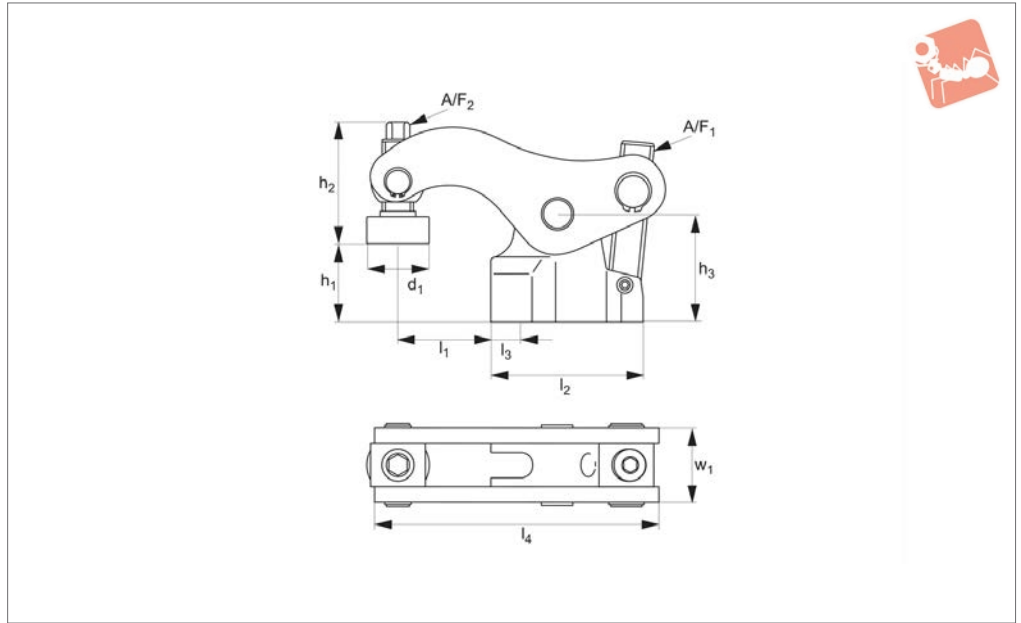
Can reach a maximum clamping height of 126mm.

Order No.	Type	$h_1$	$l_1$	$l_2$	$w_1$
10671.W0080	Set of 6	2, 4, 8, 16, 32 and 64	92	18	50





## 10675



### Material

Steel body and clamping arm, with special clamping screw.

Supplied with clamping key, extension key and clamping screw (M14 x 40mm). Please order suitable T-nuts separately, see part no. 24000.

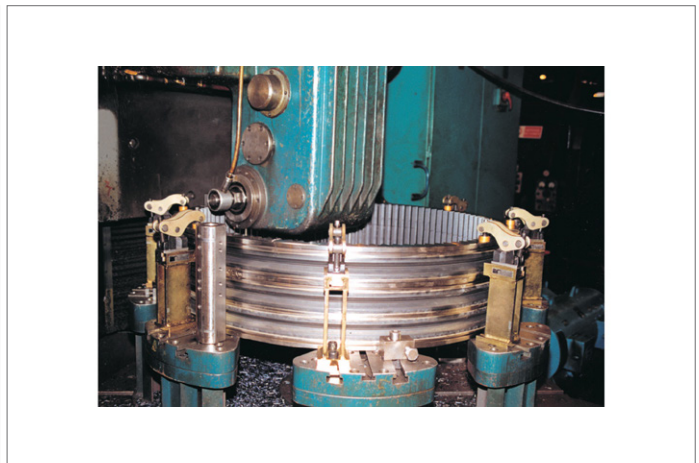
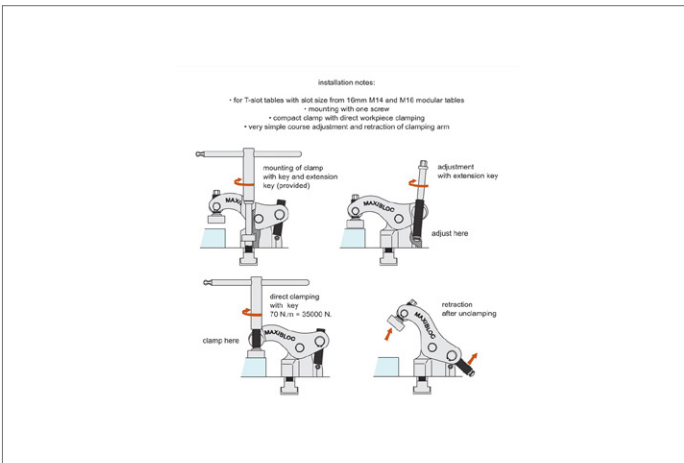
### Tips

Clamping height can be raised using our stackable elements (part no. 10676).

### Technical Notes

For very heavy machining. Arm retracts.

Order No.	Clamping force kN max.	Clamping height $h_1$ min.   max.	Clamping reach $l_1$	$h_2$	$h_3$	$d_1$	$l_2$	$l_3$	$l_4$	$w_1$	$A/F_1$	$A/F_2$	Torque to Nm max.
10675.W0310	35	0 to 86	49	62.5	55	32	78	15	152	40	8	11	70

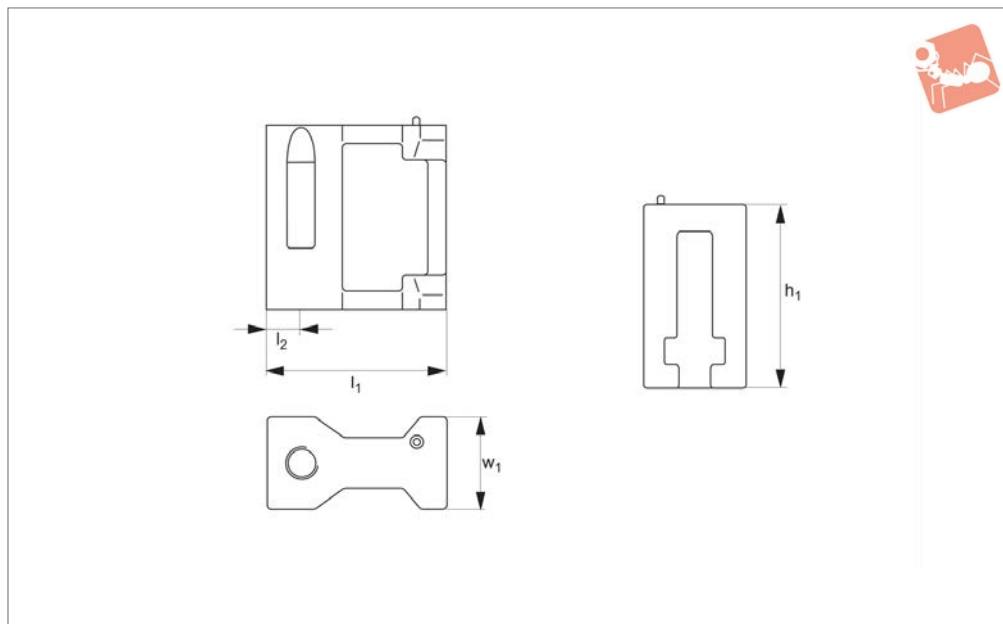




# Maxi Bloc Spacer Elements

for Maxi Bloc clamps 10675

# Adjustable Vertical Clamps



**10676**

ADJUSTABLE VERTICAL CLAMPS

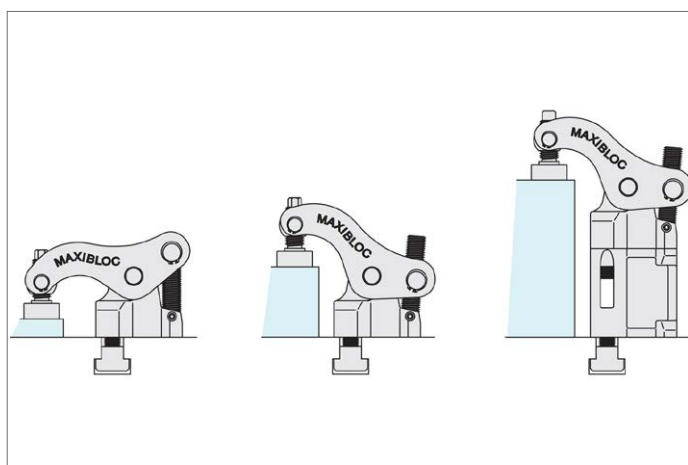
**Material**  
Steel.

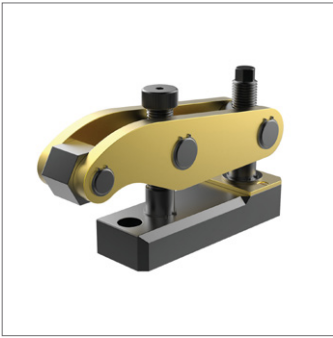
**Technical Notes**

Quick and easy clamping of different clam-

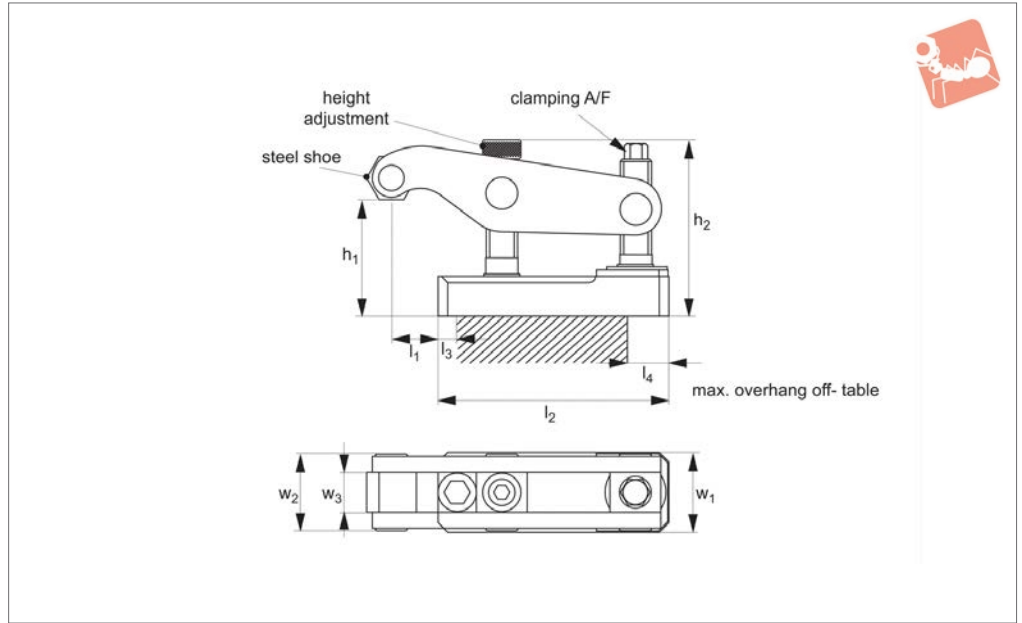
ping heights. For use with Maxi Bloc clamping system part no. 10675. Supplied with M14 mounting screw.

Order No.	Type	$h_1$	$l_1$	$l_2$	$w_1$
10676.W0320	Spacer	80	78	15	40





## 10678



### Material

Steel, hardened, supplied with clamping key and high tensile strength (12.9) clamping screw.

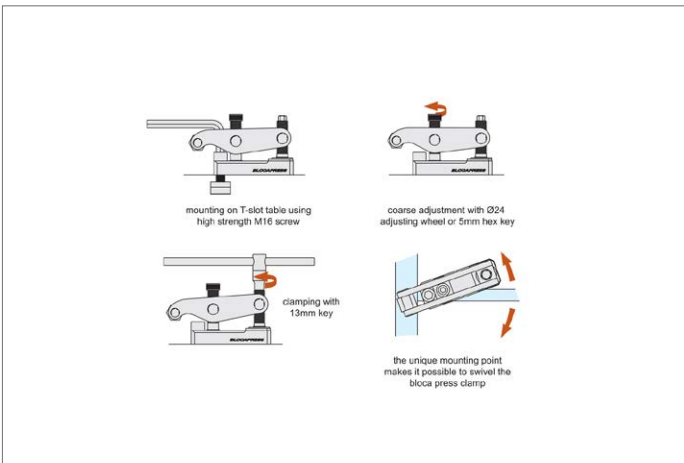
ping screw.

Five ton clamping force.

### Technical Notes

Suitable for heavy duty presses.

Order No.	Clamping force kN max.	Clamping height $h_1$ min.   max.	Clamping reach $l_1$	$h_2$	$l_2$	$l_3$	$l_4$ max.	$w_1$	$w_2$	$w_3$	A/F	Torque to Nm max.
10678.W0340	50	14 to 92	30	111	145	12	25	50	45	25	13	90





## A Wide Range of Clamps to Match any Requirement

**10650** All machining operations



**16000**  
NEWTONS

**10655** Light machining



**6500**  
NEWTONS

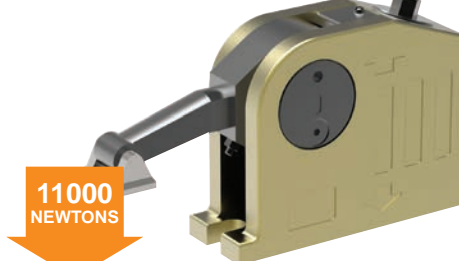
CLAMPING FORCE  
**UPTO**  
**50000**  
NEWTONS

**10658** Electrical discharge machining



**6500**  
NEWTONS

**10660** Clamping and lifting



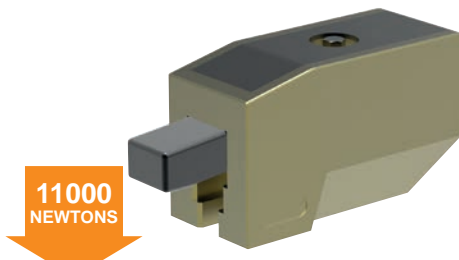
**11000**  
NEWTONS

**10661** Heavy machining



**40000**  
NEWTONS

**10670** Repetitive machining



**11000**  
NEWTONS

**10675** Heavy machining



**35000**  
NEWTONS

**10678** Press Tool Clamping



**50000**  
NEWTONS

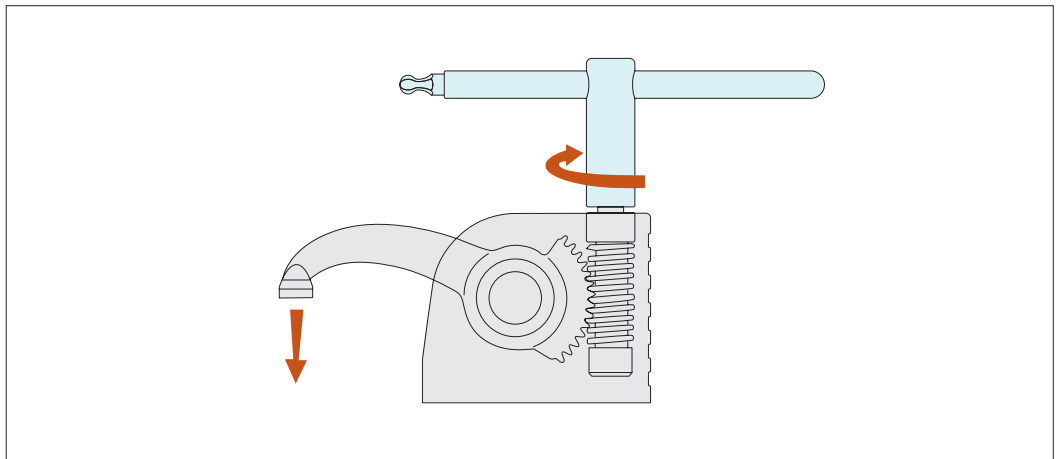
ADJUSTABLE VERTICAL CLAMPS

ov-W10650-A-T-W10678-A-T-over-clamping-vertical-pressure-rnh - Updated - 20-10-2022

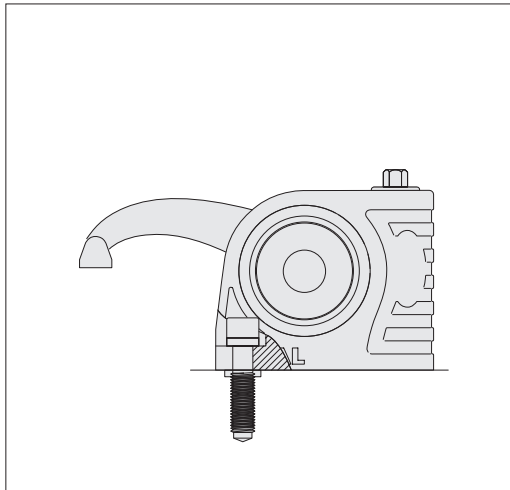


Slide the T-nut into the T-slot position and tighten the clamp onto the T-slot base, with the aid of the clamp key (shown in the image in blue).

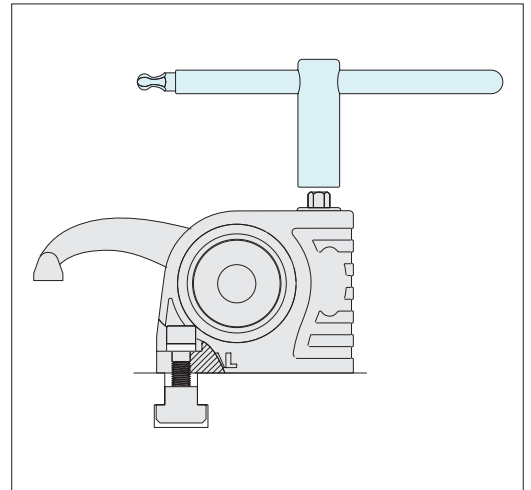
Clamp the workpiece by twisting the key. Start machining.



When unclamped the arm and the clamp remain in position

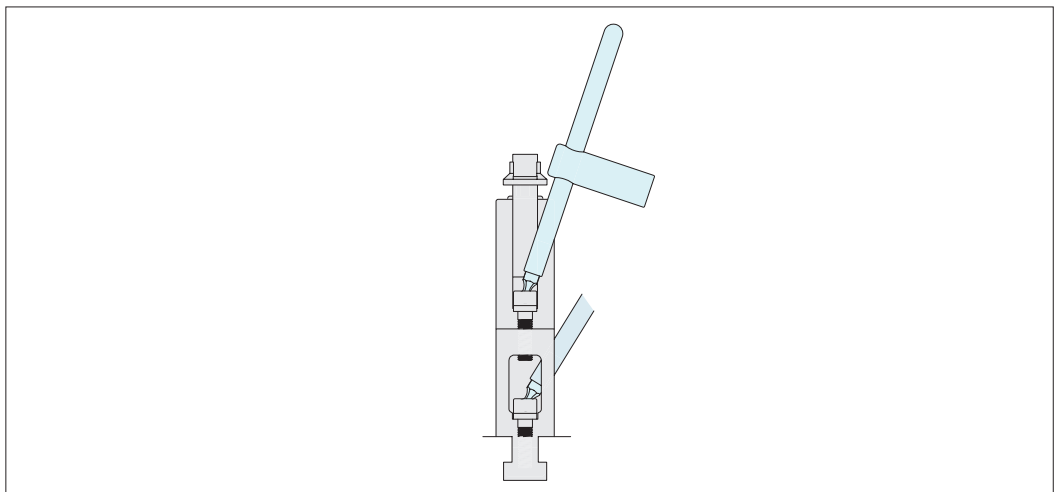


Fix to threaded bases with a special screw  
M10, M12, M14, M16.

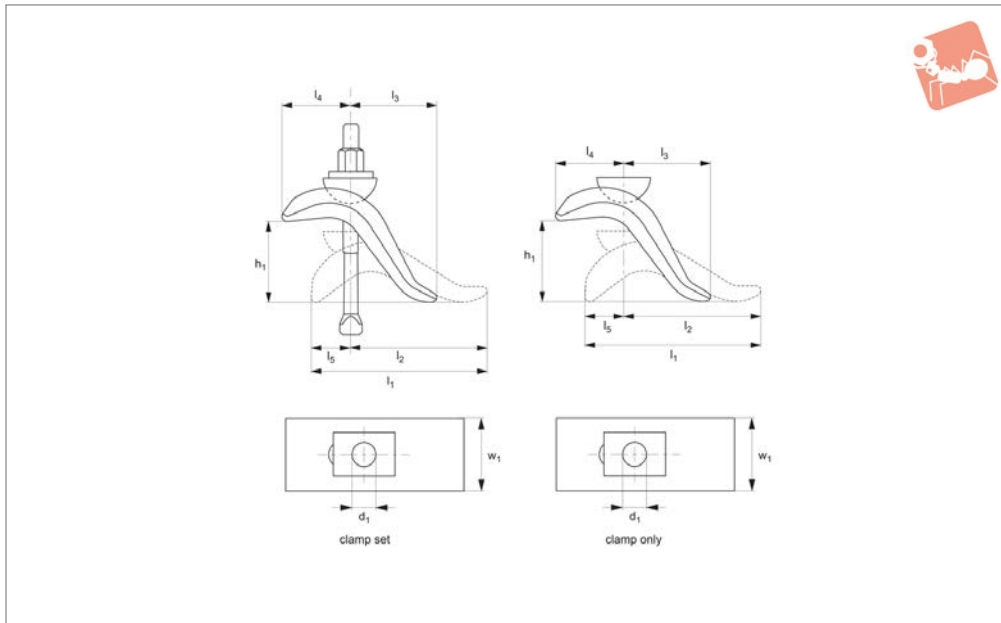


Fix to T-slots with suitable T-nuts.

The clamps are easily stackable to achieve required clamping height.







## 10600

ADJUSTABLE VERTICAL CLAMPS

### Material

Steel, forged, tempered and burnished.

### Technical Notes

Type one: clamp and T-bolt set.  
Type two: clamp only.

$h_1$  - depends on the depth of the slot position and the position of the fixture nut.

### Tips

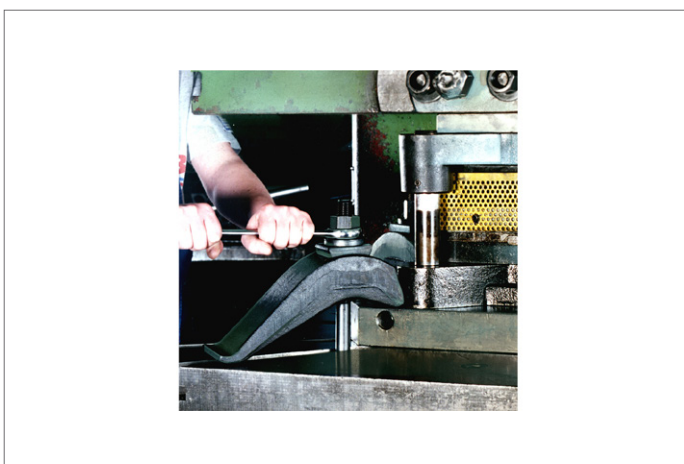
Often used for clamping press tools.  
Easy height adjustable clamp. No fitting

support required.

Used with:

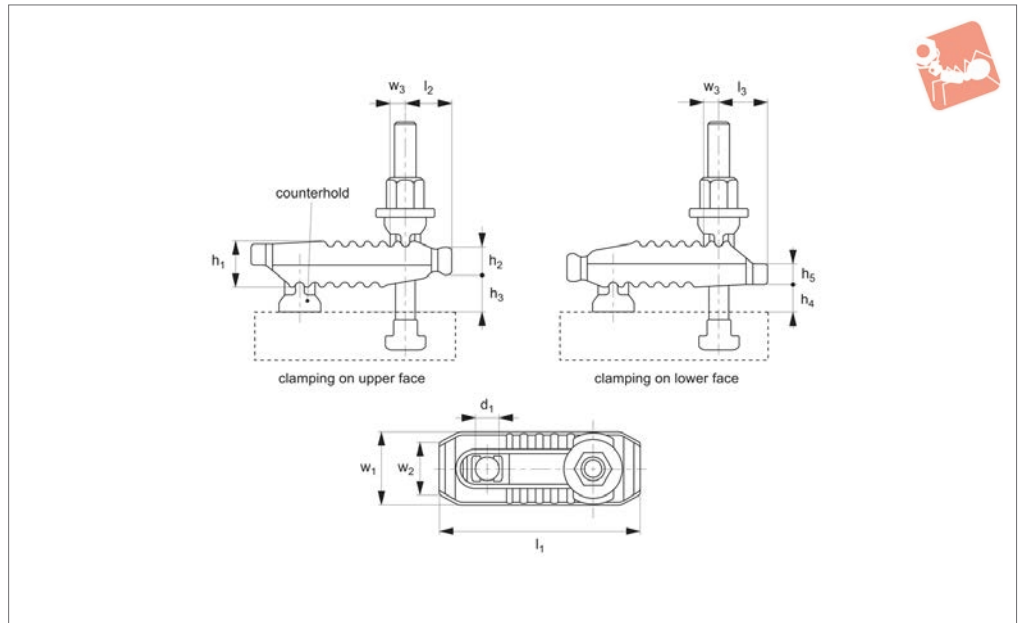
21000 T-slot bolts, 24400 collar nuts,  
25000 plain washer.

Order No.	Type	T-bolt	For T-bolt	For T-slot	$d_1 \times l_1$	$h_1$	$l_2$	$l_3$	$l_4$	$l_5$	$w_1$	Weight g
10600.W0012	Clamp set	M12x12x125	M12 - M16	12	17x140	0-50	110	60	55	30	50	1070
10600.W0014	Clamp set	M12x14x125	M12 - M16	14	17x140	0-50	110	60	55	30	50	1080
10600.W0016	Clamp set	M16x16x160	M12 - M16	16	17x140	0-75	110	60	55	30	50	1270
10600.W0018	Clamp set	M16x18x160	M12 - M16	18	17x140	0-75	110	60	55	30	50	1280
10600.W0020	Clamp set	M20x20x200	M18 - M20	20	21x175	0-85	135	80	70	40	60	2300
10600.W0022	Clamp set	M20x22x200	M18 - M20	22	21x175	0-85	135	80	70	40	60	2370
10600.W0117	Clamp only	-	M12 - M16	-	17x140	0-75	110	60	55	30	50	900
10600.W0121	Clamp only	-	M18 - M20	-	21x175	0-85	135	80	70	40	60	1600





## 10603



### Material

Clamp: steel, tempered and galvanised.  
 T-bolt: steel, forged (strength class 8.8).  
 See part 21000 for details.  
 Washer: steel, hardened. See part 25000 for details.  
 Nut: steel, heat-treated to strength class 10. See part 24300 for details.

### Technical Notes

Ideal for clamping components of varying

heights - requires no additional support or packing pieces.  
 Continuously adjustable clamp over range of heights (see dimension  $h_1$  in table), with high clamping force.  
 Support heel and stud counterhold are non-detachable, making for a single piece clamp which is quick and easy to use.  
 Supplied complete with T-bolt, washer and T-nut (see data table).

Ideal for use on press tools and injection mould tools. Height can be increased by using Support Extensions 10604.

### Tips

\*Clamping forces based on using stud and nut of strength class 8.8 or better, optimal positioning of the clamp and good condition of the thread.

Order No.	T-bolt	For T-slot	$h_1$	$h_2$	$h_3$ min.   max.	$h_4$	$h_5$	$l_2$	$l_3$	$w_1 \times l_1$	$w_2$	$w_3$	$d_1$	Clamping force kN max.	Weight g
10603.W0011	M10x10x100	10	27	17	0-40	18	12	25	30	44x115	30	11	13	25	613
10603.W0012	M12x12x125	12	27	17	0-55	18	12	25	30	44x115	30	11	13	30	686
10603.W0013	M12x12x160	12	36	21	0-70	20	17	35	36	55x150	41	12	17	35	1591
10603.W0014	M12x14x125	14	27	17	0-55	18	12	25	30	44x115	30	11	13	30	705
10603.W0015	M12x14x160	14	36	21	0-70	20	17	35	36	55x150	41	12	17	35	1610
10603.W0016	M16x16x160	16	36	21	0-70	20	17	35	36	55x150	41	12	17	40	1798
10603.W0017	M16x16x200	16	42	27	0-80	30	20	44	44	62x187	30	14	21	55	2715
10603.W0018	M16x18x160	18	36	21	0-70	20	17	35	36	55x150	41	12	17	40	1818
10603.W0020	M16x18x200	18	42	27	0-80	30	20	44	44	62x187	30	14	21	55	3018
10603.W0021	M20x20x200	20	42	27	0-80	30	20	44	44	62x187	30	14	21	60	3018
10603.W0022	M20x22x200	22	42	27	0-80	30	20	44	44	62x187	30	14	21	60	3060
10603.W0023	M20x20x250	20	51	34	0-100	31	24	60	47	70x235	30	17	25	70	4368
10603.W0024	M24x24x250	24	51	34	0-100	31	24	60	47	70x235	30	17	25	75	4895
10603.W0025	M20x22x250	22	51	34	0-100	31	24	60	47	70x235	30	17	25	70	4410
10603.W0028	M24x28x250	28	51	34	0-100	31	24	60	47	70x235	30	17	25	75	4966



# Crocodile Clamp Support Extension

## recommendations

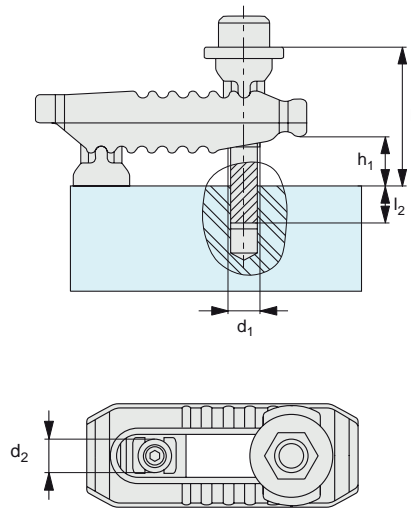


# 10603

## Clamping & Height Setting

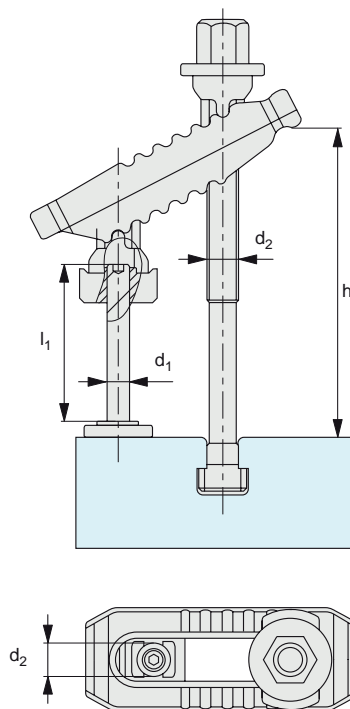
### Installation Recommendations

Installation dimensions for clamp 10603 (without support extension 10604) when using clamping stud 21100.



$d_2$	Stud 21100 size $d_1 \times l_1$	Thread depth $l_2$	Achievable clamping range height $h_1$
13	M10x80	15-31	4-25
	M10x90	15-31	17-40
	M10x100	15-31	4-25
	M12x80	18-33	0-20
	M12x90	18-33	10-34
	M12x100	18-33	22-50
17	M12x90	18-33	0-22
	M12x110	18-33	24-50
	M12x120	18-33	38-66
	M16x100	24-43	0-26
	M16x110	24-44	12-40
	M16x120	24-44	26-55
21	M16x120	24-44	2-29
	M16x130	24-44	15-43
	M16x150	24-44	43-72
	M20x140	30-52	18-48
	M20x150	30-52	31-63
	M20x160	30-52	45-78
25	M20x160	30-52	23-54
	M20x180	30-52	51-83
	M20x195	34-52	72-100
	M24x160	36-48	0-15
	M24x180	36-60	10-42
	M24x195	36-60	37-71

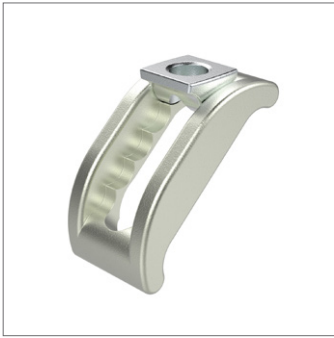
Installation dimensions for clamp 10603 (with support extension 10604) when using T-slot bolt 21000.



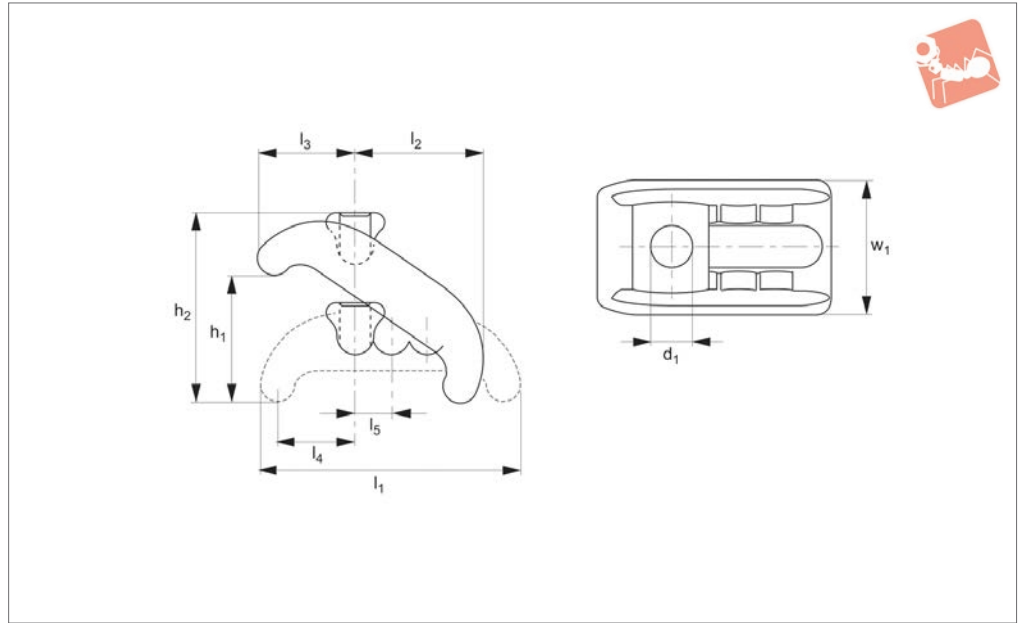
$d_2$	10604 support extension $d_1 \times l_1$	T-Slot 21000 $d_2 \times \text{T-slot} \times l_1$	Achievable clamping range height $h_1$
13	M10x39	M10x10x100	18-31
	M10x39	M12x12x160	18-95
	M10x39	M12x14x160	18-95
	M12x49	M12x12x200	26-123
	M12x49	M12x14x200	26-123
	M12x49	M16x16x200	26-123
17	M12x49	M16x18x200	26-123
	M12x94	M12x12x200	26-120
	M12x94	M12x14x200	26-120
	M12x94	M16x16x250	26-166
	M16x55	M16x16x250	33-141
	M16x55	M16x18x250	33-141
21	M16x55	M20x20x250	33-141
	M16x90	M20x22x250	33-141
	M16x90	M16x16x250	33-150
	M16x90	M16x18x250	33-150
	M16x90	M20x20x315	33-173
	M16x90	M20x22x315	33-173
25	M20x69	M20x20x315	41-177
	M20x69	M20x22x315	41-177
	M20x69	M24x24x315	41-177
	M20x69	M24x28x315	41-177
	M20x109	M20x20x315	41-197
	M20x109	M20x22x315	41-193
M20x109	M24x24x315	41-180	
M20x109	M24x28x315	41-180	

ADJUSTABLE VERTICAL CLAMPS

ov-W10603-A-T-support-extension-recommendations-rmh- Updated - 20-10-2022



## 10620



### Material

Steel, tempered and galvanised.

body has a long slot for easy positioning.

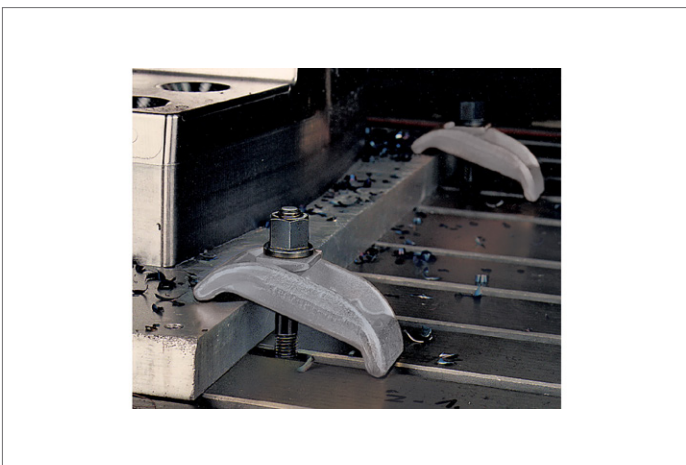
### Technical Notes

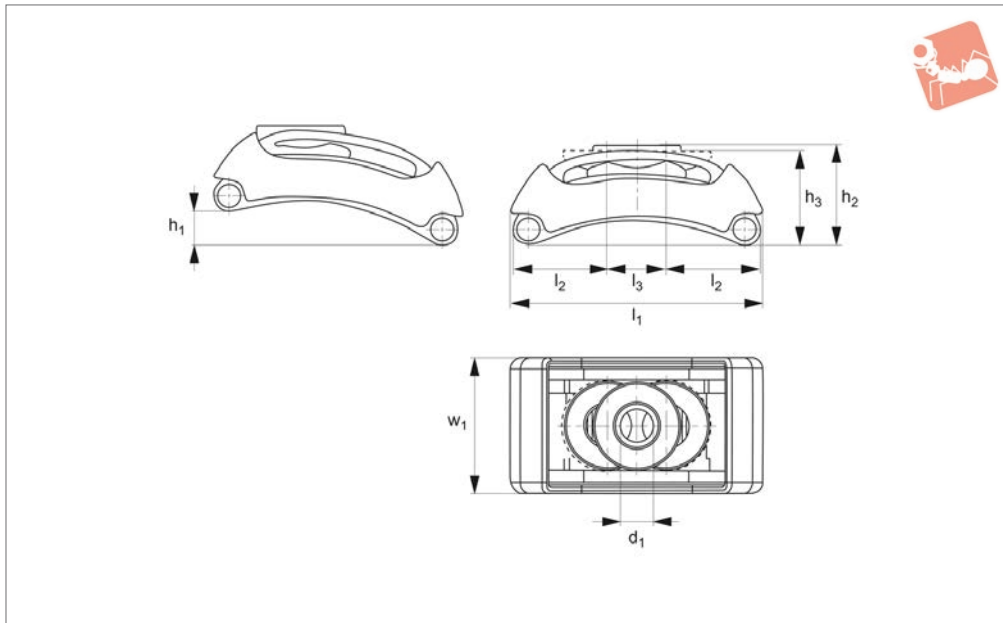
Ideal for press tool clamping. The clamp

### Tips

Supplied without T-bolt or nut - for these parts see nos. 21000 and 24400.

Order No.	Clamping height $h_1$ min.   max.	For T-slot	For bolt	$h_2$ min.   max.	$l_2$	$l_3$	$l_4$	$l_5$	$w_1 \times l_1$	$d_1$	Weight g
10620.W0012	0-35	12 & 14	M12	30-55	48	28	23	14	38x88	13	260
10620.W0016	0-55	16 & 18	M16	42-84	74	38	29	18	56x130	18	809
10620.W0020	0-65	20 & 22	M20	50-100	80	46	32	20	66x140	22	1253
10620.W0026	0-75	24 & 28	M24	54-111	100	52	39	24	76x174	26	1718
10620.W0032	0-80	36	M30	62-125	110	61	44	28	90x200	32	2785





## 10630.1

ADJUSTABLE VERTICAL CLAMPS

### Material

Steel, tempered and burnished.

### Technical Notes

Weight-saving thanks to its lightweight design. Variable and fast adjustment at a distance from the workpiece. No additional

clamping supports are needed to reach the required clamping height. The U-piece is undetachable from the clamp.

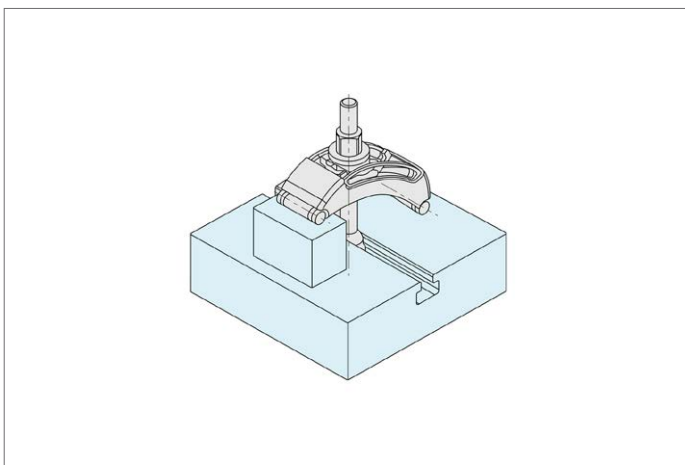
### Tips

For clamping, clamping bolts no. 21000 and studs no. 21100 and cheese head

screws (ISO 4762) can be used.

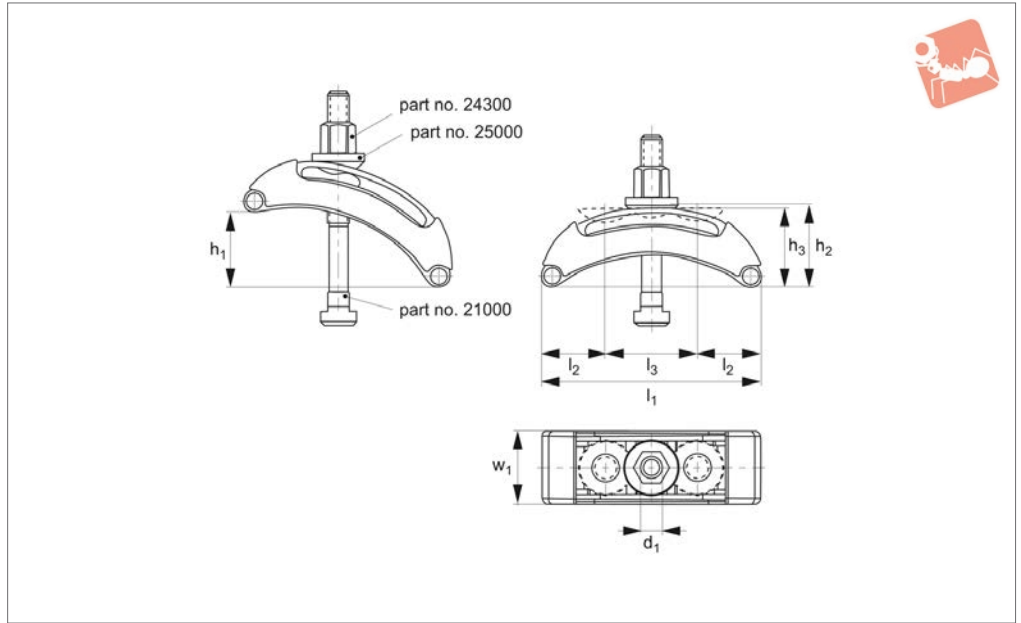
A washer no. 25000 must always be used between the hexagonal nut and U-piece.  $h_1$  is dependent on depth of slot to DIN 650 and position of fixture nut.

Order No.	Size	For clamping screw	$h_1$ min.   max.	$h_2$	$h_3$	$l_1$	$l_2$	$l_3$	$w_1$	$d_1$	Weight g
10630.W0010	10	M10	0-15	32.0	30.5	80	30	19	44	11	257
10630.W0014	14	M12-M14	0-33	49.5	47.0	125	37	51	57	14	708
10630.W0018	18	M16-M18	0-45	62.0	58.5	160	49	63	67	18	1235
10630.W0022	22	M20-M22	0-65	75.0	71.5	200	58	63	72	22	1880
10630.W0026	26	M22-M24	0-85	94.0	89.5	250	74	0	82	16	2799





### 10630.2



#### Material

Steel, tempered and burnished.

#### Technical Notes

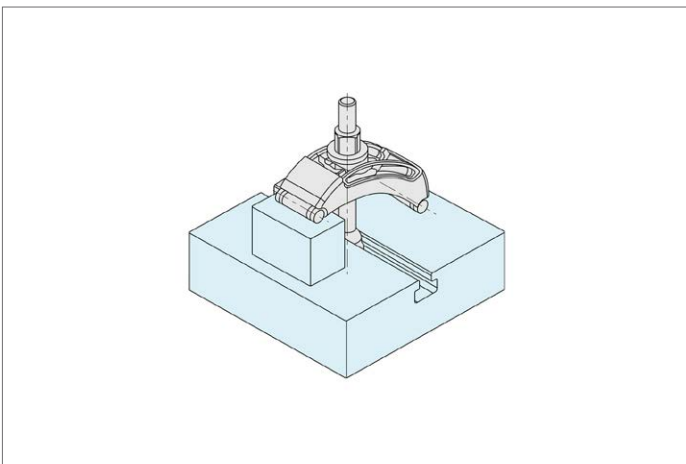
Complete with T-bolt set. Weight-saving thanks to its lightweight design. Variable

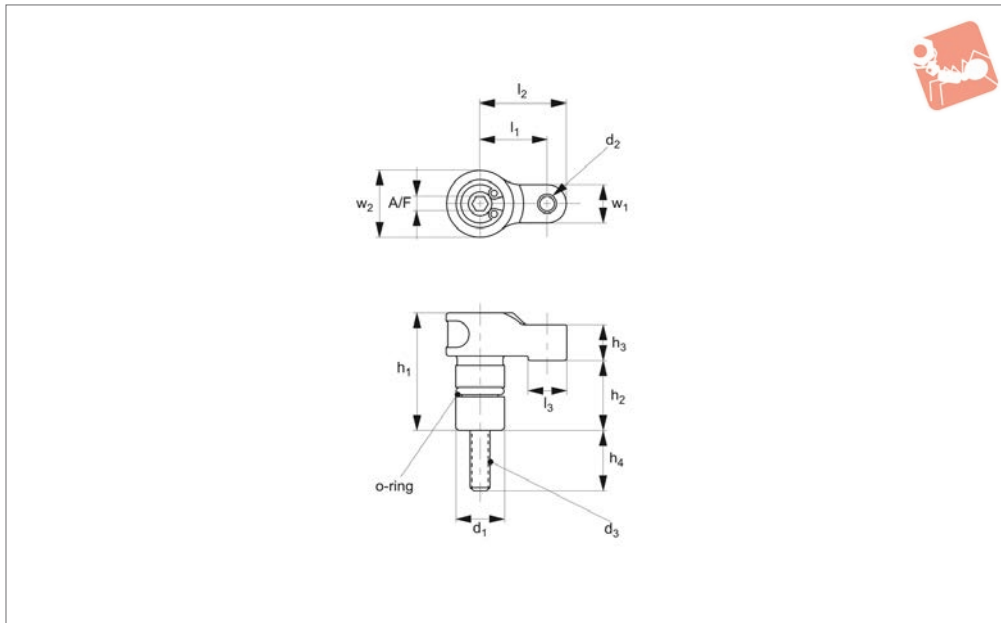
and fast adjustment at a distance from the workpiece. No additional clamping supports are needed to reach the required clamping height. The U-piece is undetachable from the clamp.

#### Tips

A washer (DIN 6340) must always be used between the hexagonal nut and U-piece.  $h_1$  is dependent on depth of slot to DIN 650 and position of fixture nut.

Order No.	Size	With clamping bolt	$h_1$ min.   max.	$h_2$	$h_3$	$l_1$	$l_2$	$l_3$	$w_1$	$d_1$	Weight g
10630.W0110	10	M10x10x80	0-15	32.0	30.5	80	30	19	44	11	349
10630.W0112	12	M12x12x100	0-33	49.5	47.0	125	37	51	57	14	886
10630.W0114	14	M12x14x125	0-33	49.5	47.0	125	37	51	57	14	905
10630.W0116	16	M16x16x160	0-45	62.0	58.5	160	49	63	67	18	1648
10630.W0118	18	M16x18x160	0-45	62.0	58.5	160	49	63	67	18	1668





## 12550.1

ADJUSTABLE VERTICAL CLAMPS

### Material

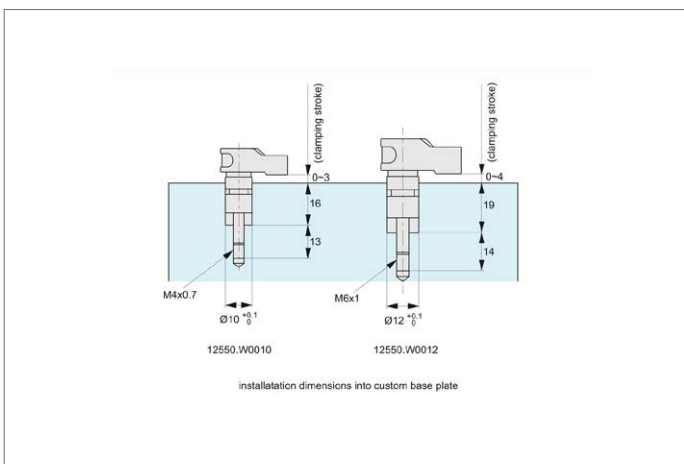
Steel (42CrMo), tempered, black oxide finish.

### Technical Notes

Very useful for limited space vertical clamping, can be recessed into bores to minimize height. Clamping stroke (see diagram below) for M 4= 0-3mm, for M 6= 0-4mm.

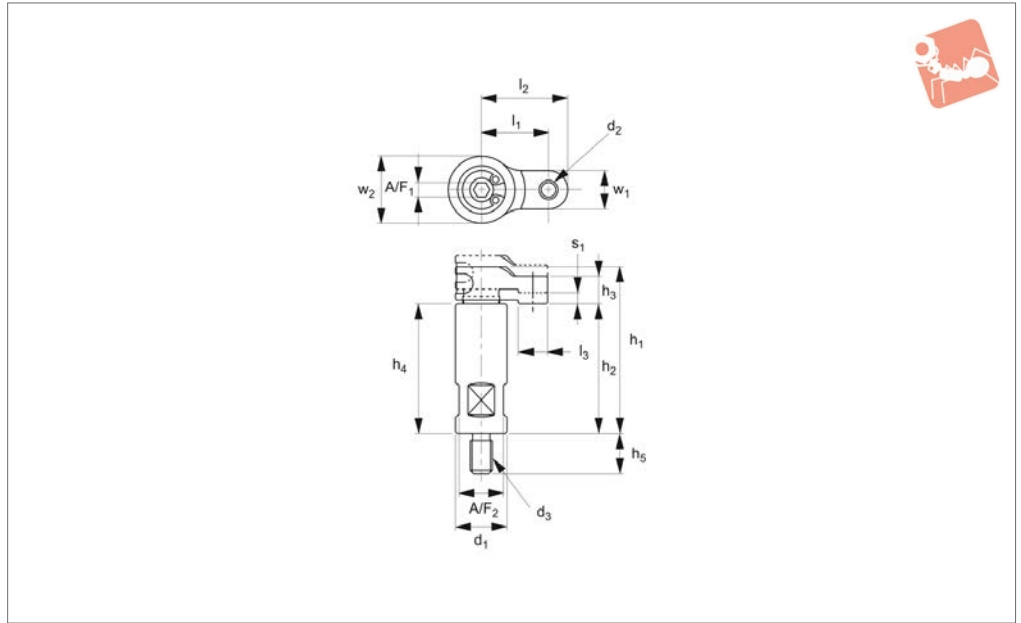
Clamping stroke (see diagram below) for M 4= 0-3mm, for M 6= 0-4mm.

Order No.	$h_1$	$l_1$	$d_1$ -0.02   -0.10	$d_2$	$h_2$	$h_3$	$h_4$	$d_3$	$l_2$	$l_3$	$w_1$	$w_2$	Torque to Nm max.	A/F	Clamping force kN max.	Weight g
12550.W0010	24,5	14	10	M 4x0,7	14,5	7,5	12,5	M 4x30	18	8	8	14	2,7	3	2,0	25
12550.W0012	30,5	17	12	M 5x0,8	17,5	9,5	13,5	M 6x35	22	10	10	16	7,0	5	3,5	45





## 12550.2



ADJUSTABLE VERTICAL CLAMPS

### Material

Clamp body: steel (42CrMo), tempered, black oxide finish.

Holder: steel (C45), tempered, black oxide

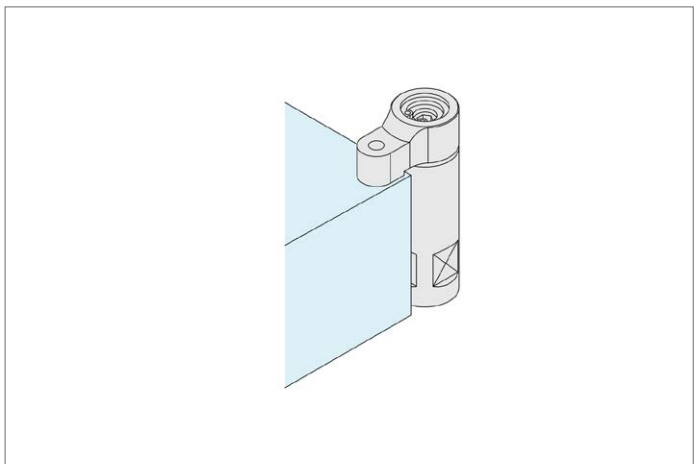
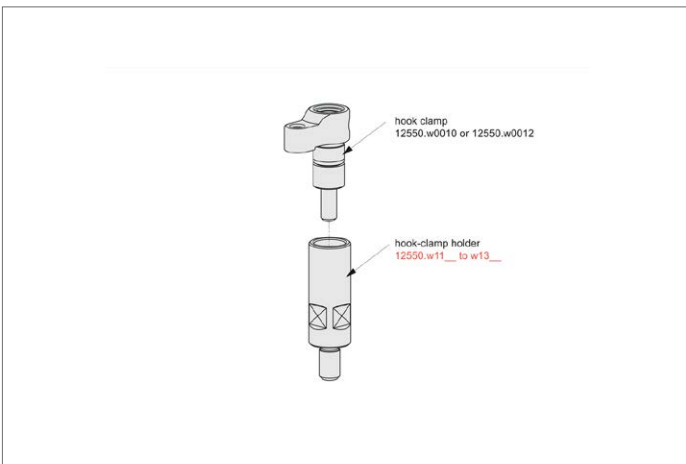
finish.

### Technical Notes

The hook clamp is designed to move up and

down in conjunction with the tightening screw.

Order No.	$h_1$	Stroke $s_1$	$l_1$	$d_1$	$d_2$	$h_2$	$h_3$	$h_4$	$h_5$	$d_3$	$w_1$	$w_2$	$A/F_1$	$A/F_2$	Clamping force kN	Torque Nm max.	Weight g
<b>12550.W0110</b>	45	3	14	14	M 4x0,7	35	7,5	35	11	M 6x1	8	14	3	12	2,0	2,7	55
<b>12550.W0112</b>	53	4	17	16	M 5x0,8	40	9,5	40	14	M 8x1,25	10	16	5	13	3,5	7,0	90

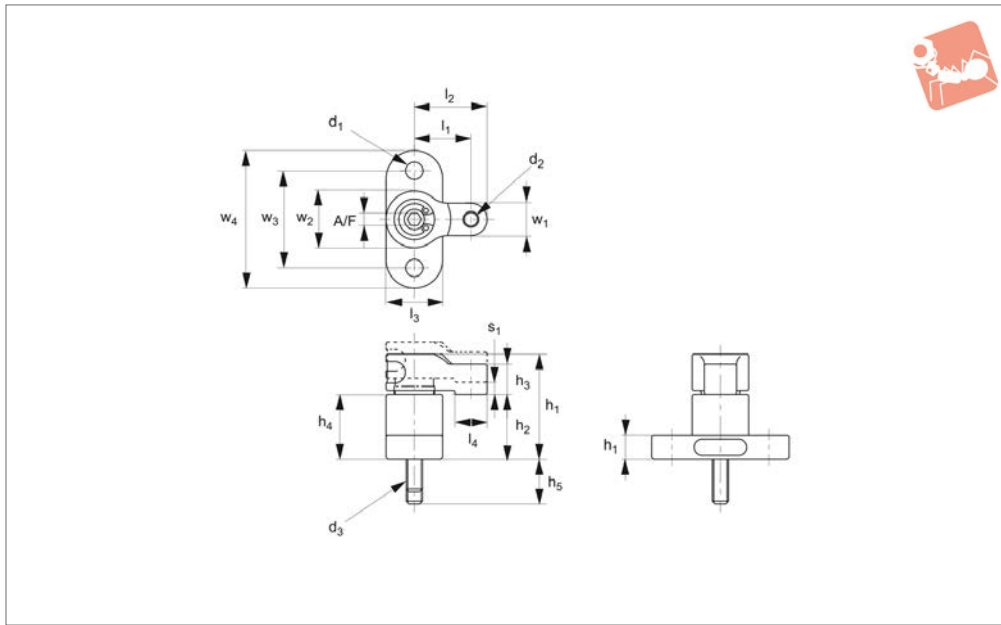






# Hook Clamp flanged

# Adjustable Vertical Clamps



**12550.3**

ADJUSTABLE VERTICAL CLAMPS

**Material**

Steel (42CrMo), quenched and tempered, black oxide finish.  
Holder: steel (C45), quenched and

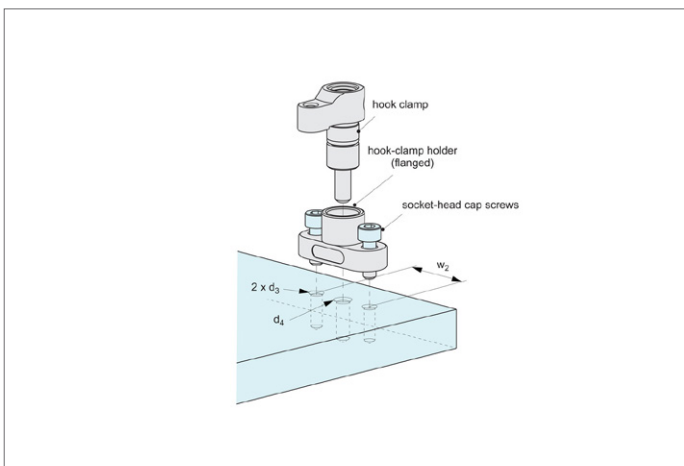
tempered, black oxide finish.

**Technical Notes**

Ideal for low height clamping.

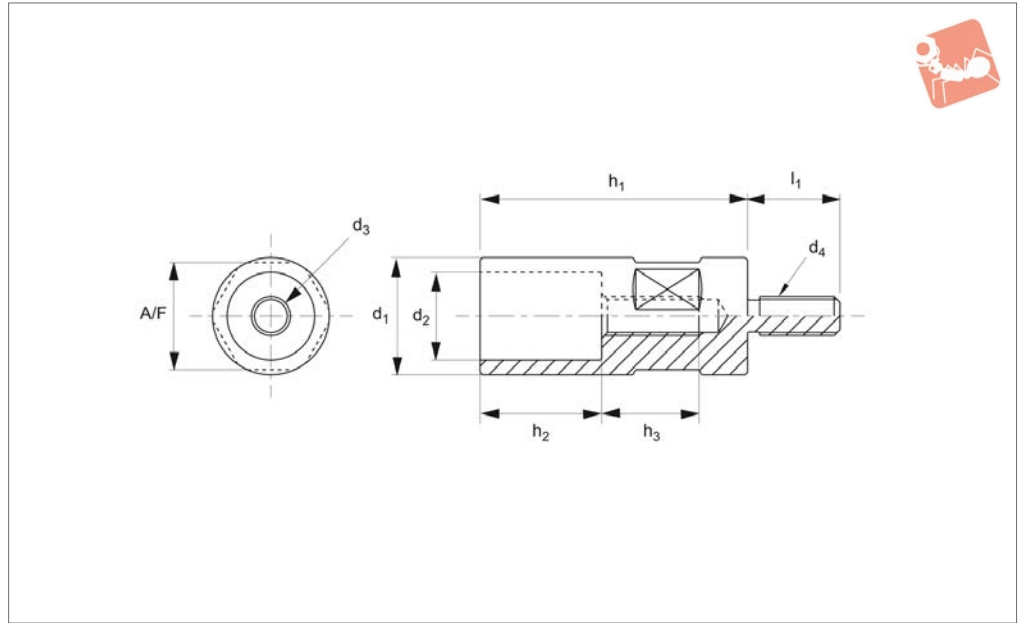
The hook clamp is designed to move up and down in conjunction with the tightening screw.

Order No.	$h_1$	Stroke $s_1$	$l_1$	$d_1$	$d_2$	$h_2$	$h_3$	$h_4$	$h_5$	$d_3$	$l_2$	$l_3$	$w_1$	$w_2$	$w_3$	$w_4$	Torque to Nm max.	A/F	Clamping force kN	Weight g
<b>12550.W0210</b>	6	3	14	4,3	M 4x0,7	16	7,5	16	11	M 4x30	18	14	8	14	24	34	2,7	3	2,0	45
<b>12550.W0212</b>	8	4	17	5,3	M 5x0,8	19	9,5	19	12	M 5x35	22	16	10	16	28	40	7,0	5	3,5	75





## 12550.4



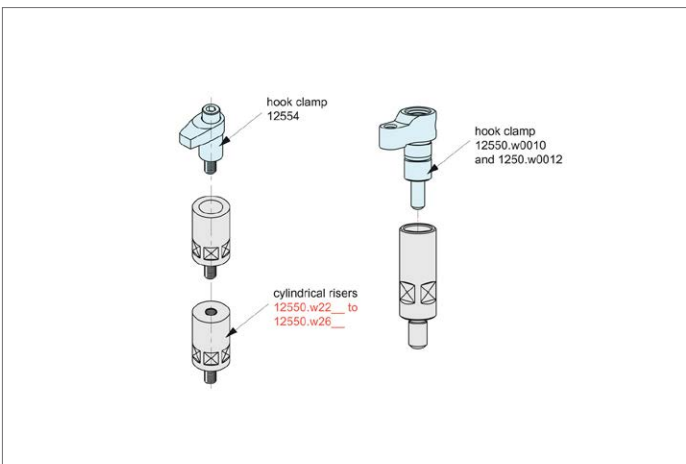
### Material

Steel (C45), black oxide finish.

### Tips

For use with hook clamps part no's 12550.  
W0010- .W0012 and 12554.

Order No.	Hook clamp size dia.	$h_1$	$l_1$	$d_1$	$d_2$ tol. f7	$h_2$	$h_3$	$d_3$	$d_4$	Torque to Nm max.	A/F	Weight g
12550.W1101	10	35	11	14	10 <sup>+0,1,0</sup>	16	13	M 4x0,7	M 6x1	2.7	12	30
12550.W1121	12	40	14	16	12 <sup>+0,1,0</sup>	19	14	M 6x1	M 8x1,25	7.0	13	45
12550.W1181	18	55	19	24	18	25	20	M 8x1,25	M 8x1,25	30	22	140
12550.W1201	20	63	30	32	20	30	21	M10x1,5	M12x1,75	38	30	400
12550.W1202	20	80	30	32	20	30	23	M10x1,5	M12x1,75	38	30	500
12550.W1251	25	80	30	40	25	40	25	M12x1,75	M12x1,75	50	36	600
12550.W1252	25	100	30	40	25	40	25	M12x1,75	M12x1,75	50	36	800
12550.W1321	32	80	30	50	32	40	25	M16x2	M16x2	80	46	930
12550.W1322	32	100	30	50	32	40	25	M16x2	M16x2	80	46	1230

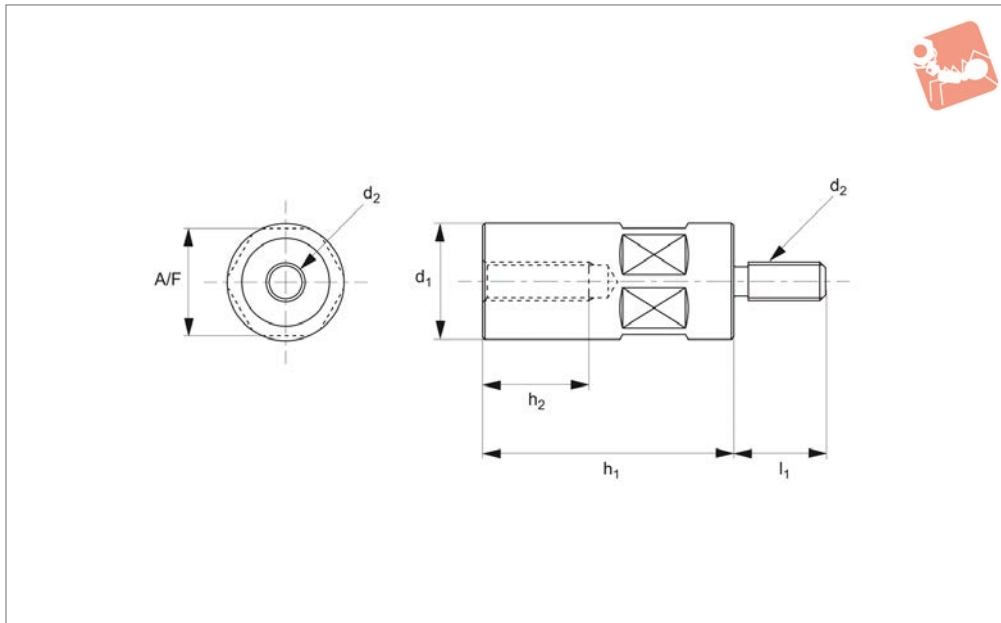




# Hook Clamp Risers

cylindrical

# Adjustable Vertical Clamps



**12550.5**

ADJUSTABLE VERTICAL CLAMPS

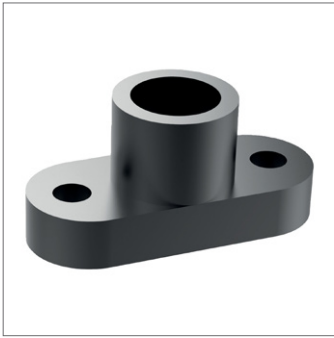
### Material

Steel, heat treated and black oxide finish.

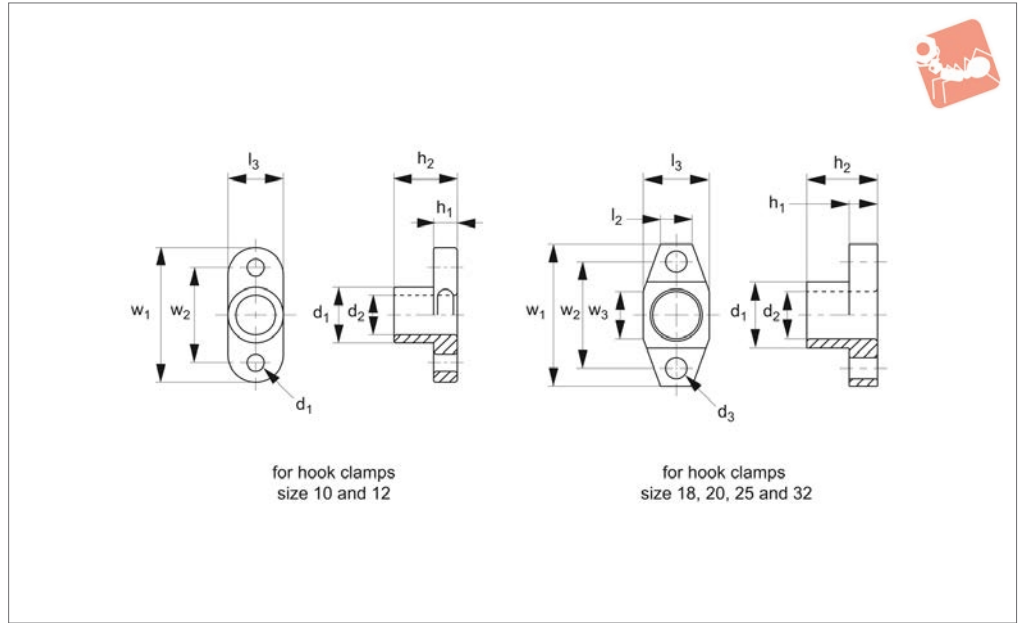
### Technical Notes

For use with hook clamps 12550.

Order No.	$h_1$	$l_1$	$d_1$	$d_2$	$h_2$	A/F	Weight g
12550.W2241	32	19	24	M 8x1,25	20	22	105
12550.W2242	40	19	24	M 8x1,25	20	22	135
12550.W2243	50	19	24	M 8x1,25	20	22	170
12550.W2244	65	19	24	M 8x1,25	20	22	220
12550.W2401	50	30	40	M12x1,75	35	36	480
12550.W2402	65	30	40	M12x1,75	35	36	640
12550.W2403	80	30	40	M12x1,75	35	36	740
12550.W2404	100	30	40	M12x1,75	35	36	940
12550.W2405	125	30	40	M12x1,75	35	36	1230
12550.W2406	160	30	40	M12x1,75	35	36	1570
12550.W2407	200	30	40	M12x1,75	35	36	1970
12550.W2501	50	30	50	M16x2	35	46	770
12550.W2502	65	30	50	M16x2	35	46	1000
12550.W2503	80	30	50	M16x2	35	46	1160
12550.W2504	100	30	50	M16x2	35	46	1470
12550.W2505	125	30	50	M16x2	35	46	1920
12550.W2601	160	30	60	M16x2	35	55	3490
12550.W2602	200	30	60	M16x2	35	55	4370



## 12550.6



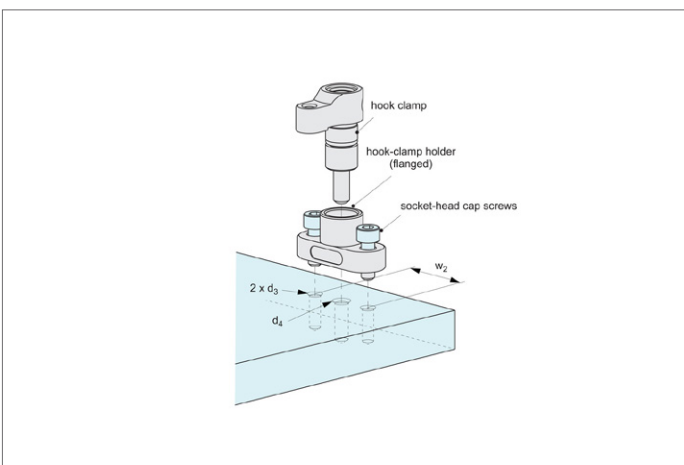
### Material

Steel (C45), black oxide finish, tempered - 12550.W3100 and 12550.W3120).

### Technical Notes

For use with hook clamps part no's 12550. W0010- .W0012 and 12554.

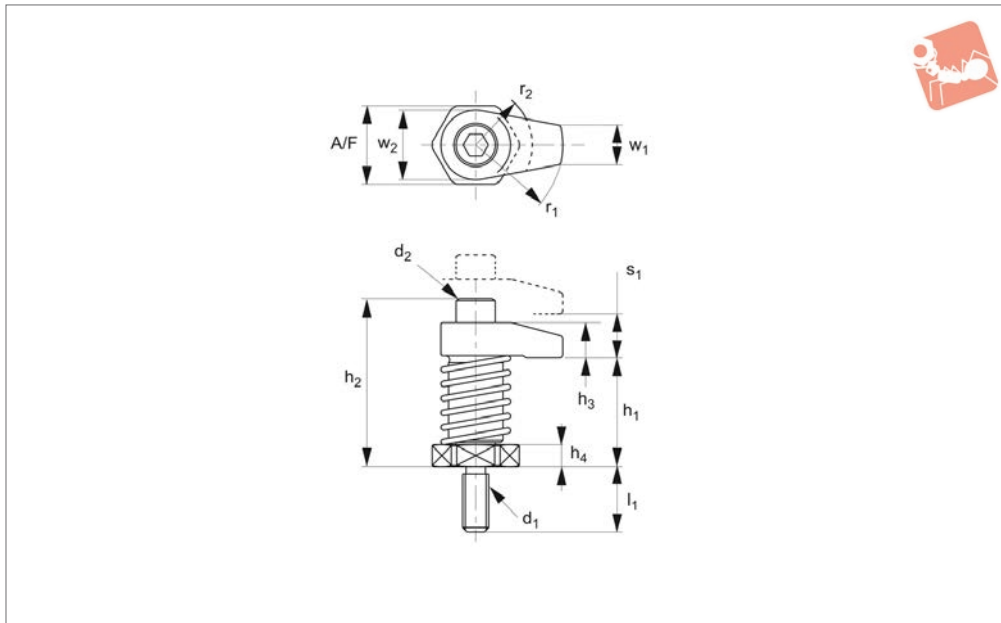
Order No.	Hook clamp size dia.	$h_1$	$l_1$	$d_1$	$d_2$ tol. f7	$h_2$	$d_3$	$l_2$	$w_1$	$w_2$	$w_3$	Weight g
12550.W3100	10	6	-	14	$10^{+0,1}$	16	4,3 (M 4)	14	34	24	-	20
12550.W3120	12	8	-	16	$12^{+0,1}$	19	5,3 (M 5)	16	40	28	-	30
12550.W3180	18	10	11.3	24	18	25	6,6 (M 6)	24	50	38	15	85
12550.W3200	20	12	13.4	28	20	30	9,0 (M 8)	28	60	45	20	150
12550.W3250	25	14	15.0	35	25	40	11,0 (M10)	35	75	55	20	290
12550.W3320	32	16	20.2	42	32	40	13,0 (M12)	41	85	65	25	400





# Hook Clamps spring loaded

# Adjustable Vertical Clamps



**12552**

ADJUSTABLE VERTICAL CLAMPS

**Material**

Steel (35CrMo), heat treated, black oxide finish, precision ground.

ping height.

**Tips**

Please apply grease to sliding surface.

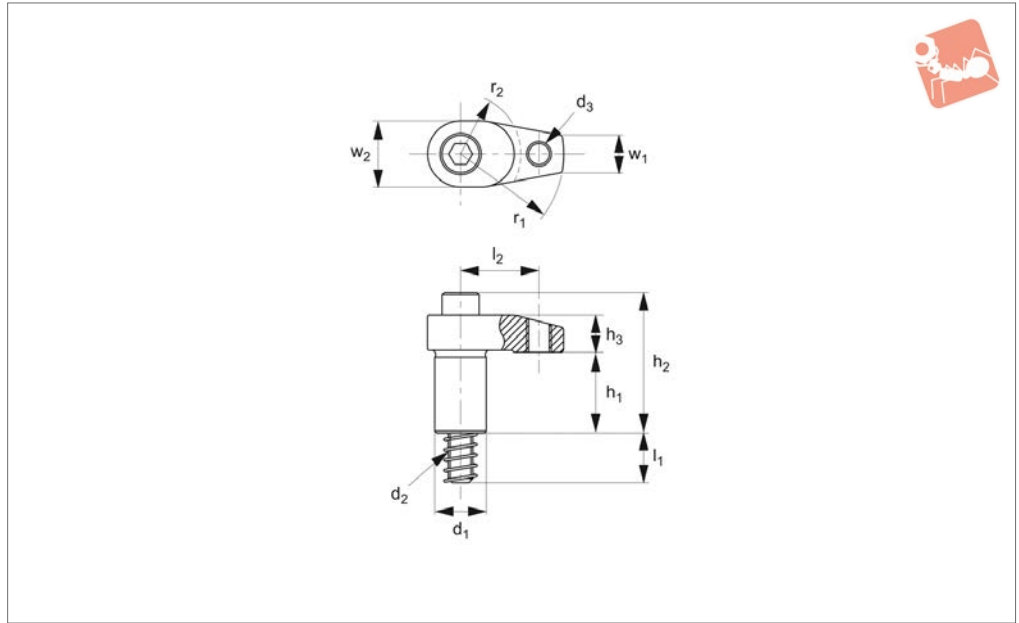
**Technical Notes**

Cylindrical risers can be used to raise clam-

Order No.	$h_1$	Stroke $s_1$	$l_1$	$d_1$	$d_2$	$h_2$	$h_3$	$h_4$	$w_1$	$w_2$	$r_1$	$r_2$	Torque to Nm max.	A/F	Clamping force kN	Weight g
12552.W0221	35	10	19	M 8x1,25	M 8x30	49	12	6	10	22	20	15	20	22	7.9	125
12552.W0222	35	10	19	M 8x1,25	M 8x30	49	12	6	10	22	25	15	20	22	7.3	130
12552.W0223	35	10	19	M 8x1,25	M 8x30	49	12	6	10	22	30	15	20	22	6.7	135
12552.W0224	45	10	19	M 8x1,25	M 8x30	59	12	16	10	22	20	15	20	22	7.9	160
12552.W0225	45	10	19	M 8x1,25	M 8x30	59	12	16	10	22	25	15	20	22	7.3	165
12552.W0226	45	10	19	M 8x1,25	M 8x30	59	12	16	10	22	30	15	20	22	6.7	170
12552.W0321	50	15	30	M12x1,7 5	M12x4 5	77	16	10	18	32	40	26	45	36	13.5	450
12552.W0322	50	15	30	M12x1,7 5	M12x4 5	79	16	10	18	32	50	26	45	36	12.6	480
12552.W0323	50	15	30	M12x1,7 5	M12x4 5	79	16	10	18	32	60	26	45	36	11.7	520
12552.W0324	65	15	30	M12x1,7 5	M12x4 5	92	16	25	18	32	40	26	45	36	13.5	600
12552.W0325	65	15	30	M12x1,7 5	M12x4 5	94	18	25	18	32	50	26	45	36	12.6	630
12552.W0326	65	15	30	M12x1,7 5	M12x4 5	94	18	25	18	32	60	26	45	36	11.7	670
12552.W0361	50	15	30	M16x2	M16x5 5	86	21	10	22	36	40	26	60	36	13.4	630
12552.W0362	50	15	30	M16x2	M16x5 5	86	21	10	22	36	50	26	60	36	12.4	680
12552.W0363	50	15	30	M16x2	M16x5 5	86	21	10	22	36	60	26	60	36	12.0	740
12552.W0364	65	15	30	M16x2	M16x5 5	101	21	25	22	36	40	26	60	36	13.4	780
12552.W0365	65	15	30	M16x2	M16x5 5	101	21	25	22	36	50	26	60	36	12.4	830
12552.W0366	65	15	30	M16x2	M16x5 5	101	21	25	22	36	60	26	60	36	12.0	890



## 12554



ADJUSTABLE VERTICAL CLAMPS

### Material

Steel (C45), tempered and black oxide finish, precision ground.

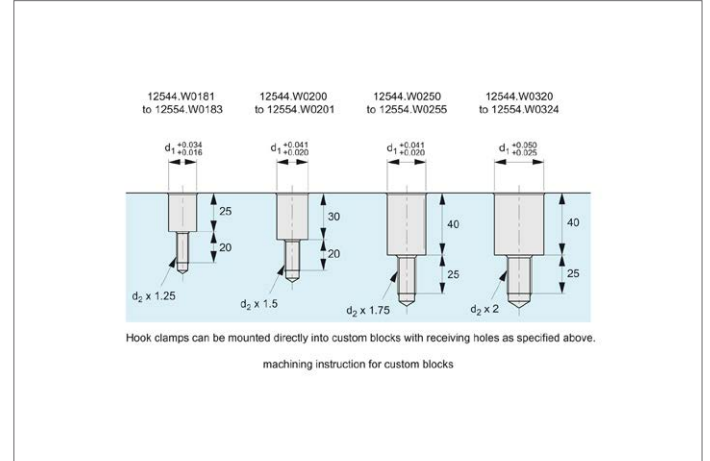
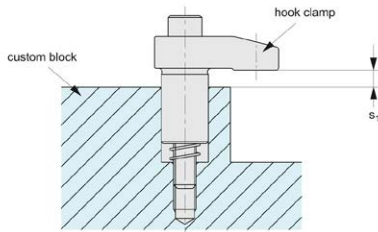
prevent galling when using in dry condition.

Can be used with clamping holders 12550.4. and cylindrical risers 12550.5.

### Tips

Please apply grease on sliding surface to

Order No.	$h_1$	Stroke $s_1$	$l_1$	$d_1$ tol. h7	$d_2$	$h_2$	$h_3$	$d_3$	$l_2$	$w_1$	$w_2$	$r_1$	$r_2$	Torque to Clamping force Nm max. kN	Weight g	
12554.W0181	23	10	21	18	M 8x50	37	12			10	22	20	15	38	15	90
12554.W0182	23	10	21	18	M 8x50	37	12			10	22	25	15	33	12	100
12554.W0183	23	10	21	18	M 8x50	37	12			10	22	30	20	30	10	105
12554.W0200	30	12	21	20	M10x65	54	15			12	25	30	20	38	13	165
12554.W0201	30	12	21	20	M10x65	54	15			12	25	40	25	32	10	180
12554.W0250	39	15	26	25	M12x80	66	16			18	32	40	25	60	18	305
12554.W0251	39	15	24	25	M12x80	68	18			18	32	50	25	50	14	360
12554.W0252	39	15	24	25	M12x80	68	18			18	32	60	25	46	12	380
12554.W0253	39	15	26	25	M12x80	66	16	M12x1,75	31	18	32	40	25	60	18	295
12554.W0254	39	15	24	25	M12x80	68	18	M12x1,75	38	18	32	50	25	50	14	350
12554.W0255	39	15	24	25	M12x80	68	18	M12x1,75	46	18	32	60	25	46	12	370
12554.W0320	39	15	26	32	M16x85	75	21			22	36	40	25	170	38	530
12554.W0321	39	15	26	32	M16x85	75	21			22	36	50	25	150	31	580
12554.W0322	39	15	26	32	M16x85	75	21			22	36	60	25	130	26	625
12554.W0323	39	15	26	32	M16x85	75	21	M12x1,75	38	22	36	50	25	150	31	565
12554.W0324	39	15	26	32	M16x85	75	21	M12x1,75	46	22	36	60	25	130	26	610



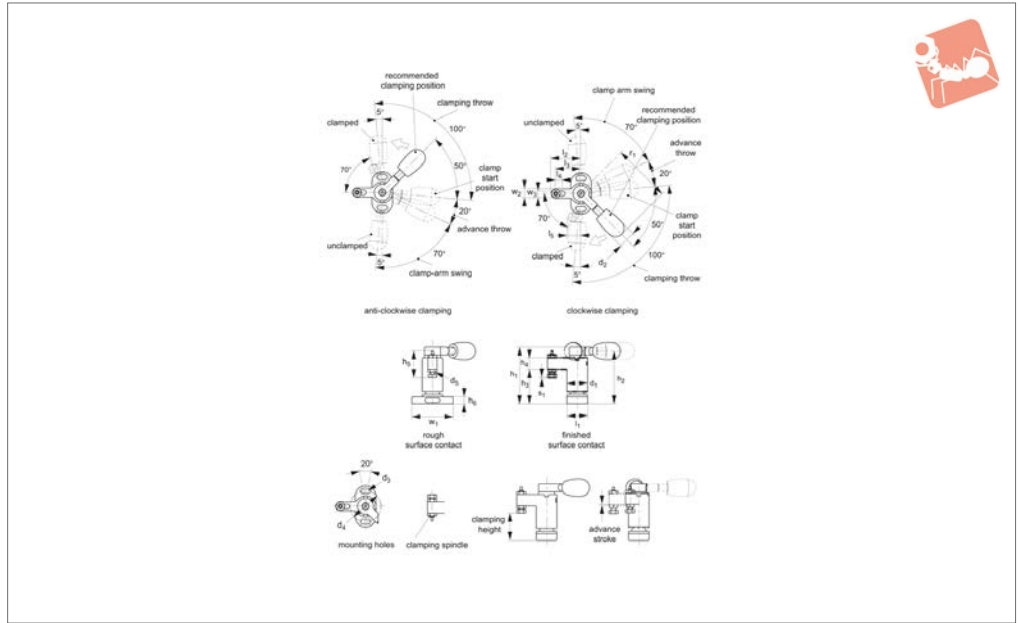
ADJUSTABLE VERTICAL CLAMPS



ADJUSTABLE VERTICAL CLAMPS



## 12562.1



### Material

Body, handle, clamping spindle: steel (C45), tempered and black oxide finish.  
 Arm, cam shaft: steel (42CrMo4), tempered

and black oxide finish.  
 Knob: phenolic plastic, black.

### Tips

Rough surface contact. Can be supplied with nickel-plated finish on request. Clamping height can be adjusted. Values in

Order No.	Clamping direction	Clamping height finished surface min.	Clamping height finished surface max.	Clamping height rough surface min.	Clamping height rough surface max.	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$h_6$	$l_1$	$l_2$	Weight g
12562.W0030	Clockwise	22,8 (22,3~23)	24,8 (24,3~25)	22,4 (21,9~22)	24,4 (23,9~24)	49	45.8	30	10	22.8	6	18	26	112
12562.W0040	Clockwise	31,3 (30,6~32,0)	31,3 (30,6~32,0)	32,2 (31,5~32,9)	34,2 (33,5~34,9)	66	61.3	40	14	28.5	8	23	35	250
12562.W0050	Clockwise	32,5 (31,7~33,2)	39,0 (38,2~39,7)	33,5 (32,7~34,2)	40,0 (39,2~40,7)	82	76.5	50	18	45.5	12	30	45	570
12562.W0060	Clockwise	36,5 (35,5~37,4)	46,0 (45,0~46,9)	39,0 (38,0~39,9)	48,5 (47,5~49,4)	100	93.0	60	22	57.0	15	40	55	1200
12562.W0031	Anti-clockwise	22,8 (22,3~23,3)	24,8 (24,3~25,3)	22,4 (21,9~22,9)	24,4 (23,9~24,9)	49	45.8	30	10	22.8	6	18	26	112
12562.W0041	Anti-clockwise	31,3 (30,6~32,0)	33,3 (32,6~34,0)	32,2 (31,5~32,9)	34,2 (33,5~34,9)	66	61.3	40	14	28.5	8	23	35	250
12562.W0051	Anti-clockwise	32,5 (31,7~33,2)	39,0 (38,2~39,7)	33,5 (32,7~34,2)	40,0 (39,2~40,7)	82	76.5	50	18	45.5	12	30	45	570
12562.W0061	Anti-clockwise	36,5 (35,5~37,4)	46,0 (45,0~46,9)	39,0 (38,0~39,9)	48,5 (47,5~49,4)	100	93.0	60	22	57.0	15	40	55	1200



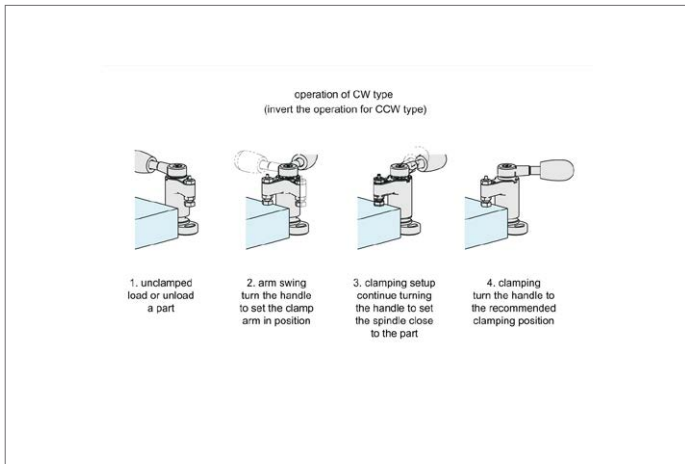


# Swing Clamps

# Adjustable Vertical Clamps

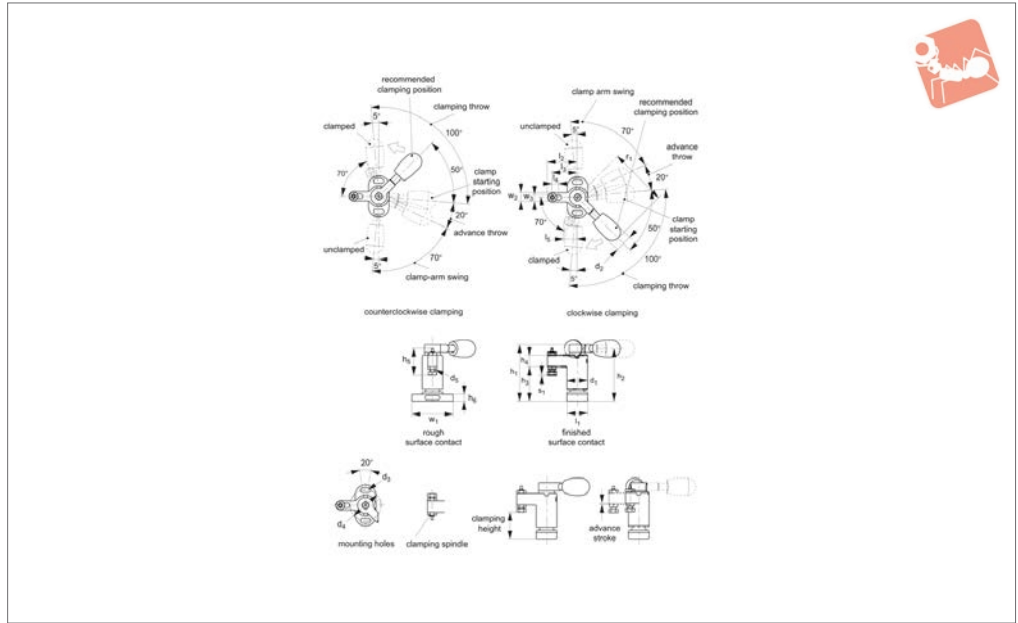
Order No.	$l_3$	$l_4$	$l_5$	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	$r_1$	$w_1$	$w_2$	$w_3$	Clamping force kN	Clamping mechanism	Clamping stroke $s_1$	Advance stroke $s_2$	Operating load N max.
12562.W0030	22	6	11.5	18	15	4.3	27	M 4x0, 70	50	36	8	4.3	1.1	Spiral Cam, 5°	1.0	0.8	100
12562.W0040	30	8	15.3	23	20	5.3	34	M 5x0, 80	63	45	10	5.3	1.8	Spiral Cam, 5°	1.4	1.1	150
12562.W0050	37	8	20.7	30	26	8.4	48	M 8x1, 25	80	65	16	8.4	2.2	Spiral Cam, 4°	1.5	1.4	200
12562.W0060	45	8	25.4	40	33	10.5	64	M1 0x1, 50	100	85	20	10.4	3.5	Spiral Cam, 4°	1.9	1.7	300
12562.W0031	22	6	11.5	18	15	4.3	27	M 4x0, 70	50	36	8	4.3	1.1	Spiral Cam, 5°	1.0	0.8	100
12562.W0041	30	8	15.3	23	20	5.3	34	M 5x0, 80	63	45	10	5.3	1.8	Spiral Cam, 5°	1.4	1.1	150
12562.W0051	37	8	20.7	30	26	8.4	48	M 8x1, 25	80	65	16	8.4	2.2	Spiral Cam, 4°	1.5	1.4	200
12562.W0061	45	8	25.4	40	33	10.5	64	M1 0x1, 50	100	85	20	10.4	3.5	Spiral Cam, 4°	1.9	1.7	300

ADJUSTABLE VERTICAL CLAMPS





## 12562.2



ADJUSTABLE VERTICAL CLAMPS

### Material

Body, handle, clamping spindle: steel (C45), quenched and tempered, electroless nickel plated.  
 Arm, cam shaft: steel (42CrMo4), quenched

and tempered, electroless nickel plated.  
 Knob: phenolic plastic, black.

parenthesised values denote clamping height range.

### Tips

Clamping height can be adjusted. The

Order No.	Clamping direction	Clamping height finished surface min.	Clamping height finished surface max.	Clamping height rough surface min.	Clamping height rough surface max.	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$h_6$	$l_1$	$l_2$	Weight g
12562.W0330	Clockwise	22,8 (22,3~23,3)	24,8 (24,3~25,3)	22,4 (21,9~22,9)	24,4 (23,9~24,9)	49	45.8	30	10	22.8	6	18	26	112
12562.W0340	Clockwise	31,3 (30,6~32,0)	33,3 (32,6~34,0)	32,2 (31,5~32,9)	34,2 (33,5~34,9)	66	61.3	40	14	28.5	8	23	35	250
12562.W0350	Clockwise	32,5 (31,7~33,2)	39,0 (38,2~39,7)	33,5 (32,7~34,2)	40,0 (39,2~40,7)	82	76.5	50	18	45.5	12	30	45	570
12562.W0360	Clockwise	36,5 (35,5~37,4)	46,0 (45,0~46,9)	39,0 (38,0~39,9)	48,5 (47,5~49,4)	100	93.0	60	22	57.0	15	40	55	1200
12562.W0331	Counter Clockwise	22,8 (22,3~23,3)	24,8 (24,3~25,3)	22,4 (21,9~22,9)	24,4 (23,9~24,9)	49	45.8	30	10	22.8	6	18	26	112
12562.W0341	Counter Clockwise	31,3 (30,6~32,0)	33,3 (32,6~34,0)	32,2 (31,5~32,9)	34,2 (33,5~34,9)	66	61.3	40	14	28.5	8	23	35	250
12562.W0351	Counter Clockwise	32,5 (31,7~33,2)	39,0 (38,2~39,7)	33,5 (32,7~34,2)	40,0 (39,2~40,7)	82	76.5	50	18	45.5	12	30	45	570



# Swing Clamps

# Adjustable Vertical Clamps

Order No.	Clamping direction	Clamping height finished surface min.	Clamping height finished surface max.	Clamping height rough surface min.	Clamping height rough surface max.	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub>	h <sub>6</sub>	l <sub>1</sub>	l <sub>2</sub>	Weight g
<b>12562.W0361</b>	Counter Clockwise	36,5 (35,5~37,4)	46,0 (45,0~46,9)	39,0 (38,0~39,9)	48,5 (47,5~49,4)	100	93.0	60	22	57.0	15	40	55	1200

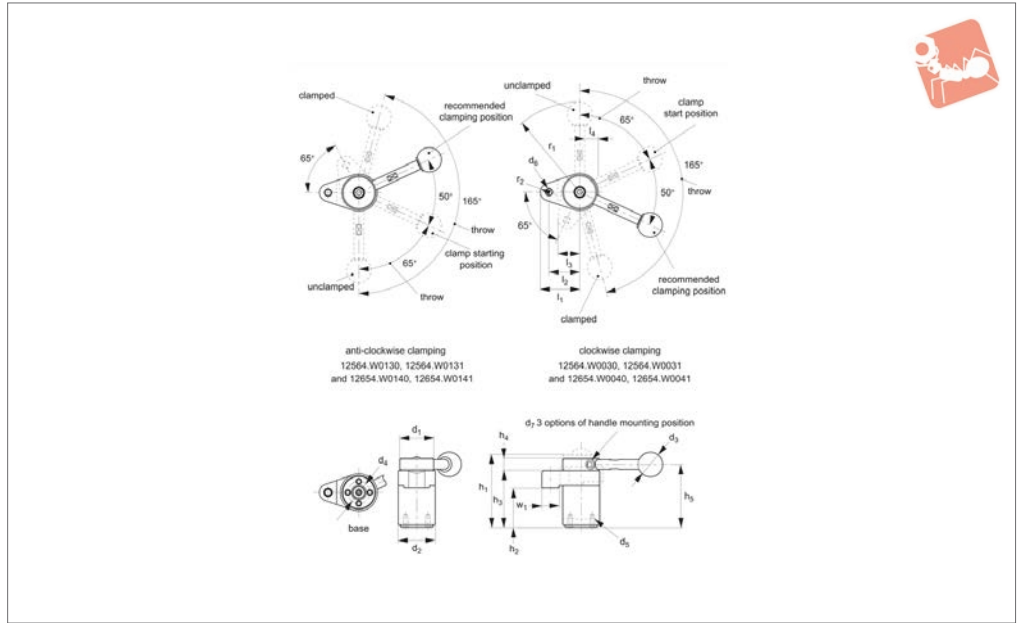
  

Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	r <sub>1</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	Clamping force kN max.	Clamping mechanism	Clamping stroke s <sub>1</sub>	Advance stroke s <sub>2</sub>	Operating load N max.
<b>12562.W0330</b>	22	6	11.5	18	15	4.3	27	M 4x0,70	50	36	8	4.3	1.1	Spiral Cam, Cam Angle 5°	1.0	0.8	100
<b>12562.W0340</b>	30	8	15.3	23	20	5.3	34	M 5x0,80	63	45	10	5.3	1.8	Spiral Cam, Cam Angle 5°	1.4	1.1	150
<b>12562.W0350</b>	37	8	20.7	30	26	8.4	48	M 8x1,25	80	65	16	8.4	2.2	Spiral Cam, Cam Angle 5°	1.5	1.4	200
<b>12562.W0360</b>	45	8	25.4	40	33	10.5	64	M10x1,50	100	85	20	10.4	3.5	Spiral Cam, Cam Angle 4°	1.9	1.7	300
<b>12562.W0331</b>	22	6	11.5	18	15	4.3	27	M 4x0,70	50	36	8	4.3	1.1	Spiral Cam, Cam Angle 5°	1.0	0.8	100
<b>12562.W0341</b>	30	8	15.3	23	20	5.3	34	M 5x0,80	63	45	10	5.3	1.8	Spiral Cam, Cam Angle 5°	1.4	1.1	150
<b>12562.W0351</b>	37	8	20.7	30	26	8.4	48	M 8x1,25	80	65	16	8.4	2.2	Spiral Cam, Cam Angle 4°	1.5	1.4	200
<b>12562.W0361</b>	45	8	25.4	40	33	10.5	64	M10x1,50	100	85	20	10.4	3.5	Spiral Cam, Cam Angle 4°	1.9	1.7	300

ADJUSTABLE VERTICAL CLAMPS



## 12564.1



ADJUSTABLE VERTICAL CLAMPS

### Material

Body, shaft: steel (42CrMo), tempered and black oxide finish.  
 Clamp arm, adaptor head: steel (C45), tempered and black oxide finish.  
 Handle: steel (C45), black oxide finish.  
 Ball knob: ABS resin, black.

### Technical Notes

When installing a pad on the clamp arm, lock the clamp arm using a wrench to prevent the clamp from receiving any torque.  
 Clamping height can be adjusted. The values in brackets shows clamping height range.

range.

### Tips

For parts 12564.W0031, 12564.W0131, 12564.W0041 and 12564.W0141 the handle must be ordered separately.

Order No.	Clamping direction	Type	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$l_1$	$l_2$	$l_3$	Weight g
12564.W0030	Clockwise	With handle	57.5	32 (31,4~32,6)	46	10	51.0	32	25	17.5	320
12564.W0040	Clockwise	With handle	78.1	45 (44,1~45,9)	63	13	69.5	40	32	21.5	710
12564.W0031	Clockwise	Without handle	57.5	32 (31,4~32,6)	46	10	51.0	32	25	17.5	295
12564.W0041	Clockwise	Without handle	78.1	45 (44,1~45,9)	63	13	69.5	40	32	21.5	660
12564.W0130	Anti Clockwise	With handle	57.5	32 (31,4~32,6)	46	10	51.0	32	25	17.5	320
12564.W0140	Anti Clockwise	With handle	78.1	45 (44,1~45,9)	63	13	69.5	40	32	21.5	710
12564.W0131	Anti Clockwise	Without handle	57.5	32 (31,4~32,6)	46	10	51.0	32	25	17.5	295
12564.W0141	Anti Clockwise	Without handle	78.1	45 (44,1~45,9)	63	13	69.5	40	32	21.5	660

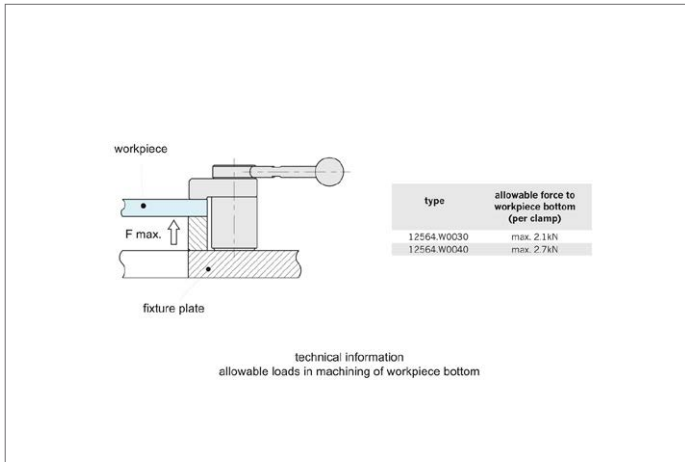
Order No.	$l_4$	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	$d_6$	$d_7$	$r_1$	$r_2$	$w_1$	Clamping force kN max.	Clamping mechanism	Handle load N max.
12564.W0030	15	30	30	20	18	M 4x0,7 Depth 8M	6x1,0M	5x0,8	73	7	14	0.8	Spiral Cam, 4°	150
12564.W0040	20	40	38	25	25	M 6x1,0 Depth 12M	M 8x1,2M	6x1,0	107	8	16	1.2	Spiral Cam, 4°	200
12564.W0031	15	30	30	20	18	M 4x0,7 Depth 8M	6x1,0M	5x0,8	73	7	14	0.8	Spiral Cam, 4°	150
12564.W0041	20	40	38	25	25	M 6x1,0 Depth 12M	M 8x1,2M	6x1,0	107	8	16	1.2	Spiral Cam, 4°	200
12564.W0130	15	30	30	20	18	M 4x0,7 Depth 8M	6x1,0M	5x0,8	73	7	14	0.8	Spiral Cam, 4°	150
12564.W0140	20	40	38	25	25	M 6x1,0 Depth 12M	M 8x1,2M	6x1,0	107	8	16	1.2	Spiral Cam, 4°	200



# Swing Clamps

# Adjustable Vertical Clamps

Order No.	$l_4$	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	$d_6$	$d_7$	$r_1$	$r_2$	$w_1$	Clamping force kN max.	Clamping mechanism	Handle load N max.
<b>12564.W0131</b>	15	30	30	20	18	M 4x0,7	Depth 8M 6x1,0M	5x0,8	73	7	14	0.8	Spiral Cam, 4°	150
<b>12564.W0141</b>	20	40	38	25	25	M 4x1,0	Depth 8M 8x1,2M	6x1,0	107	8	16	1.2	Spiral Cam, 4°	200



ADJUSTABLE VERTICAL CLAMPS

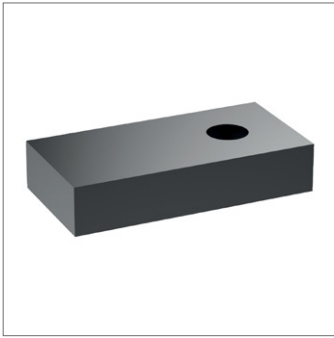
# Adjustable Vertical Clamps

# Machineable Clamp Arms

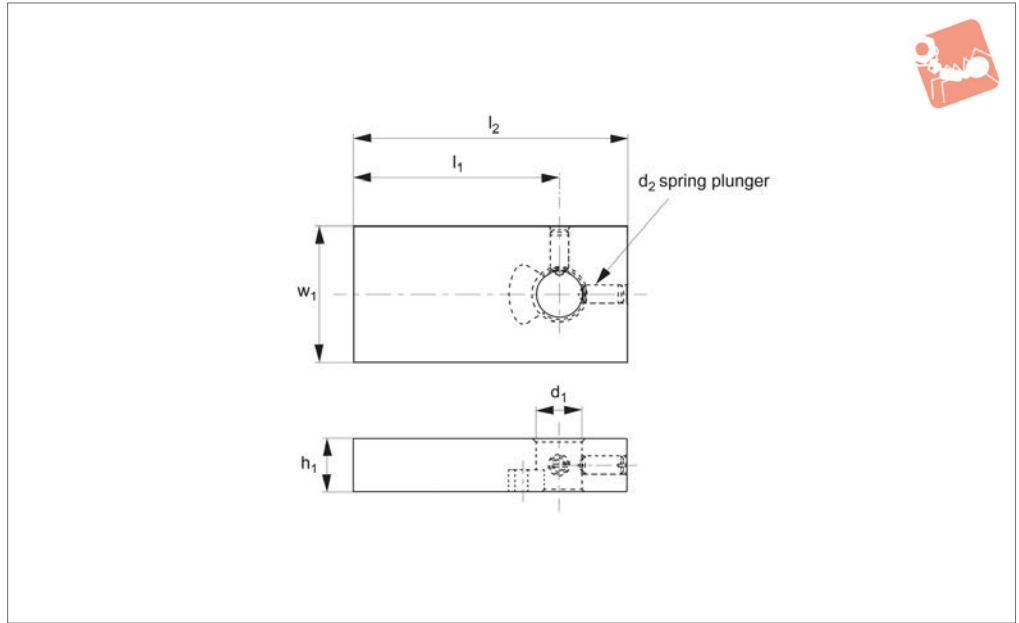
for use with 12564.W0030 - .W0141



ADJUSTABLE VERTICAL CLAMPS



## 12564.2



### Material

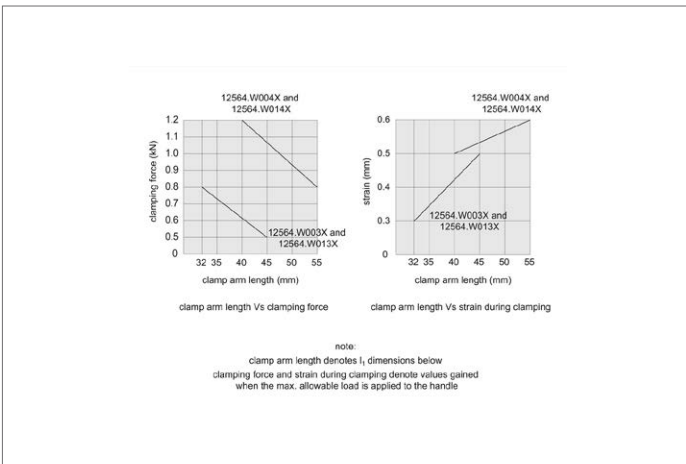
Steel (C45), black oxide finish.

Clamping force and strain during clamping denote values gained when the maximum allowable load is applied to the handle.

### Technical Notes

Clamp arm length denotes  $l_1$  dimensions.

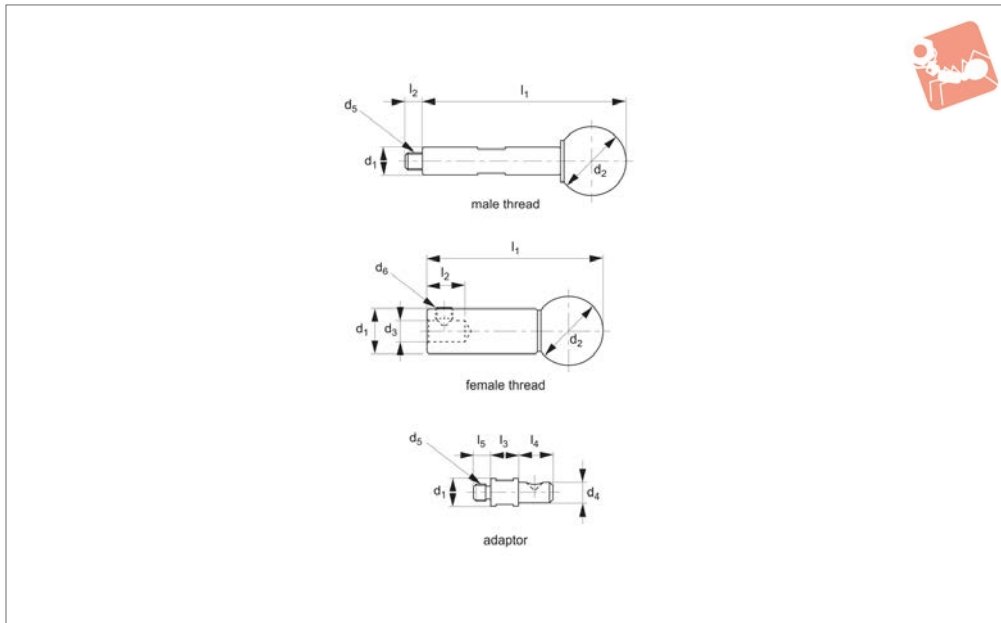
Order No.	$h_1$	$l_1$	$l_2$	$d_1$	$d_2$	$w_1$	To suit clamp 12564	Weight of clamping prd. g max.	Weight g
12564.W0430	12	45	60	10	M 4	30	.W003x and .W013x	100	150
12564.W0440	16	55	75	16	M 5	40	.W004x and .W014x	100	330





# Standard Handles for use with swing and pull clamps

# Adjustable Vertical Clamps



**12564.3**

ADJUSTABLE VERTICAL CLAMPS

### Material

Handle: steel (C45), black oxide finish.  
Ball knob: ABS resin, black.

Shaft: steel (C45), tempered and black oxide finish.

Order No.	Type	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	$d_6$	Weight g
<b>12564.W0630</b>	Male Thread	59	5	-	-	-	8	20	-	-	M 5x0,8	-	25
<b>12564.W0640</b>	Male Thread	89	6	-	-	-	10	25	-	-	M 6x1	-	50
<b>12564.W0631</b>	Female Thread	51	11	-	-	-	13	20	6	-	-	M 5x5	45
<b>12564.W0641</b>	Female Thread	79	13	-	-	-	15	25	8	-	-	M 6x6	90
<b>12564.W0632</b>	Adaptor	-	-	8	10	5	8	-	-	6	M 5x0,8	-	7
<b>12564.W0642</b>	Adaptor	-	-	10	12	6	10	-	-	8	M 6x1	-	14

# Adjustable Vertical Clamps

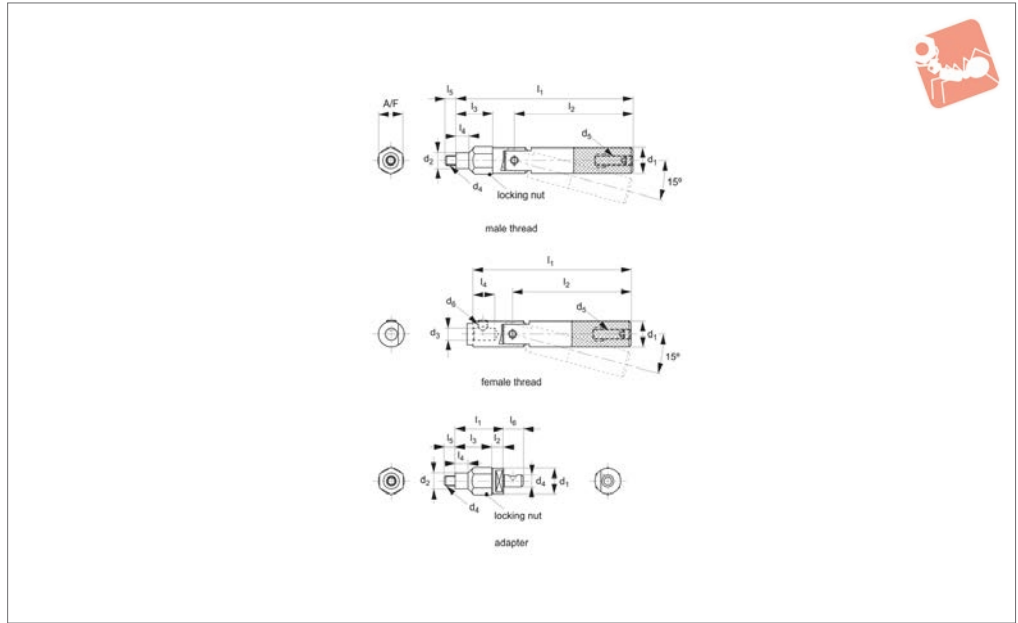
# Adjustable Torque Handles for use with swing and pull clamps



ADJUSTABLE VERTICAL CLAMPS



## 12564.4



### Material

Stem, handle: steel (C45), tempered and black oxide finish.  
Locking nut: steel (C45), black oxide

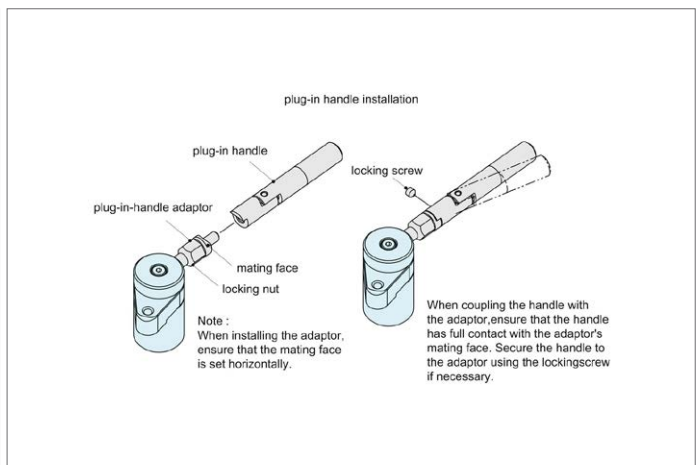
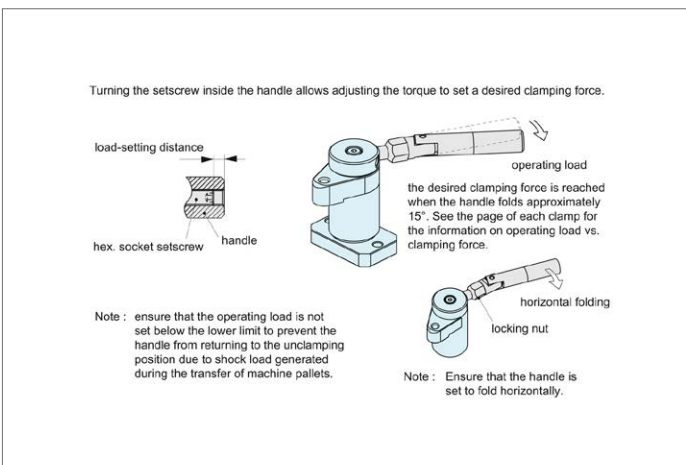
finish.

### Technical Notes

Turning the set screw inside the handle

allows the torque to be set to a desired clamping force.

Order No.	Type	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	$d_6$	A/F	Load setting range N	Weight g
<b>12564.W0730</b>	Male Thread	89,5	60	18,5	6,5	5,5		13	8		M 5x0,8	M 5x16		12	30 - 120	90
<b>12564.W0740</b>	Male Thread	119,0	84	23,0	8,0	6,5		15	10		M 6x1	M 6x20		14	30 - 160	140
<b>12564.W0731</b>	Female Thread	80,0	60		11,0			13		6		M 5x6	M 5x5		30 - 120	70
<b>12564.W0741</b>	Female Thread	107,0	84		13,0			15		8		M 6x20	M 6x6		30 - 160	130
<b>12564.W0732</b>	Adaptors	24,5	6	18,5	6,5	5,5	10	13	8		M 5x0,8				30 - 120	20
<b>12564.W0742</b>	Adaptors	30,0	7	23,0	8,0	6,5	12	15	10		M 6x1				30 - 160	40

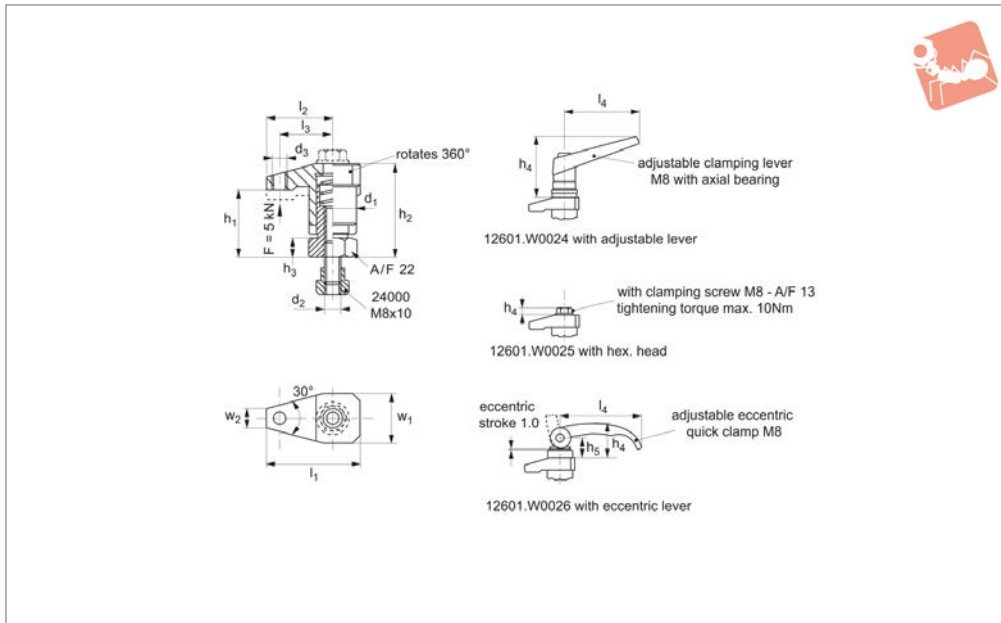






# Miniature Down Thrust Clamps swivelling

# Adjustable Vertical Clamps



## 12601

ADJUSTABLE VERTICAL CLAMPS

### Material

Steel case-hardened, blackened and ground.

### Technical Notes

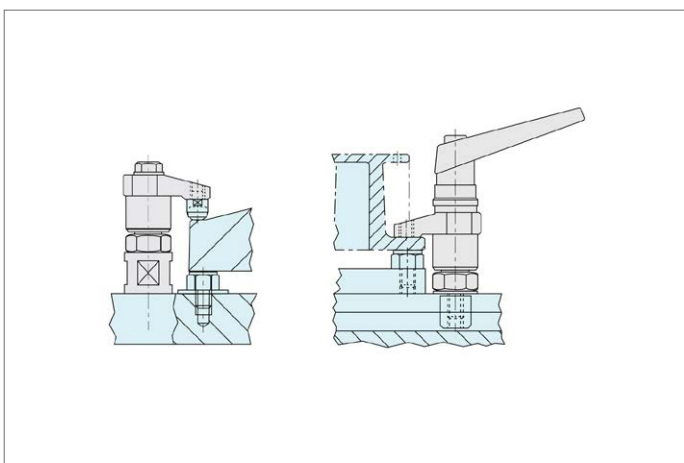
Ideally suited for clamping small

components. The 10mm wide nose allows a very small clamping footprint. For suitable self-aligning pads (if required) see no. 34100.

### Tips

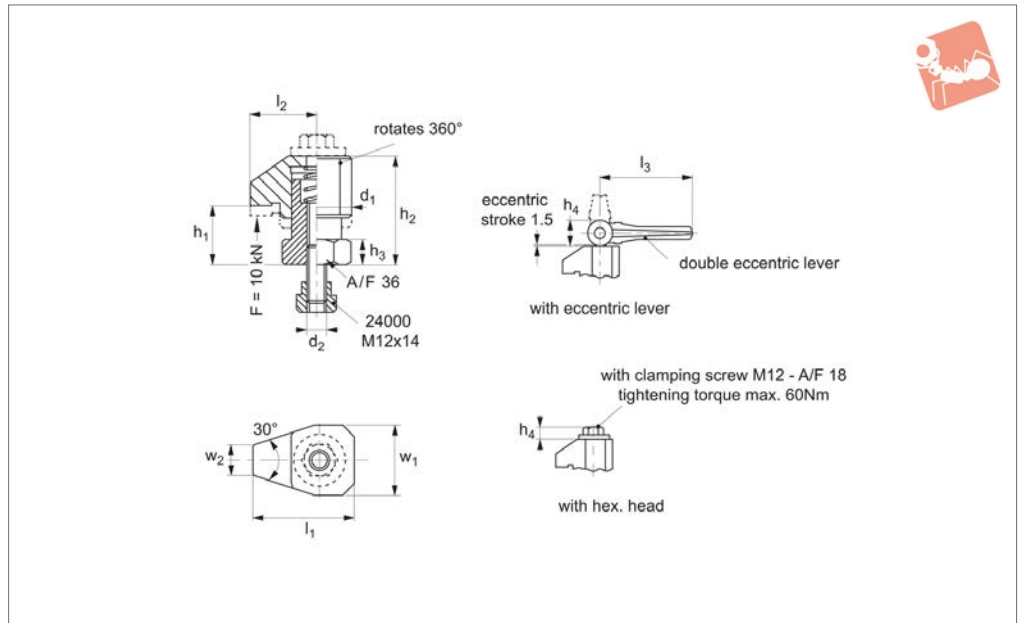
T-nuts can be supplied in any M8 sizes, see no. 24000.

Order No.	Type	Clamping height $h_1$ min.	Clamping height $h_1$ max.	Stroke	$d_1$	$d_2$	$w_1$	$w_2$	$h_2$ min.	$h_2$ max.	$h_3$	$h_4$	$h_5$	$l_1$	$l_2$	$l_3$	$l_4$	Weight g
12601.W0024	with adj. clamping lever	30	35	5	25	M8	26	10	44	49	10	60,0		49,5	35	28	74	363
12601.W0025	with hex. head	30	35	5	25	M8	26	10	44	49	10	6,9		49,5	35	28		215
12601.W0026	with ecc. clamping lever	30	35	5	25	M8	26	10	44	49	10	35,0	20,5	49,5	35	28	82	340





## 12602



### Material

Steel case-hardened, blackened and ground.

### Technical Notes

For heavy-duty clamping applications

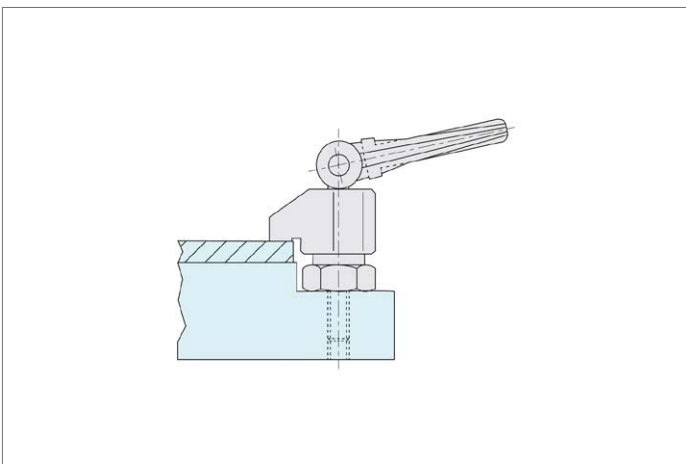
where space and height are limiting factors.

### Tips

Often used for clamping of injection mould tools and the like.

**T-nuts removable. For other T-nut sizes please refer to no. 24000.**

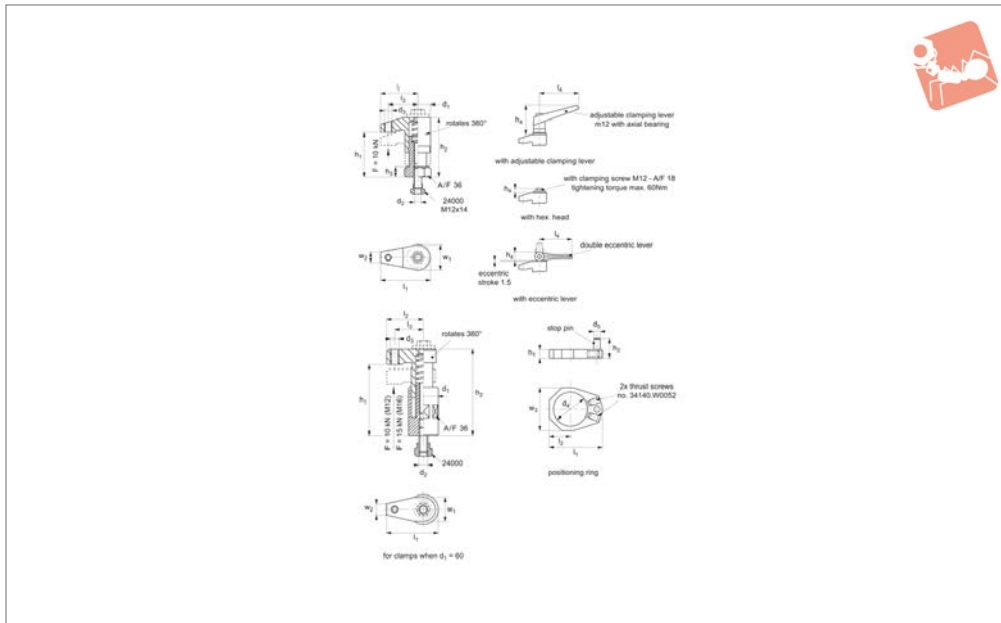
Order No.	Type	Clamping height $h_1$ min.	Clamping height $h_1$ max.	Stroke	$d_1$	$d_2$	$w_1$	$w_2$	$h_2$ min.	$h_2$ max.	$h_3$	$h_4$	$l_1$	$l_2$	$l_3$	Weight g
12602.W0034	With Eccentric Clamp Lever	25	30	5	44	M12	42	18	54	59	15	28	61	40	100	1022
12602.W0035	With Hex. Head Bolt	25	30	5	44	M12	42	18	54	59	15	13	61	40		708





# Down Thrust Clamps swivelling

# Adjustable Vertical Clamps



**12603**

ADJUSTABLE VERTICAL CLAMPS

### Material

Steel case-hardened, blackened and ground.

### Technical Notes

Clamping height increased with the addition of height adjusting cylinders no. 12605.W0125-.W0167 and reduced with self-aligning pads nos.34100 or 34120.

**Maximum clamping height** ( $h_1$  max.) must

not be exceeded.

Use of positioning ring 12603.W0350 increases height  $h_2$  by 7mm and reduces stroke by 7mm.

\* Part no. 12603.W0063 has a M16 threaded stud.

### Tips

Offers rapid manual clamping with easy removal of workpieces through rotation of

clamp arm away from component.

Positioning ring no. 12603.W0063, and its integral stop, provides repeated accuracy of the clamping position.

**SAFETY: base of the clamping cylinder must make full surface contact.**

**T-nuts removable. For other T-nut sizes please refer to no.24000.**

Order No.	Type	Stroke	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	h <sub>1</sub> min.	h <sub>1</sub> max.	Weight g
12603.W0050	With Adj. Clamping Lever	20	40	M12	M12	-	-	40	17	-	50	70	1194
12603.W0053	With Adj. Clamping Lever	30	40	M12	M12	-	-	40	17	-	68	98	1359
12603.W0056	With Adj. Clamping Lever	40	40	M12	M12	-	-	40	17	-	95	135	1639
12603.W0051	With Hex. Head	20	40	M12	M12	-	-	40	17	-	50	70	876
12603.W0054	With Hex. Head	30	40	M12	M12	-	-	40	17	-	68	98	964
12603.W0057	With Hex. Head	40	40	M12	M12	-	-	40	17	-	95	135	1300
12603.W0061	With Hex. Head	35	60	M12	M12	-	-	44	17	-	100	135	2695
12603.W0063	With Hex. Head *	35	60	M16	M16	-	-	53	24	-	100	135	2939
12603.W0052	With Ecc. Clamping Lever	20	40	M12	M12	-	-	40	17	-	50	50	1213
12603.W0055	With Ecc. Clamping Lever	30	40	M12	M12	-	-	40	17	-	68	70	1370
12603.W0058	With Ecc. Clamping Lever	40	40	M12	M12	-	-	40	17	-	95	98	1585
12603.W0060	With Ecc. Clamping Lever	35	60	M12	M12	-	-	40	17	-	100	135	3015
12603.W0350	Positioning Ring	-	-	-	-	28	5	-	-	35	7	-	32

Order No.	h <sub>2</sub> min.	h <sub>2</sub> max.	h <sub>3</sub>	h <sub>4</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	A/F
12603.W0050	73	93	15	82	75	55	43	108	36
12603.W0053	91	121	15	82	75	55	43	108	36
12603.W0056	118	158	22	82	75	55	43	108	36
12603.W0051	73	93	15	13	75	55	43	108	36
12603.W0054	91	121	15	13	75	55	43	108	36
12603.W0057	118	158	22	13	75	55	43	108	36
12603.W0061	123	158	98	13	95	65	53	-	36
12603.W0063	123	158	98	16	99	69	53	-	36
12603.W0052	50	50	15	73-93	75	55	43	108	36
12603.W0055	73	93	15	28	75	55	43	108	36
12603.W0058	91	121	22	28	75	55	43	108	36

# Adjustable Vertical Clamps

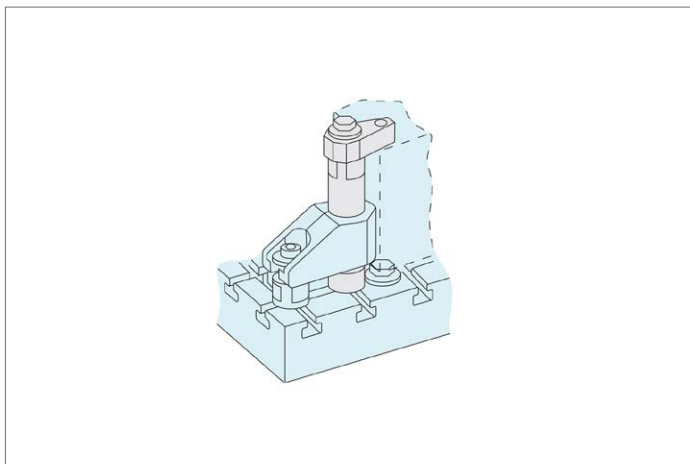


## Down Thrust Clamps swivelling



Order No.	$h_2$ min.	$h_2$ max.	$h_3$	$h_4$	$l_1$	$l_2$	$l_3$	$l_4$	A/F
<b>12603.W0060</b>	123	158	98	28	95	65	53	100	36
<b>12603.W0350</b>	16	-	-	-	43.5	17.5	-	-	-

ADJUSTABLE VERTICAL CLAMPS

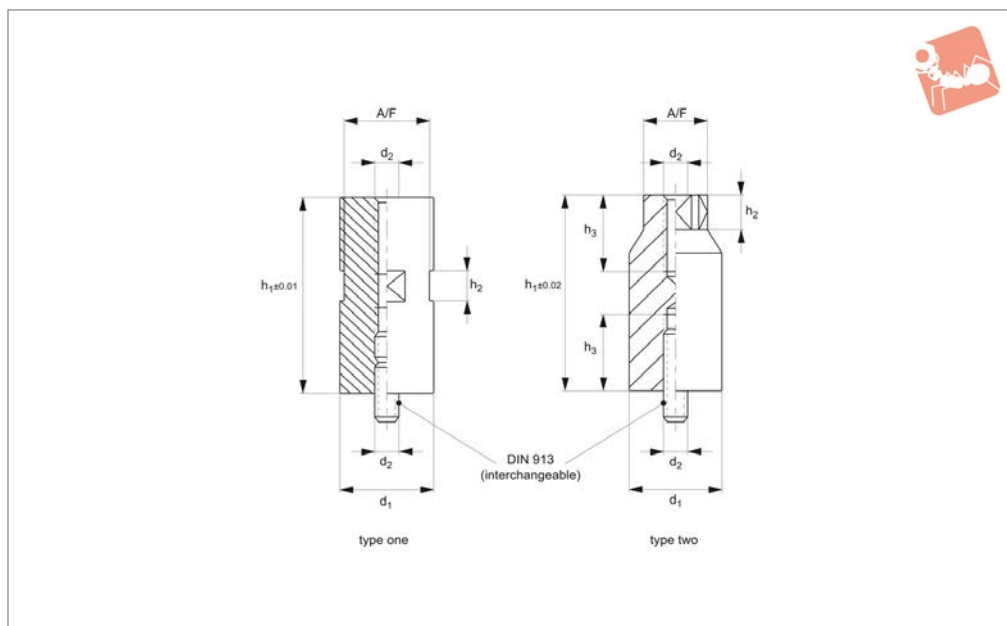




# Height Adjusting Cylinders

for down thrust clamps 12603

# Adjustable Vertical Clamps



**12605**

ADJUSTABLE VERTICAL CLAMPS

### Material

Steel case-hardened, blackened and ground.

### Technical Notes

Increase clamping height for down-thrust clamps, alternatively can be used as

general height setting and supporting elements.

Order No.	Type	d <sub>1</sub> tol. h <sub>9</sub>	d <sub>2</sub>	h <sub>1</sub> ±0.01	h <sub>2</sub>	h <sub>3</sub>	A/F	Weight g
12605.W0125	One	25	M 8	20	10	-	22	71
12605.W0126	One	25	M 8	40	20	-	22	139
12605.W0127	One	25	M 8	80	20	-	22	292
12605.W0140	One	40	M12	35	20	-	36	319
12605.W0141	One	40	M12	70	20	-	36	644
12605.W0142	One	40	M12	140	20	-	36	1325
12605.W0145	One	40	M16	35	20	-	36	318
12605.W0146	One	40	M16	70	20	-	36	634
12605.W0147	One	40	M16	140	20	-	36	1307
12605.W0160	One	60	M12	35	20	-	55	755
12605.W0161	One	60	M12	70	20	-	55	1460
12605.W0162	One	60	M12	140	20	-	55	3034
12605.W0165	One	60	M16	35	20	-	55	438
12605.W0166	One	60	M16	70	20	-	55	1493
12605.W0167	One	60	M16	140	20	-	55	3016
12605.W0241	One	70	M24	50	25	-	65	1310
12605.W0242	One	70	M24	100	25	-	65	2682
12605.W0243	Two	90	M24	200	35	50	65	8655
12605.W0244	Two	90	M24	300	35	50	65	13617

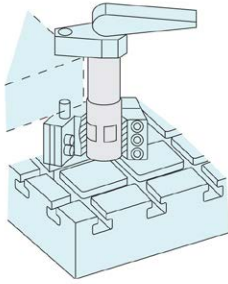
# Adjustable Vertical Clamps



## Height Adjusting Cylinders for down thrust clamps 12603



ADJUSTABLE VERTICAL CLAMPS

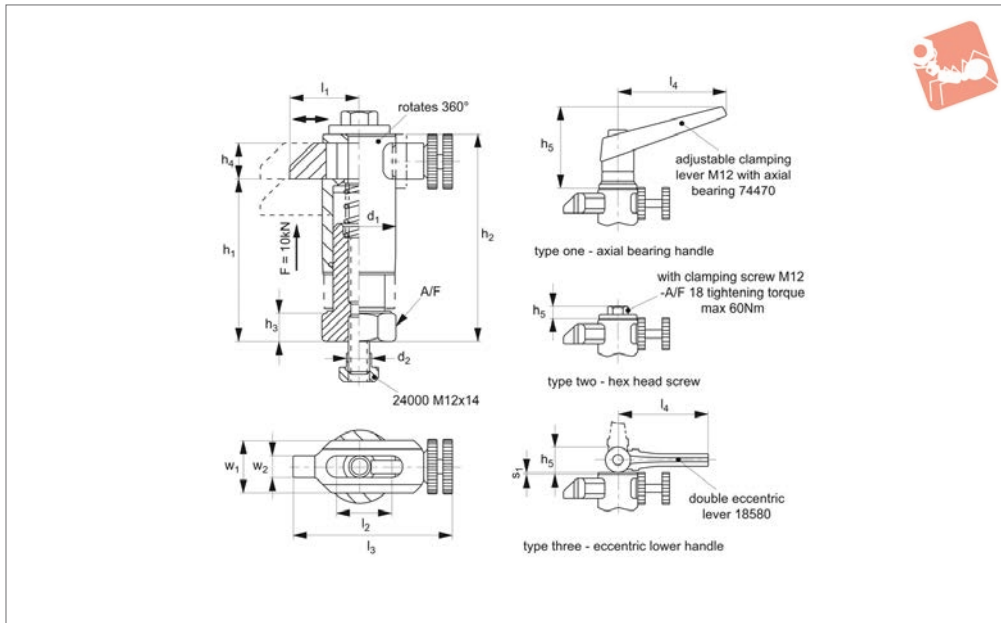




# Down Thrust Clamps

retractable

# Adjustable Vertical Clamps



## 12608

ADJUSTABLE VERTICAL CLAMPS

### Material

Steel case-hardened, blackened and ground

### Technical Notes

Use when swivelling of clamp is not possible, horizontal retraction available, see  $l_1$  min -  $l_1$  max.  
Use of positioning ring 12603.W0350

increases height  $h_1$  by 7mm and reduces stroke by 7mm.

Operation:

Push clamp jaw back. Insert workpiece to fixture. Push clamp jaw forwards, adjust position with knurled clamp screw, lock off. Apply clamping pressure.

### Tips

Offers quick manual clamping by use of clamping screw/lever. Compact design and height adjustable.

Used with:

24000 T-nuts  
12603.W0350 positioning ring.

Order No.	Type	Stroke $s_1$	$d_1$	$d_2$	$w_1$	$w_2$	$h_1$ min.	$h_1$ max.	$h_2$ min.	$h_2$ max.	Weight g
<b>12608.W0083</b>	One	20	40	M12	30	13	70	90	95	115	1400
<b>12608.W0086</b>	One	30	40	M12	30	13	88	118	113	143	1560
<b>12608.W0084</b>	Two	20	40	M12	30	13	70	90	95	115	1070
<b>12608.W0087</b>	Two	30	40	M12	30	13	88	118	113	143	1240
<b>12608.W0085</b>	Three	20	40	M12	30	13	70	90	95	115	1400
<b>12608.W0088</b>	Three	30	40	M12	30	13	88	118	113	143	1560

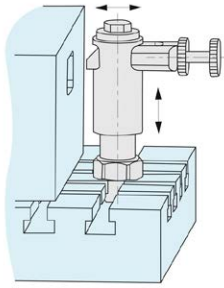
Order No.	$h_3$	$h_4$	$h_5$	$l_1$ min.	$l_1$ max.	$l_2$	$l_3$ min.	$l_3$ max.	$l_4$	A/F
<b>12608.W0083</b>	15	20	82	38	55	30	90	107	108	36
<b>12608.W0086</b>	15	20	82	38	55	30	90	107	108	36
<b>12608.W0084</b>	15	20	13	38	55	30	90	107	-	36
<b>12608.W0087</b>	15	20	13	38	55	30	90	107	-	36
<b>12608.W0085</b>	15	20	28	38	55	30	90	107	100	36
<b>12608.W0088</b>	15	20	28	38	55	30	90	107	100	36

# Adjustable Vertical Clamps

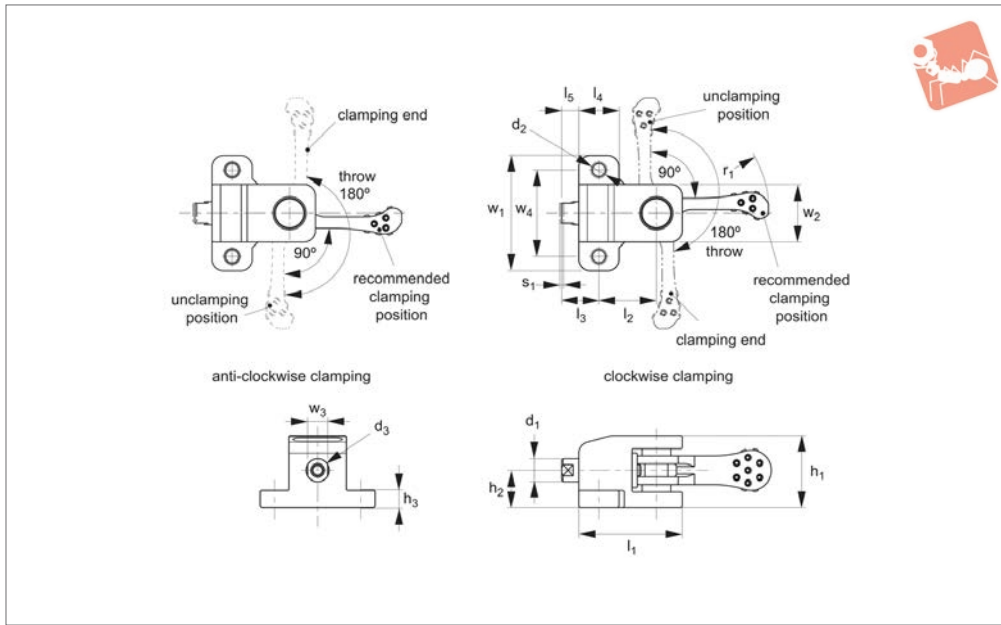
## Down Thrust Clamps retractable



ADJUSTABLE VERTICAL CLAMPS







## 12618

ADJUSTABLE VERTICAL CLAMPS

### Material

Steel (35CrMo), heat treated, black oxide finish, precision ground.  
Body: steel (C45), black oxide finish.

Piston/pin: steel (C45), tempered and black oxide finish.

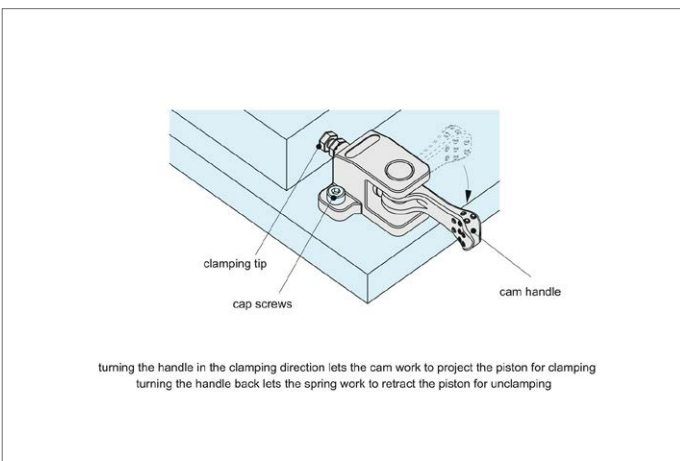
Cam handle: steel (42CrMo), tempered and black oxide finish.

### Technical Notes

The tapped hole in the piston allows a pad to be fitted to the clamp.

Order No.	Clamping direction	Clamping stroke $s_1$	$d_1$	$d_2$	$d_3$	$w_1$	$w_2$	$w_3$	$w_4$	$h_1$	Weight g
<b>12618.W0008</b>	Clockwise	1.2	8	4.5	M 4x0,7 Depth 8	40	20	7	30	25	130
<b>12618.W0012</b>	Clockwise	1.6	12	6.6	M 6x1 Depth 12	55	26	10	40	33	350
<b>12618.W0108</b>	Anti Clockwise	1.2	8	4.5	M 4x0,7 Depth 8	40	20	7	30	25	130
<b>12618.W0112</b>	Anti Clockwise	1.6	12	6.6	M 6x1 Depth 12	55	26	10	40	33	350

Order No.	$h_2$	$h_3$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$r_1$	Handle load N max.	Clamping force kN max.	Clamping mechanism
<b>12618.W0008</b>	13	6	36	20	13	14	6	40	80	0.9	Spiral Cam, 4°
<b>12618.W0012</b>	18	10	50	28	19	20	9	63	150	2.4	Spiral Cam, 4°
<b>12618.W0108</b>	13	6	36	20	13	14	6	40	80	0.9	Spiral Cam, 4°
<b>12618.W0112</b>	18	10	50	28	19	20	9	63	150	2.4	Spiral Cam, 4°

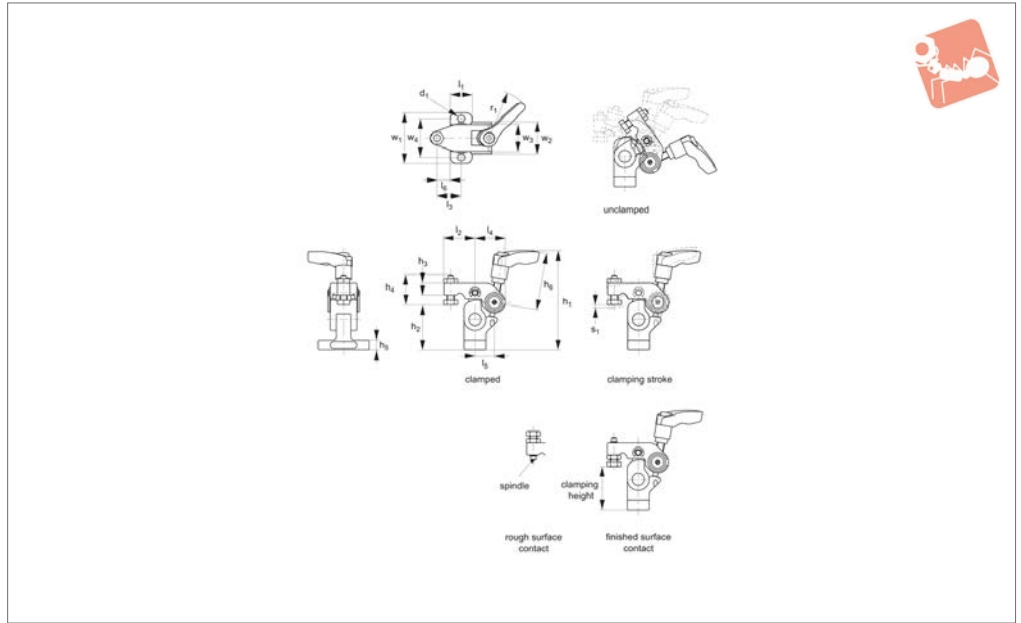


# Adjustable Vertical Clamps

# Retractable Clamps with adjustable handle



**12610.1**



ADJUSTABLE VERTICAL CLAMPS

**Material**

Body/spindle: steel (C45), tempered and black oxide finish.  
Arm/joint: steel (35CrMo), tempered and

black oxide finish.

**Tips**

Clamping height can be adjusted. The

values in brackets shows clamping height range. Screw clamping mechanism allows for longer clamping stroke and greater clamping force.

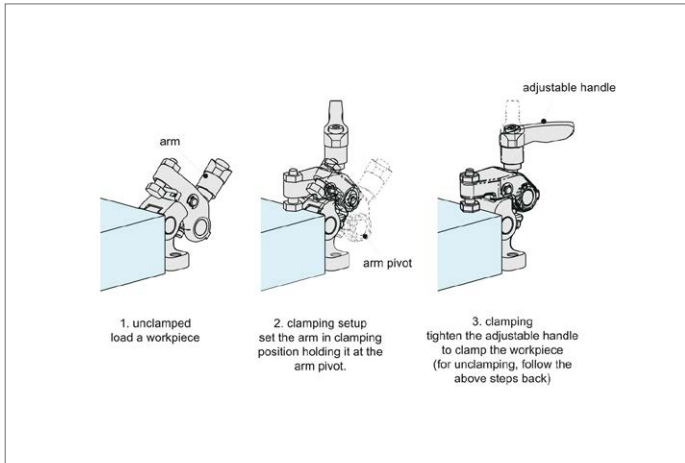
Order No.	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$h_6$	$l_1$	$l_2$	$l_3$	$l_4$	Weight g
12610.W0006	81	45	10	24.0	8	47	18	25.5	20	25	242
12610.W0008	100	55	12	30.5	10	63	22	32.0	25	31	490

Order No.	$l_5$	$l_6$	$r_1$	$w_1$	$w_2$	$w_3$	$w_4$	$w_5$	$d_1$	Handle load N max.	Clamping height finished surface min.	Clamping height finished surface max.	Clamping height rough surface min.	Clamping height rough surface max.	Clamping stroke $s_1$	Clamping force kN max.	Clamping mechanism
12610.W0006	16	11	40	42	26	22	32	M 6x1	5.5	170	32 (32,0~29,5)	40 (40,0~37,5)	35 (35,0~32,5)	43 (43,0~40,5)	2.5	2.4	Screw
12610.W0008	20	14	65	52	32	28	40	M 8x1,25	6.5	210	37 (37,0~33,5)	48 (48,0~44,5)	42 (42~38,5)	53 (53,0~49,5)	3.5	4.2	Screw



# Retractable Clamps with adjustable handle

# Adjustable Vertical Clamps



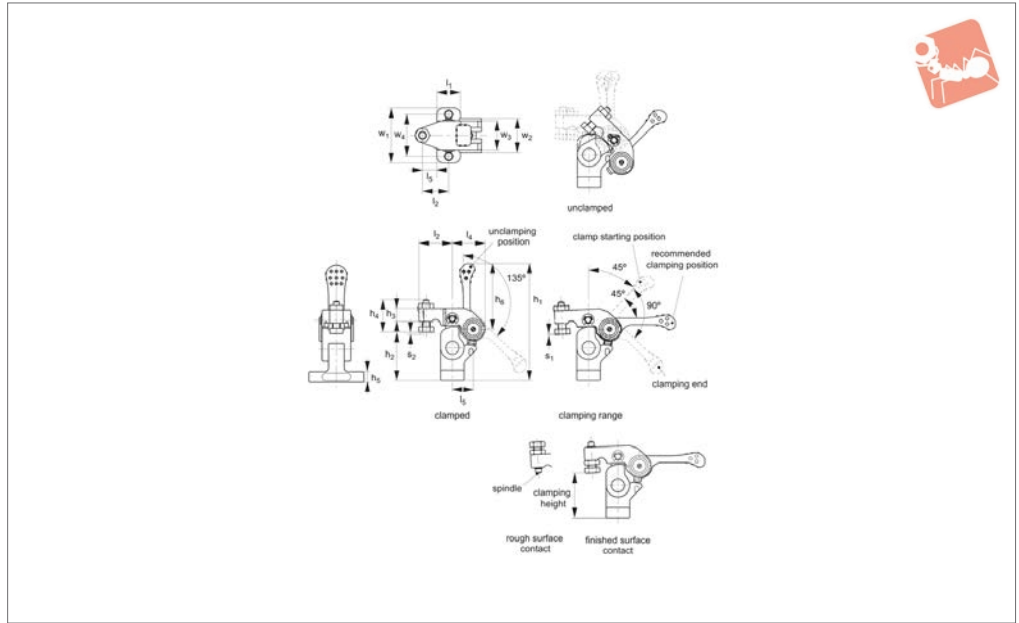
ADJUSTABLE VERTICAL CLAMPS

# Adjustable Vertical Clamps

# Retractable Clamps with eccentric handle



**12610.2**



ADJUSTABLE VERTICAL CLAMPS

**Material**

Body/spindle: steel (C45), tempered and black oxide finish.  
Arm/joint: steel (35CrMo), tempered and

black oxide finish.

**Tips**

Clamping height can be adjusted. The

values in brackets shows clamping height range.

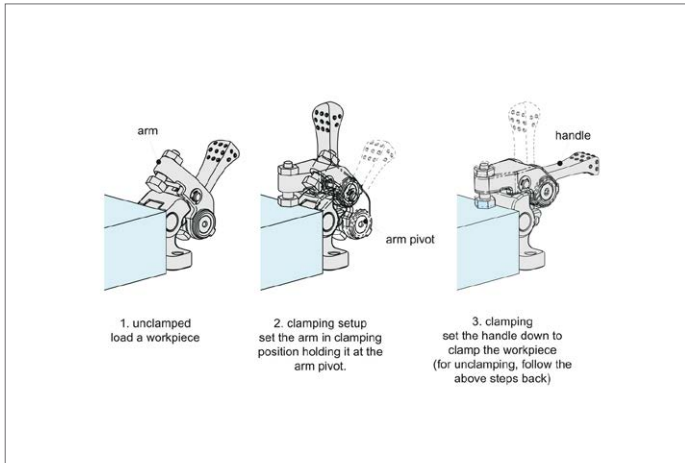
Order No.	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$h_6$	$l_1$	$l_2$	$l_3$	$l_4$	Weight g
<b>12610.W0106</b>	89	45	10	24.0	8	50	18	25.5	20	25	244
<b>12610.W0108</b>	109	55	12	30.5	10	63	22	32.0	25	31	468

Order No.	$l_5$	$l_6$	$w_1$	$w_2$	$w_3$	$w_4$	$w_5$	$d_1$	Handle load N max.	Clamping height finished surface min.	Clamping height finished surface max.	Clamping height rough surface min.	Clamping height rough surface max.	Clamping stroke $s_1$	Clamping force kN max.	Clamping mechanism	Over all stroke $s_2$
<b>12610.W0106</b>	16	11	42	26	22	32	M 6x1	5.5	100	32 (31,5~32,5)	40 (39,5~40,5)	35 (34,5~35,5)	43 (42,5~43,5)	1.0	0.7	Spiral Cam, 4°	1.5
<b>12610.W0108</b>	20	14	52	32	28	40	M 8x1, 25	6.5	150	37 (36,4~37,6)	48 (47,4~48,6)	42 (41,4~42,6)	53 (52,4~53,6)	1.2	1.1	Spiral Cam, 4°	1.8



# Retractable Clamps with eccentric handle

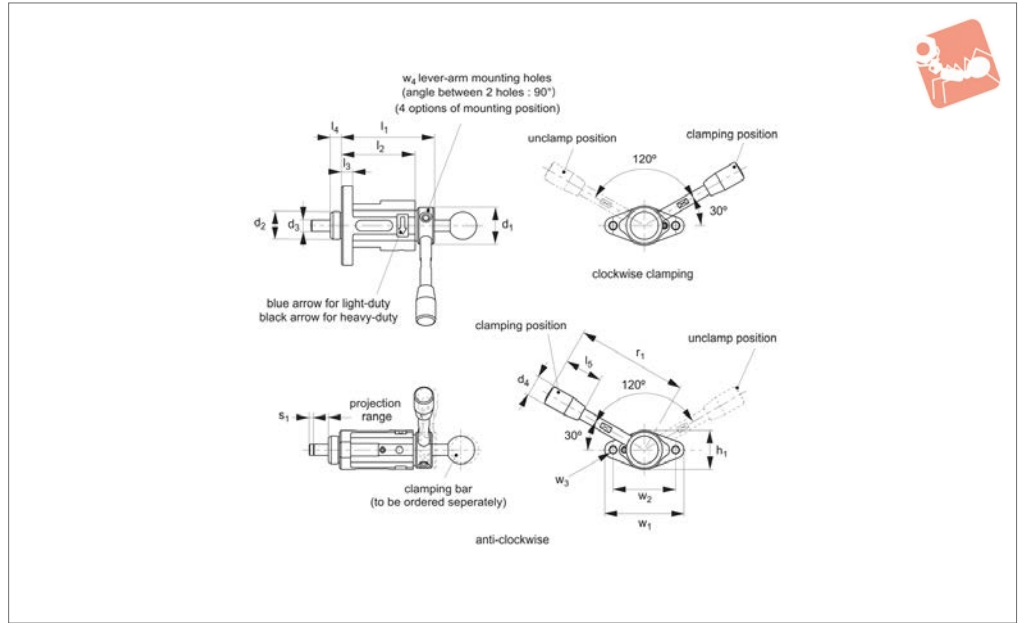
# Adjustable Vertical Clamps



ADJUSTABLE VERTICAL CLAMPS



## 12615



### Material

Body/lever arm: steel (C45), black oxide finish.

Cam: steel (C45), carburized-hardened, black oxide finish.

Handle: phenolic plastic, black matt. Clamping handle is not included.

### Technical Notes

Can be used in both vertical and horizontal

clamping applications.

Spring-loaded clamp that provides constant clamping force.

Long clamping-bar projection range allows clamping of a recessed part.

When using your own clamping bar, ensure that the diameter is finished to a H9 or better tolerance.

### Tips

When a reaction force (F) becomes greater than clamping force, the clamping bar slides back, unclamping the part.

Order No.	Type	Clamping direction	$d_1$	$d_2$	$d_3$	$d_4$	$h_1$	$l_1$	$l_2$	$l_3$	Weight g
<b>12615.W0008</b>	Light Duty	Clockwise	26	20	8	14	28	68.5	53	8	330
<b>12615.W0012</b>	Light Duty	Clockwise	36	30	12	21	40	90.7	72	12	930
<b>12615.W0208</b>	Light Duty	Clockwise	26	20	8	14	28	68.5	53	8	330
<b>12615.W0212</b>	Light Duty	Clockwise	36	30	12	21	40	90.7	72	12	950
<b>12615.W0108</b>	Heavy Duty	Anti Clockwise	26	20	8	14	28	68.5	53	8	330
<b>12615.W0112</b>	Heavy Duty	Anti Clockwise	36	30	12	21	40	90.7	72	12	930
<b>12615.W0308</b>	Heavy Duty	Anti Clockwise	26	20	8	14	28	68.5	53	8	330
<b>12615.W0312</b>	Heavy Duty	Anti Clockwise	36	30	12	21	40	90.7	72	12	950

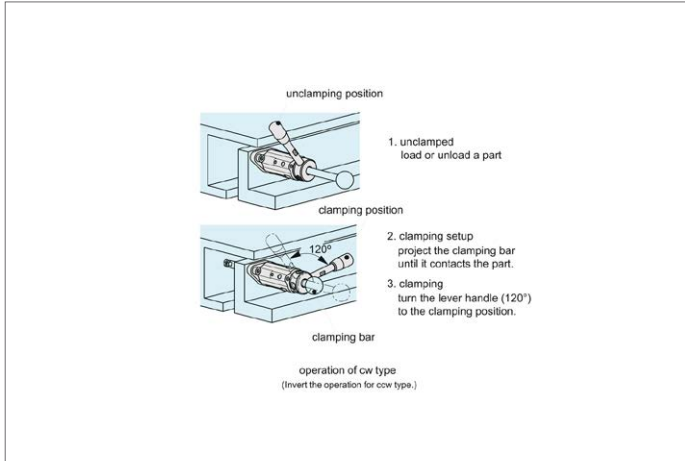
Order No.	$l_4$	$l_5$	$r_1$	$w_1$	$w_2$	$w_3$	$w_4$	Clamping stroke $s_1$	Handle load N max.	Clamping force kN max.	Clamping releasing force kN
<b>12615.W0008</b>	8	28	80	57	45	M 6x1 (Pre-drill 5,2)	M 5x0,8	1.5	40	0.2	$F > 0,2$
<b>12615.W0012</b>	12	50	132	85	65	M10x1,5 (Pre-drill 8,5)	M 6x1	2.3	100	0.7	$F < 0,7$
<b>12615.W0208</b>	8	28	80	57	45	M 6x1 (Pre-drill 5,2)	M 5x0,8	1.5	80	0.5	$F > 0,5$
<b>12615.W0212</b>	12	50	132	85	65	M10x1,5 (Pre-drill 8,5)	M 6x1	2.3	150	1.4	$F > 1,4$
<b>12615.W0108</b>	8	28	80	57	45	M 6x1 (Pre-drill 5,2)	M 5x0,8	1.5	40	0.2	$F > 0,2$
<b>12615.W0112</b>	12	50	132	85	65	M10x1,5 (Pre-drill 8,5)	M 6x1	2.3	100	0.5	$F < 0,7$
<b>12615.W0308</b>	8	28	80	57	45	M 6x1 (Pre-drill 5,2)	M 5x0,8	1.5	80	0.5	$F > 0,5$



# Vertical Acting Thrust Clamps

## Adjustable Vertical Clamps

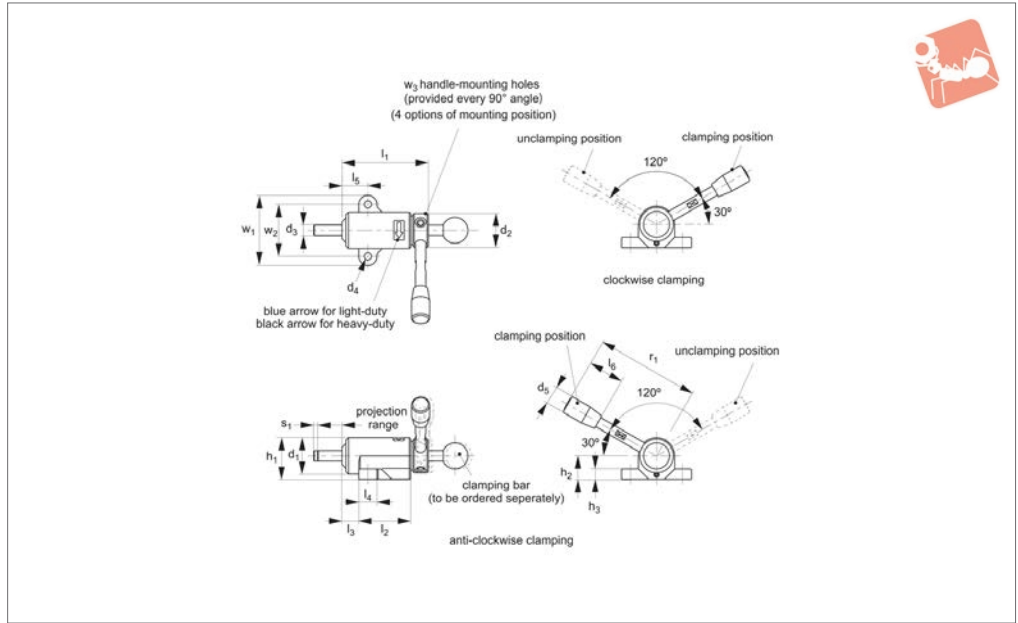
Order No.	$l_4$	$l_5$	$r_1$	$w_1$	$w_2$	$w_3$	$w_4$	Clamping stroke $s_1$	Handle load N max.	Clamping force kN max.	Clamping releasing force kN
<b>12615.W0312</b>	12	50	132	85	65	M10x1,5 (Pre-drill 8,5)	M 6x1	2.3	150	1.4	F>1,4



ADJUSTABLE VERTICAL CLAMPS



## 12616.1



### Material

Body/lever arm: steel (C45), black oxide finish.  
 Cam: steel (C45), carburized-hardened, black oxide finish.  
 Handle: phenolic plastic, black matt.

### Technical Notes

Can be used in both vertical and horizontal

clamping applications.

Spring-loaded clamp that provides constant clamping force.

Long clamping-bar projection range allows clamping of a recessed part.

When using your own clamping bar, ensure that the diameter is finished to a H9 or better tolerance.

### Tips

When the applied u-clamp force (F) becomes greater than clamping force, the clamping bar slides back, unclamping the part.

Order No.	Type	Clamping direction	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	Weight g
12616.W0008	Light Duty	Clockwise	28	26	8	5.5	14	32	18	8	330
12616.W0012	Light Duty	Clockwise	40	36	12	9.0	21	45	25	12	910
12616.W0208	Heavy Duty	Clockwise	28	26	8	5.5	14	32	18	8	330
12616.W0212	Heavy Duty	Clockwise	40	36	12	9.0	21	45	25	12	910
12616.W0108	Light Duty	Anti Clockwise	28	26	8	5.5	14	32	18	8	330
12616.W0112	Light Duty	Anti Clockwise	40	36	12	9.0	21	45	25	12	910
12616.W0308	Heavy Duty	Anti Clockwise	28	26	8	5.5	14	32	18	8	330
12616.W0312	Heavy Duty	Anti Clockwise	40	36	12	9.0	21	45	25	12	910

Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	r <sub>1</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	Clamping stroke s <sub>1</sub>	Handle load N max.	Clamping force kN max.	Clamping releasing force kN
12616.W0008	68.5	40	13	14	20	28	80	54	40	M 5x0,8	1.5	40	0.2	F>0,2
12616.W0012	93.7	55	20	20	30	50	132	80	60	M 6x1	2.3	100	0.7	F>0,7
12616.W0208	68.5	40	13	14	20	28	80	54	40	M 5x0,8	1.5	80	0.5	F>0,5
12616.W0212	93.7	55	20	20	30	50	132	80	60	M 6x1	2.3	150	1.4	F>1,4
12616.W0108	68.5	40	13	14	20	28	80	54	40	M 5x0,8	1.5	40	0.2	F>0,2
12616.W0112	93.7	55	20	20	30	50	132	80	60	M 6x1	2.3	100	0.7	F>0,7

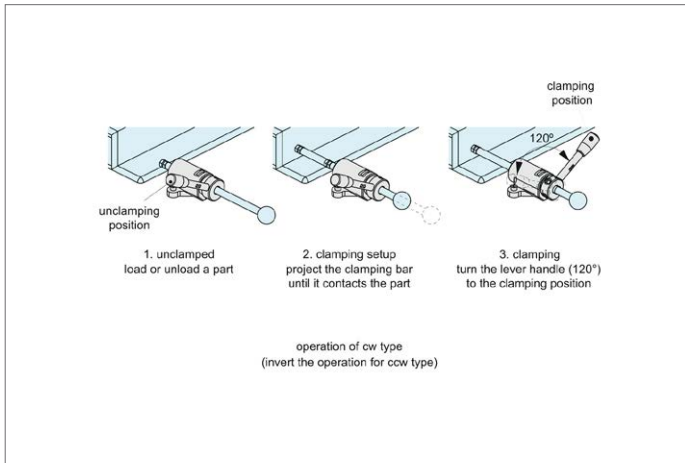




# Horizontal Thrust Clamps

# Adjustable Vertical Clamps

Order No.	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$r_1$	$w_1$	$w_2$	$w_3$	Clamping stroke $s_1$	Handle load N max.	Clamping force kN max.	Clamping releasing force kN
<b>12616.W0308</b>	68.5	40	13	14	20	28	80	54	40	M 5x0,8	1.5	80	0.5	F>0,5
<b>12616.W0312</b>	93.7	55	20	20	30	50	132	80	60	M 6x1	2.3	150	1.4	F>1,4



ADJUSTABLE VERTICAL CLAMPS

# Adjustable Vertical Clamps

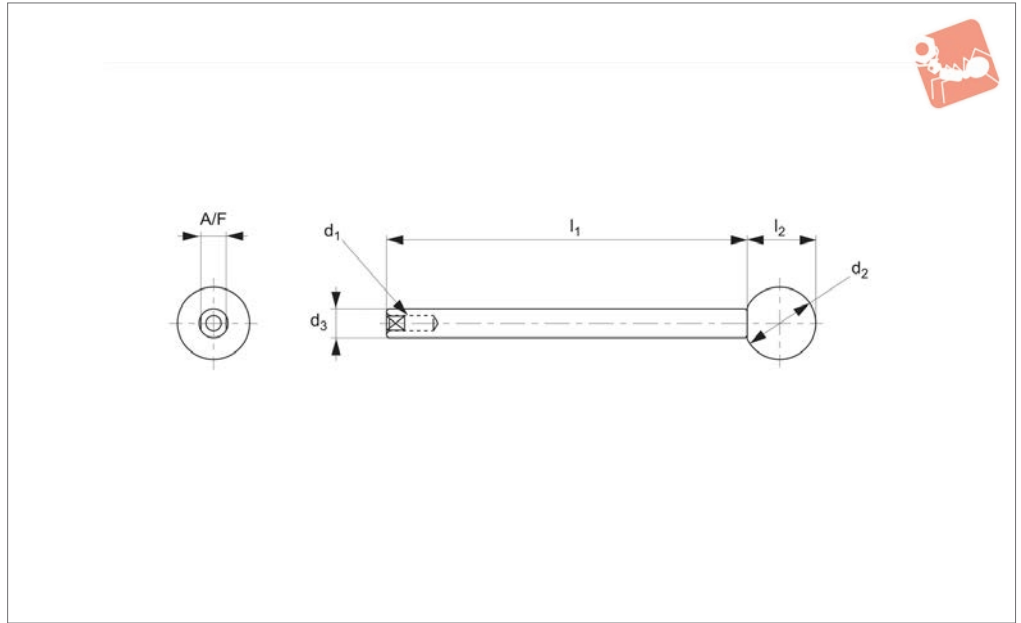
## Handles For Thrust Clamps for 12615 & 12616



ADJUSTABLE VERTICAL CLAMPS



### 12616.2



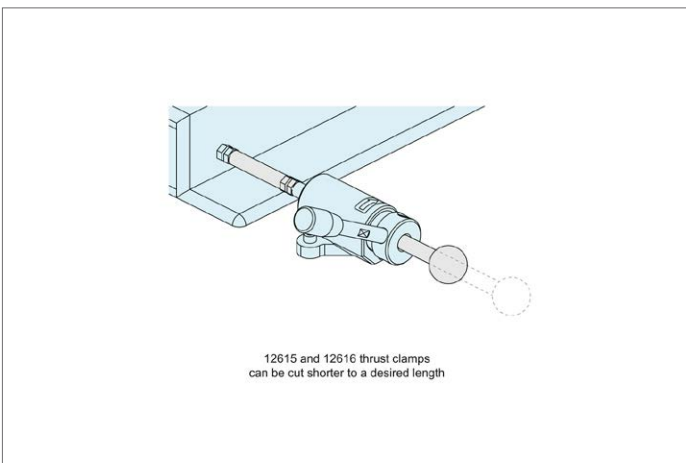
#### Material

Arm: steel (C45), chrome plated.  
Ball knob: ABS resin black.

#### Tips

Can be used with part no's 12615 and 12616.W0008- .W0312.

Order No.	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	A/F	Weight g
12616.W0810	M 4x8	20	8	100	19	7	50
12616.W0812	M 4x8	20	8	125	19	7	60
12616.W0815	M 4x8	20	8	150	19	7	70
12616.W1212	M 6x12	25	12	125	24	10	130
12616.W1215	M 6x12	25	12	150	24	10	150
12616.W1220	M 6x12	25	12	200	24	10	190

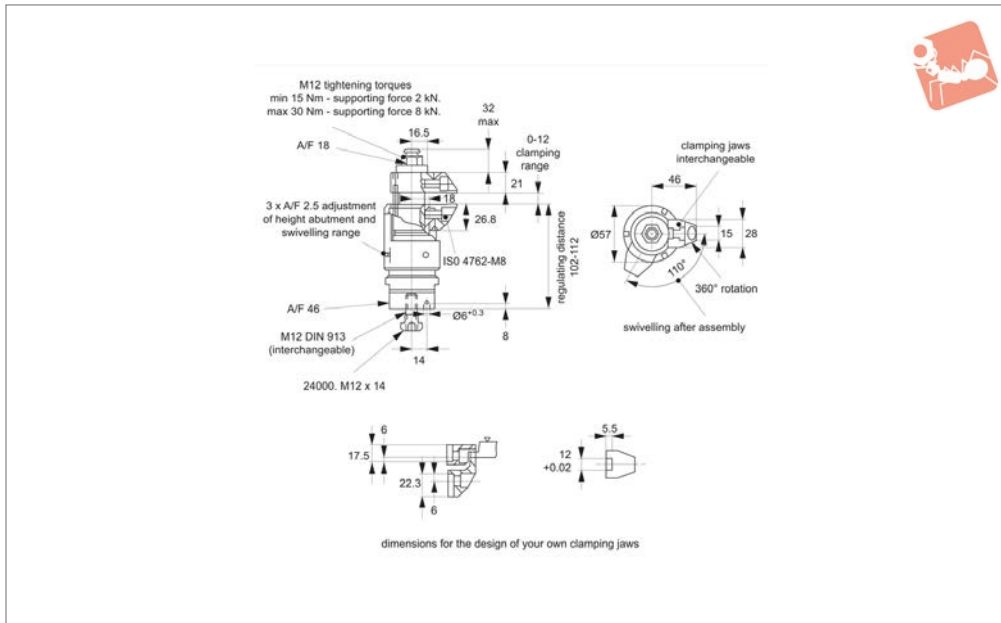




# Floating Clamps M12

combined clamping and locking

# Adjustable Vertical Clamps



12660.1

ADJUSTABLE VERTICAL CLAMPS

### Material

Body: steel case-hardened, nitrided, blackened and ground.  
Clamping jaws: steel case-hardened, nitrided, blackened.  
Housing: aluminium, red anodised.

### Technical Notes

Used to clamp and support additional clamping points on components, whilst minimising distortion in the clamping of components. It also serves to reduce vibration during machining.

### Tips

Alternative clamping jaws available, see

part 12660.W0050 to W0058 and 12660.W0148 to W0156.

The benefits of the floating clamp are:

- Avoids vibration during the processing
- Clamps ribs and flanges to reinforce clamped components
- Distortion-free clamping of first op. parts.

### Assembly

1. Mount the floating clamp (M 12 connection thread) onto the device with a wrench (A/F 46).
2. Adjust the height limit stop and the rotating area with the red sleeve and clamp with a set screw (3 x A/F 2,5). When setting

the height limit, consider tolerance of workpiece.

### Operation

1. Push the floating clamp downwards.
2. Pivot the clamping jaws in as far as possible. The floating clamp contacts the bottom of the workpiece with a slight spring load.
3. Tighten the floating clamp with a hexagonal nut (A/F 18) having a min. torque of 15 Nm and a maximum torque of 30 Nm. In the clamping process, the workpiece is clamped and simultaneously supported.
4. Releasing is done in reverse order.

Order No.	Description	Clamping & support force kN max.	Clamping stroke	Weight g
12660.W0012	Clamping & Support	8	0-12	2076

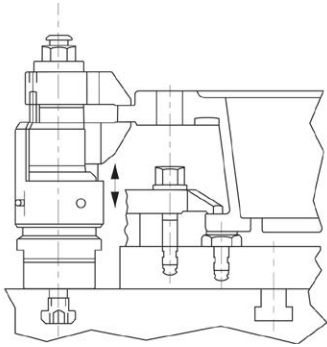
# Adjustable Vertical Clamps



## Floating Clamps M12 combined clamping and locking



ADJUSTABLE VERTICAL CLAMPS

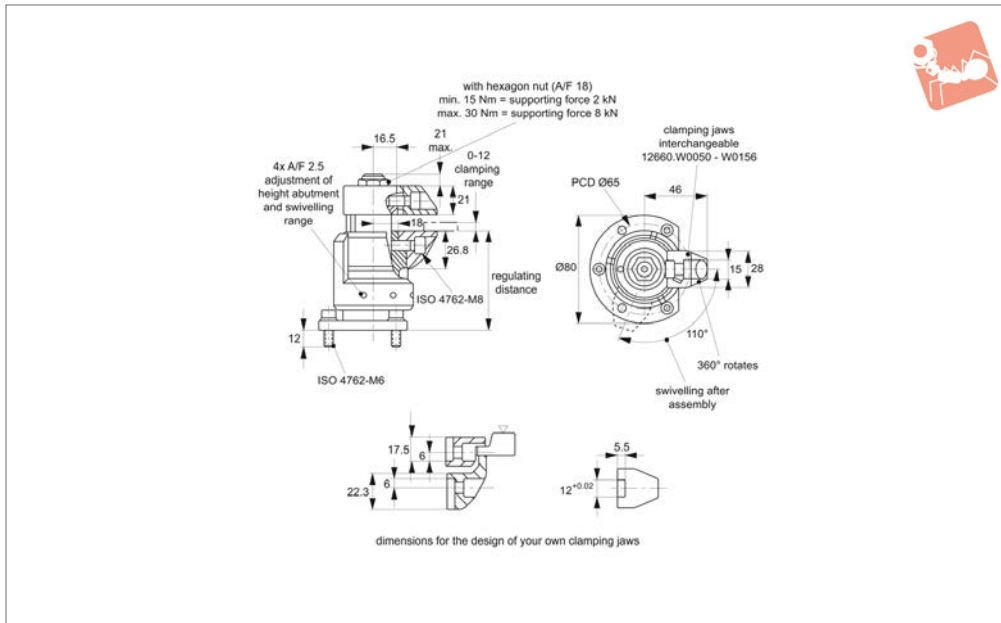




# Compact Floating Clamps M12

combined clamping and locking

# Adjustable Vertical Clamps



12660.2

ADJUSTABLE VERTICAL CLAMPS

### Material

Body: steel case-hardened, nitrided, manganese phosphate treated and ground.  
Clamping jaws: steel case-hardened, nitrided, manganese phosphate treated.  
Housing: aluminium, red anodised.

### Technical Notes

Used to clamp and support additional clamping points on components, whilst minimising distortion in the clamping of components. It also serves to reduce vibration during machining.

### Tips

Alternative clamping jaws available, see part 12660.W0050 to W0058 and 12660.W0148 to W0156.

### Floating clamp benefits:

Floating Clamp 12660.1 is used to clamp and support over-determined points on a component, offering the following benefits:

1. No deformation in the clamping of unstable components.
2. Eliminates vibration during machining.
3. Clamps on the smallest area to improve clamping stability.

### Installation of floating clamp on fixture:

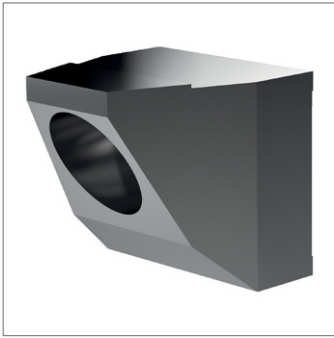
1. Fix clamp on to machine bed with A/F 46 spanner. Clamp has 12mm connection thread, select suitable T-nut for your machine bed.

2. Adjust the clamp's height limit stop and rotating area with the red setting sleeve, set sleeve position through tightening the 3 grub screws (A/F 2,5mm). When setting the height limit, make generous allowance for variation in workpiece tolerance.

### Clamping process:

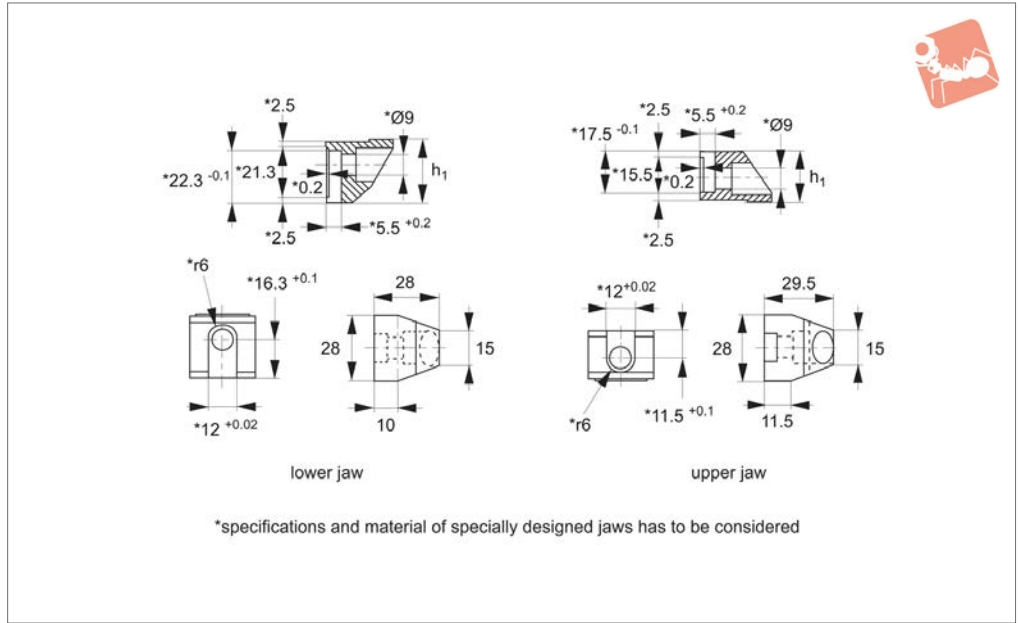
1. Push floating clamp downwards,
2. Pivot clamping jaws into component as far as possible. Clamp will contact bottom of component with a light spring pressure.
3. Tighten floating clamp with A/F 18mm hex nut – torque to min. 15Nm, 30Nm max. In the clamping process workpiece is clamped and simultaneously supported.
4. To release, reverse steps 3 to 1.

Order No.	Description	Clamping & support force kN max.	Clamping stroke	Weight g
12660.W0008	Clamping & Support	8	0-12	1450



## 12660.3

ADJUSTABLE VERTICAL CLAMPS



### Material

Steel, case-hardened, nitrided.

### Technical Notes

The clamping jaws can be used for floating clamps 12660.W0008, 12662.W0010,

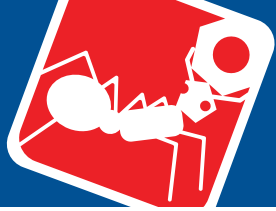
12660.W0012 and 12662.W0014

### Tips

When using custom-made jaws it is important to insert the tightening screw (M 8 grade 12,9, 43Nm) 10mm deep into the

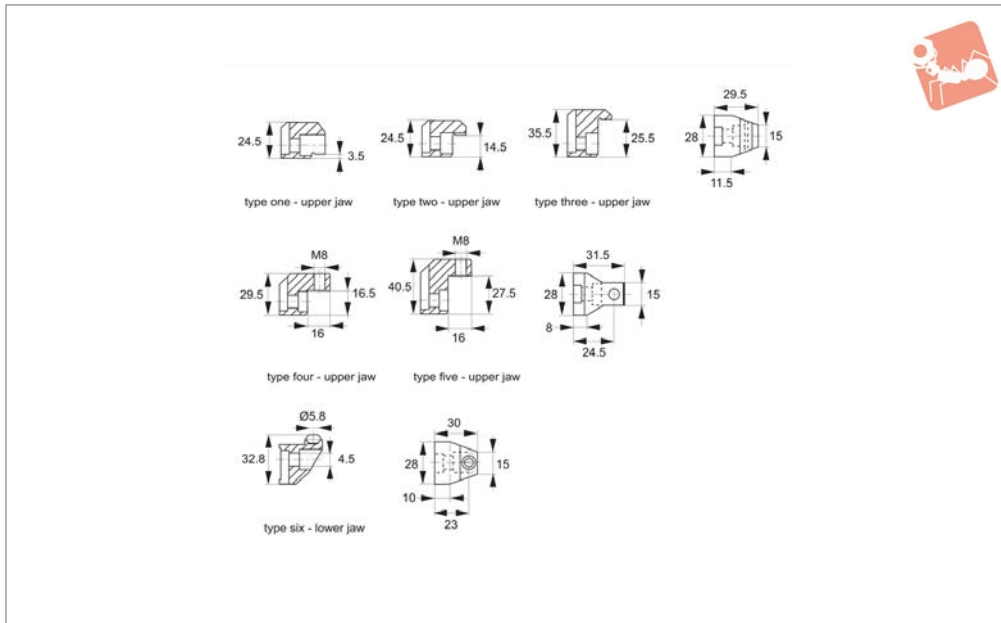
clamp housing on the upper clamping jaw and 9mm deep into the clamp housing on the lower clamping jaw.

Order No.	Type	Clamping range	$h_1$ -0.1	Weight g
12660.W0050	Lower Jaw	-	26.8	83
12660.W0052	Upper Jaw	0 - 12	21	69



# Clamping Jaws for floating clamp M12

# Adjustable Vertical Clamps



## 12660.4

ADJUSTABLE VERTICAL CLAMPS

### Material

Ball: steel ball-bearing  
Clamping jaws: steel case-hardened, nitrided.

### Technical Notes

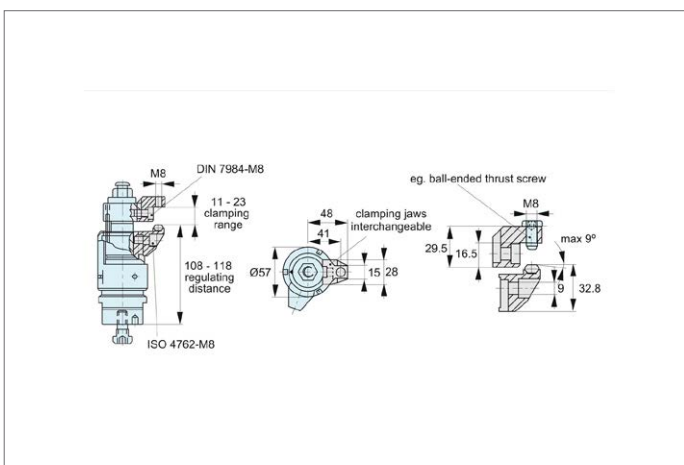
A selection of the alternative upper and

lower jaws for floating clams. The tightening torque of the floating clamp must be adapted dependet on condition. Note the surface pressure due to the reduced contact surface of the clamping jaws.

### Important Notes

The clamping jaws can be used for floating clamps 12660.W0008, 12662.W0010, 12660.W0012 and 12662.W0014.

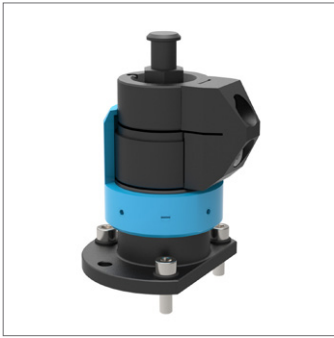
Order No.	Type	Clamping range of clamp in combination with standard lower jaw 12260.W0050	Clamping range in combination with lower jaw 12260.W0148 max.	Weight g
12660.W0054	Upper Jaw (Type One)	4-16		91
12660.W0056	Upper Jaw (Type Two)	15-27		88
12660.W0058	Upper Jaw (Type Three)	26-38		130
12660.W0154	Upper Jaw (Type Four)	29	23	83
12660.W0156	Upper Jaw (Type Five)	40	34	112
12660.W0148	Lower Jaw (Type Six)			98



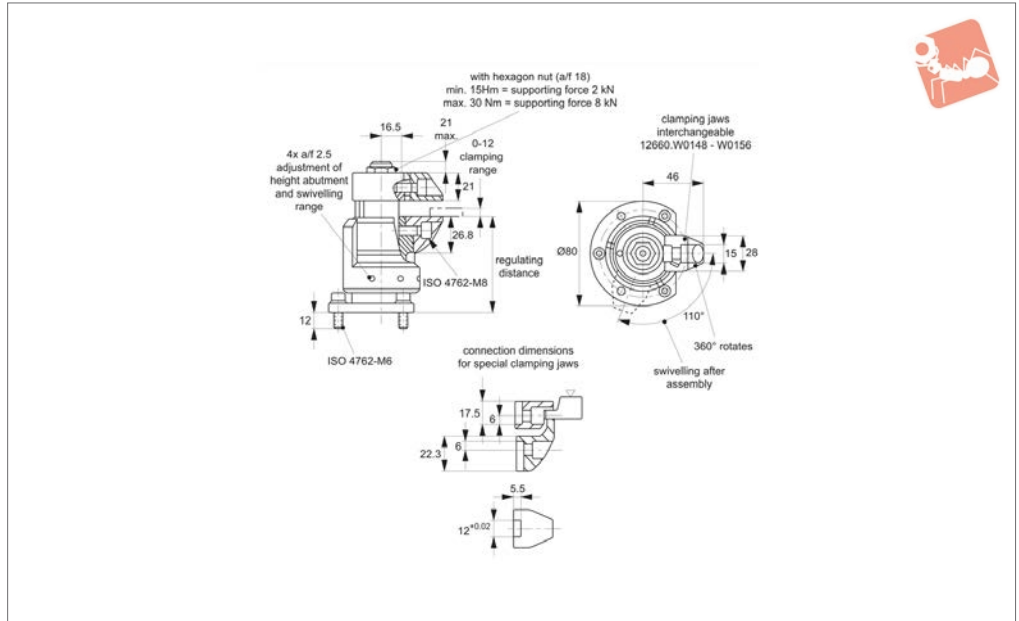
# Adjustable Vertical Clamps

# Floating Clamps - Compact

combined clamping and locking



**12661**



ADJUSTABLE VERTICAL CLAMPS

**Material**

Body: case hardened steel, nitrided, manganese phosphate treated and ground.  
Clamping jaws: case hardened steel, nitrided, manganese phosphate treated.  
Housing: aluminium, red anodised.

**Technical Notes**

Used to clamp and support additional

clamping points on components, whilst minimising distortion in the clamping of components. It also serves to reduce vibration during machining.

**Tips**

The benefits of the floating clamp are:  
- avoids vibration during the processing  
- clamps ribs, beads and shackles to rein-

force clamped components  
- distortion-free clamping of raw parts.  
Compact version with reduced height.  
Used with:  
24000 T-Nuts  
12660 Clamp Jaws - upper & lower

Order No.	Description	Clamping & support force kN max.	Clamping stroke	Weight g
12661.W0008	Clamping & Support	8	0-12	1450

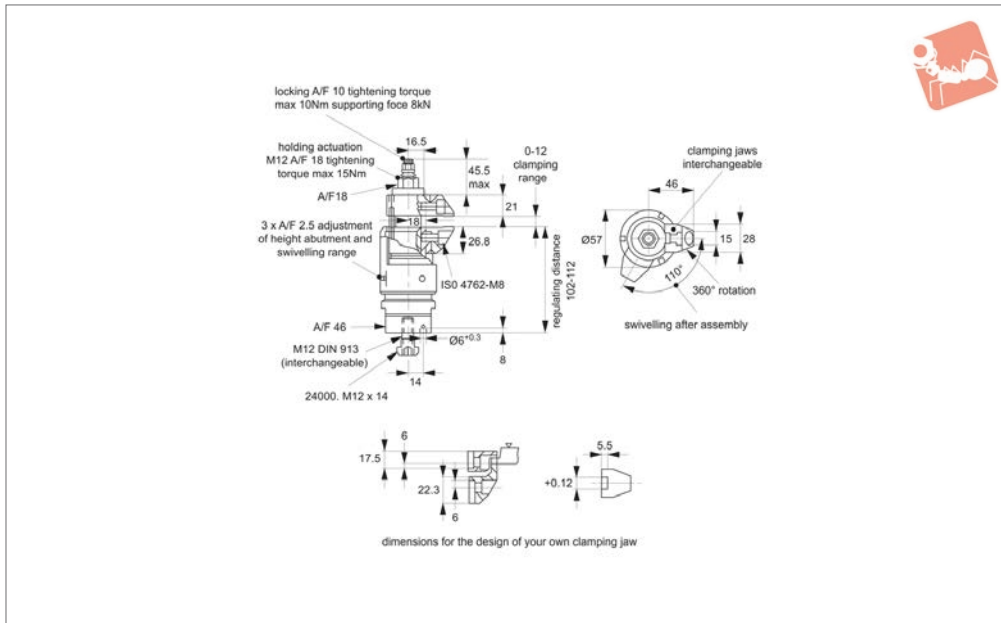




# Floating Clamps M12

separate clamping and locking

# Adjustable Vertical Clamps



**12662.1**

ADJUSTABLE VERTICAL CLAMPS

### Material

Body: case hardened steel, nitrided and ground.  
Clamping jaws: case hardened steel, nitrided.  
Housing: aluminium, blue anodised.

### Technical Notes

Used to clamp and support additional clamping points on extremely pliable work pieces, whilst minimising deformation of component. It also serves to reduce vibration during machining.

### Tips

Alternative clamping jaws available, see part 12660.W0050 to W0058 and 12660.W0148 to W0156.

### Floating clamp benefits:

Floating clamp 12662.1 is used to clamp and support over determined points on a component, offering the following benefits:

1. No deformation in the clamping of unstable components.
2. Eliminates vibration during machining.
3. Clamps on the smallest area to improve clamping stability.

### Installation of floating clamp on fixture:

1. Fix clamp on to machine bed with A/F 46 spanner. Clamp has 12mm thread, select suitable T-nut for your machine bed.
2. Adjust the clamp's height limit stop and rotating area with the blue setting sleeve, set sleeve position through tightening the 3 grub screws (A/F 2,5mm). When setting the height limit, make generous allowance

for variation in workpiece tolerance.

### Clamping process:

1. Push floating clamp downwards.
2. Pivot clamping jaws into component as far as possible. Clamp will contact bottom of component with only light spring pressure.
3. Tighten floating clamp with A/F 18mm hex nut - torque to min. 15Nm, 30Nm max. The jaws are clamping the workpiece, the clamp is still floating.
4. Tighten hexagon collar with A/F 10mm hex to max. 10Nm torque.
5. Clamping process is complete.
6. To release, reverse steps 5 to 1.

Order No.	Type	Weight g
12662.W0014	Steel	1890

# Adjustable Vertical Clamps

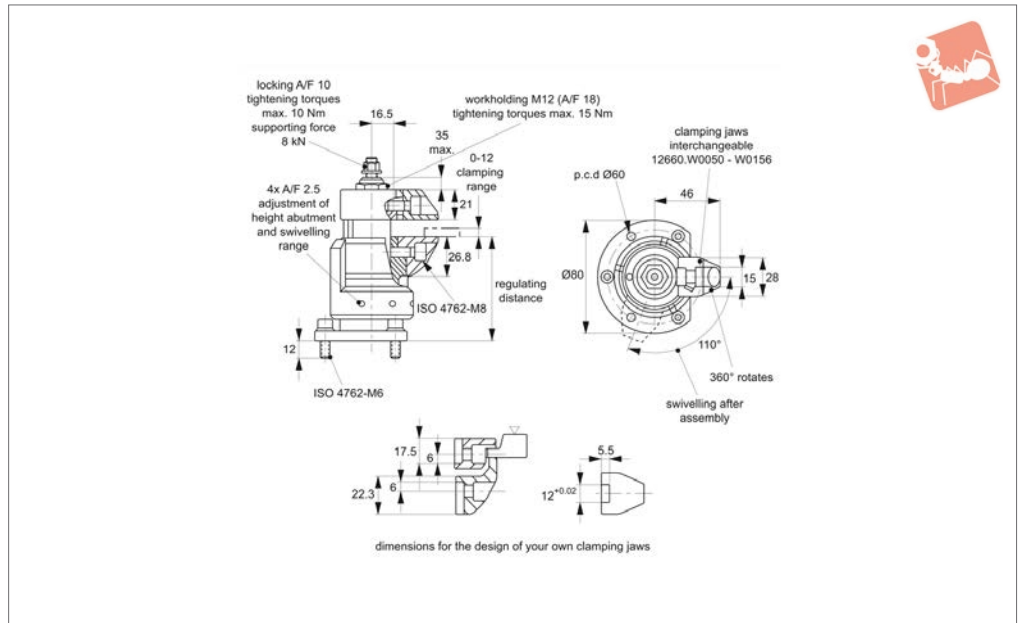
## Compact Floating Clamps separate clamping and locking



ADJUSTABLE VERTICAL CLAMPS



### 12662.2



#### Material

Body: steel case-hardened, nitrided, manganese phosphate treated and ground.  
Clamping jaws: steel case-hardened, nitrided, manganese phosphate treated.  
Housing: aluminium, blue anodised.

#### Technical Notes

Used to clamp and support additional clamping points on extremely pliable work pieces, whilst minimising deformation of component. It also serves to reduce vibration during machining.

#### Tips

Alternative clamping jaws available, see part 12660.W0050 to W0058 and 12660.W0148 to W0156.

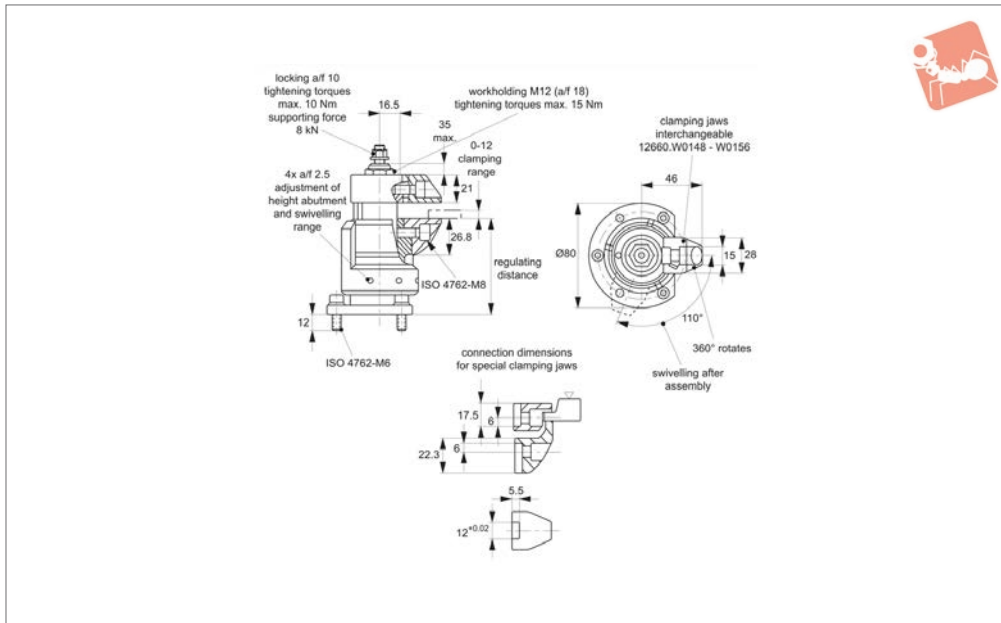
Order No.	Description	Clamping & support force kN max.	Clamping stroke $s_1$	Weight g
12662.W0010	Clamping & Locking	8	0-12	1650



# Floating Clamps - Compact

separate clamping and locking

# Adjustable Vertical Clamps



**12663**

ADJUSTABLE VERTICAL CLAMPS

### Material

Body: case hardened steel, nitrided, manganese phosphate treated and ground.  
Clamping jaws: case hardened steel, nitrided, manganese phosphate treated.  
Housing: aluminium, blue anodised.

### Technical Notes

Used to clamp and support additional

clamping points on extremely pliable work pieces, whilst minimising deformation of component. It also serves to reduce vibration during machining.

### Tips

The benefits of the floating clamp are:  
- avoids vibration during the processing  
- clamps ribs, beads and shackles to rein-

force clamped components  
- distortion-free clamping of raw parts.  
Used with:  
24000 T-Nuts  
12660 Clamp Jaws - upper & lower

Order No.	Description	Clamping & support force kN max.	Clamping stroke	Weight g
12663.W0010	Clamping and locking	8	0-12	1650

# Adjustable Vertical Clamps

# Floating Clamps M16

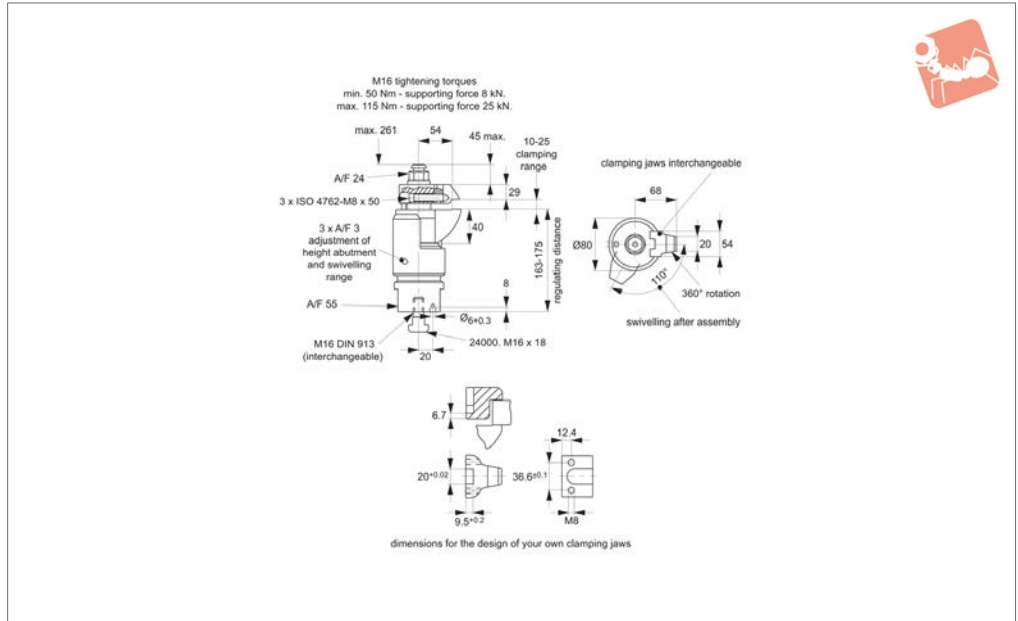
combined clamping and locking



ADJUSTABLE VERTICAL CLAMPS



## 12664.1



### Material

Body: steel case-hardened, nitrided and ground.

Clamping jaws: steel case-hardened, nitrided, manganese phosphate treated.  
Housing: aluminium, red anodised.

### Technical Notes

Used to clamp and support additional clamping points on extremely pliable work pieces, whilst minimising deformation of component. It also serves to reduce vibration during machining.

### Tips

Alternative clamping jaws available, see part 12664.W0060 to W0066.

### Floating clamp benefits:

Floating clamp 12664.1 is used to clamp and support over-determined points on a component, offering the following benefits:

1. No deformation in the clamping of unstable components.
2. Eliminates vibration during machining.
3. Clamps on the smallest area to improve clamping stability.

### Installation of floating clamp on fixture:

1. Fix clamp onto machine bed with A/F 46 spanner. Clamp has 16mm connection thread, select suitable T-nut for your machine bed.
2. Adjust the clamp's height limit stop and rotating area with the red setting sleeve, set sleeve position through tightening the

3 grub screws (A/F 2,5mm). When setting the height limit, make generous allowance for variation in workpiece tolerance.

### Clamping process:

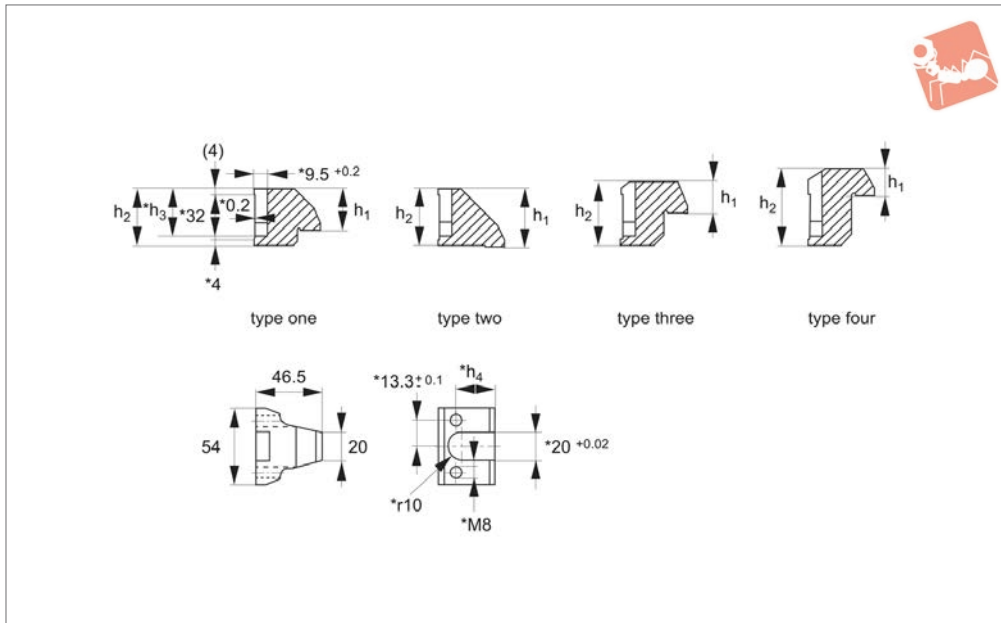
1. Push floating clamp downwards.
2. Pivot clamping jaws in to component as far as possible. Clamp will contact bottom of component with only low spring pressure.
3. Tighten floating clamp with A/F 24mm hex nut - torque 50Nm, 115Nm max. **In the clamping process the workpiece is clamped and simultaneously supported.**
4. To release, reverse steps 3 to 1.

Order No.	Type	Weight g
12664.W0016	Steel	6250



# Clamping Jaws M16 for floating clamp

# Adjustable Vertical Clamps



**12664.2**

ADJUSTABLE VERTICAL CLAMPS

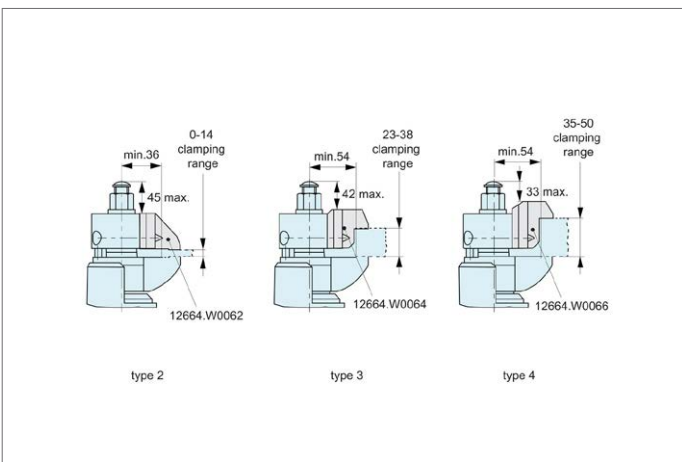
### Material

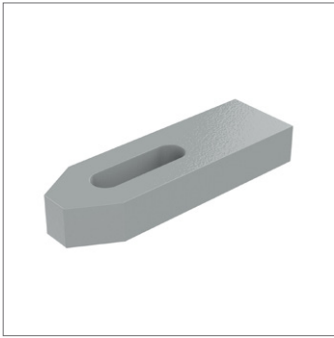
Steel case-hardened, nitrided, manganese phosphate treated.

### Technical Notes

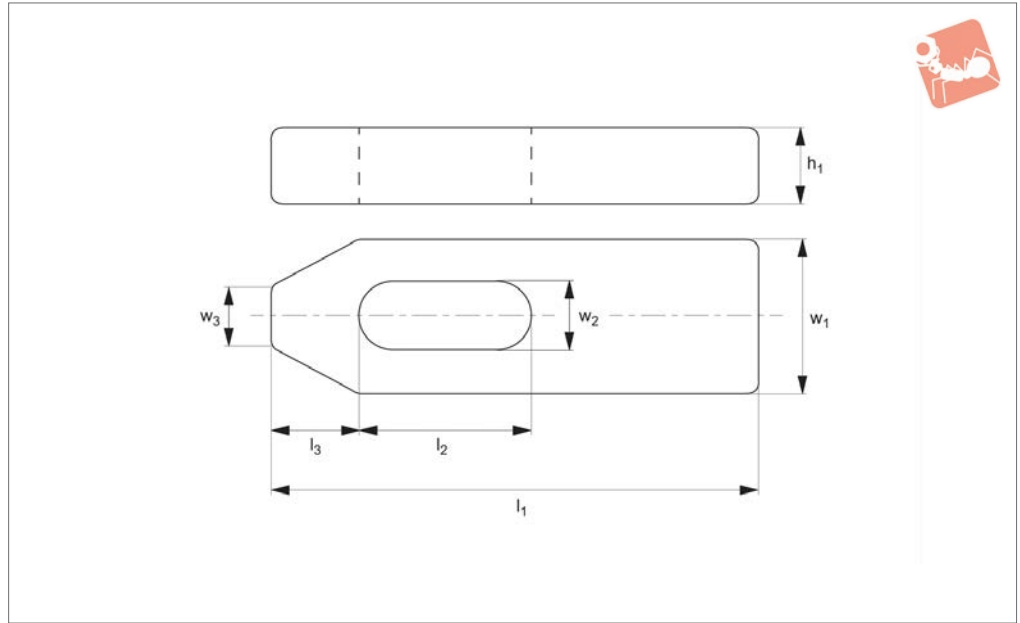
For use with 12664.1 clamps. A selection of alternative clamping jaws.

Order No.	Type	Clamping range	$h_1$	$h_2$	$h_3$	$h_4$	Weight g
<b>12664.W0060</b>	1	10-25	29.0	40	33.3	27.6	402
<b>12664.W0062</b>	2	0-14	41.0	40	33.3	27.6	380
<b>12664.W0064</b>	3	23-28	21.6	45	38.3	32.6	435
<b>12664.W0066</b>	4	35-50	18.6	54	47.3	41.6	490





## 10000



### Material

Steel, heat-treated and enamelled.

( )= Not to DIN standard.

collar nuts, 25000 plain washer.

### Technical Notes

To DIN 6314.

### Tips

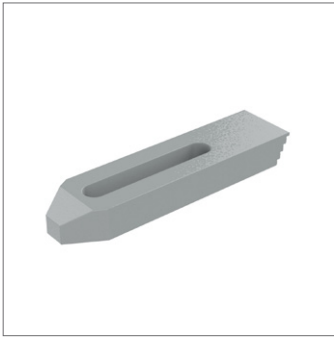
Used with:

21000 T-slot bolts, 24000 T-nuts, 24400

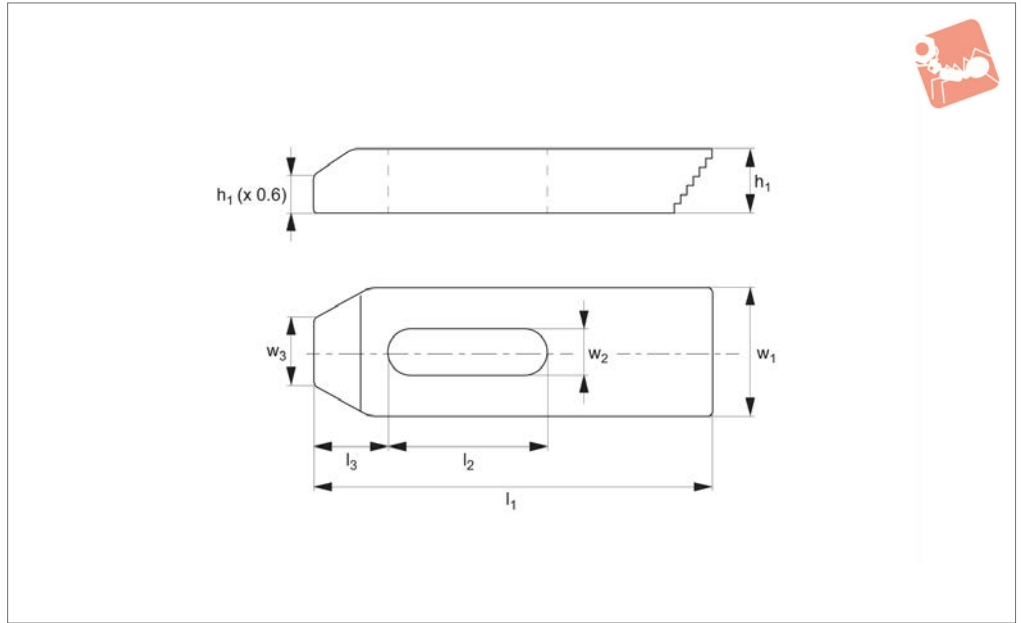
Order No.	For bolt	For bolt inch	$l_1$	$l_2$	$l_3$	$w_1$	$w_2$	$w_3$	$h_1$	Weight g
10000.W0007	M 6	1/4"	50	20	10	20	6.6	8	10	63
10000.W0009	M 8	5/16"	60	22	13	25	9.0	10	12	113
10000.W0011	M10	3/8"	80	30	15	30	11.0	12	15	226
10000.W0014	M12, M14	1/2"	100	40	21	40	14.0	14	20	490
10000.W0015	M12, M14	1/2"	125	50	21	40	14.0	14	20	621
10000.W0018	M16, M18	5/8"	125	45	26	50	18.0	18	25	960
10000.W0019	M16, M18	5/8"	160	65	26	50	18.0	18	25	1240
10000.W0022	M20, M22	3/4"	160	60	30	60	22.0	22	30	1787
10000.W0023	M20, M22	3/4"	200	80	30	60	22.0	22	30	2237
10000.W0026	M24	1"	200	80	35	70	26.0	26	30	2580
10000.W0027	M24	1"	250	105	35	70	26.0	26	35	3800
10000.W0034	M30	1-1/4"	250	100	45	80	33.0	34	40	4934
10000.W0035	M30	1-1/4"	315	130	45	80	33.0	34	50	7788
10000.W0043	M36, M42	1-1/2"	400	150	100	100	(43.0)	43	60	15000



STANDARD MANUAL CLAMPING



10020



**Material**

Steel, heat-treated and enamelled.

14000).

collar nuts, 25000 plain washer.

**Technical Notes**

To be used with step blocks etc (part no.

**Tips**

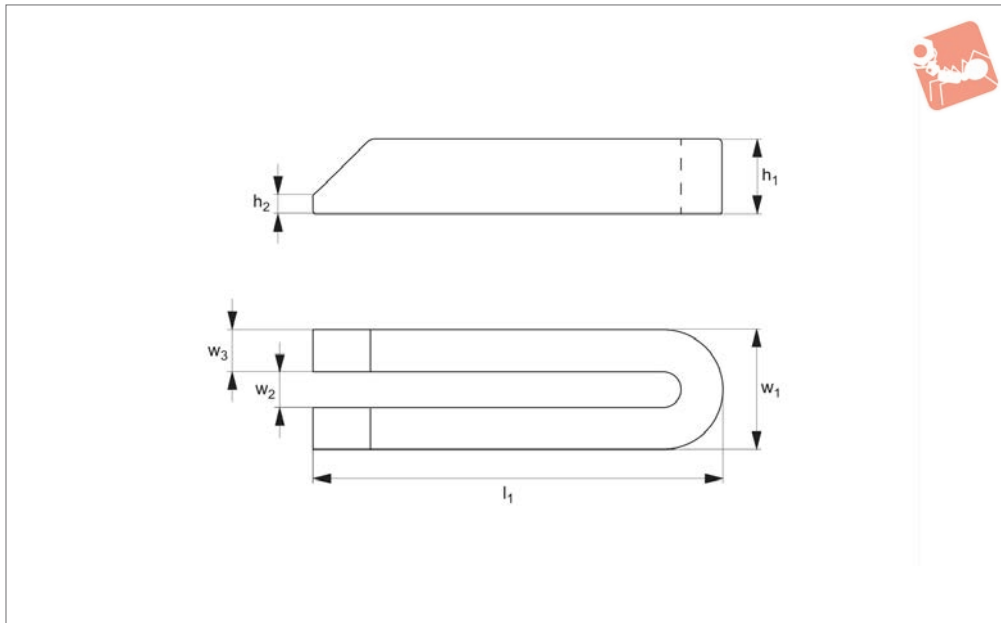
Used with:

21000 T-slot bolts, 24000 T-nuts, 24400

Order No.	For bolt	For bolt inch	$l_1$	$l_2$	$l_3$	$w_1$	$w_2$	$w_3$	$h_1$	Weight g
10020.W0007	M 6	1/4"	50	20	10	20	6.6	8	10	55
10020.W0008	M 6	1/4"	80	45	10	20	6.6	8	10	90
10020.W0009	M 8	5/16"	60	22	13	25	9.0	10	12	100
10020.W0010	M 8	5/16"	100	60	13	25	9.0	10	12	180
10020.W0011	M10	3/8"	80	30	15	30	11.0	12	15	200
10020.W0012	M10	3/8"	125	70	15	30	11.0	12	15	350
10020.W0014	M12, M14	1/2"	100	40	21	40	14.0	14	20	450
10020.W0015	M12, M14	1/2"	160	90	21	40	14.0	14	20	770
10020.W0018	M16, M18	5/8"	125	45	26	50	18.0	18	25	900
10020.W0019	M16, M18	5/8"	200	110	26	50	18.0	18	25	1500
10020.W0022	M20, M22	3/4"	160	60	30	60	22.0	22	30	1700
10020.W0026	M24	1"	200	80	35	70	26.0	26	30	2500







## 10100

STANDARD MANUAL CLAMPING

### Material

Steel, heat-treated and enamelled.

( ) = Not to DIN standard.

24000 T-nuts, 24400 collar nuts, 25000 plain washer.

### Technical Notes

To DIN 6315B.

### Tips

Used with:  
26000 clamp support, 21000 T-slot bolts,

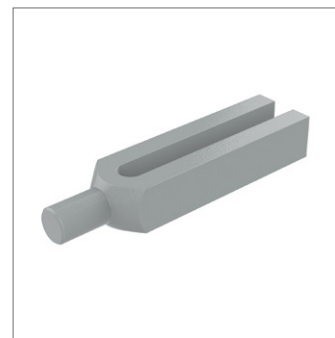
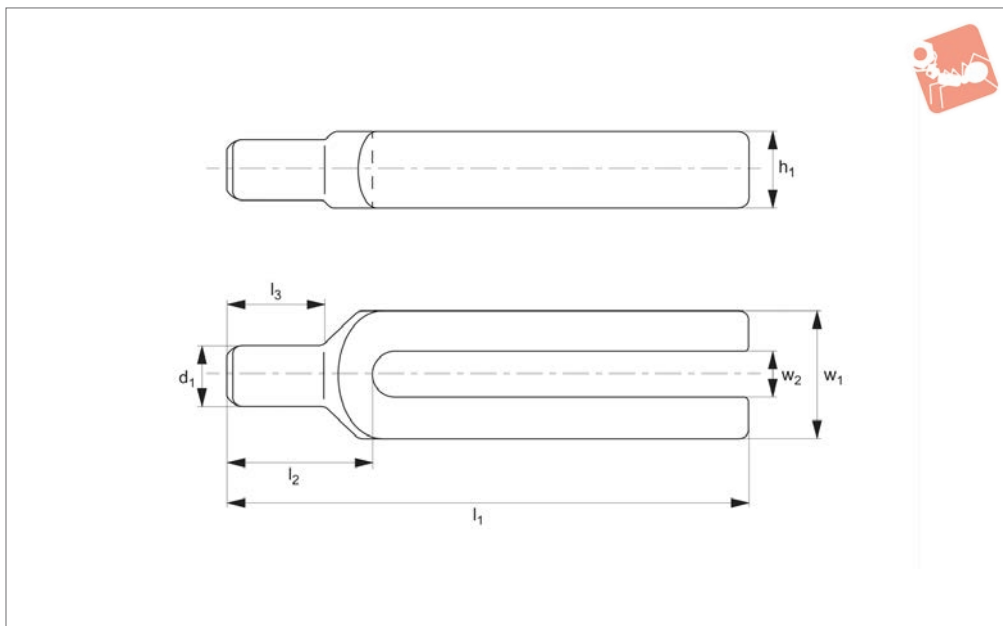
Order No.	For bolt	For bolt inch	$l_1$	$w_1$	$w_2$	$w_3$	$h_1$	$h_2$	Weight g
10100.W0007	M 6	1/4"	60	19	6.6	6	12	3	60
10100.W0009	M 8	5/16"	80	25	9.0	8	15	4	140
10100.W0011	M10	3/8"	100	31	11.0	10	20	5	300
10100.W0014	M12, M14	1/2"	125	38	14.0	12	25	6	570
10100.W0015	M12, M14	1/2"	160	38	14.0	12	25	6	730
10100.W0016	M12, M14	1/2"	200	38	14.0	12	25	6	910
10100.W0018	M16, M18	5/8"	160	48	18.0	15	30	8	1080
10100.W0019	M16, M18	5/8"	200	48	18.0	15	30	8	1360
10100.W0020	M16, M18	5/8"	250	48	18.0	15	40	10	2250
10100.W0022	M20, M22	3/4"	200	52	22.0	15	40	10	1800
10100.W0023	M20, M22	3/4"	250	62	22.0	20	40	10	3000
10100.W0024	M20, M22	3/4"	315	62	22.0	20	40	10	3850
10100.W0025	M20, M22	3/4"	500	62	(22.0)	20	50	10	7500
10100.W0026	M24	1"	200	66	26.0	20	40	10	2400
10100.W0027	M24	1"	250	66	26.0	20	40	10	3000
10100.W0028	M24	1"	315	66	26.0	20	40	10	3850
10100.W0029	M24	1"	400	66	(26.0)	20	50	10	5962
10100.W0030	M24	1"	500	66	(26.0)	20	50	10	7600
10100.W0031	M24	1"	600	66	(26.0)	20	50	10	9042
10100.W0032	M24	1"	800	66	(26.0)	20	50	10	12122
10100.W0034	M30	1-1/4"	250	74	33.0	20	50	12	3700
10100.W0035	M30	1-1/4"	315	74	33.0	20	50	12	4750
10100.W0036	M30	1-1/4"	400	74	33.0	20	50	12	6100
10100.W0037	M30	1-1/4"	600	74	(33.0)	20	50	12	9200
10100.W0038	M30	1-1/4"	1000	94	(33.0)	30	60	12	28000
10100.W0040	M36	1-1/2"	400	100	(40.0)	30	60	12	11000
10100.W0041	M36	1-1/2"	600	100	(40.0)	30	60	12	16500
10100.W0042	M36, M42	1-5/8"	600	123	(43.0)	40	80	12	29600





# Forked Clamps with pin end

# Standard Manual Clam-



**10120**

STANDARD MANUAL CLAMPING

### Material

Steel, heat-treated and enamelled.

### Technical Notes

To DIN 6315C.

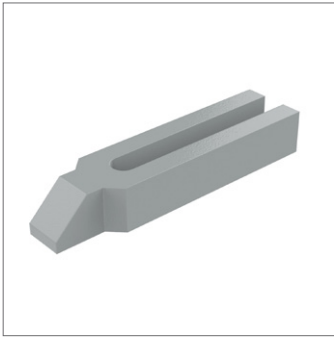
### Tips

Used with:

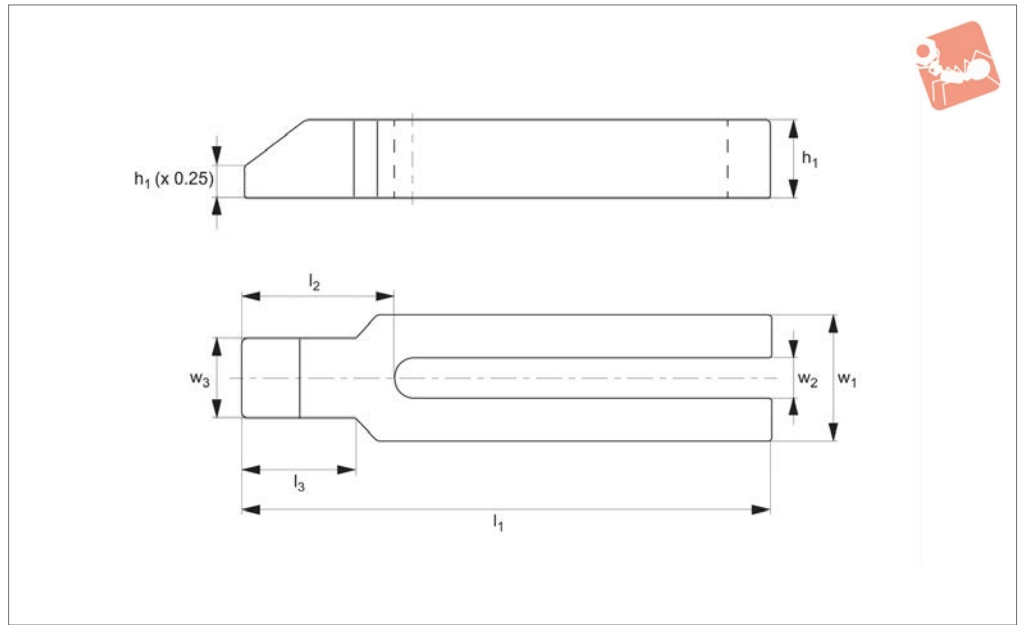
21000 T-slot bolts, 24000 T-nuts, 24400 collar nuts, 25000 plain washer.

Order No.	For bolt	For bolt inch	$l_1$	$l_2$	$l_3$	$w_1$	$w_2$	$h_1$	$d_1$	Weight g
10120.W0009	M 8	5/16"	100	30	18	30	9	15	12	220
10120.W0011	M10	3/8"	125	36	24	30	11	20	16	350
10120.W0014	M12, M14	1/2"	160	45	30	40	14	25	20	750
10120.W0015	M12, M14	1/2"	200	45	30	40	14	25	20	950
10120.W0018	M16, M18	5/8"	200	55	36	50	18	30	24	1400
10120.W0019	M16, M18	5/8"	250	55	36	50	18	30	24	1750
10120.W0022	M20, M22	3/4"	250	65	45	60	22	40	30	2700
10120.W0023	M20, M22	3/4"	315	65	45	60	22	40	30	3400
10120.W0026	M24	1"	250	80	56	70	26	40	38	3200
10120.W0027	M24	1"	315	80	56	70	26	40	38	4100
10120.W0034	M30	1-1/4"	315	85	56	80	33	50	45	5700
10120.W0035	M30	1-1/4"	400	85	56	80	33	50	45	7000





10140



**Material**

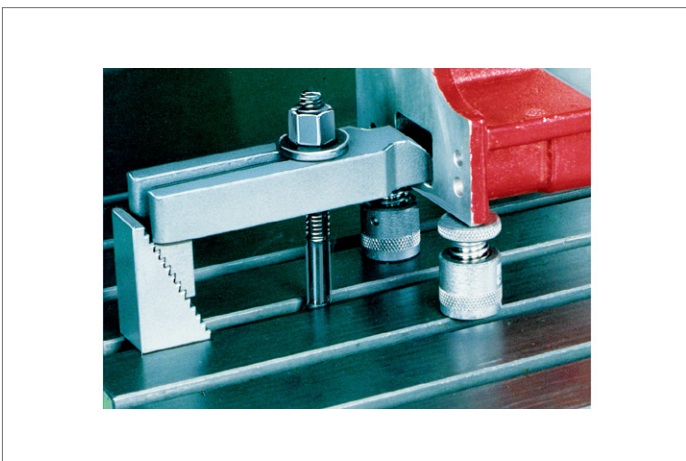
Steel, heat-treated and enamelled.

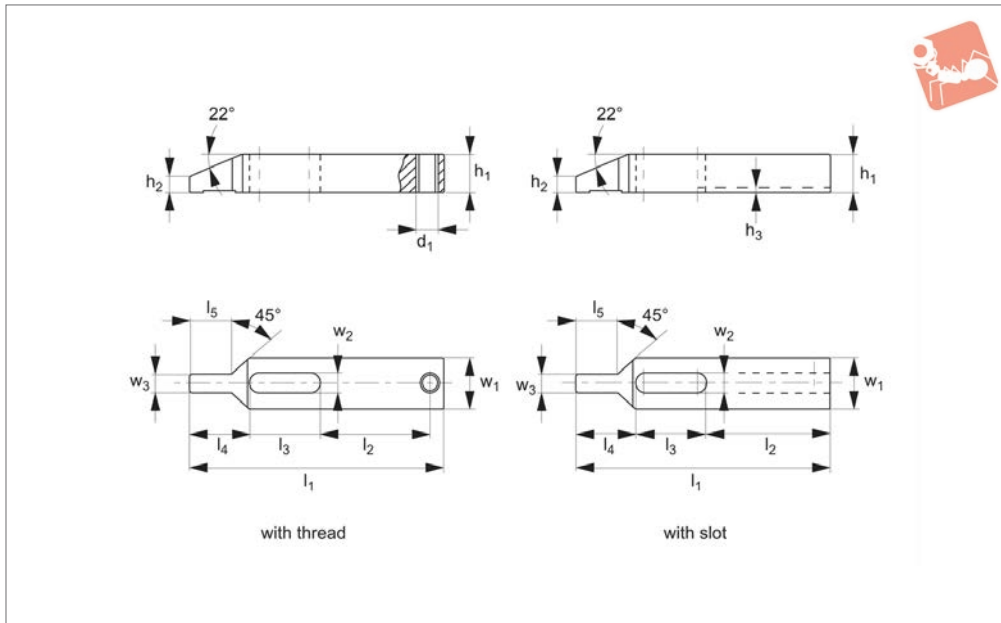
21000 T-slot bolts, 24000 T-nuts, 24400 collar nuts, 25000 plain washer.

**Tips**

Used with:

Order No.	For bolt	For bolt inch	$l_1$	$l_2$	$l_3$	$w_1$	$w_2$	$w_3$	$h_1$	Weight g
10140.W0009	M 8	5/16"	100	32	18	30	9	16	15	240
10140.W0011	M10	3/8"	125	38	24	30	11	20	20	380
10140.W0014	M12, M14	1/2"	160	47	30	40	14	24	25	800
10140.W0015	M12, M14	1/2"	200	47	30	40	14	24	25	950
10140.W0018	M16, M18	5/8"	200	57	36	50	18	28	30	1500
10140.W0019	M16, M18	5/8"	250	57	36	50	18	28	30	1850
10140.W0022	M20, M22	3/4"	250	68	45	60	22	35	40	2900
10140.W0023	M20, M22	3/4"	315	68	45	60	22	35	40	3600
10140.W0026	M24	1"	250	83	56	70	26	43	40	3400
10140.W0027	M24	1"	315	83	56	70	26	43	40	4300
10140.W0034	M30	1-1/4"	315	88	56	80	33	50	50	6000
10140.W0035	M30	1-1/4"	400	88	56	80	33	50	50	7300





## 10160

STANDARD MANUAL CLAMPING

### Material

Steel, heat-treated and blackened.

difficult to reach areas.

### Technical Notes

The small nose permits clamping even on

### Tips

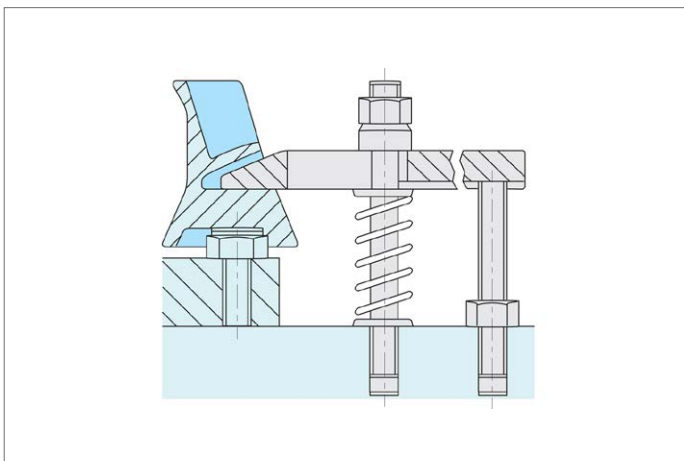
„With thread“ for vertical adjustment.

„With slot“ for horizontal adjustment.

Used with:

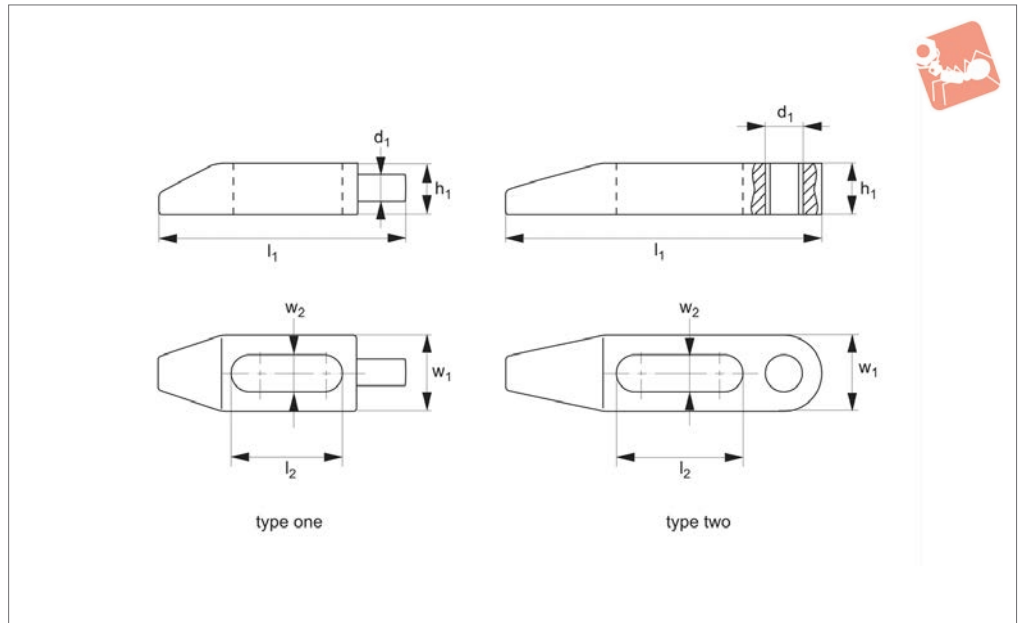
21000 T-slot bolts, 24000 T-nuts, 24400 collar nuts, 25000 plain washer.

Order No.	Type	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$w_1$	$w_2$	$w_3$	$h_1$	$h_2$	$h_3$	$d_1$	Weight g
10160.W0107	With thread	80	34	23	17	13	15	6.6	7.5	8	2.5	-	M 6	54
10160.W0109	With thread	100	42	29	22	17	20	9.0	9.5	12	4.0	-	M 8	133
10160.W0111	With thread	125	52	36	28	21	25	11.0	11.5	15	5.0	-	M10	261
10160.W0113	With thread	150	63	43	34	25	30	13.0	13.5	20	7.0	-	M12	504
10160.W0117	With thread	175	70	52	40	29	35	17.0	15.5	25	9.0	-	M16	828
10160.W0207	With slot	80	34	23	17	13	15	6.6	7.5	8	2.5	2.5	-	50
10160.W0209	With slot	100	42	29	22	17	20	9.0	9.5	12	4.0	3.0	-	127
10160.W0211	With slot	125	52	36	28	21	25	11.0	11.5	15	5.0	3.5	-	251
10160.W0213	With slot	150	63	43	34	25	30	13.0	13.5	20	7.0	4.0	-	488
10160.W0217	With slot	175	70	52	40	29	35	17.0	15.5	25	9.0	4.5	-	812
10160.W0222	With slot	225	-	62	52	33	50	22.0	19.5	35	15.5	5.5	-	2200
10160.W0226	With slot	250	-	71	60	36	60	26.0	21.5	40	17.5	5.5	-	3340





10164



**Material**

Stainless steel (AISI 630,17-4 PH), heat-treated.

both normal and restricted areas with minimum tooling interference.

collar nuts, 25000 plain washer.

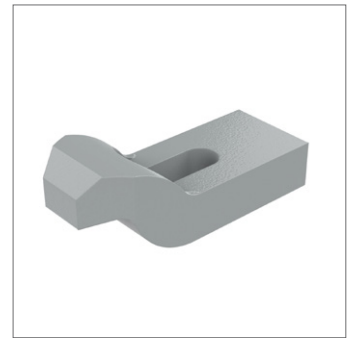
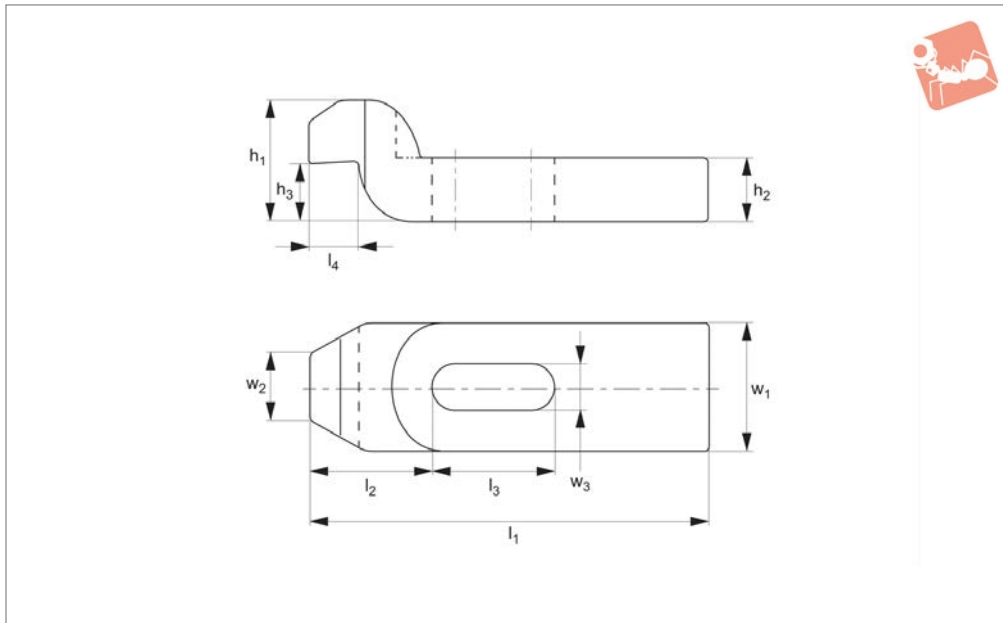
**Technical Notes**

This is a low profile slotted clamp for use in

**Tips**

Used with:  
21000 T-slot bolts, 24000 T-nuts, 24400

Order No.	Type	Holding force kN	$l_1$	$l_2$	$w_1$	$w_2$	$h_1$	$d_1$	Weight g
10164.W0092	One	14.2	92	22.0	22.6	10.4	11	9,5 Ø	150
10164.W0127	Two	26.7	127	34.5	25.4	13.4	19	M12	340
10164.W0152	Two	38.2	152	38.1	30.5	16.5	22	M16	600
10164.W0178	Two	69.8	178	38.1	35.6	19.8	27	M20	1130



## 10200

STANDARD MANUAL CLAMPING

### Material

Steel, heat-treated and enamelled.

( ) = not to DIN standard.

collar nuts, 25000 plain washer.

### Technical Notes

To DIN 6316.

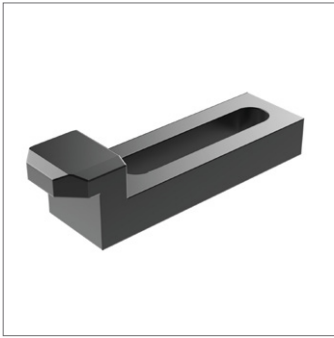
### Tips

Used with:

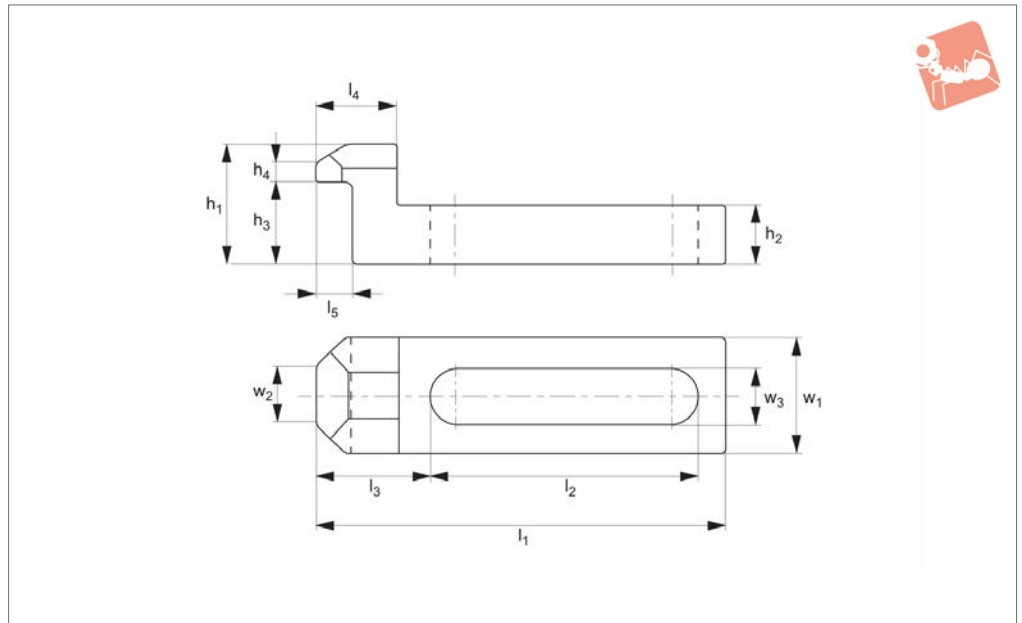
21000 T-slot bolts, 24000 T-nuts, 24400

Order No.	For bolt	For bolt inch	$l_1$	$l_2$	$l_3$	$l_4$	$w_1$	$w_2$	$w_3$	$h_1$	$h_2$	$h_3$	Weight g
10200.W0007	M 6	1/4"	60	22.0	20	8	20	10	6.6	20	10	9	81
10200.W0009	M 8	5/16"	80	27.5	25	9	25	12	9.0	24	12	11	166
10200.W0011	M10	3/8"	100	36.0	32	12	30	15	11.0	30	15	14	299
10200.W0014	M12, M14	1/2"	125	44.0	40	16	40	20	14.0	40	20	18	678
10200.W0018	M16, M18	5/8"	125	51.5	40	20	50	25	(18.0)	50	25	23	1049
10200.W0019	M16, M18	5/8"	160	51.5	50	20	50	25	18.0	50	25	23	1366
10200.W0022	M20, M22	3/4"	160	59.0	55	24	60	30	(22.0)	60	30	27	1911
10200.W0023	M20, M22	3/4"	200	59.0	70	24	60	30	22.0	60	30	27	2417
10200.W0026	M24	1"	200	76.5	60	25	70	35	(26.0)	70	35	32	3315
10200.W0027	M24	1"	250	76.5	80	25	70	35	26.0	70	35	32	4132
10200.W0034	M30	1-1/4"	250	96.0	80	40	80	40	(33.0)	80	40	45	5225
10200.W0035	M30	1-1/4"	315	96.0	100	40	80	40	33.0	100	50	45	8459
10200.W0043	M36, M42	1-1/2" - 1-5/8"	400	105.0	120	50	100	50	(43.0)	120	60	55	17078





10210



**Material**

Steel, heat-treated and blackened.

21000 T-slot bolts, 24000 T-nuts, 24400 collar nuts, 25000 plain washer.

**Tips**

Used with:

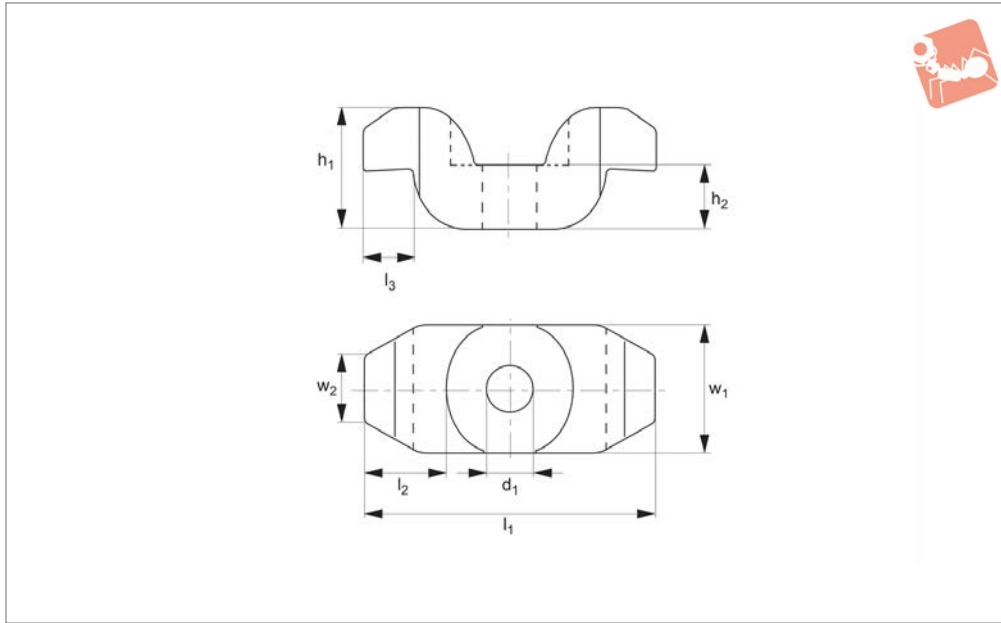
Order No.	For bolt	For bolt inch	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$w_1$	$w_2$	$w_3$	$h_1$	$h_2$	$h_3$	$h_4$	Weight g
10210.W0107	M 6	1/4"	55	36	15.5	11	5	15	8	6.6	16	8	11	2	39
10210.W0109	M 8	5/16"	70	46	19.5	15	8	20	10	9.0	20	10	14	3	80
10210.W0111	M10	3/8"	90	58	26.5	19	10	25	12	11.0	25	13	18	4	170
10210.W0113	M12	1/2"	115	75	32.5	24	12	30	15	13.0	32	16	23	5	328





# Double Goose Neck Clamps

Standard  
Manual Clam-



**10220**

STANDARD MANUAL CLAMPING

**Material**

Steel, heat-treated and enamelled.

21000 T-slot bolts, 24000 T-nuts, 24400 collar nuts, 25000 plain washer, 25700 dished washer.

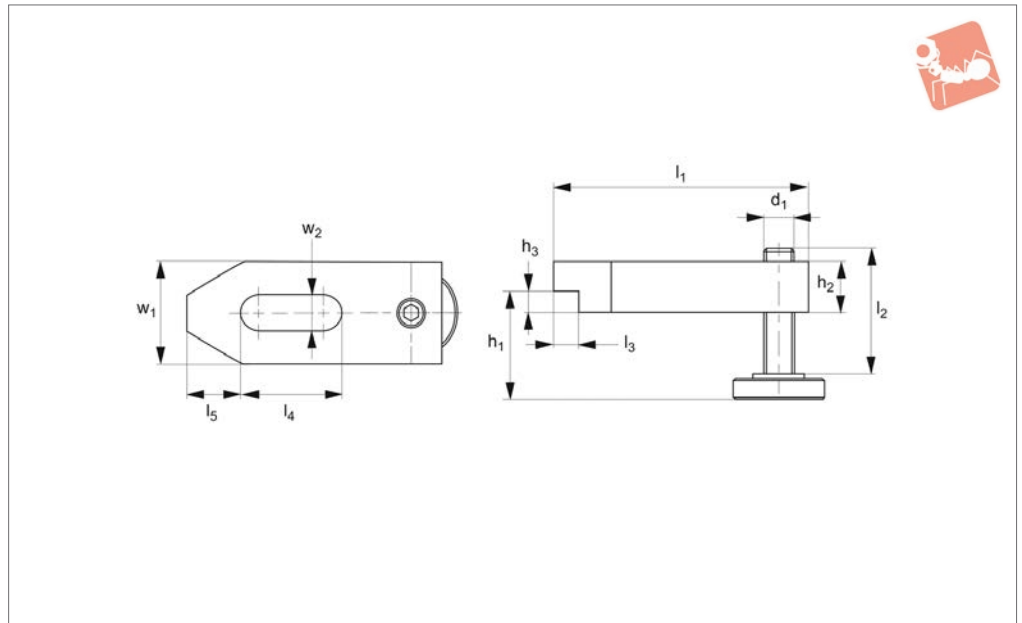
**Tips**

Used with:

Order No.	For bolt	$l_1$	$l_2$	$l_3$	$w_1$	$w_2$	$h_1$	$h_2$	$d_1$	Weight g
<b>10220.W0018</b>	M12-M18	100	26	16	40	20	40	20	18	620
<b>10220.W0025</b>	M20-M24	140	38	24	60	30	60	30	25	2040



10230



**Material**

Steel, heat-treated and enamelled.

**Technical Notes**

To clamp thin parts, turn the clamp over.

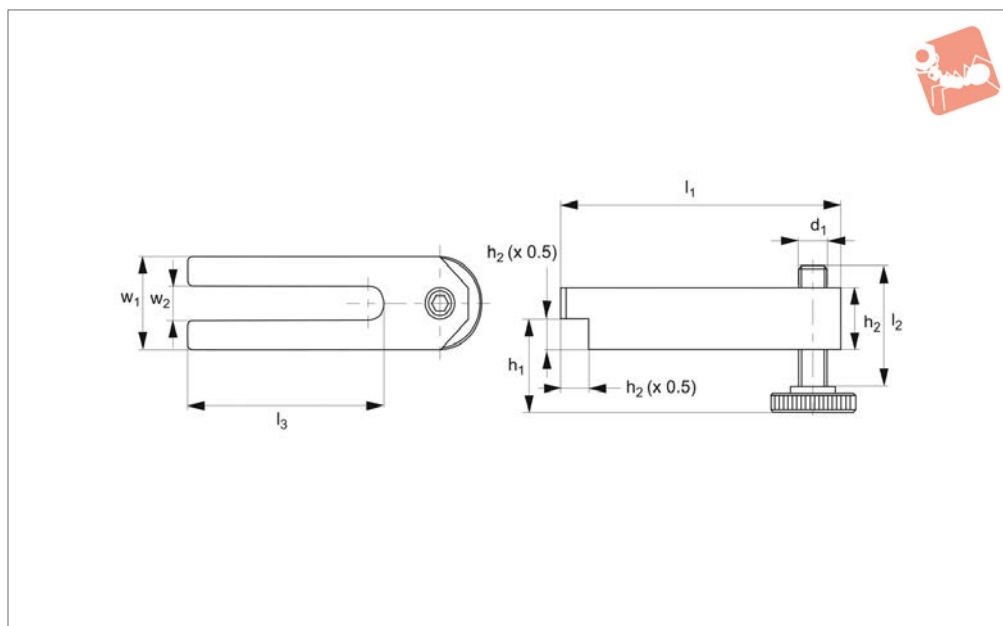
Order No.	For clamping screw	$d_1 \times l_2$	$l_4$	$l_5$	$w_1$	$w_2 \times l_1$	$h_1$	$h_2$	$h_3 \times l_3$	Weight g
10230.W0014	M12, M14	M12x49	40	21	40	14x100	10-55	20	8,0x10,0	580
10230.W0018	M16, M18	M16x55	45	26	50	18x125	13-62	25	10,0x12,5	1140
10230.W0022	M20, M22	M20x69	60	30	60	22x160	16-77	30	12,0x15,0	2100



# Slotted Stepped Clamp

with adjusting support screw

Standard  
Manual Clam-



10240

STANDARD MANUAL CLAMPING

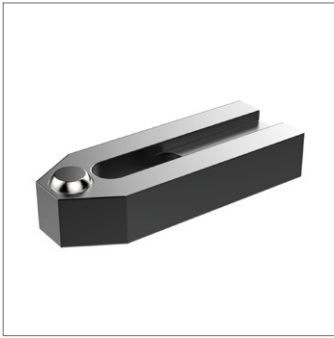
### Material

Steel, heat-treated and enamelled.

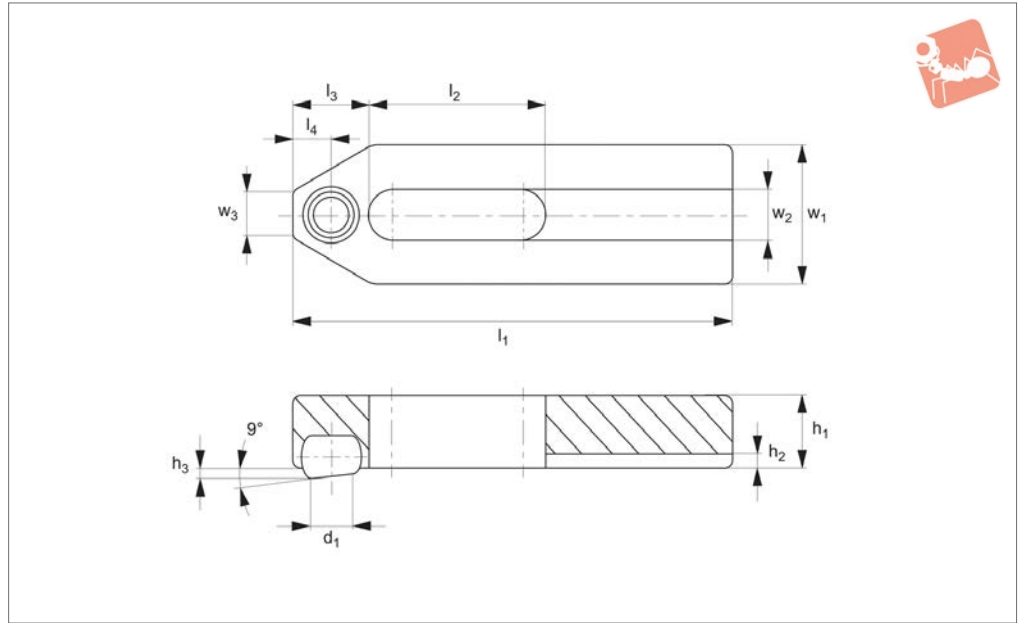
### Technical Notes

To clamp thin parts, turn the clamp over.

Order No.	For clamping screw	$d_1 \times l_2$	$l_3$	$w_1$	$w_2 \times l_1$	$h_1$	$h_2$	Weight g
10240.W0010	M10	M10x39	70	30	11x100	8-47	20	330
10240.W0014	M12, M14	M12x49	90	40	14x125	10-59	25	700
10240.W0018	M16, M18	M16x55	110	50	18x160	13-67	30	1300
10240.W0022	M20, M22	M20x69	135	60	22x200	16-85	40	2600



## 10300



### Material

Body: steel, heat-treated and blackened.  
Ball: ball-bearing steel, hardened and bright.

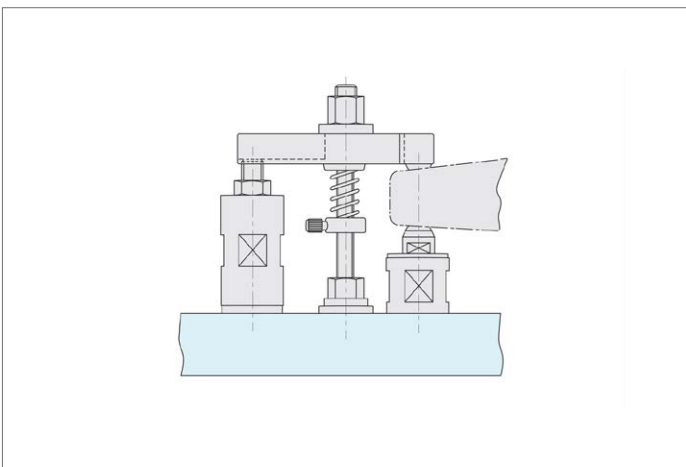
### Technical Notes

Ball secured against turning.

### Tips

Provides alignment of the clamp with the workpiece, useful where there is some component variation. For suitable supporting screw see part no. 18400.

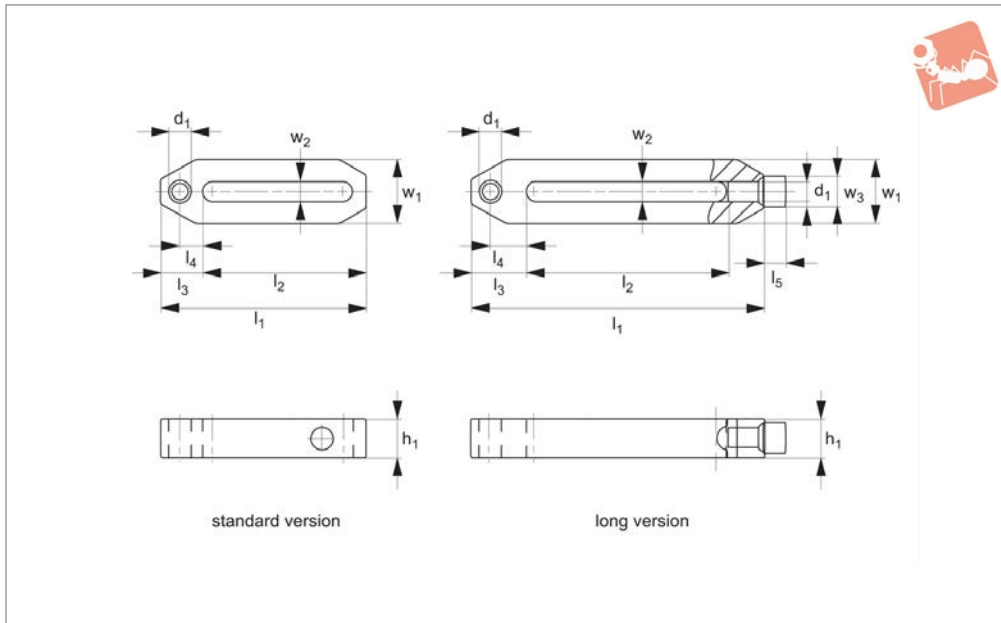
Order No.	For bolt	For bolt inch	$l_1$	$l_2$	$l_3$	$l_4$	$w_1$	$w_2$	$w_3$	$h_1$	$h_2$	$h_3$	Ball dia.	$d_1$	Weight g
10300.W0007	M 6	1/2"	50	20	10	5.0	20	6.6	8	10	2.5	1.6	8.5	5.8	61
10300.W0009	M 8	5/16"	60	22	13	6.5	25	9.0	10	12	3.0	2.0	10.0	7.2	109
10300.W0011	M10	3/8"	80	30	15	7.5	30	11.0	12	15	3.5	2.7	12.0	8.6	219
10300.W0014	M12	1/2"	125	50	21	10.5	40	13.0	14	20	4.0	3.5	16.0	10.5	615





# Long Slot Straight Clamps

Standard  
Manual Clam-



10700

STANDARD MANUAL CLAMPING

### Material

Steel, hardened and blackened.

positioning screw and is particularly useful where long reach is required.

used with these clamps.

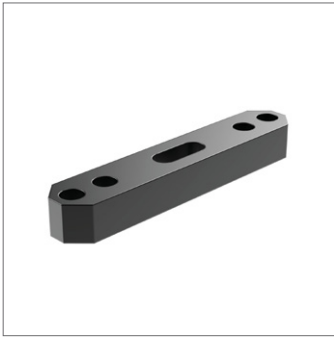
### Technical Notes

The long version has an adjustable rear

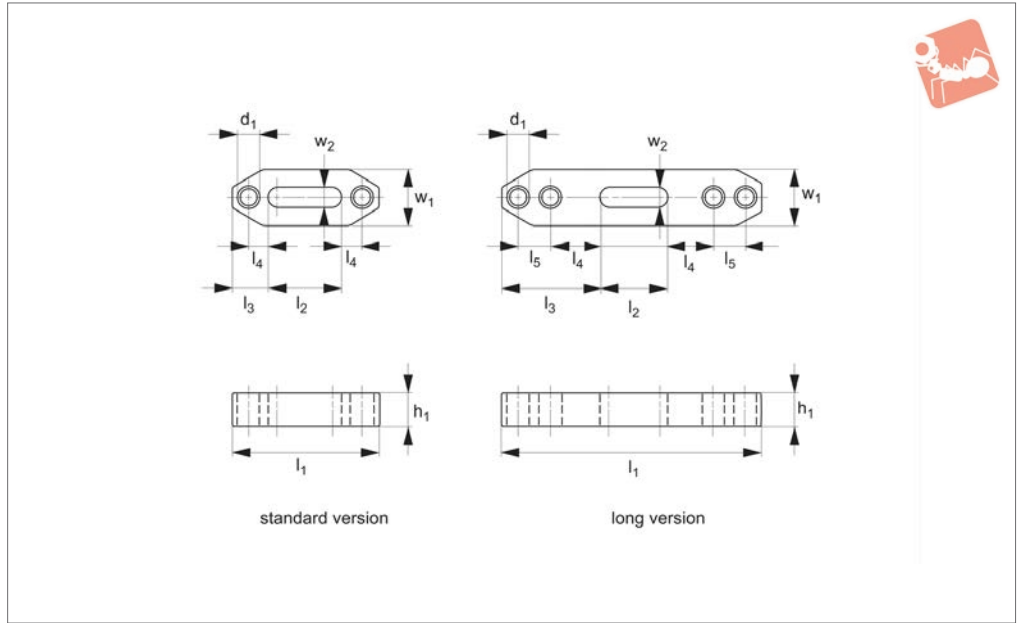
### Tips

Self-aligning pads (part no. 34100) can be

Order No.	Type	Size	$h_1 \times w_1$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$w_2$	$w_3$	$d_1$	Weight g
10700.W0012	Standard	12	20x35,0	110	82	21.5	11.5	-	12.5	-	M12	340
10700.W0016	Standard	16	30x40,0	142	107	28.0	15.0	-	17.0	-	M16	770
10700.W0020	Standard	20	40x50,0	200	150	38.0	21.0	-	21.0	-	M20	1800
10700.W0112	Long	12	20x35,0	156	106	30.0	20.0	12	12.5	18	M12	600
10700.W0116	Long	16	30x45,5	196	136	35.0	22.0	16	17.0	24	M16	1400
10700.W0120	Long	20	40x60,0	298	221	47.0	30.0	20	21.0	30	M20	3900



10740



**Material**

Steel, hardened and blackened.

same time.

**Technical Notes**

Ideal for clamping two similar parts at the

**Tips**

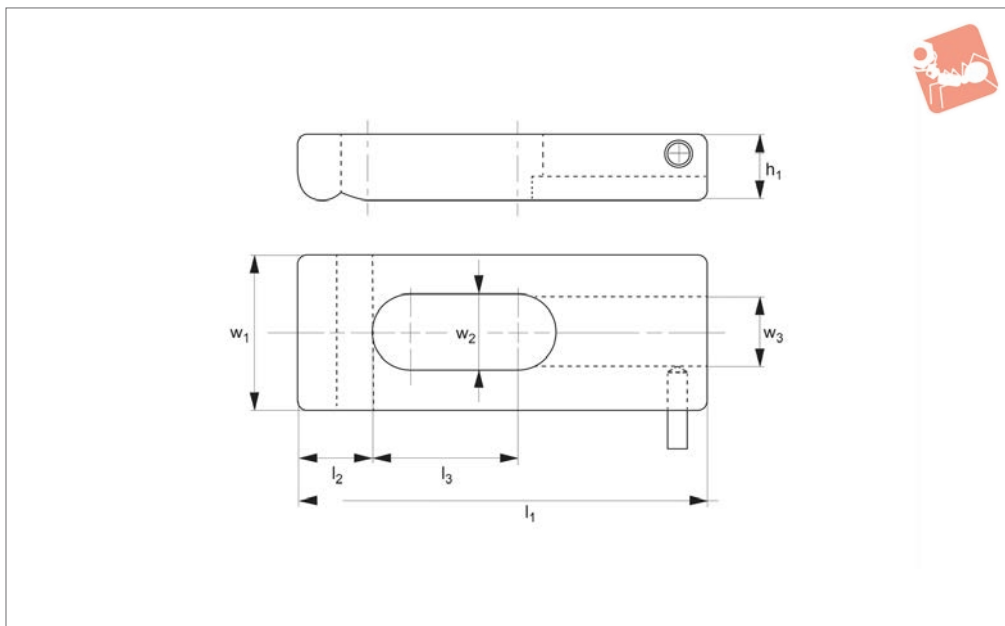
Self-aligning pads (part no. 34100) can be used with these clamps.

Order No.	Type	Size	$h_1 \times w_1$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$w_2$	$d_1$	Weight g
10740.W0012	Standard	12	15x30	80	33	23.5	13.5	-	12.5	M12	200
10740.W0016	Standard	16	25x40	100	42	29.0	16.0	-	17.0	M16	525
10740.W0112	Long	12	20x30	160	33	63.5	33.5	20	12.5	M12	610
10740.W0116	Long	16	30x40	200	42	79.0	41.0	25	17.0	M16	1480



# Clamp With Stop Pin

# Standard Manual Clam-



**18200**

STANDARD MANUAL CLAMPING

### Material

Steel, heat-treated.

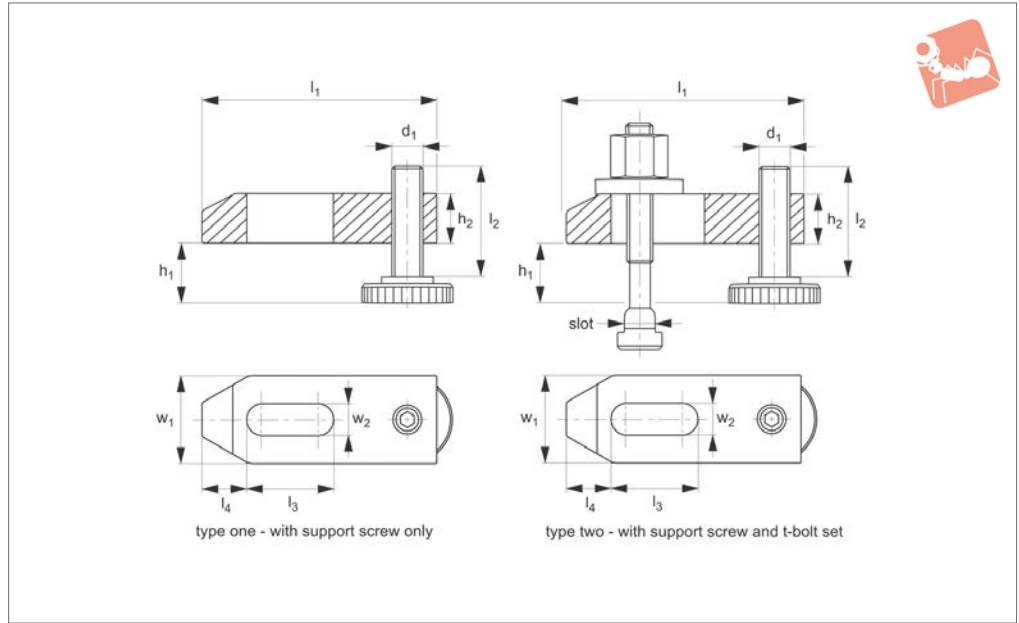
### Technical Notes

To be used with supporting screw no. 18400.

Order No.	$l_1$	$l_2$	$l_3$	$w_1$	$w_2$	$w_3$	$h_1$	Weight g
<b>18200.W0001</b>	100	13.5	37	30	15	12.5	20	350
<b>18200.W0002</b>	125	24.5	50	40	19	12.5	20	590



# 10400



### Material

Heat-treated steel, enamelled.

### Technical Notes

**Type One** - clamp and support screw only.

**Type Two** - clamp, support screw and t-bolt set.

$h^*$  - dependent on depth of slot and position of fixture nut.

tion of fixture nut.

### Tips

Often used for clamping press tools.

Used with:  
10680 Ratchet clamp lever.  
21000 T-Slot bolt.

24400 Collar Nut.  
25000 Plain washer.

Replacement Parts:

Replacement support screw see part no. 10410.

Order No.	Type	For bolt	Supplied T-bolt	T-slot size	$d_1 \times l_2$	$h_1$	$h_2$	$l_3$	$l_4$	$w_1$	$w_2 \times l_1$	Weight g
10400.W0010	One	M10	-	-	M10x39	8-37	15	30	15	30	11x80	200
10400.W0012	One	M12, M14	-	-	M12x49	10-47	20	40	21	40	14x100	560
10400.W0014	One	M12, M14	-	-	M12x94	10-92	20	40	21	40	14x100	635
10400.W0016	One	M16, M18	-	-	M16x55	13-52	25	45	26	50	18x125	1110
10400.W0018	One	M16, M18	-	-	M16x90	13-87	25	45	26	50	18x125	1230
10400.W0020	One	M20, M22	-	-	M20x69	16-65	30	60	30	60	22x160	2050
10400.W0022	One	M20, M22	-	-	M20x109	16-105	30	60	30	60	22x160	2230
10400.W0024	One	M24	-	-	M24x87	20-83	30	80	35	70	26x200	3200
10400.W0026	One	M24	-	-	M24x137	20-133	30	80	35	70	26x200	3470
10400.W0028	One	M24	-	-	M24x87	20-80	35	105	35	70	26x250	4340
10400.W0030	One	M24	-	-	M24x137	20-130	35	105	35	70	26x250	4520
10400.W0032	One	M30	-	-	M30x180	24-150	50	130	45	80	33x315	11215
10400.W0034	One	M36, M42	-	-	M30x180	24-150	80	170	80	100	43x400	24350
10400.W0110	Two	M10	M10x10x80	10	M10x39	08-32	15	30	15	30	11x80	340
10400.W0112	Two	M12, M14	M12x12x100	12	M12x49	10-40	20	40	21	40	14x100	700
10400.W0114	Two	M12, M14	M12x14x100	14	M12x49	10-38	20	40	21	40	14x100	720
10400.W0115	Two	M12, M14	M12x14x160	14	M12x94	23-92	20	40	21	40	14x100	845
10400.W0116	Two	M16, M18	M16x16x125	16	M16x55	13-48	25	45	26	50	18x125	1400
10400.W0117	Two	M16, M18	M16x16x160	16	M16x90	15-83	25	45	26	50	18x125	1610
10400.W0118	Two	M16, M18	M16x18x125	18	M16x55	13-46	25	45	26	50	18x125	1400
10400.W0119	Two	M16, M18	M16x18x160	18	M16x90	13-81	25	45	26	50	18x125	1630
10400.W0120	Two	M20, M22	M20x20x160	20	M20x69	16-65	30	60	30	60	22x160	2600
10400.W0121	Two	M20, M22	M20x20x200	20	M20x109	21-105	30	60	30	60	22x160	2930
10400.W0122	Two	M20, M22	M20x22x160	22	M20x69	16-65	30	60	30	60	22x160	2770
10400.W0123	Two	M20, M22	M20x22x200	22	M20x109	19-105	30	60	30	60	22x160	2980
10400.W0124	Two	M24	M24x28x200	28	M24x87	20-80	35	105	35	70	26x250	5486
10400.W0125	Two	M24	M24x28x250	28	M24x137	30-130	35	105	35	70	26x250	5716
10400.W0126	Two	M30	M30x36x315	36	M30x180	24-150	50	130	45	80	33x315	11995
10400.W0127	Two	M36, M42	M36x42x400	42	M30x180	24-150	80	170	80	100	43x100	25683
10400.W0113	Two	M12, M14	M12x12x160	12	M12x49	24-92	20	40	21	40	14x100	830

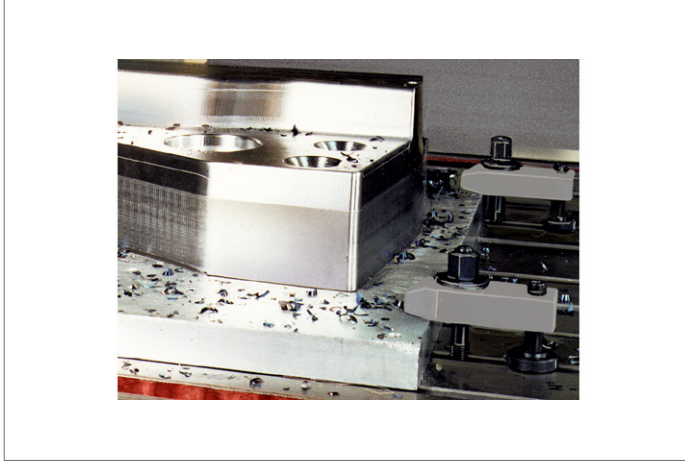




# Adjustable Plain Clamps with height adjusting screw

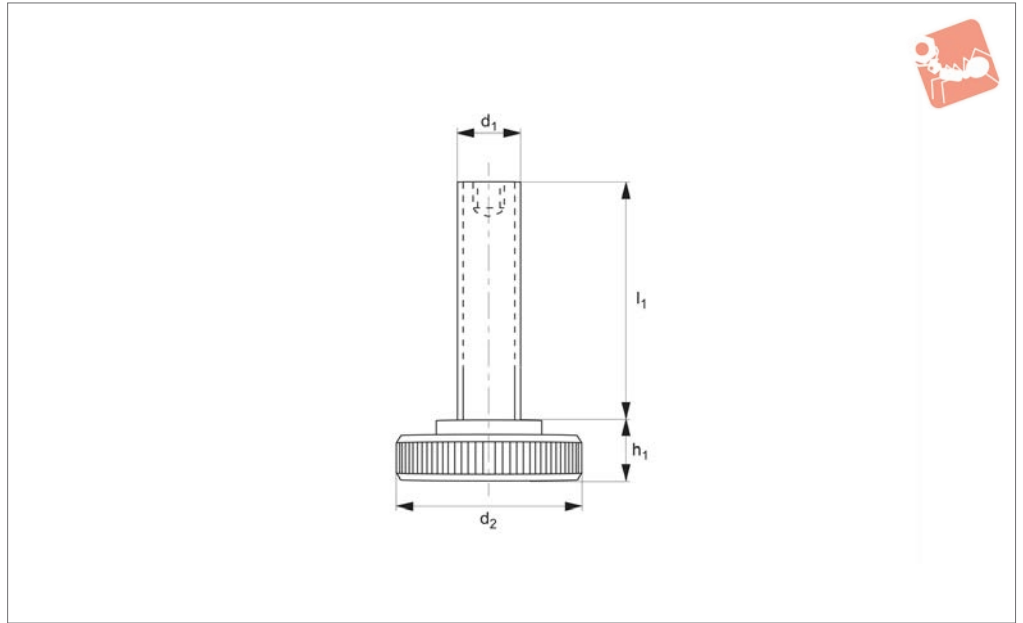


## Standard Manual Clam-





10410



**Material**

Steel, hardened, strength class 8.8.

**Technical Notes**

Suitable for all lockable clamps.

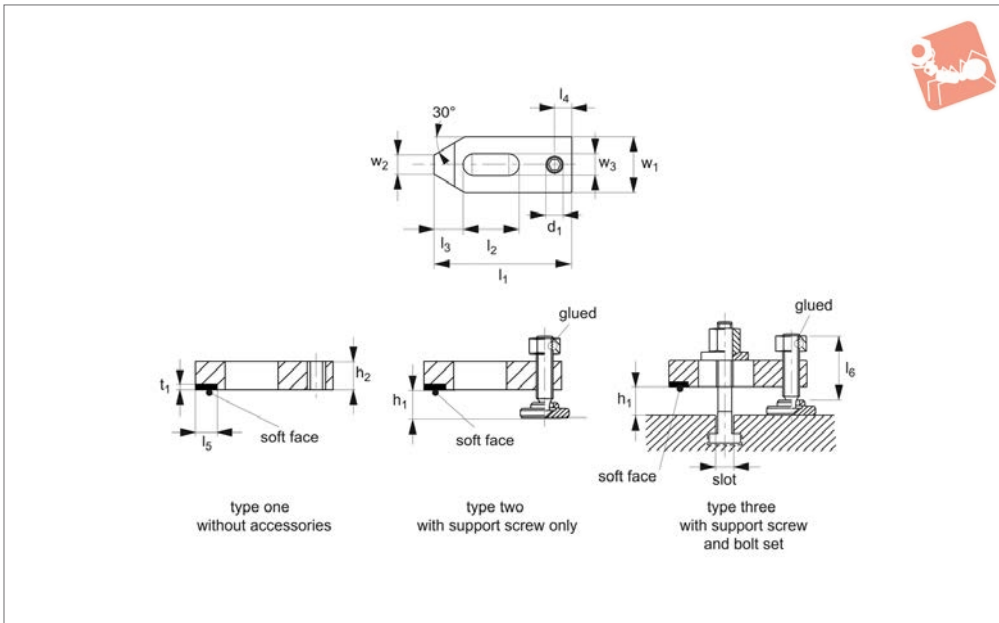
Order No.	$d_1 \times l_1$	$d_2$	$h_1$	Weight g
10410.W0010	M10x39	30	8	52
10410.W0012	M12x49	36	10	96
10410.W0013	M12x94	36	10	145
10410.W0016	M16x55	42	13	180
10410.W0017	M16x90	42	13	230
10410.W0020	M20x69	50	16	320
10410.W0021	M20x109	50	16	400
10410.W0024	M24x87	60	20	590
10410.W0025	M24x137	60	20	820
10410.W0030	M30x180	80	24	1704



# Adjustable Plain Clamps

with soft brass face

# Standard Manual Clamping



# 10420

### Material

Clamps: steel, heat-treated, blackened.  
Protective face: brass, brazed.

### Technical Notes

Type one: clamp only.  
Type two: clamp and support screw only.  
Type three: clamp, support screw and T-bolt set.

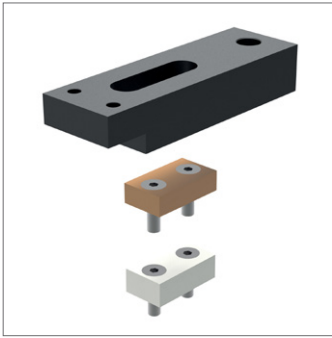
$h_1$  - dependent on depth of slot and position of fixture nut.  
The protective brass plate, brazed on to the clamp, acts to protect the workpiece from damage under clamping.

### Tips

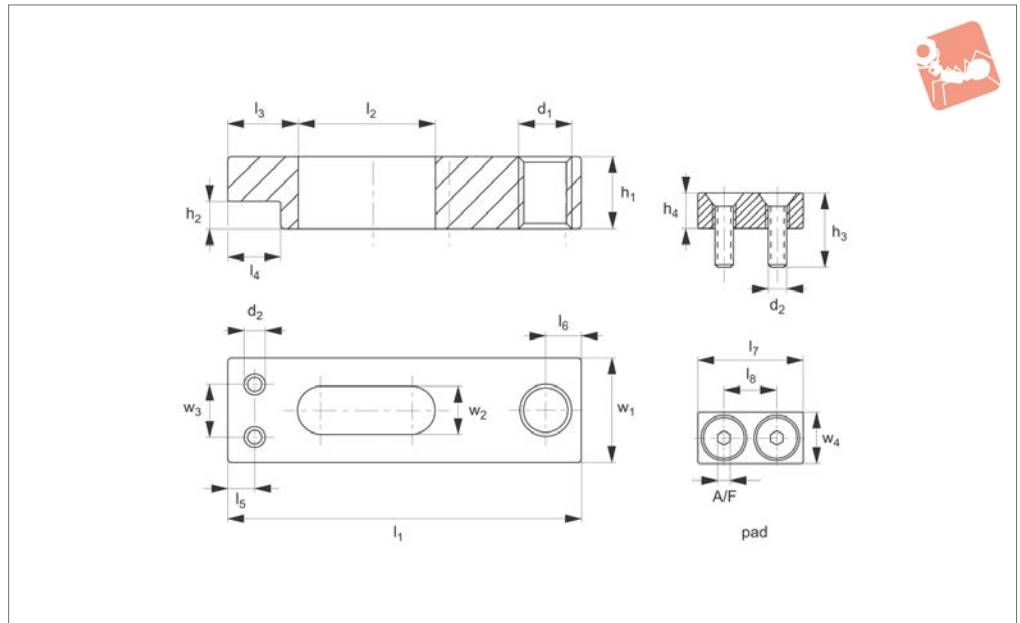
Often used for clamping press tools.

Used with:  
10680 ratchet clamp level, 21000 T-slot bolt, 24400 collar nut, 25000 plain washer.  
Replacement support screw see part nos. 34500 and 34520.

Order No.	Type	For bolt	Supplied T-bolt	T-slot size	$d_1 \times l_6$	$h_1$	$h_2$	$l_2$	$l_3$	$l_4$	$l_5$	$t_1$	$w_1$	$w_2 \times l_1$	$w_3$	Weight g
10420.W0010	One	M 8					12	22	13	8	10	2	25	9x60	10	104
10420.W0020	One	M10					15	30	15	10	12	2	30	11x80	12	211
10420.W0030	One	M12, M14					20	40	21	12	15	3	40	14x100	14	461
10420.W0040	One	M16, M18					25	45	26	16	20	3	50	18x125	18	917
10420.W0011	Two	M 8			M 8x40	8-23	12	22	13	8	10	2	25	9x60	10	150
10420.W0012	Two	M 8			M 8x60	8-43	12	22	13	8	10	2	25	9x60	10	160
10420.W0021	Two	M10			M10x60	10-38	15	30	15	10	12	2	30	11x80	12	295
10420.W0022	Two	M10			M10x80	10-58	15	30	15	10	12	2	30	11x80	12	310
10420.W0031	Two	M12, M14			M12x60	10-31	20	40	21	12	15	2	40	14x100	14	590
10420.W0032	Two	M12, M14			M12x100	10-71	20	40	21	12	15	3	40	14x100	14	620
10420.W0041	Two	M16, M18			M16x80	12-42	25	45	26	16	20	3	50	18x125	18	1150
10420.W0042	Two	M16, M18			M16x125	12-87	25	45	26	16	20	3	50	18x125	18	1220
10420.W0015	Three	M 8	M 8x8x50	7,6	M 8x40	8-16	12	22	13	8	10	3	25	9x60	10	200
10420.W0016	Three	M 8	M 8x8x80	7,6	M 8x60	8-43	12	22	13	8	10	2	25	9x60	10	220
10420.W0025	Three	M10	M10x10x65	9,6	M10x60	10-22	15	30	15	10	12	2	30	11x80	12	385
10420.W0026	Three	M10	M10x10x100	9,6	M10x80	10-58	15	30	15	10	12	2	30	11x80	12	420
10420.W0035	Three	M12, M14	M12x12x80	11,6	M12x60	10-28	20	40	21	12	15	2	40	14x100	14	740
10420.W0036	Three	M12, M14	M12x12x125	11,6	M12x100	10-71	20	40	21	12	15	3	40	14x100	14	805
10420.W0037	Three	M12, M14	M12x14x80	13,6	M12x60	10-26	20	40	21	12	15	3	40	14x100	14	755
10420.W0038	Three	M12, M14	M12x14x125	13,6	M12x100	10-71	20	40	21	12	15	3	40	14x100	14	820
10420.W0045	Three	M16, M18	M16x16x100	15,6	M16x80	12-31	25	45	26	16	20	3	50	18x125	18	1470
10420.W0046	Three	M16, M18	M16x16x160	15,6	M16x125	12-87	25	45	26	16	20	3	50	18x125	18	1630
10420.W0047	Three	M16, M18	M16x18x100	17,6	M16x80	12-32	25	45	26	16	20	3	50	18x125	18	1490
10420.W0048	Three	M16, M18	M16x18x160	17,6	M16x125	12-87	25	45	26	16	20	3	50	18x125	18	1650



## 10425



### Material

Clamp: steel, heat-treated and blackened.  
Pads: brass or plastic.

### Technical Notes

Clamp provided without clamping pads.

Mounting screws included with clamping pads.

Temperature should not exceed 250°C when using brass pad, or 0-50°C when using plastic pad.

### Tips

Particularly suitable for clamping sensitive components; soft pads protect the work-piece.

Order No.	Type	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	Weight g
10425.W0050	Clamp only	M 6	M 2	8	3	-	-	25
10425.W0051	Clamp only	M 6	M 2,5	10	4	-	-	45
10425.W0052	Clamp only	M 8	M 3	12	4	-	-	85
10425.W0053	Clamp only	M10	M 4	16	6	-	-	180
10425.W0054	Clamp only	M12	M 5	20	8	-	-	363
10425.W0055	Clamp only	M16	M 8	30	12	-	-	1445
10425.W0060	Brass pad	-	M 2	-	-	8	4	2.5
10425.W0061	Brass pad	-	M 2,5	-	-	10	6	7
10425.W0062	Brass pad	-	M 3	-	-	12	6	11
10425.W0063	Brass pad	-	M 4	-	-	16	9	25
10425.W0064	Brass pad	-	M 5	-	-	20	12	53
10425.W0065	Brass pad	-	M 8	-	-	30	16	193
10425.W0070	Plastic pad	-	M 2	-	-	8	4	0.7
10425.W0071	Plastic pad	-	M 2,5	-	-	10	6	1.6
10425.W0072	Plastic pad	-	M 3	-	-	12	6	2.7
10425.W0073	Plastic pad	-	M 4	-	-	16	9	6
10425.W0074	Plastic pad	-	M 5	-	-	20	12	13
10425.W0075	Plastic pad	-	M 8	-	-	30	16	48

Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub> +0.5	w <sub>4</sub>	A/F
10425.W0050	40	15.5	8	6	4	3.0	-	-	12	6	5.5	-	-
10425.W0051	50	22.0	10	8	5	4.0	-	-	16	9	7.0	-	-
10425.W0052	63	29.0	12	10	6	5.0	-	-	20	11	9.0	-	-
10425.W0053	80	36.0	15	13	8	6.5	-	-	25	14	11.0	-	-
10425.W0054	100	44.0	18	16	10	8.0	-	-	32	16	14.0	-	-
10425.W0055	160	63.0	30	28	16	14.0	-	-	50	30	18.0	-	-
10425.W0060	-	-	-	-	-	-	12	6	-	-	5.5	6	1.3
10425.W0061	-	-	-	-	-	-	16	9	-	-	7.0	8	1.5
10425.W0062	-	-	-	-	-	-	20	11	-	-	9.0	10	2.0
10425.W0063	-	-	-	-	-	-	25	14	-	-	11.0	13	2.5
10425.W0064	-	-	-	-	-	-	32	16	-	-	14.0	16	3.0

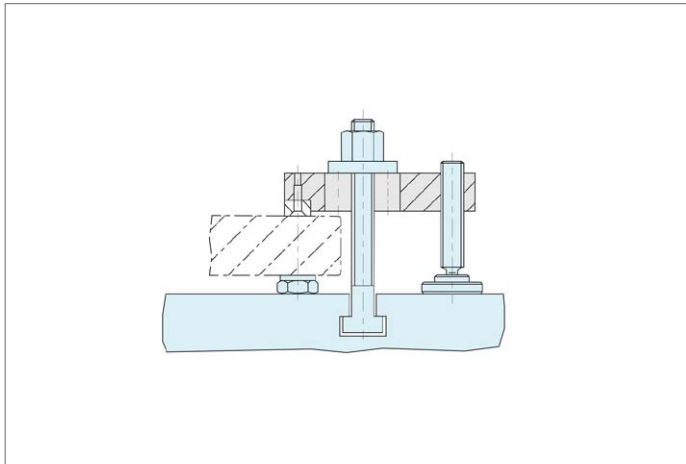


# Adjustable Plain Clamps



## Standard Manual Clam-

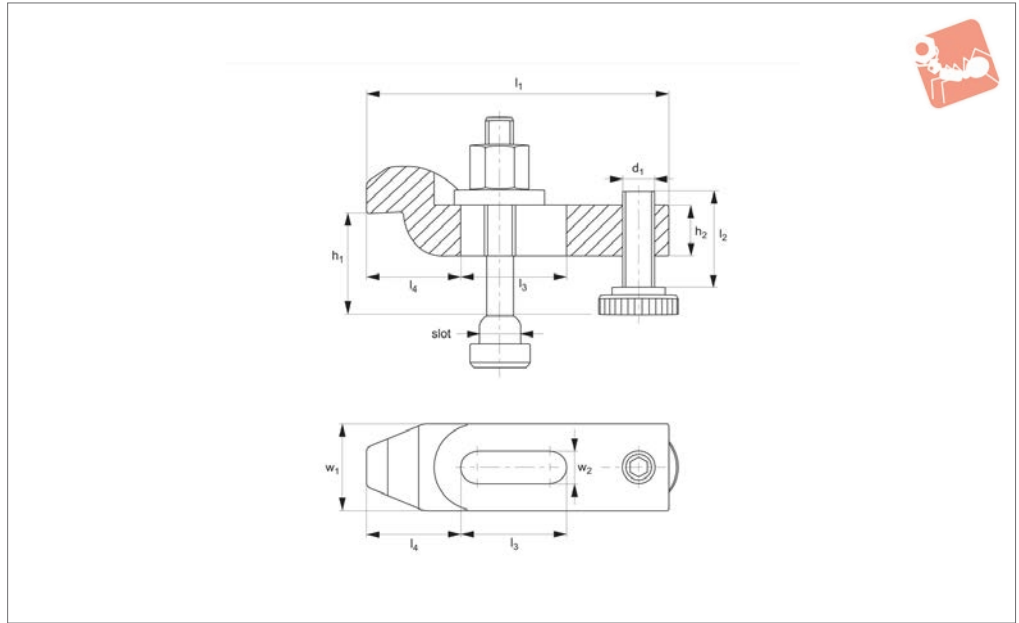
Order No.	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$l_7$	$l_8$	$w_1$	$w_2$	$w_3 + 0.5$	$w_4$	A/F
10425.W0065	-	-	-	-	-	-	50	30	-	-	18.0	28	5.0
10425.W0070	-	-	-	-	-	-	12	6	-	-	5.5	6	1.3
10425.W0071	-	-	-	-	-	-	16	9	-	-	7.0	8	1.5
10425.W0072	-	-	-	-	-	-	20	11	-	-	9.0	10	2.0
10425.W0073	-	-	-	-	-	-	25	14	-	-	11.0	13	2.5
10425.W0074	-	-	-	-	-	-	32	16	-	-	14.0	16	3.0
10425.W0075	-	-	-	-	-	-	50	30	-	-	18.0	28	5.0



STANDARD MANUAL CLAMPING



## 10500



### Material

Steel, heat-treated and enamelled.

### Technical Notes

Type one: clamp, support screw and T-bolt set.

Type two: clamp and support screw only.

Dimension  $h_1$  is dependent on depth of slot and position of fixture nut.

### Tips

Often used for clamping press tools.

Used with:

10680 ratchet clamp lever, 21000 T-slot bolt, 24400 collar nut, 25000 plain washer.

Replacement parts:

Replacement support screw see part no. 10410.

### Important Notes

Particularly suited to clamping low work-pieces. The clamping height can be adjusted by means of the support screw.

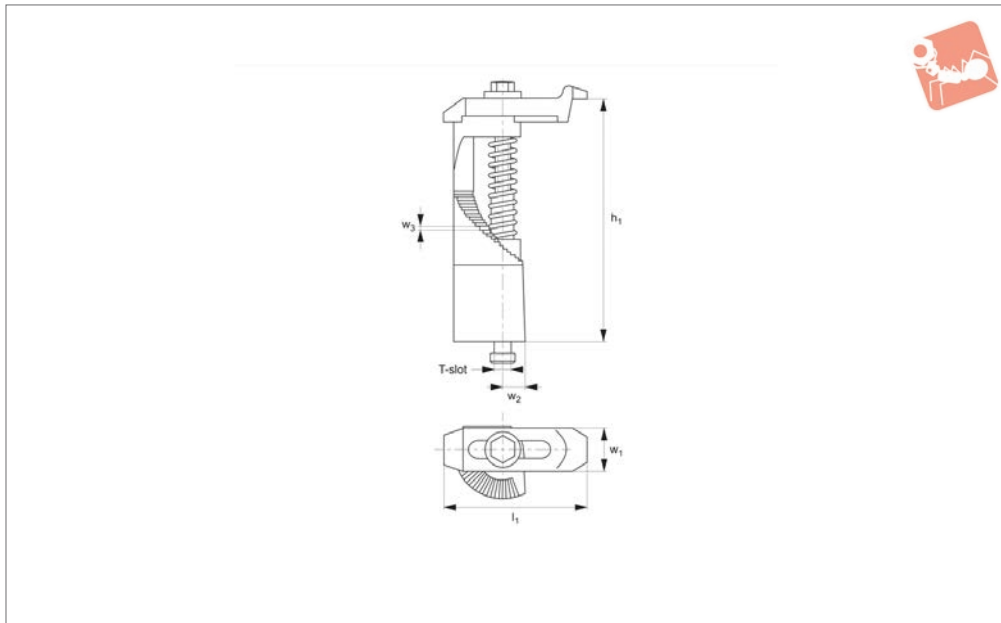
Order No.	Type	For bolt	For T-slot	T-bolt	$d_1 \times l_2$	$h_1$	$h_2$	$l_3$	$l_4$	$w_1$	$w_2 \times l_1$	Weight g
10500.W0010	With bolt	M10	10	M10x10x80	M10x39	22-46	15	32	36.0	30	11x100	440
10500.W0012	With bolt	M12	12	M12x12x100	M12x49	28-58	20	40	44.0	40	14x125	906
10500.W0014	With bolt	M12	14	M12x14x100	M12x49	28-56	20	40	44.0	40	14x125	926
10500.W0016	With bolt	M16	16	M16x16x125	M16x55	36-71	25	50	51.5	50	18x160	1859
10500.W0018	With bolt	M16	18	M16x18x125	M16x55	36-69	25	50	51.5	50	18x160	1875
10500.W0020	With bolt	M20	20	M20x20x160	M20x69	43-92	30	70	59.0	60	22x200	3322
10500.W0022	With bolt	M22	22	M20x22x160	M20x69	43-92	30	70	59.0	60	22x200	3352
10500.W0110	W/o bolt	M10	-	-	M10x39	22-51	15	32	36.0	30	11x100	344
10500.W0112	W/o bolt	M12	-	-	M12x49	28-65	20	40	44.0	40	14x125	761
10500.W0116	W/o bolt	M16	-	-	M16x55	36-75	25	50	51.5	50	18x160	1516
10500.W0120	W/o bolt	M20	-	-	M20x69	43-92	30	70	59.0	60	22x200	2669
10500.W0124	W/o bolt	M24	-	-	M24x87	52-115	35	60	76.5	70	26x200	3810



# Adjustable Step Pillar Clamps with goose neck



Standard  
Manual Clam-



10550

STANDARD MANUAL CLAMPING

### Material

Steel forged, thread quality 8.8.

### Technical Notes

Clamping unit for quick action. The compact construction ensures a small foot-

print on the machine table. Allows clamping over a wide height range with minimum fuss.

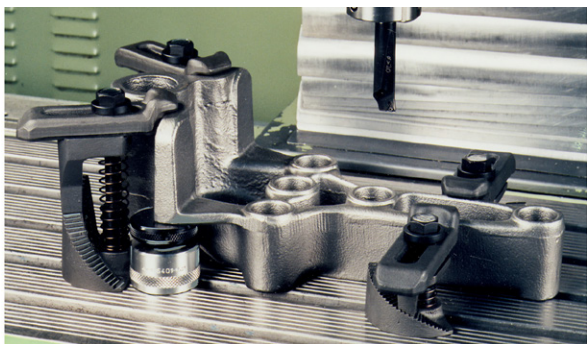
\* Clamping forces stated for minimum  $h_1$

dimension.

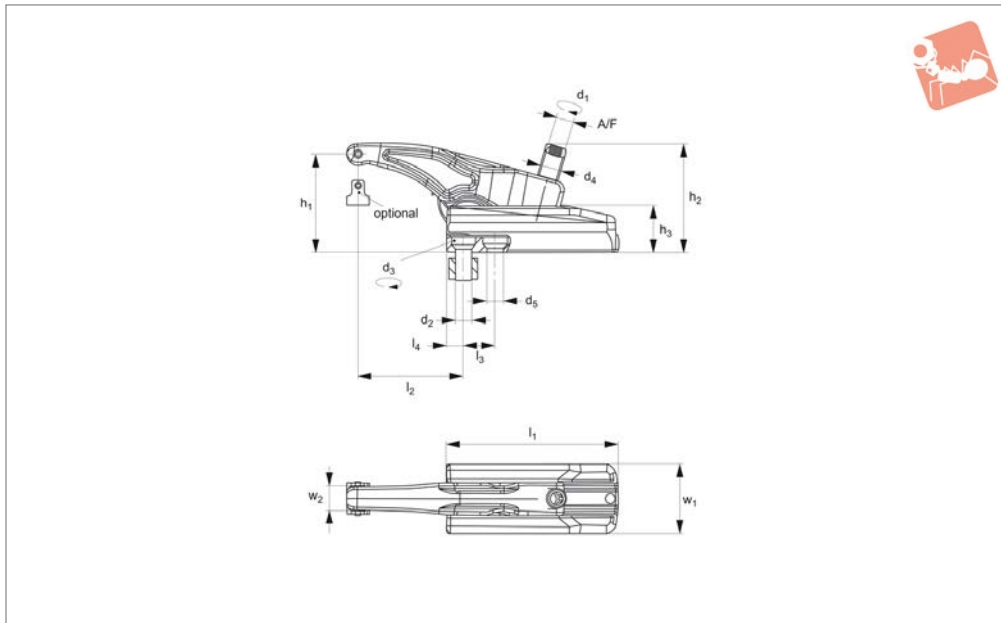
### Tips

Used with:  
24000 T-nuts.

Order No.	Size	T-slot size	$h_1$	$l_1$	Tightening torque Nm	$w_1$	$w_2$	$w_3$	Clamping force kN max.	Weight g
10550.W0120	12-0	12	0-45	140	50	34	14	0.8	11.5	700
10550.W0121	12-1	12	15-45	112	50	34	14	0.8	11.4	600
10550.W0122	12-2	12	30-75	112	50	34	15	1.3	11.4	800
10550.W0123	12-3	12	60-135	112	50	34	16	2.5	11.4	1200
10550.W0124	12-4	12	120-195	112	50	34	18	2.5	11.4	1700
10550.W0125	12-5	12	180-255	112	50	34	19	2.5	11.4	2200
10550.W0126	14-0	14	0-45	140	80	34	14	0.8	15.5	700
10550.W0127	14-1	14	15-45	112	80	34	14	0.8	15.3	600
10550.W0128	14-2	14	30-75	112	80	34	15	1.3	15.3	800
10550.W0129	14-3	14	60-135	112	80	34	16	2.5	15.3	1200
10550.W0130	14-4	14	120-195	112	80	34	18	2.5	15.3	1700
10550.W0131	14-5	14	180-255	112	100	34	19	2.5	15.3	2200
10550.W0132	16-0	16	0-70	160	100	50	20	1.3	15.3	1900
10550.W0133	16-1	16	25-70	125	100	50	20	1.3	16.3	1700
10550.W0134	16-2	16	50-120	125	100	50	21	2.5	16.3	2500
10550.W0135	16-3	16	100-220	125	100	50	21	3.8	16.3	3540
10550.W0136	16-4	16	200-320	125	100	50	24	3.8	16.3	4900
10550.W0137	18-0	18	0-70	160	130	50	20	1.3	17.8	1870
10550.W0138	18-1	18	25-70	125	130	50	20	1.3	19.0	1670
10550.W0139	18-2	18	50-120	125	130	50	21	2.5	19.0	2500
10550.W0140	18-3	18	100-220	125	130	50	21	3.8	19.0	3580
10550.W0141	18-4	18	200-320	125	130	50	24	3.8	19.0	4720







10588.1

STANDARD MANUAL CLAMPING

**Material**

Steel, tempered, alloyed and galvanised (black).

**Technical Notes**

Complete with mounting kit.  
Powerful, adjustable height clamp for

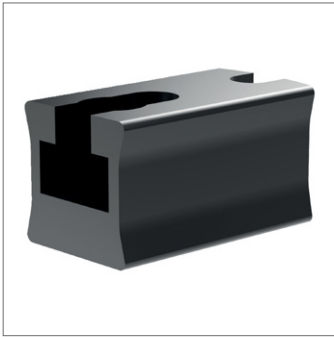
milling, press tools and injection mould applications. Clamping force 22 kN to 49 kN depending on size. Low height readily adjustable. Smooth or ribbed clamping pad available. For use in threaded holes (M10, M12, M16, M20) and 12-28mm T-slot

bases.

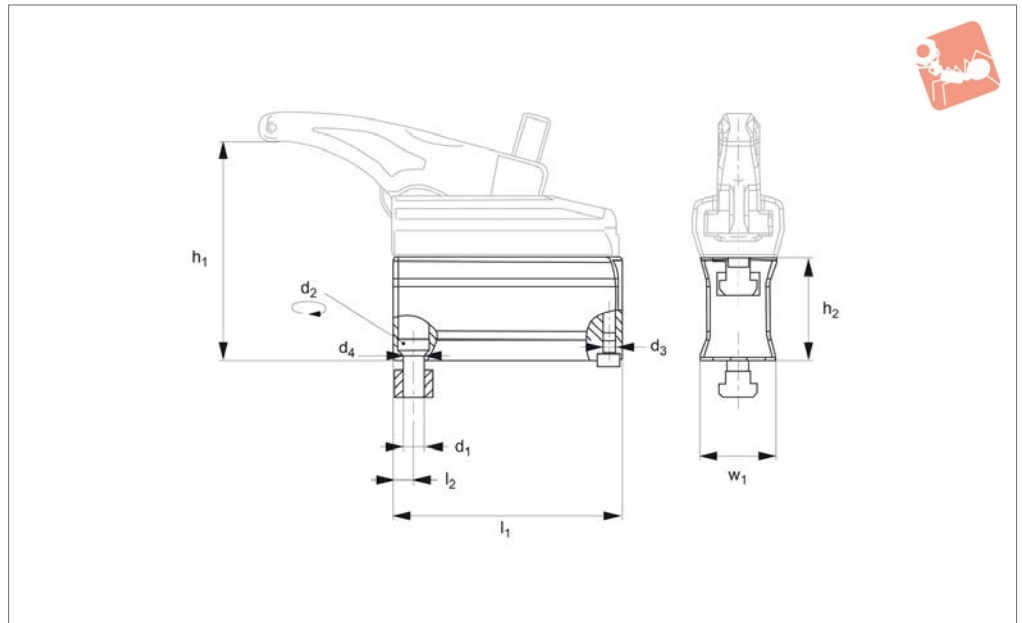
**Tips**

Torque the screws to the correct specified torque. Clamping force depends on thread lubrication and thread condition.

Order No.	Size	For slot	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	h <sub>1</sub> min.   max.	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	Torque to d <sub>1</sub> Nm max.	Torque to d <sub>3</sub> Nm max.	w <sub>1</sub>	w <sub>2</sub>	A/F	Load capacity for static load kN max.	Weight g
10588.W0022	22	12	M10	M12	13	5-38	58	30	65	15-50		11	50	35	45	13	6	22	700
10588.W0023	22	14	M12	M12	13	5-38	58	30	65	15-50		11	50	40	45	13	6	22	700
10588.W0030	30	14	M12	M16	13	6-68	85	36	135	13-110	25	13	100	70	54	18	8	30	2013
10588.W0031	30	18	M16	M16	17	6-68	85	36	135	16-114	28	16	100	150	54	18	8	30	2045
10588.W0032	32	14	M12	M16	13	6-50	78	36	95	12-82	20	12	120	70	54	18	8	32	1462
10558.W0040	40	18	M16	M20	17	6-50	92	42	110	15-95	26	15	150	150	60	20	10	40	2262
10558.W0043	43	18	M16	M20	17	5-80	105	42	155	16-134	32	16	220	150	60	20	10	43	3158
10558.W0049	49	22	M20	M24	21	7-88	125	52	175	19-165	36	19	220	200	75	25	12	49	5928



10588.2



**Material**

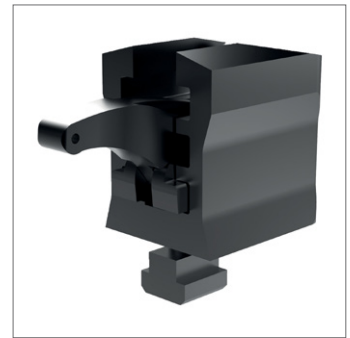
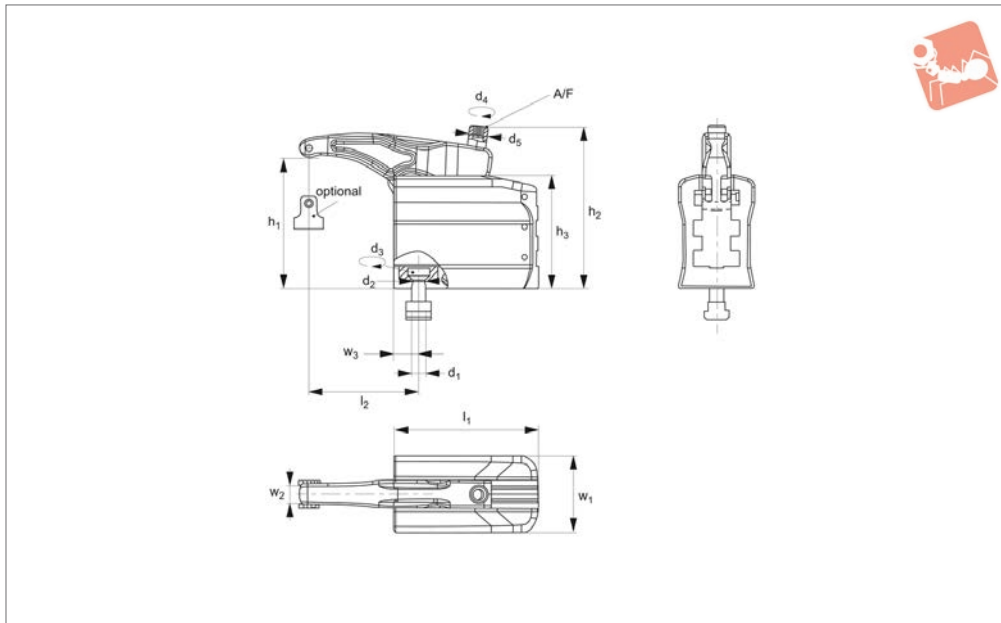
Steel, tempered and galvanised (black).

Further space elements could be added to achieve required clamping height.

**Technical Notes**

Spacer element only and bolts.

Order No.	Size	For T-slot	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	h <sub>1</sub> min.   max.	h <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	Weight g
10588.W0122	22	12	M10	35	M 6	14	40-73	35	65	12	36.0	480
10588.W0123	22	14	M12	40	M 6	13	40-73	35	65	12	36.0	480
10588.W0130	30	14	M12	70	M 8	13	66-128	60	135	12	44.5	2300
10588.W0132	32	14	M12	70	M 8	13	66-110	60	95	12	44.5	1570
10588.W0140	40	18	M16	150	M 8	17	76-120	70	110	16	47.5	2290
10558.W0143	43	18	M16	150	M 8	17	75-150	70	155	16	47.5	3344
10558.W0149	49	22	M20	200	M10	21	87-168	80	175	19	58.0	5286



## 10588.3

STANDARD MANUAL CLAMPING

### Material

Steel, tempered, alloyed and galvanised (black).

### Technical Notes

Complete with three-step support element, clamping unit and mounting kit.

### Tips

Three step clamping:

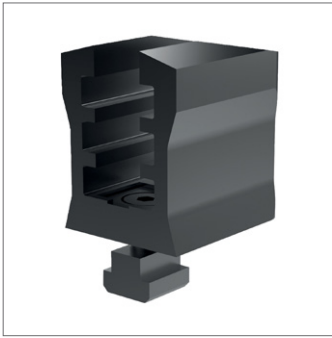
1. Position clamp on table and tighten to correct torque.
2. Adjust the clamping arm.
3. Tighten the clamping screw to clamp

part (tighten to correct torque).

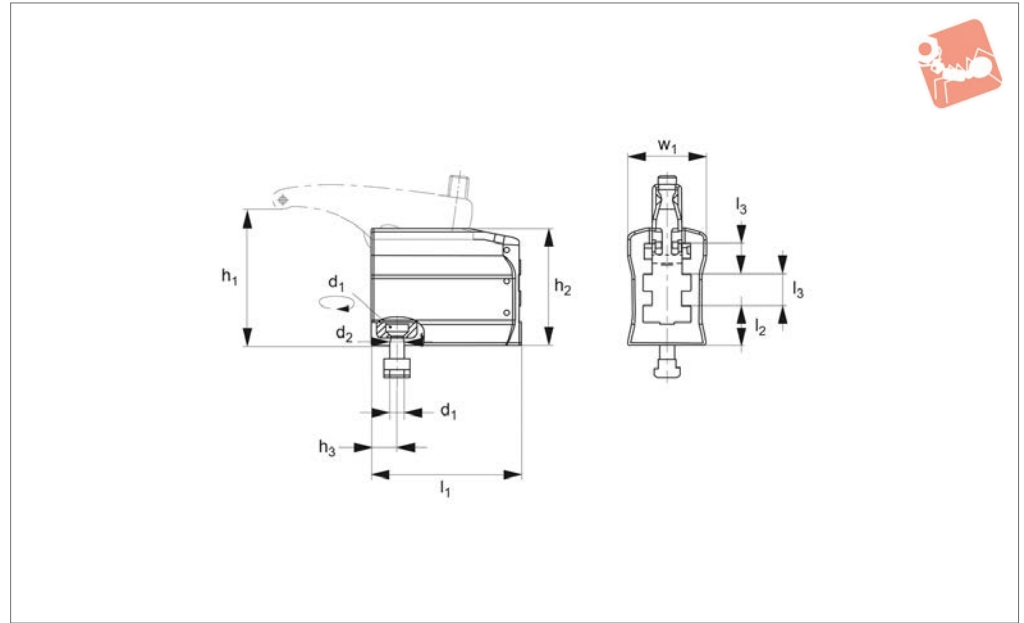
### Important Notes

**Not suitable for use on injection moulding, die casting machines or presses.**

Order No.	Size	For T-slot	d <sub>1</sub>	d <sub>3</sub>	d <sub>5</sub>	h <sub>1</sub> min.   max.	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	Torque to d <sub>2</sub> Nm max.	Torque to d <sub>4</sub> Nm max.	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	A/F	Load capacity for static load kN max.	Weight g
<b>10588.W0222</b>	22	14	M12	40	M12	9-74	98	67	65	30-58	13,5	55	52	13	14,5	6	22	1120
<b>10588.W0230</b>	30	14	M12	70	M16	13-129	146	101	130	37-106	13,5	100	68	18	22,5	8	30	4600
<b>10588.W0243</b>	43	18	M16	150	M20	16-147	175	116	150	48-114	17,5	200	75	20	25,0	10	43	6844
<b>10558.W0249</b>	49	22	M20	200	M24	16-169	207	140	170	68-172	22,0	220	85	25	29,0	12	49	10870



10588.4



**Material**

Steel, tempered and galvanised (black).

ting kit. Unsuitable for injection moulding, die casting machines and presses.

**Technical Notes**

Complete with pressure plate and moun-

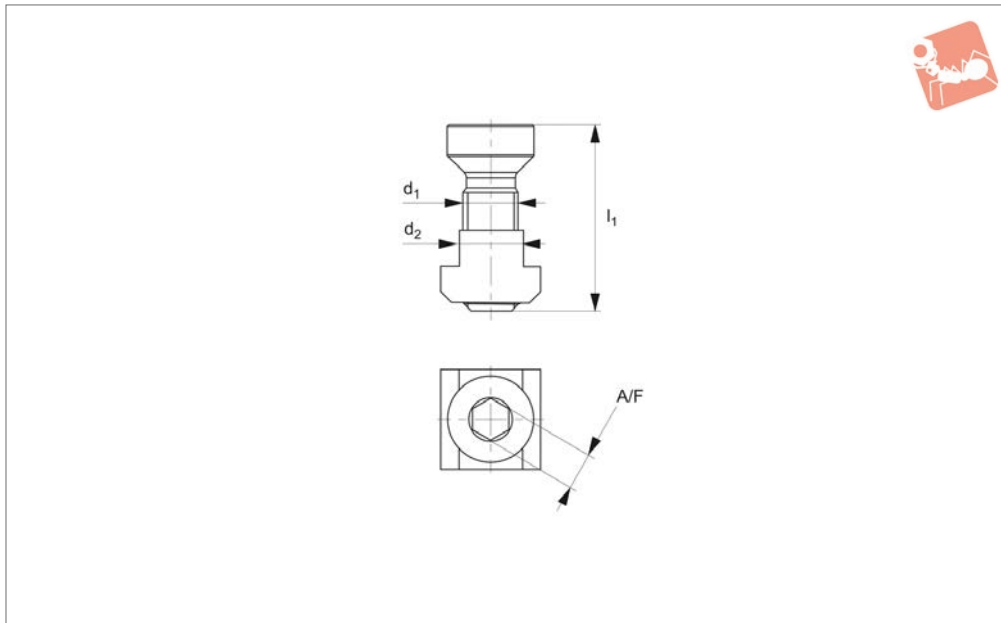
Order No.	Size	For T-slot	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Torque to Nm max.	w <sub>1</sub>	Weight g
10588.W0322	22	14	M12	13.5	9-74	65	14.5	65	25	16	40	52	795
10588.W0330	30	14	M12	13.5	13-129	101	22.5	130	34	27	70	68	3440
10588.W0343	43	18	M16	17.5	16-147	116	25.0	150	43	29	150	75	5010
10558.W0349	49	22	M20	22.0	16-169	138	29.0	170	52	34	200	85	7710



# Fastening Kit

for power clamp 10588.W0222 - W0249

# Standard Manual Clam-



## 10588.5

STANDARD MANUAL CLAMPING

### Material

Steel, heat-treated.

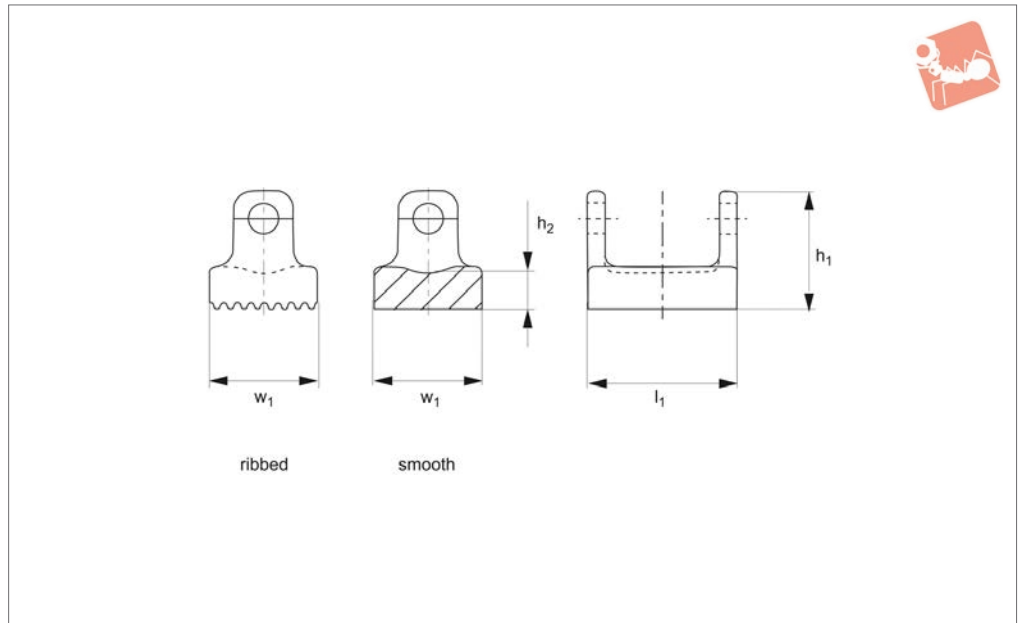
### Technical Notes

Fastening screw strength class 12.9 and T-slot nut DIN 508.

Order No.	Size	$d_1$	$d_2$	$l_1$	A/F	Weight g
10588.W2212	22	M10	12	29.0	6	61
10588.W2214	22	M12	14	31.5	6	61
10588.W2215	22	M12	14	35.5	6	40
10588.W3014	30/32	M12	14	34.0	8	70
10588.W3016	30/32	M12	16	38.0	8	98
10588.W3018	30/32	M12	18	38.0	8	125
10588.W3019	30	M12	14	41.0	8	78
10588.W3118	30	M16	18	41.0	8	143
10588.W3120	30	M16	20	45.0	8	208
10588.W3122	30	M16	22	49.0	8	270
10588.W3124	30	M16	24	49.0	8	348
10588.W4018	40/43	M16	18	43.0	10	145
10588.W4020	40/43	M16	20	47.0	10	195
10588.W4022	40/43	M16	22	51.0	10	264
10588.W4024	40/43	M16	24	51.0	10	350
10588.W4319	43	M16	18	52.0	10	160
10558.W4922	49	M20	22	52.0	12	300
10558.W4923	49	M20	22	66.0	12	330
10558.W4924	49	M20	24	55.0	12	390
10558.W4928	49	M20	28	62.0	12	505



**10588.6**



**Material**

Stainless steel.

**Technical Notes**

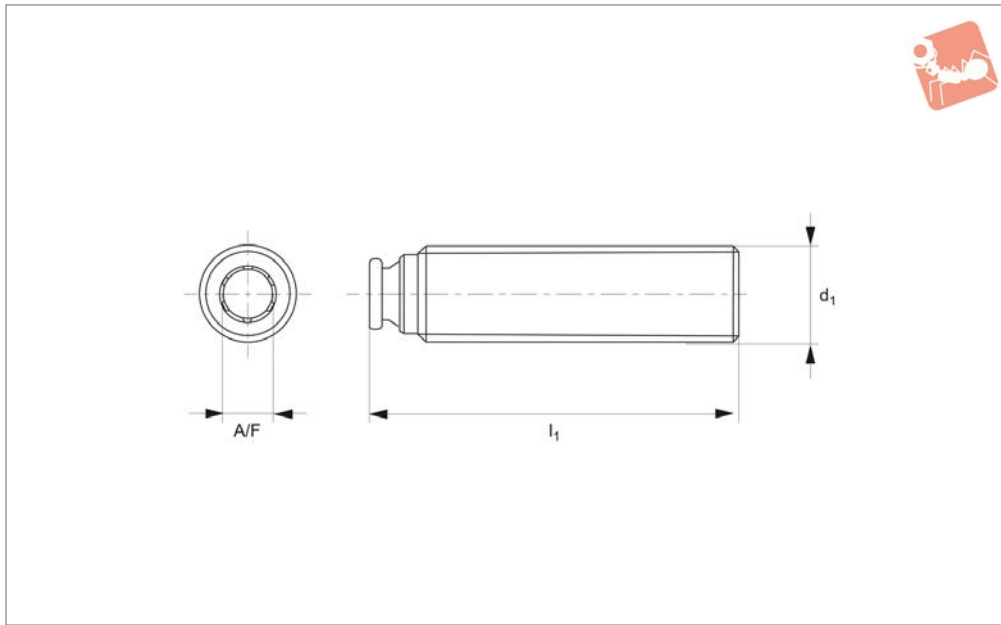
Complete with pin.

Order No.	Size	Form	$h_1$	$h_2$	$l_1$	$w_1$	Weight g
10588.W0701	22	Smooth	14.0	4.5	19	12	11
10588.W0702	30/32	Smooth	19.5	6.0	25	18	28
10588.W0703	40/43	Smooth	24.0	6.5	30	20	47
10588.W0704	49	Smooth	28.0	7.0	36	25	75
10588.W0711	22	Ribbed	14.0	4.5	19	12	10
10558.W0712	30/32	Ribbed	19.5	6.0	25	18	27
10588.W0713	40/43	Ribbed	24.0	6.5	30	20	48
10558.W0714	49	Ribbed	28.0	7.0	36	25	78



# Replacement Clamping Screw for 10588 clamps

Standard  
Manual Clam-



**10588.7**

STANDARD MANUAL CLAMPING

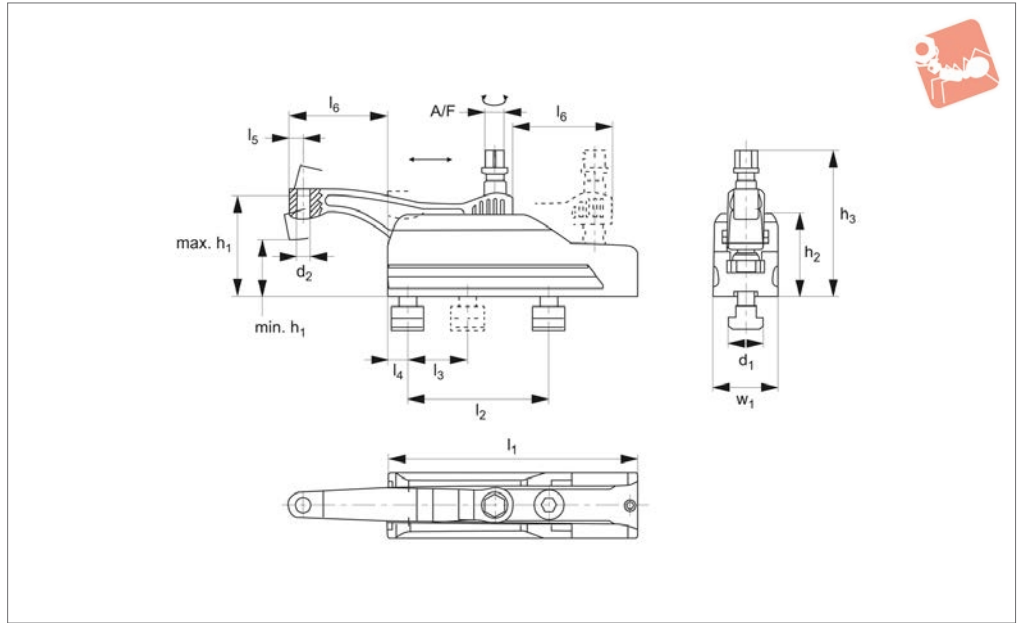
## Material

Steel, tempered and burnished.

Order No.	Size	$d_1$	$l_1$	A/F	Weight g
10588.W0823	22	M12	43	6	30
10588.W0830	30	M16	62	8	80
10588.W0832	32	M16	55	8	70
10588.W0840	40	M20	65	10	128
10588.W0843	43	M20	78	10	165
10558.W0849	49	M24	93	12	275



## 10592.1



### Material

Body: steel, heat-treated and black coated.  
Lever: steel, heat-treated and silver coated.

### Technical Notes

Assembly and set-up:

1. Take out stop pin ISO 4762-M 6 x 10.
2. Move back and take out clamping lever.

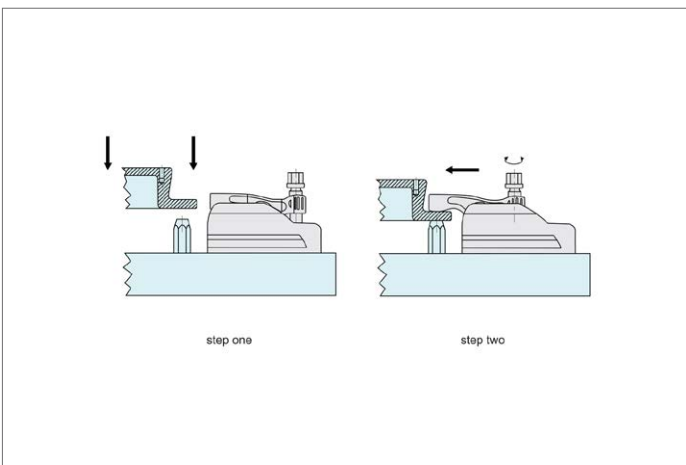
3. Tightening by two screws with internal hexagon (included).
4. Place clamping lever in sliding rail.
5. Tighten clamping screw to torque required.

### Tips

The clamps are corrosion resistant, provide easy clamping of varied heights with

strong clamping forces. The self-locking clamping lever allows the clamp to be used in horizontal or vertical orientations. Slide back the clamping lever to allow access to parts. Corrosion resistant coating is applied to the spacer elements (see order no's 10592.W0112 and 10592.W0116).

Order No.	$d_1$	$d_2$	$h_1$ min.	$h_1$ max.	$h_2$	$h_3$	$l_1$	$l_2$ +1	$l_3$	$l_4$	$l_5$	$l_6$ max.	Tightening torque Nm max.	$w_1$	A/F	Clamping force kN max.	Weight g
10592.W0012	M12	M 8	40	60	59	95	134	70	50	13	10,0	43	45	45	16	15	1813
10592.W0016	M16	M12	47	85	70	126	213	120	50	17	12,5	85	75	55	18	25	4274

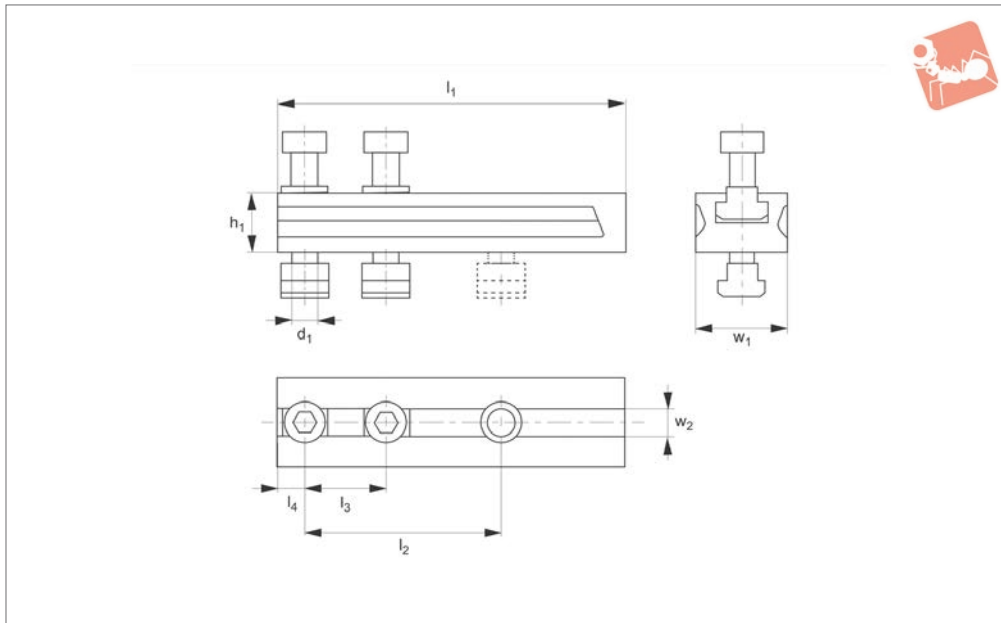






# Height Adapters

for compact clamp 10592.W0012 and .W0016



### 10592.2

STANDARD MANUAL CLAMPING

#### Material

Steel, heat-treated, black coated.

allows a clamping height increase.

replaced by screws extended by the dimension  $h_1$ .

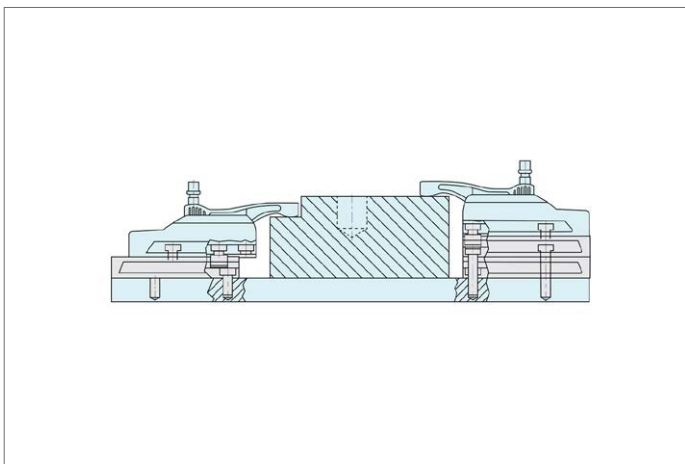
#### Technical Notes

The height adapter for compact clamps

#### Tips

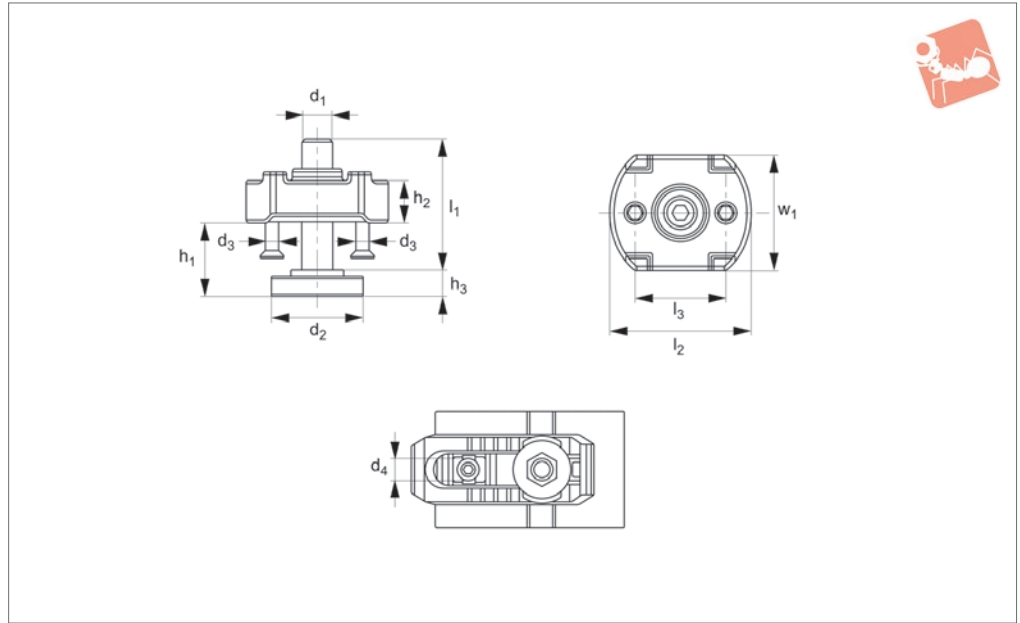
When using multiple height adapters, the screws ISO 10642 or DIN 7984 have to be

Order No.	$d_1$	$h_1$	$l_1$	$l_2$ +1	$l_3$	$l_4$	$w_1$	$w_2$ tol. H12	Weight g
10592.W0112	M12	20	134	70	50	13	45	14	874
10592.W0116	M16	35	213	120	50	17	55	18	2534





## 10604



### Material

Body and support screw: steel, zinc plated and hardened. Strength class 8.8.

counterhold of the crocodile clamp to increase the clamping height.

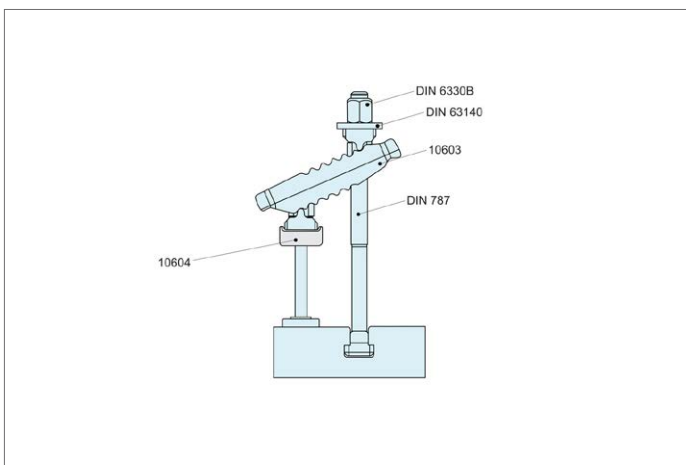
### Technical Notes

The support extension is screwed to the

### Tips

Allows continuous adjustment of clamping heights.

Order No.	$d_1 \times l_1$	$d_2$	$d_3$	$d_4$	$h_1$ min.   max.	$h_2$	$h_3$	$l_2$	$l_3$	$w_1$	Weight g
10604.W0010	M10x39	30	M 5	13	8-30	10	8	44	30	30	197
10604.W0016	M12x49	36	M 5	17	10-37	16	10	54	35	42	433
10604.W0018	M12x94	36	M 5	17	10-80	16	10	54	35	42	473
10604.W0020	M16x55	42	M 5	21	13-41	20	13	60	40	50	608
10604.W0022	M16x90	42	M 5	21	13-73	20	13	60	40	50	640
10604.W0025	M20x69	50	M 6	25	16-52	25	16	70	50	50	1136
10604.W0027	M20x109	50	M 6	25	16-91	25	16	70	50	50	1396

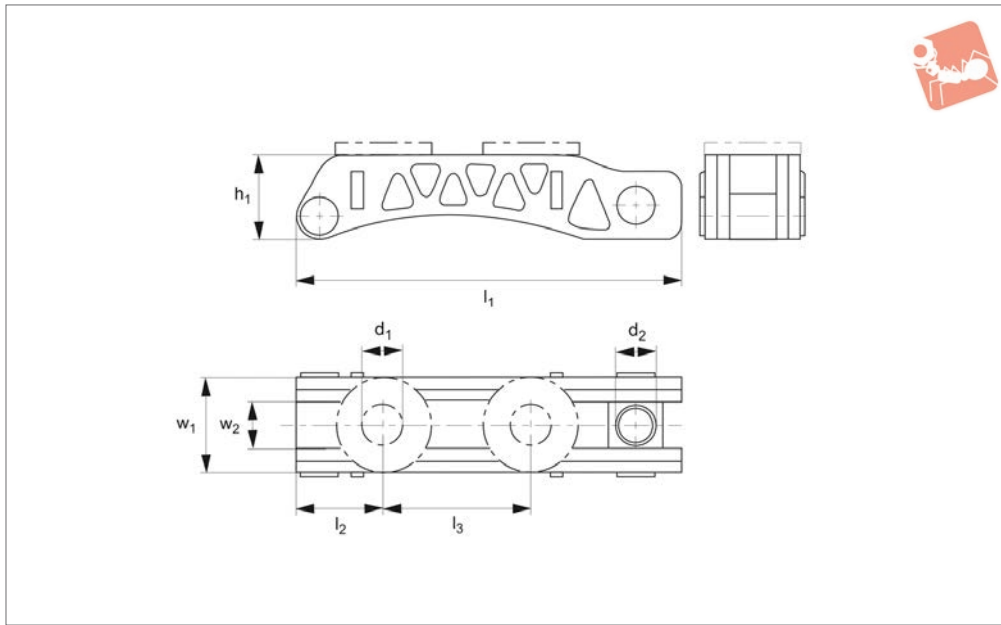




# Scalloped Clamp

light design

# Standard Manual Clam-



**10610.1**

STANDARD MANUAL CLAMPING

**Material**

Steel, tempered and burnished.

**Technical Notes**

The weight saving device allows a 50%

reduction in weight with no effect on clamping force that can be applied. Useful for rotating applications.

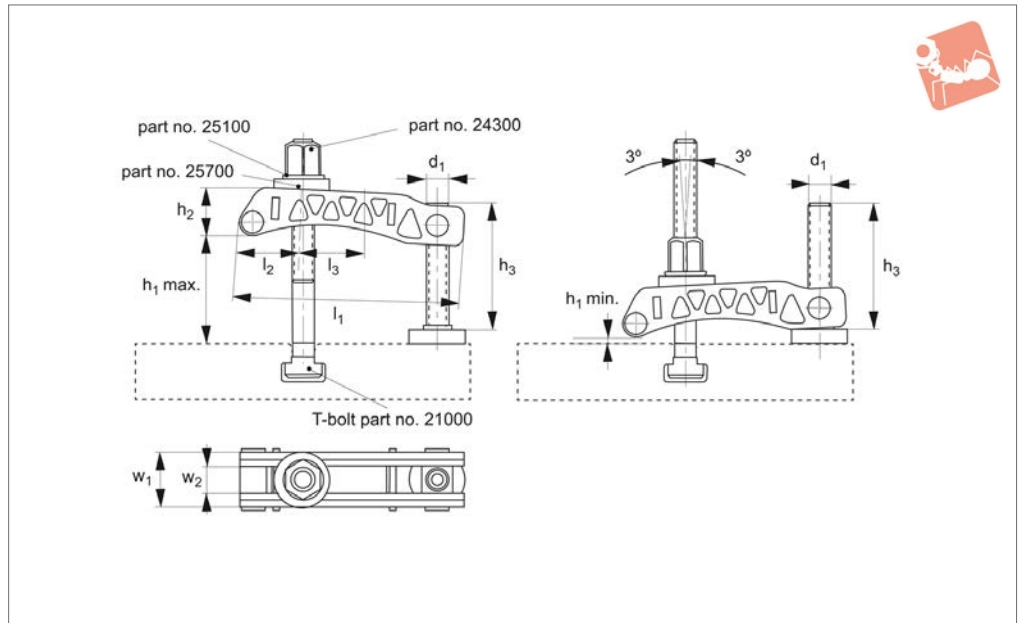
**Tips**

For clamping, T-bolts no. 21000 (DIN 787), studs no. 21100 (DIN 6379) and cheese head screws (ISO 4762) can be used.

Order No.	Size	For clamping screw	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	w <sub>1</sub>	w <sub>2</sub>	Weight g
10610.W0022	22	M20, M22	22	M20	44	200	45	77	49	25	1289
10610.W0026	26	M24	26	M24	44	250	46	116	54	30	1630
10610.W0033	33	M30	33	M30	71	315	59	152	72	40	4522
10610.W0043	43	M36, M42	43	M30	80	400	74	209	102	54	9709



10610.2



**Material**

Steel, tempered and burnished.

**Technical Notes**

The weight saving device allows a 50% reduction in weight with no effect on clam-

ping force that can be applied. Useful for rotating applications.

**Tips**

For clamping, clamping screws (DIN 21000), stud bolts (DIN 21100) and cheese

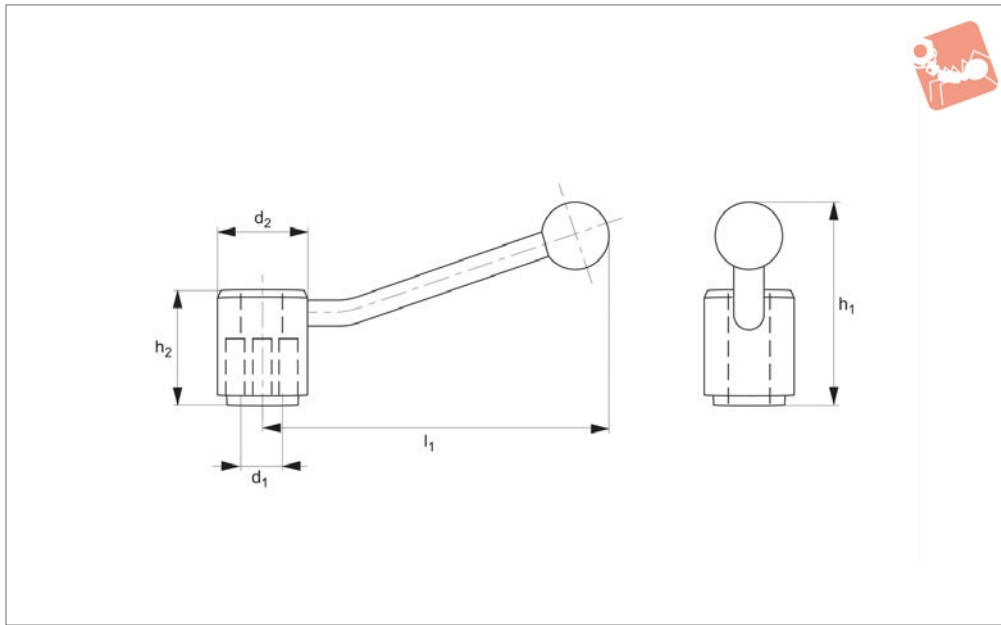
head screws (ISO 4762) can be used.  $h_1$  is dependent on the depth of the slot and position of the fixture nut.

Order No.	Size	For T-slot	With T-bolt	$d_1 \times h_2$	$h_1$ min.   max.	$h_3$	$l_1$	$l_2$	$l_3$	$w_1$	$w_2$	Weight g
10610.W0122	22	20	M20x20x160	M20x69	8-58	44	200	45	77	49	25	2434
10610.W0123	22	20	M20x20x200	M20x109	8-98	44	200	45	77	49	25	2531
10610.W0126	26	24	M24x28x200	M24x87	10-81	44	250	46	116	54	30	3779
10610.W0127	26	24	M24x28x250	M24x137	10-130	44	250	59	116	54	30	3884
10610.W0133	33	36	M30x36x315	M30x180	7-214	71	315	59	152	72	40	9044
10610.W0143	43	48	M36x42x400	M30x180	7-153	80	400	74	209	102	54	17560



# Ratchet Clamping Lever

## Standard Manual Clam-



**10680**

STANDARD MANUAL CLAMPING

### Material

Steel, burnished.

clamps, but particularly useful for part nos. 10400, 10500 and 10620.

without the need for spanners.

### Technical Notes

For use as quick acting lever for most

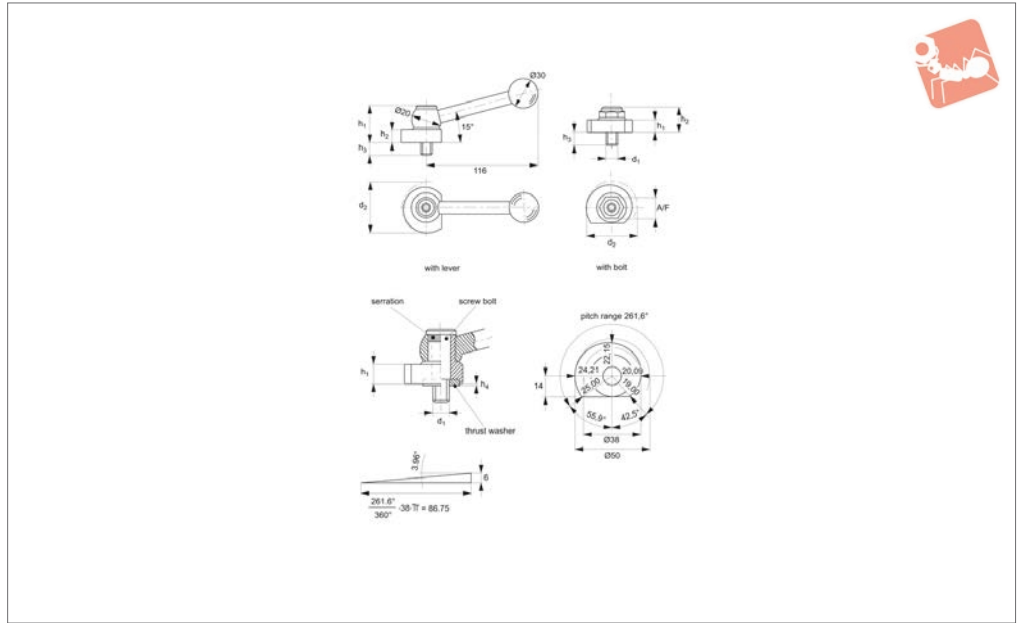
### Tips

The ratchet action allows quick clamping

Order No.	$d_1$	$d_2$	$h_1$	$h_2$	$l_1$	Weight g
10680.W0012	M12	33	83	48	135	360
10680.W0016	M16	40	105	64	158	620



## 12500



### Material

#### Steel Type:

Body: steel, blackened. Spiral eccentric and washer case hardened.

Screw: bolt nitrated.

Ball knob: DIN 319 black plastic, (PF31).

#### Stainless Steel Type:

Body: stainless steel 1.4305 (AISI 303), nickel plated.

Screw: stainless steel 1.4021, heat-

treated, nickel plated.

Ball knob: DIN 319 black plastic, (PF31).

### Technical Notes

The screw bolt and washer can be pre-set together so that the clamp can be easily rotated to any position - by means of the serrations. By removing the washer the clamp can also be used as an infinitely adjustable stop.

### Tips

**No. 12500 eccentric clamp, clamps from the SIDE.**

**Left hand acting version available on request.**

**No. 12520 clamping catch, clamps from ABOVE or BELOW.**

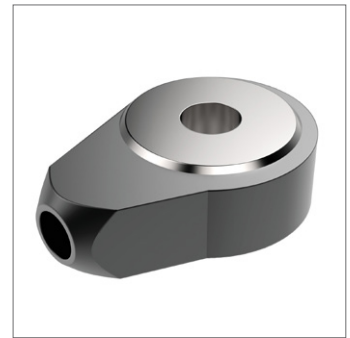
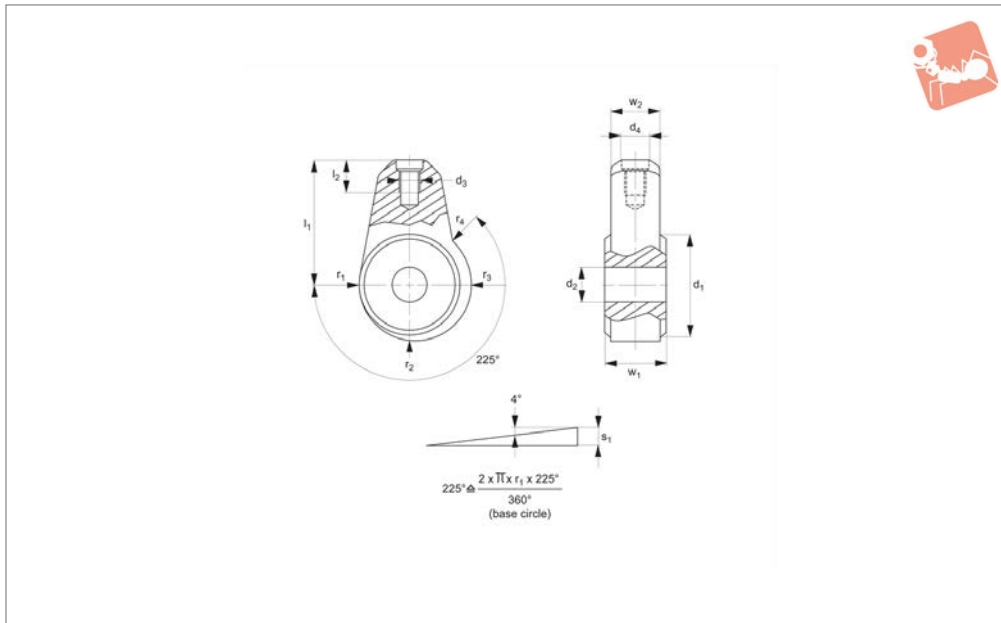
Left hand acting version can be supplied on request.

Order No.	Material	d <sub>1</sub>	h <sub>1</sub>	d <sub>2</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	Type	A/F	Clamping surface	Weight g
12500.W0050	Steel	M10	34.5	50	12	11	0.2	With Lever	-	Side	317
12500.W0150	Steel	M10	24.0	50	12	11	0.2	With Bolt	19	Side	159
12500.W0051	Stainless Steel	M10	34.5	50	12	11	0.2	With Lever	-	Side	317
12500.W0151	Stainless Steel	M10	25.0	50	12	11	0.2	With Bolt	19	Side	159



# Eccentric Side Clamps with shaft location

## Standard Manual Clam-



**12505**

STANDARD MANUAL CLAMPING

### Material

Body: sintered steel, case hardened.

clamping force and are self-locking in any position. Use in conjunction with gear lever handle part 74600.

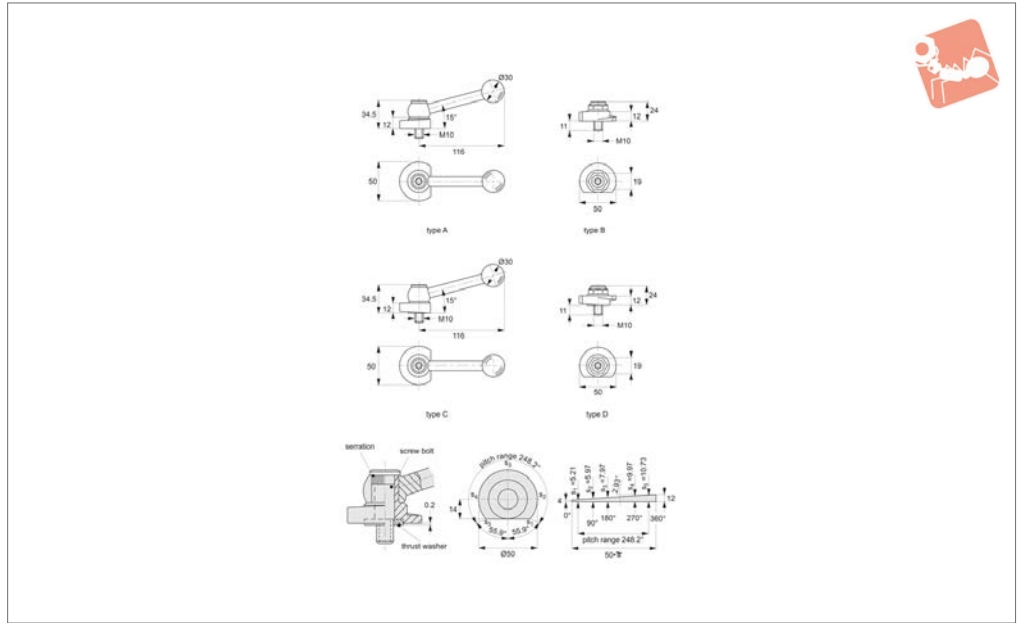
### Technical Notes

These eccentric clamps provide constant

Order No.	$w_1$ -0.05 -0.15	$w_2$	$l_1$	$d_1$	$d_2$ tol. h9	$d_3$	$d_4$	Corres. handle dia. 74600	$l_2$	$r_1$	$r_2$	$R_3$	$r_4$	Stroke $s_1$	Weight g
<b>12505.W0210</b>	13	11	28	24	8	M 6		8	9	12.0	13.3	14.6	15.3	3.3	50
<b>12505.W0220</b>	15	13	32	30	10	M 8		10	12	15.0	16.7	18.3	19.1	4.1	100
<b>12505.W0230</b>	17	15	36	35	12	M10		12	15	17.5	19.4	21.3	22.3	4.8	150



12520



STANDARD MANUAL CLAMPING

**Material**

**Steel Type:**

Body: steel, blackened. Spiral eccentric and washer case hardened.

Screw: bolt nitrated.

Gear lever handle: steel, ground, blackened.

Ball knob: DIN 319 black plastic, (PF31).

**Stainless Steel Type:**

Body: stainless steel 1.4305 (AISI 303),

nickel plated.

Screw: stainless steel 1.4021, heat-

treated, nickel plated.

Gear lever handle: stainless steel, 1.4305, dull blasted.

Ball knob: DIN 319 black plastic, (PF31).

**Technical Notes**

Through manually adjusting the setting of the clamping lever, the lever can be placed

in the most convenient position for clamping.

**Tips**

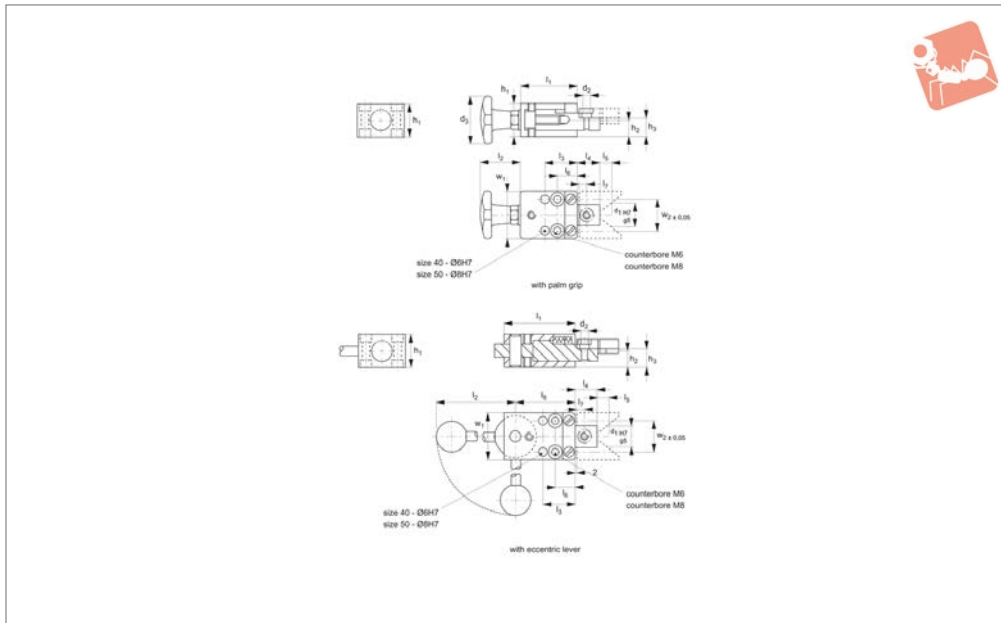
**Type A & B - force generated from TOP of catch.**

**Type C & D - force generated from BOTTOM of catch.**

Left hand acting version can be supplied on request.

Order No.	Material	Type	Clamping surface	Description	Weight g
12520.W0250	Steel	Type A	Top	Pitch Opposite to Bearing Surface	304
12520.W0350	Steel	Type B	Top	Pitch Opposite to Bearing Surface	154
12520.W0450	Steel	Type C	Bottom	Pitch on Bearing Surface	312
12520.W0550	Steel	Type D	Bottom	Pitch on Bearing Surface	154
12520.W0251	Stainless Steel	Type A	Top	Pitch Opposite to Bearing Surface	310
12520.W0351	Stainless Steel	Type B	Top	Pitch Opposite to Bearing Surface	154
12520.W0451	Stainless Steel	Type C	Bottom	Pitch on Bearing Surface	317
12520.W0551	Stainless Steel	Type D	Bottom	Pitch on Bearing Surface	153





## 17440

STANDARD MANUAL CLAMPING

### Material

Body: steel, case-hardened, ground and blackened.

Star grip: no. 70020 (orange).

Lever: no. 73000 (black).

### Technical Notes

Suitable for simultaneous positioning and

clamping of workpieces.

The locating element is a precision element which can be assembled from either side.

### Tips

The clamping and fixing part (made by the user to suit the workpiece) is screwed onto the unit.

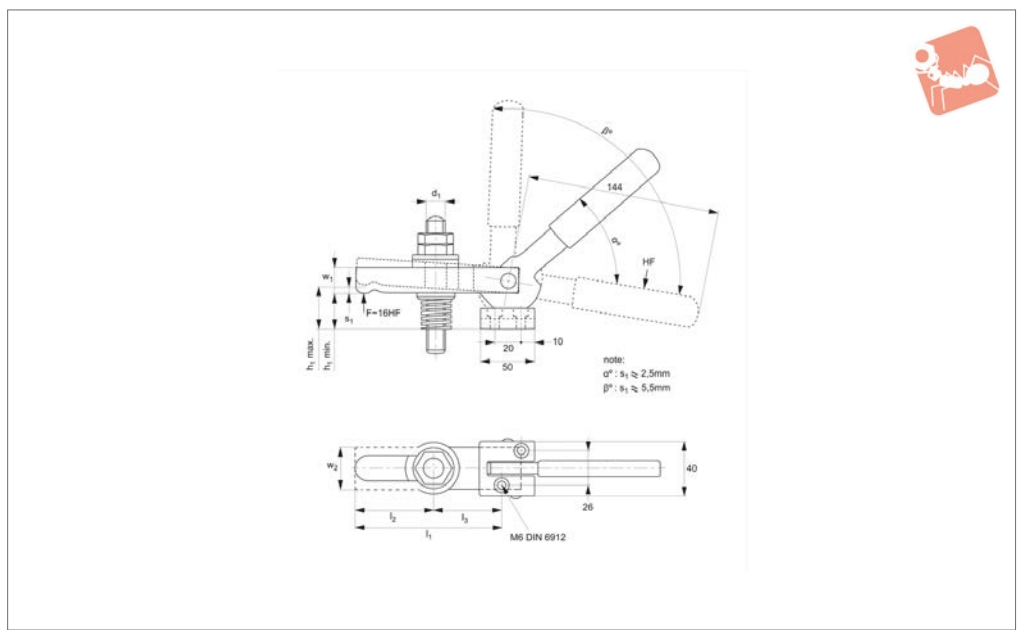
Order No.	w <sub>1</sub>	w <sub>2</sub> ±0.05	l <sub>1</sub>	d <sub>1</sub> tol. H7/g5	h <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>2</sub>	h <sub>3</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	Type	Weight g
17440.W0040	40	27	50	18	29,8	M 6	40	14,9	16,9	33	28	19	9	17	8		With palm grip	505
17440.W0050	50	33	60	22	34,8	M 8	50	17,4	19,4	42	34	24	10	21	10		With palm grip	862
17440.W0440	40	27	60	18	29,8	M 6		14,9	16,9	96	28	19	3	17	8	50	Eccentric lever	566
17440.W0450	50	33	75	22	34,8	M 8		17,4	19,4	145	34	24	4	21	10	63	Eccentric lever	1071



STANDARD MANUAL CLAMPING



## 18000



### Material

Steel, heat-treated, burnished.

Actuation by hand requires force (HF) of 150N approximately.

tely 16x hand force (HF) applied.

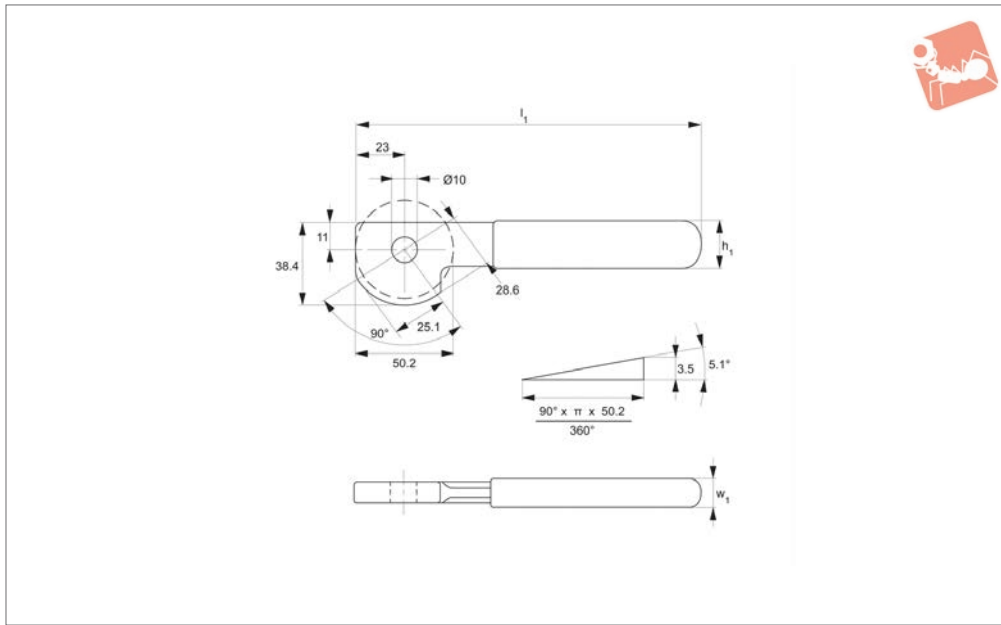
### Tips

Especially useful on component fixtures.

### Important Notes

Clamping force (F) exerted is approxima-

Order No.	$w_1$	$w_2$	$l_1$	$d_1$	$h_1$ min.	$h_1$ max.	$l_2$	$l_3$	Weight g
18000.W0001	30	20	100	M12	26	35	21-43	37	1000
18000.W0002	40	20	125	M16	26	35	34-66	45	1400



## 18020

STANDARD MANUAL CLAMPING

### Material

Steel, heat-treated.  
Handle: plastic, coated.

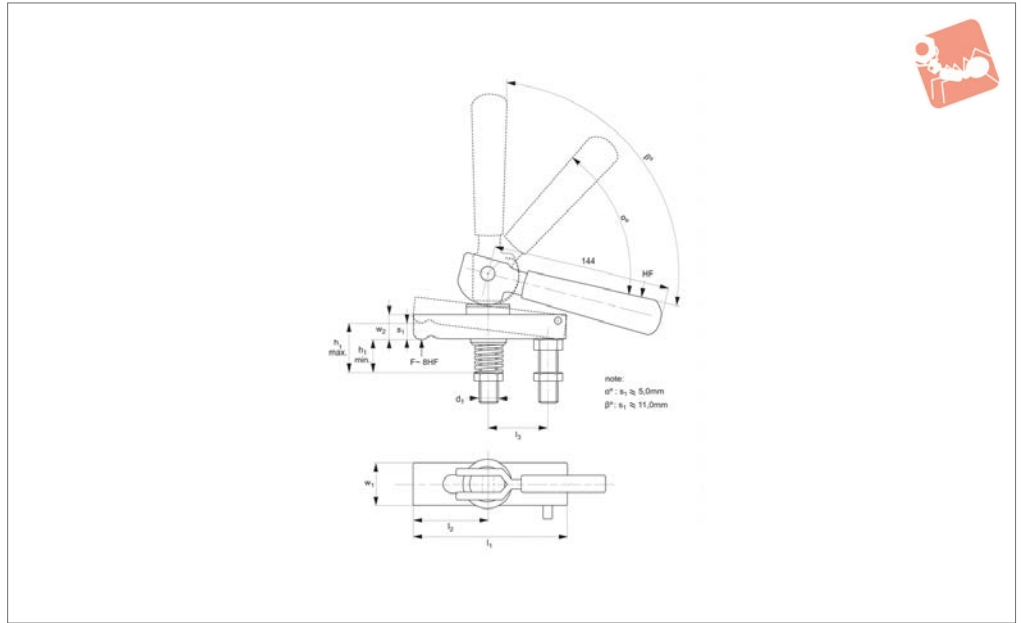
### Technical Notes

Cam lever for end clamping.

Order No.	w <sub>1</sub>	l <sub>1</sub>	h <sub>1</sub>	Weight g
18020.W0001	14	167	24	300



18040



STANDARD MANUAL CLAMPING

**Material**

Body: steel, heat-treated.  
Handle: plastic, coated.

**Tips**

Actuation by hand requires force of approxi-

ximately 150N (HF).

**Important Notes**

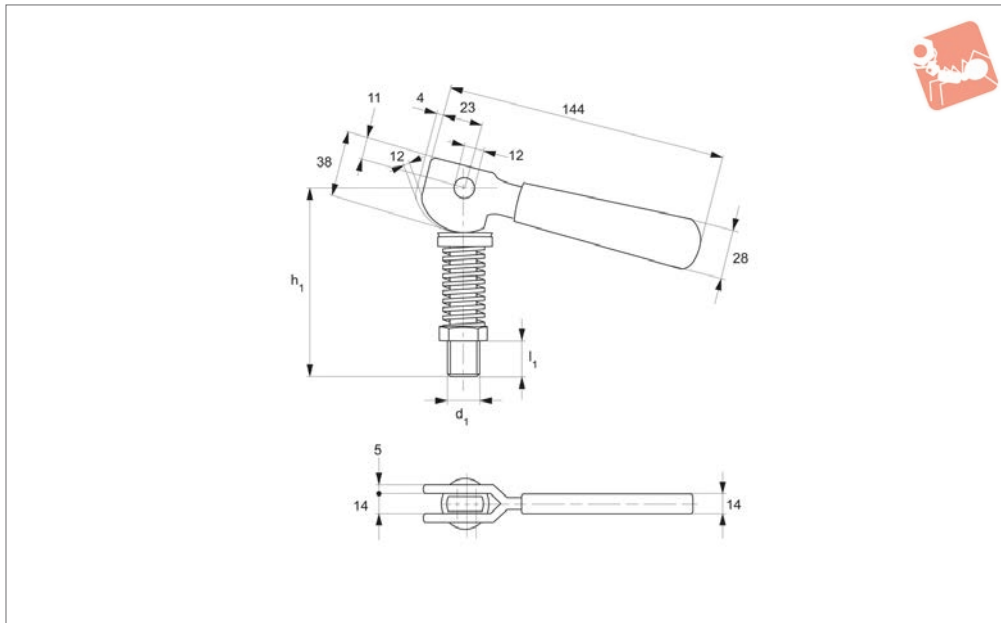
Clamping force (F) achieved is approximately 8x hand force (HF) applied.

Order No.	$w_1$	$w_2$	$l_1$	$d_1$	$h_1$ min.	$h_1$ max.	$l_2$	$l_3$	Weight g
18040.W0001	30	20	100	M12	30	45	21 - 43	32	1000
18040.W0002	40	20	125	M16	35	50	34 - 66	40	1450



# Cam Levers - Double Surface with bolt

Standard  
Manual Clam-



**18080**

STANDARD MANUAL CLAMPING

### Material

Lever: steel, heat-treated.  
Handle: plastic, coated.

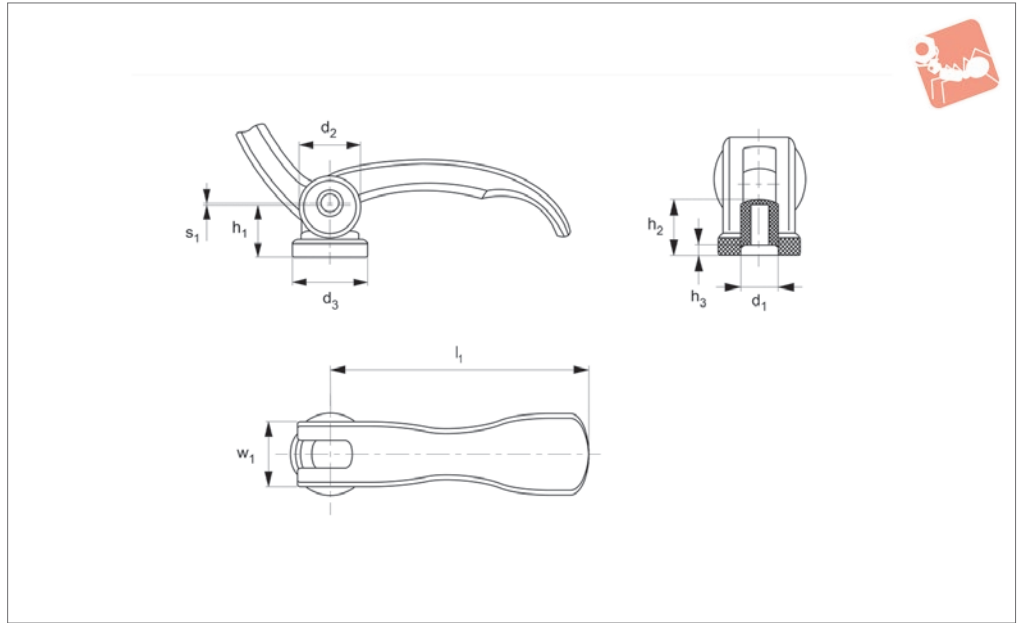
### Technical Notes

Cam lever for centre clamping.

Order No.	$l_1$	$d_1$	$h_1$	Type	Weight g
18080.W0001	25	M12	110	With Bolt	500
18080.W0002	30	M16	120	With Bolt	610
18080.W0100	-	-	-	Without Bolt	310



## 18580.1



### Material

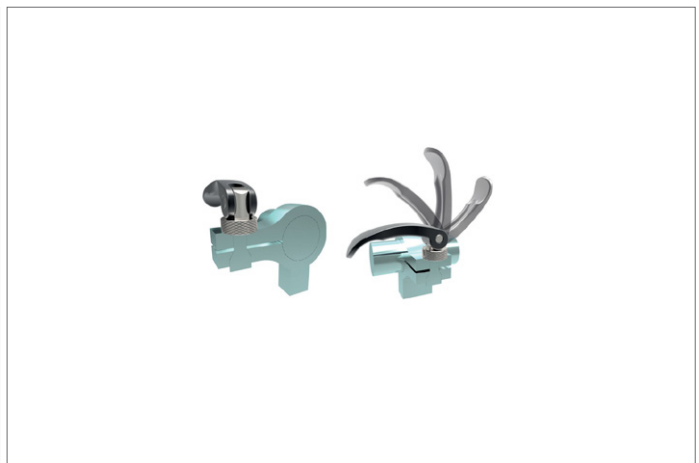
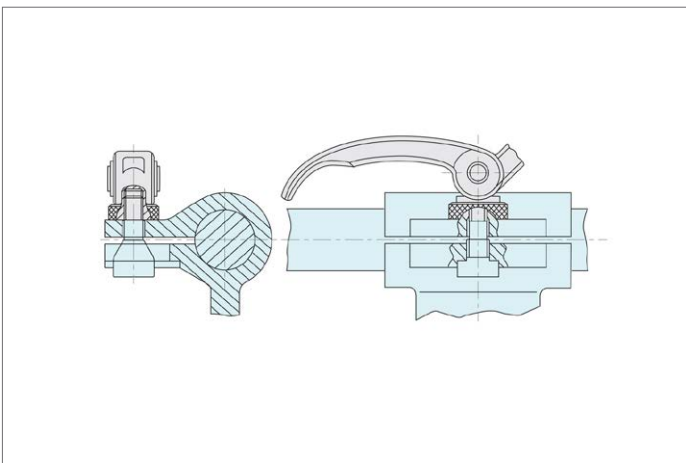
Handle: zinc die-cast, black plastic coated.  
Threaded part, inner parts, adjusting nut: steel, galvanised or stainless 1.4305.

Bearing washer: glass reinforced, thermo-plastic.

### Technical Notes

Enables quick and easy clamping of work-pieces.  
Withstands temperatures of up to 80°C.

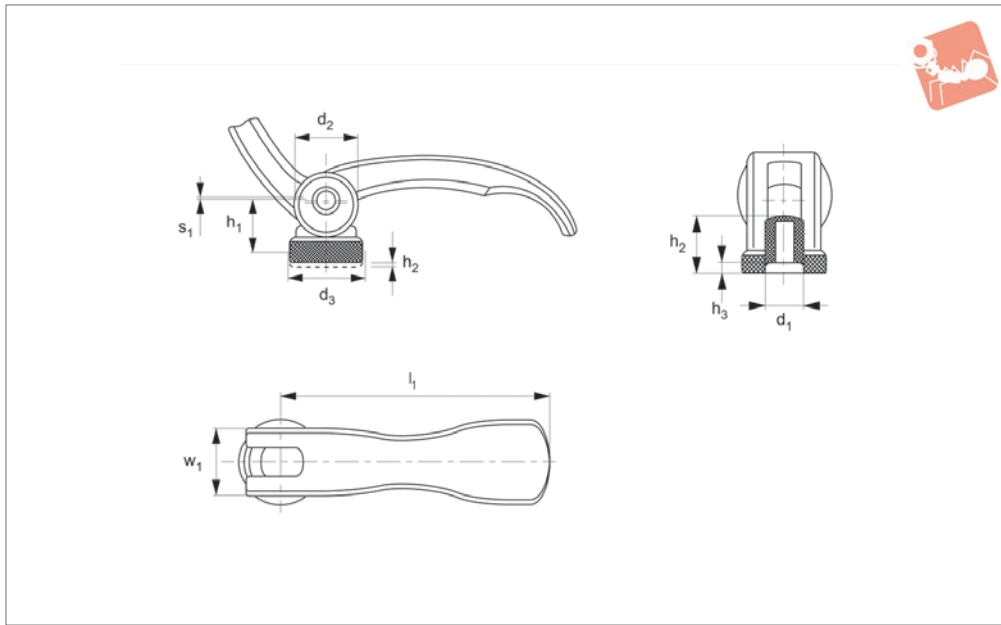
Order No.	Material	w <sub>1</sub>	l <sub>1</sub>	d <sub>1</sub>	h <sub>1</sub> max.	d <sub>2</sub>	d <sub>3</sub>	h <sub>2</sub>	h <sub>3</sub>	Clamping stroke s <sub>1</sub>	Weight g
18580.W0003	Steel	16	63	M 5	16.4	16	18.5	13	3.0	0.75	60
18580.W0001	Steel	16	63	M 6	16.4	16	18.5	13	3.0	0.75	58
18580.W0002	Steel	20	82	M 8	19.5	20	22.5	15	3.7	1.00	116
18580.W0203	Stainless	16	63	M 5	16.4	16	18.5	13	3.0	0.75	60
18580.W0201	Stainless	16	63	M 6	16.4	16	18.5	13	3.0	0.75	58
18580.W0202	Stainless	20	82	M 8	19.5	20	22.5	15	3.7	1.00	116





# Eccentric Levers - with Threaded Bush

quick clamping - adjustable



### 18580.2

STANDARD MANUAL CLAMPING

#### Material

Handle: zinc die-cast, black plastic coated.  
Threaded part, inner parts, adjusting nut: stainless steel (AISI 303, 1.4305).  
Bearing washer: reinforced glass, thermo-

plastic.

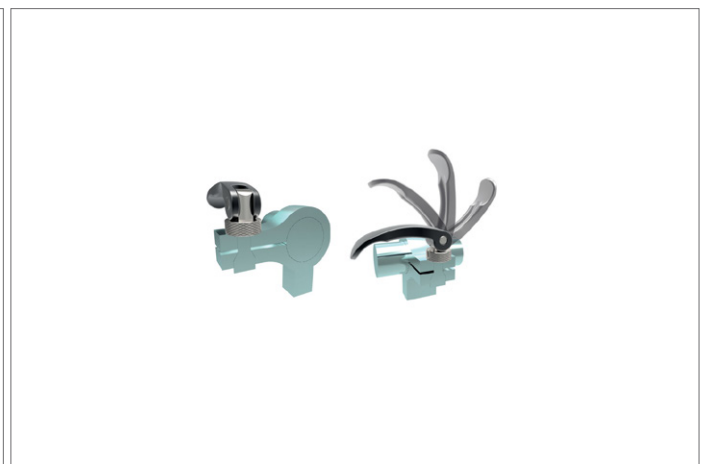
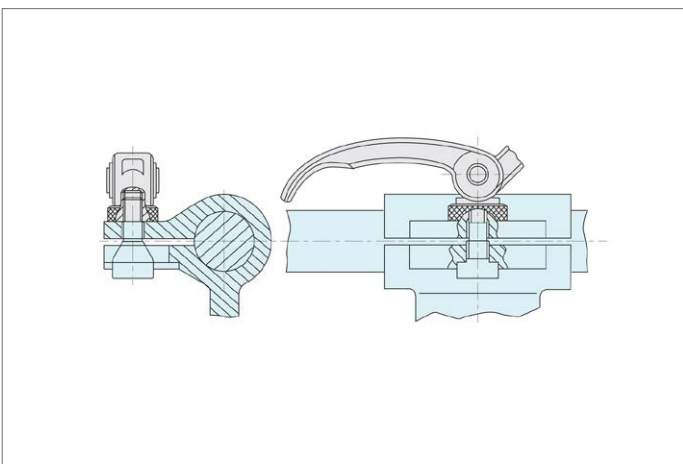
#### Technical Notes

Enables quick and easy clamping of workpieces.

Adjustable type enables repositioning of lever to avoid obstruction of the workpiece.

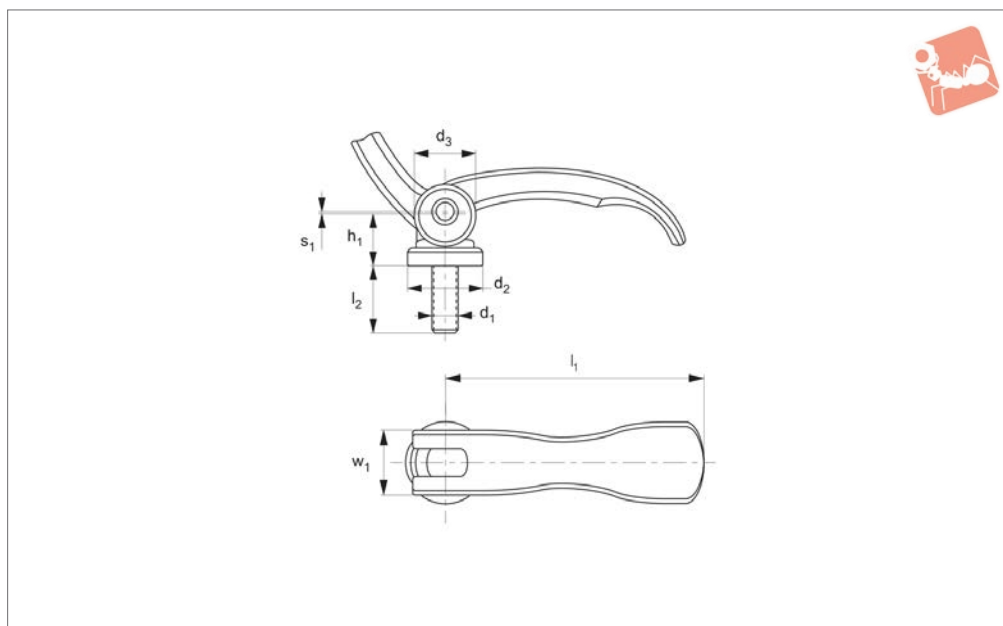
Withstands temperatures of up to 80° C.

Order No.	Material	w <sub>1</sub>	l <sub>1</sub>	d <sub>1</sub>	h <sub>1</sub> max.	d <sub>2</sub>	d <sub>3</sub>	Range of adj. h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	Clamping stroke s <sub>1</sub>	Weight g
18580.W0302	Stainless	20	82	M 8	19.5	20	25	2.5	15	3.7	1.00	130
18580.W0303	Stainless	16	63	M 5	16.4	16	19	1.5	13	3.0	0.75	65
18580.W0301	Stainless	16	63	M 6	16.4	16	19	1.5	13	3.0	0.75	64
18580.W0102	Steel	20	82	M 8	19.5	20	25	2.5	15	3.7	1.00	130
18580.W0103	Steel	16	63	M 5	16.4	16	19	1.5	13	3.0	0.75	65
18580.W0101	Steel	16	63	M 6	16.4	16	19	1.5	13	3.0	0.75	64





**18582.1**



**Material**

Handle: zinc die-cast, black plastic coated.  
Grub screw, inner parts, adjusting nut:  
steel, galvanised, or stainless steel  
1.4305.

Bearing washer: Thermoplastic (POM),  
glass-reinforced.

pieces. Withstands temperatures of up to  
80° C.

**Technical Notes**

Enables quick and easy clamping of work-

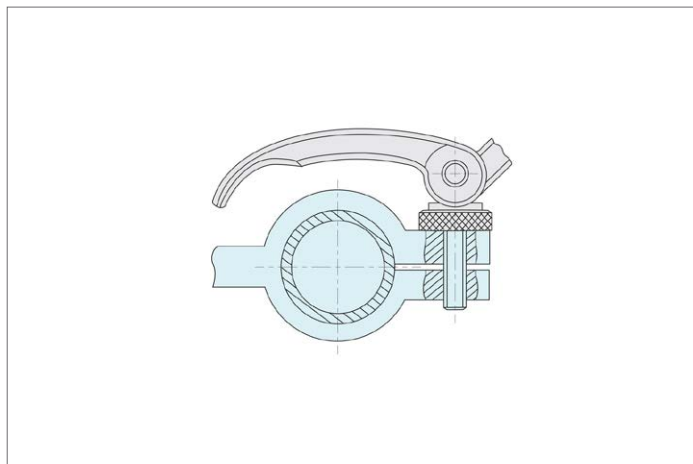
Order No.	Material	w <sub>1</sub>	l <sub>1</sub>	d <sub>1</sub>	h <sub>1</sub> max.	d <sub>2</sub>	d <sub>3</sub>	l <sub>2</sub> max.	Clamping stroke s <sub>1</sub>	Weight g
18582.W0009	Steel	16	63	M 6	16.4	16	18.5	16	0.75	63
18582.W0012	Steel	16	63	M 6	16.4	16	18.5	30	0.75	66
18582.W0014	Steel	16	63	M 6	16.4	16	18.5	40	0.75	68
18582.W0016	Steel	16	63	M 6	16.4	16	18.5	50	0.75	68
18582.W0019	Steel	20	82	M 8	19.5	20	22.5	20	1.00	129
18582.W0020	Steel	20	82	M 8	19.5	20	22.5	25	1.00	130
18582.W0022	Steel	20	82	M 8	19.5	20	22.5	35	1.00	133
18582.W0023	Steel	20	82	M 8	19.5	20	22.5	40	1.00	135
18582.W0030	Steel	16	63	M 5	16.4	16	18.5	16	0.75	62
18582.W0031	Steel	16	63	M 5	16.4	16	18.5	20	0.75	63
18582.W0032	Steel	16	63	M 5	16.4	16	18.5	25	0.75	64
18582.W0033	Steel	16	63	M 5	16.4	16	18.5	30	0.75	65
18582.W0034	Steel	16	63	M 5	16.4	16	18.5	35	0.75	65
18582.W0035	Steel	16	63	M 5	16.4	16	18.5	40	0.75	66
18582.W0036	Steel	16	63	M 5	16.4	16	18.5	50	0.75	67
18582.W0209	Stainless	16	63	M 6	16.4	16	18.5	16	0.75	63
18582.W0212	Stainless	16	63	M 6	16.4	16	18.5	30	0.75	66
18582.W0214	Stainless	16	63	M 6	16.4	16	18.5	40	0.75	68
18582.W0216	Stainless	16	63	M 6	16.4	16	18.5	50	0.75	68
18582.W0219	Stainless	20	82	M 8	19.5	20	22.5	20	1.00	129
18582.W0220	Stainless	20	82	M 8	19.5	20	22.5	25	1.00	130
18582.W0222	Stainless	20	82	M 8	19.5	20	22.5	35	1.00	133
18582.W0223	Stainless	20	82	M 8	19.5	20	22.5	40	1.00	135
18582.W0230	Stainless	16	63	M 5	16.4	16	18.5	16	0.75	62
18582.W0231	Stainless	16	63	M 5	16.4	16	18.5	20	0.75	63
18582.W0232	Stainless	16	63	M 5	16.4	16	18.5	25	0.75	64
18582.W0233	Stainless	16	63	M 5	16.4	16	18.5	30	0.75	65
18582.W0234	Stainless	16	63	M 5	16.4	16	18.5	35	0.75	65
18582.W0235	Stainless	16	63	M 5	16.4	16	18.5	40	0.75	66
18582.W0236	Stainless	16	63	M 5	16.4	16	18.5	50	0.75	67





# Eccentric Levers - Male fixed

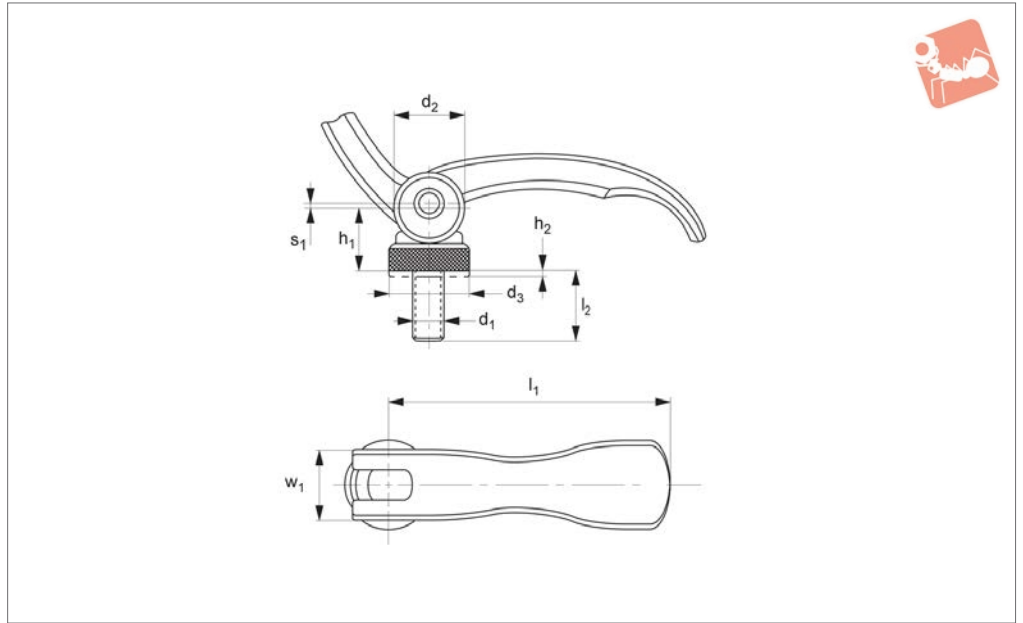
## Standard Manual Clam-



STANDARD MANUAL CLAMPING



18582.2



STANDARD MANUAL CLAMPING

**Material**

Handle: zinc die-cast, black plastic coated.  
Grub screw, inner parts, adjusting nut: steel, zinc plated or stainless steel (AISI 303, 1.4305).

Bearing washer: Thermoplastic (POM), glass-reinforced.

**Technical Notes**

Enables quick and easy clamping of work-

pieces. Adjustable type enables re-positioning of lever to avoid obstruction of the workpiece.

Withstands temperatures of up to 80° C.

Order No.	Material	w <sub>1</sub>	l <sub>1</sub>	d <sub>1</sub>	h <sub>1</sub> max.	d <sub>2</sub>	d <sub>3</sub>	h <sub>2</sub> range of adj.	l <sub>2</sub> max.	Type	Clamping stroke s <sub>1</sub>	Weight g
18582.W0130	Steel	16	63	M 5	16.4	16	19	1.5	16	Adjustable	0.75	68
18582.W0131	Steel	16	63	M 5	16.4	16	19	1.5	20	Adjustable	0.75	69
18582.W0132	Steel	16	63	M 5	16.4	16	19	1.5	25	Adjustable	0.75	70
18582.W0133	Steel	16	63	M 5	16.4	16	19	1.5	30	Adjustable	0.75	71
18582.W0134	Steel	16	63	M 5	16.4	16	19	1.5	35	Adjustable	0.75	71
18582.W0135	Steel	16	63	M 5	16.4	16	19	1.5	40	Adjustable	0.75	72
18582.W0136	Steel	16	63	M 5	16.4	16	19	1.5	50	Adjustable	0.75	73
18582.W0109	Steel	16	63	M 6	16.4	16	19	1.5	16	Adjustable	0.75	69
18582.W0110	Steel	16	63	M 6	16.4	16	19	1.5	20	Adjustable	0.75	69
18582.W0111	Steel	16	63	M 6	16.4	16	19	1.5	25	Adjustable	0.75	71
18582.W0112	Steel	16	63	M 6	16.4	16	19	1.5	30	Adjustable	0.75	72
18582.W0113	Steel	16	63	M 6	16.4	16	19	1.5	35	Adjustable	0.75	73
18582.W0114	Steel	16	63	M 6	16.4	16	19	1.5	40	Adjustable	0.75	74
18582.W0116	Steel	16	63	M 6	16.4	16	19	1.5	50	Adjustable	0.75	76
18582.W0120	Steel	20	82	M 8	19.5	20	25	2.5	25	Adjustable	1.00	142
18582.W0121	Steel	20	82	M 8	19.5	20	25	2.5	30	Adjustable	1.00	144
18582.W0122	Steel	20	82	M 8	19.5	20	25	2.5	35	Adjustable	1.00	146
18582.W0125	Steel	20	82	M 8	19.5	20	25	2.5	50	Adjustable	1.00	152
18582.W0127	Steel	20	82	M 8	19.5	20	25	2.5	60	Adjustable	1.00	156
18582.W0330	Stainless	16	63	M 5	16.4	16	19	1.5	16	Adjustable	0.75	68
18582.W0331	Stainless	16	63	M 5	16.4	16	19	1.5	20	Adjustable	0.75	69
18582.W0332	Stainless	16	63	M 5	16.4	16	19	1.5	25	Adjustable	0.75	70
18582.W0333	Stainless	16	63	M 5	16.4	16	19	1.5	30	Adjustable	0.75	71
18582.W0334	Stainless	16	63	M 5	16.4	16	19	1.5	35	Adjustable	0.75	71
18582.W0335	Stainless	16	63	M 5	16.4	16	19	1.5	40	Adjustable	0.75	72
18582.W0336	Stainless	16	63	M 5	16.4	16	19	1.5	50	Adjustable	0.75	73
18582.W0309	Stainless	16	63	M 6	16.4	16	19	1.5	16	Adjustable	0.75	69
18582.W0310	Stainless	16	63	M 6	16.4	16	19	1.5	20	Adjustable	0.75	69
18582.W0311	Stainless	16	63	M 6	16.4	16	19	1.5	25	Adjustable	0.75	71
18582.W0312	Stainless	16	63	M 6	16.4	16	19	1.5	30	Adjustable	0.75	72
18582.W0313	Stainless	16	63	M 6	16.4	16	19	1.5	35	Adjustable	0.75	73
18582.W0314	Stainless	16	63	M 6	16.4	16	19	1.5	40	Adjustable	0.75	74
18582.W0316	Stainless	16	63	M 6	16.4	16	19	1.5	50	Adjustable	0.75	76

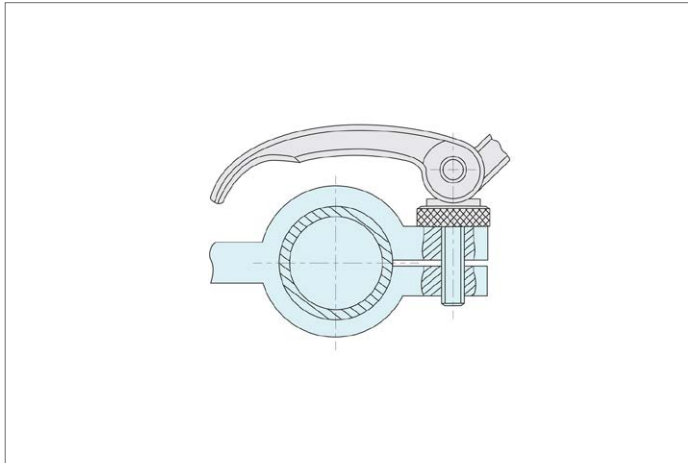


# Eccentric Levers - Male adjustable

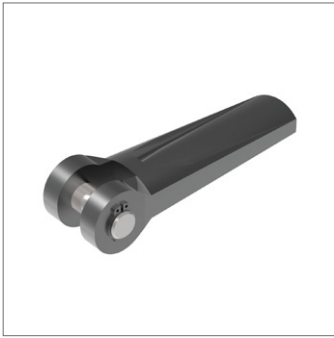


## Standard Manual Clam-

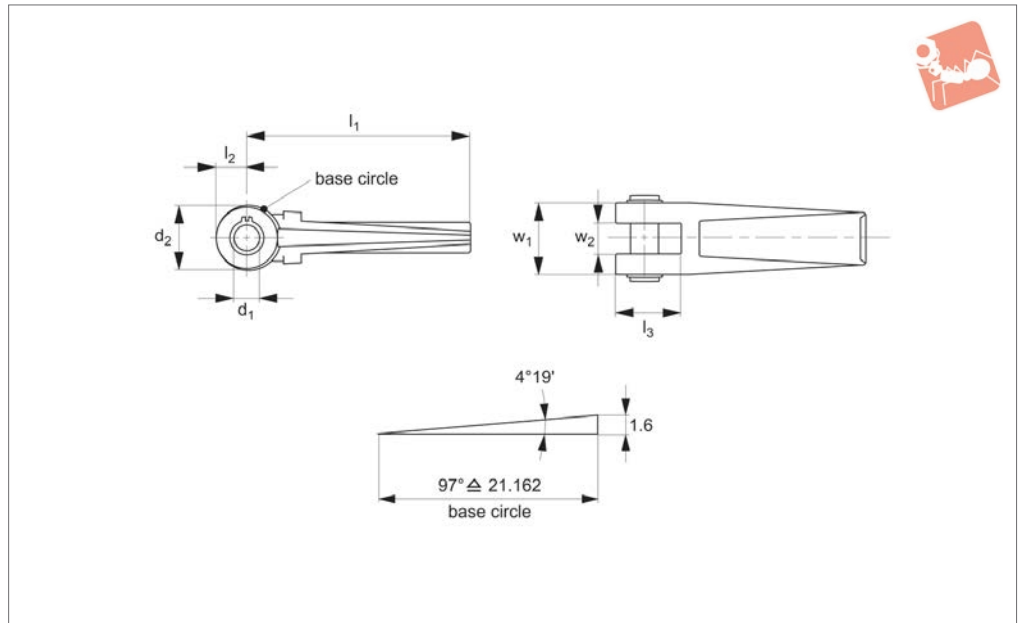
Order No.	Material	$w_1$	$l_1$	$d_1$	$h_1$ max.	$d_2$	$d_3$	$h_2$ range of adj.	$l_2$ max.	Type	Clamping stroke $s_1$	Weight g
<b>18582.W0320</b>	Stainless	20	82	M 8	19.5	20	25	2.5	25	Adjustable	1.00	142
<b>18582.W0321</b>	Stainless	20	82	M 8	19.5	20	25	2.5	30	Adjustable	1.00	144
<b>18582.W0322</b>	Stainless	20	82	M 8	19.5	20	25	2.5	35	Adjustable	1.00	146
<b>18582.W0325</b>	Stainless	20	82	M 8	19.5	20	25	2.5	50	Adjustable	1.00	152
<b>18582.W0327</b>	Stainless	20	82	M 8	19.5	20	25	2.5	60	Adjustable	1.00	156



STANDARD MANUAL CLAMPING



18600



**Material**

Lever: steel, alloyed, case-hardened and blackened.  
Fulcrum pin: steel, case-hardened and

ground. Complete with circlips.

**Technical Notes**

Eccentric clamping cams on both sides.

**Tips**

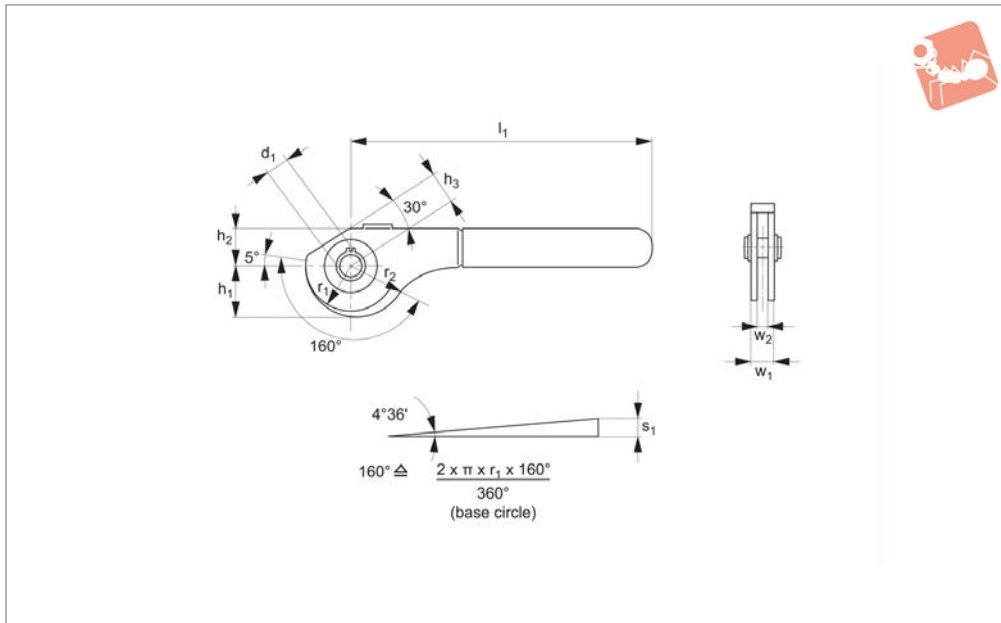
Can be used with swing bolts.

Order No.	w <sub>1</sub>	w <sub>2</sub>	l <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	l <sub>2</sub>	l <sub>3</sub>	Weight g
18600.W0012	32	14.1	100	12	28	12.5	28.5	334



# Cam Levers - Double Surface with fulcrum pin

Standard  
Manual Clam-



**18620**

STANDARD MANUAL CLAMPING

### Material

Eccentric: steel (ST52-3, 1.0570), zinc phosphated or stainless steel, (AISI 304, 1.4301).

Circlip: stainless steel (AISI 301, 1.4310).

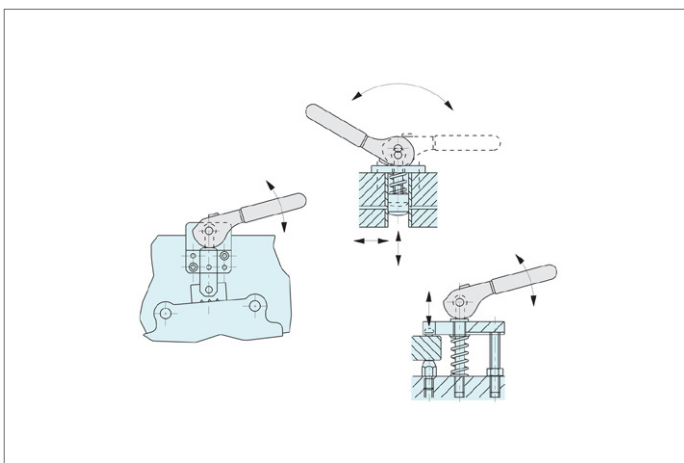
Fulcrum pin: stainless steel (AISI 420, 1.4021), heat-treated.

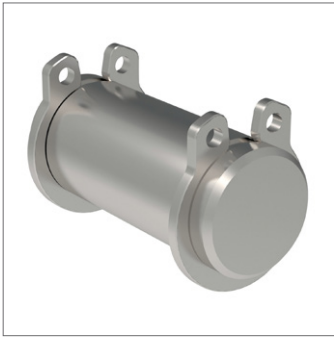
Grip: red PVC, max. temperature 60°C.

### Technical Notes

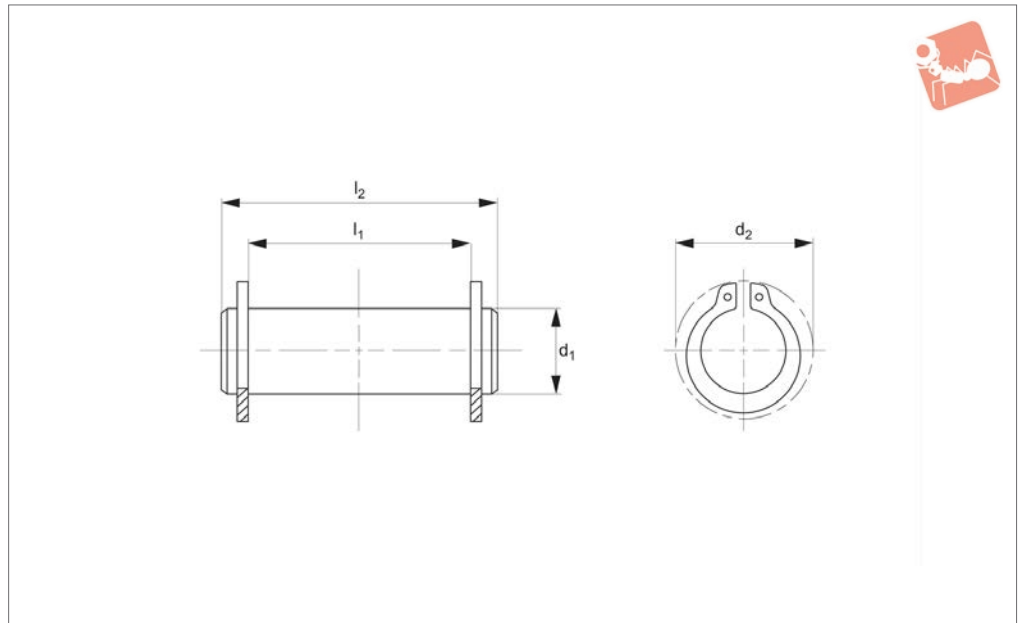
Supplied with fulcrum pin no. 18640.

Order No.	w <sub>1</sub>	w <sub>2</sub>	l <sub>1</sub>	d <sub>1</sub> tol. f8	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	r <sub>1</sub>	r <sub>2</sub>	Eccentric stroke s <sub>1</sub>	Total stroke r <sub>2</sub> - h <sub>3</sub>	Type	Weight g
<b>18620.W0408</b>	13	9	114	8	19.54	14	12	17.2	21.07	3.87	9.07	Steel	93
<b>18620.W0410</b>	17	12	138	10	24.54	17	15	21.6	26.45	4.85	11.45	Steel	178
<b>18620.W0412</b>	20	14	157	12	31.81	21	18	28.0	34.29	6.29	16.29	Steel	290
<b>18620.W0508</b>	13	9	114	8	19.54	14	12	17.2	21.07	3.87	9.07	Stainless Steel	94
<b>18620.W0510</b>	17	12	138	10	24.54	17	15	21.6	26.45	4.85	11.45	Stainless Steel	175
<b>18620.W0512</b>	20	14	157	12	31.81	21	18	28.0	34.29	6.29	16.29	Stainless Steel	288





18640



**Material**

Pin: stainless steel (AISI 420, 1.4021),  
heat treated.

Circlip: stainless steel (AISI 301, 1.4310) -

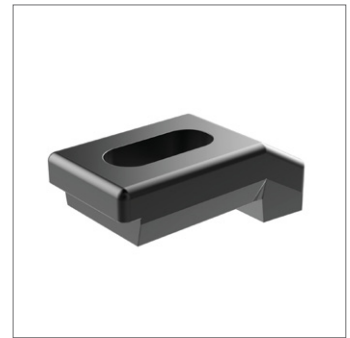
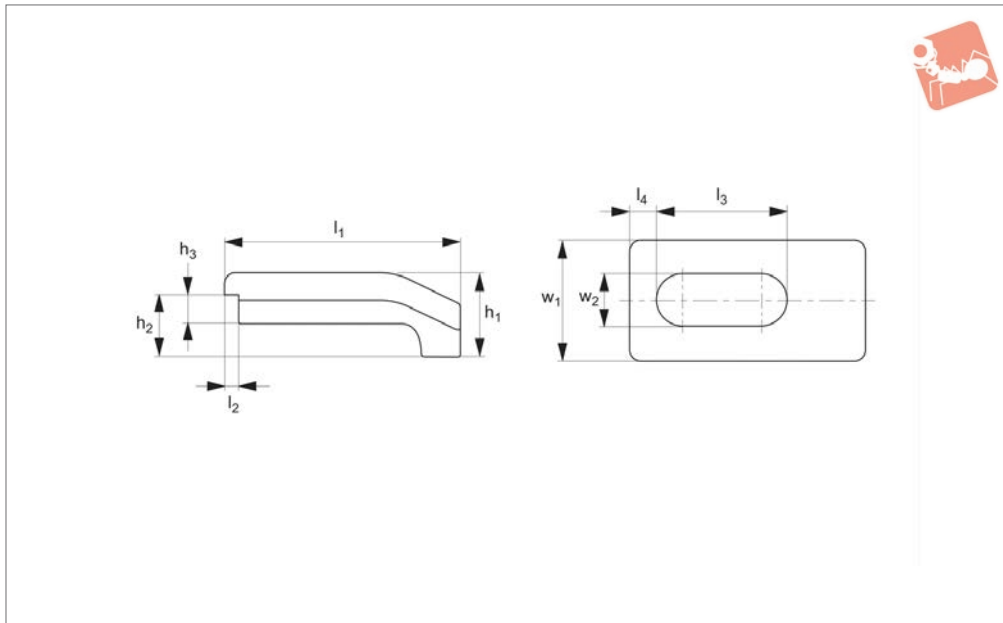
supplied.

**Technical Notes**

Suitable for eccentric levers no.18620 and

similar applications.

Order No.	$l_1$ -0.5	$d_1$ tol. f8	$d_2$	$l_2$	Weight g
18640.W0082	14	8	14.7	18	7.7
18640.W0085	21	8	14.7	27	10.0
18640.W0102	18	10	17.0	24	14.0
18640.W0105	29	10	17.0	35	21.0
18640.W0122	21	12	19.0	27	23.0
18640.W0125	31	12	19.0	37	34.0



## 10290

STANDARD MANUAL CLAMPING

### Material

Steel, heat-treated and blackened.

### Technical Notes

Supplied in pairs.

### Tips

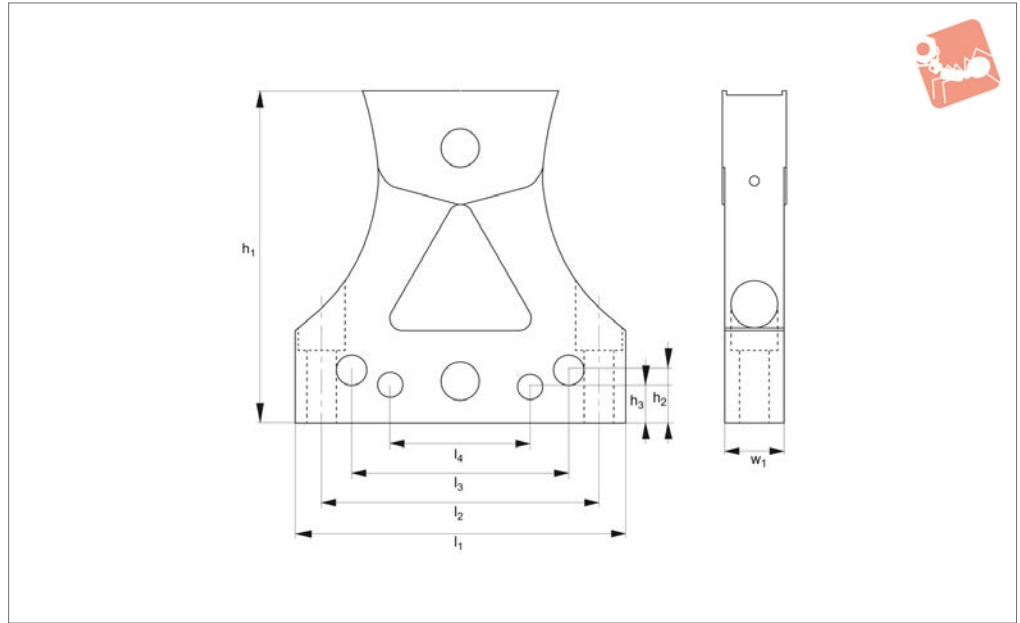
Used with:

21000 T-slot bolt, 21120 T-stud, 24400 collar nut, 25000 plain washer.

Order No.	For bolt	For vice jaw width	$h_1$	$h_2$	$h_3 \times l_2$	$l_1$	$l_3$	$l_4$	$w_1$	$w_2$	Weight g
<b>10290.W0015</b>	M12- M16	100	22.5	15	10x6,5	78	40	10.5	40	16.5	660
<b>10290.W0020</b>	M12- M16	125/160	27.5	20	10x6,5	78	40	10.5	40	16.5	705



12464



**Technical Notes**

Vice towers mount directly to your 4" or 6" vice to elevate your workpiece into the 5-axis envelope and allow machining on 5 sides of the workpiece. Incorporating talon, versagrip and pitbull clamps the system is exceptionally versatile in securing round or square stock material. As well as being suited for mounting to

your vice, the vice towers can also be mounted to your T-slot table.

**Tips**

Low profile clamping reduces material costs and eliminates the need for time-consuming workpiece preparation.

**Important Notes**

Full set contents:

- 2 x vice towers
- 4 x talon grips 12034.W0075
- 4 x versagrips 12036.W0175
- 1 x talon stop 12035.W0220
- 2 x pitbull clamp 12031.W0060
- 2 x each support bolts M12x65/100/200
- 4 x mounting bolts M12x55
- 4 x T-nuts M12x16

Order No.	Type	Suitable vice size	Mounting bolts	$h_1$	$h_2$	$h_3$	$l_1$	$l_2$	$l_3$	$l_4$	$w_1$
12464.W0066	Set	4" or 6"	M12x55	150	23.9	17.5	150	126.0	98.6	63.5	26.9

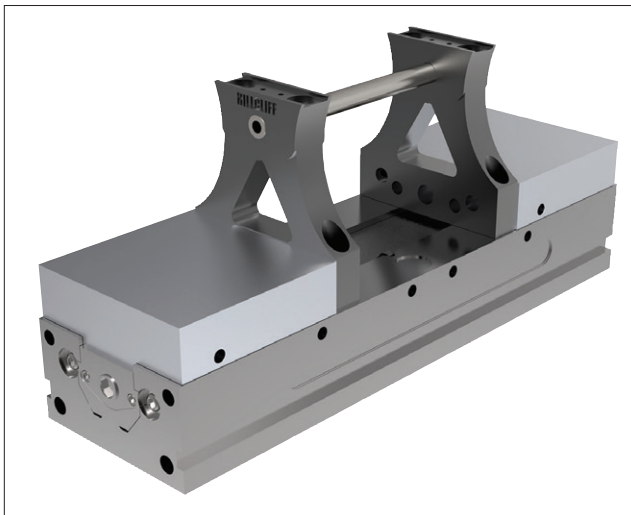






#### Vice Application

- Mount jaws to either 4 or 6 inch vice with logo facing outwards, keeping the mounting bolts loose.
- Determine which grippers will be used, install and hand-tighten the grippers. If VersaGrips are being used to grip round stock, place in outboard bores. Do not tighten screws at this point. Tighten vice lightly onto workpiece allowing jaws to centre themselves, adjust VersaGrips, and tighten gripper screws and mounting bolts for both jaws.
- Loosen vice jaw for load/unload clearance of workpiece. Install support/pivot bolt.
- Setup is complete. Tighten support bolt allowing grippers to penetrate 0.25-1.52mm on material < 40 HRC.
- For additional holding force, loosen vice handle which will eliminate any jaw lift that may have occurred and depending on amount of torque can increase pressure to over 4000 kg.



#### T-slot and Grid Table Application

- Using vertical counterbores on outboard edges of jaws, install mounting bolts into t-nuts or grid plate and adjust accordingly. Do not tighten at this time.
- Select appropriate support bolts and install in upper horizontal counterbore and thread into opposite tower.
- Place workpiece between jaws and lightly tighten upper support bolt until all grippers contact workpiece. Tighten vertical mounting bolts.
- Loosen upper support bolt one full turn or until adequate workpiece clearance is obtained.
- Upper support bolt is now the “drive bolt” for securing and releasing workpiece.
- Any size T-nuts can be utilised. We provide 16mm T-nuts.



**19100**



**Material**

Clamp sets are designed for use on T-slot machines, and contain all the necessary

parts to quickly clamp tools, fixtures or workpieces. All parts are interchangeable and are made of heat treated steel to DIN

standard (class 8 or class 10). The clamping set comes in a wooden box which has a removable lid.

Order No.	Thread & Slot size	Box l x w x h	Step blocks 14000	T-Bolts 21000	Step clamps 10020	Studs 21100	Weight kg
19100.W0010	M10 x 10	355x270x47	.W0001 x 4pcs .W0002 x 4pcs .W0003 x 2pcs	40mm .W0101 x 2pcs 63mm .W0102 x 4pcs 100mm.W0103 x 4pcs	.W0010 x 4pcs	80mm .W0102 x 4pcs	9.2
19100.W0012	M12 x 12	460x330x50	.W0002 x 4pcs .W0003 x 4pcs	50mm .W0121 x 2pcs 80mm .W0123 x 4pcs 125mm .W0124 x 4pcs	.W0014 x 4pcs	100mm .W0124 x 4pcs	14.3
19100.W0014	M12 x 14	460x330x50	.W0002 x 4pcs .W0003 x 4pcs	50mm .W0141 x 2pcs 80mm .W0143 x 4pcs 125mm .W0144 x 4pcs	.W0014 x 4pcs	100mm .W0124 x 4pcs	14.6
19100.W0015	M14 x 16	510x415x50	.W0002 x 4pcs .W0003 x 4pcs	63mm .W0161 x 2pcs 100mm .W0162 x 4pcs 160mm .W0163 x 4pcs	.W0018 x 4pcs	125mm .W0147 x 4pcs	18.5
19100.W0016	M16 x 16	510x415x50	.W0002 x 4pcs .W0003 x 4pcs	63mm .W0165 x 2pcs 100mm .W0167 x 4pcs 160mm .W0168 x 4pcs	.W0018 x 4pcs	125mm .W0164 x 4pcs	21.5
19100.W0018	M16 x 18	510x415x50	.W0002 x 4pcs .W0003 x 4pcs	63mm .W0181 x 2pcs 100mm .W0183 x 4pcs 160mm .W0184 x 4pcs	.W0018 x 4pcs	125mm .W0164 x 4pcs	21.50

Order No.	Fixture nuts 24300	Extension nuts 24600	Dished washers 25700	Low height clamp 12200	T-Slot scrapper 26300	Spanner	Thread paste
19100.W0010	.W0110 x 6pcs	.W0110 x 4pcs	.W0110 x 6pcs	.W0012 x 4pcs	-	16 x 1pc	1pc



## Clamping Sets with low height clamps 12200



## Standard Manual Clam-

Order No.	Fixture nuts 24300	Extension nuts 24600	Dished washers 25700	Low height clamp 12200	T-Slot scrapper 26300	Spanner	Thread paste
19100.W0012	.W0112 x 6pcs	.W0112 x 4pcs	.W0112 x 6pcs	.W0012 x 4pcs	-	18 x 1pc	1pc
19100.W0014	.W0112 x 6pcs	.W0112 x 4pcs	.W0112 x 6pcs	.W0014 x 4pcs	.W0120 x 1pc	18 x 1pc	1pc
19100.W0015	.W0114 x 6pcs	.W0114 x 4pcs	.W0114 x 6pcs	.W0016 x 1pc	.W0120 x 1pc	22 x 1pc	1pc
19100.W0016	.W0116 x 6pcs	.W0116 x 4pcs	.W0116 x 6pcs	.W0016 x 1pc	.W0120 x 1pc	24 x 1pc	1pc
19100.W0018	.W0116 x 6pcs	.W0116 x 4pcs	.W0116 x 6pcs	.W0018 x 1pc	.W0120 x 1pc	24 x 1pc	1pc

STANDARD MANUAL CLAMPING



**19200**

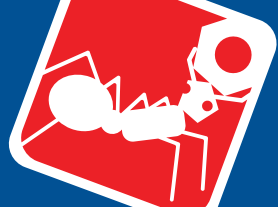


### Technical Notes

High quality clamping set for machines. Comprising step clamps no. 10200 and

step blocks no. 14000. High quality T-bolts and studs (class 8 or class 10). With spring clamp supports.

Order No.	Thread & Slot size	Box l x w x h	Step blocks 14000	T-Bolts 21000	Step clamps 10020	Studs 21100	Weight kg
19200.W0010	M10 x 10	355x225x47	.W0001 x 4pcs .W0002 x 4pcs .W0003 x 2pcs	63mm .W0102 x 4pcs 100mm .W0103 x 4pcs	.W0011 x 4pcs	80mm .W0083 x 4pcs	6.5
19200.W0012	M12 x 12	359x333x52	.W0002 x 4pcs .W0003 x 4pcs	80mm .W0123 x 4pcs 125mm .W0124 x 4pcs	.W0014 x 4pcs	100mm .W0124 x 4pcs	11.0
19200.W0014	M12 x 14	359x333x52	.W0002 x 4pcs .W0003 x 4pcs	80mm .W0123 x 4pcs 125mm .W0124 x 4pcs	.W0014 x 4pcs	100mm .W0124 x 4pcs	11.1
19200.W0016	M16 x 16	390x415x55	.W0002 x 4pcs .W0003 x 4pcs	100mm .W0167 x 4pcs 160mm .W0168 x 4pcs	.W0018 x 4pcs	125mm .W0164 x 4pcs	16.5
19200.W0018	M16 x 18	390x415x55	.W0002 x 4pcs .W0003 x 4pcs	100mm .W0183 x 4pcs 160mm .W0184 x 4pcs	.W0018 x 4pcs	125mm .W0164 x 4pcs	16.5
19200.W0020	M20 x 20	480x528x60	.W0002 x 4pcs .W0003 x 4pcs	125mm .W0203 x 4pcs 200mm .W0205 x 4pcs	.W0022 x 4pcs	125mm .W0202 x 4pcs	24.5
19200.W0022	M20 x 22	480x528x60	.W0002 x 4pcs .W0003 x 4pcs	125mm .W0223 x 4pcs 200mm .W0225 x 4pcs	.W0022 x 4pcs	125mm .W0202 x 4pcs	24.5
19200.W0024	M20 x 24	480x528x60	.W0002 x 4pcs .W0003 x 4pcs	-	.W0022 x 4pcs	125mm .W0202 x 8pcs 200mm .W0204 x 4pcs	24.8



# Clamping Sets with stop clamps 10020

## Standard Manual Clam-

Order No.	T-nuts 24000	Fixture nuts 24300	Extension nuts 24600	Dished washers 25700	T-Slot scrapper 26300	Clamp Support 26000	Spanner	Thread paste
19200.W0010	-	.W0110 x 6pcs	.W0110 x 4pcs	.W0110 x 6pcs	-	.W0101 x 4pcs	16 x 1pc	1pc
19200.W0012	-	.W0112 x 4pcs	.W0112 x 4pcs	.W0112 x 6pcs	-	.W0102 x 4pcs	18 x 1pc	1pc
19200.W0014	-	.W0112 x 4pcs	.W0112 x 4pcs	.W0112 x 6pcs	.W0120 x 1pc	.W0102 x 4pcs	18 x 1pc	1pc
19200.W0016	-	.W0116 x 4pcs	.W0116 x 4pcs	.W0116 x 6pcs	.W0120 x 1pc	.W0103 x 4pcs	24 x 1pc	1pc
19200.W0018	-	.W0116 x 4pcs	.W0116 x 4pcs	.W0116 x 6pcs	.W0120 x 1pc	.W0103 x 4pcs	24 x 1pc	1pc
19200.W0020	-	.W0120 x 6pcs	.W0120 x 4pcs	.W0120 x 6pcs	.W0120 x 1pc	.W0104 x 4pcs	30 x 1pc	1pc
19200.W0022	-	.W0120 x 6pcs	.W0120 x 4pcs	.W0120 x 6pcs	.W0132 x 1pc	.W0104 x 4pcs	30 x 1pc	1pc
19200.W0024	.W0242 x 8pcs	.W0120 x 6pcs	.W0120 x 4pcs	.W0120 x 6pcs	.W0132 x 1pc	.W0104 x 4pcs	30 x 1pc	1pc

STANDARD MANUAL CLAMPING



## 19240



### Material

All parts are produced from tempered steel according to DIN or factory standards,

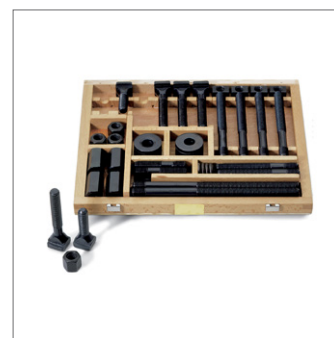
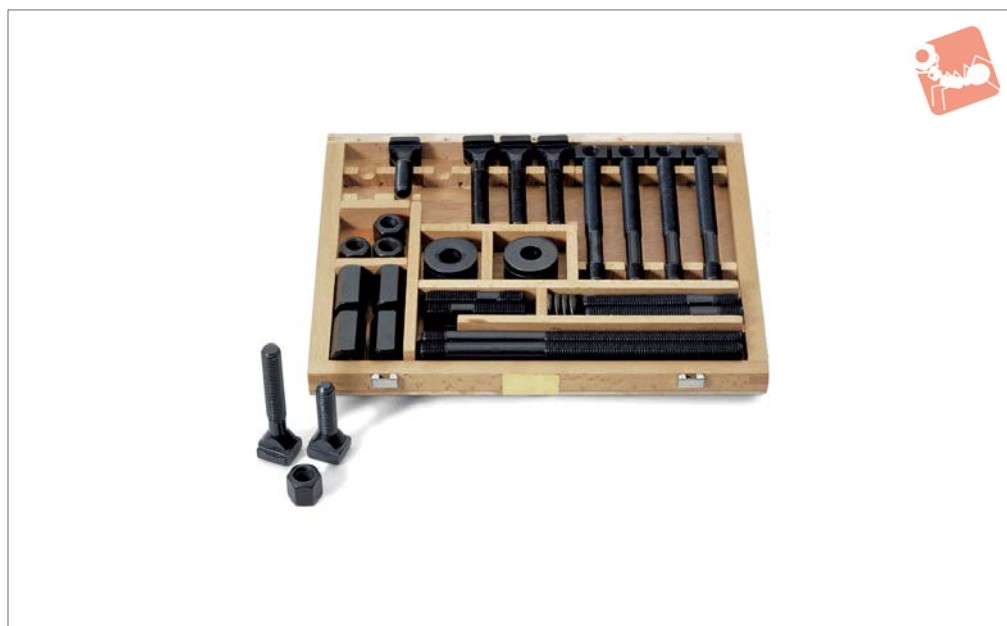
screw parts to strength class 8 or 10. Ideal for tool making, manufacturing and training facilities.

Order No.	Thread & Slot size	Step blocks <b>14000</b>	T-Bolts <b>21000</b>	Step clamps <b>10020</b>	Weight kg
<b>19240.W0014</b>	M12 x 14	.W0002 x 4pcs .W0003 x 4pcs	50mm .W0141 x 2pcs 80mm .W0143 x 4pcs 125mm .W0144 x 4pcs	.W0014 x 2pcs .W0015 x 2pcs	10.0
<b>19240.W0016</b>	M14 x 16	.W0002 x 4pcs .W0003 x 4pcs	63mm .W0161 x 2pcs 100mm .W0162 x 4pcs 160mm .W0163 x 4pcs	.W0014 x 2pcs .W0015 x 2pcs	11.1
<b>19240.W0018</b>	M16 x 18	.W0002 x 4pcs .W0003 x 4pcs	63mm .W0181 x 2pcs 80mm .W0182 x 4pcs 160mm .W0184 x 4pcs	.W0018 x 2pcs .W0019 x 2pcs	15.2
Order No.	Studs <b>21100</b>	Fixture nuts <b>24300</b>	Extension nuts <b>24600</b>	Dished washers <b>25700</b>	
<b>19240.W0014</b>	100mm .W0124 x 2pcs	.W0112 x 6pcs	.W0112 x 2pcs	.W0112 x 6pcs	
<b>19240.W0016</b>	100mm .W0142 x 2pcs 160mm .W0143 x 2pcs	.W0114 x 6pcs	.W0114 x 2pcs	.W0114 x 6pcs	
<b>19240.W0018</b>	125mm .W0164 x 4pcs 200mm .W0166 x 2pcs	.W0116 x 6pcs	.W0116 x 4pcs	.W0116 x 6pcs	



# T-Bolt Set in wooden box

# Standard Manual Clam-



**29000**

STANDARD MANUAL CLAMPING

### Technical Notes

Set no 29000.W0020 contains extra studs  
no. 21100 (2 x 80 mm, 4 x 125 mm) in

place of T-bolts no. 21000.

Order No.	Thread & Slot size	Box l x w x h	T-Bolts 21000	Studs 21100	Weight g
29000.W0010	M10x10	254x188x32	40mm .W0101 x 2pcs 63mm .W0102 x 4pcs 100mm.W0103 x 4pcs	50mm .W0101 x 4pcs 80mm .W0102 x 4pcs 200mm .W0106 x 4pcs	2000
29000.W0012	M12x12	276x234x36	50mm .W0101 x 4pcs 80mm .W0102 x 4pcs 200mm .W0106 x 4pcs	63mm .W0122 x 4pcs 100mm .W0124 x 4pcs 200mm .W0127 x 4pcs	3200
29000.W0014	M12x14	278x234x36	50mm .W0141 x 2pcs 80mm .W0143 x 4pcs	63mm .W0122 x 4pcs 100mm .W0124 x 4pcs 125mm .W0125 x 4pcs 200mm .W0127 x 4pcs	3500
29000.W0016	M14x16	317x239x44	63mm .W0161 x 2pcs 100mm .W0162 x 4pcs	63mm .W0141 x 4pcs 100mm .W0142 x 4pcs 160mm .W0143 x 4pcs 250mm .W0145 x 4pcs	5400
29000.W0017	M16x16	339x294x48	63mm .W0165 x 2pcs 100mm .W0167 x 4pcs 160mm .W0168 x 4pcs	80mm .W0162 x 4pcs 125mm .W0164 x 4pcs 250mm .W0167 x 4pcs	7400
29000.W0018	M16x18	339x294x48	63mm .W0181 x 2pcs 100mm .W0183 x 4pcs	80mm .W0162 x 4pcs 125mm .W0164 x 4pcs 160mm .W0165 x 4pcs 250mm .W0167 x 4pcs	7400
29000.W0020	M18x20	358x342x56	-	80mm .W0181 x 6pcs 125mm .W0182 x 8pcs 200mm .W0184 x 4pcs 315mm .W0186 x 4pcs	11000
29000.W0022	M20x22	358x342x56	80mm .W0201 x 2pcs 125mm .W0203 x 4pcs	80mm .W0201 x 4pcs 125mm .W0202 x 4pcs 200mm .W0204 x 4pcs 315mm .W0206 x 4pcs	13500
29000.W0028	M24x28	444x409x72	100mm .W0281 x 2pcs 160mm .W0283 x 4pcs	100mm .W0241 x 4pcs 160mm .W0243 x 4pcs 250mm .W0245 x 4pcs 400mm .W0247 x 4pcs	23600



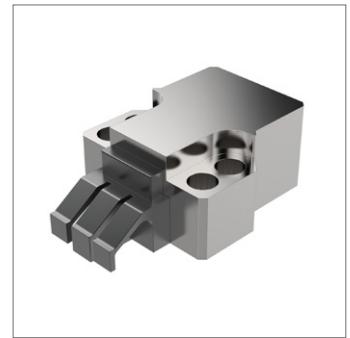
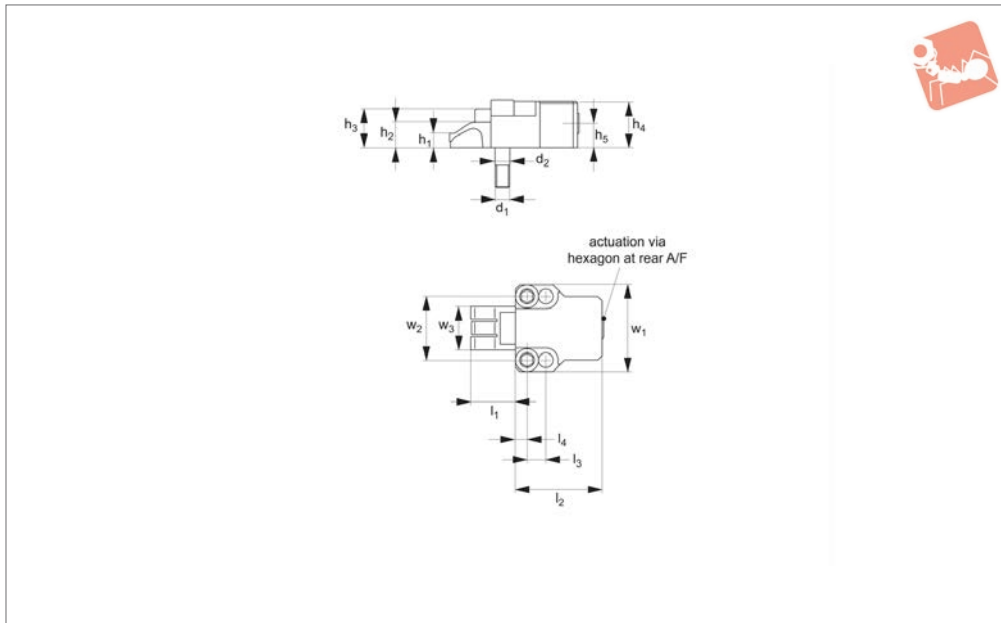
Order No.	T-nuts 24000	Fixture nuts 24330	Extension nuts 24600	Dished washers 25700	Spherical washer 25100	Plain washer 25000
29000.W0010	-	.W0110 x 4pcs	.W0110 x 4pcs	.W0110 x 4pcs	.W0110 x 4pcs	.W0110 x 4pcs
29000.W0012	-	.W0112 x 4pcs	.W0112 x 4pcs	.W0112 x 4pcs	.W0112 x 4pcs	.W0112 x 4pcs
29000.W0014	.W0143 x 4pcs	.W0112 x 4pcs	.W0112 x 4pcs	.W0112 x 4pcs	.W0112 x 4pcs	.W0112 x 4pcs
29000.W0016	.W0164 x 4pcs	.W0114 x 4pcs	.W0114 x 4pcs	.W0114 x 4pcs	.W0114 x 4pcs	.W0114 x 4pcs
29000.W0017	-	.W0116 x 4pcs	.W0116 x 4pcs	.W0116 x 4pcs	.W0116 x 4pcs	.W0116 x 4pcs
29000.W0018	.W0185 x 4pcs	.W0116 x 4pcs	.W0116 x 4pcs	.W0116 x 4pcs	.W0116 x 4pcs	.W0116 x 4pcs
29000.W0020	.W0202 x 10pcs	.W0118 x 4pcs	.W0118 x 4pcs	-	-	.W0118 x 10pcs
29000.W0022	.W0223 x 4pcs	.W0120 x 4pcs	.W0120 x 4pcs	.W0120 x 4pcs	.W0120 x 4pcs	.W0120 x 4pcs
29000.W0028	.W0284 x 4pcs	.W0124 x 4pcs	.W0124 x 4pcs	.W0124 x 4pcs	.W0124 x 4pcs	.W0124 x 4pcs





# 2.2 Ton Finger Clamp - Smooth Face movable jaw

## Heavy-Duty Side Clamping



**11040**

HEAVY-DUTY SIDE CLAMPING

**Material**

Hardened steel, with spring steel clamping element.

**Technical Notes**

A low height, very powerful compact clamp. These clamps have a unique sideways and

downwards clamping action.

**Tips**

Provided with specially ground location bolts  $\varnothing 10,2 - M10$ , allowing for precise positioning. For mounting there are 2 tapped holes at  $44,00 \pm 0,005\text{mm}$  centres, M10 with depth of 28mm, counterbore

10,2 (H6) with depth of 14mm.

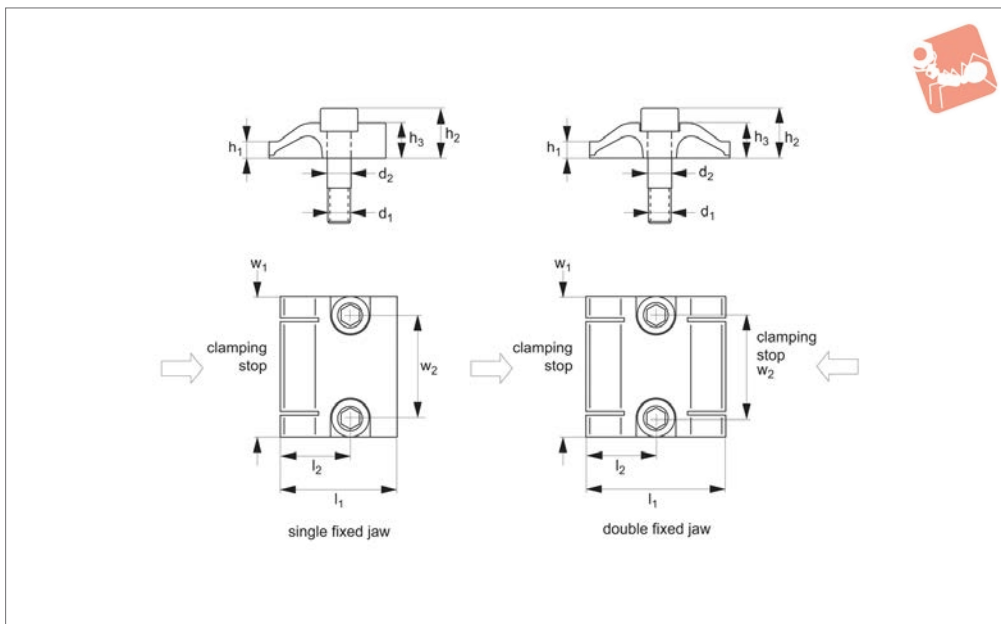
**Important Notes**

When used in conjunction with fixed stop, part nos. 11041 or 11043, these clamps achieve a positive downforce on both faces of the workpiece - a unique feature.

Order No.	Clamping height $h_1$		Clamping stroke $l_1$		$d_1$	$d_2$ tol. h6	$h_2$	$h_3$	$h_4$	$h_5$	$l_2$
11040.W0025	10		18-34		M10	10.2	18	27	33	17	60
Order No.	$l_3$	$l_4$	$l_5$	$w_1$	$w_2$	$w_3$	A/F	Clamping torque Nm		Clamping force kN	
11040.W0025	13	8	18	60	44	30	8	50		22	



### 11041



#### Material

Spring steel.

#### Technical Notes

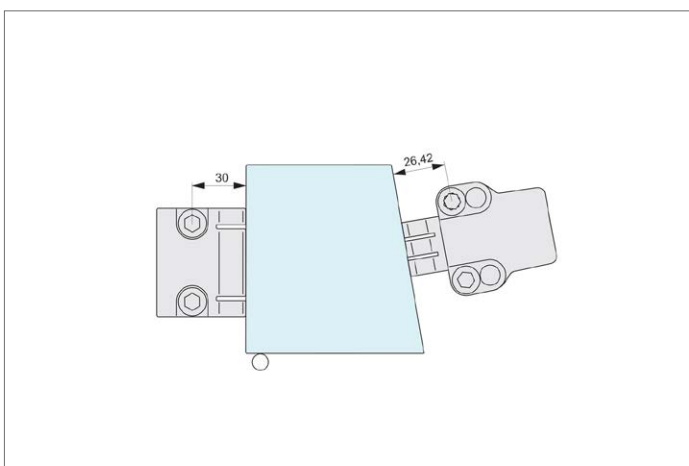
These stops have a unique sideways and downwards action.

#### Tips

Provided with specially ground location bolts  $\text{Ø}10,2 - \text{M}10$ , allowing for precise positioning. Precision of the screws also allows dimension  $l_2$  to be used as a useful

clamping datum. For mounting there are 2 tapped holes at  $44,00 \pm 0,005\text{mm}$  centres,  $\text{M}10$ , with depth of 28mm, counterbore  $10,2 (\text{H}6)$ , with depth of 14mm.

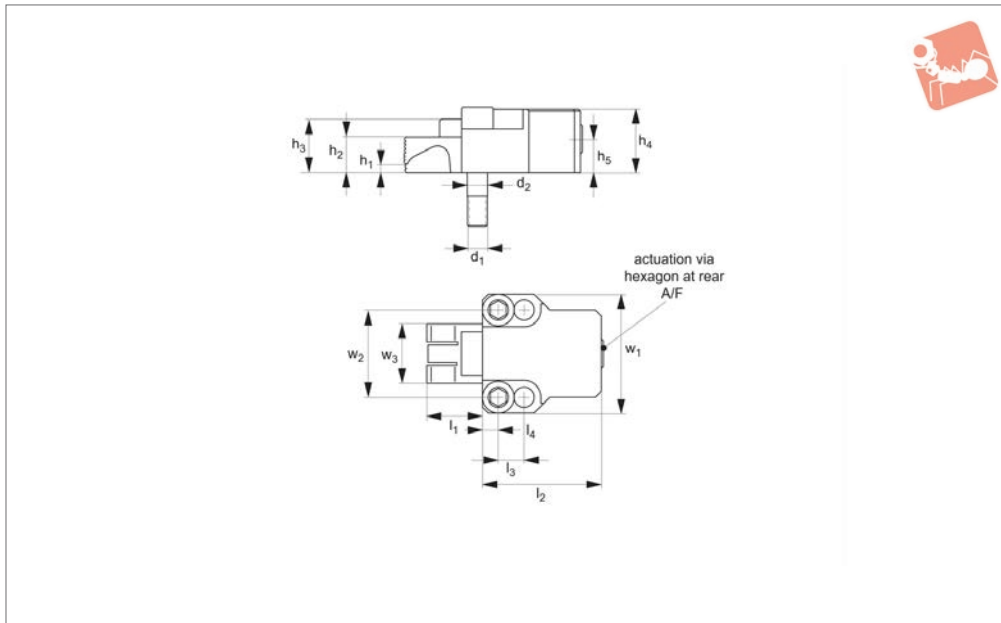
Order No.	Type	Clamping height $h_1$	$d_1$	$d_2$ tol. h6	$h_2$	$h_3$	$l_1$	$l_2$	$w_1$	$w_2$
11041.W0080	Single	7	M10	10.2	22	15	50	30	60	44
11041.W0082	Double	7	M10	10.2	22	15	60	30	60	44





## 2.2 Ton Clamp - Serrated Face movable jaw

## Heavy-Duty Side Clamping



# 11042

HEAVY-DUTY SIDE CLAMPING

### Material

Hardened steel, with spring steel clamping element.

### Technical Notes

A low height, very powerful compact clamp.

These clamps exert a sideways and down-

wards clamping action.

### Tips

Provided with specially ground location bolts  $\varnothing 10,2 - M10$ , allowing for precise positioning.

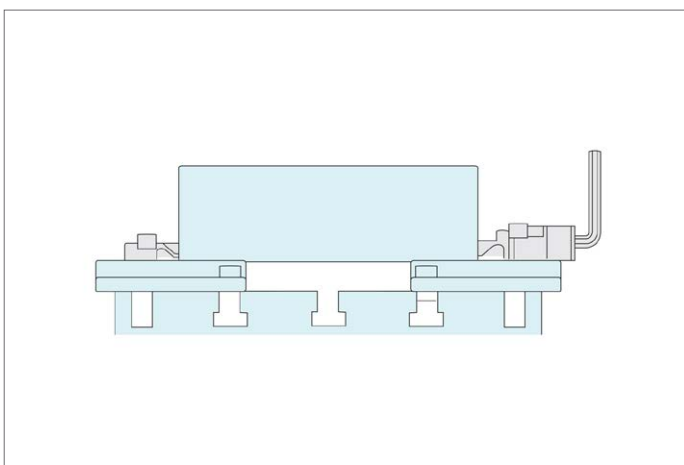
For mounting there are 2 tapped holes at  $44,00 \pm 0,005\text{mm}$  centres, M10 with depth

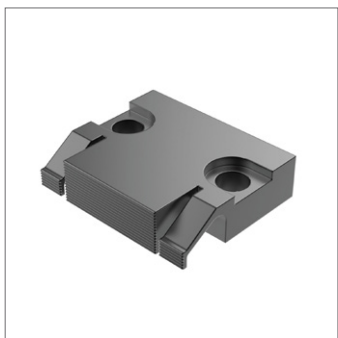
of 28mm, counterbore 10,2 (H6) with depth of 14mm.

### Important Notes

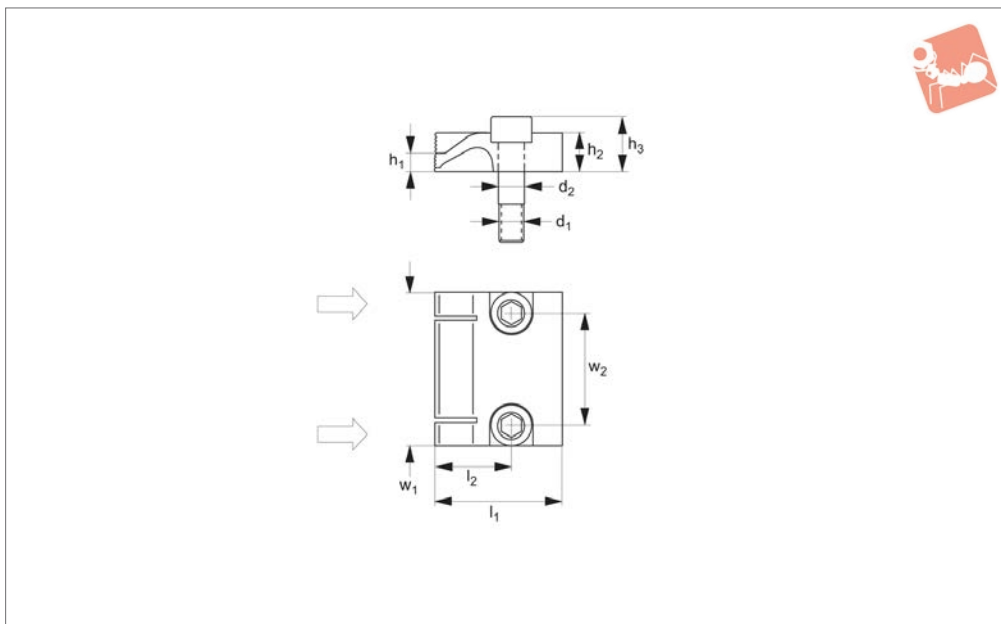
When used in conjunction with fixed stop (part nos. 11041 or 11043) these clamps achieve a positive downforce on both faces of the workpiece - a unique feature.

Order No.	Clamp height $h_2$	Clamp stroke $l_1$	$d_1$	$d_2$ tol. h6	$h_1$	$h_3$	$h_4$	$h_5$	$l_2$	$l_3$	$l_4$	$w_1$	$w_2$	$w_3$	A/F	Torque to Nm max.	Clamping force kN max.
11042.W0027	18	18-34	M10	10,2	10	27	33	17	60	13	8	60	44	30	8	50	22





### 11043



**Material**  
Spring steel.

**Technical Notes**  
These stops have a unique sideways and

downwards action.

**Tips**  
Provided with specially ground location bolts  $\varnothing 10,2 - M10$ , allowing for precise

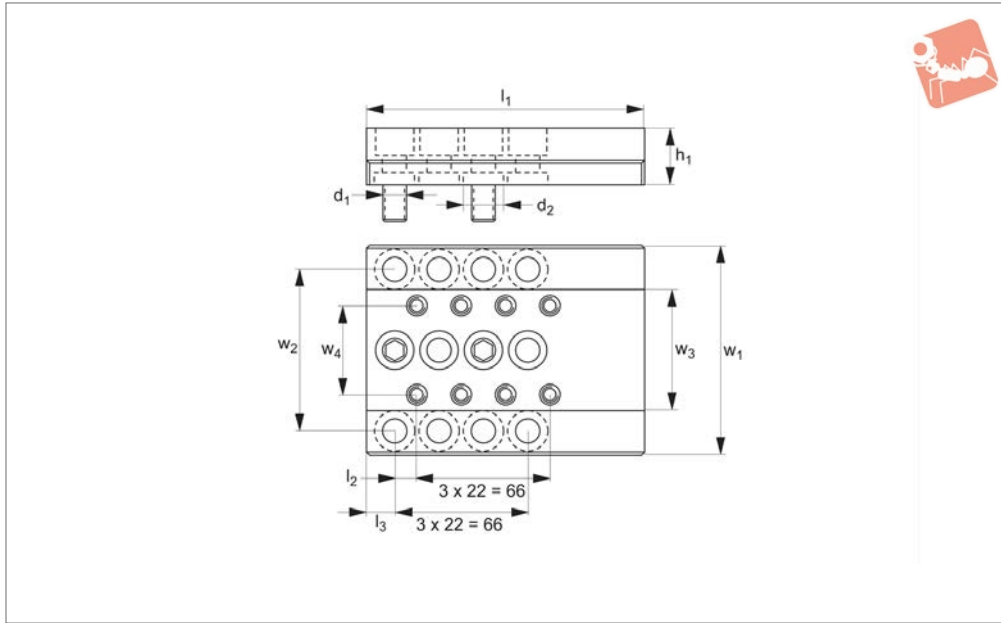
positioning. For mounting - 2 tapped holes at  $44,00 \pm 0,005\text{mm}$  centres, M10 with depth of 28mm, counterbore 10,2 (H6) with depth of 14mm.

Order No.	Type	Clamping height $h_1$	$d_1$	$d_2$ tol. h6	$h_2$	$h_3$	$l_1$	$l_2$	$w_1$	$w_2$
11043.W0081	Serrated Face	7	M10	10.2	15	22	50	30	60	44



# Base Plates Finger - Short for 2.2 ton clamps

## Heavy-Duty Side Clamping



# 11045

HEAVY-DUTY SIDE CLAMPING

### Material

Steel, hardened, with ground faces.

### Technical Notes

For T-slot tables and fixture plates.

### Tips

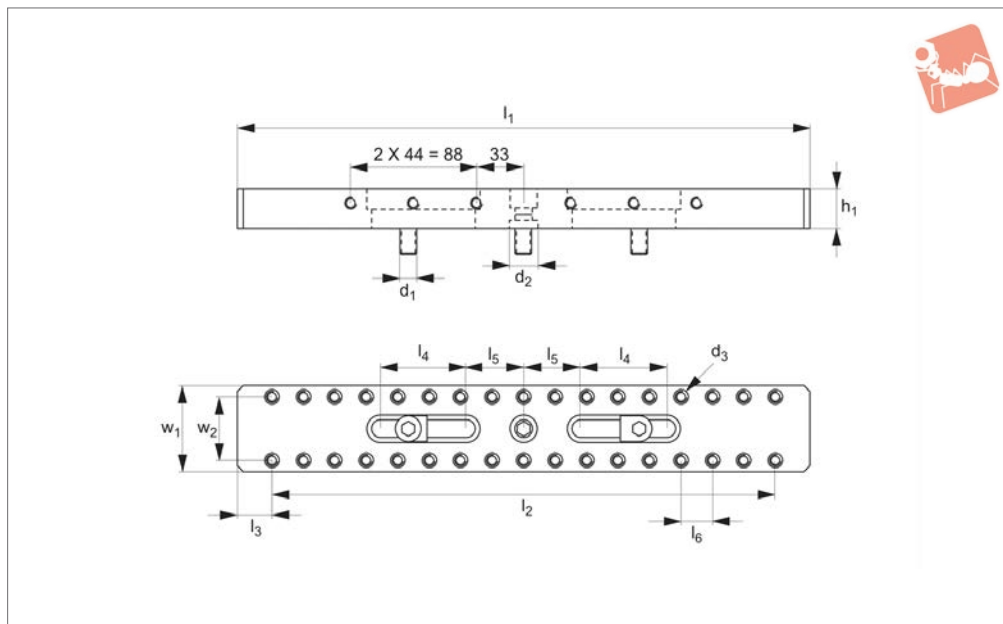
Provided with 3 x M12 fixing screws and centring locator.

For use with parts 11040-11043.

Order No.	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>
11045.W0016	M12	20	28	138	11	14	104	80	60	44



## 11046



### Material

Steel, hardened, with ground faces.

### Technical Notes

For T-slot tables and fixture plates.

### Tips

Provided with 3 x M12 fixing screws and centring locator.

For use with parts 11040-11043.

Order No.	$d_1$	$d_2$	$d_3$	$h_1$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$w_1$	$w_2$
11046.W0015	M12	20	Ø10,2 - M10	28	400	352	60	40	24	22	60	44



# 2.2 Ton Finger Clamps

vice sets

# Heavy-Duty Side Clamping



## 11050

HEAVY-DUTY SIDE CLAMPING

### Material

Clamp rail: steel, hardened and ground faces.  
Clamps: hardened steel, with spring steel clamping element.  
Stops: spring steel.

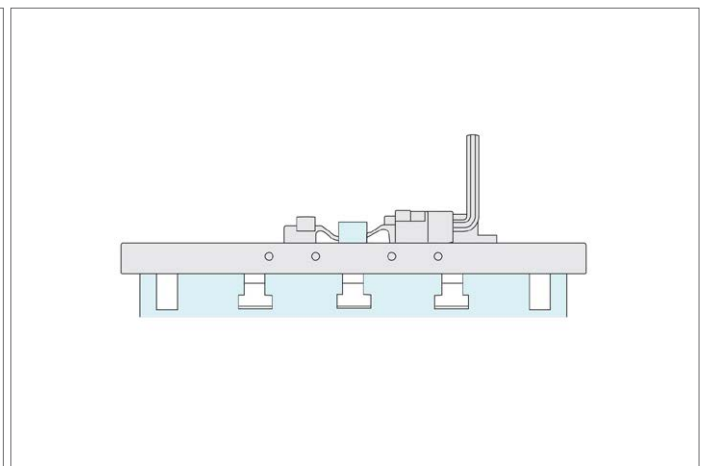
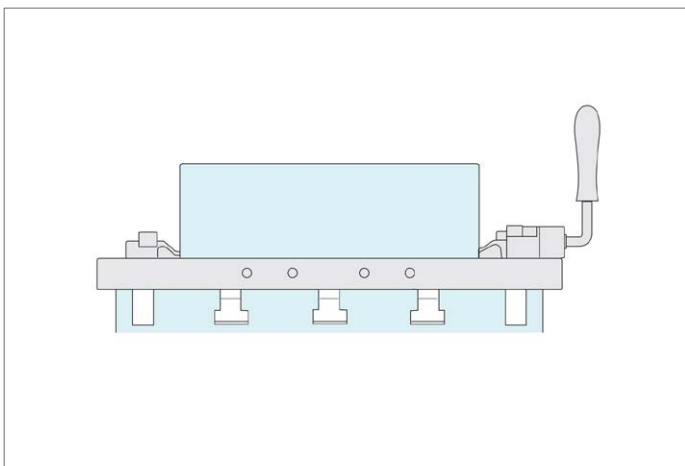
### Technical Notes

A low height, very powerful compact clamp system.  
These clamps have a unique sideways and downwards clamping action.  
Maximum workpiece capacity 280mm.

### Tips

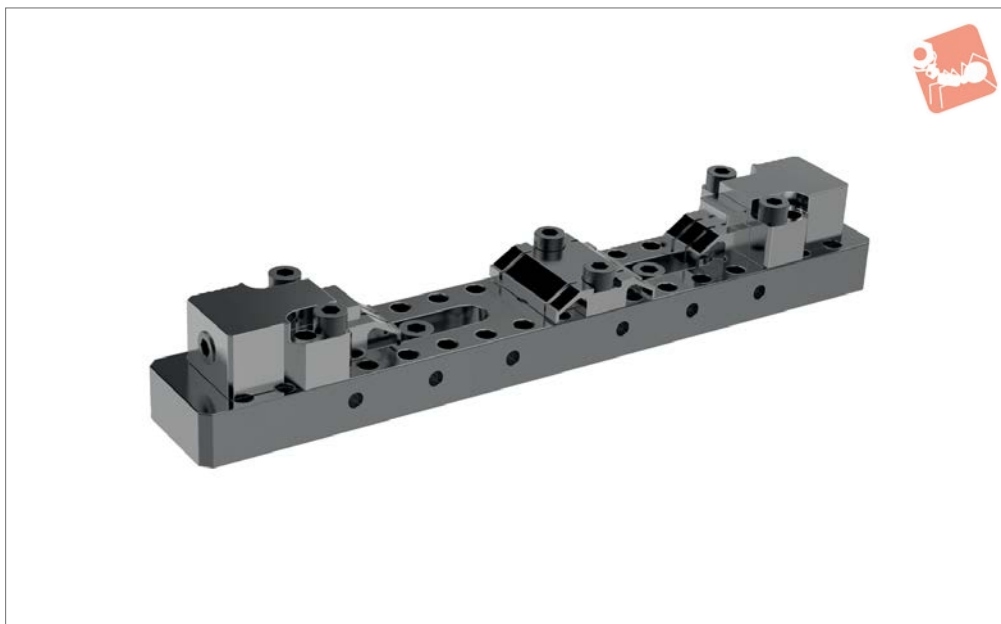
Provided with specially ground location bolts  $\varnothing 10,2 - M10$ .  
Also available with serrated jaws.

Order No.	Type	Base	Clamp	Stop
11050.W0004	Standard Vice Set	1 pc 11046.W0015	1 pc 11040.W0025	1 pc 11041.W0080





### 11051



#### Material

Clamp rail: steel, hardened, with ground faces.  
Clamps: hardened steel, with spring steel clamping element.  
Stops: spring steel.

#### Technical Notes

A low height, very powerful compact

#### clamp.

These clamps have a unique sideways and downwards clamping action.  
Maximum workpiece capacity 107mm when used as a double vice, or 280mm when used as a single vice.

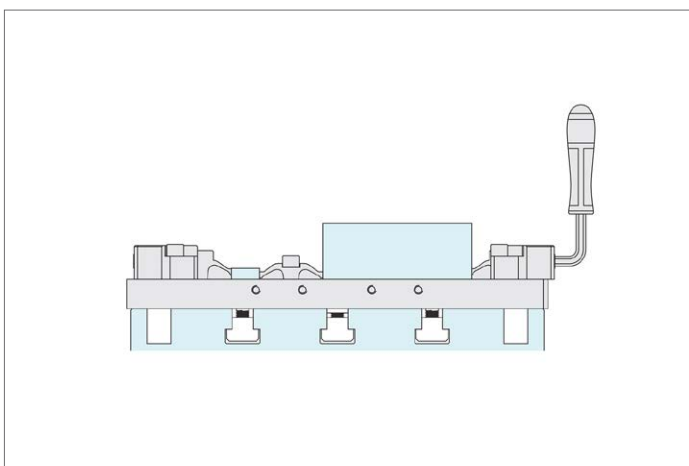
#### Tips

Provided with specially ground location

bolts  $\varnothing 10,2 - M10$ .

Also available with serrated jaws.

Order No.	Type	Base	Clamp	Stop
11051.W0002	Double Vice Set	1 pc 11046.W0015	2 pcs 11040.W0025	1 pc 11041.W0082







## 2.2 Ton Finger Clamps modular vice set

## Heavy-Duty Side Clamping



# 11052

HEAVY-DUTY SIDE CLAMPING

### Material

Clamp rail: steel, hardened, with ground faces.

Clamps: hardened steel, with spring steel clamping element.

Stops: spring steel.

### Technical Notes

A low height, very powerful compact clamp.

These clamps have a unique sideways and downwards clamping action.

### Tips

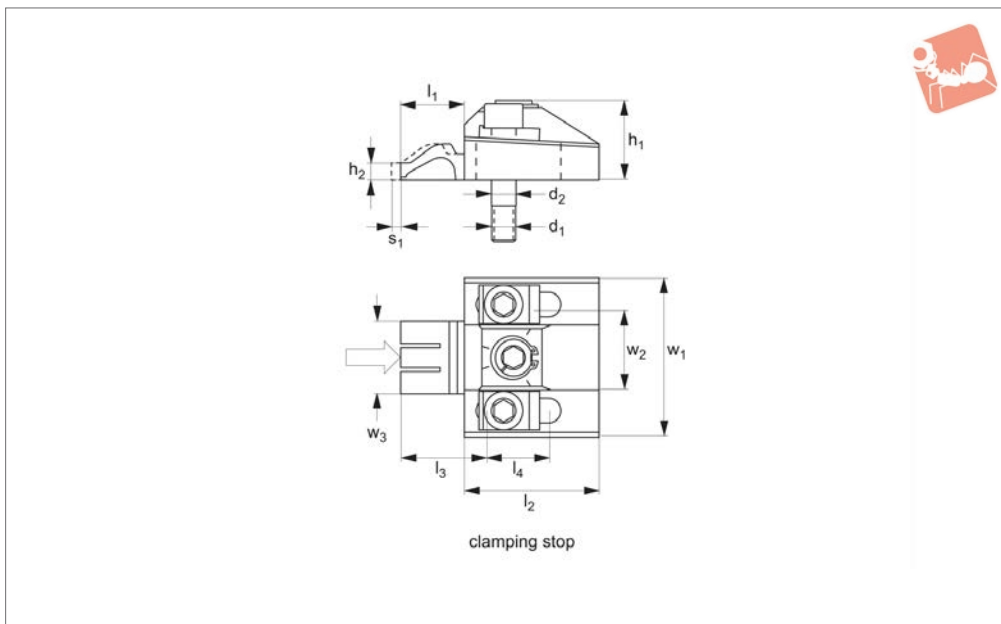
Provided with specially ground location bolts  $\varnothing 10,2 - M10$ .

Also available with serrated jaws.

Order No.	Type	Base	Clamp	Stop
11052.W0006	Modular Vice Set	2 pcs 11045.W0016	1 pc 11040.W0025	1 pc 11041.W0080



**11070**



**Material**

Hardened steel, with spring steel clamping element.

**Technical Notes**

A low height, very powerful compact

**clamp.**

These clamps have a unique sideways and downwards clamping action.

**Tips**

Provided with specially ground location

bolts  $\varnothing 10,2$  - M10, screws, washers and clamping key. For mounting there are 2 tapped holes at  $44,00 \pm 0,005$ mm centres, M10 with depth of 28mm, counterbore 10,2 (H6) with depth of 14mm.

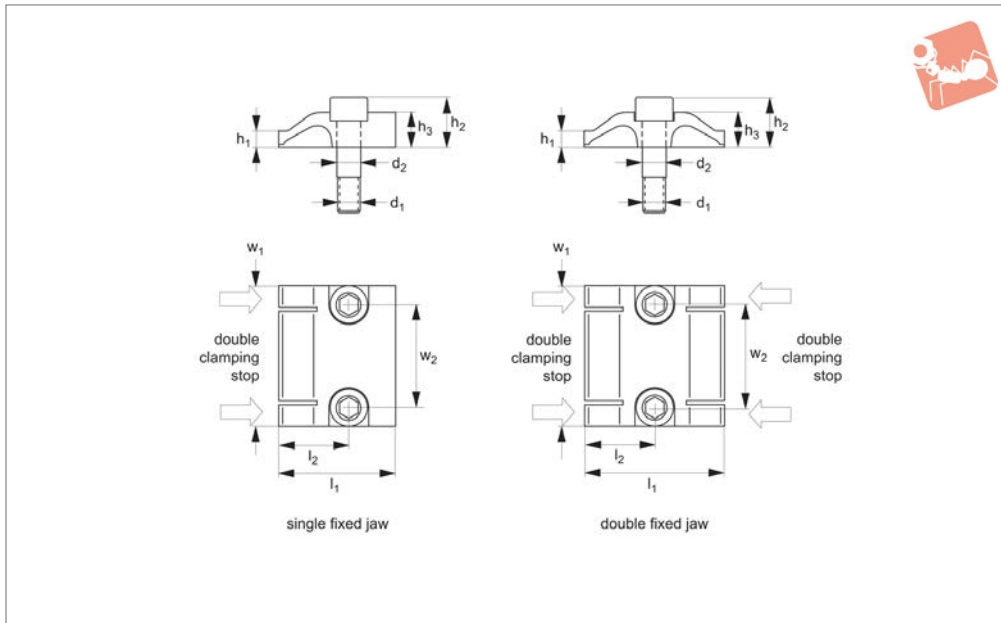
Order No.	Clamping adjustment $l_3$	Clamping height $h_2$	Clamping stroke $s_1$	$d_1$	$d_2$ tol. h6	$h_1$	$l_1$	$l_2$	$l_4$	$w_1$	$w_2$	$w_3$	Torque to Nm max.	Clamping force kN max.
11070.W0020	25	7	1,6	M10	10,2	33	26,5	56	36,5	66	44	30	70	12





# 1.2 Ton Fixed Stops for finger clamps

## Heavy-Duty Side Clamping



**11071**

HEAVY-DUTY SIDE CLAMPING

**Material**

Spring steel.

**Technical Notes**

These stops have a unique sideways and

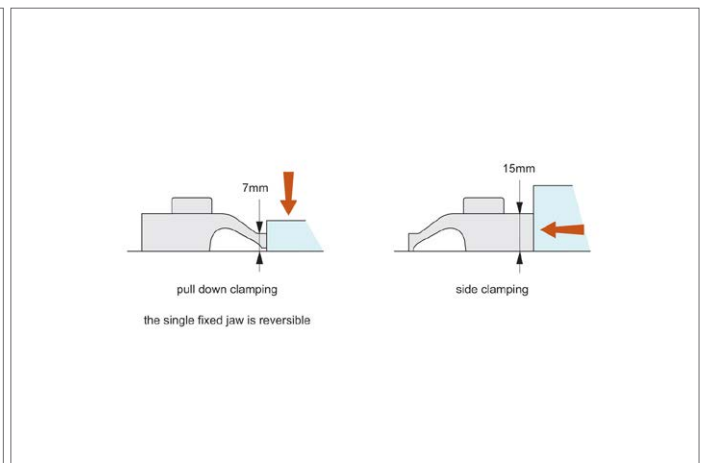
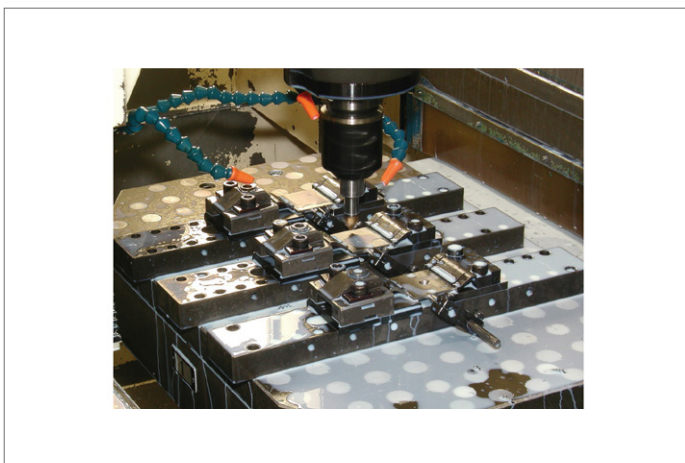
downwards action.

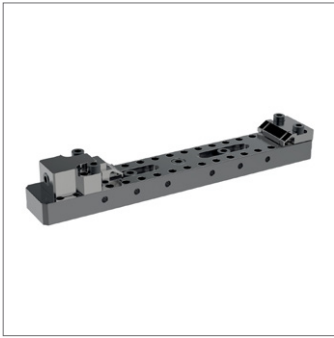
**Tips**

Provided with specially ground location bolts  $\varnothing 10,2 - M10$ . For mounting there are

2 tapped holes at  $44,00 \pm 0,005\text{mm}$  centres, M10 with depth of 28mm, counterbore 10,2 (H6) with depth of 14mm.

Order No.	Type	Clamping height $h_1$	$d_1$	$d_2$	$h_2$	$h_3$	$l_1$	$l_2$	$w_1$	$w_2$
11071.W0080	Single	7	M10	10.2	22	15	50	30	60	44
11071.W0082	Double	7	M10	10.2	22	15	60	30	60	44





**11075**



**Material**

Steel, hardened, with ground faces.

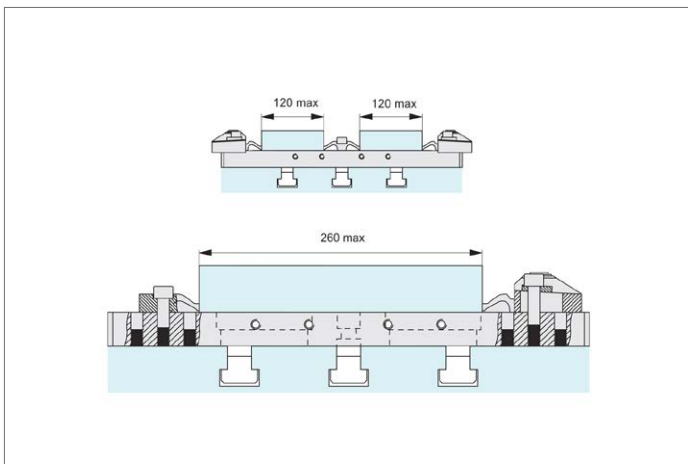
**Technical Notes**

For T-slot tables and fixture plates.

**Tips**

Provided with 2 x M12 fixing screws and centring locator.

Order No.	Rail	Stop	Type	Clamp
11075.W0010	1 pc 11046.W00015	1 pc 11071.W0080	Vice Set	1 pc 11070.W0020





# 1.2 Ton Finger Clamps modular vice set

## Heavy-Duty Side Clamping



### 11076

HEAVY-DUTY SIDE CLAMPING

#### Material

Steel, hardened, with ground faces.

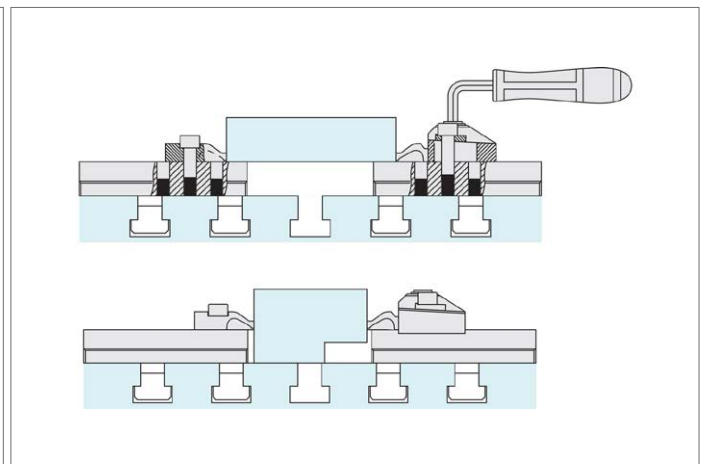
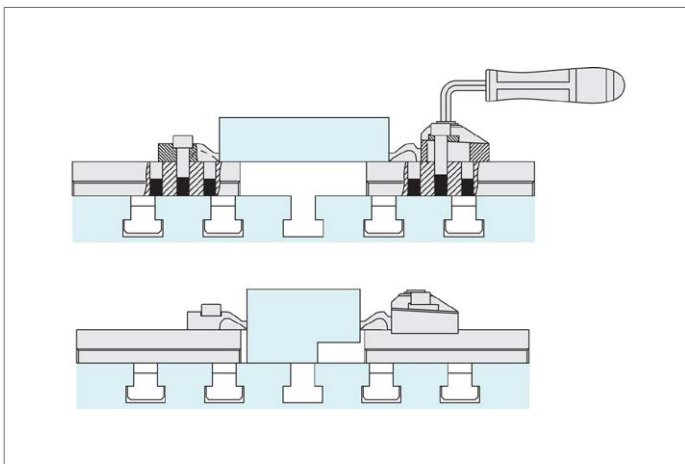
#### Technical Notes

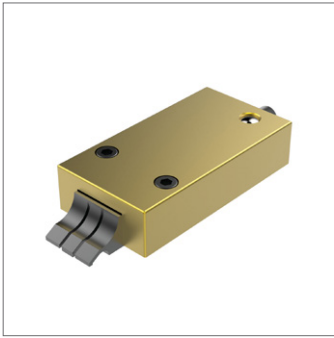
For T-slot tables and fixture plates.

#### Tips

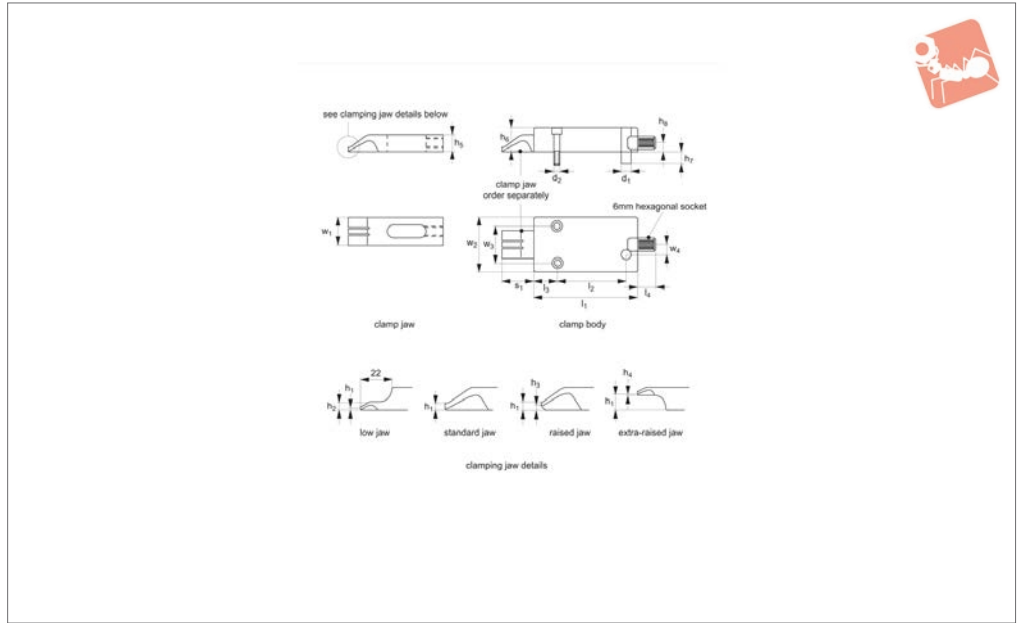
Provided with 3 x M12 fixing screws and centring locator.

Order No.	Rail	Stop	Type	Clamp
11076.W0014	2 pc 11045.W0016	1 pc 11071.W0080	Modular Vice Set	1 pc 11070.W0020





## 11080



### Material

Aluminium body, with spring steel clamping element.

### Technical Notes

A low height, very powerful compact

clamp.

These clamps have a unique sideways and downwards clamping action.

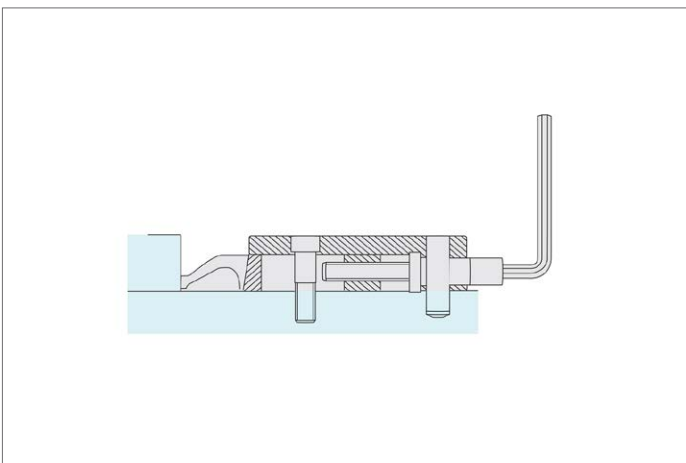
### Tips

Clamp jaws and clamp body sold separa-

tely. To order please select clamp body 11080.W0090 then most suitable clamp jaw for your application - (part nos. 11080.W0610 to 11080.W0625).

Order No.	Type	Jaw height $h_1$	Clamp stroke	$s_1$	$w_1$	$d_1$	$d_2$
11080.W0090	Clamp Body	-	20	18 to 38	-	M 6	10
11080.W0610	Standard Jaw	4.7	-	-	28	-	-
11080.W0615	Low Jaw	2.5	-	-	28	-	-
11080.W0620	Raised Jaw	8.0	-	-	28	-	-
11080.W0625	Extra-raised Jaw	13.5	-	-	28	-	-

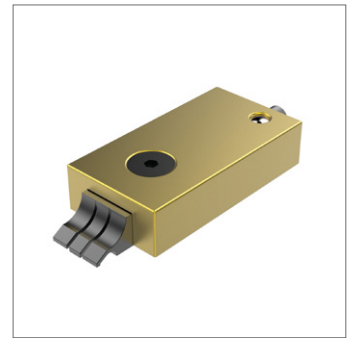
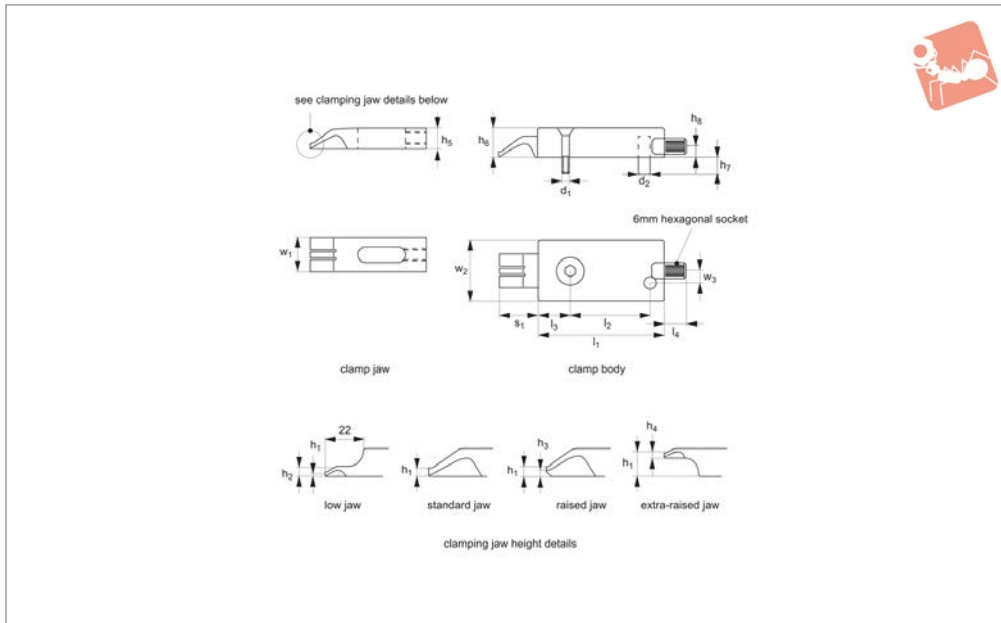
Order No.	$h_2$	$h_3$	$l_1$	$l_2$	$h_4$	$l_3$	$h_5$	$l_4$	$h_6$	$h_7$	$h_8$	$w_2$	$w_3$	$w_4$
11080.W0090	-	-	104	69.5	-	23	-	18	24	9	12	55	37	10
11080.W0610	-	-	-	-	-	-	17	-	-	-	-	-	-	-
11080.W0615	6.0	-	-	-	-	-	17	-	-	-	-	-	-	-
11080.W0620	-	4.0	-	-	-	-	17	-	-	-	-	-	-	-
11080.W0625	-	-	-	-	2.5	-	17	-	-	-	-	-	-	-





# 1.0 Ton Finger Clamps for T-slots

## Heavy-Duty Side Clamping



# 11081

HEAVY-DUTY SIDE CLAMPING

### Material

Jaw: spring steel.  
Body: aluminium.

### Technical Notes

These clamps have a unique sideways and

downwards action.

Please see part no. 11082 for fixed stops.

### Tips

Provided location bolts - M10, M12.  
Clamp and body supplied separately. To

order please select clamp body (part nos. 11081.W0065 or .W0068) then the clamping jaw most suitable for your application (11081.W0610 to .W0625).

Order No.	Type	Clamp stroke	s <sub>1</sub>	w <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>
11081.W0065	Clamp Body M10	20	18 to 38	-	M10	10	-	-	-	104	69.5
11081.W0068	Clamp Body M12	20	18 to 38	-	M12	10	-	-	-	104	69.5
11081.W0610	Standard Jaw	-	-	28	-	-	2.5	-	-	-	-
11081.W0615	Low Jaw	-	-	28	-	-	4.7	6.0	-	-	-
11081.W0620	Raised Jaw	-	-	28	-	-	8.0	-	4.0	-	-
11081.W0625	Extra-raised Jaw	-	-	28	-	-	13.5	-	-	-	-

Order No.	h <sub>4</sub>	l <sub>3</sub>	h <sub>5</sub>	l <sub>4</sub>	h <sub>6</sub>	h <sub>7</sub>	h <sub>8</sub>	w <sub>2</sub>	w <sub>3</sub>	Clamping torque Nm	Clamping force kN
11081.W0065	-	23	-	1.8	24	9	12	55	10	12	10
11081.W0068	-	23	-	1.8	24	9	12	55	10	12	10
11081.W0610	-	-	17	-	-	-	-	-	-	-	-
11081.W0615	-	-	17	-	-	-	-	-	-	-	-
11081.W0620	-	-	17	-	-	-	-	-	-	-	-
11081.W0625	2.5	-	17	-	-	-	-	-	-	-	-

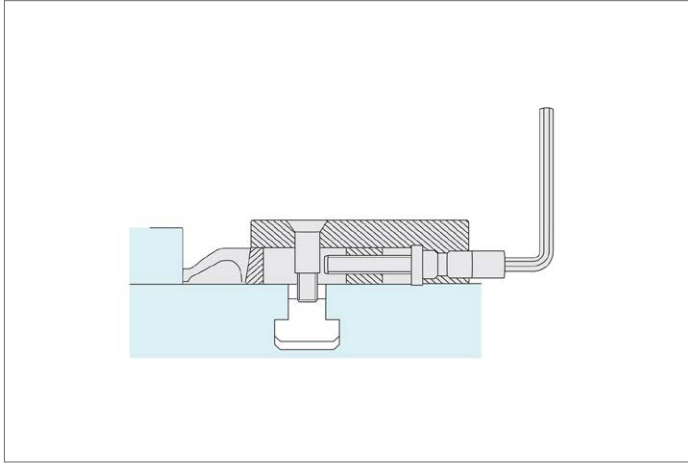
# Heavy-Duty Side Clamping



# 1.0 Ton Finger Clamps for T-slots



HEAVY-DUTY SIDE CLAMPING

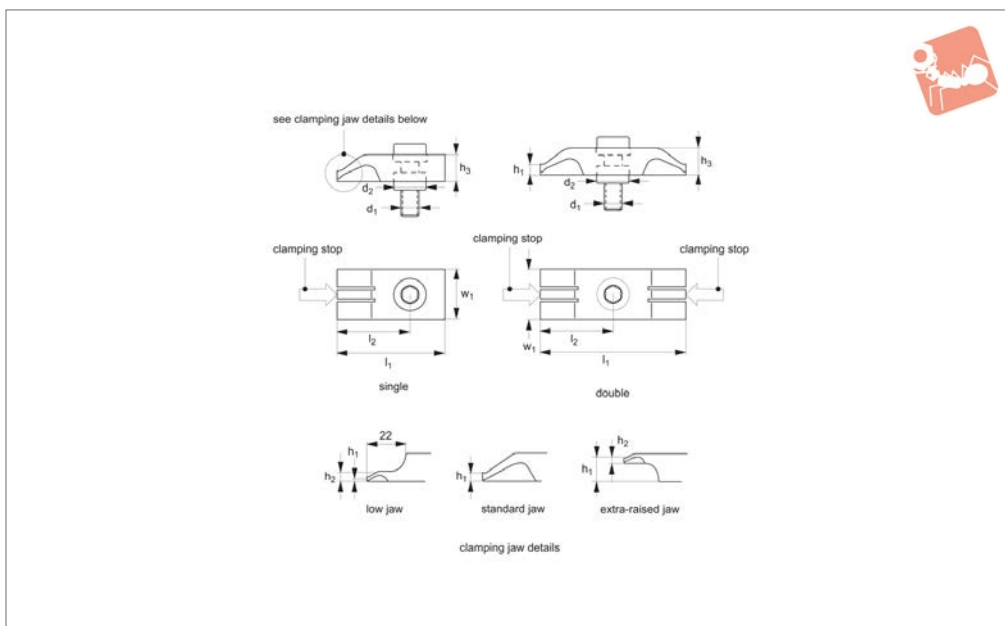






# 1.0 Ton Fixed Stops for 1 ton finger clamps

## Heavy-Duty Side Clamping



# 11082

HEAVY-DUTY SIDE CLAMPING

### Material

Hardened steel, with spring steel clamping element.

### Technical Notes

A low height, very powerful compact clamp stop.

### Tips

Supplied with clamping screw and Ø18 centering bush. When used longitudinally along a T-slot it is advisable to use anti-slip T-nuts or additional stops to resist the force exerted by the clamping element.

For use with part nos. 11080 and 11081.

Fitting instruction:

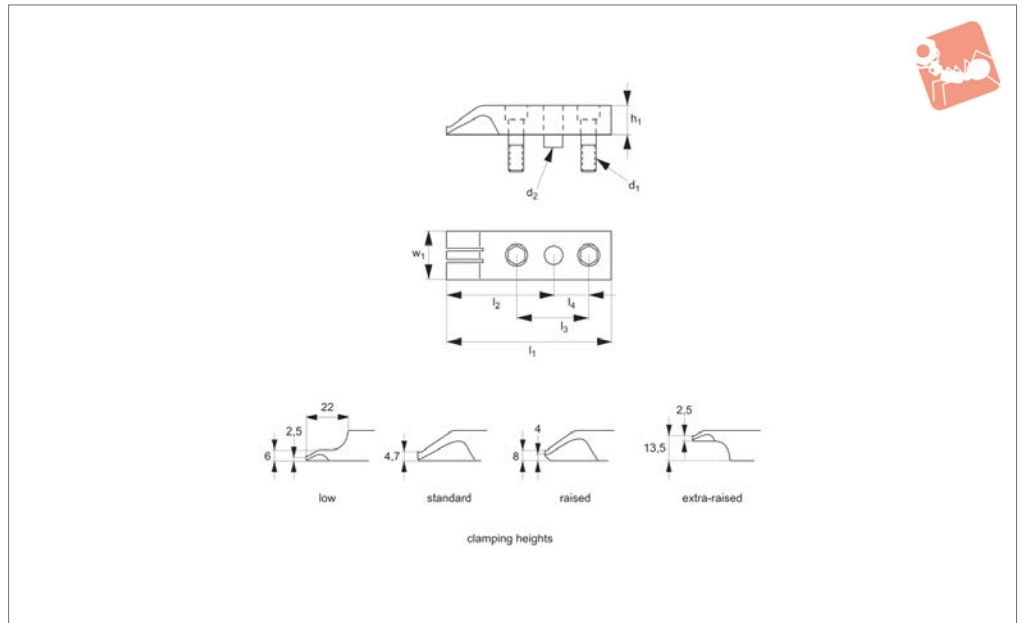
Tap M10/M12 counterbore 18,00 (H7) with depth 5mm.

Order No.	Type	Jaw height $h_1$	Jaw type	$w_1$	$d_1$	$d_2$	$h_2$	$h_3$	$l_1$	$l_2$
11082.W0140	Single	4.7	Standard	28	M10	18	-	15	60	40
11082.W0141	Single	4.7	Standard	28	M12	18	-	15	60	40
11082.W0142	Single	13.5	Extra-raised	28	M10	18	2.5	15	60	40
11082.W0143	Single	2.5	Low	28	M10	18	6	15	60	40
11082.W0144	Single	2.5	Low	28	M12	18	6	15	60	40
11082.W0145	Double	6.0	Standard	28	M10	18	-	15	80	40
11082.W0147	Double	6.0	Standard	28	M12	18	-	15	80	40





### 11083



#### Material

Spring steel.

#### Technical Notes

These stops have a unique sideways and

downward action.

For use on support bars, part no. 11086.

Supplied with M6 screws and dowel pin.

Order No.	Type	w <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>
11083.W0120	Low Jaw	28	M 6	8	17	95	57.7	40	20
11083.W0125	Standard Jaw	28	M 6	8	17	95	57.7	40	20
11083.W0130	Raised Jaw	28	M 6	8	17	95	57.7	40	20
11083.W0135	Extra-raised Jaw	28	M 6	8	17	95	57.7	40	20



# 1.0 Ton Finger Clamp Sets

## Heavy-Duty Side Clamping



### 11085

HEAVY-DUTY SIDE CLAMPING

#### Material

Support bar: steel, hardened, with ground faces.

Clamping jaws: spring steel.

Body: aluminium.

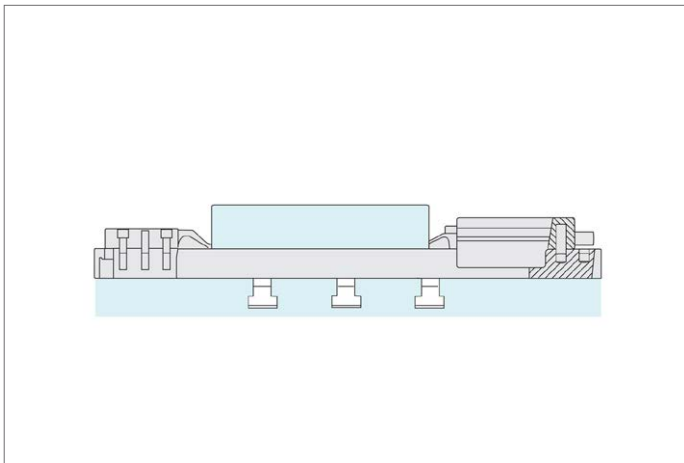
#### Tips

Maximum workpiece capacity 232mm when

used as a single vice.

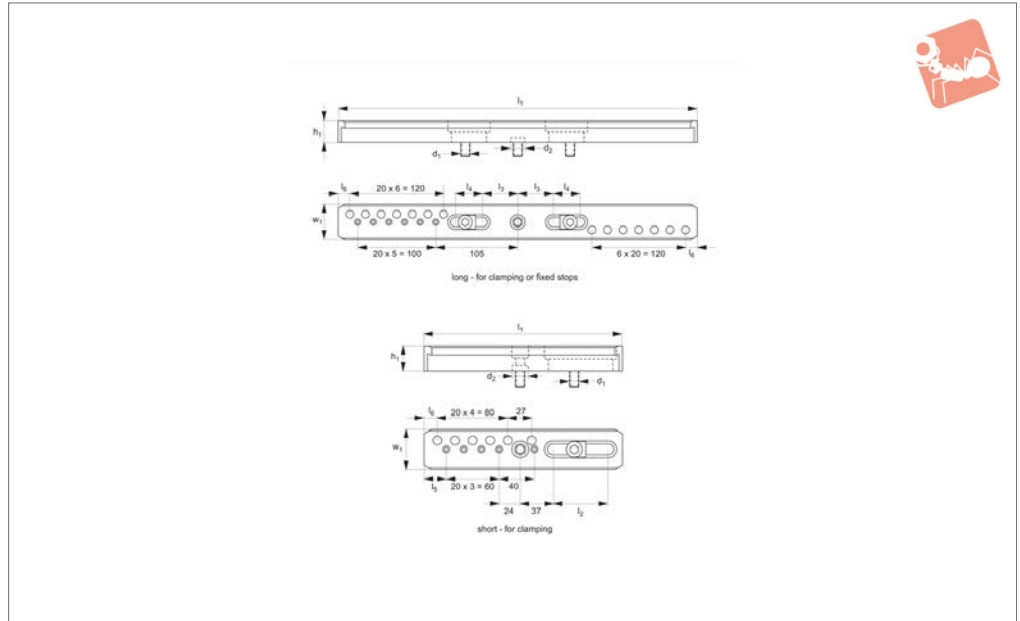
Supplied with M12 mounting screws.

Order No.	Type	Rail	Clamp body	Clamp jaw	Fixed clamp
11085.W0455	Set	1 pc 11086.W0040	1 pc 11080.W0090	1 pc 11080.W0610	1 pc 11083.W0125





## 11086



### Material

Steel, hardened, with ground faces.

for locator  $d_2$  tap M12 counterbore 18,00  
H7 + 5mm deep.

### Technical Notes

Fitting instructions:

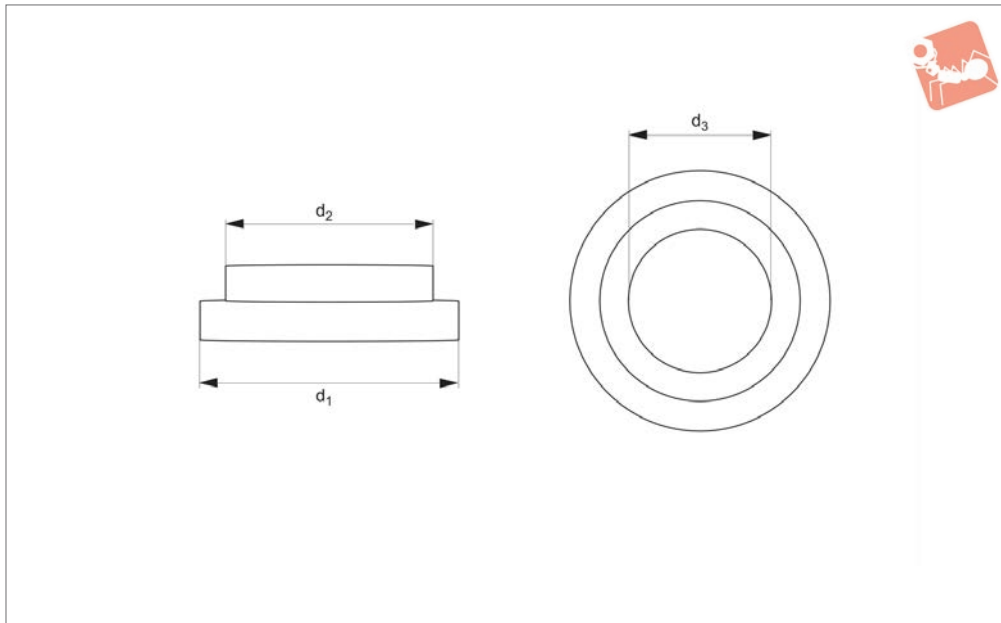
For use with finger clamps 11080-11083.

Order No.	Type	$w_1$	$d_1$	$d_2$	$h_1$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$
<a href="#">11086.W0040</a>	Long	45.5	M12	18	28	460	-	45	35	-	15
<a href="#">11086.W0045</a>	Short	45.5	M12	18	28	225	63	-	-	25	15



# Centering Bushes for clamp 11086

## Heavy-Duty Side Clamping



**11095**

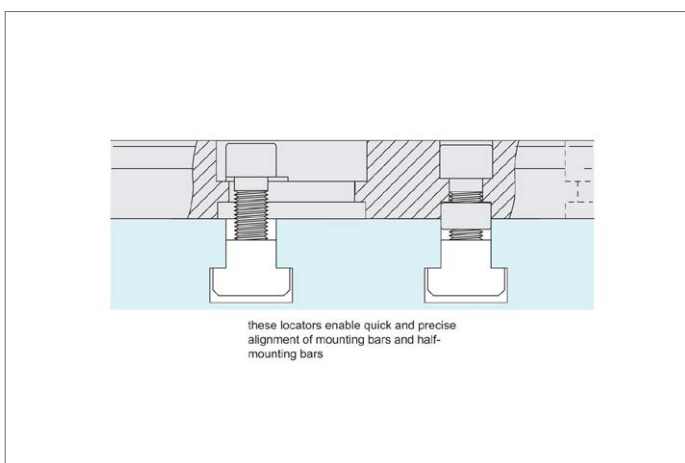
HEAVY-DUTY SIDE CLAMPING

### Tips

Centering bushes for use with finger clamps mounting bars 11086. Their use

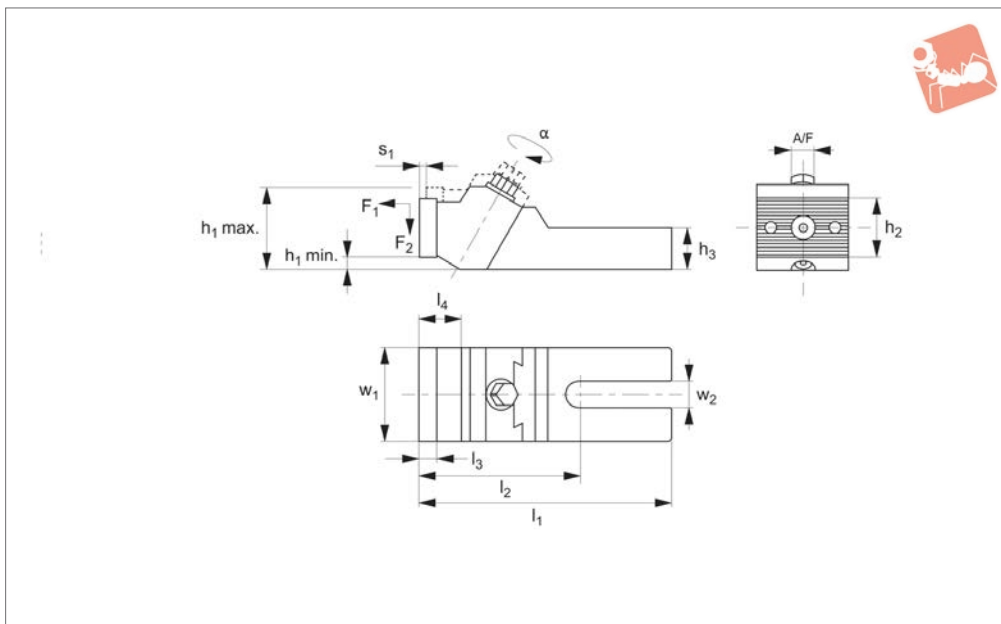
enables immediate alignment of the clamp to the T-slot and hence prevents any movement of components.

Order No.	Slot size	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>
11095.W0220	12	18	12	10.2
11095.W0225	14	18	14	10.2
11095.W0230	16	18	16	12.2
11095.W0215	18	18	18	12.2
11095.W0235	20	18	20	12.2
11095.W0240	22	18	22	12.2





### 12318



#### Material

Body: steel, tempered.  
Clamping jaws: steel, case hardened.

#### Technical Notes

Reversible clamping jaws with smooth side for machined workpieces and serrated side for rough clamping surfaces.

#### Tips

The large clamping surface makes these solid clamping jaws suitable for laterally clamping workpieces. We recommend using two clamping studs for fastening the solid clamping jaw on the machine table. Screws for T-slots No. 21000 - two screws per

clamping jaw - should be ordered separately as a fastening bolt depending on the width of the machine T-slot.

#### Important Notes

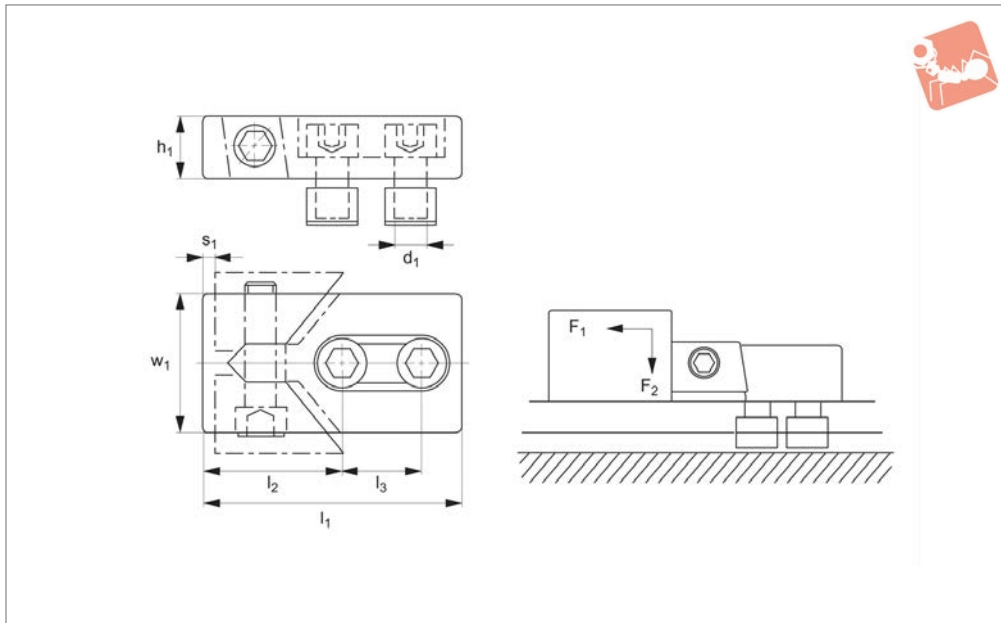
\*Clamping forces  $F_1$  and  $F_2$  depend on the T-slot size.

Order No.	For T-slot	$w_1$	$w_2$	$h_1$ min.	$h_1$ max.	$h_2$	$h_3$	$l_1$ max.	$l_2$	$l_3$	$l_4$	Stroke $s_1$	A/F	Weight g
<a href="#">12318.W0012</a>	12-14	40	13	3	33.5	25.4	20	128	82	8	19	3.0	13	840
<a href="#">12318.W0014</a>	12-18	65	19	20	60.0	40	30	177	113	12	29	6.0	16	3020
<a href="#">12318.W0024</a>	20-30	75	26	33	73.0	40	36	224	135	12	29	7.5	18	4880
<a href="#">12318.W0036</a>	32-42	90	38	51	91.5	40	46	256	152	12	34	10.0	21	7715



# Clamping Jaws - Low Height downhold action

# Heavy-Duty Side Clamping



**12200**

HEAVY-DUTY SIDE CLAMPING

### Material

Steel, heat treated, blackened.

Acutated on one side via hex. key (provided).

wards into the workpiece.  
**Sold in pairs.**

### Technical Notes

Ideal for clamping low-profile plates.

### Tips

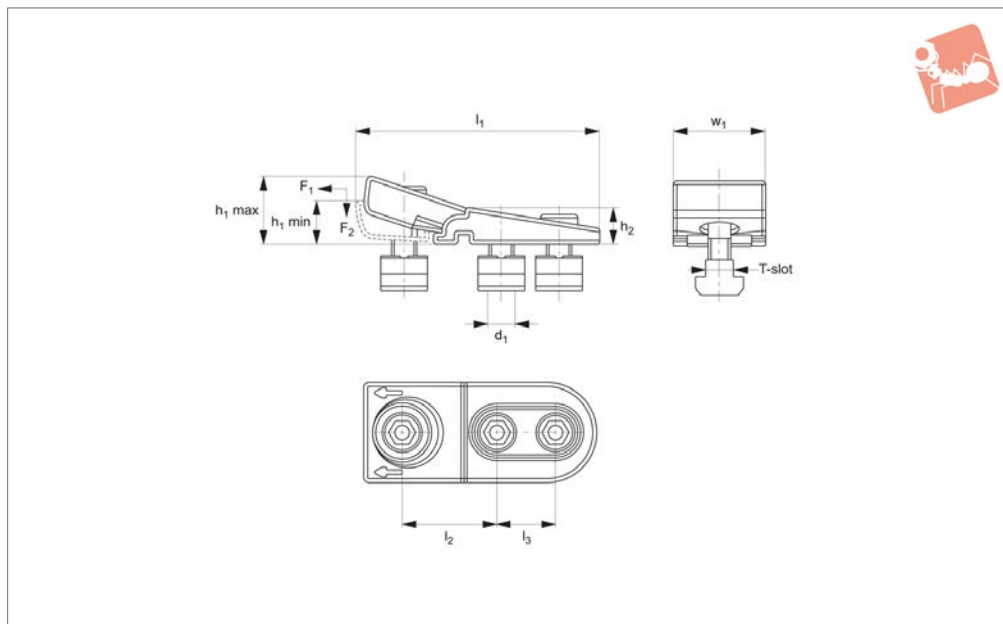
Clamping action is forwards and down-

Order No.	T-slot size	w <sub>1</sub>	d <sub>1</sub>	h <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Stroke s <sub>1</sub>	F <sub>1</sub> kN	F <sub>2</sub> kN	Weight/pair g
<b>12200.W0012</b>	12	40	M10	20	80	39	26	3	16	0.6	1150
<b>12200.W0014</b>	14	40	M12	20	80	39	26	3	22	0.9	1250
<b>12200.W0016</b>	16	40	M12	20	80	39	26	3	22	0.9	1330
<b>12200.W0017</b>	16	50	M14	25	100	46	34	4	32	1.2	2340
<b>12200.W0018</b>	18	50	M16	25	100	46	34	4	36	1.4	2540
<b>12200.W0020</b>	20	50	M16	25	100	46	34	4	36	1.4	2660
<b>12200.W0022</b>	22	78	M20	30	140	65	50	5	36	1.4	5980
<b>12200.W0024</b>	24	78	M20	30	140	65	50	5	36	1.4	6330
<b>12200.W0028</b>	28	78	M24	30	140	65	50	5	40	1.6	7060
<b>12200.W0030</b>	30	78	M24	30	140	65	50	5	40	1.6	7580





## 12205



### Material

Steel, tempered and burnished.

Suitable for horizontal and vertical applications.

### Technical Notes

Low height clampings of thin workpieces.

### Tips

For clamping of low profile workpieces.

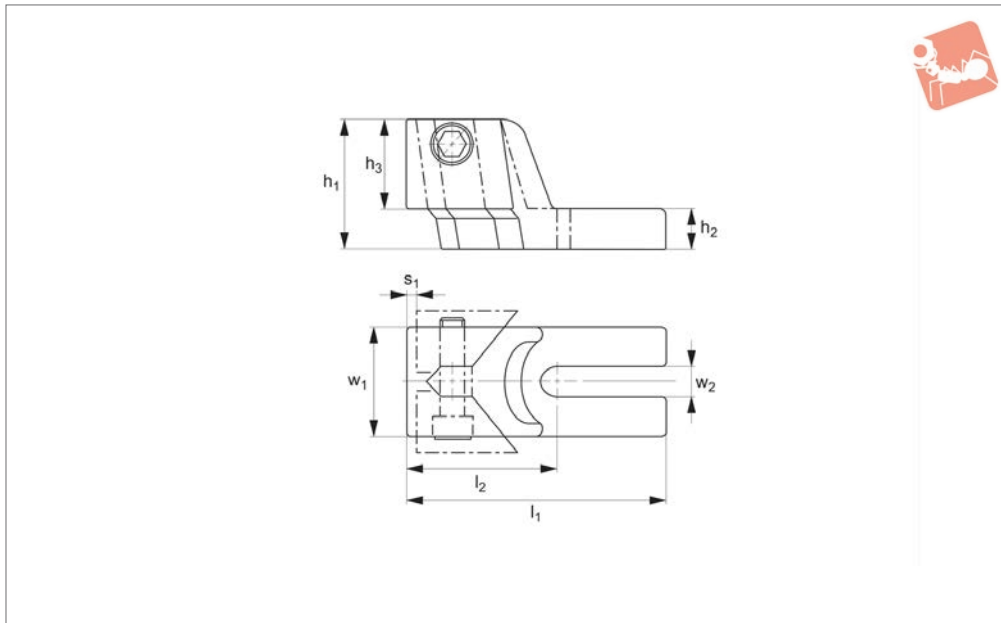
Order No.	T-slot size	w <sub>1</sub>	d <sub>1</sub>	h <sub>1</sub> min.	h <sub>1</sub> max.	h <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	F <sub>1</sub> kN	F <sub>2</sub> kN	Weight g
12205.W0014	14	15	M12	16	25	16	110	45-48	26	15	7.5	579
12205.W0016	16	15	M12	16	25	16	110	45-48	26	15	7.5	600
12205.W0018	18	20	M16	19	30	19	130	50-54	33	20	10.0	1011
12205.W0020	20	20	M16	19	30	19	130	50-54	33	20	10.0	1055
12205.W0022	22	30	M20	22	36	22	152	58-63	41	30	15.0	1670
12205.W0024	24	30	M20	22	36	22	152	58-63	41	30	15.0	1705
12205.W0028	28	30	M20	22	36	22	152	58-63	41	30	15.0	1807





# Clamping Jaws - Standard downhold action

# Heavy-Duty Side Clamping



**12300**

HEAVY-DUTY SIDE CLAMPING

### Material

Body: cast iron.  
Jaws: steel, hardened.

### Technical Notes

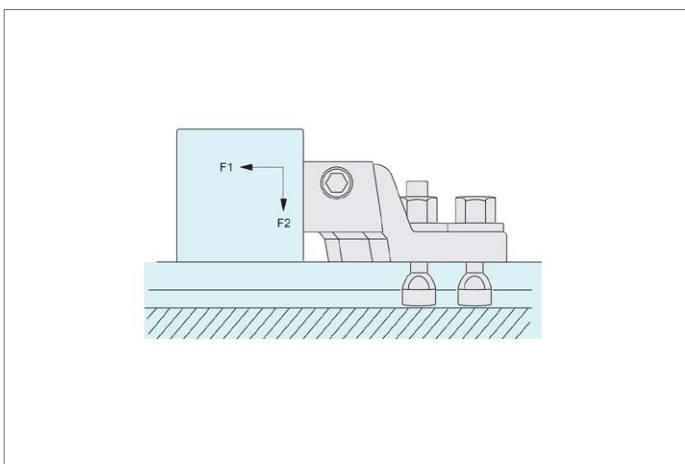
For mounting of each clamp to machine

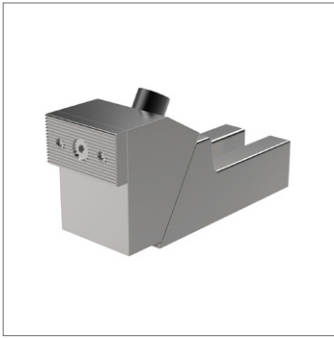
table, two clamping bolts no. 21000,  
washers no. 25000 and fixture nuts no.  
24300 should be ordered separately.  
Hex. key provided.

### Tips

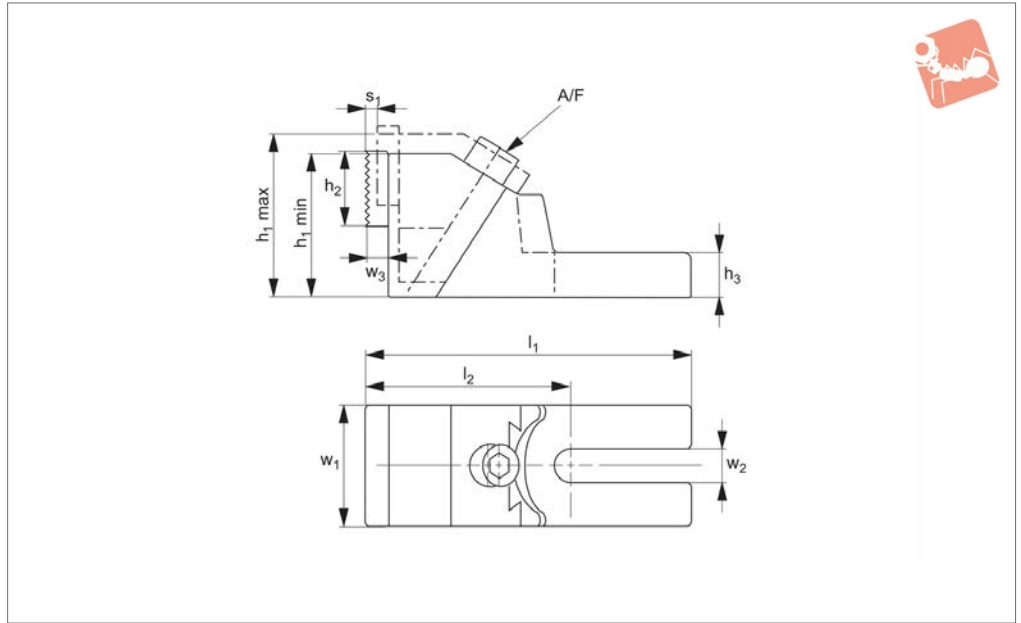
Can be actuated from left hand side only.  
**Sold in pairs.**  
For table of clamping forces, see below.

Order No.	For T-slot	w <sub>1</sub>	w <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	Stroke s <sub>1</sub>	Weight g
<b>12300.W0016</b>	10-14	40	13	50	20	30	115	60	3	1590
<b>12300.W0018</b>	16-20	50	19	60	25	35	150	72	4	2940
<b>12300.W0030</b>	22-36	80	31	75	30	45	205	102	5	7900





## 12320



### Material

Body: cast iron.  
Jaws: steel, hardened.

### Technical Notes

Jaw plates are reversible (ribbed/smooth).

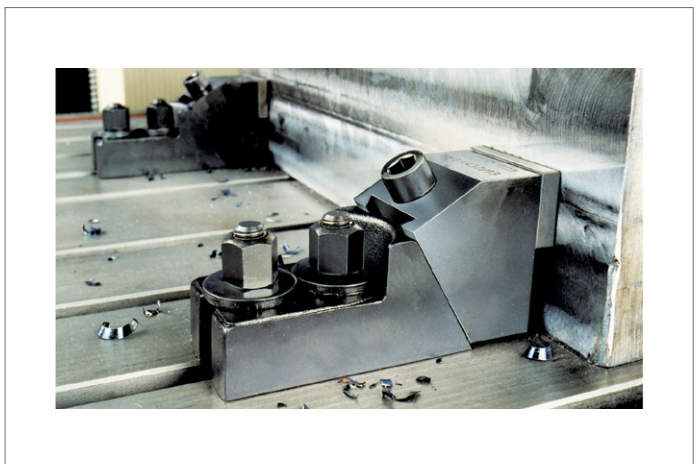
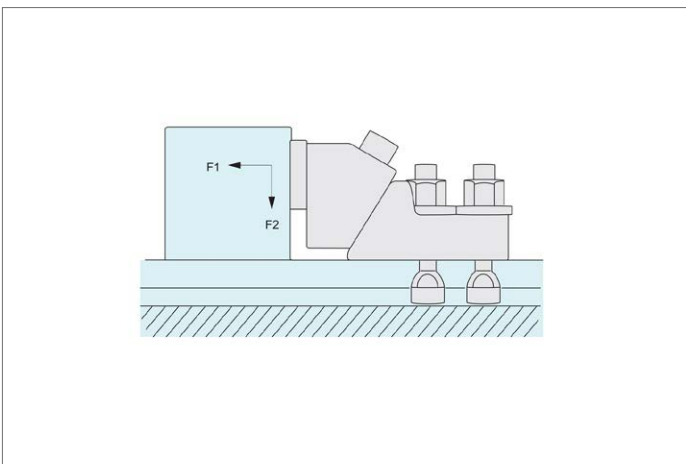
Clamping action is forwards and downwards into the workpiece.

### Tips

Extremely powerful clamps for use where high clamping forces are required. Due to

the high clamping forces we recommend the use of 2 clamping bolts (no. 21000), for each clamp.

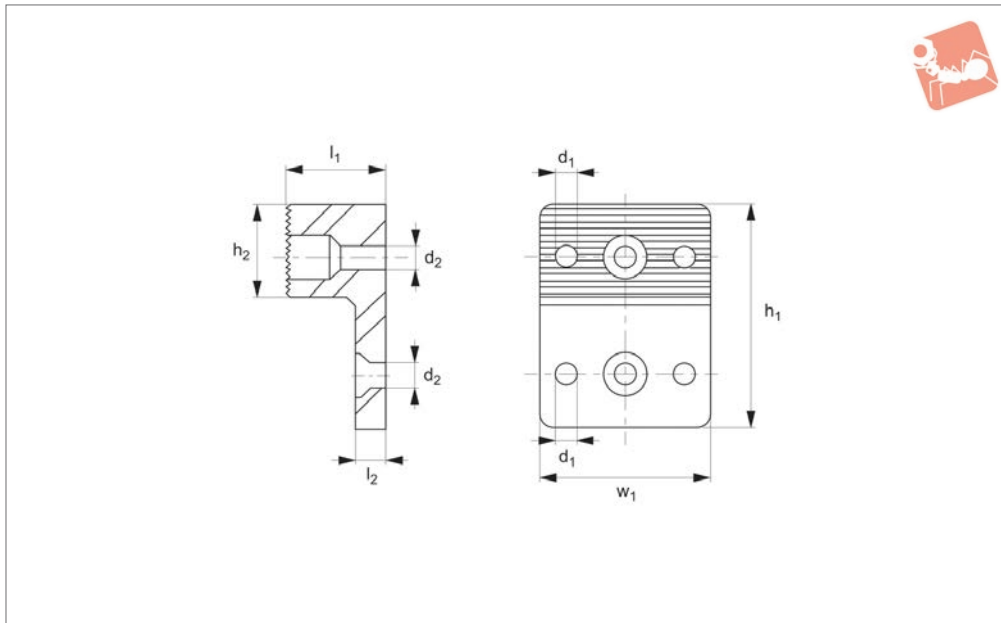
Order No.	For T-slot	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	h <sub>1</sub> min.	h <sub>1</sub> max.	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	Stroke s <sub>1</sub>	A/F	Weight g
<b>12320.W0014</b>	12-18	65	19	12	85	99	40	38	179	112.5	8	14	1590
<b>12320.W0024</b>	20-30	75	26	12	100	118	40	45	230	138.5	11	14	2940
<b>12320.W0036</b>	32-42	90	38	12	120	145	40	56	265	158.0	15	17	7900





# Clamping Jaw for clamps 12320

# Heavy-Duty Side Clamping



**12330**

HEAVY-DUTY SIDE CLAMPING

### Material

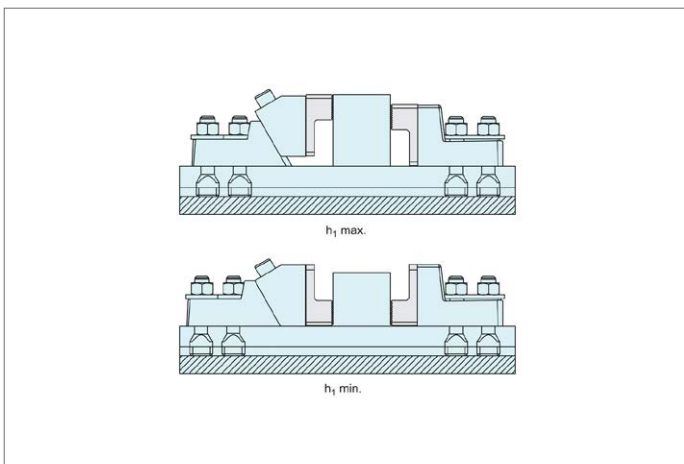
Steel, case hardened, with M8 bolts.

machining of rough parts. Can be mounted on the clamping jaw or the stop.

### Tips

Clamping jaw with serrated surface for

Order No.	For clamp $w_1$	$d_1$	$d_2$	$h_1$	$h_2$	$l_1$	$l_2$	Weight g
12330.W0019	65	8.1	9	85	35	38	12	889
12330.W0026	75	8.1	9	100	45	38	12	1306
12330.W0038	90	8.1	9	120	50	38	12	1829

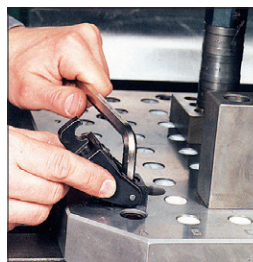




Our comprehensive range of clamping elements includes a compact and powerful workpiece clamping element, the chain clamping set no. 12700. This set was specifically designed for clamping large workpieces with round or arched surfaces.

Due to an increase in the bearing surface of the chain, the clamping force is distributed across the workpiece thereby reducing deformation.

## Setting Up



1. Attach the hook unit and the take-up unit as close to the workpiece as possible.



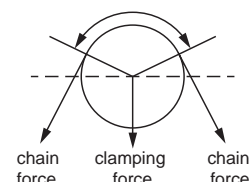
2. Turn the knurled nut on the take-up unit until the pull rod is fully extended. Select the number of chain segments required for the workpiece and attach to the pull rod.



3. Fine adjustment of the chain lengths is made by tightening the knurled nut until the chain slightly touches the workpiece.



4. To clamp the workpiece connect the free end of the chain onto the hook unit. Using a hex key tighten the eccentric shaft, and ensure the lever is rotated to its fully locked position (180°). The workpiece is now clamped.



## Important Factors in Selection of Chain Clamp

### Chain Length and Stretch

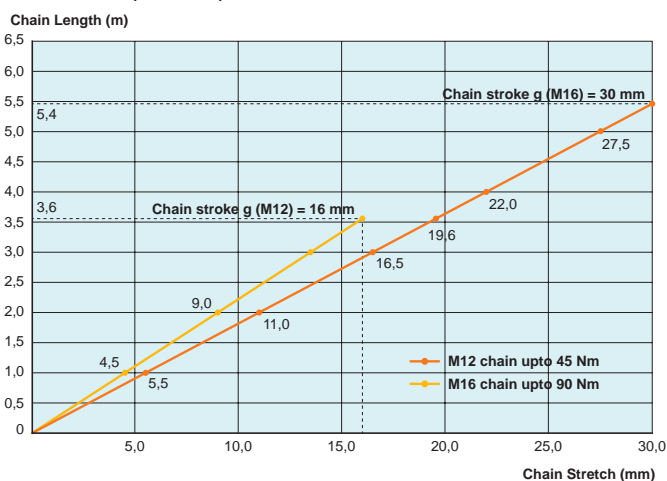
Torque value of 50 Nm is used for M12 set.

Torque value of 90 Nm is used for M16 set.

The clamping force achievable through the Wixroyd chain clamp set is dependent upon three factors:

- Workpiece diameter (see graph).
- Chain length and stretch (see graph).
- Contact angle of chain and workpiece (see table below right).

Chain Stretch at Specified Torques



### Table of Clamping Force to Contact Angle $\alpha$



Clamping with the chain clamp set.

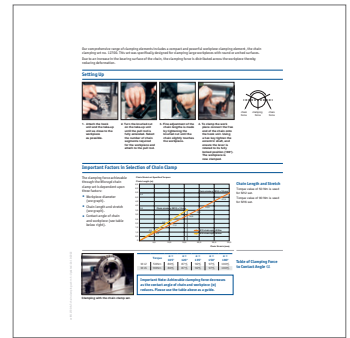
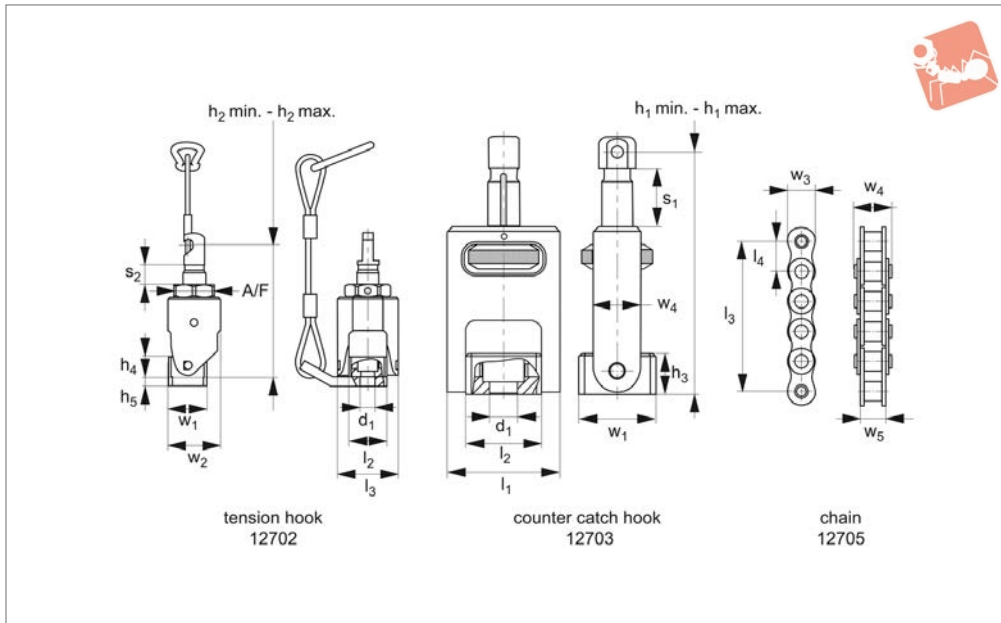
Torque	$\alpha = 105^\circ$	$\alpha = 120^\circ$	$\alpha = 135^\circ$	$\alpha = 150^\circ$	$\alpha = 180^\circ$
M12   50Nm	80%	87%	92%	97%	100%
M16   90Nm	80%	87%	92%	97%	100%

**Important Note:** Achievable clamping force decreases as the contact angle of chain and workpiece ( $\alpha$ ) reduces. Please use the table above as a guide.



# Chain Clamping Set with lanyard

# Chain Clamping



## 12700

CHAIN CLAMPING

### Material

Alloy steel.

Set contents:

- 1 x tension hook,
- 1 x take-up hook,
- 1 x clamp chain protection set,
- .W0112 (2 x 492mm, 1 x 238mm, 1 x 15,9mm),
- .W0116 (1x991mm, 1x229mm, 1x483, 1x25mm),
- 4 x split chain links,
- 6 x plastic protectors (to protect the work-piece),

1 x chain clamp protection lanyard.

Note: M20 and M24 clamp sets only have 3 chain lengths.

### Technical Notes

For clamping valves, flanges, pump cases etc - can be used on fixture sub-plates or machine tables. The clamping force is generated by the eccentric shaft, and the force is determined by the take-up which is adjusted using the knurled screw. Please order T-nuts no. 24000 separately if

required.

### Tips

The even distribution of the clamping force reduces workpiece deformation. The work-pieces are protected from marking of the chain by plastic protectors which are locked into the chain segments. Chains enable a large range of adjustment. See table opposite for details for achievable clamping forces.

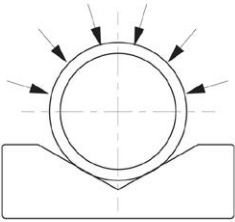
Order No.	Size	For T-slot	Combined chain length max.	d <sub>1</sub>	h <sub>1</sub> min.	h <sub>1</sub> max.	h <sub>2</sub> min.	h <sub>2</sub> max.	h <sub>3</sub>	h <sub>4</sub>	Weight g
12700.W0112	12	14, 16 of 18	1302	M12	83	108.0	100	118	18	18	853
12700.W0116	16	18, 20, 22 or 24	1829	M16	110	146.0	122	153	25	25	1902
12700.W0120	20	22 to 28	4940	M20	162	205.5	195	250	41	41	6037
12700.W0124	24	28 to 36	4940	M24	166	209.0	199	260	41	41	6040

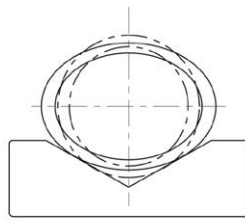
Order No.	h <sub>5</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Permissible torque					Clamping force		
					Nm max.	w <sub>1</sub>	w <sub>2</sub>	w <sub>4</sub>	A/F	Stroke s <sub>1</sub>	Clamp stroke s <sub>2</sub>	kN max.
12700.W0112	8	50	34	54	45	34	47	21	36	25.0	18	15
12700.W0116	10	64	44	70	90	37	62	29	46	36.0	31	40
12700.W0120	10	91	64	98	190	58	86	48	65	43.5	55	75
12700.W0124	10	91	64	98	300	58	86	48	65	43.0	61	120



chain clamping:  
even distribution of clamping force-  
little workpiece deformation.



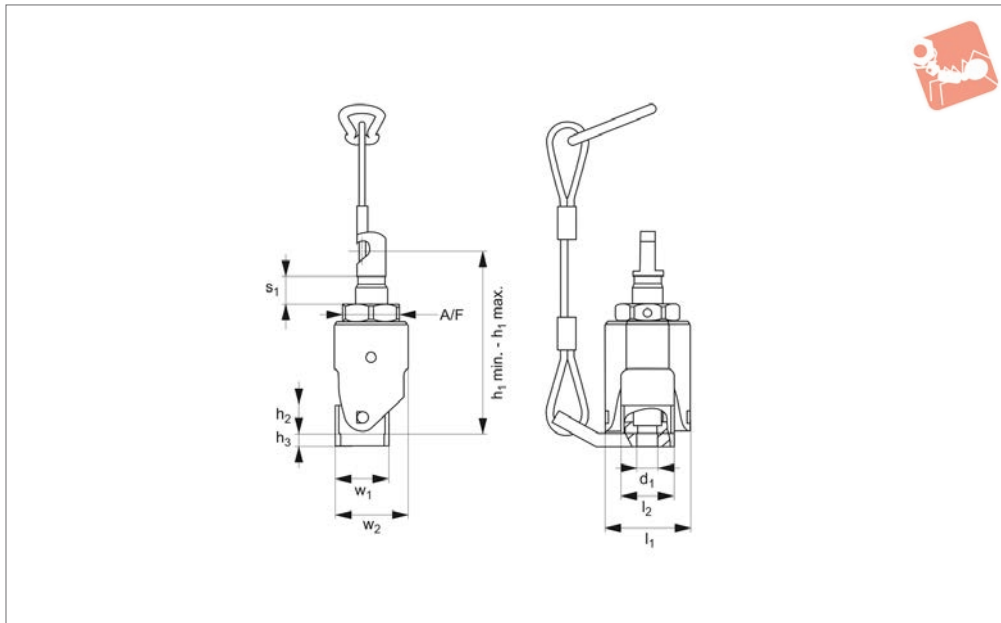
existing methods:  
workpiece deformation caused by  
pressure at a single clamping point.





# Tension Hook for chain clamping set 12700

# Chain Clamping



**12702**

CHAIN CLAMPING

**Material**

Hardened and tempered alloy steel.

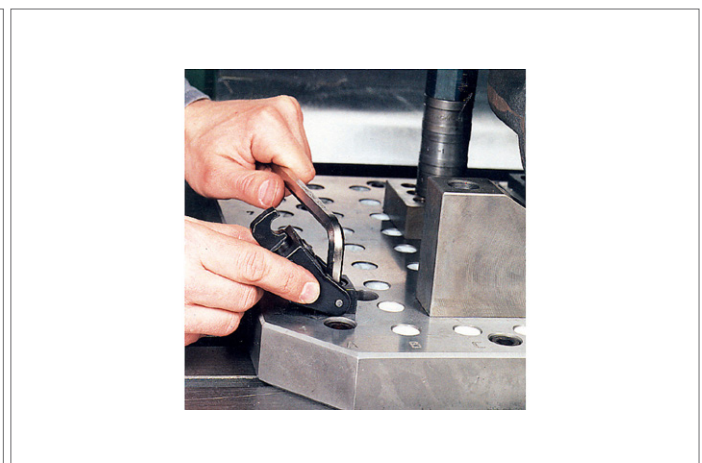
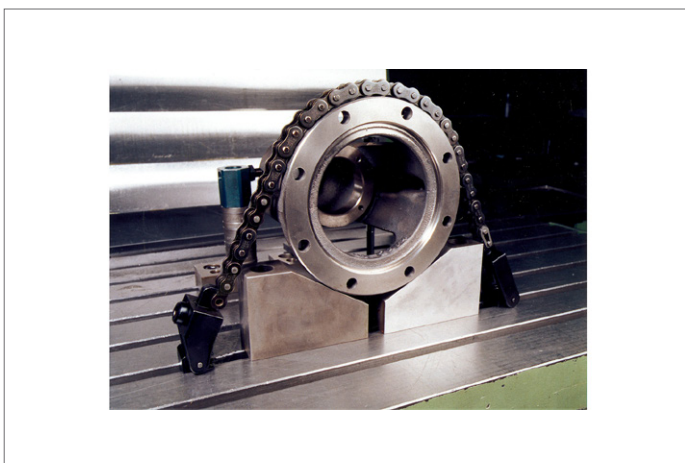
**Technical Notes**

For use with chain clamp set 12700.

Tension hook provides final clamping and tightening of component when chain clamp 12700 is used. Counter catch hook is for the iniatial pre-tightening of chain

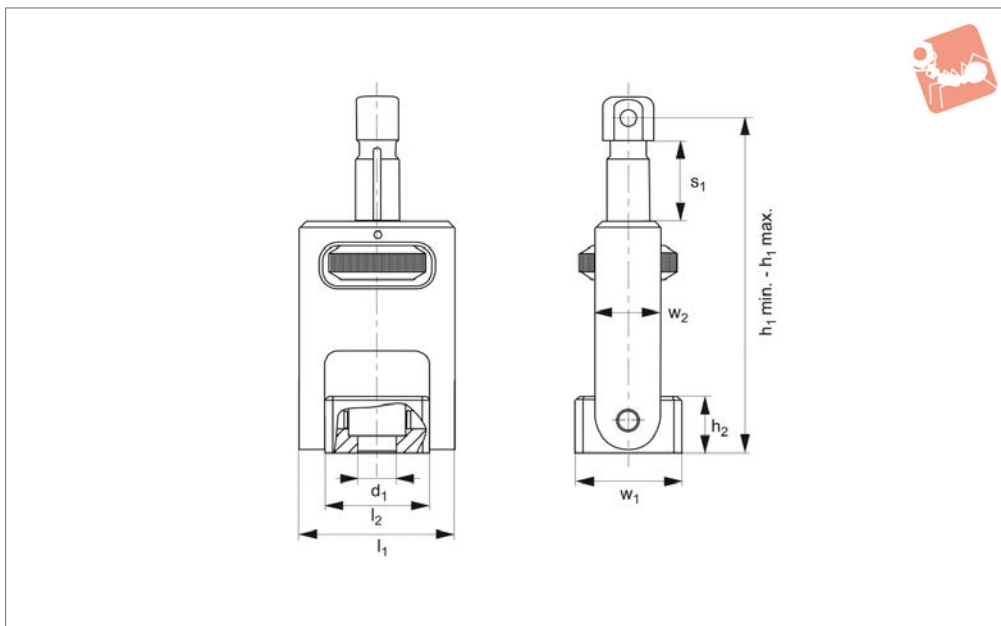
prior to final clamping. Comes complete with safety lanyard.

Order No.	Size	For T-slot	d <sub>1</sub>	h <sub>1</sub> min.	h <sub>1</sub> max.	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	Torque to Nm max.	w <sub>1</sub>	w <sub>2</sub>	A/F	Clamp stroke s <sub>1</sub>	Clamping force kN max.	Weight g
<b>12702.W0012</b>	12	14, 16 of 18	M12	100	118	18	8	54	34	45	34	47	36	18	15	853
<b>12702.W0016</b>	16	18, 20, 22 or 24	M16	122	153	25	10	70	44	90	37	62	46	31	40	1902
<b>12702.W0020</b>	20	22 to 28	M20	195	250	41	10	98	64	190	58	86	65	55	75	6037
<b>12702.W0024</b>	24	28 to 36	M24	199	260	41	10	98	64	300	58	86	65	61	120	6040





## 12703

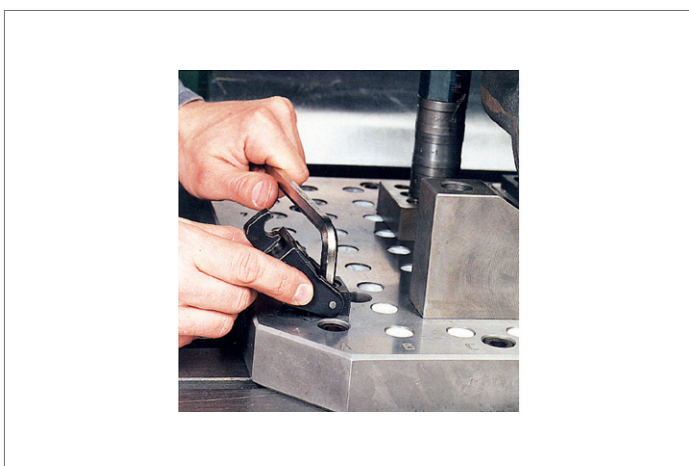


**Material**  
Alloy steel.

Counter catch hook is for the pre-tightening of chain prior to final clamping.

**Technical Notes**  
For use with chain clamp set 12700.

Order No.	Size	For T-slot	d <sub>1</sub>	h <sub>1</sub> min.	h <sub>1</sub> max.	h <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	w <sub>2</sub>	Stroke s <sub>1</sub>	Clamping force kN max.	Weight g
12703.W0012	12	14, 16 or 18	M12	83	108.0	18	50	34	34	21	25.0	15	553
12703.W0016	16	18, 20, 22 or 24	M16	110	146.0	25	64	44	37	29	36.0	40	1235
12703.W0020	20	22 to 28	M20	162	205.5	41	91	64	58	48	43.5	75	4088
12703.W0024	24	28 to 36	M24	166	209.0	41	91	64	58	48	43.0	120	4145

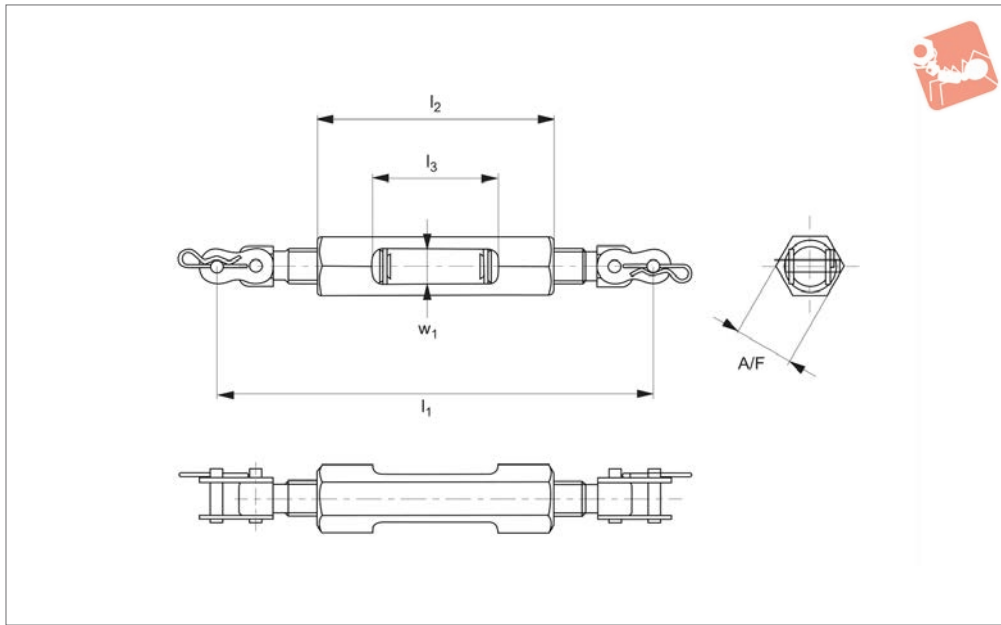






# Turnbuckle for chain clamping set 12700

## Chain Clamping



**12704**

CHAIN CLAMPING

### Material

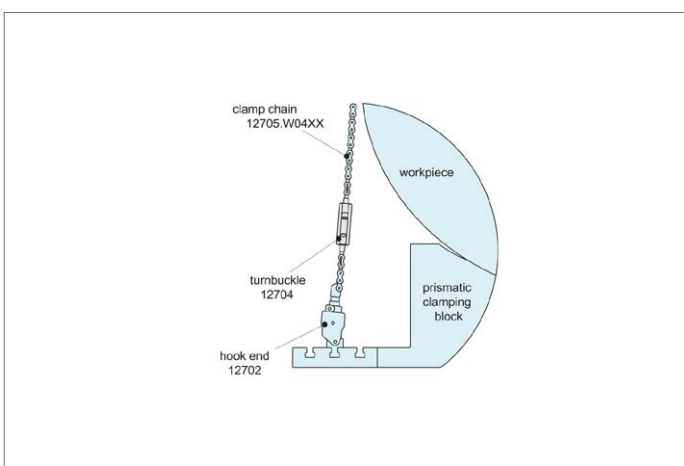
Alloy steel.

### Technical Notes

For use with chain clamp set 12700. The

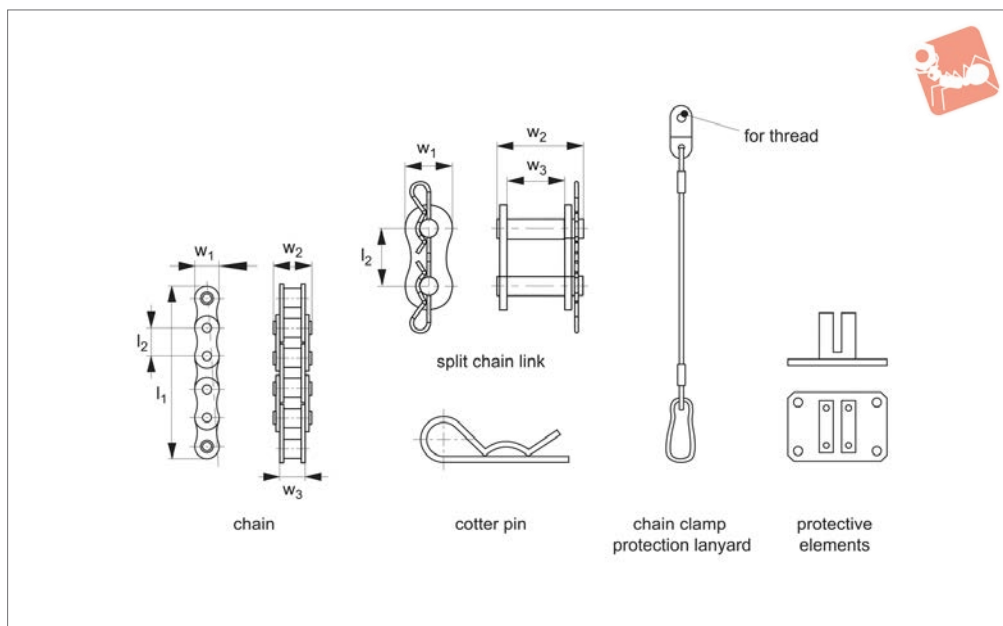
turnbuckle is clamped between the chains using two locking links. The chain is pre-tensioned by turning, and the play (caused by lengthening of the chain) is removed.

Order No.	Size	$l_1$	$l_2$	$l_3$	$w_1$	A/F	Clamping force kN max.	Weight g
12704.W0012	12	111-147	97	52	14	24	15	240
12704.W0016	16	151-203	126	66	20	30	40	720
12704.W0020	20	206-270	180	100	31	50	75	2222
12704.W0024	24	214-284	180	105	31	50	120	3517





## 12705



### Technical Notes

**Lanyard:** for use with chain clamp, when properly assembled prevents chain from snapping uncontrolled if chain breaks.

**Protective element:** can be placed between chain and workpiece to protect

surfaces.

**Chain Links:** for use to connect chain of different lengths to expand chain capacity and hence accommodate larger workpieces.

**Chain:** DIN8187, as well as being extended with the use of connecting links, can also

be shortened to suit requirements. Chain is pre-tensioned to minimise elongation.

### Important Notes

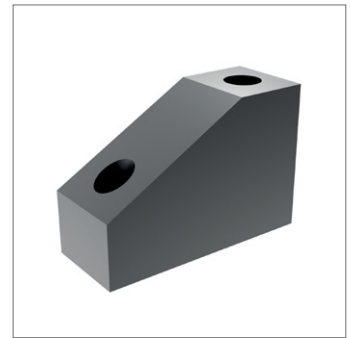
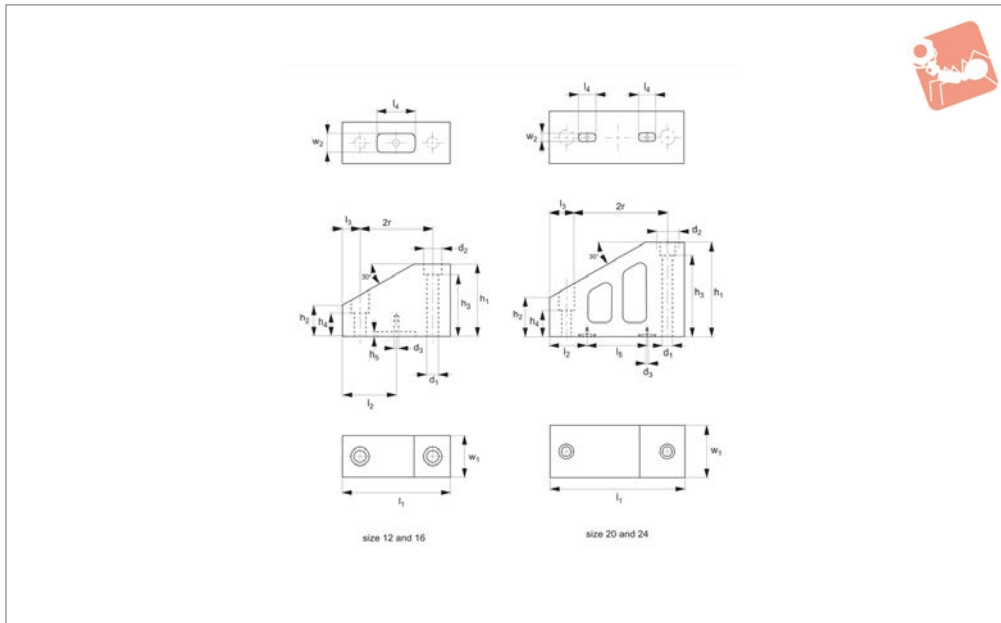
If the lanyard system is damaged the entire lanyard set must be replaced.

Order No.	Size	Type	Length nom.	$l_1$	$l_2$	$w_1$	$w_2$	$w_3$	Clamping force to be secured kN max.	Qty/pack	Weight g
12705.W0012	12	Lanyard	-	-	-	-	-	-	15	-	280
12705.W0016	16	Lanyard	-	-	-	-	-	-	40	-	350
12705.W0020	20	Lanyard	-	-	-	-	-	-	75	-	1313
12705.W0024	24	Lanyard	-	-	-	-	-	-	120	-	1313
12705.W0112	12	Workpiece Protector	-	-	-	-	-	-	-	6	3
12705.W0116	16	Workpiece Protector	-	-	-	-	-	-	-	6	5
12705.W0120	20	Workpiece Protector	-	-	-	-	-	-	-	6	10
12705.W0124	24	Workpiece Protector	-	-	-	-	-	-	-	6	16
12705.W0212	12	Chain Link	-	-	15.87	14	22	13	15	-	15
12705.W0216	16	Chain Link	-	-	25.40	21	39	25	40	-	67
12705.W0220	20	Chain Link	-	-	31.75	26	44	29	75	-	113
12705.W0224	24	Chain Link	-	-	38.10	33	59	38	120	-	274
12705.W0312	12	Cotter Pin	-	-	-	-	-	-	-	10	0.5
12705.W0316	16	Cotter Pin	-	-	-	-	-	-	-	10	1.0
12705.W0320	20	Cotter Pin	-	-	-	-	-	-	-	10	2.2
12705.W0324	24	Cotter Pin	-	-	-	-	-	-	-	10	6.5
12705.W0412	12	Chain	125	111	15.87	15	20	13	15	-	114
12705.W0413	12	Chain	250	238	15.87	15	20	13	15	-	228
12705.W0414	12	Chain	500	492	15.87	15	20	13	15	-	455
12705.W0415	12	Chain	1000	1000	15.87	15	20	13	15	-	910
12705.W0416	16	Chain	125	127	25.40	21	23	25	40	-	335
12705.W0417	16	Chain	250	229	25.40	21	23	25	40	-	670
12705.W0418	16	Chain	500	483	25.40	21	23	25	40	-	1340
12705.W0419	16	Chain	1000	991	25.40	21	23	25	40	-	2680
12705.W0420	20	Chain	1000	984	31.75	26	44	29	75	-	3720
12705.W0421	20	Chain	1500	1492	31.75	26	44	29	75	-	5580
12705.W0422	20	Chain	2000	2000	31.75	26	44	29	75	-	7440
12705.W0424	24	Chain	1000	1028	38.10	33	54	38	120	-	7050
12705.W0425	24	Chain	1500	1485	38.10	33	54	38	120	-	10575
12705.W0426	24	Chain	2000	2019	38.10	33	54	38	120	-	14100



# Angle Block - 120° for chain clamping

## Chain Clamping



### 12706

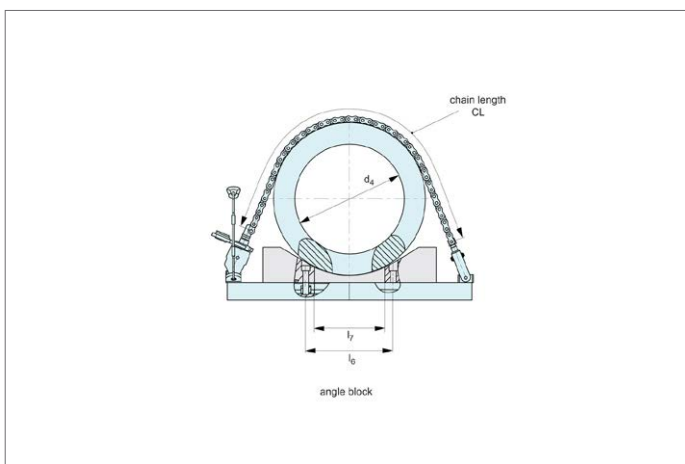
CHAIN CLAMPING

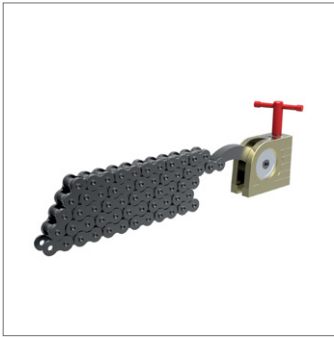
#### Technical Notes

Ideal for use when clamping components with chain clamp set 12700. 2 off prisms

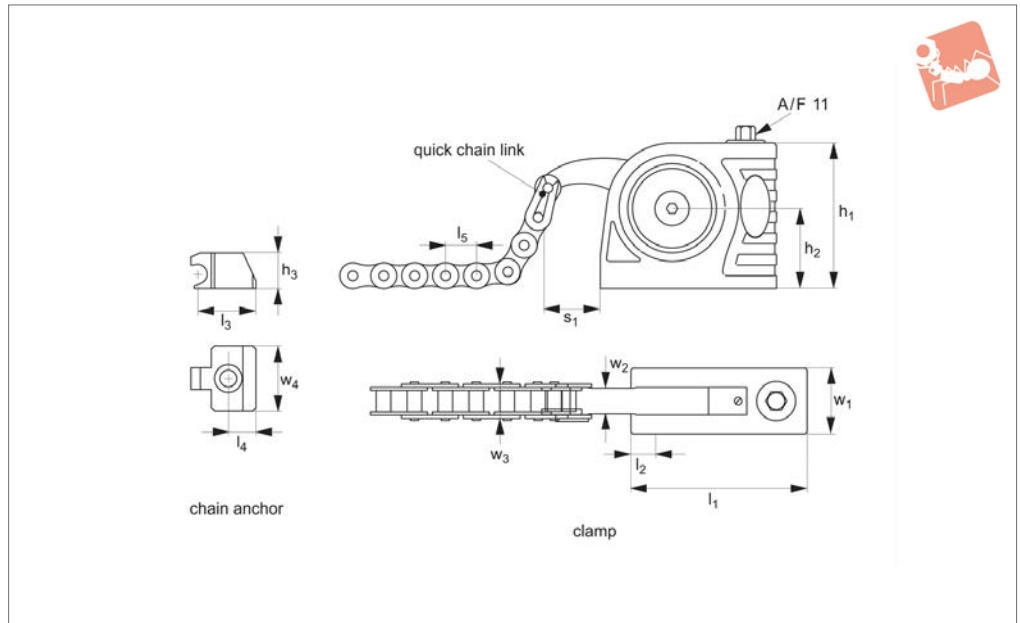
provide ideal support for components with large circumferences. **Sold individually.**

Order No.	Size	2r	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>	w <sub>2</sub>	Weight g
<b>12706.W0012</b>	12	80	13.5	20	M 6	80	35	67	27	5.5	118	59	19	42	-	47	20	3230
<b>12706.W0016</b>	16	100	17.5	26	M 6	100	44	33	33	5.5	148	74	24	44	-	47	20	3960
<b>12706.W0020</b>	20	270	22.0	33	M 6	250	102	161	91	5.5	360	100	45	44	160	78	20	32455
<b>12706.W0024</b>	24	270	22.0	40	M 6	250	102	161	91	5.5	360	100	45	44	160	78	20	31760





## 12750



### Material

Clamp: as part no. 10650.  
Chain: steel, 19,05mm pitch - 1 metre.  
Chain anchor: steel.  
Quick chain link: steel.

diameter workpieces.

Extra lengths of chain can be ordered and linked together.  
Clamp or unclamp with a simple turn of the red key. The chain can then easily be removed clear from the workpiece.

### Tips

Chains with rubber protective pads can also be provided on request (min. radius 200mm).

### Technical Notes

Provides strong and even clamping of large

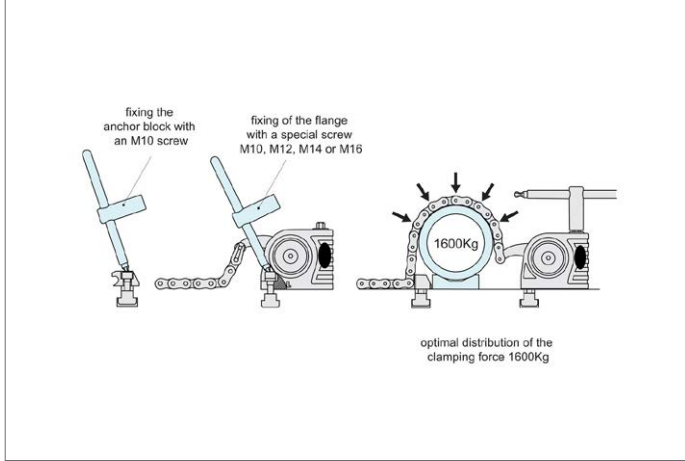
Order No.	Description	$h_1$	$h_2$	$h_3$	$l_1$	$l_2$
12750.W0040	Set: Clamp, 1m Chain, Chain Anchor	89	49	-	108	12.5
12750.W0900	Chain - 1m	-	-	-	-	-
12750.W0905	Quick Chain Link	-	-	-	-	-
12750.W0910	Chain Anchor	-	-	22	-	-

Order No.	$l_3$	$l_4$	$l_5$	$w_1$	$w_2$	$w_3$	$w_4$	A/F	Clamp reach $s_1$	Clamping force kN max.
12750.W0040	-	-	-	40	16	-	-	11	33	16
12750.W0900	-	-	19.05	-	-	19.5	-	-	-	-
12750.W0905	-	-	19.05	-	-	-	-	-	-	-
12750.W0910	26	17	-	-	-	-	40	-	-	-



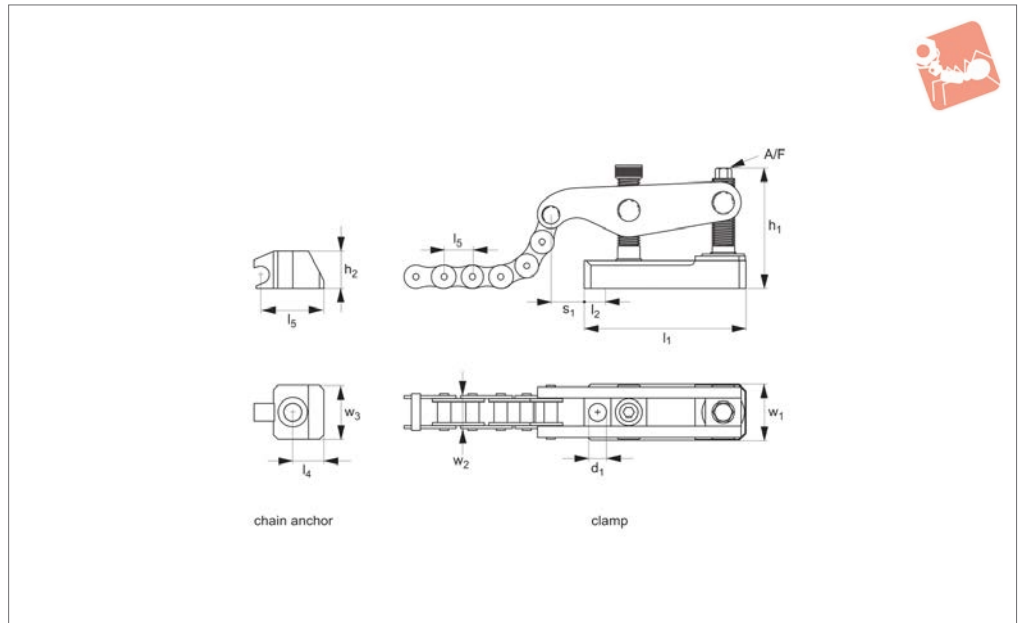
# Chain Clamp Sets - 16kN for large diameter clamping

## Chain Clamping





## 12752



### Material

Clamp - as part no. 10678.  
Chain - steel, 25,4 pitch. 3m long.  
Chain anchor - steel.

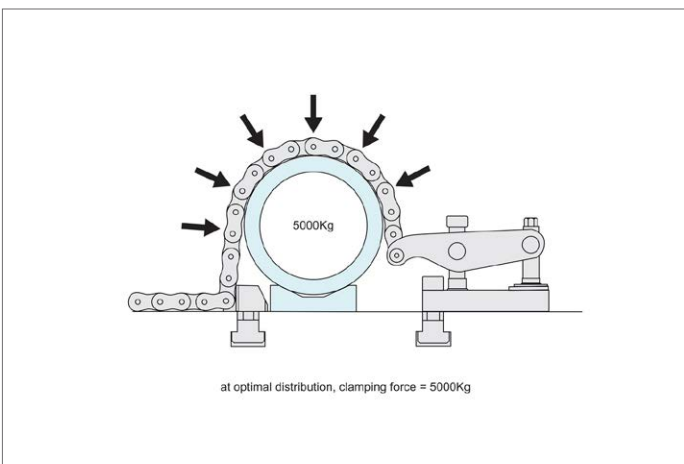
### Technical Notes

Heavy clamping forces of up to 50kN.

Provides strong and even clamping of large diameter workpieces.  
Clamp or unclamp with a simple turn of hexagon socket. Chain can be easily removed clear from the workpiece.  
Please use socket head cap screw of

strength class 12,9 for mounting. Please order T-nuts to suit your application separately, if required see part 24000.

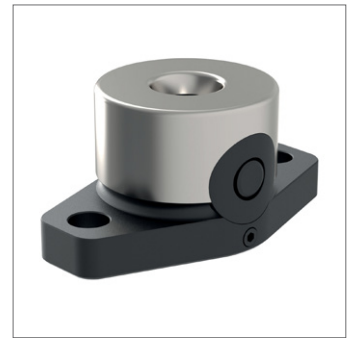
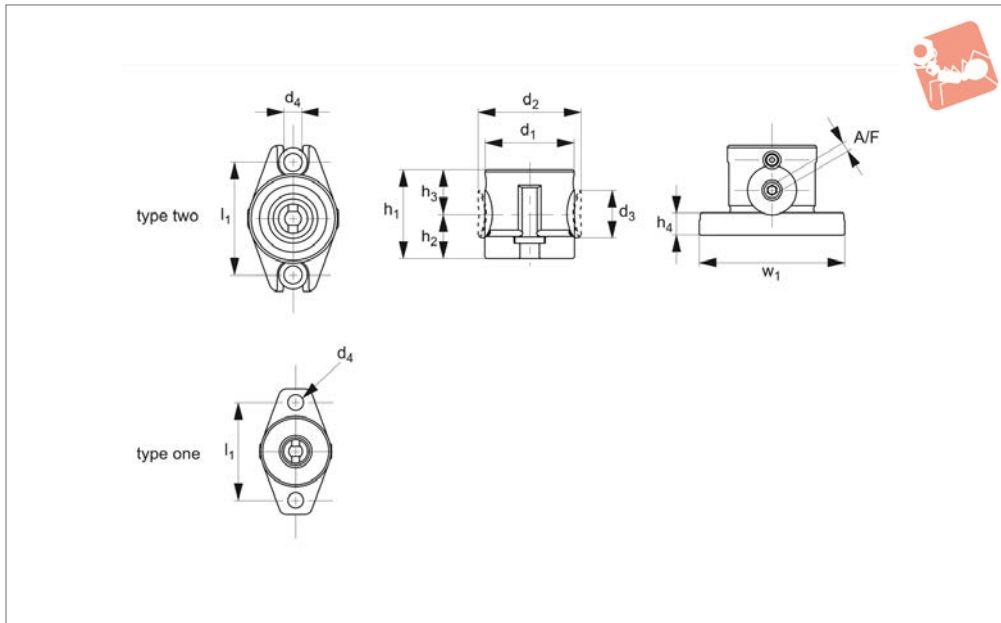
Order No.	Description							d <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>
12752.W0001	Set: Clamp, Chain (3m), Chain Anchor							17	111	35	108	12
Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	A/F	Clamp reach s <sub>1</sub>	Clamping force kN max.			
12752.W0001	57	28	25.4	50	25.4	50	13	30	50			





# Clamping Module - Single flanged

## Bore Clamping



**12043**

BORE CLAMPING

### Material

Steel (AISI 4140), induction hardened, black oxide finish.

### Technical Notes

For suitable clamping screws see part no.s

12046 through 12050.

For permissible cutting forces and corresponding workpiece weights when using the clamping module system, see technical pages.

Order No.	$h_1$ $\pm 0.01$	$h_2$	$h_3$	$l_1$	$w_1$	Type	Size	$d_1$	$d_2$	$d_3$	$d_4$	$h_4$	A/F	Clamping force kN max.	Screw torque Nm max.	Weight g
<b>12043.W0008</b>	25	12.5	12.5	42	54	One	8	30	34.5	15	6.6	7	3	5	4	100
<b>12043.W0011</b>	40	20.0	20.0	50	65	Two	11	40	46.0	22	9.0	10	4	8	8	300
<b>12043.W0016</b>	63	33.0	30.0	75	95	Two	16	60	69.0	32	13.0	15	6	15	50	1400
<b>12043.W0021</b>	80	40.0	40.0	100	130	Two	21	80	91.0	44	17.0	20	8	25	50	3300



Simple Workholding Provides

<b>Single Step Machining</b>	<b>Lower Fixture Cost</b>	<b>Better Machining Accuracy</b>	<b>Shorter Machining Time</b>
No tool interference	Single fixture	Single setup	Simple toolpaths

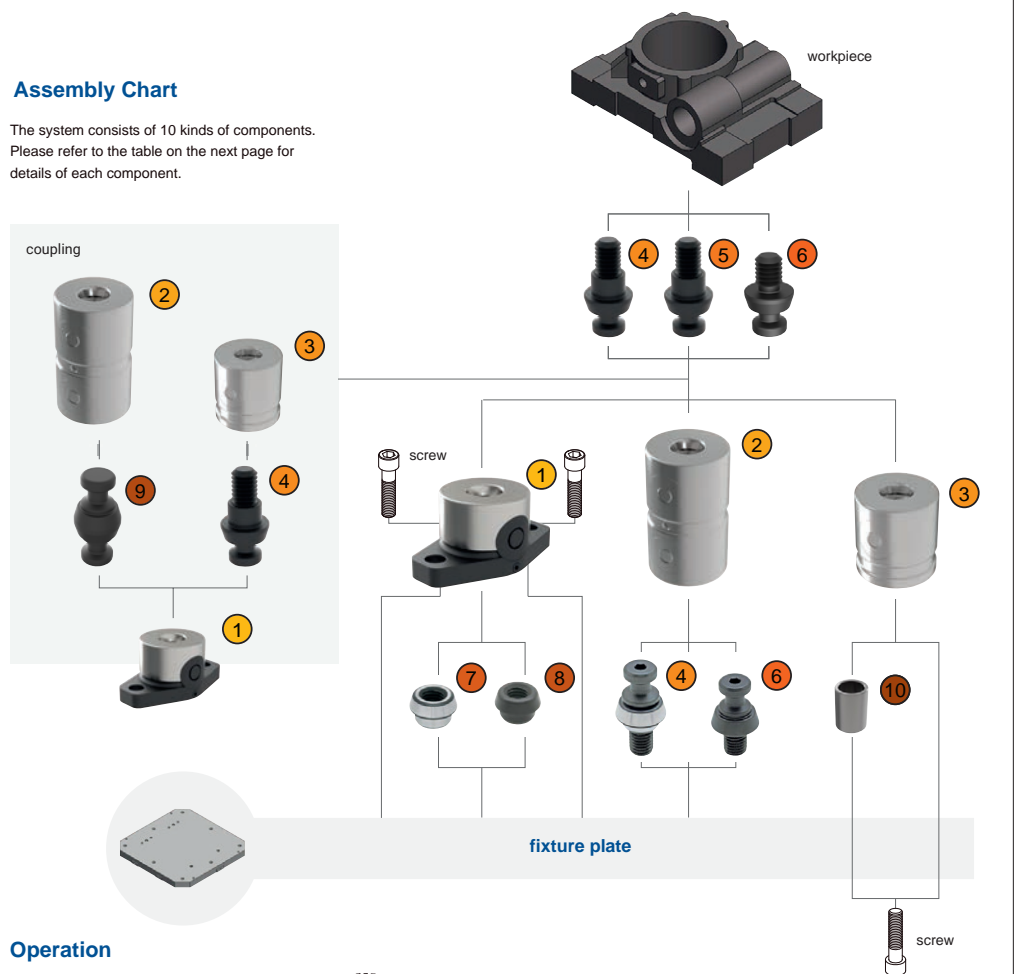
How to Use Modular Clamping System

Wixroyd Products

- ① 12043
- ② 12044
- ③ 12045
- ④ 12046.W0xxx
- ⑤ 12046.W4xxx
- ⑥ 12047
- ⑦ 12048.W02xx
- ⑧ 12048.W01xx
- ⑨ 12047
- ⑩ 12048.W00xx

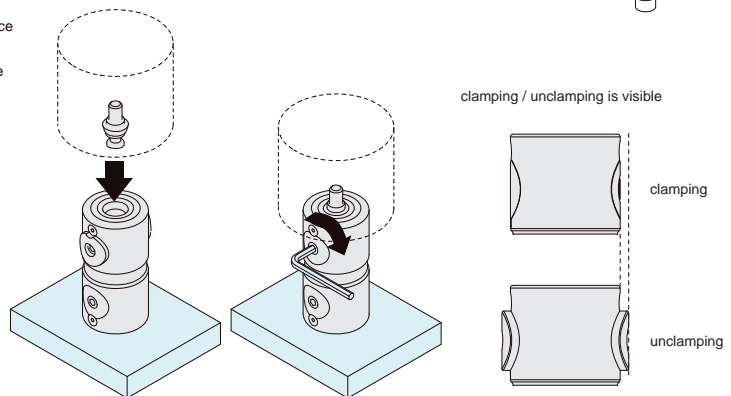
Assembly Chart

The system consists of 10 kinds of components. Please refer to the table on the next page for details of each component.



Operation

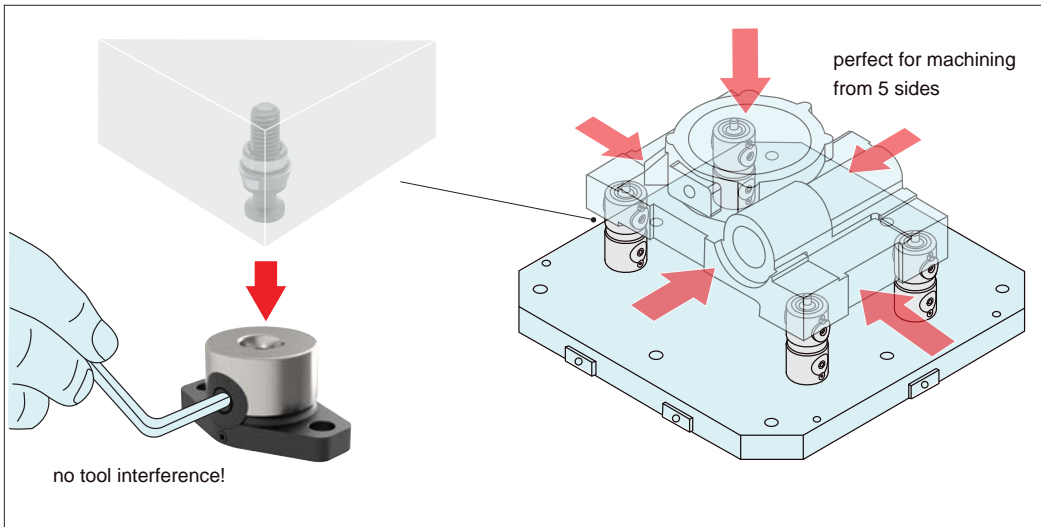
Install clamping screw on the workpiece and mount it on clamping module.  
Tighten the locking screws on the side of the clamping module.





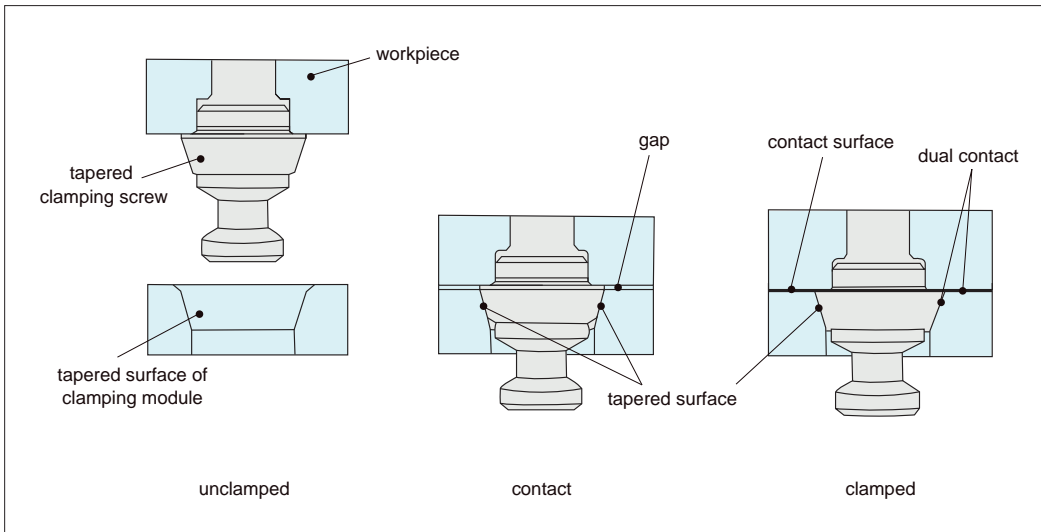


### Application Example



### Locating Mechanism

Dual surface contact at the tapered surfaces and contact surfaces provides 5  $\mu$  m locating repeatability.



BORE CLAMPING

ov-W12043-A-T-W12049.5-A-T-modular-pull-clamping-system-b-rmh - Updated - 21-10-2022

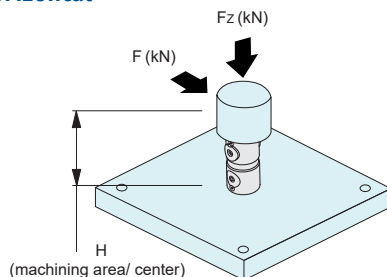
## Permissible Cutting Force & Workpiece Weight for Clamping Module System 12043 to 12049

### 1 Module

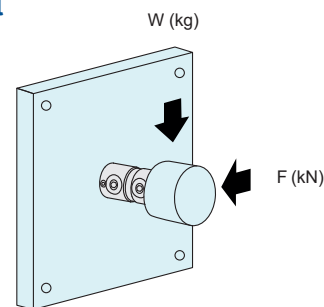
Note: Prepare a locator when the workpiece gets big rotating force.

Ensure the cutting force and the workpiece weight are within the allowable level.

#### Horizontal

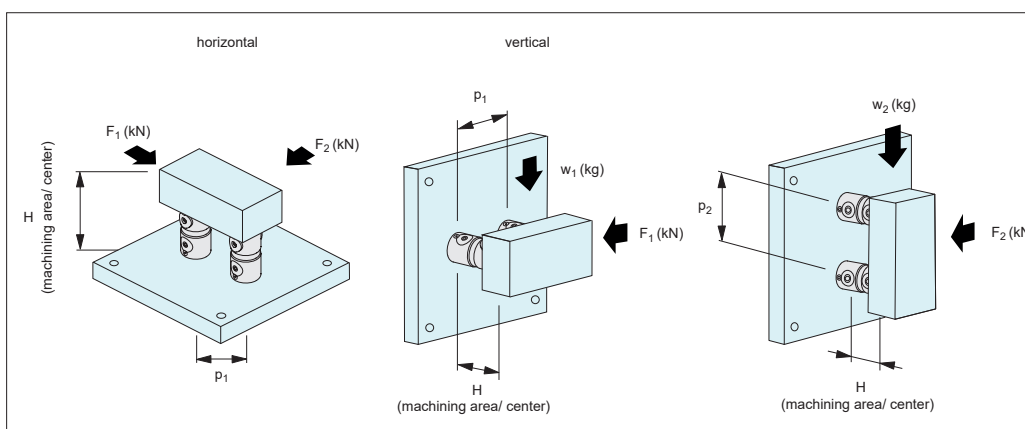


#### Vertical

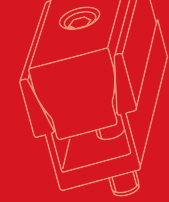


Part Number	Allowable Cutting Force		Allowable Workpiece Weight w(kg)
	F(kN)	Fz(kN)	
12043.W0008	50/H		50 x 100/H
12044.W0008	25/H	1.5	25 x 100/H
12045.W0008	25/H		25 x 100/H
12043.W0011	120/H		120 x 100/H
12044.W0011	70/H	2.5	70 x 100/H
12045.W0011	70/H		70 x 100/H
12043.W0016	250/H		250 x 100/H
12044.W0016	150/H	7.5	150 x 100/H
12045.W0016	150/H		150 x 100/H
12043.W0021	500/H		500 x 100/H
12044.W0021	300/H	15	300 x 100/H
12045.W0021	300/H		300 x 100/H

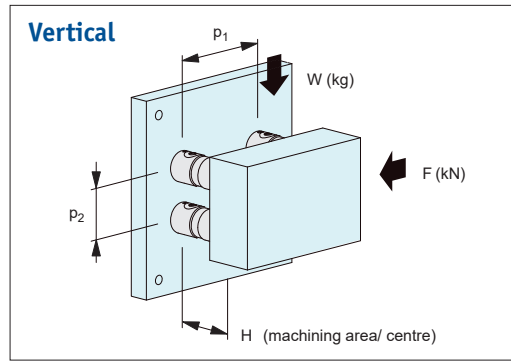
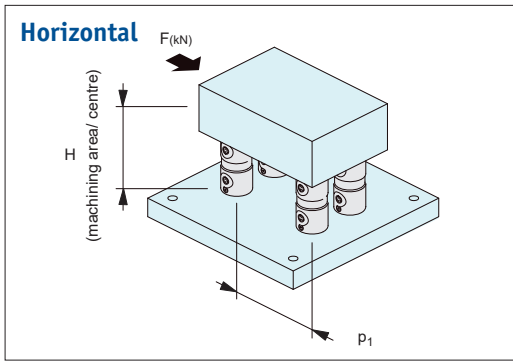
### 2 Modules



Part Number	Allowable Cutting Force			Allowable Workpiece Weight		
	F1(kN)	F2(kN)	Max(kN)	w1(kg)	w2(kg)	Max(kg)
12043.W0008	$(0.10p_1 + 180)H$	100/H		100x100/H	$(0.10p_2 + 180) \times 100/H$	
12044.W0008	$(0.05p_1 + 90)H$	50/H	1.8	50x100/H	$(0.05p_2 + 90) \times 100/H$	180
12045.W0008	$(0.05p_1 + 90)H$	50/H		50x100/H	$(0.05p_2 + 90) \times 100/H$	
12043.W0011	$(0.24p_1 + 432)H$	240/H		240x100/H	$(0.24p_2 + 432) \times 100/H$	
12044.W0011	$(0.14p_1 + 252)H$	140/H	3.2	140x100/H	$(0.14p_2 + 252) \times 100/H$	320
12045.W0011	$(0.14p_1 + 252)H$	140/H		140x100/H	$(0.14p_2 + 252) \times 100/H$	
12043.W0016	$(0.50p_1 + 900)H$	500/H		500x100/H	$(0.50p_2 + 900) \times 100/H$	
12044.W0016	$(0.30p_1 + 540)H$	300/H	6	300x100/H	$(0.30p_2 + 540) \times 100/H$	600
12045.W0016	$(0.30p_1 + 540)H$	300/H		300x100/H	$(0.30p_2 + 540) \times 100/H$	
12043.W0021	$(1.00p_1 + 1800)H$	1000/H		1000x100/H	$(1.00p_2 + 1800) \times 100/H$	
12044.W0021	$(0.60p_1 + 1080)H$	600/H	10	600x100/H	$(0.60p_2 + 1080) \times 100/H$	1000
12045.W0021	$(0.60p_1 + 1080)H$	600/H		600x100/H	$(0.60p_2 + 1080) \times 100/H$	

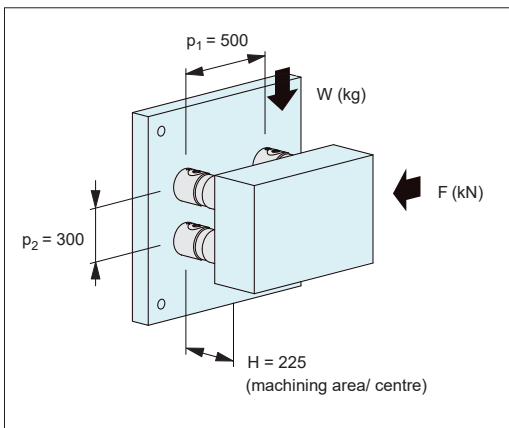


## Permissible Cutting Force & Workpiece Weight for Clamping Module System 12043 to 12049



4 Modules

Part Number	Allowable Cutting Force		Allowable Workpiece Weight	
	F(kN)	Max(kN)	w(kg)	Max (kg)
12043.W0008	2X (0.10p <sub>1</sub> + 180)/H	3.6	2X (0.10p <sub>2</sub> + 180) X100/H	360
12044.W0008	2X (0.05p <sub>1</sub> + 90)/H		2X (0.05p <sub>2</sub> + 90) X100/H	
12045.W0008	2X (0.05p <sub>1</sub> + 90)/H	6.4	2X (0.05p <sub>2</sub> + 90) X100/H	640
12043.W0011	2X (0.24p <sub>1</sub> + 432)/H		2X (0.24p <sub>2</sub> + 432) X100/H	
12044.W0011	2X (0.14p <sub>1</sub> + 252)/H	12	2X (0.14p <sub>2</sub> + 252) X100/H	1200
12045.W0011	2X (0.14p <sub>1</sub> + 252)/H		2X (0.14p <sub>2</sub> + 252) X100/H	
12043.W0016	2X (0.50p <sub>1</sub> + 900)/H	20	2X (0.50p <sub>2</sub> + 900) X100/H	2000
12044.W0016	2X (0.30p <sub>1</sub> + 540)/H		2X (0.30p <sub>2</sub> + 540) X100/H	
12045.W0016	2X (0.30p <sub>1</sub> + 540)/H	20	2X (0.30p <sub>2</sub> + 540) X100/H	2000
12043.W0021	2X (1.00p <sub>1</sub> + 1800)/H		2X (1.00p <sub>2</sub> + 1800) X100/H	
12044.W0021	2X (0.60p <sub>1</sub> + 1080)/H	20	2X (0.60p <sub>2</sub> + 1080) X100/H	2000
12045.W0021	2X (0.60p <sub>1</sub> + 1080)/H		2X (0.60p <sub>2</sub> + 1080) X100/H	



### Calculation Example

- Vertical mounting
- 4 pcs of 12044.W0016 (height 125mm)
- Pitch:  
p<sub>1</sub> = 500mm  
p<sub>2</sub> = 300mm
- Workpiece centre: H= 225mm
- F direction cutting force: 3kN
- Workpiece weight: 375kg

<Allowable Cutting Force F>  

$$F = 2x(0.3X p_1 + 540)/H$$

$$= 2x(0.3X 500 + 540)/225$$

$$= 6.13kN$$

\*) Cutting force 3kN is within allowable value (6.13kN).

<Allowable Workpiece Weight W>  

$$W = 2x(0.3X p_2 + 540)X100/H$$

$$= 2x(0.3X 300 + 540)X100/225$$

$$= 560kg$$

\*) Workpiece weight 375kg is within allowable value (560kg).

Height-W12043-A-T-W12049.5-b-rnh - Updated - 21-10-2022

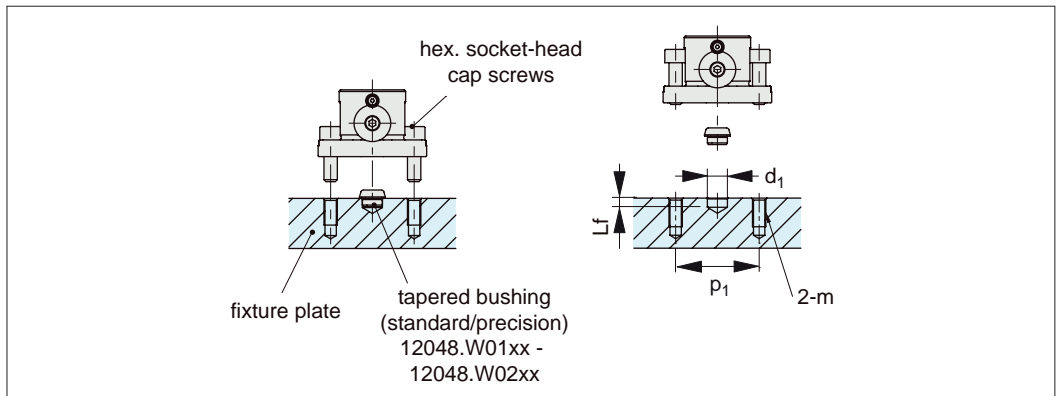


## Installation Instructions Modular Clamping System

### Mounting-Hole Dimension

Use 12048.W02xx tapered bushing (precision) for precise locating.

Use 12048.W01xx tapered bushing (standard) for rough locating.

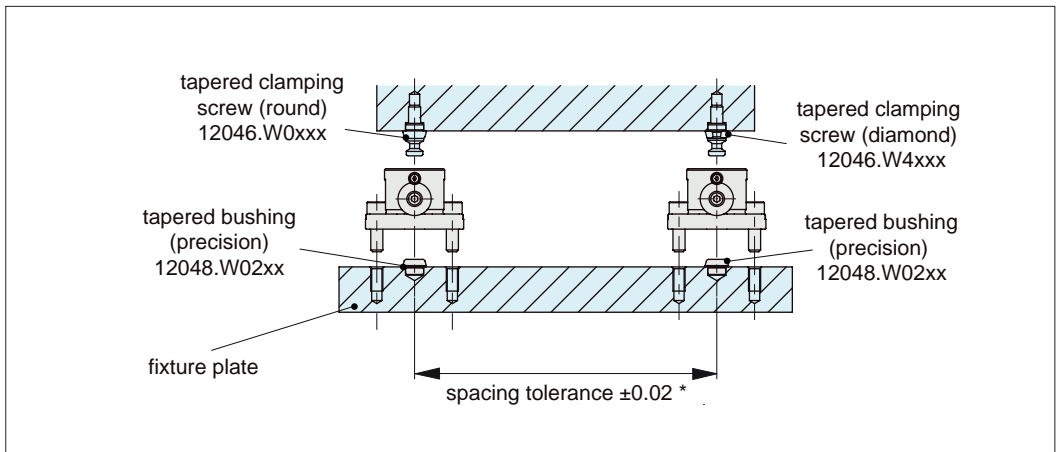


Part Number	d <sub>1</sub> (H7)	Lf	M	P <sub>1</sub>
12043.W0008	8	5.5	M 6X1	42
12043.W0011	12	5.5	M 8X1.25	50
12043.W0016	18	6.5	M 12X1.75	75
12043.W0021	22	8	M 16X2	100

### Spacing Tolerance

Spacing tolerance for 12048.W02xx tapered bushings (precision) should be  $\pm 0.02$ .

Spacing tolerance for 12048.W01xx tapered bushings (standard) should be  $\pm 0.01$ .

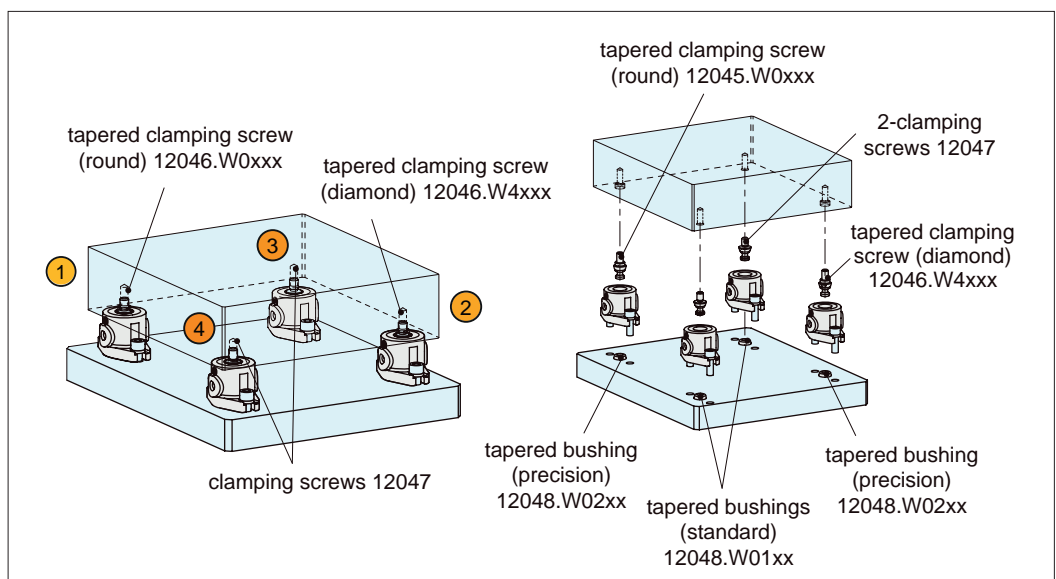


### Tightening Order

Note: For 12043.W0008, use 2 pieces of round tapered clamping screw. Tighten these 2 screws in the same order to maintain the locating repeatability.

Tighten the locking screws in order of

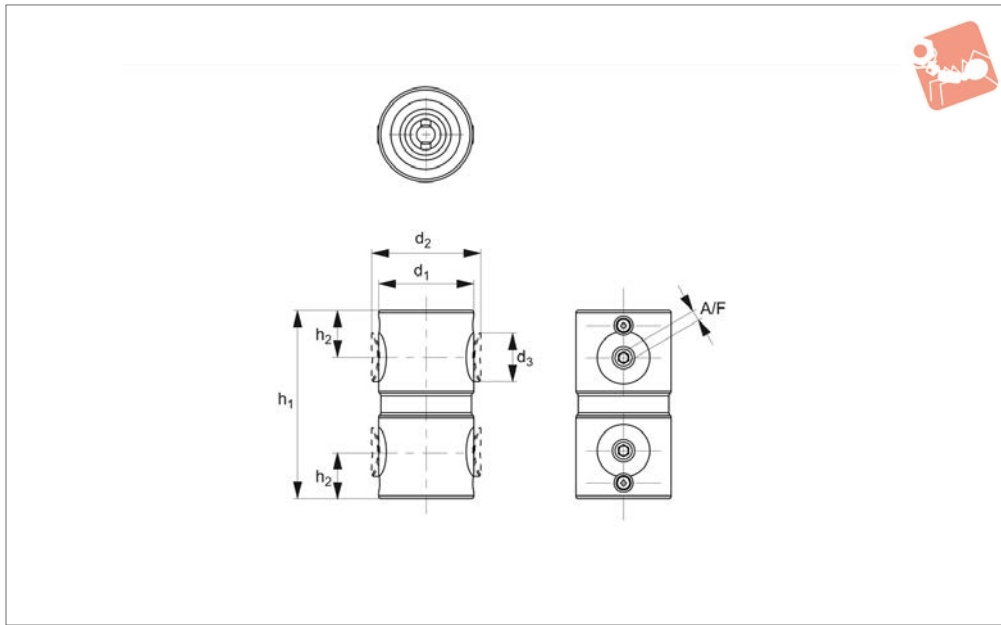
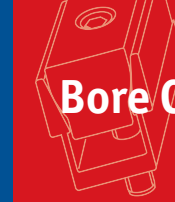
- ① Round tapered clamping screw
- ② Diamond tapered clamping screw
- ③ Clamping screw
- ④ Clamping screw





# Clamping Module - Double unflanged

## Bore Clamping



### 12044

BORE CLAMPING

#### Material

Steel (AISI 4140), induction hardened, black oxide finish.

#### Technical Notes

For suitable clamping screws see part no.s

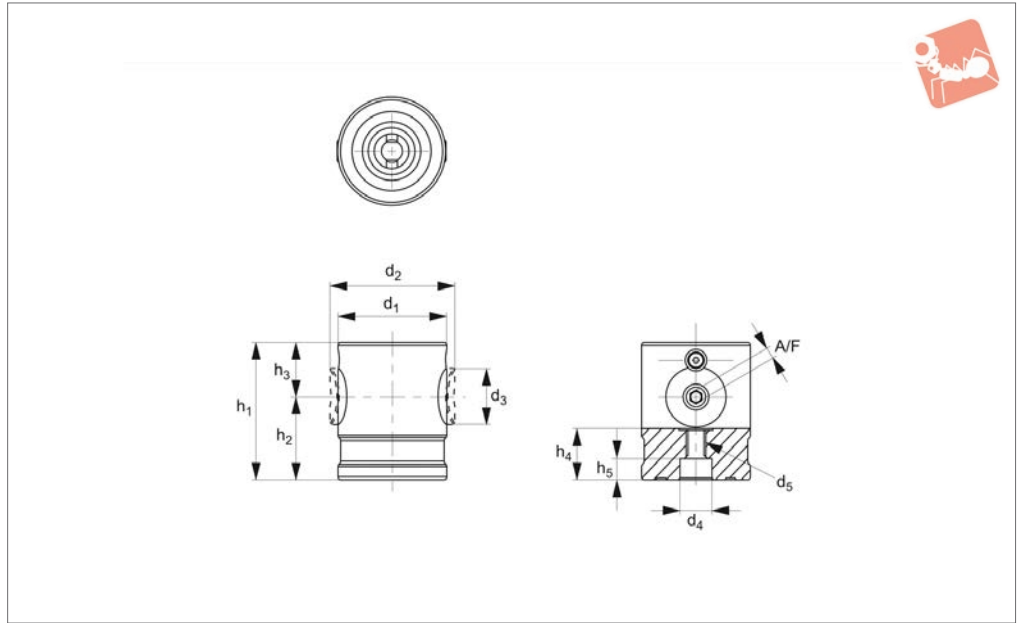
12046 through 12050.

For permissible cutting forces and corresponding workpiece weights when using the clamping module system, see technical pages.

Order No.	$h_1$ $\pm 0.01$	$h_2$	Size	$d_1$	$d_2$	$d_3$	A/F	Clamping force kN max.	Screw torque Nm max.	Weight g
12044.W0008	50	12.5	8	30	34.5	15	3	5	4	200
12044.W0011	80	20.0	11	40	46.0	22	4	8	8	700
12044.W0016	125	30.0	16	60	69.0	32	6	15	22	2600
12044.W0021	160	40.0	21	80	91.0	44	8	25	50	5800



## 12045



BORE CLAMPING

### Material

Steel (AISI 4140), induction hardened, black oxide finish.

### Technical Notes

For suitable clamping screws see part no.s

12046 through 12050.

For permissible cutting forces and corresponding workpiece weights when using the clamping module system, see technical pages.

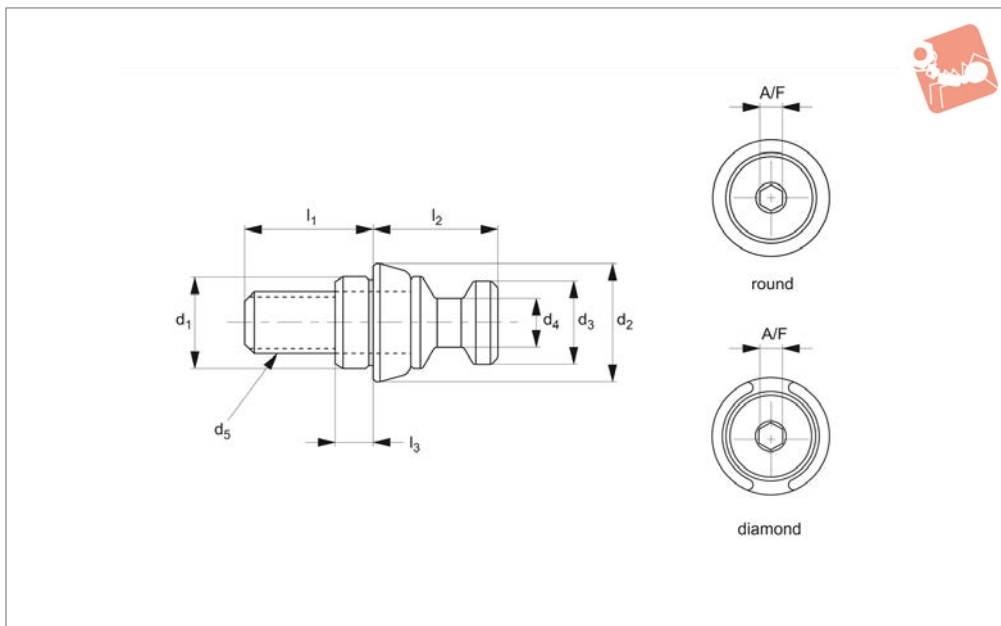
Order No.	$h_1$ $\pm 0.01$	$h_2$	$h_3$	Size	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	$h_4$	$h_5$	A/F	Clamping force kN max.	Screw torque Nm max.	Weight g
12045.W0008	32	19.5	12.5	8	30	34.5	15	8	M 6x1,00	11.5	5.0	3	5	4	200
12045.W0011	50	30.0	20.0	11	40	46.0	22	12	M 8x1,25	18.0	7.5	4	8	8	500
12045.W0016	80	50.0	30.0	16	60	69.0	32	18	M12x1,75	25.0	10.5	6	15	22	1600
12045.W0021	100	60.0	40.0	21	80	91.0	44	22	M16x2,00	31.0	12.5	8	25	50	3800



# Tapered Clamping Screws

round and diamond

## Bore Clamping



**12046**

BORE CLAMPING

### Material

Bushing: steel (C45E), black oxide finish, precision ground.

Screw: steel (SCM435), tempered, black oxide finish.

### Technical Notes

For suitable clamping modules, see parts

12043, 12044 and 12045.

Round type can be used for mounting 12044 double clamping module to fixture plate.

Used together, round and diamond type tapered clamping screws can provide x and y location of workpiece with up to 5 micron

repeatability.

Order No.	$l_1$	Suitable clamping module size	Type	Size	$d_1$ tol. g6	$d_2$	$d_3$	$d_4$	$d_5$	$l_2$	$l_3$	A/F	Weight g
12046.W0061	13	8	Round	8	8	11,5	8	4,8	M 6x1,00	10,0	5,0	3	6
12046.W0062	17	11	Round	11	10	15,5	11	6,5	M 6x1,00	16,5	5,0	3	17
12046.W0081	17	11	Round	11	12	15,5	11	6,5	M 8x1,25	16,5	5,0	3	20
12046.W0082	17	16	Round	16	12	24,5	16	9,5	M 8x1,25	25,0	5,0	5	52
12046.W0121	24	16	Round	16	18	24,5	16	9,5	M12x1,75	25,0	6,0	5	70
12046.W0122	24	21	Round	21	18	31,5	21	13,0	M12x1,75	33,0	6,0	6	125
12046.W0161	30	21	Round	21	22	31,5	21	13,0	M16x2,01	33,0	7,5	6	150
12046.W4062	17	11	Diamond	11	10	15,5	11	6,5	M 6x1,01	16,5	5,0	3	17
12046.W4081	17	11	Diamond	11	12	15,5	11	6,5	M 8x1,26	16,5	5,0	3	20
12046.W4082	17	16	Diamond	16	12	24,5	16	9,5	M 8x1,26	25,0	5,0	5	52
12046.W4121	24	16	Diamond	16	18	24,5	16	9,5	M12x1,75	25,0	6,0	5	70
12046.W4122	24	21	Diamond	21	18	31,5	21	13,0	M12x1,75	33,0	6,0	6	125
12046.W4161	30	21	Diamond	21	22	31,5	21	13,0	M16x2,01	33,0	7,5	6	150



## Installation Instructions Tapered Clamping Screws

### How To Use

Note: For 12043.W0008, 12044.W0008 or 12045.W0011, use 2 pieces of round type.

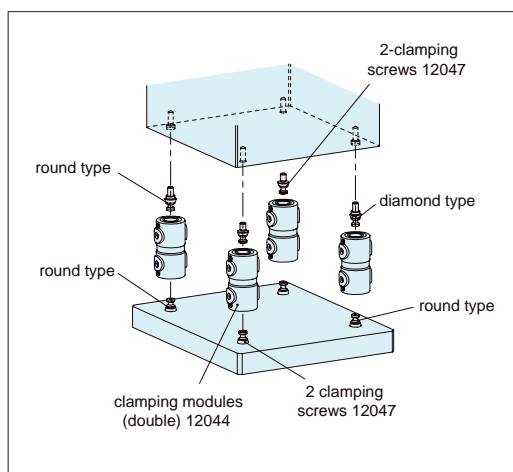
### Round Type

- Can be used for locating 12044 clamping module (double).
- Can be used for locating a workpiece with diamond type.

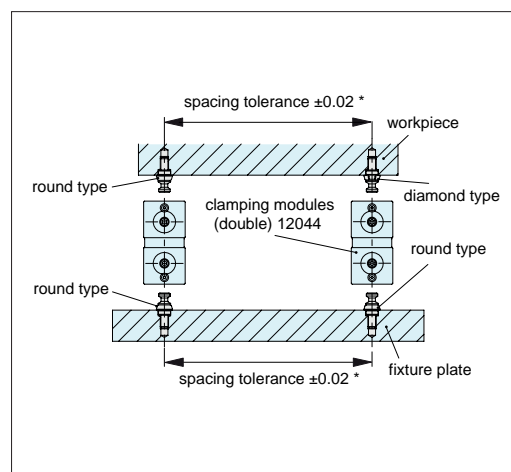
### Diamond Type

- Can be used for locating a workpiece with round type.
- Fix the tapered bushing of diamond type after deciding the direction.

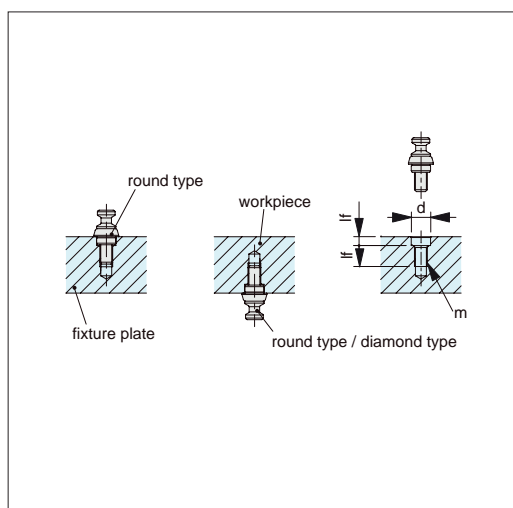
### Application Example



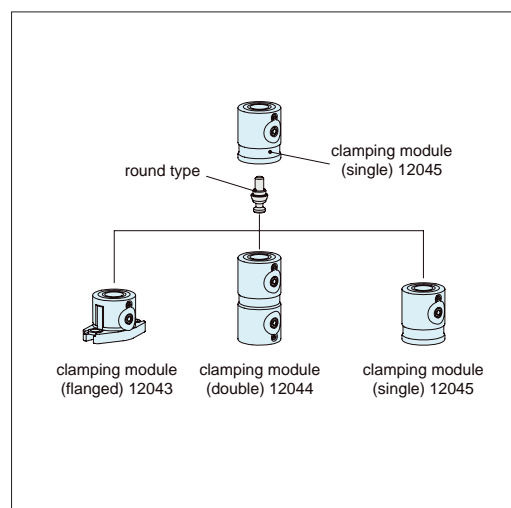
### Spacing Tolerance



### Mounting-Hole Dimension



### Coupling of Clamping Module (Single)



Part Number	d (H7)	Lf	Lf <sub>1</sub>	M
12046.WX061	8	9	5.5	M 6X1
12046.WX062	10	13	5.5	M 6X1
12046.WX081	12	13	5.5	M 8X1.25
12046.WX082	12	13	5.5	M 8X1.25
12046.WX121	18	19	6.5	M12X1.75
12046.WX122	18	19	6.5	M12X1.75
12046.WX161	22	23	8	M16X2

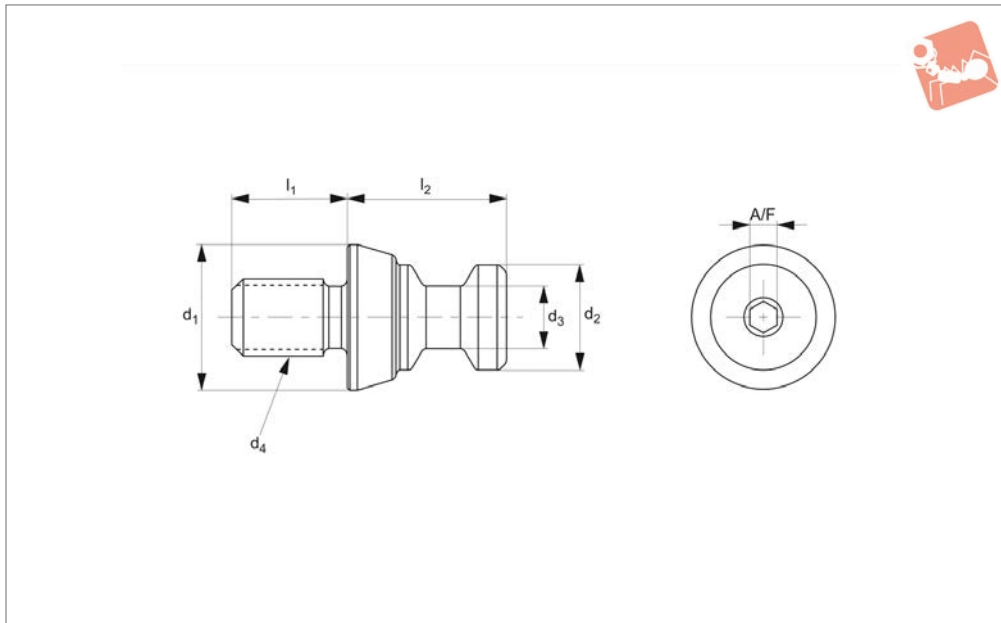
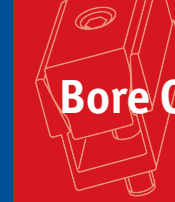
Round type can be used as a coupling for clamping module (single). Locating repeatability is 5 μm).





# Tapered Clamping Screws floating

## Bore Clamping



**12047.1**

BORE CLAMPING

### Material

Bushing: steel (C45E), black oxide finish, precision ground.

### Technical Notes

Can be used to couple double clamping modules (see part no.12044) together for

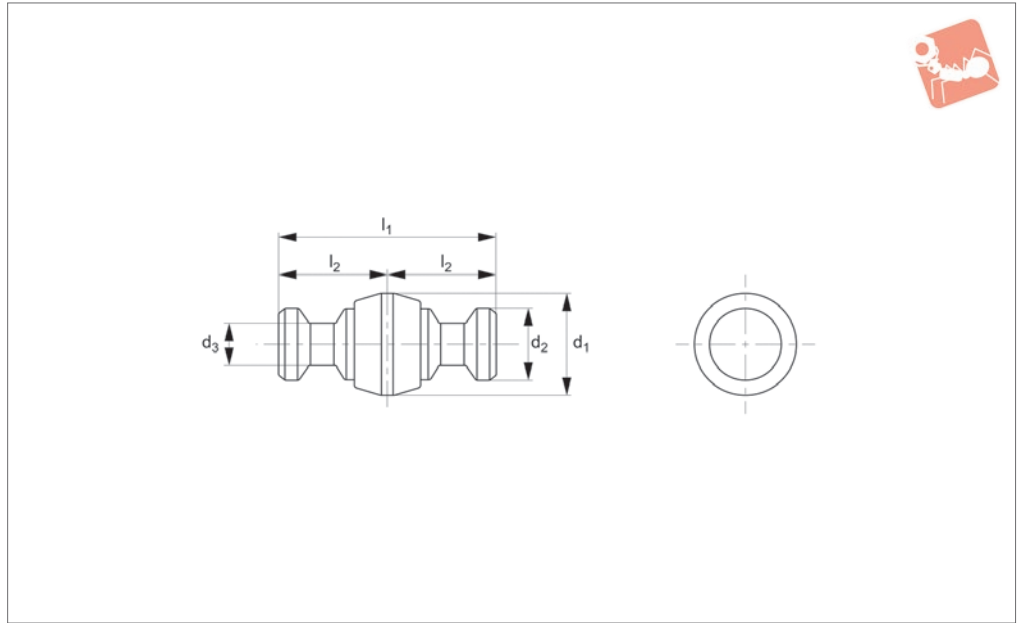
greater height.

Locating repeatability  $\pm 0,2\text{mm}$ .

Order No.	$l_1$	Suitable clamping module size	Type	Size	$d_1$	$d_2$	$d_3$	$d_4$	$l_2$	A/F	Weight g
12047.W0061	8	8	Floating	8	11	8	4,8	M 6x1,00	10,0	3	5
12047.W0062	9	11	Floating	11	15	11	6,5	M 6x1,00	16,5	3	13
12047.W0081	12	11	Floating	11	15	11	6,5	M 8x1,25	16,5	3	16
12047.W0082	12	16	Floating	16	24	16	9,5	M 8x1,25	25,0	5	46
12047.W0121	18	16	Floating	16	24	16	9,5	M12x1,75	25,0	5	57
12047.W0122	18	21	Floating	21	31	21	13,0	M12x1,75	33,0	6	108
12047.W0161	22	21	Floating	21	31	21	13,0	M16x2,01	33,0	6	125



## 12047.2



### Material

Bushing: steel (C45E), black oxide finish, precision ground.

### Technical Notes

Can be used to couple double clamping modules (see part no.12044) together for

greater height.

Locating repeatability  $\pm 0,2\text{mm}$ .

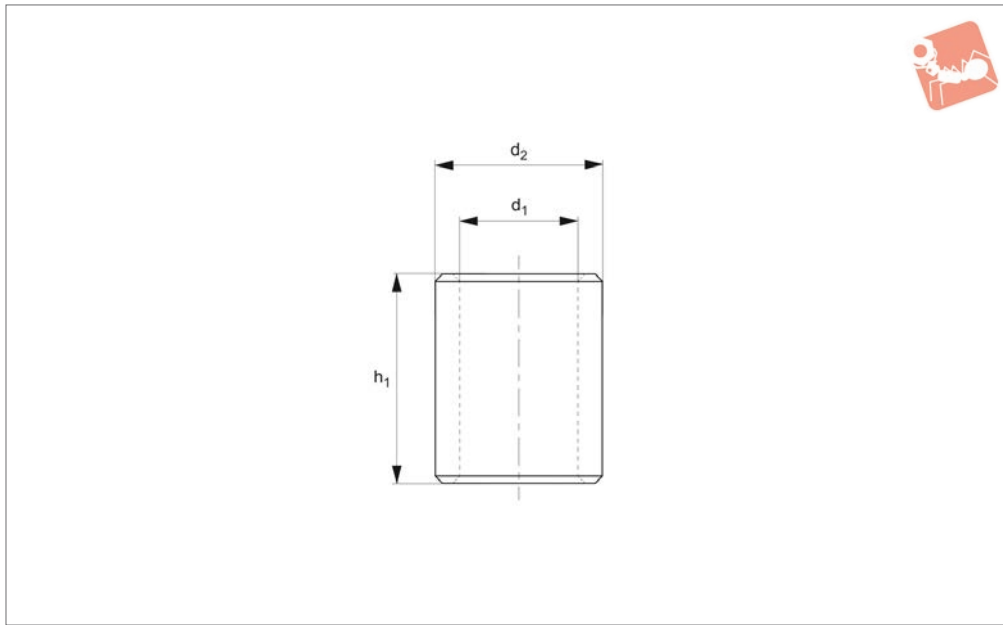
Order No.	$l_1$	Suitable clamping module 12044	Type	Size	$d_1$	$d_2$	$d_3$	$l_2$	Weight g
12047.W0011	33	11	Floating	11	15.5	11	6.5	16.5	24
12047.W0016	50	16	Floating	16	24.5	16	9.5	25.0	85
12047.W0021	66	21	Floating	21	31.5	21	13.0	33.0	190



# Locating Bush

for single clamping module 12045

## Bore Clamping



**12048.1**

BORE CLAMPING

### Material

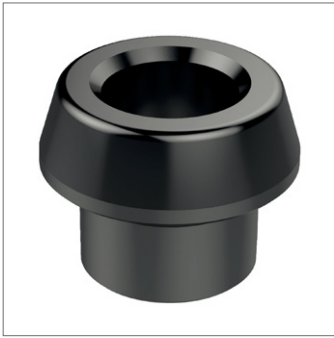
Steel (SK95), tempered, black oxide finish, precision ground.

single clamping module (see part no. 12045) location on the fixture plate. Can achieve clamping module locating repeatability of up to 0,04mm.

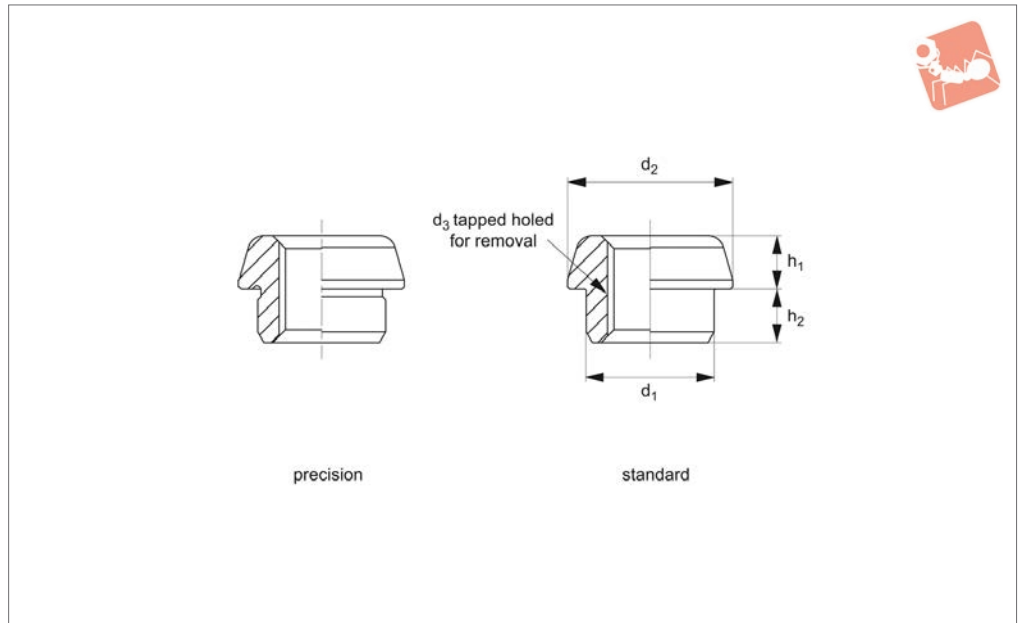
### Technical Notes

Can be used to increase the accuracy of

Order No.	$h_1$	Suitable clamping module 12045	Size	$d_1$	$d_2$ tol. h6	Weight g
12048.W0008	11	8	8	6.0	8	2
12048.W0011	15	11	11	8.5	12	7
12048.W0016	22	16	16	12.5	18	22
12048.W0021	28	21	21	16.5	22	35



## 12048.2



### Material

Steel (C45E), tempered, black oxide finish, precision ground (precision type only)

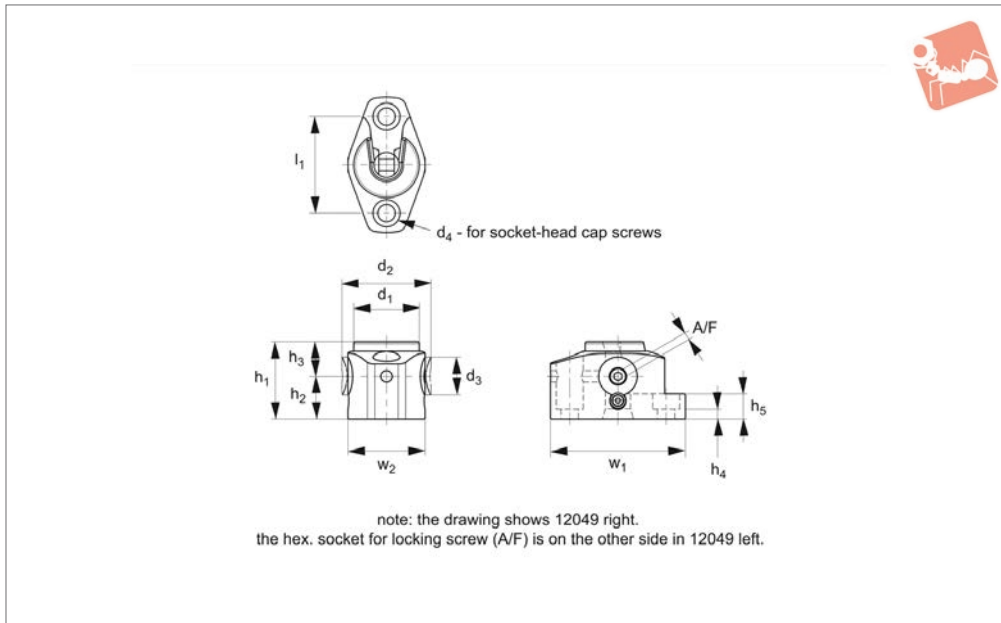
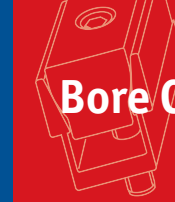
### Technical Notes

Can be used to increase the accuracy of

flanged single clamping module (see part no. 12043) location on the fixture plate. Can achieve clamping module locating repeatability of up to 5 microns (precision type), or 0,1mm (standard type).

Only the precision type is precision ground for increased locating accuracy.

Order No.	$h_1$	$h_2$	Suitable clamping module 12043	Type	Size	$d_2$	$d_3$	Precision $d_1$ tol. g6	Standard $d_1$ -0.02 -0.05	Weight g
12048.W0108	4	5.0	8	Standard	8	11.5	M 6x1,00	-	8	4
12048.W0111	5	5.0	11	Standard	11	15.5	M 8x1,25	-	12	8
12048.W0116	8	6.0	16	Standard	16	24.5	M12x1,75	-	18	27
12048.W0121	10	7.5	21	Standard	21	31.5	M16x2,00	-	22	51
12048.W0208	4	5.0	8	Precision	8	11.5	M 6x1,00	8	-	4
12048.W0211	5	5.0	11	Precision	11	15.5	M 8x1,25	12	-	8
12048.W0216	8	6.0	16	Precision	16	24.5	M12x1,75	18	-	27
12048.W0221	10	7.5	21	Precision	21	31.5	M16x2,00	22	-	51



## 12049.1

BORE CLAMPING

### Material

Steel (AISI 4140), induction hardened, black oxide finish, precision ground.

### Technical Notes

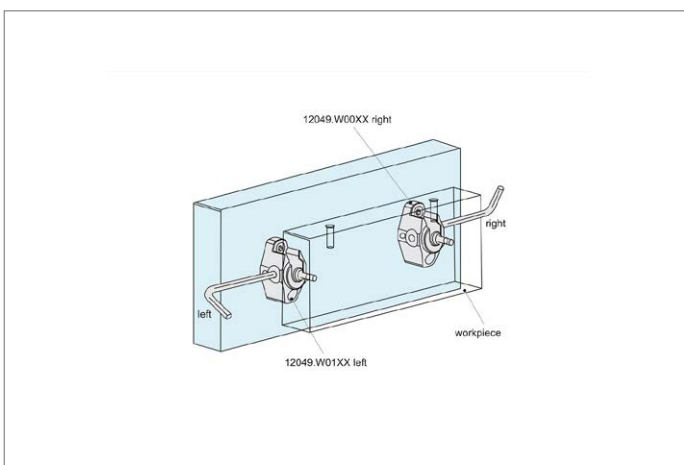
For suitable clamping screws see part no.s

12049.W0212 - .W0224.

For permissible cutting forces and corresponding workpiece weights when using the clamping module system, see technical pages.

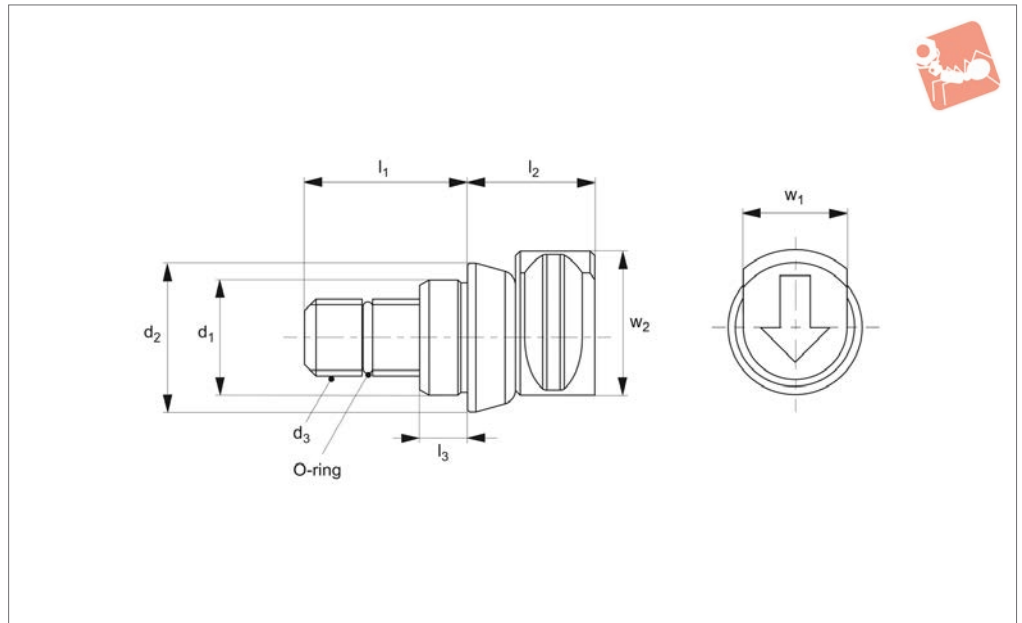
Diagram shown is for right hand version, left hand version only varies by location of locking screw A/F which is on the left hand side of module rather than right.

Order No.	$h_1$ $\pm 0.01$	$h_2$	$h_3$	$l_1$	$w_1$	Type	Size	$d_1$	$d_2$	$d_3$	$d_4$	$h_4$	$h_5$	$w_2$	A/F	Clamping force kN max.	Screw torque Nm max.	Weight g
<b>12049.W0012</b>	40	22	18	50	70	Right	12	34	46	20	M 8	5	13	40	4	8	8	400
<b>12049.W0019</b>	63	35	28	75	100	Right	19	52	69	30	M12	8	20	60	6	15	22	1400
<b>12049.W0024</b>	80	44	36	100	140	Right	24	70	93	40	M16	10	26	80	8	25	50	3200
<b>12049.W0112</b>	40	22	18	50	70	Left	12	34	46	20	M 8	5	13	40	4	8	8	400
<b>12049.W0119</b>	63	35	28	75	100	Left	16	52	69	30	M12	8	20	60	6	15	22	1400
<b>12049.W0124</b>	80	44	36	100	140	Left	24	70	93	40	M16	10	26	80	8	25	50	3200





## 12049.2



### Material

Bushing: steel (C45E), black oxide finish, precision ground.  
Screw: steel (SCM 435), tempered, black

oxide finish.

O-ring: nitrile rubber.

### Technical Notes

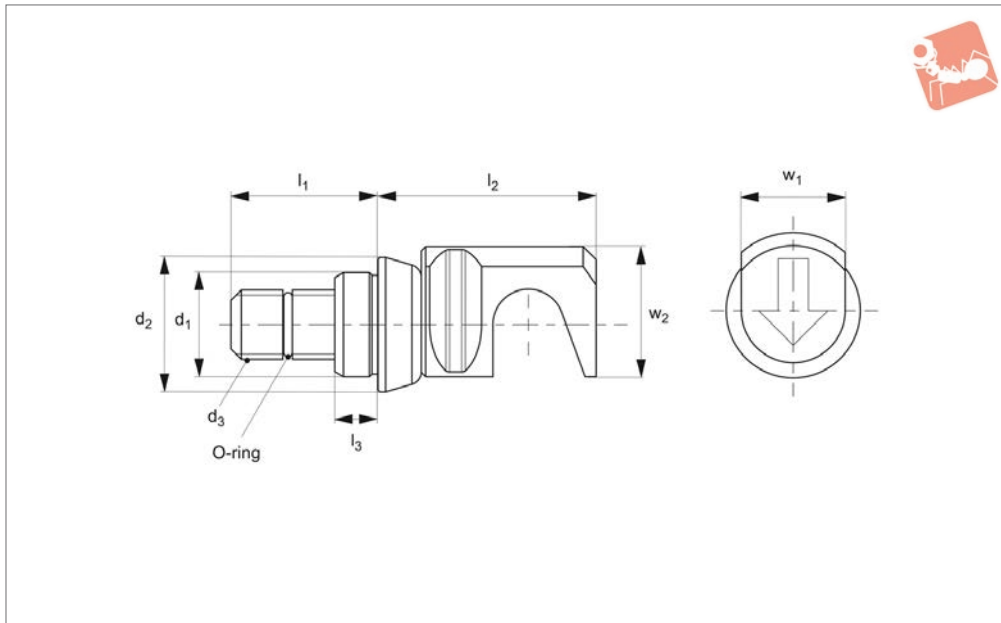
For suitable clamping modules see part no.12049.W0012 - .W0124.

Order No.	$l_1$	$w_1$	Suitable clamping module size	Type	Size	$d_1$ tol. g6	$d_2$	O-ring size	$d_3$	$l_2$	$l_3$	$w_2$	Weight g
<b>12049.W0212</b>	17	12	12	Precision	12	12	15,5	SS050 (CS1 I/D 5,0)	M 8x1,25	13,0	5,0	15,0	22
<b>12049.W0219</b>	24	19	19	Precision	19	18	24,5	S8 (CS1,5 I/D 7,5)	M12x1,75	21,5	6,0	23,5	81
<b>12049.W0224</b>	30	24	24	Precision	24	22	31,5	S12 (CS 1,5 I/D 11,5)	M16x2,00	27,0	7,5	30,0	170



# Tapered Clamping Screws - Hook precision

## Bore Clamping



**12049.3**

BORE CLAMPING

### Material

Bushing: steel (C45E), black oxide finish, precision ground.  
Screw: steel (SCM 435), tempered, black

oxide finish.

O-ring: nitrile rubber.

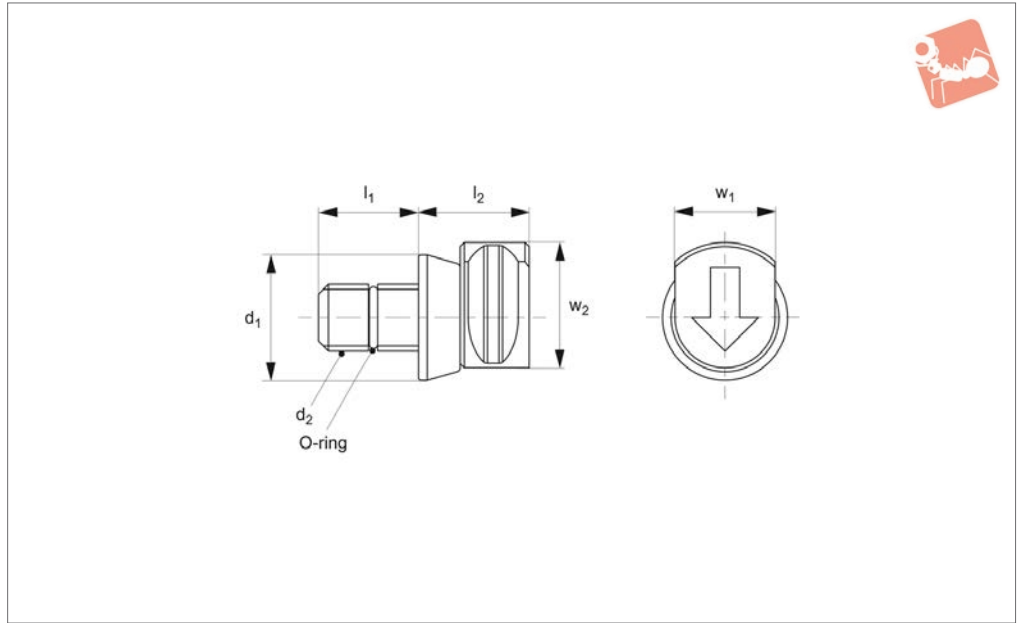
### Technical Notes

For suitable clamping modules see part no. 12049.1.

Order No.	$l_1$	$w_1$	Suitable clamping module size	Type	Size	$d_1$ tol. g6	$d_2$	O-ring size	$d_3$	$l_2$	$l_3$	$w_2$	Weight g
<b>12049.W0312</b>	17	12	12	Precision	12	12	15,5	SS050 (CS1 I/D 5,0)	M 8x1,25	25	5,0	15,0	30
<b>12049.W0319</b>	24	19	19	Precision	19	18	24,5	S8 (CS1,5 I/D 7,5)	M12x1,75	40	6,0	23,5	115
<b>12049.W0324</b>	30	24	24	Precision	24	22	31,5	S12 (CS 1,5 I/D 11,5)	M16x2,00	51	7,5	30,0	235



## 12049.4



### Material

Bushing: steel (C45E), black oxide finish, precision ground.  
Screw: steel (SCM 435), tempered, black

oxide finish.

O-ring: nitrile rubber.

### Technical Notes

For suitable clamping modules see part no. 12049.1.

Order No.	$l_1$	$w_1$	Suitable clamping module size	Type	Size	$d_1$	$d_2$	O-ring size	$l_2$	$w_2$	Weight g
12049.W0412	12	12	12	Standard	12	15	M 8x1,25	SS050 (CS1 I/D 5,0)	13,0	15,0	18
12049.W0419	18	19	19	Standard	19	24	M12x1,75	S8 (CS1,5 I/D 7,5)	21,5	23,5	69
12049.W0424	22	24	24	Standard	24	31	M16x2,00	S12 (CS 1,5 I/D 11,5)	27,0	30,0	147

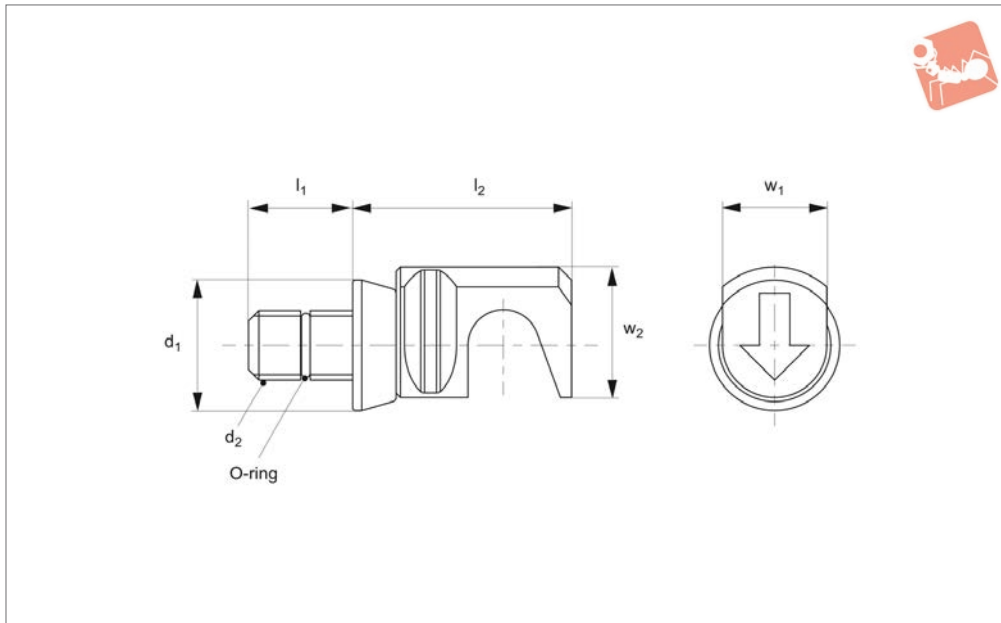




# Clamping Screws - Hook standard



## Bore Clamping



### 12049.5

BORE CLAMPING

#### Material

Bushing: C45E. Black oxide finish, precision ground.  
 Screw: steel (SCM 435), tempered, black

oxide finish.

O-ring: nitrile rubber.

#### Technical Notes

For suitable clamping modules see part no. 12049.1.

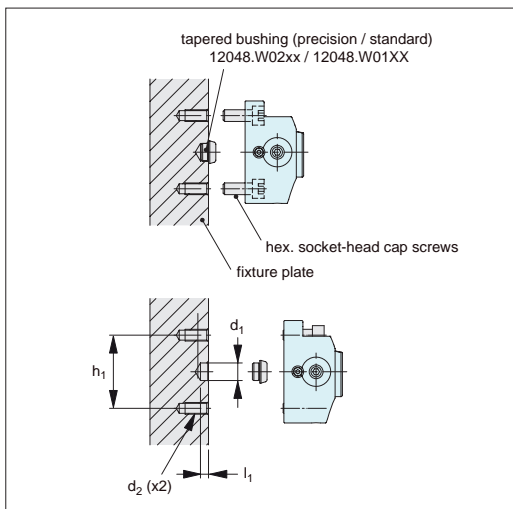
Order No.	$l_1$	$w_1$	Suitable clamping module size	Type	Size	$d_1$	$d_2$	O-ring size	$l_2$	$l_3$	$w_2$	Weight g
<b>12049.W0512</b>	12	12	12	Standard	12	15	M 8x1,25	SS050 (CS1 I/D 5,0)	25	5,0	15,0	26
<b>12049.W0519</b>	18	19	19	Standard	19	24	M12x1,75	S8 (CS1,5 I/D 7,5)	40	6,0	23,5	103
<b>12049.W0524</b>	22	24	24	Standard	24	31	M16x2,00	S12 (CS 1,5 I/D 11,5)	51	7,5	30,0	213



How To Use

- Use 12048.W02xx tapered bushing (precision) for precise locating.
- Use 12048.W01xx tapered bushing (standard) for rough locating.

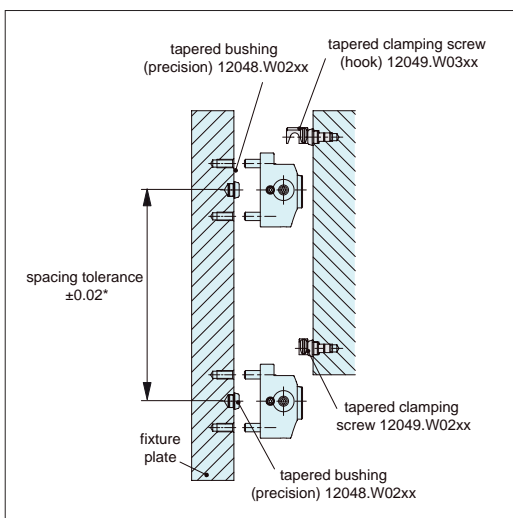
Mounting Hole Dimension



Part Number	d <sub>1</sub> (H7)	l <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>
12049.W0012	12	5.5	M 8X1,25	50
12049.W0112	12	5.5	M 8X1,25	50
12049.W0019	18	6.5	M12X1,75	75
12049.W0119	18	6.5	M12X1,75	75
12049.W0024	22	8	M16X2	100
12049.W0124	22	8	M16X2	100

\* The tolerance of dimension 'd<sub>1</sub>' for tapered bushings (standard) should be  $0^{-0,1}$

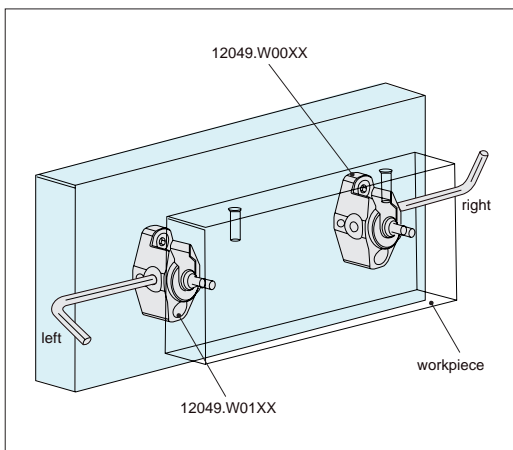
Spacing Tolerance



Spacing tolerance should be  $\pm 0,02$  for tapered bushings (precision).

\*Spacing tolerance should be  $\pm 0,1$  for tapered bushings (standard).

Layout



Use 12049.W00xx for tightening from right side, 12049.W01xx for left side.



# Clamping Modules for Vertically Mounted Fixtures



12049

Clamping & Height Setting

## Clamping Modules for Vertically Mounted Fixtures

Firstly tighten the hook type clamping screw.

The first one becomes reference.

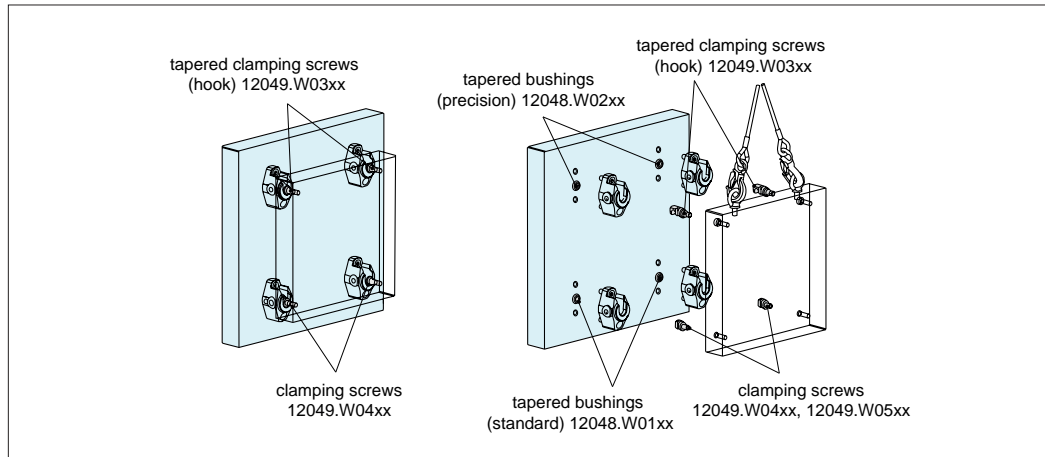
The products should be positioned as shown below.

12049.W03xx, 12049.W01xx and 12049.W02xx tapered clamping screws and 12048.W02xx tapered bushings (precision) should be used together, and 12049.W04xx and 12049.W05xx clamping screws and 12048.W01xx tapered bushings (standard) should also be used together.

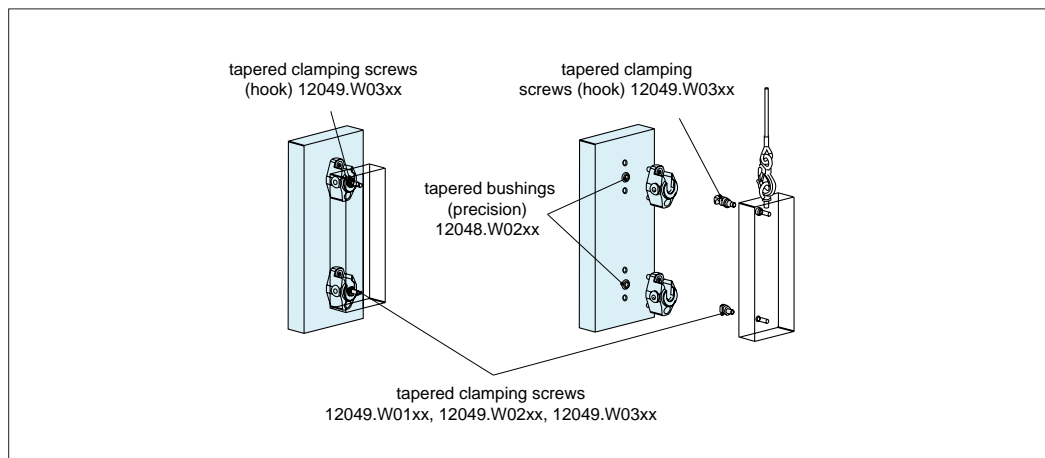
### Application Example

Note: Do not remove the hoists until the unit fully clamped.

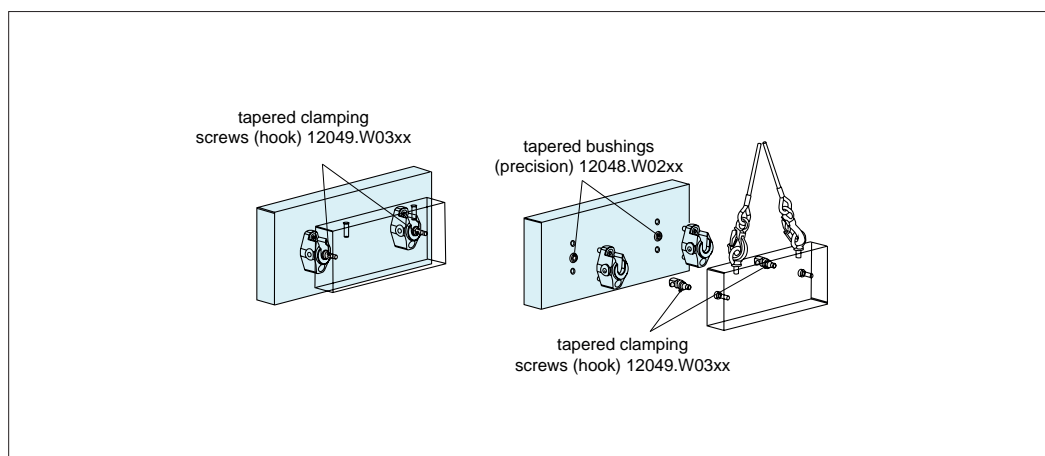
### Example 1



### Example 2



### Example 3



BORE CLAMPING

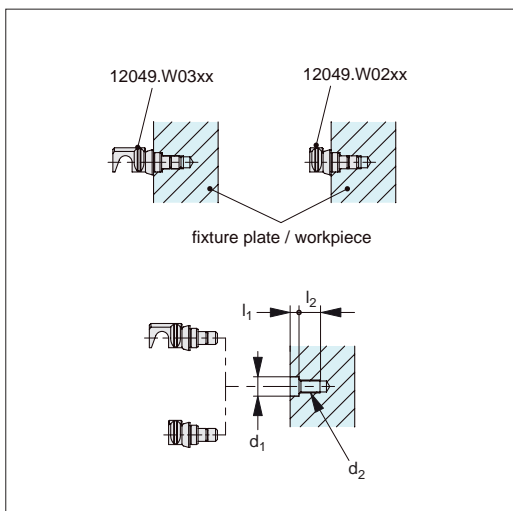
ov-W12049.1-A-T-W12049.5-A-T-clamping-modules-vertically-mounted-fixtures-rmh - Updated - 21-10-2022



## Clamping Modules for Angle Mounted Fixtures

- Each clamping screw has commercially available O-ring to prevent rotation and keep the direction of arrow marking.
- O-ring should be replaced by the customer when it is worn.
- Tapered clamping screws can be used for locating fixture plate or workpiece.
- Clamping screws can be used for just clamping.

### Mounting Hole Dimension

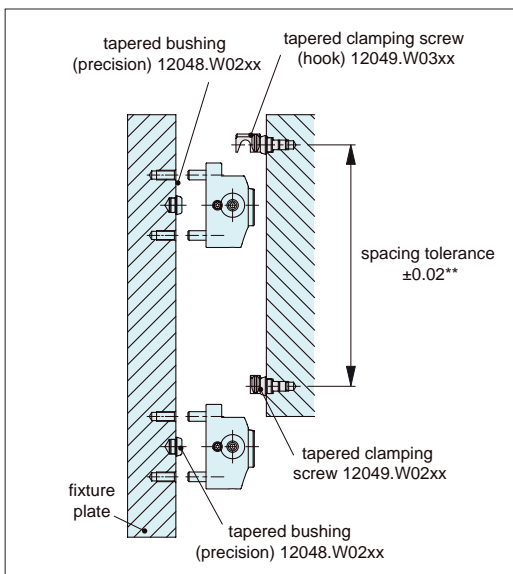


Part Number	d <sub>1</sub> *	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>
12049.W0212	12	13	5.5	M 8X1,25
12049.W0312	12	13	5.5	M 8X1,25
12049.W0219	18	19	6.5	M12X1,75
12049.W0319	18	19	6.5	M12X1,75
12049.W0224	22	23	8	M16X2,00
12049.W0324	22	23	8	M16X2,00

\* The hole tolerance should always be  $\begin{matrix} -0,010 \\ -0,025 \end{matrix}$  when tapered clamping screws are always mounted on the fixture plate. Fixture plate and tapered bushing fit tightly and keep repeatability without chip incursion.

The hole tolerance should be H7 when mounting on workpiece. Tapered bushing can be easily mounted/ removed.

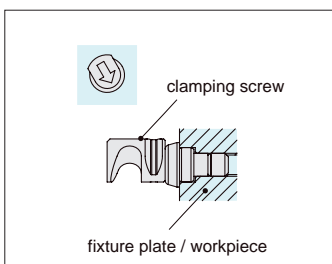
### Spacing Tolerance



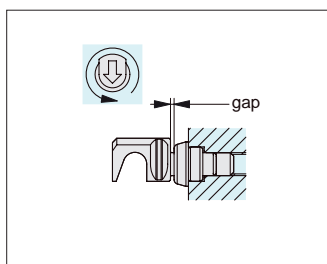
Spacing tolerance should be  $\pm 0,02$  for tapered clamping screws.

\*\*Spacing tolerance should be  $\pm 0,2$  for clamping screws.

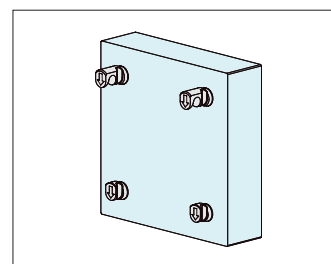
### Installation



1. Fully tighten the clamping screw on fixture plate or workpiece.



2. Turn the screw counter clockwise within one turn until the arrow marking points downward. (There is a gap between clamping screw and tapered bushing)

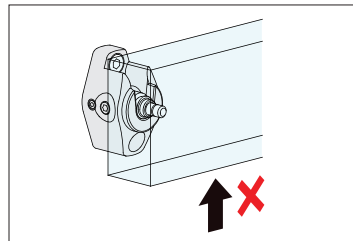
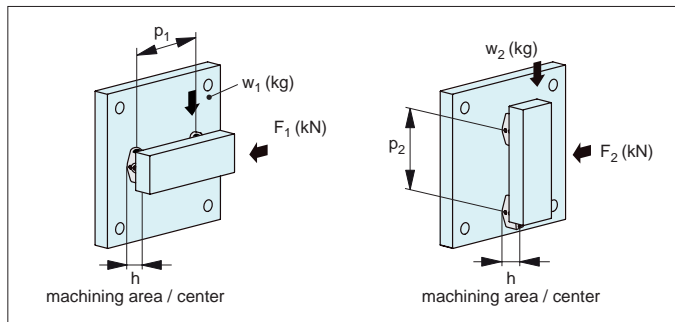


3. Install the clamping screws into the clamping modules.



## Permissible Cutting Force & Workpiece Weight of Clamping Modules (Hook)

Ensure the cutting force and workpiece weight are within the allowable level.



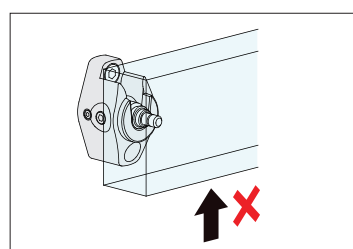
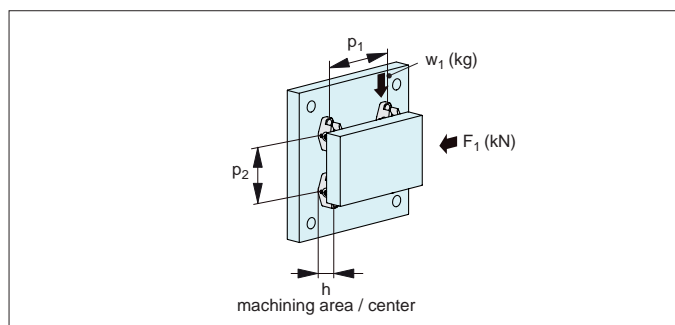
Note: Heavy cutting force in the open direction may cause workpiece move.

### 2 Modules

#### Permissible Cutting Force

#### Permissible Workpiece Weight

Part Number	F <sub>1</sub> (kN)	F <sub>2</sub> (kN)	Max (kN)	w <sub>1</sub> (kg)	w <sub>2</sub> (kg)	Max (kg)
12049.W0012 / W0112	$(0,24p_1 + 432)/h$	240/h	3,2	240 x100/h	$(0,24p_2 + 432) \times 100/h$	320
12049.W0019 / W0119	$(0,50p_1 + 900)/h$	500/h	6	500 x100/h	$(0,50p_2 + 900) \times 100/h$	600
12049.W0024 / W0124	$(1,00p_1 + 1800)/h$	1000/h	10	1000x100/h	$1,00p_2 + 1880) \times 100/h$	1000



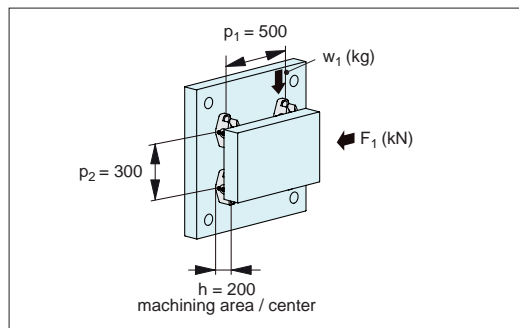
Note: Heavy cutting force in the open direction may cause workpiece move.

### 4 Modules

#### Permissible Cutting Force

#### Permissible Workpiece Weight

Part Number	F <sub>1</sub> (kN)	Max (kN)	w <sub>1</sub> (kg)	Max (kg)
12049.W0012 / W0112	$2x(0,24p_1 + 432)/h$	6.4	$2x(0,24p_2 + 432) \times 100/h$	640
12049.W0019 / W0119	$2x(0,50p_1 + 900)/h$	12	$2x(0,50p_2 + 900) \times 100/h$	1200
12049.W0024 / W0124	$2x(1,00p_1 + 1800)/h$	20	$2x(1,00p_2 + 1880) \times 100/h$	2000



- 4 pieces of 12049.W0019 (height 63mm)
- Pitch: p<sub>1</sub> = 500mm p<sub>2</sub> = 300mm
- Workpiece center: h = 200mm
- F<sub>1</sub> direction cutting force: 5kN
- Workpiece weight: 600kg

#### <Allowable Cutting Force F<sub>1</sub>>

$$F_1 = 2x(0.5X p_1 + 900)/H$$

$$= 2x(0.5X 500 + 900)/200$$

$$= 11.5kN$$

\*) Cutting force 5kN is within allowable value (11.5kN).

#### <Allowable Workpiece Weight W<sub>1</sub>>

$$W_1 = 2x(0.5X p_2 + 900)X100/H$$

$$= 2x(0.5X 300 + 900)X100/200$$

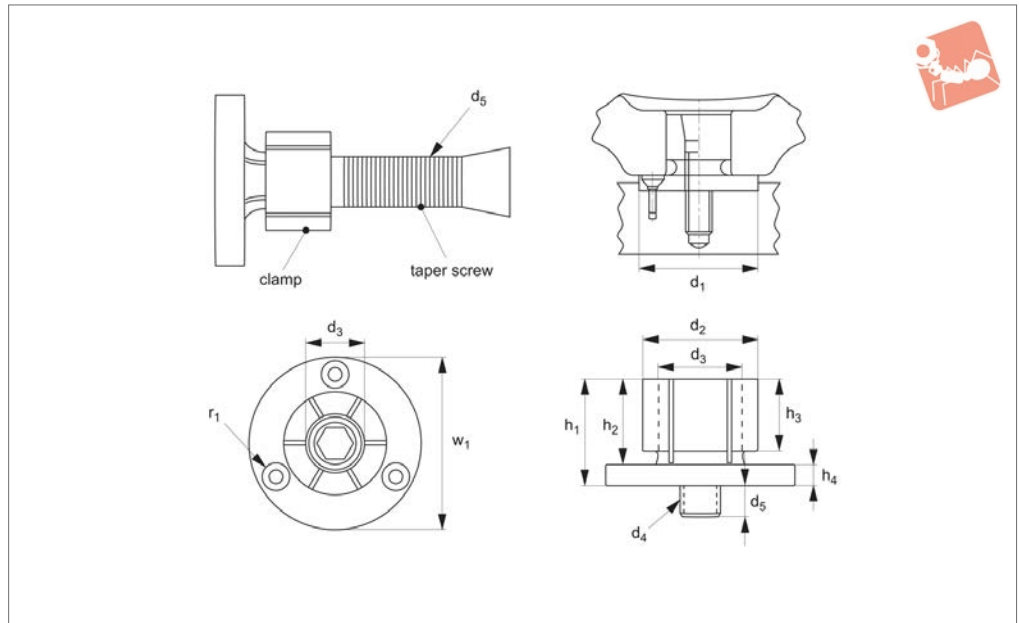
$$= 1050kg$$

\*) Workpiece weight 600kg is within allowable value (1050kg).

### Calculation Example



## 12051



### Material

Body: mild steel.  
Tapered screw: steel, heat-treated (coated to prevent seizing).  
12051.W0250: aluminium (7075-T6) .

### Technical Notes

For holding parts on an inside diameter, for high density machining on vertical or horizontal mills.  
Diameter can range from 4,1mm to a maximum of 250mm!  
This product can also be used as an expanding mandrel on a lathe.  
Tighten with hex key or hydraulic pull cylinders.  
The flange diameter of the base is held to a close tolerance for precision location in a machined pocket.

### Tips

$d_3$  is the minimum diameter the „ $d_2$ “ dimension can be machined or turned down to.  
Mounting screws included.

### Important Notes

#### Installation for clamps 12051.W0010 to .W0051.

- Expand clamp 0,1mm over the relaxed diameter and machine to fit workpiece bore (on lathe or mill).  
If using the clamp on a lathe then use the nut provided to tighten the taper screw. This nut is only used to machine the clamp.
- Machine a pocket in the fixture for the close tolerance „ $d_1$ “ dimension, and drill and tap mounting holes „ $d_4$ “.
- Drill and tap a hole „ $d_5$ “ in the centre of

the pocket for the tapered screw.

- A recessed dowel pin can be installed into the flange for extra rigidity if required.
- Range of expansion 0,13 - 0,64mm depending on clamp size.

#### Installation for clamps 12051.W0077 to .W0250.

- Insert machining locking ring (provided), tighten taper screw and machine clamp to required bore size.
- Release taper screw and remove locking ring prior to any machining of workpieces. Note: 12051.W0175 and W0250 have four mounting holes on PCD as dimension „ $d_4$ “.

Order No.	$h_1$	$h_2$	$h_3$	$d_1$ +0.000 -0.050	Weight g
12051.W0010	10.7	7.6	6.1	20.0	23
12051.W0012	21.8	16.0	15.0	29.7	59
12051.W0014	24.9	19.0	15.0	31.5	109
12051.W0020	24.9	19.0	15.0	37.5	204
12051.W0027	28.6	22.2	17.5	50.0	213
12051.W0035	31.8	25.4	20.6	56.0	317
12051.W0042	39.6	31.8	27.0	69.5	593
12051.W0051	39.6	31.8	27.0	75.5	775
12051.W0077	45.5	37.6	32.3	107.5	1826
12051.W0103	45.5	37.6	32.3	132.9	2954
12051.W0175	45.5	37.6	32.3	132.9	6795
12051.W0250	45.5	37.6	32.3	152.4	5436

Order No.	$d_3$ min.	$d_4$	$d_5$	Stock $d_2$	$h_4$	$r_1$ on PCD	Torque to Nm max.	Holding force kN	Expansion from relaxed dia. max.
12051.W0010	4.1	M 2	4.1	7.4	3.0	M 2 at 13,7	0.7	1.1	0.1



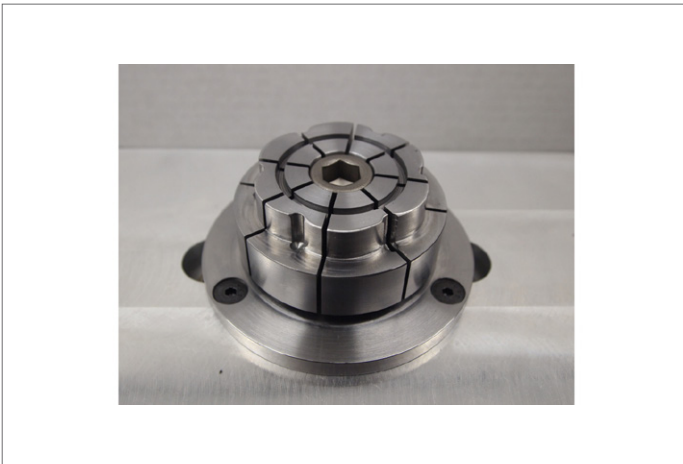
# ID Xpansion Clamps - Machinable

for clamping internal bores



## Bore Clamping

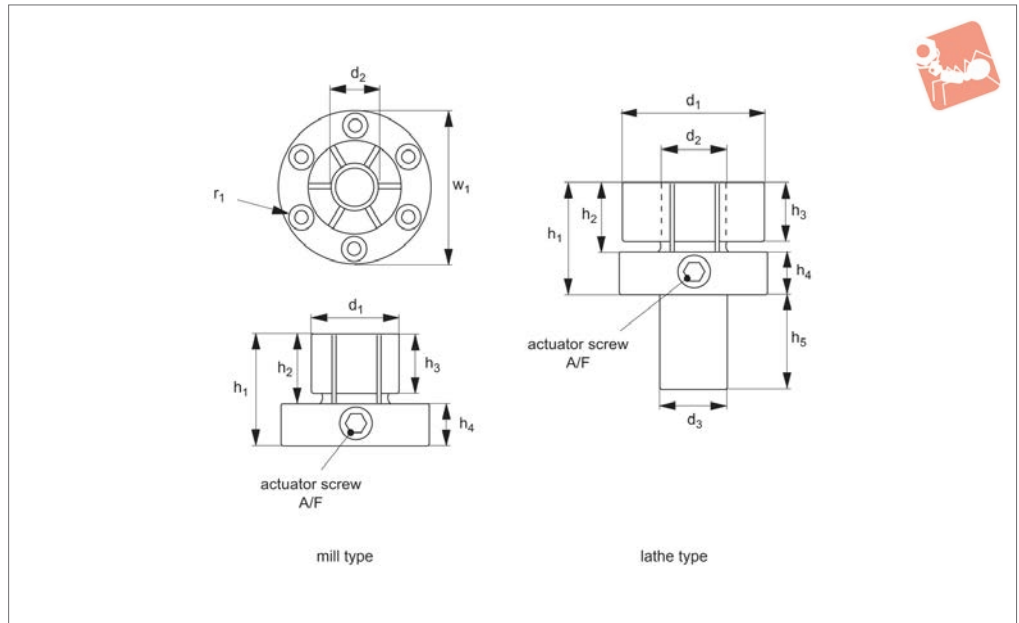
Order No.	d <sub>3</sub> min.	d <sub>4</sub>	d <sub>5</sub>	Stock d <sub>2</sub>	h <sub>4</sub>	r <sub>1</sub> on PCD	Torque to Nm max.	Holding force kN	Expansion from relaxed dia. max.
<b>12051.W0012</b>	7.1	M 4	7.2	12.4	5.9	M 3 at 21,0	5.0	4.2	0.3
<b>12051.W0014</b>	12.2	M 6	11.2	14.2	5.9	M 3 at 23,1	17.0	8.4	0.3
<b>12051.W0020</b>	13.5	M 8	13.2	20.0	5.9	M 3 at 29,0	34.0	11.1	0.4
<b>12051.W0027</b>	18.0	M10	16.3	27.0	6.4	M 4 at 39,4	60.0	20.0	0.4
<b>12051.W0035</b>	23.0	M12	20.3	35.3	6.4	M 4 at 45,5	150.0	26.2	0.4
<b>12051.W0042</b>	29.3	M16	21.4	42.0	7.9	M 5 at 55,9	280.0	44.5	0.4
<b>12051.W0051</b>	29.3	M16	21.4	51.5	7.9	M 5 at 63,9	280.0	44.5	0.4
<b>12051.W0077</b>	29.3	M16	19.3	77.7	7.9	M 6 at 92,6	280.0	44.5	0.4
<b>12051.W0103</b>	29.3	M16	19.3	103.0	7.9	M 6 at 118,1	280.0	44.5	0.4
<b>12051.W0175</b>	29.3	M16	19.3	175.0	7.9	M 6 at 118,1	280.0	44.5	0.5
<b>12051.W0250</b>	29.3	M16	19.3	250.2	7.9	M 6 at 133,4	170.0	26.0	1.0



BORE CLAMPING



## 12052



### Material

Mild steel body, with heat-treated tapered screw (coated to prevent seizing).

### Technical Notes

For clamping blind holes from 17,8mm to 53mm.

Actuated from the side. The cam shaft and the plunger expand the clamp.

### Tips

Actuated by turning a socket head cam shaft on the side which moves a tapered plunger to expand the clamp.

Two versions: one for milling (type: mill) and one for turning (type: lathe).

„d<sub>2</sub>“ is the minimum diameter the „d<sub>1</sub>“ dimension can be machined or turned down to.

Mounting screws included.

### Important Notes

Installation Instructions:

ID Xpansion Clamps are designed for clamping on the inside diameter of a component. To install correctly, please follow the following guidelines:

1. Expand the clamp approximately 0,1mm over its relaxed diameter and machine diameter d<sub>1</sub> to suit bore of the workpiece, either on lathe or mill.

2. If machining the clamp on a lathe use the nut provided, on the back of the clamp, to tighten the tapered screw. This nut is used only to machine the clamp.

3. Machine a pocket in the fixture to the close tolerance of dimension w<sub>1</sub>, and depth h<sub>4</sub>.

4. Drill and tap mounting holes as per dimension r<sub>1</sub>.

5. In the centre of the pocket, drill and tap a hole to dimension d<sub>3</sub> for the tapered screw.

6. For additional rigidity, a recessed dowel pin may be installed into the flange, if required.

Order No.	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	w <sub>1</sub> +0.000 -0.05	Type	d <sub>1</sub>	d <sub>2</sub> min.	d <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub>	r <sub>1</sub> on PCD	A/F	Torque to Nm max.	Holding force kN	Weight g
<b>12052.W0828</b>	41.3	22.2	17.5	50.0	Mill	28.7	17.8	-	19.0	-	Ø39,4 (M 4)	M 6	66	20	340.2
<b>12052.W0853</b>	44.4	25.4	21.3	-	Lathe	53.3	17.8	25	19.0	44.4	-	M 6	66	20	

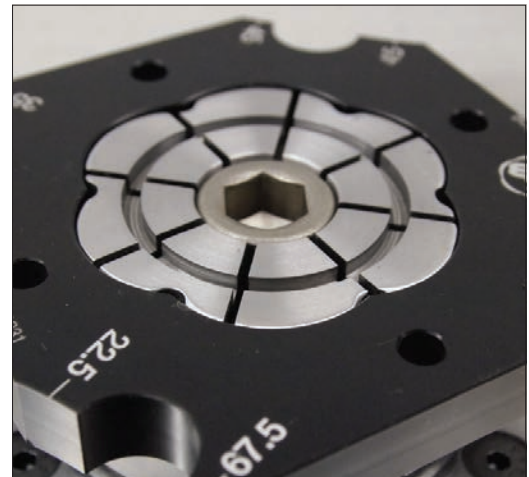
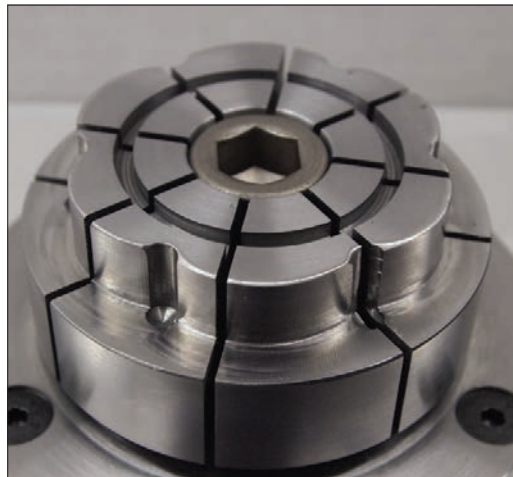






**ID Xpansion Clamp, Machinable**

The ID Xpansion Clamp is the ideal way to hold multiple parts on an inside diameter for machining on your VMC or HMC.



ID Xpansion Clamps can be used to hold components with complex internal shapes, not just plain bores.

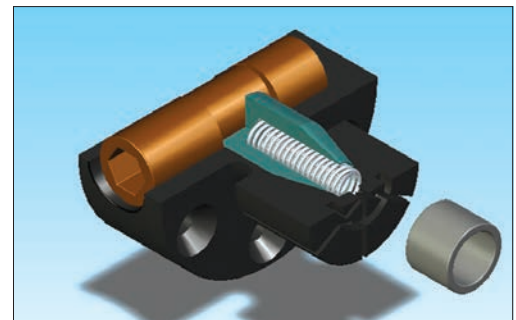
These machinable clamps are produced in 10 sizes and can hold internal diameters from 21,8 to 45,5mm.

- Low profile and ideal for secondary operations on lathe parts.
- Easily machined to size on lathe or mill.
- Excellent for palletised setups.
- Allow more parts per workcube or fixture plates.
- Body made of mild steel for machinability.
- Tighten with hex key, hydraulic pull cylinders or speed block.

BORE CLAMPING

**Side-Loc Xpansion Clamp**  
machinable

Wixroyd introduces a new style clamp to its range of ID-Xpansion clamps, the Side-Loc Xpansion Clamp. Actuated by turning a socket head cam shaft on the side, it is ideal for clamping on blind internal diameters. The locking ring provides an accurate preset diameter and rigidity for machining. Like our original ID Xpansion clamps, the Side-Loc Xpansion Clamp has the dead length feature which is critical for close tolerance dimensions.

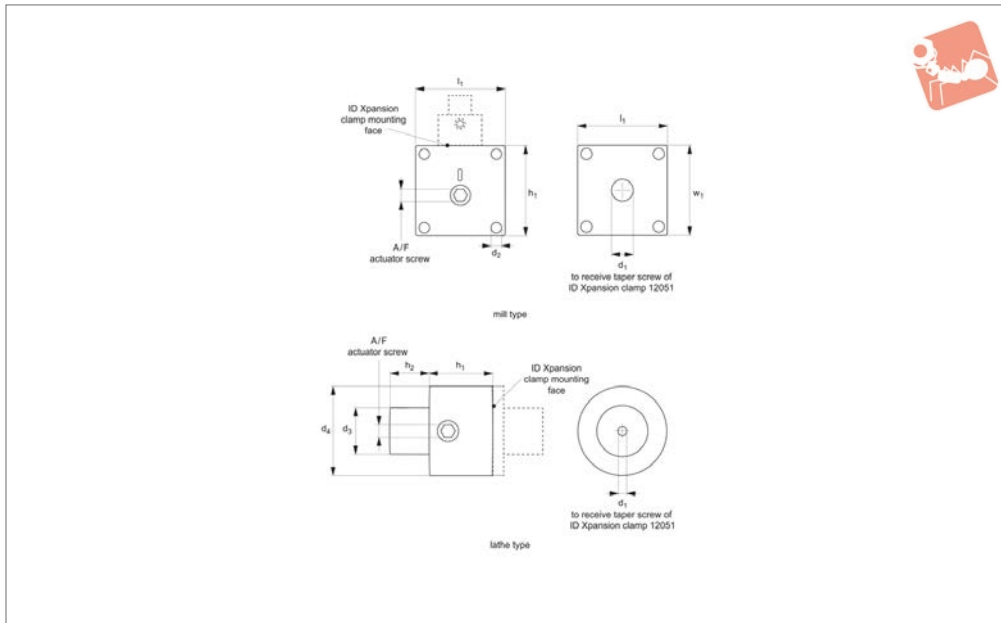
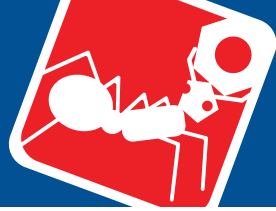


Clamp activated from the side with a standard hex key.

Designed in two styles, one for milling operations and one for lathe applications; the mill Side-Loc Xpansion Clamp can be machined from 28.4 to 18mm and the lathe version from 53 to 18mm.



Side-Loc Xpansion Clamp, when the component obstructs the clamps tapered screw.



### 12054

BORE CLAMPING

#### Material

Steel.

#### Technical Notes

Versatile manual actuators when combined with our ID Xpansion clamps 12051. Enables clamping of smaller internal diameters and blind holes. Mount corresponding ID Xpansion clamp. Mill type actuator is adaptable and can be used on both vertical and horizontal planes. Once installed the clamp can be actuated with use of an actuator screw (6mm A/F).

#### Tips

Order ID Xpansion clamp 12051 separately.

#### Important Notes

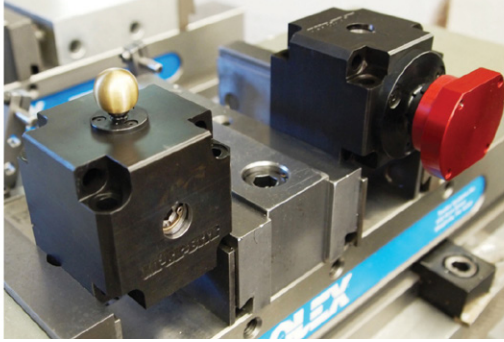
Manual actuators for mills and lathes. Introducing another new and innovative workholding system. Specifically designed to clamp on blind internal diameters smaller than our Side-Loc clamps would allow. We took the design a step further, by increasing the functionality to clamp smaller inside diameters. For the mill version the option of holding the workpiece in a

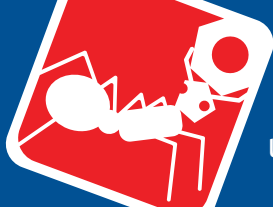
vertical or horizontal plane. By simply mounting our standard ID Xpansion clamps on these manual actuators, or using another style clamp that has a „straight draw“, you can now perform operations that previously required extensive hydraulic/pneumatic cylinders. Mill mounted manual actuators for ID Xpansion clamps are suitable for holding workpieces of very small blind internal diameters.

Order No.	$h_1$	$h_2$	$l_1$	$w_1$	Suitable for ID Xpansion clamp	Type	$d_1$	$d_2$ for	$d_3$	$d_4$	A/F
12054.W0002	57.2	-	57.2	57.2	.W0010	Mill	M 2	M 6	-	-	6
12054.W0004	57.2	-	57.2	57.2	.W0012	Mill	M 4	M 6	-	-	6
12054.W0006	57.2	-	57.2	57.2	.W0014	Mill	M 6	M 6	-	-	6
12054.W0008	57.2	-	57.2	57.2	.W0020	Mill	M 8	M 6	-	-	6
12054.W0010	57.2	-	57.2	57.2	.W0027	Mill	M10	M 6	-	-	6
12054.W0012	57.2	-	57.2	57.2	.W0035	Mill	M12	M 6	-	-	6
12054.W0102	38	25.4	-	-	.W0010	Lathe	M 2	-	25.0	56.9	6
12054.W0104	38	25.4	-	-	.W0012	Lathe	M 4	-	25.0	56.9	6
12054.W0106	38	25.4	-	-	.W0014	Lathe	M 6	-	25.0	56.9	6
12054.W0108	38	25.4	-	-	.W0020	Lathe	M 8	-	25.0	56.9	6
12054.W0110	38	25.4	-	-	.W0027	Lathe	M10	-	25.0	56.9	6
12054.W0112	38	25.4	-	-	.W0035	Lathe	M12	-	25.0	56.9	6
12054.W0550	-	-	-	-	-	Spare - Actuator Screw	-	-	-	-	-



BORE CLAMPING



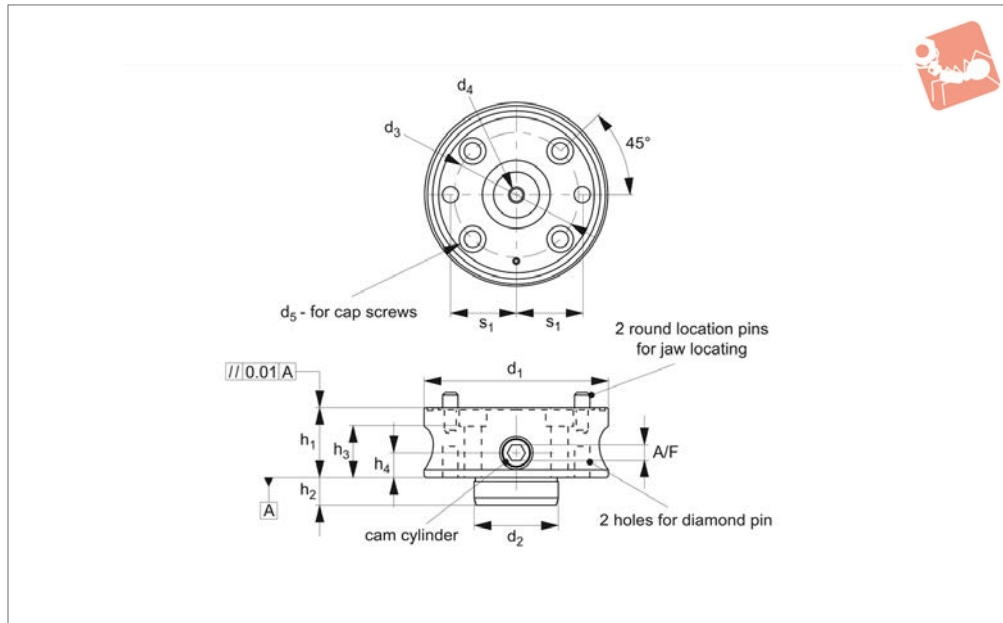


# Flexible Form Clamping Base

use with flexible form holding jaws 12056 or 12057



## Bore Clamping



### 12055.1

BORE CLAMPING

#### Material

Body: steel.

#### Technical Notes

For use with jaws part no.s 12056 and 12057 for clamping on the external of a component (jaw no. 12056) or for clam-

ping on internal bore of a component (jaw no. 12057). Order jaws separately.

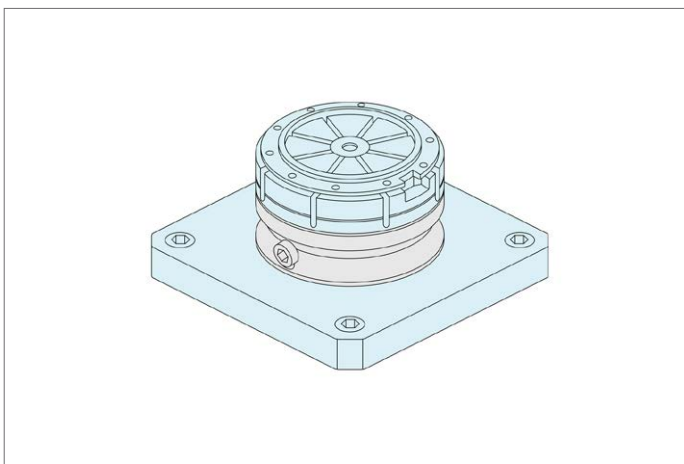
Supplied with one diamond locating pin to suit.

Can achieve part location repeatability of  $\pm 0,03$  and jaw repeatability of  $\pm 0,02$ . Max.

clamping stroke of 0,3mm diameter.

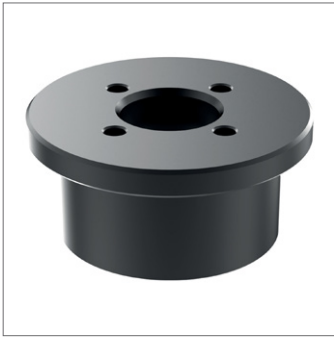
To prevent damage or deformation, do not tighten the cam cylinder without a holding jaw installed.

Order No.	$h_1$ $\pm 0.01$	$h_2$	$h_3$	Type	Size	$d_1$	$d_2$ tol. G6	$d_3$	$d_4$	$d_5$	$h_4$	Stroke $s_1$ $\pm 0.02$	A/F	Torque to Nm max.	External form no. 12056 clamping force kN	Internal form no. 12057 clamping force kN	Weight g
<b>12055.W0065</b>	35	27	12	Base	65	65	28	42	M 8x1,25	M 6	12	22	8	15	4,5	4,5	800
<b>12055.W0090</b>	40	30	14	Base	90	90	42	60	M10x1,5	M 8	14	30	8	25	7,0	7,0	1700
<b>12055.W0120</b>	45	33	16	Base	120	120	55	80	M10x1,5	M10	18	43	10	40	10,0	10,0	3500
<b>12055.W0160</b>	50	36	18	Base	160	160	63	110	M12x1,75	M12	24	60	10	40	12,0	10,0	7100

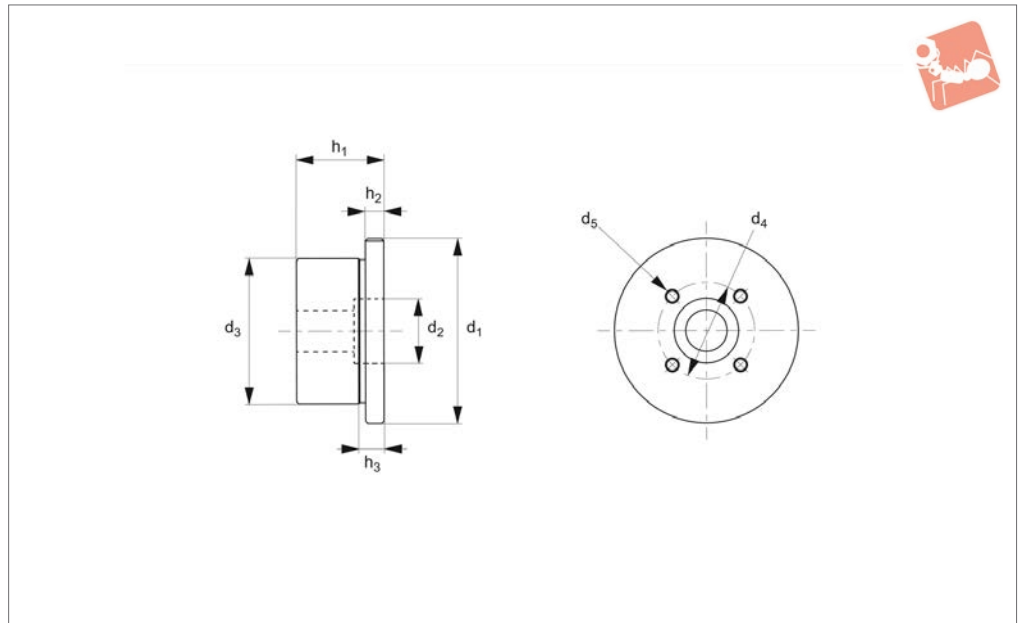




BORE CLAMPING



## 12055.2



### Material

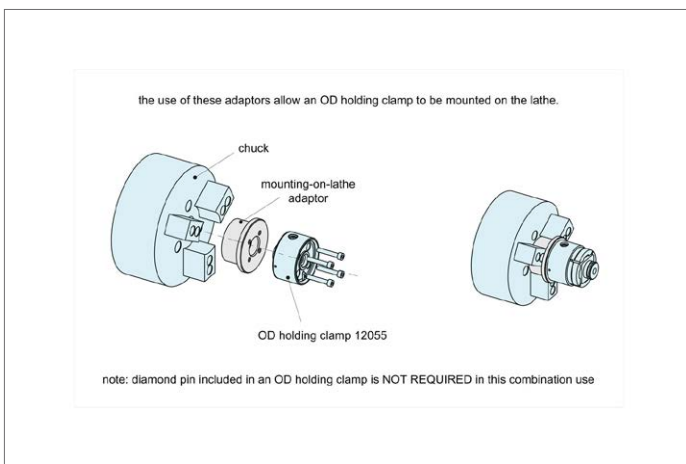
Steel, hardened and blackened.

form holding clamp (part no. 12055) to a lathe.

### Technical Notes

Adaptor to enable mounting of flexible

Order No.	$h_1$	$h_2$	$h_3$	Suitable for clamping base 12055	Size	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	Weight g
<b>12055.W1065</b>	38	8	13	4.5	65	80	28	63	42	M 6x1,00	910
<b>12055.W1090</b>	43	8	15	7.0	90	100	42	80	60	M 8x1,25	1600





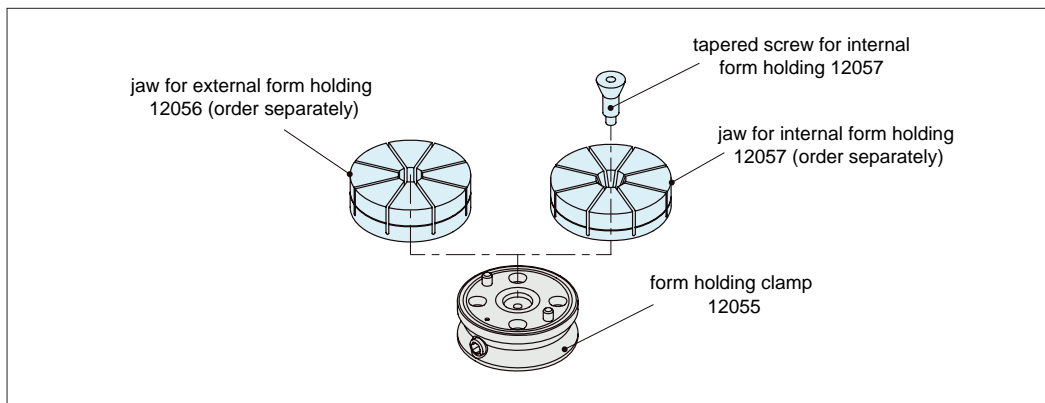
# Form Holding Clamp installation



## 12055

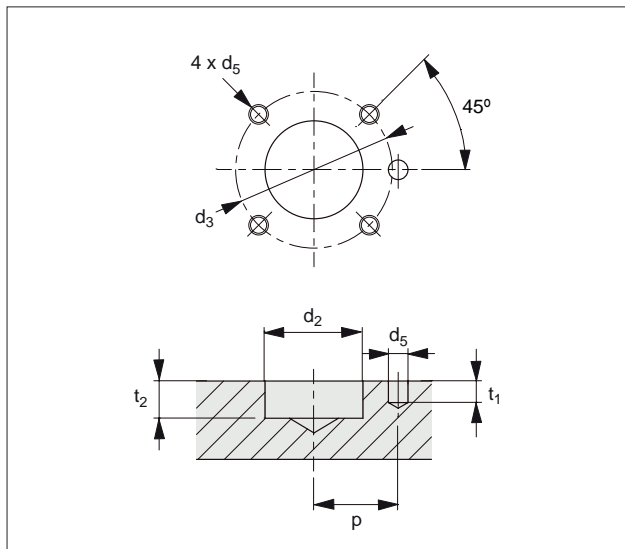
### Clamping & Height Setting

#### Feature



Two optional jaws allow clamping a workpiece both on its external form and internal form.

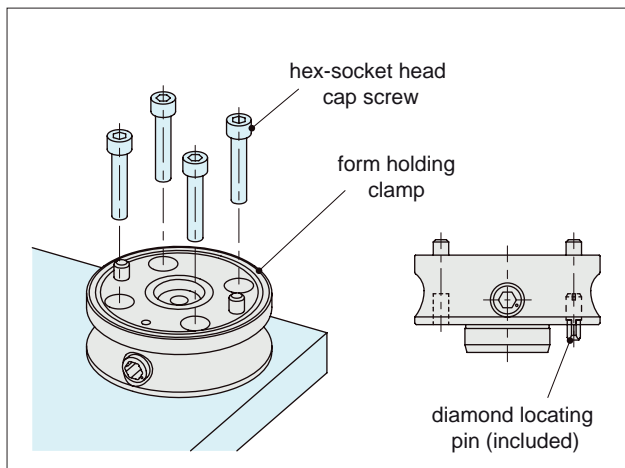
#### How to Use



Part Number	d <sub>2</sub> (H7)	t <sub>1</sub>	d <sub>5</sub> (G7)	t <sub>2</sub>
12055.W0065	28	13	6	6
12055.W0090	42	15	8	8
12055.W0120	55	19	10	11
12055.W0160	63	25	12	13

Part Number	P (±0,02)	d <sub>5</sub>	d <sub>3</sub>
12055.W0065	22	M 6X1	42
12055.W0090	30	M 8X1,25	60
12055.W0120	43	M10X1,5	80
12055.W0160	60	M12X1,75	110

#### Installation Instruction



Insert an included diamond locating pin into the body for locating and secure the body to the fixture plate with 4 socket-head cap screws.

Note: use either of the holes for the diamond locating pin for your application.

#### Dimension of Diamond Locating Pin

Part Number	diameter
12055.W0065	Ø 6h6
12055.W0090	Ø 8h6
12055.W0120	Ø 10h6
12055.W0160	Ø 12h6

BORE CLAMPING

ov-W12055.1-A-T-W12055.2-A-T-installation-mh - Updated -24-10-2022

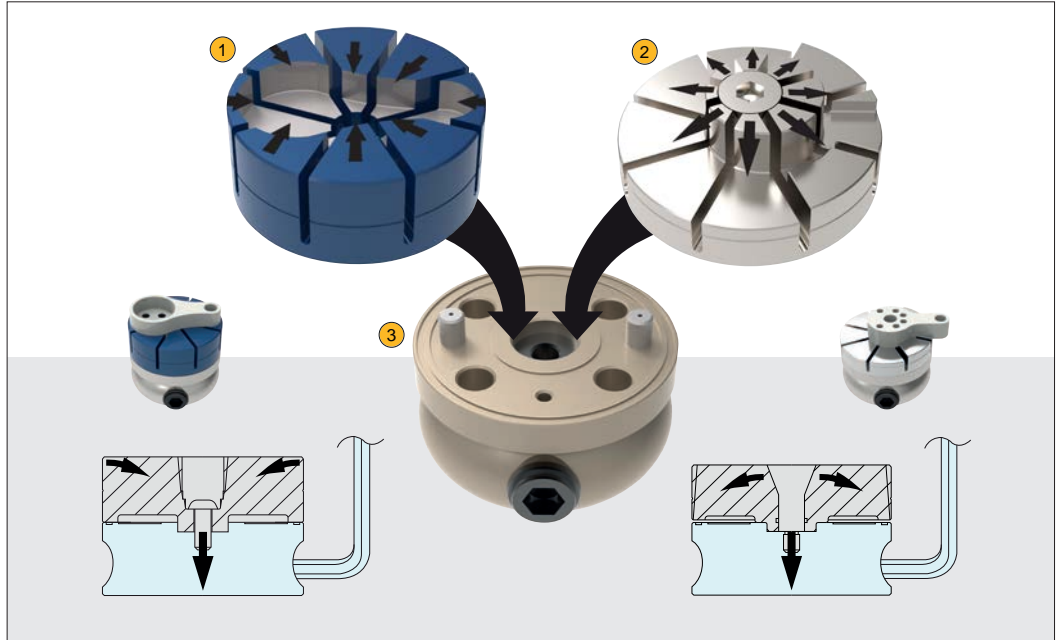


Versatile holding of complex shaped workpieces on either the external or internal form - quick, secure, versatile.

Single clamping base designed to accept either external form or internal form clamping jaws, fully flexible holding of custom forces.

BORE CLAMPING

- ① External Form Jaw - 12056
- ② Internal Form Jaw - 12057
- ③ Flexible Form Clamping Base - 12055

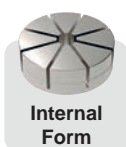
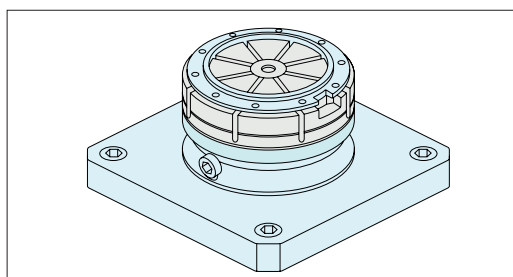
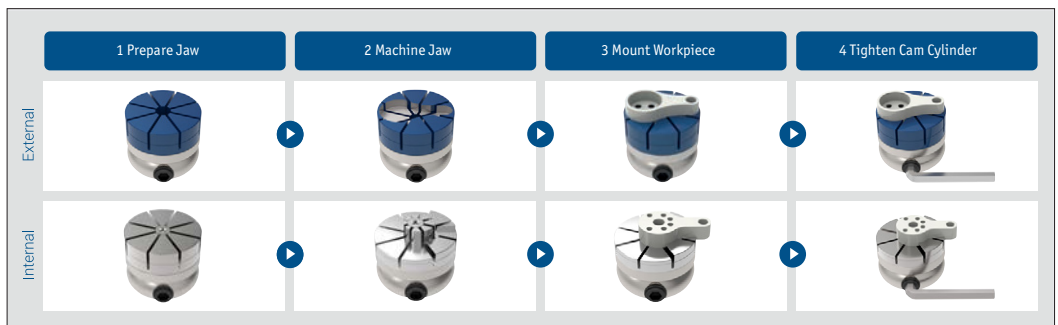


## External

Parts 12055, 12056

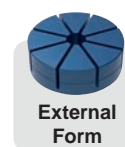
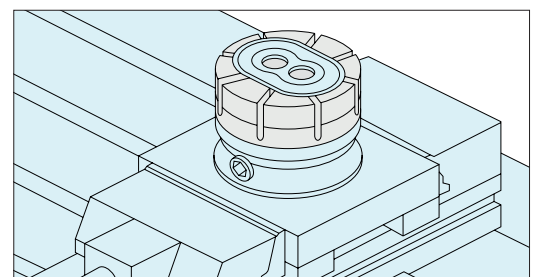
## Internal

Parts 12055, 12057



Internal Form

**Clamping Low Profile Workpiece**  
Parts 12055 and 10257. 8 jaw clamping sections distribute clamping force to workpiece for deformation prevention.



External Form

**Fixture for Temporal Job**  
Parts 12055 and 10256. Can be mounted on the existing vise by attaching the clamp on plate.

Note to control the tightening torque using adequate tools in reference to the data provided by the performance curve.

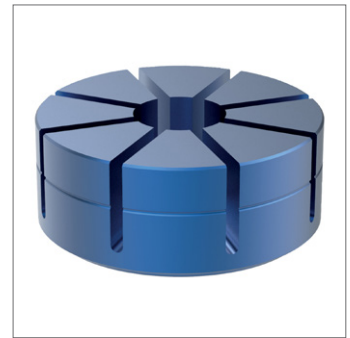
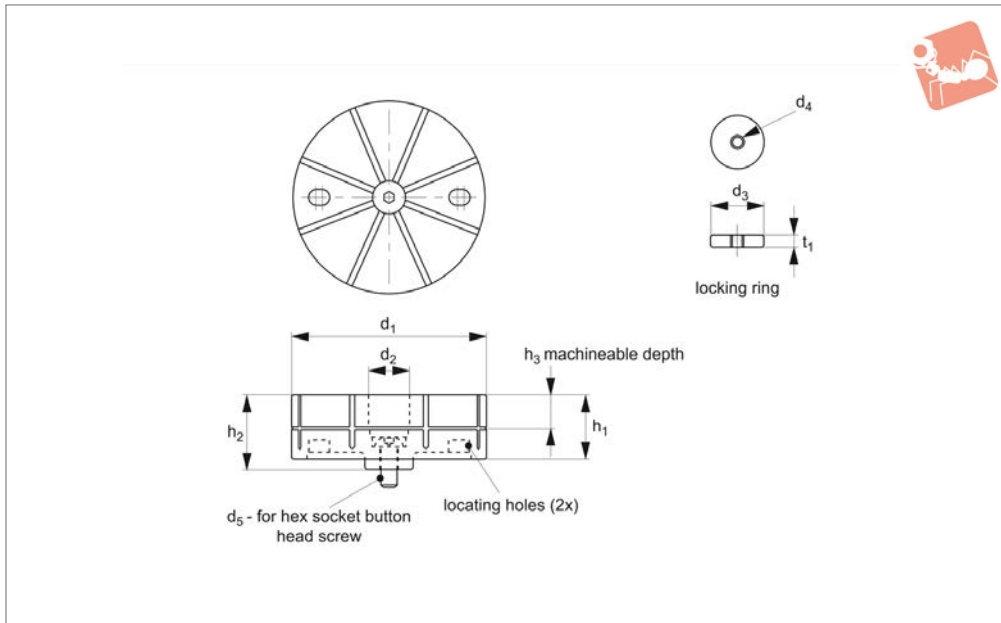
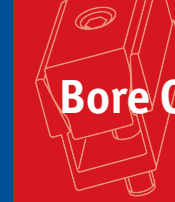




# External Form Holding Jaws

for flexible form holding clamp no. 12055

## Bore Clamping



**12056**

BORE CLAMPING

### Material

Jaws: aluminium (A7075), silver anodised.  
Locating ring: steel (C45E), tempered, nickel plated.

Ideal for die-cast and extruded parts.

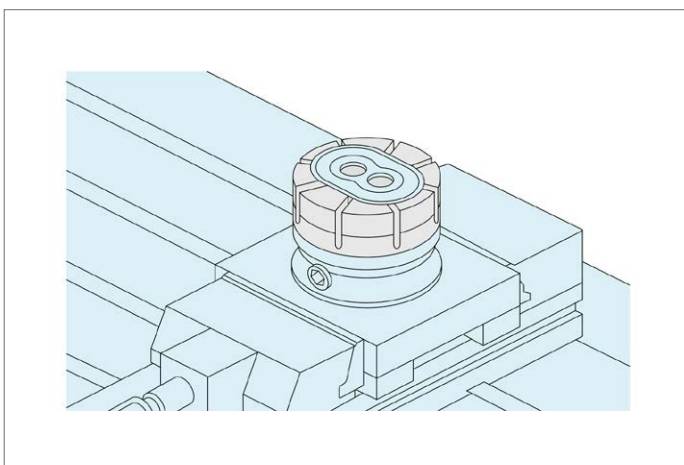
Used with flexible form clamping base no. 12055.

Supplied with O-ring, locking ring and socket button head screw to assist during machining of form.

### Technical Notes

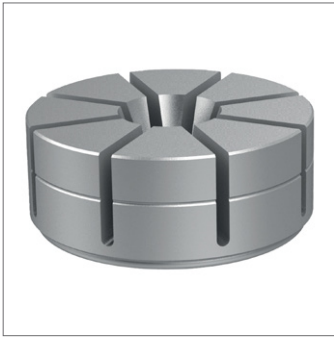
Offers 0,15mm clamping stroke on jaw.

Order No.	$h_1$	$h_2$	$h_3$	Suitable for clamping base 12055	Type	Size	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	$t_1$	Weight g
<b>12056.W0065</b>	26	25	10	.W0065	Jaw	65	65	21	20	M 5x0,80	M 8x20	4	200
<b>12056.W0090</b>	40	35	15	.W0090	Jaw	90	90	25	24	M 6x1,00	M 10x25	5	500
<b>12056.W0120</b>	46	40	20	.W0120	Jaw	120	120	25	24	M 6x1,00	M 10x25	5	1100
<b>12056.W0160</b>	52	45	25	.W0190	Jaw	160	160	29	28	M 8x1,25	M 12x25	6	2200

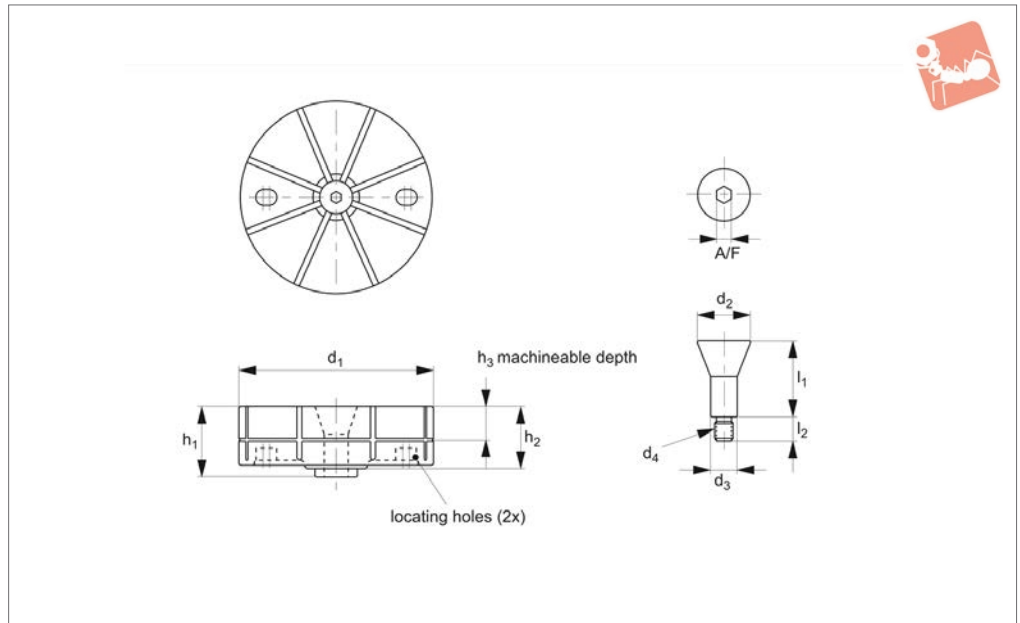




BORE CLAMPING



## 12057



### Material

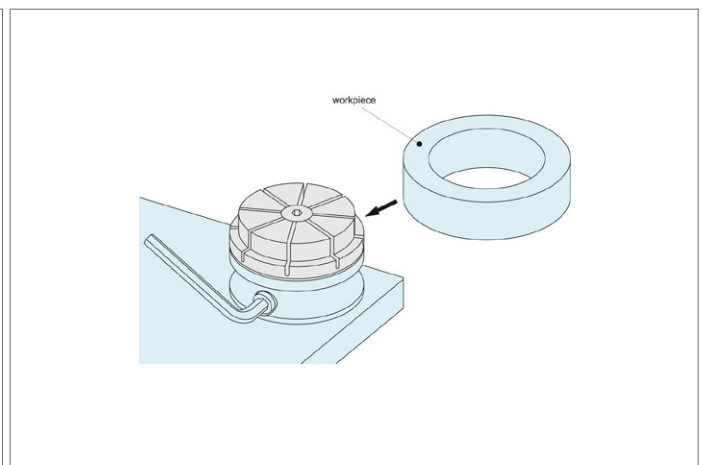
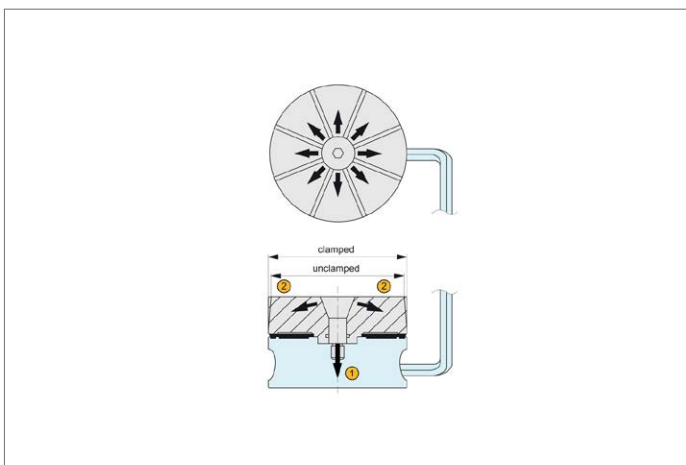
Jaws: aluminium (A7075), silver anodised.  
Tapered screw: steel (C45E), tempered, nickel plated.

Tapered screw expands jaw outwards to hold irregular shaped workpieces securely.  
Offers 0,15mm clamping stroke on jaw.  
Ideal for die-cast and extruded parts.  
Used with flexible form clamping base no. 12055.

### Technical Notes

Order jaw and tapered screw separately.

Order No.	$h_1$	$h_2$	$h_3$	$l_1$	Suitable for clamping base 12055	Type	Size	$d_1$	$d_2$	$d_3$	$d_4$	$l_2$	A/F	Suitable for internal jaw 12057	Weight g
12057.W0065	28,5	25	10		.W0065	Jaw	65	65							200
12057.W0090	34,5	30	15		.W0095	Jaw	90	90							400
12057.W0120	40,5	35	20		.W0120	Jaw	120	120							900
12057.W0160	46,5	40	25		.W0160	Jaw	160	160							1900
12057.W2065				29		Screw	65		22,5	13,2	M 8x1,25	10	6	.W1065	50
12057.W2090				35		Screw	90		27,0	16,0	M10x1,5	11	8	W.1090	80
12057.W2120				41		Screw	120		29,0	13,0	M10x1,5	16	8	W.1120	100
12057.W2160				47		Screw	160		33,0	18,0	M12x1,75	14	10	W.1160	150





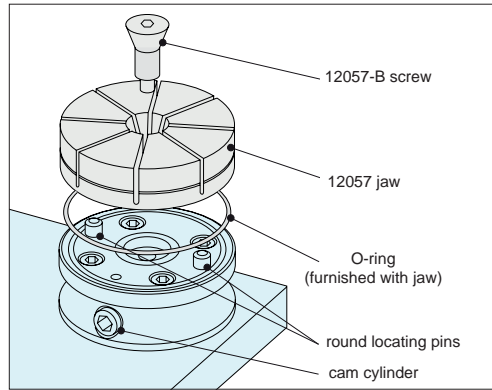
# Installation and Machining of Jaw Profile



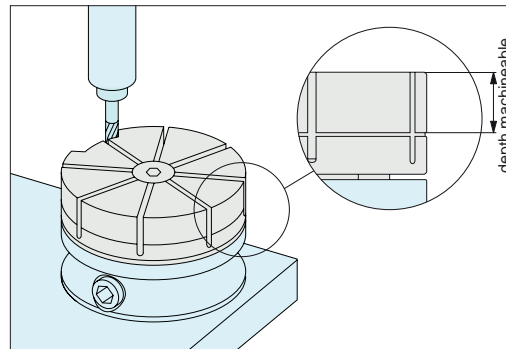
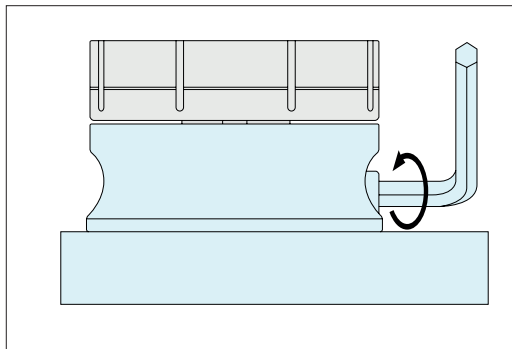
12057

Clamping & Height Setting

- Insert O-ring to the groove on top surface of the Flexible Form Holding Clamp 12055.
- Mount jaw 12057 to clamping base, align with locating pins and fix with tapered screw.



## Prepare Jaw for Mounting

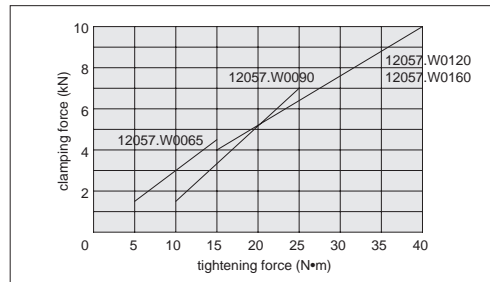
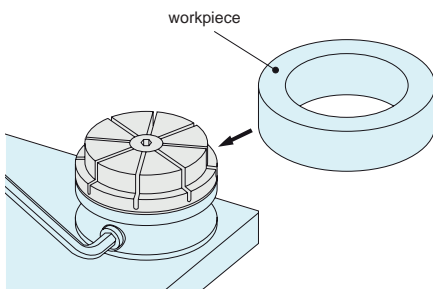


## Machine Jaw

2.1 Loosen the clamping bases cam cylinder fully. Measure dimension of the jaw for machining. Tighten the cam cylinder until each jaw section expands a further 0.15mm beyond desired clamping dimensions.

2.2 Machine the jaw to the contours of workpiece. (Do not machine the jaws beyond the machinable depth – see data tables of jaws 12056 and 12057 for dimension.)

After machining of jaw, loosen cam cylinder of clamp base and load workpiece. Tighten the cam cylinder again to clamp.

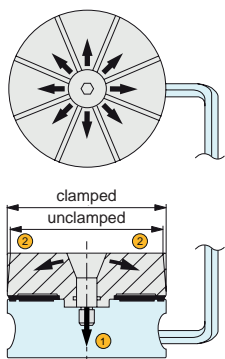


## Load Workpiece

Note: Do not tighten the cam cylinder without the workpiece set to prevent damage and deformation. Tightening with the torque beyond allowable screw torque will lower the durability of the jaw.

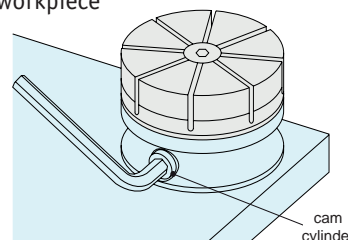
Take note of recommended tightening forces.

## Function



- Tapered screw fixes jaw to clamping base and expands the jaws in eight directions for 'pre-holding' of irregularly-shaped workpieces.
- Final 0.15mm clamping stroke of the jaw is activated via the cam cylinder to provide final clamping of workpiece on its internal contours.

- When the cam cylinder is tightened, the tapered screw is pulled down.
- At the same time the 8 jaw sections expand to clamp the internal form of workpiece.

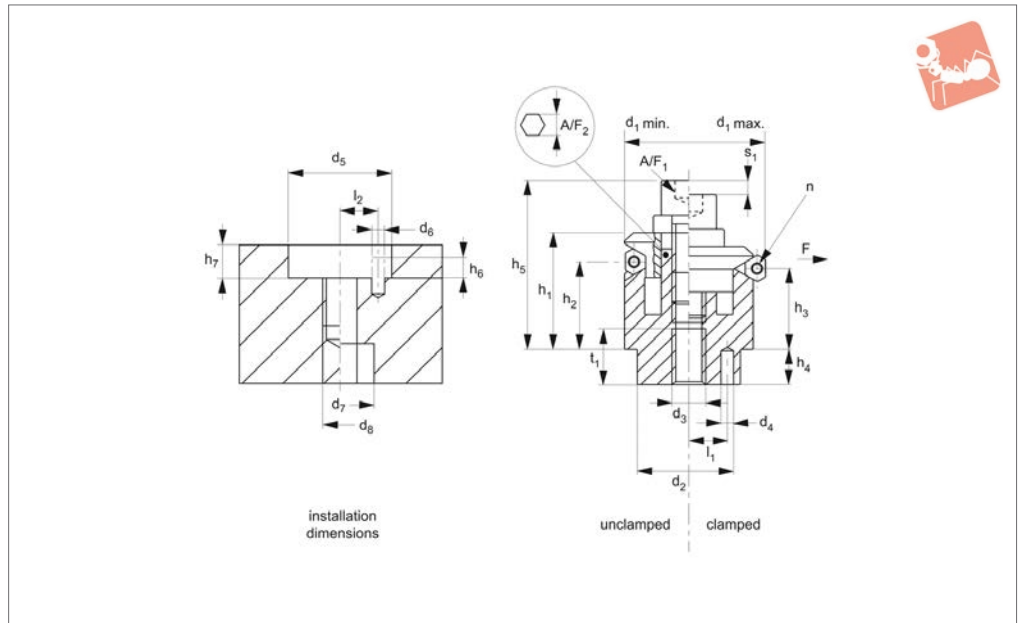




BORE CLAMPING



## 12061



### Material

Body: tool steel (1.2842), blackened.  
 Top cone: steel, case hardened, blackened and ground.  
 Ball: stainless steel (1.4112), hardened and burnished.  
 Tension spring: stainless steel, 1.4310 (AISI 301)

### Technical Notes

Suitable for concentric positioning and chucking inside holes with surfaces prone to damage.  
 Locking pin for precise ball positioning.  
 For deep installation applications, „ $d_2$  max.“ must be maintained for clearance.  
 Repeatability and rotational accuracy,

$\pm 0,025$ .

### Tips

Suitable for perforated walls prone to damage, machining centres, welding devices, transfer units, assembly units etc.

Order No.	$h_1$ -1	$h_2$	$h_3$	$l_1$ $\pm 0.1$	$d_1$ min.	$d_1$ max.	$d_2$ tol. F7	$d_3$	$d_4$ +0.3	$d_6$	$d_7$	Weight g
12061.W0214	14.3	9.8	8.6	4.5	14.5	18.5	12	M 4	2.0	2.0	4	19
12061.W0218	16.6	11.5	10.4	5.5	18.5	22.5	15	M 5	2.5	2.5	5	38
12061.W0222	19.7	14.1	13.0	7.0	22.5	26.5	20	M 6	3.0	3.0	6	62
12061.W0226	19.7	14.1	13.0	7.0	26.5	30.5	20	M 6	3.0	3.0	6	87
12061.W0230	23.2	14.0	11.7	9.0	30.5	38.5	25	M 6	4.0	4.0	6	133
12061.W0238	27.2	18.0	15.5	11.0	38.5	46.5	30	M 8	4.0	4.0	8	238
12061.W0246	27.2	18.0	15.7	11.0	46.5	54.5	30	M 8	4.0	4.0	8	327
12061.W0254	40.7	23.7	19.1	15.0	54.5	70.5	45	M10	5.0	5.0	10	658
12061.W0270	46.0	28.3	23.6	17.0	70.5	86.5	60	M12	5.0	5.0	12	1286
12061.W0286	51.1	30.3	25.6	25.0	86.5	102.5	60	M16	5.0	5.0	16	1778

Order No.	$d_8$	Location hole $d_5$ tol. H7	$h_4$	$h_5$ -2	$h_6$	$h_7$	$l_2$	Stroke $s_1$	$t_1$	$A/F_1$	$A/F_2$	Clamping force kN max.	No. of segments $n$
12061.W0214	M 4	12	5.5	19.3	2.0	5.5	4.5	2.3	6	3	5	3.5	3
12061.W0218	M 5	15	7.5	22.8	2.5	7.5	5.5	2.3	7	4	5	4.5	3
12061.W0222	M 6	20	6.0	28.7	3.0	6.0	7.0	2.3	8	5	6	5.0	3
12061.W0226	M 6	20	6.0	28.9	3.0	6.0	7.0	2.3	8	5	6	5.0	3
12061.W0230	M 6	25	7.0	32.2	4.0	7.0	9.0	4.6	8	5	6	5.0	3
12061.W0238	M 8	30	7.5	39.2	4.0	7.5	11.0	4.6	10	6	8	6.5	6
12061.W0246	M 8	30	7.5	39.2	4.0	7.5	11.0	4.6	10	6	8	6.5	6
12061.W0254	M10	45	9.0	54.7	5.0	9.0	15.0	9.2	12	8	10	8.0	6
12061.W0270	M12	60	10.0	63.0	5.0	10.0	17.0	9.2	15	10	12	10.0	6
12061.W0286	M16	60	10.0	72.1	5.0	10.0	25.0	9.2	15	14	17	10.0	6

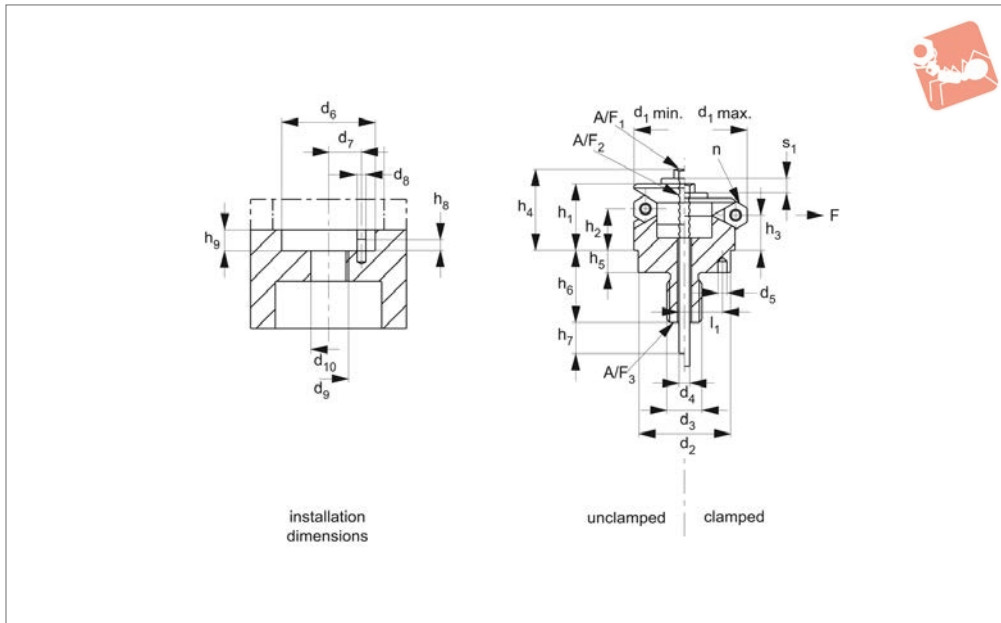


# Internal Centering Clamps

rear actuated - for delicate components



## Bore Clamping



12062

BORE CLAMPING

### Material

Body: tool steel 1.2842, blackened.  
 Top cone: steel 1.4112, case hardened, blackened and ground.  
 Ball: steel, hardened and ground.  
 Spring: steel (AISI 301, 1.4310).

### Technical Notes

Suitable for concentric positioning and

chucking inside holes with surfaces prone to damage.  
 Locking pin for precise ball positioning.  
 Pull down version can be actuated from rear either manually, or via pneumatic hydraulic cylinder attached to thread „ $d_5$ “ at rear of clamp.  
 For deep installation applications, „ $d_2$

max“ must be maintained for clearance. Repeatability and rotational accuracy,  $\pm 0,025$ .

### Tips

Suitable for perforated walls prone to damage, machining centres, welding devices, transfer units, assembly units etc.

Order No.	$h_1$	$h_2$	$h_3$	$l_1$ $\pm 0.1$	$d_1$ min.	$d_1$ max.	$d_2$	$d_3$	$d_4$	$d_5$ $+0.3$	$d_6$ tol. H7	$d_7$ $\pm 0.1$	$d_8$	Weight g
12062.W0214	14.2	9.8	8.6	4.5	14.5	18.5	12	M 6	M 3	2.0	12	4.5	2.0	21
12062.W0218	16.6	11.5	10.4	5.5	18.5	22.5	15	M 8	M 4	2.5	15	5.5	2.5	46
12062.W0222	19.7	14.1	13.0	7.0	22.5	26.5	20	M10	M 5	3.0	20	7.0	3.0	78
12062.W0226	19.9	14.2	13.0	7.0	26.5	30.5	20	M10	M 5	3.0	20	7.0	3.0	96
12062.W0230	23.2	14.0	11.7	9.0	30.5	38.5	25	M12	M 6	4.0	25	9.0	4.0	143
12062.W0238	27.2	18.0	15.5	11.0	38.5	46.5	30	M12	M 6	4.0	30	11.0	4.0	250
12062.W0246	27.2	18.0	15.7	11.0	46.5	54.5	30	M12	M 6	4.0	30	11.0	4.0	340
12062.W0254	40.7	23.7	19.1	15.0	54.5	70.5	45	M14x1,5	M 8	5.0	45	15.0	5.0	680
12062.W0270	46.0	28.1	23.5	17.0	70.5	86.5	60	M16x1,5	M 8	5.0	60	17.0	5.0	1300
12062.W0286	51.1	30.1	25.5	25.0	86.5	102.5	60	M16x1,5	M10	5.0	60	25.0	5.0	2060

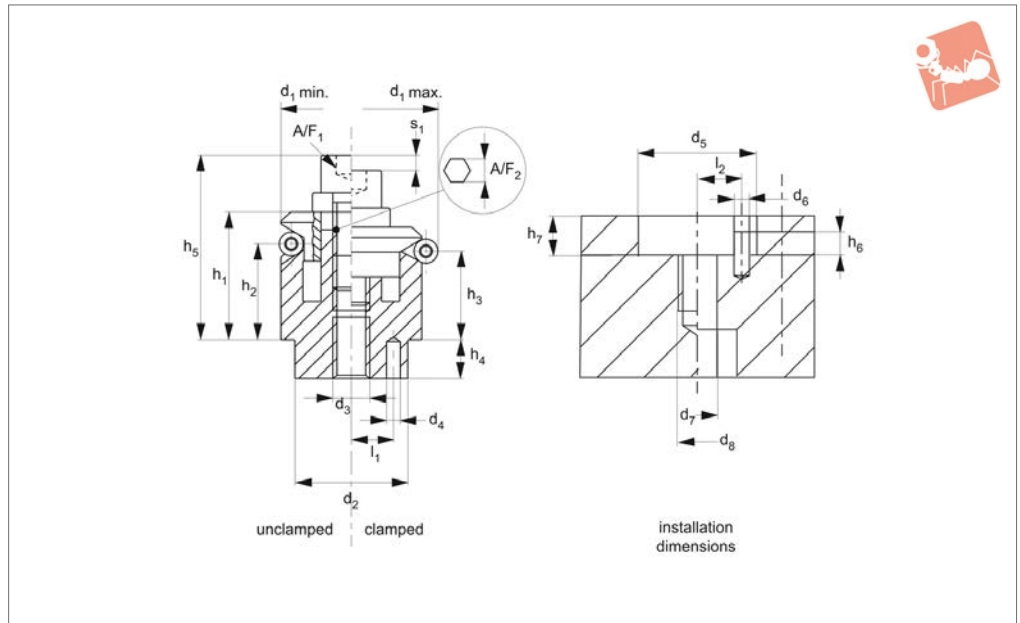
Order No.	$d_9$	$d_{10}$ $+0.5$	$h_4$ $-2$	$h_5$	$h_6$ $+1$	$h_7$ $\approx$	$h_8$ $+1$	$h_9$ $+0.5$	$n_1$	Stroke $s_1$	$A/F_1$	$A/F_2$	$A/F_3$	Clamping force kN max.	Torque to Nm max.
12062.W0214	M 6	6	17.0	5.5	14.1	12	2.5	5.5	3	2.3	6	3	10	3.5	2
12062.W0218	M 8	8	20.5	7.5	18.2	14	3.5	7.5	3	2.3	7	5	13	4.0	5
12062.W0222	M10	10	24.4	6.0	17.4	15	3.5	6.0	3	2.3	8	6	16	4.5	10
12062.W0226	M10	10	24.6	6.0	17.4	15	3.5	6.0	3	2.3	8	6	16	4.5	10
12062.W0230	M12	12	28.8	7.0	21.9	20	3.5	7.0	3	4.6	10	6	18	4.5	17
12062.W0238	M12	12	33.1	7.5	22.5	20	4.5	7.5	6	4.6	10	8	18	6.5	17
12062.W0246	M12	12	33.1	7.5	22.5	20	6.5	7.5	6	4.6	10	8	18	6.5	17
12062.W0254	M14x1,5	14	50.0	9.0	24.9	32	6.5	9.0	6	9.2	13	10	21	8.0	43
12062.W0270	M16x1,5	16	55.3	10.0	29.4	20	6.5	10.0	6	9.2	13	12	24	10.0	43
12062.W0286	M16x1,5	16	61.5	10.0	29.4	25	6.5	10.0	6	9.2	16	12	24	12.5	79



BORE CLAMPING



## 12071



### Material

Body: tool steel, blackened.  
 Top cone: case hardened stainless steel 1.4112, blackened and ground.  
 Ball: stainless steel, 1.4034. hardened and ground.  
 Spring: stainless steel, 1.4310 (AISI 301).

### Technical Notes

For deep installation applications, „d<sub>2</sub>

max.“ must be maintained for clearance. A locking pin can be used for precise ball positioning.  
 Suitable for concentric positioning and chucking inside holes, repeatability and rotary accuracy ±0,025.

### Tips

Precise self-centering, providing clamping and positioning of components.

### Important Notes

If machining delicate components, see parts 12061.

Order No.	h <sub>1</sub> -1	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub> ±0.1	d <sub>1</sub> min.	d <sub>1</sub> max.	d <sub>2</sub> tol. f7	d <sub>3</sub>	d <sub>4</sub> +0.3	d <sub>5</sub> tol. H7	d <sub>6</sub>	Weight g
12071.W0211	8.6	3.9	3.2	3.5	11.7	14.2	10	M 4	1.5	10	1.5	9.0
12071.W0214	14.2	9.8	8.6	4.5	14.5	18.5	12	M 4	2.0	12	2.0	20.0
12071.W0218	16.5	11.6	10.4	5.5	18.5	22.5	15	M 5	2.5	15	2.5	39.0
12071.W0222	19.6	14.1	12.9	7.0	22.5	26.5	20	M 6	3.0	20	3.0	60.0
12071.W0226	19.8	14.1	13.0	7.0	26.5	30.5	20	M 6	3.0	20	3.0	86.0
12071.W0230	23.2	14.1	11.8	9.0	30.5	38.5	25	M 6	4.0	25	4.0	125.0
12071.W0238	27.2	18.0	15.7	11.0	38.5	46.5	30	M 8	4.0	30	4.0	233.0
12071.W0246	27.1	18.0	15.7	11.0	46.5	54.5	30	M 8	4.0	30	4.0	323.0
12071.W0254	40.6	23.7	19.1	15.0	54.5	70.5	45	M10	5.0	45	5.0	653.0
12071.W0270	46.1	28.3	23.7	17.0	70.5	86.5	60	M12	5.0	60	5.0	1271.0
12071.W0286	51.2	30.3	25.6	25.0	86.5	102.5	60	M16	5.0	60	5.0	1783.0

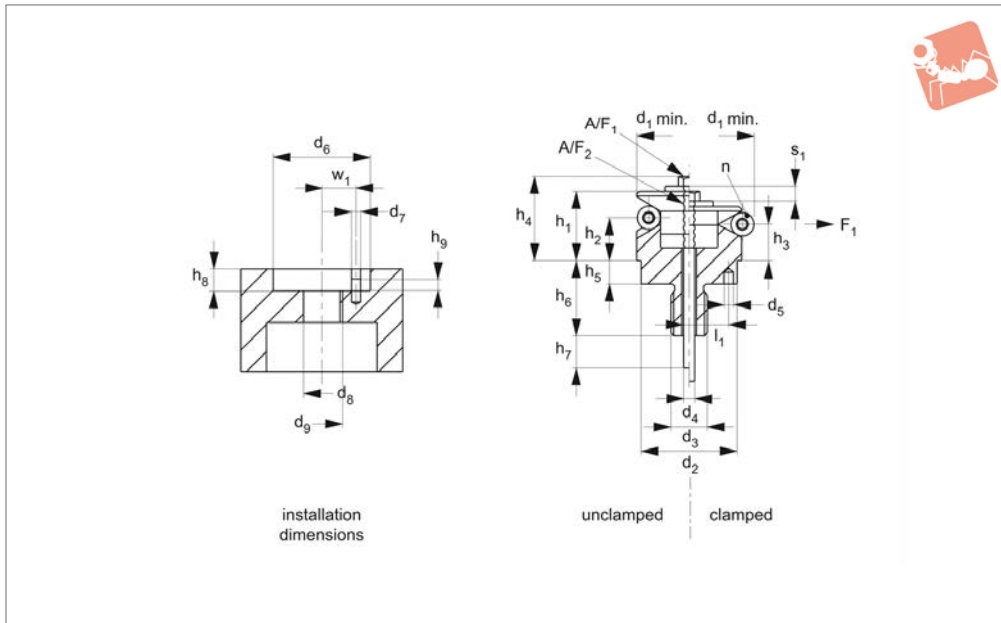
Order No.	d <sub>7</sub>	d <sub>8</sub>	h <sub>4</sub>	h <sub>5</sub> -2	h <sub>6</sub>	h <sub>7</sub> +0.5	l <sub>2</sub> ±0.1	Stroke s <sub>1</sub>	t <sub>1</sub>	A/F <sub>1</sub>	A/F <sub>2</sub>	Clamping force kN max.	Torque to Nm max.
12071.W0211	4	M 4	3.5	14.7	2.0	3.5	3.5	1.3	4	3	-	0.5	5
12071.W0214	4	M 4	5.5	19.2	2.5	5.5	4.5	2.3	6	3	5	3.5	5
12071.W0218	5	M 5	7.5	22.7	3.5	7.5	5.5	2.3	7	4	5	4.5	10
12071.W0222	6	M 6	6.0	28.6	3.5	6.0	7.0	2.3	8	5	6	5.0	17
12071.W0226	6	M 6	6.0	28.8	3.5	6.0	7.0	2.3	8	5	6	5.0	17
12071.W0230	6	M 6	7.0	32.2	3.5	7.0	9.0	4.6	8	5	6	5.0	17
12071.W0238	8	M 8	7.5	39.2	4.5	7.5	11.0	4.6	10	6	8	6.5	43
12071.W0246	8	M 8	7.5	39.2	6.5	7.5	11.0	4.6	10	6	8	6.5	43
12071.W0254	10	M10	9.0	54.6	6.5	9.0	15.0	9.2	12	8	10	8.0	79
12071.W0270	12	M12	10.0	63.1	6.5	10.0	17.0	9.2	15	10	12	10.0	141
12071.W0286	16	M16	10.0	72.2	6.5	10.0	25.0	9.2	15	14	17	10.0	354



# Internal Centering Clamps

rear actuated, for casts and forgings

## Bore Clamping



**12072**

BORE CLAMPING

### Material

Body: tool steel, blackened.  
 Top cone: case hardened stainless steel 1.4112, blackened and ground.  
 Ball: stainless steel, 1.4034, hardened and ground.  
 Spring: stainless steel, 1.4310 (AISI 301).

### Technical Notes

Suitable for concentric positioning and chucking inside holes, provided that small

ball impressions can be accepted.  
 Pull down version can be actuated from rear either manually, or via pneumatic of hydraulic cylinder attached to thread „d<sub>4</sub>“ at rear of clamp.  
 For deep installation applications, „d<sub>2</sub> max.“ must be maintained for clearance.  
 A locking pin can be used for precise ball positioning.  
 Repeatability and rotational accuracy,

±0,025.

### Tips

Suitable for; machining centres, welding devices, transfer units, assembly units etc.

### Important Notes

If machining delicate components, see parts 12062.

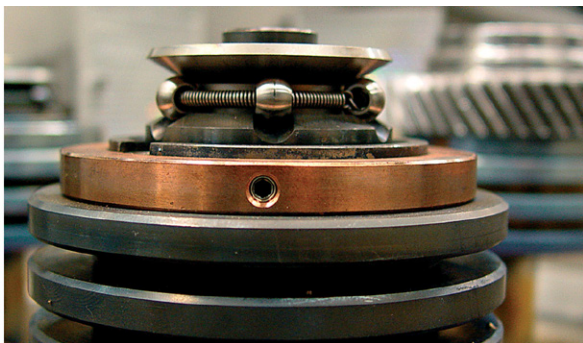
Order No.	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub> ±0.1	w <sub>1</sub> ±0.1	d <sub>1</sub> min.	d <sub>1</sub> max.	d <sub>2</sub> tol. f7	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub> +0.3	d <sub>6</sub> tol. H7	d <sub>7</sub>	d <sub>8</sub>	Weight g
12072.W0211	9.9	3.9	3.2	3.5	3.5	11.7	14.2	10	M 5	M 3	1.5	10	1.5	5	12
12072.W0214	14.2	9.8	8.6	4.5	4.5	14.5	18.5	12	M 6	M 3	2.0	12	2.0	6	21
12072.W0218	16.5	11.6	10.4	5.5	5.5	18.5	22.5	15	M 8	M 4	2.5	15	2.5	8	45
12072.W0222	19.6	14.1	12.9	7.0	7.0	22.5	26.5	20	M10	M 5	3.0	20	3.0	10	77
12072.W0226	19.8	14.1	13.0	7.0	7.0	26.5	30.5	20	M10	M 5	3.0	20	3.0	10	96
12072.W0230	23.2	14.1	11.8	9.0	9.0	30.5	38.5	25	M12	M 6	4.0	25	4.0	12	140
12072.W0238	27.1	18.0	15.5	11.0	11.0	38.5	46.5	30	M12	M 6	4.0	30	4.0	12	246
12072.W0246	27.2	18.0	15.7	11.0	11.0	46.5	54.5	30	M12	M 6	4.0	30	4.0	12	327
12072.W0254	40.6	23.7	19.1	15.0	15.0	54.5	70.5	45	M14x1,5	M 8	5.0	45	5.0	14	650
12072.W0270	46.1	28.3	23.7	17.0	17.0	70.5	86.5	60	M16x1,5	M 8	5.0	60	5.0	16	1272
12072.W0286	51.2	30.3	25.7	25.0	25.0	86.5	102.5	60	M16x1,5	M10	5.0	60	5.0	16	2042

Order No.	d <sub>9</sub>	h <sub>4</sub> -2	h <sub>5</sub>	h <sub>6</sub> +1	h <sub>7</sub> ≈	h <sub>8</sub> +0,5	h <sub>9</sub>	Stroke s <sub>1</sub>	A/F <sub>1</sub>	A/F <sub>2</sub>	A/F <sub>3</sub>	Torque to Nm max.	Clamping force F <sub>1</sub> kN	Ball dia.	Number of balls n
12072.W0211	M 5	12.7	3.5	11.0	10	3.5	2.0	1.3	5.5	4	8	2	0.5	2.5	3
12072.W0214	M 6	17.0	5.5	14.1	12	5.5	2.5	2.3	5.5	3	10	2	3.5	4.0	3
12072.W0218	M 8	20.4	7.5	18.2	14	7.5	3.5	2.3	7.0	5	13	5	4.0	4.0	3
12072.W0222	M10	24.3	6.0	17.4	15	6.0	3.5	2.3	8.0	6	16	10	4.5	4.0	3
12072.W0226	M10	24.5	6.0	17.4	15	6.0	3.5	2.3	8.0	6	16	10	4.5	4.0	3
12072.W0230	M12	28.8	7.0	21.9	20	7.0	3.5	4.6	10.0	6	18	17	4.5	8.0	3
12072.W0238	M12	33.0	7.5	22.5	20	7.5	4.5	4.6	10.0	8	18	17	6.5	8.0	6
12072.W0246	M12	33.1	7.5	22.5	20	7.5	6.5	4.6	10.0	8	18	17	6.5	8.0	6
12072.W0254	M14x1,4	49.9	9.0	24.5	32	9.0	6.5	9.2	13.0	10	21	43	8.0	16.0	6



Order No.	$d_9$	$h_4$ -2	$h_5$	$h_6$ +1	$h_7$ $\approx$	$h_8$ +0.5	$h_9$	Stroke $s_1$	$A/F_1$	$A/F_2$	$A/F_3$	Torque to Nm max.	Clamping force $F_1$ kN	Ball dia.	Number of balls $n$
<b>12072.W0270</b>	M16x1,5	55.4	10.0	29.4	20	10.0	6.5	9.2	13.0	12	24	43	10.0	16.0	6
<b>12072.W0286</b>	M16x1,5	61.6	10.0	29.4	25	10.0	6.5	9.2	16.0	12	24	79	15.5	16.0	6

BORE CLAMPING







# Self Centering Internal Clamps

**12061, 62 -  
12071, 72**  
Clamping & Height Setting

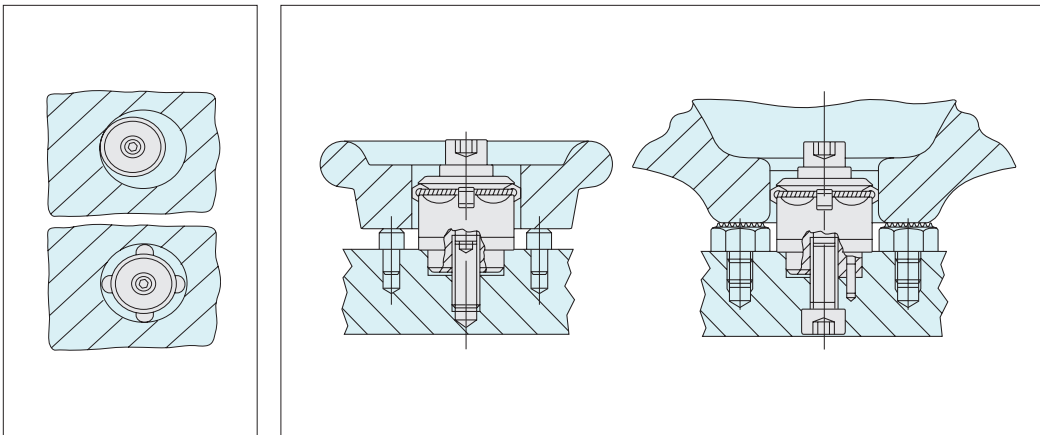
The internal centering clamp provides autocentric chucking inside both round and square holes, at the simple turn of a hexagon screw. Precise self-centering is achieved through the expansion of the ring of balls which, during clamping, are pressed outward across a precision cone. As the outer diameter of the clamp changes the balls transmit force between its body and the bore. The clamps are used in machining and welding fixtures, product assemblies and transfer units.



- Easy to use.
- Precise self-centering and downhold clamping minimising tolerance errors.
- 3 or 6 points of clamping for maximum stability.
- Clamping on uneven surfaces, such as casts and forgings.
- Low height clamping element.
- Bore sizes 11 to 102mm.
- Repeatable positioning accuracy  $\pm 0,025$  and rotational accuracy  $\pm 0,025$ .
- Easily actuated by the turn of a screw.
- Clamping of workpieces with perforated walls without distortion.
- Actuation from above or below.

## Advantages

## Centering



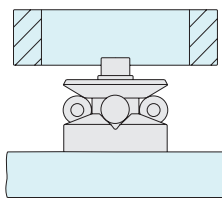
### Manual from above

### Manual, hydraulic or pneumatic from below

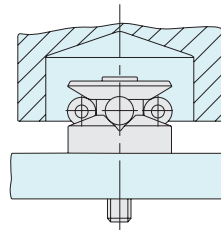
### Actuation Models



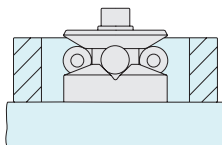
**12061** - for delicate workpieces (non-marking).



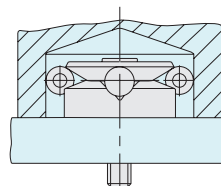
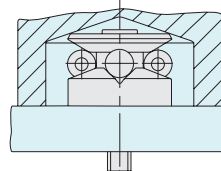
**12062** - for delicate workpieces (non-marking).



**12071** - for cast and more robust workpieces.

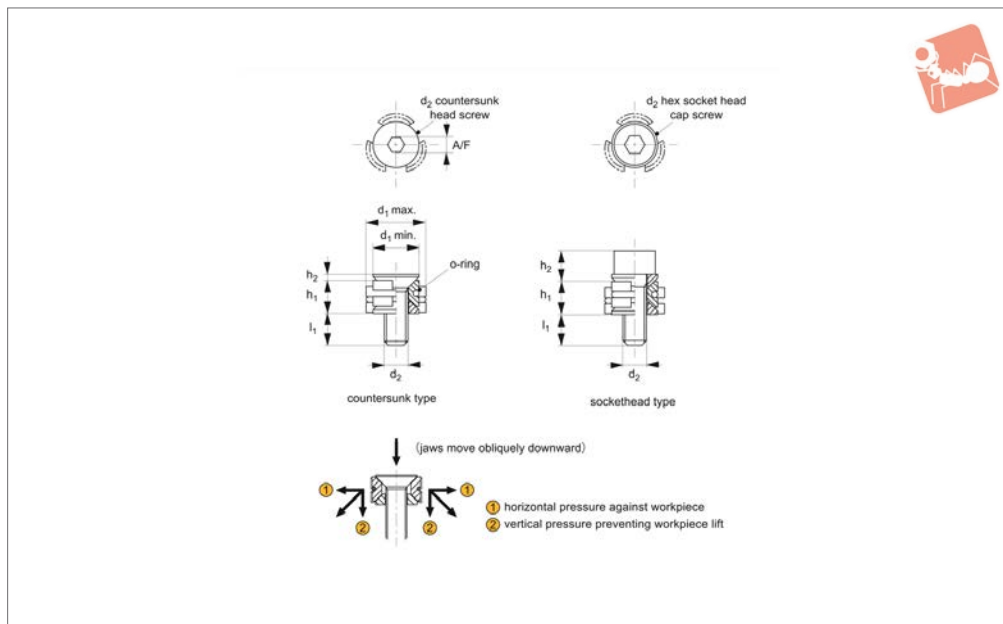


**12072** - for cast and more robust workpieces.





## 12074



### Material

Steel (AISI 4140), 33-39 HRC, blackened.

### Technical Notes

Compact clamps to hold workpiece on an inside diameter. Wedge construction

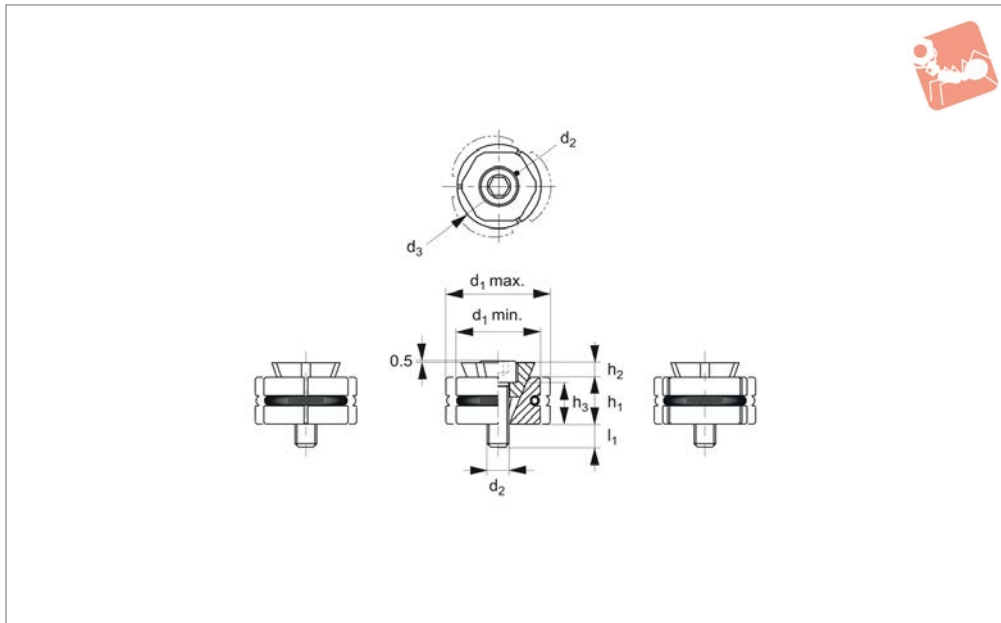
provides powerful clamping force. Generates both horizontal and vertical clamping force.

### Tips

Clamps are suited to holding on cast or

roughed holes. Contact point nature of clamp may result in marking of workpiece. Not recommended for use in accurately finished holes.

Order No.	$h_2$	$l_1$ at $d_1$ max.	Type	$d_1$ min.	$d_1$ max.	$d_2$	$h_1$ at $d_1$ min.	$h_1$ at $d_1$ max.	A/F	Clamping force kN max.	Torque to Nm max.	Weight g
12074.W0008	0.9	7.3	Countersunk	8	10.3	M 4x0,70	4.6	5.5	3	2.1	0.9	3
12074.W0010	1.1	9.1	Countersunk	10	12.3	M 5x0,80	5.6	6.4	3	4.3	1.5	5
12074.W0012	1.3	11.2	Countersunk	12	16.3	M 6x1,00	7.0	8.6	4	7.3	2.1	9
12074.W0016	1.6	16.2	Countersunk	16	22.0	M 8x1,25	9.4	11.5	5	18.0	4.0	22
12074.W0108	5.1	7.1	Socket Head	8	10.3	M 4x0,70	4.6	5.5	3	2.7	1.5	4
12074.W0110	6.2	9.0	Socket Head	10	12.3	M 5x0,80	5.6	6.4	4	5.4	2.5	7
12074.W0112	7.9	10.6	Socket Head	12	16.3	M 6x1,00	7.0	8.6	5	9.1	5.0	11
12074.W0116	10.4	15.4	Socket Head	16	22.0	M 8x1,25	9.4	11.5	6	25.0	9.0	28



## 12075

BORE CLAMPING

### Material

Steel (AISI 4140, 42CrMo4), 47-53 HRC, blackened.

diameter. Wedge construction provides powerful clamping force. Generates both horizontal and vertical clamping force.

roughed holes. Contact point nature of clamp, may result in marking of workpiece. Not recommended for use in accurately finished holes.

### Technical Notes

Clamps hold workpieces on an inside

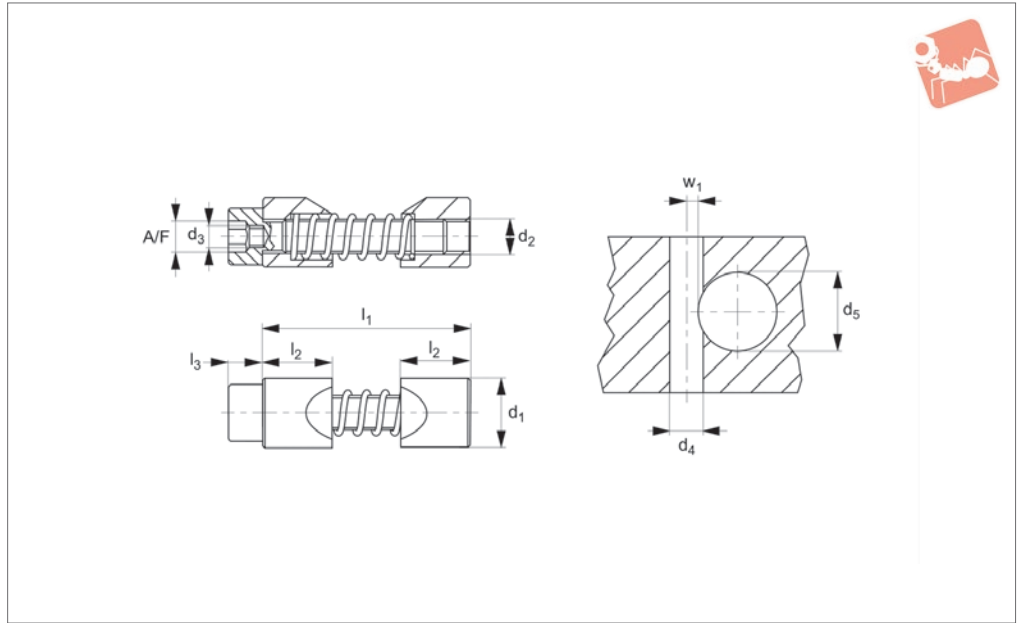
### Tips

Clamps are suited to holding on cast or

Order No.	$h_1$	$h_3$ min.	$h_3$ max.	$l_1$ at $d_1$ max.	$d_1$ min.	$d_1$ max.	$d_1$	$d_2$	$d_3$	$h_2$ at $d_1$ min.	Clamping force kN max.	Torque to Nm max.	Weight g
12075.W0008	9	8.0	2.6	9.4	19.5	24	24	M 4 x 12	9.5	2.5	3.2	2	19
12075.W0012	13	11.5	5.0	13.0	23.5	29	29	M 6 x 18	11.5	4.0	10.5	5	43
12075.W0016	17	15.0	6.0	19.0	28.5	36	36	M 8 x 25	14.0	5.5	25.0	9	89



## 32940.1



### Material

Body: steel, heat-treated, blackened.  
Clamping screw: steel, zincplated.  
Spring: stainless.

RoHS compliant  
REACH: contains no SVHC materials

### Technical Notes

Installation:

- 1) machine bores
- 2) insert shaft clamp
- 3) expand jaws to appropriate dimension of the part to be clamped
- 4) position the shaft
- 5) clamp it using the working tool

The thread  $d_3$  serves to hold the assembly tool (optional).

### Tips

For clamping shafts, axles, columns, bolts, bars, pipes etc. (with diameters 6-125mm), quickly and easily.

Order No.	$d_1$ tol. h11	$d_2$	$d_3$	$l_1$ max.	$l_2$	$l_3$	Hub bore tol. H7	$d_4$	Location hole shaft $d_5$	$w_1$ +0.2	A/F	Tightening torque Nm max.	Fitting tool 32940	Weight g
<b>32940.W0006</b>	8	M 4	M 2,5	27	8	4	8		6-10	2,8	3	2,9	.W0806	8
<b>32940.W0010</b>	10	M 5	M 3	33	10	5	10		10-15	3,3	4	6,0	.W0810	12
<b>32940.W0015</b>	12	M 6	M 4	39	12	6	12		15-20	3,5	5	10,0	.W0815	21
<b>32940.W0020</b>	16	M 8	M 5	46	16	8	16		20-30	4,0	6	25,0	.W0820	52
<b>32940.W0030</b>	20	M10	M 6	53	20	10	20		30-40	4,8	8	46,0	.W0830	98
<b>32940.W0040</b>	25	M12	M 8	70	25	12	25		40-60	5,6	10	82,0	.W0840	183
<b>32940.W0060</b>	30	M16	M10	81	30	16	30		60-125	7,9	14	206,0	.W0860	344



# Steel Shaft Clamps

for cylindrical parts

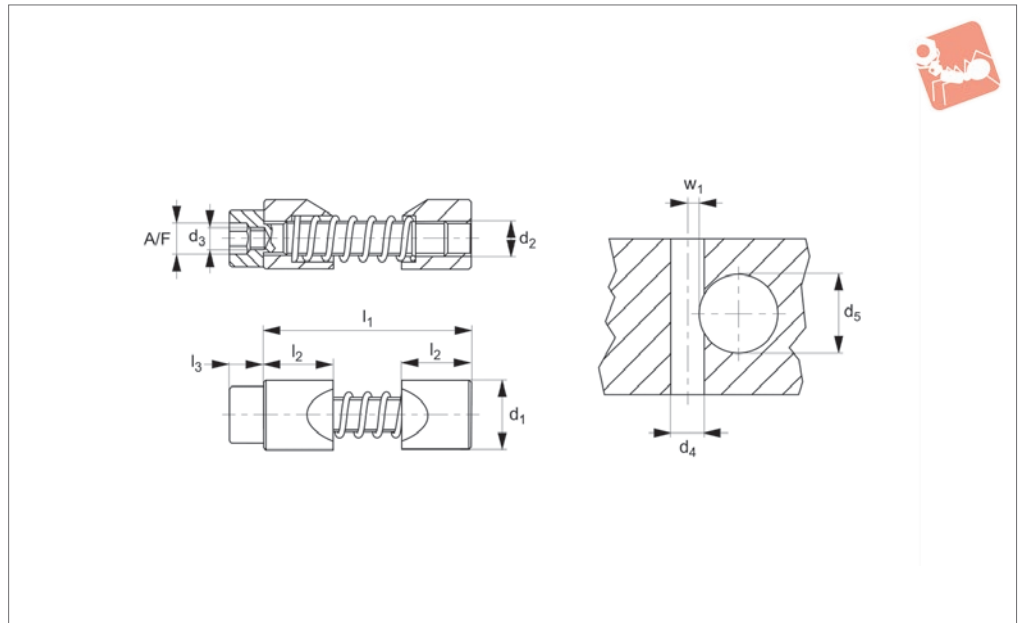
## Shaft Clamping



SHAFT CLAMPING



## 32940.2



### Material

Body: stainless 1.4305.  
Clamping screw: stainless.  
Spring: stainless.

RoHS compliant  
REACH

### Technical Notes

Installation:

- 1) machine bores
- 2) insert shaft clamp
- 3) expand jaws to appropriate dimension of the part to be clamped
- 4) position the shaft
- 5) clamp it using the working tool

The thread  $d_3$  serves to hold the assembly tool (optional).

### Tips

For clamping shafts, axles, columns, bolts, bars, pipes etc. (with diameters 6-125mm), quickly and easily.

Order No.	$d_1$ tol. h11	$d_2$	$d_3$	$l_1$ max.	$l_2$	Weight g
32940.W0106	8	M 4	M 2,5	27	8	7
32940.W0110	10	M 5	M 3	33	10	13
32940.W0115	12	M 6	M 4	39	12	22
32940.W0120	16	M 8	M 5	46	16	52
32940.W0130	20	M10	M 6	53	20	104
32940.W0140	25	M12	M 8	70	25	189
32940.W0160	30	M16	M10	81	30	346

Order No.	$l_3$	Hub bore $d_4$ tol. H7	Location hole shaft $d_5$	$w_1$ +0.2	A/F	Tightening torque Nm max.	Fitting tool 32940
32940.W0106	4	8	6-10	2.8	3	2.9	.W0806
32940.W0110	5	10	10-15	3.3	4	6	.W0810
32940.W0115	6	12	15-20	3.5	5	10	.W0815
32940.W0120	8	16	20-30	4.0	6	25	.W0820
32940.W0130	10	20	30-40	4.8	8	46	.W0830
32940.W0140	12	25	40-60	5.6	10	82	.W0840
32940.W0160	16	30	60-125	7.9	14	206	.W0860



# Stainless Shaft Clamps

for cylindrical parts

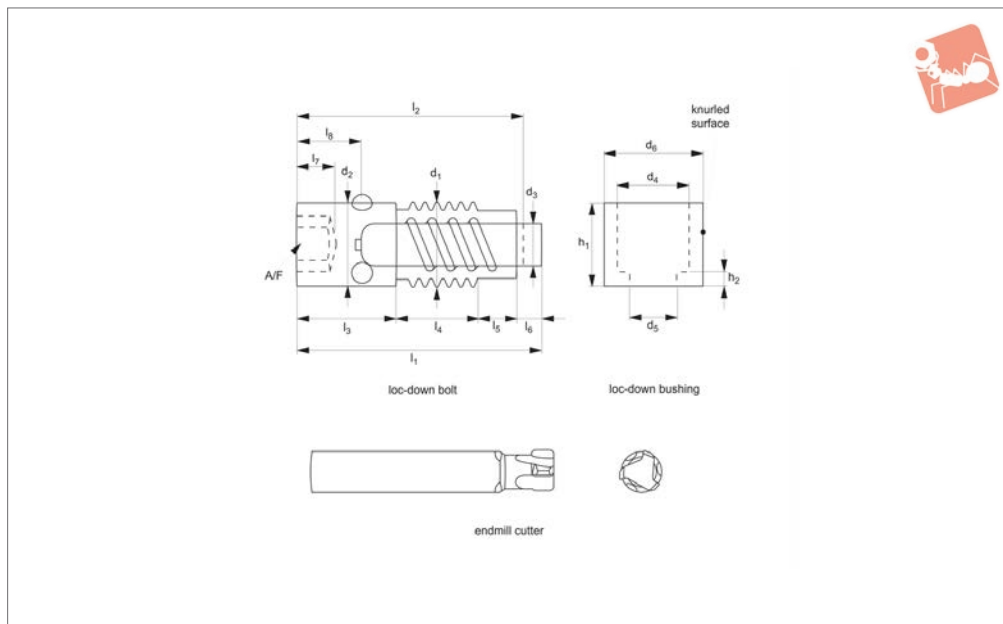
## Shaft Clamping



SHAFT CLAMPING



## 12098



### Material

Bolt: stainless steel, heat treated  
 Bushings: alloy steel (4140), Rc 58-60, black oxide finish  
 Endmill cutter: stainless steel, heat treated  
 Install tool: stainless steel, heat treated

### Technical Notes

\*\*Please note: max. clamping force is typically 0,33kN. force for every 1 Nm. of torque, and is dependent upon workpiece material.

### Max torque:

With bushing 20 Nm.  
 Alu/brass (without bush) 20 Nm.  
 Mild steel/ stainless steel 27Nm.  
 Metals HRc 45 20Nm.  
 See technical pages.

### Tips

Ideal low cost quick component and fixture change. Use in conjunction with location pins 36340 and drill bushes 30800 for fast and accurate positioning. Provides repea-

### tability to 0,01mm.

Time saving solution, removing the need for traditional bolts whilst reducing tooling interference from traditional clamping methods.  
 Ideal for high speed machining of components.

### Important Notes

See installation guidance sheet for correct installation procedure.

Order No.	Type	Size	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>6</sub>	h <sub>1</sub>	Weight g
12098.W0010	Loc-down bolt	M10	M10x1,5	9.9	5.0	-	-	-	-	16
12098.W0012	Loc-down bolt	M12	M12x1,75	12.6	7.9	-	-	-	-	27
12098.W0016	Loc-down bolt	M16	M16x2	15.9	9.8	-	-	-	-	58
12098.W0110	Loc-down bushing	M10	-	-	-	13.2	10.2	18.0	10.0	10
12098.W0112	Loc-down bushing	M12	-	-	-	16.3	13.0	22.0	9.7	14
12098.W0116	Loc-down bushing	M16	-	-	-	20.7	16.1	26.9	14.1	30
12098.W0510	Endmill cutter	M10	-	-	-	-	-	-	-	-
12098.W0512	Endmill cutter	for M12, M16	-	-	-	-	-	-	-	-
12098.W0535	Bushing install tool	for M10 to M16	-	-	-	-	-	-	-	159

Order No.	h <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	A/F
12098.W0010	-	42.8	40.2	14.1	18.7	5.3	4.6	6.3	10.5	5
12098.W0012	-	43.8	38.5	15.8	16.0	6.3	5.7	6.8	12.3	6
12098.W0016	-	56.4	50.0	21.3	22.7	6.0	6.3	8.5	15.9	8
12098.W0110	2.9	-	-	-	-	-	-	-	-	-
12098.W0112	1.6	-	-	-	-	-	-	-	-	-
12098.W0116	3.6	-	-	-	-	-	-	-	-	-
12098.W0510	-	-	-	-	-	-	-	-	-	-
12098.W0512	-	-	-	-	-	-	-	-	-	-
12098.W0535	-	-	-	-	-	-	-	-	-	-

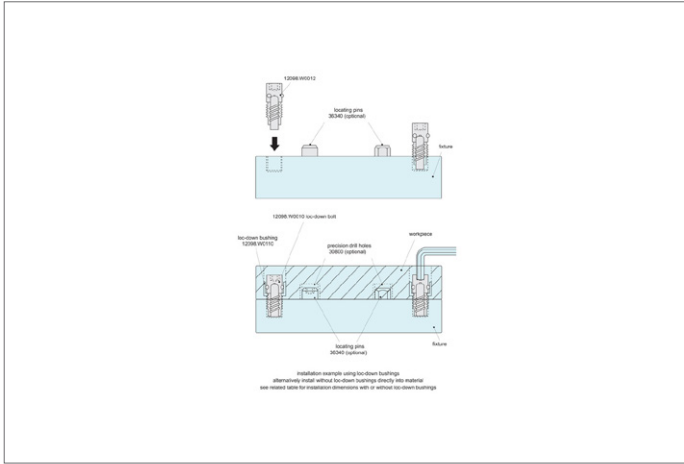




# Expanding Loc-Down Bolts for quick component clamping



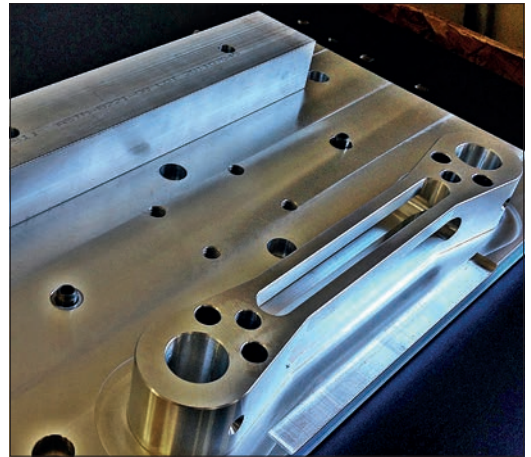
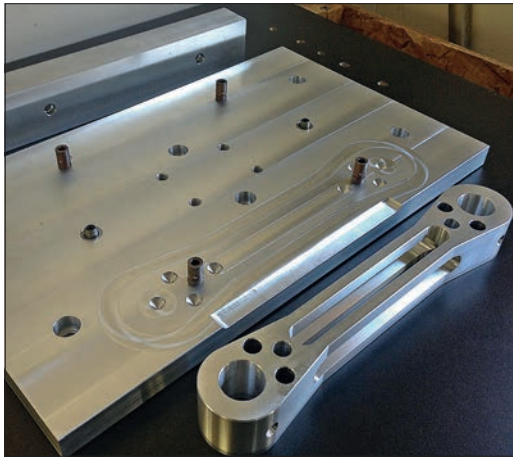
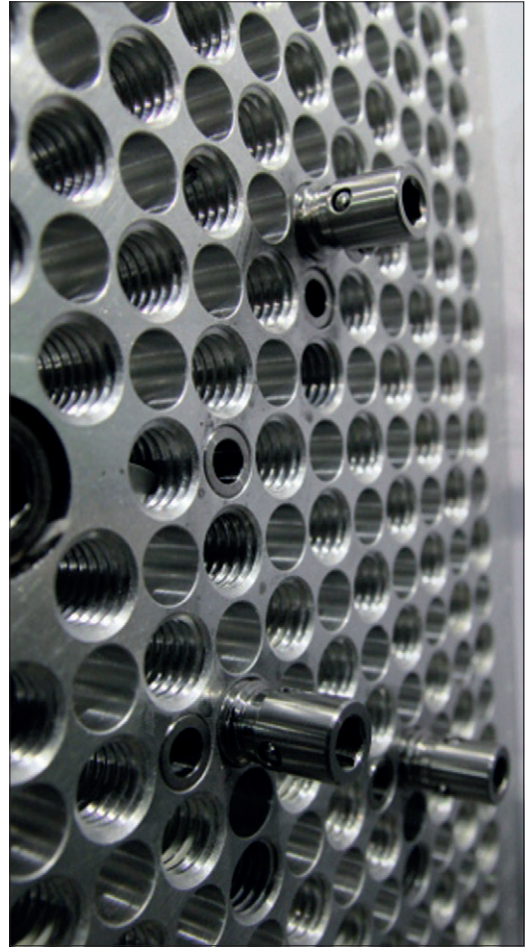
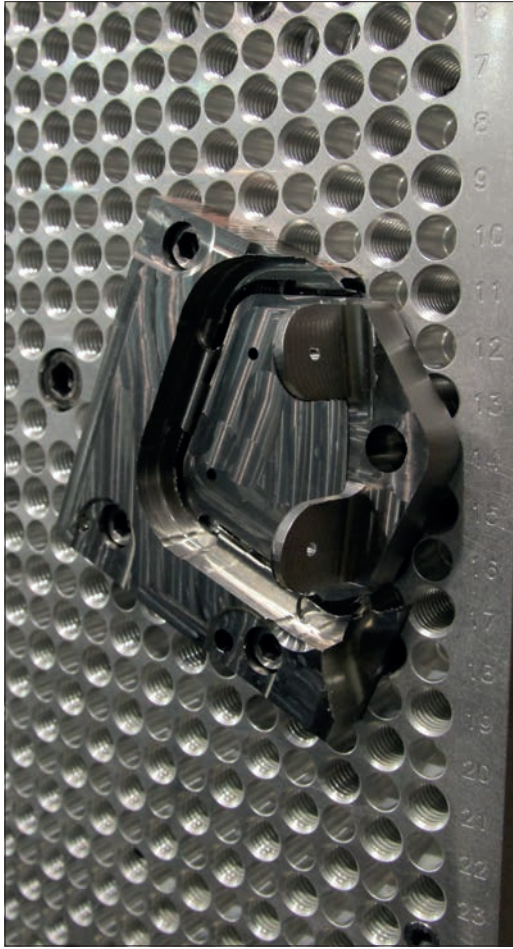
## Pull Back Inserts



PULL BACK INSERTS



# Expanding Loc-Down Bolt applications



PULL BACK INSERTS

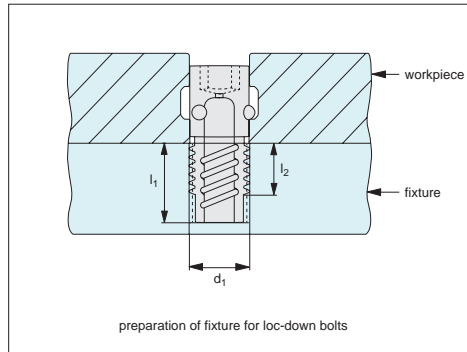


## Installation Guidance

1. Drill and tap blind hole to thread  $d_1$  depth of  $l_1$ .
2. Thread must be to a minimum depth  $l_2$  and a blind hole.
3. Blind hole must be flat to ensure proper actuation of bolt.

### Preparation of Fixture

Loc-down Bolt	Size	$d_1$	$l_1$	$l_2$ min.
12098.W0010	M10	M10 x 1,5	22	18
12098.W0012	M12	M10 x 1,75	22	18
12098.W0016	M16	M10 x 2	27	22

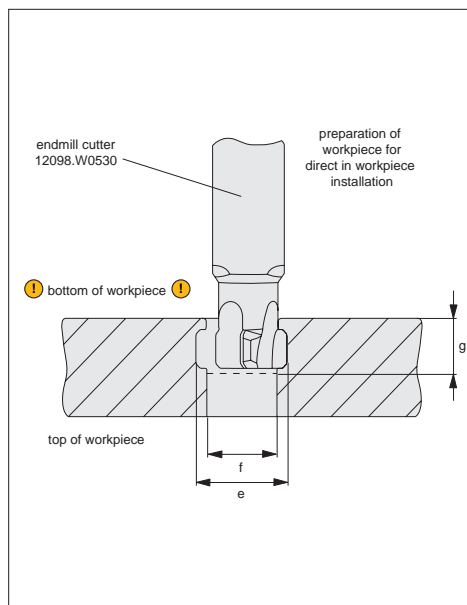


## Preparation of Fixture

1. Drill through hole, dimension 'f'.
2. Using endmill cutter, (please order separately), touch off on bottom of workpiece and drop tool to dimension 'g'. Now cut a groove to diameter 'e'. Please refer to table of endmill cutter starting feeds and speeds for different materials.
3. Countersink 0.8mm x 90°. See "direct workpiece without bushing preparation" chart below.

### Preparation of Workpiece Option 1

Loc-down Bolt	Size	$h_3$	$w_1$	$d_7$
12098.W0010	M10	12,5 - 12,7	9,9	11,43
12098.W0012	M12	15,9 - 16,0	13,0	11,73
12098.W0016	M16	20,6 - 20,9	16,5	15,09



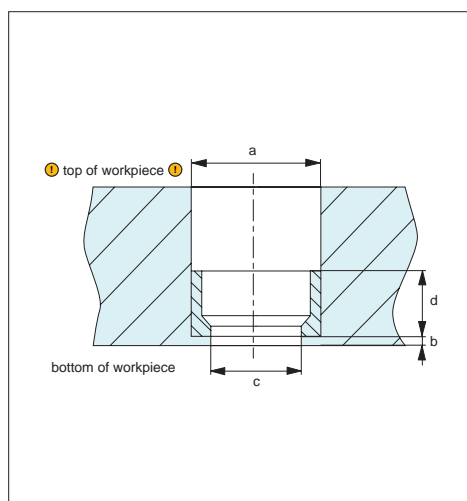
## Preparation of Workpiece Option 1

without bushing direct into workpiece.

### Endmill Cutter Starting Feeds and Speeds

Material	Feed	Speed
Aluminium	25 IPM	3,000 rpm/1 radial pass
Hard metals	1 IPM	1,200 rpm/3 equal radial passes

1. Drill through workpiece to dimension 'c'. Deep countersink hole of diameter "a", leaving material on bottom of thickness 'b' (i.e. mounting) surface of workpiece.
2. Install loc-down bushing (please order separately), ensuring bottom of bushing is flush with base of counter sink hole.
3. On deep holes, consider counter bore for dimension "a" for easier bushing installation.
4. This is a press fit installation, metal is displaced. The OD of the bushing is knurled, to aid in retention, and minimize bushing and part distortion. Using bushing installation tool 12098.W0535 (order separately) provides properly seated bushing installation, without damage to the bushing.



## Preparation of Workpiece Option 2

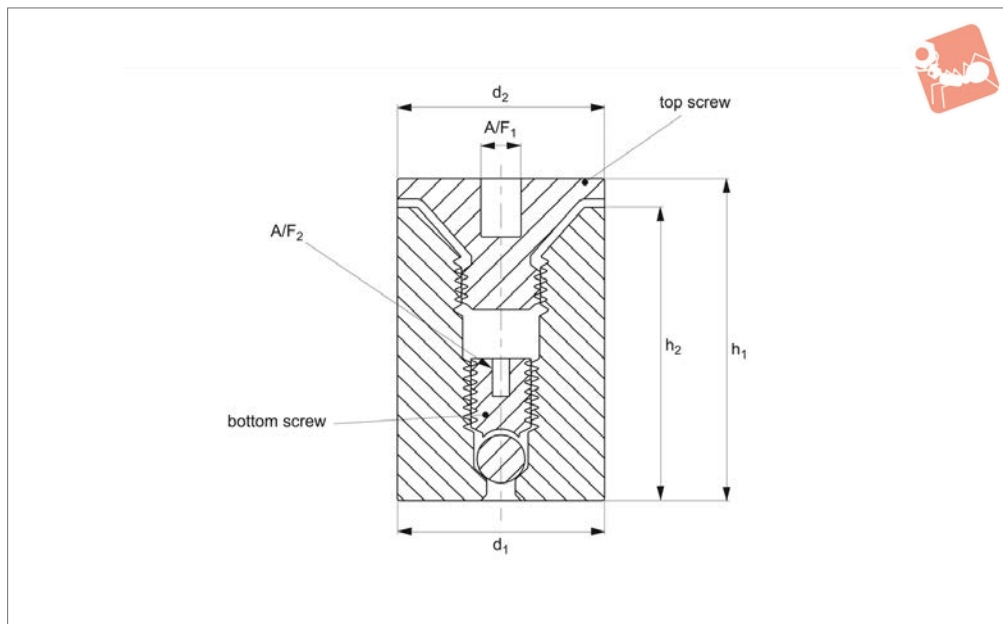
with loc-down bushing (especially for soft materials).

### Preparation of Workpiece Option 2

Loc-down Bolt	Size	Loc-down Bushing	Endmill Cutter	$d_7$	$h_5$	$d_9$	$h_4$
12098.W0010	M10	12098.W0110	12098.W0510	18,00/18,02	2,0	10,3/10,5	10,0
12098.W0012	M12	12098.W0112	12098.W0512	22,00/22,03	2,0	13,0/13,5	9,7
12098.W0016	M16	12098.W0112	12098.W0516	27,00/27,03	2,5	16,3/16,6	14,0



## 12099



### Material

Steel (SNCM20), heat-treated, quenched and tempered.

0,013.

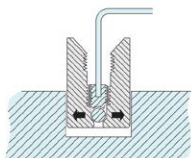
### Tips

These dowels are designed just for locating and are unsuitable for applications where high shear stress is generated.

### Technical Notes

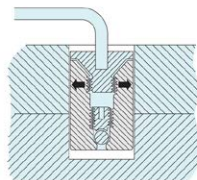
Self-centering and repeatable to within +/-

Order No.	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	A/F <sub>1</sub>	A/F <sub>2</sub>	Screw torque bottom screw	Screw torque top screw	Recommended hole dia. +0.025	Weight g
							Nm max.	Nm max.		
12099.W0010	10	9.9	20	17.6	4	3	2.2	2.2	10	11
12099.W0012	12	11.9	25	22.6	5	4	2.2	2.2	12	18
12099.W0014	14	13.9	28	24.9	5	4	3.5	4.5	14	28
12099.W0016	16	15.9	32	29.7	6	5	3.5	5.7	16	41
12099.W0020	20	19.9	38	35.4	8	6	4.5	5.7	20	76



installation instructions one

remove the top screw, expand the bottom half slightly by turning the setscrew, and insert the dowel into the locating hole of the base plate. Hold the dowel with a plier or other tool and tighten the setscrew to fix the bottom half



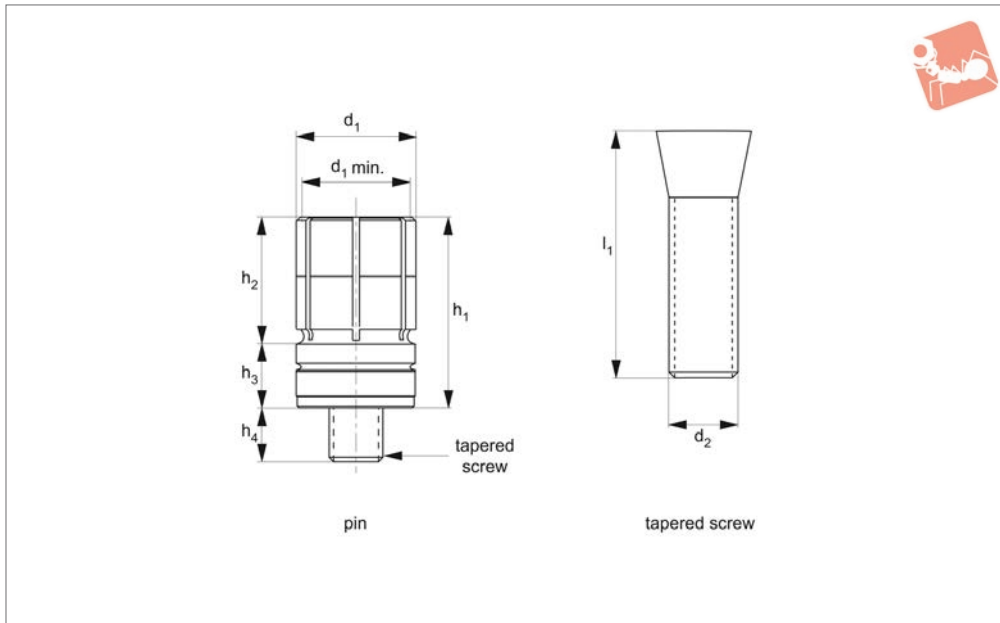
installation instructions two

replace the top screw, slide the locating hole of the fixture plate over the dowel, and expand the top half with a hex wrench



## 12058

PULL BACK INSERTS



### Material

Stainless steel (17-4PH) or steel (12L14). Pin and screw supplied together. Replacement pins can be ordered separately, see parts 12058.W5030-W5060. Supplied as one pin and one tapered screw.

### Technical Notes

XYZ Xpansion pins provide a cost-effective workholding solution for tombstones, grid and fixture plates, enabling full tool access to the work surface with no external clamping interference.

Unique design provides accurate location and repeatability with high holding forces to secure parts on an internal diameter.

Press-fit XYZ Xpansion pins are for installation into a precision bored hole, with a centred threaded hole to receive tapered screw.

Easy to use installation/removal tool available, please order separately.

### Tips

Designed for applications requiring quick set-up on secondary operation, water jetting or even non-machining applications where discrete location and clamping of parts is required.

### Important Notes

Clamping of component achieved via tight-

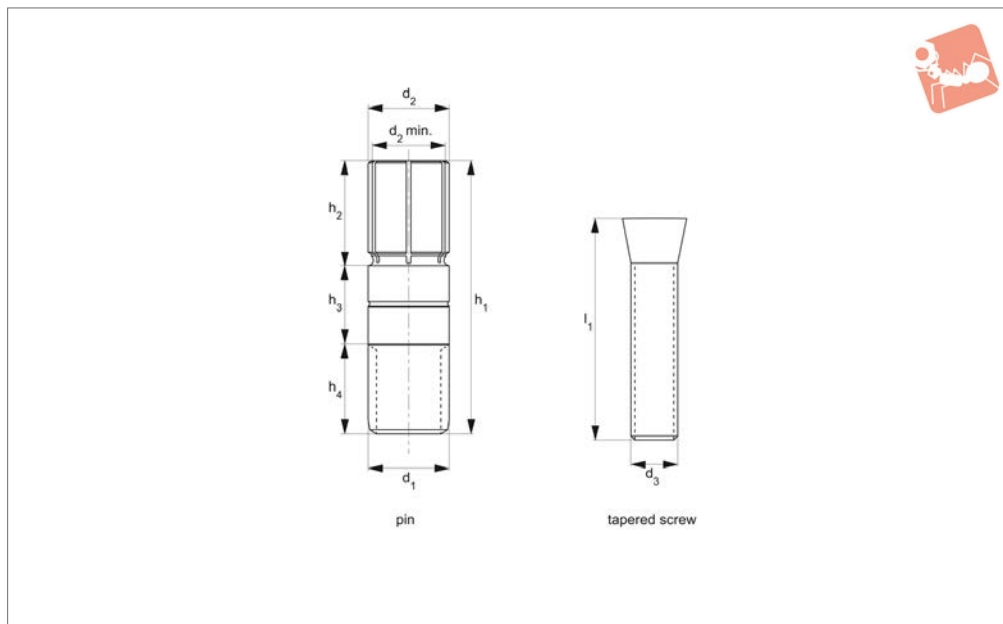
tening of tapered screw to expand the XYZ pin collet; expansion of 0,7mm is possible. The top of the pin has been slightly tapered to maximise line contact in the mounting bore and to provide adequate clearance during workpiece loading and unloading. If recessing pin into a fixture at a depth below the collet slits, be sure to provide sufficient clearance to allow for expansion of clamp (approx. 0,7mm).

**d<sub>1 min.</sub>** is the minimum diameter to which the pin can be machined down. The tapered screws listed on the data table are for replacement purposes.

Order No.	Type	Material	For pin dia.	$l_1$	$d_1$ +0.00 -0.025	$d_1$ min.	$d_2$	$h_1$	$h_2$	$h_3$	$h_4$	Weight g
12058.W0030	Pin	17-4PH	-	16	6	5.5	-	13	7.0	5.8	7.3	2.7
12058.W0040	Pin	17-4PH	-	22	10	7.5	-	19	12.7	6.4	8.4	9.5
12058.W0050	Pin	17-4PH	-	22	12	10.5	-	19	12.7	6.4	11.1	17
12058.W0060	Pin	17-4PH	-	22	16	12.0	-	19	12.7	6.4	13.0	27
12058.W0130	Pin	12L14	-	16	6	5.5	-	13	7.0	5.8	7.3	2.7
12058.W0140	Pin	12L14	-	22	10	7.5	-	19	12.7	6.4	8.4	9.5
12058.W0150	Pin	12L14	-	22	12	10.5	-	19	12.7	6.4	11.1	17.2
12058.W0160	Pin	12L14	-	22	16	12.0	-	19	12.7	6.4	13.0	27.2
12058.W5030	Tapered Screw	-	-	-	-	-	M 3x0,5	-	-	-	-	-
12058.W5040	Tapered Screw	-	-	-	-	-	M 4x0,7	-	-	-	-	4.5
12058.W5050	Tapered Screw	-	-	-	-	-	M 6x1,0	-	-	-	-	-
12058.W5060	Tapered Screw	-	-	-	-	-	M 8x1,25	-	-	-	-	13.6
12058.W6030	Inst. Tool	-	6	-	-	-	-	-	-	-	-	-
12058.W6040	Inst. Tool	-	10	-	-	-	-	-	-	-	-	-
12058.W6050	Inst. Tool	-	12	-	-	-	-	-	-	-	-	-
12058.W6060	Inst. Tool	-	16	-	-	-	-	-	-	-	-	63.5



## 12059



### Material

Stainless steel (17-4PH, AISI 630) or steel (12L14). Pin and screw supplied together. Replacement pins can be ordered separately, see parts 12059.W5010-12059.W5020. Supplied as one pin and one tapered screw.

### Technical Notes

XYZ Xpansion pins provide a cost-effective workholding solution for tombstones, grid and fixture plates, enabling full tool access to the work surface with no external clamping interference. Unique design provides accurate location and repeatability with high holding forces to secure parts on an internal diameter. Threaded XYZ Xpansion pins are installed

via a drilled and reamed hole for precise location, or set in a hardened drill bush for additional fixture strength and wear resistance.  $d_2$  tolerance  $+0.00/-0.025$ .

### Tips

Designed for applications requiring quick set-up on secondary operation, water jetting or even non machining applications where discrete location and clamping of parts is required.

### Important Notes

Clamping of component achieved via tightening of tapered screw to expand the XYZ pin collet; expansion of 0,7mm is possible. The top of the pin has been slightly tapered to maximise line contact in the mouting

bore and to provide adequate clearance during loading and unloading of workpieces.

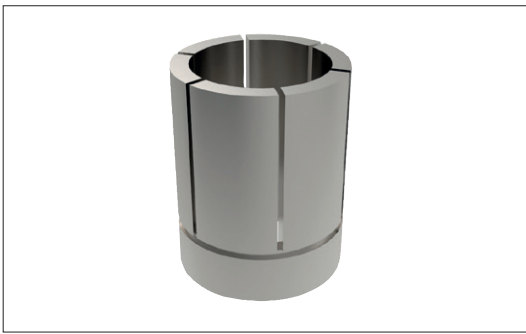
If installation pin in a precision bore, drill and ream the hole over the nominal diameter  $d_2$  by minimum  $+0,003$  to  $+0,013$  mm.

If recessing pin into a fixture at a depth below the collet slits, be sure to provide sufficient clearance to allow for expansion of clamp (approx. 0,7mm).

$d_2$  min.\* is the minimum diameter to which the pin can be machined down.

The tapered screws listed on the data table are for replacement purposes.

Order No.	Type	$l_1$	$d_1$	$d_2$ $+0.00 -0.025$	$d_2$ min.*	$d_3$	$h_1$	$h_2$	$h_3$	$h_4$	Weight g
12059.W0050	Pin	-	M12x1,75	12	10.5	-	40	15	12	13	34
12059.W0060	Pin	-	M16x2,00	16	12.0	-	45	16	16	13	59
12059.W5010	Tapered Screw	30	-	-	-	M 6x1,00	-	-	-	-	9.1
12059.W5020	Tapered Screw	30	-	-	-	M 8x1,25	-	-	-	-	14



Expansion pins are the ideal solution for securing parts on the inside diameter on tombstones, grid and fixture plates.

The unique design achieves accurate location, repeatability and high holding forces for securing parts and provide discrete workholding and full accessibility to the work surface with no external clamping interference.

Location accuracy is achieved through the close tolerance between the Xpansion pin's locating diameter and busing internal diameter. The top of the pins have a slight taper to maximise line contact in the bore, and to provide clearance during loading and unloading.

Pins expand up to 0.7mm, with the pin's diameter machinable to your specific application.

Ideal for quick set-up on secondary operation, water jetting operations, or even applications outside of a machining centre.

Available in long threaded version, or shorter press fit model. Serrated and smooth finish in both M12 and M16 threads.



Design simple fixture plate with Xpansion pins located to suit your component, the same hole spacing will be used in the workpiece/raw stock for mounting bolt holes.



Install the Xpansion pin into the fixture plate.

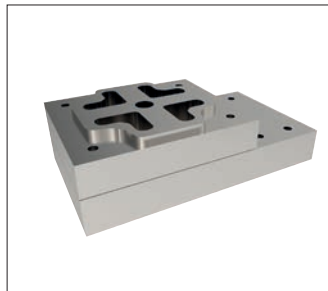


Install the Xpansion pin's tapered drive screw into fixture plate.

### Easy to Install



Load workpiece raw stock onto Xpansion pins and tighten tapered drive screws to clamp.

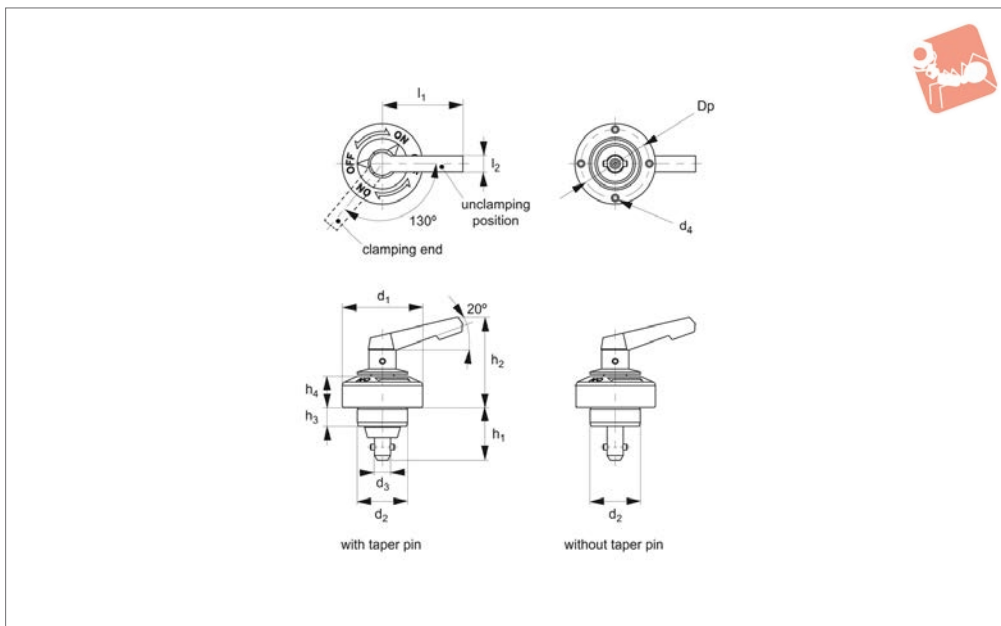


Run first operation – note the clear tooling path possible with no noticeable external clamping interference.

- Flip the part and locate on the same Xpansion pins for operation two.
- Xpansion pins provide a quick, accurate and low cost fixture solution.



## 12085.1



### Material

Body/shank: steel (SCM440), black oxide finish.

Tapered pin: steel (SCM440), nitrocarburised.

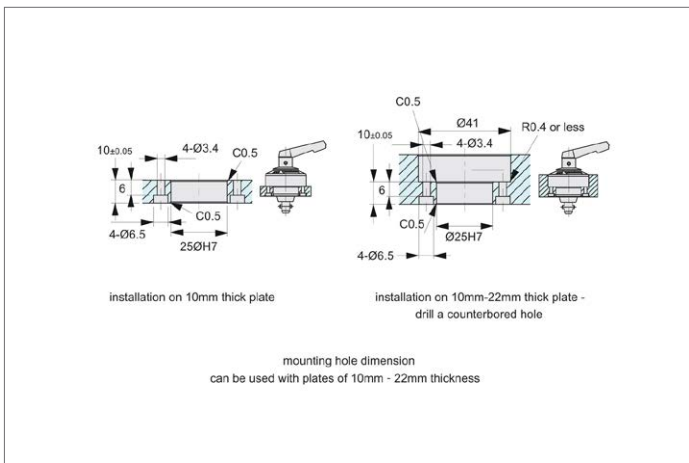
Handle: die-cast zinc (ZDC1), silver-grey painted.

Pin: stainless steel (AISI 303, 1.4305).

### Technical Notes

The lifting force is the power of the inner spring of the body to push up the moveable tapered pin.

Order No.	Tapered pin	Size	Clamping force N	$l_1$	$l_2$	Dp	$d_1$	$d_2$ tol. G6	$d_3$	$d_4$	$h_1$	$h_2$	$h_3$	$h_4$	Lifting force N	Weight g
12085.W0008	With	8	600	40	8	34	40	25	8	M 3x0,5	26	45	9,5	15,5	100	220
12085.W0108	Without	8	700	40	8	34	40	25	8	M 3x0,5	26	45	9,5	15,5		215





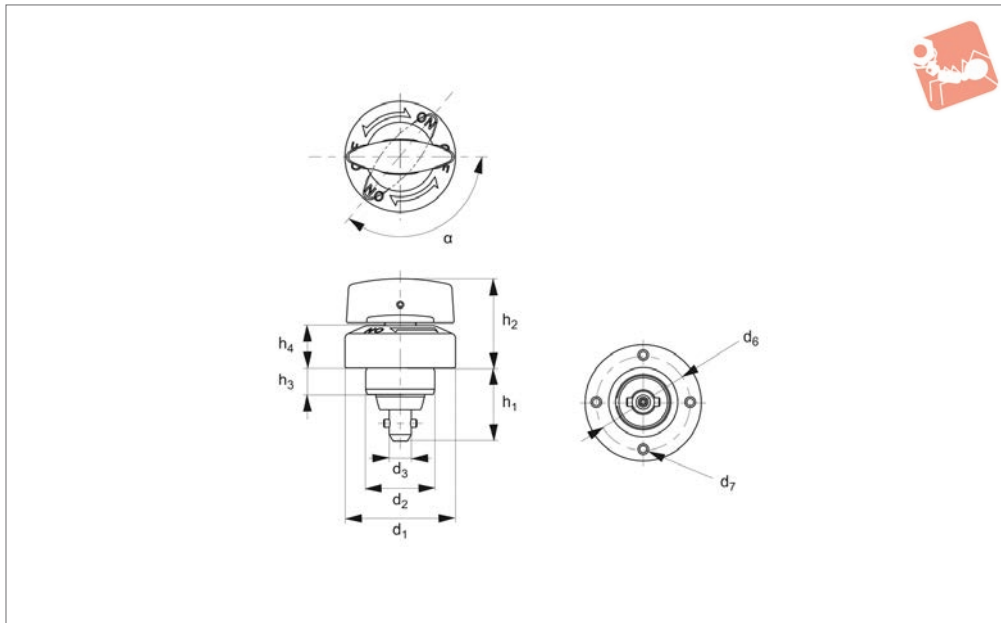


# One-Touch Flex Locator Clampers

knob



## Pull Back Inserts



**12085.2**

PULL BACK INSERTS

### Material

Body/shank: steel (AISI 4140, 42CrMo4), black oxide finish.

Tapered pin: steel (AISI 4140, 42CrMo4), nitrocarburised.

Knob: stainless steel (AISI 304, 1.4308).

Pin: stainless steel (AISI 303, 1.4305).

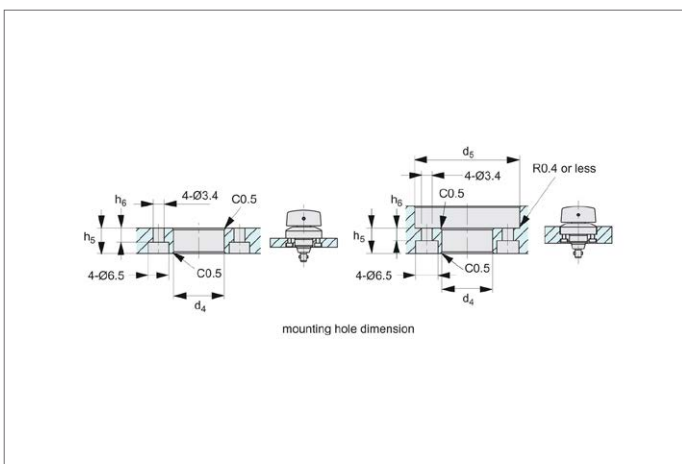
### Technical Notes

The lifting force is the power of the inner spring of the body to push up the moveable tapered pin.

### Tips

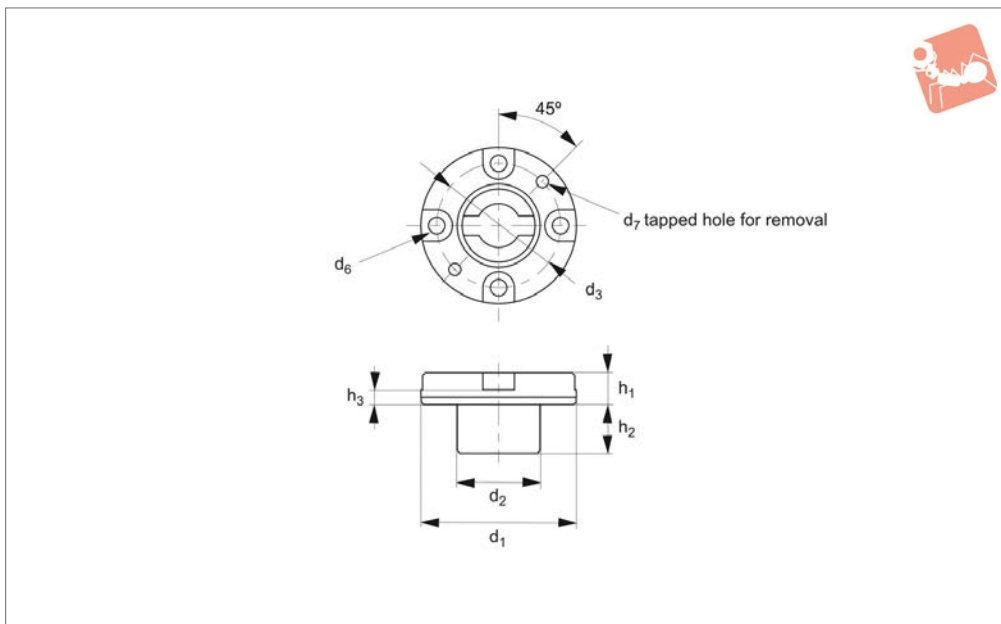
Flex locator bushing: for .W0206, see part no. 12085.W0506. For .W0208, see part no. 12085.W0508.

Order No.	Size	Clamping force N	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub>	h <sub>6</sub>	Lifting force N	α	Weight g
<b>12085.W0206</b>	6	350	32	16	5.5	16	33	25.5	M 3x0,5	22	27	7.5	12.0	8	4	30	120°	96
<b>12085.W0208</b>	8	600	40	25	8.0	25	41	34.0	-	26	32	9.5	15.5	10	6	100	130°	211





## 12085.3



### Material

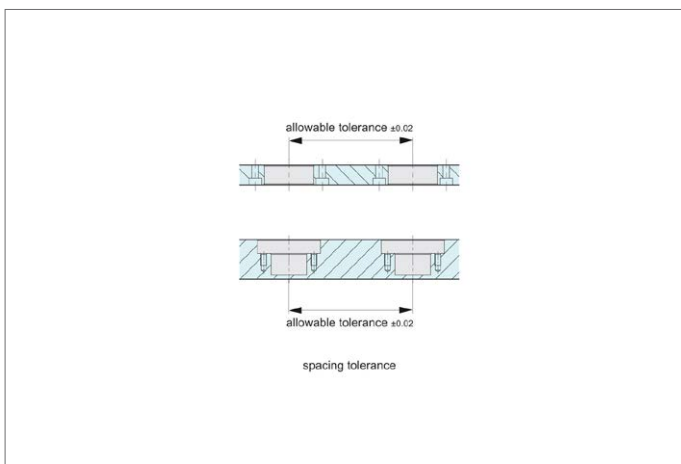
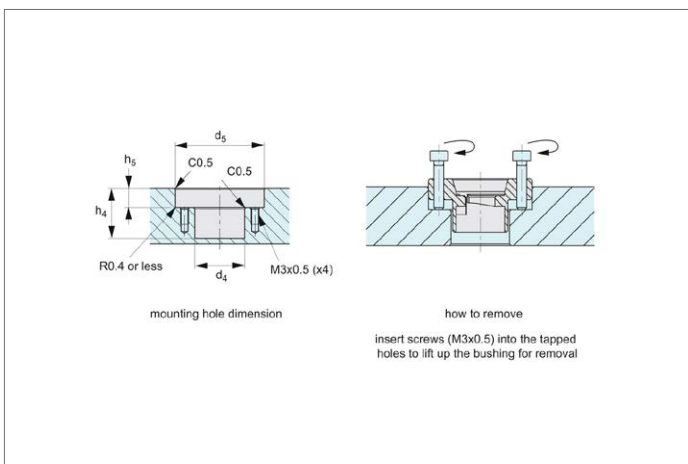
Stainless steel (AISI 304, 1.4301).

no. 12108. Use plates to avoid any deformation to workpiece during clamping.

### Technical Notes

Clamping plates for spiral cam clamp, part

Order No.	Size	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub>	Weight g
<b>12085.W0506</b>	6	28	12.5	21.5	13.5	28	3.4	M 3x0,5	5.5	8	2	15	6	20
<b>12085.W0508</b>	8	32	17	25.5	18.0	32	3.4	M 3x0,5	6.5	10	3	18	7	32





# One Touch Flex Locator Clampers

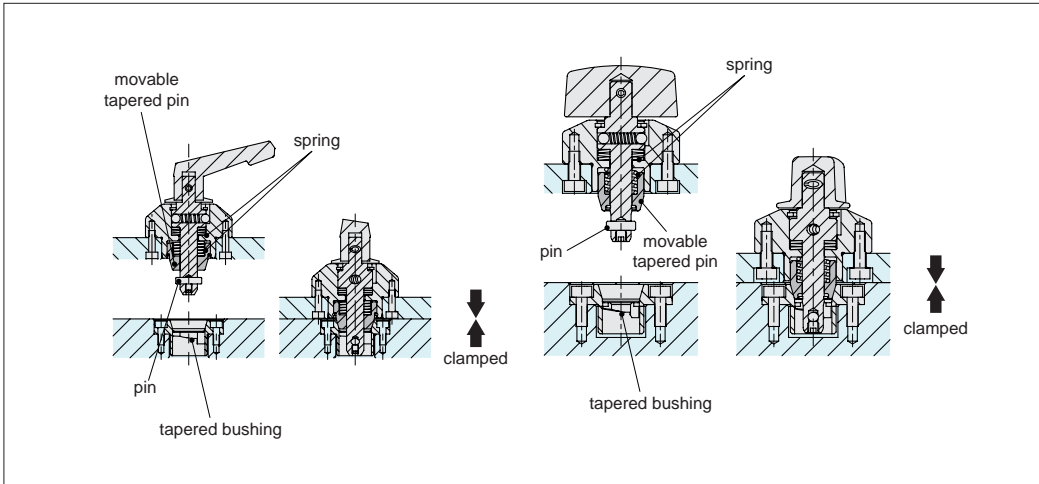
how to use



## 12085

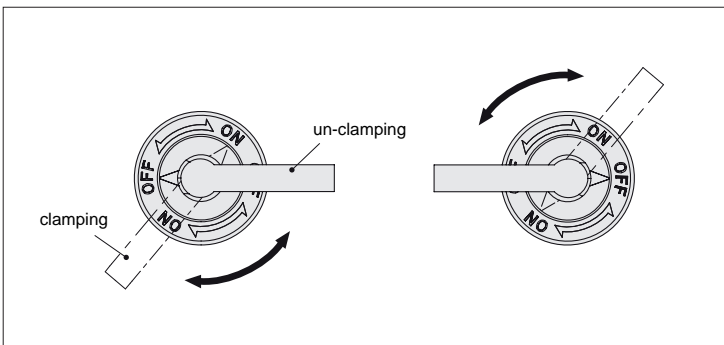
### Clamping & Height Setting

#### Feature



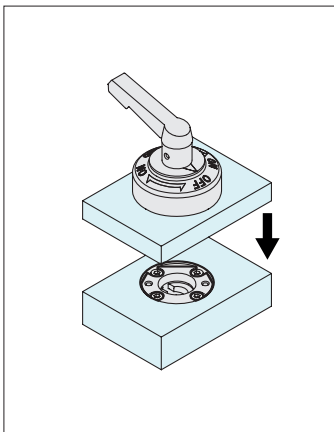
- The plates are located by fitting the tapered pin and the tapered bushing.
- The pin contacts the cam surface inside the bushing, and it compresses the inner spring, then the plates are clamped.

Note: 12085.W0108 does not have locating function.



Two clamping and unclamping positions of handle can be chosen for 12085.W0008/W0108

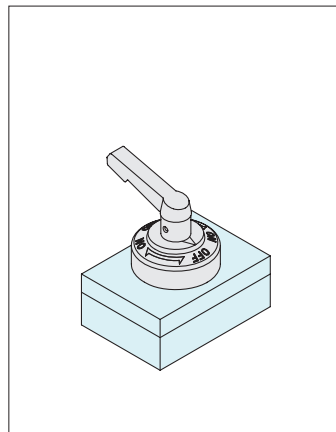
#### How to Operate



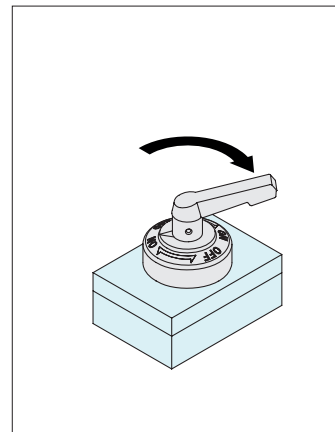
1. Ensure the handle is positioned at 'OFF' mark.

\*Follow back these steps for unclamping

\*Same operation for knob style.



2. Insert the clamber to the bushing.



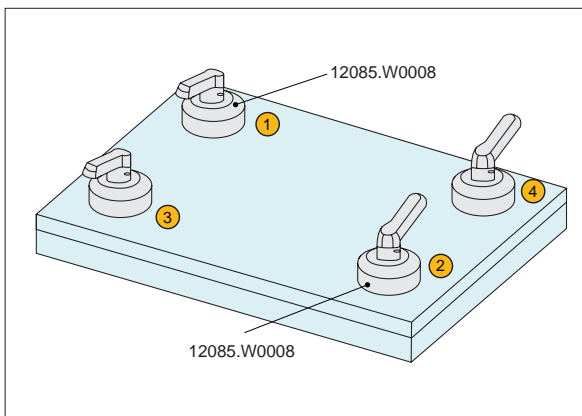
3. Turn the handle to 'ON' mark for clamping.

PULL BACK INSERTS

ov-W12085.1-A-T-W12085.3-A-T-how-to-use-one-touch-flex-locators-a-rnh - Updated -24-10-2022



### Tightening Order



Ensure the handle is positioned at 'OFF' mark and lift down the fixture plate.

Turn the handle and clamp in order of **1 - 2 - 3 - 4**

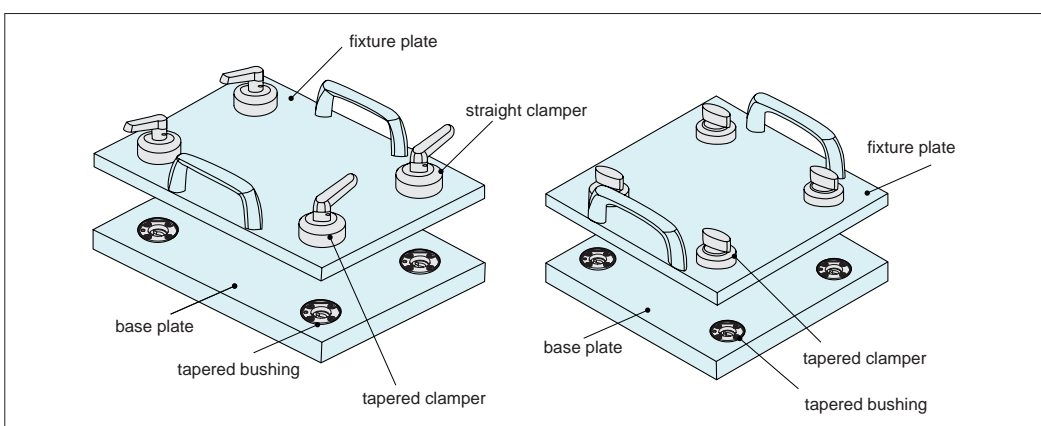
\*For unclamping, ensure the handle is positioned at 'OFF' mark and disassemble the fixture plate.

**If the handles are not tightened in the correct order, the locating repeatability may exceed 10 μm.**

### How to Use

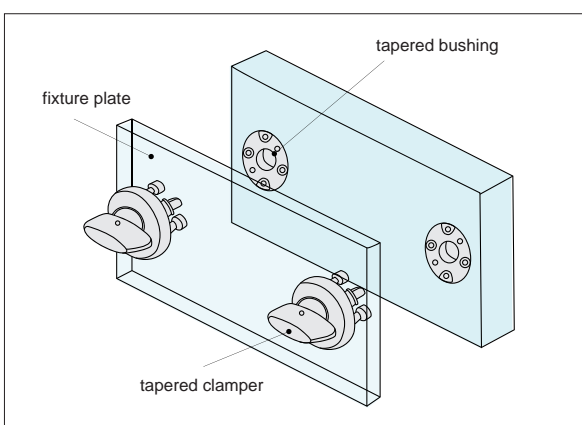
#### Horizontal Assembly of Fixture Plate

Note: Ensure not to lift the fixture plate up and down with gripping the handle of the clammers.



#### Vertical Assembly of Fixture Plate

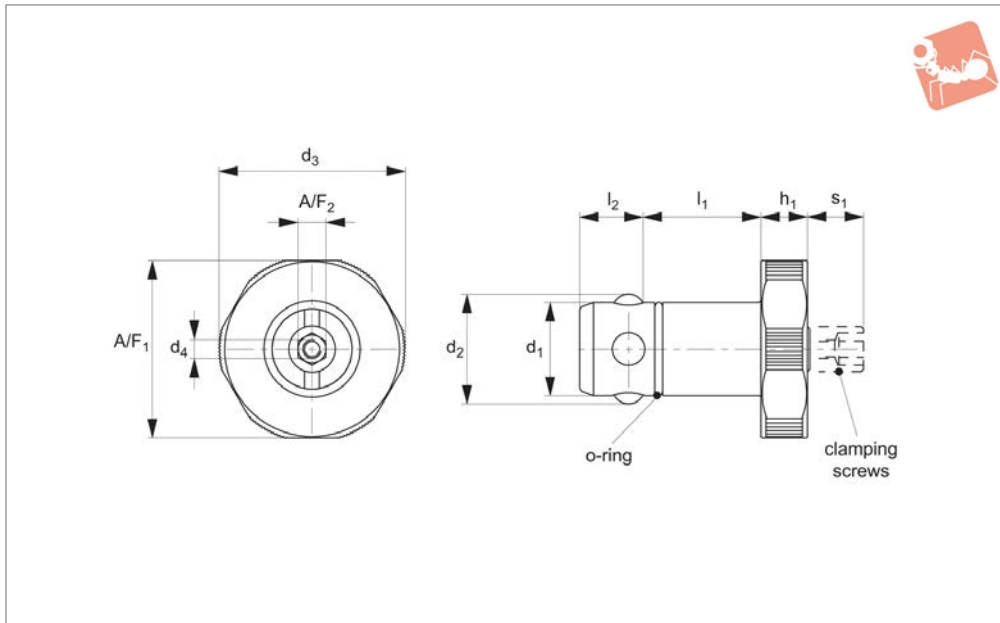
Note: Locating repeatability is 10 μm.



Clamp and Bush Combination		Max. Loading Capacity (N)
<b>12085.W0206</b>	Ø6	120
<b>12085.W0008</b>	Ø8	400
<b>12085.W0108</b>	Ø8	400
<b>12085.W0208</b>	Ø8	400

Note: The maximum load is the entire sum of the load of fixture plates, fixtures and workpieces.

The maximum loading capacity shown is the value when two sets of tapered clamber and tapered bushing are used.



### 12090

PULL BACK INSERTS

#### Material

Steel version: heat treated steel, tempered and blackened.

Stainless steel version: precipitation hardened stainless steel (17-4PH, AISI 630).

#### Technical Notes

By tightening the clamping screw, the

positioning clamping pin is centered and clamped via the four balls, into the locating bush.

The clamping screw can be operated manually via a removable handle or hex. key.

#### Tips

For removable handle see part no. 12091.

#### Important Notes

The positioning clamping pin allows fast clamping, fastening, adjusting, changing and securing of workpieces, plates, fixture systems etc.

Order No.	Material	$l_1$ +0.6	$l_2$ $\pm 1$	$d_1$ -0.02   - 0.05	$d_2$	$d_3$	$d_4$	For clamping plate thickness $\pm 0.05$	$h_1$	Holding force kN	Stroke $s_1$ max.	A/F <sub>1</sub>	A/F <sub>2</sub>	Weight g
12090.W0016	Steel	25	13,6	16	18,7	32	M 4	20	10	5	9	30	6	105
12090.W0018	Steel	30	13,6	16	18,7	32	M 4	25	10	5	9	30	6	115
12090.W0020	Steel	25	13,6	20	23,6	40	M 4	20	10	6	9	38	6	170
12090.W0022	Steel	30	13,6	20	23,6	40	M 4	25	10	6	9	38	6	185
12090.W0025	Steel	25	18,6	25	29,0	45	M 4	20	10	8	9	43	10	255
12090.W0027	Steel	30	18,6	25	29,0	45	M 4	25	10	8	9	43	10	275
12090.W0030	Steel	25	18,6	30	34,6	55	M 4	20	10	10	9	53	10	375
12090.W0032	Steel	30	18,6	30	34,6	55	M 4	25	10	10	9	53	10	400
12090.W0116	Stainless Steel	25	13,6	16	18,7	32	M 4	20	10	5	9	30	6	105
12090.W0118	Stainless Steel	30	13,6	16	18,7	32	M 4	25	10	5	9	30	6	115
12090.W0120	Stainless Steel	25	13,6	20	23,6	40	M 4	20	10	6	9	38	6	170
12090.W0122	Stainless Steel	30	13,6	20	23,6	40	M 4	25	10	6	9	38	6	185
12090.W0125	Stainless Steel	25	18,6	25	29,0	45	M 4	20	10	8	9	43	10	255
12090.W0127	Stainless Steel	30	18,6	25	29,0	45	M 4	25	10	8	9	43	10	275
12090.W0130	Stainless Steel	25	18,6	30	34,6	55	M 4	20	10	10	9	53	10	375
12090.W0132	Stainless Steel	30	18,6	30	34,6	55	M 4	25	10	10	9	53	10	400

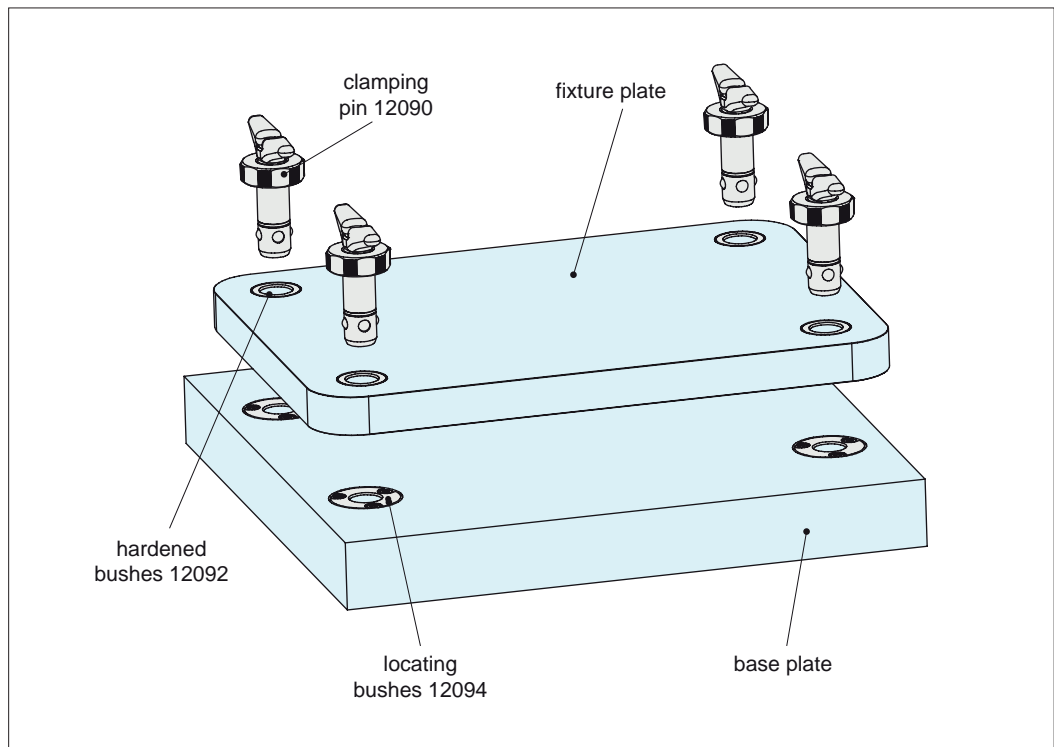
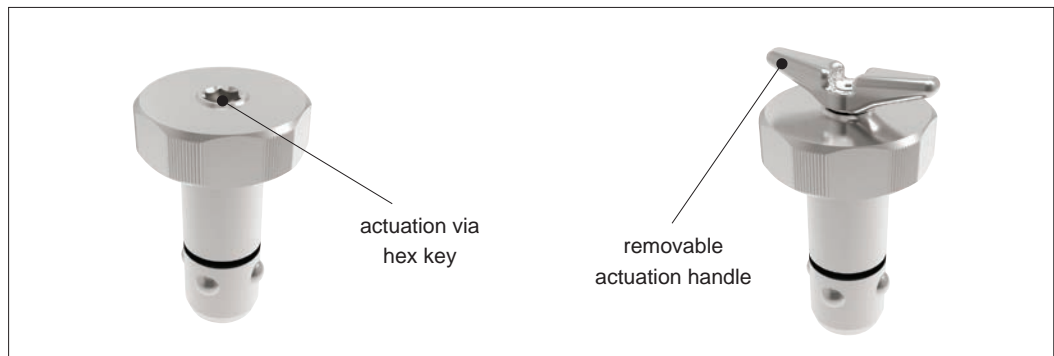


By tightening the clamping screws, the positioning clamping pin is centered and clamped with four balls in the locating bush. The clamping screw can be operated manually via a removable handle or via a hex. key.

## Advantages

### Overview

- Advantages of initial spring tension:
  - Abrasion resistant.
  - Clamping ball and location hole are protected from overload.
  - No seizing of the pin through overloading.
  - Reduces vibration during machining.
  - Eliminates unintentional unlocking of the system (e.g. due to system vibration).
- High repeatability of  $\pm 0.03\text{mm}$ .
- Simple installing /uninstalling using a spanner faces and knurling.
- Low construction height.
- Operation via hex. key or optional handle.

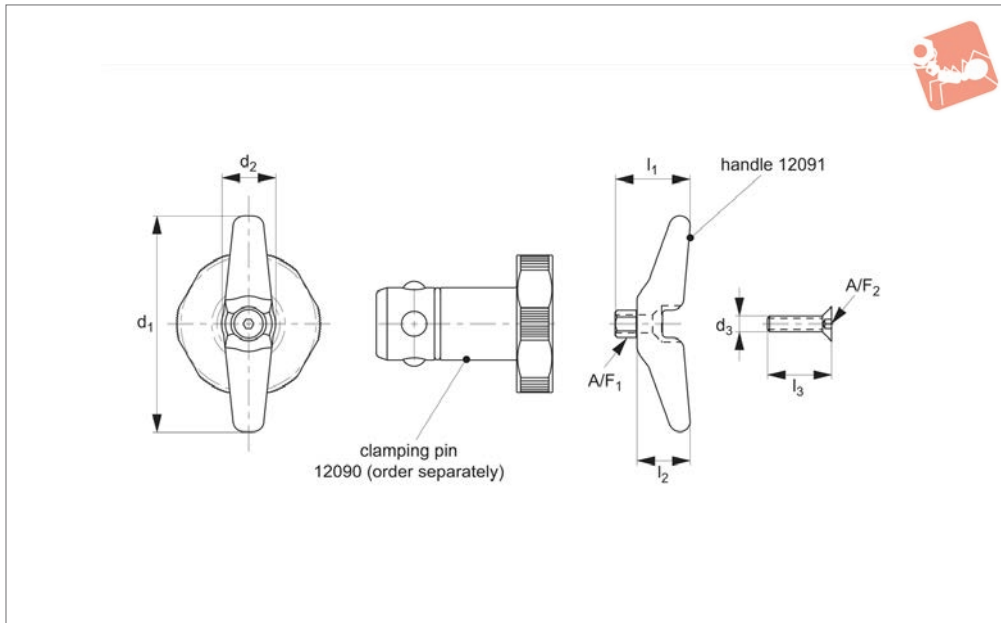




# Manual Handles for positioning clamping pins 12090



## Pull Back Inserts



**12091**

PULL BACK INSERTS

**Material**

Stainless steel.

**Technical Notes**

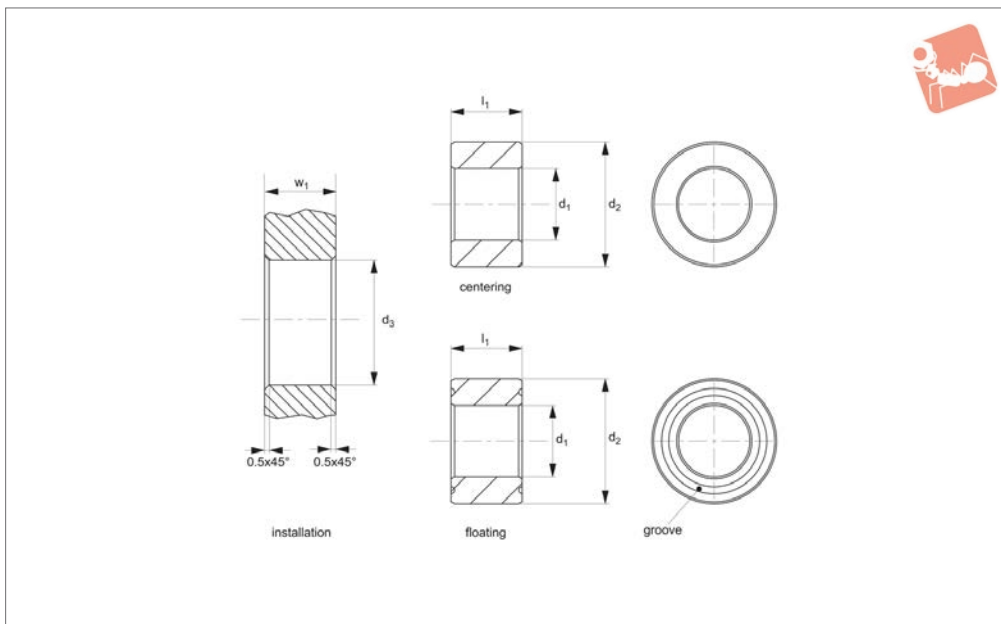
The handle enables easy and fast operation

of the positioning clamping pin. The handle is tightened to the positioning clamping pin with the M4 screw included in the delivery.

Order No.	For pin dia.	$l_1$	$l_2$	$l_3$	$d_1$	$d_2$	$d_3$	A/F <sub>1</sub>	A/F <sub>2</sub>	Weight g
12091.W0900	16/20	20	15	16	60	15	M 4	6	3	45
12091.W0902	25/30	25	20	20	80	15	M 4	10	3	80



## 12092



### Material

Steel version: steel, heat treated, tempered and blackened.

Stainless steel version: hardened stainless

steel (AISI 440B, 1.4112).

### Technical Notes

Mount two centering and two floating

bushes into the mounting plate to achieve optimal repeatability. The floating bush has a groove which serves as a differentiation mark.

Order No.	Type	Material	$l_1$ -0.25 -0.5	$d_1$ tol. F6	$d_1$ +0.2	$d_2$ tol. n6	$w_1$ $\pm 0.05$	$d_3$ tol. H7	Weight g
12092.W0702	Centering	Steel	20	16	-	25	20	25	45
12092.W0704	Centering	Steel	25	16	-	25	20	25	55
12092.W0706	Centering	Steel	20	20	-	35	20	25	100
12092.W0708	Centering	Steel	25	20	-	35	20	25	125
12092.W0710	Centering	Steel	20	25	-	35	20	25	75
12092.W0712	Centering	Steel	25	25	-	35	20	25	95
12092.W0714	Centering	Steel	20	30	-	45	20	25	140
12092.W0716	Centering	Steel	25	30	-	45	20	25	175
12092.W0732	Floating	Steel	20	-	16.8	25	20	25	42
12092.W0734	Floating	Steel	25	-	16.8	25	20	25	52
12092.W0736	Floating	Steel	20	-	20.8	35	20	25	95
12092.W0738	Floating	Steel	25	-	20.8	35	20	25	120
12092.W0740	Floating	Steel	20	-	25.8	35	20	25	70
12092.W0742	Floating	Steel	25	-	25.8	35	20	25	85
12092.W0744	Floating	Steel	20	-	30.8	45	20	25	135
12092.W0746	Floating	Steel	25	-	30.8	45	20	25	165
12092.W0802	Centering	Stainless Steel	20	16	-	25	20	25	45
12092.W0804	Centering	Stainless Steel	25	16	-	25	20	25	55
12092.W0806	Centering	Stainless Steel	20	20	-	35	20	25	100
12092.W0808	Centering	Stainless Steel	25	20	-	35	20	25	125
12092.W0810	Centering	Stainless Steel	20	25	-	35	20	25	75
12092.W0812	Centering	Stainless Steel	25	25	-	35	20	25	95
12092.W0814	Centering	Stainless Steel	20	30	-	45	20	25	140
12092.W0816	Centering	Stainless Steel	25	30	-	45	20	25	175
12092.W0832	Floating	Stainless Steel	20	-	16.8	25	20	25	42
12092.W0834	Floating	Stainless Steel	25	-	16.8	25	20	25	52
12092.W0836	Floating	Stainless Steel	20	-	20.8	35	20	25	95
12092.W0838	Floating	Stainless Steel	25	-	20.8	35	20	25	120
12092.W0840	Floating	Stainless Steel	20	-	25.8	35	20	25	70
12092.W0842	Floating	Stainless Steel	25	-	25.8	35	20	25	85
12092.W0844	Floating	Stainless Steel	20	-	30.8	45	20	25	135
12092.W0846	Floating	Stainless Steel	25	-	30.8	45	20	25	165



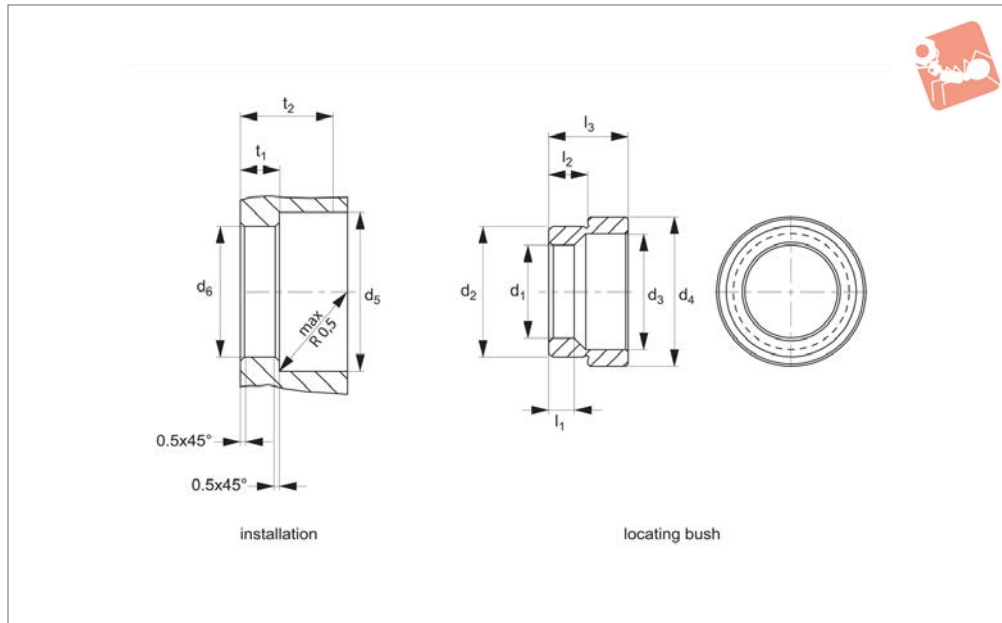


# Locating Bushings

for positioning clamping pins 12090 - press fit



# Pull Back Inserts



**12093**

PULL BACK INSERTS

### Material

Steel version: steel, heat treated, tempered and blackened.

Stainless steel version: hardened stainless

steel (AISI 440B, 1.4112).

### Technical Notes

The press fit locating bush for positioning

clamping pins are inserted in the machine table or the base plate with light pressure.

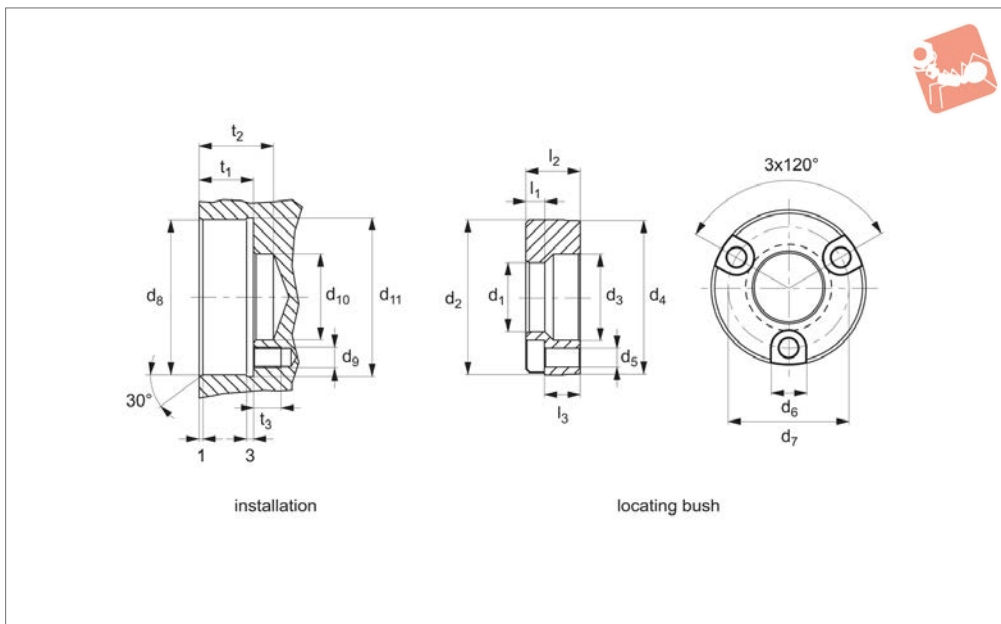
Order No.	Material	$l_1$	$l_2$	$l_3$	$d_1$ tol. F6	$d_2$ $\pm 0.01$	$d_3$	$d_4$	$d_5$ $+1$	$d_6$ tol. H7	$t_1$ $\pm 0.025$	$t_2$ min.	Weight g
<b>12093.W0762</b>	Steel	5.3	6.9	12.1	16	22	20	28.6	31	22	7.3	22	25
<b>12093.W0764</b>	Steel	5.3	8.4	17.1	20	28	25	32.2	34	28	8.8	22	40
<b>12093.W0766</b>	Steel	5.3	10.2	21.0	25	35	31	40.2	42	35	10.6	28	80
<b>12093.W0768</b>	Steel	5.3	10.6	21.8	30	42	37	48.2	50	42	11.0	28	115
<b>12093.W0862</b>	Stainless Steel	5.3	6.9	12.1	16	22	20	28.6	31	22	7.3	22	25
<b>12093.W0864</b>	Stainless Steel	5.3	8.4	17.1	20	28	25	32.2	34	28	8.8	22	40
<b>12093.W0866</b>	Stainless Steel	5.3	10.2	21.0	25	35	31	40.2	42	35	11.0	28	80
<b>12093.W0868</b>	Stainless Steel	5.3	10.6	21.8	30	42	37	48.2	50	42	11.0	28	115



PULL BACK INSERTS



## 12094



### Material

Steel version: steel, heat treated, tempered and blackened.

Stainless steel version: precipitation-hardened stainless steel (17-4 PH, AISI

630, 1.4542).

### Technical Notes

The screw fit locating bushings for positioning clamping pins are inserted in the

machine table or in the base plate and are screwed on.

### Important Notes

Supplied with mounting screws.

Order No.	Material	$l_1$	$l_2$	$l_3$ $\approx$	$d_1$ tol. F6 +0.01	$d_2$	$d_3$	$d_4$	$d_5$	$d_6$	$d_7$	$d_8$ tol. H7	$d_9$	$d_{10}$ +1	$d_{11}$	$t_1$ $\pm 0.02$	$t_2$	$t_3$	Weight g
12094.W0782	Steel	5,3	11,6	7,0	16	37	20	36,5	4,5	8	29	37	M 4	20	38,5	11,9	22	12	70
12094.W0784	Steel	5,3	15,8	10,0	20	45	25	44,5	5,5	10	35	45	M 5	25	46,5	16,2	22	12	130
12094.W0786	Steel	5,3	19,9	13,5	25	55	31	54,5	6,6	11	42	55	M 6	31	56,5	20,3	28	14	245
12094.W0788	Steel	5,3	21,8	15,0	30	60	37	59,5	6,6	11	48	60	M 6	37	61,5	22,2	28	14	195
12094.W0882	Stainless Steel	5,3	11,6	7,0	16	37	20	36,5	4,5	8	29	37	M 4	20	38,5	11,9	22	12	70
12094.W0884	Stainless Steel	5,3	15,8	10,0	20	45	25	44,5	5,5	10	35	45	M 5	25	46,5	16,2	22	12	130
12094.W0886	Stainless Steel	5,3	19,9	13,5	25	55	31	54,5	6,6	11	42	55	M 6	31	56,5	20,3	28	14	245
12094.W0888	Stainless Steel	5,3	21,8	15,0	30	60	37	59,5	6,6	11	48	60	M 6	37	61,5	22,2	28	14	195

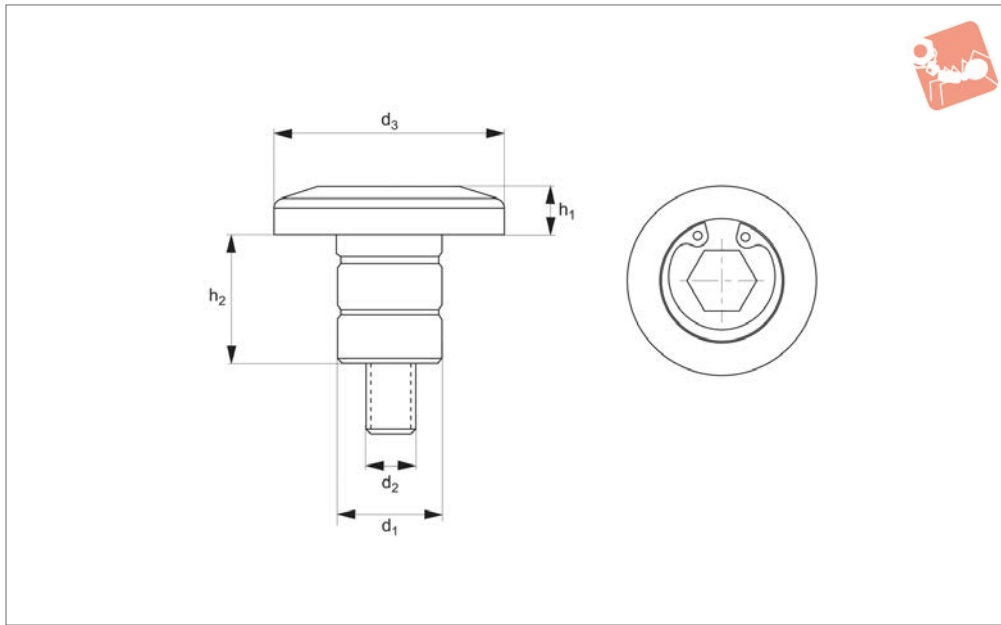




# Locator Unit - Standard



## Pull Back Inserts



**12095.1**

PULL BACK INSERTS

### Material

Heat-treated steel, alloy with black oxide finish. High tensile strength (180 000+ PSI or 1241 MPa) and hardness (46 HRC).

### Technical Notes

Easy locating - installs and locks in

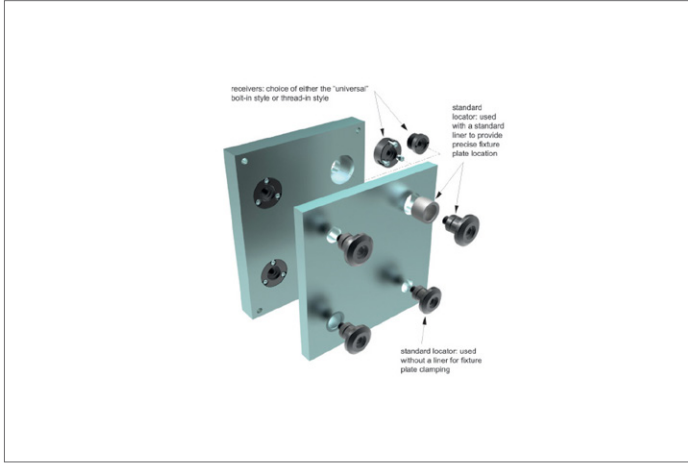
seconds, offers  $\pm 0.0004$ " repeatability.

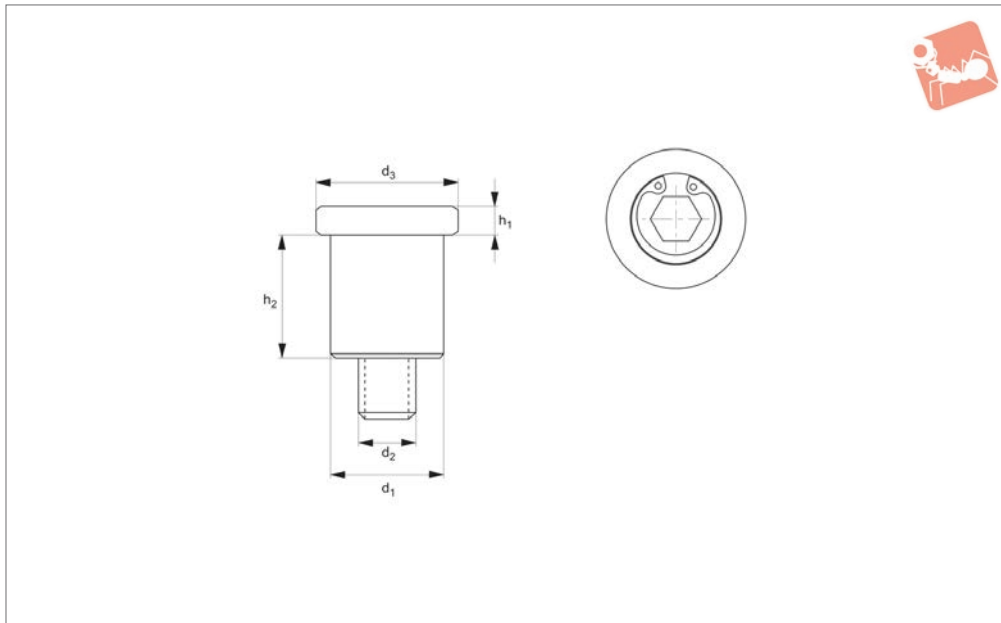
### Tips

The exclusive self-extracting mechanism eliminates the need for prying, pounding or using jack screws to separate fixture and base plates. It enables the locator unit to

be easily removed from counterbored installations.

Order No.	Fixture plate thickness inch $\pm 0.005$	d <sub>1</sub> mm	d <sub>2</sub> UNF-2B	d <sub>3</sub> inch	h <sub>1</sub> inch	h <sub>2</sub> inch	Hold down force lb max.	Tightening torque ft-lb max.
12095.W0131	0.50	13	1/4"-20	1.00	0.25	0.78	2964	13
12095.W0132	0.75	13	1/4"-20	1.00	0.25	1.03	2964	13
12095.W0161	0.50	16	5/16"-18	1.38	0.31	0.78	5385	26
12095.W0162	0.75	16	5/16"-18	1.38	0.31	1.03	5385	26
12095.W0163	1.00	16	5/16"-18	1.38	0.31	1.28	5385	26
12095.W0201	0.75	20	3/8"-16	1.63	0.38	1.07	8107	46
12095.W0202	1.00	20	3/8"-16	1.63	0.38	1.32	8107	46
12095.W0203	1.50	20	3/8"-16	1.63	0.38	1.82	8107	46
12095.W0204	2.00	20	3/8"-16	1.63	0.38	2.32	8107	46
12095.W0251	0.75	25	1/2"-13	1.80	0.41	1.07	14709	113
12095.W0252	1.00	25	1/2"-13	1.80	0.41	1.32	14709	113
12095.W0254	1.50	25	1/2"-13	1.80	0.41	1.82	14709	113
12095.W0255	2.00	25	1/2"-13	1.80	0.41	2.32	14709	113
12095.W0301	0.75	30	1/2"-13	2.13	0.50	1.15	22623	213
12095.W0302	1.00	30	5/8"-11	2.13	0.50	1.40	22623	213
12095.W0303	1.50	30	5/8"-11	2.13	0.50	1.90	22623	213
12095.W0304	2.00	30	5/8"-11	2.13	0.50	2.40	22623	213
12095.W0351	0.75	35	3/4"-10	2.25	0.50	1.15	31572	375
12095.W0352	1.00	35	3/4"-10	2.25	0.50	1.40	31572	375
12095.W0353	1.50	35	3/4"-10	2.25	0.50	1.90	31572	375
12095.W0534	2.00	35	3/4"-10	2.25	0.50	2.40	31572	375
12095.W0501	0.75	50	1-8	3.00	0.69	1.27	46958	781
12095.W0502	1.00	50	1-8	3.00	0.69	1.52	46958	781
12095.W0503	1.50	50	1-8	3.00	0.69	2.02	46958	781
12095.W0504	2.00	50	1-8	3.00	0.69	2.52	46958	781





### 12095.2

PULL BACK INSERTS

#### Material

Steel, heat-treated alloy, black oxide finish.  
 Tensile strength 180,000+ PSI or 1241 MPa.  
 Hardness 46 HRc.

#### Technical Notes

Easy locating - installs and locks in

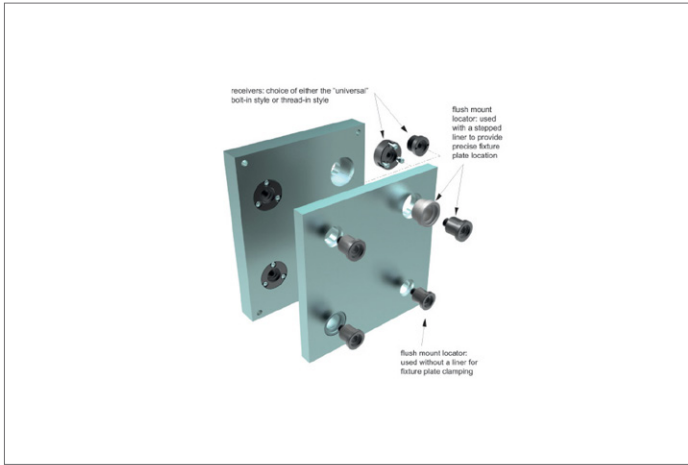
seconds.  
 Offers  $\pm 0.0004$ " repeatability.

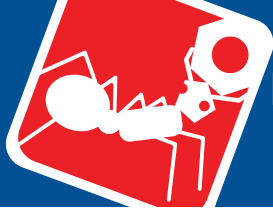
#### Tips

The exclusive self-extracting mechanism eliminates the need for prying, pounding or using jack screws to separate fixture and base plates. It enables the locator unit to be easily removed from counterbored

installations.

Order No.	Fixture plate thickness $\pm 0.005$
12095.W2131	0.50
12095.W2132	0.75
12095.W2161	0.50
12095.W2162	0.75
12095.W2163	1.00
12095.W2201	0.75
12095.W2202	1.00
12095.W2203	1.50
12095.W2204	2.00
12095.W2251	0.75
12095.W2252	1.00
12095.W2254	1.50
12095.W2255	2.00
12095.W2301	0.75
12095.W2302	1.00
12095.W2303	1.50
12095.W2304	2.00
12095.W2352	1.00
12095.W2353	1.50
12095.W2354	2.00
12095.W2503	1.50
12095.W2504	2.00





### Quick and Easy to Use with Every Load

The Wixroyd Precision Locating & Mounting System consists of locators, receivers and bushings for a wide range of tooling, fixturing, workholding, production, welding and assembly applications. They offer the ability to make fast, accurate set-up changes which enables significant improvements in machining productivity, throughput rates, quality and reduced operating costs.

Wixroyd has solved the typical problems associated with precision attachment and removal of fixture plates, tooling and accessories. The Wixroyd system eliminates the need to pry, pound and use jack screws to separate the fixture plate from the sub-plate or machine table. The Wixroyd system uses a threaded fastening device to mechanically extract the precision locator from its receiver, allowing easy separation of fixture plates, tooling and accessories. Unlike competitive ball locking products, the Wixroyd system does not require expensive "repair kits" since there are no rubber o-rings to break nor ball bearings to fall out or fracture.

- Place fixture plate over sub-plate or machine table containing the Wixroyd receivers.
- Insert two Wixroyd precision locators through holes lined with hardened bushings and into the receivers.
- Insert two remaining locators into unlined holes and tighten to draw each locator to the desired torque.
- Total time require to unload existing fixture plates and load a new fixture plate is typically under 2 minutes.

- Self- extracting – unique design enables easy and quick "self-extract" from tooling, fixturing etc. There is no binding or other issues to delay removal time or compromise accuracy of the locking system.
- Precise locating – repeatability of +/- 0.0004"
- High clamping strength – over 45,000 lbs
- Easy Installation – easily installed in a wide range of applications using standard tooling and machining practices.
- Compact – requires minimal space in tooling and fixture applications. Both standard and compact/flush mounting options.
- Can be retro-fitted with existing competitive ball lock type systems.

### System Overview

### Usage

### System Features

### Product Range



**12095.W0131 to .W0504 -**  
Locator unit - standard



**12095.W2131 to .W2504 -**  
Locator unit - compact



**12097.W0131 to .W0501 -**  
Face mount receivers  
- standard



**12097.W2131 to .W2501 -**  
Face mount compact  
receivers - compact

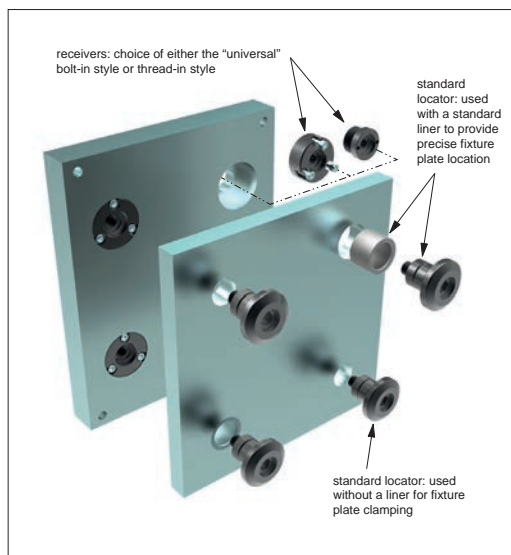


## Precision Locating and Mounting System

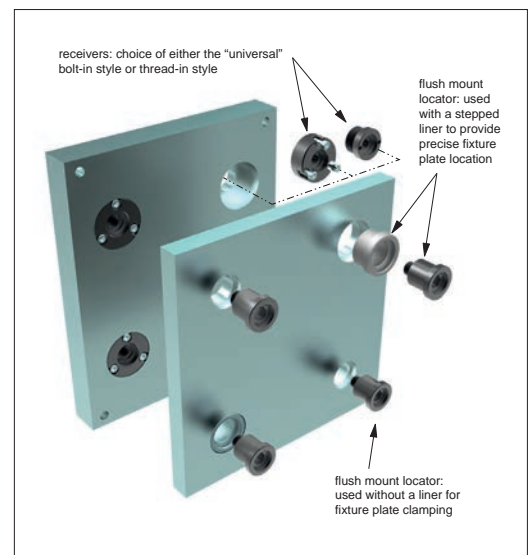
### FAQs

- Q. What is the Wixroyd Precision Locating & Mounting System?**  
 A. It is a means of locating and locking two flat surfaces together. These surfaces are most commonly a fixture plate and sub-plates, however, they are also used in many other applications because of their holding strength and accuracy.
- Q. How does it locate the fixture plate?**  
 A. The Wixroyd system locates with receivers in the base plate, liner bushings in the sub-plate and locator/fasteners locking the two surfaces together.
- Q. How many locators are needed to locate and fasten the fixture plate?**  
 A. Two locators with liner bushings are required to accurately position and two locators without liner bushings to fasten only.
- Q. How does it fasten?**  
 A. Locators use standard threads to hold the two surfaces together. By tightening the locators into the receivers very high holding forces can be achieved.
- Q. Can the Wixroyd system be mounted so the work pieces mounting surface is free from any interference?**  
 A. Yes, our compact of flush locators allow the head to lie flush with the fixture plate surface.
- Q. Can the system be used in high temperature applications?**  
 A. Yes, because all parts are made from heat treated alloy steel, temperatures up to +500F are not a problem. The user should account for thermal expansion of the fixture plates and bases that could affect tolerances.
- Q. Can Fixture plates be mounted in both the horizontal and vertical positions with the Wixroyd system?**  
 A. Yes, in vertical mounting applications Wixroyd offer optional docking hardware to “hang” the fixture plate from the tooling column before fastening the surfaces together.
- Q. Can a current ball locking type system be retrofit to work with the Wixroyd system?**  
 A. Yes, the universal bolt-in receiver will fit directly into the pocket that holds ball locking type receivers. Also, the Wixroyd system locators will fit the existing holes and liners of a fixture plate set up for ball locking systems.

### Applications

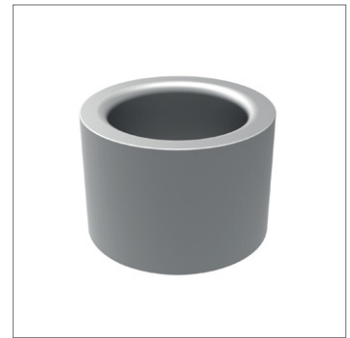
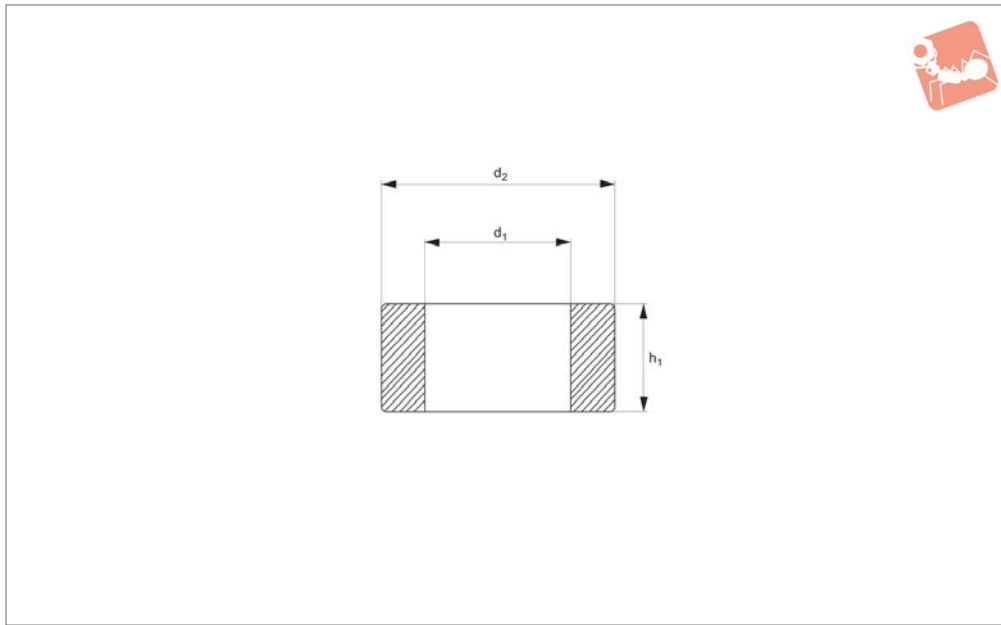


Standard locators



Flush mount locators





## 12096.1

PULL BACK INSERTS

### Material

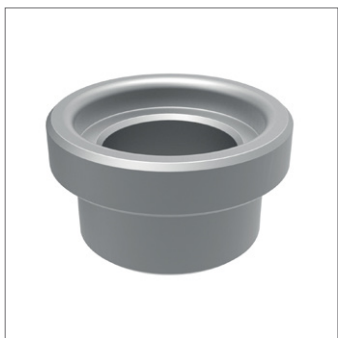
Alloy steel, hardness 62+ HRC.

the integrated locator unit system (part no. 12095), achieving precise and accurate machining results.

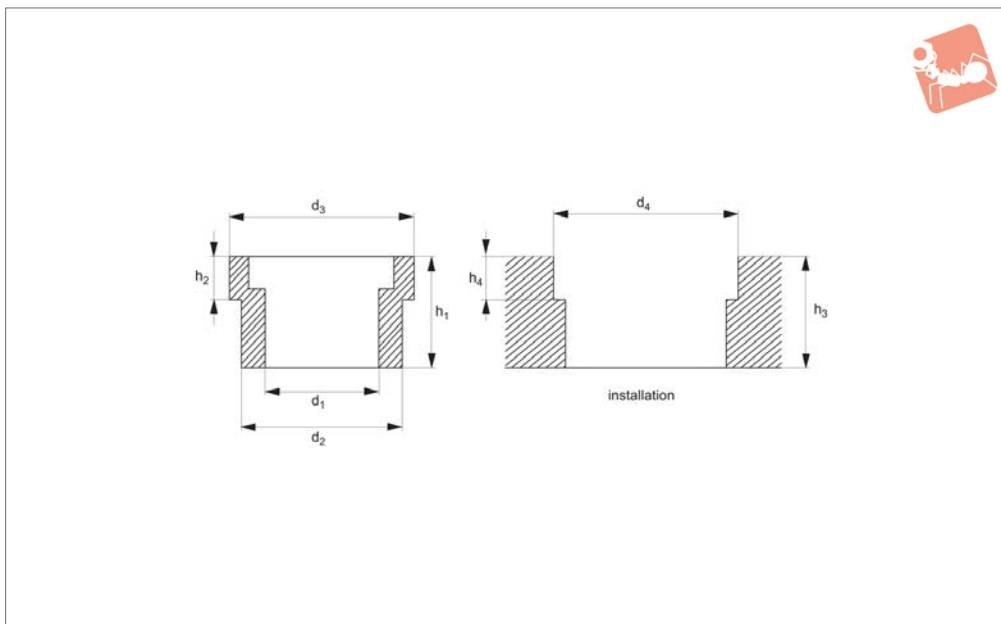
### Technical Notes

Liner bushings are a critical component of

Order No.	Fixture plate thickness inch ±0.005	d <sub>1</sub> mm	d <sub>2</sub> inch +0.0000 -0.0004	h <sub>1</sub> inch
12096.W0131	0.50	13	0.7518	0.45
12096.W0132	0.75	13	0.7518	0.70
12096.W0161	0.50	16	1.0018	0.45
12096.W0162	0.75	16	1.0018	0.70
12096.W0164	1.00	16	1.0018	0.95
12096.W0201	0.75	20	1.1270	0.70
12096.W0202	1.00	20	1.1270	0.95
12096.W0203	1.50	20	1.1270	1.45
12096.W0204	2.00	20	1.1270	1.95
12096.W0251	0.75	25	1.3772	0.70
12096.W0252	1.00	25	1.3772	0.95
12096.W0253	1.50	25	1.3772	1.45
12096.W0254	2.00	25	1.3772	1.95
12096.W0301	0.75	30	1.7523	0.70
12096.W0302	1.00	30	1.7523	0.95
12096.W0303	1.50	30	1.7523	1.45
12096.W0305	2.00	30	1.7523	1.95
12096.W0351	0.75	35	1.7523	0.70
12096.W0352	1.00	35	1.7523	0.95
12096.W0353	1.50	35	1.7523	1.45
12096.W0354	2.00	35	1.7523	1.95
12096.W0501	0.75	50	2.5025	0.70
12096.W0502	1.00	50	2.5025	0.95
12096.W0503	1.50	50	2.5025	1.45
12096.W0504	2.00	50	2.5025	1.95



## 12096.2



### Material

Alloy steel, hardness 62+ HRC.

the integrated locator unit system (part no. 12095), achieving precise and accurate machining results.

### Technical Notes

Liner bushings are a critical component of

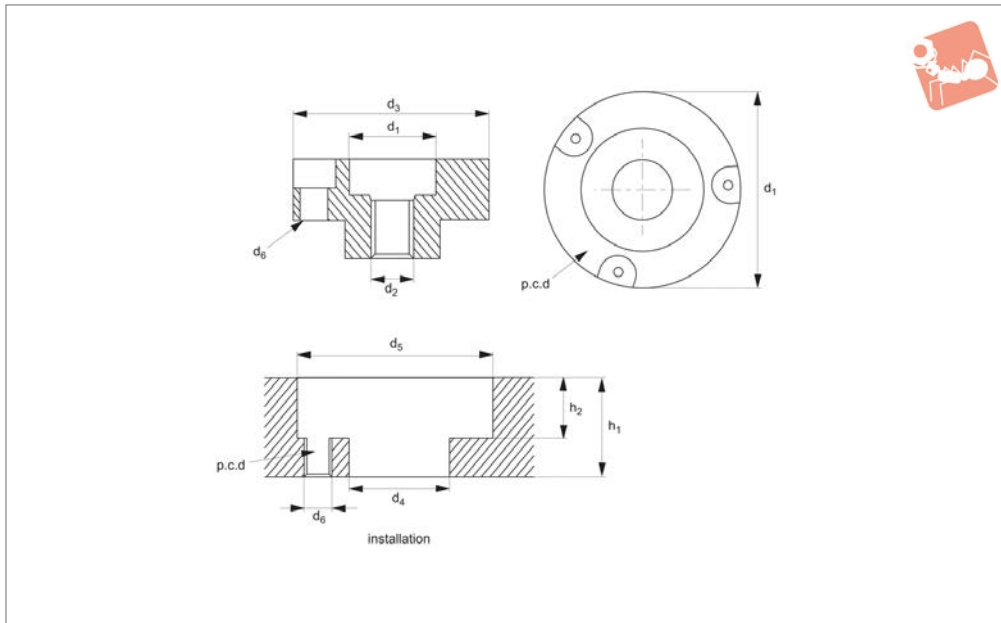
Order No.	$d_1$ mm	$d_2$ inch +0.0000 -0.0004	$d_3$ inch	$d_4$ plate c'bore dia. inch ±0.005	Fixture plate thickness $h_3$ inch ±0.005	$h_1$ inch	$h_2$ inch	$h_4$ plate c'bore depth inch +0.010 -0.005
12096.W2131	13	0.7518	0.92	0.94	0.50	0.45	0.22	0.23
12096.W2132	13	0.7518	0.92	0.94	0.75	0.70	0.22	0.23
12096.W2161	16	1.0018	1.23	1.25	0.50	0.45	0.31	0.33
12096.W2162	16	1.0018	1.23	1.25	0.75	0.70	0.31	0.33
12096.W2163	16	1.0018	1.23	1.25	1.00	0.95	0.31	0.33
12096.W2201	20	1.1270	1.36	1.38	0.75	0.70	0.38	0.39
12096.W2202	20	1.1270	1.36	1.38	1.00	0.95	0.38	0.39
12096.W2203	20	1.1270	1.36	1.38	1.50	1.45	0.38	0.39
12096.W2204	20	1.1270	1.36	1.38	2.00	1.95	0.38	0.39
12096.W2251	25	1.3772	1.61	1.63	0.75	0.70	0.38	0.39
12096.W2252	25	1.3772	1.61	1.63	1.00	0.95	0.38	0.39
12096.W2253	25	1.3772	1.61	1.63	1.50	1.45	0.38	0.39
12096.W2254	25	1.3772	1.61	1.63	2.00	1.95	0.38	0.39
12096.W2301	30	1.7523	1.98	2.00	0.75	0.70	0.38	0.39
12096.W2302	30	1.7523	1.98	2.00	1.00	0.95	0.38	0.39
12096.W2303	30	1.7523	1.98	2.00	1.50	1.45	0.38	0.39
12096.W2304	30	1.7523	1.98	2.00	2.00	1.95	0.38	0.39
12096.W2352	35	1.7523	1.98	2.00	1.00	0.95	0.45	0.47
12096.W2353	35	1.7523	1.98	2.00	1.50	1.45	0.45	0.47
12096.W2354	35	1.7523	1.98	2.00	2.00	1.95	0.45	0.47
12096.W2503	50	2.5025	3.00	3.02	1.50	1.45	0.70	0.72
12096.W2504	50	2.5025	3.00	3.02	2.00	1.95	0.70	0.72



# Face Mount Receivers - Standard



# Pull Back Inserts



## 12097.1

PULL BACK INSERTS

### Material

Heat-treated steel alloy with black oxide finish. High tensile strength (180 000 PSI or 1241 MPa) and hardness (50-52 HRC).

### Technical Notes

Precision machined to  $\pm 0.0002$ " tol. Repea-

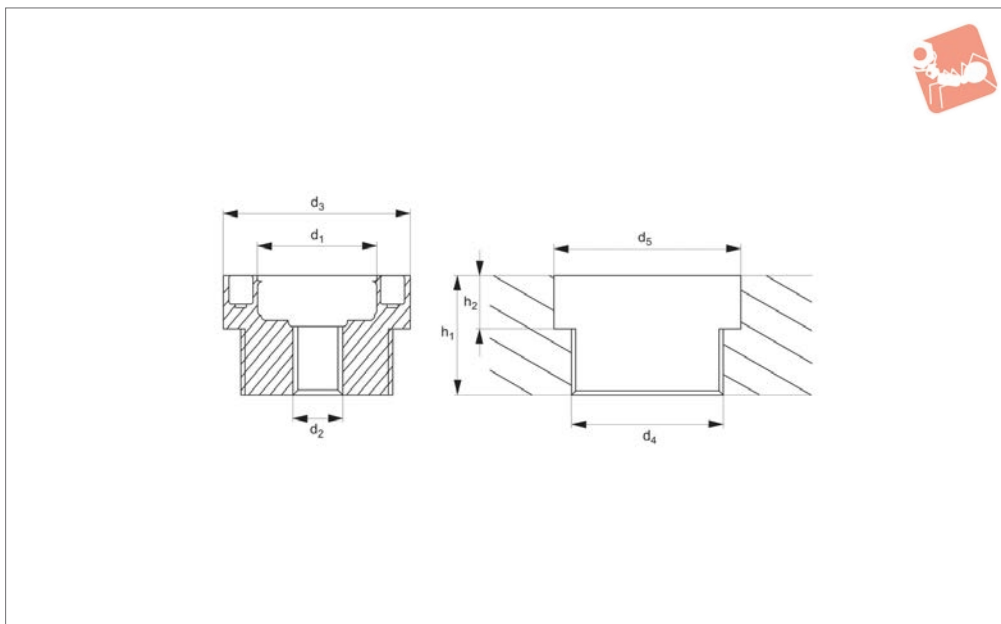
tability of ,0004" or better.

Standard face mount design. This receiver is interchangeable with competitive face mount designs providing an advanced retrofit option. For customers with existing investments in another system.

Order No.	$d_2$ UNF-2B	$d_3$ inch +0.0000 -0.0004	$d_4$ inch	$d_5$ inch +0.0004 -0.0000	$d_6$ inch	For shank dia $d_1$ mm	$h_1$ inch min.	$h_2$ inch +0.010 -0.005	p.c.d inch
12097.W0131	1/4-20	1.3750	11/16	1.3754	#8-32 x 1/2	13	3/4	0.469	0.984
12097.W0161	5/16-18	1.4370	13/16	1.4374	#8-32 x 1/2	16	3/4	0.469	1.125
12097.W0201	3/8-16	1.6873	13/16	1.6877	#10-32 x 3/4	20	1	0.637	1.362
12097.W0251	1/2-13	2.0623	1	2.0627	1/4-28 x 7/8	25	1-1/4	0.799	1.644
12097.W0301	5/8-11	2.2654	1-3/16	2.2658	1/4-28 x 1	30	1-3/8	0.871	1.875
12097.W0351	3/4-10	2.6873	1-9/16	2.6877	5/16-24 x 1	35	1-1/2	0.904	2.178
12097.W0501	1-8	3.4998	2-5/32	3.5002	3/8-24 x 1-1/4	50	2	1.239	2.916



12097.2



**Material**

Heat-treated steel alloy with black oxide finish. High tensile strength (180 000 PSI or 1241 MPa) and hardness (50-52 HRC).

**Technical Notes**

Precision machined to  $\pm,0002''$  tol. Repeatability of  $,0004''$  or better.  
Compact face mount design optimises

subplate space, is easier to install, stronger and less expensive than standard face mount receivers.

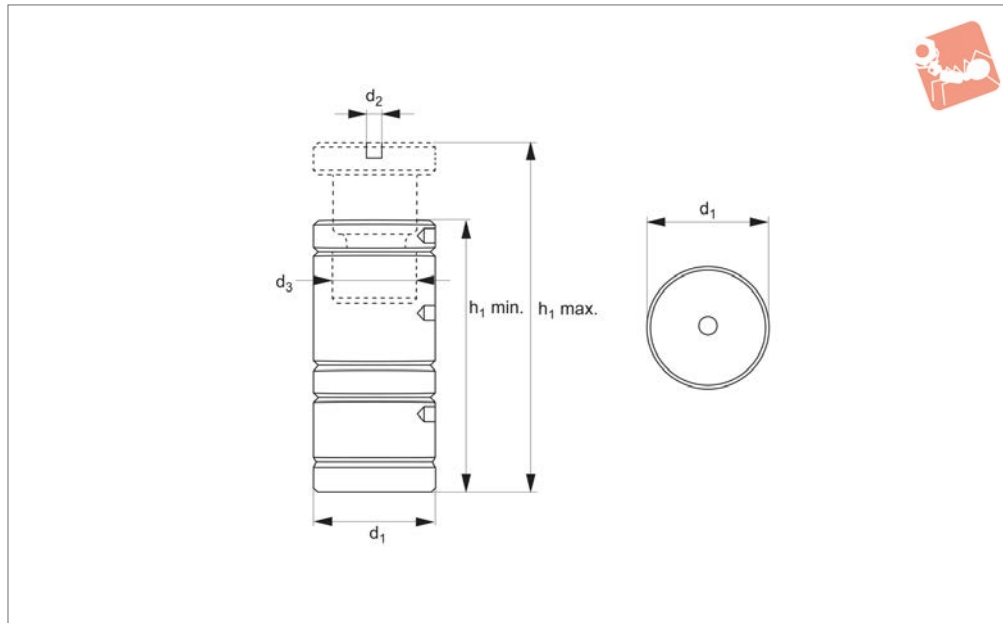
Order No.	d <sub>1</sub> mm +0.010 -0.000	d <sub>2</sub> inch	d <sub>3</sub> inch	d <sub>4</sub> UNF-2B	d <sub>5</sub> inch +0.0004 -0.0000	h <sub>1</sub> inch min.	h <sub>2</sub> inch +0.010 -0.005
12097.W2131	13	1/4-20	0.9500	3/4-16	0.9504	3/4	,300
12097.W2161	16	5/16-18	1.0625	7/8-14	1.0629	3/4	,300
12097.W2201	20	3/8-16	1.2750	1-12	1.2754	1	,390
12097.W2251	25	1/2-13	1.5000	1-1/4-12	1.5004	1	,390
12097.W2301	30	5/8-11	1.8125	1-1/2-12	1.8129	1-1/4	,505
12097.W2351	35	3/4-10	2.1250	1-1/2-12	2.1254	1-5/16	,630
12097.W2501	50	1-8	2.7500	2-12	2.7504	1-3/4	,765



# Screw Jack Set with Spacers

aluminium and steel

## Screw Jacks



**14130**

SCREW JACKS

### Material

Body: aluminium.  
Spindle: steel, heat treated with trapezoidal self-locking thread.

### Technical Notes

Thread protected against swarf ingress.  
For individual parts and to make up greater heights please see no. 14140.

### Set contents:

- 1 x main screwjack
- 1 x large spacer (25,0mm)
- 1 x small spacer (12,5mm)
- 1 x aluminium base
- 1 x magnetic base

### Tips

Max. static load (kN.) applies up to

maximum height of 350mm. Do not use above these heights.  
Main screw jack has a centering hole Ø12mm, for fitting of support and positioning pads nos. 15030 - 15080.

### Important Notes

**Do not adjust screw jack under load.**

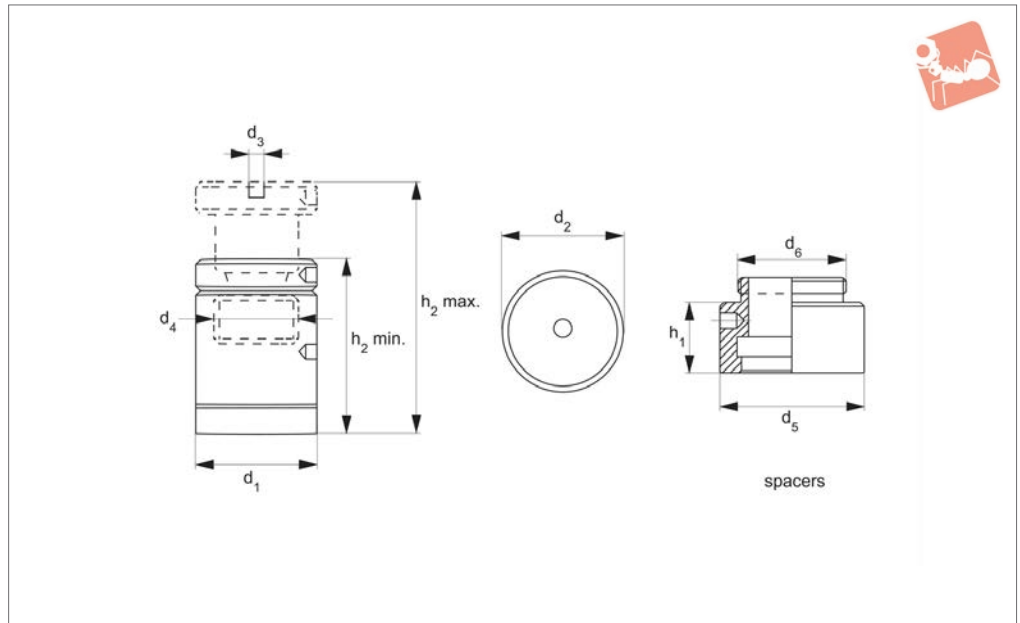
Order No.	$h_1$ min.	$h_1$ max.	$d_1$	$d_2$	$d_3$	Static load kN max.	Weight g
<b>14130.W0001</b>	75	125	50	12	30x4	30	920



SCREW JACKS



## 14140



### Material

Body: aluminium.

Spindle: steel, tempered with trapezoidal self locking thread.

### Tips

Individual parts can be combined to create

screw jacks of varying heights (maximum 350mm).

Max. static load (30kN.) applies for heights up to 350mm, above which there is danger of buckling.

### Important Notes

**Do not adjust screw jack under load.**

Order No.	Type	$h_1$	$h_2$ min.	$h_2$ max.	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	$d_6$	Static load kN max.	Weight g
14140.W0010	Screw Jack with Aluminium Foot	-	75	88	50	50	12	30x4	-	-	30	630
14140.W0020	Screw Jack with Magnetic Foot	-	75	88	50	50	12	30x4	-	-	30	720
14140.W0125	Spacer Element	12.5	-	-	-	-	-	-	50	M38x2	30	38
14140.W0250	Spacer Element	25.0	-	-	-	-	-	-	50	M38x2	30	76
14140.W0500	Spacer Element	50.0	-	-	-	-	-	-	50	M38x2	30	165

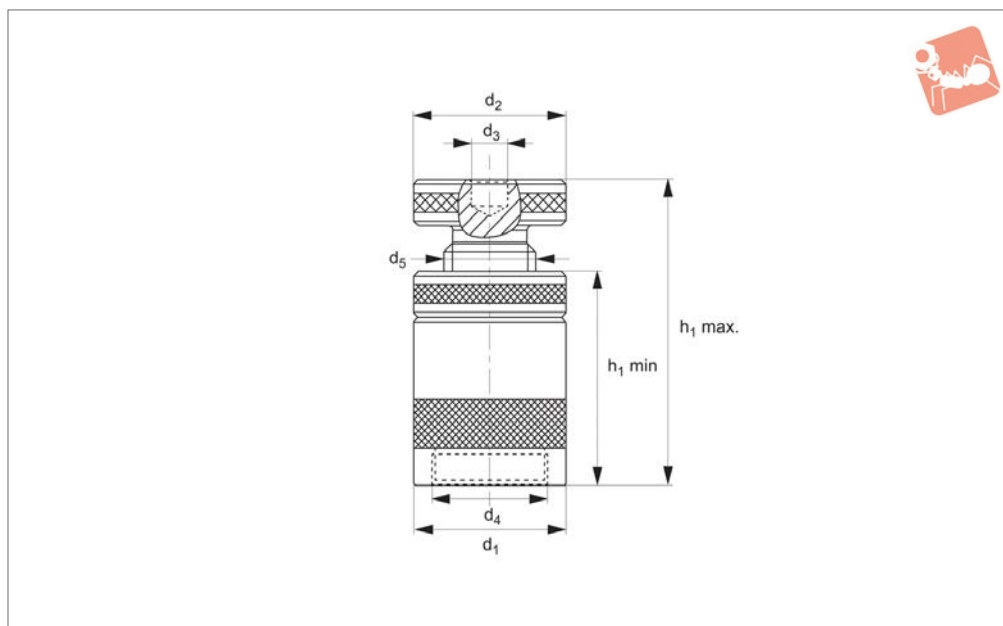


# Screw Jacks

plain Ø12 centering hole



# Screw Jacks



15000

SCREW JACKS

### Material

Body: carbon steel, enamelled.  
Spindle: steel, tempered.  
Trapezoidal thread, self-locking with end stop.

### Technical Notes

Light duty: for clamps with slot widths up to 14mm.

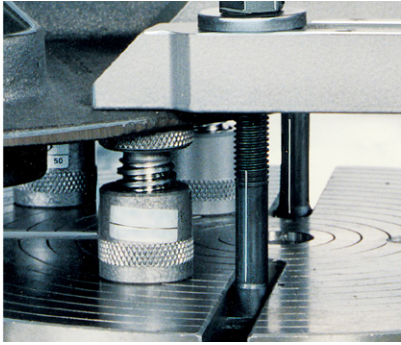
Medium duty: for clamps with slot widths approx. 14-22mm.  
Heavy duty: for clamps with slot widths between 20-40mm.  
Extra heavy duty: for supporting larger work-pieces.

### Tips

Centering hole Ø12mm in top of screw

jacks (no hole on part no. 15000.W0050).  
When using in conjunction with forked clamps no. 10100, we recommend the use of locating pad no. 15060.  
See technical pages for the table of locating pad and support pad elements suitability.

Order No.	Type	$h_1$ min.	$h_2$ max.	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	Static load kN max.	Weight g
15000.W0050	Light Duty	38	50	31	31	-	-	20x4	15	190
15000.W0052	Medium Duty	42	52	50	50	12	M38x2	30x4	60	550
15000.W0070	Medium Duty	50	70	50	50	12	M38x2	30x4	60	620
15000.W0100	Medium Duty	70	100	50	50	12	M38x2	30x4	60	900
15000.W0140	Heavy Duty	100	140	68	68	12	-	40x7	100	2760
15000.W0210	Heavy Duty	140	210	80	70	12	-	50x8	170	4600
15000.W0200	Extra Heavy	140	200	100	80	12	-	65x10	350	6900
15000.W0280	Extra Heavy	190	280	140	110	12	-	80x10	600	19000
15000.W0300	Extra Heavy	190	300	100	80	12	-	65x10	350	9000





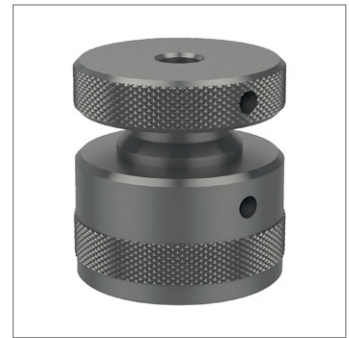
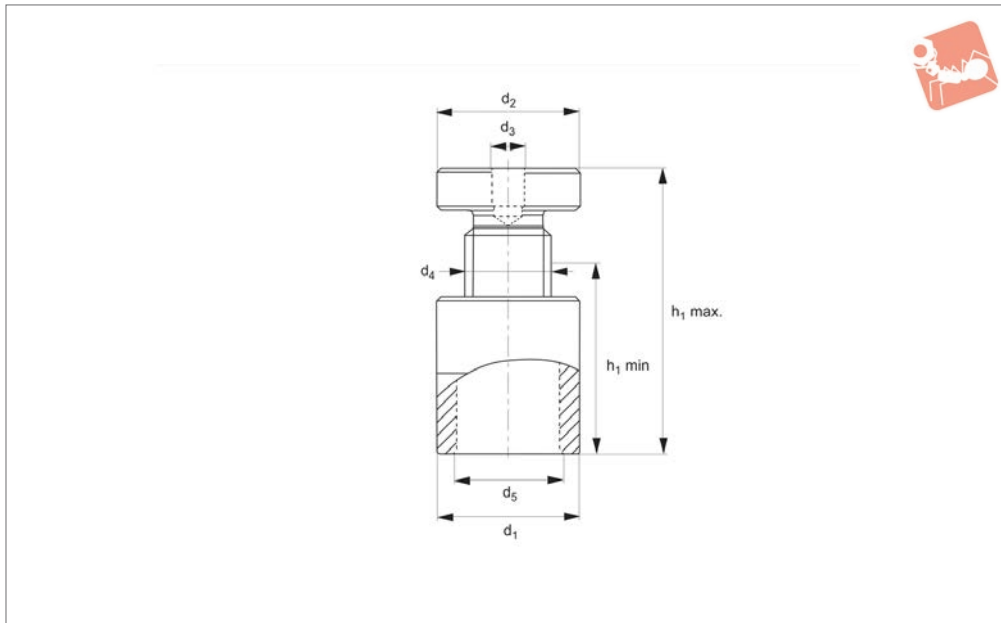


# Screw Jacks

threaded M12 centering hole



# Screw Jacks



**15002**

SCREW JACKS

**Material**

Body: carbon steel, enamelled.  
Spindle: trapezoidal thread, self-locking with end stop.

**Technical Notes**

The threaded centering hole (M12) on the

top surface of the screw jack enables secure fixing of support accessories 15042 and 15062, whilst the M38x2 base thread allows expansion of the screw jack height.

**Tips**

For table of support and locating element

compatibility see technical pages.

**Important Notes**

**Do not adjust screw jack when under load.**

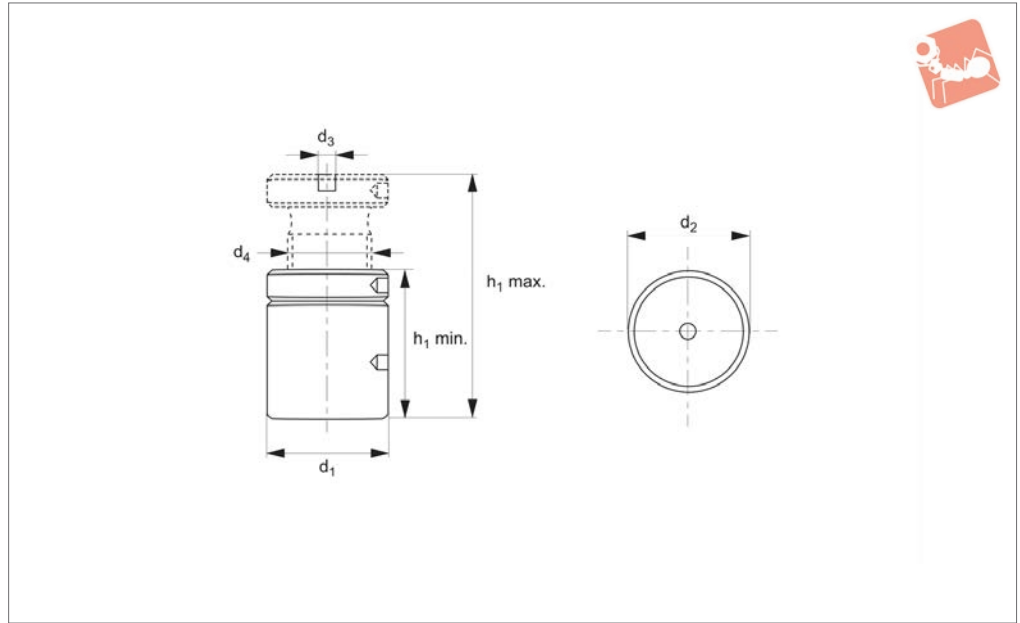
Order No.	Type	Size	$h_1$ min.	$h_1$ max.	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	Static load kN max.	Weight g
<b>15002.W0052</b>	Medium Duty	52	42	52	50	50	M12	30x4	M38x2	100	550
<b>15002.W0070</b>	Medium Duty	70	50	70	50	50	M12	30x4	M38x2	100	620
<b>15002.W0100</b>	Medium Duty	100	70	100	50	50	M12	30x4	M38x2	100	948



SCREW JACKS



## 15100



### Material

Body & base: aluminium 400 N/mm<sup>2</sup> tensile strength.

Spindle: steel, tempered.

Trapezoidal thread, self-locking with end stop.

### Technical Notes

See technical pages for the table of loca-

ting pad and support locating element suitability.

Greater heights can be achieved by combining screw jacks with the centering support pad no. 15060.

### Tips

The swarf is absorbed into the aluminium base thereby protecting the machine table.

Particularly useful for delicate machine tables and high precision machines.

### Important Notes

**Do not adjust screw jacks under load.**

Order No.	Size	$h_1$ min.	$h_1$ max.	$d_1$	$d_2$	$d_3$	$d_4$	Static load kN max.	Weight g
15100.W0052	52	42	52	50	50	12	30x4	30	370
15100.W0070	70	50	70	50	50	12	30x4	30	430
15100.W0100	100	70	100	50	50	12	30x4	30	600

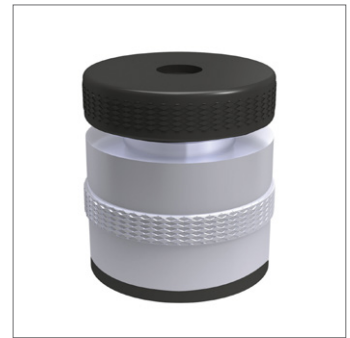
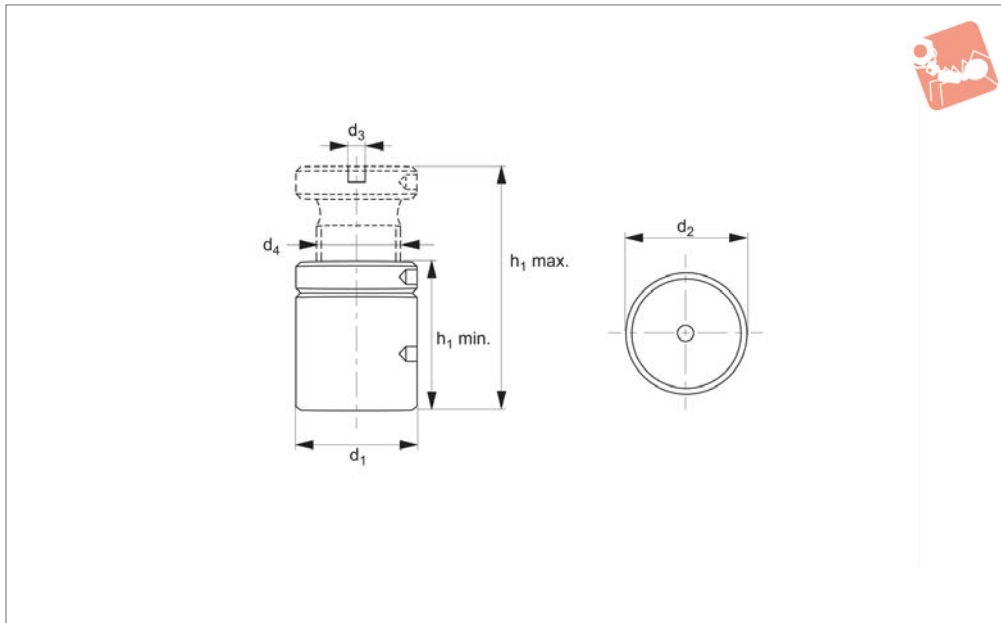


# Screw Jacks

aluminium - magnetic base



# Screw Jacks



**15120**

SCREW JACKS

### Material

Body: aluminium 400N/mm<sup>2</sup> tensile strength.  
 Base: magnetic.  
 Spindle: steel, tempered.  
 Trapezoidal thread, self locking with end stop.

### Technical Notes

See technical pages for the table of locating pad and support locating element suitability.

### Tips

Allows for positioning of screw jacks on

both horizontal and vertical surfaces.  
 Greater heights can be achieved by combining the screw jacks with the centering pad no. 15060<X\15060#22>.  
 Magnetic base ensures precise positioning of workpiece on vertical faces.

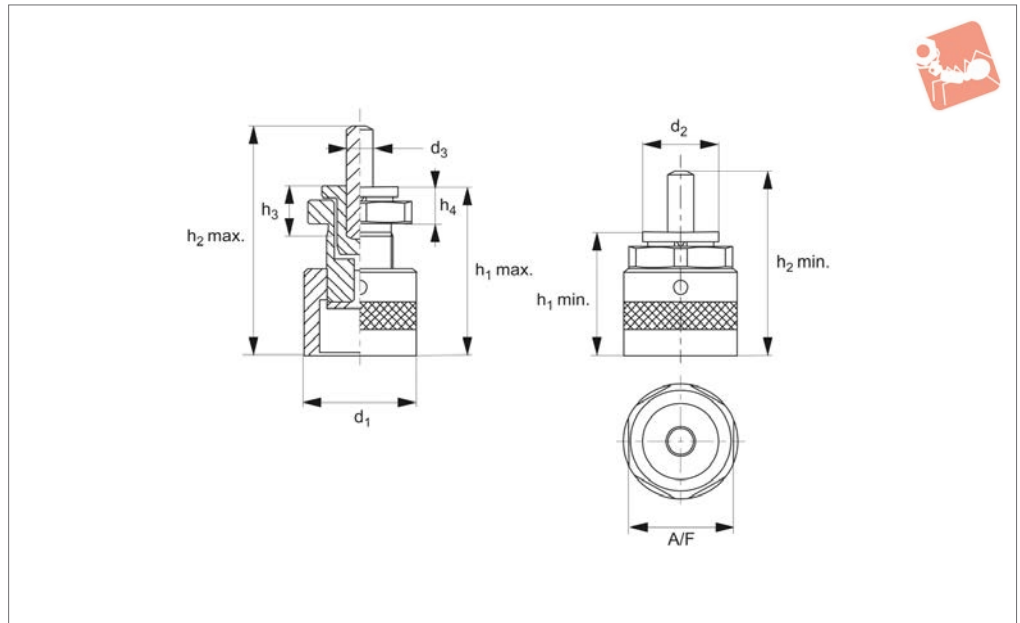
Order No.	Size	$h_1$ min.	$h_1$ max.	$d_1$	$d_2$	$d_3$	$d_4$	Static load kN max.	Weight g
<b>15120.W0006</b>	62	52	62	50	50	12	30x4	30	380
<b>15120.W0008</b>	80	60	80	50	50	12	30x4	30	550
<b>15120.W0011</b>	110	80	110	50	50	12	30x4	30	710



SCREW JACKS



## 15200



### Material

Body: steel, tempered.  
Spindle: M30x1,5 fine thread with end stop.

### Technical Notes

Comes with 2 locating pins (Ø12x50 and

Ø12x80). Centering hole Ø12 mm. The M30x1,5 fine thread makes precise adjustment possible whilst preventing the workpiece from turning.

See technical pages for the table of locating pad and support locating element

suitability.

### Tips

A bearing insert prevents the workpiece turning whilst the jack is adjusted.

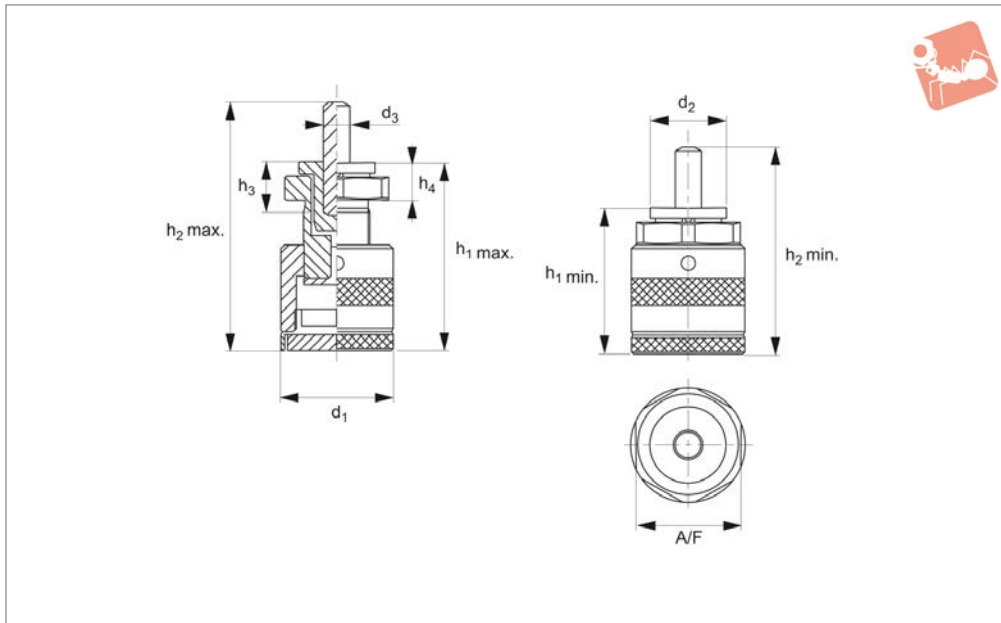
Order No.	$h_1$ min.	$h_1$ max.	$h_3$	$h_4$	$d_1$	$d_2$	$d_3$	A/F	Static load kN max.	With locating pins 12x80 $h_2$ min. - $h_2$ max.	With locating pins 12x50 $h_2$ min. - $h_2$ max.	Weight g
15200.W0007	55	75	22	16,5	50	34	12	46	30	113-133	82-102	680
15200.W0011	75	115	22	16,5	50	34	12	46	30	132-172	102-142	550



# Height Setting Screw Jacks

magnetic base and locating pins

## Screw Jacks



**15220**

SCREW JACKS

### Material

Body: steel, tempered.

Base: magnetic.

Spindle: M30x1,5 fine thread with end stop.

### Technical Notes

With 2 locating pins ( $\varnothing 12 \times 50$  and  $\varnothing 12 \times 80$ ).

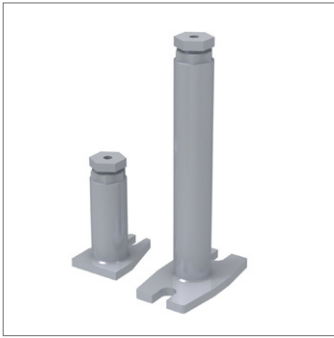
Centering hole  $\varnothing 12 \text{mm}$ . The M30x1.5 fine thread makes precise adjustment possible whilst also preventing the workpiece from turning.

See technical pages for the table of locating pad and support locating element compatibility.

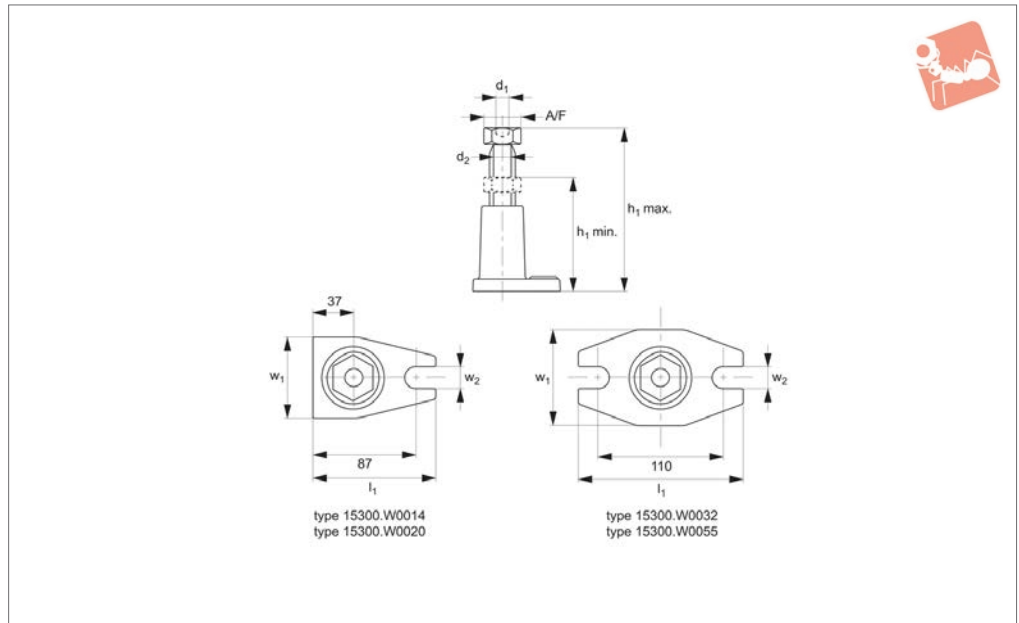
### Tips

A bearing insert prevents the workpiece from turning whilst the jack is adjusted. These screw jacks can be placed on other screw jacks (using a centering pad) to build up heights of up to 1370mm.

Order No.	$h_1$ min.	$h_1$ max.	$h_3$	$h_4$	$d_1$	$d_2$	$d_3$	A/F	Static load kN max.	With locating pins 12x80 $h_2$ min. - $h_2$ max.	With locating pins 12x50 $h_2$ min. - $h_2$ max.	Weight g
<b>15220.W0007</b>	65	85	22	16,5	50	34	12	46	30	122 - 142	92 - 112	800
<b>15220.W0011</b>	85	125	22	16,5	50	34	12	46	30	142 - 182	112 - 152	1000



## 15300



### Material

Housing: cast iron, enamelled.  
Spindle: carbon steel, trapezoidal thread 30x6.

### Technical Notes

Centering hole  $\varnothing 12$ mm.

See technical pages for the table of locating pad and support locating element suitability.

### Tips

When using in conjunction with forked clamps, we recommend the use of locating

pads no. 15040 when the slot width of the clamps is  $>26$ mm.

### Important Notes

**Do not adjust screw jacks under load.**

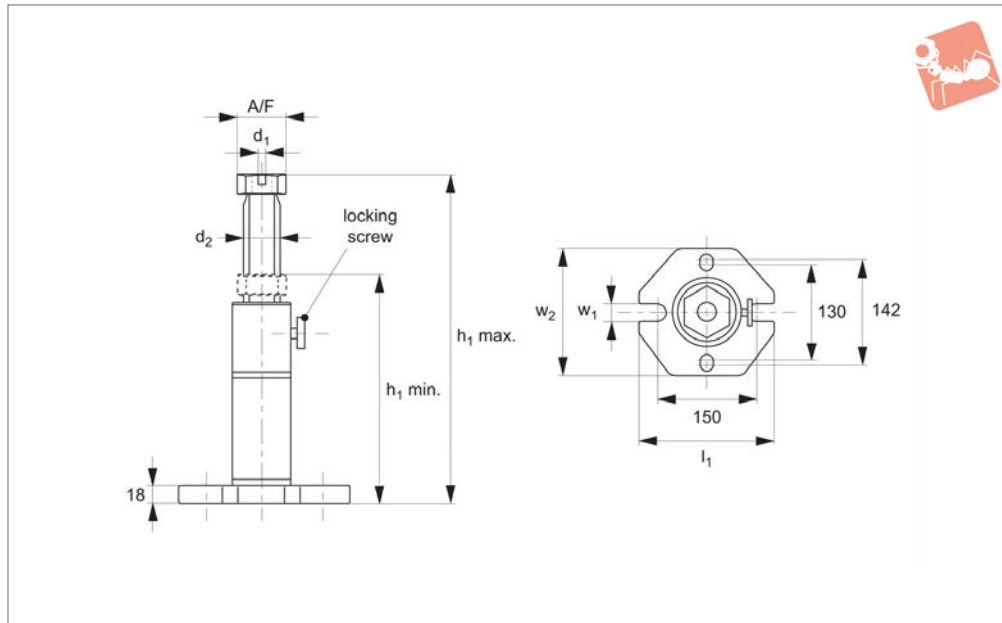
Order No.	$h_1$ min.	$h_1$ max.	$d_1$	$d_2$	$w_1$	$w_2$	$l_1$	A/F	Static load kN max.	Weight g
15300.W0014	100	140	12	30x6	75	18	110	46	60	1800
15300.W0020	140	200	12	30x6	75	18	110	46	60	2200
15300.W0032	200	320	12	30x6	90	22	160	46	40	3800
15300.W0055	320	550	12	30x6	90	22	160	46	25	4900





# Heavy Duty Screw Jacks with brass locking screw

## Screw Jacks



**15320**

SCREW JACKS

### Material

Housing: cast steel, enamelled.  
Spindle: carbon steel, trapezoidal thread 40x7.

See technical pages for the table of locating pad and support locating element suitability.

### Technical Notes

With  $\varnothing 12$ mm centering hole.

### Important Notes

**Do not adjust screw jacks under load.**

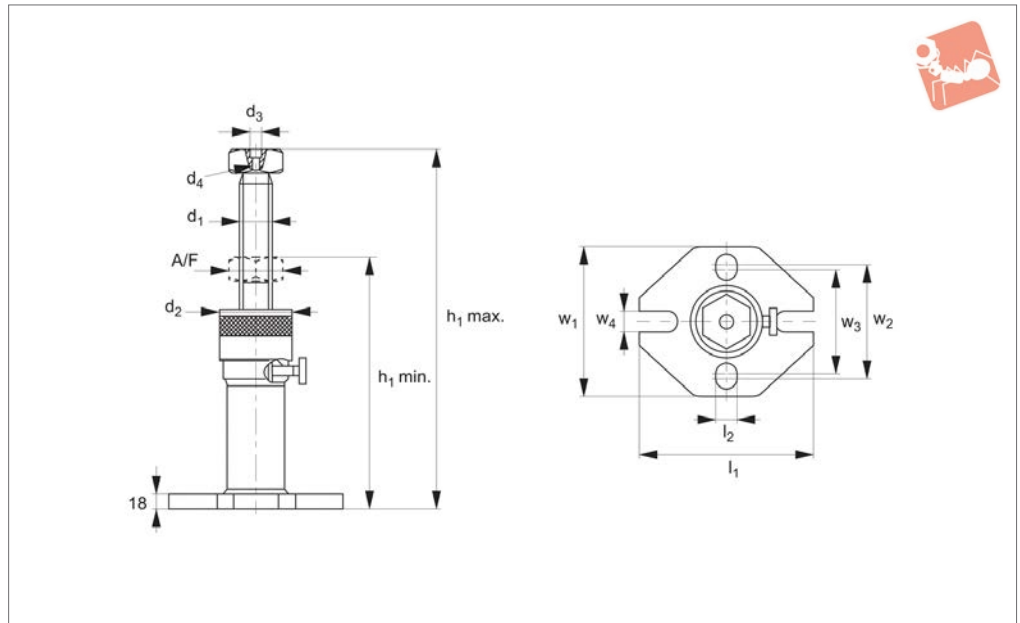
Order No.	$h_1$ min.	$h_1$ max.	$d_1$	$d_2$	$w_1$	$w_2$	$l_1$	A/F	Static load kN max.	Weight g
15320.W0030	200	300	12	40x7	26	190	220	65	80	8000
15320.W0046	290	470	12	40x7	26	190	220	65	60	10000
15320.W0075	430	750	12	40x7	26	190	220	65	50	13000
15320.W0125	710	1250	12	40x7	26	190	220	65	40	18000



SCREW JACKS



## 15360



### Material

Housing: steel, tempered, enamelled.  
Spindle: steel, tempered, trapezoidal thread.

### Technical Notes

This screw jack is designed for quick, stepless adjustment throughout its height

range.

Centering hole  $\varnothing 12\text{mm}$ .  
See technical pages for the table of locating pad and support locating element suitability.

### Tips

To adjust height, grip spindle, loosen

locking screw, twist setting ring and set required height.

### Important Notes

**Do not adjust screw jacks under load.**

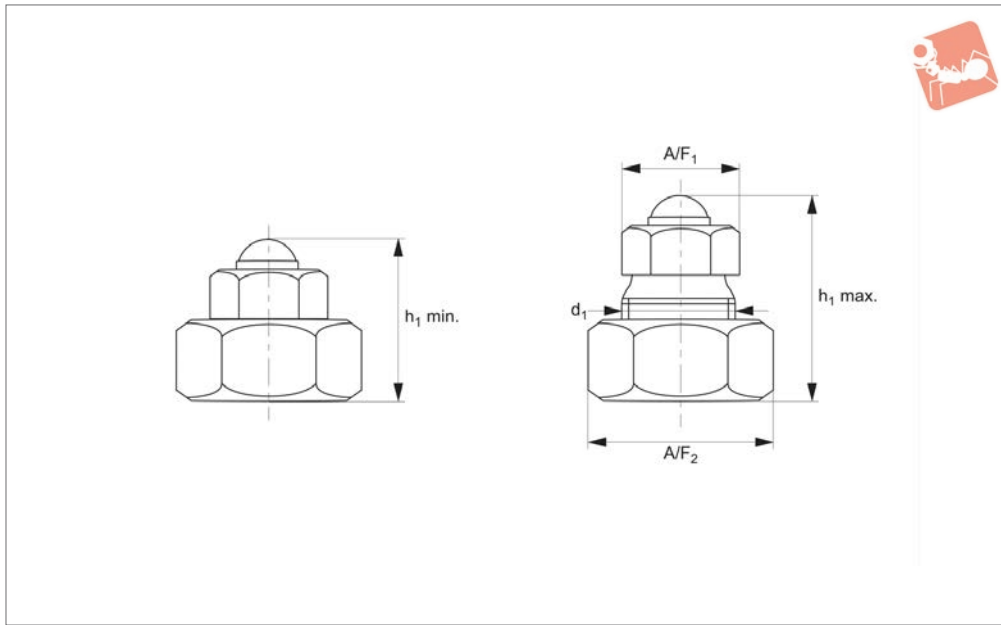
Order No.	$h_1$ min.	$h_1$ max.	$d_1$	$d_2$	$d_3$	$d_4$	$w_1$	$w_2$	$l_1$	A/F	Static load kN max.	Weight kg
15360.W0045	320	450	40x7	90	12	M10	26	190	220	65	50	11.5
15360.W0071	450	710	40x7	90	12	M10	26	190	220	65	40	13.7
15360.W0125	710	1250	40x7	90	12	M10	26	190	220	65	30	18.3





# Height Setting Screw Jack with pivoting ball

## Screw Jacks



**15520**

SCREW JACKS

### Material

Body: steel, tempered, burnished.  
Ball: steel, hardened.

screw jack is designed to support and align cast iron or forged components. Alignment can be made to 0,1mm.

reduces the required operating forces. The use of a point-type support reduces the transmission of turning forces generated by the machine spindle.

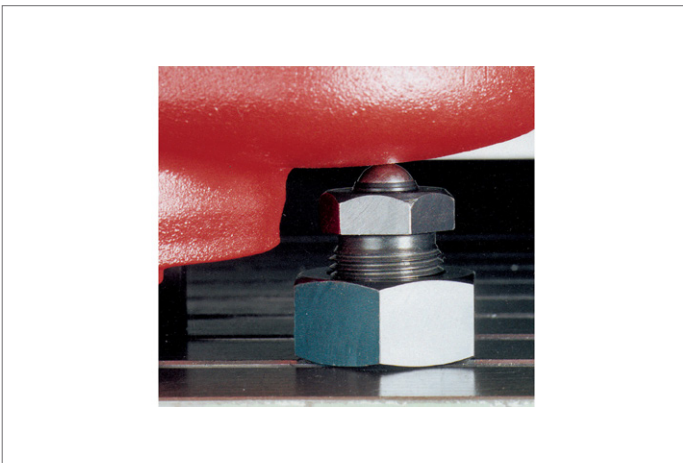
### Technical Notes

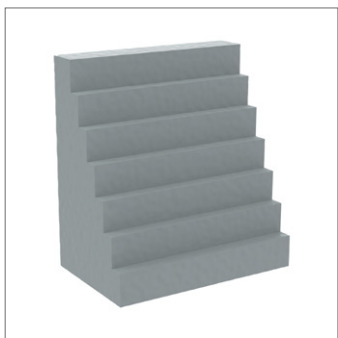
Used as a point support, this heavy-duty

### Tips

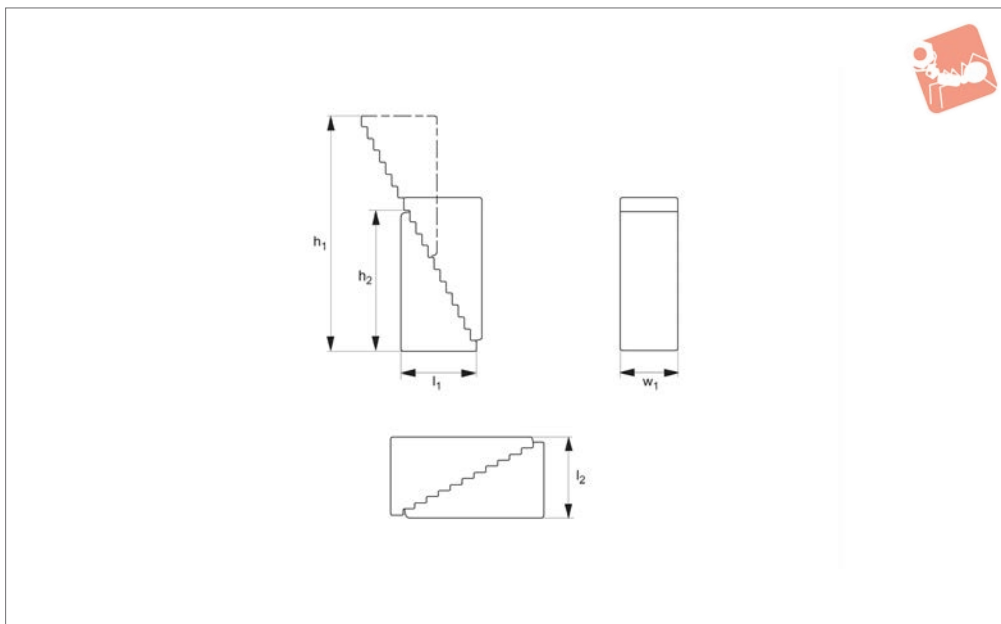
The pivoting ball minimizes the friction and

Order No.	Size	$h_1$ min.	$h_1$ max.	$d_1$	$A/F_1$	$A/F_2$	Static load kN max.	Weight g
15520.W0070	70	56	70	39x3	41	60	30	950





**14000**



**Material**

Heat-treated steel, enamelled.

**Technical Notes**

When used as a pair, these blocks are

compatible with all our clamps. However, when used individually, they can be used with clamp no. 10020.

Step increments: vertical 4,65mm,

horizontal 2,30mm.

**Tips**

**Sold individually.** Dimensions  $h_1$  and  $h_2$  are when step blocks used as a pair.

Order No.	Size	$h_1$ max.	$h_2$	$w_1$	$l_1$	$l_2$ min.	Weight g
14000.W0001	1	51	33	30	19.0	23	90
14000.W0002	2	107	66	30	35.5	39	300
14000.W0003	3	208	131	30	68.0	71	1050





# Universal Step Block Set in wooden case

## Screw Jacks



### 14020

SCREW JACKS

#### Material

Steel, tempered and enamelled.

#### Technical Notes

In a sturdy wooden case with lid. Please

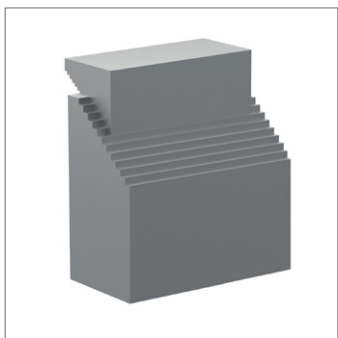
refer to product no. 14000 for more information regarding the contents of the set.

#### Tips

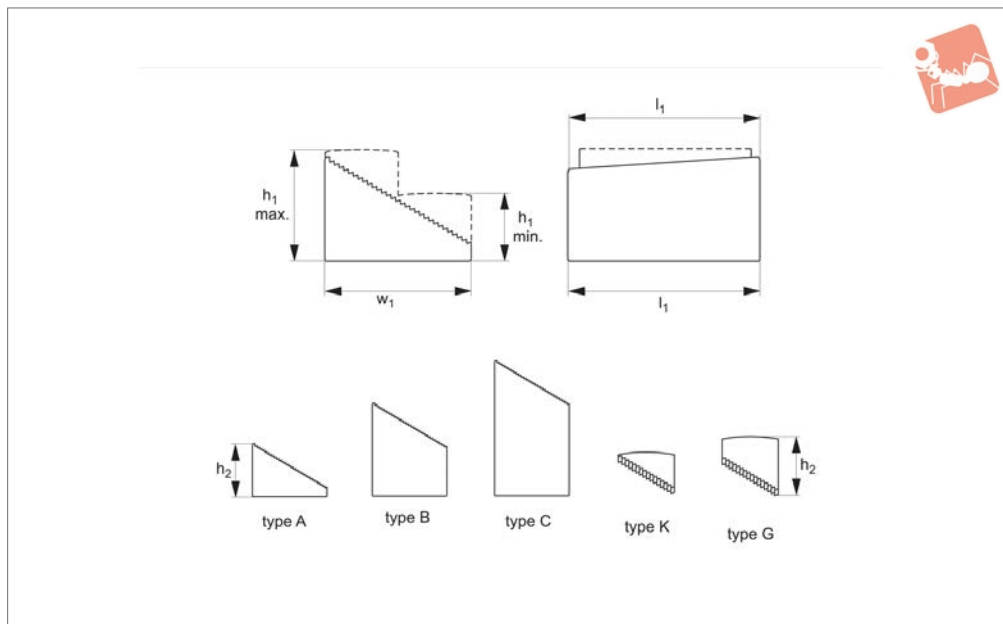
When used as a pair, these blocks are

compatible with all our clamps. However, when used individually, they can be used with clamp no. 10020.

Order No.	Case size	Contents	$h_1$ min.	$h_1$ max.	Weight g
14020.W0100	280x155x40	8 pcs 14000.W0001 8 pcs 14000.W0002 4 pcs 14000.W0003	23	208	8400



## 14040



### Material

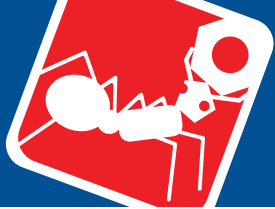
Steel, tempered and enamelled.

The tooth form is a metric profile to DIN 13 sheet 1 with a pitch of 2,5mm. It lies in the normal section of the setting level.

### Technical Notes

DIN 6326.

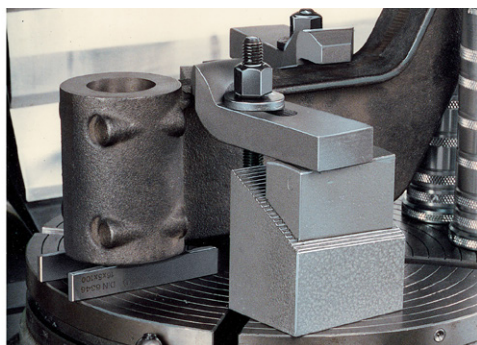
Order No.	Type	Clamping height $h_1$ min.	Clamping height $h_1$ max.	Description	$h_2$	$w_1$	$l_1$	Lower part	Upper part	Single parts	Weight g
14040.W0001	A			Lower part	42	60	80			A	850
14040.W0002	B			Lower part	82	60	80			B	2300
14040.W0003	C			Lower part	122	60	80			C	3800
14040.W0004	K			Upper part	24	30	70			K	200
14040.W0005	G			Upper part	44	30	70			G	500
14040.W0014	A+K	25	45	Combination				A	K		1050
14040.W0015	A+G	45	65	Combination				A	G		1350
14040.W0017	A+K+G	25	65	Combination				A	KG		1550
14040.W0023	B+K	65	85	Combination				B	K		2500
14040.W0025	B+G	85	105	Combination				B	G		2800
14040.W0026	B+K+G	65	105	Combination				B	KG		3000
14040.W0034	C+K	105	125	Combination				C	K		4000
14040.W0035	C+G	125	145	Combination				C	G		4300
14040.W0036	C+K+G	105	145	Combination				C	KG		4500



# Adjustable Step Blocks with spiral gearing



## Screw Jacks



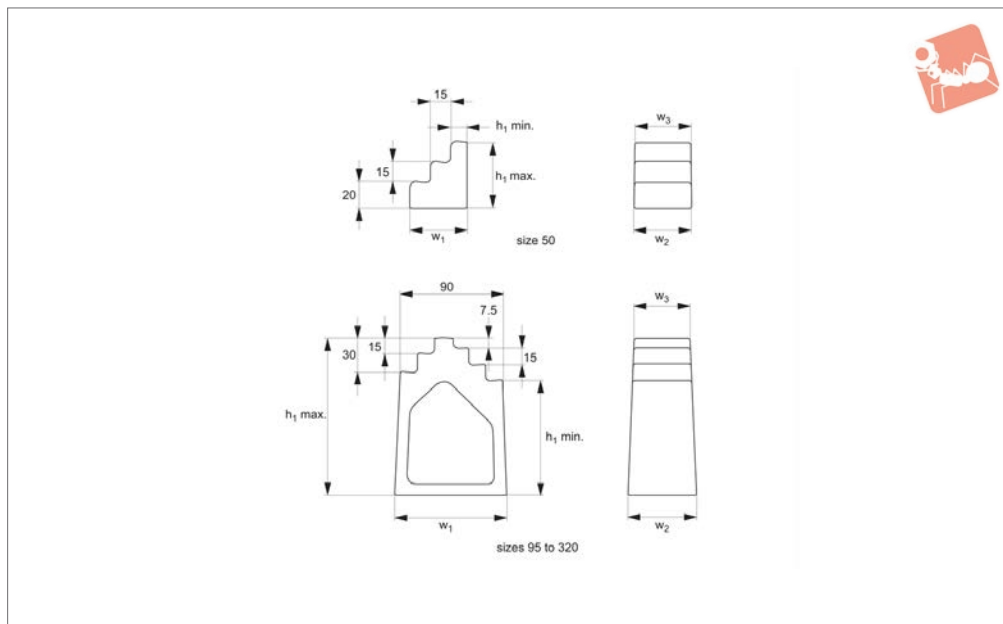
SCREW JACKS



SCREW JACKS



**14100**



**Material**

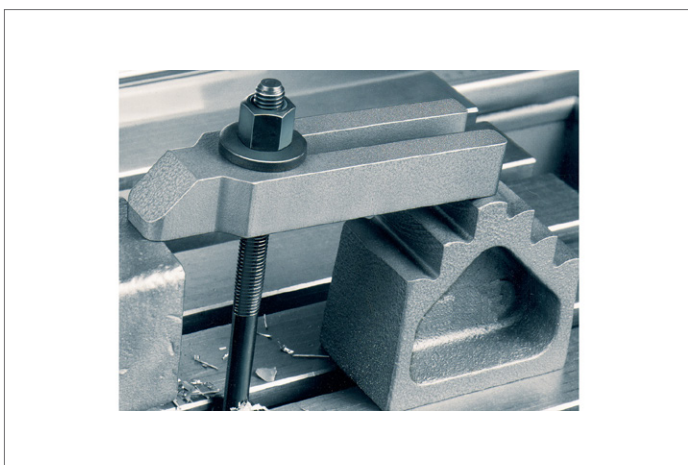
Cast iron, enamelled with support surface and steps milled.

**Technical Notes**

Produced to DIN 6318.  
See item no. 14150<X\14150#22> for

extra wide step blocks. Step increments of 7,5mm each.

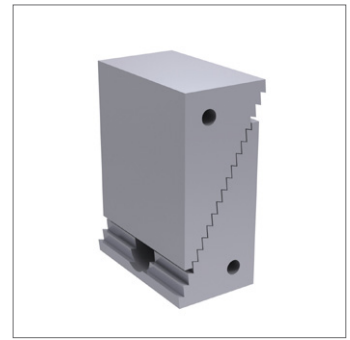
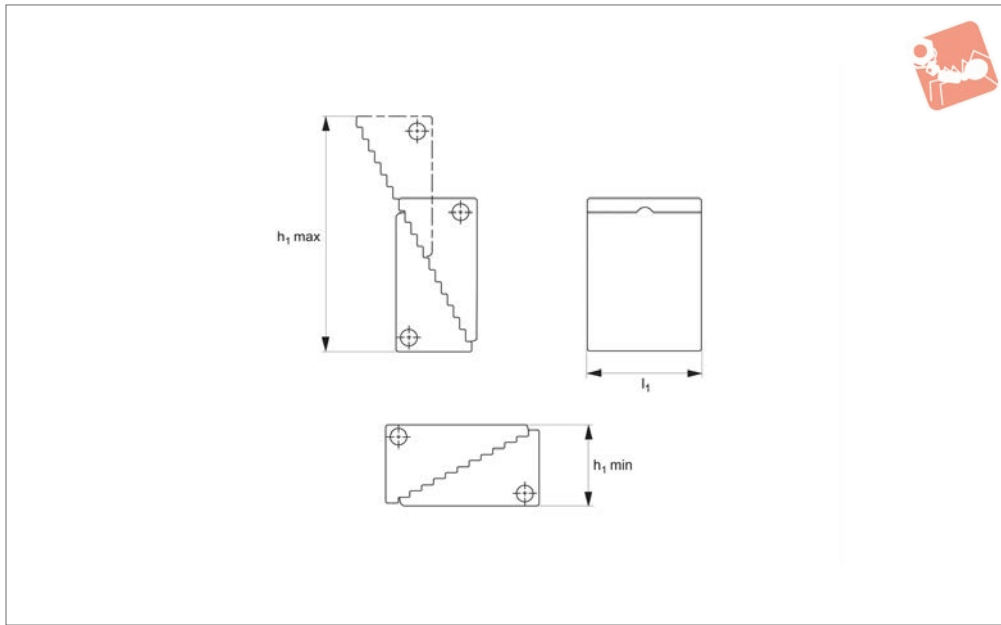
Order No.	Size	$h_1$ min.	$h_1$ max.	$w_1$	$w_2$	$w_3$	Weight g
14100.W0050	50	12.5	50	42.5	50	50	500
14100.W0095	95	57.5	95	95.0	55	50	1600
14100.W0140	140	102.5	140	100.0	60	50	2000
14100.W0185	185	147.5	185	105.0	65	50	2900
14100.W0230	230	192.5	230	110.0	70	50	3600
14100.W0275	275	237.5	275	115.0	75	50	4300
14100.W0320	320	282.5	320	120.0	80	50	5200





# Step Blocks with coupling spring

# Screw Jacks



## 14110

SCREW JACKS

### Material

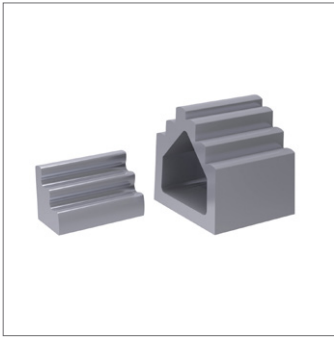
Carbon steel, enamelled.

### Technical Notes

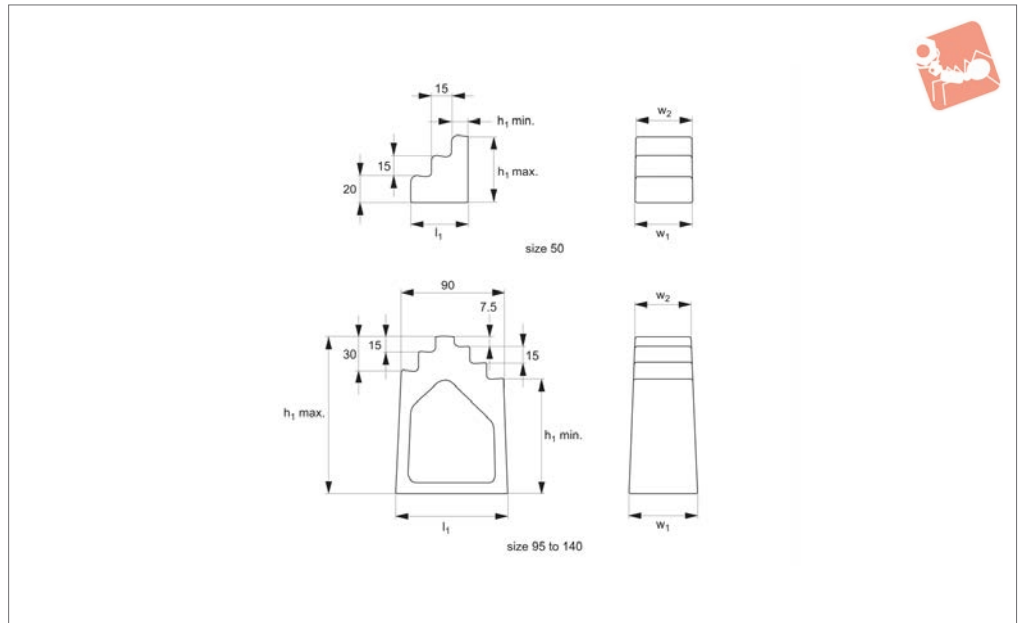
Similar to no. 14000.W0002 but joined

together with a spring for ease of handling. Used vertically or horizontally. Step increments vertical 4,65mm, horizontal 2,30mm.

Order No.	Size	$h_1$ min.	$h_1$ max.	$l_1$	Weight g
14110.W0001	2	37	107	60	1000



**14150**



**Material**

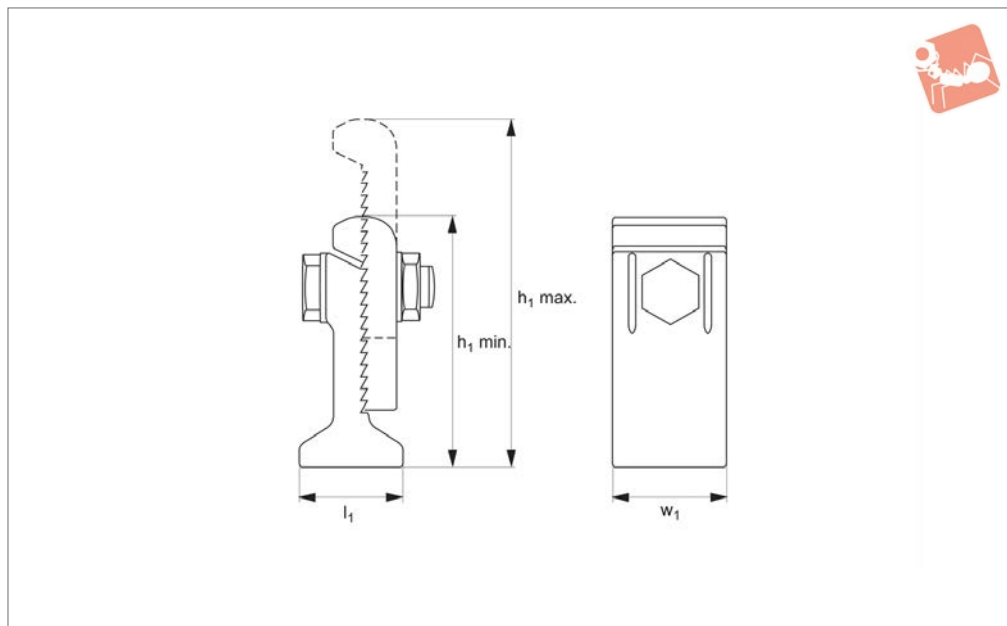
Cast iron, enamelled.  
Base and step faces milled.

**Technical Notes**

Step increments of 7,5mm each.

Order No.	Size	$h_1$ min.	$h_1$ max.	$w_1$	$w_2$	$l_1$	Weight g
14150.W0050	50	12.5	50	80	80	42.5	800
14150.W0095	95	57.5	95	85	80	95.0	2300
14150.W0140	140	102.5	140	90	80	100.0	3450





## 14200

SCREW JACKS

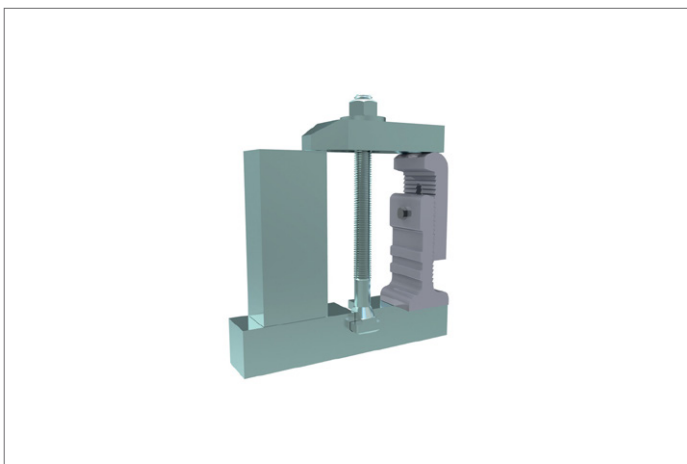
### Material

Steel, malleable casting, enamelled.  
Base and step faces milled.

### Technical Notes

Step increments 5,2mm.

Order No.	Size	$h_1$ min.	$h_1$ max.	$w_1$	$l_1$	Static load kN max.	Weight g
14200.W0015	2	111	147	50	50	40	1225
14200.W0022	3	155	223	60	60	60	2607
14200.W0034	4	220	340	80	80	90	6028





With the modular screw jack your production becomes even more flexible and economical. When combined you can achieve a maximum height of 1620mm.

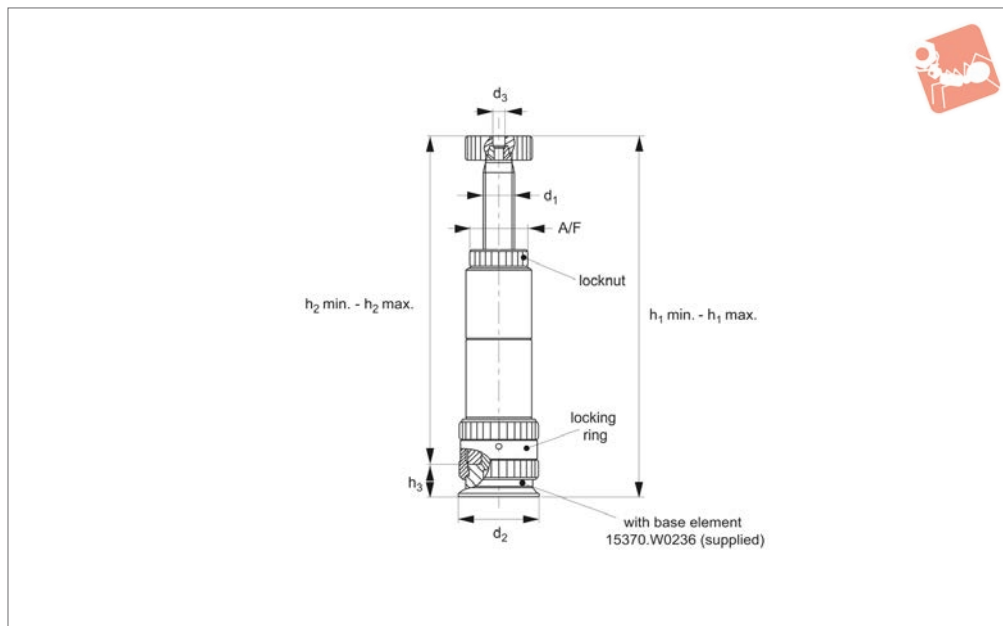
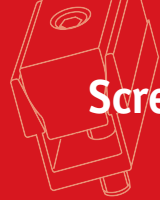
### Benefits

- Maximum height of 1620mm.
- Quick set-up time.

### The Elements

- 1 Bearing pads, 15374.W0075, 15374.W0175, 15374.W0275
- 2 Screw jack, 15370.W0040, 15372.W0023
- 3 Spacer, 15370.W0116, 15370.W0126, 15370.W0135
- 4 Base, 15370.W0236, 15370.W0356, 15370.W0456
- 5 Thread adapter, 15374.W0016, 15374.W0020, 15374.W0024





## 15370.1

SCREW JACKS

### Material

Steel, tempered, burnished.

### Technical Notes

Can be used on T-slots and grid plates by means of adapters which are screwed in the base element. The individual elements are

joined together and connected by means of a threaded ring. The insertion tool makes it possible to use the locknut and base element as well as a thread adapter.

### Tips

Can be used with other elements to achieve

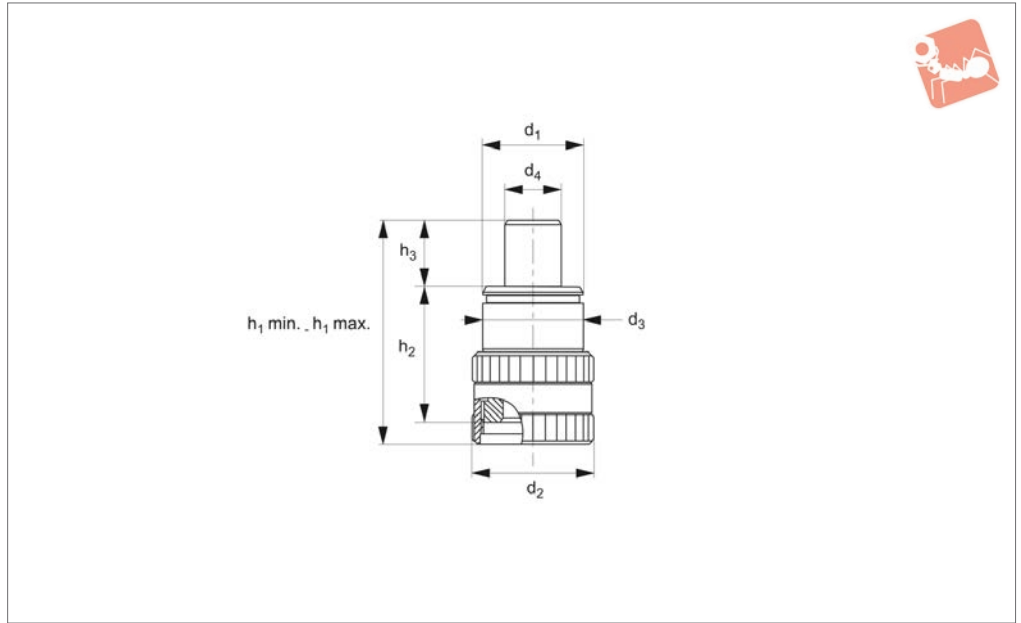
heights of up to 1.6 metres, with a max. load of 60 kN. Observe possible buckling loads.

**Do not adjust screw jacks under load.**

Order No.	$h_1$ min.	$h_1$ max.	$h_2$ min.	$h_2$ max.	$h_3$	$d_1$	$d_2$	$d_3$	A/F	F kN max.	Weight g
15370.W0040	306	406	270	370	36	40x7	90	12	65	60	9436



**15370.2**



**Material**

Steel, tempered, burnished.

can allow stopless height range of up to 1620mm.

load of 60 kN. Observe possible buckling loads.

**Technical Notes**

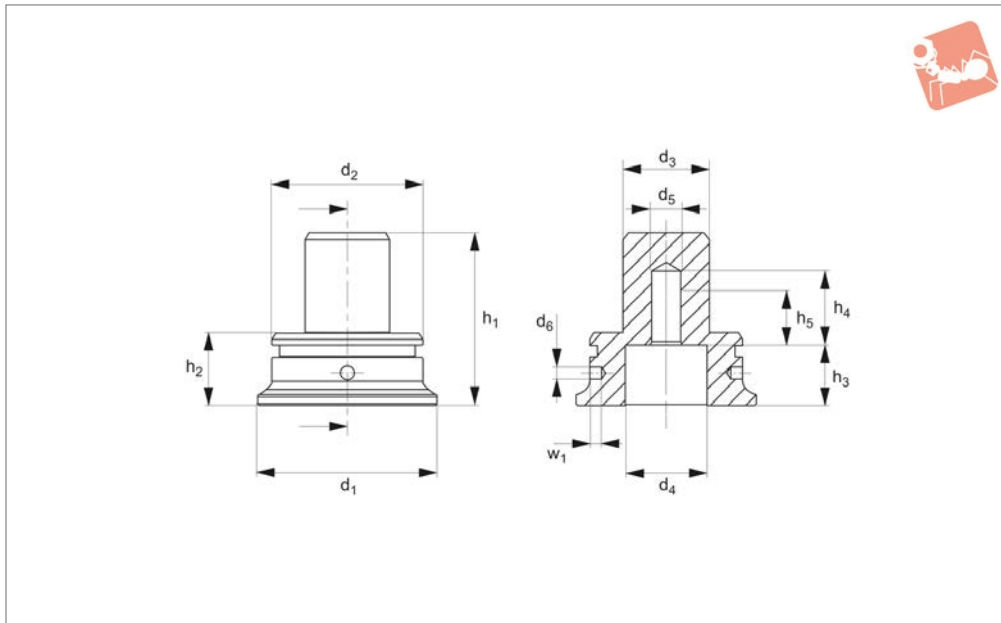
These spacer elements are used with modular screw jacks 15370. Using the item

**Tips**

Can be used with other elements to achieve heights of up to 1.6 metres, with a max.

**Do not adjust screw jacks under load.**

Order No.	$h_1$ min.	$h_1$ max.	$h_2$	$h_3$	$d_1$	$d_2$	$d_3$	$d_4$	Weight g
15370.W0116	150	166.5	100	50	M76x3	89	75	42.5	3132
15370.W0126	250	266.5	200	50	M76x3	89	75	42.5	6228
15370.W0135	350	366.5	300	50	M76x3	89	75	42.5	7493



**15370.3**

SCREW JACKS

**Material**

Steel, tempered, burnished.

**Technical Notes**

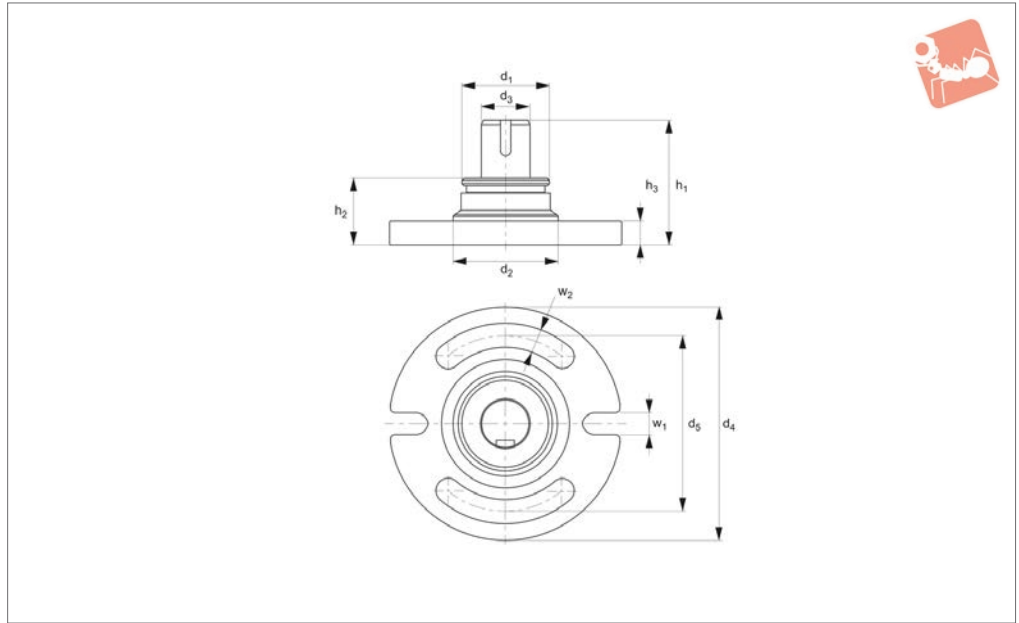
Can be used on T-slots and grid plates by

means of adapters which are screwed in the base element. The individual elements are easily joined together with threaded ring ensuring process reliability.

Order No.	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$w_1$	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	$d_6$	Weight g
<b>15370.W0236</b>	86	36	30	37	27	6	90	M76x3	42.5	41	M16	6.2	1497



15370.4



SCREW JACKS

**Material**

Steel, tempered, burnished.

**Technical Notes**

Can be used on T-slots and grid plates. The

individual elements are easily joined together.

Enables easy positioning on a machine table.

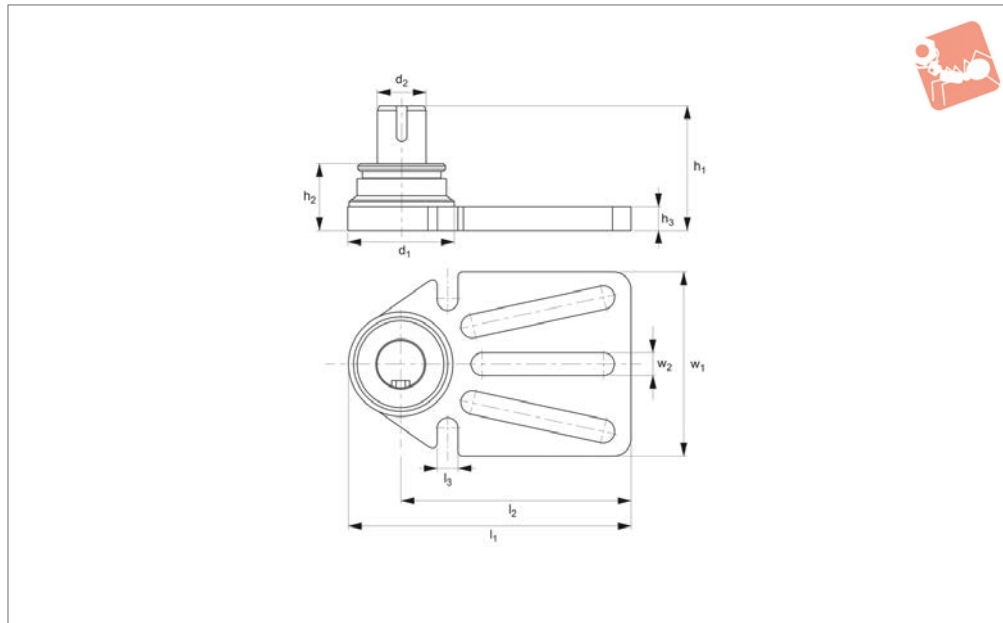
Order No.	$h_1$	$h_2$	$h_3$	$w_1$	$w_2$	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	Weight g
15370.W0356	106	56	20	17	20	M76x3	90	42.5	200	150	5717



# Modular Screw Jack Base

adjustable

## Screw Jacks



**15370.5**

SCREW JACKS

### Material

Steel, tempered, burnished.

Enables easy positioning on a machine table.

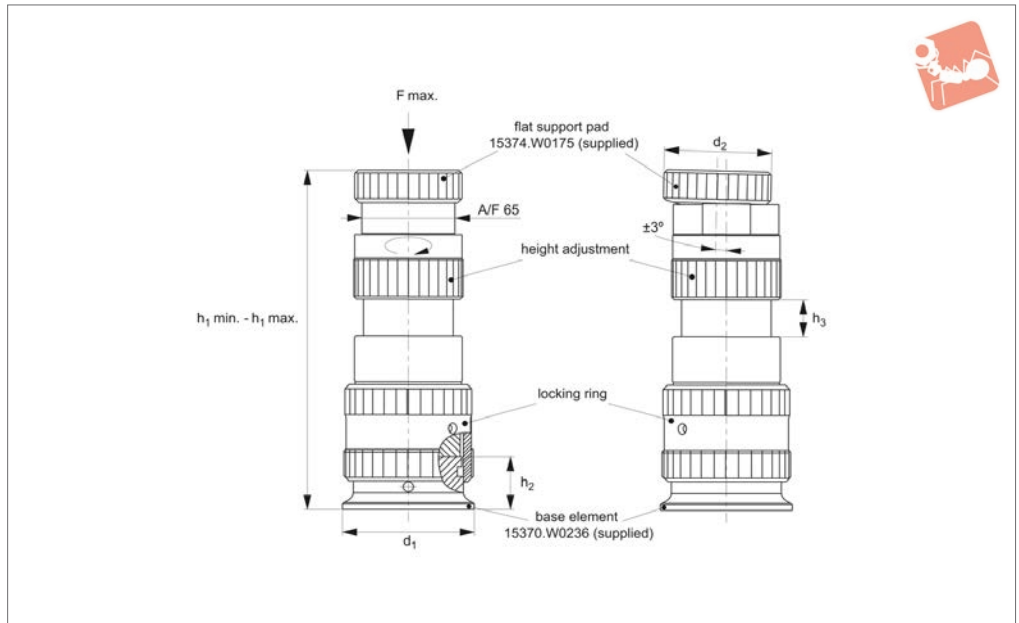
### Technical Notes

Can be used on T-slots and grid plates.

Order No.	$h_1$	$h_2$	$h_3$	$w_1$	$w_2$	$d_1$	$d_2$	$l_1$	$l_2$	$l_3$	Weight g
<b>15370.W0456</b>	106	56	20	158.5	20	90	42.5	240	195	17	5652



15372



SCREW JACKS

**Material**

Body and base: steel, tempered, burnished.  
Spindle and bearing: steel, tempered, plasma-nitrided and burnished.

**Technical Notes**

Can be used on T-slots and grid plates by means of adapters which are screwed in the base element with a spacer element. This

support can be finely adjusted to a maximum height of 330mm under load. The bearings can be adjusted with an angle of  $\pm 3^\circ$ . Used as an extra support point to prevent sag and vibration of the workpiece. As it is mounted directly under a clamping point, distortion of the work-piece is prevented.

For use in horizontal and vertical clamping.

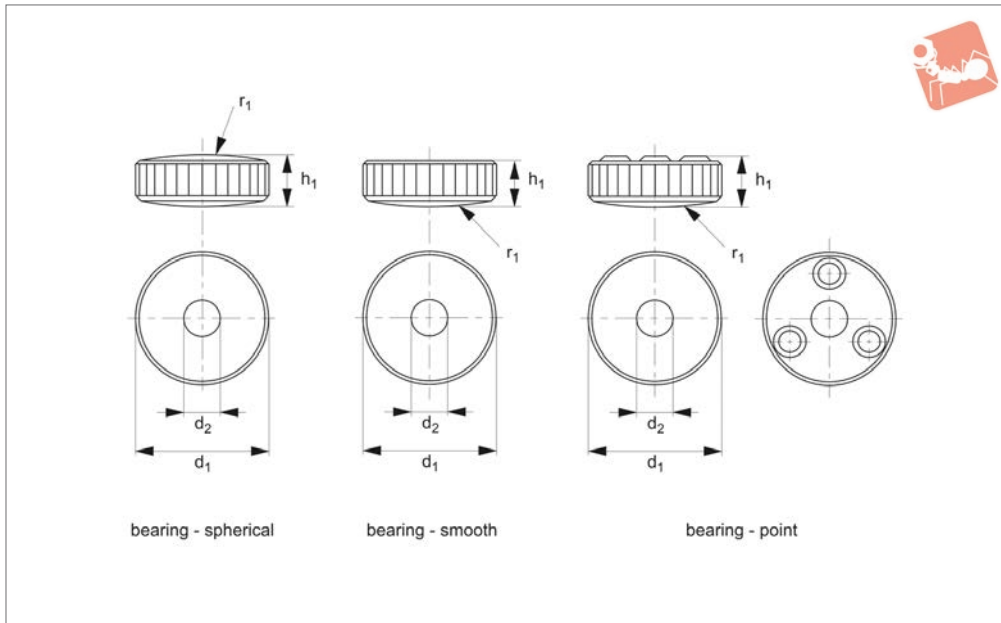
**Tips**

**Maximum height 330mm when used with additional spacer 15370.W0116.**

Three different bearings are held in place by magnets. Bearings are interchangeable.

Order No.	$h_1$ min.	$h_1$ max.	$h_2$	$d_1$	$d_2$	Stroke $h_3$	F kN max.	Weight g
15372.W0023	210	230	36	90	75	20	35	6671





## 15374.1

SCREW JACKS

### Material

Steel, tempered, plasma-nitrided and burnished.

### Technical Notes

Interchangeable top bearing for the fine

thread modular screw jack 15537.2.

Compensation of large work-piece tolerances.

For use in horizontal and vertical clamping.

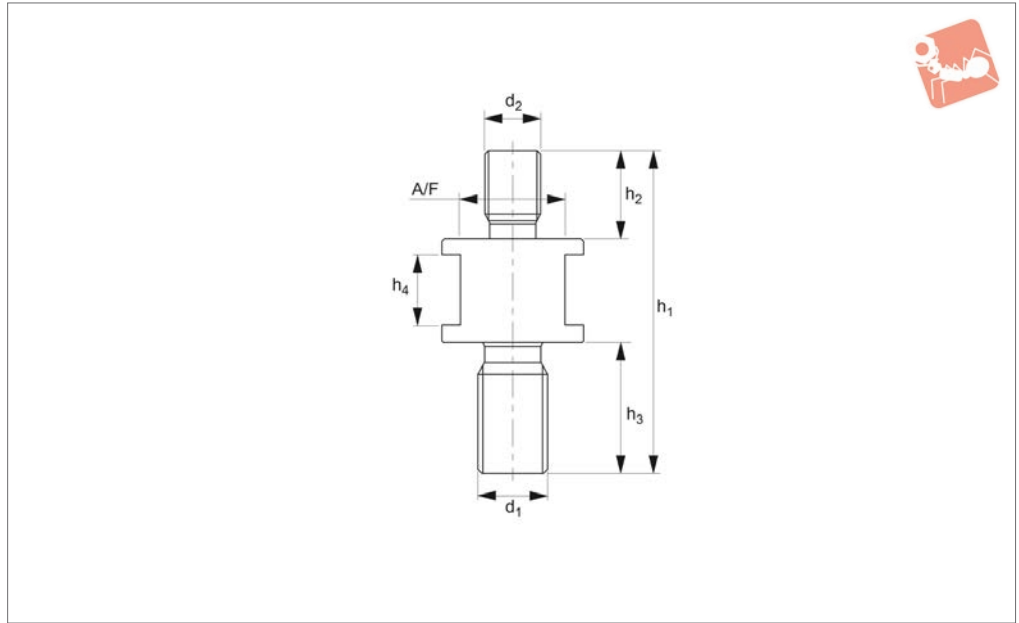
Order No.	Bearing type	$h_1$	$d_1$	$d_2$	$r_1$	Weight g
15374.W0075	Spherical	24.7	75	20.5	140	655
15374.W0175	Smooth	24.7	75	20.5	140	739
15374.W0275	Point	24.7	75	20.5	140	651



SCREW JACKS



**15374.2**



**Material**

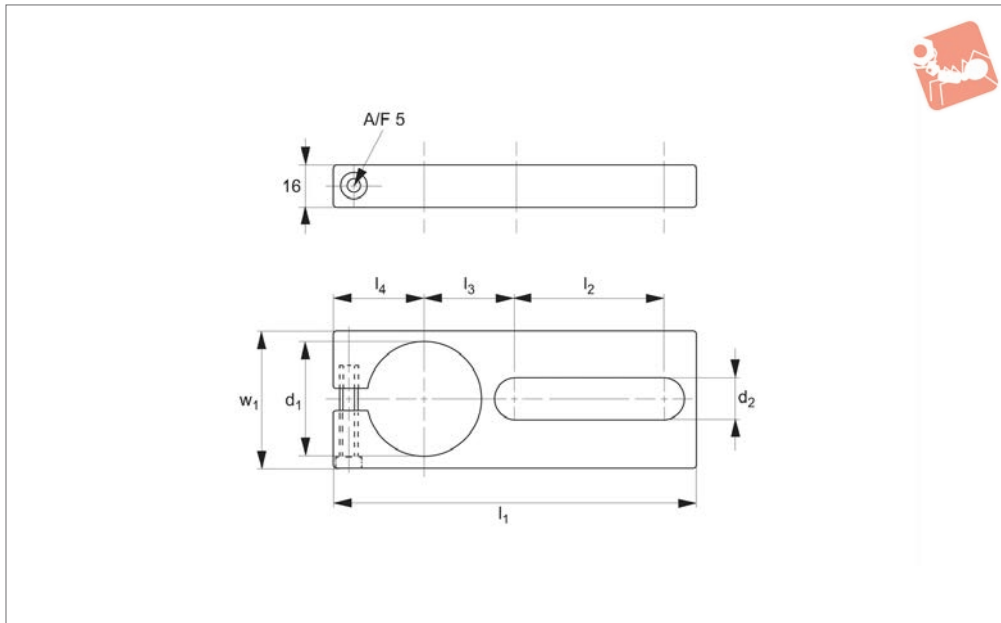
Steel, tempered and burnished.

base element allowing easy fixing to T-slots and grid plates.

**Technical Notes**

The thread adapters are screwed in the

Order No.	$h_1$	$h_2$	$h_3$	$h_4$	$d_1$	$d_2$	A/F	Weight g
15374.W0016	83.5	25	29	20	M16	M16	30	339
15374.W0020	91.5	25	37	20	M20	M16	30	381
15374.W0024	101.5	25	47	20	M24	M16	30	452



## 15010

SCREW JACKS

### Material

Steel, blackened.

movement when a workpiece is changed, and for mounting screw jacks vertically.

tely.

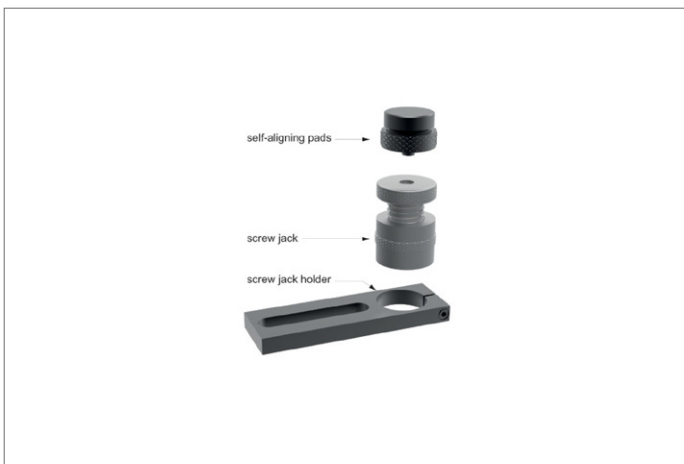
### Technical Notes

Used to fix screw jacks in place to prevent

### Tips

Please order screw jacks no. 15000 separa-

Order No.	For screw jacks no. 15000	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	w <sub>1</sub>	Weight g
15010.W0232	Size 50	31	18.5	175	90	35	30	40	518
15010.W0250	Size 52,70,100	50	20.5	190	90	46	38	60	891
15010.W0270	Size 140	69	24.5	210	90	54	48	80	1300





**15030**  
Spherical



**15040**  
Pin Type



**15050**  
Vee Type



**15060**  
Centering Pin



**15070**  
Cylindrical



**15080**  
Self-Aligning



**15090**  
Pivot Ball



**15000**  
Screw Jack



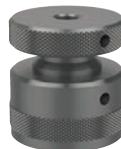
**15042**  
Locating Pad



**15062**  
Centering Pad



**15002**  
Screw Jack



These screw and aligning jacks offer a broad range of applications. Due to their robust construction, the screw jacks function securely and precisely, with infinite adjustment even under heavy loads.

- Safe and reliable clamp supports for heights from 38 to 1250mm.
- Accurate and safe supporting and setting of any workpiece in various levels and heights.
- Aluminium screw jacks for delicate machine tables, surface plates and CMM tables.
- Magnetic screw jacks for horizontal and vertical supporting and setting.

### Table of Suitability for Screw Jack Attachments

Attachments	Suited to screw jacks with centering pin - plain bore	Suitable screw jack
15030	Ø12	15200 14130
15040		15220 14140
15050		15000 15300
15060		15000 15320
15070		15100 15360
15080		15120 15500
15090		

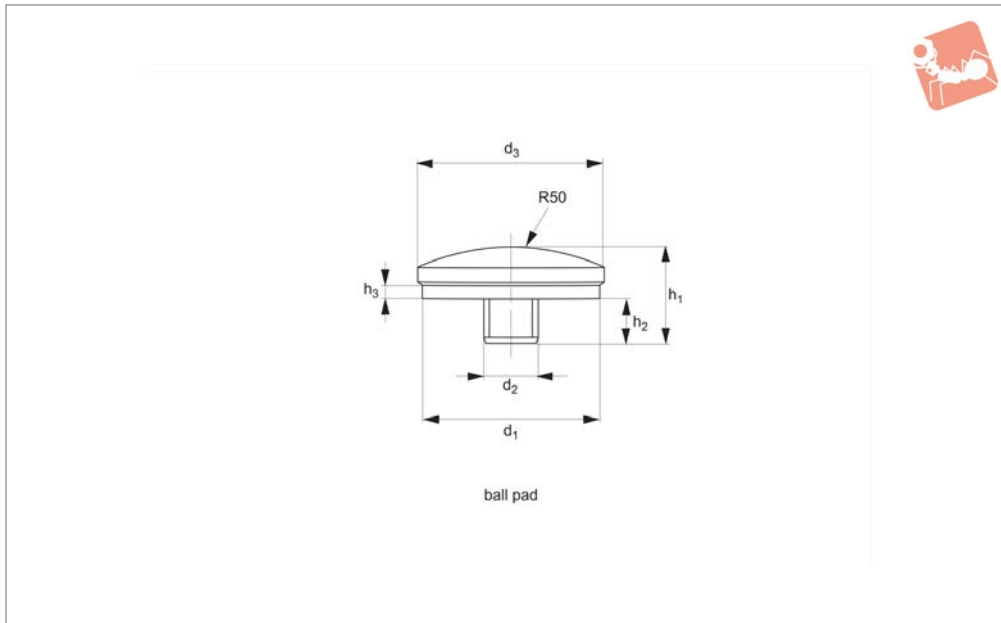
Attachments	Suited to screw jacks with either / or centering pin - threaded	Suitable screw jack
15042	M 12	15002.W0052 / W0070 / W0100
15062	M 10	15320 15360
15062	M 12	15002.W0052 / W0070 / W0100

Attachments	Base thread	Suitable screw jack
15042	M38 x 2	15000.W0052 / W0070 / W0100
15062		15000.W0052 / W0070 / W0100
		15100 14140



# Locating Pad - Spherical for screw jacks

## Screw Jacks



**15030**

SCREW JACKS

**Material**

Steel, hardened, blackened and burnished.

15300.

See technical pages for the table of screw jack suitability.

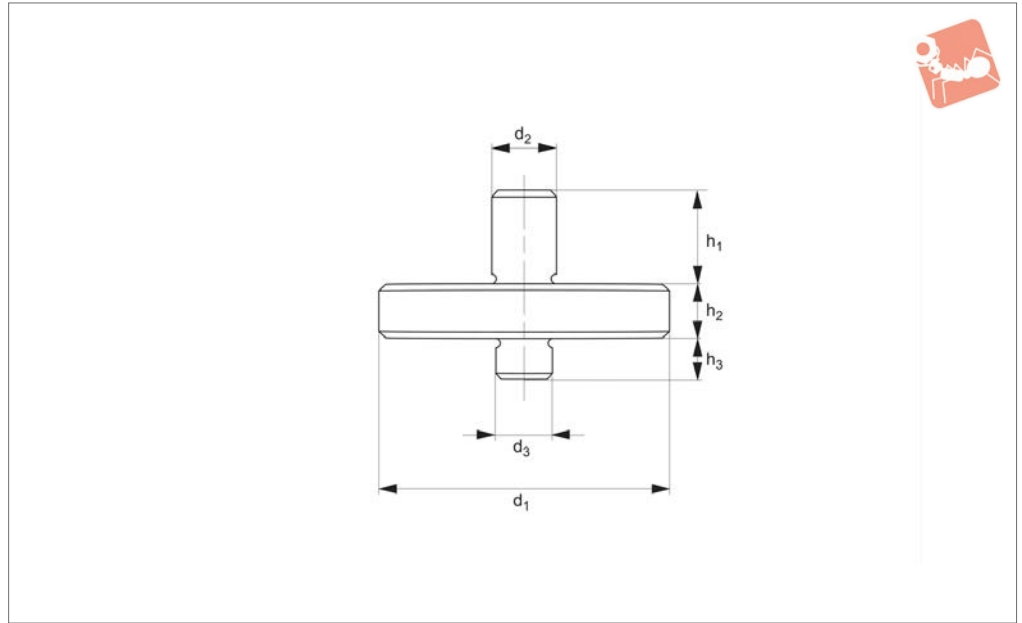
**Tips**

Can be used with screw jacks 15000 and

Order No.	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	Weight g
15030.W0037	35	12	37	18	8	3	90



**15040**



**Material**

Steel, hardened and blackened.

15300.

See technical pages for the table of screw jack suitability.

**Tips**

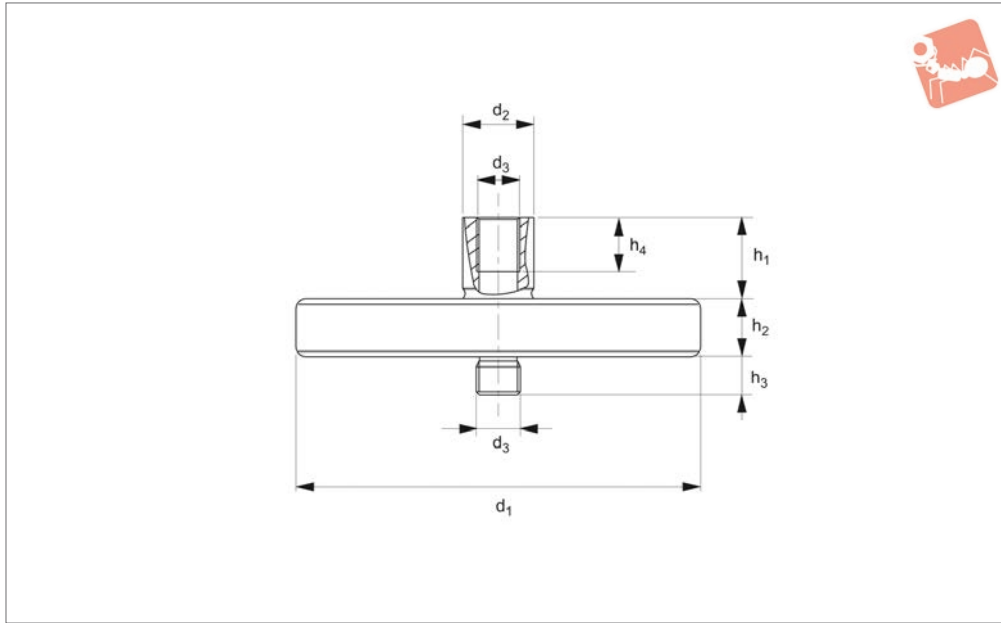
Can be used with screw jacks 15000 and

Order No.	$d_1$	$d_2$	$d_3$	$h_1$	$h_2$	$h_3$	Weight g
15040.W0163	63	14	12	15	12	8	310
15040.W0167	78	25	12	19	15	8	650



# Locating Pad - Pin Type M12 for screw jacks

## Screw Jacks



**15042**

SCREW JACKS

### Material

Steel, hardened, enamelled and blackened.

### Technical Notes

Has threaded centering pin (M12) for secu-

ring to compatible screw jacks with corresponding M12 threaded centering holes.

### Tips

Do not adjust screw jack when under load. See technical pages for the table of screw

jack suitability.

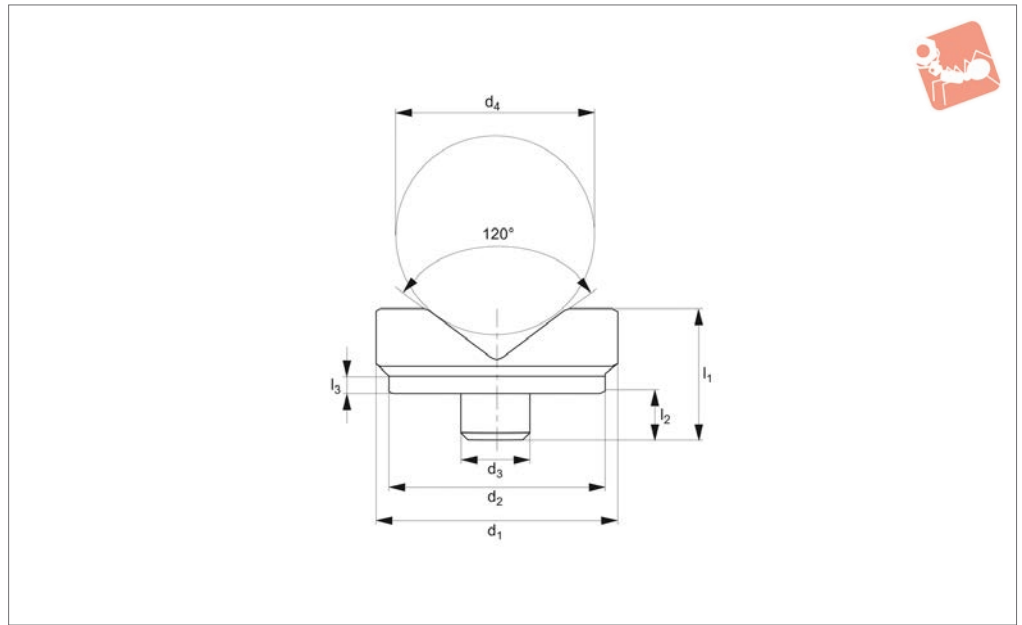
Order No.	$d_1$	$d_2$	$d_3$	$h_1$	$h_2$	$h_3$	$h_4$	Weight g
15042.W0012	72	22	M12	20	12	12	15	601



SCREW JACKS



**15050**



**Material**

Steel, hardened and blackened.

15300.

See technical pages for the table of screw jack suitability.

**Tips**

Can be used with screw jacks 15000 and

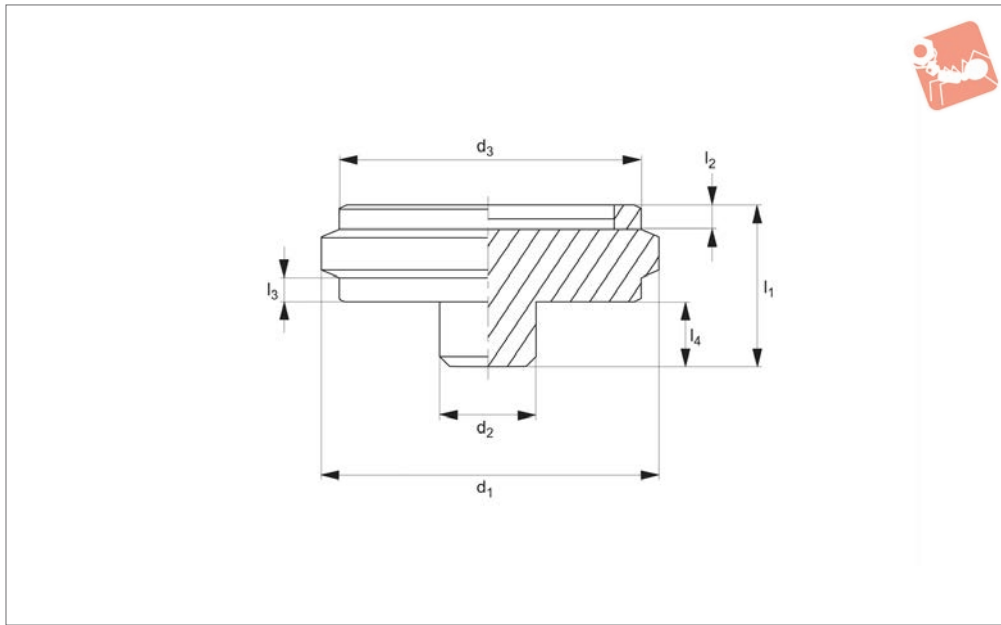
Order No.	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub> min.	d <sub>4</sub> max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Weight g
15050.W0045	45	42	12	10	50	23	8	3	120
15050.W0065	65	62	12	22	100	38	8	3	545





# Centering Pad for screw jacks

# Screw Jacks



## 15060

SCREW JACKS

### Material

Steel, hardened and blackened.

15300.

See technical pages for the table of screw jack suitability.

### Tips

Can be used with screw jacks 15000 and

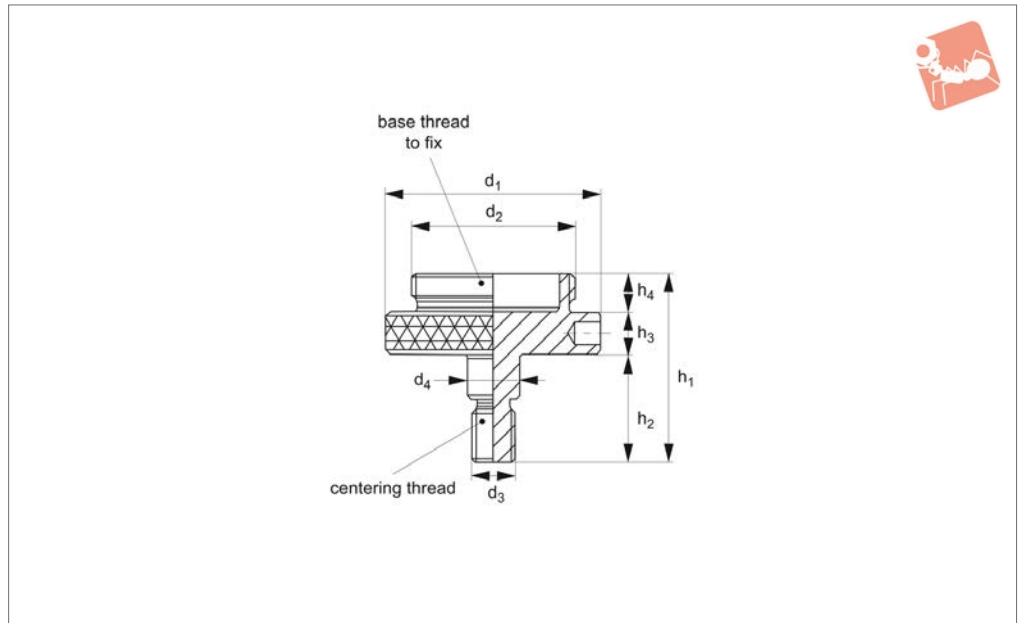
Order No.	$d_1$	$d_2$	$d_3$	$l_1$	$l_2$	$l_3$	$l_4$	Weight g
15060.W0145	45	12	35.8	19	3	8	8	120



SCREW JACKS



## 15062



### Material

Steel, hardened and blackened.

### Technical Notes

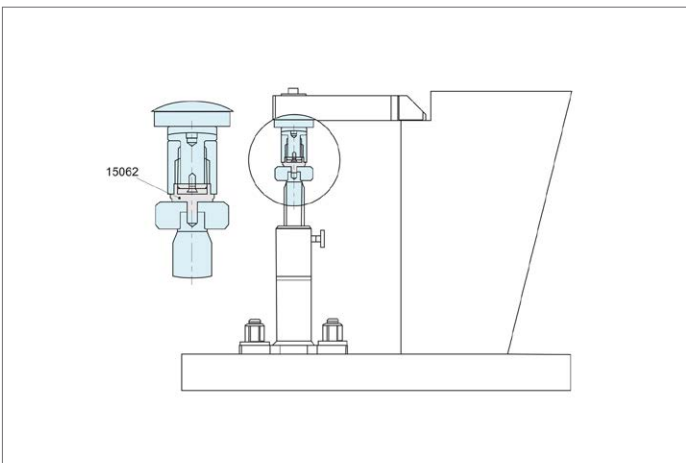
Has threaded centering pin (M12) for securing to compatible screw jacks with corre-

sponding M12 threaded centering holes. Also equipped with M38x2 male thread for fixing screw jacks with corresponding M38x2 thread in their base.

### Tips

Do not adjust screw jacks when under load. See technical pages for the table of screw jack suitability.

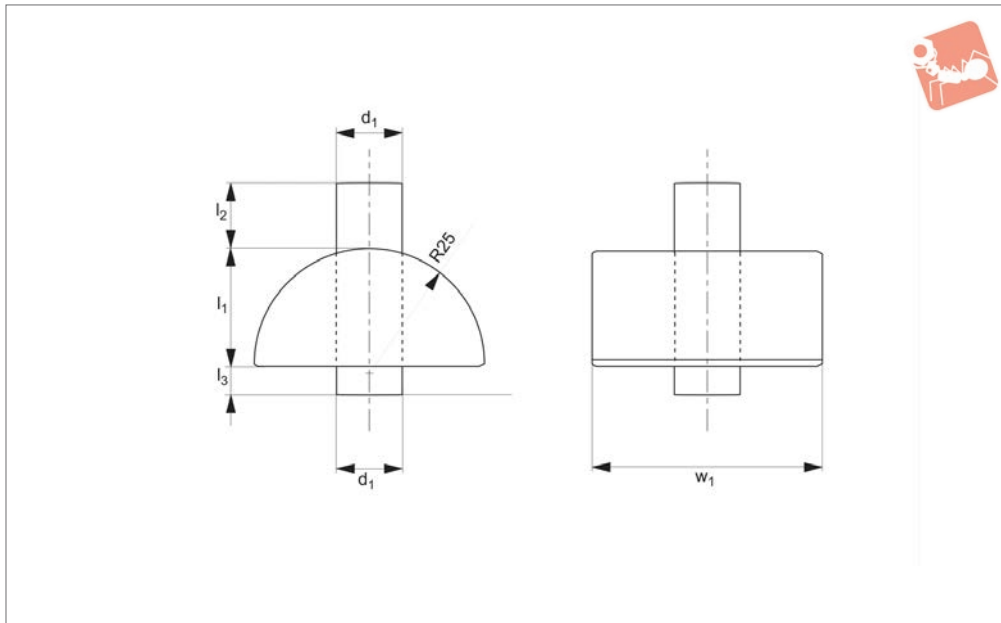
Order No.	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	Weight g
15062.W0010	50	M38x2	M10	11.9	33	25	10	9	200





# Locating Pad - Domed for screw jacks

## Screw Jacks



**15070**

SCREW JACKS

**Material**

Steel, hardened and blackened.

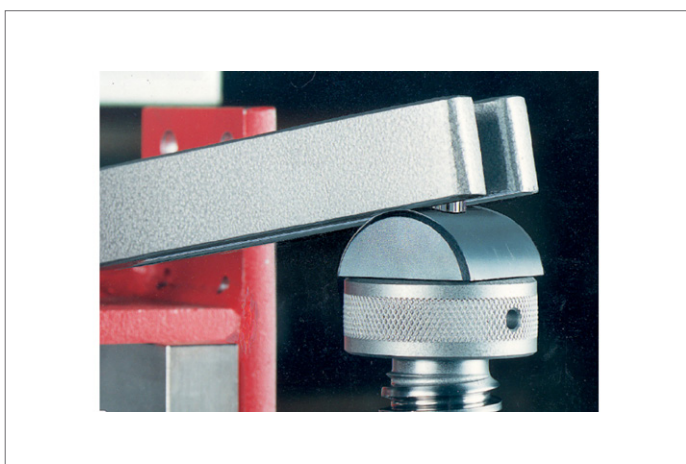
15300.

See technical pages for the table of screw jack suitability.

**Tips**

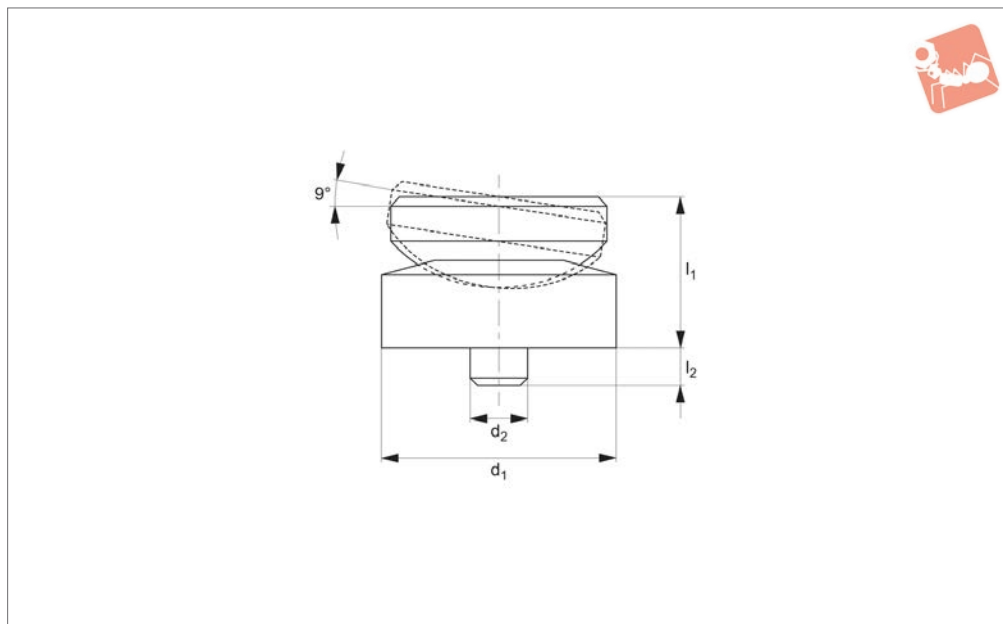
Can be used with screw jacks 15000 and

Order No.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	w <sub>1</sub>	Weight g
15070.W0050	12	23	19	8	50	370





## 15080



### Material

Steel, case-hardened, blackened.

### Technical Notes

These self-aligning pads ensure that the

bearing surfaces between the clamp/work-piece, and the screw jack are correctly aligned.

See technical pages for the table of screw

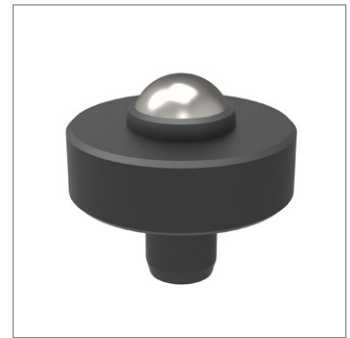
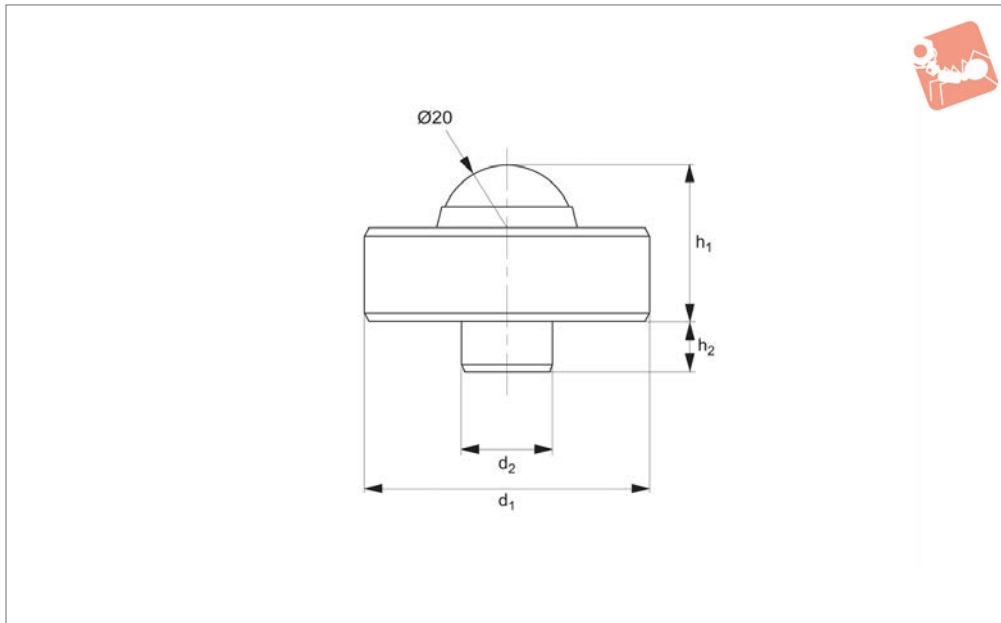
jack suitability.

Order No.	For screw jack	$d_1$	$d_2$	$l_1$	$l_2$	Weight g
15080.W0150	Sizes 52, 70, 100	50	12	32	8	399
15080.W0165	Sizes 140, 210	65	12	35	8	715



# Locating Pad - Pivot Ball for screw jacks

## Screw Jacks



**15090**

SCREW JACKS

**Material**

Pad: steel, tempered.  
Ball: steel, hardened.

**Technical Notes**

Designed for use with screw jacks and for

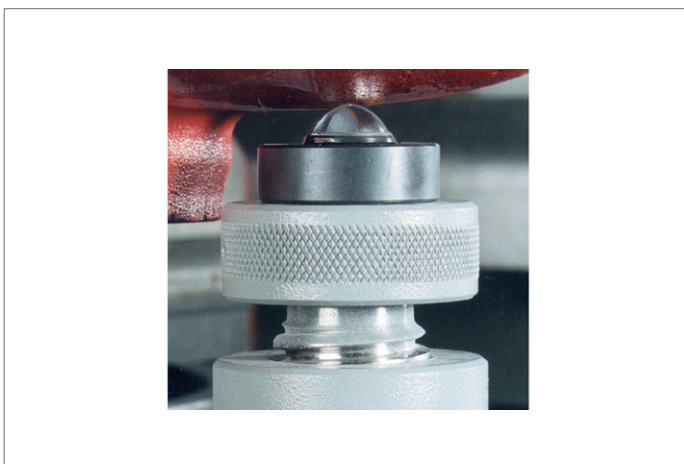
supporting heavy duty cast iron and forged parts.

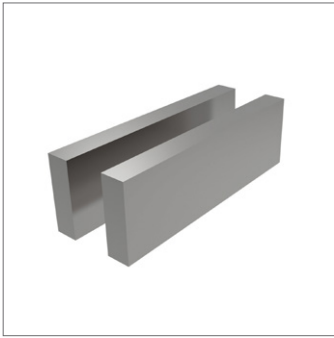
**Tips**

The pivot ball minimizes the friction on the support. The use of a point-like support

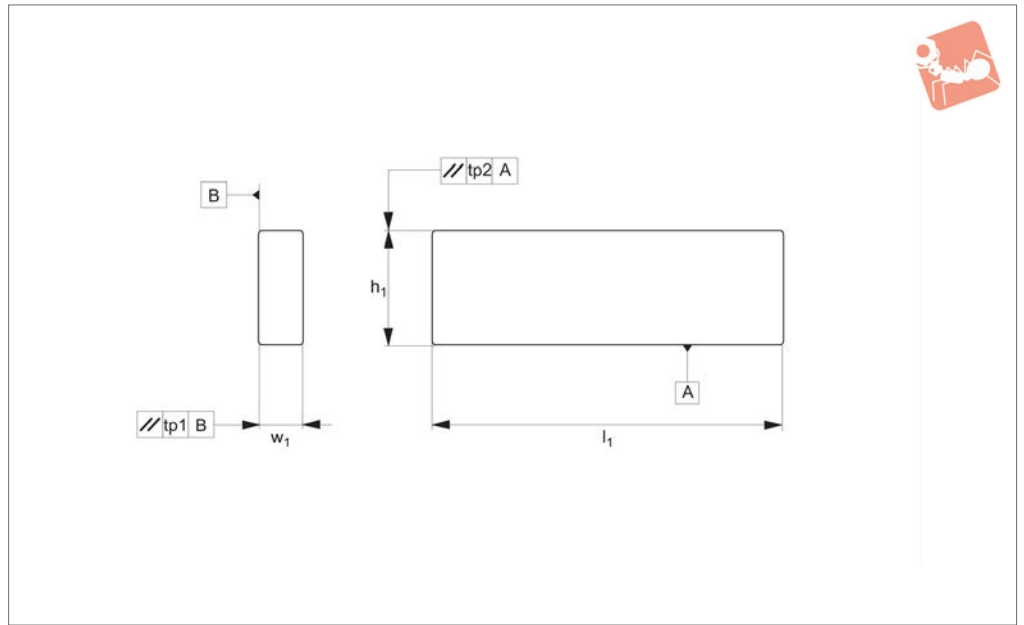
reduces the transmission of the turning force generated by the machine spindle. See technical pages for the table of screw jack suitability.

Order No.	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	Static load kN max.	Weight g
15090.W0030	45	12	25	8	30	240





## 17100



### Material

Steel, case-hardened and precision ground in pairs.

### Technical Notes

DIN6364 P. Tolerances:  
 $h_1$  (height) pair tolerance  $tp2 =$  to IT5.

$w_1$  (width) pair tolerance  $tp1 =$  to IT5.  
 Other dimensions to ISO 2768m.

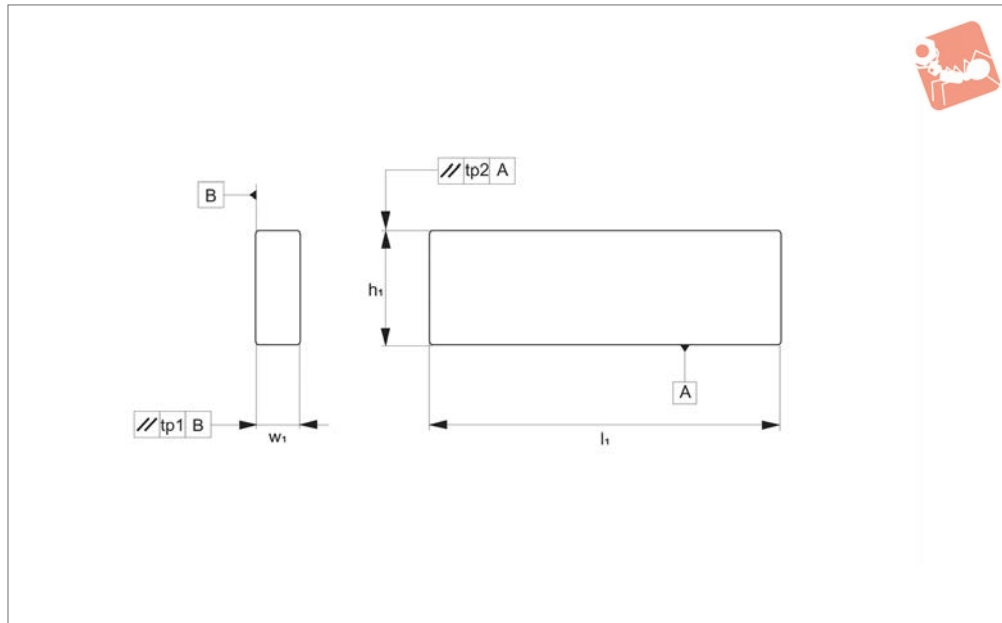
Order No.	$h_1$	$l_1$	Pair tolerance $tp1$	$w_1$	Pair tolerance $tp2$	$h_1$	Standard tolerance $h_1$	Standard tolerance $w_1$	$w_1$	Weight/pair g
17100.W0008	8	63	0.004		0.006		$\pm 0,2$	$\pm 0,1$	2.5	20
17100.W0010	10	63	0.005		0.006		$\pm 0,2$	$\pm 0,1$	3.2	30
17100.W0012	12	63	0.005		0.008		$\pm 0,2$	$\pm 0,1$	4.0	45
17100.W0013	12	100	0.005		0.008		$\pm 0,2$	$\pm 0,1$	4.0	75
17100.W0016	16	63	0.005		0.008		$\pm 0,2$	$\pm 0,1$	5.0	80
17100.W0017	16	100	0.005		0.008		$\pm 0,2$	$\pm 0,1$	5.0	125
17100.W0020	20	63	0.006		0.009		$\pm 0,2$	$\pm 0,2$	6.3	125
17100.W0021	20	100	0.006		0.009		$\pm 0,2$	$\pm 0,2$	6.3	200
17100.W0025	25	100	0.006		0.009		$\pm 0,2$	$\pm 0,2$	8.0	315
17100.W0026	25	160	0.006		0.009		$\pm 0,2$	$\pm 0,2$	8.0	500
17100.W0032	32	100	0.006		0.011		$\pm 0,3$	$\pm 0,2$	10.0	500
17100.W0033	32	160	0.006		0.011		$\pm 0,3$	$\pm 0,2$	10.0	800
17100.W0040	40	100	0.008		0.011		$\pm 0,3$	$\pm 0,2$	12.0	750
17100.W0041	40	160	0.008		0.011		$\pm 0,3$	$\pm 0,2$	12.0	1200
17100.W0050	50	160	0.008		0.011		$\pm 0,3$	$\pm 0,2$	16.0	2000
17100.W0063	63	160	0.009		0.013		$\pm 0,3$	$\pm 0,2$	20.0	3170
17100.W0064	63	250	0.009		0.013		$\pm 0,3$	$\pm 0,2$	20.0	4950
17100.W0080	80	250	0.009		0.013		$\pm 0,3$	$\pm 0,2$	25.0	7900
17100.W0100	100	250	0.011		0.015		$\pm 0,3$	$\pm 0,3$	32.0	12680
17100.W0101	100	400	0.011		0.015		$\pm 0,3$	$\pm 0,3$	40.0	25300



# Set of Parallel Pairs in wooden case



## Supports & Stops



### 17120

SUPPORTS & STOPS

#### Material

Steel, case hardened and precision ground.  
In wooden box with removable lid.

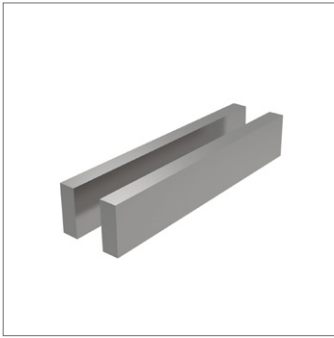
#### Tolerances:

$h_1$  (height) pair tolerance tp2 = to IT5.  
 $w_1$  (width) pair tolerance tp1 = to IT5.  
Other dimensions to ISO 2768m.

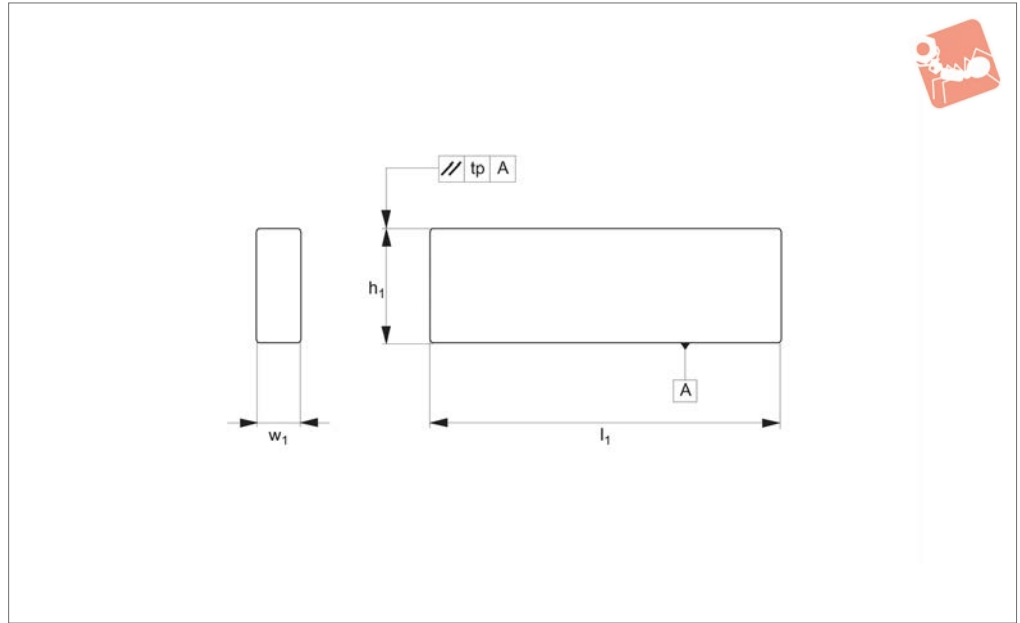
#### Technical Notes

Produced to DIN 6346S.

Order No.	Support height in 1 mm increments	1 pair $L = 250\text{mm}$ $h_1 \times w_1$	1 pair $l_2 = 100\text{mm}$ $h_1 \times w_1$	1 pair $l_2 = 160\text{mm}$ $h_1 \times w_1$	1 pair $l_2 = 63\text{mm}$ $h_1 \times w_1$	Wooden box $l_1 \times h_1 \times w_1$	Weight g
17120.W0025	2,5-25		12x4,0		8x2,5	200x100x36	1300
			16x5,0		10x3,2		
			20x6,3		12x4,0		
			25x8,0		16x5,0		
					20x6,3		
17120.W0040	4,0-40		12x4,0			305x115x50	3800
			16x5,0	25x8,0			
			20x6,3	32x10,0			
			25x8,0	40x12,0			
17120.W0063	8,0-63		25x8,0			305x115x70	7400
			32x10,0	50x16,0			
			40x12,0	63x20,0			
17120.W0100	20,0-100	63x20			280x215x125	27100	
		80x25					
		100x32					
17120.W0532	4,0-32		12x4,0			132x145x50	1500
			16x5,0				
			20x6,3				
			25x8,0				
			32x10,0				
17120.W0550	8,0-50			25x8,0		192x158x75	4900
				32x10,0			
				40x12,0			
				50x16,0			



## 17200



### Material

Steel, case-hardened and ground in pairs.

### Technical Notes

Tolerances - high precision level:

$h_1$  (height) pair tolerance  $tp = \pm 0,004\text{mm}$ .

$h_1$  (height) standard (single)  $tp = \pm 0,004\text{mm}$ .

Other dimensions to DIN ISO 2768m.

Tolerances - standard level:

$h_1$  (height) pair tolerance  $tp = \pm 0,01\text{mm}$ .

$h_1$  (height) standard (single)  $tp = \text{ISO 2768m}$ .

Tolerances - precision level:

$h_1$  (height) pair tolerance  $tp = \pm 0,01\text{mm}$ .

$h_1$  (height) standard (single)  $tp = \pm 0,01\text{mm}$ .

Other dimensions to DIN ISO 2768m.

Order No.	$h_1$ - Pair tolerance $tp$	$h_1$ - Standard tolerance $tp$	$h_1 \times w_1 \times l_1$	Precision level	Weight/pair g
17200.W0014	0.004	$\pm 0,004$	14x10x150	Super High	330
17200.W0016	0.004	$\pm 0,004$	16x10x150	Super High	380
17200.W0018	0.004	$\pm 0,004$	18x10x150	Super High	420
17200.W0020	0.004	$\pm 0,004$	20x10x150	Super High	470
17200.W0022	0.004	$\pm 0,004$	22x10x150	Super High	520
17200.W0024	0.004	$\pm 0,004$	24x10x150	Super High	570
17200.W0026	0.004	$\pm 0,004$	26x10x150	Super High	610
17200.W0028	0.004	$\pm 0,004$	28x10x150	Super High	660
17200.W0030	0.004	$\pm 0,004$	30x10x150	Super High	710
17200.W0032	0.004	$\pm 0,004$	32x10x150	Super High	750
17200.W0035	0.004	$\pm 0,004$	35x10x150	Super High	830
17200.W0040	0.004	$\pm 0,004$	40x10x150	Super High	940
17200.W0045	0.004	$\pm 0,004$	45x10x150	Super High	1060
17200.W0050	0.004	$\pm 0,004$	50x10x150	Super High	1180
17200.W0114	0.01	$\pm 0,01$	14x10x150	Precision	330
17200.W0116	0.01	$\pm 0,01$	16x10x150	Precision	380
17200.W0118	0.01	$\pm 0,01$	18x10x150	Precision	420
17200.W0120	0.01	$\pm 0,01$	20x10x150	Precision	470
17200.W0122	0.01	$\pm 0,01$	22x10x150	Precision	520
17200.W0124	0.01	$\pm 0,01$	24x10x150	Precision	570
17200.W0126	0.01	$\pm 0,01$	26x10x150	Precision	610
17200.W0128	0.01	$\pm 0,01$	28x10x150	Precision	660
17200.W0130	0.01	$\pm 0,01$	30x10x150	Precision	710
17200.W0132	0.01	$\pm 0,01$	32x10x150	Precision	750
17200.W0135	0.01	$\pm 0,01$	35x10x150	Precision	830
17200.W0140	0.01	$\pm 0,01$	40x10x150	Precision	940
17200.W0145	0.01	$\pm 0,01$	45x10x150	Precision	1060
17200.W0150	0.01	$\pm 0,01$	50x10x150	Precision	1180
17200.W0214	0.01	2768-m	14x10x150	Standard	330
17200.W0216	0.01	2768-m	16x10x150	Standard	380





## Parallel Supports - Pairs

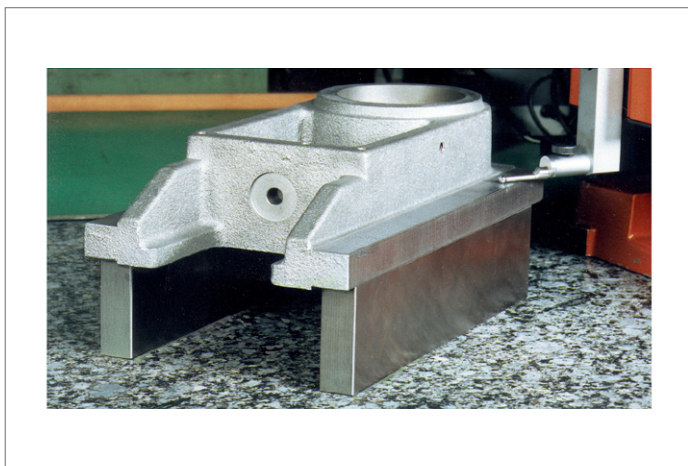
high, standard and precision



## Supports & Stops

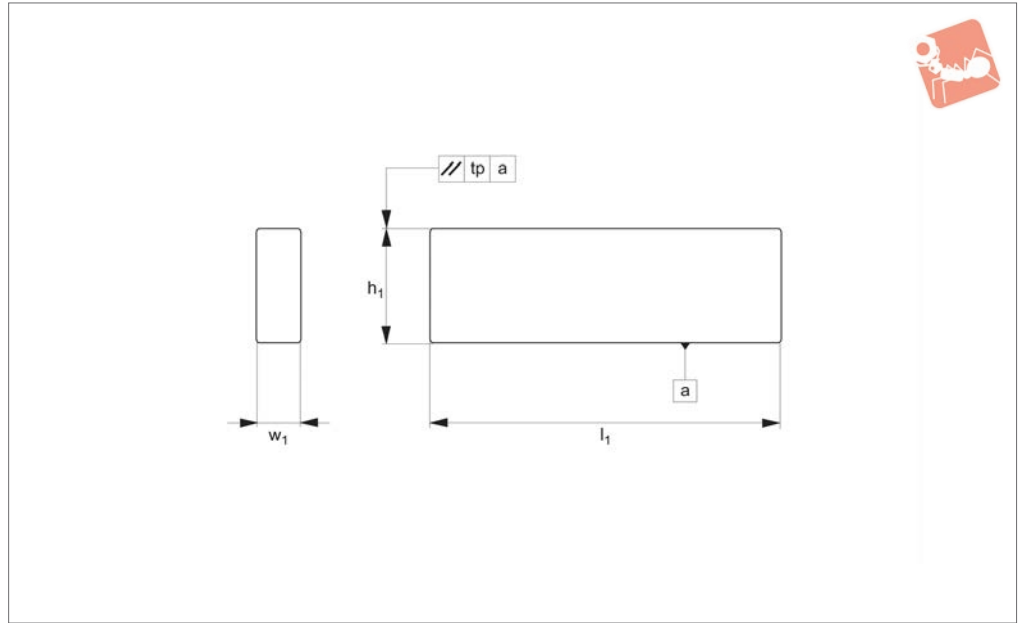
Order No.	$h_1$ - Pair tolerance tp	$h_1$ - Standard tolerance tp	$h_1 \times w_1 \times l_1$	Precision level	Weight/pair g
17200.W0218	0.01	2768-m	18x10x150	Standard	420
17200.W0220	0.01	2768-m	20x10x150	Standard	470
17200.W0222	0.01	2768-m	22x10x150	Standard	520
17200.W0224	0.01	2768-m	24x10x150	Standard	570
17200.W0226	0.01	2768-m	26x10x150	Standard	610
17200.W0228	0.01	2768-m	28x10x150	Standard	660
17200.W0230	0.01	2768-m	30x10x150	Standard	710
17200.W0232	0.01	2768-m	32x10x150	Standard	750
17200.W0235	0.01	2768-m	35x10x150	Standard	830
17200.W0240	0.01	2768-m	40x10x150	Standard	940
17200.W0245	0.01	2768-m	45x10x150	Standard	1060
17200.W0250	0.01	2768-m	50x10x150	Standard	1180

SUPPORTS & STOPS





## 17211



SUPPORTS & STOPS

### Material

Steel, case-hardened and finely ground in pairs.

### Technical Notes

Machined in parallel and square. Set incre-

ments are 1mm.

**Super high precision version. For standard precision model, (see part no 17200 for full tolerances).**

Tolerances:

$h_1$  (height) pair tolerance  $tp =$  to IT5.

$h_1$  (height) and  $w_1$  (width) standard (single) tolerance  $\pm 0,01$ mm.

All other dimensions to DIN ISO 2768m.

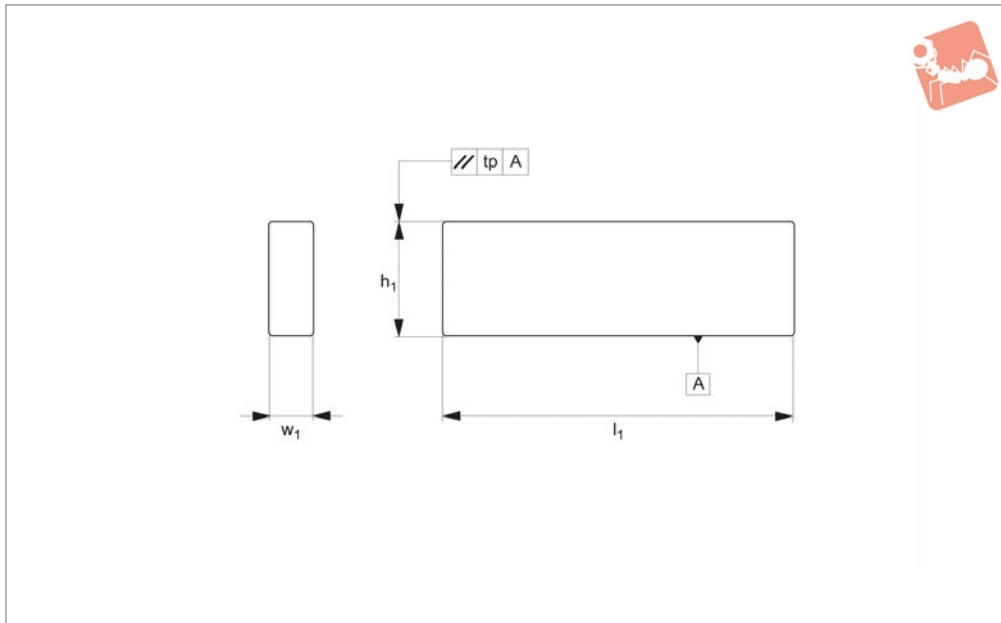
Order No.	Contents (1 pair each) $w_1 \times h_1 \times l_1$	Support height in 1 mm increments	Tolerance $h_1$ and $w_1$ mm	Weight g
17211.W0001	2x5x100 2x10x100	2-24	$\pm 0,01$	2200
	2x15x100 2x20x100			
	3x6x100 3x11x100			
	3x16x100 3x21x100			
	4x7x100 4x12x100			
17211.W0002	8x11x125 8x16x125	8-42	$\pm 0,01$	14000
	8x21x125 8x26x125			
	8x31x125 8x36x125			
	10x13x125 10x18x125			
	10x23x125 10x28x125			
17211.W0003	8x11x150 8x16x150	8-42	$\pm 0,01$	17000
	8x21x150 8x26x150			
	8x31x150 8x36x150			
	10x13x150 10x18x150			
	10x23x150 10x28x150			



# Parallel Support Pairs - Set standard precision - in wooden stand



## Supports & Stops



# 17212

SUPPORTS & STOPS

### Material

Steel, case hardened and finely ground in pairs.

### Technical Notes

Machined in parallel and square. Set incre-

ments are 1mm.

**Standard precision version (see part no. 17200 for full tolerances). For high precision model, see parts 17211.**

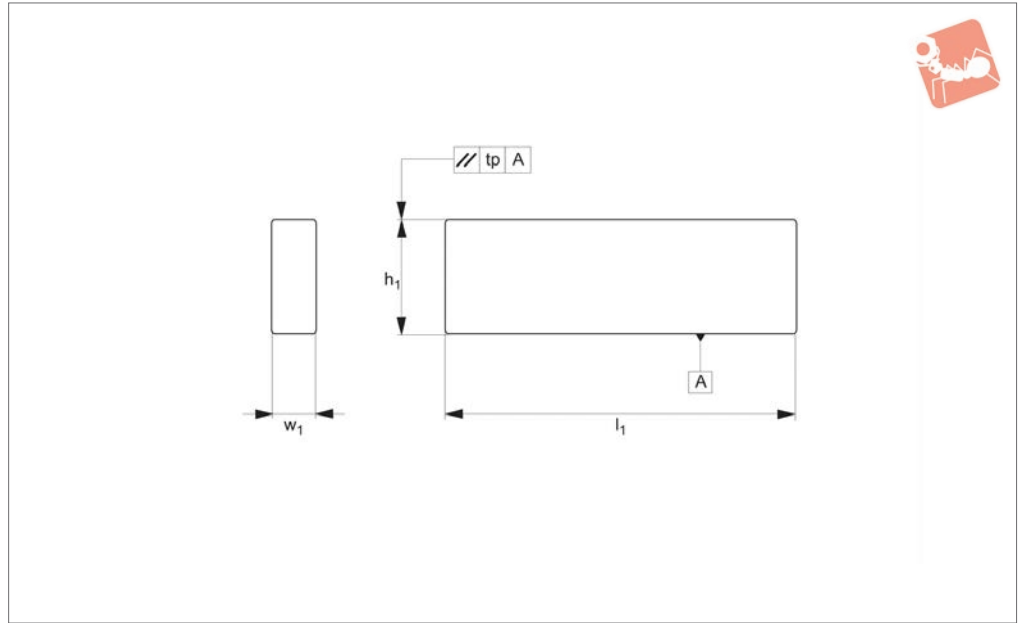
Tolerances:

$h_1$  (height) pair tolerance  $tp =$  to ITS.  
 $h_1$  (height) and  $w_1$  (width) standard (single) tolerance to DIN ISO 2768m.  
 All other dimensions to DIN ISO 2768m.

Order No.	Contents (1 pair each) $w_1 \times h_1 \times l_1$	Support height in 1 mm increments	Weight g
17212.W0201	2x5x100 2x10x100	2-24	2200
	2x15x100 2x20x100		
	3x6x100 3x11x100		
	3x16x100 3x21x100		
	4x7x100 4x12x100		
17212.W0202	8x11x125 8x16x125	8-42	14000
	8x21x125 8x26x125		
	8x31x125 8x36x125		
	10x13x125 10x18x125		
	10x23x125 10x28x125		
17212.W0203	8x11x150 8x16x150	8-42	17000
	8x21x150 8x26x150		
	8x31x150 8x36x150		
	10x13x150 10x18x150		
	10x23x150 10x28x150		



## 17220



### Material

Steel, ground and case-hardened.  
In wooden box with removable lid.

### Technical Notes

Dimensions  $w_1$  and  $l_1$  to ISO 2768 medium.  
Tolerances - 17220.W0001 (super high precision).  
 $h_1$  (height) pair tolerance  $tp = 0,004\text{mm}$ .  
 $h_1$  (height) standard tolerance  $tp = \pm 0,004\text{mm}$ .

Other dimensions to DIN ISO 2768m.

Tolerances - 17220.W0000 (standard precision).  
 $h_1$  (height) pair tolerance  $tp = 0,010\text{mm}$ .  
 $h_1$  (height) standard tolerance  $tp = \pm 0,004\text{mm}$ .

### Tips

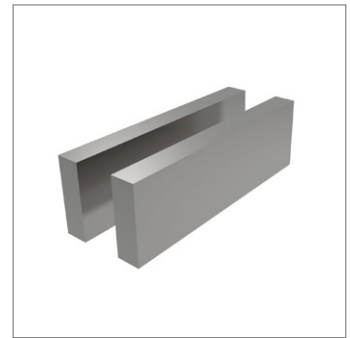
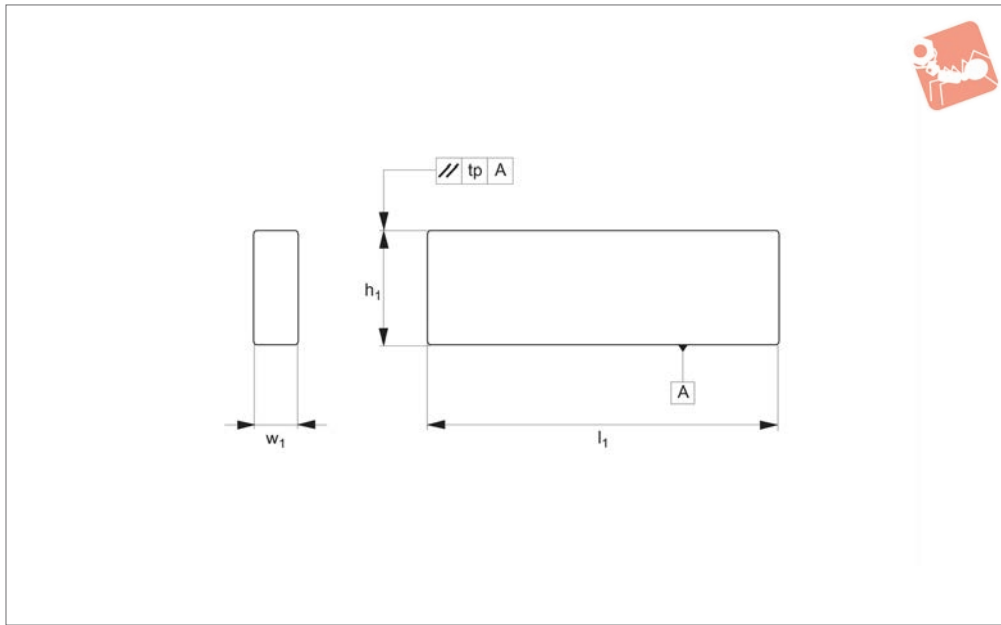
Indispensable for parallel support of components in vices and plates. Their high

degree of accuracy allows the combination of sizes.

Part no. 17220.W0000 is exactly the same as 17220.W0001, but is a lower cost, and lower toleranced set.

**Matched sets can be supplied on request for an extra charge.**

Order No.	Contents (pairs) $h_1 \times w_1 \times l_1$	$h_1$ Standard tolerance	$h_1$ - Pair tolerance $tp$	Weight g
17220.W0001	14x10x150	$\pm 0,004$	$\pm 0,004$	10900
	16x10x150			
	18x10x150			
	20x10x150			
	22x10x150			
17220.W0000	as per 17220.W0001 but with lower tolerances	$\pm 0,2$ (to 30mm) $\pm 0,3$ (>30mm)	$\pm 0,010$	10600



## 17320

SUPPORTS & STOPS

### Material

Steel, case-hardened and finely ground in pairs.

### Technical Notes

The thickness of these parallels matches the slot width on machine tables (tolerance H8).

range H8).

Tolerances:

$h_1$  (height) pair tolerance  $tp = IT5$ .

$h_1$  (height) standard (single) tolerance to DIN ISO 2768m.

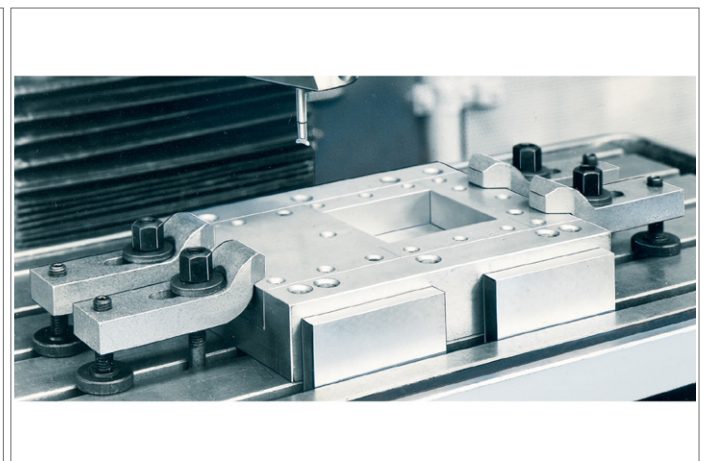
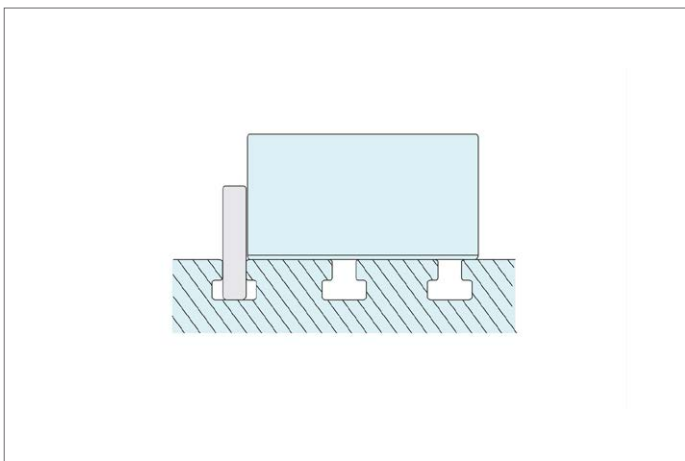
$w_1$  (width) standard (single) tolerance = h7

Other dimensions to DIN ISO 2768m.

### Tips

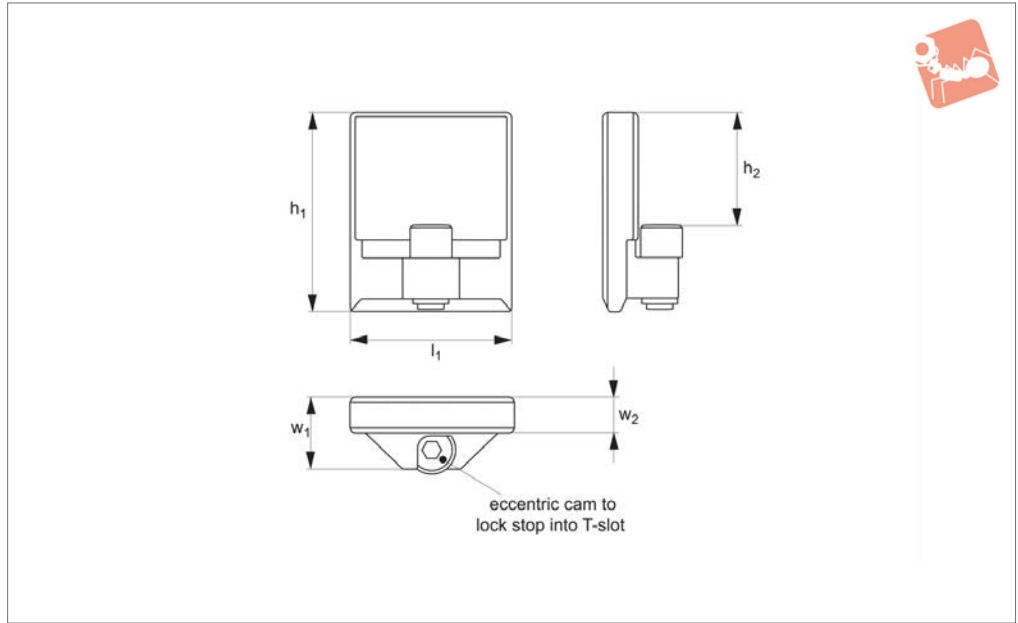
Ideally used for stops on small and medium machines. They allow rapid alignment of the workpiece to the table.

Order No.	$h_1$	$l_1$	Pair tolerance $h_1$ tp	Standard tolerance $h_1$ DIN 7168m	$w_1$	$w_1$ tol. h7	Weight/pair g
17320.W0008	25	100	0.009	$\pm 0,2$	8	-0.015	315
17320.W0010	32	100	0.011	$\pm 0,3$	10	-0.015	500
17320.W0012	40	100	0.011	$\pm 0,3$	12	-0.018	750
17320.W0014	50	100	0.011	$\pm 0,3$	14	-0.018	1100
17320.W0016	50	160	0.011	$\pm 0,3$	16	-0.018	2000
17320.W0018	63	160	0.013	$\pm 0,3$	18	-0.018	2850
17320.W0020	63	160	0.013	$\pm 0,3$	20	-0.021	3170
17320.W0022	80	160	0.013	$\pm 0,3$	22	-0.021	4400
17320.W0024	80	160	0.013	$\pm 0,3$	24	-0.021	4800
17320.W0028	100	160	0.015	$\pm 0,3$	28	-0.021	7000





## 17400



### Material

Steel, ground and hardened.

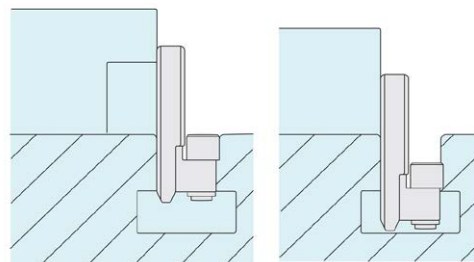
For machine T-slots from 12mm to 22mm.

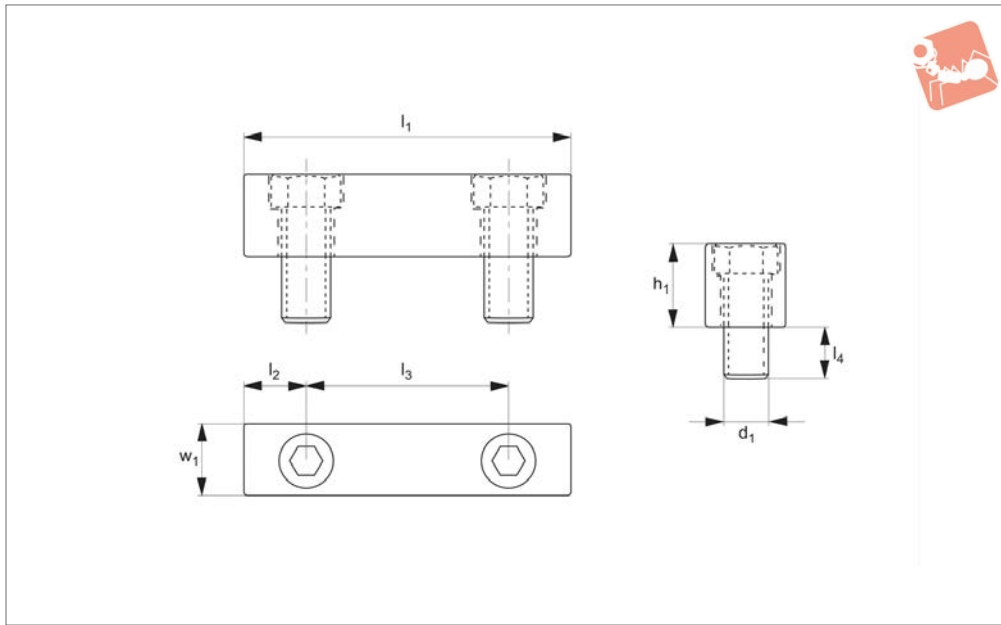
Position stop in machine slot, actuate the eccentric cam to lock in place.

### Technical Notes

Compact, strong and easily removable.

Order No.	$w_2$	$h_1$	$h_2$	$l_1$	Slot size $w_1$
17400.W0020	6.0	33	17	25	12
17400.W0025	6.0	36	20	30	14
17400.W0030	8.0	40	20	30	16
17400.W0035	9.8	40	21	40	18
17400.W0045	12.0	55	27	50	22





## 17403

SUPPORTS & STOPS

### Material

Low carbon steel, precision ground square.  
Mounting screws included.

### Technical Notes

The locating rails can be machined and are ideal for using with our machinable

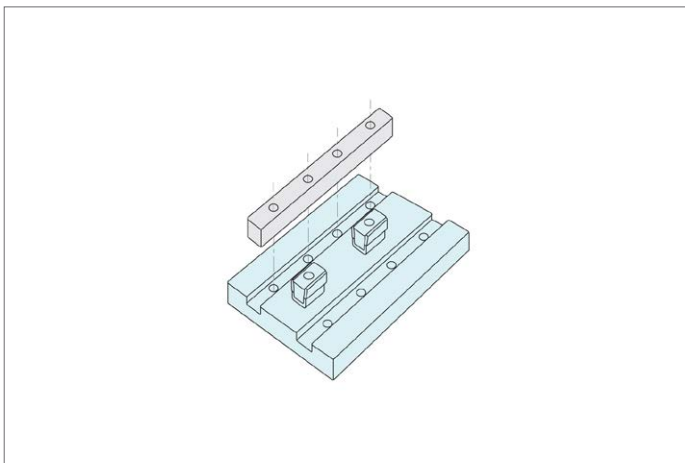
clamps.

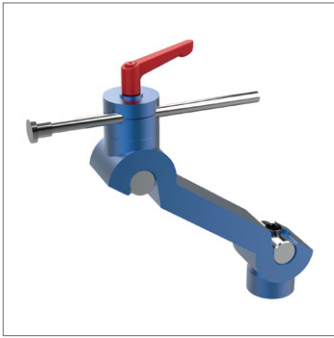
### Important Notes

1. Mill a slot to locate the rail. Depth of slot will determine rail height.
2. Drill and tap the required holes.
3. For better rigidity the rail should be

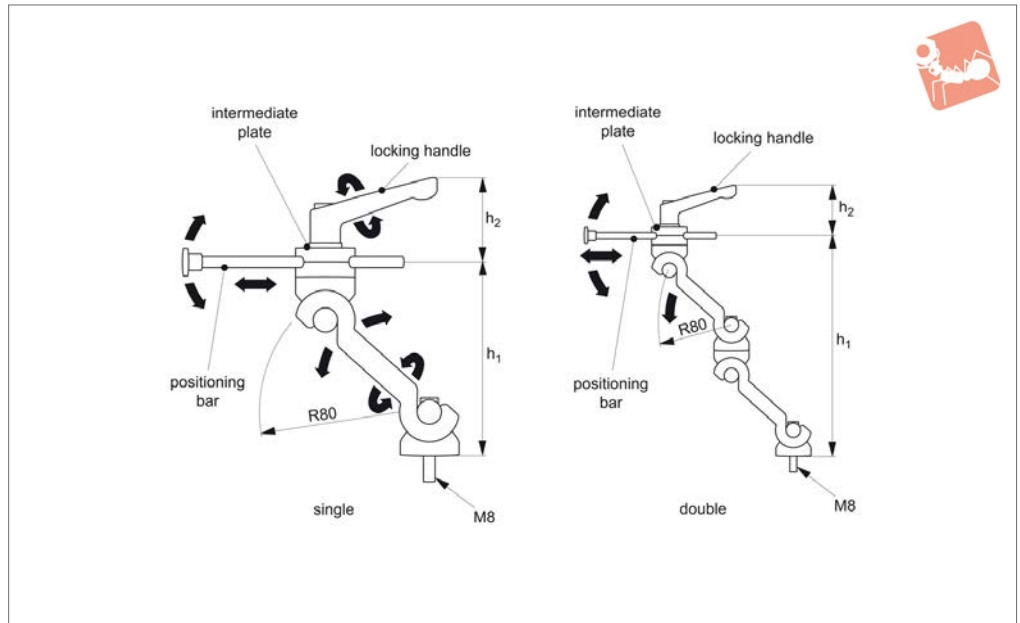
4. If rails are to be machined to hold round pieces, the clamps should be mounted and both rail and clamps machined at the same time.

Order No.	$w_1$ +0.00 -0.01	$d_1$	$h_1$	$l_1$	$l_2$	$l_3$	$l_4$	No. of holes	Weight g
17403.W0200	15	M 6	12	50	15	20	11	2	68.0
17403.W0210	15	M 6	12	100	20	30	11	3	140.6
17403.W0220	15	M 6	12	150	30	30	11	4	208.7
17403.W0240	15	M 6	12	250	25	50	11	5	353.8
17403.W0260	24	M10	18	75	20	35	18	2	258.5
17403.W0280	24	M10	18	150	30	30	18	4	512.6
17403.W0300	24	M10	18	250	25	50	18	5	848.2





**17405**

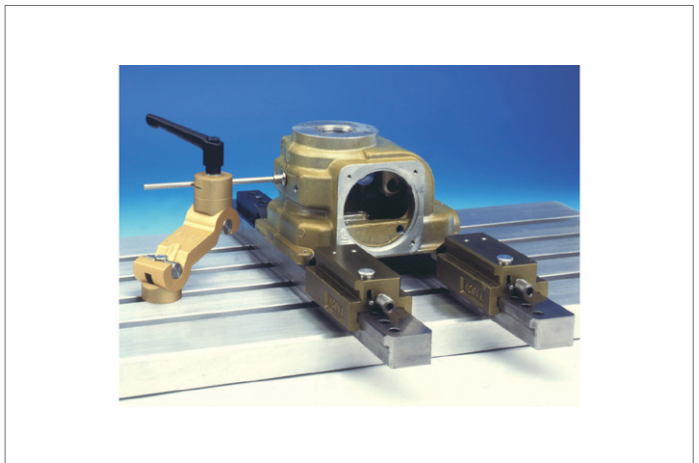
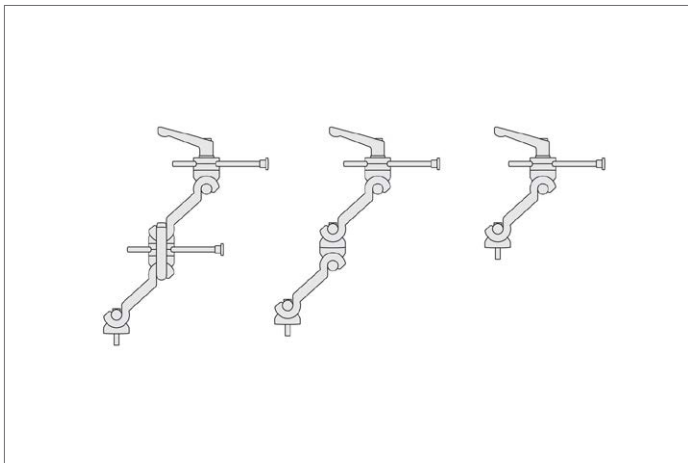


### Technical Notes

Three dimensional, fully adjustable end stops for milling machines, and vices.

Can also be used as a support to minimise work-piece vibration.

Order No.	Bar dia.	Height adj. min.   max.	$h_1$	$h_2$	Type
17405.W0420	6x150	0-150	145	60	Single
17405.W0430	6x150	0-300	300	60	Double
17405.W0710	-	-	-	-	Intermediate Plate
17405.W0720	-	-	-	-	Locking Handle





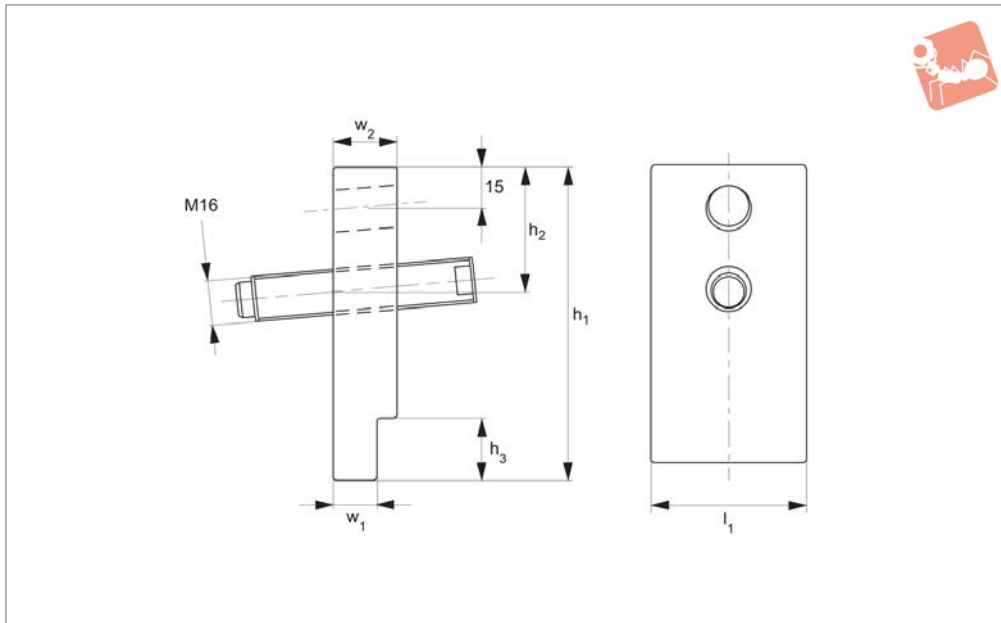


# Heavy Duty Side Stop

adjustable



## Supports & Stops



**17420**

SUPPORTS & STOPS

### Material

Steel, tempered, with two threaded holes M16, and adjustable set screw M16x80.

on slotted tables. The side stop slips into the T-slot and locks when the adjusting bolt comes into contact with the workpiece.

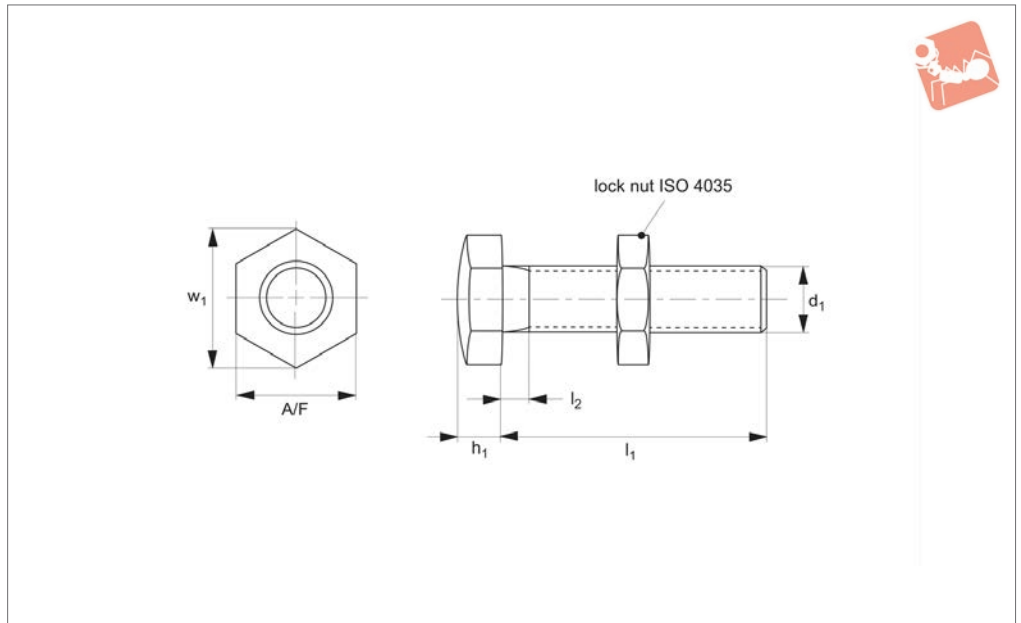
### Technical Notes

Used to position long or heavy workpieces

Order No.	$w_2$	$h_1$	$h_2$	$h_3$	$l_1$	Slot $w_1$	Weight g
17420.W0018	20	100	40	20	50	18	805
17420.W0020	25	125	40	30	80	20	1880
17420.W0022	25	125	40	30	80	22	1920
17420.W0024	32	150	65	40	100	24	3515
17420.W0028	32	150	65	40	100	28	3645
17420.W0036	40	160	65	50	120	36	4870



## 18300



SUPPORTS & STOPS

### Material

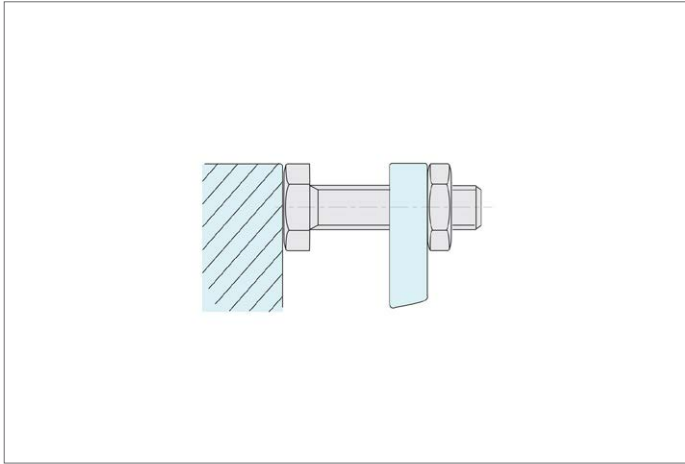
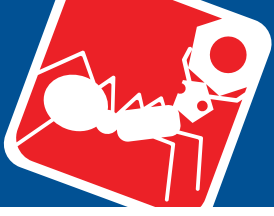
Bolt: steel, blackened and with a hardened head. Tensile strength 500N/mm<sup>2</sup>.

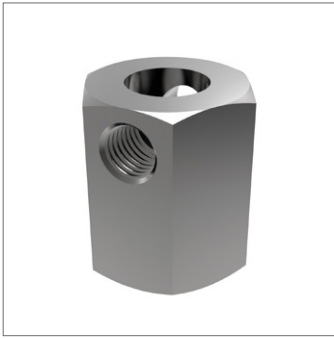
and rounded head which can be used as support or setting bolt as an end stop. These bolts are normally used together with a locknut.

### Technical Notes

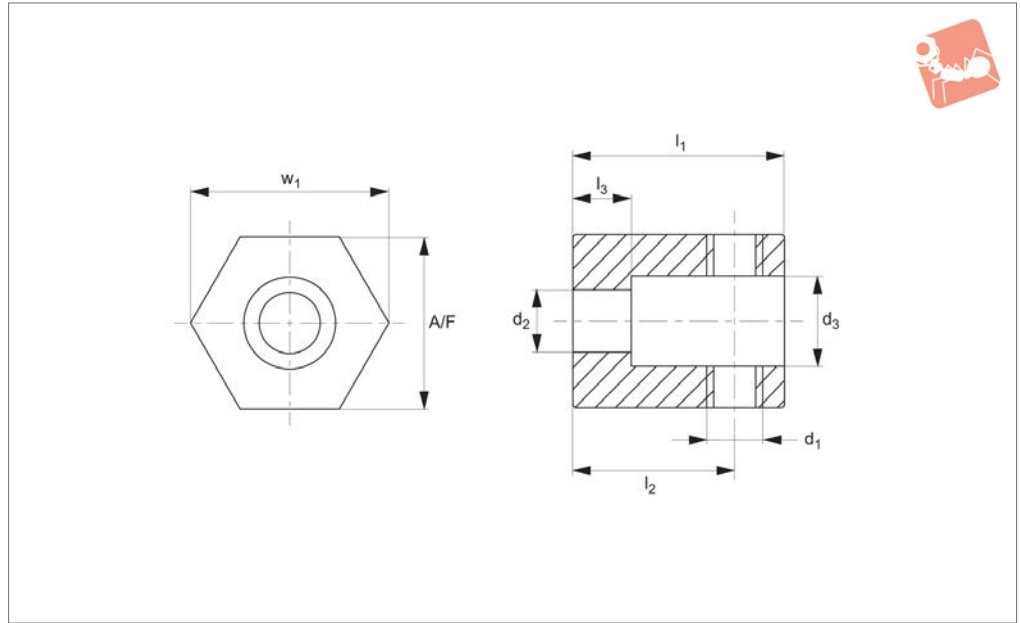
Setting bolts are produced with a hardened

Order No.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	h <sub>1</sub>	w <sub>1</sub>	A/F
18300.W0031	M 3	10	2	2.0	6.4	5.5
18300.W0032	M 3	20	2	2.0	6.4	5.5
18300.W0033	M 3	30	2	2.0	6.4	5.5
18300.W0041	M 4	10	2	2.8	8.1	7.0
18300.W0042	M 4	20	2	2.8	8.1	7.0
18300.W0043	M 4	30	2	2.8	8.1	7.0
18300.W0051	M 5	20	2	3.5	9.2	8.0
18300.W0052	M 5	30	2	3.5	9.2	8.0
18300.W0053	M 5	40	2	3.5	9.2	8.0
18300.W0061	M 6	30	3	4.0	11.5	10.0
18300.W0062	M 6	40	3	4.0	11.5	10.0
18300.W0063	M 6	50	3	4.0	11.5	10.0
18300.W0081	M 8	30	4	5.5	15.0	13.0
18300.W0082	M 8	40	4	5.5	15.0	13.0
18300.W0083	M 8	50	4	5.5	15.0	13.0
18300.W0101	M10	40	5	7.0	19.6	17.0
18300.W0102	M10	50	5	7.0	19.6	17.0
18300.W0103	M10	60	5	7.0	19.6	17.0
18300.W0104	M10	70	5	7.0	19.6	17.0
18300.W0121	M12	40	5	8.0	21.9	19.0
18300.W0122	M12	50	5	8.0	21.9	19.0
18300.W0123	M12	60	5	8.0	21.9	19.0
18300.W0124	M12	70	5	8.0	21.9	19.0
18300.W0161	M16	50	6	10.0	27.7	24.0
18300.W0162	M16	60	6	10.0	27.7	24.0
18300.W0163	M16	70	6	10.0	27.7	24.0
18300.W0164	M16	80	6	10.0	27.7	24.0





30400



**Material**

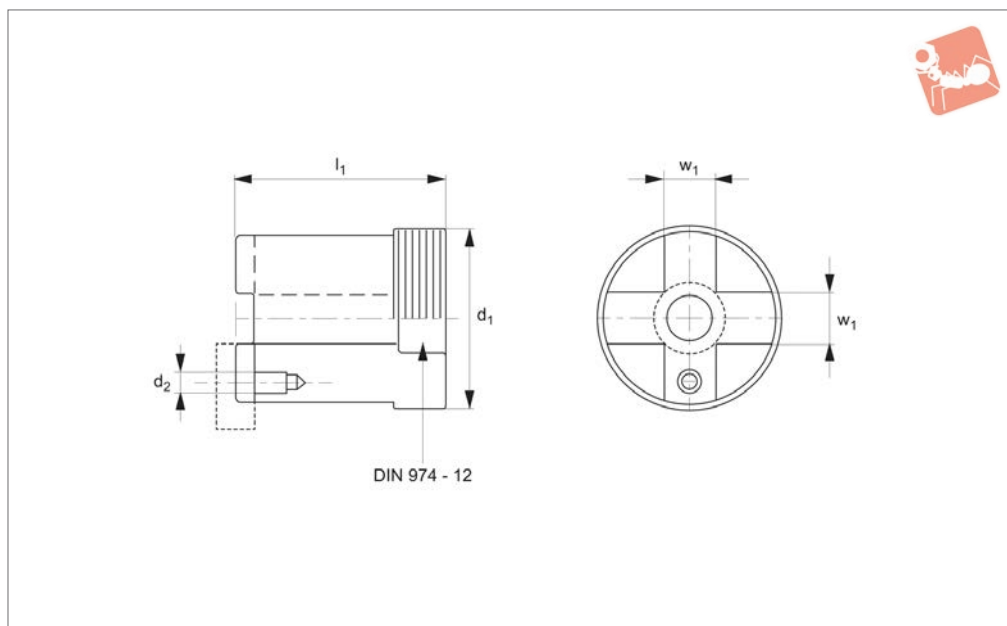
Steel, heat-treated, blackened.

34500 and thrust pads no. 34520 - used as adjustable stops.

**Technical Notes**

Used in conjunction with grub screws no.

Order No.	w <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	A/F	Weight g
30400.W0045	25.4	M 8	8.4	14	26	20	8	22	55
30400.W0145	40.0	M12	13.0	19	44	34	12	36	280



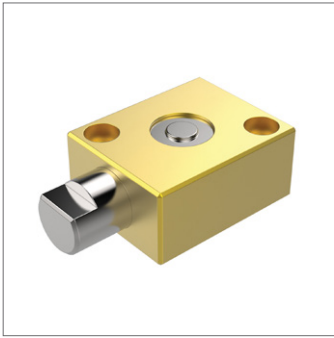
### 30420

SUPPORTS & STOPS

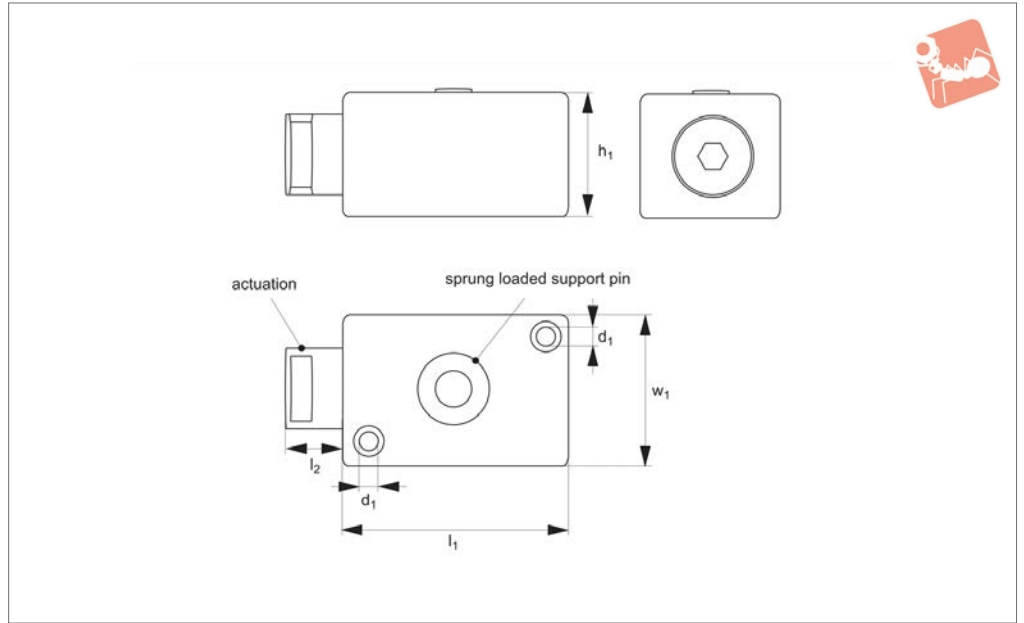
#### Material

Steel, case-hardened and ground.

Order No.	$w_1$ tol. H7	$d_1$ $\pm 0.01$	$d_2$	$l_1$	Weight g
30420.W0050	14	50	M 6	60	750



**11090**

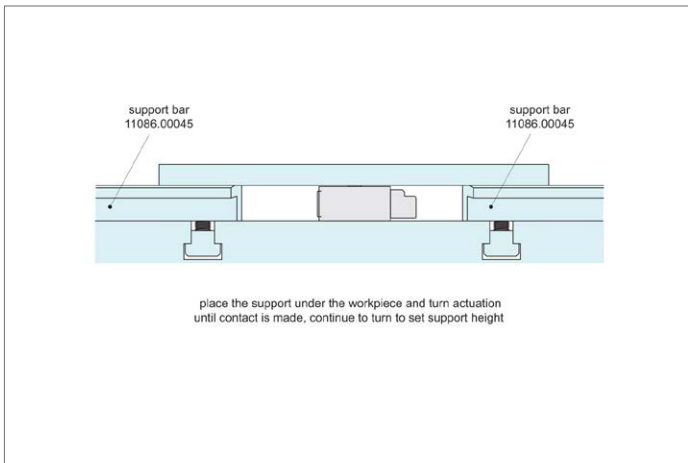


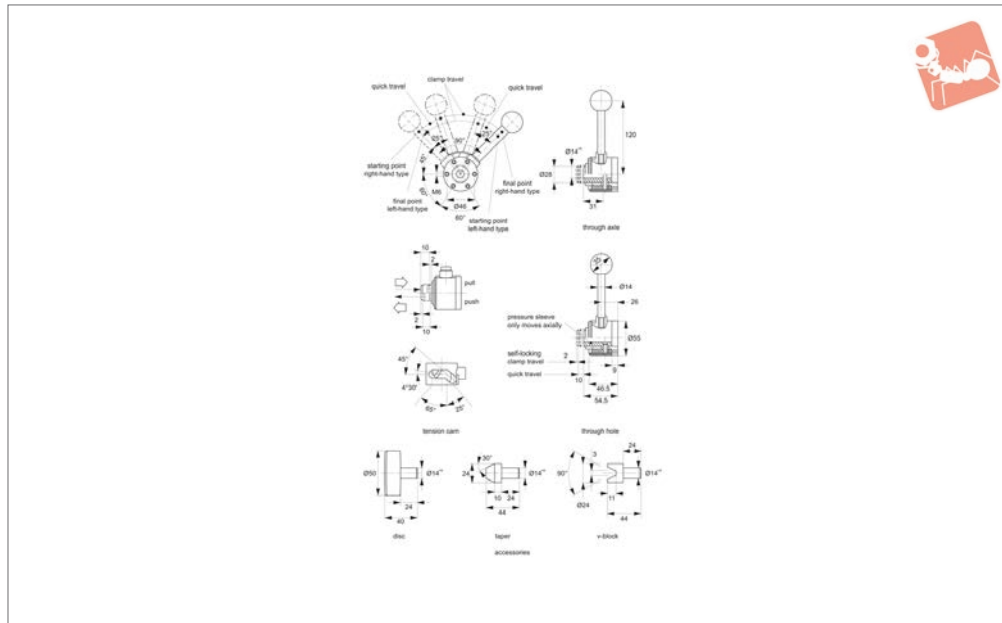
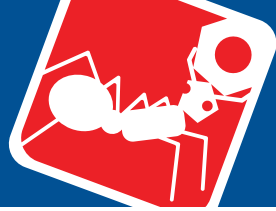
**Tips**  
Eliminates workpiece chatter and vibration during machining.

Easy to actuate; locate and fix beneath workpiece, turn actuation handle and sprung loaded support will come into

contact with workpiece. Lock handle to set support.

Order No.	Support height	$w_1$	$d_1$	$l_1$	$l_2$
11090.W0060	28	45	6	56	20





## 12540

SUPPORTS & STOPS

### Material

Individual parts: steel, blackened.  
 Ball knob: duroplast (PF 31) DIN 7708, red.  
 Housing: thermoplastic, black.  
 Additional parts: steel, blackened.

### Technical Notes

Travel path/movement of approach 10mm, during which no clamping takes place.  
 Within the quick clamp travel of 2mm, self-

locking occurs in any position. Maximum clamping force allowed 4,9 kN.

### Through Axle Type:

Due to the cam axle running across the diameter of the pressure sleeve, depth of the pressure sleeve is limited to 31mm.

### Through Hole Type:

Depth of the pressure sleeve is not limited and is equal to equal to 45,5mm. Moun-

ting: via six M 6 x 9 threaded holes on its base.

### Tips

A compact clamping element for pull and push clamping which can be actuated by turning the tension cam.

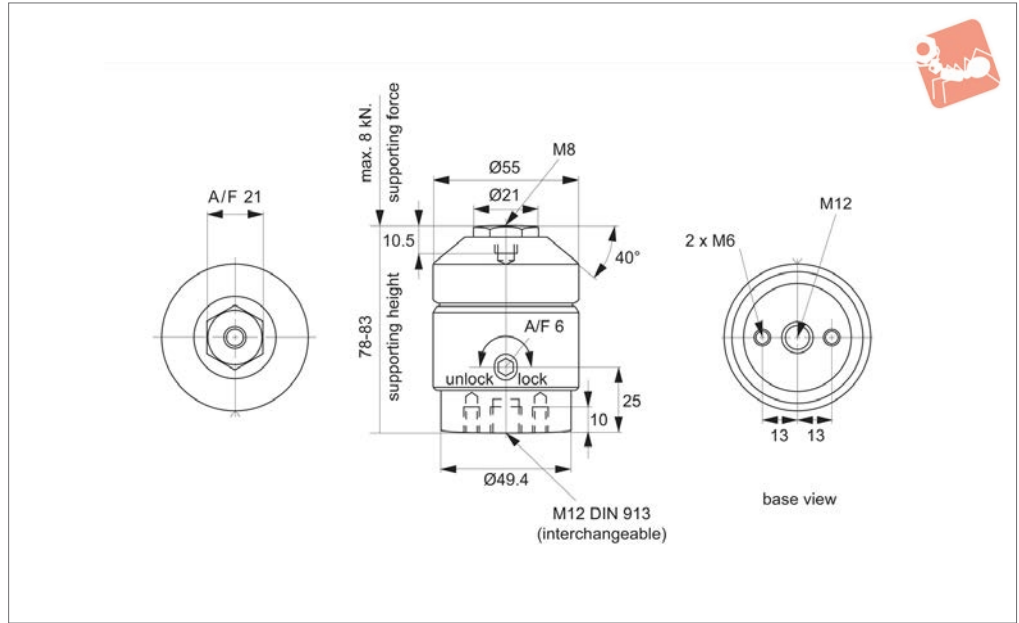
Used with:

12540.W0042 - W0046 Clamping devices.

Order No.	Type	Description	Clamping force kN max.	Weight g
12540.W0002	Through axle	Right push/left pull	4.9	751
12540.W0004	Through axle	Left push/right pull	4.9	749
12540.W0012	Through axle	Right push/left pull	4.9	745
12540.W0014	Through axle	Left push/right pull	4.9	750
12540.W0042	Accessories	Disc	-	270
12540.W0044	Accessories	Taper	-	85
12540.W0046	Accessories	Vee-block	-	82



## 12680



### Material

Body: steel case-hardened, nitrided, blackened and ground.  
Housing: aluminium, red anodised.

### Technical Notes

Used to support over determined clamping points, whilst minimising deformation of component. It also reduces vibration during machining.

By tuning on the lock function (max. 180° at 15Nm), the clamping mechanism locks the support pin without moving. The support element has supported the work-piece and is locked in place.

### Tips

#### Assembly:

Fix the support element (2x M6 thread) onto the device. Ensure the key activation is in required orientation.

Alternatively: Dismantle the M12 x 10 threaded pin and replace it by an M12x 30 threaded pin and assemble the support element with a spanner (A/F 21), e.g for T-slot mounting (no pin M12x 30 and T-nut 24000 M12x 14, grade 10, are parts of the standard supply volume. The support element can be recessed into a hole max. 16mm deep.

#### Operation:

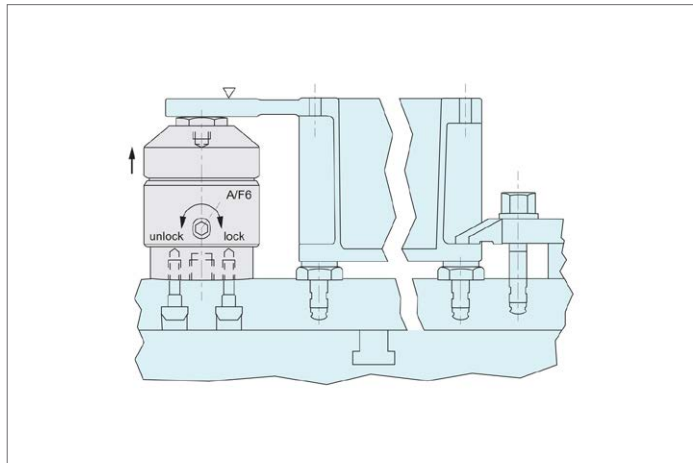
By turning the clamping cam (A/F 6 internal hexagon) on the outer surface of the re protective sleeve, the support pin contacts the workpiece with a slight spring

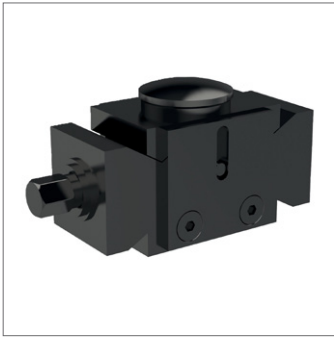
load.

1. By turning on (15Nm) as far as possible (lock), total of 180°, the clamping mechanism locks the support pin without moving. The support element has been placed onto the workpiece and locked.
2. If turned in the opposite directions (unlock), the clamping is released. If turned back as far as possible, i.e. total of 180° the support pin moves to the end position.

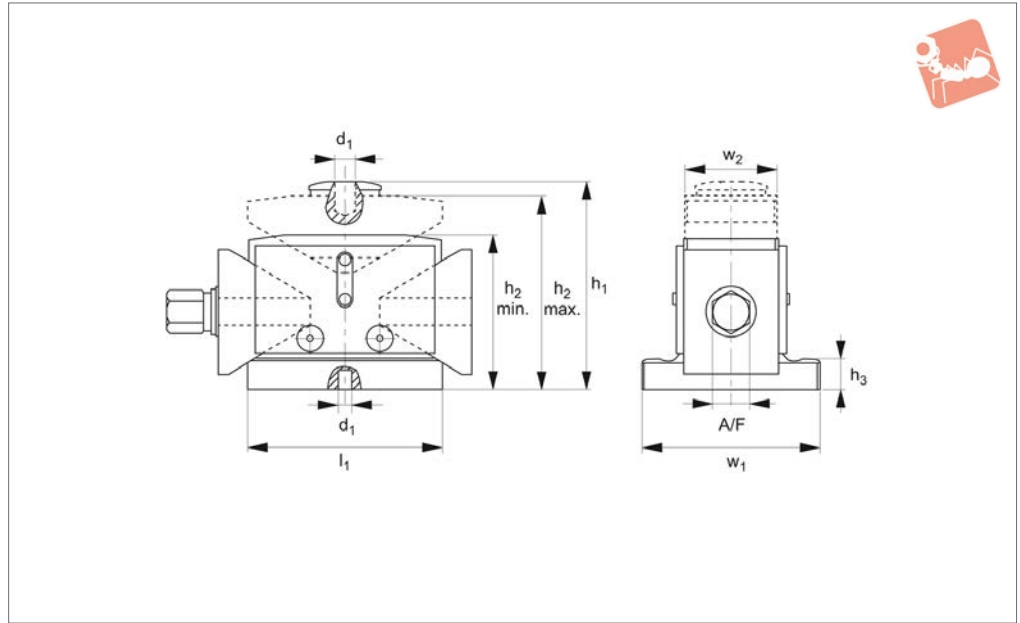
Order No.	Description	Stroke	Supporting force kN max.	Weight g
12680.W0400	Support Element	5	8	950







**15500**



**Material**

Spheroidal graphite, cast iron.  
Heat treated and burnished.  
Contact surfaces precision machined.

**Technical Notes**

Centering hole  $\varnothing 12\text{mm}$ .  
With loads up to 33% of the max. static

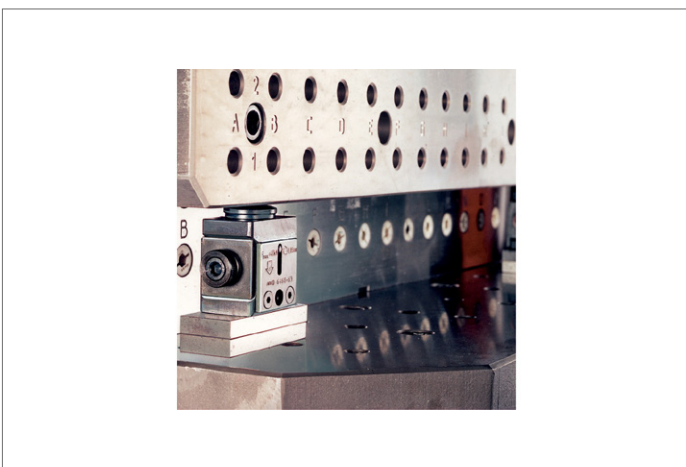
load, adjustment is easily made with a turn of screw. Allows fine adjustment to 0.1mm. See technical pages for the table of locating pad and support pad elements compatibility.

**Tips**

Particularly useful for precise positioning

and machining of large components on heavy duty machines. If necessary, an additional  $\varnothing 12\text{mm}$  locating hole in the base allows the wedge blocks to be located.

Order No.	Size	w <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub> min.	h <sub>2</sub> max.	d <sub>1</sub>	h <sub>3</sub>	l <sub>1</sub>	Static load kN max.	w <sub>2</sub>	A/F	Adj./ 360°	Weight g
15500.W0006	63	63	80	50	68	12	7	63	40	40	13	0.86	1700
15500.W0012	125	115	135	100	125	12	20	125	100	60	24	1.16	8600
15500.W0016	190	145	200	170	190	12	20	175	250	80	36	2.02	23750



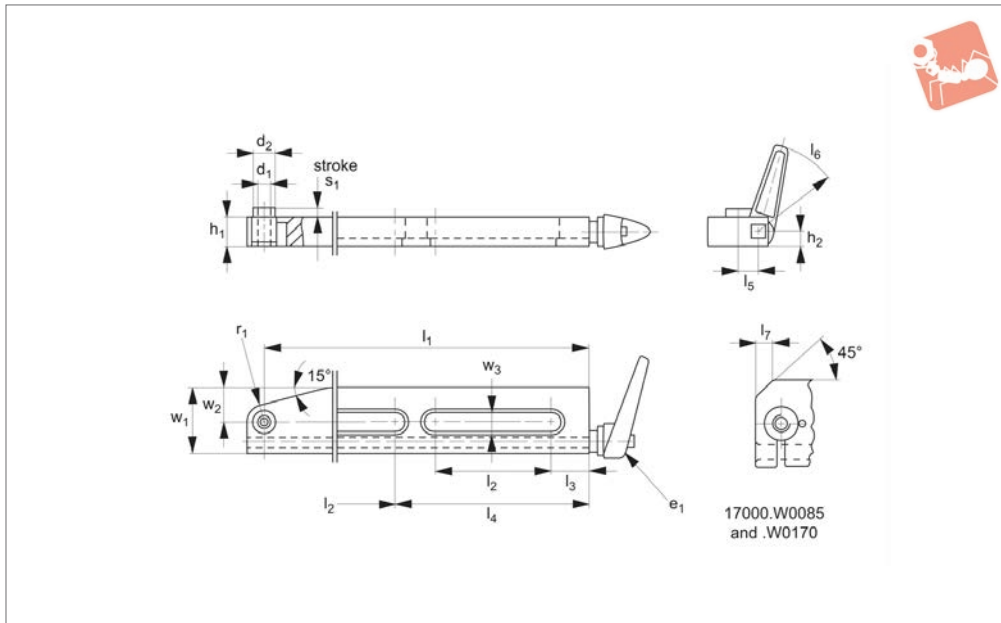


# Workpiece Supports

for support and to prevent workpiece chatter



# Supports & Stops



**17000**

SUPPORTS & STOPS

### Material

Support: steel, case-hardened and ground.  
Grip: die-cast zinc.

### Technical Notes

Used as support beneath workpieces to prevent chatter and vibration.

The supporting pin is applied with spring pressure to the workpiece and can be clamped in any desired position without the need to reach under the workpiece.

### Tips

Additional support to a three-point fixed

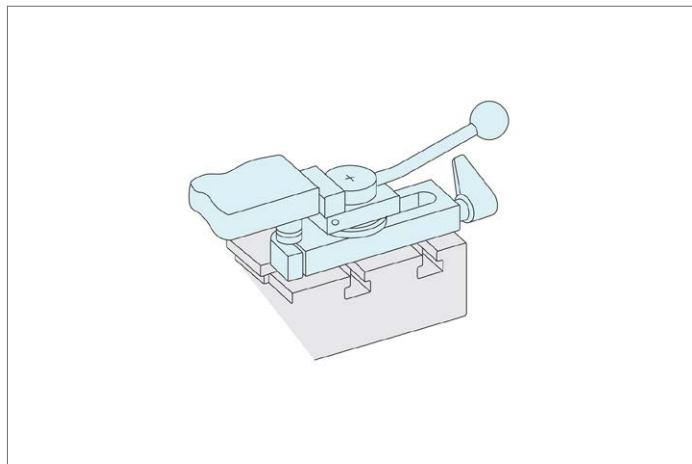
support. Threaded studs or levelling pads can be screwed into the female thread to set the required height.

Sizes .W0085 to W0170 have only one slot. 17000.W0450 is fitted with axial bearing clamping lever 74470.W0210.

Order No.	w <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>	Handle e <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	Weight g
17000.W0085	8.5	19.5	11.5	M 8	13	M 6x18	75	35	342
17000.W0150	13.0	24.0	14.0	M10	20	M 8x22	150	90	1159
17000.W0170	17.0	34.0	21.5	M16	26	M12x30	170	100	2534
17000.W0300	13.0	24.0	14.0	M10	20	M 8x22	300	100	2153
17000.W0450	25.0	40.0	25.0	M20	32	M10x25	387	110	7300

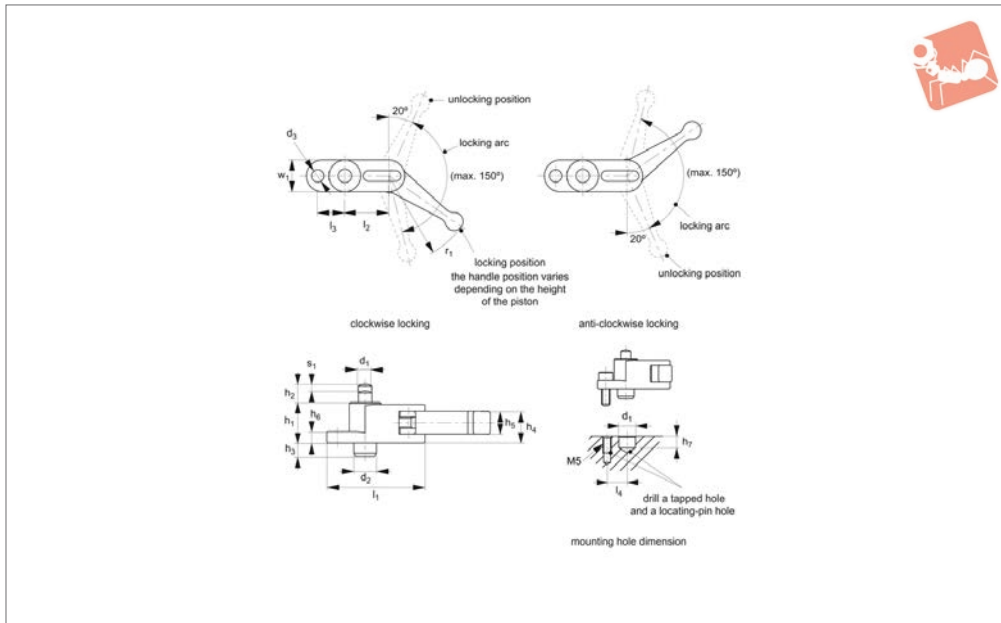
Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	r <sub>1</sub>	Load capacity kN max.	Stroke s <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>
17000.W0085	13	-	13	62	5	-	0.5	3	30	10
17000.W0150	20	-	17	74	-	15	2.5	6	50	25
17000.W0170	25	-	27	108	11	-	5.0	11	60	20
17000.W0300	30	160	17	74	-	15	2.5	6	50	25
17000.W0450	30	200	30	89	-	24	10.0	11	85	40





# Compact Work Supports with cam handle

## Supports & Stops



# 17002

SUPPORTS & STOPS

### Material

Body and pin: steel (S45C), black oxide finish.

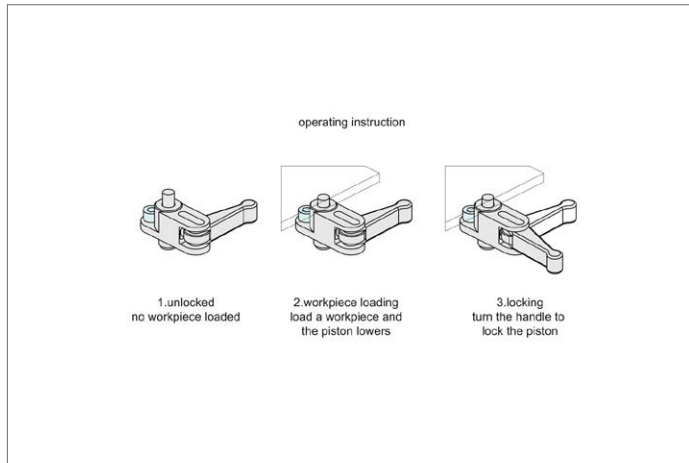
Piston: steel, black oxide finish, HRc 50-55. Cam handle: zinc die-cast, chrome plated.

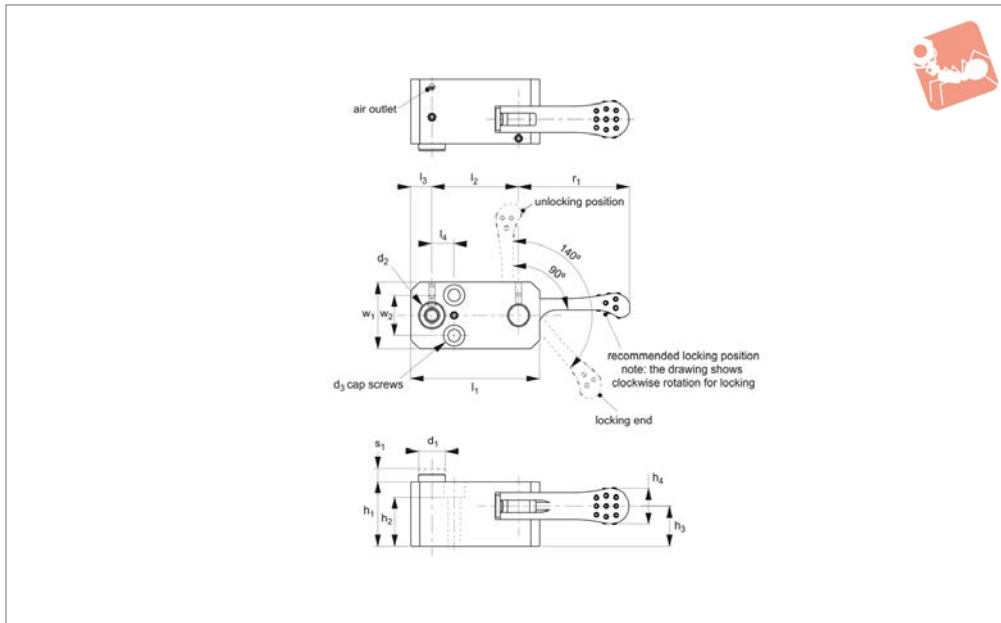
### Technical Notes

The built in disc spring prevent release.

Order No.	w <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub> +0.3 -0	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub>	Weight g
17002.W0018	14	18	8	6	10	5.5	10	6.0	14.5	10	76
17002.W0118	14	18	8	6	10	5.5	10	6.0	14.5	10	76
17002.W0025	18	25	10	10	14	5.5	14	9.5	18.5	13	140
17002.W0125	18	25	10	10	14	5.5	14	9.5	18.5	13	140

Order No.	h <sub>6</sub>	h <sub>7</sub>	Handle load N max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	r <sub>1</sub>	Locking direction	Locking mechanism	Piston spring force N	Stroke s <sub>1</sub>	Support capacity N max.
17002.W0018	5	7.0	80	43.5	19.5	12	12	39	Clockwise	Spiral cam, 4°	1,5-3	3	200
17002.W0118	5	7.0	80	43.5	19.5	12	12	39	Anticlockwise	Spiral cam, 4°	1,5-3	3	200
17002.W0025	5	10.5	100	50.4	22.4	14	14	50	Clockwise	Spiral cam, 4°	1,8-3	4	400
17002.W0125	5	10.5	100	50.4	22.4	14	14	50	Anticlockwise	Spiral cam, 4°	1,8-3	4	400





### 17003

SUPPORTS & STOPS

#### Material

Body: steel (S45C), black oxide finish.  
 Piston: steel (SK95), tempered and black oxide finish.  
 Locking pin: steel (S45C), tempered and black oxide finish.  
 Handle: steel (SCM440), tempered and black oxide finish.

#### Technical Notes

The built in disc spring prevent loosened locking.

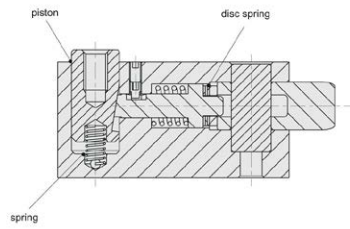
#### Tips

When you attach a support pad to the tapped hole through the shaft, lock the

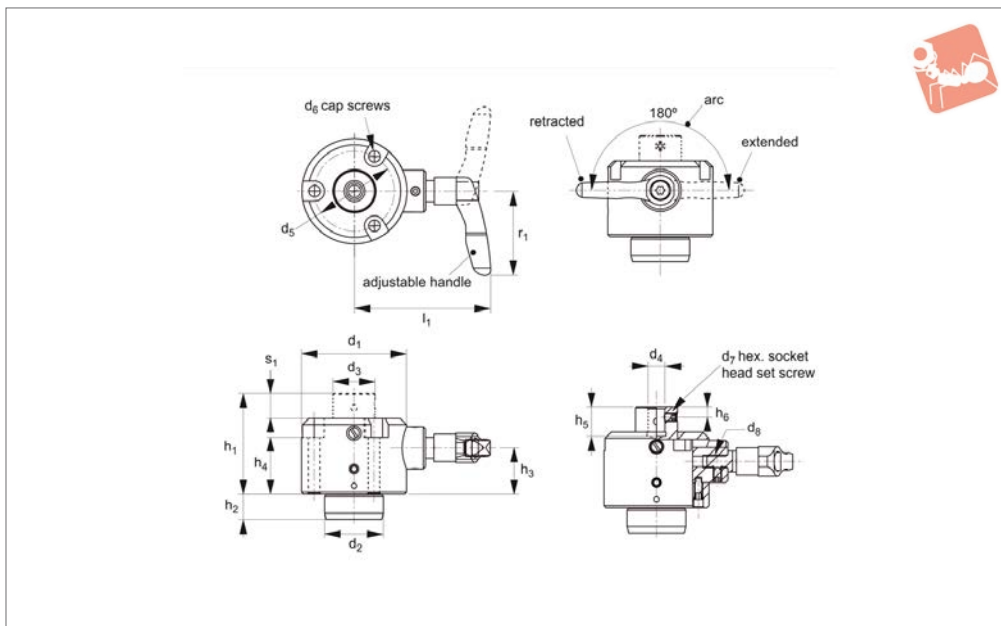
shaft in place to prevent damage on installation. To change locking direction loosen set screw, remove retaining pin, invert handle and reassemble.

Order No.	Capacity kN max.	w <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>3</sub>	h <sub>4</sub>	l <sub>1</sub>	Weight g
<b>17003.W0024</b>	0.5	25	24	19	10	M 5x8	M 4	14	14	52	213
<b>17003.W0029</b>	0.7	30	29	22	12	M 6x10	M 5	18	16	58	335
<b>17003.W0037</b>	0.9	38	37	25	16	M 8x15	M 6	23	19	75	738
<b>17003.W0042</b>	1.2	45	42	30	19	M10x15	M 8	26	24	85	1110

Order No.	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	r <sub>1</sub>	Locking mechanism	Piston spring force N	Stroke s <sub>1</sub>	w <sub>2</sub>	Allowable handle load N
<b>17003.W0024</b>	36	8	8	40	Spiral cam, 4°	0-6	5	15	80
<b>17003.W0029</b>	39	9.5	10	50	Spiral cam, 4°	0-6	6	18	100
<b>17003.W0037</b>	51	12	12	63	Spiral cam, 4°	0-7	8	24	150
<b>17003.W0042</b>	56	14.5	15	80	Spiral cam, 4°	0-11	10	28	200







### 17004.1

SUPPORTS & STOPS

#### Material

Body and piston: steel (S45C), tempered and black oxide finish.  
Crank shaft: steel (S45C), black oxide finish.

#### Technical Notes

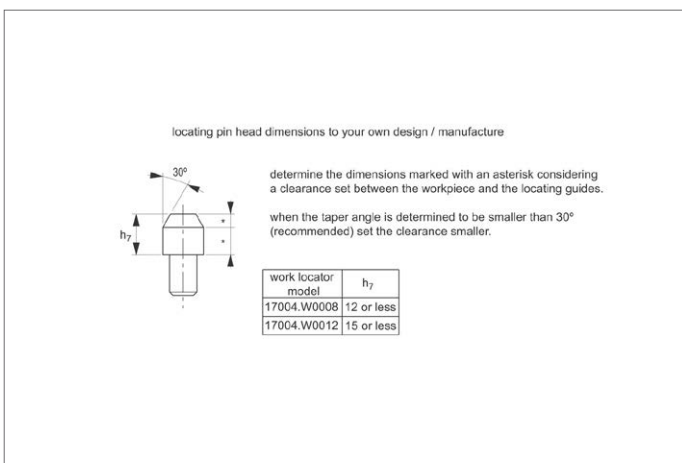
Can support heavy workpieces made from

steel or cast iron. No tools needed. The handle position is freely adjustable. The handle can be easily changed to act in a clockwise or anti clockwise direction. Different locating pins can be mounted depending on workpiece's locating holes. The piston stays locked when it is fully

extended or retracted until the handle is operated again.

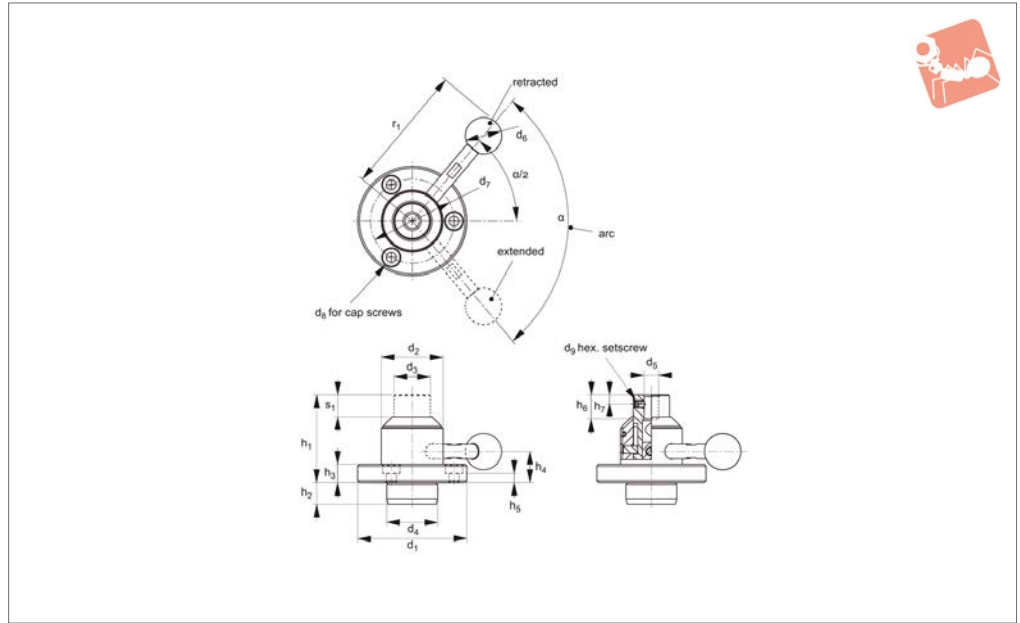
Order No.	$h_1$	$h_2$	$d_1$	$d_2$ tol. g6	$d_3$	$d_4$ tol. G7	$d_5$	$d_6$	$d_7$	$d_8$	Weight g
17004.W0008	48	12	50	28	20	8	38	M 5	M 4x5	M 6x12	590
17004.W0012	61	14	65	42	30	12	52	M 6	M 5x8	M 8x7	1310

Order No.	$h_3$	$h_4$	$h_5$	$h_6$	$l_1$	$r_1$	Stroke $s_1$	Allowable handle load N	Workpiece weight kg max.
17004.W0008	22	27	14	5	65.0	40	12	170	250
17004.W0012	26	31	16	6	87.5	65	15	210	300





## 17004.2



### Material

Body: steel (S45C), tempered and black oxide finish.

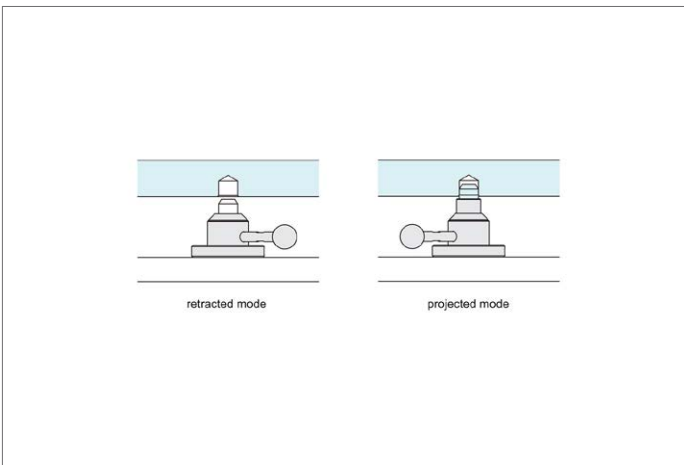
Piston: steel (SCM440), tempered and black oxide finish.

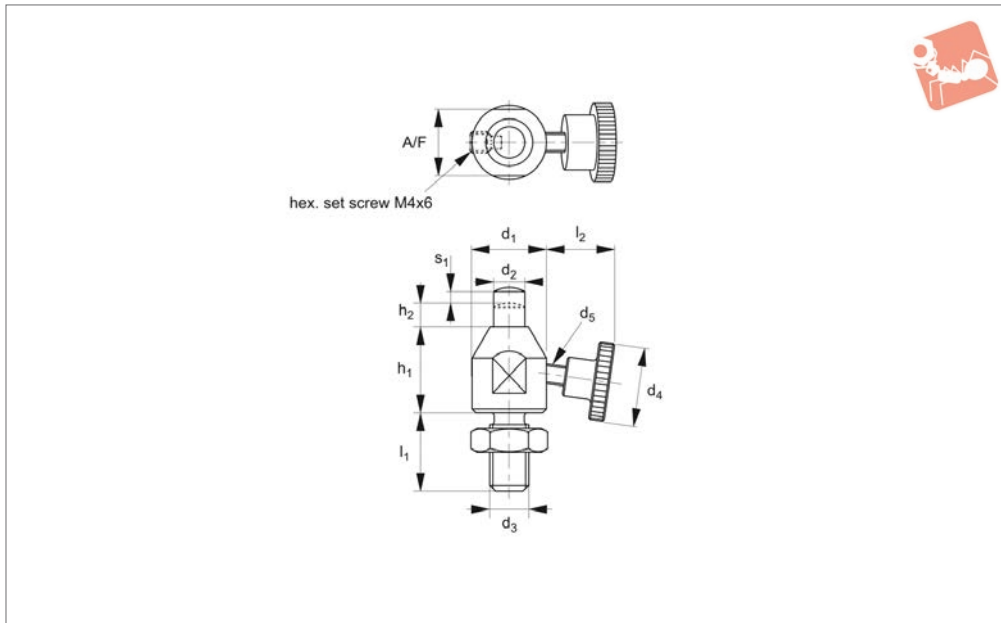
Ball knob: ABS resin, black.

Handle: steel (S45C), black oxide finish.

Order No.	$h_1$	$h_2$	$d_1$	$d_2$	$d_3$	$d_4$ tol. G6	$d_5$ tol. G7	$d_6$	$d_7$	$d_8$	Weight g
17004.W0108	48	12	60	34	20	28	8	20	46	M 5	420
17004.W0112	61	14	80	48	30	42	12	25	63	M 6	1040

Order No.	$d_9$	$h_3$	$h_4$	$h_5$	$h_6$	$h_7$	$r_1$	Stroke $s_1$	Allowable handle load N	Workpiece weight kg max.	$\alpha$
17004.W0108	M 4x5	10	17	5	13	5	71	12	150	250	100°
17004.W0112	M 6x8	13	23	7	15	8	94	15	200	300	90°





### 17005.1

SUPPORTS & STOPS

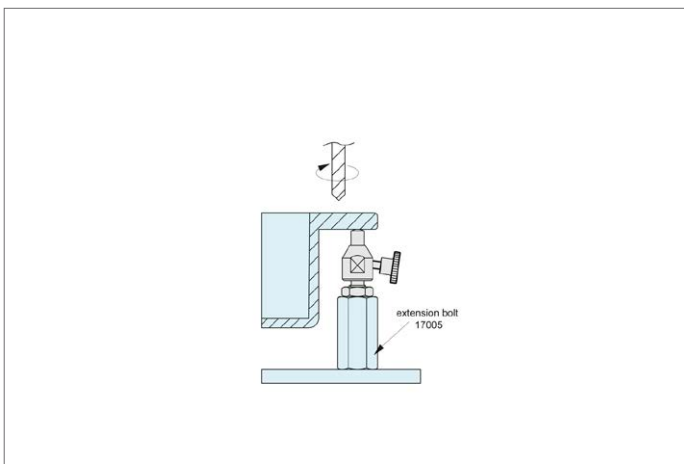
#### Material

oxide finish.

Body: steel (C45), black oxide finish.

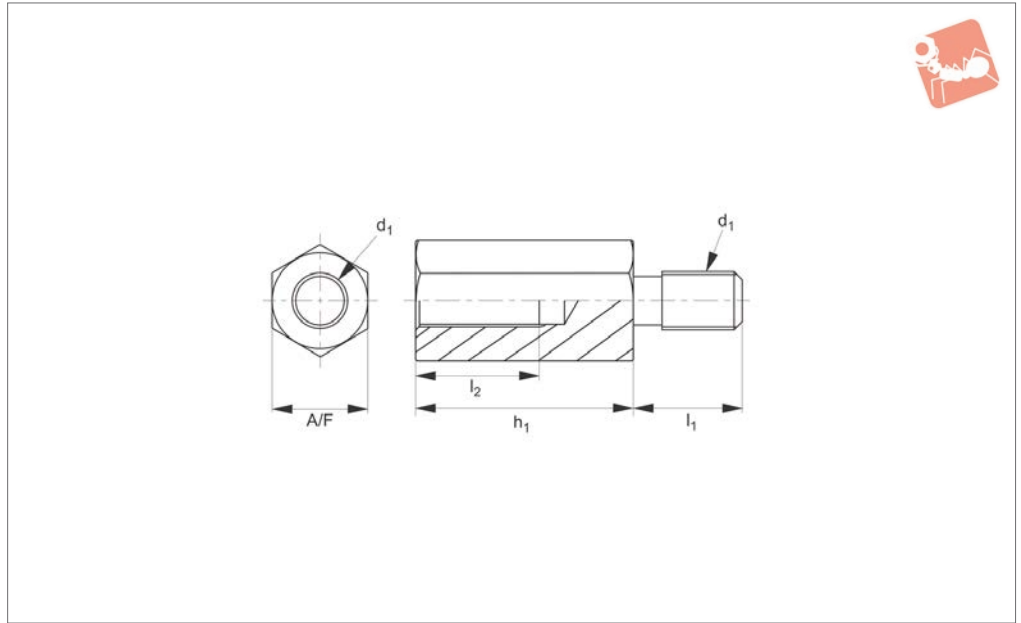
Piston: steel (42CrMo), heat treated, black

Order No.	$h_1$	$h_2$	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	$l_1$	$l_2$	Piston spring force N	Stroke $s_1$	Support capacity kN	A/F	Weight g
<b>17005.W0018</b>	18	5	15	6	M 8x1,25	16	M 4x16	16	13,2	1,5~3,0	3	0,2	13	36
<b>17005.W0022</b>	22	6	19	8	M10x1,50	20	M 5x20	20	16,3	1,8~3,0	4	0,3	17	72
<b>17005.W0025</b>	25	6	22	10	M12x1,75	24	M 6x25	24	22,3	1,8~3,0	4	0,4	19	150





**17005.2**

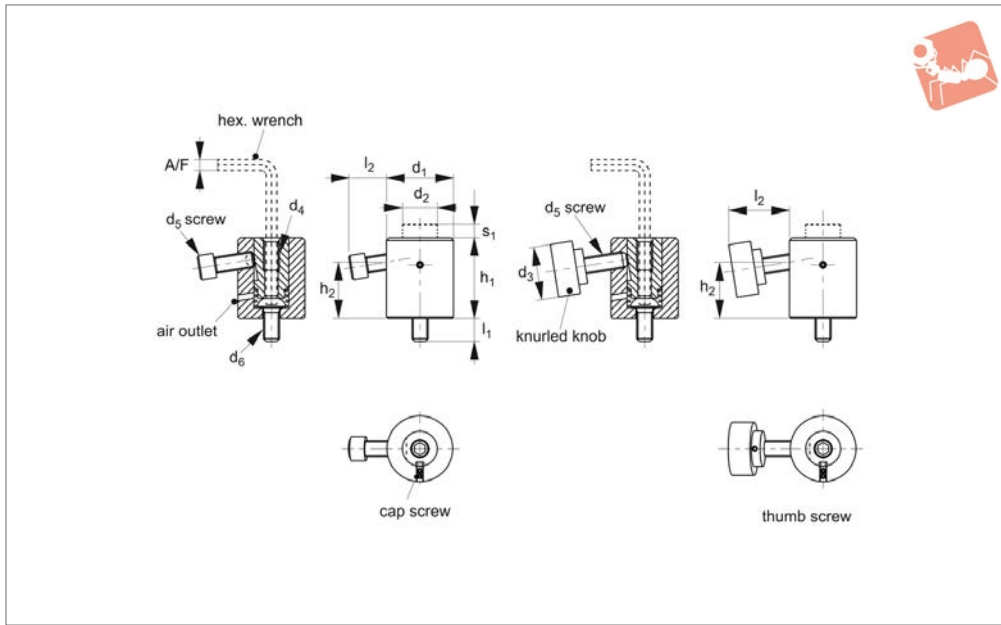


SUPPORTS & STOPS

**Material**

Steel (C45), tempered and black oxide finish.

Order No.	$h_1$	$d_1$	$l_1$	$l_2$	A/F	Weight g
17005.W0825	25	M 8x1,25	13	16	13	25
17005.W0832	32	M 8x1,25	13	16	13	35
17005.W0840	40	M 8x1,25	13	16	13	45
17005.W1032	25	M10x1,50	16	20	17	60
17005.W1050	32	M10x1,50	16	20	17	95
17005.W1075	40	M10x1,50	16	20	17	145
17005.W1232	25	M12x1,75	18	20	22	95
17005.W1250	32	M12x1,75	18	20	22	165
17005.W1275	40	M12x1,75	18	20	22	250



### 17008

SUPPORTS & STOPS

#### Material

Body: steel (C45), black oxide finish.  
Piston: steel (C45), tempered, black oxide finish.

#### Technical Notes

The positive locking mechanism allows the

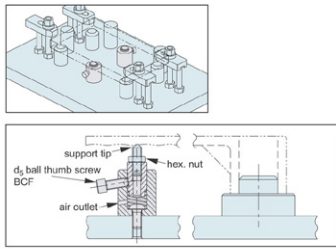
cap screw style to offer high support capacities.

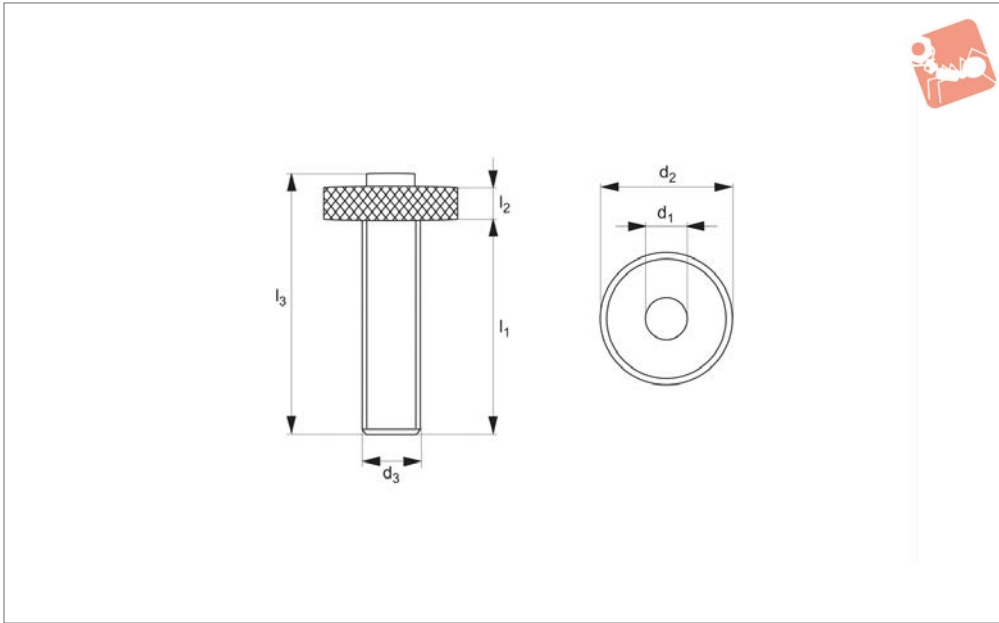
#### Tips

When you attach a support tip to the tapped hole through the shaft, tighten the shaft and secure it to prevent damage.

Order No.	Type	$h_1$	$h_2$	$d_1$	$d_2$	$d_3$	$d_4$	Weight g
17008.W0033	Cap screw	33	22.0	28	14	-	M 6x12	150
17008.W0042	Cap screw	42	28.5	35	19	-	M 8x16	300
17008.W0050	Cap screw	50	34.0	42	22	-	M10x20	540
17008.W0060	Cap screw	60	42.0	50	26	-	M12x24	865
17008.W0070	Cap screw	70	47.0	60	33	-	M16x32	1390
17008.W0233	Thumb screw	33	22.0	28	14	24	M 6x12	185
17008.W0242	Thumb screw	42	28.5	35	19	30	M 8x16	360
17008.W0250	Thumb screw	50	34.0	42	22	36	M10x20	620
17008.W0260	Thumb screw	60	42.0	50	26	40	M12x24	1020

Order No.	$d_5$	$d_6$	$l_1$	$l_2$	Piston spring force N	Stroke $s_1$	Support capacity kN max.	Torque to Nm max.	A/F
17008.W0033	M 6x16	M 6	10	14.1	10~22	6	4.0	7.5	4
17008.W0042	M 8x20	M 8	15	18.8	10~27	10	6.0	14.0	5
17008.W0050	M10x25	M10	14	23.8	14~28	10	7.5	18.0	6
17008.W0060	M12x30	M12	17	28.5	15~30	10	9.0	22.0	8
17008.W0070	M12x30	M16	22	26.5	15~35	10	9.0	25.0	10
17008.W0233	M 6	M 6	10	22.7	10~22	6	0.6	1.0	4
17008.W0242	M 8	M 8	15	27.7	10~27	10	0.7	1.2	5
17008.W0250	M10	M10	14	31.8	14~28	10	0.7	1.5	6
17008.W0260	M12	M12	17	36.8	15~30	10	0.8	2.0	8





## 18420

SUPPORTS & STOPS

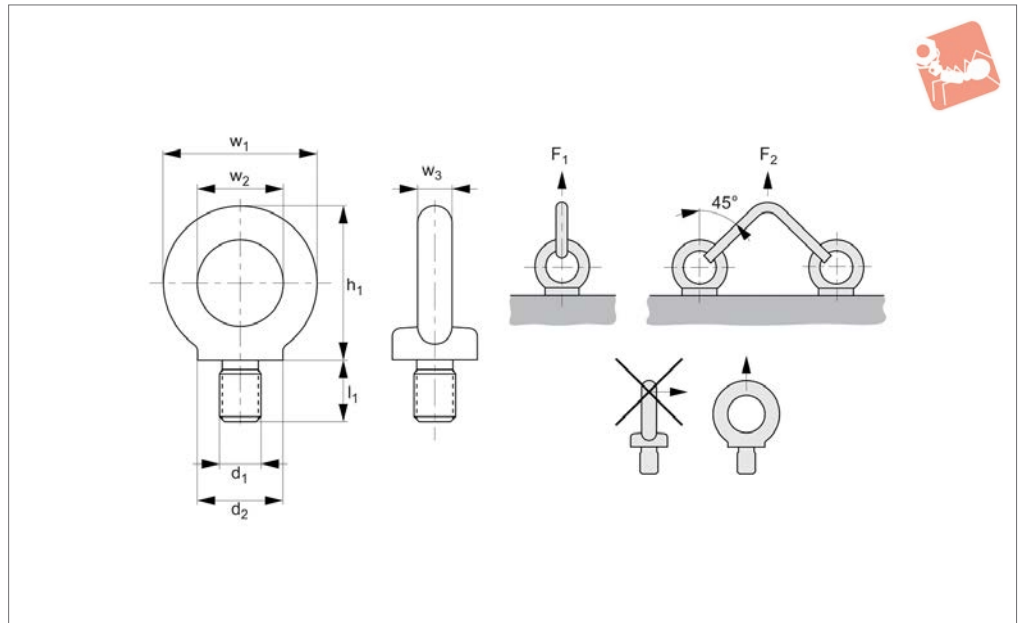
### Material

Steel, heat-treated.

Order No.	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Weight g
18420.W0001	12	28	M12	46	8	58	70
18420.W0002	16	34	M16	57	9	72	150



## 18863



### Material

Forged steel (C15E) annealed and zinc plated. Contact face machined. CE marked.

### Technical Notes

To DIN 580.  
When using lifting eye bolts it is critical to ensure that the face is in firm contact with the mating surface.  
These lifting bolts are generally installed and remain on a piece of equipment for the

purpose of transporting them. They are not for repeated lifting use - if this is required our swivelling lifting bolt range should be used.

### Tips

Maximum load values are only applicable when the thread is fully screwed in, and the material it is being used in is as least as strong as the that of the bolt.  
Temperature range -20°C to +200°C.

$F_1$  and  $F_2$  values given are for steel and cast iron components.

### Important Notes

Not to be used at lift angles of greater than 45° or with swivelling loads.  
**Please refer to the safety documentation before using this part.**  
**Supplied with certificate and operating instructions.**

Order No.	Thread	d <sub>1</sub>	d <sub>2</sub>	w <sub>1</sub>	l <sub>1</sub>	h <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	F <sub>1</sub> kg max.	F <sub>2</sub> kg max.	Weight kg
18863.W0006	Coarse	M 6	20	36	13.0	36	20	8	70	50	0.05
18863.W0008	Coarse	M 8	20	36	13.0	36	20	8	140	95	0.06
18863.W0010	Coarse	M10	25	45	17.0	45	25	10	230	170	0.11
18863.W0012	Coarse	M12	30	54	20.5	53	30	12	340	240	0.18
18863.W0016	Coarse	M16	35	63	27.0	62	35	14	700	500	0.28
18863.W0020	Coarse	M20	40	72	30.0	71	40	16	1200	830	0.45
18863.W0024	Coarse	M24	50	90	36.0	90	50	20	1800	1270	0.74
18863.W0030	Coarse	M30	65	108	45.0	109	60	24	3200	2300	1.66
18863.W0036	Coarse	M36	75	126	54.0	128	70	28	4600	3300	2.65
18863.W0042	Coarse	M42	85	144	63.0	147	80	32	6300	4500	4.03
18863.W0048	Coarse	M48	100	166	68.0	168	90	38	8600	6100	6.38
18863.W0056	Coarse	M56	110	184	78.0	187	100	42	11500	8200	8.80
18863.W5012	Fine	M12 x 1,5	30	54	20.5	53	30	12	340	240	0.18
18863.W5016	Fine	M16 x 1,5	35	63	27.0	62	35	14	700	500	0.28
18863.W5020	Fine	M20 x 2,0	40	72	30.0	71	40	16	1200	830	0.45
18863.W5024	Fine	M24 x 2,0	50	90	36.0	90	50	20	1800	1270	0.74
18863.W5030	Fine	M30 x 2,0	65	108	45.0	109	60	24	3600	2600	1.66
18863.W5036	Fine	M36 x 3,0	75	126	54.0	128	70	28	5100	3700	2.58
18863.W5042	Fine	M42 x 3,0	85	144	63.0	147	80	32	7000	5000	3.95
18863.W5048	Fine	M48 x 3,0	100	166	68.0	168	90	38	8600	6100	6.38
18863.W5056	Fine	M56 x 4,0	110	184	78.0	187	100	42	11500	8300	8.48

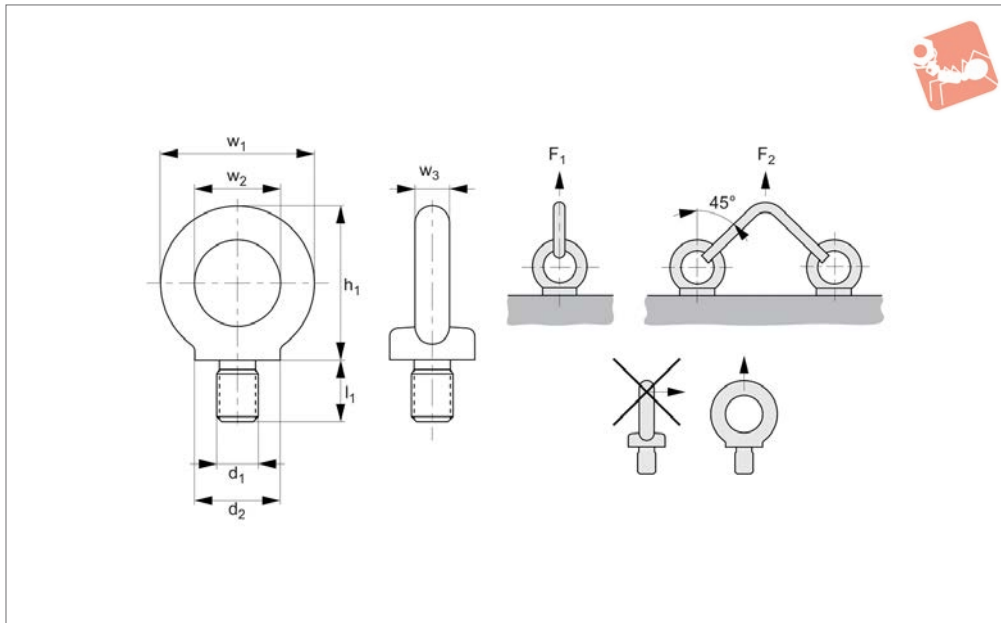




# Steel Male Lifting Eye Bolts

inch sizes

## Lifting Eye Bolts & Nuts



**18866**

LIFTING EYE BOLTS & NUTS

### Material

Forged steel (C15E) annealed and zinc-plated (-ZP). Contact face machined. CE marked.

Hot dipped galvanised versions (for more demanding applications and limited outside use) also available on request, suffix changes to -GV.

### Technical Notes

To DIN 580.

When using lifting eye bolts it is critical to ensure that the face is in firm contact with

the mating surface.

These lifting bolts are generally installed and remain on a piece of equipment for the purpose of transporting them. They are not for repeated lifting use - if this is required our swivelling lifting bolt range should be used.

### Tips

Maximum load values are only applicable when the thread and the material, it is being used in is as least as strong as the

that of the bolt.

$F_1$  and  $F_2$  values given are for steel and cast iron components.

### Important Notes

Not to be used at lift angles of greater than 45° or with swivelling loads.

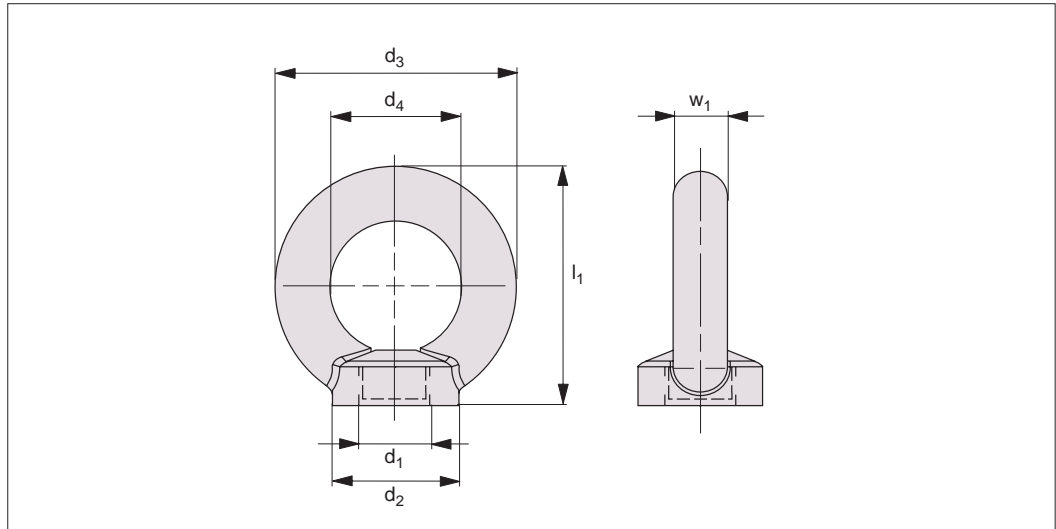
**Please refer to the safety documentation before using this part.**

**Supplied with certificate and operating instructions.**

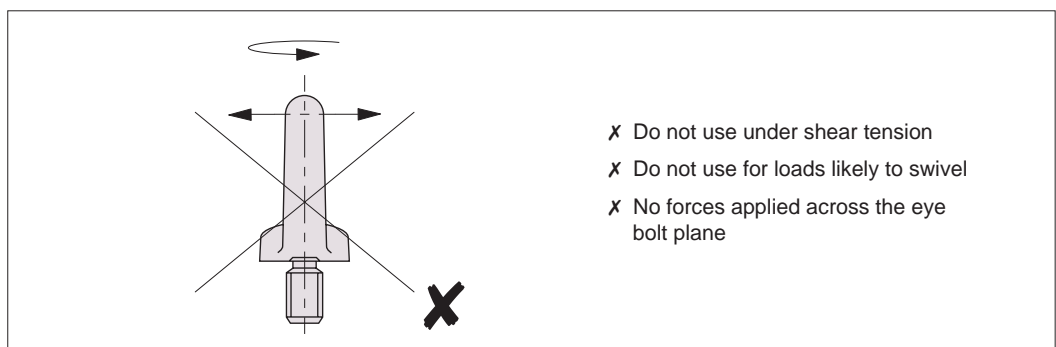
Order No.	$d_1$	Thread type	$d_2$	$w_1$	$l_1$	$h_1$	$w_2$	$w_3$	$F_1$ kg max.	$F_2$ kg max.	Weight kg
<b>18866.W0025</b>	1/4"-20	UNC	20	36	13.0	36	20	8	70	50	0.06
<b>18866.W0038</b>	3/8"-16	UNC	25	45	17.0	45	25	10	230	170	0.11
<b>18866.W0050</b>	1/2"-12	UNC	30	54	20.5	53	30	12	340	240	0.18
<b>18866.W0063</b>	5/8"-11	UNC	35	63	27.0	62	35	14	700	500	0.28
<b>18866.W0075</b>	3/4"-10	UNC	40	72	30.0	71	40	16	1200	830	0.45
<b>18866.W0088</b>	7/8"-9	UNC	50	90	36.0	90	50	20	1500	1050	0.74
<b>18866.W0100</b>	1"-8	UNC	50	90	36.0	90	50	20	1800	1270	0.74
<b>18866.W0112</b>	1-1/8"-7	UNC	65	108	45.0	109	60	24	2500	1650	1.66
<b>18866.W0125</b>	1-1/4"-7	UNC	75	126	54.0	128	70	28	4300	3200	2.65
<b>18866.W0150</b>	1-1/2"-6	UNC	85	144	63.0	147	80	32	6100	4300	4.03
<b>18866.W0200</b>	2"	UNC	100	166	68.0	168	90	38	9900	7300	6.38
<b>18866.W0250</b>	2-1/2"	UNC	120	206	90.0	208	110	48	16000	11000	12.40



**Important Note: DIN 580 lifting eye bolts are mainly intended for permanent mounting to components such as motors, switchgear cabinets and gears, and for transporting these items of equipment. Please take care to take particular note of the following advice.**



- 1) To be used by authorised, qualified and instructed personnel. Lifting eye bolts must be marked permanently raised with manufacturer's mark, material ID (e.g. C15E, A2 or A4), load-bearing capacity and axial direction (WLL in kg, see also Table/ F in N), and with CE symbol.
- 2) Check the lifting points for proper bolt seat, corrosion, wear and tear, deformation, etc. at regular intervals and before every use.
- 3) Select the lifting point such that the introduced forces are absorbed by the base material without any deformation. Screw-in depth for steel with a tensile strength of  $R_m > 340 \text{ N/mm}^2$ , e.g. S235JR (1.0037); or GG25 (0.6025 - without cavities or shrinkage):  $1.5 \times \text{thread size } d_1 (=L)$ . For screw-in material with lower strength, use lifting points with greater screw-in length. Minimum screw-in depths recommended:  $2 \times \text{thread size } d_1$  in aluminium alloys,  $2.5 \times \text{thread size } d_1$  in light metal with low strength. For light materials, non-ferrous metals and grey cast iron, select the thread such that the load-bearing capacity of the thread corresponds with the requirements involving the base material. For through-holes, a nut ( $0.8 \times d$ ) should be fully and firmly bolted from the opposite side. If the thread length of the screw is sufficient, the use of an additional washer is recommended.
- 4) Select the position of the fixing points to avoid swivel or load shifts.
  - a.) Arrange the lifting point for a single strand sling perpendicular above the load centre.
  - b.) Arrange the lifting points for a twin strand sling to ensure both sides are above the load centre. Caution: Avoid turning or rotating movements during transport!
  - c.) Position the eye bolt such that no shear tension acts on the eye bolt (illustration below, incorrect use). The introduced force must act in the direction of the eye bolt plane (illustration right, correct use).

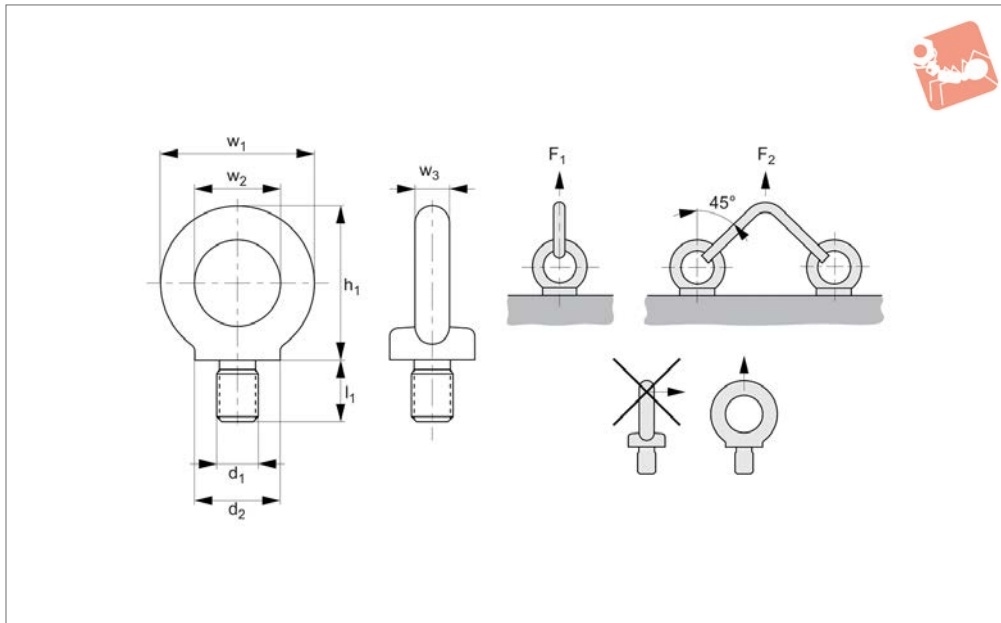




# Stainless Male Lifting Eye Bolts

metric sizes

## Lifting Eye Bolts & Nuts



**18864**

LIFTING EYE BOLTS & NUTS

### Material

Stainless steel (A4, AISI 316).  
CE marked.

### Technical Notes

To DIN 580.

When using lifting eye bolts it is critical to ensure that the face is in firm contact with the mating surface.

These lifting bolts are generally installed and remain on a piece of equipment for the

purpose of transporting them. They are not for repeated lifting use - if this is required our swivelling lifting bolt range should be used.

### Tips

Maximum load values are only applicable when the thread and the material, it is being used in is as least as strong as the that of the bolt.

$F_1$  and  $F_2$  values given are for steel and cast

iron components.

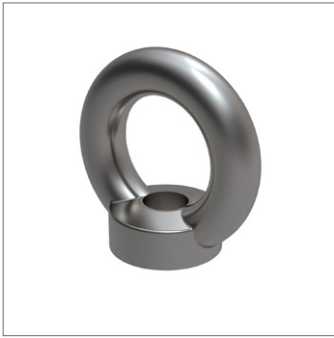
### Important Notes

Not to be used at lift angles of greater than 45° or with swivelling loads.

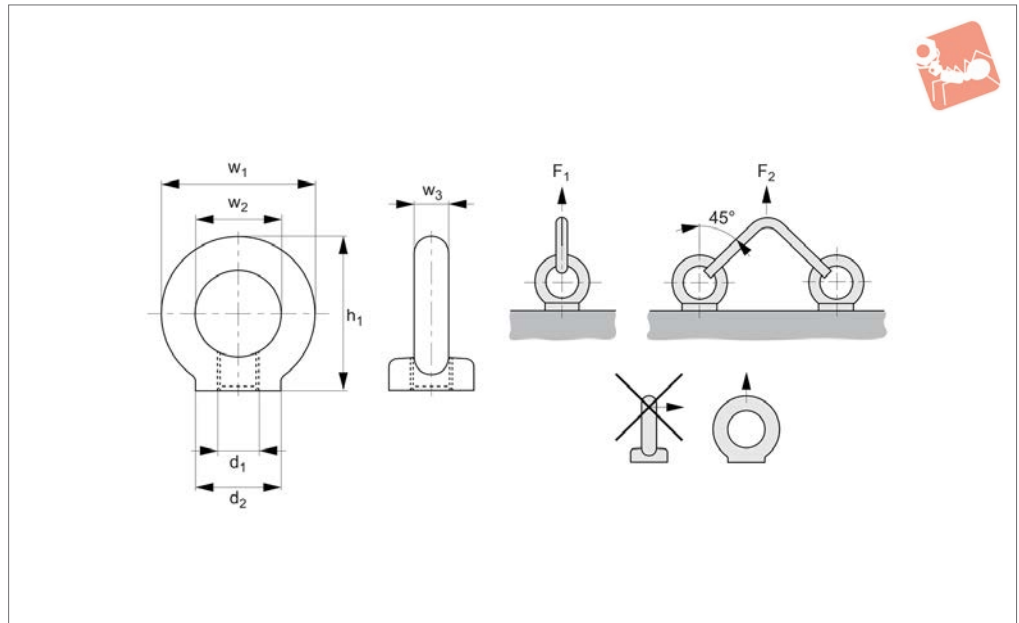
**Please refer to the safety documentation before using this part.**

**Supplied with certificate and operating instructions.**

Order No.	Material	d <sub>1</sub>	d <sub>2</sub>	w <sub>1</sub>	l <sub>1</sub>	h <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	F <sub>1</sub> kg max.	F <sub>2</sub> kg max.	Weight kg
<b>18864.W0006</b>	A4 s/s	M 6	20	36	13.0	36	20	8	70	50	0.05
<b>18864.W0008</b>	A4 s/s	M 8	20	36	13.0	36	20	8	140	95	0.06
<b>18864.W0010</b>	A4 s/s	M10	25	45	17.0	45	25	10	230	170	0.11
<b>18864.W0012</b>	A4 s/s	M12	30	54	20.5	53	30	12	340	240	0.18
<b>18864.W0016</b>	A4 s/s	M16	35	63	27.0	62	35	14	700	500	0.28
<b>18864.W0020</b>	A4 s/s	M20	40	72	30.0	71	40	16	1200	860	0.45
<b>18864.W0024</b>	A4 s/s	M24	50	90	36.0	90	50	20	1800	1270	0.74
<b>18864.W0030</b>	A4 s/s	M30	65	108	45.0	109	60	24	3200	2300	1.66
<b>18864.W0036</b>	A4 s/s	M36	75	126	54.0	128	70	28	4600	3300	2.65
<b>18864.W0042</b>	A4 s/s	M42	85	144	63.0	147	80	32	6300	4500	4.03
<b>18864.W0048</b>	A4 s/s	M48	100	166	68.0	168	90	38	8600	6100	6.38



## 18843



### Material

Forged steel (C15E) annealed and zinc plated. Contact face machined. CE marked.  
Hot dipped galvanised versions (for more demanding applications and limited outside use) also available on request, suffix changes to -GV.

### Technical Notes

To DIN 582.  
When using lifting eye bolts it is critical to ensure that the face is in firm contact with

the mating surface.

These lifting bolts are generally installed and remain on a piece of equipment for the purpose of transporting them. They are not for repeated lifting use - if this is required our swivelling lifting bolt range should be used.

### Tips

Maximum load values are only applicable when the thread and the material, it is being used in is as least as strong as the

that of the bolt.

Temperature range -20°C to +200°C.

$F_1$  and  $F_2$  values given are for steel and cast iron components.

### Important Notes

Not to be used at lift angles of greater than 45° or with swivelling loads.

**Please refer to the safety documentation before using this part.**

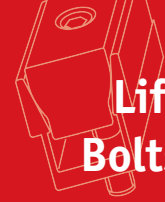
**Supplied with certificate and operating instructions.**

Order No.	Thread	d <sub>1</sub>	d <sub>2</sub>	w <sub>1</sub>	h <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	F <sub>1</sub> kg max.	F <sub>2</sub> kg max.	Weight kg
18843.W0006	Coarse	M 6	20	36	36	20	8	70	50	0.05
18843.W0008	Coarse	M 8	20	36	36	20	8	140	95	0.05
18843.W0010	Coarse	M10	25	45	45	25	10	230	170	0.09
18843.W0012	Coarse	M12	30	54	53	30	12	340	240	0.16
18843.W0016	Coarse	M16	35	63	62	35	14	700	500	0.24
18843.W0020	Coarse	M20	40	72	71	40	16	1200	830	0.36
18843.W0024	Coarse	M24	50	90	90	50	20	1800	1270	0.72
18843.W0030	Coarse	M30	65	108	109	60	24	3200	2300	1.32
18843.W0036	Coarse	M36	75	126	128	70	28	5100	3700	2.08
18843.W0042	Coarse	M42	85	144	147	80	32	7000	4500	3.11
18843.W0048	Coarse	M48	100	166	168	90	38	8600	6100	5.02
18843.W0056	Coarse	M56	110	184	187	100	42	11500	8200	6.70
18843.W0064	Coarse	M64	120	206	208	110	48	16000	11000	9.30
18843.W0072	Coarse	M72x6	150	260	260	140	60	20000	14000	18.5
18843.W0080	Coarse	M80x6	170	296	298	160	68	28000	20000	27.3
18843.W0100	Coarse	M100x6	190	330	330	180	75	40000	29000	26.4
18843.W5016	Fine	M16 x 1,5	35	63	62	35	14	700	500	0.24
18843.W5020	Fine	M20 x 2,0	40	72	71	40	16	1200	830	0.36
18843.W5024	Fine	M24 x 2,0	50	90	90	50	20	1800	1270	0.72
18843.W5030	Fine	M30 x 2,0	65	108	109	60	24	3600	2600	1.32
18843.W5036	Fine	M36 x 3,0	75	126	128	70	28	5100	3700	2.08
18843.W5042	Fine	M42 x 3,0	85	144	147	80	32	7000	5000	3.11
18843.W5048	Fine	M48 x 3,0	100	166	168	90	38	8600	6100	5.02



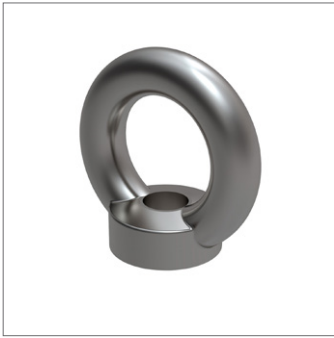
# Steel Female Lifting Eye Bolts

metric sizes

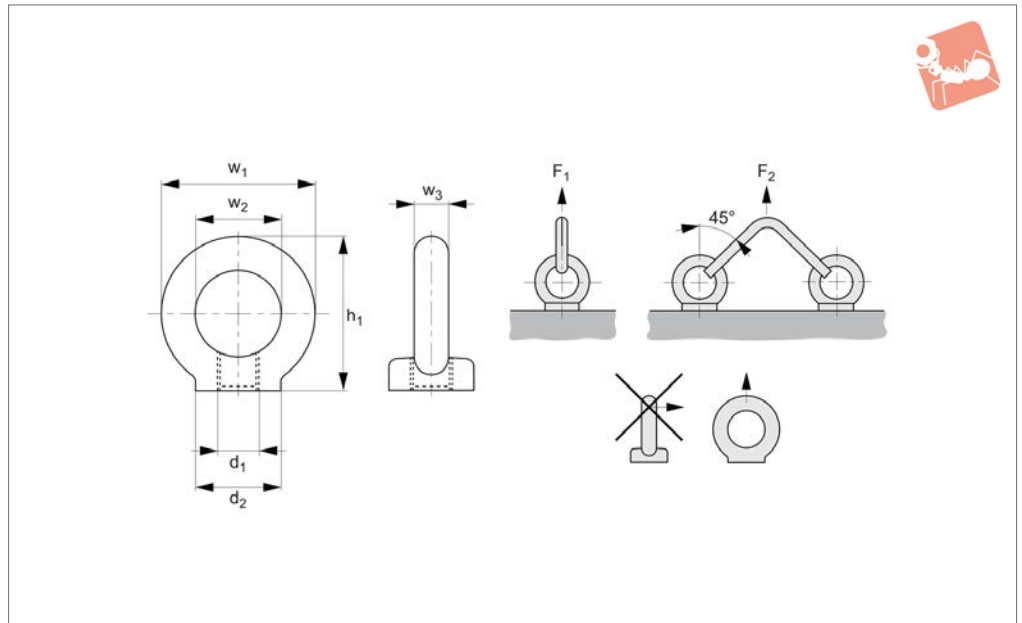


## Lifting Eye Bolts & Nuts

Order No.	Thread	$d_1$	$d_2$	$w_1$	$h_1$	$w_2$	$w_3$	$F_1$ kg max.	$F_2$ kg max.	Weight kg
<b>18843.W5056</b>	Fine	M56 x 4,0	110	184	187	100	42	11500	8300	6.69



**18846**



**Material**

Forged steel (C15E) annealed and zinc plated. Contact face machined. CE marked. Hot dipped galvanised versions (for more demanding applications and limited outside use) also available on request, suffix changes to -GV.

**Technical Notes**

To DIN 582.  
When using lifting eye bolts it is critical to ensure that the face is in firm contact with the mating surface.

These lifting bolts are generally installed and remain on a piece of equipment for the purpose of transporting them. They are not for repeated lifting use - if this is required our swivelling lifting bolt range should be used.

**Tips**

Maximum load values are only applicable when the thread and the material, it is being used in is as least as strong as the that of the bolt.

$F_1$  and  $F_2$  values given are for steel and cast iron components.

**Important Notes**

Not to be used at lift angles of greater than 45° or with swivelling loads.

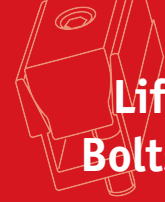
**Please refer to the safety documentation before using this part. Supplied with certificate and operating instructions.**

Order No.	d <sub>1</sub>	Thread type	d <sub>2</sub>	w <sub>1</sub>	h <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	F <sub>1</sub> kg max.	F <sub>2</sub> kg max.	Weight kg
18846.W0025	1/4"-20	UNC	20	36	8	20	36	70	50	0.05
18846.W0038	3/8"-16	UNC	25	45	10	25	45	230	170	0.09
18846.W0050	1/2"-13	UNC	30	54	12	30	53	340	240	0.16
18846.W0063	5/8"-11	UNC	35	63	14	35	62	700	500	0.24
18846.W0075	3/4"-10	UNC	40	72	16	40	71	1200	830	0.36
18846.W0088	7/8"-9	UNC	50	90	20	50	90	1500	1050	0.72
18846.W0100	1"-8	UNC	50	90	20	50	90	1800	1270	0.72
18846.W0112	1-1/8"-7	UNC	65	108	24	60	109	2500	1650	1.32
18846.W0150	1-1/2"-6	UNC	85	144	32	80	147	6100	4300	3.11
18846.W0200	2"	UNC	100	166	38	90	168	9900	7300	5.02
18846.W0250	2-1/2"	UNC	120	206	48	110	208	16000	11000	9.30

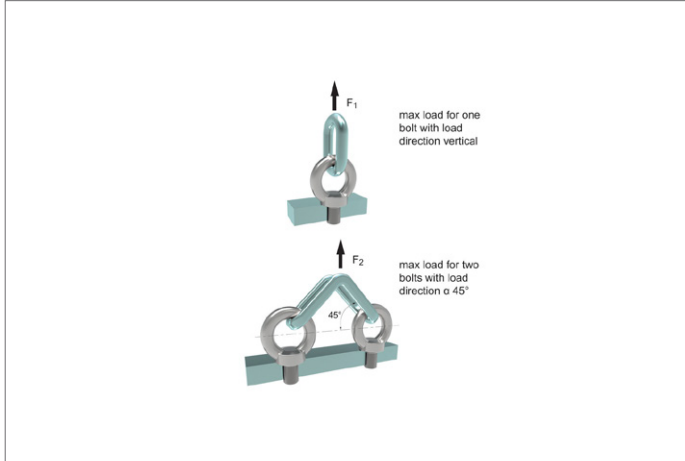


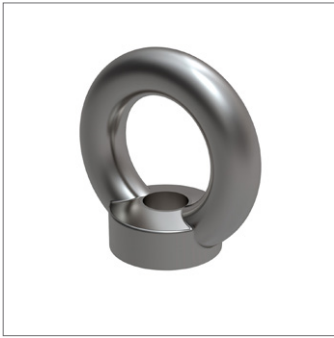
# Steel Female Lifting Eye Bolts

inch sizes

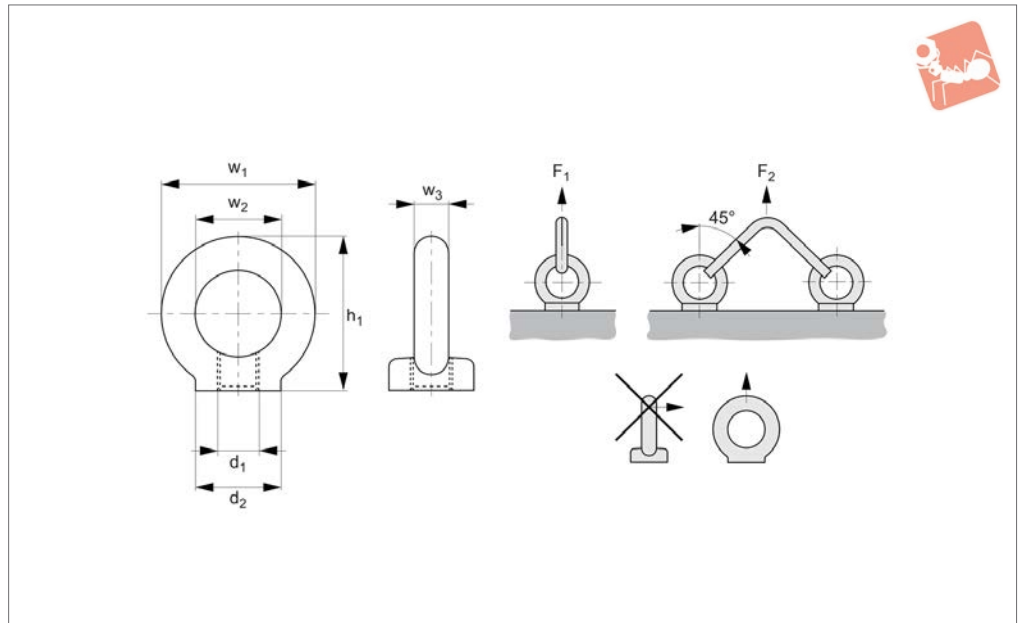


## Lifting Eye Bolts & Nuts





## 18844



### Material

Stainless steel (A4, AISI 316).  
CE marked.

### Technical Notes

To DIN 582.

When using lifting eye bolts it is critical to ensure that the face is in firm contact with the mating surface.

These lifting bolts are generally installed and remain on a piece of equipment for the

purpose of transporting them. They are not for repeated lifting use - if this is required our swivelling lifting bolt range should be used.

### Tips

Maximum load values are only applicable when the thread and the material, it is being used in is as least as strong as the that of the bolt.

$F_1$  and  $F_2$  values given are for steel and cast

iron components.

### Important Notes

Not to be used at lift angles of greater than 45° or with swivelling loads.

**Please refer to the safety documentation before using this part.**

**Supplied with certificate and operating instructions.**

Order No.	Material	d <sub>1</sub>	d <sub>2</sub>	w <sub>1</sub>	h <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	F <sub>1</sub> kg max.	F <sub>2</sub> kg max.	Weight kg
18844.W0006	A4 s/s	M 6	20	36	36	20	8	70	50	0.05
18844.W0008	A4 s/s	M 8	20	36	36	20	8	140	95	0.05
18844.W0010	A4 s/s	M10	25	45	45	25	10	230	170	0.09
18844.W0012	A4 s/s	M12	30	54	53	30	12	340	240	0.16
18844.W0016	A4 s/s	M16	35	63	62	35	14	700	500	0.24
18844.W0020	A4 s/s	M20	40	72	71	40	16	1200	860	0.36
18844.W0024	A4 s/s	M24	50	90	90	50	20	1800	1270	0.72
18844.W0030	A4 s/s	M30	65	108	109	60	24@	3200	2300	1.32
18844.W0036	A4 s/s	M36	75	126	128	70	28	4600	3300	2.08
18844.W0042	A4 s/s	M42	85	144	147	80	32	6300	4500	3.11
18844.W0048	A4 s/s	M48	100	166	168	90	38	8600	6100	5.02





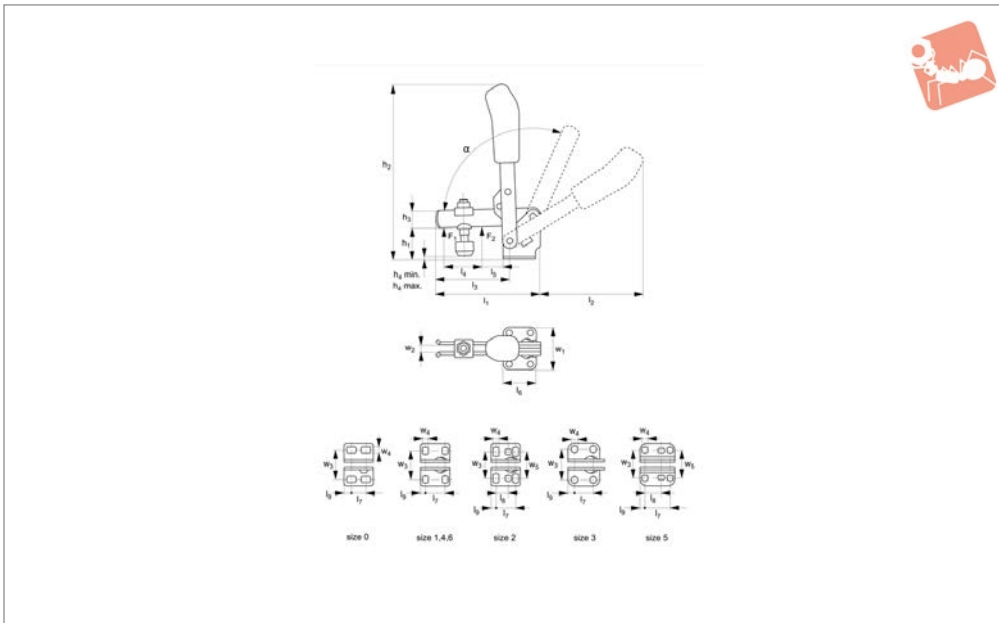
# Vertical Acting Toggle Clamps

open arm - horizontal base



**40000.1**

STEEL TOGGLE CLAMPS



### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes (sizes 2-6). Pre-lubricated bearings (grease suitable for food industry use).  
 Ergonomic, soft feel, oil-resistant handle with large grip area. Supplied complete

with clamping screw (with rubber pad).

### Technical Notes

For fastening to mounting plates, etc.  
 Opening angle (symbola/symbol/symbola/symbol\*) can be changed by pressing in a stop pin on the clamp body.

Temperature range -10°C to +80°C.

### Tips

**This product is also available in stainless steel, matt black and ESD.**

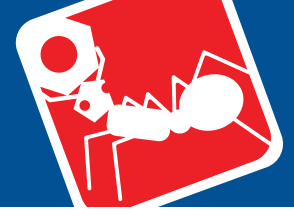
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	l <sub>1</sub>	l <sub>2</sub>	Weight g
40000.W0000	0	0.5	0.7	M 4x25	18.0	81	8	-1.5	3.5	49	50	60
40000.W0001	1	0.6	1.1	M 5x30	19.0	98	10	-4.0	2.0	61	58	105
40000.W0002	2	0.8	1.2	M 6x35	23.0	140	12	-3.0	4.5	78	89	175
40000.W0003	3	1.2	2.5	M 8x45	33.0	186	18	2.0	11.0	112	112	410
40000.W0004	4	1.7	3.0	M 8x65	42.5	221	20	-6.0	22.5	141	130	630
40000.W0005	5	3.0	5.0	M12x80	55.8	281	25	-3.0	27.5	195	185	1480
40000.W0006	6	3.4	5.5	M12x110	81.0	333	30	-2.5	55.0	231	206	2200

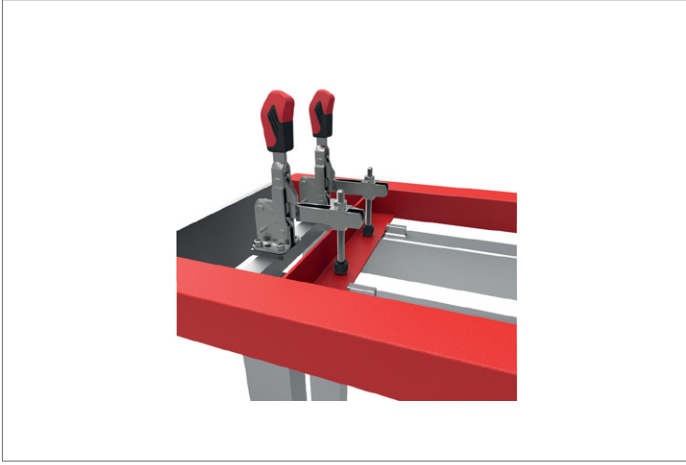
Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	α	α*
40000.W0000	31.0	14	5.5	22	8,5-13,5	-	5.5	32	4	23.0	4.5	-	95°	-
40000.W0001	39.0	18	6.0	27	16.0	-	5.5	34	5	22,5-26,0	4.5	-	95°	-
40000.W0002	52.0	25	11.0	32	20.0	12.5	6.0	43	6	23,0-31,0	5.5	27	105°	60°
40000.W0003	79.0	37	19.0	35	20.0	-	7.5	46	8	32.5	7.5	-	105°	60°
40000.W0004	101.0	54	16.0	53	32.0	-	13.0	64	10	43,0-46,5	8.6	-	105°	60°
40000.W0005	140.0	73	34.0	65	45.0	26,5-31,5	9.5	70	14	45,0-50,0	8.5	45	115°	60°
40000.W0006	165.5	89	28.0	90	50.5	-	24.5	100	14	67,5-72,5	13.0	-	140°	60°

# Steel Toggle Clamps

## Vertical Acting Toggle Clamps open arm - horizontal base



STEEL TOGGLE CLAMPS





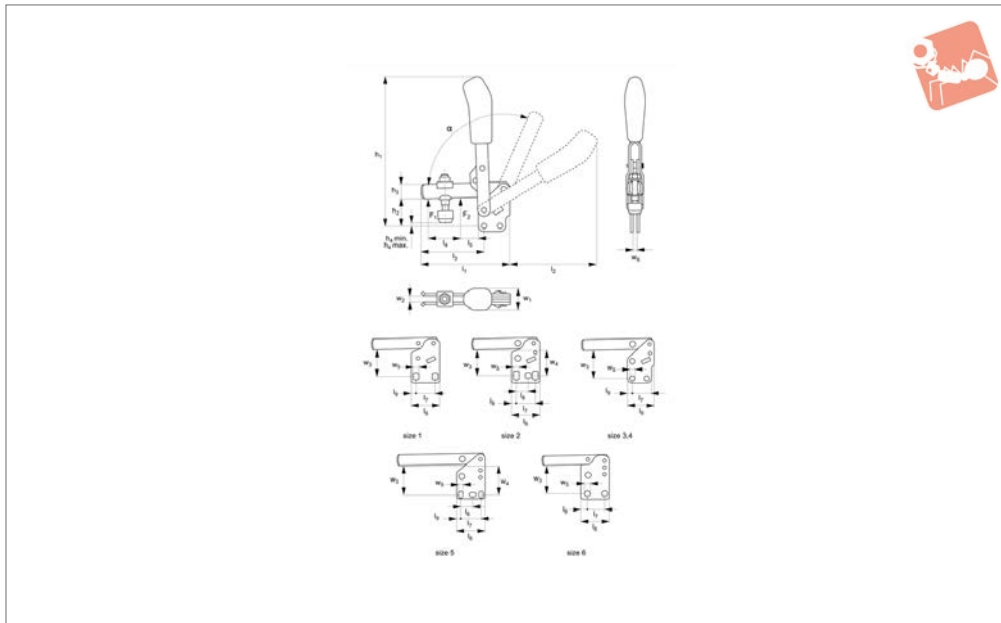
# Vertical Acting Toggle Clamps

open arm - vertical base



## 40050.1

STEEL TOGGLE CLAMPS



### Material

Body: steel, zinc plated. Stainless steel rivets running in hardened bushes (sizes 2-6). Pre-lubricated bearings (grease suitable for food industry use). Ergonomic, soft feel, oil-resistant handle

with large grip area.

Supplied complete with clamping screw (with rubber pad).

### Technical Notes

For fastening to mounting plates, etc.

Opening angle (symbola/symbol/symbola/symbol\*) can be changed by pressing in a stop pin on the clamp body.

Temperature range -10°C to +80°C.

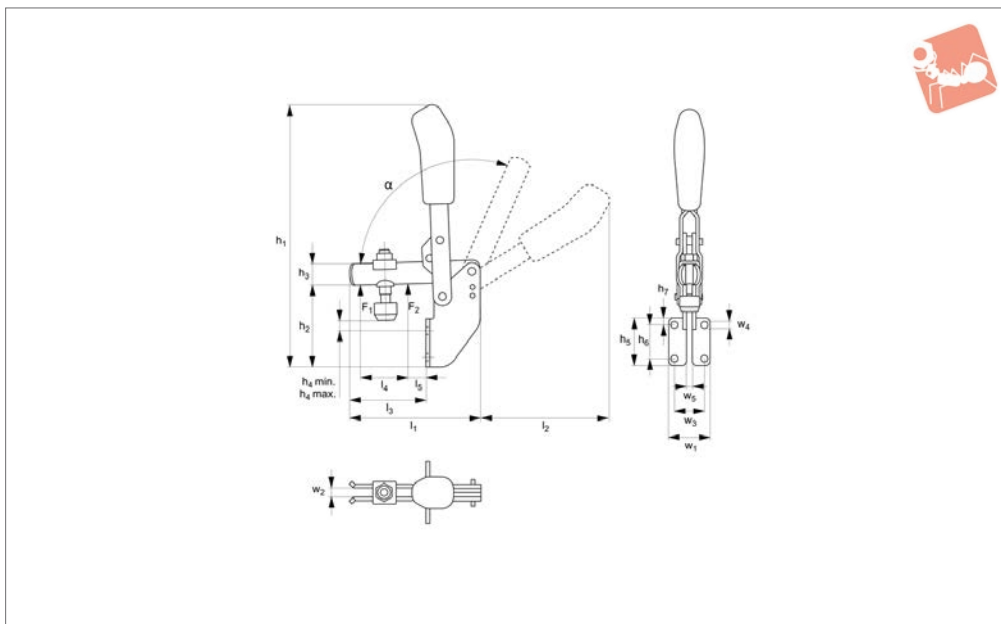
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Weight g
40050.W0001	1	0.6	1.1	M 5x30	109.0	29	10	6.0	12.5	61	59	39	105
40050.W0002	2	0.8	1.2	M 6x35	144.5	38	12	11.5	19.5	78	80	52	175
40050.W0003	3	1.2	2.5	M 8x45	200.0	48	18	16.5	25.0	112	114	79	410
40050.W0004	4	1.7	3.0	M 8x65	244.0	65	20	16.5	45.5	141	130	101	630
40050.W0005	5	3.0	5.0	M12x80	301.0	77	25	18.0	49.0	195	183	140	1480
40050.W0006	6	3.4	5.5	M12x110	369.0	117	30	33.0	90.5	231	206	165	2200

Order No.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	w <sub>6</sub>	α	α*
40050.W0001	18	6	27	16.0	-	5.5	19	5	23,5-25,0	4,5	-	5	95°	-
40050.W0002	25	11	32	20.0	12.5	6.0	21	6	28,5-32,0	5,5	30	5	105°	60°
40050.W0003	36	19	40	20.0	-	7.5	27	8	41.0	7.5	-	6	105°	60°
40050.W0004	54	16	53	32.0	-	13.0	35	10	55.5	8.6	-	8	105°	60°
40050.W0005	72	35	65	45.0	26,5-31,5	9.5	45	14	66.0	8.5	64	10	115°	60°
40050.W0006	89	28	90	50.5	-	24.5	45	14	102.0	13.0	-	10	140°	60°



**40100.1**



**Material**

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes (sizes 2-3). Pre-lubricated bearings (grease suitable for food industry use).  
 Ergonomic, soft feel, oil-resistant handle

with large grip area.  
 Supplied complete with clamping screw (with rubber pad).

**Technical Notes**  
 For fastening to mounting plates, etc.

Opening angle (symbol $\alpha$ /symbol $\alpha$ \*) can be changed by pressing in a stop pin on the clamp body.  
 Lock washer for the thrust bolt at the end of the clamping arm.  
 Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	h <sub>5</sub>	h <sub>6</sub>	h <sub>7</sub>	Weight g
40100.W0001	1	0.8	1.1	M 5x30	125.0	45.0	10	2.5	9.0	30	14	10	125
40100.W0002	2	1.0	1.2	M 6x35	176.5	60.0	12	8.0	15.5	32	20	6	220
40100.W0003	3	1.4	2.5	M 8x45	223.0	71.0	18	9.0	17.5	38	24	7	400
40100.W0004	4	2.0	3.0	M 8x65	280.0	101.5	20	11.0	39.5	96	32	54	650

Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	$\alpha$	$\alpha^*$
40100.W0001	61	58	34.5	18	7	30.0	5	20.0	4.5	5	98°	-
40100.W0002	77	90	41.0	25	6	37.0	6	25.5	6.1	5	105°	60°
40100.W0003	110	112	62.0	37	11	42.5	8	28.5	6.5	6	105°	60°
40100.W0004	141	129	83.0	54	11	52.0	10	32.0	8.5	8	105°	60°



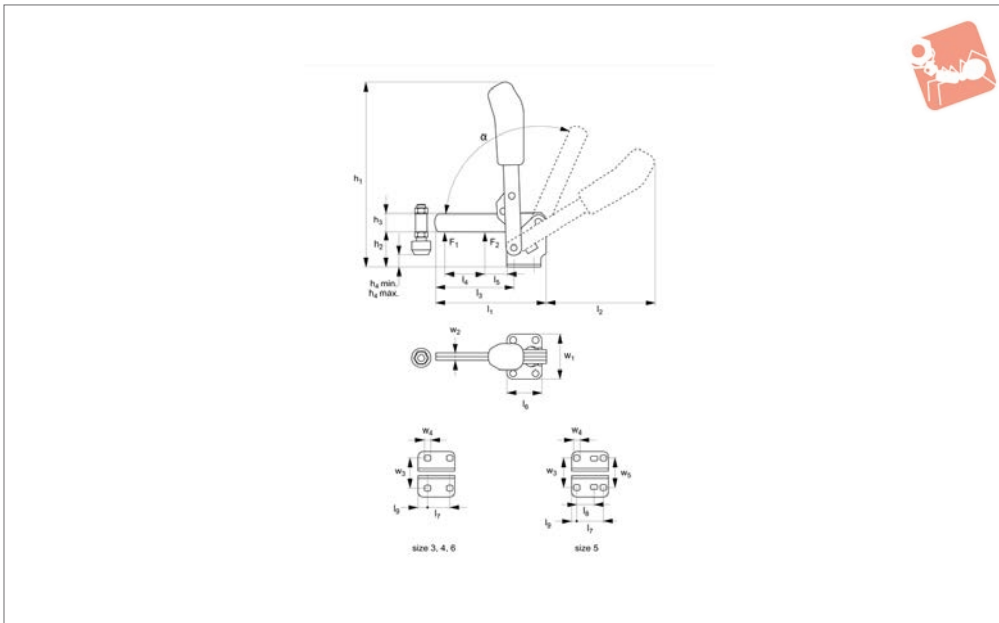
# Vertical Acting Toggle Clamps

solid arm - horizontal base



**40150**

STEEL TOGGLE CLAMPS



### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes.  
 Pre-lubricated bearings (grease suitable for food industry use).  
 Ergonomic, soft feel, oil-resistant handle

with large grip area.  
 Supplied complete with weldable clamping screw (with rubber pad).

### Technical Notes

For fastening to mounting plates, etc. The arm can be shortened to suit the work-

piece, the sleeve is then welded to the arm. Opening angle (symbol  $\alpha$ ) can be changed by pressing in a stop pin on the clamp body. Temperature range -10°C to +80°C.

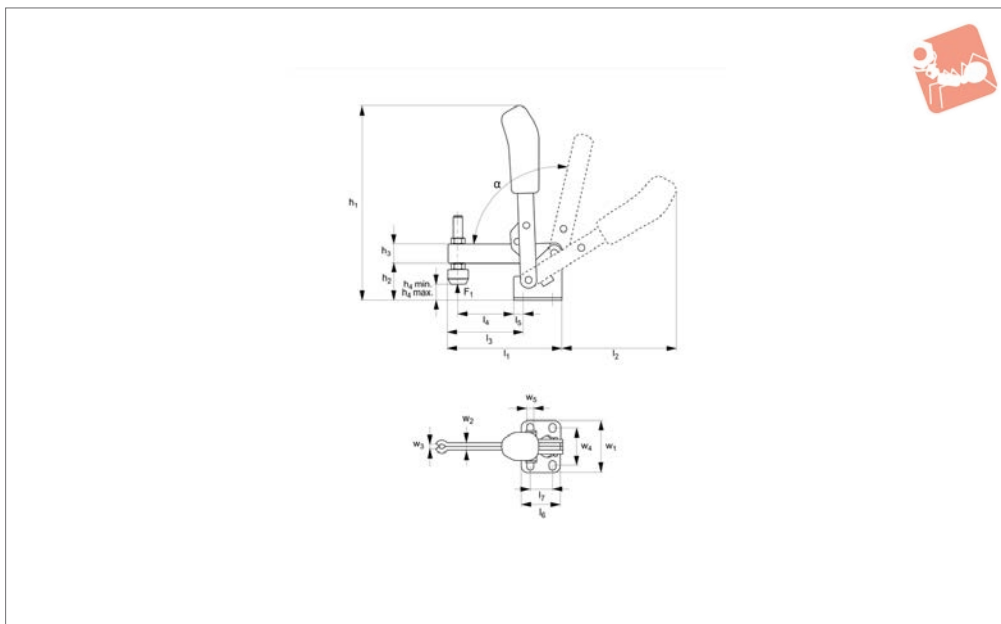
Order No.	Size	$F_1$ kN	$F_2$ kN	Clamping screw	$h_1$	$h_2$	$h_3$	$h_4$ min.	$h_4$ max.	$l_1$	$l_2$	$l_3$	Weight g
40150.W0003	3	1.4	2.5	M 8x45	186	33.5	18	0	12.0	108.5	116.5	81.0	340
40150.W0004	4	2.0	3.0	M 8x65	221	42.5	20	-8	21.0	141.5	129.5	101.0	585
40150.W0005	5	3.0	5.0	M12x80	281	55.5	25	-6	25.5	196.5	184.0	141.0	1480
40150.W0006	6	3.5	5.5	M12x110	331	81.0	30	-5	51.0	232.0	206.0	166.5	2200

Order No.	$l_4$	$l_5$	$l_6$	$l_7$	$l_8$	$l_9$	$w_1$	$w_2$	$w_3$	$w_4$	$w_5$	$\alpha$	$\alpha^*$
40150.W0003	43	19.5	35	20.0	-	7.5	46	6	32.5	7.5	-	105°	60°
40150.W0004	61	17.0	53	32.0	-	13.0	64	8	45.0	8.6	-	105°	60°
40150.W0005	88	30.5	65	45.0	26,5-31,5	9.5	70	10	45,0-50,0	8.5	45	115°	60°
40150.W0006	90	20.5	90	50.5	-	24.5	100	10	68,0-72,0	13.0	-	140°	60°



## 40200



### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes.  
 Pre-lubricated bearings (grease suitable

for food industry use).  
 Ergonomic, soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw (with rubber pad).

### Technical Notes

Temperature range -10°C to +80°C.

Order No.	Size	$F_1$ kN	Clamping screw		$h_1$	$h_2$	$h_3$	$h_4$ min.	$h_4$ max.	$l_1$	$l_2$	Weight g
40200.W0001	1	1	M 5x30		98	18.5	10	-6	4.5	67	58	100
Order No.	$l_3$	$l_4$	$l_5$	$l_6$	$l_7$	$w_1$	$w_2$	$w_3$	$w_4$	$w_5$	$\alpha$	
40200.W0001	45	33	5.5	27	16	34	5	5	22,5-25,5	4.5	95°	

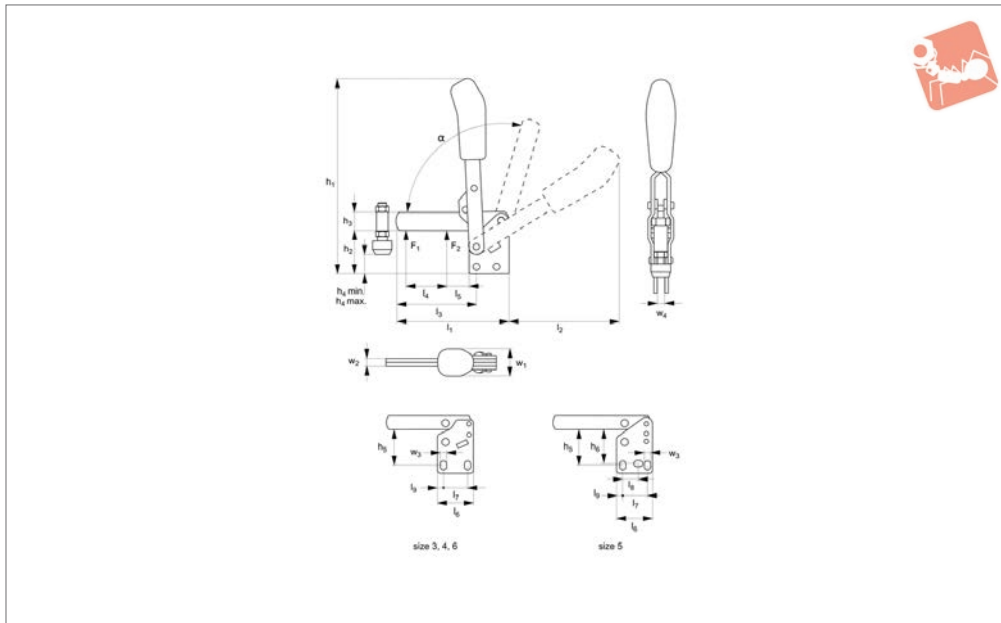


# Vertical Acting Toggle Clamps

solid arm - vertical base



## Steel Toggle Clamps



**40250**

STEEL TOGGLE CLAMPS

### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes.  
 Pre-lubricated bearings (grease suitable for food industry use).  
 Ergonomic, soft feel, oil-resistant handle

with large grip area.  
 Supplied complete with weldable clamping screw (with rubber pad).

### Technical Notes

For mounting to struts and for welding jigs. The arm can be shortened to suit the

workpiece, the sleeve is then welded to the arm.

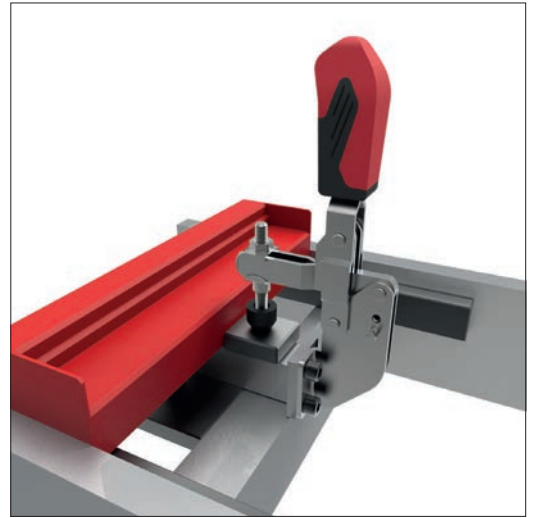
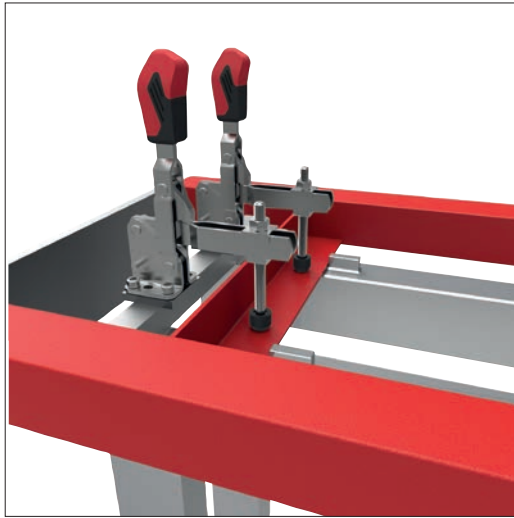
Opening angle (symbol $\alpha$ /symbol $\alpha$ /symbol $\alpha$ /symbol\*) can be changed by pressing in a stop pin on the clamp body.  
 Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	h <sub>5</sub>	h <sub>6</sub>	l <sub>1</sub>	l <sub>2</sub>	Weight g
40250.W0003	3	1.4	2.5	M 8x45	200	48	18	14.5	26.0	41.0	-	108.5	111.0	400
40250.W0004	4	2.0	3.0	M 8x65	244	65	20	13.0	44.0	55.5	-	141.5	129.5	585
40250.W0005	5	3.0	5.0	M12x80	302	77	25	15.0	47.0	66.0	64	196.5	184.0	1480
40250.W0006	6	3.5	5.5	M12x110	369	117	30	28.5	86.5	102.0	-	232.0	206.0	2200

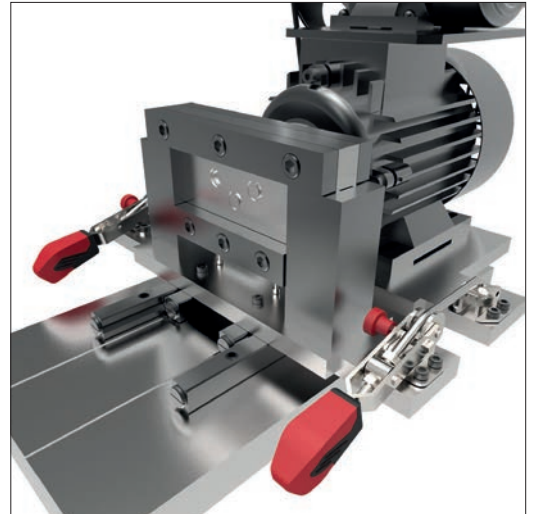
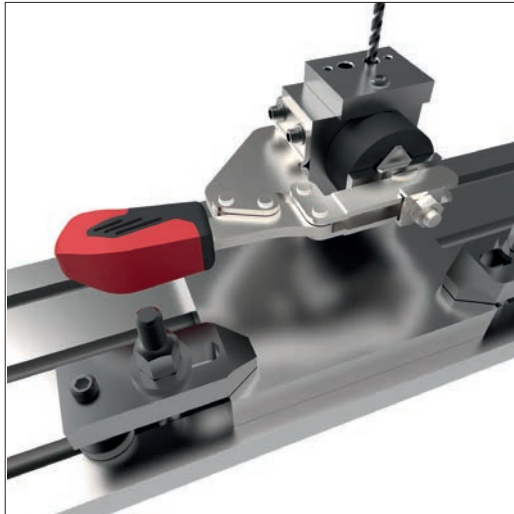
Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	$\alpha$	$\alpha^*$
40250.W0003	81.0	43	19.5	35	20.0	-	7.5	27	6	7.5	6	105°	60°
40250.W0004	101.0	61	17.0	53	32.0	-	13.0	34	8	8.6	8	105°	60°
40250.W0005	141.0	88	30.5	65	45.0	26,5-31,5	9.5	36	10	8.5	10	115°	60°
40250.W0006	166.5	90	20.5	90	50.5	-	24.5	39	10	13.0	10	140°	60°



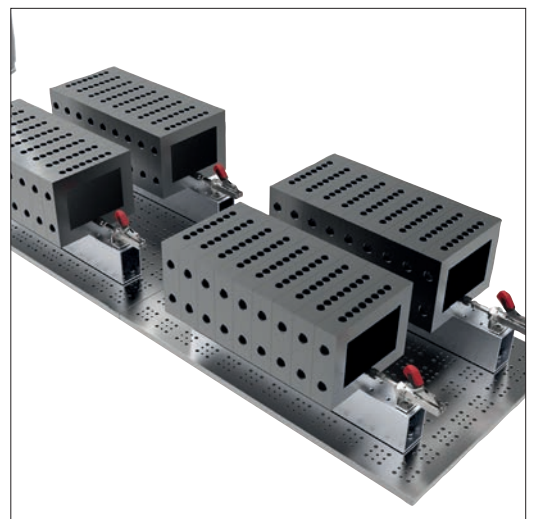
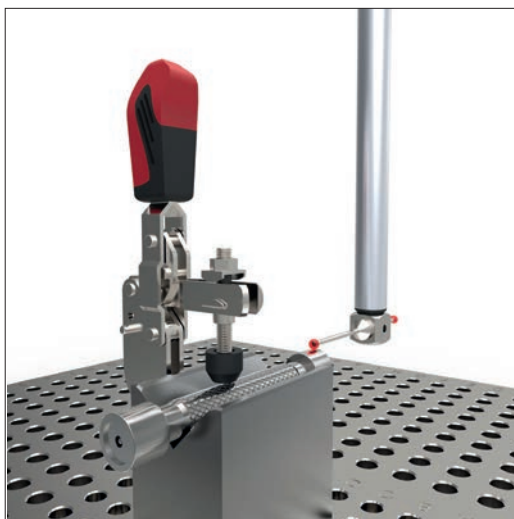
## Welding Fixtures



## Machining and Jig Assemblies



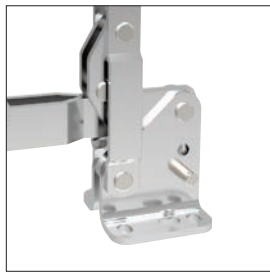
## Cmm's



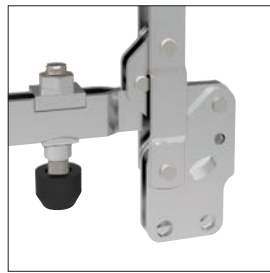




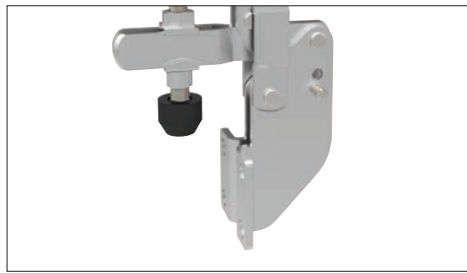
STEEL TOGGLE CLAMPS



Horizontal base



Vertical base



Angled base

### Mounting Base Variations



Vertical acting



Horizontal acting



Push-pull

### Clamping Variations



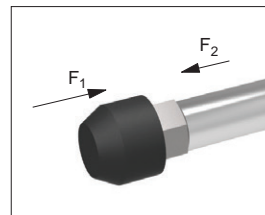
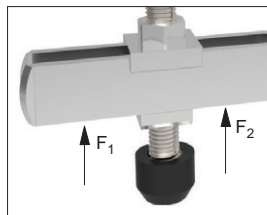
Hook type



Latch type

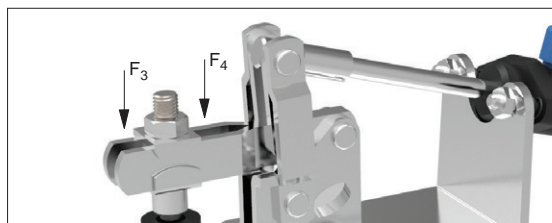
### Explanation of forces

The force transmitted to the workpiece by the toggle clamp's closed arm, without itself being deformed when machine forces are applied. The holding force value is dependent upon the proximity of the measuring load point to the toggle clamp's pivot point (therefore two values,  $F_1$  and  $F_2$  are provided).



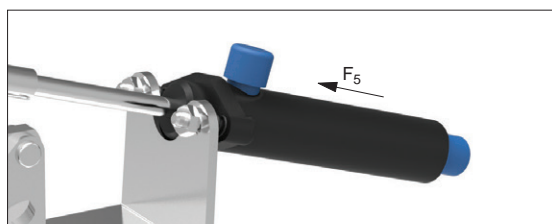
### Holding Forces $F_1$ or $F_2$

The force applied to the workpiece when the toggle clamp's arm is closed. These clamping forces can only be stated for pneumatic toggle clamps, clamping forces of manual clamps cannot be easily measured as they are dependent upon the operator.



### Clamping Forces $F_3$ or $F_4$

For pneumatically controlled toggle clamps only,  $F_5$  is the piston force required (at 6 bar to) achieve the stated clamping force.



### Piston Forces $F_5$

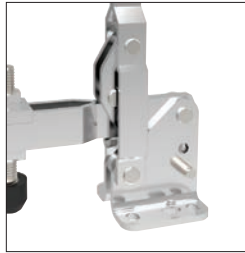
ov-W40000.1-A-T-W42070-A-T-b-rmh- Updated -27-10-2022



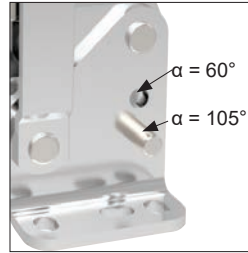
### Quality Features



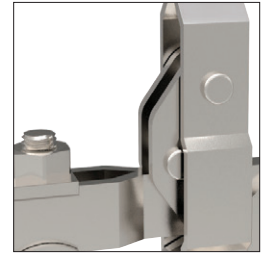
Ergonomic soft grip  
2-component handle



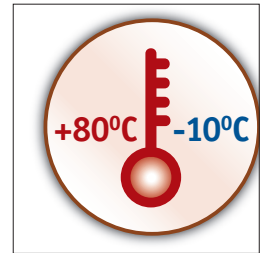
Stainless rivets and  
hardened bushings



Moveable stop for  
variable opening angle



Operator  
finger protection



Temperature resistant

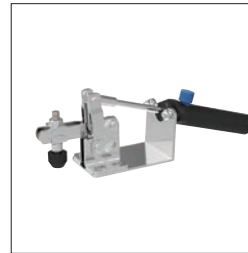
### Unique Features



Safety catches



Heavy duty versions



Pneumatic versions



Matt black surface for  
optical measurement

### Materials



Steel, zinc plated  
and passivated



Stainless steel (304)



Steel, matt black  
vario-spektron coated



Protective cap and  
handle made of an  
electrostatic conductive  
(dissipative) material.



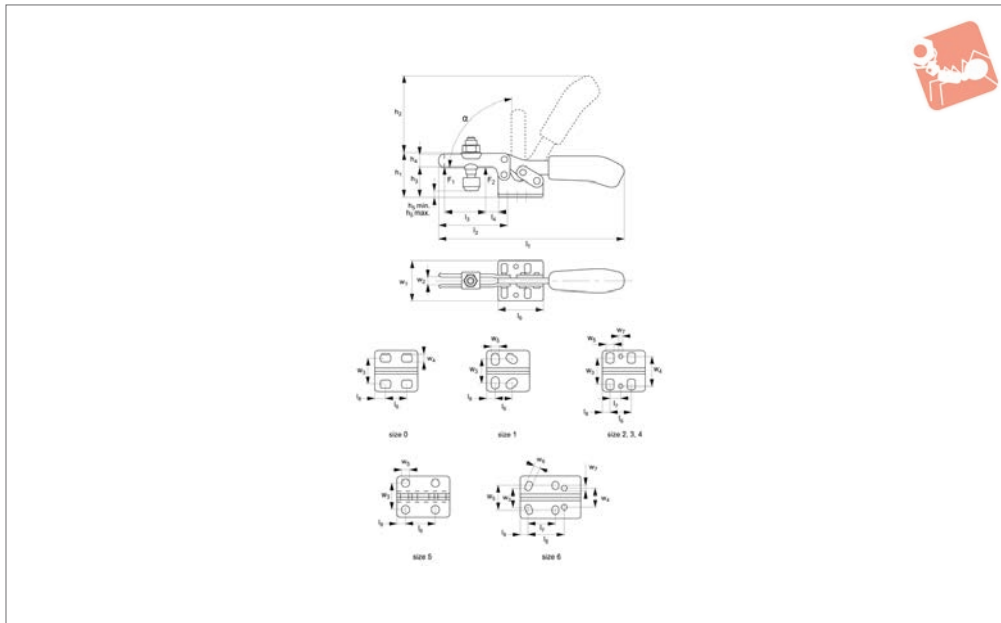
# Horizontal Acting Toggle Clamps

open arm - horizontal base



**41000.1**

STEEL TOGGLE CLAMPS



### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes (sizes 2-6).  
 Pre-lubricated bearings (grease suitable for food industry use).

Ergonomic, soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw (with rubber pad).

### Technical Notes

Temperature range -10°C to +80°C.

### Tips

For stainless steel version see part no. 41020.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>5</sub> min.	h <sub>5</sub> max.	l <sub>1</sub>	l <sub>2</sub>	Weight g
41000.W0000	0	0.3	0.4	M 4x25	23.0	34	14.5	7.5	-5.5	0.0	79	28	35
41000.W0001	1	0.8	1.1	M 5x30	30.0	49	19.0	10.0	-3.0	2.5	120	42	105
41000.W0002	2	1.0	1.2	M 6x35	45.0	68	24.0	13.2	-1.5	5.0	162	64	185
41000.W0003	3	1.8	2.5	M 8x45	48.5	86	32.0	15.0	-2.0	9.0	206	73	320
41000.W0004	4	2.0	3.0	M 8x65	75.0	126	45.0	20.0	-4.0	24.0	287	113	700
41000.W0005	5	3.0	5.0	M 8x65	73.0	128	46.0	25.0	1.7	25.0	321	123	1080
41000.W0006	6	4.0	7.0	M10x116	114.5	181	71.5	30.0	-6.0	44.0	354	110	1925

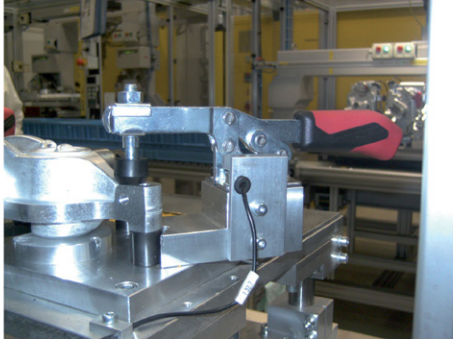
Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	w <sub>6</sub>	w <sub>7</sub>	α
41000.W0000	9.0	5.5	25.5	11,5-15,5	-	6.3	25.0	4	16.0	-	4.6	-	-	90°
41000.W0001	18.7	8.0	34.0	13,0-14,5	-	5.5	34.0	5	18,0-21,5	-	5.2	-	-	90°
41000.W0002	32.0	16.0	38.0	26.0	12.7	6.0	42.0	6	19,5-29,5	28.5	5.6	-	5.6	90°
41000.W0003	38.0	14.0	50.0	25.7	13.0	7.0	45.5	8	22,0-31,8	31.6	6.5	-	5.1	90°
41000.W0004	63.0	27.0	57.0	41.0	20.5	8.0	58.0	10	29,0-43,0	43.0	8.5	-	8.5	90°
41000.W0005	78.0	16.0	77.0	41.5	-	12.5	58.0	10	41.5	-	8.5	-	-	90°
41000.W0006	59.3	20.6	95.0	57.7	43.6	11.5	66.5	10	32,1-43,8	31.6	9.8	36,0-44,2	8.7	83°

# Steel Toggle Clamps

## Horizontal Acting Toggle Clamps open arm - horizontal base



STEEL TOGGLE CLAMPS



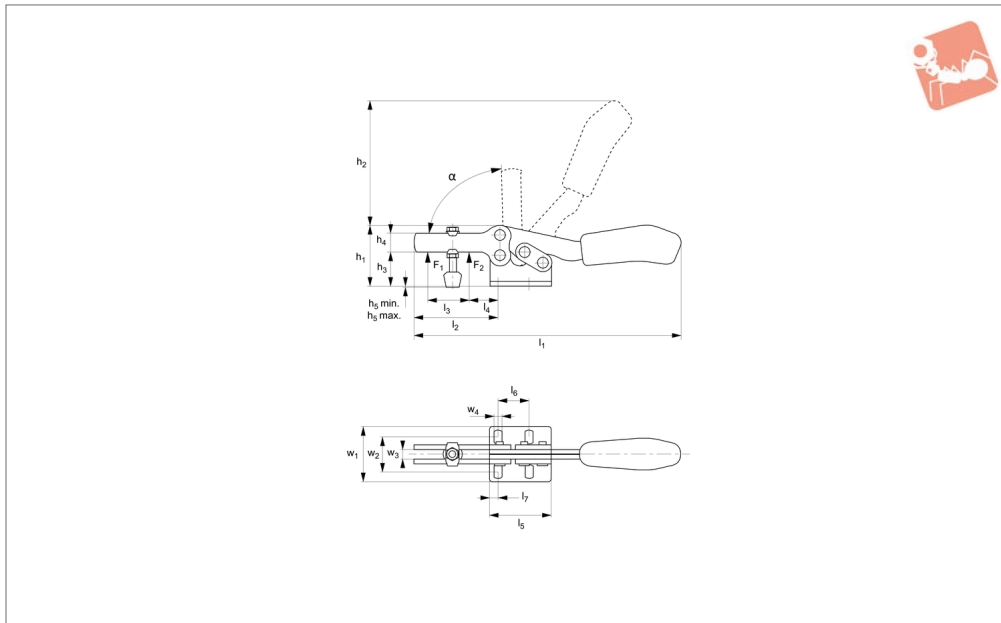


# Horizontal Toggle Clamp Plus

open arm - horizontal base - increased clamping



## Steel Toggle Clamps



### 41001.1

STEEL TOGGLE CLAMPS

#### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes.  
 Pre-lubricated bearings (grease suitable for food industry use).

Ergonomic, soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw (with rubber pad).

#### Technical Notes

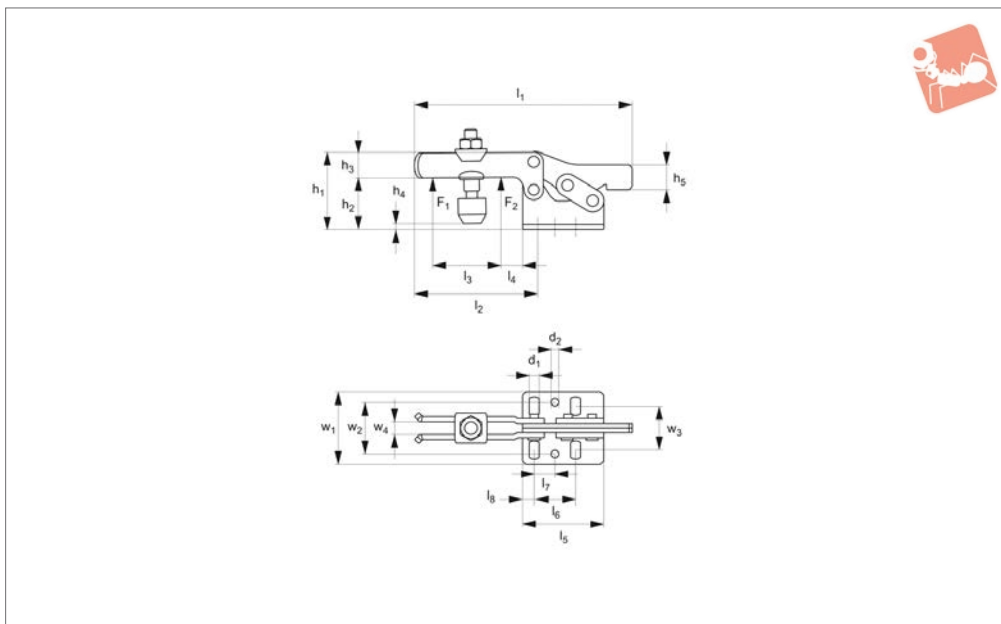
Temperature range -10°C to +80°C. **With increased clamping force.**  
 Also available in stainless steel part no. 41001.W0301 - .W0304.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub> min.	h <sub>5</sub> max.	l <sub>1</sub>	Weight g
41001.W0001	1	1.1	1.7	M 5x35	35	46	19.0	12	0	10.0	126	114
41001.W0002	2	1.6	3.0	M 6x50	51	108	28.0	16	-1	12.0	224	450
41001.W0003	3	2.5	4.0	M 8x58	58	112	33.5	18	-1	13.0	242	560
41001.W0004	4	3.5	8.0	M10x76	77	135	41.0	24	-2	16.5	329	1250

Order No.	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	α
41001.W0001	46	20	16.5	34.0	13.5	6.0	27.5	15,0 - 19,5	5	4.3	90°
41001.W0002	71	39	14.0	52.0	26.0	7.0	46.0	23,5 - 34,0	8	6.5	90°
41001.W0003	78	43	22.0	52.5	26.0	6.5	47.0	25,5 - 36,0	8	6.5	90°
41001.W0004	120	69	23.0	76.0	41.5	10.5	60.0	34,5 - 45,0	10	8.6	90°



## 41005.1



### Material

Body: steel, zinc plated.

Rivets: stainless steel running in hardened bushes.

Pre-lubricated bearings (grease suitable for food industry use).

Supplied complete with clamping screw

(with rubber pad).

### Technical Notes

Temperature range -10°C to +80°C.

### Tips

Order removable handle separately 41005.

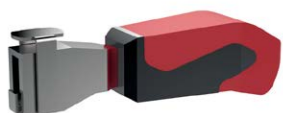
W0102- .W0104.

To prevent interference during use the handle can be removed after opening or closing the clamp.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	h <sub>5</sub>	Weight g
41005.W0002	2	1.0	1.2	M 6x35	45.0	24	13.2	-1.5	5	12	160
41005.W0003	3	1.8	2.5	M 8x45	48.5	32	15.0	-2.0	9	15	269
41005.W0004	4	2.0	3.0	M 8x65	75.0	45	20.0	-4.0	24	15	608

Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	α
41005.W0002	113	64	32	16	38	26.0	12.7	6	42.0	19,5-29,5	6	28.5	5.6	5.6	90°
41005.W0003	134	73	38	14	50	25.7	13.0	7	45.5	22,0-31,8	8	31.6	6.5	5.1	90°
41005.W0004	191	113	63	27	57	41.5	20.5	8	58.0	29,0-43,0	10	43.0	8.5	8.5	90°



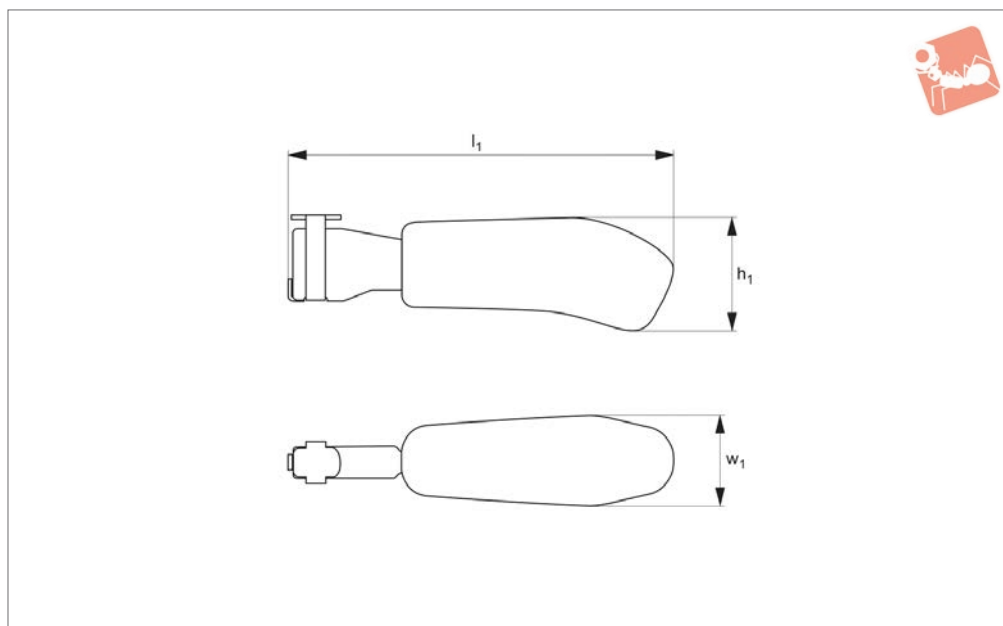
part no. 41005.W0102- .W0104  
to reduce length during use the handle can be removed after opening or closing the clamp



## Red Handle - Removable for horizontal acting toggle clamp



## Steel Toggle Clamps



### 41005.2

STEEL TOGGLE CLAMPS

#### Material

Ergonomic, oil-resistant handle with large grip surface and soft components.

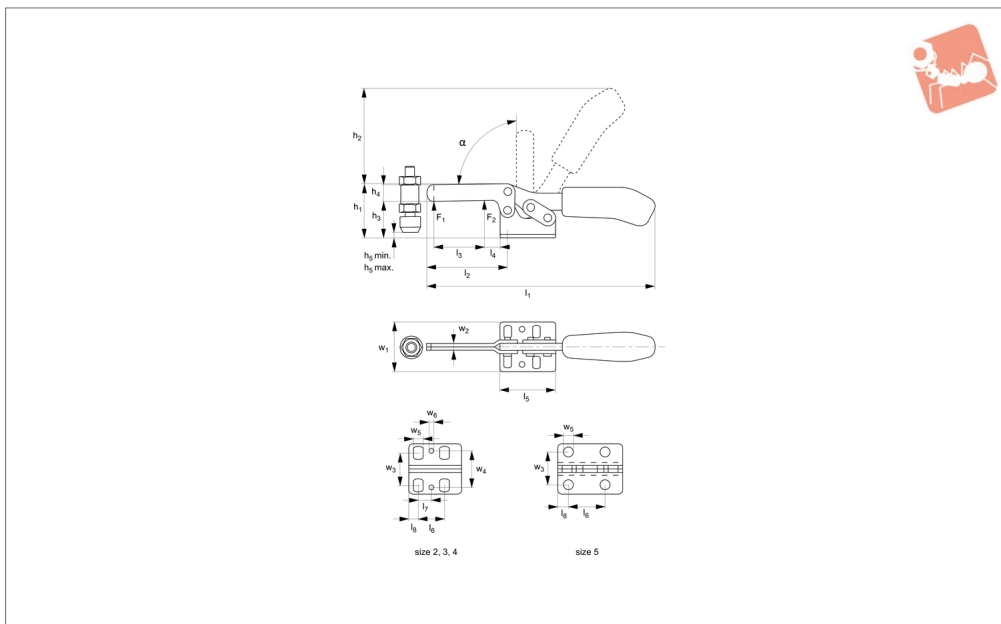
#### Technical Notes

For use with clamp no. 41005.W0002 - . W0004.

Order No.	Size	$h_1$	$l_1$	$w_1$	Weight g
41005.W0102	2	26	93.0	21.0	70
41005.W0103	3	35	118.5	27.0	122
41005.W0104	4	42	134.5	34.5	195



## 41030



### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes.  
 Pre-lubricated bearings (grease suitable for food industry use).

Ergonomic, soft feel, oil-resistant handle with large grip area.  
 Supplied complete with weldable clamping screw (with rubber pad).

### Technical Notes

The arm can be shortened to suit the work-piece, the sleeve is then welded to the arm.  
 Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub> min.	h <sub>5</sub> max.	l <sub>1</sub>	l <sub>2</sub>	Weight g
41030.W0002	2	1.0	1.2	M 6x35	45.0	66	24	13	-2.0	7.5	161	63	185
41030.W0003	3	1.8	2.5	M 8x45	48.5	86	32	15	-3.5	11.0	205	72	320
41030.W0004	4	2.0	3.0	M 8x65	75.0	114	45	20	-6.0	22.0	280	111	700
41030.W0005	5	3.0	5.0	M12x80	73.0	128	46	25	-13.0	12.5	320	121	1080

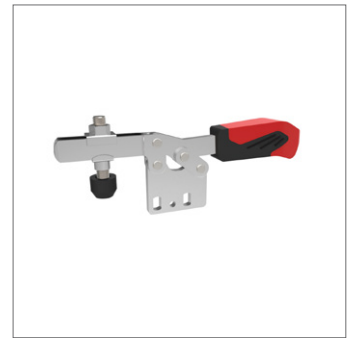
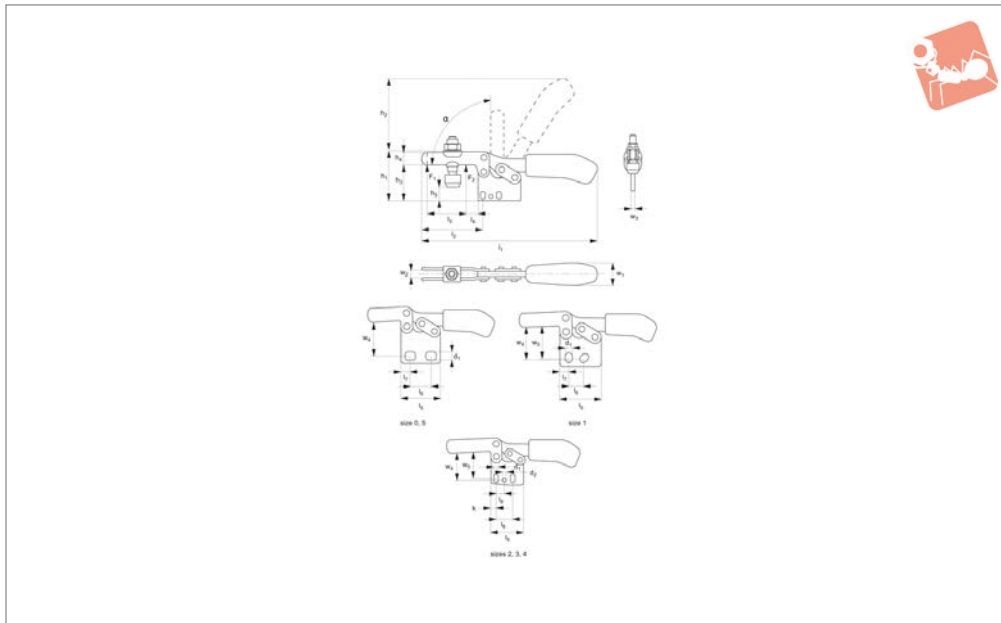
Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	w <sub>6</sub>	α
41030.W0002	35	16.0	38	26.0	12.7	6.0	42.0	5	19,5-29,5	28.5	5.6	5.6	90°
41030.W0003	44	15.0	50	26.0	13.0	7.0	45.5	6	22,0-31,8	32.0	6.5	5.1	90°
41030.W0004	66	26.0	57	41.0	20.5	8.0	58.0	8	29,0-43,0	43.0	8.5	8.5	90°
41030.W0005	78	17.5	77	41.5	-	12.5	58.0	10	41.5	-	8.5	-	90°





# Horizontal Acting Toggle Clamps

open arm - vertical base



**41050.1**

STEEL TOGGLE CLAMPS

### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes (sizes 2-5).  
 Pre-lubricated bearings (grease suitable

for food industry use).  
 Ergonomic, soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw (with rubber pad).

### Technical Notes

Temperature range -10°C to +80°C.

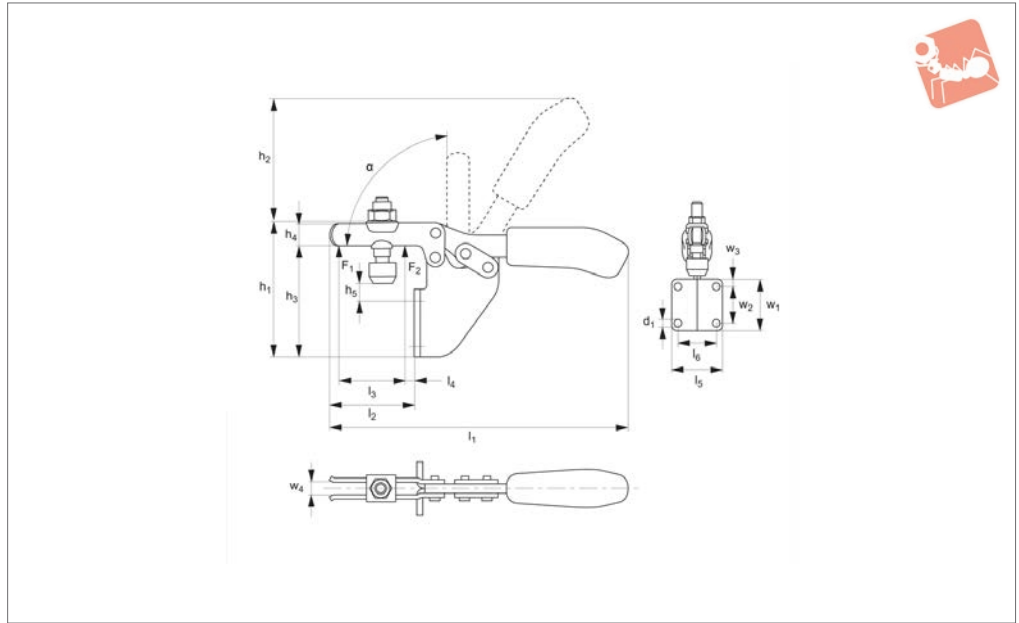
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub> min.	h <sub>5</sub> max.	l <sub>1</sub>	l <sub>2</sub>	Weight g
41050.W0000	0	0.3	0.4	M 4x25	33.0	34	24.5	7.5	4.7	10.7	79	28	35
41050.W0001	1	0.8	1.1	M 5x30	43.0	49	31.5	10.0	8.0	15.0	120	42	105
41050.W0002	2	1.0	1.2	M 6x35	61.0	68	40.0	13.2	15.0	22.0	164	64	185
41050.W0003	3	1.8	2.5	M 8x45	65.0	86	49.0	15.0	14.5	26.0	206	73	320
41050.W0004	4	2.0	3.0	M 8x65	97.0	115	66.5	20.0	17.5	46.0	287	113	700
41050.W0005	5	3.0	5.0	M 8x65	92.5	128	65.0	25.0	21.5	45.0	321	123	1080

Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	d <sub>1</sub>	d <sub>2</sub>	α
41050.W0000	9.0	5	25.5	11,5-15,5	6.3	-	12	4	20.0	-	3	4.6	-	90°
41050.W0001	18.5	8	34.0	13,0-14,5	5.5	-	18	5	23,5-25,5	24.5	5	5.2	-	90°
41050.W0002	32.0	16	38.0	26.0	6.0	12.7	21	6	29,5-34,0	34.0	5	5.6	5.6	90°
41050.W0003	38.5	14	50.0	25.7	7.0	13.0	27	8	37,5-42,5	42.0	6	6.5	5.1	90°
41050.W0004	63.0	27	57.0	41.0	8.0	20.5	34	10	52,0-59,0	59.0	8	8.5	8.5	90°
41050.W0005	78.0	16	77.0	41.5	12.5	-	36	10	57.0	-	10	8.5	-	90°



**41100**



**Material**

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes (sizes 2-3).  
 Pre-lubricated bearings (grease suitable

for food industry use).  
 Ergonomic, soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw (with rubber pad).

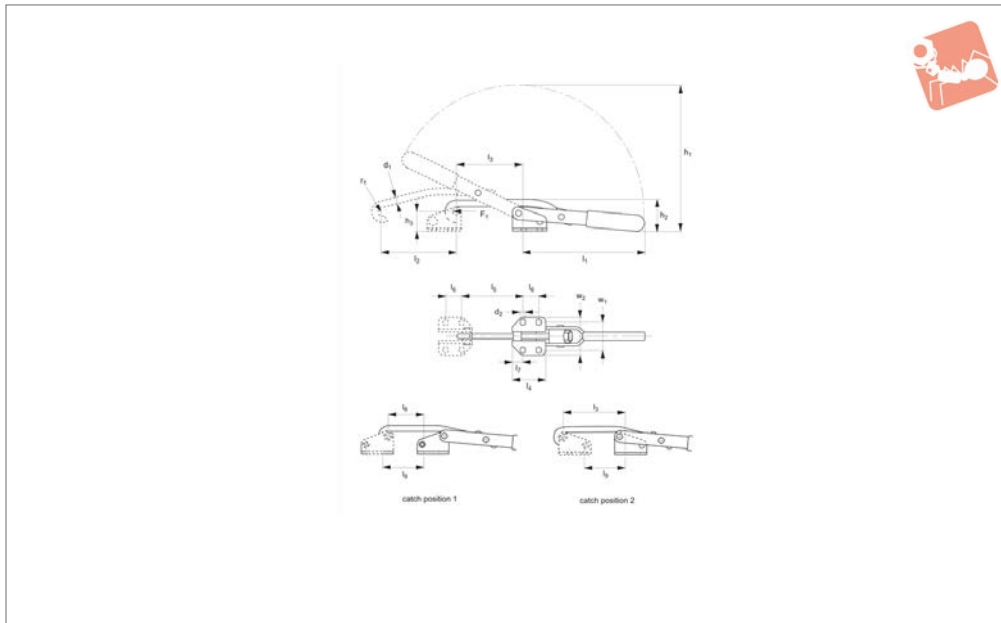
**Technical Notes**

Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub> min.	h <sub>5</sub> max.	Weight g
41100.W0001	1	0.8	1.1	M 5x30	68.0	49	57	10.0	14	20.0	170
41100.W0002	2	1.0	1.2	M 6x35	94.0	68	73	13.2	22	29.5	245
41100.W0003	3	1.8	2.5	M 8x45	86.5	86	70	15.0	5	16.0	390
41100.W0004	4	2.0	3.0	M 8x65	133.0	120	102	20.0	11	40.0	730

Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	d <sub>1</sub>	α
41100.W0001	120	32	18.5	4.0	31.0	19.0	28	13.5	8	5.0	5.2	90°
41100.W0002	162	52	32.0	10.5	37.0	25.5	32	20.0	6	6.2	5.6	90°
41100.W0003	206	59	37.0	6.5	42.5	28.5	38	24.0	7	8.0	6.8	90°
41100.W0004	282	93	63.0	15.0	52.0	32.0	82	32.0	40	10.0	8.5	90°



## 41700.1

STEEL TOGGLE CLAMPS

### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in case hardened bushes. Pre-lubricated bearings (grease suitable for food industry use).  
 Ergonomic, soft feel, oil-resistant handle with large grip area.

### Technical Notes

Ideally suited for use as a toggle type

fastener for the lids or covers of fixed or rotating drums and containers.

**The length of the hook is adjustable by rotating the threaded hook to extend or contract it's reach.**

Temperature range -10°C to +80°C.

### Tips

For counter strike see part no. 41700.W0011- .W0015.

For stainless steel version see part no. 41740.W0001- .W0005.

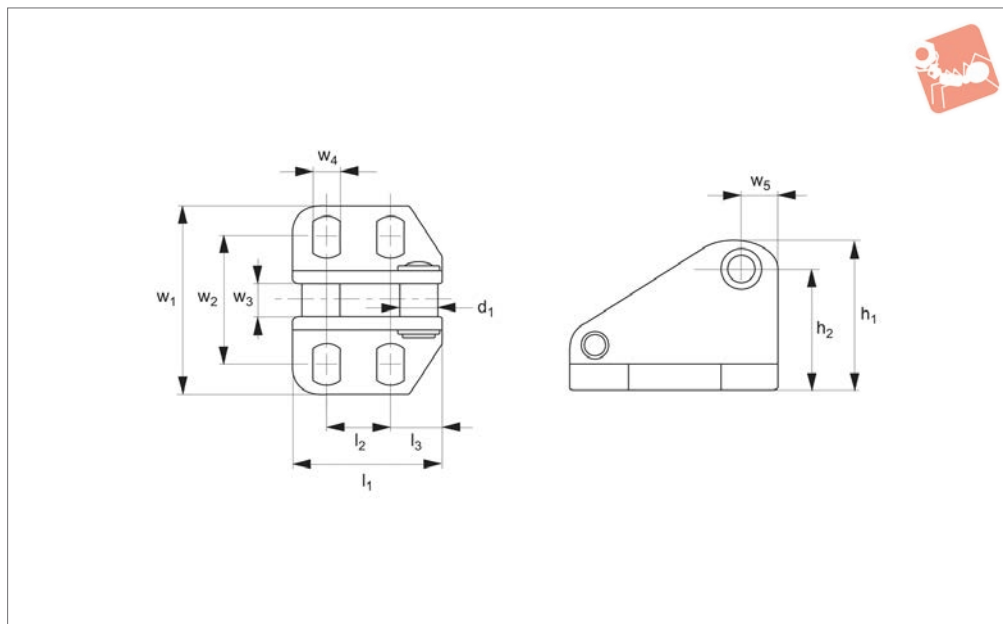
Order No.	Size	F <sub>1</sub> kN	h <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	Weight g
41700.W0001	1	2	111	5.3	4.5	34.5	22.7	88	45	100
41700.W0003	3	3	179	7.1	5.6	36.0	22.7	148	98	270
41700.W0005	5	5	280	10.8	11.2	69.0	49.1	228	146	850

Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>1</sub>	w <sub>2</sub>	r <sub>1</sub>	Adj. distance
41700.W0001	35,0-42,0	31	35,0-42,5	19	6	16,0-23,0	16,5-23,5	40	25,5-30,5	4.5	8
41700.W0003	65,5-77,0	40	72,5-84,0	19	13	32,5-44,0	39,5-50,5	45	31,0-36,0	5.5	12
41700.W0005	57,0-71,0	55	58,0-72,0	29	13	26,5-40,0	27,5-42,0	85	56,0-63,5	8.0	14



**41740.1**



### Material

Body: steel, zinc plated.  
Rivets: stainless steel running in case hardened bushes.

### Technical Notes

For use with no. 41600 and 41700.W0001 - .W0005.

### Tips

For stainless steel version see part no. 41740.W0311 - .W0315.

Order No.	Size	$h_1$	$d_1$	$h_2$	$l_1$	$l_2$	$l_3$	$w_1$	$w_2$	$w_3$	$w_4$	$w_5$	Weight g
41740.W0011	1	29	8	22.7	31	19	6	40	26,0-30,0	6.9	4.5	6	40
41740.W0013	3	29	10	22.7	40	19	13	45	31,3-35,8	10.9	5.5	6	70
41740.W0015	5	61	15	49.1	55	29	13	86	56,5-64,0	13.8	11.2	12	320

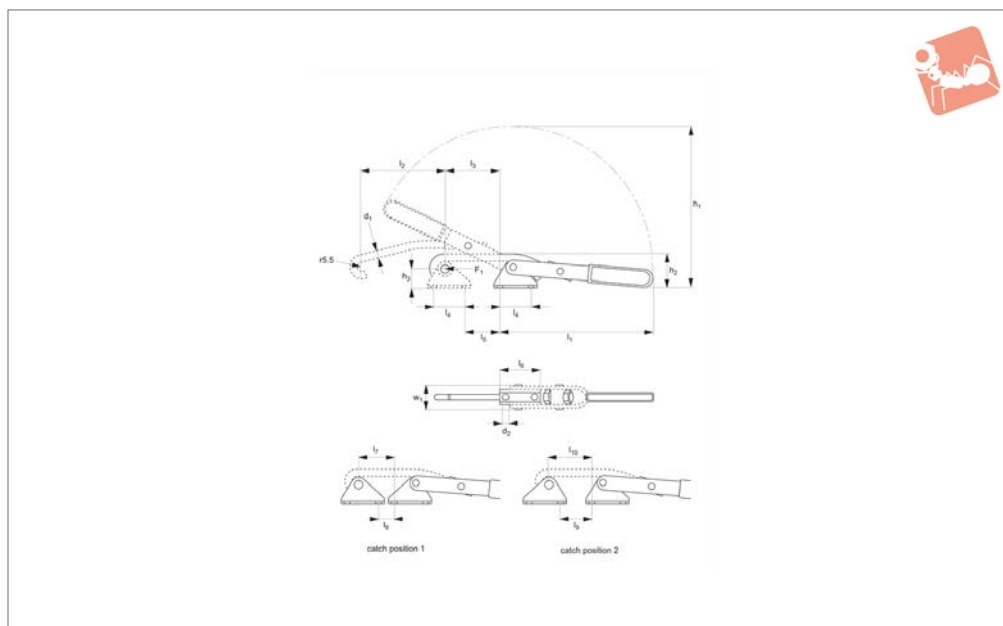


# Hook Type Toggle Clamp

narrow base



## Steel Toggle Clamps



### 41781.1

STEEL TOGGLE CLAMPS

#### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use).  
 Handle: oil-resistant plastic with large grip area.

#### Technical Notes

Suitable for use as a toggle type fastener

for the lids or covers of fixed or rotating drums and containers.

Their narrow base makes them ideal for applications where space is limited but holding forces must not be compromised.

**The length of the hook is adjustable, up to 22mm. Adjustment is made by rotating the threaded hook to extend or contract its reach.**

Temperature range -10°C to +80°C.

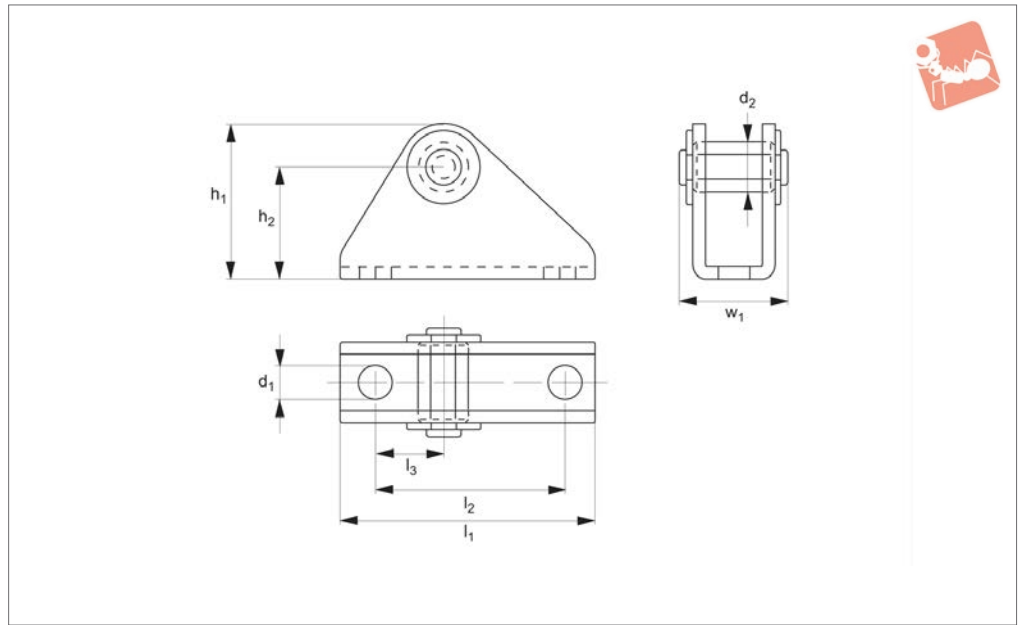
#### Tips

See part no. 41791.W0013 for strike catch.  
 For stainless steel version see part no. 41781.W0303.

Order No.	Size	$F_1$ kN	$h_1$	$d_1$	$d_2$	$h_2$	$h_3$	$l_1$	$l_2$	Weight g
41781.W0003	3	3	179	7.1	6.5	36	23	170	99	270
Order No.	$l_3$	$l_4$	$l_5$	$l_6$	$l_7$	$l_8$	$l_9$	$l_{10}$	$w_1$	Adj. distance
41781.W0003	44-56	38	20-32	52	38-46	14-22	30-42	44-56	27	22



**41791.1**



**Material**

Body: steel, zinc plated.

Rivets: stainless steel running in hardened

bushes.

**Technical Notes**

The adjustment range of the clamp can be

altered by rotating the fixed catch.

Use socket cap screws for mounting.

Order No.	Size	$h_1$	$d_1$	$d_2$	$h_2$	$l_1$	$l_2$	$l_3$	$w_1$	Weight g
41791.W0013	3	32	6.5	10	23	52	38	14	22	65

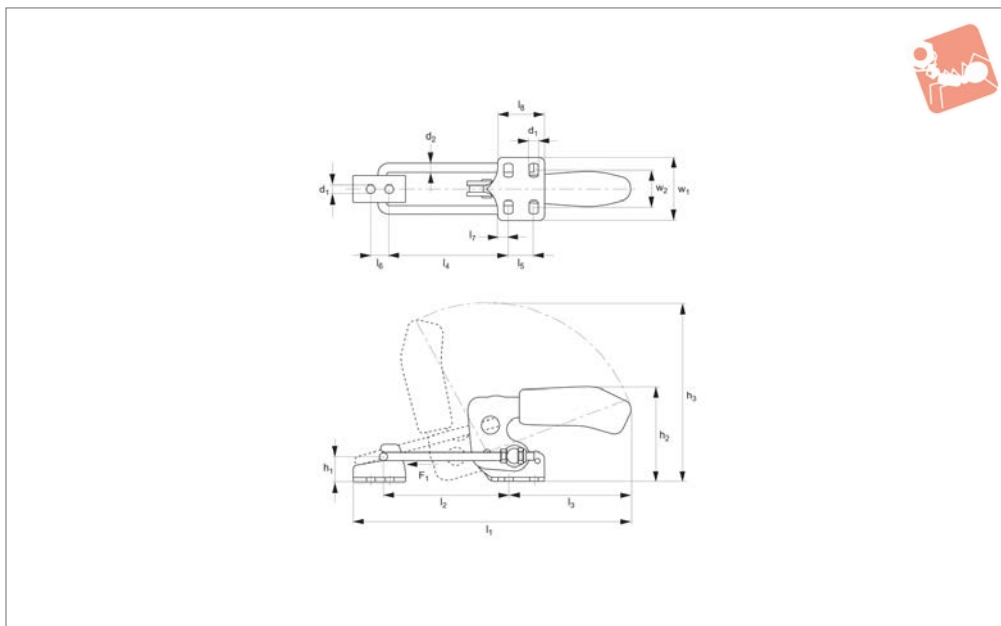


# Latch Type Toggle Clamps

horizontal acting



## Steel Toggle Clamps



### 41801.1

STEEL TOGGLE CLAMPS

#### Material

Body: steel, zinc-plated. Stainless steel rivets running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use).  
Ergonomic, soft feel, oil-resistant handle

with large grip area.

Hook: steel, tempered.

**Complete with counter strike.**

#### Technical Notes

Temperature range -10°C to +80°C.

#### Tips

For stainless steel version see part no. 41811.

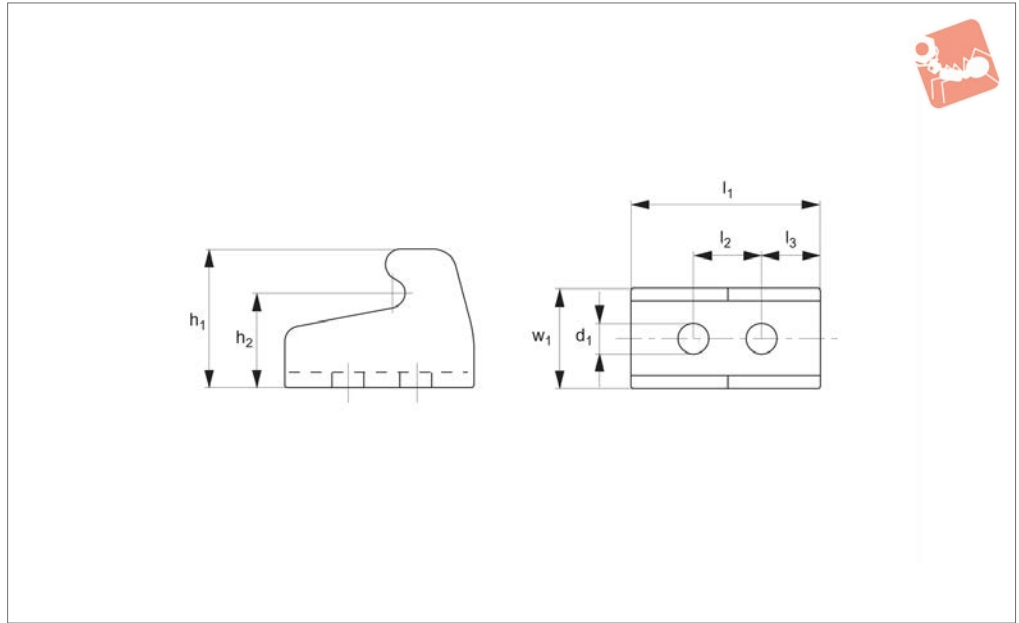
Order No.	Size	F <sub>1</sub> kN	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub> min.	l <sub>1</sub> max.	l <sub>2</sub> min.	l <sub>2</sub> max.	h <sub>3</sub>	Weight g
41801.W0002	2	1.6	12	47.0	125	159	42.0	76	99	120
41801.W0003	3	3.2	19	70.0	169	216	53.5	101	136	330
41801.W0004	4	7.0	26	94.5	209	273	66.0	130	168	810

Order No.	l <sub>3</sub>	l <sub>4</sub> min.	l <sub>4</sub> max.	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>
41801.W0002	69	38.0	72	13	11	6.4	26.0	38.0	19,5-23,5	5.2	4
41801.W0003	93	48.6	96	19	14	8.0	35.0	48.0	24,5-32,0	6.5	6
41801.W0004	111	59.0	123	32	19	9.5	53.5	64.5	35,0-46,0	8.5	8



**41811.1**



**Material**

Steel, zinc plated.

For stainless steel version see part no. 41781.W0303.

**Technical Notes**

See part no. 41781.W0013 for strike catch.

Order No.	Size	$h_1$	$h_2$	$l_1$	$l_2$	$l_3$	$w_1$	$d_1$	Weight g
41811.W0012	2	16	18	26	11	8	18	5.2	12
41811.W0013	3	44	28	39	14	12	23	6.5	19
41811.W0014	4	108	38	56	19	17	30	8.5	26



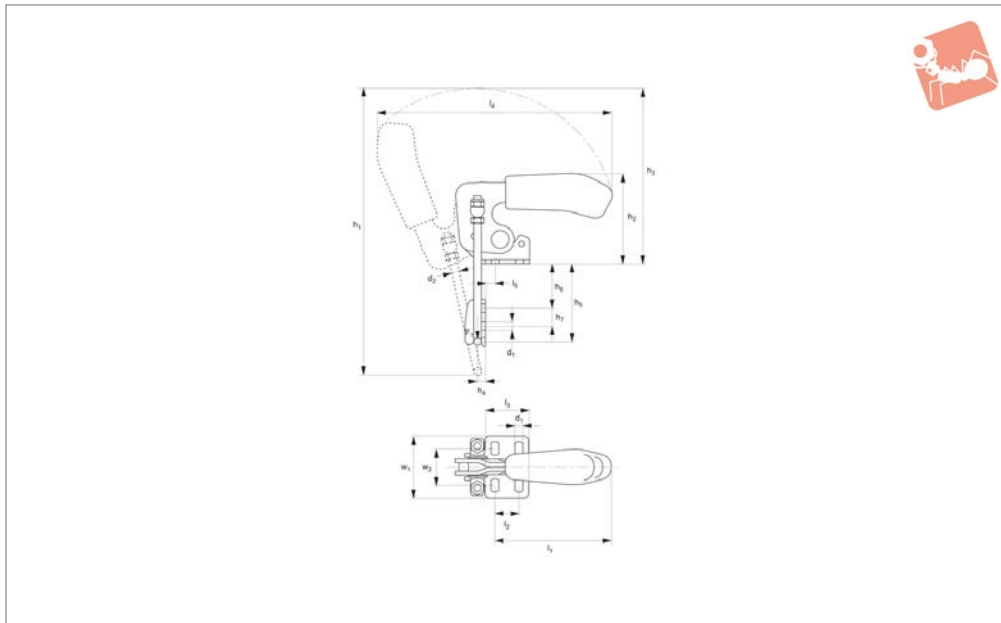


# Latch Type Toggle Clamps

vertical acting



## Steel Toggle Clamps



**41821.1**

STEEL TOGGLE CLAMPS

### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes.  
 Bearings are pre-lubricated.

Ergonomic, soft feel, oil-resistant handle with large grip area.  
 Complete with counter strike.

### Technical Notes

Temperature range -10°C to +80°C.

### Tips

For stainless steel version see part 41821.

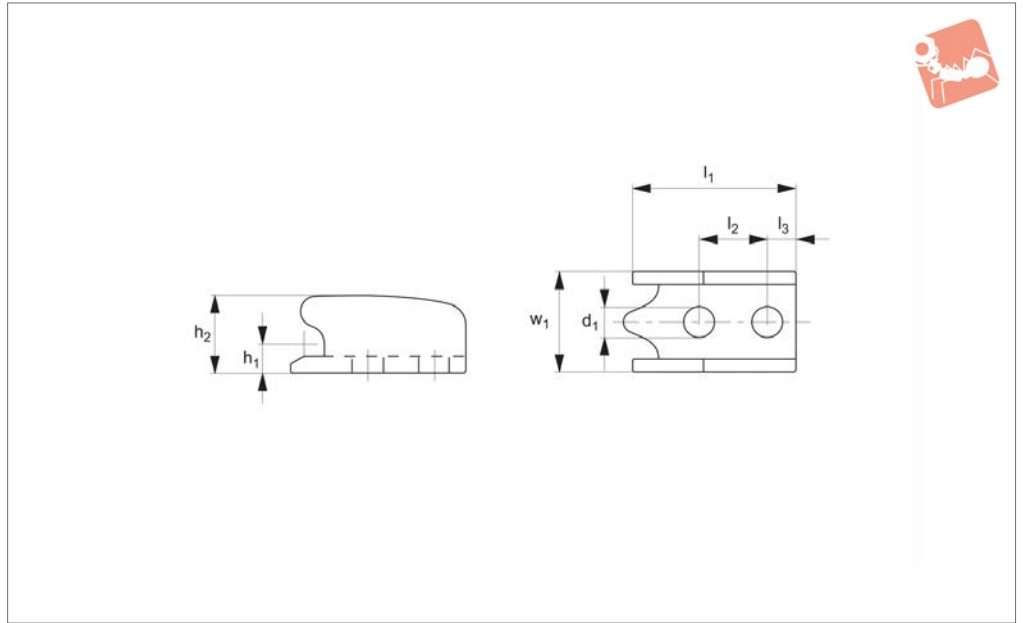
Order No.	Size	F <sub>1</sub> kN	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub> min.	Weight g
41821.W0002	2	1.6	150	47.0	69	13	99	4.5	24	130
41821.W0003	3	3.2	172	70.0	93	19	137	6.0	33	340
41821.W0004	4	7.0	254	94.5	111	32	168	8.0	43	810

Order No.	h <sub>5</sub> max.	h <sub>6</sub> min.	h <sub>6</sub> max.	h <sub>7</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>	w <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>
41821.W0002	47	5.0	28	11	26.0	158	6.8	38.0	19,5-23,5	5.2	4
41821.W0003	63	6.5	36	14	35.0	190	8.0	48.0	24,5-32,5	6.5	6
41821.W0004	81	9.0	47	19	53.5	239	9.5	64.5	35,0-46,0	8.5	8



**41831.1**



**Material**

Steel, zinc plated.

**Technical Notes**

For use with toggle clamp no. 41821.W0002 - .W0004.

Order No.	Size	$h_1$	$h_2$	$l_1$	$l_2$	$l_3$	$w_1$	$d_1$	Weight g
41831.W0012	2	5	12	26	11	5	18	5.2	14
41831.W0013	3	6	16	36	14	7	23	6.5	30
41831.W0014	4	8	22	48	19	9	30	8.5	66

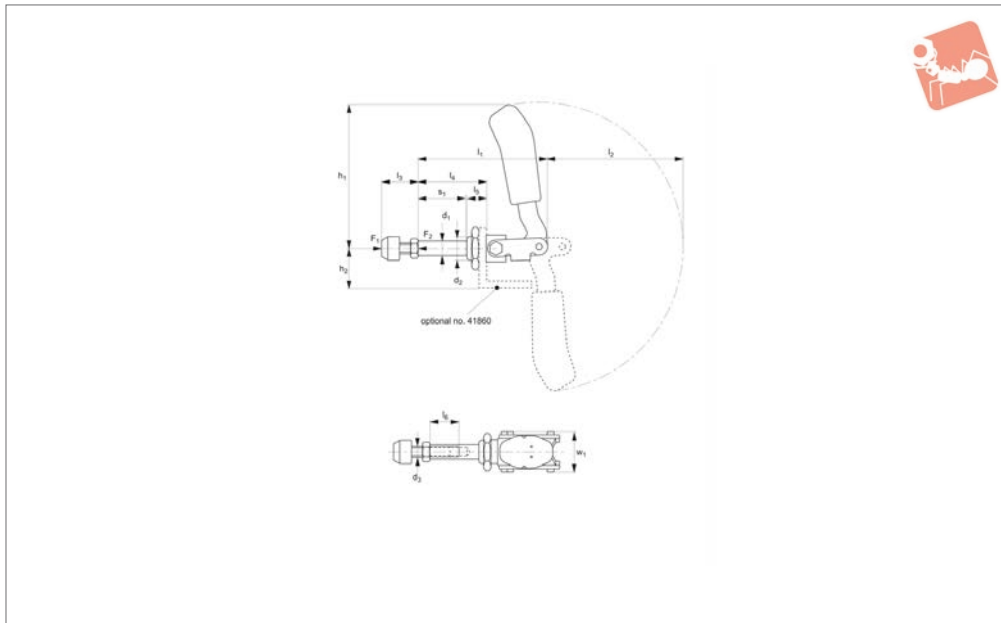


# Push-Pull Toggle Clamps

compact version



## Steel Toggle Clamps



### 41840.1

STEEL TOGGLE CLAMPS

#### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use).  
 Ergonomic, soft feel, oil-resistant handle

with large grip area.  
 Supplied complete with clamping screw (with rubber pad).

#### Technical Notes

Compact construction with long travel.

Temperature range -10°C to +80°C.

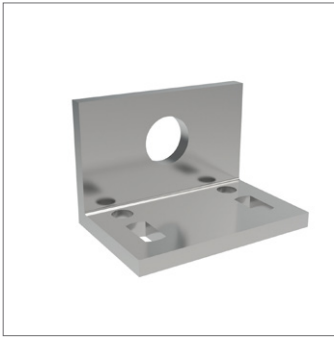
#### Tips

For stainless steel version see part no. 41840.W0002- .W0005.

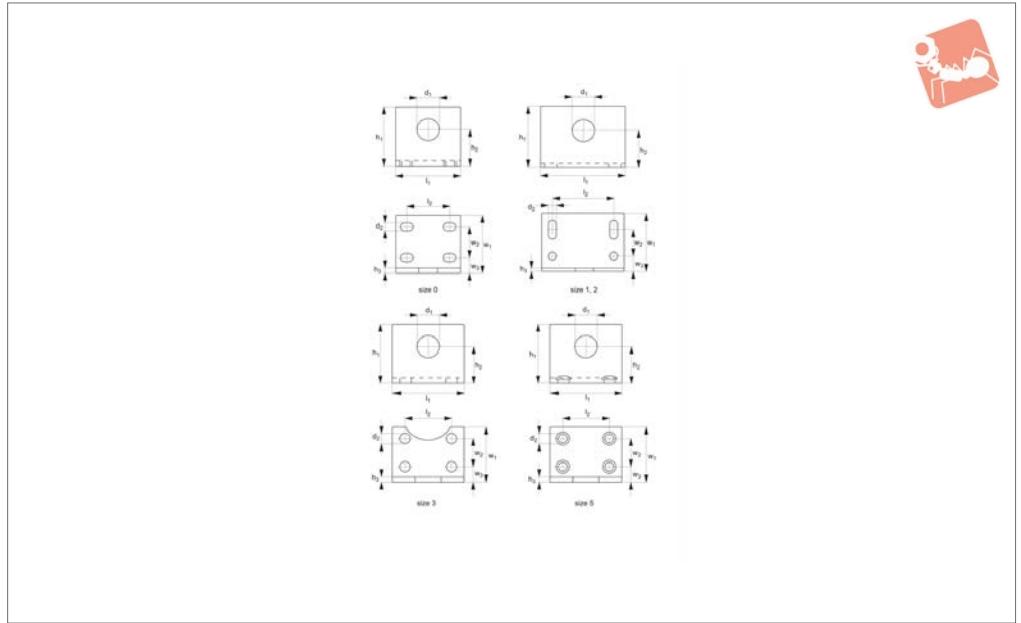
Order No.	Size	Clamping screw	F <sub>1</sub> kN	F <sub>2</sub> kN	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	Weight g
41840.W0002	2	M 6x25	1.0	1.0	10	M16x1,5	M 6	73	24	130
41840.W0003	3	M 8x35	2.5	2.5	12	M20x1,5	M 8	123	33	320
41840.W0005	5	M12x50	4.0	4.0	16	M24x1,5	M12	149	37	1200
41840.W0006	5-M27	M12x50	4.0	4.0	16	M27x2,0	M12	149	37	1200

Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub> min.	l <sub>3</sub> max.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	w <sub>1</sub>	Stroke s <sub>1</sub>
41840.W0002	68.5	68	17	25	36	13	15	30.5	21.5
41840.W0003	108.5	115	22	35	57	16	25	33.0	40.0
41840.W0005	175.0	139	30	50	92	24	45	49.0	67.0
41840.W0006	175.0	139	30	50	92	24	45	49.0	67.0



## 41880.1



### Material

Steel, zinc plated.

### Technical Notes

The increased height of the centre line

allows a wide range of applications. Fastening by means of four screws.

For stainless steel version see part 41880.W0300- .W0305.

Order No.	Size	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	Weight g
41880.W0500	0	10.2	4.5	23	13	3	30	15,5-20,5	30	16	9.0	35
41880.W0501	1	12.2	6.7	40	24	4	60	40.0	40	18	11.0	135
41880.W0502	2	16.2	6.7	40	24	5	60	40.0	40	18	11.0	160
41880.W0503	3	20.2	6.7	50	33	6	65	41.0	44	19	14.5	235
41880.W0505	5	24.0	9.0	60	37	8	70	45.0	60	32	17.0	450
41880.W0506	5-M27	27.0	9.0	60	37	8	70	45.0	60	32	17.0	440

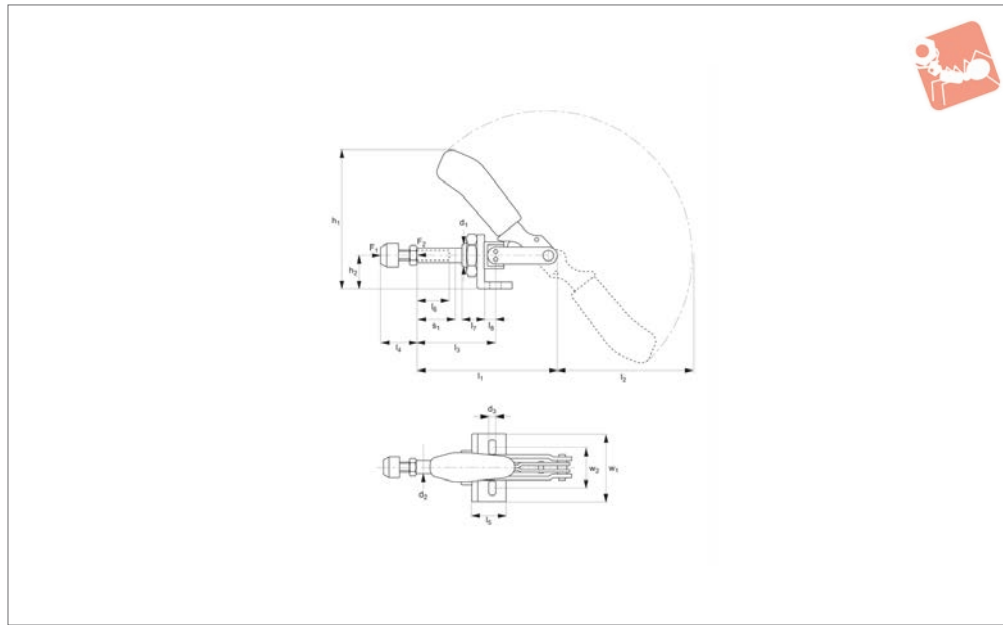


# Push-Pull Type Toggle Clamps

extended push rod



## Steel Toggle Clamps



**42000.1**

STEEL TOGGLE CLAMPS

### Material

Body: steel, zinc plated.  
Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use).  
Ergonomic, soft feel, oil-resistant handle

with large grip area.  
Supplied complete with clamping screw no. 45020 (with rubber pad).

### Technical Notes

Temperature range -10°C to +80°C.

### Tips

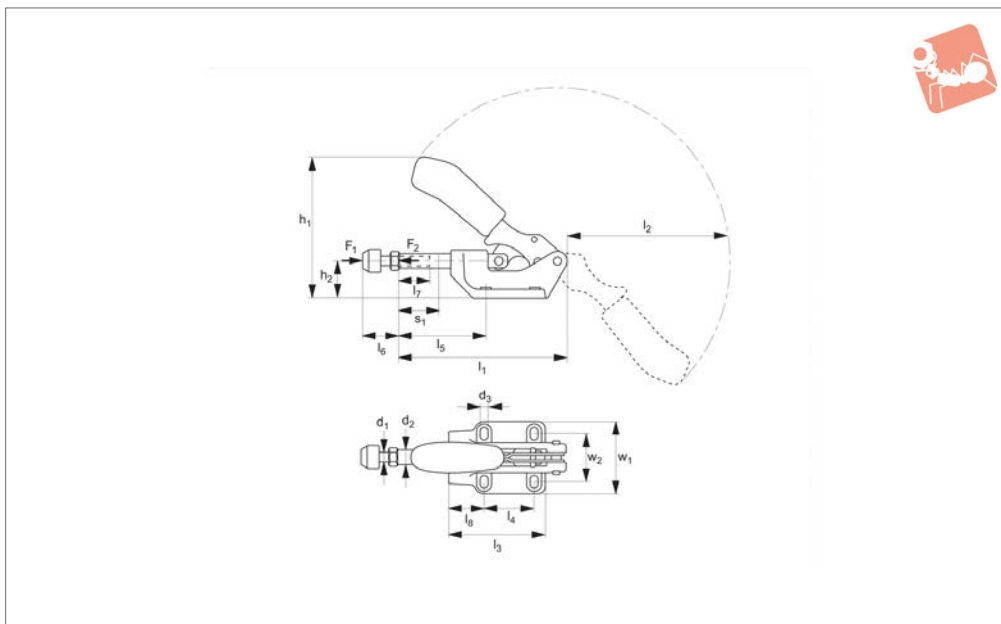
For stainless steel version see part no. 41890.W0000- .W0003.

Order No.	Size	Type	Clamping screw	F <sub>1</sub> kN	F <sub>2</sub> kN	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	Weight g
42000.W0000	0	With Bracket	M 4x20	0.8	0.8	M10x1,0	6.5	4.5	49.3	12	65
42000.W0001	1	With Bracket	M 4x20	1.0	1.0	M12x1,5	8.0	4.5	60.5	15	125
42000.W0002	2	With Bracket	M 6x25	2.0	2.0	M16x1,5	10.0	5.6	85.5	20	245
42000.W0003	3	With Bracket	M 8x35	2.5	2.5	M20x1,5	12.0	6.5	108.0	25	445
42000.W0005	5	With Bracket	M12x50	4.5	4.5	M24x1,5	16.0	8.5	129.5	30	880
42000.W0006	5-M27	With Bracket	M12x50	4.5	4.5	M27x2,0	16.0	8.5	129.5	30	900
42000.W0010	0	W/o Bracket	M 4x20	0.8	0.8	M10x1,0	6.5	-	37.0	-	60
42000.W0011	1	W/o Bracket	M 4x20	1.0	1.0	M12x1,5	8.0	-	45.5	-	100
42000.W0012	2	W/o Bracket	M 6x25	2.0	2.0	M16x1,5	10.0	-	66.0	-	245
42000.W0013	3	W/o Bracket	M 8x35	2.5	2.5	M20x1,5	12.0	-	82.5	-	330
42000.W0015	5	W/o Bracket	M12x50	4.5	4.5	M24x1,5	16.0	-	99.0	-	700
42000.W0016	5-M27	W/o Bracket	M12x50	4.5	4.5	M27x2,0	16.0	-	99.0	-	720

Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub> min.	l <sub>3</sub> max.	l <sub>4</sub> min.	l <sub>4</sub> max.	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	Stroke s <sub>1</sub>
42000.W0000	66.5	54.0	17.0	33.0	12	20	16	13	10	6.5	25	16.0	16
42000.W0001	91.0	74.0	24.5	44.5	12	20	20	20	16	7.0	30	16,0-19,5	20
42000.W0002	114.0	105.0	32.5	58.5	17	25	34	20	19	12.5	50	31,8- 36,0	26
42000.W0003	140.0	127.5	37.0	69.0	22	35	30	30	22	13.0	60	29,5-42,5	32
42000.W0005	171.5	158.0	41.5	81.5	30	50	35	50	25	15.5	65	29,0-46,0	40
42000.W0006	171.5	158.0	41.5	81.5	30	50	35	50	25	15.5	65	29,0-46,0	40
42000.W0010	66.5	54.0	10.5	26.5	12	20	-	13	10	-	17	-	16
42000.W0011	91.0	74.0	17.5	37.5	12	20	-	20	16	-	19	-	20
42000.W0012	114.0	105.0	20.0	46.0	17	25	-	20	19	-	24	-	26
42000.W0013	140.0	127.0	24.0	56.0	22	35	-	30	22	-	30	-	32
42000.W0015	171.5	158.0	26.5	66.5	30	50	-	50	25	-	36	-	40
42000.W0016	171.5	158.0	26.5	66.5	30	50	-	50	25	-	41	-	40



## 42050.1



### Material

Base: cast iron, malleable, varnished.  
 Lever and push rod: zinc plated, passivated and tempered.  
 Rivets: stainless steel running in hardened

bushes. Pre-lubricated bearings (grease suitable for food industry use).  
 Ergonomic, soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw

and rubber nose.  
**Technical Notes**  
 Temperature range -10°C to +80°C.

Order No.	Size	Clamping screw $d_1$	$F_1$ kN	$F_2$ kN	$d_2$	$d_3$	$h_1$	$h_2$	$l_1$	$l_2$	Weight g
42050.W0003	3	M 8x35	4	4	12	6.5	116.0	30	139	135	540
42050.W0005	5	M12x50	10	10	16	8.5	137.5	38	174	156	1115
42050.W0007	7	M12x50	25	25	22	11.0	179.0	55	218	192	2840

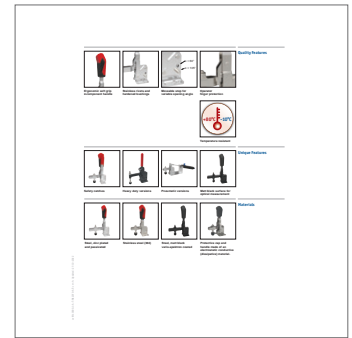
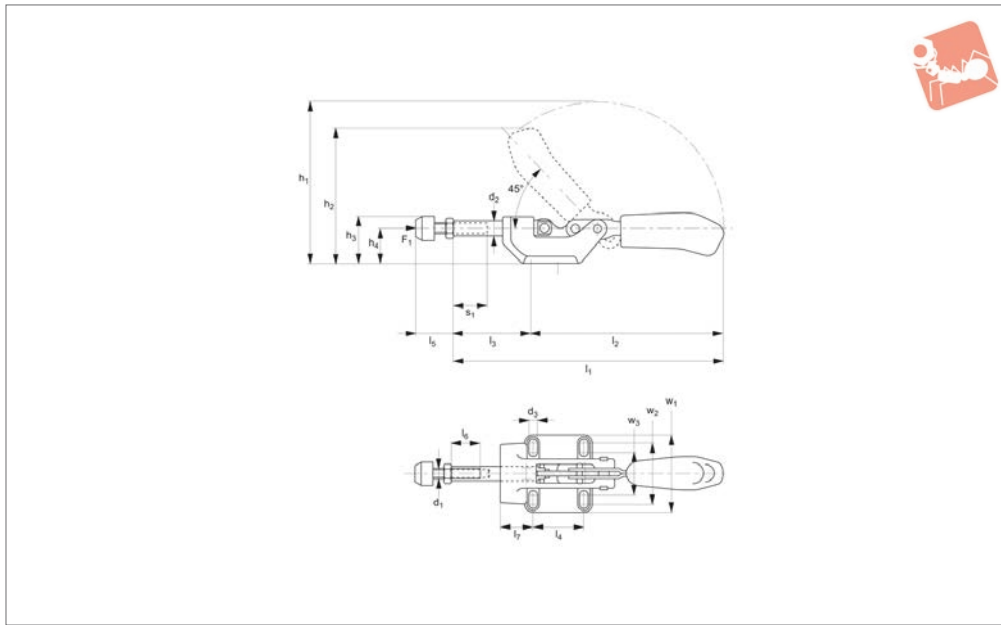
  

Order No.	$l_3$	$l_4$	$l_5$ min.	$l_5$ max.	$l_6$ min.	$l_6$ max.	$l_7$	$l_8$	$w_1$	$w_2$	Stroke $s_1$
42050.W0003	95	41	40	72	22	35	30	28	60	36-44	32
42050.W0005	121	41	58	98	30	50	50	45	71	41-50	40
42050.W0007	158	70	59	105	30	50	50	45	93	57-65	50



# Reverse Action Push-Pull Toggle

angle base - heavy duty



## 42070

STEEL TOGGLE CLAMPS

### Material

Base: cast iron, malleable, varnished.  
 Lever and push rod: steel, zinc plated and tempered.  
 Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use).  
 Ergonomic, soft feel, oil-resistant handle

with large grip area.  
 Supplied complete with clamping screw and rubber nose.

### Technical Notes

Reverse clamping position, clamp is locked when handle is extended at the back of the clamp (the reverse action of clamp no.

42050).  
 This toggle clamp boasts a low height when in the clamped position, making it ideal for use in small spaces.  
 Compatible with push-pull toggle clamps no. 42050.  
 Temperature range -10°C to +80°C.

Order No.	Size	Clamping screw $d_1$	$F_1$ kN	$d_2$	$d_3$	$h_1$	$h_2$	$h_3$	$h_4$	Weight g	
42070.W0003	3	M 8x35	4	12	6.5	133.5	109	39	30	540	
Order No.	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$l_7$	$w_1$	$w_2$	$w_3$	Stroke $s_1$
42070.W0003	235	163	72	41	22-35	30	28	60	44	36	30

# Stainless Steel Toggle Clamps

## Vertical Acting Toggle Clamps

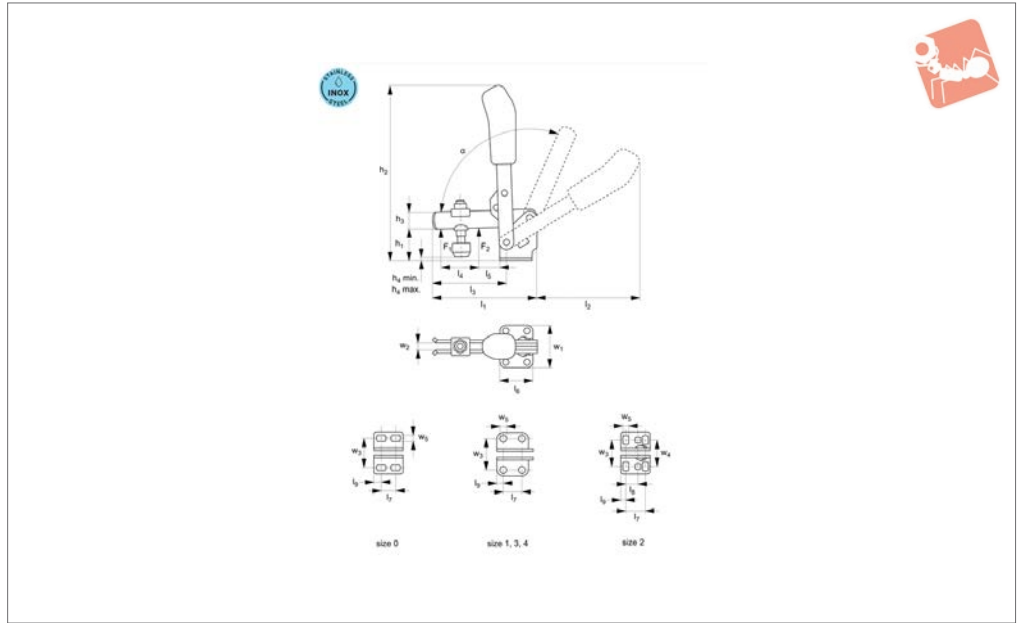
stainless steel - open arm - horizontal base



STAINLESS STEEL TOGGLE CLAMPS



### 40000.4



#### Material

Body: stainless steel (AISI 304, 1.4301).  
 Rivets: stainless steel running in hardened bushes (sizes 2-4). Pre-lubricated bearings.  
 Ergonomic soft feel oil-resistant handle

with large grip area.  
 Supplied complete with stainless clamping screw (with rubber pad).

#### Technical Notes

Opening angle (symbol $\alpha$ /symbol $\alpha$ /symbol $\alpha$ /

symbol $\alpha^*$ ) can be changed by pressing in a stop pin on the clamp body.  
 Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Weight g
40000.W0300	0	0.5	0.7	M 4x25	18.0	81	8	-1.5	3.5	49	50	31	60
40000.W0301	1	0.6	1.1	M 5x30	19.0	98	10	-4.0	2.0	61	58	39	105
40000.W0302	2	0.8	1.2	M 6x35	23.0	129	12	-3.3	4.5	78	80	52	175
40000.W0303	3	1.2	2.5	M 8x45	33.0	186	18	3.0	10.5	112	112	79	410
40000.W0304	4	1.7	3.0	M 8x65	42.5	221	20	-6.0	19.5	141	130	101	630

Order No.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	$\alpha$	$\alpha^*$
40000.W0300	14	5.5	22	8,5-13,5	-	5.5	32	4	23	-	4.5	95°	-
40000.W0301	18	6.0	27	16.0	-	5.5	34	5	22-26	-	4.5	95°	-
40000.W0302	25	11.0	32	20.0	12.5	6.0	43	6	23-31	27	5.5	105°	60°
40000.W0303	37	19.0	35	20.0	-	7.5	46	8	32	-	7.5	105°	60°
40000.W0304	54	16.0	53	32.0	-	13.0	64	10	45	-	8.6	105°	60°

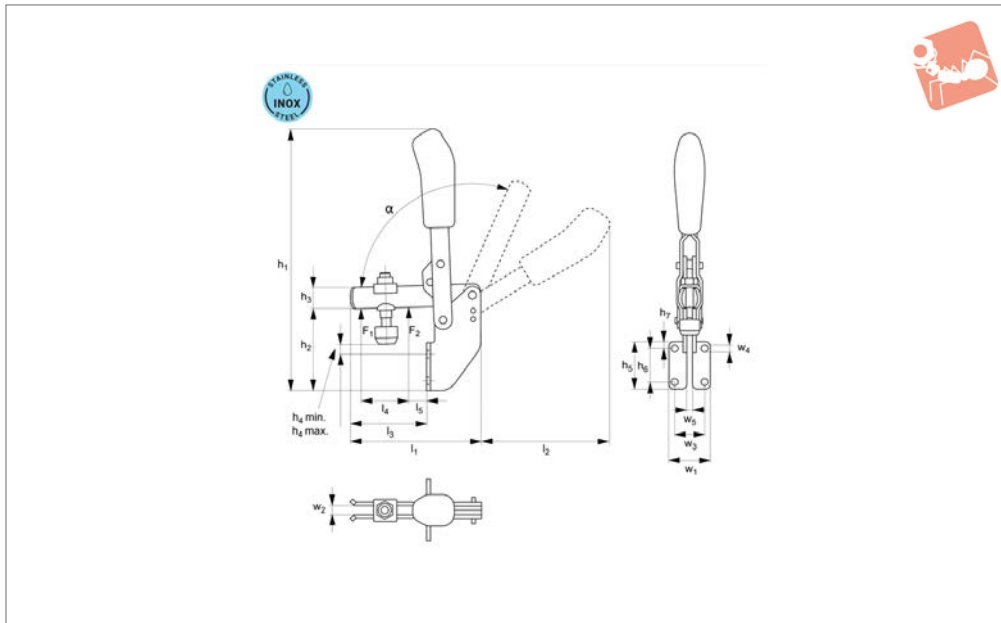




# Vertical Acting Toggle Clamps

angle base - stainless steel

# Stainless Steel Toggle Clamps



**40100.4**

STAINLESS STEEL TOGGLE CLAMPS

### Material

Body: stainless steel (AISI 304, 1.4301).  
 Rivets: stainless steel running in hardened bushes.  
 Pre-lubricated bearings.  
 Ergonomic soft feel oil-resistant handle

with large grip area.  
 Supplied complete with stainless clamping screw (with rubber pad).

### Technical Notes

Suitable for use in the food industry.

Opening angle (symbola/symbol/symbola/symbol\*) can be changed by pressing in a stop pin on the clamp body.  
 Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	h <sub>5</sub>	h <sub>6</sub>	h <sub>7</sub>	Weight g
<b>40100.W0302</b>	2	0.8	1.2	M 6x35	167	60	12	8	15	32	20	6	220
Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	α	α*	
<b>40100.W0302</b>	77	81	41	25	6	37	6	25.5	6.1	5	105°	60°	

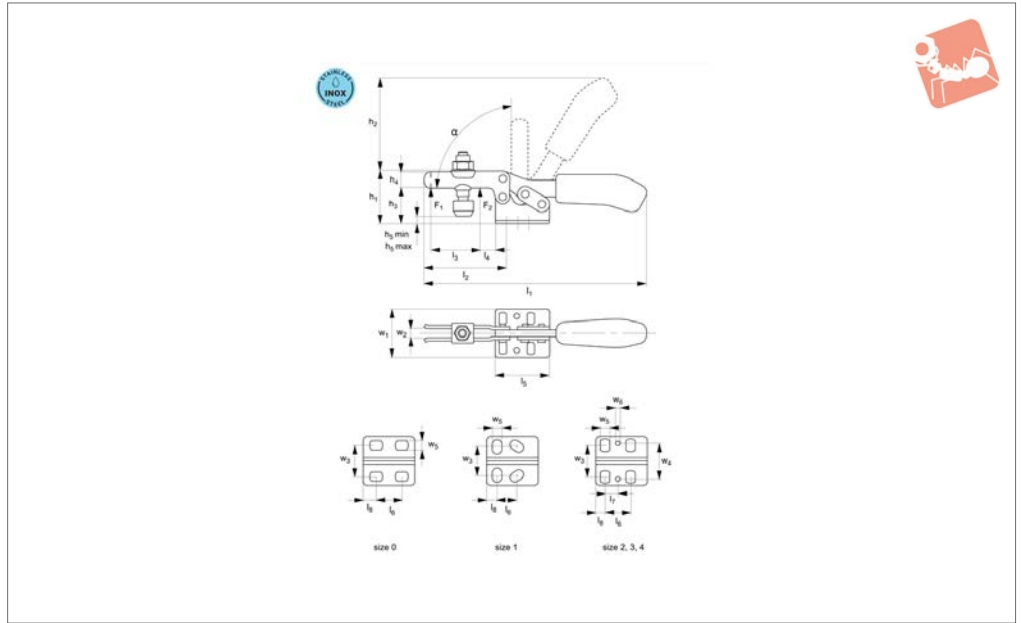
# Stainless Steel Toggle Clamps

## Horizontal Acting Toggle Clamps

stainless steel - open arm - horizontal base



**41000.4**



STAINLESS STEEL TOGGLE CLAMPS

**Material**

Body: stainless steel (AISI 304, 1.4301), polished.  
 Rivets: stainless steel running in hardened bushes (sizes 2-5). Pre-lubricated

bearings.

Ergonomic soft feel oil-resistant handle with large grip area.  
 Supplied complete with stainless clamping screw (with rubber pad).

**Technical Notes**

Suitable for the food industry.  
 Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub> min.	h <sub>5</sub> max.	l <sub>1</sub>	l <sub>2</sub>	Weight g
41000.W0300	0	0.3	0.4	M 4x25	23.0	34	14.5	7.5	-5.0	0.6	79	28	35
41000.W0301	1	0.8	1.1	M 5x30	30.0	49	19.0	10.0	-4.0	2.0	120	42	105
41000.W0302	2	1.0	1.2	M 6x35	45.0	68	24.0	13.0	-1.6	5.0	162	64	185
41000.W0303	3	1.8	2.5	M 8x45	48.5	86	32.0	15.0	-2.0	9.0	206	73	320
41000.W0304	4	2.0	3.0	M 8x65	75.0	126	45.0	20.0	-4.0	24.0	287	113	700

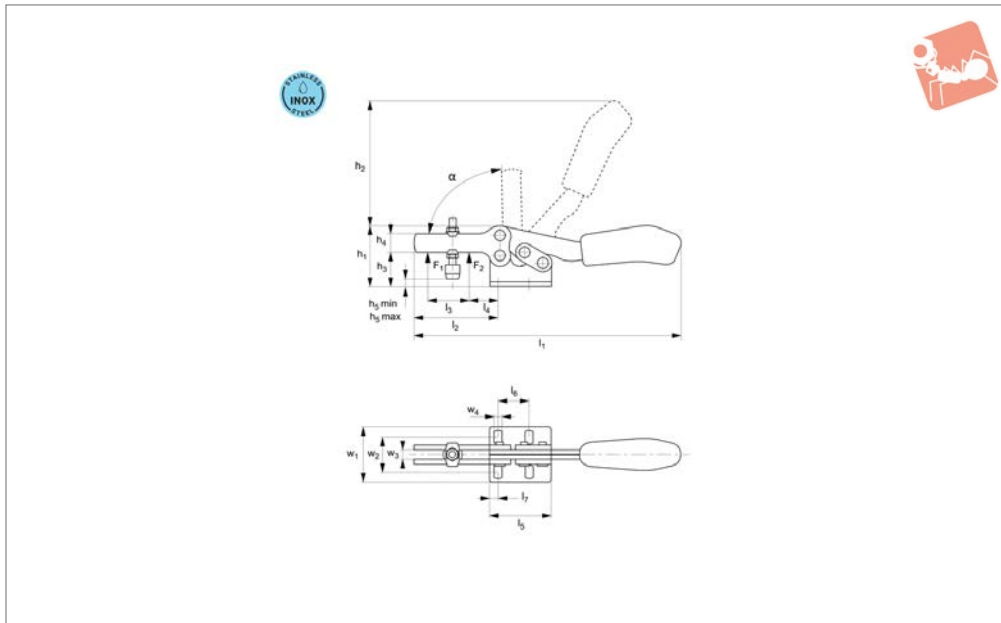
Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	w <sub>6</sub>	α
41000.W0300	9.0	5	25.5	11,5-15,5	-	6.3	25.0	4	16.0	-	4.6	-	90°
41000.W0301	18.6	8	34.0	13,3-14,7	-	5.5	34.0	5	18,0-21,5	-	5.2	-	90°
41000.W0302	32.0	16	38.0	26.0	12.7	6.0	42.0	6	19,5-29,5	28.5	5.6	5.6	90°
41000.W0303	36.0	14	50.0	25.7	13.0	7.0	44.5	8	22,0-31,8	31.6	6.5	5.1	90°
41000.W0304	63.0	27	57.0	41.0	20.5	8.0	58.0	10	29,0-43,0	43.0	8.5	8.5	90°



# Horizontal Toggle Clamp Plus

stainless - increased clamping force

# Stainless Steel Toggle Clamps



## 41001.4

STAINLESS STEEL TOGGLE CLAMPS

### Material

Body: stainless steel, polished.  
Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use).

Ergonomic soft feel oil-resistant handle with large grip area.  
Supplied complete with stainless clamping screw (with rubber pad).

### Technical Notes

Suitable for use in the food industry.  
Temperature range -10°C to +80°C.  
**With increased retaining forces.**

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub> min.	h <sub>5</sub> max.	l <sub>1</sub>	Weight g
41001.W0301	1	1.1	1.7	M 5x35	37	52	19.6	12	1	10.2	125	150
41001.W0302	2	1.6	3.0	M 6x50	51	110	28.0	16	-1	12.0	224	450
41001.W0303	3	2.5	4.0	M 8x58	61	112	35.0	18	1	13.0	243	600
41001.W0304	4	3.5	8.0	M10x76	77	135	41.0	24	-2	17.5	329	1250

Order No.	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	α
41001.W0301	44	20.5	15.0	40	13.5	6.0	27.2	14,7 - 19,5	5	4.3	80°
41001.W0302	71	39.0	14.0	52	26.0	7.0	46.0	23,5 - 34,0	8	6.5	90°
41001.W0303	74	41.5	20.6	56	26.2	6.5	49.2	27,5 - 38,0	8	6.5	90°
41001.W0304	120	69.0	23.0	76	41.5	10.5	60.0	34,5 - 45,0	10	8.6	90°

# Stainless Steel Toggle Clamps

## Hook Type Toggle Clamps

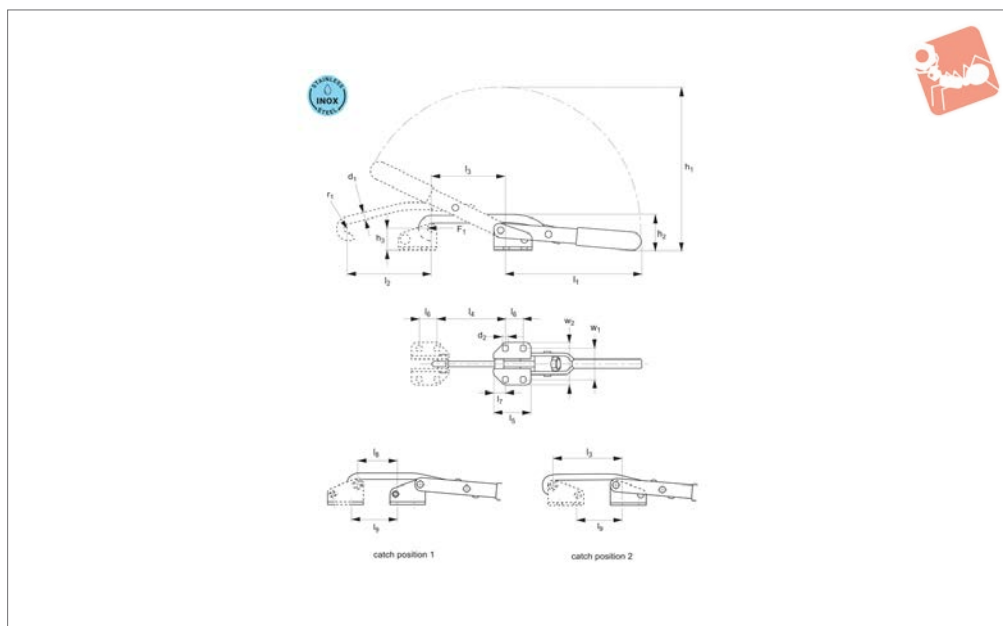
stainless steel



STAINLESS STEEL TOGGLE CLAMPS



### 41700.4



#### Material

Body: stainless steel (AISI 304, 1.4301).  
Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings.  
Handle: oil-resistant plastic with large grip

area.

#### Technical Notes

For counter strike see part no. 41740.  
W0011- .W0015.

**The length of the hook is adjustable by rotating the threaded hook to extend or contract its reach.**

Temperature range -10°C to +80°C.  
Suitable for food industry.

Order No.	Size	F <sub>1</sub> kN	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	Weight g
41700.W0301	1	1.0	111	35.0	22.7	88	45	35,0-42,0	35,0-42,5	100
41700.W0303	3	1.5	179	36.5	22.7	148	97	65,5-77,0	72,5-84,0	270
41700.W0305	5	2.5	280	70.5	49.1	228	146	57,0-71,0	58,0-72,0	850

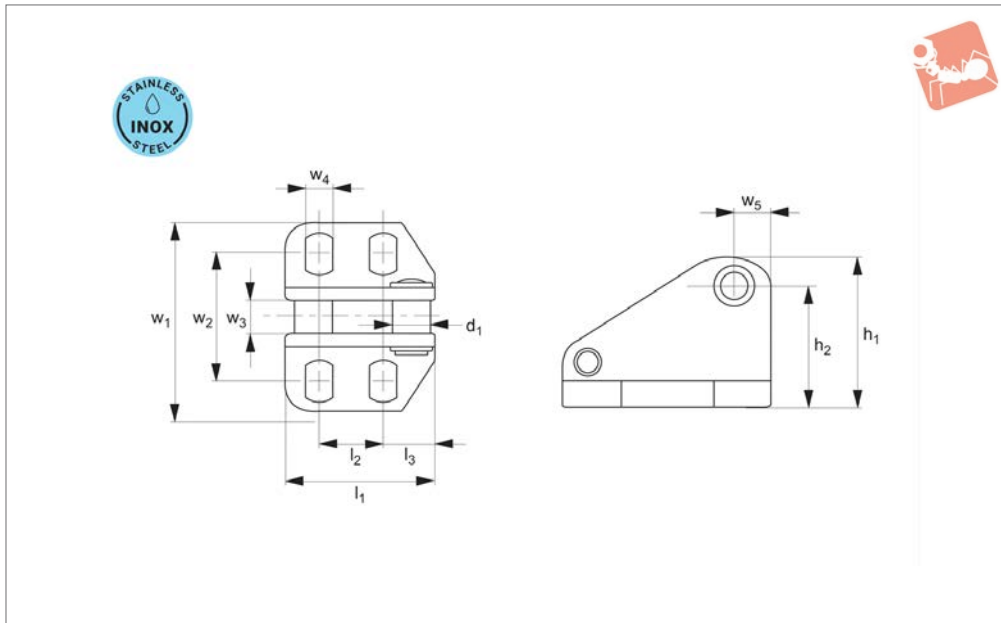
Order No.	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>1</sub>	w <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>	r <sub>1</sub>	Adj. distance
41700.W0301	31	19	6	16,5-23,5	16,0-23,0	40	25,5-30,5	6	4.5	4.5	8
41700.W0303	40	19	13	39,5-50,5	32,5-44,0	45	31,0-36,0	8	5.6	5.5	12
41700.W0305	55	29	13	27,5-42,0	26,5-40,0	85	56,0-63,5	12	11.2	8.0	14



# Fixed Catch

stainless steel - for no. 41700.W0301 - .W0305

# Stainless Steel Toggle Clamps



**41740.4**

STAINLESS STEEL TOGGLE CLAMPS

### Material

Stainless steel (AISI 304, 1.4301), polished.

### Tips

For zinc plated and passivated version see part no. 41740.W0011- .W0005.

### Technical Notes

Catch for no. 41700.W0001- .W0005.

Order No.	Size	$h_1$	$h_2$	$l_1$	$l_2$	$l_3$	$w_1$	$w_2$	$w_3$	$w_4$	$w_5$	$d_1$	Weight g
<b>41740.W0311</b>	1	29	22.7	31	19	6	40	26,0-30,0	6.9	4.5	6	8	40
<b>41740.W0313</b>	3	29	22.7	40	19	13	45	31,3-35,8	10.9	5.6	6	10	70
<b>41740.W0315</b>	5	61	49.1	55	29	13	86	56,5-64,0	13.8	11.2	12	15	320

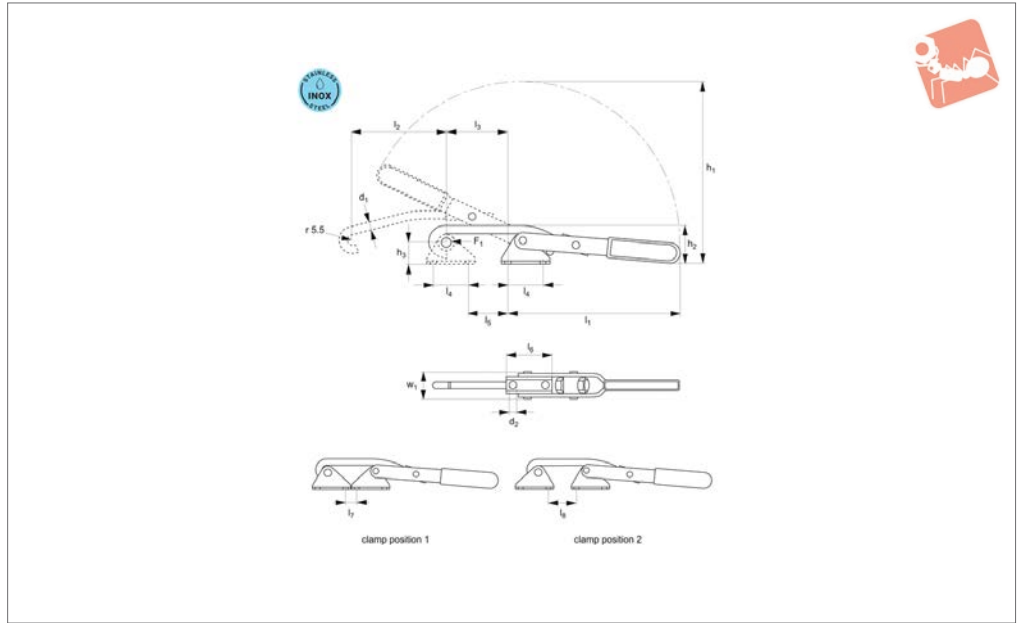
# Stainless Steel Toggle Clamps

## Hook Type Toggle Clamp

stainless steel - narrow base



**41781.4**



STAINLESS STEEL TOGGLE CLAMPS

### Material

Body: stainless steel (AISI 304, 1.4301).  
Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings.  
Handle: oil-resistant plastic with large grip area.

### Technical Notes

Suitable for use as a toggle type fastener

for the lids or covers of fixed or rotating drums and containers. The length of the hook is adjustable.  
Their narrow base makes them ideal for applications where space is limited but holding forces must not be compromised.  
**The length of the hook is adjustable, up to 22mm. Adjustment made by rotating**

**the threaded hook to extend or contract its reach.**

Temperature range -10°C to +80°C.

### Tips

See part no. 41791.W0313 for fixed catch.

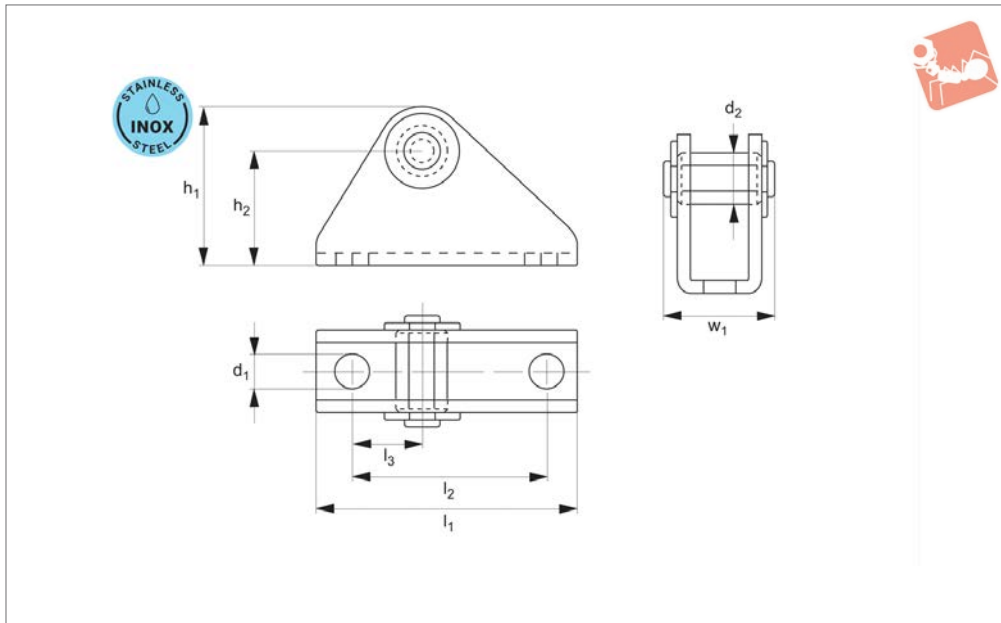
Order No.	Size	$F_1$ kN	$h_1$	$h_2$	$h_3$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$l_7$	$l_8$	$w_1$	$d_1$	$d_2$	Adj. distance	Weight g
<b>41781.W0303</b>	3	1.5	179	37	23	169	98	44-55	38	15-41	52	15-20	29-41	26.5	8	6.5	22	270



# Fixed Catch

stainless steel - for part no. 41791.W0003

# Stainless Steel Toggle Clamps



**41791.4**

STAINLESS STEEL TOGGLE CLAMPS

### Material

Stainless steel (AISI 304, 1.4301), polished.

altered by rotating the fixed catch.  
Fixing catch for toggle clamp part no. 41791.W0003 Suitable for use in the food industry.

### Technical Notes

The adjustment range of the clamp can be

Order No.	Size	$h_1$	$h_2$	$l_1$	$l_2$	$l_3$	$w_1$	$d_1$	$d_2$	Weight g
41791.W0313	3	32	23	52	38	14	22	6.5	10	65

# Stainless Steel Toggle Clamps

## Latch Type Toggle Clamps

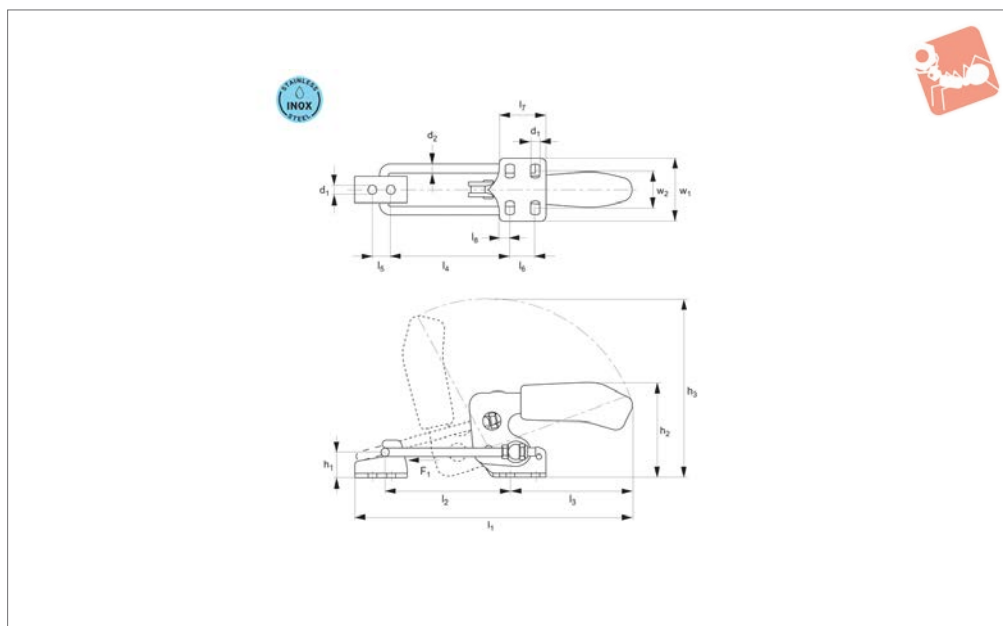
stainless steel - horizontal acting



STAINLESS STEEL TOGGLE CLAMPS



### 41801.4



#### Material

Body: stainless steel (AISI 304, 1.4301).  
Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings.

Ergonomic soft feel oil-resistant handle with large grip area.

#### Technical Notes

Complete with counter strike, see part no. 41811.W0312 - .W0314.  
Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub> min.	l <sub>1</sub> max.	l <sub>2</sub> min.	l <sub>2</sub> max.	Weight g
41801.W0302	2	1.6	12	47.0	99	125	159	42.0	76	120
41801.W0303	3	3.2	19	71.0	137	170	217	53.5	101	330
41801.W0304	4	7.0	26	94.5	171	212	276	66.0	130	810

Order No.	l <sub>3</sub>	l <sub>4</sub> min.	l <sub>4</sub> max.	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>
41801.W0302	69	38.0	72	11	13	26.0	6.4	38.0	19,5-23,5	5.2	4
41801.W0303	94	48.5	96	14	19	35.0	8.0	48.0	24,5-32,5	6.5	6
41801.W0304	114	59.0	123	19	32	53.5	9.5	64.5	35,0-46,0	8.5	8

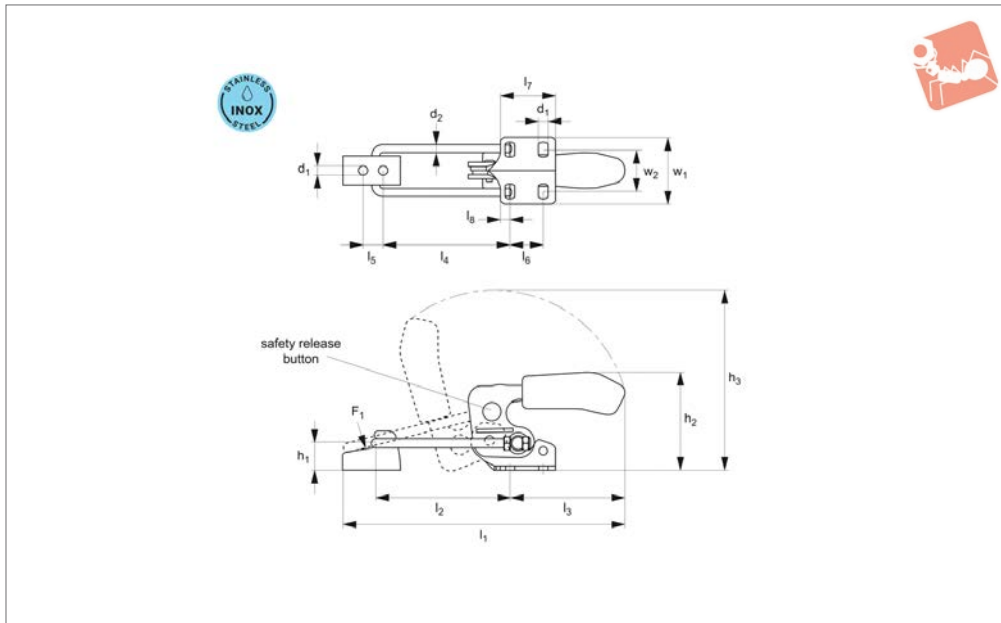




# Latch Type Toggle Clamps

stainless - horizontal acting - safety button

# Stainless Steel Toggle Clamps



**41805.4**

STAINLESS STEEL TOGGLE CLAMPS

### Material

Body: stainless steel (AISI 304, 1.4301), polished.  
 Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings.  
 Ergonomic soft feel oil-resistant handle

with large grip area.  
 Complete with counter strike.

### Technical Notes

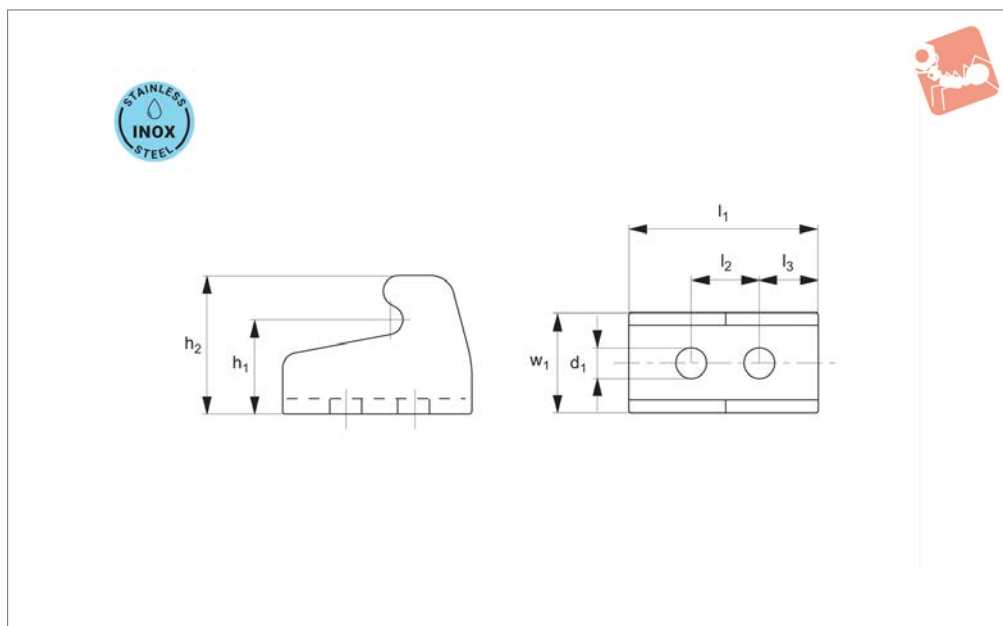
The safety latch holds the clamp in both the open and the closed position. This

prevents opening under vibration or inadvertent movement of the clamping arm when loading or unloading a fixture.  
 Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub> min.	l <sub>1</sub> max.	l <sub>2</sub> min.	l <sub>2</sub> max.	Weight g	
41805.W0304	4	7.0	26	94	168	209	273	66	130	850	
Order No.	l <sub>3</sub>	l <sub>4</sub> min.	l <sub>4</sub> max.	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>
41805.W0304	111	59	123	19	32	53.5	9.5	64.5	35-46	8.5	8



### 41811.4



#### Material

Stainless steel (AISI 304, 1.4301), polished.

#### Technical Notes

Catch for toggle clamp no. 41811.W0002 - .W0004.

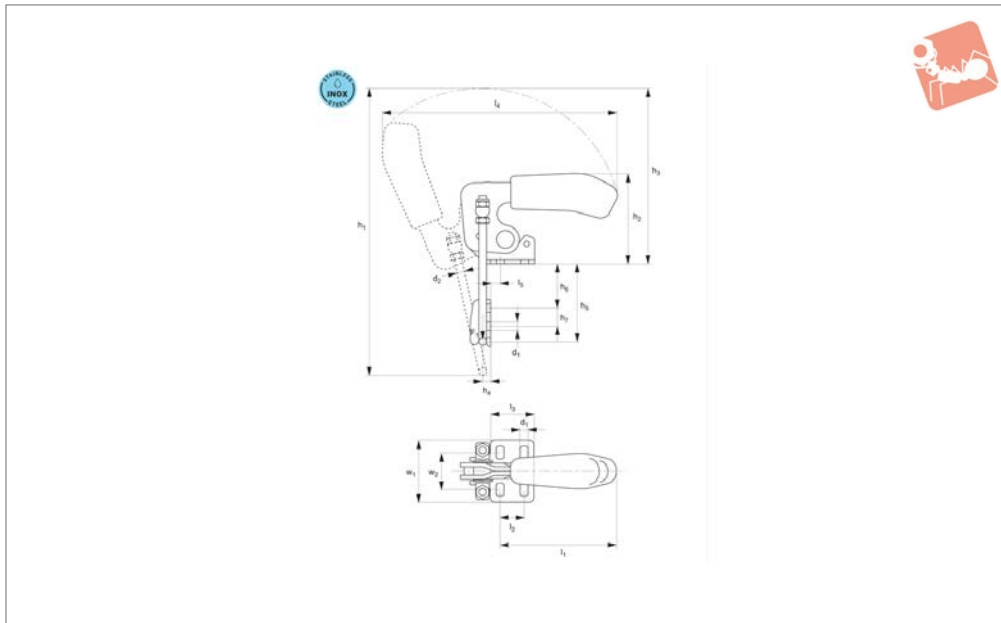
Order No.	Size	$h_1$	$h_2$	$l_1$	$l_2$	$l_3$	$w_1$	$d_1$	Weight g
41811.W0312	2	12	18	26	11	8	18	5.2	16
41811.W0313	3	19	28	39	14	12	23	6.5	44
41811.W0314	4	26	38	56	19	17	30	8.5	108



# Latch Type Toggle Clamps

stainless - vertical acting

# Stainless Steel Toggle Clamps



**41821.4**

STAINLESS STEEL TOGGLE CLAMPS

### Material

Body: stainless steel (AISI 304, 1.4301), polished.  
Rivets: stainless steel running in greased bushes.  
Ergonomic soft feel oil-resistant handle

with large grip area.

Complete with counter strike.

### Technical Notes

Temperature range -10°C to +80°C.

### Tips

Suitable for use in the food industry.  
Also available in steel zinc plated version, see part no. 41821.W0002 - .W0004.

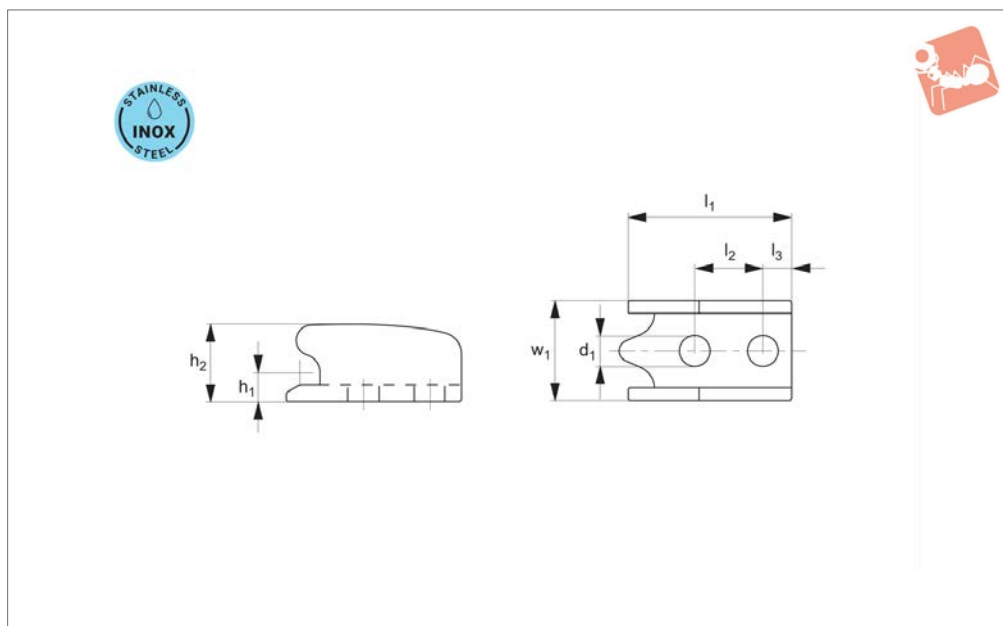
Order No.	Size	F <sub>1</sub> kN	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub> min.	h <sub>5</sub> max.	h <sub>6</sub> min.	Weight g
41821.W0302	2	1.6	150	47.0	99	4.5	24	47	5.0	130
41821.W0303	3	3.2	172	70.0	137	6.0	33	63	6.5	340
41821.W0304	4	7.0	254	94.5	168	8.0	43	81	9.0	810

Order No.	h <sub>6</sub> max.	h <sub>7</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>	w <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>
41821.W0302	28	11	69	13	26.0	158	6.8	38.0	19,5-23,5	5.2	4
41821.W0303	36	14	93	19	35.0	195	8.0	48.0	24,5-32,5	6.5	6
41821.W0304	47	19	111	32	53.5	239	9.5	64.5	35,0-46,0	8.5	8



### 41831.4



#### Material

Stainless steel (AISI 304, 1.4301), polished.

#### Technical Notes

For use with toggle clamp no. 41821.W0302 - .W0304.

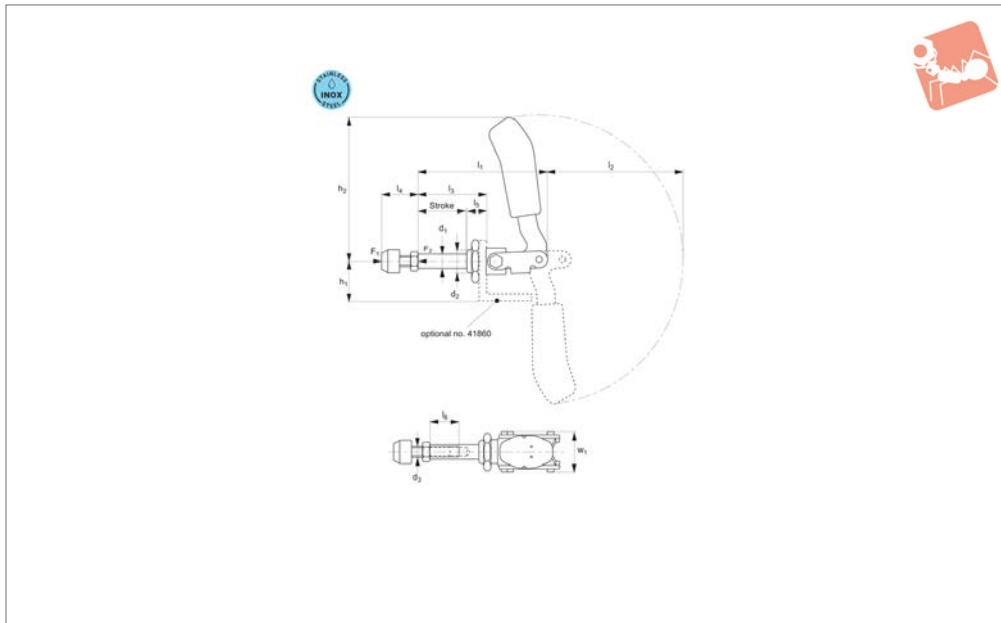
Order No.	Size	$h_1$	$h_2$	$l_1$	$l_2$	$l_3$	$w_1$	$d_1$	Weight g
41831.W0312	2	5	12	26	11	5	18	5.2	14
41831.W0313	3	6	16	36	14	7	23	6.5	30
41831.W0314	4	8	22	48	19	9	30	8.5	66



# Push-Pull Toggle Clamps

stainless steel - compact version

# Stainless Steel Toggle Clamps



**41840.4**

STAINLESS STEEL TOGGLE CLAMPS

### Material

Body: stainless steel (AISI 304, 1.4301), polished.  
Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings.

Ergonomic soft feel oil-resistant handle with large grip area.  
Supplied complete with stainless clamping screw (with rubber pad).

### Technical Notes

Compact version with long rod guide.  
Temperature range -10°C to +80°C.

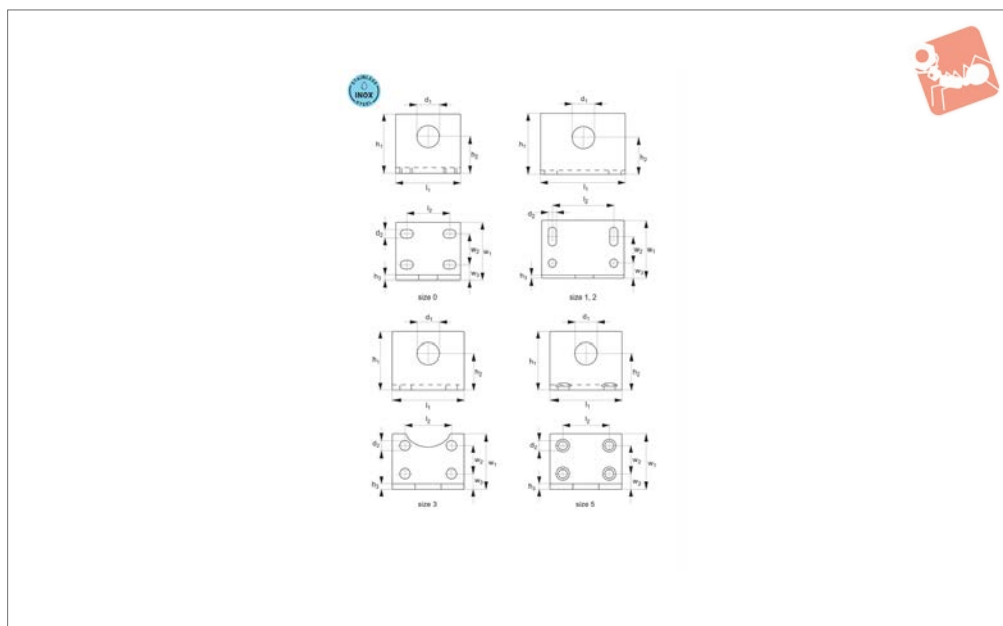
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	Stroke s <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	Weight g
41840.W0302	2	1.0	1.0	M 6x25	21.5	24	73.0	68.5	69	130
41840.W0303	3	2.5	2.5	M 8x35	40.0	33	120.5	108.0	115	320
41840.W0305	5	4.0	4.0	M12x50	67.0	37	149.0	175.0	139	1200

Order No.	l <sub>3</sub>	l <sub>4</sub> min.	l <sub>4</sub> max.	l <sub>5</sub>	l <sub>6</sub>	w <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>
41840.W0302	36	17	27.0	13	15	30.5	10	M16x1,5	M 6
41840.W0303	57	22	37.5	16	25	33.0	12	M20x1,5	M 8
41840.W0305	92	30	50.0	24	45	49.0	16	M24x1,5	M12



### 41880.4



#### Material

Stainless steel (AISI 304, 1.4301), polished.

#### Technical Notes

The increased height of the centre line

allows a wide range of applications. Fastening by means of four screws.

For use with toggle clamp nos. 41840.

W0002- .W0005 and 41890.W0000- .

W0003.

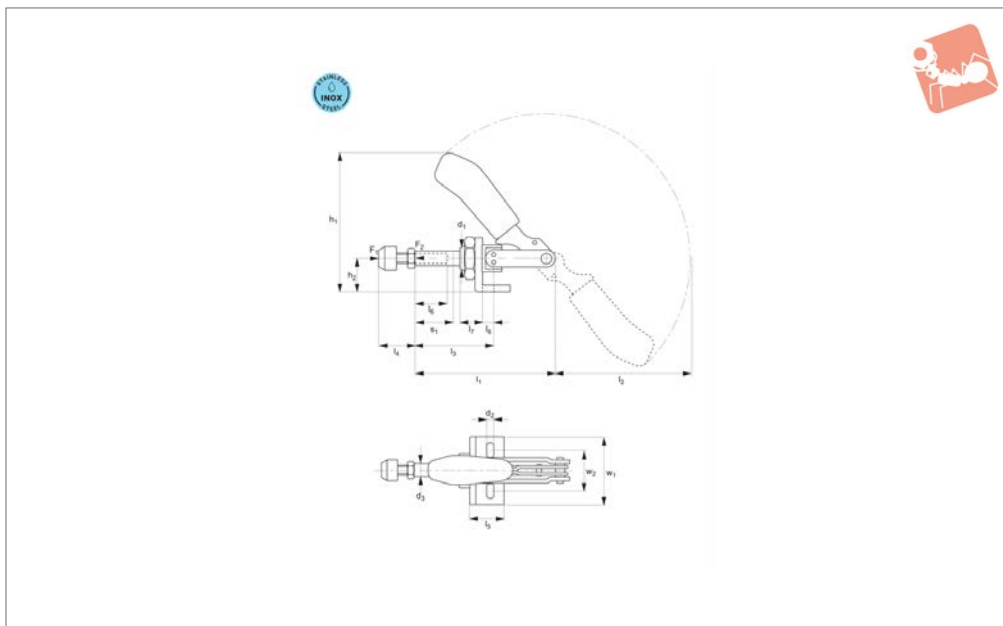
Order No.	Size	$h_1$	$h_2$	$h_3$	$l_1$	$l_2$	$w_1$	$w_2$	$w_3$	$d_1$	$d_2$	Weight g
41880.W0300	0	23	13	3	30	15,5-20,5	30	16	9.0	10.2	4.5	35
41880.W0302	2	40	24	5	60	40.0	40	18	11.0	16.2	6.7	170
41880.W0303	3	50	33	6	65	41.0	44	19	14.5	20.2	6.7	260
41880.W0305	5	60	37	8	70	45.0	60	32	17.0	24.0	9.0	480



# Push-Pull Toggle Clamps

stainless steel - angle bracket

# Stainless Steel Toggle Clamps



**41890**

STAINLESS STEEL TOGGLE CLAMPS

### Material

Body: stainless steel (AISI 304, 1.4301), polished.  
 Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings.  
 Ergonomic soft feel, oil-resistant handle

with large grip area.  
 Supplied complete with stainless clamping screw (with rubber pad).

### Technical Notes

Long clamping stroke. Lever can be set to

any angle relative to base.  
 Suitable for use in the food industry.  
 Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	Stroke s <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	Weight g
41890.W0000	0	0.8	0.8	M 4x20	16	49.3	12	66.5	54	65
41890.W0003	3	2.5	2.5	M 8x35	32	110.0	25	140.0	132	445

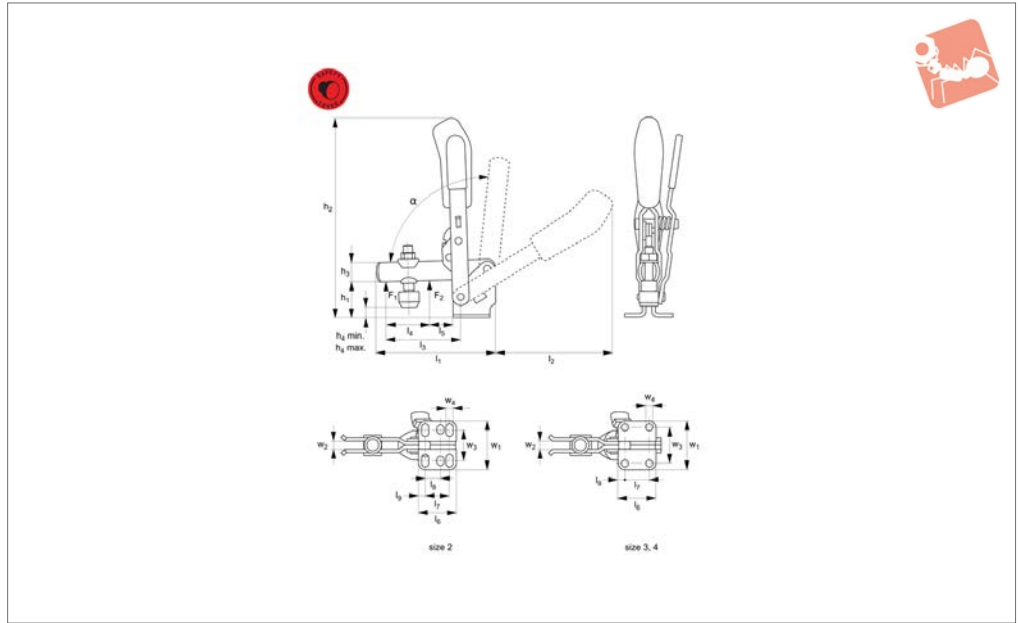
Order No.	l <sub>3</sub> min.	l <sub>3</sub> max.	l <sub>4</sub> min.	l <sub>4</sub> max.	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>
41890.W0000	17	33	12	20	16	13	10	6.5	25	16.0	M10x1,0	4.5	6.5
41890.W0003	37	69	22	35	30	30	22	13.0	60	29,5-42,5	M20x1,5	6.5	12.0

# Safety Lever Toggle Clamps

## Vertical Acting Toggle Clamps safety lever - open arm - horizontal base



**40010.1**



SAFETY LEVER TOGGLE CLAMPS

### Material

Body: steel, zinc plated. Rivets: stainless steel rivets running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use). Ergonomic soft feel oil-resistant handle with large grip area.

Supplied complete with clamping screw (with rubber pad).

### Technical Notes

The safety lever holds the clamp in both the open and the closed position. This prevents opening under vibration or inad-

vertent movement of the clamping arm when loading or unloading a fixture. Opening angle (symbol $\alpha$ /symbol $\alpha$ /symbol $\alpha$ /symbol $\alpha$ \*) can be changed by pressing in a stop pin on the clamp body. Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Weight g
40010.W0002	2	1.0	1.2	M 6x35	23.0	139.5	12	-3	4.5	78	89	52	260
40010.W0003	3	1.4	2.5	M 8x45	33.0	186.0	18	2	11.0	112	112	79	470
40010.W0004	4	2.0	3.0	M 8x65	42.5	221.0	20	-6	22.5	141	130	101	690
Order No.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	$\alpha$	$\alpha^*$	
40010.W0002	25	11	32	20	12.5	6.0	43	6	23,0-31,0	5.5	105°	60°	
40010.W0003	36	19	35	20	-	7.5	46	8	32.5	7.5	105°	60°	
40010.W0004	54	16	53	32	-	13.0	64	10	45.0	8.6	105°	60°	

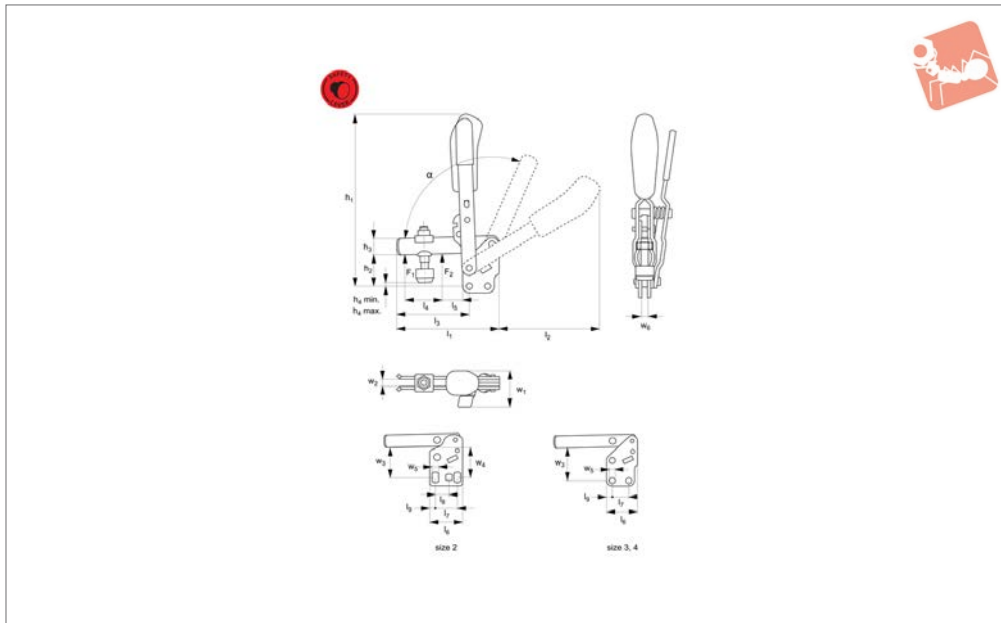




# Vertical Acting Toggle Clamps

safety lever - open arm - vertical base

# Safety Lever Toggle Clamps



**40060.1**

SAFETY LEVER TOGGLE CLAMPS

### Material

Body: steel, zinc plated. Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use). Ergonomic soft feel oil-resistant handle with large grip area. Supplied complete with clamping screw

(with rubber pad).

### Technical Notes

Ideal for mounting to struts and on welding jigs. The safety lever holds the clamp in both the open and the closed position. This prevents opening under vibration or inad-

vertent movement of the clamping arm when loading or unloading a fixture. Opening angle (symbol $\alpha$ /symbol $\alpha$ \*) can be changed by pressing in a stop pin on the clamp body. Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Weight g
40060.W0002	2	1.0	1.2	M 6x35	154	38	12	11.5	19.5	78	89	52	175
40060.W0003	3	1.4	2.5	M 8x45	200	48	18	10.0	18.5	111	114	79	470
40060.W0004	4	2.0	3.0	M 8x65	244	65	20	16.5	45.5	141	130	101	690

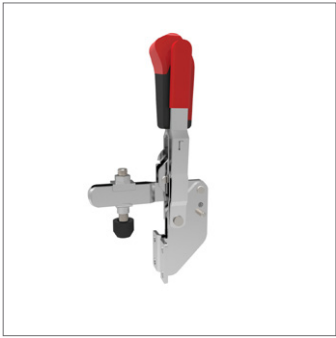
  

Order No.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	w <sub>6</sub>	$\alpha$	$\alpha^*$
40060.W0002	25	11	32	20	12.5	6.0	37.5	6	28,5-32,0	30	5.5	5	105°	60°
40060.W0003	37	19	40	20	-	7.5	48.0	8	41.0	-	7.5	6	105°	60°
40060.W0004	54	16	53	32	-	13.0	53.0	10	55.5	-	8.6	8	105°	60°

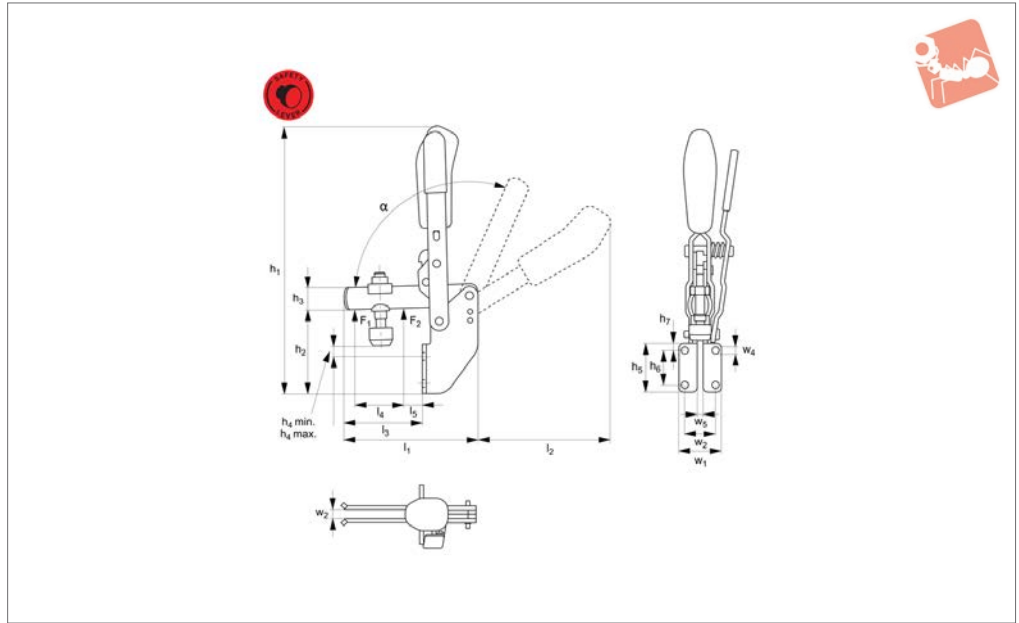
# Safety Lever Toggle Clamps

## Vertical Acting Toggle Clamps

safety lever - open arm - angle base



**40120**



SAFETY LEVER TOGGLE CLAMPS

### Material

Body: steel, zinc plated. Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use). Ergonomic soft feel oil-resistant handle with large grip area.

Supplied complete with clamping screw (with rubber pad).

### Technical Notes

Ideal for side mounting. The safety lever holds the clamp in both the open and the closed position. This

prevents opening under vibration or inadvertent movement of the clamping arm when loading or unloading a fixture. Opening angle (symbol $\alpha$ /symbol $\alpha$ /symbol $\alpha$ /symbol $\alpha$ ) can be changed by pressing in a stop pin on the clamp body. Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	h <sub>5</sub>	h <sub>6</sub>	h <sub>7</sub>	Weight g
40120.W0002	2	1.0	1.2	M 6x35	176.5	60.0	12	8	15.5	32	20	6	250
40120.W0003	3	1.4	2.5	M 8x45	223.0	71.0	18	9	17.5	38	24	7	535
40120.W0004	4	2.0	3.0	M 8x65	280.0	101.5	20	11	39.5	96	32	54	750

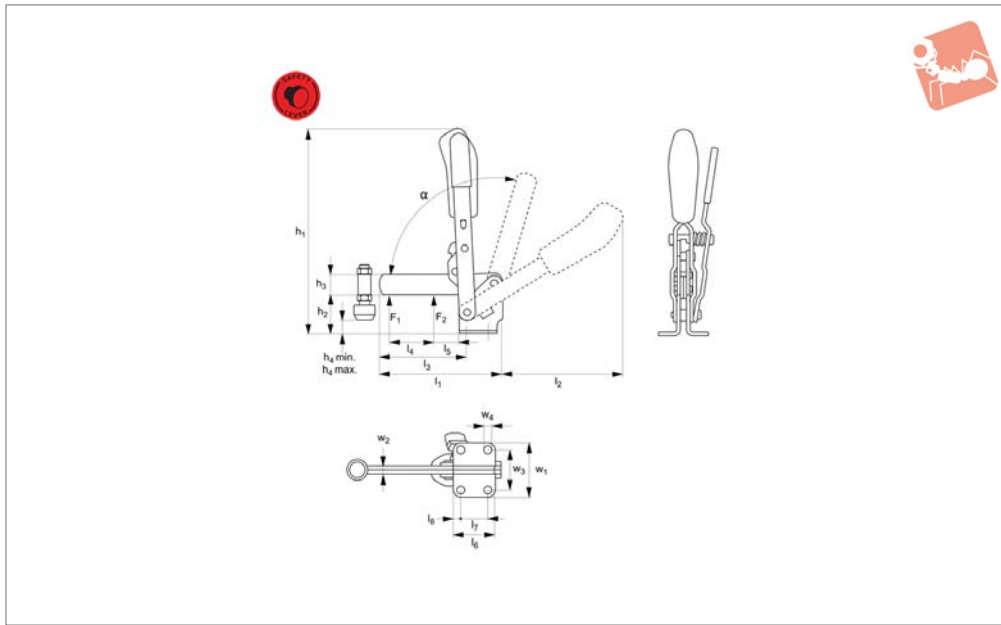
Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	$\alpha$	$\alpha^*$
40120.W0002	77	90	41	25	6	37.0	6	25.5	6.1	5	105°	60°
40120.W0003	110	112	62	37	11	42.5	8	28.5	6.5	6	105°	60°
40120.W0004	141	129	83	54	11	52.0	10	32.0	8.5	8	105°	60°



# Vertical Acting Toggle Clamps

safety lever - solid arm - horizontal base

# Safety Lever Toggle Clamps



**40160**

SAFETY LEVER TOGGLE CLAMPS

### Material

Body: steel, zinc plated. Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use). Ergonomic soft feel oil-resistant handle with large grip area. Supplied complete with weldable clamping

screw (with rubber pad).

### Technical Notes

For fastening to mounting plates, etc. The arm can be shortened to suit the work-piece. The sleeve is then welded to the arm. The safety lever holds the clamp in both

the open and the closed position. This prevents opening under vibration or inadvertent movement of the clamping arm when loading or unloading a fixture. Opening angle (symbol $\alpha$ /symbol $\alpha$ /symbol $\alpha$ /symbol $\alpha$ \*) can be changed by pressing in a stop pin on the clamp body. Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	h <sub>5</sub>	Weight g
40160.W0003	3	1.4	2.5	M 8x45	186	48.0	18	0	12	35	470
40160.W0004	4	2.0	3.0	M 8x65	220	42.5	20	-8	21	53	690

Order No.	h <sub>6</sub>	h <sub>7</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	$\alpha$	$\alpha^*$
40160.W0003	20	7.5	112	112	81	43	19	46	6	32	7.1	105°	60°
40160.W0004	32	13.0	140	130	101	61	16	64	8	45	8.5	105°	60°

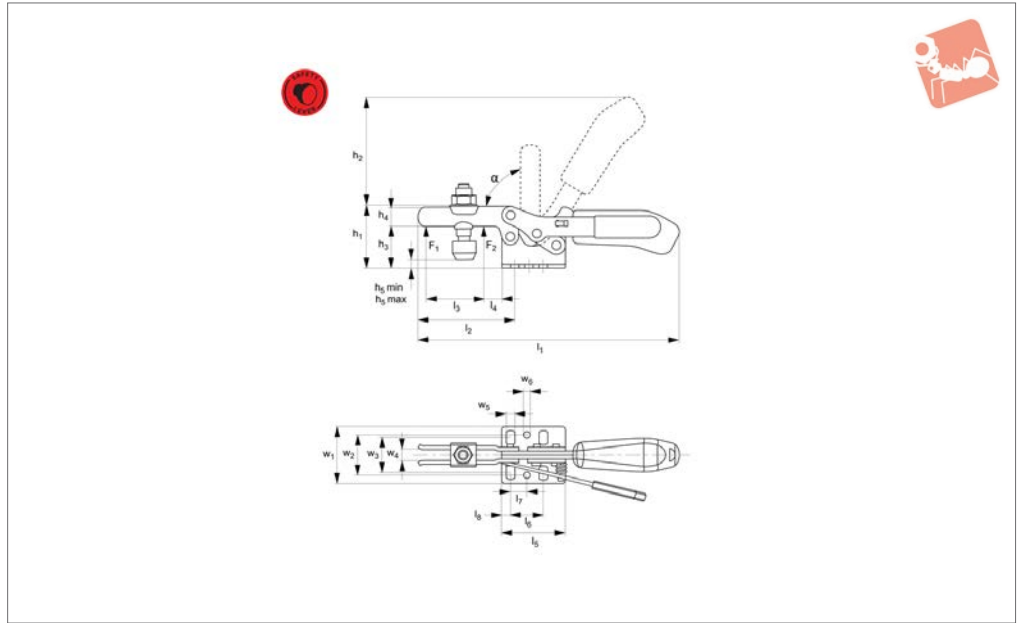
# Safety Lever Toggle Clamps

## Horizontal Acting Toggle Clamps

safety lever - open arm - horizontal base



### 41010



SAFETY LEVER TOGGLE CLAMPS

#### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use).  
 Ergonomic soft feel oil-resistant handle

with large grip area.  
 Supplied complete with clamping screw (with rubber pad).

#### Technical Notes

The safety lever holds the clamp in both

the open and the closed position. This prevents opening under vibration or inadvertent movement of the clamping arm when loading or unloading a fixture.

Temperature range -10°C to +80°C.

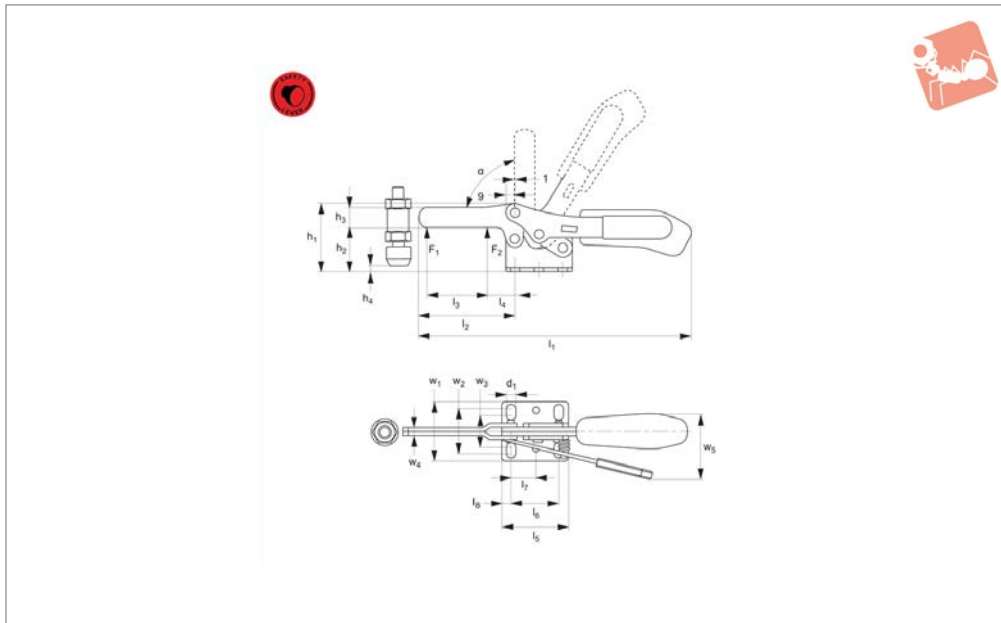
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub> min.	h <sub>5</sub> max.	l <sub>1</sub>	l <sub>2</sub>	Weight g
41010.W0003	3	1.8	2.5	M 8x45	48.5	86.0	32	15	-2	9	206	73	390
41010.W0004	4	2.0	3.0	M 8x65	75.0	126.5	45	20	-4	24	287	113	800
Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	w <sub>6</sub>	α
41010.W0003	38	14	50	25.7	13.0	7	45.5	31.6	22,0-31,8	8	6.5	5.1	90°
41010.W0004	63	27	57	41.0	20.5	8	58.0	43.0	29,0-43,0	10	8.5	8.5	90°



# Horizontal Acting Toggle Clamps

safety lever - solid arm - horizontal base

# Safety Lever Toggle Clamps



**41040**

SAFETY LEVER TOGGLE CLAMPS

### Material

Body: steel, zinc plated. Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use). Ergonomic soft feel oil-resistant handle

with large grip area.

Supplied complete with weldable clamping screw (with rubber pad).

### Technical Notes

The safety lever holds the clamp in both

the open and the closed position. This prevents opening under vibration or inadvertent movement of the clamping arm when loading or unloading a fixture. Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw		h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	l <sub>1</sub>	l <sub>2</sub>	Weight g
<b>41040.W0004</b>	4	2	3	M 8x65		75	45	20	-6	23	286	111	800
Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	d <sub>1</sub>	α
<b>41040.W0004</b>	66	34	57	41	20.5	8	58	43	29	8	56.3	8.5	90°

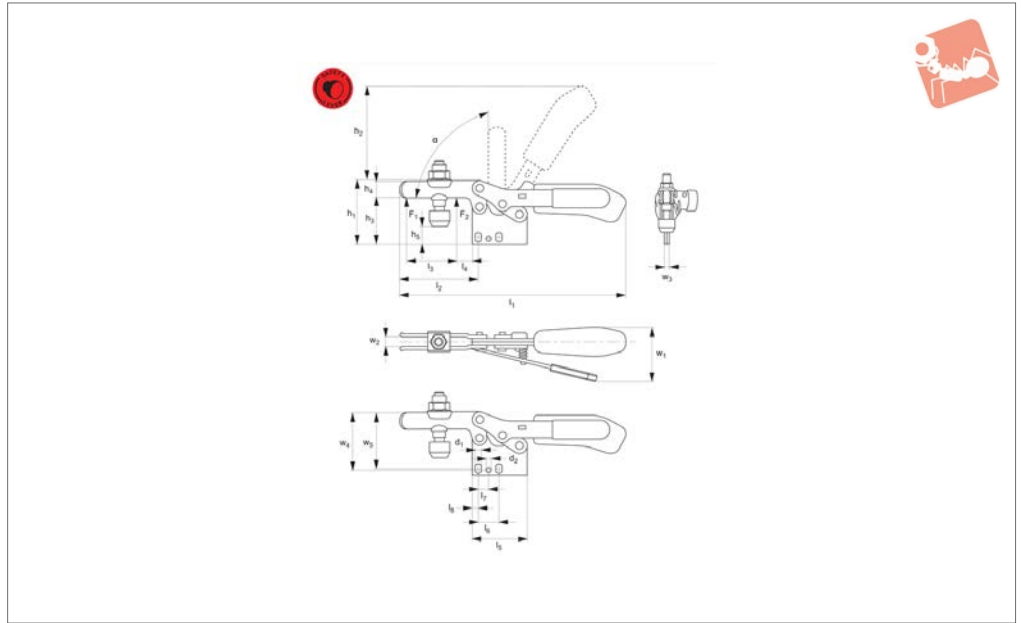
# Safety Lever Toggle Clamps

## Horizontal Toggle Clamps

safety lever - open arm - vertical base



**41060.1**



SAFETY LEVER TOGGLE CLAMPS

### Material

Body: steel, zinc plated. Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use). Ergonomic soft feel oil-resistant handle

with large grip area.

Supplied complete with weldable clamping screw (with rubber pad).

### Technical Notes

The safety lever holds the clamp in both

the open and the closed position. This prevents opening under vibration or inadvertent movement of the clamping arm when loading or unloading a fixture. Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub> min.	h <sub>5</sub> max.	l <sub>1</sub>	l <sub>2</sub>	Weight g
<b>41060.W0003</b>	3	1.8	2.5	M 8x45	65	86	49.0	15	14.5	26	206	73	390
<b>41060.W0004</b>	4	2.0	3.0	M 8x65	97	126	66.5	20	17.5	46	287	113	800

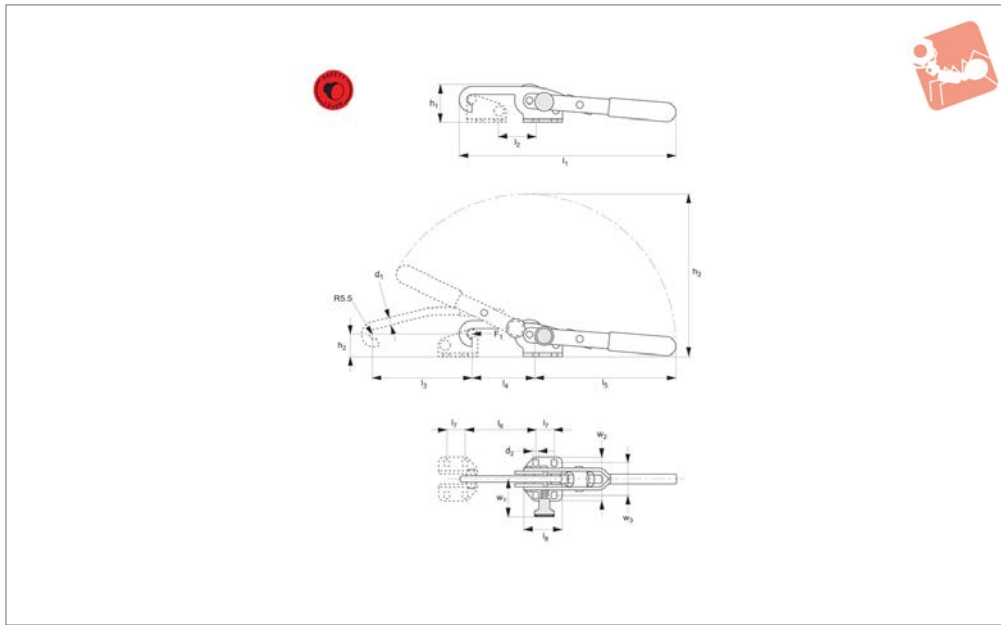
  

Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	d <sub>1</sub>	d <sub>2</sub>	α
<b>41060.W0003</b>	38	14	50	25.7	13.0	7	48	8	6	42	37,5-42,5	6.5	5.1	90°
<b>41060.W0004</b>	63	27	57	41.0	20.5	8	51	10	8	59	52,0-59,0	8.5	8.5	90°



# Hook Clamp safety knob

# Safety Lever Toggle Clamps



**41600**

SAFETY LEVER TOGGLE CLAMPS

### Material

Body: steel, zinc plated.  
Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use).  
Handle: oil-resistant plastic handle with large grip area.

### Technical Notes

The safety knob locks the clamp in the

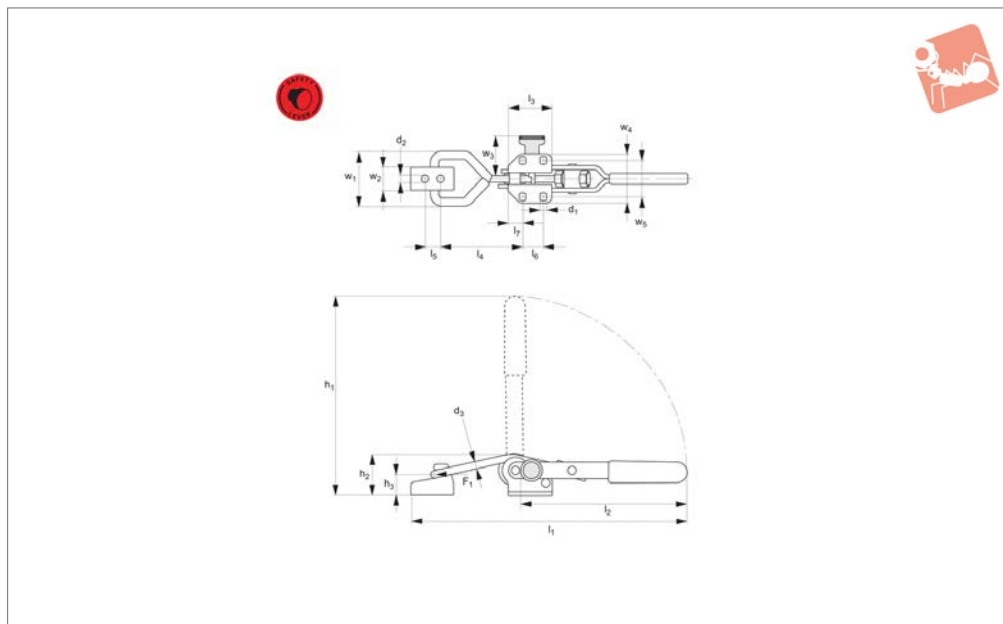
closed position. This prevents opening under vibration or inadvertent movement of the clamping arm when loading or unloading a fixture.  
Pull out the safety knob to release the clamp.  
The  $h_2$  engagement height (23mm) must be adhered to, ensure safety knob functionality.

The length of the hook is adjustable up to 12mm. Adjustment is made by rotating the threaded hook to extend or contract its reach.  
Use counter strike 41740.W0013, order separately.  
Temperature range -10°C to +80°C.

Order No.	Size	$F_1$ kN	$h_1$	$h_2$	$h_3$	$l_1$	$l_2$	$l_3$	Weight g	
41600.W0003	3	3	38	23	181	240	41-50	98	295	
Order No.	$l_4$	$l_5$	$l_6$	$l_7$	$l_8$	$w_1$	$w_2$	$w_3$	$d_1$	$d_2$
41600.W0003	67-76	151	74-83	19	40	38.5	45	32-36	7.1	5.6



## 41620



### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use).  
 Handle: oil-resistant plastic with large grip area.

### Technical Notes

The safety knob locks the clamp in the closed position. This prevents opening under vibration or inadvertent movement of the clamping arm when loading or unloading a fixture.  
 Pull out the safety knob to release the

clamp.

Supplied complete with counter strike.  
 For additional counter strikes, see part 41801.W00012- .W0014.  
 Temperature range -10°C to +80°C.

Order No.	Size	$F_1$ kN	$h_1$	$h_2$	$h_3$	$l_1$	$l_2$	$l_3$	$l_4$	Weight g	
41620.W0003	3	3	179	38	19	257	149	40	79.5	295	
Order No.	$l_5$	$l_6$	$l_7$	$w_1$	$w_2$	$w_3$	$w_4$	$w_5$	$d_1$	$d_2$	$\varnothing d_3$
41620.W0003	14	19	13	49	21	38.5	32-35	45	5.6	6.5	7.1

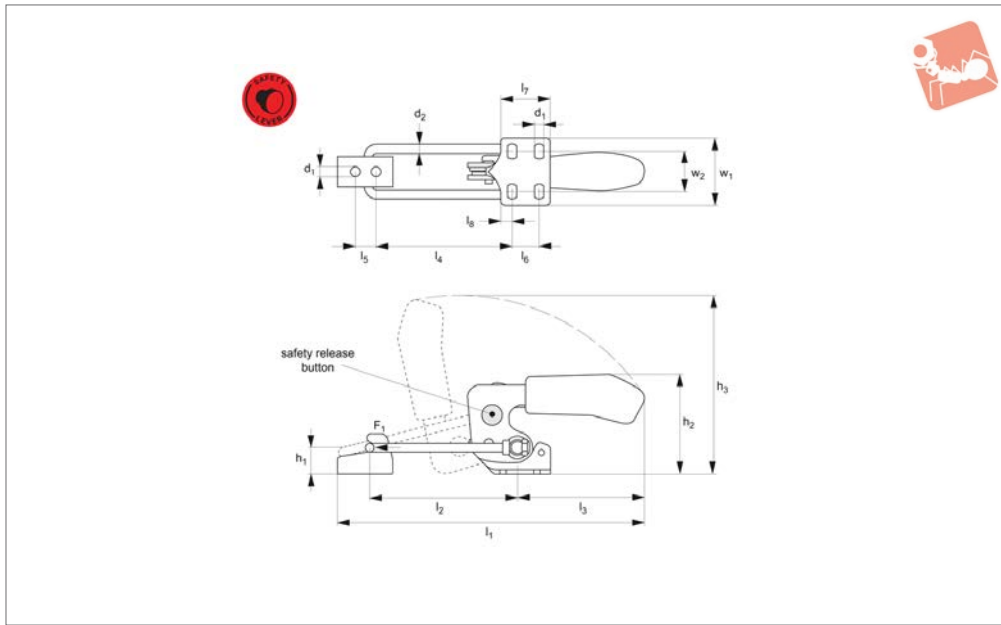




# Latch Type Horizontal Toggle Clamp

safety button

# Safety Lever Toggle Clamps



**41805.1**

SAFETY LEVER TOGGLE CLAMPS

### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use).  
 Handle: ergonomic soft feel, oil-resistant with a large grip area.

Hook: steel, tempered.

### Technical Notes

The safety button locks the clamp in the closed position. This prevents opening under vibration or inadvertent movement of the clamping arm when loading or

unloading a fixture.  
 Temperature range -10°C to +80°C.

### Tips

Also available in stainless steel version part no. 41805.W0304.

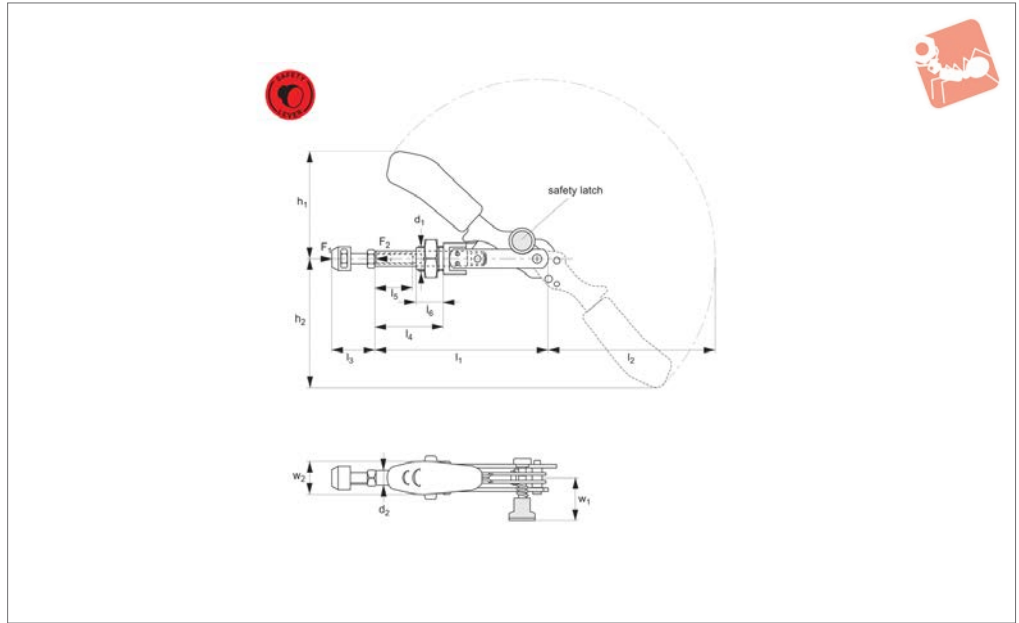
Order No.	Size	F <sub>1</sub> kN	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub> min.	l <sub>1</sub> max.	l <sub>2</sub> min.	l <sub>2</sub> max.	l <sub>3</sub>	Weight g
<b>41805.W0004</b>	4	7.0	26	94	168	209	273	66	130	111	850
Order No.	l <sub>4</sub> min.	l <sub>4</sub> max.	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>	
<b>41805.W0004</b>	59	123	19	32	53.5	9.5	64.5	35-46	8.5	8	

# Safety Lever Toggle Clamps

# Push-Pull Type Toggle Clamp safety knob



**41895**



SAFETY LEVER TOGGLE CLAMPS

### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use).  
 Handle: ergonomic soft feel, oil-resistant with a large grip area.

### Technical Notes

The safety knob holds the clamp in both the open and the closed position. This prevents opening under vibration or inadvertent movement of the clamping arm when loading or unloading a fixture. Without angle bracket. Push and pull-

clamping (equal operation of rod and lever). Long rod-guide with attaching thread and nut.  
 Temperature range -10°C to +80°C.

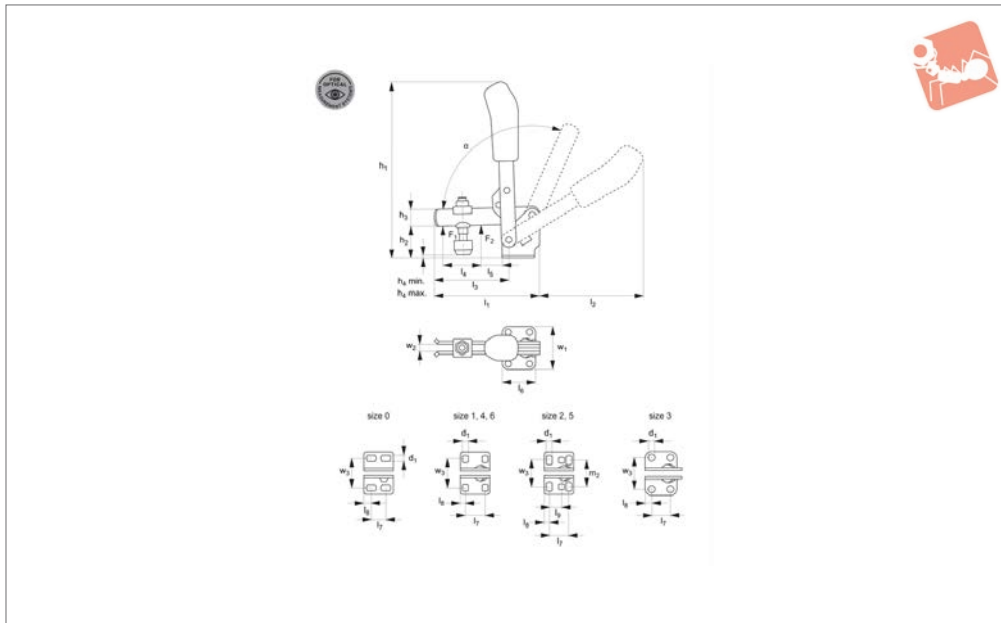
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub> min./max.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	w <sub>1</sub>	w <sub>2</sub>	Weight g
41895.W0003	3	2,5	2,5	M 8x35	M20x1,5	12	86	103	140	134	22-35	56	30	22	36	27	402



# Vertical Acting Toggle Clamps

black - open arm - horizontal base

# Optical Measuring Toggle



**40000.2**

OPTICAL MEASURING TOGGLE CLAMPS

### Material

Body: steel matt black.  
 Bushes: case hardened and pre-lubricated.  
 Handle: plastic, black, oil resistant, ergonomic.  
 Supplied complete with matt black clamping screw (with rubber pad).

### Technical Notes

For fastening to mounting plates, etc.

symbola/symbol\* alternative angle through using the removable stop. Opening angle (symbola/symbol/symbola/symbol\*) can be changed by pressing in a stop pin on the clamp body.

### For optical analysis applications.

### Tips

Designed specifically for clamping of parts during photometric measurement. Uniform

matt black surface prevents reflection, enabling easy „knocking-out“ of the clamp during optical analysis of a component.

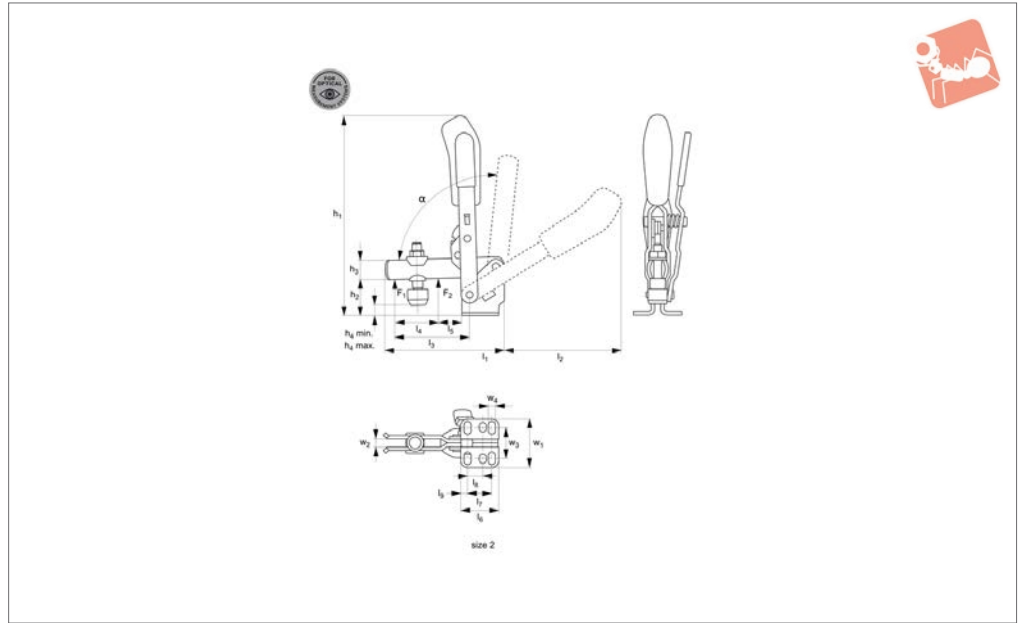
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Weight g
40000.W0100	0	0.5	0.7	M 4x34,5	81	18	8	-4.0	6.5	49	50	32	60
40000.W0101	1	0.6	1.1	M 5x38,0	98	19	10	-3.7	1.6	61	58	39	105
40000.W0102	2	0.8	1.2	M 6x46,0	140	23	12	-4.4	4.4	78	89	52	175
40000.W0103	3	1.2	2.5	M 8x63,0	188	33	18	-2.8	7.0	112	112	79	410

Order No.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	d <sub>1</sub>	α	α*
40000.W0100	14	5.5	22	8,5-13,5	5.5	-	4	32	23.0	-	4.5	95°	-
40000.W0101	18	6.0	27	16.0	5.5	-	5	34	22,5-26,0	-	4.5	95°	-
40000.W0102	25	11.0	32	20.0	6.0	12.5	6	43	23,0-31,0	27	5.5	105°	60°
40000.W0103	36	19.0	35	20.0	7.5	-	8	46	32.5	-	7.5	105°	60°



## 40010.2



### Material

Body: steel matt black.  
 Bushes: case hardened and pre-lubricated.  
 Ergonomic soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw (with rubber pad).

### Technical Notes

The safety lever holds the clamping arm in

both the clamped and open position. This prevents opening under vibration or accidental movement of the clamping arm during assembly/disassembly of the fixture.

Opening angle (symbol $\alpha$ /symbol $\alpha^*$ ) can be changed by pressing in a stop pin on the clamp body.

**For optical analysis applications.**

### Tips

Designed specifically for clamping of parts during photometric measurement. Uniform matt black surface prevents reflection, enabling easy „knocking-out“ of the clamp during optical analysis of a component.

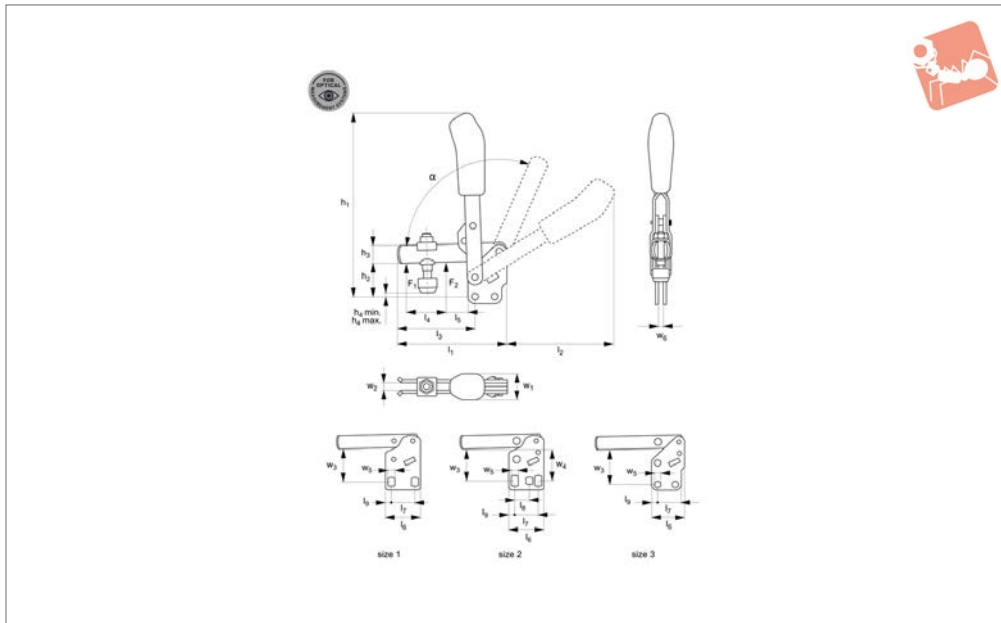
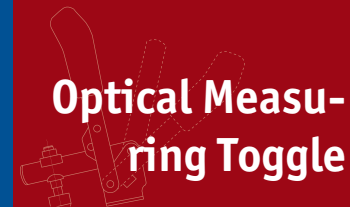
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Weight g
40010.W0005	2	1.0	1.2	M 6x46	139	23	12	-4.4	4.4	78	88	52	260
Order No.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	d <sub>1</sub>	$\alpha$	$\alpha^*$	
40010.W0005	26	11	32	20	6	12.5	6	43	23-31	5.5	105°	60°	



# Vertical Acting Toggle Clamps

open arm - vertical base - black

# Optical Measuring Toggle



40050.2

OPTICAL MEASURING TOGGLE CLAMPS

### Material

Body: steel matt black.  
 Bushes: case hardened and pre-lubricated.  
 Ergonomic soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw (with rubber pad).

### Technical Notes

For fastening to mounting plates, etc.  
 Opening angle (symbol $\alpha$ /symbol $\alpha$ /symbol $\alpha$ /symbol $\alpha$ \*) can be changed by pressing in a stop pin on the clamp body.  
**For optical analysis applications.**

### Tips

Designed specifically for clamping of parts during photometric measurement. Uniform matt black surface prevents reflection, enabling easy „knocking-out“ of the clamp during optical analysis of a component.

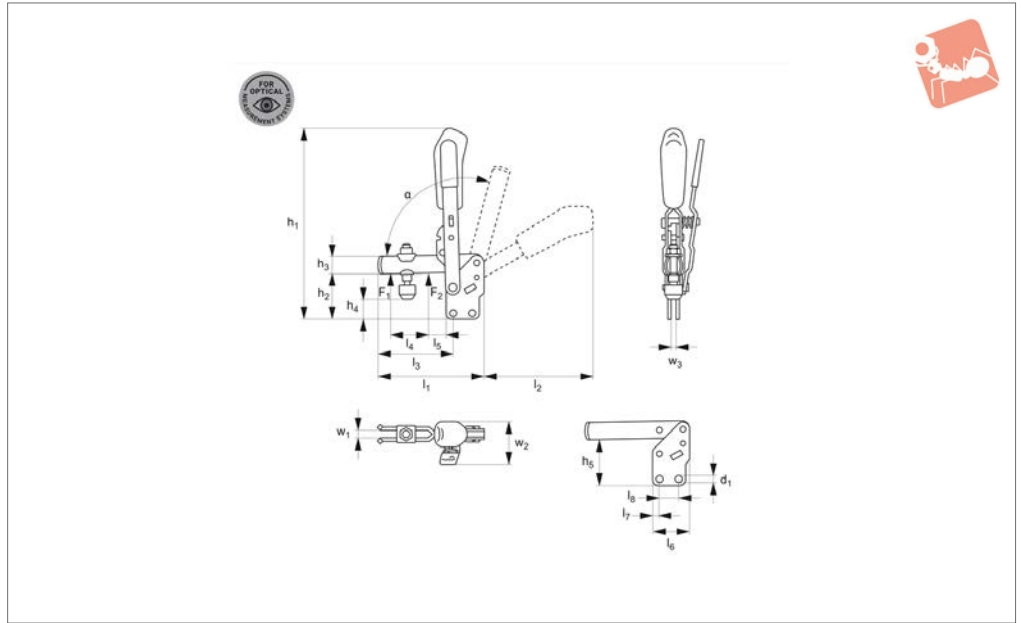
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	h <sub>5</sub>	h <sub>6</sub>	l <sub>1</sub>	Weight g
40050.W0101	1	0.6	1.1	M 5x38	110.5	29	10	6.8	12	23,5-25,0	-	61	105
40050.W0102	2	0.8	1.2	M 6x46	114.5	38	12	10.5	19	28,5-32,0	30	78	175
40050.W0103	3	1.2	2.5	M 8x63	201.0	48	18	11.4	21	41.0	-	112	410

Order No.	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	d <sub>1</sub>	$\alpha$	$\alpha^*$
40050.W0101	58	39	18	6	27	16	5.5	-	5	19	5	4.5	95°	-
40050.W0102	80	52	25	11	32	20	6.0	12,5	6	21	5	5.5	105°	60°
40050.W0103	113	79	36	19	40	20	7.5	-	8	27	6	7.5	105°	60°



## 40060.2



### Material

Body: steel matt black.  
 Bushes: case hardened and pre-lubricated.  
 Ergonomic soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw (with rubber pad).

### Technical Notes

For fastening to mounting plates, etc.  
 Opening angle (symbol $\alpha$ /symbol $\alpha$ /symbol $\alpha$ /symbol $\alpha^*$ ) can be changed by pressing in a stop pin on the clamp body.  
**For optical analysis applications.**

### Tips

Designed specifically for clamping of parts during photometric measurement. Uniform matt black surface prevents reflection, enabling easy „knocking-out“ of the clamp during optical analysis of a component.

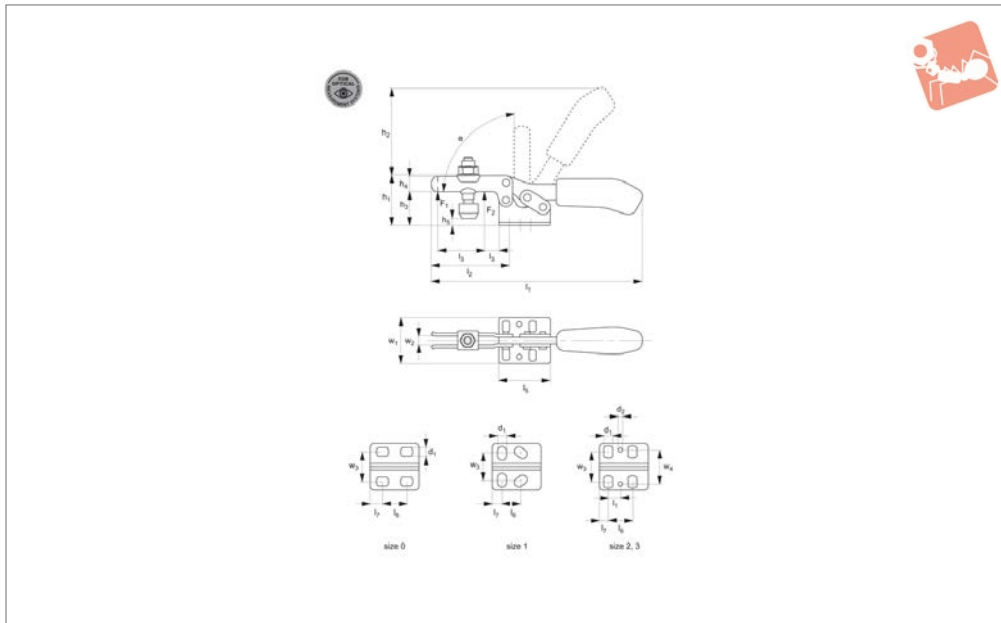
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	h <sub>5</sub>	l <sub>1</sub>	l <sub>2</sub>	Weight g
40060.W0006	3	1.4	2.5	M 8x63	200	48	18	16.5	25	41	112	114	470
Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	d <sub>1</sub>	$\alpha$	$\alpha^*$	
40060.W0006	79	37	19	40	7.5	20	8	45.5	6	7.5	105°	60°	



# Horizontal Acting Toggle Clamps

black - open arm - horizontal base

# Optical Measuring Toggle



**41000.2**

OPTICAL MEASURING TOGGLE CLAMPS

### Material

Body: steel matt black.  
 Bushes: case hardened and pre-lubricated.  
 Ergonomic soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw

(with rubber pad).

### Technical Notes

For optical analysis applications.

### Tips

Designed specifically for clamping of parts

during photometric measurement. Uniform matt black surface prevents reflection, enabling easy „knocking-out“ of the clamp during optical analysis of a component.

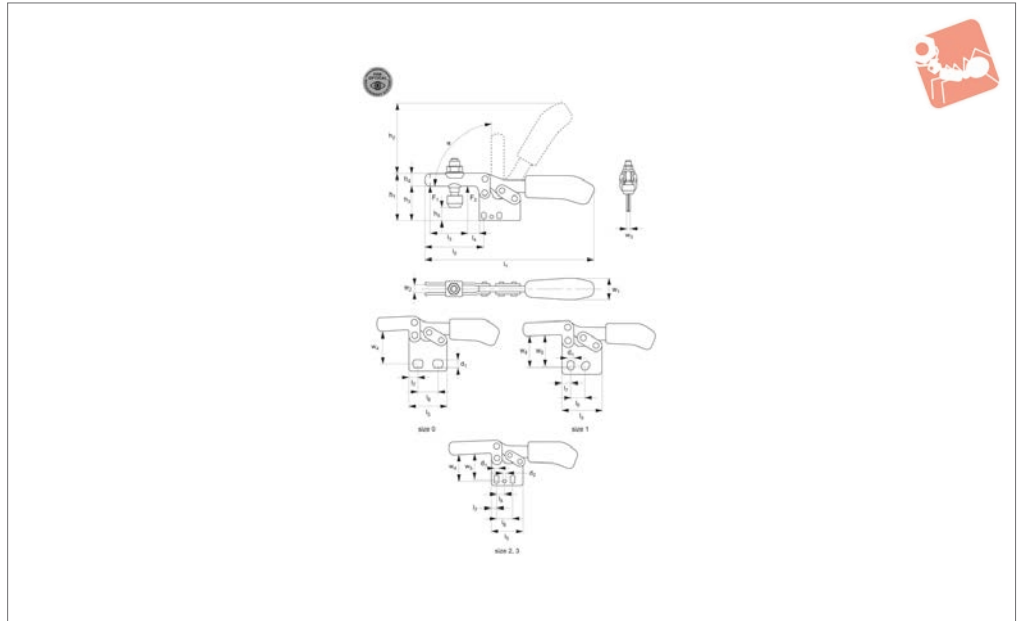
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub> min.	h <sub>5</sub> max.	l <sub>1</sub>	l <sub>2</sub>	Weight g
<b>41000.W0100</b>	0	0.3	0.4	M 4x34,5	23.0	34.0	14.5	7.5	-7.4	2.7	79	28	35
<b>41000.W0101</b>	1	0.8	1.1	M 5x38,0	30.0	49.0	19.0	10.0	-3.6	1.8	120	42	105
<b>41000.W0102</b>	2	1.0	1.2	M 6x46,0	45.0	66.3	24.0	13.2	-2.6	5.0	162	64	185
<b>41000.W0103</b>	3	1.8	2.5	M 8x63,0	48.5	86.0	32.0	15.0	-7.4	5.0	206	73	320

Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	α
<b>41000.W0100</b>	9.0	5.5	25.5	11,5-15,5	6.25	-	25.0	4	16.0	-	4.6	-	90°
<b>41000.W0101</b>	18.8	8.0	34.0	13,0-14,5	5.50	-	34.0	5	18,0-21,5	-	5.2	-	90°
<b>41000.W0102</b>	32.0	16.0	38.0	26.0	6.00	12.7	42.0	6	19,5-29,5	28.5	5.6	5.6	90°
<b>41000.W0103</b>	37.0	14.0	50.0	25.7	7.00	-	45.5	8	22,0-31,8	31.6	6.5	5.1	90°



## 41050.2



### Material

Body: steel, matt black.  
 Bushes: sizes 2-3 case hardened and pre-lubricated.  
 Ergonomic soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw

(with rubber pad).

### Technical Notes

Opening angle (symbola/symbol/symbola/symbol\*) can be changed by pressing in a stop pin on the clamp body.

**For optical analysis applications.**

### Tips

Designed specifically for clamping of parts during photometric measurement. Uniform matt black surface prevents reflection, enabling easy „knocking-out“ of the clamp during optical analysis of a component.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub> min.	h <sub>5</sub> max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Weight g
41050.W0100	0	0.3	0.4	M 4x34,5	33	34	24.5	7.5	2.2	13.7	79.0	28.0	9.0	35
41050.W0101	1	0.8	1.1	M 5x38,0	43	49	31.5	10.0	8.9	14.8	119.7	41.7	18.5	105
41050.W0102	2	1.0	1.2	M 6x46,0	61	68	40.0	13.2	14.0	22.0	164.0	64.0	32.0	185
41050.W0103	3	1.8	2.5	M 8x63,0	65	86	49.0	15.0	9.5	22.0	206.0	73.0	39.0	320

Order No.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	d <sub>1</sub>	d <sub>2</sub>	α
41050.W0100	5.5	25.5	11,5-15,5	6.25	-	4	12	3	-	20.0	4.6	-	90°
41050.W0101	8.0	34.0	13,0-15,5	5.50	-	5	18	5	24.5	23,5-25,5	5.2	-	90°
41050.W0102	16.0	38.0	26.0	6.00	12.7	6	21	5	34.0	29,5-34,0	5.6	5.6	90°
41050.W0103	12.0	50.0	25.7	7.00	13.0	8	27	6	42.0	37,5-42,5	6.5	5.1	90°

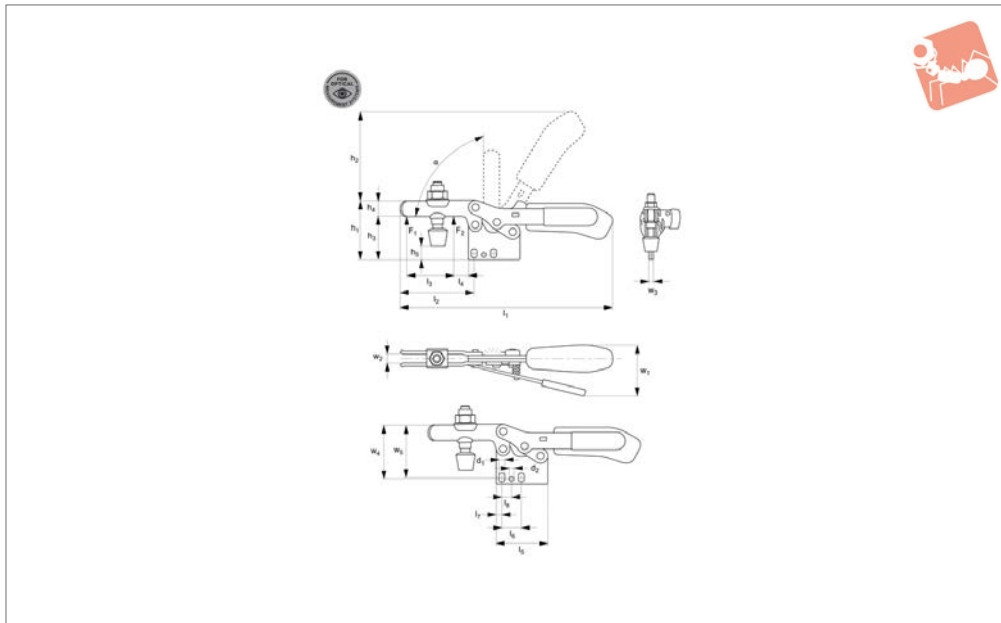




# Horizontal Acting Toggle Clamps

black - open arm - vertical base - safety

# Optical Measuring Toggle



**41060.2**

OPTICAL MEASURING TOGGLE CLAMPS

### Material

Body: steel, matt black.  
 Bushes: case hardened and pre-lubricated.  
 Ergonomic soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw (with rubber pad).

### Technical Notes

The safety lever holds the clamp in both

the open and the closed position. This prevents opening under vibration or inadvertent movement of the clamping arm when loading or unloading a fixture.

### For optical analysis applications.

### Tips

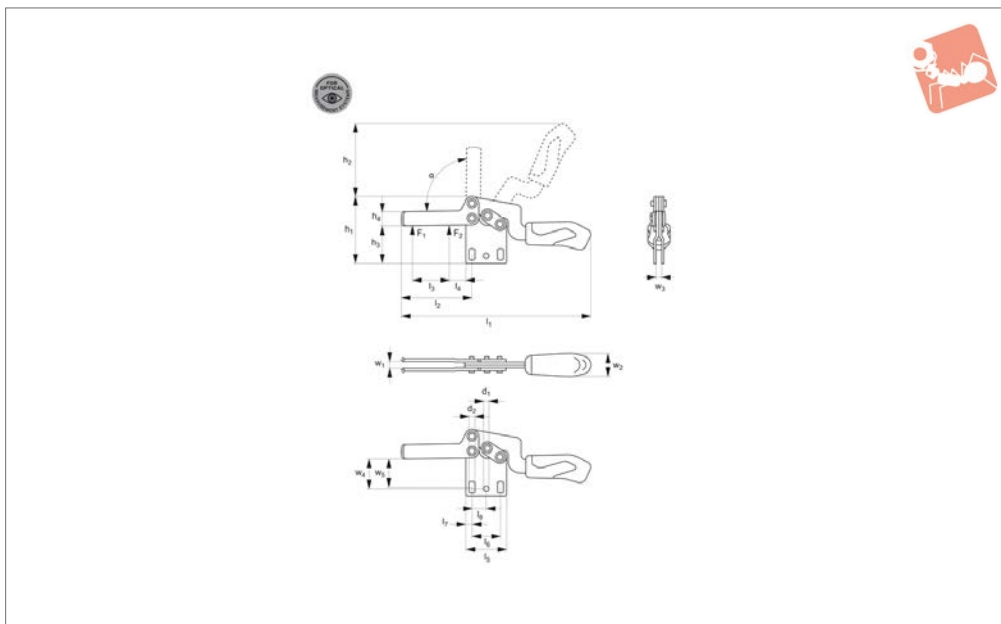
Designed specifically for clamping of parts during photometric measurement. Uniform matt black surface prevents reflection,

enabling easy „knocking-out“ of the clamp during optical analysis of a component.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub> min.	h <sub>5</sub> max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Weight g
<b>41060.W0100</b>	3	1.8	2.5	M 8x63	65	86	49	15	9	22	206	73	37	390
Order No.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	d <sub>1</sub>	d <sub>2</sub>	α	
<b>41060.W0100</b>	14	50	25.7	7	13	8	47	6	42	38-42	6.5	5.1	90°	



## 41062.1



### Material

Body: steel, matt black.  
 Bushes: case hardened and pre-lubricated.  
 Ergonomic soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw (with rubber pad).

### Technical Notes

symbola/symbol\* alternative angle

through using the removable stop.  
 Opening angle (symbola/symbol/symbola/symbol\*) can be changed by pressing in a stop pin on the clamp body.

### For optical analysis applications.

### Tips

Designed specifically for clamping of parts during photometric measurement. Uniform matt black surface prevents reflection,

enabling easy „knocking-out“ of the clamp during optical analysis of a component.

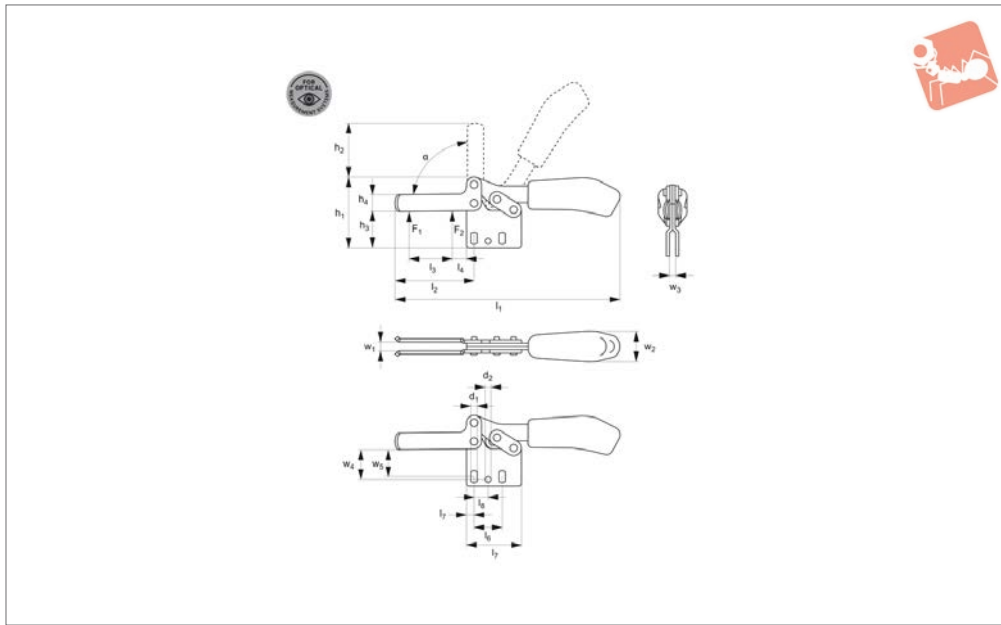
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	Weight g
41062.W0100	2	1	1.2	190	34	67	13.2	173.5	64	38.6	11	38	61
Order No.	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	d <sub>1</sub>	d <sub>2</sub>	α		
41062.W0100	26	6	13.1	6.2	21	5	27	23-28	5.6	4.8	90°		



# Horizontal Acting Toggle Clamps

black - open arm - vertical base

# Optical Measuring Toggle



**41062.2**

OPTICAL MEASURING TOGGLE CLAMPS

### Material

Body: steel, matt black.  
 Bushes: case hardened and pre-lubricated.  
 Ergonomic soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw

(with rubber pad).

### Technical Notes

For optical analysis applications.

### Tips

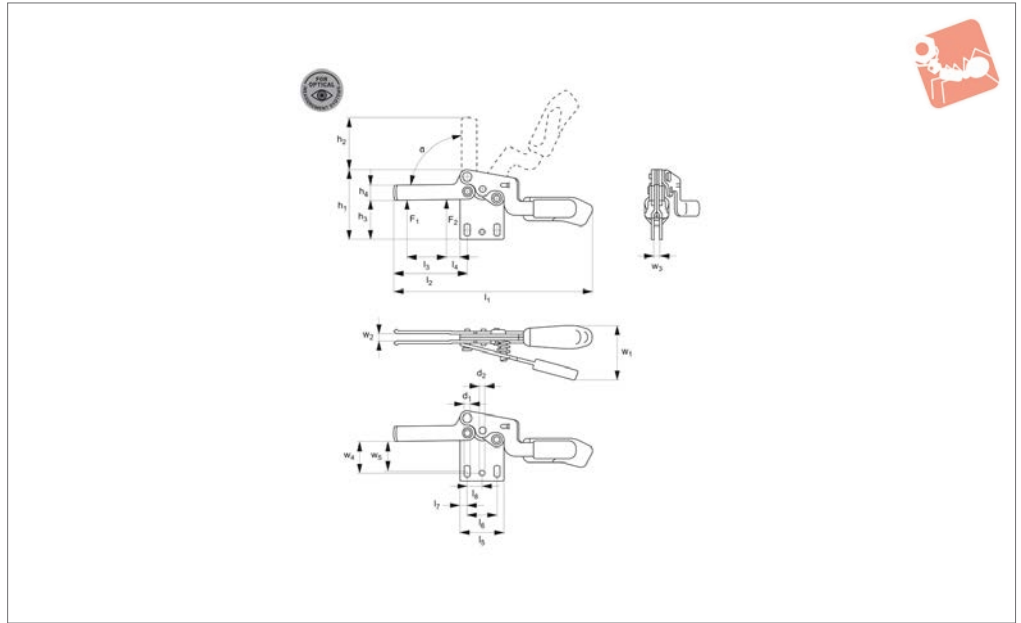
Designed specifically for clamping of parts

during photometric measurement. Uniform matt black surface prevents reflection, enabling easy „knocking-out“ of the clamp during optical analysis of a component.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	Weight g
<b>41062.W0110</b>	3	1.8	2.5	65	86	34	15	206	73	34.5	16.5	50	320
Order No.	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	d <sub>1</sub>	d <sub>2</sub>	α		
<b>41062.W0110</b>	25.7	7	13	8	27	6	27	22,5-27,5	6.5	5.1	90°		



## 41064.1



### Material

Body: steel, matt black.  
 Bushes: case hardened and pre-lubricated.  
 Ergonomic soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw (with rubber pad).

### Technical Notes

The safety lever holds the clamping arm in

both the clamped and open position. This prevents opening under vibration or accidental movement of the clamping arm during assembly/disassembly of the fixture.

### For optical analysis applications.

### Tips

Designed specifically for clamping of parts during photometric measurement. Uniform

matt black surface prevents reflection, enabling easy „knocking-out“ of the clamp during optical analysis of a component.

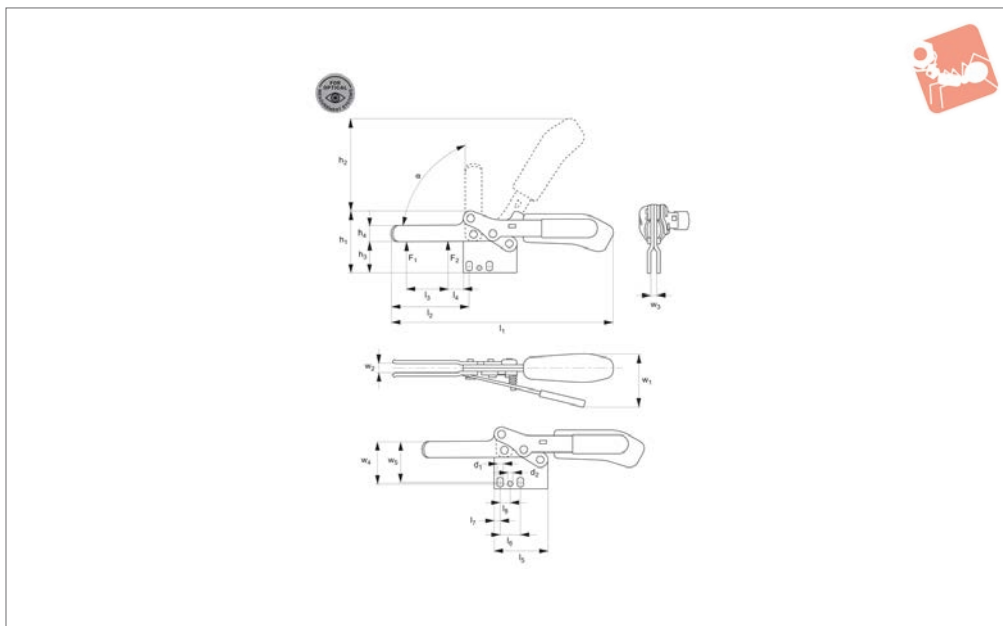
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	Weight g
41064.W0100	2	1	1.2	61	67	34	13.2	173.5	64	38.6	11	38	230
Order No.	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	d <sub>1</sub>	d <sub>2</sub>	α		
41064.W0100	26	6	13.1	6.2	48	5	27	23-28	5.6	4.8	90°		



# Horizontal Acting Toggle Clamps

black - open arm - vertical base - safety

# Optical Measuring Toggle



**41064.2**

OPTICAL MEASURING TOGGLE CLAMPS

### Material

Body: steel, matt black.  
 Bushes: case hardened and pre-lubricated.  
 Ergonomic soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw (with rubber pad).

### Technical Notes

The safety lever holds the clamping arm in

both the clamped and open position. This prevents opening under vibration or accidental movement of the clamping arm during assembly/disassembly of the fixture.

### For optical analysis applications.

### Tips

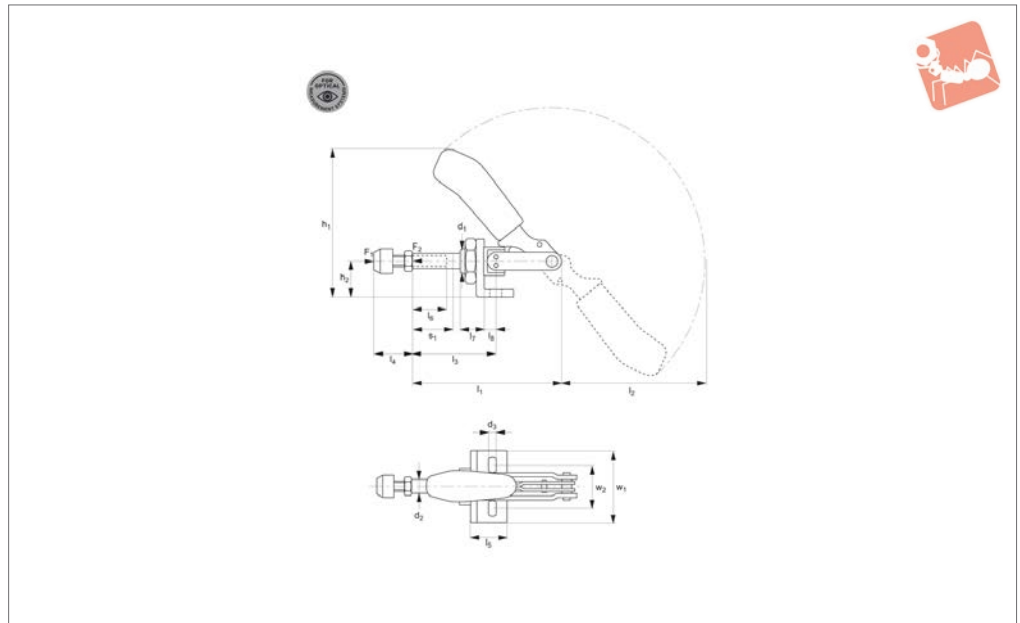
Designed specifically for clamping of parts during photometric measurement. Uniform

matt black surface prevents reflection, enabling easy „knocking-out“ of the clamp during optical analysis of a component.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	Weight g
<b>41064.W0110</b>	3	1.8	2.5	65	86	34	15	206	73	34.5	16.5	50	350
Order No.	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	d <sub>1</sub>	d <sub>2</sub>	α		
<b>41064.W0110</b>	25.7	7	13	8	46.5	6	27	22,5-27,5	6.5	5.1	90°		



## 42000.2



### Material

Body: steel, matt black.  
 Bushes: case hardened and pre-lubricated.  
 Ergonomic soft feel, oil-resistant handle with large grip area.  
 Supplied complete with clamping screw

45020.2 (with rubber pad).

### Technical Notes

**For optical analysis applications.**

**Tips**  
 Designed specifically for clamping of parts

during photometric measurement. Uniform matt black surface prevents reflection, enabling easy „knocking-out“ of the clamp during optical analysis of a component.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Stroke s <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	Clamping screw d <sub>3</sub>	d <sub>4</sub>	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	Weight g
42000.W0501	1	1	1	20	M12x1,5	8	M 4x20	4.5	60	15	91	125
42000.W0502	2	2	2	26	M16x1,5	10	M 6x25	5.6	95	20	114	245

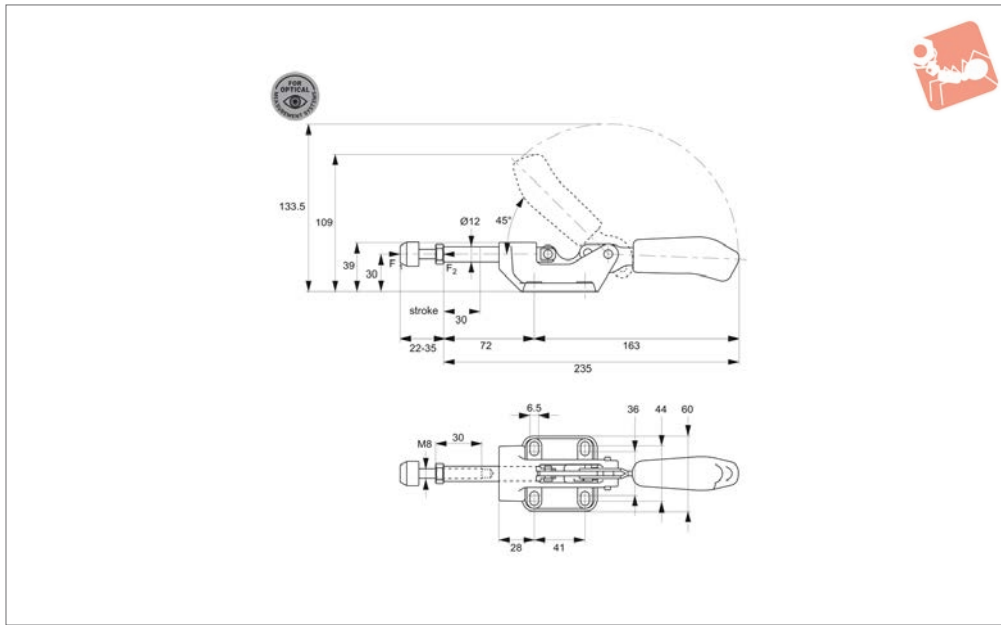
Order No.	l <sub>2</sub>	l <sub>3</sub> min.	l <sub>4</sub> min.	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>
42000.W0501	72	24.5	12	20	20	16	7.0	30	16,0-19,5
42000.W0502	105	32.5	17	34	25	19	12.5	50	31,8-36,0



# Push-Pull Type Toggle Clamps - Black

for optical measuring equipment

## Optical Measuring Toggle



**42050.2**

OPTICAL MEASURING TOGGLE CLAMPS

### Material

Body: malleable cast iron, matt black.  
Levers and rods of tempered steel, matt black galvanised.

### Technical Notes

For optical analysis applications.

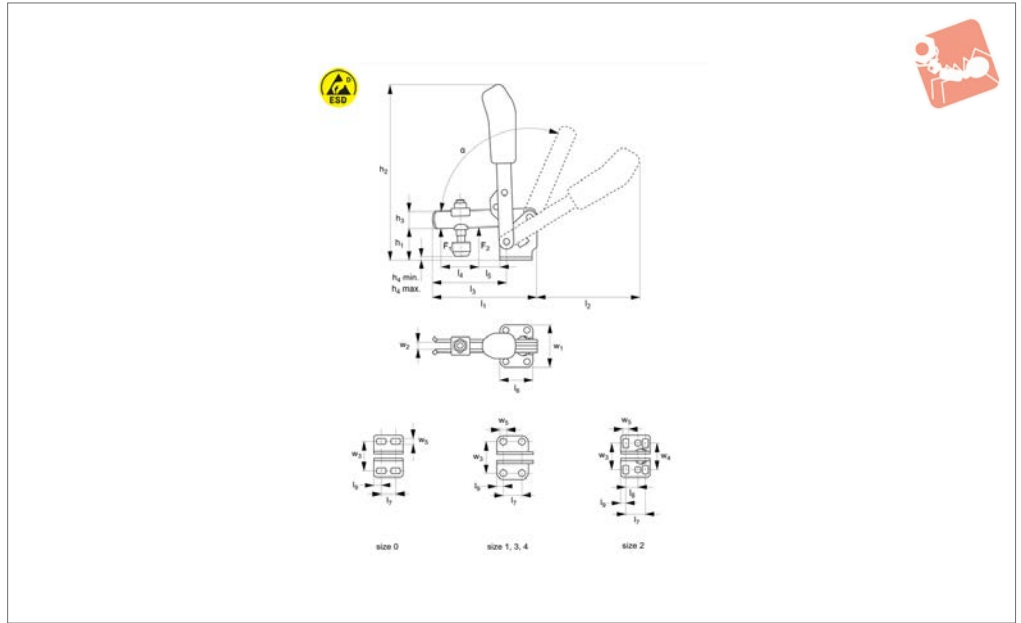
### Tips

Designed specifically for clamping of parts during photometric measurement. Uniform matt black surface prevents reflection, enabling easy „knocking-out“ of the clamp during optical analysis of a component.

Order No.	Size	F <sub>1</sub> kN	Clamping screw	Weight g
42050.W0103	3	4	M 8x44	540



## 40000.3



### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushings (sizes 2-3). Bearing positions are greased.  
 With protective cap and handle made of electrostatic conductive (dissipative) material. The handle is ergonomic, soft

feel, oil-resistant and with large grip area.  
 Safety clamping piece with finger protection, retainer for the clamping screw at the end of the clamping arm.  
 Complete with zinc plated and tempered clamping screw no. 45060.W0300- .W0303.

### Technical Notes

Temperature range -10°C to +80°C.  
**The ESD (electrostatically sensitive devices) vertical clamp is non-insulating. It must not be used in areas where open voltages are used.**

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Weight g
40000.W0200	0	0.5	0.7	M 4x25	18	81	8	-1.5	3.5	49	50	31	60
40000.W0201	1	0.6	1.1	M 5x30	19	98	10	-4.0	2.0	61	58	39	105
40000.W0202	2	0.8	1.2	M 6x35	23	140	12	-3.0	4.5	78	89	52	175
40000.W0203	3	1.2	2.5	M 8x45	33	186	18	2.0	11.0	112	112	79	410

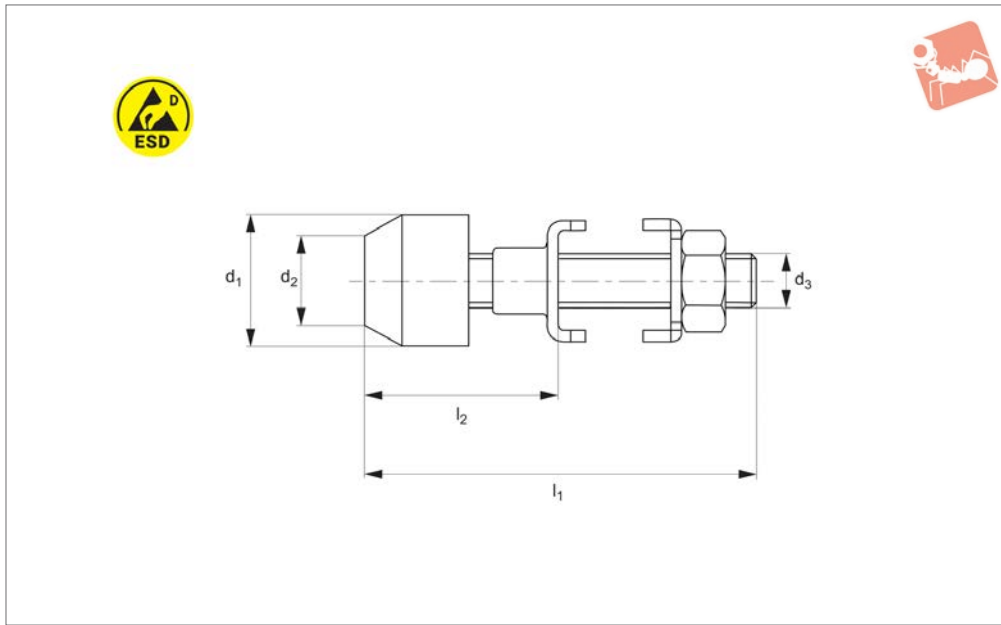
  

Order No.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	α	α*
40000.W0200	14	5	22	8,5-13,5	-	5.5	32	4	23.0	-	4.5	95°	-
40000.W0201	18	6	27	16.0	-	5.5	34	5	22,5-26,0	-	4.5	95°	-
40000.W0202	25	11	32	20.0	12.5	6.0	43	6	23,0-31,0	27	5.5	105°	60°
40000.W0203	37	19	35	20.0	-	7.5	46	8	32.5	-	7.5	105°	60°





# ESD Clamping Screws for open arm toggle clamps



**45060.3**

ESD TOGGLE CLAMPS

### Material

Steel, zinc plated and tempered steel.  
Tensile strength class 8.8. With nut and removable rubber pad.

### Technical Notes

The ESD (electrostatically sensitive devices) clamping screw is non-insulating. It must not be used in areas

where open voltages are used.

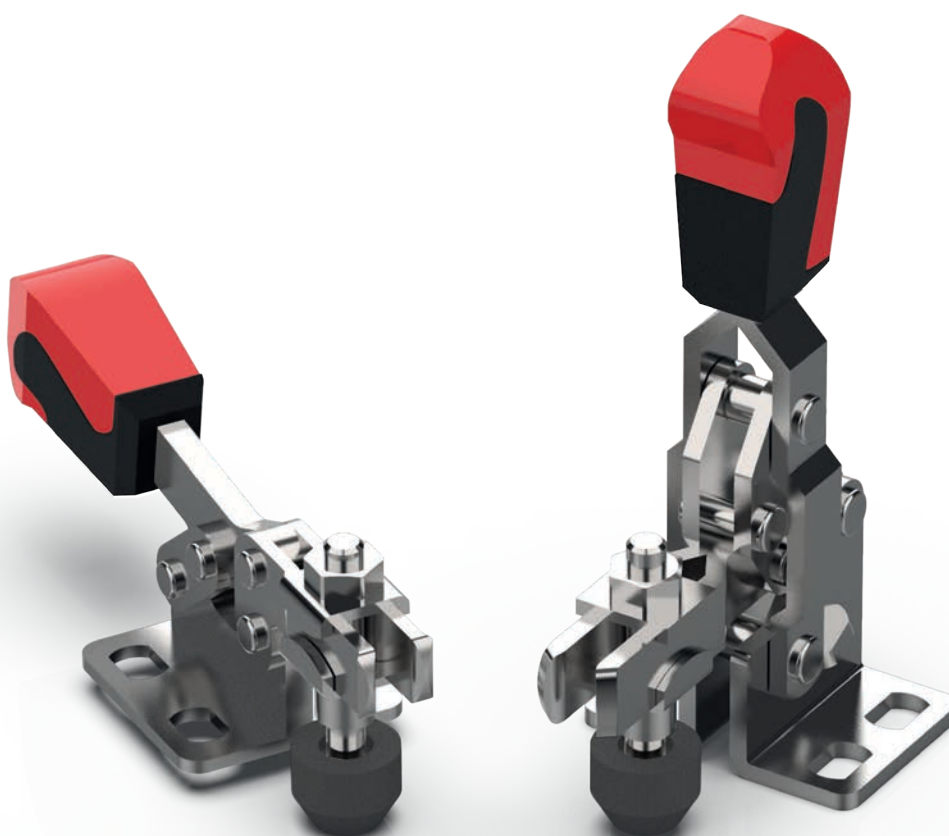
Order No.	Size	Type	Washer size	$l_1$	$l_2$	$d_1$	$d_2$	Screw DIN 933 $d_3 \times l_3$	Weight g
45060.W0300	0	Steel	0	32	13-20	11.0	7	M 4x25	5
45060.W0301	1	Steel	1	38	17-24	12.5	8	M 5x30	10
45060.W0302	2	Steel	2	45	18-28	15.0	10	M 6x35	22
45060.W0303	3	Steel	3	58	22-34	15.0	10	M 8x45	40



The ESD toggle clamps have been specially developed for working with electrostatically sensitive components, assemblies or devices in ESD protection zones (EPA) in accordance with the standard DIN EN 61340-5-1. All our toggle clamps have been tested and certified by an independent expert regarding leakage resistance, discharge time and surface tension.

### Features

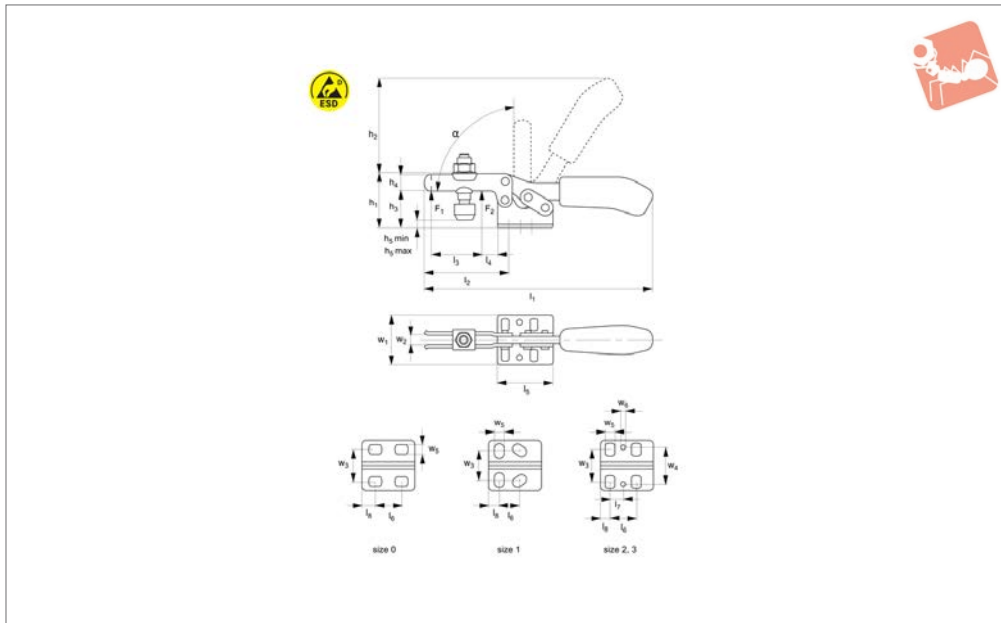
- Leakage resistance according to DIN IEC / TR 61340-5-2 between  $10^{04}$  and  $10^{09}$  Ohm.
- Discharge time according to DIN IEC / TR 61340-5-2  $< 2$  seconds.
- Surface tension (electric field strength) according to DIIN EN 61340-5-1  $< 100$  Volt.





# Horizontal Acting Toggle Clamps

ESD - open arm - horizontal base



**41000.3**

ESD TOGGLE CLAMPS

### Material

Body: steel, zinc plated.  
 Rivets: stainless steel running in hardened bushings (sizes 2-3). Bearing positions are greased.  
 With protective cap and handle made of electrostatic conductive (dissipative)

material. The handle is ergonomic, soft feel, oil-resistant and with large grip area. Retainer for the clamping screw at the end of the clamping arm.  
 Complete with zinc plated and tempered clamping screw no. 45060.W0300- .W0303.

### Technical Notes

Temperature range -10°C to +80°C.  
**The ESD (electrostatically sensitive devices) horizontal clamp is non-insulating. It must not be used in areas where open voltages are used.**

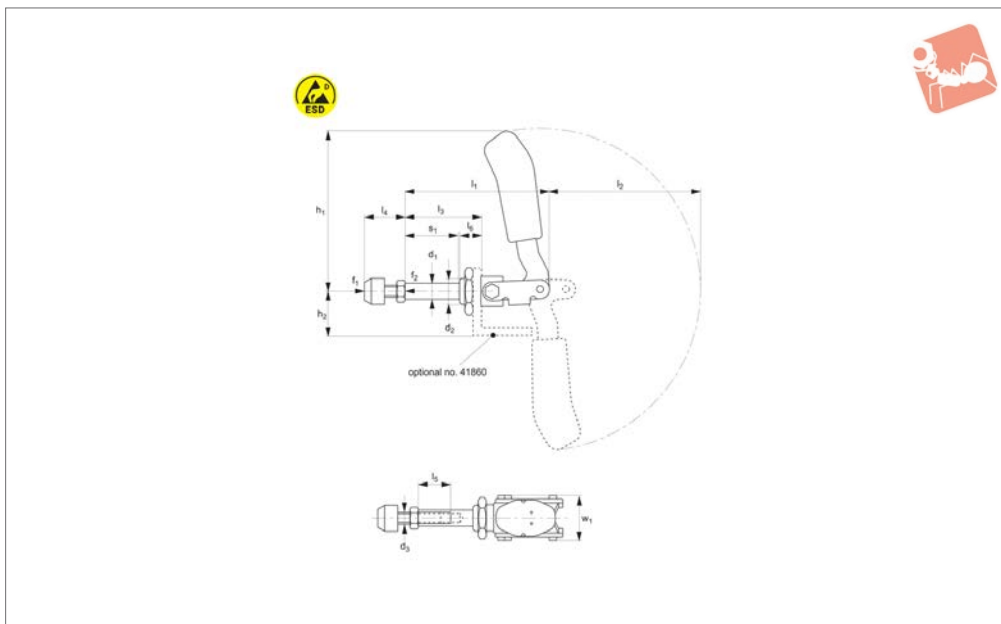
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub> min.	h <sub>5</sub> max.	l <sub>1</sub>	l <sub>2</sub>	Weight g
41000.W0200	0	0.25	0.4	M 4x25	23.0	34	14.5	7.5	-5.5	0.0	79	28	35
41000.W0201	1	0.80	1.1	M 5x30	30.0	49	19.0	10.0	-3.0	2.5	120	42	105
41000.W0202	2	1.00	1.2	M 6x35	45.0	68	24.0	13.2	-1.5	5.0	162	64	185
41000.W0203	3	1.80	2.5	M 8x45	48.5	86	32.0	15.0	-2.0	9.0	206	73	320

Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	w <sub>6</sub>	α
41000.W0200	9.0	5.5	25.5	11,5-15,5	-	6.3	25.0	4	16.0	-	4.6	-	90°
41000.W0201	18.7	8.0	34.0	13,0-14,5	-	5.5	34.0	5	18,0-21,5	-	5.2	-	90°
41000.W0202	32.0	16.0	38.0	26.0	12.7	6.0	42.0	6	19,5-29,5	28.5	5.6	5.6	90°
41000.W0203	38.0	14.0	50.0	25.7	13.0	7.0	45.5	8	22,0-31,8	31.6	6.5	5.1	90°



## 41840.3



### Material

Body: steel, zinc-plated.  
 Piston rod: non-rusting steel.  
 Shoulder screws: steel, tempered. Bearing positions are greased.  
 Long rod-guide with attaching thread and nut.

With protective cap and handle made of electrostatic conductive (dissipative) material. The handle is ergonomic, soft feel, oil-resistant and with large grip area. Complete with zinc plated and tempered clamping screw no. 45020.W0301- .W0303.

### Technical Notes

Temperature range -10°C to +80°C.  
**The ESD (electrostatically sensitive devices) push-pull type toggle clamp is non-insulating. It must not be used in areas where open voltages are used.**

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub> min.	Weight g
41840.W0202	2	1.0	1.0	73	24	68.5	68	36	17	130
41840.W0203	3	2.5	2.5	123	33	108.0	115	57	22	320

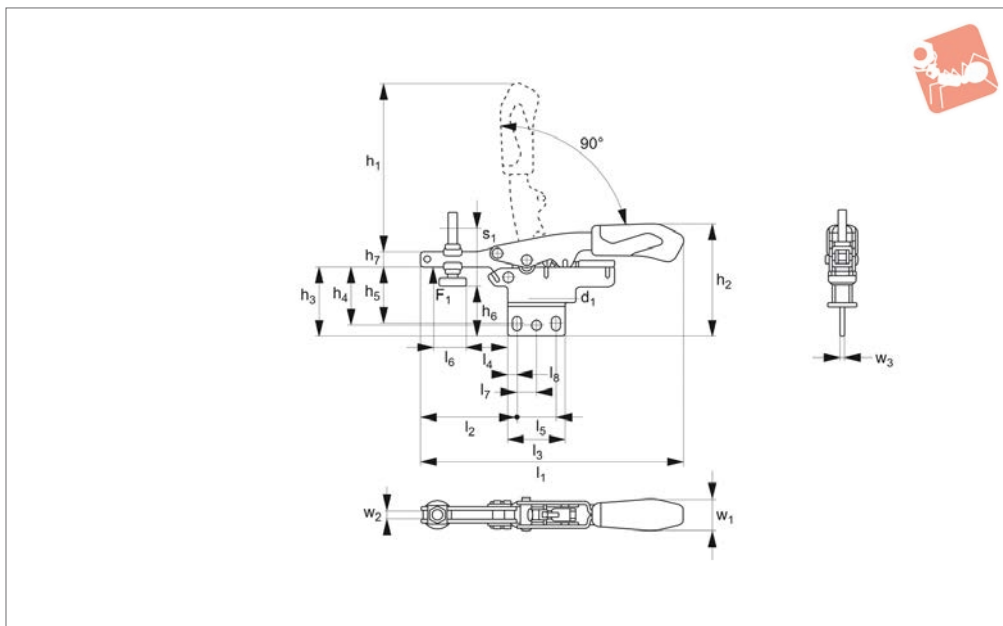
Order No.	l <sub>4</sub> max.	l <sub>5</sub>	l <sub>6</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	w <sub>1</sub>	Stroke s <sub>1</sub>	Clamping screw
41840.W0202	25	15	13	10	M16x1,5	M 6	30.5	24.5	M 6x25
41840.W0203	35	25	16	12	M20x1,5	M 8	33.0	40.0	M 8x35



# Auto-Adjust Toggle Clamp

open clamping arm - vertical base

# Auto-Adjust Toggle Clamps



**42609**

AUTO-ADJUST TOGGLE CLAMPS

### Material

Body: steel, zinc plated.  
Ergonomic, soft feel and oil-resistant handle with large grip area.

Supplied complete with zinc plated clamping screw (with rubber pad).

### Technical Notes

Automatically adjusts to suit work-piece height.  
Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	Automatic height compensation s <sub>1</sub>	Height compensation max.	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub>	h <sub>6</sub> min.	Weight g
<b>42609.W0020</b>	20	2	20	35	M 6x49	113	73.0	47	39.8	37-40	13.5	272
<b>42609.W0050</b>	50	3	35	40	M 8x50	158	94.5	59	49.0	45-49	27.5	544

Order No.	h <sub>6</sub> max.	h <sub>7</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	d <sub>1</sub>	d <sub>2</sub>
<b>42609.W0020</b>	31	10	173	64.0	38	25.9	26	22	13	6.0	21	6.0	3	5.6	5.6
<b>42609.W0050</b>	38	13	243	106.5	55	38.0	50	35	19	8.5	27	8.2	4	6.5	5.6

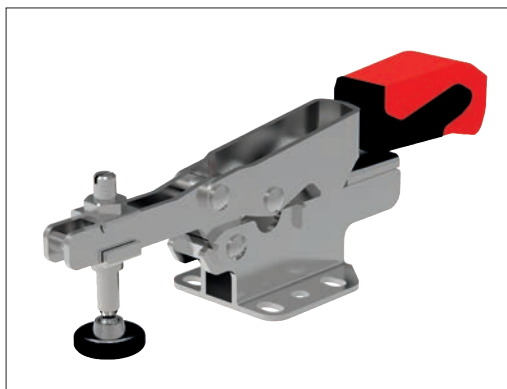


### Benefits

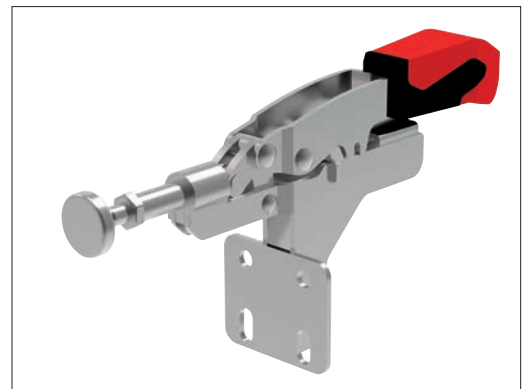
- Automatically adapts to workpiece height / width.
- Ideal for small batch sizes.
- Adjustable clamping forces.



### Example Toggle Clamps



42605 - Horizontal base - vertical acting



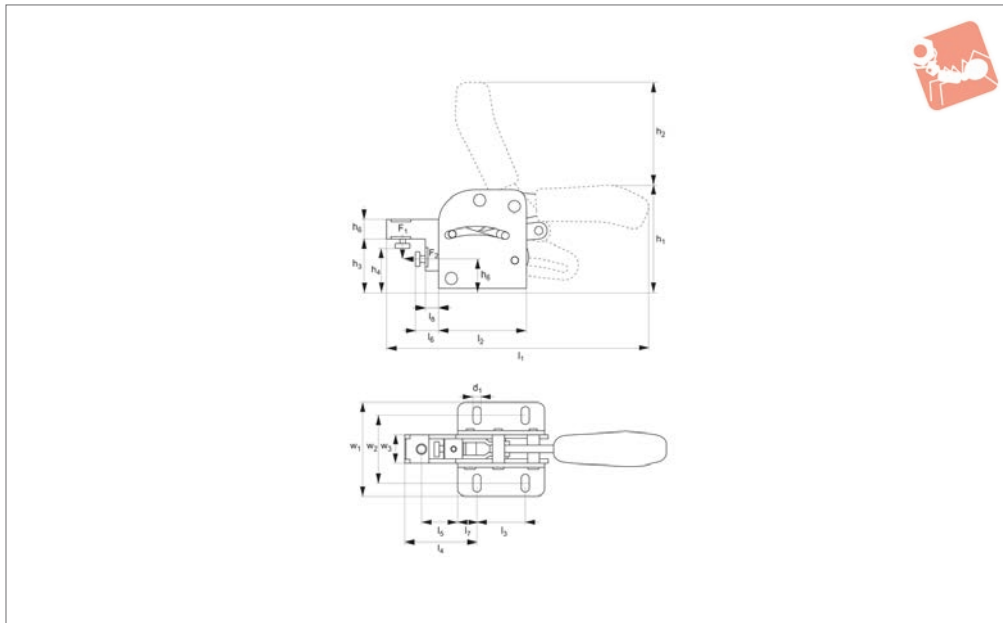
42611 - Push pull type - horizontal acting



# Combination Toggle Clamp

position and clamp

# Auto-Adjust Toggle Clamps



**42500**

AUTO-ADJUST TOGGLE CLAMPS

**Material**

Body: steel, zinc plated.  
Rivets: stainless steel running in hardened bushes. Pre-lubricated bearings (grease suitable for food industry use).

Ergonomic, soft feel and oil-resistant handle with large grip area.

**Technical Notes**

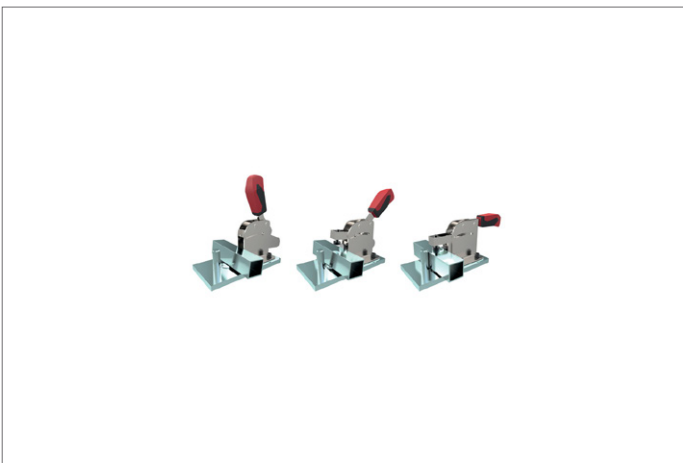
Especially useful in welding applications.

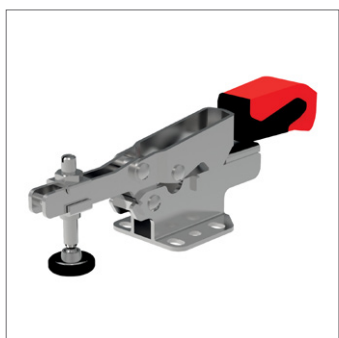
The positioning rod and toggle clamp achieve precise positioning and clamping of components in one operation.  
Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	d <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	h <sub>5</sub>	h <sub>6</sub>	l <sub>1</sub>	Weight g
42500.W0001	1	1.0	1.0	5.5	74	62	36.0	25	32	22	12	150	340
42500.W0002	2	2.0	2.0	6.5	94	87	46.0	30	40	28	16	219	700
42500.W0003	3	3.0	3.0	8.5	110	106	55.5	40	50	34	20	270	1620

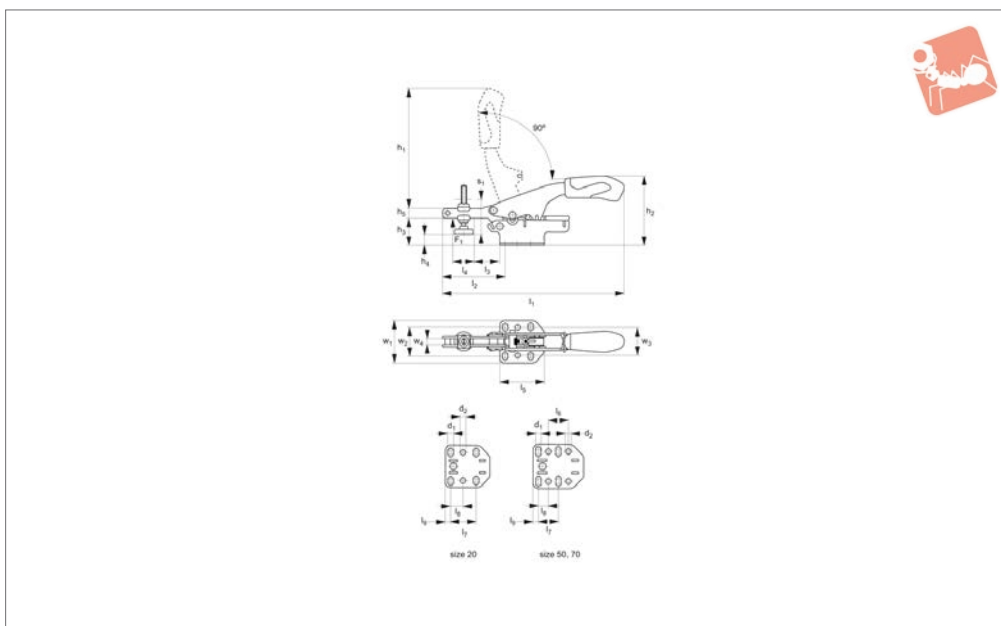
  

Order No.	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub> min.	l <sub>6</sub> max.	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>
42500.W0001	55	40	33	15	5	10	7.5	0.5	53	34,5-39,5	17.0
42500.W0002	75	50	56	32	14	24	12.5	9.0	75	48,5-61,5	19.5
42500.W0003	90	50	74	37	20	30	20.0	14.0	96	60,0-80,0	29.0





## 42605



### Material

Body: steel, zinc plated.  
Ergonomic soft feel oil-resistant handle with large grip area.

Supplied complete with zinc-plated clamping screw (with rubber pad).

### Technical Notes

Automatically adjusts to suit workpiece height.

Order No.	Size	F <sub>1</sub> kN	Automatic height compensation s <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	h <sub>5</sub>	Weight g
42605.W0020	20	2	20	5.5	5.5	121	70	27	-7.0	11.0	10	345
42605.W0050	50	3	35	6.5	6.5	174	72	23	-8.9	1.5	13	520
42605.W0070	70	3	35	6.5	6.5	174	90	41	-6.6	19.7	13	575

Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	Clamping screw	Height compensation max.
42605.W0020	184	63	22.0	26.0	45.0	-	26.0	12.7	5.3	42.5	26-32	28	6.1	M 6x49	35
42605.W0050	261	104	35.2	22.2	63.5	25.4	25.4	12.7	6.3	57.0	32-44	38	8.4	M 8x50	40
42605.W0070	261	104	35.0	50.0	63.5	25.4	25.4	12.7	6.3	57.0	32-44	38	8.5	M 8x66	60

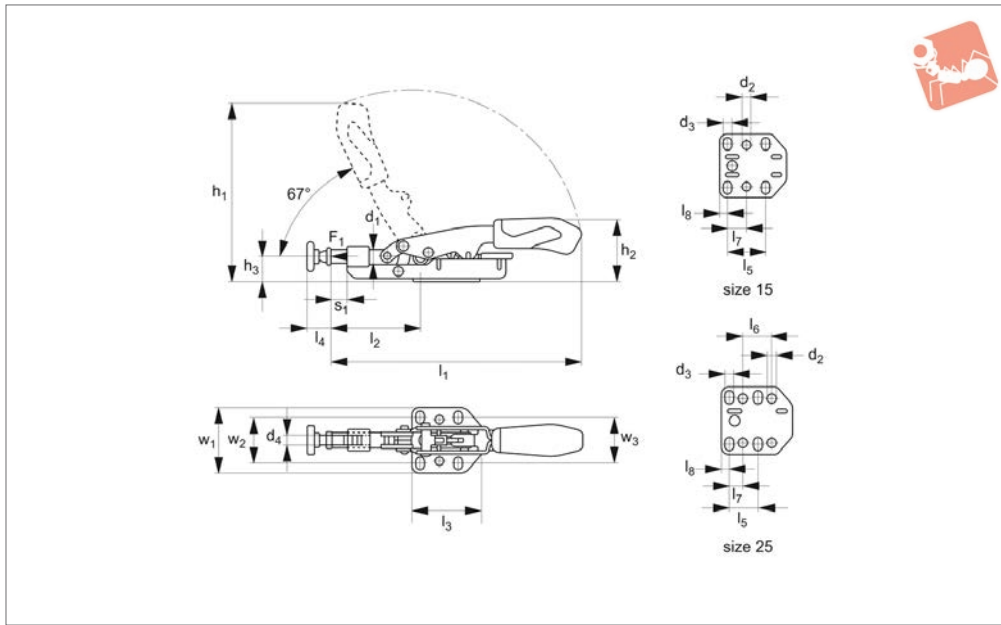




# Auto-Adjust Push-Pull Toggle Clamp

horizontal base

# Auto-Adjust Toggle Clamps



**42613**

AUTO-ADJUST TOGGLE CLAMPS

**Material**

Body: steel, zinc plated.  
Ergonomic, soft feel and oil-resistant handle with large grip area.

Supplied complete with zinc plated clamping screw (with rubber pad).

**Technical Notes**

Automatically adjusts to suit work-piece height.  
Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	Automatic height compensation s <sub>1</sub>		d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	Weight g
<b>42613.W0015</b>	15	2	8		8.5	5.5	5.5	M 6	145	58	16.8	230
<b>42613.W0025</b>	25	3	13		11.8	6.5	6.5	M 8	207	71	23.2	550

Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub> min.	l <sub>4</sub> max.	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	Clamping screw	Height compensation max.
<b>42613.W0015</b>	177	52-69	45.0	13	25	26.0	-	12.7	5.3	42.5	26-32	28	M 6x37	25
<b>42613.W0025</b>	256	72-98	63.5	16	35	25.4	25.4	12.7	6.3	57.0	32-44	38	M 8x50	35

# Auto-Adjust Toggle Clamps

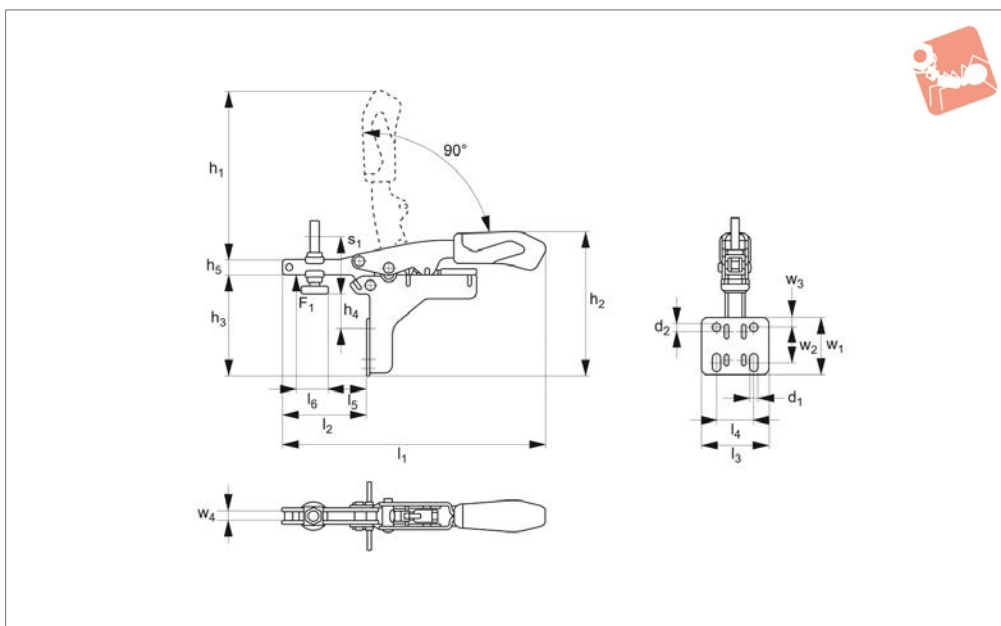
## Auto-Adjust Toggle Clamp open clamping arm - angle base



AUTO-ADJUST TOGGLE CLAMPS



### 42607



#### Material

Body: steel, zinc plated.  
Ergonomic, soft feel and oil-resistant handle with large grip area.

Supplied complete with zinc plated clamping screw (with rubber pad).

#### Technical Notes

Automatically adjusts to suit work-piece height.  
Temperature range -10°C to +80°C.

Order No.	Size	$F_1$ kN	Automatic height compensation $s_1$	Height compensation max.	Clamping screw	$h_1$	$h_2$	$h_3$	$h_4$ min.	Weight g
42607.W0020	20	2	20	35	M 6x49	113	94	68	3	272
42607.W0050	50	3	35	40	M 8x66	158	124	88	1	544

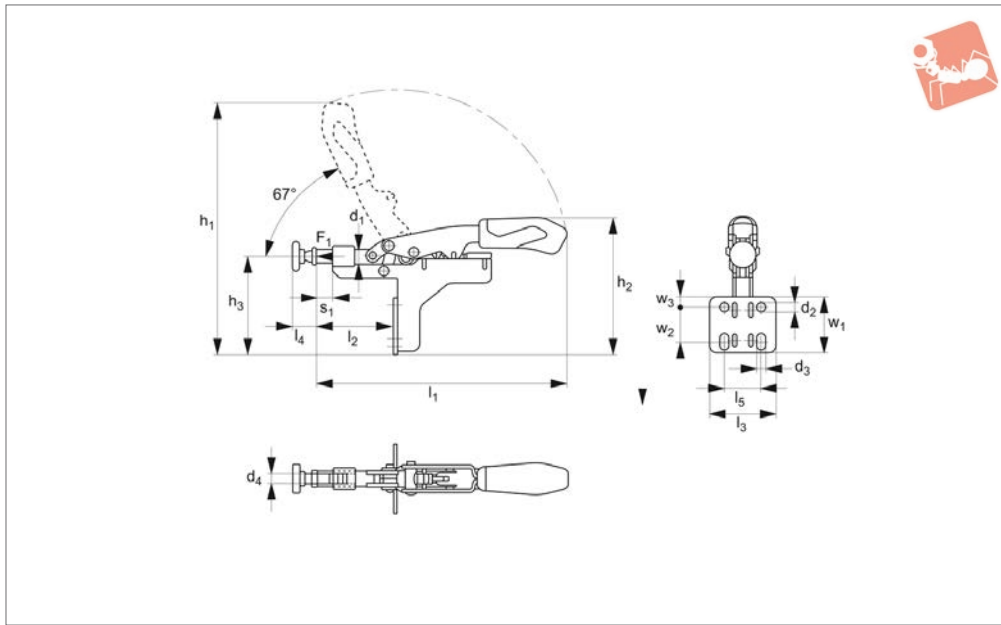
Order No.	$h_4$ max.	$h_5$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$d_1$	$d_2$	$w_1$	$w_2$	$w_3$	$w_4$
42607.W0020	24	10	173	56	45	25.4	24	22	5.6	5.6	38	20,0-26,0	7.1	6.0
42607.W0050	30	13	244	85	57	38.1	31	40	6.5	6.5	51	20,5-30,0	10.6	8.2



# Auto-Adjust Push-Pull Toggle Clamp

angle base

# Auto-Adjust Toggle Clamps



**42611**

AUTO-ADJUST TOGGLE CLAMPS

**Material**

Body: steel, zinc plated.  
Ergonomic, soft feel and oil-resistant handle with large grip area.

Supplied complete with zinc plated clamping screw (with rubber pad).

**Technical Notes**

Automatically adjusts to suit work-piece height.  
Temperature range -10°C to +80°C.

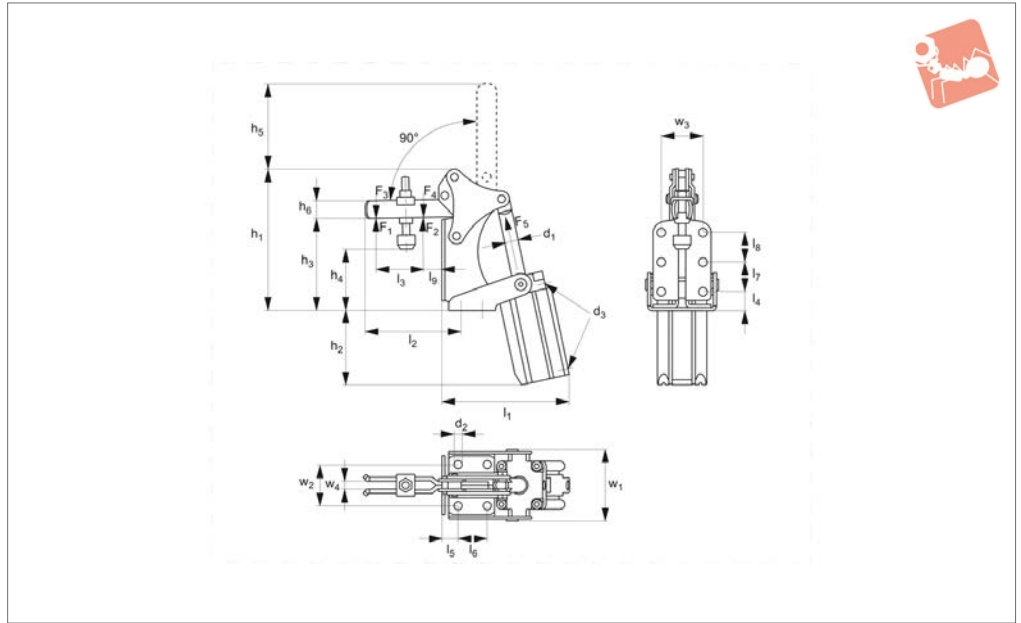
Order No.	Size	F <sub>1</sub> kN	Automatic height compensation s <sub>1</sub>	Height compensation max.	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub>	Weight g
<b>42611.W0015</b>	15	2	8	25	M 6x37	173	91	66	167	272
<b>42611.W0025</b>	25	3	13	35	M 8x50	238	119	84	236	544

Order No.	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub> min.	l <sub>4</sub> max.	l <sub>5</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>
<b>42611.W0015</b>	42-59	45	14	29	25.4	8.5	5.6	5.6	M 6	38	20,0-26,0	7.1
<b>42611.W0025</b>	58-83	57	19	39	38.1	11.8	6.5	6.5	M 8	51	20,5-30,0	10.6



## 47060



PNEUMATIC TOGGLE CLAMPS

### Material

Body: steel, zinc plated.  
Bushes: case hardened and greased.  
Rivets: stainless steel.  
Complete with tempered, white zinc plated clamping screw.

### Technical Notes

Bearings are pre-lubricated.  
Clamp ready for installation and consists

of:  
- vertical toggle clamp no. 40000 (without handle)  
Pneumatic cylinder, double acting.  
 $F_3$  and  $F_4$  = max. clamping force at 6 bar.  
 $V_n$  = air consumption per double stroke in  $dm^3$  at 6 bar.  
Suitable proximity switches for end-position monitoring are available using

order 45001. 0.3m PUR cable with M8 connector and rotatable knurled nuts.  
Switching function: NOC.  
Output: PNP.

### Tips

The console is self-supporting and must be clear of other surfaces. There is a valve for controlling the speed of operation.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	F <sub>3</sub> kN	F <sub>4</sub> kN	F <sub>5</sub> kN	Clamping screw	Piston dia.	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	h <sub>5</sub>	h <sub>6</sub>	Weight g
47060.W0002	2	1.0	1.2	0.70	1.0	0.30	M 6x35	25	100.5	67.5	65.0	38.4	45.0	43	12	625
47060.W0003	3	1.0	2.5	0.65	1.1	0.50	M 8x45	32	114.5	78.0	68.7	38.0	46.5	69	18	1025
47060.W0004	4	2.0	3.0	1.50	2.2	0.75	M 8x65	40	153.0	80.0	100.0	51.0	80.0	92	20	1700

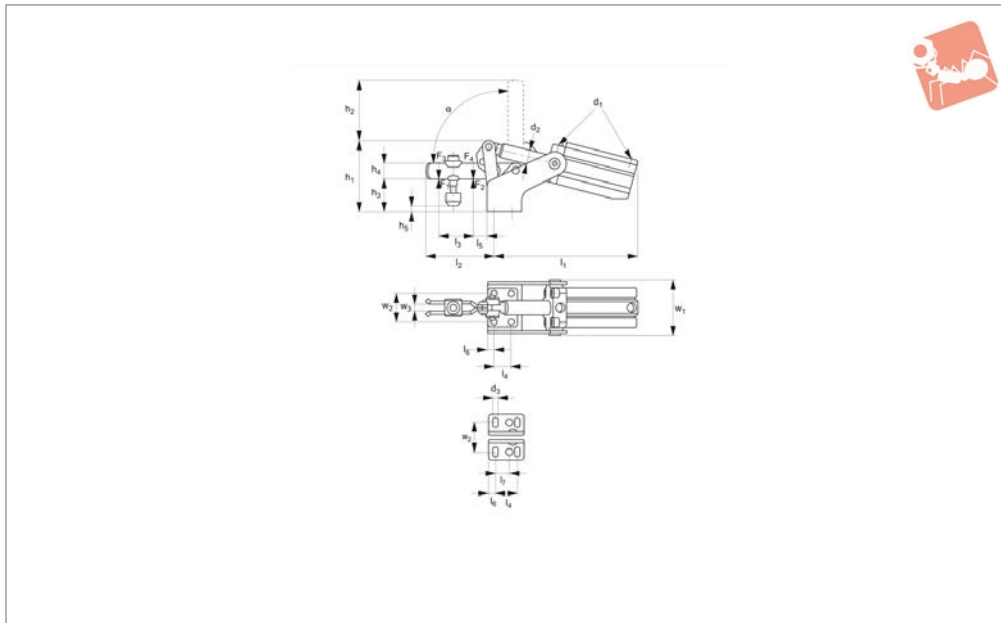
  

Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	Vn dm <sup>3</sup>
47060.W0002	83.0	56.5	25	15.9	15.3	13	13	12.5	6.5	27	6	54.5	26.6	12	5.6	M 5	0.3
47060.W0003	96.0	80.5	36	17.5	16.5	16	16	-	12.5	25	8	62.5	25.0	16	6.5	G1/8	0.4
47060.W0004	123.5	102.0	49	20.5	17.5	32	32	32.0	19.0	45	10	77.5	45.0	16	8.5	G1/4	0.8



# Pneumatic Toggle Clamp with horizontal cylinder attachment

## Pneumatic Toggle Clamps



### 47010

PNEUMATIC TOGGLE CLAMPS

#### Material

Body: steel, zinc plated and galvanised.  
Bushes: case hardened and greased.  
Rivets: stainless steel.  
Complete with tempered, galvanized clamping screw.

#### Technical Notes

Bearings are pre-lubricated.  
Clamp ready for installation and consists of:

- vertical toggle clamp no. 40000 (without handle)
- FESTO-pneumatic cylinder, double acting.

$F_3$  and  $F_4$  = max. clamping force at 6 bar.  
piston  $\varnothing^*$  = required piston dia. to achieve force  $F_5$  at 6 bar.

$V_n$  = air consumption per double stroke in  $dm^3$  at 6 bar.

Suitable proximity switches for end-

position monitoring are available using order 45001. 0.3m PUR cable with M8 connector and rotatable knurled nuts.  
Switching function: NOC.  
Output: PNP.

#### Tips

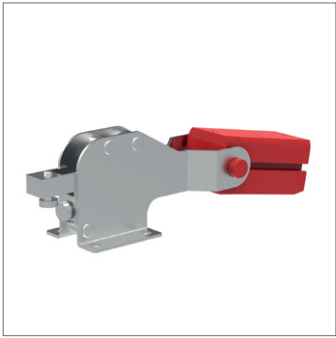
The console is self-supporting and must be clear of other surfaces. There is a valve for controlling the speed of operation.

Order No.	Size	$F_1$ kN	$F_2$ kN	$F_3$ kN	$F_4$ kN	Clamping screw	Piston dia.	$d_1$	$d_2$	$d_3$	$h_1$	$h_2$	Weight g
47010.W0001	1	0.8	1.1	0.2	0.3	M 5x30	16	M 5	8	4.5	51.0	34.0	320
47010.W0002	2	1.0	1.2	0.7	1.0	M 6x35	25	M 5	12	5.5	62.0	42.5	600
47010.W0003	3	1.0	2.5	0.7	1.1	M 8x45	32	G1/8	16	7.5	82.0	69.0	1005
47010.W0004	4	2.0	3.0	1.5	2.2	M 8x65	40	G1/8	16	8.6	99.5	92.0	1520

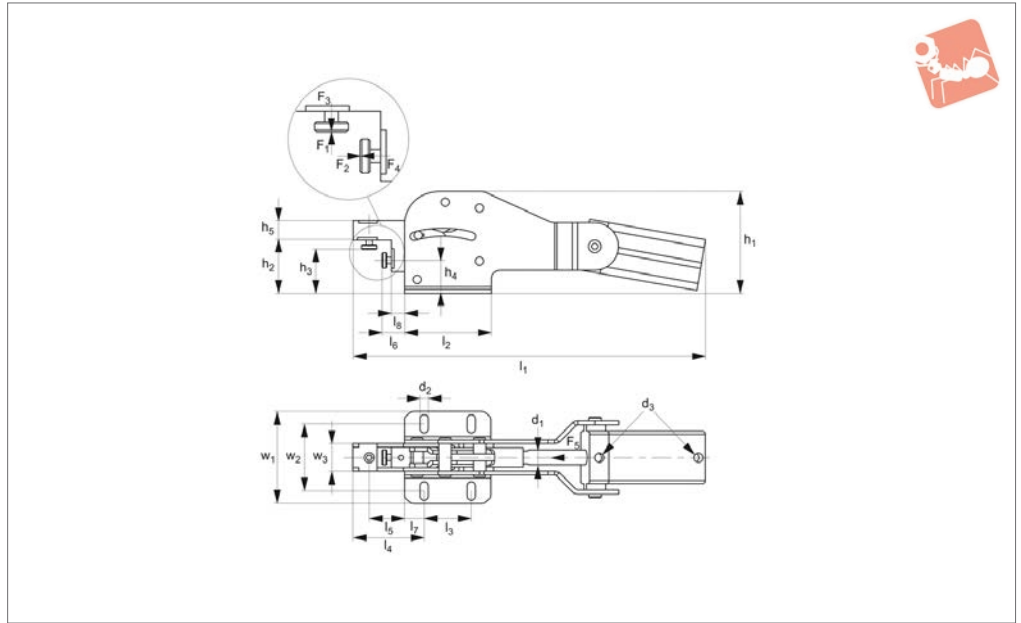
Order No.	$h_3$	$h_4$	$h_5$ min.	$h_5$ max.	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$l_7$	Opening angle $\alpha$	$V_n$ $dm^3$	$w_1$	$w_2$	$w_3$
47010.W0001	21.0	10	-2.0	4.5	126.0	39.0	18	16	6	6.0	-	92,0°	0.1	50.0	24	5
47010.W0002	26.0	12	-1.0	7.0	145.0	51.5	25	20	11	6.0	12.5	91,5°	0.3	54.5	27	6
47010.W0003	36.5	18	5.4	14.0	165.5	78.0	36	20	19	7.5	-	90,0°	0.4	62.5	32	8
47010.W0004	45.0	20	-3.0	25.5	196.0	101.0	45	32	25	13.0	-	90,5°	0.8	77.5	45	10



PNEUMATIC TOGGLE CLAMPS



## 47030



### Material

Body: steel, zinc plated and galvanised.  
 Bushes: case hardened and greased.  
 Rivets: stainless steel.  
 Complete with tempered, galvanized clamping screw.

### Technical Notes

Bearings are pre-lubricated.  
 Clamp ready for installation and consists

of:

- vertical toggle clamp no. 40000 (without handle)
  - FESTO-pneumatic cylinder, double acting.
- With magnetic piston for limit position query.  
 $F_3$  and  $F_4$  = max. clamping force at 6 bar.  
 $V_n$  = air consumption per double stroke in  $dm^3$  at 6 bar.

Suitable proximity switches for end-position monitoring are available using order 45001. 0.3m PUR cable with M8 connector and rotatable knurled nuts.  
 Switching function: NOC. Output: PNP.

### Tips

The console is self-supporting and must be clear of other surfaces. There is a valve for controlling the speed of operation.

Order No.	Size	$F_1/F_2$ kN	$F_3$ kN	$F_4$ kN	$F_5$ kN	Piston dia.	$d_1$	$d_2$	$d_3$	$h_1$	$h_2$	$h_3$ min.	$h_3$ max.	$h_4$	Weight g
47030.W0001	1	1	0.3	0.1	0.3	25	5.5	10	M 5	68	36.0	25	32	22	770
47030.W0002	2	2	0.5	0.3	0.4	32	6.5	12	G1/8	88	46.0	30	40	28	1450
47030.W0003	3	3	0.7	0.4	0.8	40	8.5	16	G1/8	106	55.5	40	50	34	3050

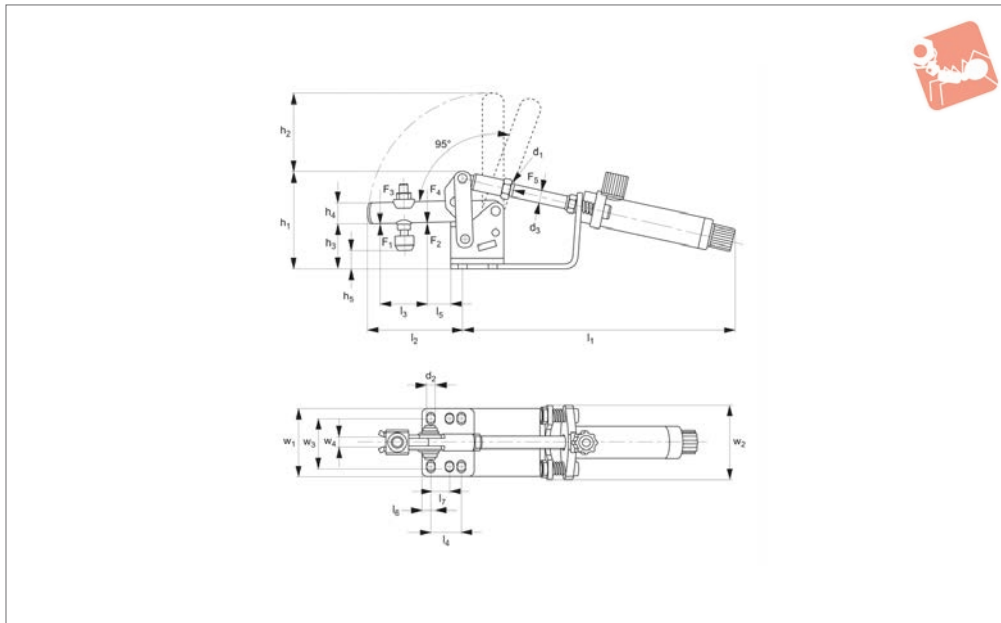
  

Order No.	$h_5$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$ min.	$l_6$ max.	$l_7$	$l_8$	$V_n$ $dm^3$	$w_1$	$w_2$	$w_3$
47030.W0001	12	225	55	40	33	15	5	10	7.5	0.5	0.3	53	34,5-39,5	17.0
47030.W0002	16	305	75	50	56	32	10	20	12.5	10.5	0.4	75	55.0	19.5
47030.W0003	20	370	90	50	74	37	20	30	20.0	14.0	0.8	96	70.0	29.0



# Pneumatic Toggle Clamp with horizontal cylinder attachment

## Pneumatic Toggle Clamps



### 47040

PNEUMATIC TOGGLE CLAMPS

#### Material

Body: steel, zinc plated and galvanised.  
Bushes: case hardened and greased.  
Rivets: stainless steel.  
Complete with tempered, galvanized clamping screw.

#### Technical Notes

Bearings are pre-lubricated.

Clamp ready for installation and consists of:

- vertical toggle clamp no. 40000 (without handle)
- Plastic pneumatic cylinder, double acting.

Vn = air consumption per double stroke in dm<sup>3</sup> at 6 bar.

#### Tips

The console is self-supporting and must be clear of other surfaces. There is a valve for controlling the speed of operation.

F<sub>3</sub> and F<sub>4</sub> = max. clamping force at 6 bar.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	F <sub>3</sub> kN	F <sub>4</sub> kN	F <sub>5</sub> kN	Clamping screw	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	Weight g
47040.W0000	0	0.5	0.7	0.07	0.09	38	M 4x25	M 4	4.5	4	46	23.0	20	125
47040.W0001	1	0.8	1.1	0.13	0.18	60	M 5x30	M 6	4.5	6	50	34.5	22	400
47040.W0002	2	1.0	1.2	0.35	0.50	170	M 6x35	M 8	5.4	8	63	42.5	27	600
47040.W0003	3	1.4	2.5	0.55	1.00	265	M 8x45	M10x1,25	7.1	10	64	69.0	38	800

Order No.	h <sub>4</sub>	h <sub>5</sub> min.	h <sub>5</sub> max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	Vn dm <sup>3</sup>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>
47040.W0000	8	-1	6	132	31	14	13.5	5.5	5.0	-	0.03	33	29	23	4
47040.W0001	10	-2	5	145	38	18	16.0	6.0	6.0	-	0.06	34	33	24	5
47040.W0002	12	1	8	163	52	25	20.0	11.0	6.0	12.5	0.17	44	54	27	6
47040.W0003	18	7	16	205	78	37	20.0	19.0	7.5	-	0.30	50	59	32	8

# Pneumatic Toggle Clamps

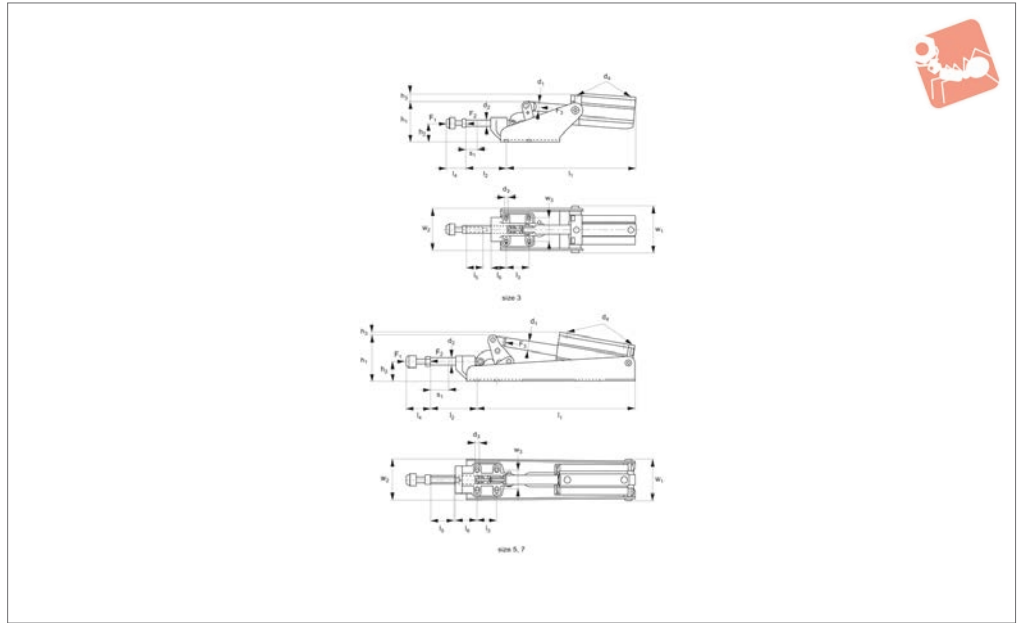
## Push Type Pneumatic Toggle Clamp heavy duty version



PNEUMATIC TOGGLE CLAMPS



### 47050



#### Material

Console: steel, zinc plated.  
Clamp body: malleable iron casting, painted.  
Lever parts and push rod: zinc plated, passivated and tempered.  
Rivets: stainless steel.

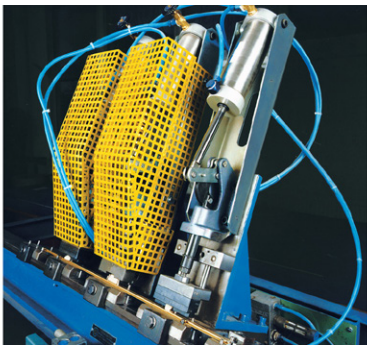
Bearing positions are greased. Pneumatic cylinder with magnetic piston for end-position monitoring. Complete with zinc plated and tempered clamping screw no. 45020.

#### Technical Notes

Heavy duty version for long working life. Suitable proximity switches for end-position monitoring are available using order 45001. 0.3 m PUR cable with M8 connector and rotatable knurled nuts. Switching function: NOC. Output: PNP.

Order No.	F <sub>1</sub> kN	F <sub>2</sub> kN	F <sub>3</sub> kN	Clamping screw	Piston dia.	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	Weight g
47050.W0003	4	2.5	0.75	M 8 x 35	40	16.0	12	6.5	G1/8	72	33	22	2610
47050.W0005	10	5.0	1.00	M12 x 50	50	20.0	16	8.5	G1/4	96	41	22	5265
47050.W0007	25	10.0	1.80	M12 x 50	63	20.0	22	11.0	G1/4	128	59	29	6120

Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub> min.	l <sub>4</sub> max.	l <sub>5</sub>	l <sub>6</sub>	Stroke s <sub>1</sub>	Vn dm <sup>3</sup>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>
47050.W0003	232	72	41	21.5	35	30	28	20	0.8	83	73.5	41
47050.W0005	316	98	41	30.0	50	30	45	29	2.2	86	84.0	41
47050.W0007	422	105	70	30.0	50	50	45	38	4.5	93	114.0	57

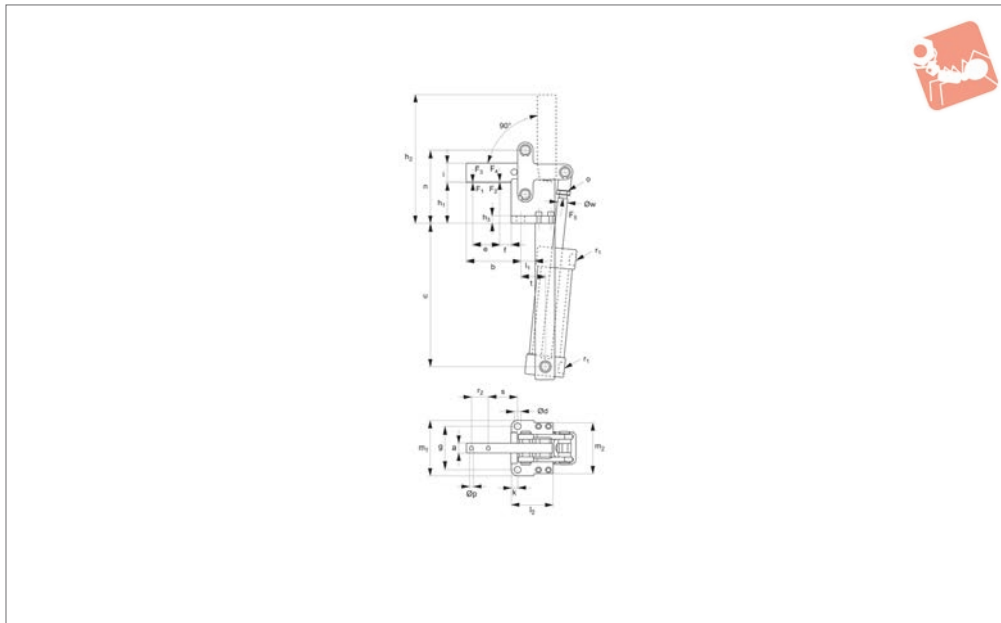






# Heavy Duty Vertical Pneumatic Toggle with vertical cylinder mounting

## Pneumatic Toggle Clamps



**47800**

PNEUMATIC TOGGLE CLAMPS

### Material

Body: tempered steel, burnished.  
Axle bolts: tempered and ground, locked with circlips.  
Bushes: case hardened and greased.

### Technical Notes

Clamp ready for installation, fitted with FESTO-pneumatic cylinder, double acting.

$f_3$  and  $f_4$  = max. clamping force at 6 bar.  
Piston dia. = required piston dia. to

achieve force  $f_5$  at 6 bar.

$Vn$  = air consumption per double stroke in  $dm^3$  at 6 bar.

### Tips

Ideal for installation in material handling lines and special purpose machines. Opening and closing of clamp can be controlled electronically, allowing integration into automated processes. See also no. 46200 <\46200#25> - clamp only.

Clamps are maintenance free, due to heat-treated and ground axle bolts. Holes are provided in arm to allow fixing of clamping elements via welding or screws.

### Important Notes

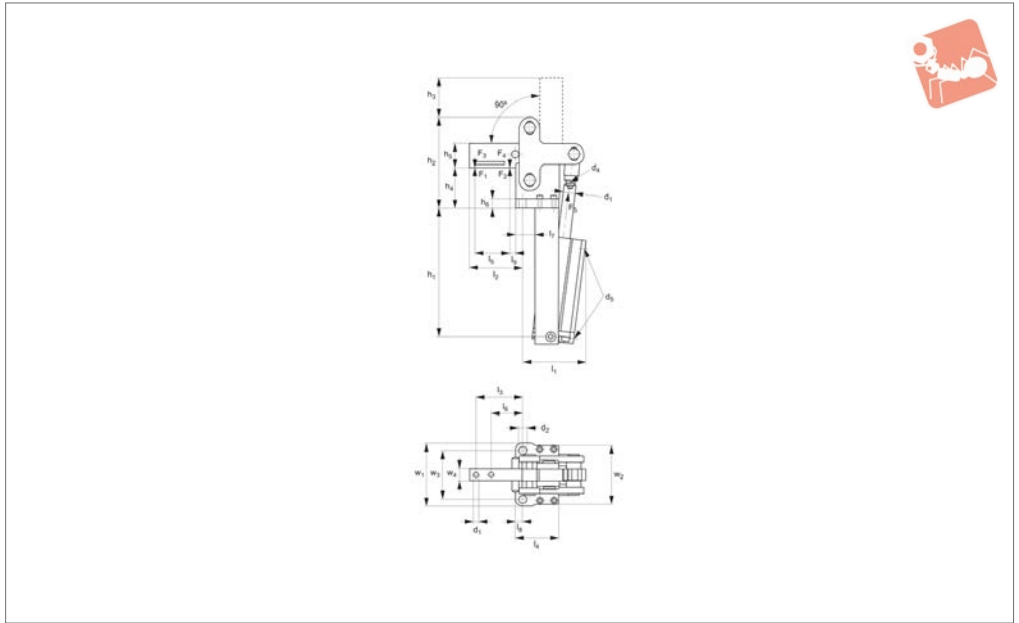
**Magnetic piston for end-position sensing.**

Please order proximity switch separately from FESTO, see table for details.

Order No.	Size	$F_1$ kN	$F_2$ kN	$F_3$ kN	$F_4$ kN	$F_5$ kN	$Vn$ $dm^3$	$h_1$	$h_2$	$h_3$	a	b	d	Dia. p	e	f	Weight g
<b>47800.W0006</b>	6	12	18	2.5	3.5	1.0	1.8	69	226	15	20	91	13	8.2	60	10.0	7250
Order No.	$g_1$	i	k	$l_1$	$l_2$	$m_1$	$m_2$	n	o	$\varnothing w$	Piston dia.	Piston stroke	$r_1$	$r_2$	s	t	u
<b>47800.W0006</b>	83	40	12	32	73.5	107	100	137	M16x1,5	16	50	87	G1/4	26	54	48	221



## 47850



PNEUMATIC TOGGLE CLAMPS

### Material

Body: tempered steel, burnished.  
 Axle bolts: tempered and ground, locked with circlips.  
 Bushes: case hardened and greased.

### Technical Notes

With swivel mounting and adj. end position cushioning.  
 Clamp ready for installation, fitted with pneumatic cylinder double acting.

$F_3$  and  $F_4$  = max. clamping force at 6 bar.  
 $V_n$  = air consumption per double stroke in  $dm^3$  at 6 bar.  
 Suitable proximity switches for end-position monitoring are available using order 45001. 0.3m PUR cable with M8 connector and rotatable knurled nuts.  
 Switching function: NOC. Output: PNP.

### Tips

Ideal for installation in material handling lines and special purpose machines.

Opening and closing of clamp can be controlled electronically, allowing integration into automated processes.  
 See also no. 46100 <X\46100#25> - clamp only.

### Important Notes

**Magnetic piston for end-position sensing.**

Order No.	Size	$F_1$ kN	$F_2$ kN	$F_3$ kN	$F_4$ kN	$F_5$ kN	$V_n$ $dm^3$	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$h_6$	$l_1$	$l_2$	$l_3$	Weight g
47850.W0004	4	6	9	1.5	2.2	0.8	1.0	193	129.5	75.5	65	30	12	103	82	74	3850
47850.W0006	6	12	18	2.5	3.5	1.0	1.6	221	154.5	68.5	69	40	15	120	91	80	6950
47850.W0008	8	20	30	4.0	6.0	1.8	1.8	255	204.0	110.0	94	60	20	162	125	107	13160

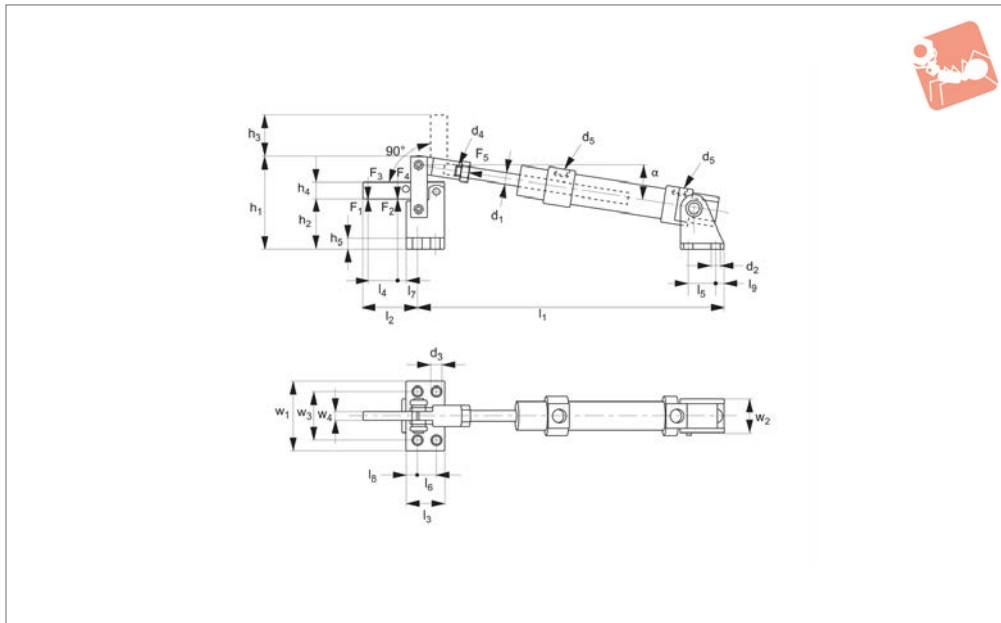
Order No.	$l_4$	$l_5$	$l_6$	$l_7$	$l_8$	Piston dia.	$w_1$	$w_2$	$w_3$	$w_4$	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$
47850.W0004	67	54	47	37	10	40	90	82	70	15	16	11	6.2	M12x1,25	G1/8
47850.W0006	74	60	54	34	12	50	107	100	83	20	20	13	8.2	M16x1,50	G1/4
47850.W0008	109	95	67	49	15	63	145	115	115	30	20	17	13.0	M16x1,50	G1/4



# Pneumatic Toggle Clamps

heavy duty - horizontal

# Pneumatic Toggle Clamps



**47480**

PNEUMATIC TOGGLE CLAMPS

### Material

Tempered steel, blued.  
The axle bolts run in bronze bushes and are tempered, ground and locked with circlips.

### Technical Notes

Clamp ready for installation and consists of:  
- heavy duty vertical toggle clamp no. 46100  
- FESTO-pneumatic cylinder, double acting.

- Bearing block.

$F_3$  and  $F_4$  = max. clamping force at 6 bar.  
\* $V_n$  = air consumption per double stroke in  $dm^3$  at 6 bar.  
Cylinders are to DIN ISO 6432.

### Tips

Ideal for installation in material handling lines and special purpose machines.  
Opening and closing of clamp can be controlled electronically, allowing integra-

tion into automated processes.

See also no. 46100 <X\46100#25> - clamp only.

### Important Notes

**Magnetic piston for end-position sensing.**

Please order proximity switch separately from FESTO, see table for details.

Order No.	Size	$F_1$ kN	$F_2$ kN	$F_3$ kN	$F_4$ kN	$F_5$ kN	Piston stroke $s_1$	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$l_1$	$l_2$	$l_3$	$l_4$	Weight g
<b>47480.W0000</b>	0	0.6	1.0	0.2	0.4	0.1	40	53	26	23	10	6	195	34	22	14	260
<b>47480.W0001</b>	1	0.8	1.2	0.6	0.8	0.2	40	68	37	28	12	8	238	41	28	17	500

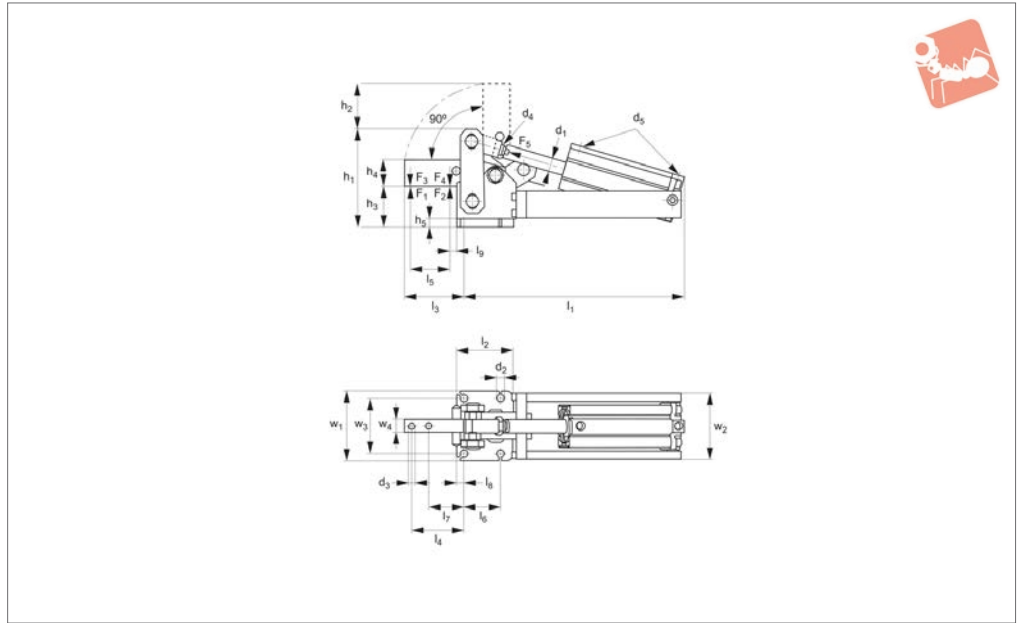
Order No.	$l_5$	$l_6$	$l_7$	$l_8$	$l_9$	$w_1$	$w_2$	$w_3$	$w_4$	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	Piston dia.	$V_n$ $dm^3$	$\alpha$
<b>47480.W0000</b>	15	11	7	5.5	5	35	27	27.5	5	6	5.5	4.5	M 6	M 5	16	0.1	6,6°
<b>47480.W0001</b>	20	14	9	8.0	6	50	35	34.0	6	8	6.5	7.0	M 8	G1/8	20	0.2	9,0°

# Pneumatic Toggle Clamps

## Heavy Duty Pneumatic Toggle Clamps with horizontal cylinder



### 47500



PNEUMATIC TOGGLE CLAMPS

#### Material

Body: tempered steel, burnished.  
 Axle bolts: tempered and ground, locked with circlips.  
 Bushes: case hardened and greased.

#### Technical Notes

Clamp ready for installation and consists of:  
 - heavy duty vertical toggle clamp no. 46100  
 Pneumatic cylinder, double acting.

$F_3$  and  $F_4$  = max. clamping force at 6 bar.  
 $V_n$  = air consumption per double stroke in  $dm^3$  at 6 bar.  
 Suitable proximity switches for end-position monitoring are available using order 45001. 0.3m PUR cable with M8 connector and rotatable knurled nuts.  
 Switching function: NOC. Output: PNP.

#### Tips

Ideal for installation in material handling lines and special purpose machines.  
 Opening and closing of clamp can be

controlled electronically, allowing integration into automated processes.  
 See also no. 46100 <X\46100#25> - clamp only.  
 Holes are provided in the arm to allow fixing of clamping elements by screwing or welding. Also available in a hydraulic version.

#### Important Notes

**Magnetic piston for end-position sensing.**

Order No.	Size	$F_1$ kN	$F_2$ kN	$F_3$ kN	$F_4$ kN	$F_5$ kN	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	Weight g
47500.W0004	4	6	9	1.5	2.2	0.8	122	75	57	30	12	284	77	82	74	54	4800
47500.W0006	6	12	18	2.5	3.5	1.0	147	68	61	40	12	333	85	90	79	60	6965
47500.W0008	8	20	30	4.0	6.0	1.8	196	110	86	60	12	404	113	128	110	95	12785

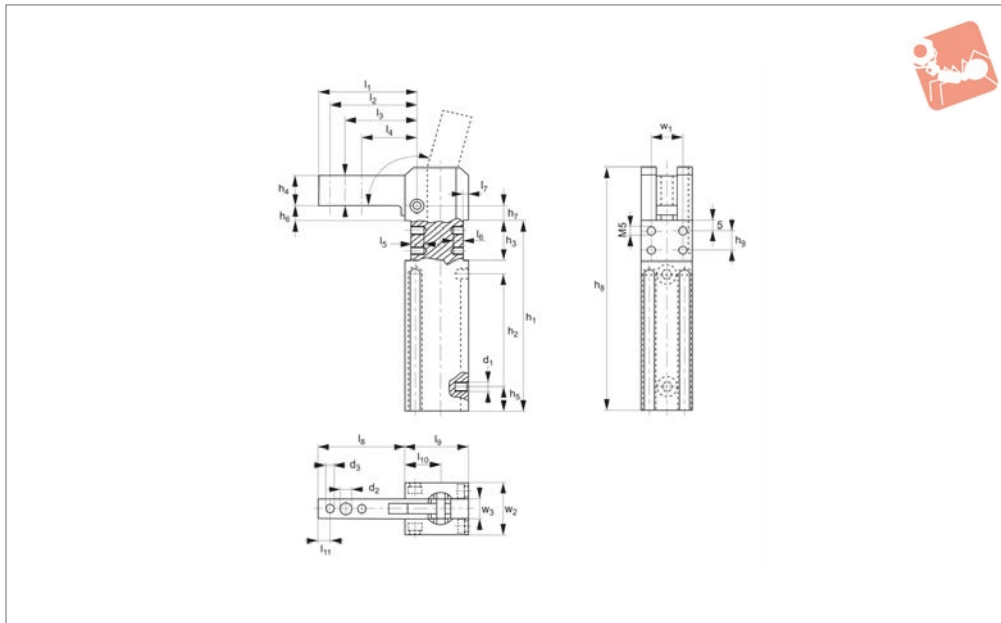
Order No.	$l_6$	$l_7$	$l_8$	$l_9$	$w_1$	$w_2$	$w_3$	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	Piston dia.	$V_n$ $dm^3$
47500.W0004	52	47	10	10	90	82	70	16	11	6.2	M12x1,25	G1/8	40	1.0
47500.W0006	55	53	11	10	105	100	83	20	11	8.2	M16x1,50	G1/4	50	1.8
47500.W0008	80	70	13	10	135	123	111	20	13	13.0	M16x1,50	G1/4	63	4.3



# Pneumatic Toggle Clamp

double acting

# Pneumatic Toggle Clamps



**47902**

PNEUMATIC TOGGLE CLAMPS

### Material

Case: high-strength aluminium, red anodised.

Clamp arm: steel, burnished, with three holes.

Max. operating pressure 6 bar. Mini design

in block version for clamping and gripping applications. Magnetic piston for end-position monitoring.

### Technical Notes

Suitable proximity switches for end-

position monitoring are available using order 45001. 0.3m PUR cable with M8 connector and rotatable knurled nuts. Switching function: NOC. Output: PNP.

Order No.	Size	Clamping moment at 5 bar Nm	Holding moment Nm max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	l <sub>10</sub>	l <sub>11</sub>	Weight g
47902.W0001	16	8	25	50	44	36	28	7	5	2.5	44	32	18	6	300
47902.W0002	20	15	54	60	52	42	32	8	6	3.0	53	39	22	8	550
47902.W0003	25	25	75	75	65	53	40	8	6	4.0	68	45	25	10	850

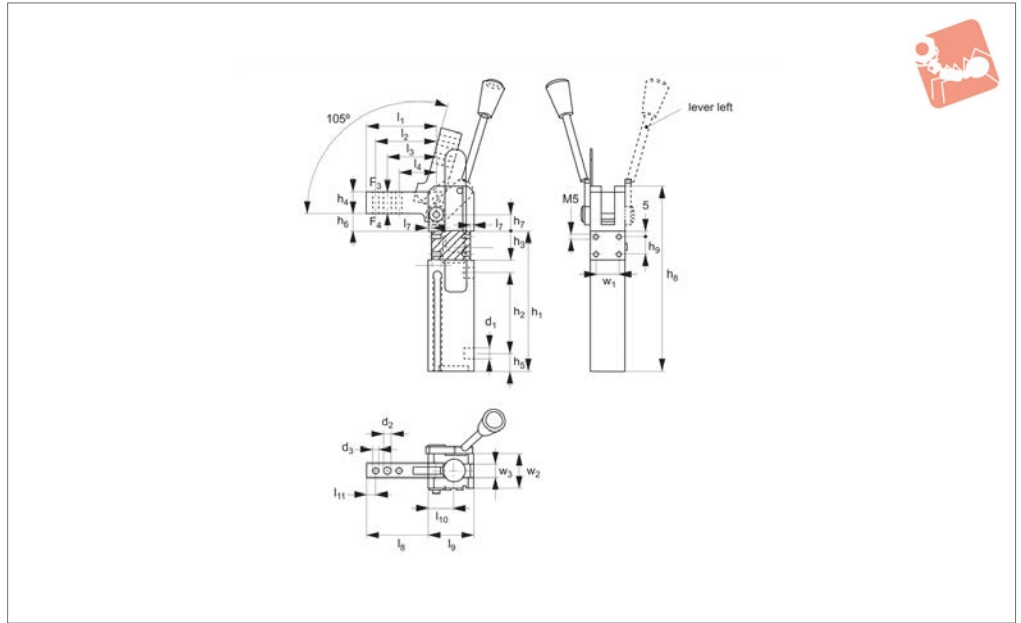
Order No.	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub> +0.1	h <sub>4</sub>	h <sub>5</sub>	h <sub>6</sub>	h <sub>7</sub>	h <sub>8</sub>	h <sub>9</sub> ±0.1	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub> tol. H7	w <sub>1</sub> ±0.1	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	Piston dia.
47902.W0001	96	57	20	15	12	7.5	7.5	123	10	M 5	5.5	4	16	26	10	18	16
47902.W0002	120	69	25	18	15	15.0	14.0	158	15	G1/8	6.5	5	20	30	12	22	20
47902.W0003	136	80	28	22	18	19.0	17.0	182	18	G1/8	8.5	6	25	35	16	25	25

# Pneumatic Toggle Clamps

## Pneumatic Clamp with Lever double acting



**47904**



PNEUMATIC TOGGLE CLAMPS

### Material

Case: high-strength aluminium, red anodised.

Clamp arm: steel, bronzed, with three bores.

Max. operating pressure 6 bar. Double-acting and with additional lever for manual

opening and/or closing. Mini design in block version for clamping and gripping applications.  
Magnetic piston for end-position monitoring.

### Technical Notes

Suitable proximity switches for end-position monitoring are available using order 45001. 0.3m PUR cable with M8 connector and rotatable knurled nuts.  
Switching function: NOC. Output: PNP.

Order No.	Size	Clamping moment at 5 bar Nm	Holding moment Nm max.	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$l_7$	$l_8$	$l_9$	$l_{10}$	$l_{11}$	$h_1$	Weight g
47904.W0001	16	8	25	50	44	36.0	28	7	5	2.5	44	32	18	6	96	320
47904.W0002	16	8	25	50	44	36.0	28	7	5	2.5	44	32	18	6	96	320
47904.W0003	20	15	54	60	52	42.0	32	8	6	3.0	53	39	22	8	120	700
47904.W0004	20	15	54	60	52	42.0	32	8	6	3.0	53	39	22	8	120	700
47904.W0005	25	25	75	75	65	52.5	40	8	6	4.0	68	45	25	10	136	920
47904.W0006	25	25	75	75	65	52.5	40	8	6	4.0	68	45	25	10	136	920

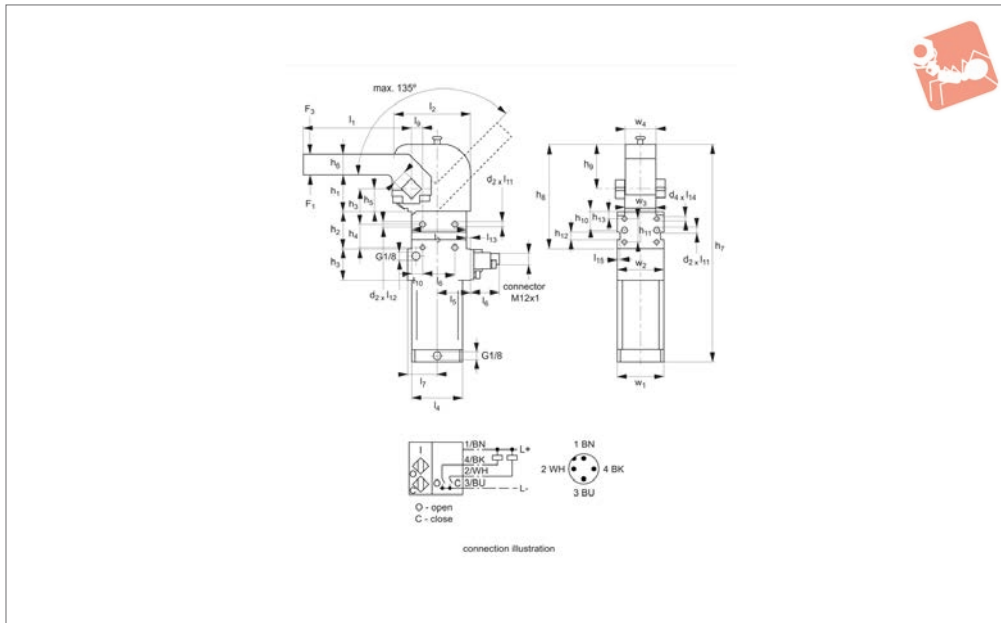
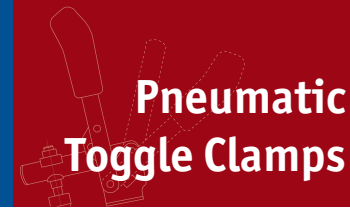
Order No.	$h_2$	$h_3$ +0.1	$h_4$	$h_5$	$h_6$	$h_7$	$h_8$	$h_9$ $\pm 0.1$	$d_1$	$d_2$	$d_3$ tol. H7	$w_1$ $\pm 0.1$	$w_2$	$w_3$	Lever type	Piston dia.
47904.W0001	57	20	15	12	7.5	7.5	123	10	M 5	5.5	4	10	26	10	Right	16
47904.W0002	57	20	15	12	7.5	7.5	123	10	M 5	5.5	4	10	26	10	Left	16
47904.W0003	69	25	18	15	15.0	14.0	158	15	G1/8	6.5	5	20	30	12	Right	20
47904.W0004	69	25	18	15	15.0	14.0	158	15	G1/8	6.5	5	20	30	12	Left	20
47904.W0005	80	28	22	18	19.0	17.0	182	18	G1/8	8.5	6	18	35	16	Right	25
47904.W0006	80	28	22	18	19.0	17.0	182	18	G1/8	8.5	6	18	35	16	Left	25



# Heavy Pneumatic Toggle Clamp

dual acting

## Pneumatic Toggle Clamps



47910.1

PNEUMATIC TOGGLE CLAMPS

### Material

Case: aluminium. Max. operating pressure 6 bar. With continuously adjustable opening angle in the range 10° to 135°. With pneumatic end position cushioning and self-locking. With inductive query 24V as standard. **Clamp arm not included.**

### Technical Notes

Accessories (not included in the standard

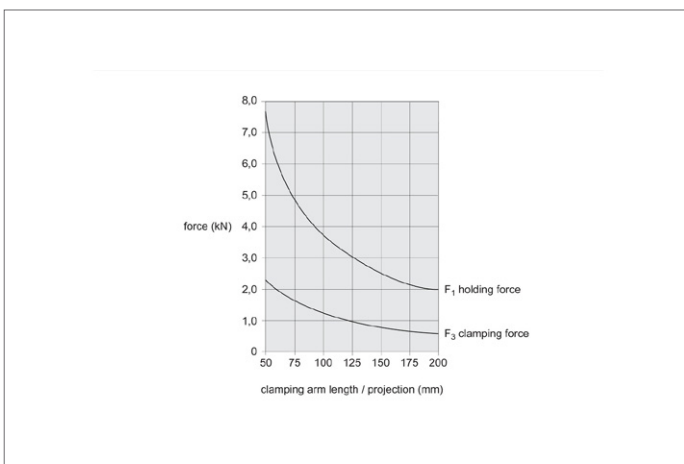
scope of delivery) are clamping arm no. 47912.W0210 - .W0218 centre, right and left, and connecting plug for inductive query.  
Piston diameter: 40mm.  
Clamping moment at 5 bar 120Nm.  
Holding moment max. 380Nm.

### Tips

These pneumatic toggle clamps are

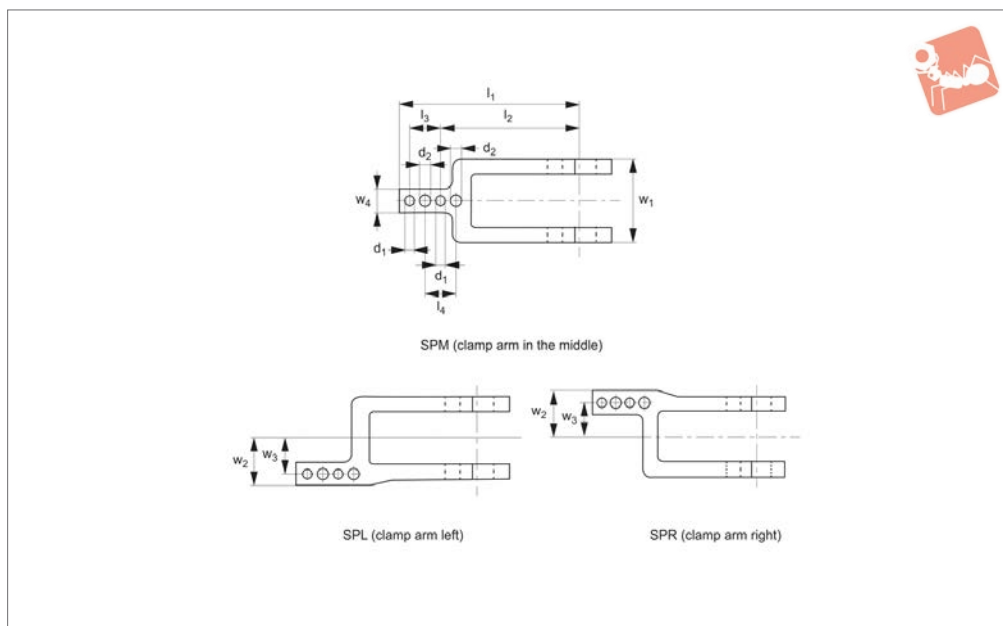
suitable for use in material handling lines and on special machines. Opening and clamping position of the clamp can be controlled electrically, allowing integration into automated manufacturing processes.

Order No.	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$l_7$	$l_8$	$l_9$	$l_{10}$	$l_{11}$	$l_{12}$	$l_{13}$	$l_{14}$	$l_{15}$	$h_1$	$h_{10}$	Weight
47910.W0001	117	83	60	55	36	35	34	32	$\pm 0.05$	$\pm 0.05$	8	6	4	12	3.5	40	$\pm 0.05$	1400
Order No.	$h_{11}$	$h_{12}$	$h_{13}$	$h_2$	$h_3$	$h_4$	$h_5$	$h_6$	$h_7$	$h_8$	$h_9$	$d_1$	$d_2$	$w_1$	$w_2$	$w_3$	$w_4$	
47910.W0001	25	8	$\pm 0.1$	40	$\pm 0.05$	25	25	22	235.5	113	48	tol. $h_9$	6	50	50	35	-0.5	





### 47910.2



#### Material

Steel.

#### Technical Notes

For heavy pneumatic toggle clamp no. 47910.W0001, size 40.

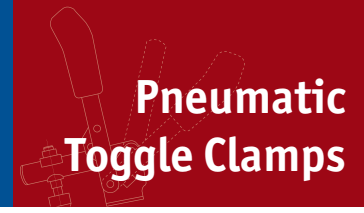
Order No.	Size	Clamp for 47910.W0001	$l_1$	$l_2$ $\pm 0.1$	$l_3$ $\pm 0.02$	$l_4$ $\pm 0.02$	$d_1$	$d_2$	$w_1$	$w_2$	$w_3$ $\pm 0.1$	$w_4$ $-0.1$	Weight g
47910.W0210	40	Left	117	90	20	20	6	7	54	31	23	16	520
47910.W0211	40	Middle	117	90	20	20	6	7	54	31	23	16	520
47910.W0212	40	Right	117	90	20	20	6	7	54	31	23	16	520



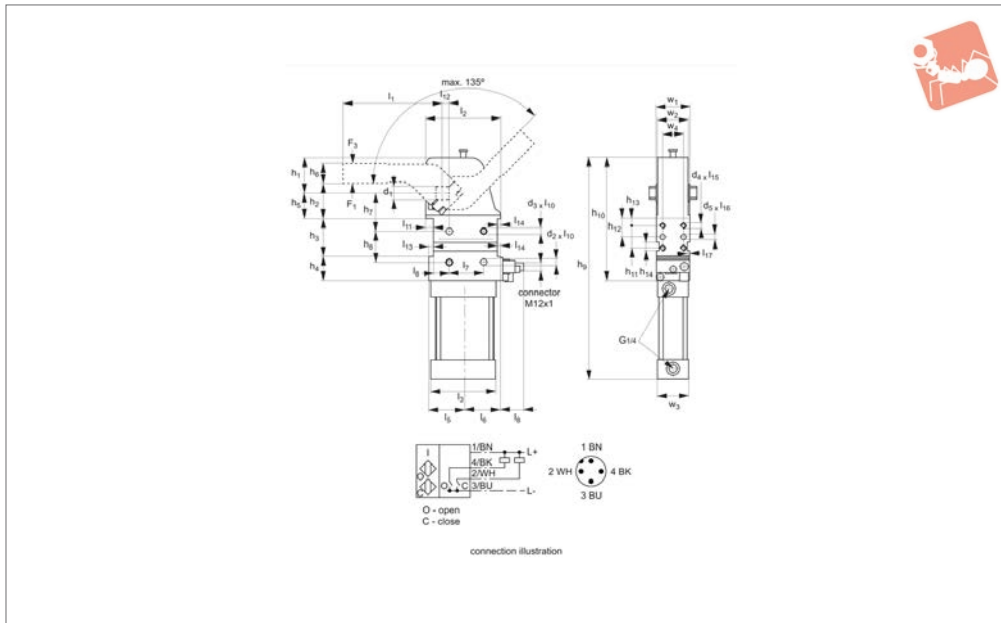


# Heavy Pneumatic Toggle Clamp

dual acting



## Pneumatic Toggle Clamps



47912.1

PNEUMATIC TOGGLE CLAMPS

### Material

Case: aluminium. Max. operating pressure 6 bar. With continuously adjustable opening angle in the range 5° to 135°. With pneumatic end position cushioning and self-locking. With inductive query 24V as standard. **Clamp arm not included.**

### Technical Notes

Accessories (not included in the standard

scope of delivery) are clamping arm no. 47912.W0210 - .W0218 centre, right and left, and connecting plug for inductive query.

### Tips

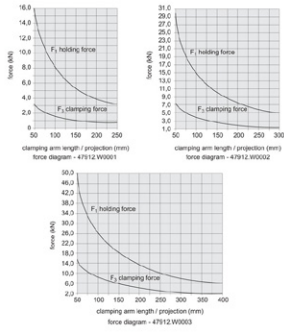
These pneumatic toggle clamps are suitable for use in material handling lines and on special machines. Opening and clamping position of the clamp can be

controlled electrically, allowing integration into automated manufacturing processes.

Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub> ±0.1	l <sub>10</sub>	l <sub>11</sub>	l <sub>12</sub>	l <sub>13</sub>	l <sub>14</sub>	l <sub>15</sub>	h <sub>1</sub>	h <sub>10</sub> ±0.2	h <sub>11</sub> ±0.1	Weight g
47912.W0001	144	108.0	94	93	52	52	50	33	23	12	11	10	7	5	12	51.5	178	32	3.5
47912.W0002	144	112.5	106	93	54	54	50	34	23	12	12	10	8	8	12	58.5	185	32	4.6
47912.W0003	179	162.0	140	134	81	72	70	33	36	13	20	15	8	8	15	88.0	270	50	15.6

Order No.	h <sub>12</sub> ±0.05	h <sub>13</sub> ±0.1	h <sub>14</sub>	h <sub>2</sub>	h <sub>3</sub> ±0.1	h <sub>4</sub>	h <sub>5</sub> ±0.05	h <sub>6</sub> ±0.1	h <sub>7</sub> ±0.05	h <sub>8</sub>	h <sub>9</sub> ±0.1	d <sub>1</sub>	d <sub>2</sub> tol. H7	d <sub>3</sub> tol. H7	d <sub>4</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>
47912.W0001	27	11	12	52	55	35	37	28	55	45	321	19	10	M10	M 8	48	45	45	30
47912.W0002	27	11	12	52	55	35	37	28	55	45	335	22	10	M10	M 8	54	52	52	30
47912.W0003	40	15	12	70	80	55	50	35	65	75	488	30	12	M12	M10	76	74	62	50

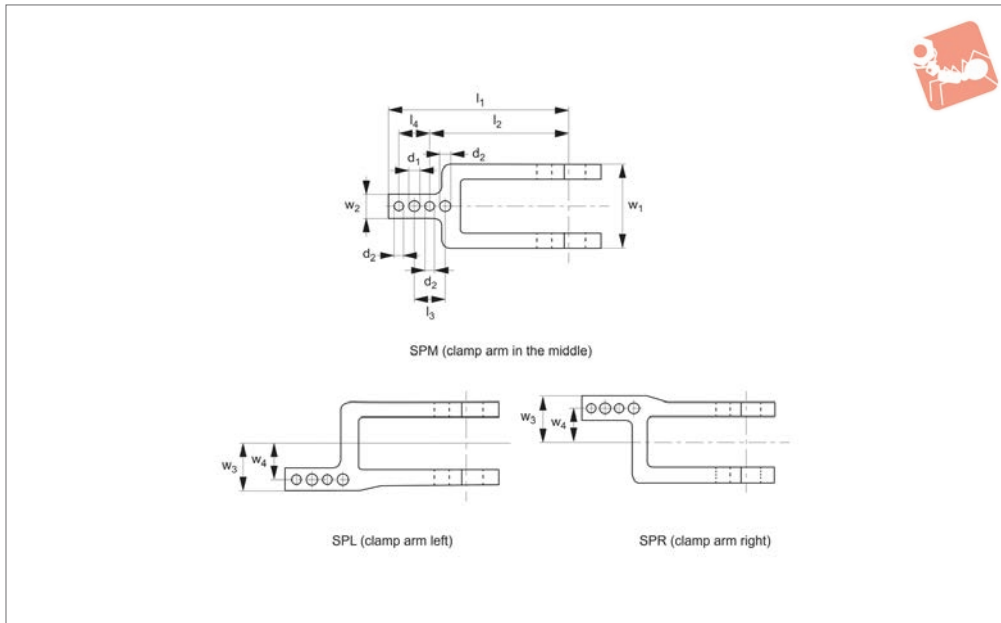




# Clamp Arm

for 47912.W0001 - .W0003

# Pneumatic Toggle Clamps



## 47912.2

PNEUMATIC TOGGLE CLAMPS

### Material

Steel.

### Technical Notes

For heavy pneumatic toggle clamp no. 47912, sizes 50, 63 and 80.

Order No.	Size	Article no.	$l_1$	$l_2$ $\pm 0.2$	$l_3$ $\pm 0.02$	$l_4$	$d_1$	$d_2$ tol. H7	$w_1$	$w_2$ -0.1	$w_3$	$w_4$ $\pm 0.1$	Weight g
<b>47912.W0210</b>	50	Left	144	30	30	9	9	6	68	20	44	34.0	855
<b>47912.W0211</b>	50	Middle	144	30	30	9	9	6	68	20	44	34.0	855
<b>47912.W0212</b>	50	Right	144	30	30	9	9	6	68	20	44	34.0	855
<b>47912.W0213</b>	63	Left	144	30	30	9	9	6	78	20	47	37.0	1150
<b>47912.W0214</b>	63	Middle	144	30	30	9	9	6	78	20	47	37.0	1150
<b>47912.W0215</b>	63	Right	144	30	30	9	9	6	78	20	47	37.0	1150
<b>47912.W0216</b>	80	Left	179	30	30	9	9	6	108	25	63	50.5	1450
<b>47912.W0217</b>	80	Middle	179	30	30	9	9	6	108	25	63	50.5	1450
<b>47912.W0218</b>	80	Right	179	30	30	9	9	6	108	25	63	50.5	1450

# Heavy Duty Toggle Clamps

# Heavy Duty Vertical Toggle Clamp

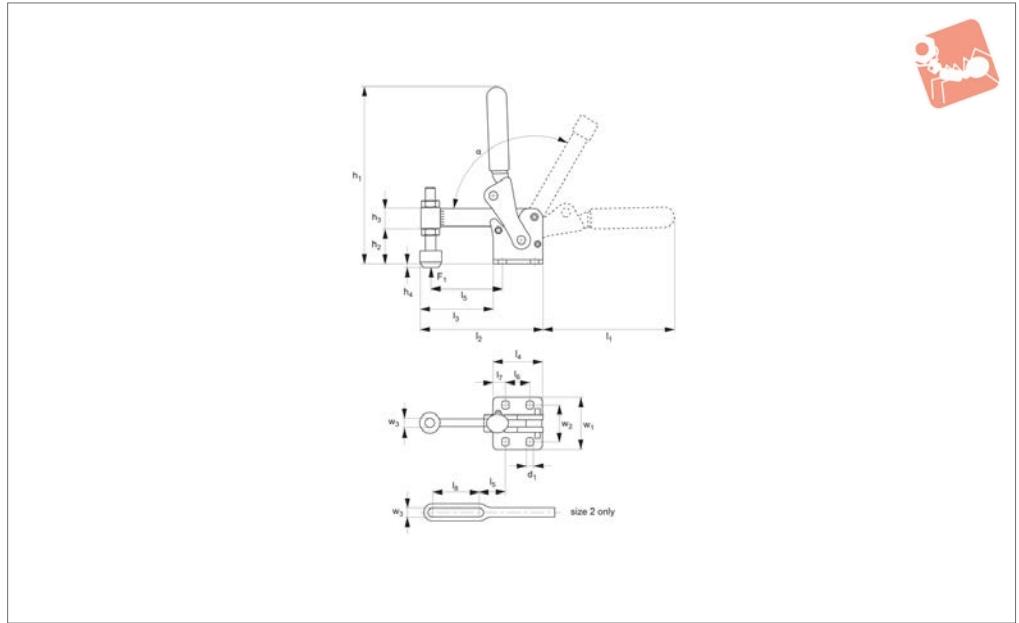
horizontal base



HEAVY DUTY TOGGLE CLAMPS



**46080**



**Material**

Body: steel, black oxide coated.  
 Lever: cast steel, black oxide coated.  
 Bushes: reamed, case hardened.  
 Pins: hardened, ground and permanently lubricated.  
 Handle: ergonomic soft feel, oil-resistant, with large grip area.  
 Supplied complete with zinc plated and

tempered clamping screw (with rubber pad).

**Technical Notes**

Heavy vertical toggle clamps are especially suitable for production equipment and fixtures.  
 Temperature range -10°C to +80°C.

**Tips**

Clamp nuts on lever arm to vary friction in movement.  
 Supplement these base modular toggle clamps with your own clamping arms, handles etc. to meet the requirements of your specific application.

Order No.	Size	F <sub>1</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Weight g
46080.W0202	2	2.5	M 6x50	127	25	15	-13.5	6	94	85	57	320
46080.W0204	4	5.0	M12x80	216	44	24	-19.0	14	160	146	100	1250
46080.W0206	6	6.0	M12x110	263	65	30	-22.0	35	185	181	121	2130
46080.W0208	8	12.0	M12x110	303	71	36	-10.0	41	203	226	151	4050

Order No.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	d <sub>1</sub>	α
46080.W0202	37	21	20	8.5	30	47	32	6.1	7.1	120°
46080.W0204	60	75	30	15.0	-	65	45	12.2	8.5	120°
46080.W0206	75	95	45	15.0	-	78	52	12.2	10.5	120°
46080.W0208	95	120	55	20.0	-	108	75	12.2	12.5	120°



# Heavy Duty Vertical Toggle Clamp

horizontal base



## Heavy Duty Toggle Clamps



HEAVY DUTY TOGGLE CLAMPS

# Heavy Duty Toggle Clamps

# Heavy Duty Vertical Toggle Clamp

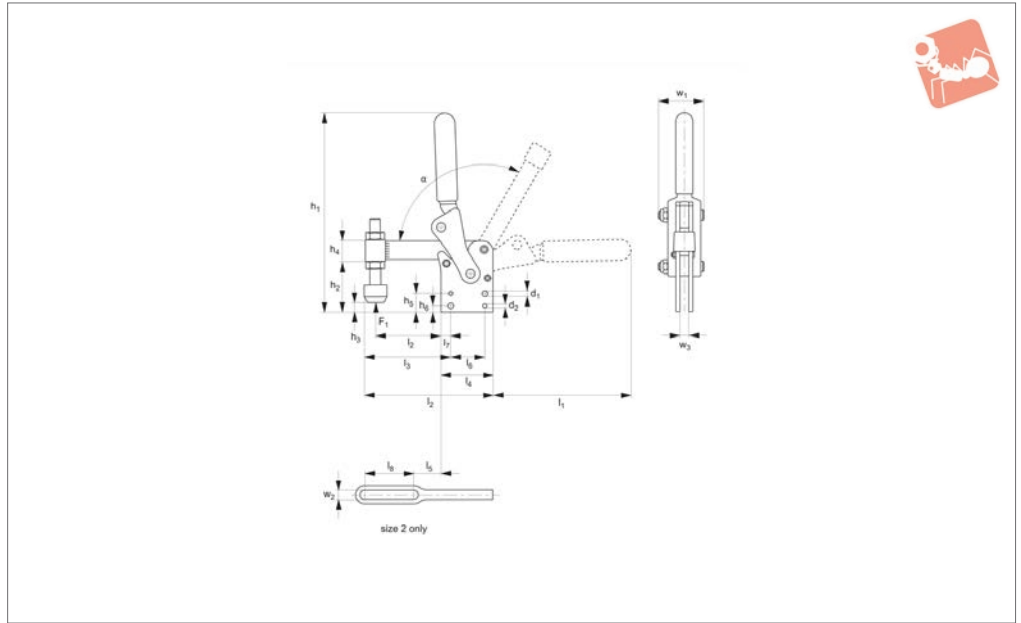
with vertical base and mounting holes



HEAVY DUTY TOGGLE CLAMPS



## 46090



### Material

Body and lever: steel, blued.  
 Bushes: reamed, case hardened.  
 Pins: hardened, ground and permanently lubricated.  
 Handle: ergonomic soft feel, oil-resistant, with large grip area.

Supplied complete with clamping screw (with rubber pad).

### Technical Notes

Heavy vertical toggle clamps are especially suitable for production equipment and fixtures.

Temperature range -10°C to +80°C.

### Tips

Clamp nuts on lever arm to vary friction in movement.

Order No.	Size	F <sub>1</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub> min.	h <sub>3</sub> max.	h <sub>4</sub>	h <sub>5</sub>	h <sub>6</sub>	Weight g
46090.W0202	2	2.5	M 6x50	144	42.0	3.5	22.8	15	-	-	320
46090.W0204	4	10.0	M12x80	233	62.0	-1.0	35.0	24	25	10	1320
46090.W0206	6	12.0	M12x110	289	87.5	0.0	58.0	30	35	15	2120
46090.W0208	8	20.0	M12x110	338	106.0	25.0	76.0	36	40	20	4060

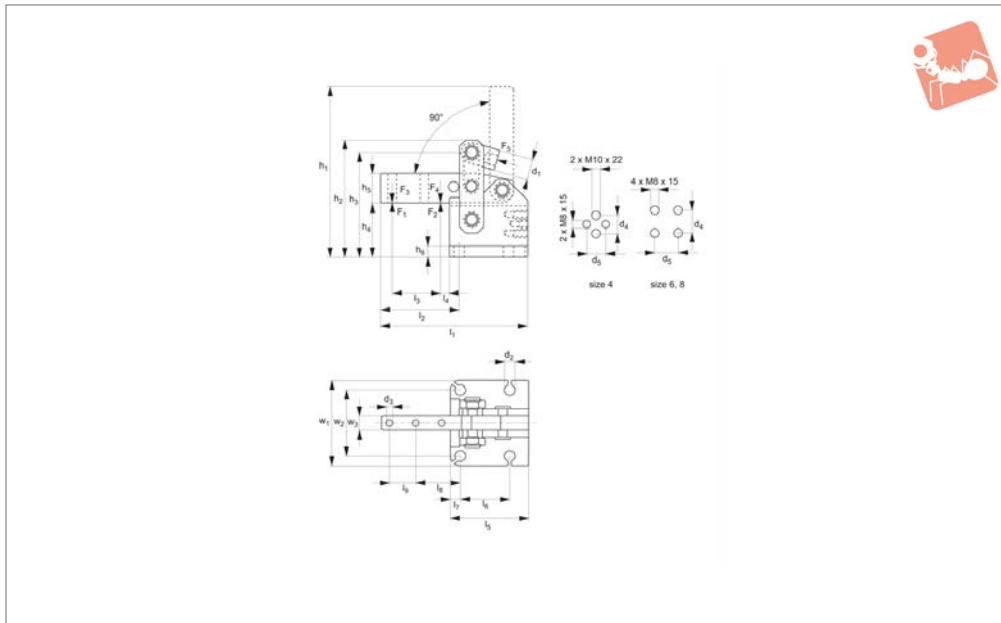
Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	d <sub>1</sub>	d <sub>2</sub>	α
46090.W0202	94	85	48	37	12	-	-	30	31	6.2	6	-	-	190°
46090.W0204	161	146	101	60	75	30	15	-	52	12.2	10	8.5	5.7	120°
46090.W0206	189	181	121	75	95	45	15	-	60	12.2	12	10.5	7.7	120°
46090.W0208	219	226	151	95	120	55	20	-	76	12.2	16	12.5	9.7	120°



# Heavy Duty Vertical Toggle Clamp

with vertical base and mounting holes

# Heavy Duty Toggle Clamps



## 46100

HEAVY DUTY TOGGLE CLAMPS

### Material

Body: tempered steel, burnished.  
Axle Bolts: tempered and ground, locked with circlips.

Bushes: case hardened and greased.

### Technical Notes

The clamping forces  $F_3$  and  $F_4$  can be

achieved by using a cylinder with piston force  $F_5$ . This clamp can be equipped with a normal hydraulic or pneumatic cylinder. The rod joint is exchangeable.

Order No.	Size	$F_1$ kN	$F_2$ kN	$F_3$ kN	$F_4$ kN	$F_5$ kN	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$h_6$	$l_1$	$l_2$	$l_3$	Weight g
<b>46100.W0000</b>	0	0.6	1.0	0.2	0.4	0.1	75.5	53.5	47.5	25.5	10	6	50	33.5	14	110
<b>46100.W0001</b>	1	0.8	1.2	0.6	0.8	0.2	96.0	68.0	61.5	37.0	12	8	61	41.0	17	230
<b>46100.W0004</b>	4	6.0	9.0	1.5	2.2	0.8	197.0	122.0	109.0	57.0	30	12	154	82.0	54	2535
<b>46100.W0006</b>	6	12.0	18.0	2.5	3.5	1.0	215.0	147.0	129.0	61.0	40	12	169	90.0	60	4215
<b>46100.W0008</b>	8	20.0	30.0	4.0	6.0	1.8	306.0	196.0	176.0	86.0	60	12	235	127.5	95	10670

Order No.	$l_4$	$l_5$	$l_6$	$l_7$	$l_8$	$l_9$	$w_1$	$w_2$	$w_3$	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	Piston dia.	Piston stroke
<b>46100.W0000</b>	8.5	22.0	11	5.5	-	-	35	27	5	M 6	4.5	-	-	-	16	40
<b>46100.W0001</b>	9.0	28.0	14	8.0	-	-	50	35	6	M 8	7.0	-	-	-	20	40
<b>46100.W0004</b>	10.0	77.0	52	10.0	47.0	27	90	70	15	M12x1,25	11.0	6.2	20	18	40	80
<b>46100.W0006</b>	10.0	85.0	55	11.0	53.0	26	105	83	20	M16x1,50	11.0	8.2	24	24	50	100
<b>46100.W0008</b>	9.5	112.5	80	12.5	69.5	40	136	111	30	M16x1,50	13.0	13.0	40	34	63	120

# Heavy Duty Toggle Clamps

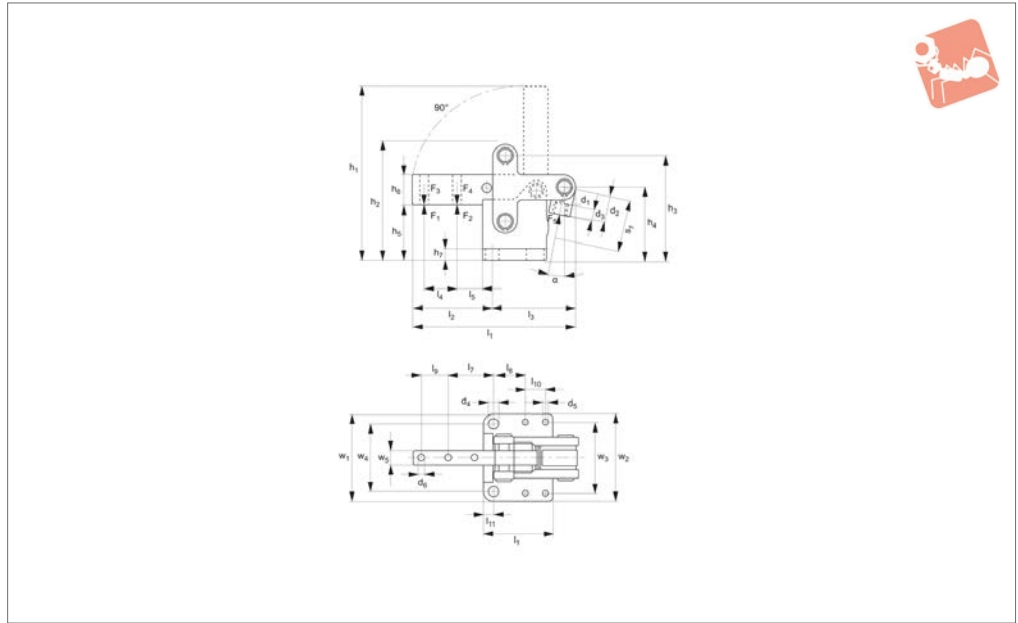
# Heavy Duty Toggle Clamps for vertical cylinder connection



HEAVY DUTY TOGGLE CLAMPS



## 46200



### Material

Body: tempered steel, burnished.  
Axle Bolts: tempered and ground, locked with circlips.

Bushes: case hardened and greased.

### Technical Notes

The clamping forces  $F_3$  and  $F_4$  can be

achieved by using a cylinder with piston force  $F_5$ . This clamp can be equipped with a normal hydraulic or pneumatic cylinder. The rod joint is exchangeable.

Order No.	Size	$F_1$ kN	$F_2$ kN	$F_3$ kN	$F_4$ kN	$F_5$ kN	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$h_6$	$h_7$	$l_1$	$l_{10}$	$l_{11}$	$l_2$	$l_3$	Weight g
46200.W0004	4	6	9	1.5	2.2	0.75	206	130	117	82	65	30	12	172	18	10	82	76	2400
46200.W0006	6	12	18	2.5	3.5	1.00	226	155	137	92	69	40	15	200	24	12	91	88	4300
46200.W0008	8	20	30	4.0	6.0	1.80	318	204	184	124	94	60	20	265	40	15	125	120	11000

Order No.	$l_4$	$l_5$	$l_6$	$l_7$	$l_8$	$l_9$	Stroke $s_1$	$w_1$	$w_2$	$w_3$	$w_4$	$w_5$	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	$d_6$	$\alpha$
46200.W0004	54	20.0	67.0	47	33.0	27	74	90	90	75.5	70	15	M12x1,25	29.5	14	11	6.5	6.2	9,0°
46200.W0006	60	22.0	73.5	54	29.5	26	87	107	100	87.5	83	20	M16x1,50	37.0	18	13	6.5	8.2	7,5°
46200.W0008	95	24.5	109.0	67	44.0	40	120	145	123	120.5	115	30	M16x1,50	32.0	17	13	6.5	13.2	6,5°

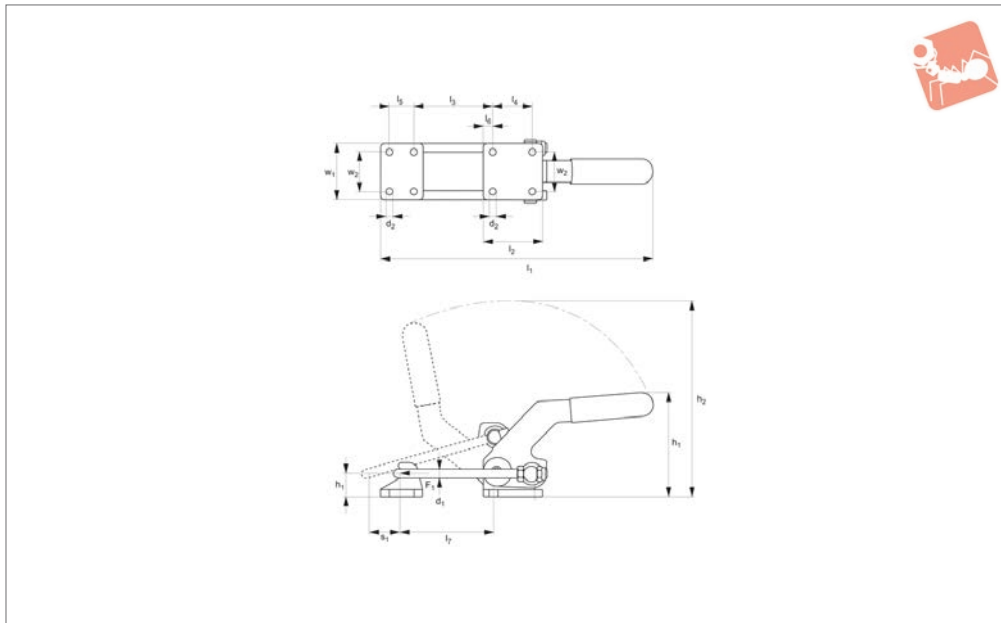




# Heavy Duty Hook Toggle Clamp

for high retaining force

# Heavy Duty Toggle Clamps



**46030**

HEAVY DUTY TOGGLE CLAMPS

### Material

Foot, lever, arm and catch: cast steel, black oxide coated.

Strap, pins and nuts: steel, heat treated and zinc plated.

Pins: hardened, ground and permanently lubricated.

Handle: ergonomic soft feel, oil-resistant, with large grip area.

**Supplied complete with counter catch.**

### Technical Notes

Four mounting holes in both foot and

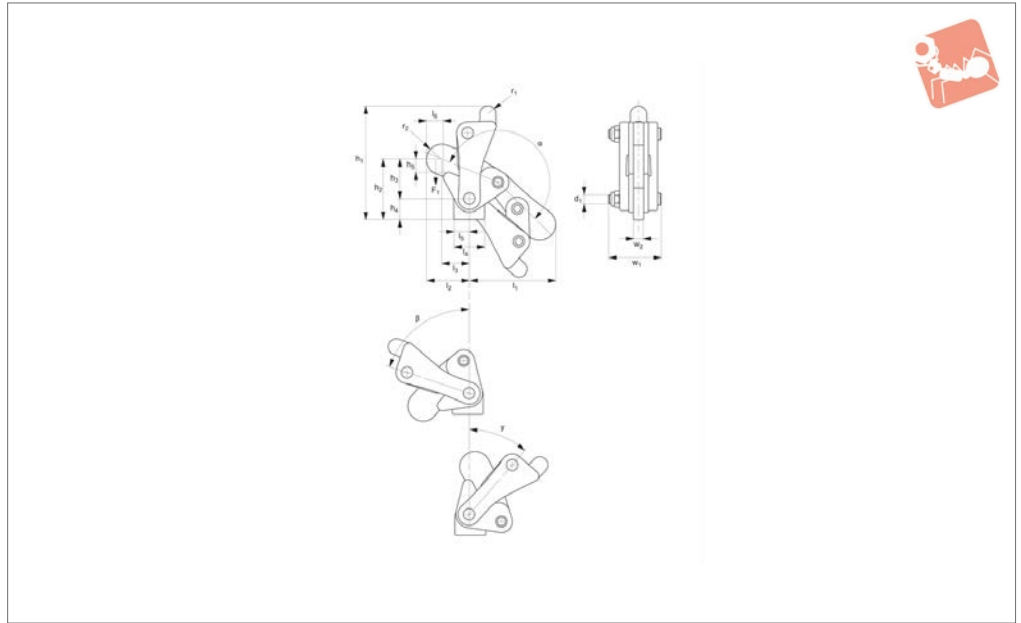
catch.

Circlips are used to retain pins in bearing bushes, and to centre the clamping pin. Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	Adj. distance	Stroke s <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	Weight g
<b>46030.W0204</b>	4	15	66	44	228	122	245-311	183	2830
<b>46030.W0205</b>	5	27	65	47	285	146	313-378	238	4020
Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	w <sub>1</sub>	w <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>
<b>46030.W0204</b>	42-107	24-90	68	45	28	64	45	10	8.5
<b>46030.W0205</b>	49-114	28-93	86	57	35	82	57	12	10.5



## 46050



### Material

Body: steel, black oxide coated.  
 Lever: cast steel, black oxide coated.  
 Bushes: reamed and case hardened bearings.  
 Pins: hardened, ground and permanently lubricated.

### Technical Notes

Mechanism can be welded at an angle to its support. Clamp nuts on lever arm enable adjustment of friction in clamp movement.  
 Temperature range -10°C to +80°C.

### Tips

Supplement these base modular toggle clamps with your own clamping arms, handles etc. to meet the requirements of your specific application.

Order No.	Size	$F_1$ kN	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$l_1$	$l_2$	Weight g
46050.W0002	2	2.5	76	38	18	20.0	5	58	32	205
46050.W0004	4	7.0	112	58	38	20.0	12	82	41	855
46050.W0006	6	11.0	145	78	50	28.0	16	105	55	1600
46050.W0008	8	22.5	172	98	65	33.0	19	135	72	3100
46050.W0010	10	34.0	210	117	83	33.5	25	155	77	5560

Order No.	$l_3$	$l_4$	$l_5$	$l_6$	$r_1$	$r_2$	$w_1$	$w_2$	$d_1$	$\alpha$	$\beta$	$\gamma$
46050.W0002	22	22	11	12	5	10.0	31	6	M 6	200°	70°	40°
46050.W0004	26	30	15	16	8	15.0	52	10	M 8	200°	70°	40°
46050.W0006	36	36	18	20	11	18.0	60	12	M10	200°	70°	40°
46050.W0008	50	50	25	27	14	22.5	76	16	M12	200°	70°	40°
46050.W0010	52	70	35	22	14	25.0	90	20	M16	200°	60°	28°

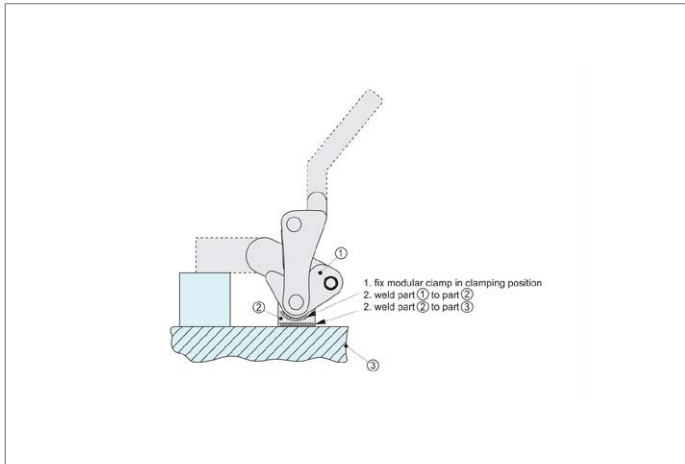


# Modular Toggle Clamp

swivelling foot - welding version



## Heavy Duty Toggle Clamps



HEAVY DUTY TOGGLE CLAMPS

# Heavy Duty Toggle Clamps

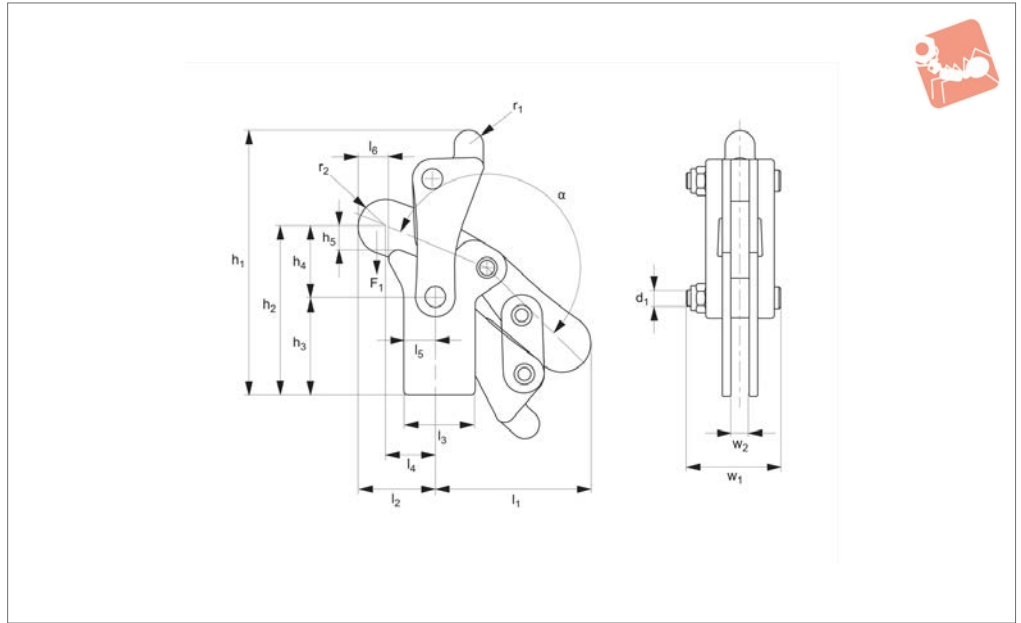
## Modular Toggle Clamp vertical foot - welding version



HEAVY DUTY TOGGLE CLAMPS



**46060**



### Material

Body: steel, black oxide coated.  
Lever: cast steel, black oxide coated.  
Bushes: reamed and case hardened bearings.  
Pins: hardened, ground and permanently

lubricated.

### Technical Notes

Clamp nuts on lever arm enable adjustment of friction in clamp movement.  
Temperature range -10°C to +80°C.

### Tips

Supplement these base modular toggle clamps with your own clamping arms, handles etc. to meet the requirements of your specific application.

Order No.	Size	$F_1$ kN	$h_1$	$h_2$	$h_3$	$h_4$	$h_5$	$l_1$	$l_2$	Weight g
46060.W0002	2	2.5	90	52	34	18	5	58	32	245
46060.W0004	4	7.0	142	88	50	38	12	82	41	970
46060.W0006	6	11.0	182	114	64	50	16	106	55	1750
46060.W0008	8	22.5	218	140	76	64	19	135	72	3310
46060.W0010	10	34.0	266	173	90	83	25	155	77	5970

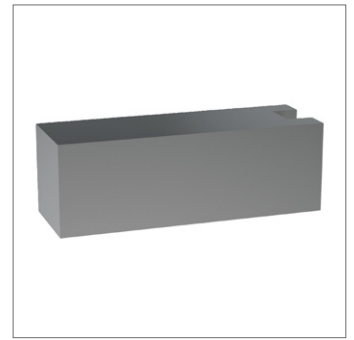
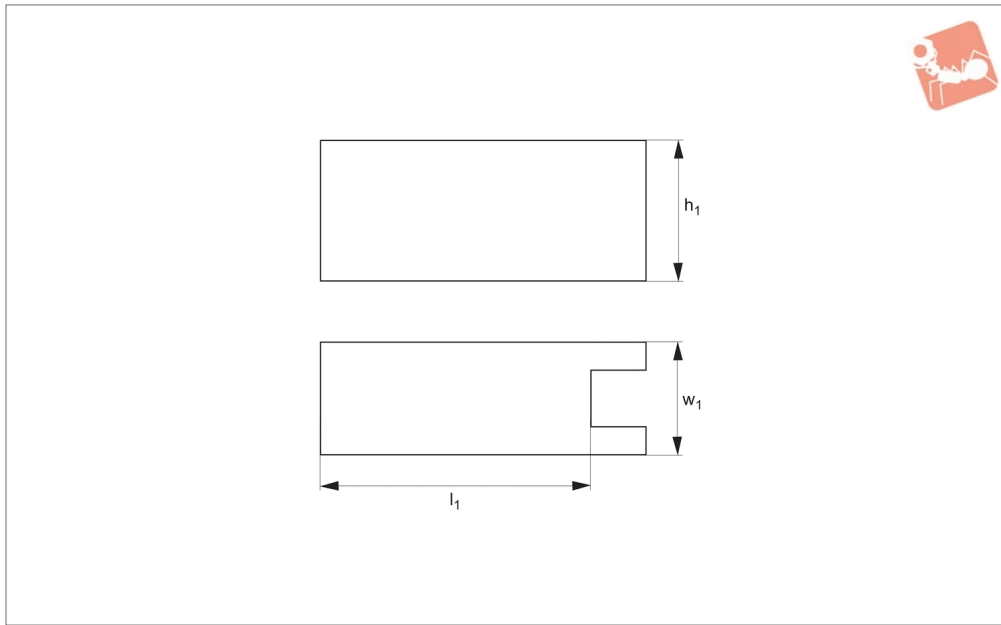
  

Order No.	$l_3$	$l_4$	$l_5$	$l_6$	$r_1$	$r_2$	$w_1$	$w_2$	$d_1$	$\alpha$
46060.W0002	30	22	14	12	5	10.0	31	6	M 6	190°
46060.W0004	44	26	19	16	8	15.0	52	10	M 8	190°
46060.W0006	55	36	28	20	11	18.0	60	12	M10	190°
46060.W0008	66	50	37	27	14	22.5	76	16	M12	190°
46060.W0010	80	52	40	22	14	25.0	90	20	M16	190°



# Clamping Arm Extension for modular toggle clamps

## Heavy Duty Toggle Clamps



**46070.1**

HEAVY DUTY TOGGLE CLAMPS

### Material

Steel, black oxide coated.  
For welding.

### Technical Notes

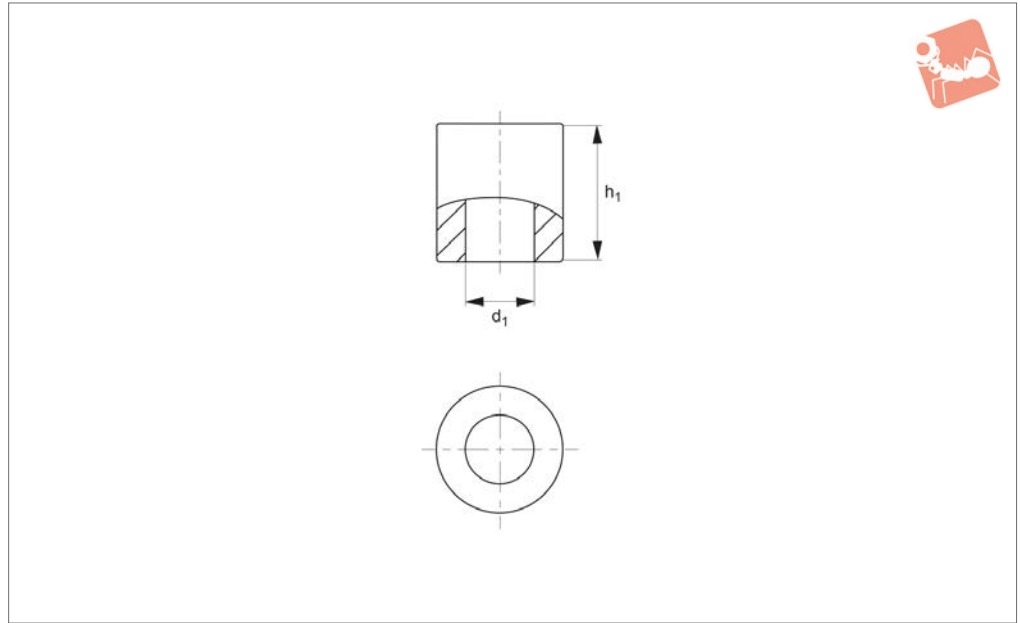
To suit modular toggle clamps 46050 and 46060.

Temperature range -10°C to +80°C.

Order No.	Size	$l_1 \times h_1 \times w_1$	Weight g
46070.W0002	2	40x15x15	81
46070.W0004	4	48x25x20	208
46070.W0006	6	60x30x25	390
46070.W0008	8	75x35x30	676
46070.W0010	10	94x35x35	970



**46070.2**



### Material

Steel, black oxide coated.  
For welding.

### Technical Notes

To suit modular toggle clamps 46050 and 46060.

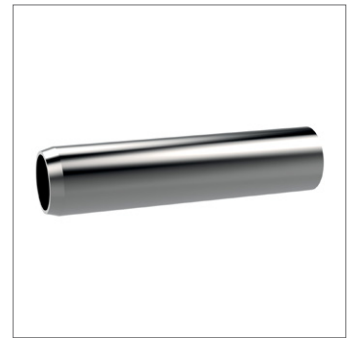
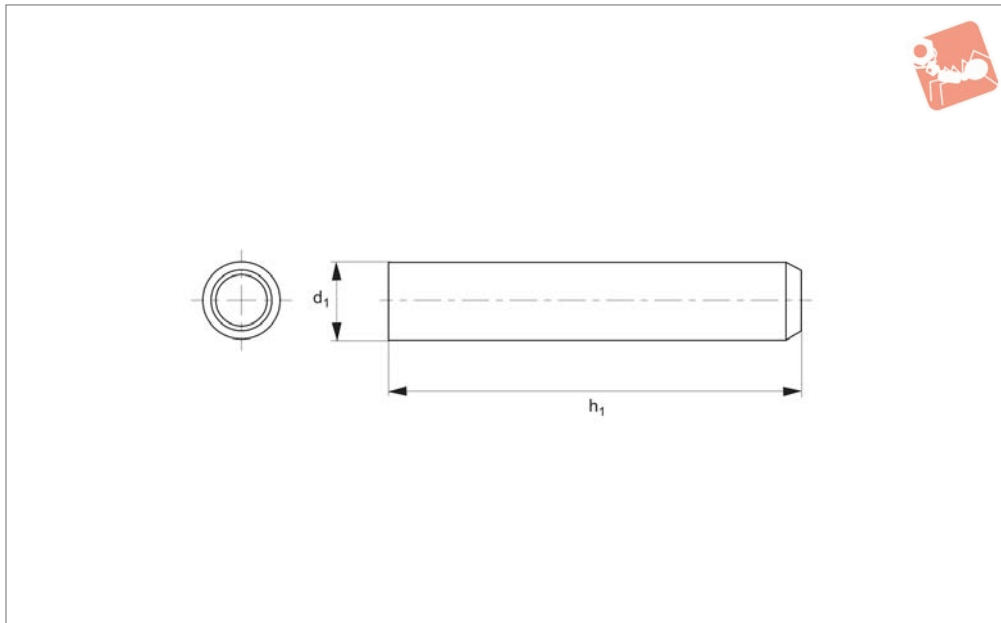
Order No.	Size	$d_1 \times h_1$	Weight g
46070.W0102	2	6,5x20	26
46070.W0104	4	12,1x24	50
46070.W0106	6	12,1x30	63
46070.W0108	8+10	12,1x36	75



# Lever Arm Tube - Short

for modular toggle clamps

## Heavy Duty Toggle Clamps



**46070.3**

HEAVY DUTY TOGGLE CLAMPS

### Material

Steel, black oxide coated.  
For welding.

### Technical Notes

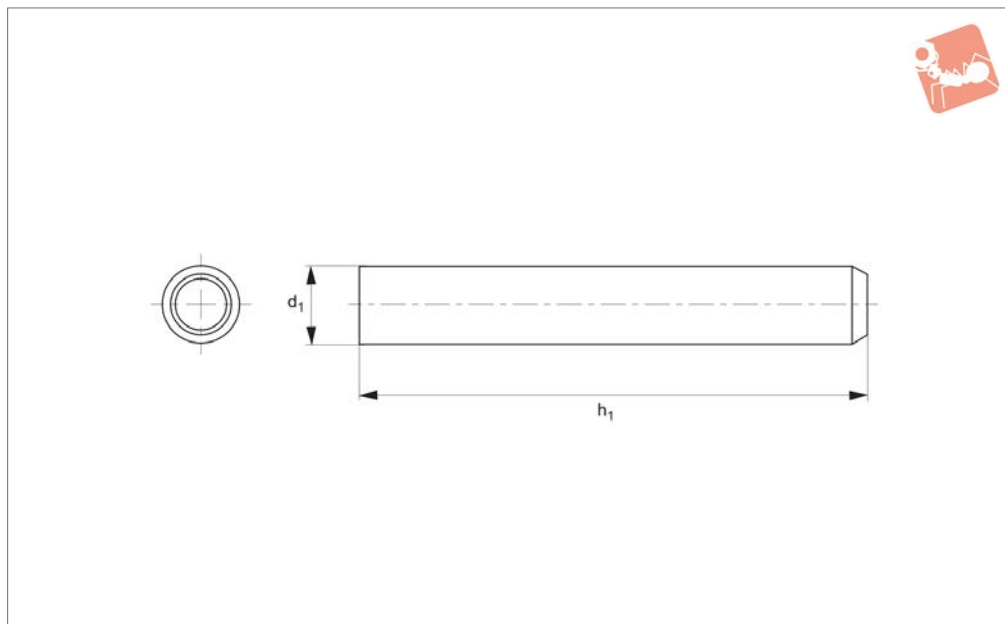
To suit modular toggle clamps 46050 and 46060.

Chamfered to protect operator's hands.

Order No.	Size	$d_1 \times h_1$	Weight g
46070.W0202	2	13x55	37
46070.W0204	4	18x95	104
46070.W0206	6	22x105	148
46070.W0208	8+10	28x115	148



**46070.4**



### Material

Steel, black oxide coated.  
For welding.

### Technical Notes

To suit modular toggle clamps 46050 and 46060.

Chamfered to protect operator's hands.

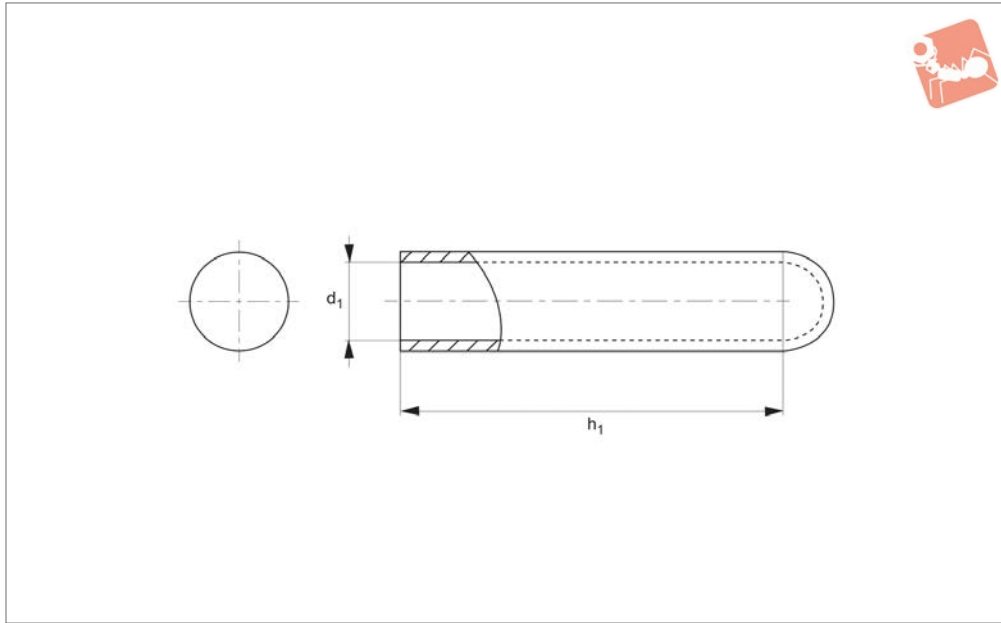
Order No.	Size	$d_1 \times h_1$	Weight g
46070.W0302	2	13x95	60
46070.W0304	4	18x120	132
46070.W0306	6	22x150	211
46070.W0308	8+10	28x180	333





## Grips for Levers for modular toggle clamps

## Heavy Duty Toggle Clamps



**46070.5**

HEAVY DUTY TOGGLE CLAMPS

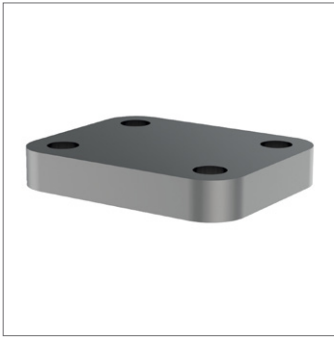
### Material

Oil-resistant plastic, red.

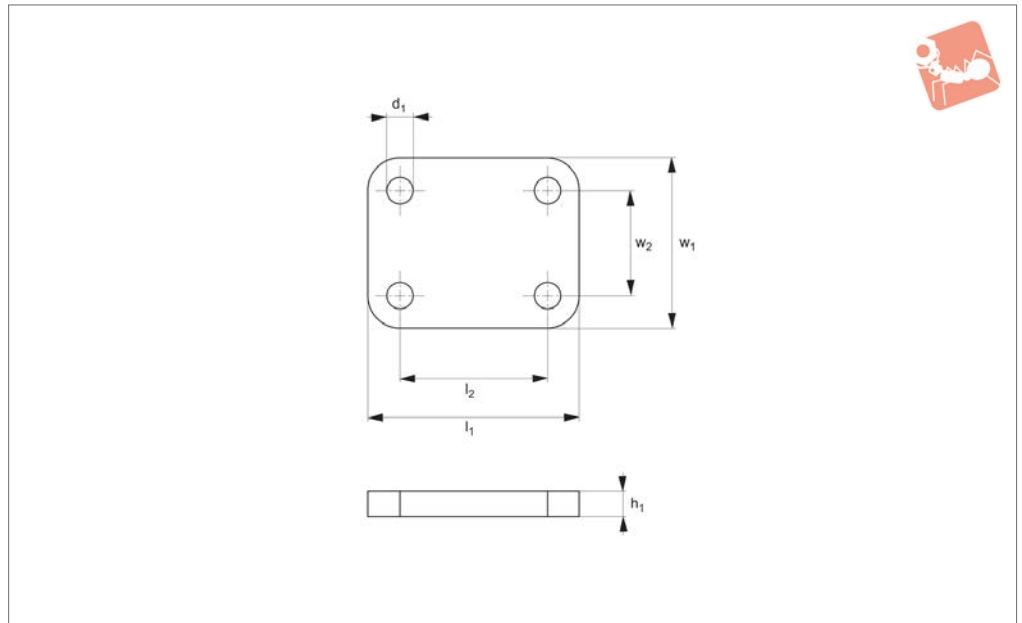
### Technical Notes

To suit lever arms 46070.W0202- .W0208  
and 46070.W0302 - .W0308.

Order No.	Size	$d_1 \times h_1$	Weight g
46070.W0402	2	13x50	7
46070.W0404	4	18x90	21
46070.W0406	6	22x100	28
46070.W0408	8+10	28x110	39



### 46070.6



#### Material

Steel, black oxide coated.  
For welding.

Order No.	Size	$h_1$	$l_1$	$l_2$	$w_1$	$w_2$	$d_1$	Weight g
46070.W0502	2+4	8	50	35	40	25	6.5	86
46070.W0506	6	8	50	30	60	40	8.5	211
46070.W0508	8	8	65	45	70	50	8.5	333
46070.W0510	10	10	70	50	80	60	10.5	406

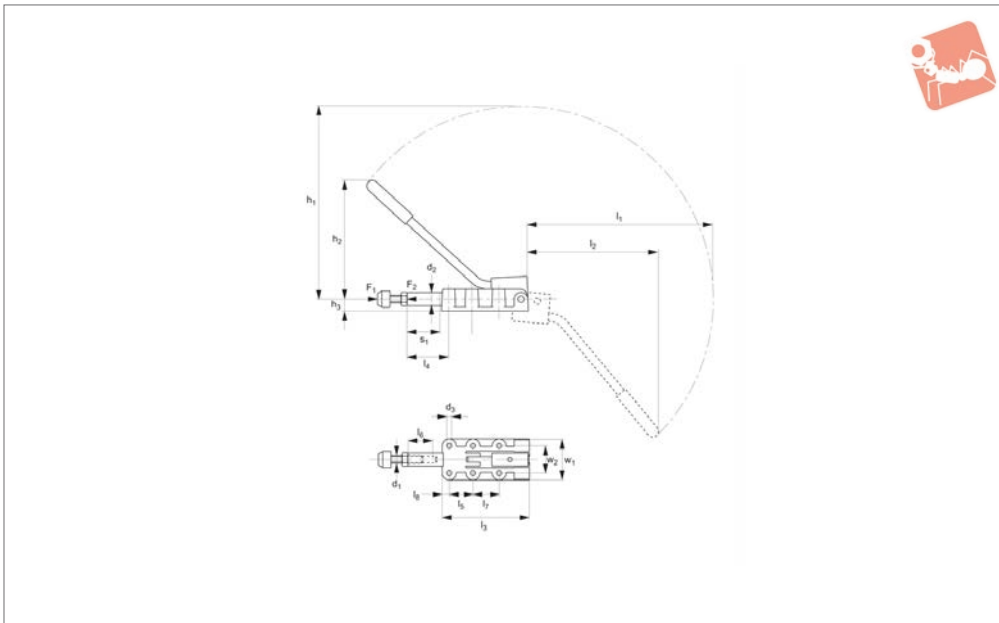


# Heavy Duty Push-Pull Toggle Clamps

reversible lever



# Heavy Duty Toggle Clamps



**42100**

HEAVY DUTY TOGGLE CLAMPS

### Material

Body: cast iron, malleable, burnished.  
 Lever and rod: tempered steel, burnished.  
 Lever: steel, zinc plated.  
 Handle: ergonomic soft feel, oil-resistant,

with large grip area.

Supplied complete with zinc plated clamping screw.

### Technical Notes

For push-pull clamping.  
 Very strong construction with long push-rod guidance.  
 Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw d <sub>1</sub>	Stroke s <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	Weight g
<b>42100.W0004</b>	4	7	7	M 8x35	32	14	5.5	190.0	115.0	12	650
<b>42100.W0005</b>	5	12	12	M10x50	50	20	8.5	290.5	178.5	18	1600
<b>42100.W0007</b>	7	25	25	M12x50	75	25	10.5	392.0	246.0	22	4280
<b>42100.W0008</b>	8	45	45	M16x80	106	30	10.5	523.0	323.0	28	7720

Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>
<b>42100.W0004</b>	182	128	90	63	36.5	30	-	25.0	47	33.3
<b>42100.W0005</b>	279	197	137	63	35.0	50	41	8.0	58	41.0
<b>42100.W0007</b>	374	267	198	114	45.0	50	45	12.0	84	54.0
<b>42100.W0008</b>	501	365	254	149	70.0	60	70	14.5	86	57.0

# Heavy Duty Toggle Clamps

# Heavy Duty Push-Pull Toggle Clamp

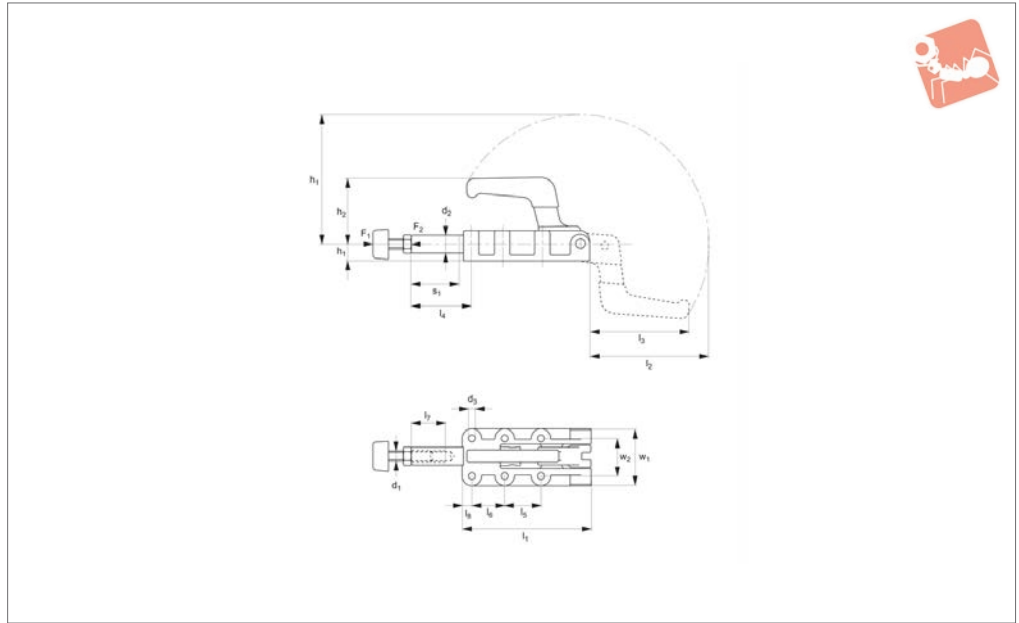
solid hand lever



HEAVY DUTY TOGGLE CLAMPS



## 42150



### Material

Body: cast iron, malleable, burnished.  
 Lever and rod: tempered steel, burnished.  
 Handle: ergonomic soft feel, oil-resistant, with large grip area.

Supplied complete with zinc plated and tempered clamping screw.

### Technical Notes

Heavy duty version with long guide rod.  
 Temperature range -10°C to +80°C.

Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw d <sub>1</sub>	Stroke s <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	Weight g
42150.W0004	4	7	7	M 8x35	32	14	5.5	96	42.5	12	590
42150.W0005	5	12	12	M10x50	50	20	8.5	136	70.0	18	1650
42150.W0007	7	25	25	M12x50	75	25	10.5	196	93.5	22	4150
42150.W0008	8	45	45	M16x80	106	30	10.5	247	111.5	28	7420

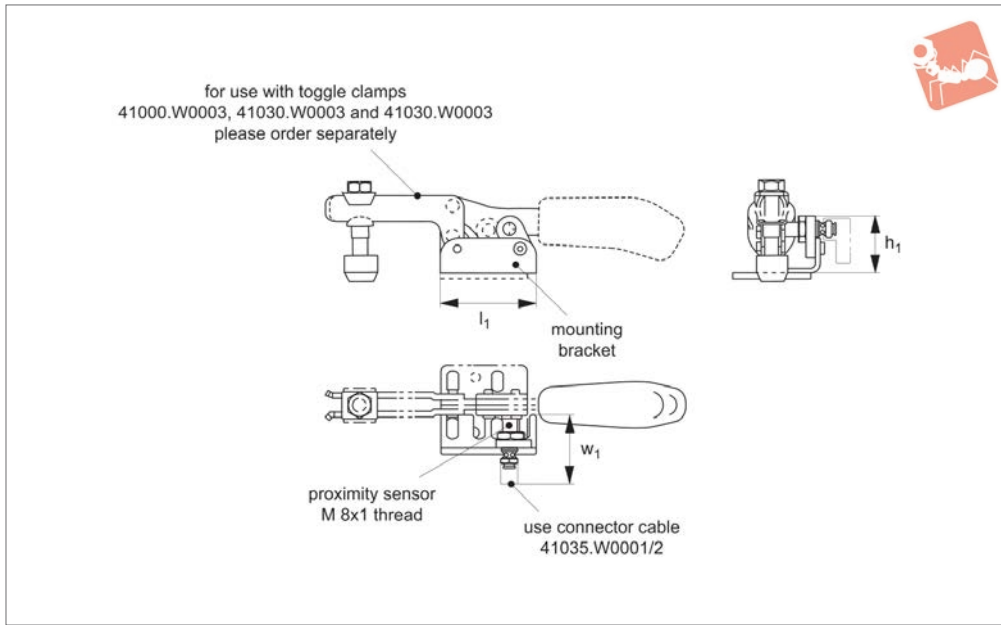
  

Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>
42150.W0004	90	88.0	69.0	63	-	36.5	30	25.0	47	33.3
42150.W0005	137	126.0	105.0	63	41	35.0	50	8.0	58	41.0
42150.W0007	198	183.5	151.5	114	45	45.0	50	12.0	84	54.0
42150.W0008	254	232.0	196.0	149	70	70.0	60	14.5	86	57.0



# Position Sensor for manual toggle clamps

# Toggle Clamp Accessories



## 41035.1

TOGGLE CLAMP ACCESSORIES

### Material

Sensor and mounting bracket: steel, zinc plated complete with inductive sensor M 8x1.

Cable: angled connector with cable permanently injection moulded on. Silicone-free, halogen-free, gold plated contacts. IP68 rated in accordance to IEC529.

### Technical Notes

Monitors the closed position of a toggle

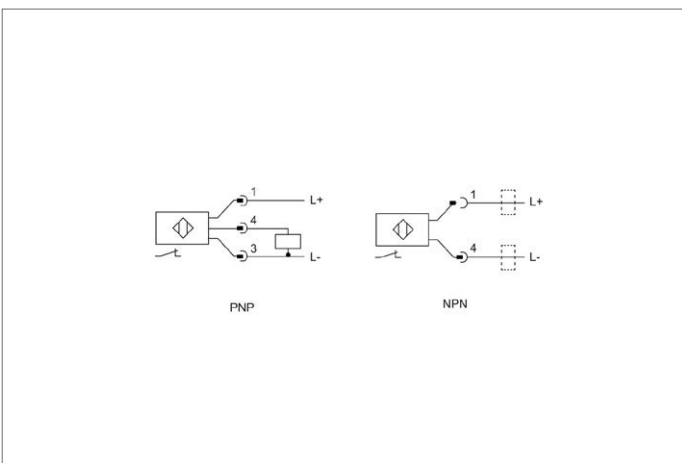
clamp and enables their integration into fixture/application monitoring systems. Sensor monitor can be used on both sides for horizontal toggle clamp nos. 41000.W0003, 41030.W0003 and 41000.W0103, and only on one side for horizontal toggle clamp with safety latch no. 41000.W0003. Temperature range: 0°C to 60°C. Sensing bracket 41035.W0103 can be integrated into your monitoring system using cables 41035.W0001 or W0002 and can be

rewired either PNP or NPN (see circuit diagram below).

### Tips

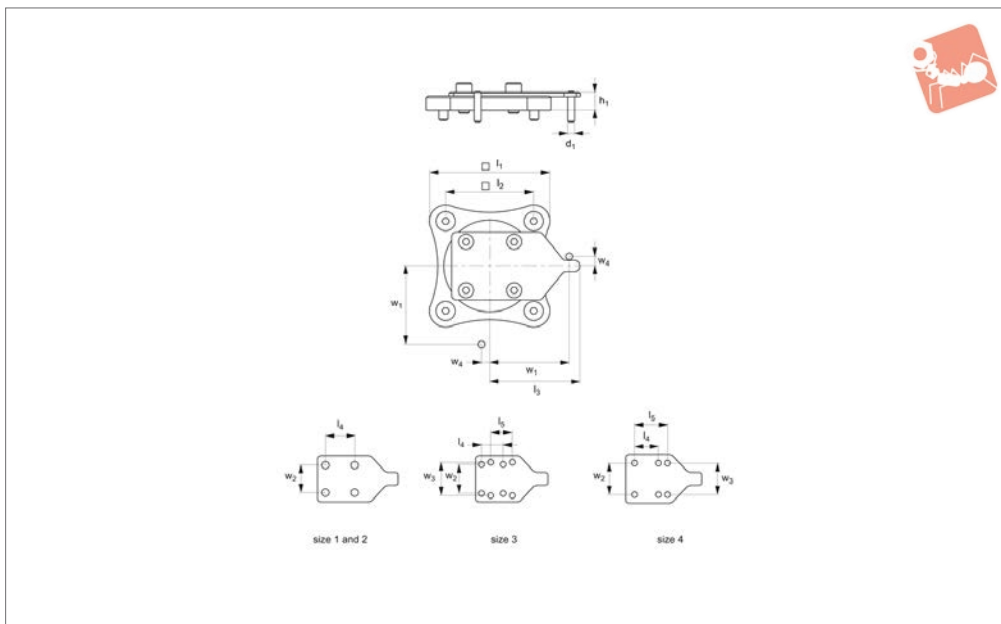
Order toggle clamp separately.

Order No.	Type	Cable length m	w <sub>1</sub>	h <sub>1</sub>	l <sub>1</sub>	Weight g
41035.W0001	Cable	2	-	-	-	75
41035.W0002	Cable	5	-	-	-	150
41035.W0103	Bracket	-	40	35	55	60





## 41035.2



### Material

Body: steel, zinc plated.  
Includes stop pin for limiting the opening position of 90°.

### Technical Notes

Order 41035.W0010 for toggle clamp

41000 size 3.

Order 41035.W0012 for toggle clamp

41000 size 4.

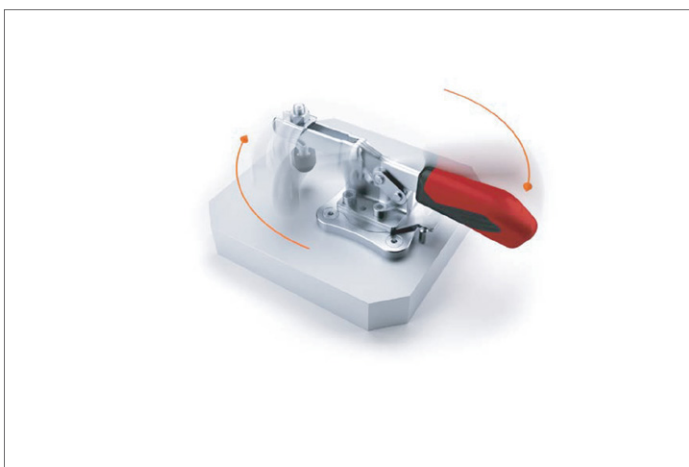
Order 41035.W0013 for toggle clamp

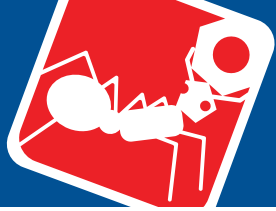
40000 sizes 2 and 3.

Order 41035.W0014 for toggle clamp

40000 size 4.

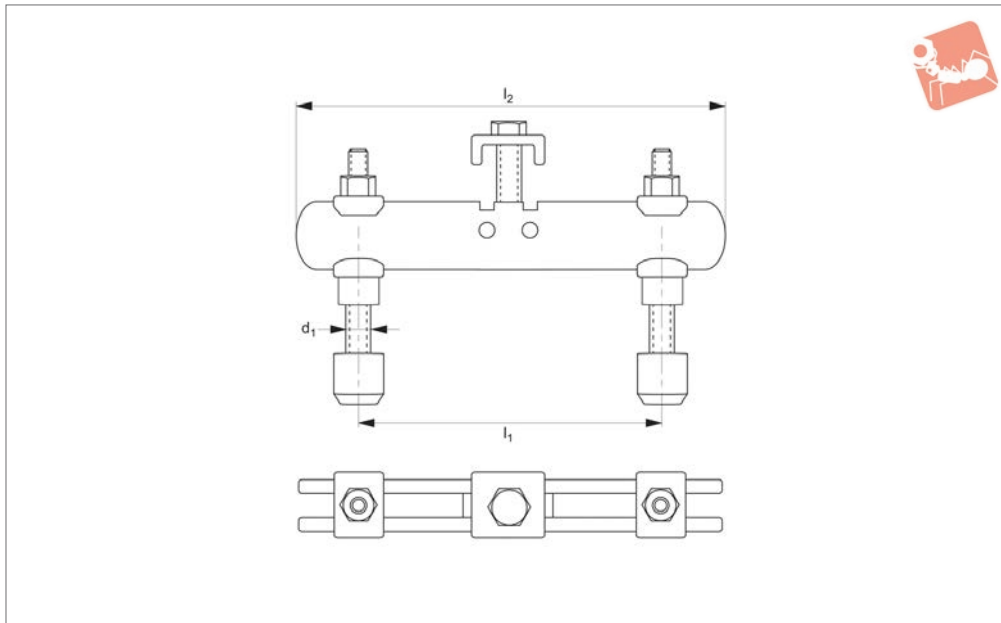
Order No.	Size	$d_1$	$w_1$	$h_1$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$w_2$	$w_3$	$w_4$	Weight g
41035.W0010	1	6	41	11.4	76	54	47.0	26.0	-	26.0	-	9.0	430
41035.W0012	2	6	68	13.4	104	76	77.0	41.5	-	41.5	-	9.0	915
41035.W0013	3	6	41	11.4	76	54	45.0	20.0	20	27.0	32.5	9.0	430
41035.W0014	4	6	59	13.4	104	76	69.2	32.0	45	45.0	45.0	10.5	922





# Supporting Arms for toggle clamps

# Toggle Clamp Accessories



**45000**

TOGGLE CLAMP ACCESSORIES

### Material

Steel, zinc plated. Complete with two clamping screws no. 45060 and hexagon screw.

### Technical Notes

With this supporting arm there is the option of clamping either two small workpieces or one large workpiece at two

points. See table below for suitable toggle clamps.

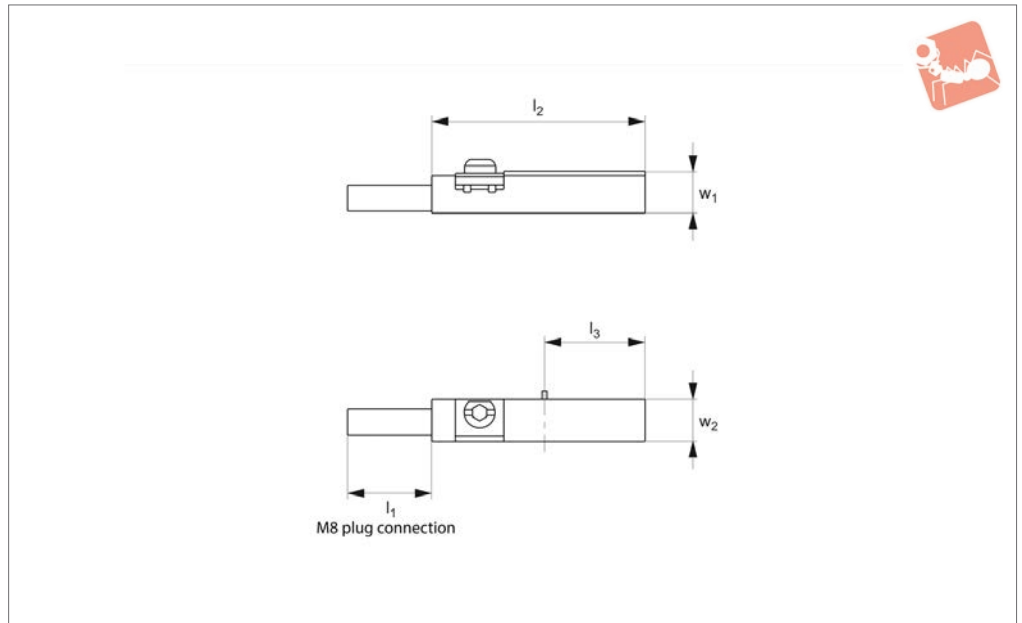
Temperature range -10°C to +80°C.

Order No.	Size	Clamping screw $d_1$	Distance between screws $l_1$ min.   max.	$l_2$	Weight g
45000.W0000	0	M 4x25	18-60	70	40
45000.W0001	1	M 5x30	22-72	85	65
45000.W0002	2	M 6x35	28-85	100	90
45000.W0003	3	M 8x45	34-100	120	200
45000.W0004	4	M 8x65	40-125	150	370
45000.W0005	5	M 8x65	40-125	150	370
45000.W0006	6	M12x80	54-200	240	985





**45001**



**Technical Notes**

PUR cable 0.3m with M8 plug connection and rotating knurled nuts.

Switching function: NOC. Output: PNP.

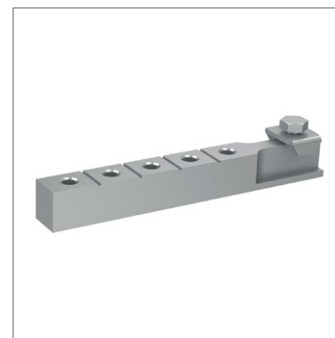
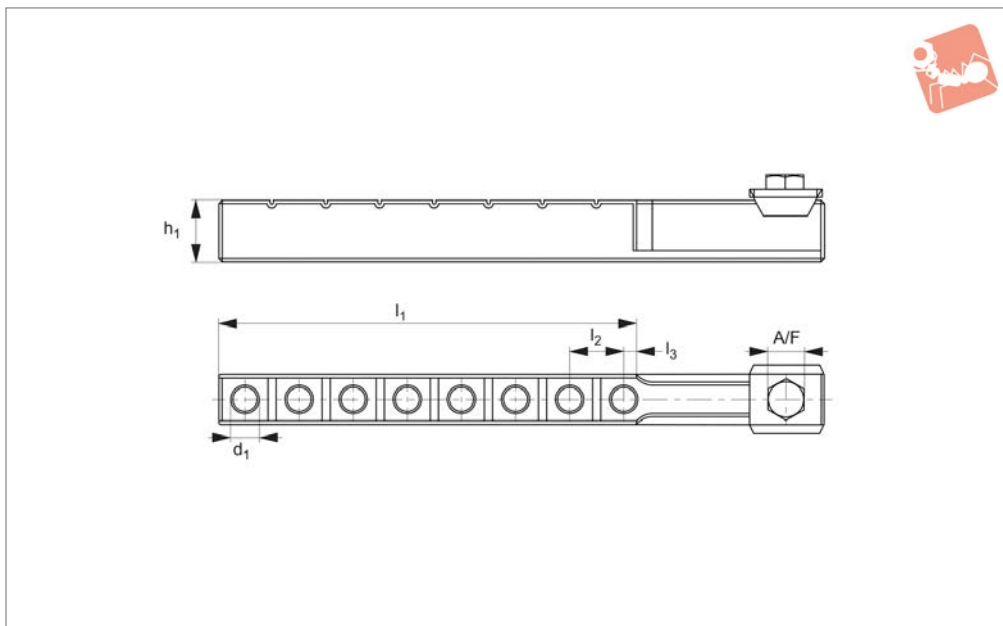
Order No.	Cable length $l_1$	$w_1$	$l_2$	$l_3$	$w_2$	Weight g
45001.W0000	300	5.1	25.3	12	5	15





# Clamping arm extension for manual toggle clamps

## Toggle Clamp Accessories



**45002**

TOGGLE CLAMP ACCESSORIES

### Material

Aluminium.

Complete with fastening bolt, without

clamping screw.

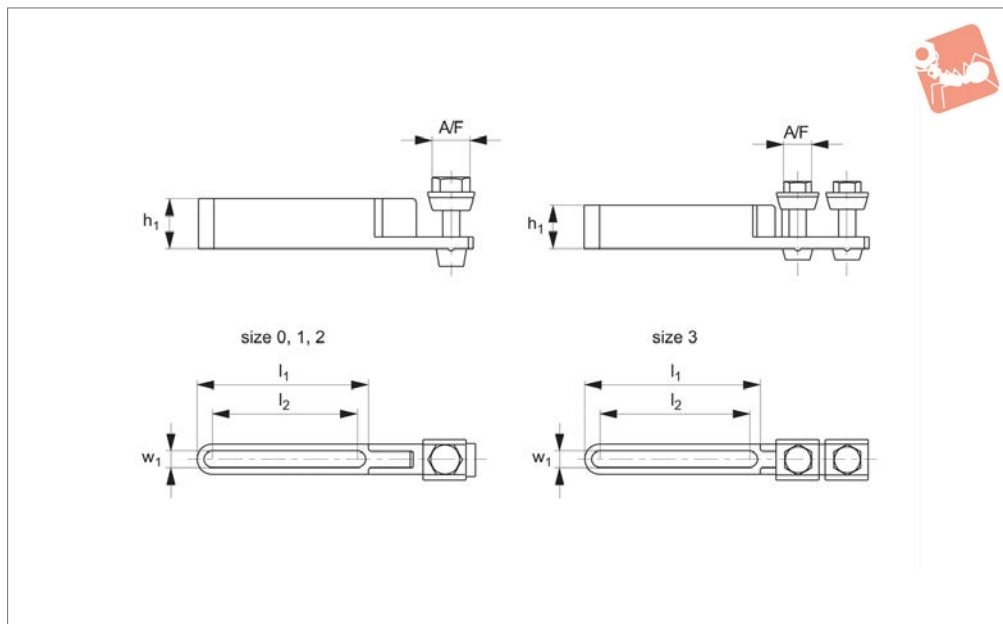
### Tips

Can be shortened to required length.

Order No.	Size	d <sub>1</sub>	h <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	A/F	Weight g
45002.W0000	1	5xM 5	11	61	12	6	7	24
45002.W0001	2	6xM 6	14	90	15	8	8	47
45002.W0002	3	8xM 8	17	115	15	3	10	92



### 45010



#### Material

Steel, blued.  
Complete with fastening screw, without clamping screw

#### Technical Notes

For clamping screws see part 45020.  
Temperature range -10°C to +80°C.

#### Tips

Can be shortened to required length.

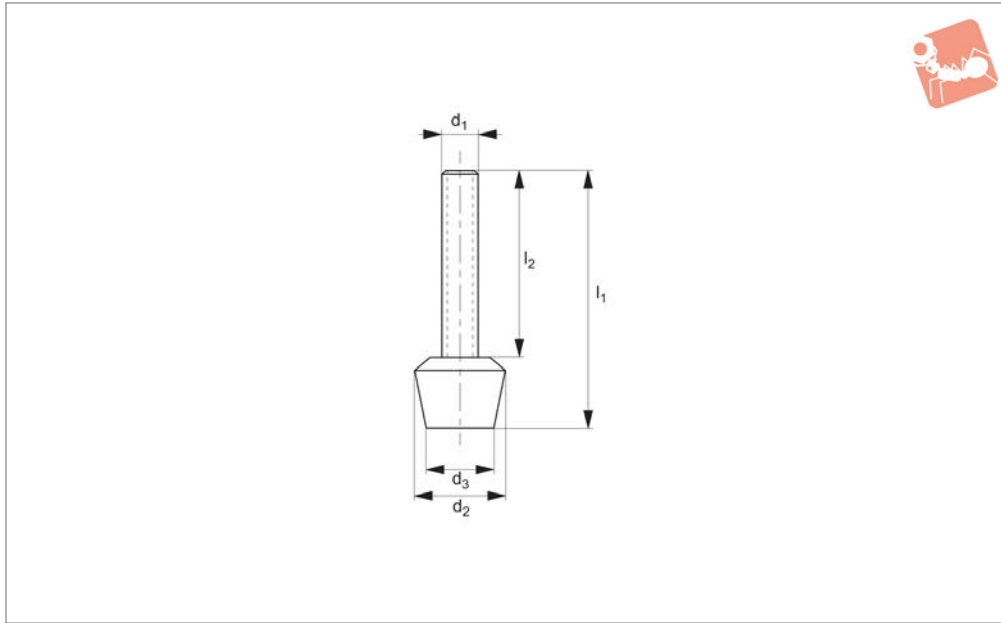
Order No.	Size	w <sub>1</sub>	h <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	To suit clamping screw	A/F	Weight g
45010.W0000	0	4.2	10	32.5	25	M 4	7	15
45010.W0001	1	5.2	12	55.0	45	M 5	8	25
45010.W0002	2	6.2	14	73.5	65	M 6	10	40
45010.W0003	3	8.2	20	82.0	70	M 8	13	80



# Clamping Screws for Toggle Clamps

bonded pressure pad

## Toggle Clamp Accessories



**45016**

TOGGLE CLAMP ACCESSORIES

**Material**

Screw: steel, zinc plated and tempered, strength class 8.8.

Pad: oil-resistant neoprene, hardness 85

shore A, silicone free.

**Technical Notes**

The bonded pressure pad is used to prevent

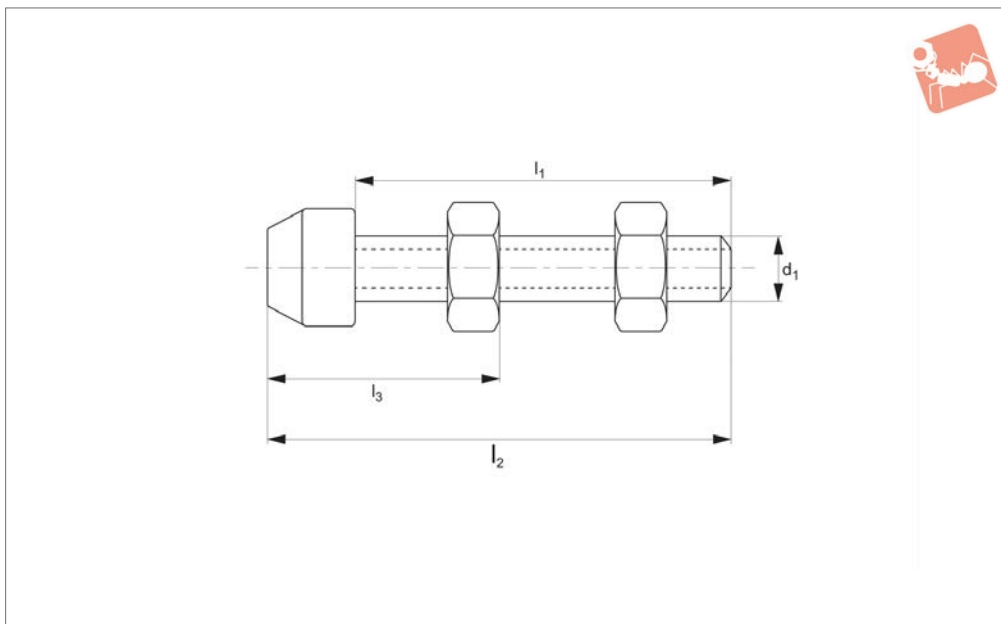
damage to delicate workpieces.

Temperature range -10°C to +80°C.

Order No.	d <sub>1</sub> x l <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l <sub>2</sub>	Weight g
45016.W0001	M 4x32	11	8	24	4
45016.W0002	M 5x38	13	10	28	8
45016.W0003	M 6x35	16	12	23	11
45016.W0004	M 6x45	16	12	33	13
45016.W0005	M 6x60	16	12	48	16
45016.W0006	M 8x48	21	16	32	25
45016.W0007	M 8x58	21	16	42	29
45016.W0008	M 8x63	21	16	47	31
45016.W0009	M 8x78	21	16	62	37
45016.W0010	M10x66	26	20	46	53
45016.W0011	M10x76	26	20	56	59
45016.W0012	M10x116	26	20	96	84
45016.W0013	M12x70	31	24	46	78
45016.W0014	M12x100	31	24	76	105
45016.W0015	M12x130	31	24	106	131



**45018**



**Material**

Body: steel, zinc plated and tempered, tensile strength class 8.8.  
Supplied complete with two nuts and

removable protection pad.

Temperature range -10°C to +80°C.

**Technical Notes**

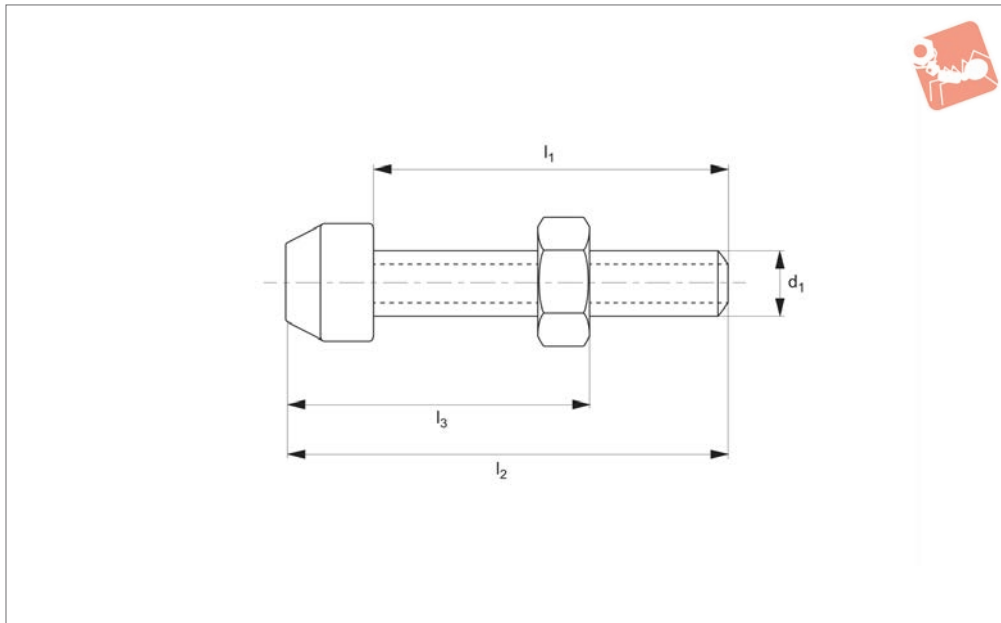
For toggle clamps.

Order No.	Size	$d_1 \times l_1$	$l_2$	$l_3$	Weight g
45018.W0001	1	M 5x30	38	14-25	10
45018.W0002	2	M 6x35	45	17-25	20
45018.W0003	3	M 8x45	58	22-32	35
45018.W0004	4	M 8x65	78	22-52	40
45018.W0005	5	M12x80	98	30-60	130
45018.W0006	6	M12x110	128	30-88	160
45018.W0008	8	M16x120	130	25-84	280



# Clamping Screws for push-pull toggle clamps

## Toggle Clamp Accessories



### 45020.1

TOGGLE CLAMP ACCESSORIES

#### Material

Steel: zinc plated and tempered, tensile strength class 8.8.

Stainless: stainless steel (AISI 304,

1.4301). With nut and removable rubber protection pad.

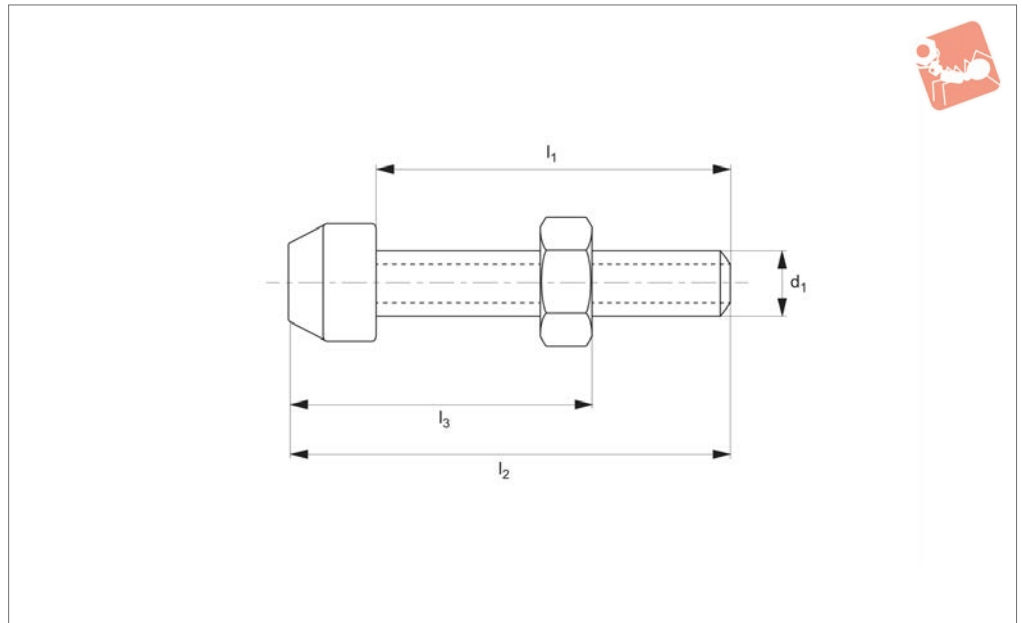
#### Technical Notes

Protection pad is made of oil-resistant neoprene to prevent damage to delicate workpiece surfaces, hardness 70 shore A,

Order No.	Type	Size	$d_1 \times l_1$	$l_2$	$l_3$	Weight g
45020.W0001	Steel	0+1	M 4x20	27	12-20	4
45020.W0002	Steel	2	M 6x25	35	17-25	15
45020.W0003	Steel	3	M 8x35	48	22-35	26
45020.W0005	Steel	5	M10x50	66	30-52	57
45020.W0007	Steel	7	M12x50	68	30-50	82
45020.W0008	Steel	8	M16x80	90	25-70	220
45020.W0501	Stainless	0+1	M 4x20	27	12-20	4
45020.W0502	Stainless	2	M 6x25	35	18-27	15
45020.W0503	Stainless	3	M 8x35	48	22-35	26
45020.W0507	Stainless	7	M12x50	68	30-50	82



**45020.2**



**Material**

Steel matt black, tensile strength class 8.8. With nut and bonded pressure pad.

**Technical Notes**

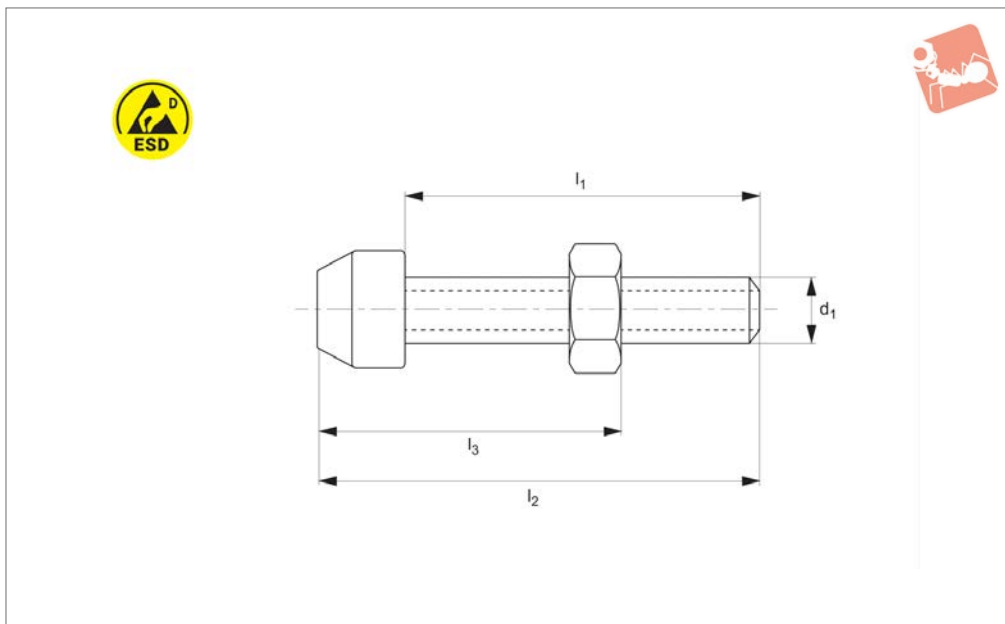
For optical analysis applications.

Order No.	Size	$d_1 \times l_1$	$l_2$	$l_3$	Weight g
45020.W0100	1	M 4x20	23	10-17	4
45020.W0101	2	M 6x25	35	17-25	15
45020.W0102	3	M 8x44	44	26-33	26



# ESD Clamping Screws for push-pull toggle clamps

## Toggle Clamp Accessories



**45020.3**

TOGGLE CLAMP ACCESSORIES

### Material

Steel, zinc plated and tempered. Tensile strength class 8.8. With nut and removable rubber pad.

### Technical Notes

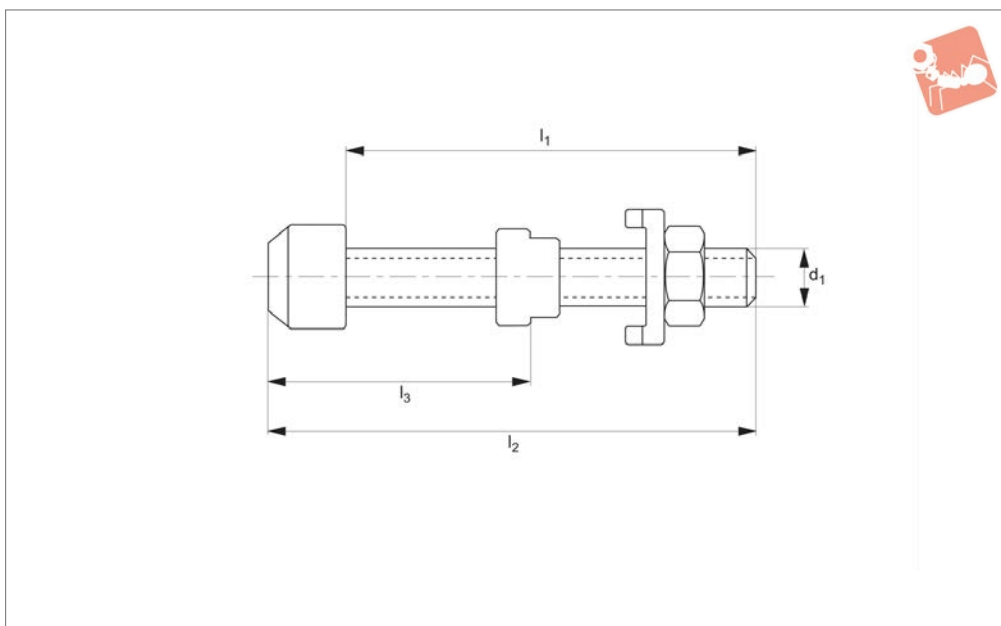
**The ESD (electrostatically sensitive devices) clamping screw is non-insulating. It must not be used in areas**

where open voltages are used.

Order No.	Size	$d_1 \times l_1$ DIN 933	$l_2$	$l_3$	Weight g
45020.W0301	0+1	M 4x20	27	12-20	4
45020.W0302	2	M 6x25	35	17-25	15
45020.W0303	3	M 8x35	48	22-35	26



## 45060.1



### Material

Steel, zinc plated and tempered, tensile strength class 8.8 or stainless steel (AISI 304, 1.4301).

Removable protective cap made of oil-

resistant neoprene to prevent damage to delicate workpiece surfaces, hardness 70 shore A, silicone-free.

### Technical Notes

Sizes 0-3, 6 supplied with washer/nut element.

Sizes 4-7 supplied with nut for T-slot.

Order No.	Type	Size	$d_1 \times l_1$	$l_2$	$l_3$	T-nut DIN 508	U-washer size	Weight g
45060.W0000	Steel	0	M 4x25	32	13-20	-	0	5
45060.W0001	Steel	1	M 5x30	38	17-24	-	1	10
45060.W0002	Steel	2	M 6x35	45	19-28	-	2	22
45060.W0012	Steel	2	M 6x50	60	19-43	-	2	30
45060.W0003	Steel	3	M 8x45	58	22-34	-	3	40
45060.W0004	Steel	4	M 8x65	78	21-50	M 8x10	4	62
45060.W0005	Steel	5	M 8x65	78	21-45	M 8x10	5	62
45060.W0016	Steel	6*	M10x116	116	28-78	-	6	122
45060.W0006	Steel	6	M12x80	97	28-58	M12x14	6	160
45060.W0007	Steel	7	M12x110	127	28-88	M12x14	6	180
45060.W0500	Stainless Steel	0	M 4x25	32	13-20	-	0	5
45060.W0501	Stainless Steel	1	M 5x30	38	17-24	-	1	10
45060.W0502	Stainless Steel	2	M 6x35	45	19-28	-	2	22
45060.W0503	Stainless Steel	3	M 8x45	58	22-34	-	3	40
45060.W0504	Stainless Steel	4	M 8x65	78	21-50	-	3	60

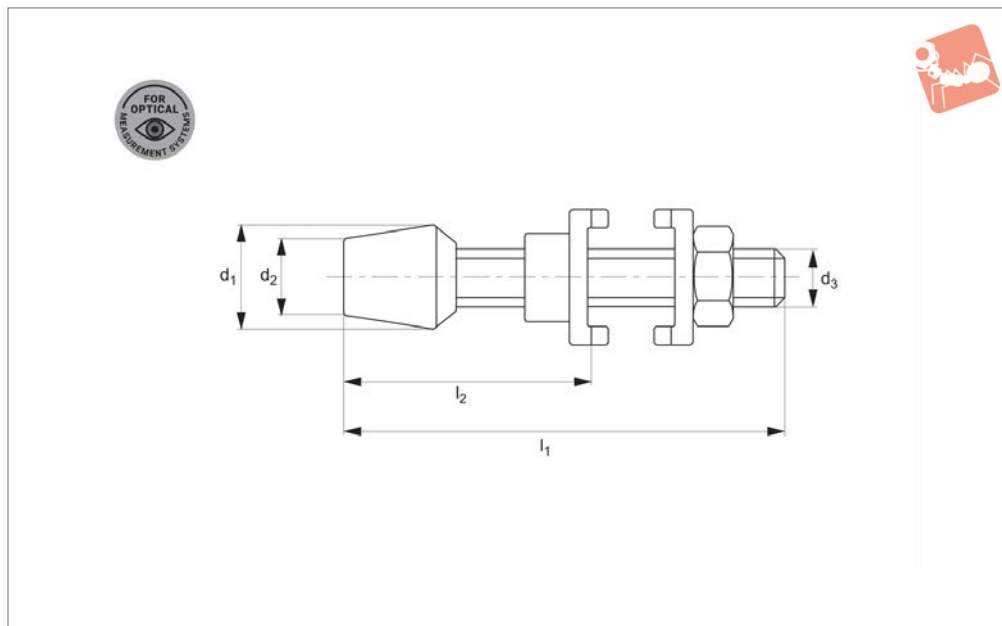




# Clamping Screw - Black

for open clamping arms

## Toggle Clamp Accessories



**45060.2**

TOGGLE CLAMP ACCESSORIES

### Material

Steel matt black, galvanized, tensile strength class 8.8. Complete with washer, nut and screw. With bonded pressure pad

made of oil-resistant neoprene to prevent damage to delicate workpieces. Hardness 85 Shore A, silicone-free.

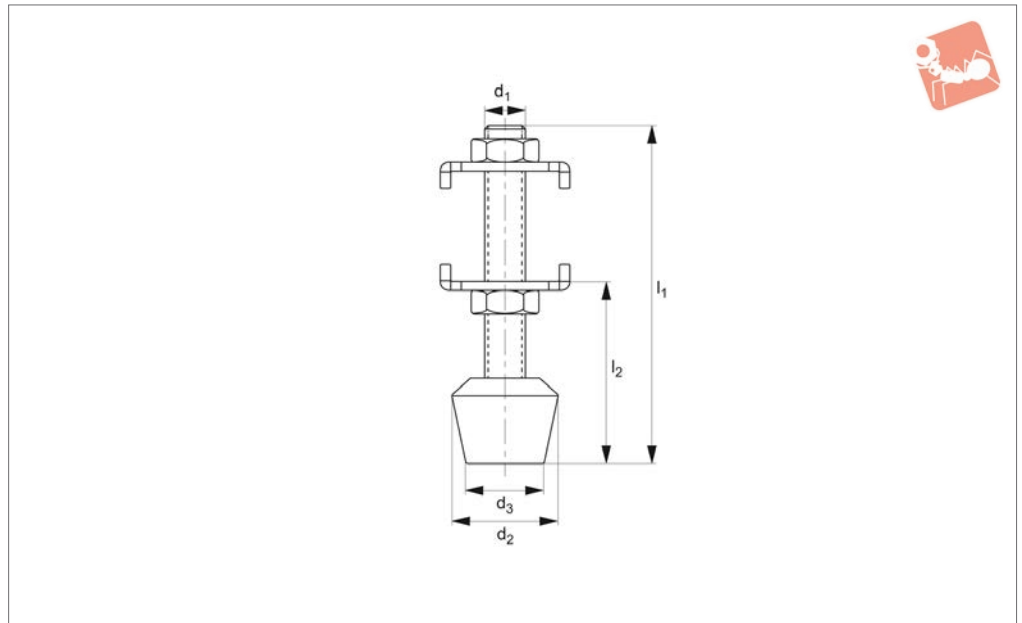
### Technical Notes

For optical analysis applications.

Order No.	Size	d <sub>1</sub>	l <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l <sub>2</sub>	Weight g
45060.W0100	0	M 4	34.5	10	-	11,5-22	6
45060.W0101	1	M 5	38.0	13	10	17,0-24	11
45060.W0102	2	M 6	46.0	16	10	20,0-27	17
45060.W0103	2	M 6	60.0	16	10	20,0-40	22
45060.W0104	2	M 6	110.0	16	10	20,0-90	60
45060.W0105	3	M 8	63.0	18	13	27,0-37	39



## 45062.1



### Material

Steel. Strength class 8.8.

Pad: oil resistant neoprene, hardness 85

shore A silicone-free.

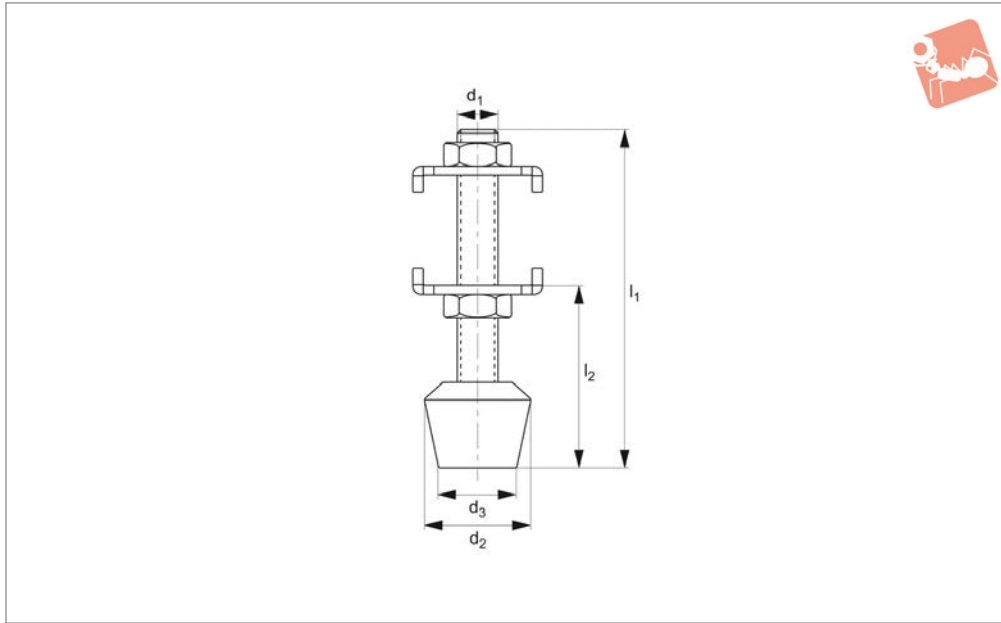
Complete with U-washers, hex nuts and screw with bonded pad.

Order No.	Size	$d_1 \times l_1$	$d_2$	$d_3$	$l_2$	Weight g
45062.W0001	1	M 5 x 35	11	10	9-18	15
45062.W0002	2	M 6 x 50	16	12	17-29	20
45062.W0003	3	M 8 x 58	21	16	21-34	36
45062.W0004	4	M 10 x 76	26	20	28-44	95



# Stainless Clamping Screws for horizontal acting toggle clamp

## Toggle Clamp Accessories



**45062.2**

TOGGLE CLAMP ACCESSORIES

### Material

Stainless steel, strength class 8.8.

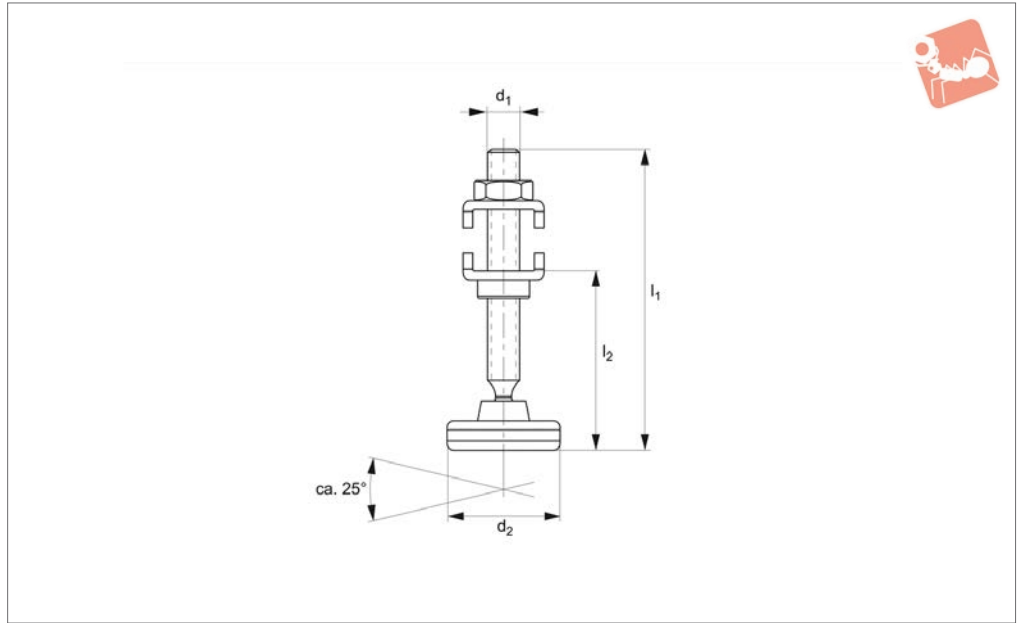
Pad: oil resistant neoprene, hardness 85

shore A silicone-free.

Order No.	Size	$d_1 \times l_1$	$d_2$	$d_3$	$l_2$	Weight g
<b>45062.W0101</b>	1	M 5 x 35	11	10	10-22	15
<b>45062.W0102</b>	2	M 6 x 50	16	12	17-29	20
<b>45062.W0103</b>	3	M 8 x 58	21	16	22-31	45
<b>45062.W0104</b>	4	M 10 x 76	26	20	28-44	95



**45070**



TOGGLE CLAMP ACCESSORIES

### Material

Steel, zinc plated.

### Technical Notes

For use with auto adjust toggle clamps.

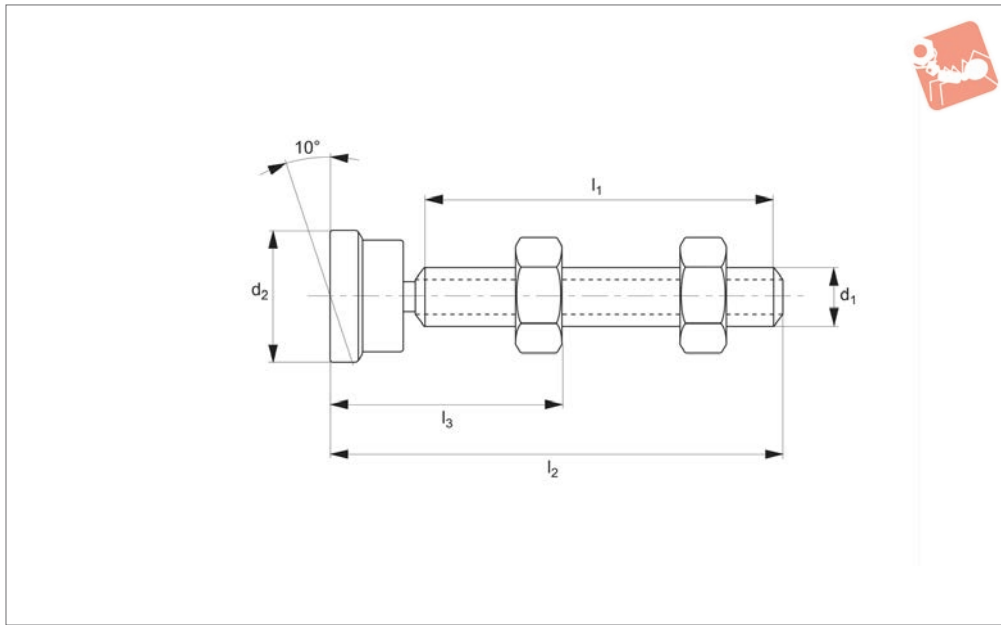
Order No.	Size	$d_1 \times l_1$	$d_2$	$l_2$	Weight g
45070.W0001	1	M 6x49	19	16-34	23
45070.W0002	2	M 8x50	27	21-31	51
45070.W0003	3	M 8x66	27	21-47	55



# Self Aligning Clamping Screws

for solid and closed twin-arm toggle clamps

## Toggle Clamp Accessories



**45078**

TOGGLE CLAMP ACCESSORIES

### Material

Steel, tempered, galvanised and passivated.

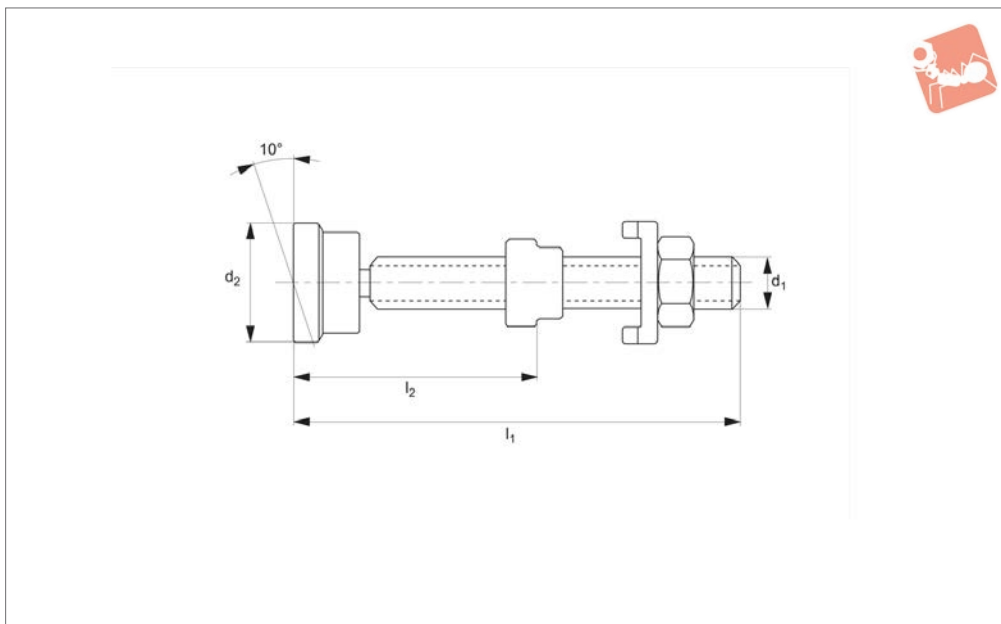
### Tips

For use with toggle clamps.

Order No.	Size	Screw $d_1 \times l_1$	$d_2$	$l_2$	$l_3$	Weight g
45078.W0001	1	M 5x35	12	37	8-23	9
45078.W0004	4	M 8x75	16	78	16-52	42
45078.W0005	6	M12x100	25	105	30-61	138



**45080**



**Material**

Steel, zinc plated and tempered.

Sizes 4-6 with T-nut.

**Technical Notes**

Sizes 1-3 with washer/nut element.

**Tips**

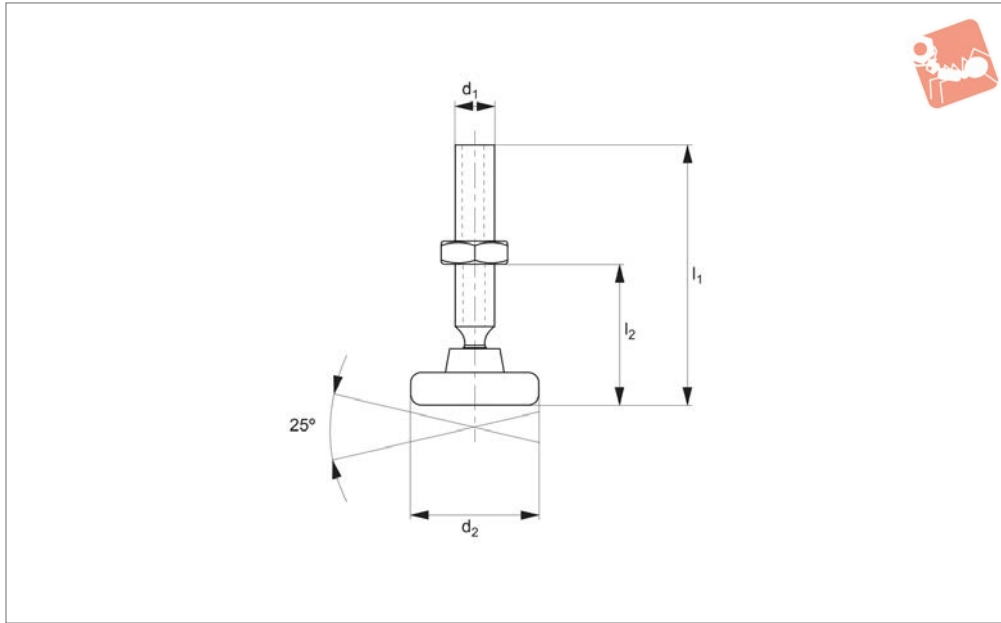
For use with toggle clamps.

Order No.	Size	Screw	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	T-nut DIN 508	Washer size	Weight g
45080.W0001	1	M 5x35	12	37	12-22	-	1	12
45080.W0002	2	M 6x50	12	52	14-33	-	2	20
45080.W0003	3	M 8x75	16	78	18-52	-	3	47
45080.W0004	4	M 8x75	16	78	15-50	M 8x10	4	62
45080.W0006	6	M12x100	25	105	25-62	M12x14	6	183



# Clamping Screws for auto adjust toggle clamps

## Toggle Clamp Accessories



**45084**

TOGGLE CLAMP ACCESSORIES

### Material

Steel, galvanised.

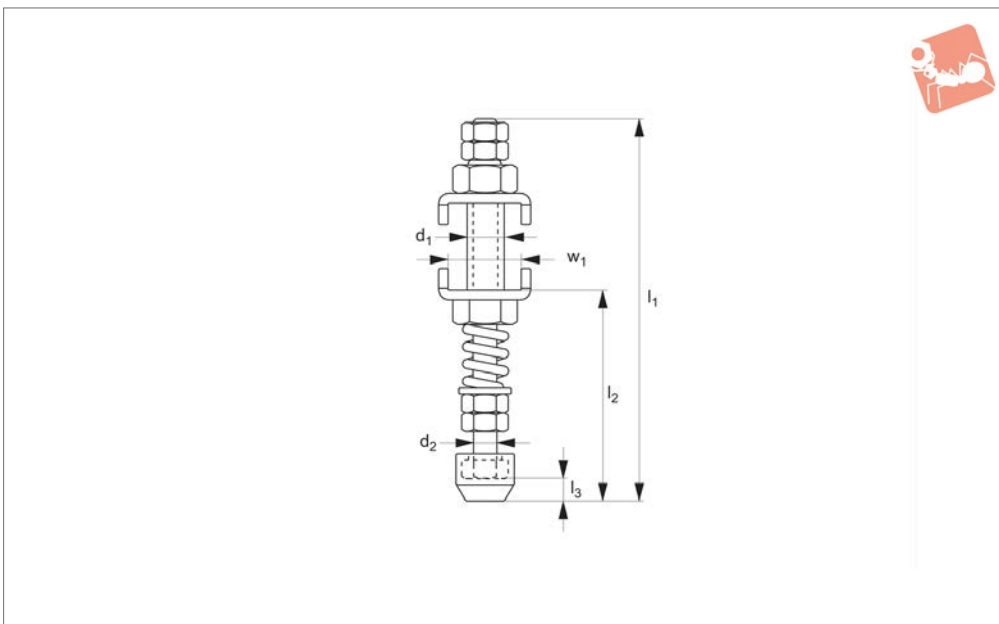
### Tips

For auto adjust toggle clamps.

Order No.	Size	$d_1 \times l_1$	$d_2$	$l_2$	Weight g
45086.W0001	1	M 6x37	19	13-25	16
45086.W0002	2	M 8x50	19	16-35	41



## 45100



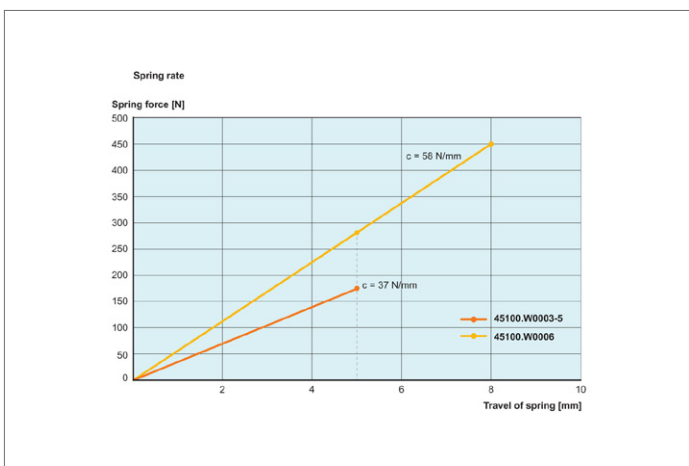
### Material

Steel, zinc plated and tempered.  
Rubber pad.

### Tips

For toggle clamps with open ended arms.

Order No.	Size	d <sub>1</sub>	w <sub>1</sub>	l <sub>1</sub>	d <sub>2</sub>	l <sub>2</sub>	l <sub>3</sub>	Rubber pad 45120	Weight g
45100.W0003	3	M 8	14.5	90	M 5	39-52	5	.W0001	55
45100.W0004	4	M 8	18.5	90	M 5	40-53	5	.W0001	63
45100.W0005	5	M 8	20.5	90	M 5	40-48	5	.W0001	64
45100.W0006	6	M12	24.0	123	M 8	60-68	7	.W0003	182

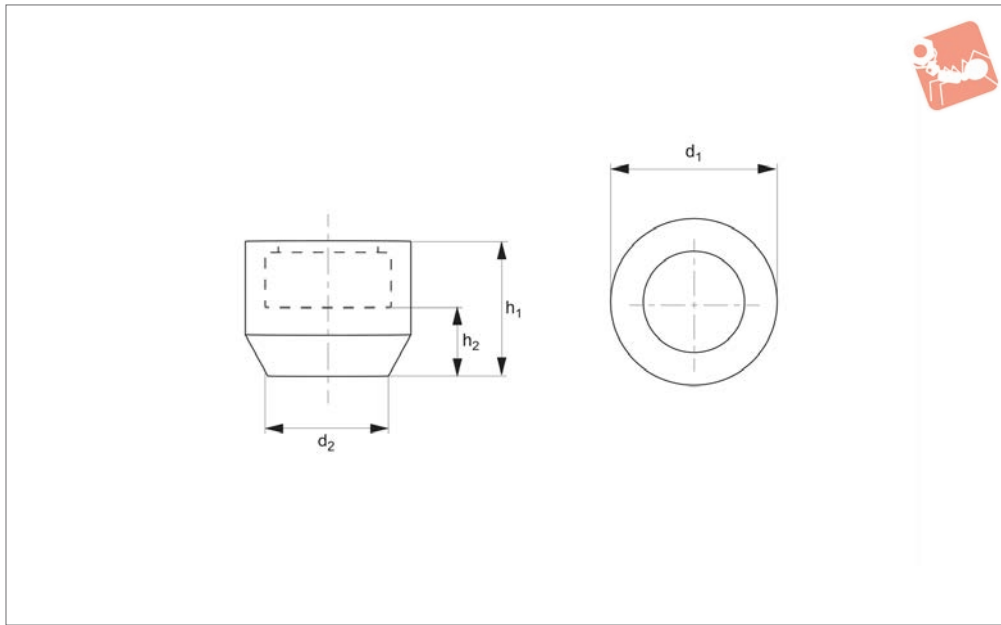






# Rubber Caps for clamping screws

# Toggle Clamp Accessories



## 45120

TOGGLE CLAMP ACCESSORIES

### Material

Oil-resistant neoprene, hardness 70 Shore A.

### Technical Notes

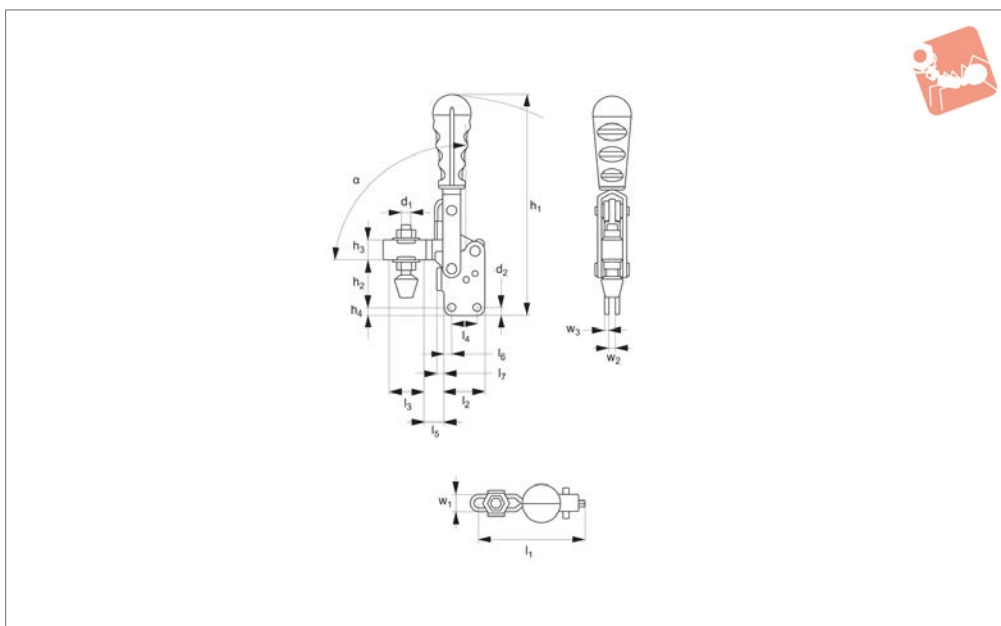
Prevents damage to delicate components. Suitable for clamping screws nos. 45018,

45020.W0001- .W0008, 45060.W0000- .W0007 and 45100.

Order No.	Size	d <sub>1</sub>	h <sub>1</sub>	d <sub>2</sub>	h <sub>2</sub>	Weight g
45120.W0000	M 4	11.0	8.5	7	4.2	1
45120.W0001	M 5	12.5	10.0	8	5.0	1
45120.W0002	M 6	15.0	12.0	10	6.0	2
45120.W0003	M 8	19.0	15.0	13	7.5	4
45120.W0005	M10	22.0	17.5	15	8.5	5
45120.W0006	M12	25.0	20.0	19	9.5	8
45120.W0007	M12	26.0	20.0	18	9.5	9
45120.W0009	M16	33.0	27.0	24	14.0	19



## EC602



### Material

Body: steel, zinc plated.  
 Rivets: stainless steel.  
 Bushes: case hardened and greased.  
 Handle: plastic, red, oil resistant.

Supplied complete with clamping screw (with rubber pad).

symbol\*) can be changed by pressing in a stop pin on the clamp body.

### Technical Notes

Opening angle (symbola/symbolsymbola/

Order No.	Size	Holding force kN	$d_1$	$d_2$	$h_1$	$h_2$	$h_3$	Weight g
EC602-2	2	1.1	M 6	5.2	122	28.5	11.0	160
EC602-3	3	1.7	M 8	7.1	190	40.4	17.5	380
EC602-4	4	2.8	M10	8.3	240	54.5	22.0	600
EC602-5	5	3.6	M12	8.7	240	57.4	22.5	1100

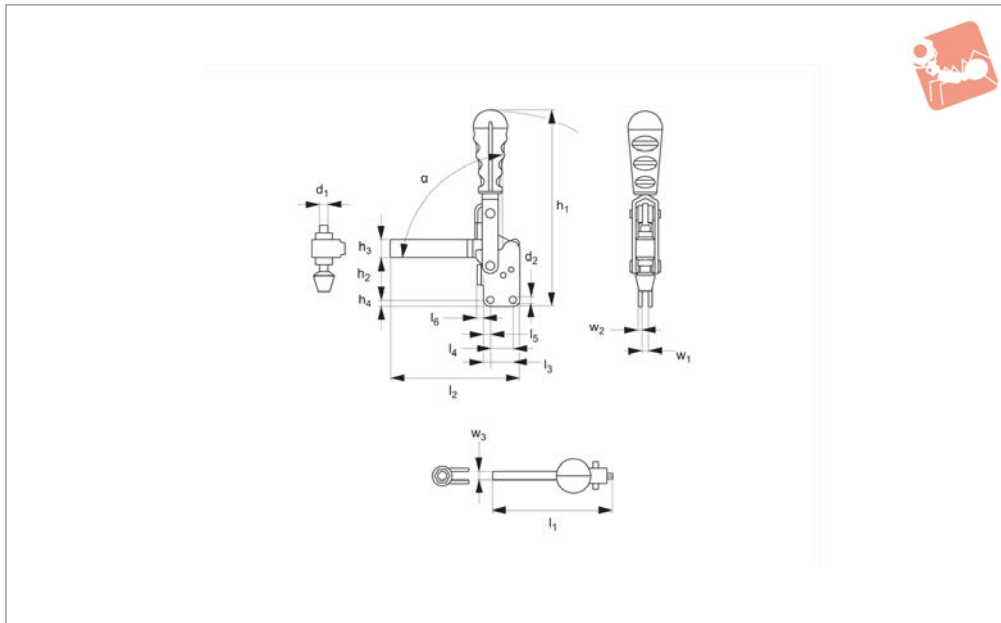
Order No.	$h_4$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$l_7$	$w_1$	$w_2$	$w_3$	$\alpha/\alpha^*$
EC602-2	5.5	71.2	27	21.7	12.7	8.3	7	6.7	6.2	6	3	93°
EC602-3	7.5	90.2	35	29.2	19.0	18.8	8	5.5	8.9	6	3	91°
EC602-4	9.5	142.0	50	62.0	32.0	12.3	9	10.0	10.6	8	4	90°/115°
EC602-5	9.5	179.0	51	81.4	31.8	20.0	10	12.2	13.4	10	5	101°/129°



# Toggle Clamps - Vertical Acting

economy - vertical base - weldable arm

## Economy Toggle Clamps



**EC606**

ECONOMY TOGGLE CLAMPS

**Material**

Body: steel, zinc plated.

Bushes: case hardened and greased.

Handle: plastic, red, oil resistant.

Supplied complete with clamping screw (with rubber pad).

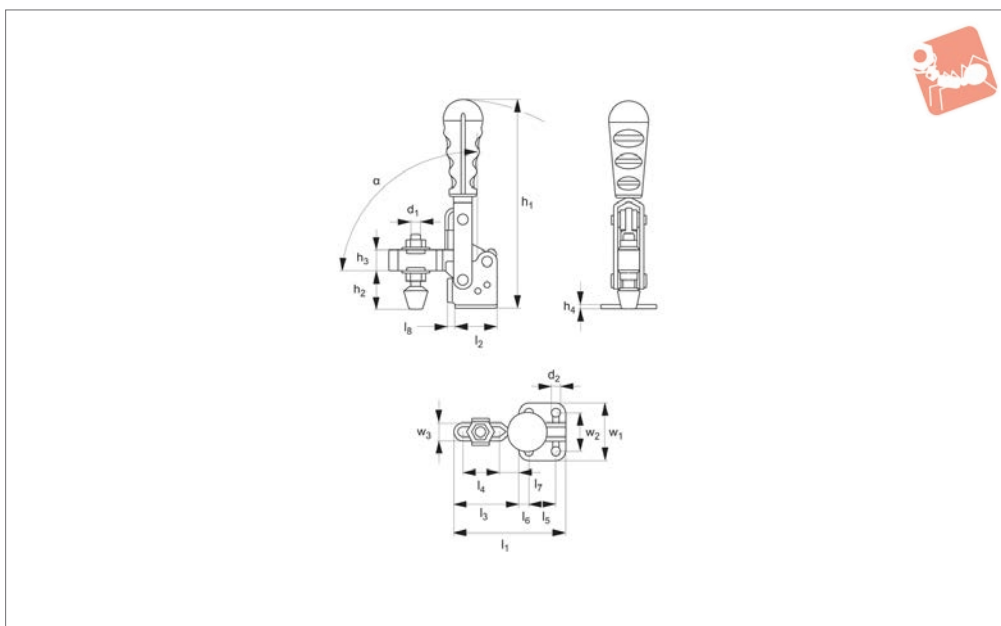
Order No.	Size	Holding force kN	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	l <sub>1</sub>	Weight g
EC606-3	3	2.0	M 8	7.1	190	40.4	17.5	7.5	123	380
EC606-4	4	3.4	M10	8.3	240	54.5	22.0	9.5	141	600
EC606-5	5	4.5	M12	8.7	240	57.4	22.5	9.5	176	1100

Order No.	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	α
EC606-3	88.4	35	19	8	5.5	6	6	3	90°
EC606-4	90.0	50	32	9	10.0	8	8	4	90°
EC606-5	125.0	51	32	10	12.2	10	10	5	103°



## EC600



### Material

Body: steel, zinc plated.  
Rivets: stainless steel.

Bushes: case hardened and greased. (with rubber pad).  
Handle: plastic, red, oil resistant.  
Supplied complete with clamping screw

Order No.	Size	Holding force kN	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	l <sub>1</sub>	l <sub>2</sub>	Weight g
EC600-1	1	0.5	M 5	4.4	77	19	8.0	2.0	50.4	26.0	50
EC600-2	2	1.5	M 6	5.1	111	23	11.0	3.0	69.9	27.0	190
EC600-3	3	2.5	M 8	7.1	175	32	17.5	3.2	90.0	35.0	380
EC600-4	4	3.4	M10	8.3	218	42	22.0	4.0	143.0	50.0	810
EC600-5	5	3.6	M12	8.7	224	51	22.5	3.0	176.0	50.8	1100

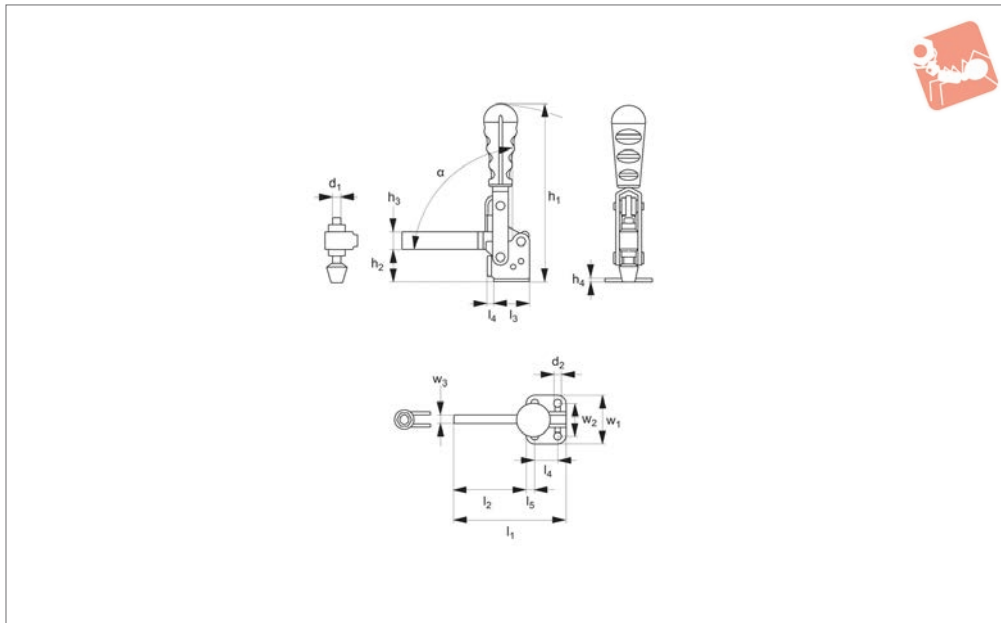
Order No.	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	α
EC600-1	24.4	16.4	16.0	5.0	3.5	-	33.4	23.4	5.0	67,4°
EC600-2	42.9	21.5	12.7	7.0	15.0	-	37.9	26.9	6.0	93,0°
EC600-3	55.0	28.0	19.0	8.0	19.0	5.5	47.0	32.0	8.9	90,4°
EC600-4	92.8	60.5	32.0	9.0	23.0	10.0	64.0	45.0	10.6	90,0°
EC600-5	125.0	82.5	32.0	9.5	31.0	12.2	64.0	45.0	13.4	101°



# Toggle Clamps - Vertical Acting

economy - horizontal base - weldable arm

## Economy Toggle Clamps



**EC604**

ECONOMY TOGGLE CLAMPS

**Material**

Body: steel, zinc plated.  
Rivets: stainless steel.  
Bushes: case hardened and greased.

Handle: plastic, red, oil resistant.  
Supplied complete with clamping screw and rubber nose.

**Technical Notes**

symbola/symbol\* alternative angle through use of removable stop.

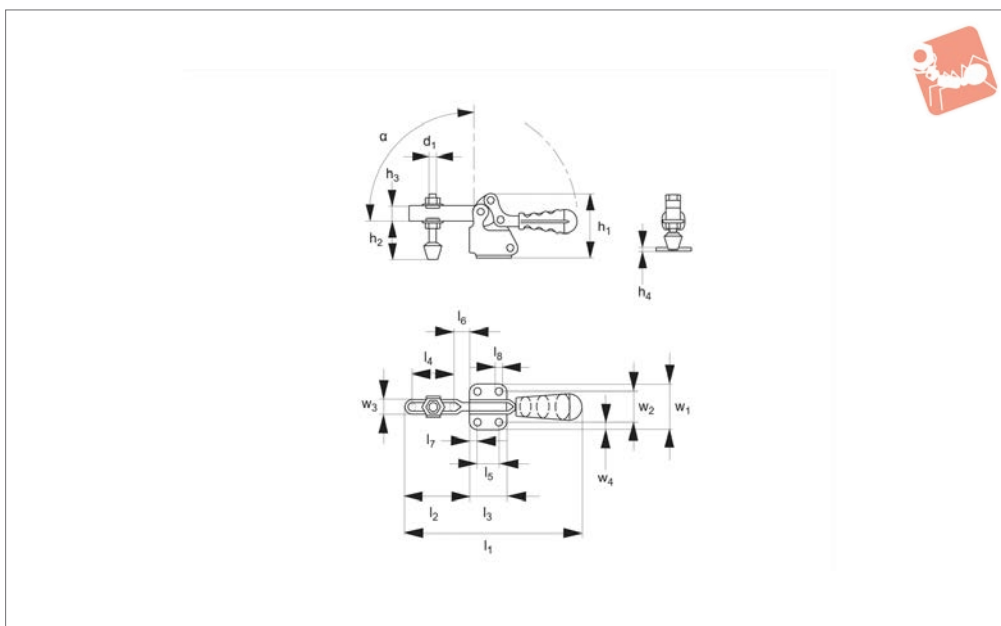
Order No.	Size	Holding force kN	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	Weight g
EC604-3	3	2.0	M 8	7.1	175	32.0	17.5	3	380
EC604-4	4	3.4	M10	8.3	218	42.0	22.0	4	600
EC604-5	5	4.5	M12	8.7	224	50.8	22.5	8	1100

Order No.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	α/α*
EC604-3	123	88.4	35	19	8	47.0	32.0	6	90°
EC604-4	141	91.0	50	32	9	64.0	45.0	8	90°
EC604-5	176	125.0	51	32	10	64.2	45.2	10	103°/112°



## EC630



### Material

Body: steel, zinc plated.

Bushes: case hardened and greased.

Handle: plastic, red, oil resistant.

Supplied complete with clamping screw (with rubber pad).

Order No.	Size	Holding force kN	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	l <sub>1</sub>	Weight g
EC630-1	1	0.7	M 5	5.2	38.2	19	9.5	2.0	105	70
EC630-2	2	0.9	M 6	5.5	52.6	25	14.0	2.5	162	230
EC630-3	3	2.2	M 8	6.6	68.5	34	17.5	3.0	189	430
EC630-4	4	3.4	M10	8.7	90.0	45	23.8	4.0	269	910

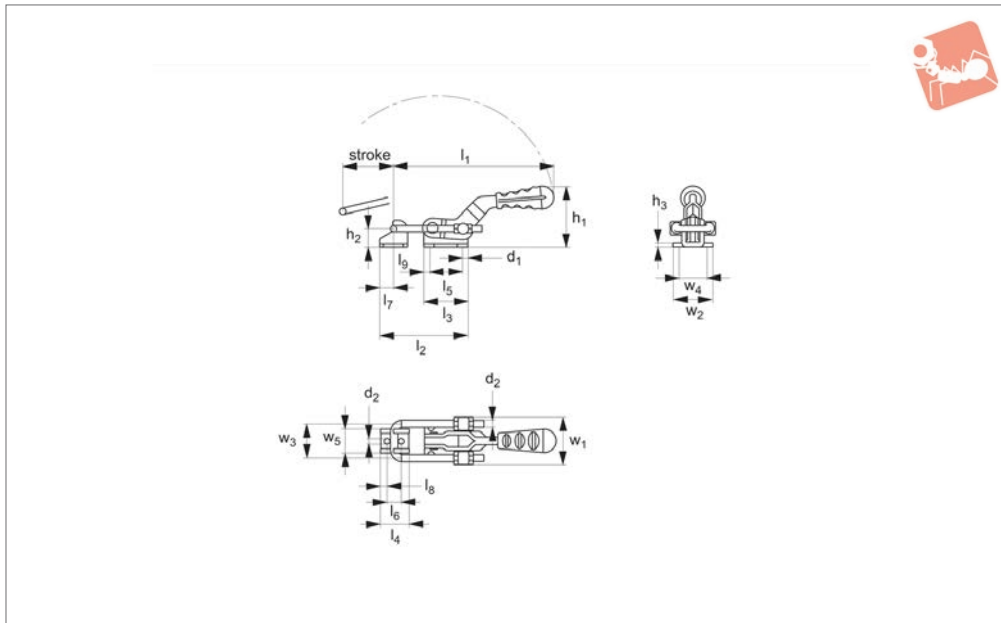
Order No.	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	α
EC630-1	36.8	25	20.0	13.5	12.0	5.7	27	19	5.8	-	94°
EC630-2	61.4	38	36.5	26.0	19.0	6.0	40	28	6.2	3.0	96°
EC630-3	66.3	42	36.8	26.0	22.0	8.0	47	31	9.0	2.5	96°
EC630-4	103.0	59	64.8	41.2	28.5	9.0	59	43	11.4	1.8	95°



# Economy Toggle Clamps - Latch Type

horizontal acting

# Economy Toggle Clamps



## EC648

ECONOMY TOGGLE CLAMPS

### Material

Body: steel, zinc plated.

Bushes: case-hardened and greased.

Handle: plastic, red, oil resistant.

Complete with counter strike.

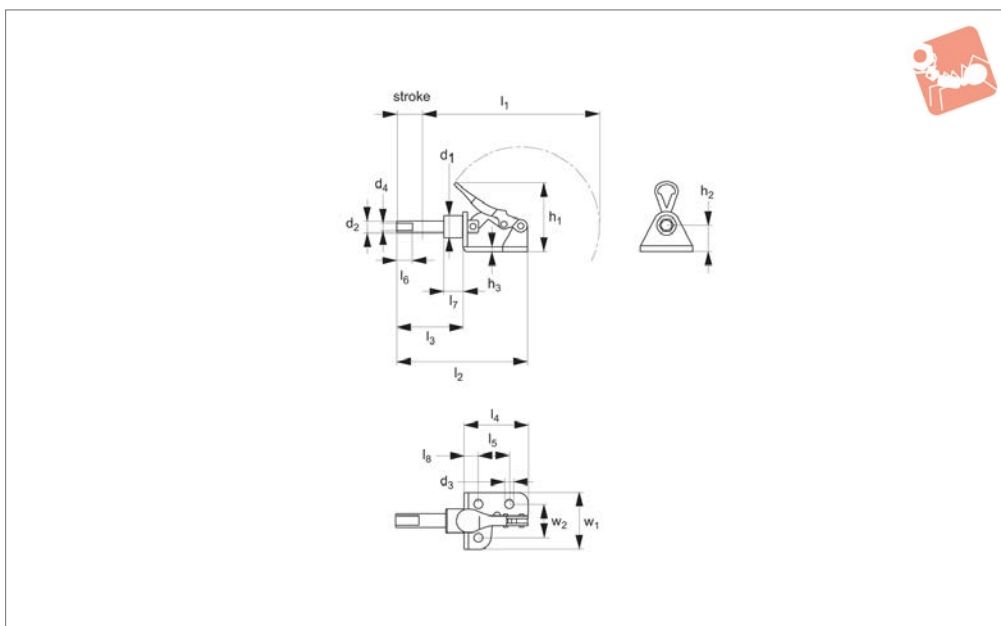
Order No.	Size	Holding force kN	Stroke $s_1$	$d_1$	$d_2$	$d_3$	$h_1$	$h_2$	$h_3$	$l_1$	$l_2$ max.	Weight g
EC648-2	2	1.6	27.5	4.2	4.2	M 4	32	12	2	96	59	70
EC648-3	3	3.2	35.5	6.7	6.7	M 5	57	14	3	151	80	250
EC648-4	4	7.0	66.5	8.5	8.5	M 8	85	24	4	203	118	750

Order No.	$l_3$	$l_4$	$l_5$	$l_6$	$l_7$	$l_8$	$l_9$	$w_1$	$w_2$	$w_3$	$w_4$	$w_5$
EC648-2	26.0	20.0	16.0	10.0	9.0	6.0	5.0	28.0	28.0	19.0	19	13
EC648-3	39.5	25.3	19.0	14.3	12.3	5.5	6.5	42.0	44.5	25.5	32	20
EC648-4	60.5	38.0	41.3	19.0	19.0	9.5	9.6	60.5	54.0	44.5	38	30



## EC641



### Material

Body: steel, zinc plated.  
Bushes: stainless steel, hardened and

greased. (with rubber pad).  
Handle: plastic, red, oil resistant.  
Supplied complete with clamping screw

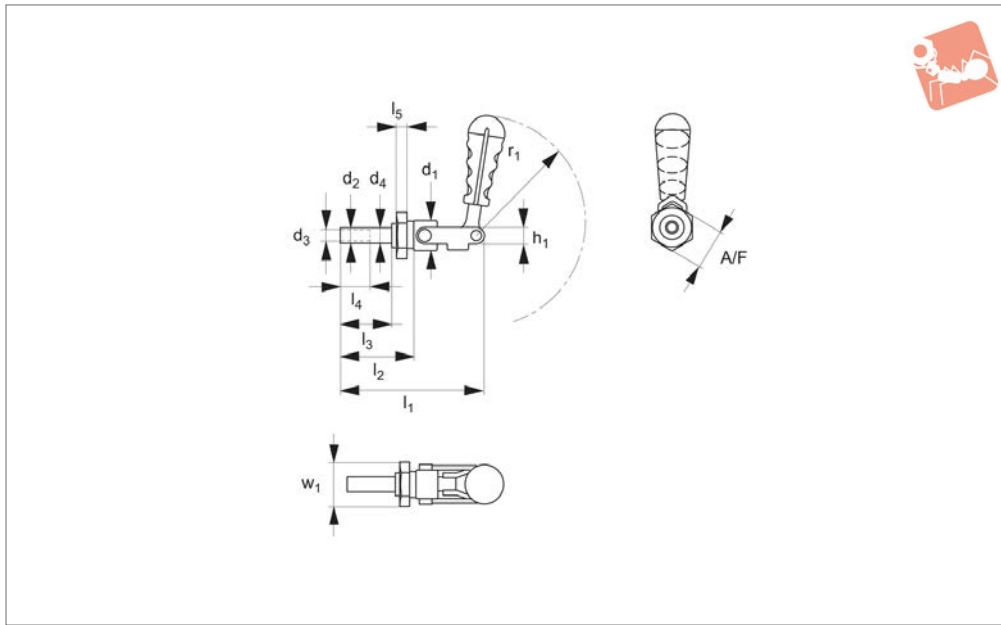
Order No.	Size	Holding force kN	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	h <sub>1</sub>	l <sub>1</sub>	Weight g			
EC641-0	0	0.5	11	6.5	4.4	4	35	88.5	50			
Order No.	h <sub>2</sub>	l <sub>2</sub>	h <sub>3</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	w <sub>1</sub>	w <sub>2</sub>	Stroke s <sub>1</sub>
EC641-0	12.7	68	12.7	35	33	16	12	10	7	27	16	16





# Economy Toggle Clamps - Push Pull short

# Economy Toggle Clamps



## EC644

ECONOMY TOGGLE CLAMPS

### Material

Body: steel, zinc plated.  
Bushes: stainless steel, hardened and greased.

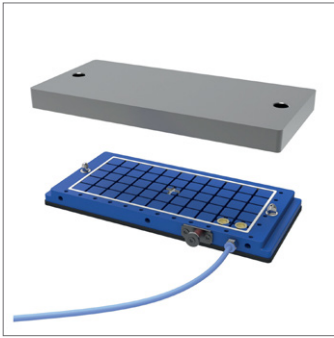
Handle: plastic, red, oil resistant.

Supplied complete with clamping screw (with rubber pad).

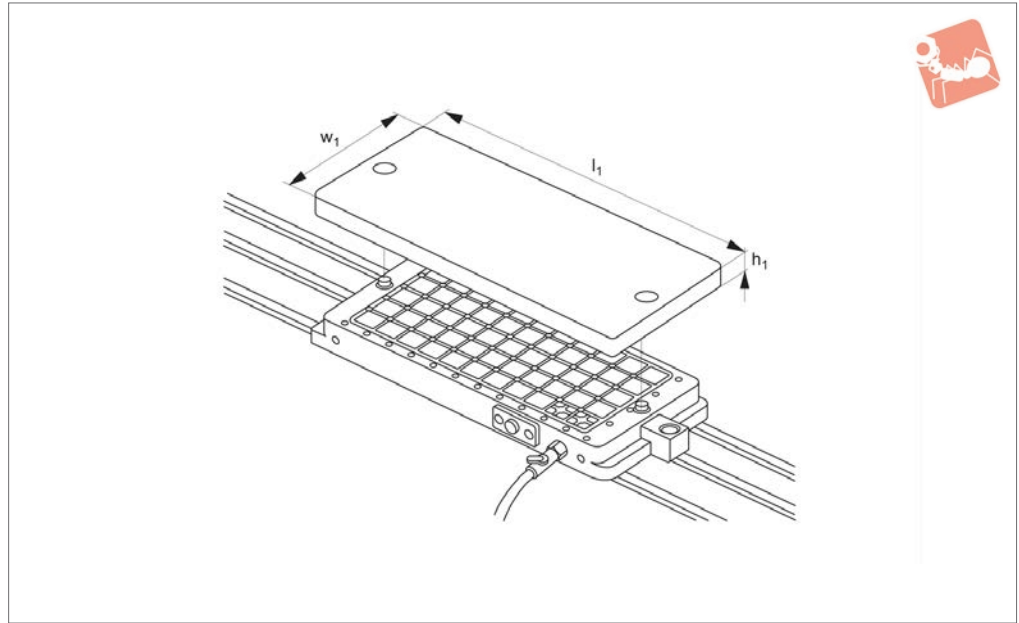
### Important Notes

Supplied with corresponding mounting plate - see drawing for dimensions.

Order No.	Size	Holding force kN	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	h <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	r <sub>1</sub>	w <sub>1</sub>	A/F	Stroke	Weight g
<b>EC644-2</b>	2	0.9	19	9.4	M 6	M16x1,5	9.5	64	33.5	20.7	15.8	6.4	66.3	26.0	23	19.7	110
<b>EC644-3</b>	3	1.3	19	11.0	M 8	M20x1,5	11.0	104	56.0	39.7	26.0	6.4	90.5	32.6	30	39	280



## 19710



### Technical Notes

Use as a quick fixture palletising system - blank pallets available, see part no. 19710.W0325.  
Mount to grid plate or T-slot table with clamps provided.  
Operates from 70-100 psi shop air, no need

for vacuum pumps and coolant traps.  
Will accept the standard 19730.W0150 vacuum pallet, increasing your vacuum platform to over 360mm x 315mm.  
Remove 12mm pins for grinding/machining thin material, use set screws to locate and aid in holding force.

### Tips

Clamp in a vice to reduce setup time.

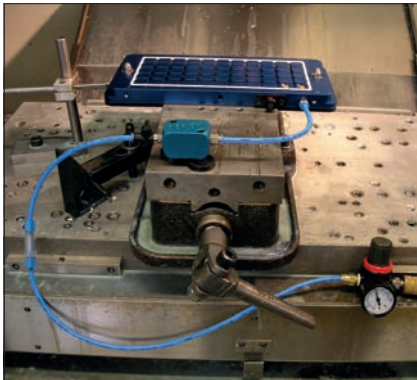
### Important Notes

Set includes everything necessary to get your 19710 running within minutes of opening the box - excludes regulator.

Order No.	Description	$l_1$	$h_1$	$w_1$
19710.W0110	Gasket - Black per foot	-	-	-
19710.W0114	Gasket - White per foot	-	-	-
19710.W0300	Complete System - Base, 2 Pallets and Clamps	-	-	-
19710.W0325	Blank Pallet	318	25	150
19710.W0375	Base and Clamps	315	25	140

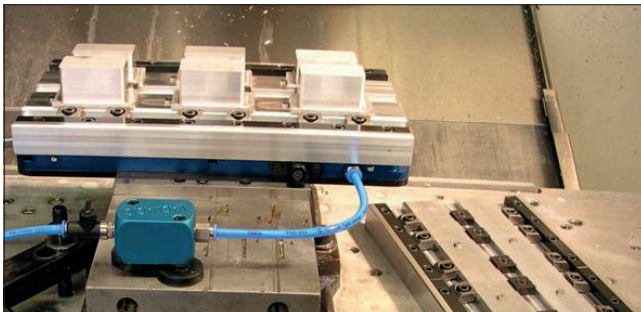


### Applications

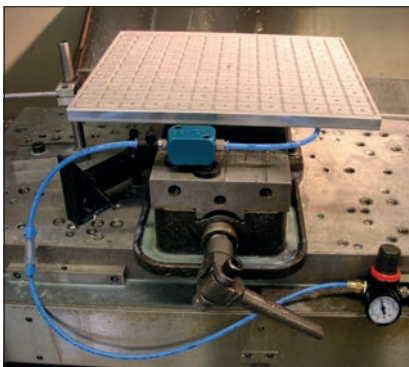
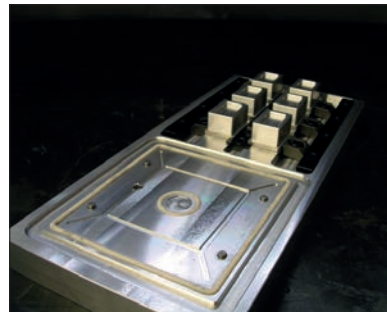


More than just a vacuum system - a fully flexible clamping and fixturing solution.

Mount the base unit to the grid plate, T-slot table or in a vice.



Make your own vacuum fixtures for fully flexible fixturing.



Will accept the standard 19730.W0150 pallet, increasing your vacuum platform to over 360 x 315mm.



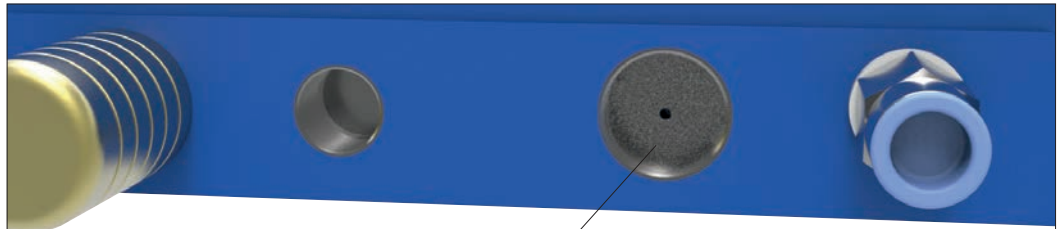
Sliding stop 12042 used to assist in low profile positioning on our vacuum system.



## Maintenance

Very little maintenance is necessary to keep your system up and running. Using general housekeeping practices will ensure your system operates properly for years to come.

- Brass filters may require periodic cleaning to prevent clogging and airflow obstruction. Remove the filters, soak in a cleaning solvent, and apply compressed air from the rear of the filter. This should be done in a safe manner to avoid personal injury to yourself or others. Then, simply dry and re-install the filters.
- The Venturi generator may become obstructed with foreign objects or blocked up by coolant if the system has not been used for a while. Simply remove the supply valve and check/remove any small objects that may be interfering with the air supply. While the supply valve is removed, use a 0,9mm pin to clear any debris build-up that may have accumulated in the Venturi generator (see image below).
- The low vacuum indicator may also require periodic cleaning. Remove this and clean with light oil before re-installing.
- A visual inspection of all O-rings and white gasket material should be done on a regular basis: O-rings monthly, white gasket material weekly.



Supply valve removed exposing Venturi generator

## Troubleshooting

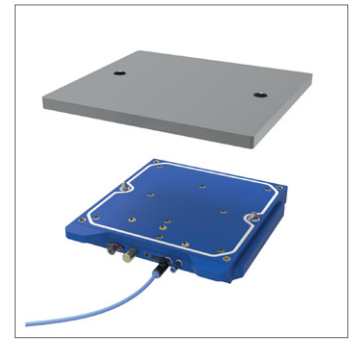
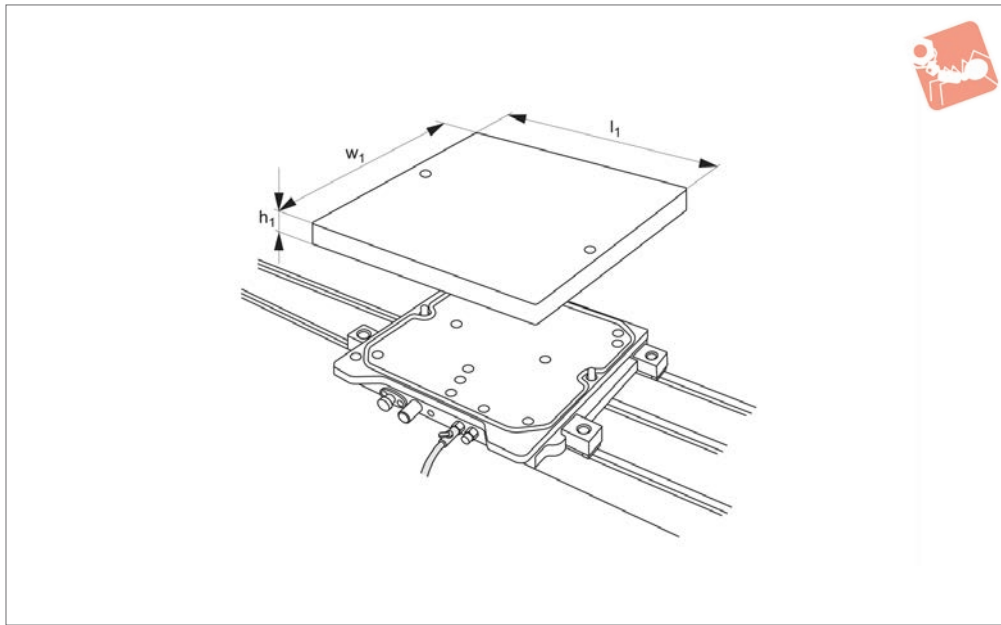
This is a very simple operating system. Any problems can be easily rectified with the information contained in this manual or by contacting us directly.

- Check air pressure.
- Ensure gasket material is protruding above the fixture plate and continuous with no gaps.
- Clean brass filters.
- Check front of Venturi generator for obstructions.
- Ensure locating pins are fully seated (diamond and solid).
- Through hole for vacuum pallets should be a minimum of 0.25 inch diameter.
- Check that all top plate mounting bolts are tight and below the surface of the plate.
- Check air lines for leaks.
- Check workpiece for flatness.
- Check exhaust air for restricted flow.



# Vacmagic VM300 Vacuum System for vacuum and quick fixture change

## Vacuum Clamping Systems



**19730**

VACUUM CLAMPING SYSTEMS

### Technical Notes

Can be used as a traditional vacuum system and for a rapid fixture change system. For vacuum application use the standard vacuum grid pallet or use with the blank pallets machined to suit custom parts. Alternatively, use as a quick fixture change system. Pallets can be swapped in 30 seconds or

less. Load pallets while machining to maximise productivity. Easy to install and set up. Virtually maintenance free - reliable and easy to use. Flexible pallet design. No pumps - use standard shop air. Air supply requirements 70-100 psi. Low pressure safety switch, vacuum indicator, hardened locator pins all included.

### Tips

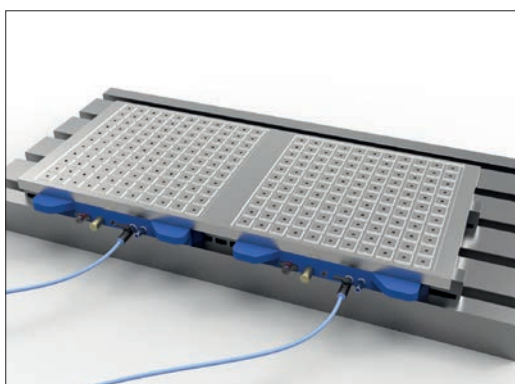
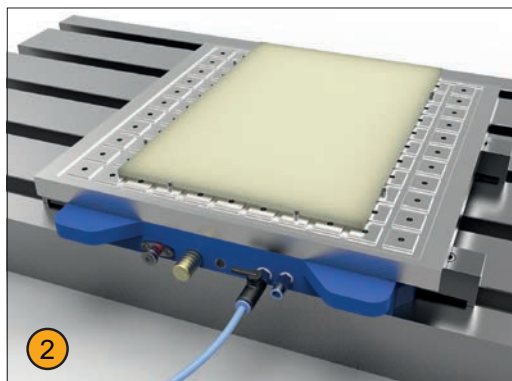
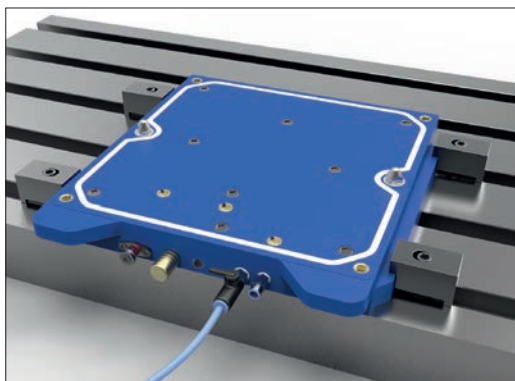
Vacuum pallet 19730.W0150 is machined with cross slots to receive vacuum sealing gasket and machined with M 6 holes for fixing of stops such as sliding stop 12042.W0200. Spare parts readily available, please see replacement parts page.

Order No.	Description	$l_1$	$h_1$	$w_1$	Weight kg
<b>19730.W0101</b>	Complete System Includes: Base Unit, 2 Blank Pallets, 1 Vacuum Pallet	-	-	-	25.5
<b>19730.W0130</b>	Blank Pallet	360	19	315	
<b>19730.W0131</b>	Blank Pallet (1" thick)	379	25	379	5.0
<b>19730.W0150</b>	Vacuum Pallet with M 6 Threaded Holes	360	16	315	14.5
<b>19730.W0160</b>	Large Vacuum Pallet	859	16	368	12.0
<b>19730.W0175</b>	Base (Receiver) - Includes Safety Switch, Required Hoses	323	35	330	25.8

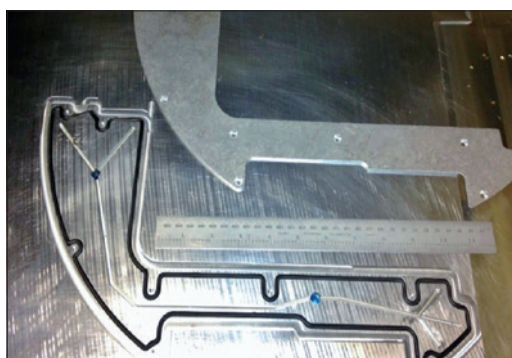
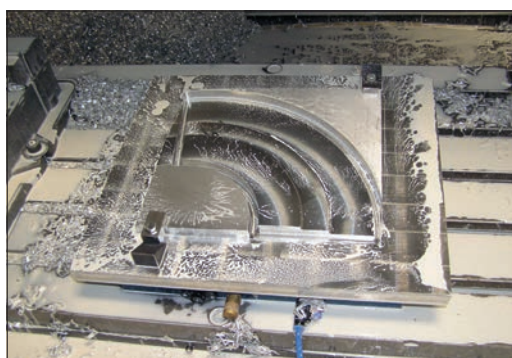
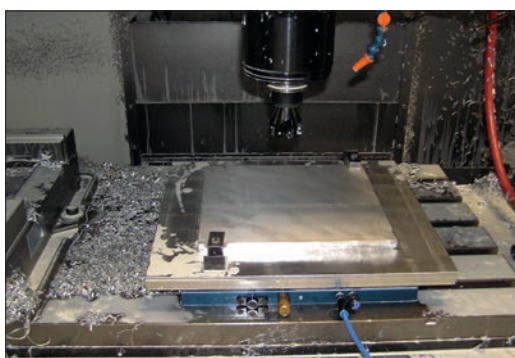


## Applications

- Quick change
- Maximise productivity
- Easy installation
- Precise repeatability
- Reliable and easy to use
- No pump required



- 1 Low profile base unit quickly mounts to machine table. Operates with standard 70 psi workshop air.
- 2 Workpiece placed over rubber gasket and pushed down to create a vacuum. Now ready for machining.
- 3 Two systems placed next to each other for holding larger pieces.





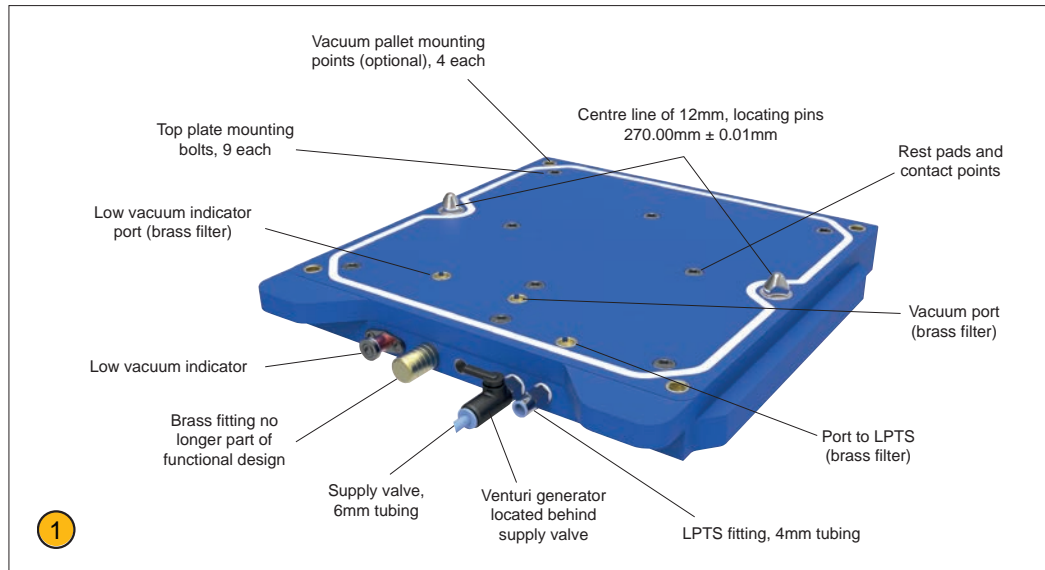
# VacMagic Set VM300 - 19730

set contents

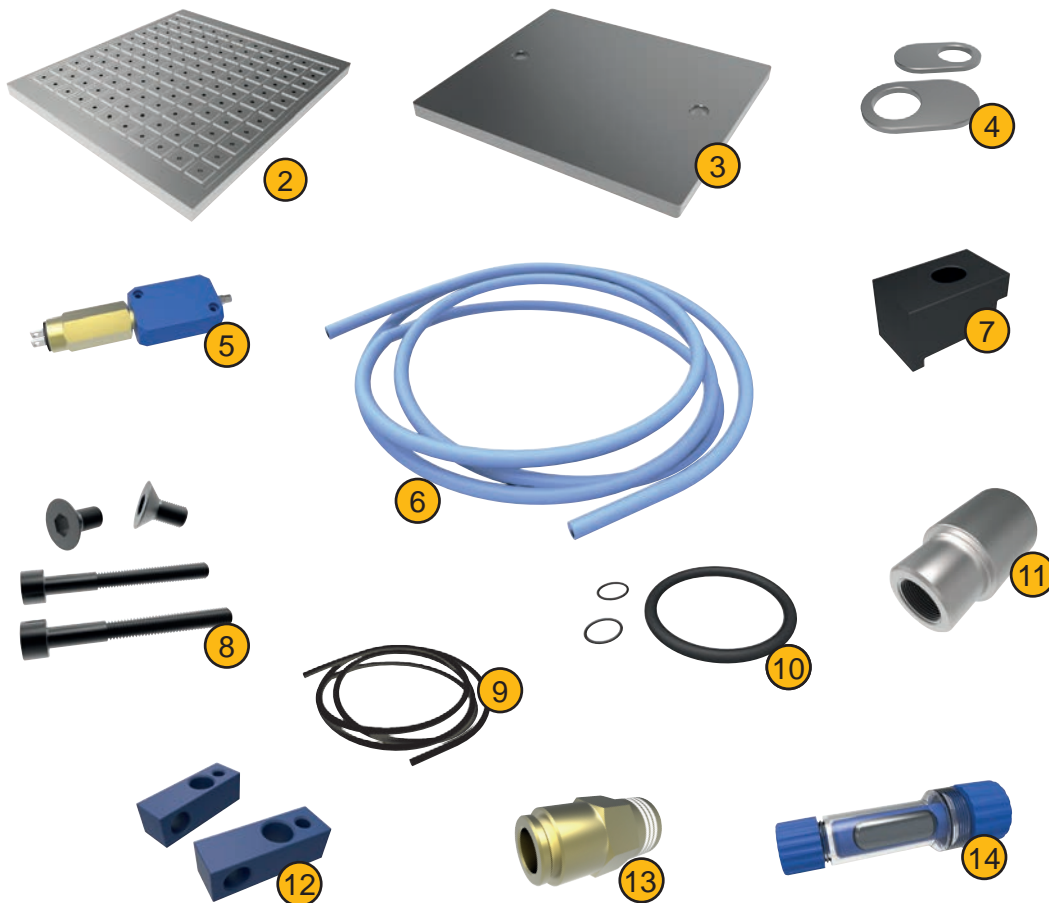


## Clamping & Height Setting

### Contents



- 1** Base unit (19730.W0175)
- 2** Vacuum pallet (19730.W0150)
- 3** Blank pallet x2 (19730.W0130)
- 4** Special mounting washers x4 (MB45055)
- 5** Low pressure trip switch (LPTS) (MB45040)
- 6** 4mm & 6mm supply line (MB45080 and MB45085)
- 7** Base unit mounting clamps x4 (MB22851)
- 8** LPTS mounting screws x2, FHCS for alignment pins x2
- 9** 10 ft. gasket material (black) (MB45110)
- 10** Extra O-rings x3 (MB45045)
- 11** Base alignment pins x2 (MB45075)
- 12** 4mm & 6mm tubing mounting brackets x2
- 13** 6mm supply line regulator fitting (MB45050)
- 14** Inline filter (MB45015)



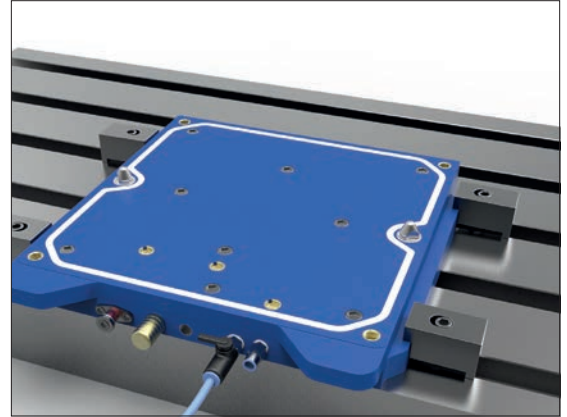
ov-vacmagic-vm300-w19730-A-T-contents-of-kit-rmh - Updated - 25-10-2022



### Quick and Easy to Use with Every Load

#### Option 1 - Preferred Method for Mounting the Base Unit

- 1) Identify the locating pins and secure with 4 mounting clamps.
- 2) Baseplate is now ready for connection of air supply.



#### Option 2 - Mounting Using Internal Slots

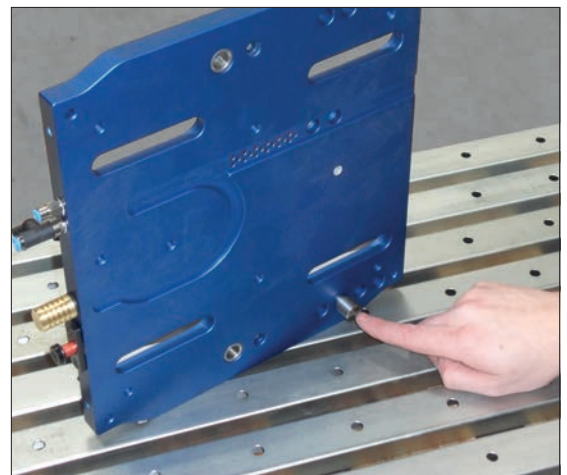
- 1) Remove 6mm bolts (2 each), securing locating pins from the bottom side of the unit, and loosen top plate mounting bolts. Remove locating pins, mounting bolts and top plate.
- 2) Identify the base plate and secure using special mounting washers.
- 3) Prior to installing top plate, ensure there are no foreign objects on either of the mating surfaces and all three O-rings are properly seated. Install top plate and loosely install mounting screws.
- 4) Insert locating pins and adjust diamond pin 90° to solid pin. Please be aware there is no practical method of installing the 6mm bolts used to secure the locating pins once the base is mounted. (A sub-plate with clearance holes may be used if necessary.)
- 5) Securely tighten all top plate mounting bolts.



**Important Note: One loose top plate bolt may interfere with pallets precisely locating on rest pads, preventing 100% vacuum.**

**Option 2 may be necessary if mounting more than one unit side-by-side.**

**Base alignment pins may be installed to locate off T-slots or precise bores in sub-plate. Remove top plate and secure with provided mounting screws.**



- 6) Base plate is now ready for connection of the air supply.

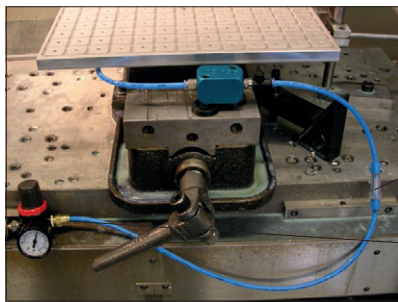




# VacMagic VM100 - 19710

## connection of air supply

# Clamping & Height Setting



The in-line filter is provided to help prevent blockages in the air supply.

In-line filter

Regulator fitting

- 1) Install regulator fitting to regulator. Connect 6mm blue tubing to front of base unit (supply valve) and regulator fitting. Mounting brackets are included to aid in routing lines.
- 2) Secure tubing close to the base unit to prevent undue stress on supply valve.
- 3) Place blank pallet on unit, turn on supply valve. Vacuum indicator retracts. (Refer to troubleshooting section if indicator is not fully recessed).

System is ready for use.

### Manual Machines

Note: Air requirements should be between 70-100 psi with a minimum flow of 2 cfm. Pressure below 70 or above 100 psi will reduce maximum vacuum force.

Perform steps 1-3 above for manual machines

- 4) Remove power from the machine.
- 5) Mount the low pressure trip switch (LPTS) at convenient location, usually to the rear of the machine.
- 6) Connect 4mm blue tubing to the front base unit and fitting on the LPTS.
- 7) Connect the LPTS in series with the selected cut-off circuit.
- 8) Restore power and check all the air connections for leaks.
- 9) Adjust the trip screw located on top of the LPTS between the two prongs; synchronise with the low vacuum indicator on the front of the base unit.



#### Low Pressure Trip Switch (LPTS) Important Note:

**Method of synchronising the LPTS with the low vacuum indicator: With LPTS connected to the door switch interlock, slowly reduce the airflow with the supply valve until the low vacuum indicator starts to protrude. At this point, adjust the trip screw until the machine shuts down. Increase the airflow and the machine will resume function. This should be done several times to ensure the settings are optimised.**

System is ready for use.

### Review Checklist Prior to Use

- Base unit is identified and securely mounted to the machine table.
- Top plate bolts are tight.
- Check all air lines for leaks.
- Air supply is 70-100 psi.
- Low vacuum indicator is operating properly.
- LPTS is operating properly (if installed).

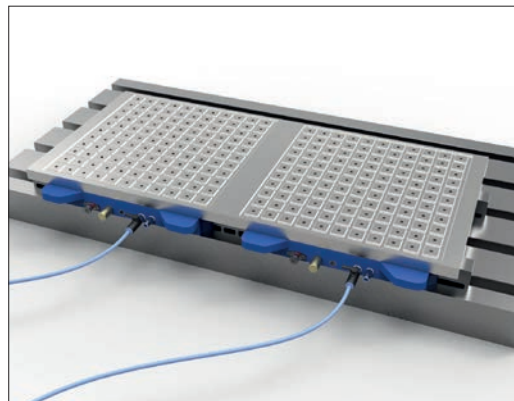
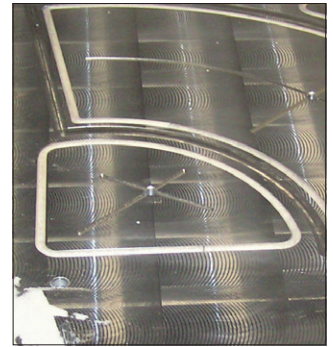


## Custom Vacuum Pallets

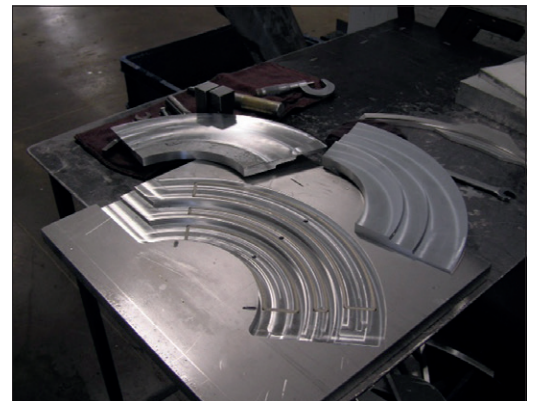
When using the blank pallet to design your custom pallets, we recommend a quick look at some examples sent in by customers. Feel free to submit photos of your application - we love to see what our customers can do with our products.

Machining dimension for the white gasket material: 0.142" wide x 0.138" deep, bottom of slot to be square.

One through hole is required for each vacuum chamber, minimum diameter 0,25 inch. We suggest an aggressive countersink on the bottom side of the pallet and the top should be in a slot, channel or pocket. Avoid through hole being directly over rest pads on base unit (see image on right).



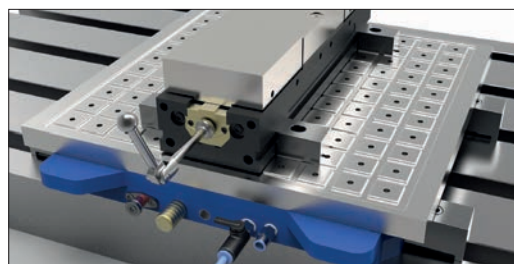
Twin vacuum setup



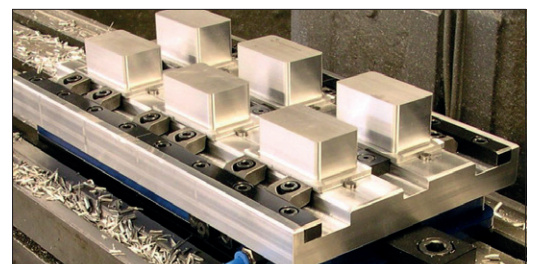
Create custom vacuum pallets for specific applications

## Additional Information

- The Venturi generator produces a vacuum of approximately 12-13 psi.
- Increasing friction between your workpiece and the vacuum pallet will provide additional resistance against lateral movement. Using an adhesive-backed "sandpaper" product on the vacuum plate or pins with sharp points protruding slightly above the surface will aid in difficult applications.
- When using more than one system for large applications, we recommend that you do not connect them to each other. Rather, keep each separate system running independently.
- Apply a small amount of silicone to secure the white gasket material in the slot. A very small gap is all that is required, so as not to interfere with compression characteristics.
- When using the VacMagic as a pallet changer or when a vice is mounted to a blank pallet, aggressive machining operations can be performed. In this configuration the vacuum being produced is approximately 1,500 lbs. What makes the unit so strong is the two 12 mm locating pins that would have to bend or snap to break the vacuum seal.
- The standard vacuum pallet has 140 holes (4mm) that can be used for locating pins or small edge clamps.



Mounting a vice on the blank pallet will eliminate the time it previously took to clock it in.



Fixture plate.



# VacMagic VM300 - 19730

## replacement parts



## Clamping & Height Setting

### Replacement Parts for 19730 VacMagic VM300

For advice and ordering of these parts please contact our technical department.

Description	Part No.
Brass filter	MB45010
In-line filter	MB45015
Mounting bracket with 4mm & 6mm holes	MB45020
Locating pins (1 tapered & 1 diamond)	MB45025
Low vacuum indicator with spring	MB45030
Spring for low vacuum indicator	MB45031
Low pressure trip switch (LPTS)	MB45035
Low pressure trip switch assembly (LPTS)	MB45040
"VacMagic O-rings" (3/pk, 2 small & 1 large)	MB45045
Supply valve	MB45050
Special mounting washer	MB45055
LPTS fitting (base unit)	MB45060
LPTS fitting (block)	MB45065
Bushings for custom pallets (2/pk)	MB45070
Base alignment pins (2/pk)	MB45075
4mm blue tubing (15 ft/pack)	MB45080
6mm blue tubing (12 ft/pack)	MB45085
6mm tubing QD fitting for regulator	MB45090
Assorted hardware for location pins, alignment pins & LPTS block	MB45095
VacMagic system including 1 vacuum pallet, 2 blank pallets & 4 mounting clamps	19730.W0101
Vacuum gasket 0,170" dia. (5 ft/pack) - black (for long machine cycles & aggressive coolants)	MB45110
Vacuum gasket 0,170" dia. custom lengths (by the ft) - black (for long machine cycles & aggressive coolants)	MB45111
Vacuum gasket 0,125" dia. (5 ft/pack) - black (for long machine cycles & aggressive coolants)	MB45118
Vacuum gasket 0,170" dia. (by the ft) - white (for small parts, water based coolants or dry running)	MB45114
VacMagic blank pallet	19730.W0130
VacMagic vacuum pallet	19730.W0150
VacMagic base unit including 4 mtg clamps	19730.W0175
Large mounting clamp	MB22815

### Overall Dimensions for Units and Parts

	Dimension	Imperial	Metric
Base Unit	Height	1.375"	35mm
	Width	12.75"	323mm
	Length	13.00"	330mm
Standard Pallet	Height	0.75"	19mm
	Width	14.20"	360mm
	Length	12.4"	315mm
Vacuum Pallet	Height	0.63"	16mm
	Width	14.20"	360mm
	Length	12.40"	315mm



## Introduction to Vac Pallet Systems

It is over 10 years since the VacMagic palletising system was a workholding solution award winner at the MACH exhibition, and its relevance in prototype and early production run manufacturing is still as strong today as its innovation was 10 years ago.

**Vacuum palletisation will reduce your setup times and maximise your production runs!**

## VacMagic Systems - Two Products in One

**VM300** - Simple and easy to use, has the ability to switch from pallet changer to vacuum chuck in seconds to reduce setup time.

**VM100** - Primarily designed for grinding non-ferrous material on a magnetic chuck, like its bigger brother (the VM300) it can be a pallet changer and a vacuum chuck.

## Multi-Power Vac System

**Multi-Power Vac** - Possibly the most multi-functional vacuum workholding system currently available.

## Why Choose a Vacuum System?

Compatible with CNC machines; vacuum clamping is cost-effective, increases productivity and minimises the potential of any clamping damage to the workpiece.

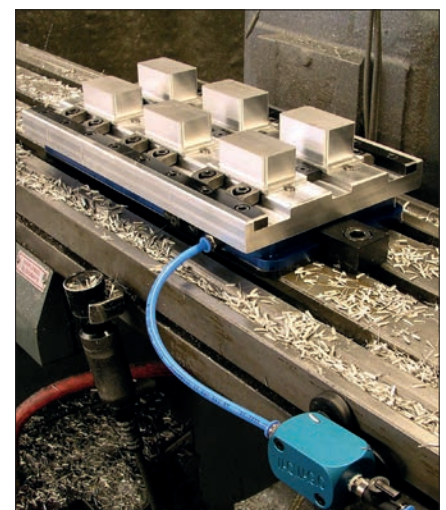
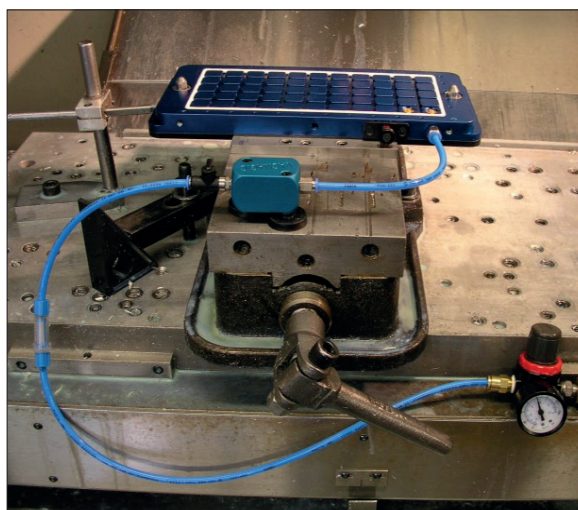
The VacMagic system enables high volume production runs at the same feeds and speeds as traditional pallet systems, with less setup time which reduces spindle downtime.

The low profile base unit of the VacMagic can be used either as a vacuum pallet or a standard pallet set up as a fixture plate for increased productivity. Alternatively, a standard vice can be mounted directly onto the VacMagic base for easy loading and unloading, eliminating the need to index the vice on each use – providing quick change over from prototype to production volumes.

Multi-Power Vac has a 400mm x 350mm grid plate base, tapped with M6 threads and a finely textured surface, which increases holding force through friction. The Multi-Power Vac therefore offers greater flexibility for multiple workholding solutions.

## What Materials Can My Vacuum System Work With?

The vacuum system is ideally suited to anything that is difficult to hold, such as oddly-shaped objects, parts too thin for traditional workholding, or brittle and/or soft materials like graphite. It is an ideal alternative to a magnetic chuck for non-magnetic materials such as wood or plastic.

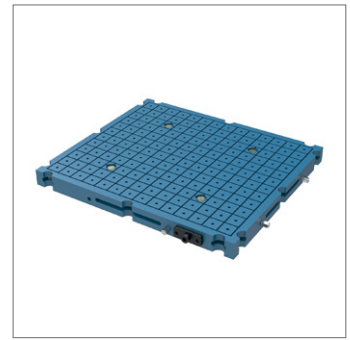
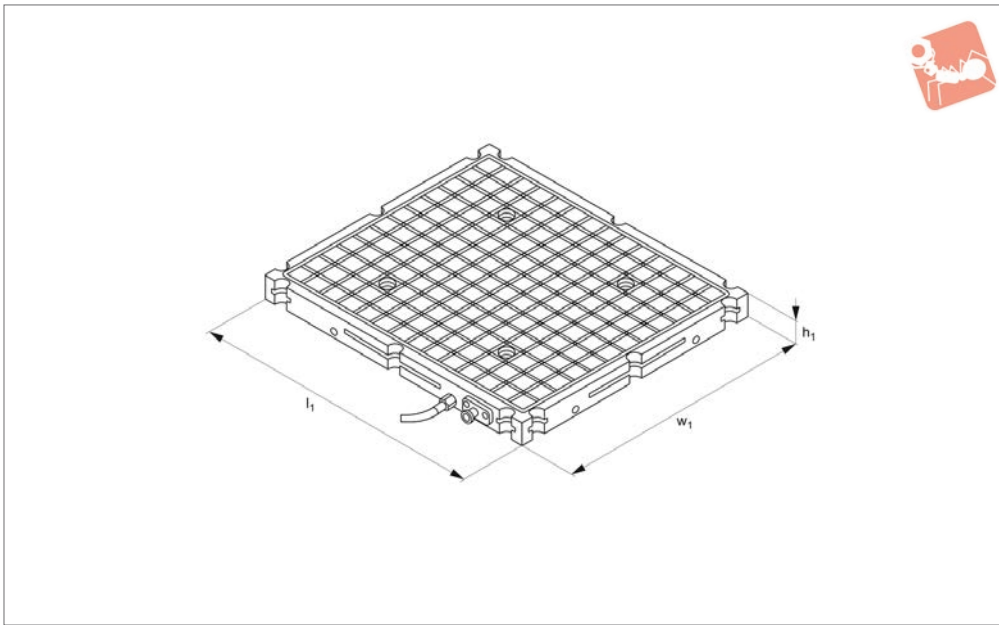


## What Can We Do For You?

For a demonstration of our VacMagic and Multi-Power Vac Palletising and Clamping System.

Please call us on **0333 207 4497** or email [sales@wixroyd.com](mailto:sales@wixroyd.com)

We look forward to helping you maximise your productivity.



## 19740

VACUUM CLAMPING SYSTEMS

### Technical Notes

Easy to install and set up vacuum workholding system.

We recommend use of a coolant trap (optional) when using an external vacuum source.

### Tips

1. Receiver base 19740.W0200 is 406 x 355mm, with grid plate design to allow multiple workholding solutions. Textured surface generates additional holding force through friction.
2. Machined with cross slots to form grids

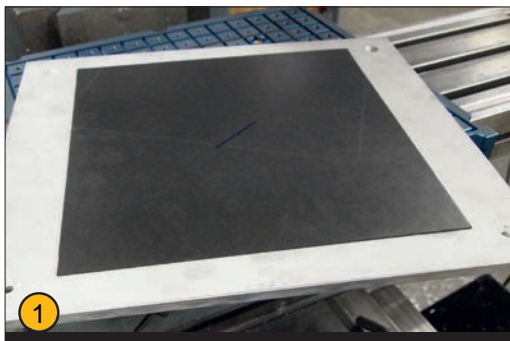
- of 23,6mm square, at 26,9mm spacing. Each grid machined with M6 x 0,8 holes for fixing of stops such as sliding stop 12042. W0200.
3. Cross slots (3,6mm wide x 3,5mm deep) accept sealing gasket around each grid. Flexible receiver base design with 4 vacuum ports allowing holding of 1 to 4 small parts, or 1 large part (vacuum ports can be plugged).
4. Six oversized steel washers machined below bottom surface of receiver means it can be used for grinding operation on a

- magnetic chuck.
5. Twelve recessed pockets on side of receiver base allow multiple bases to be linked together to make a single large vacuum table.
6. 12mm diameter locating pins on underside of receiver base at 270mm, centre line for easy location.
7. Can be powered with shop air (70-100 psi), or vacuum generator.
9. Eight location ports for vacuum source connection.

Order No.	Description	l <sub>1</sub>	h <sub>1</sub>	w <sub>1</sub>	Weight kg
<b>19740.W0000</b>	Complete System Includes: Multi Vac Pallet, Vac Generator, Coolant Trap and Fittings.	406	31.7	355	15.0
<b>19740.W0050</b>	Coolant Trap with Hose and Fittings	-	-	-	1.5
<b>19740.W0100</b>	Vacuum Generator with Regulator, Filter and Push Fit Connections	-	-	-	1.0
<b>19740.W0200</b>	Multi Vac Plate Only. With Mounting Fittings and Tubing.	406	31.7	355	16.5
<b>19740.W0250</b>	Sacrificial Top Plate with Mounting Screws (406 x 355mm).	-	-	-	4.0



## Application 1



- 1 A custom "sacrificial plate" was made to cover the multi-power vacuum clamping plate for machining of thin and delicate parts.
- 2 Sacrificial plate is easily secured to multi-power vacuum clamping plate via four flat head screws.
- 3 To maximise the flexibility of the machining process, four multi-power vacuum clamping plates have been connected together and are run from one standalone vacuum pump. Here three very different components are being held; one long workpiece even stretches across two vacuum units.

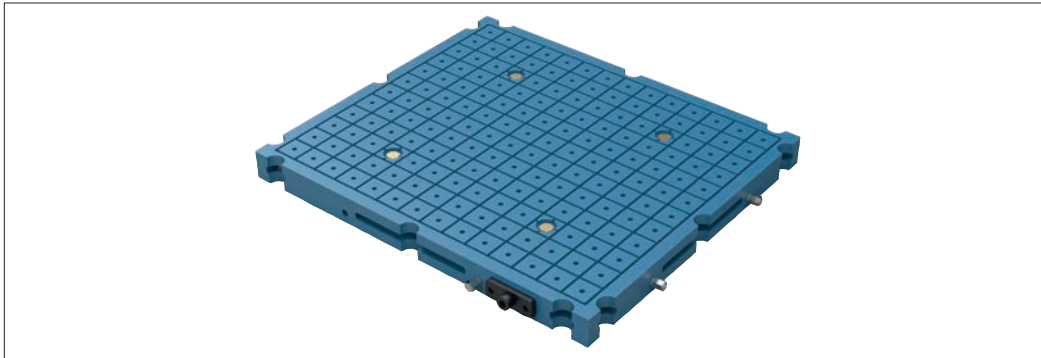
## Application 2



- 4 Multi-power vacuum clamping plates are suitable for large and small components. In this application six units have been connected together to achieve a very large clamping area of approximately 1200 x 700mm.
- 5 To hold delicate components, a custom pallet has been designed; vacuum ports were accessed through the pallet with a grid pattern to suit the component. Grid is sealed using supplied vacuum gasket to create vacuum seal.
- 6 Workpieces are aligned to the vacuum seal and loaded. Air supply is applied and workpieces are clamped ready for machining.

## Why use the Multi-Power Vacuum plate?

- Cost-effective, versatile clamping that can be used for many applications.
- Quick setup and very easy to use.
- Minimises the likelihood of damage to the workpiece caused by other workholding methods.
- Compatible with CNC machines.
- Four suction ports allow multi-part clamping or a large surface area.
- Pre-drilled & threaded M6 holes for extra clamps or stops.



For a unique, universal clamping solution, look no further than Wixroyd's 19740 Multi-Power vacuum clamping plate. Equipped with several innovative features to meet your vacuum workholding needs.

### Installation Overview

- Can be powered with our vacuum generator (19740.W0100) or can be run from machine shop air supply (70 psi).
- Base dimensions are 406mm x 355mm.
- 4 Vacuum ports allow up to four small parts or one large part to be held securely (ports can be plugged).
- M6 tapped threads integrated in the grid plate for versatile workholding solutions and / or more aggressive machining conditions.
- Multiple pallets can operate from a single vacuum generator.

Simply mount the pallet using two mounting clamps. The pallet is now ready for the air supply to be connected.

- Place pallet on magnetic chuck.
- Use locating pins & liners to precisely locate pallet onto sub-plate and secure with mounting clamps.
- For larger workholding solutions, link pallets connecting using the supplied washers.

The in-line filter is provided to remove contaminants from the air supply. Adjust the gas regulator (80-95 psi best). Common air connection fittings are provided.

- Base unit is mounted to machine table.
- Air supply pressure is 70-100 psi.
- Air lines are connected and sealed.
- Low vacuum indicator is operating properly.

Very little maintenance is necessary to keep your system up and running. Using general housekeeping practices will ensure your system operates properly for years to come.

### Troubleshooting

This is a very simple operating system. Any problems can be easily rectified with the information contained in this manual or by contacting us directly.

- Check air pressure.
- Ensure gasket material is protruding above fixture plate and that there are no gaps between the gasket and the plate.
- Clean brass filters.
- Check Venturi generator inlet for obstructions.
- Ensure that the through hole for the vacuum pallet is a minimum of 1/4 inch in diameter and is chamfered.
- Check air lines for leak.
- Check workpiece for flatness.
- Ensure the exhaust air line is not blocked.

### Summary

### Preferred Mounting Method

### Optional Mounting Methods

### Connection of Air Supply

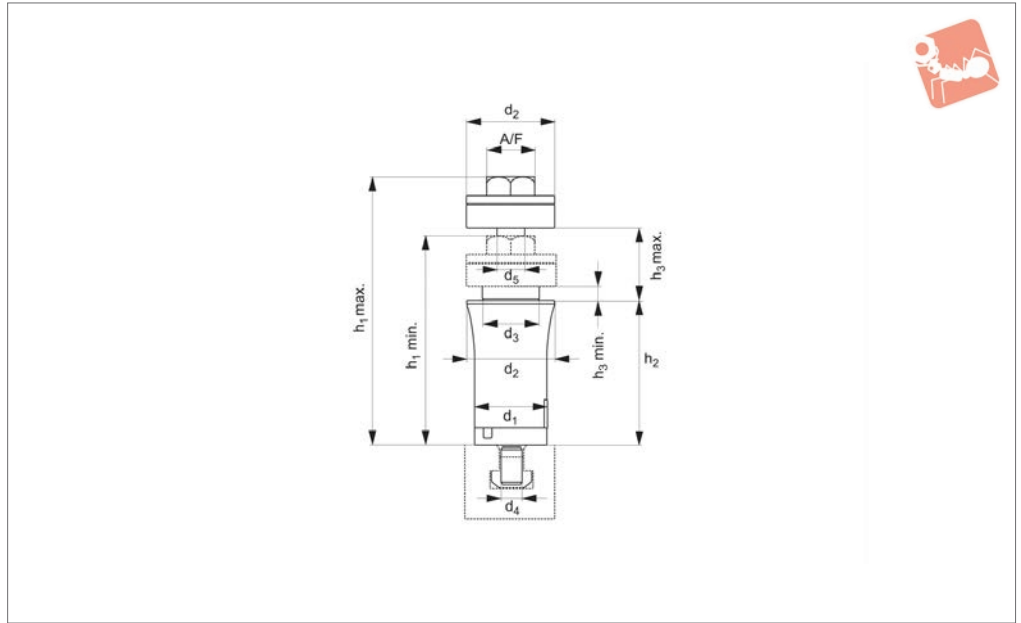
### Review Checklist Prior to Use

### Maintenance

ov-multi-power-vacuum-clamping-plate-W19740-A-T-quick-review-rnh - Updated -25-10-2022



## 12490



### Material

Body: steel, blackened.  
Clamping jaw: brass.

### Technical Notes

Used to raise workpiece 80mm above

machine table to improve clearance of milling/drilling head. Can accommodate component thickness from 8 to 40mm. Clamps quickly actuated via bolt (27 A/F).

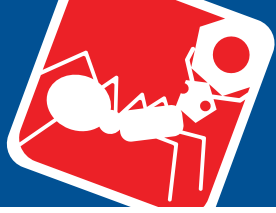
### Tips

Ideally suited to flat work pieces of regular thickness.

Order No.	For T-slot	$h_1$ min.	$h_2$ $\pm 0.1$	$h_3$ min.	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	A/F	Weight g
12490.W0080	14	116	80	8	40	50	32	M12	M16	27	1270



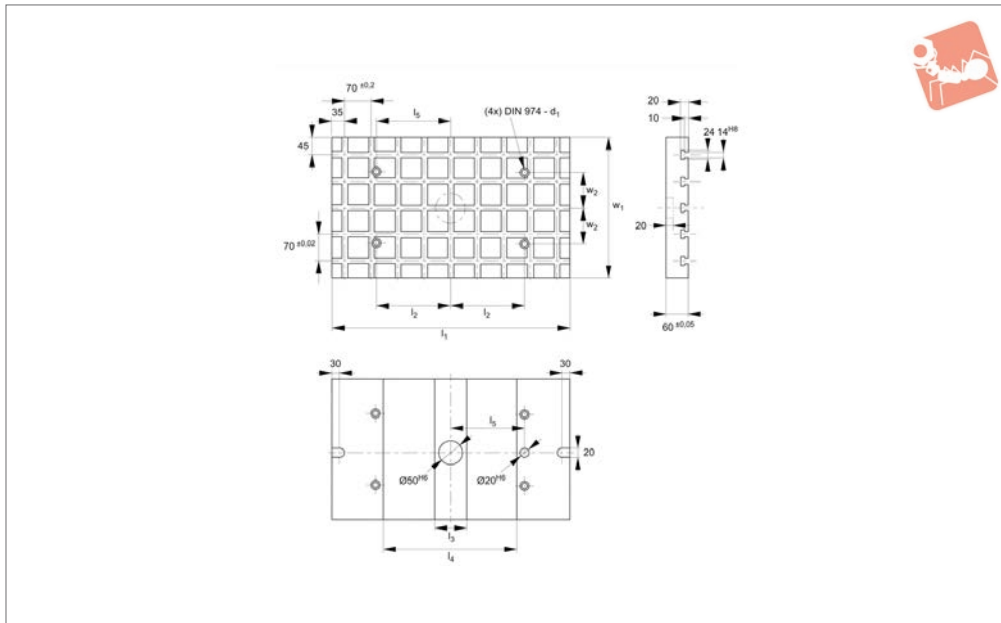




# T-Slot Base Plate

rectangular

## Base Plates & Clamping



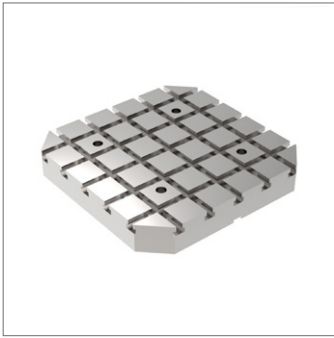
## 19580

BASE PLATES & CLAMPING ANGLES

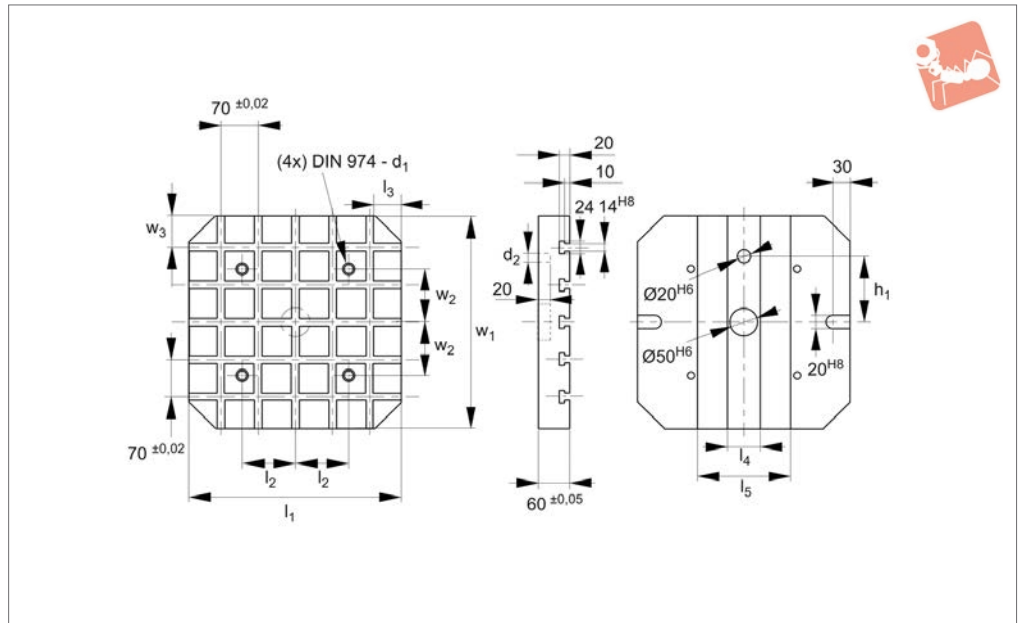
### Material

High tensile tool steel.

Order No.	$l_1 \times w_1$	$w_2$ $\pm 0.2$	$l_2$ $\pm 0.2$	$l_3$	$l_4$	$l_5$ $\pm 0,013$	$d_1$	Number of T-slots	Weight kg
19580.W0300	420x230	100	150	70	240	150	12	3x6	38
19580.W0400	490x300	100	200	70	310	200	12	4x7	57
19580.W0500	630x370	100	200	70	350	200	12	5x9	92



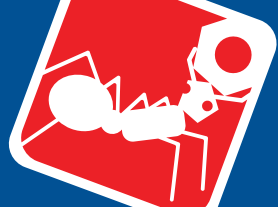
## 19582



### Material

High tensile tool steel.

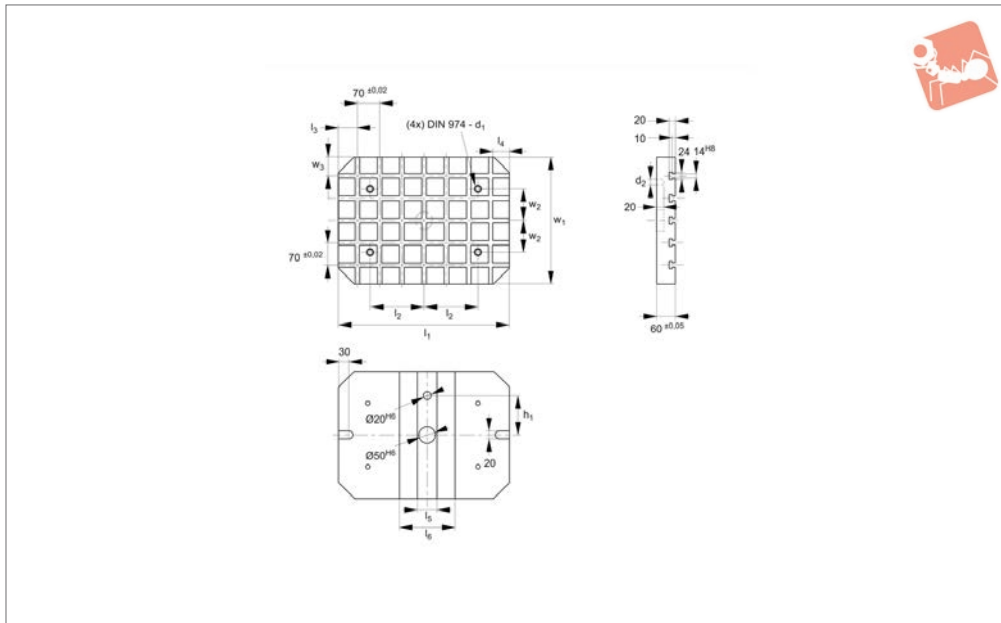
Order No.	$w_1 \times l_1$	$w_2$ $\pm 0.2$	$w_3$	$l_2$ $\pm 0.2$	$l_3$	$l_4$	$l_5$	$h_1$ $\pm 0.013$	$d_1$	$d_2$ tol. h6	Number of T-slots	Weight kg
19582.W0700	400x400	100	60	100	50	65	175	150	12	20	5x5	61
19582.W0800	500x500	200	40	200	60	70	310	200	12	20	7x7	95
19582.W0900	630x630	200	35	200	70	70	340	200	16	25	9x9	152



# T- Slot Base Plate

rectangular

## Base Plates & Clamping



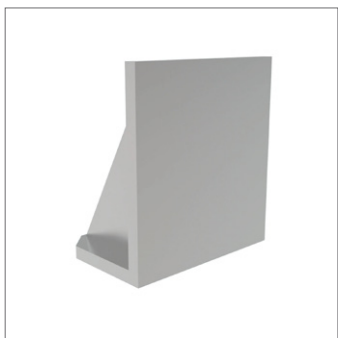
19584

BASE PLATES & CLAMPING ANGLES

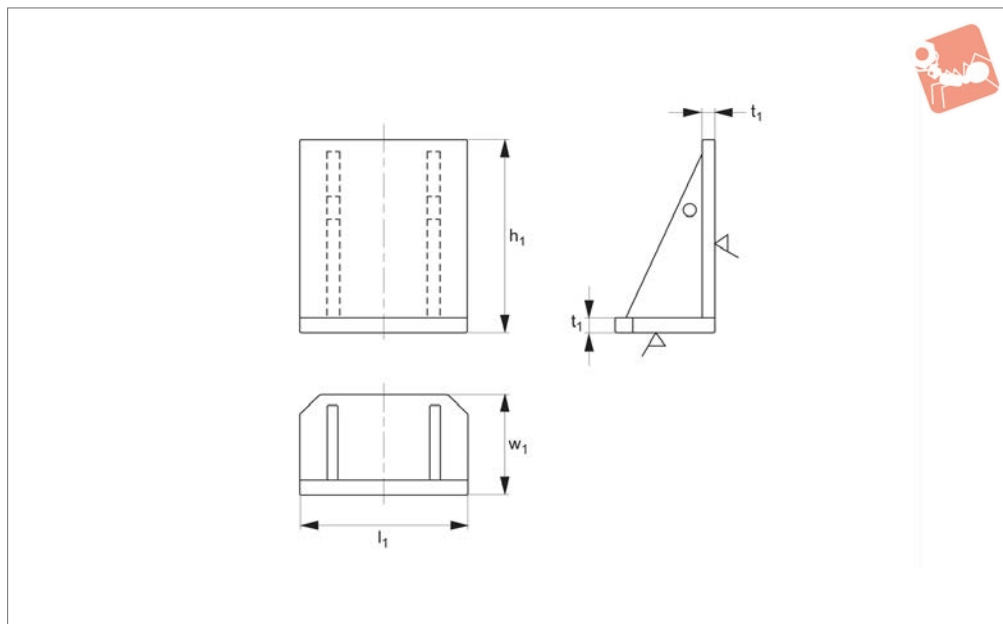
### Material

High tensile tool steel.

Order No.	$w_1 \times l_1$	$w_2$ $\pm 0.2$	$w_3$ $\pm 0.02$	$l_2$ $\pm 0.2$	$l_3$ $\pm 0.02$	$l_4$	$l_5$	$l_6$	$h_1$ $\pm 0.013$	$d_1$	$d_2$	Number of T-slots	Weight kg
19584.W0300	400x500	100	60	200	40	50	70	310	150	12	20	5x7	77
19584.W0500	500x630	200	40	200	35	60	70	340	200	12	20	7x9	120



**19540**



**Material**  
Steel, welded.

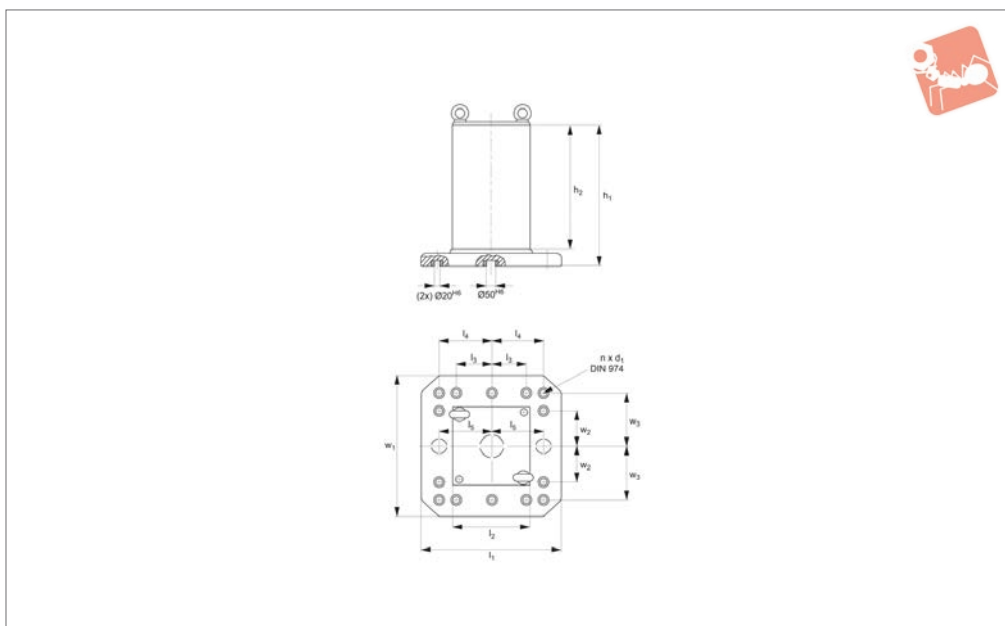
Order No.	$l_1$	$w_1$	$h_1$	$t_1$	Weight kg
19540.W0020	400	250	450	32	76
19540.W0040	500	330	550	32	125
19540.W0060	630	370	650	32	180



# Clamping Cubes

cast iron - semi-finished

## Base Plates & Clamping



**19560**

BASE PLATES & CLAMPING ANGLES

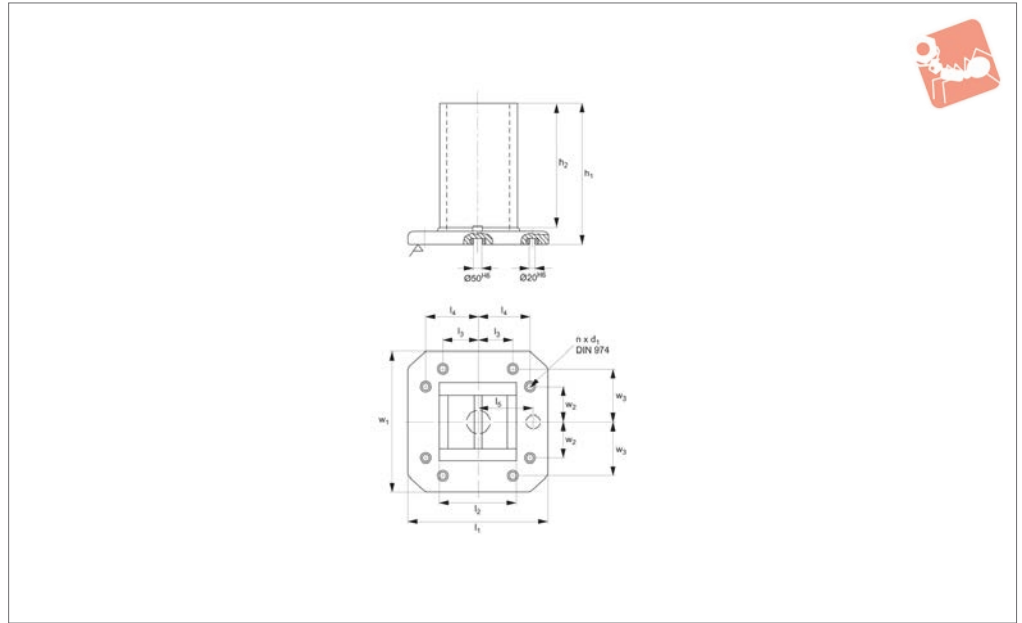
### Material

Cast iron (GG).

Order No.	$w_1 \times l_1$	$w_2$ $\pm 0.2$	$w_3$ $\pm 0.2$	$h_1$	$h_2$	$l_2$ $+1$	$l_3$ $\pm 0.2$	$l_4$ $\pm 0.2$	$l_5$ $\pm 0.013$	$d_1$	No. of holes n	For screw	Weight kg
<b>19560.W0210</b>	400x400	-	150	408	358	231	-	150	150	12	4	M12	134
<b>19560.W0410</b>	500x500	-	200	565	510	331	-	200	200	12	6	M12	265
<b>19560.W0610</b>	630x630	200	300	700	640	451	200	300	200	16	8	M16	427



## 19570



### Material

Steel, welded.

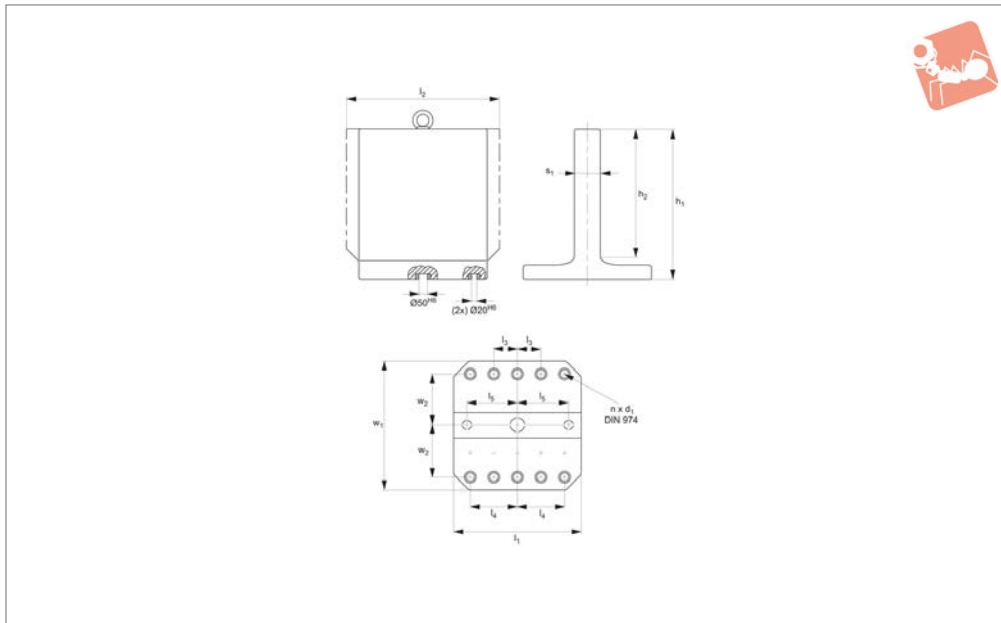
### Technical Notes

Special designs upon request.

### Tips

Lower cost alternative to cast version no. 19560.

Order No.	$w_1 \times l_1$	$w_2$ $\pm 0.2$	$w_3$ $\pm 0.2$	$h_1$	$h_2$	$l_2$ $+1$	$l_3$ $\pm 0.2$	$l_4$ $\pm 0.2$	$l_5$ $\pm 0.013$	$d_1$	No. of holes	For screw	Weight kg
<b>19570.W0220</b>	400x400	150	-	500	450	231	-	150	150	12	4	M12	134
<b>19570.W0240</b>	500x500	200	-	650	595	331	-	200	200	12	4	M12	265
<b>19570.W0260</b>	630x630	200	300	800	740	451	200	300	200	16	8	M16	427



## 19500

BASE PLATES & CLAMPING ANGLES

### Material

Cast iron (GG30).

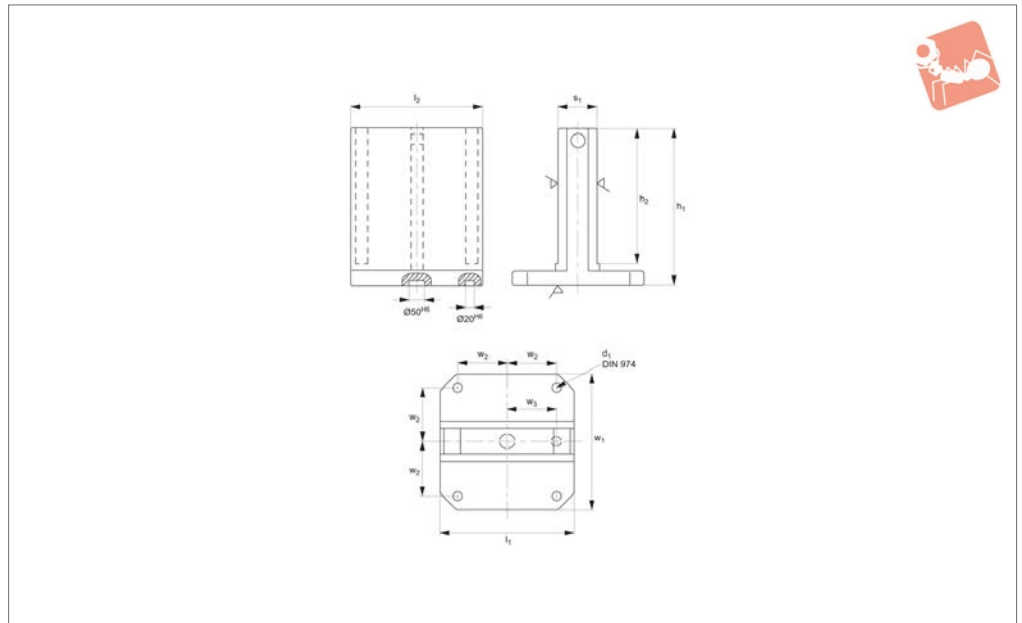
### Technical Notes

19510 is the less expensive welded version.

Order No.	$w_1 \times l_1$	$w_2$ $\pm 0.2$	$l_2$	$l_3$ $\pm 0.2$	$l_4$ $\pm 0.2$	$l_5$ $\pm 0.2$	$d_1$	$h_1$	$h_2$	$s_1$ $+1$	No. of holes n	For screw	Weight kg
<b>19500.W0002</b>	400x400	150	-	-	150	150	12	475	400	81	4	M12	150
<b>19500.W0003</b>	400x400	150	500	-	150	150	12	475	400	81	4	M12	173
<b>19500.W0004</b>	500x500	200	-	-	200	200	12	595	500	101	6	M12	284
<b>19500.W0005</b>	500x500	200	630	-	200	200	12	595	500	101	6	M12	334
<b>19500.W0006</b>	630x630	200	-	-	200	200	16	725	630	131	6	M16	470
<b>19500.W0007</b>	800x800	300	-	100	300	300	16	910	800	151	8	M16	745



## 19510



### Material

Steel, welded.

### Tips

Lower cost alternative to cast version.

### Technical Notes

Special designs upon request.

Order No.	$w_1 \times l_1$	$w_2$ $\pm 0.2$	$w_3$ $\pm 0.013$	$l_2$	$d_1$	$h_1$	$h_2$	$s_1$ $+1$	For screw	Weight kg
<b>19510.W0120</b>	400x400	150	150	400	12	475	425	121	M12	148
<b>19510.W0140</b>	500x500	200	200	500	12	600	545	151	M12	274
<b>19510.W0160</b>	630x630	200	200	630	16	725	660	181	M16	395

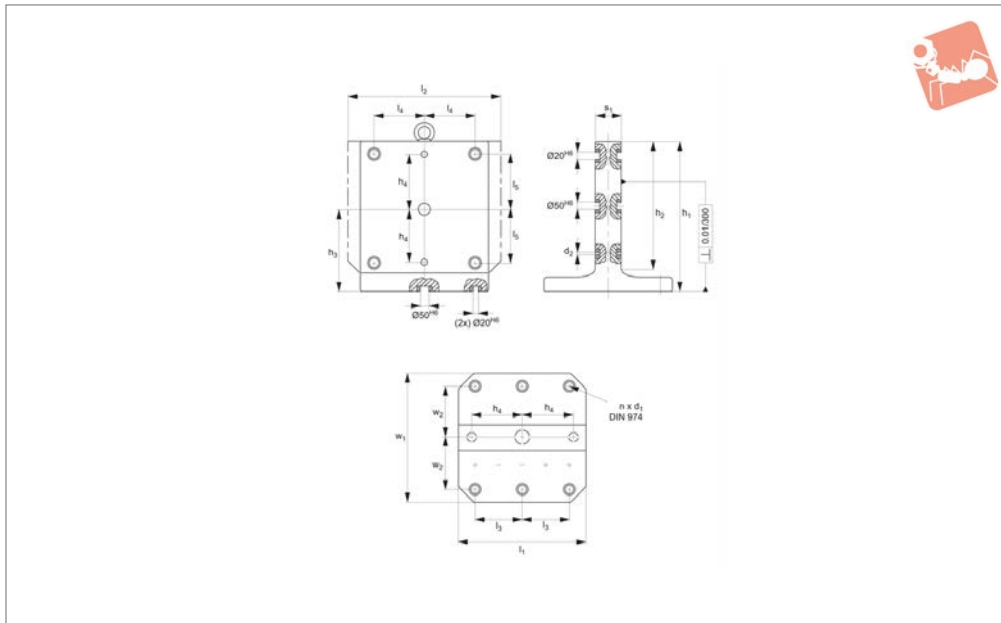




# Cast Iron Tombstones

fully machined

## Base Plates & Clamping



**19520**

BASE PLATES & CLAMPING ANGLES

### Material

Cast iron (GG30).

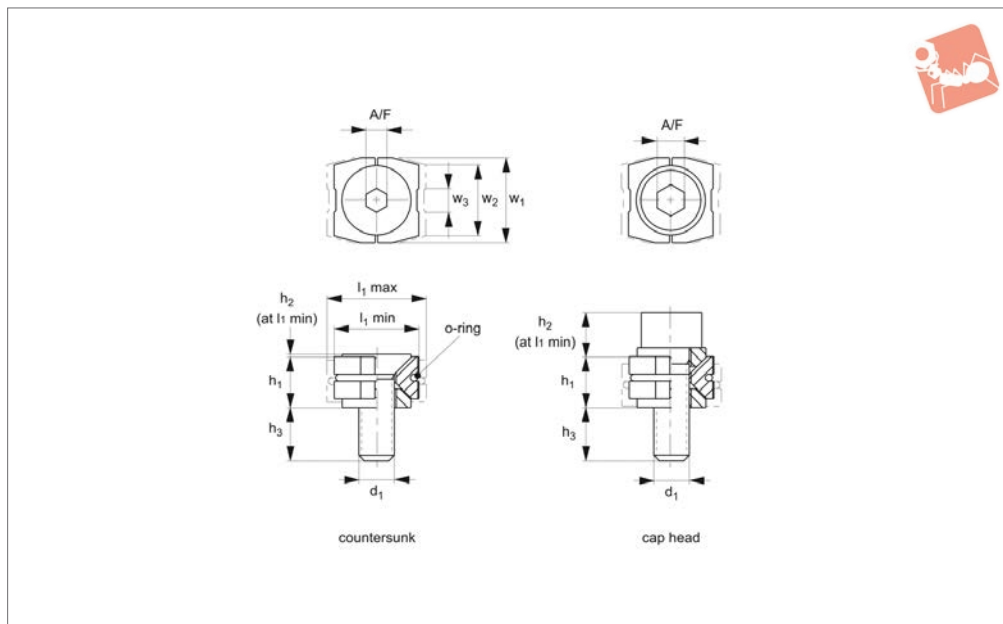
Order No.	$w_1 \times l_1$	$w_2$	$l_2$	$l_3$ $\pm 0.2$	$l_4$	$l_5$	$d_1$	Weight kg
<b>19520.W0240</b>	400x400	150	400	150	100	100	12	147
<b>19520.W0340</b>	400x400	150	500	150	200	100	12	168
<b>19520.W0440</b>	500x500	200	500	200	200	200	12	295
<b>19520.W0540</b>	500x500	200	630	200	200	200	12	326
<b>19520.W0640</b>	630x630	200	630	200	200	200	16	385

Order No.	$h_1$	$h_2$	$h_3$ $\pm 0.01$	$h_4$ $\pm 0.013$	$s_1$ $\pm 0.02$	Number of holes n	For screw
<b>19520.W0240</b>	475	400	275	150	80	4	M12
<b>19520.W0340</b>	475	400	275	150	80	4	M12
<b>19520.W0440</b>	595	500	345	200	100	6	M12
<b>19520.W0540</b>	595	500	345	200	100	6	M12
<b>19520.W0640</b>	725	630	410	200	130	6	M16



## 12454



### Material

Jaw: alloy steel, black oxide finish, hardness HRC33-39.

Washer: alloy steel, black oxide finish.

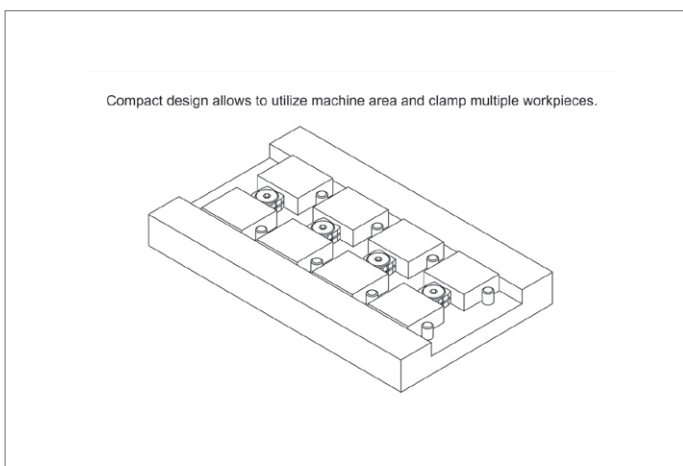
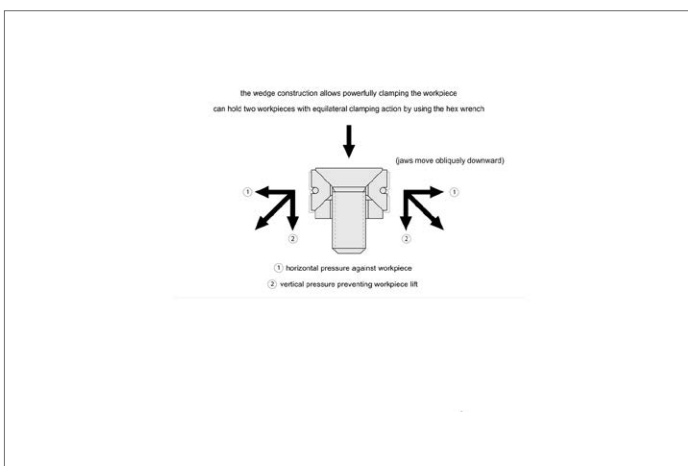
O-ring: fluoro rubber.

### Technical Notes

Compact design for clamping of multiple workpieces. Wedge construction results in powerful clamping and holding of two workpieces with equal clamping force.

Provides both downward and side clamping force.

Order No.	Type	$l_1$ min.	$l_1$ max.	$h_1$ min.	$h_1$ max.	$h_2$	$h_3$	$w_1$	$w_2$	$w_3$	$d_1$	A/F	Clamping force kN max.	Tightening force Nm max.	Weight g
<b>12454.W0010</b>	Countersunk	12,0	14,0	6,2	7,2	0,3	9,5	12,0	10	3,3	M 5x15	3	2,0	4,3	8
<b>12454.W0012</b>	Countersunk	15,0	17,0	7,5	8,5	0,2	9,3	14,8	12	4,0	M 6x16	4	3,5	7,3	13
<b>12454.W0016</b>	Countersunk	18,5	21,5	9,9	11,4	0,4	11,3	18,4	16	5,3	M 8x20	5	5,0	18,0	27
<b>12454.W0110</b>	Cap Head	12,0	14,0	6,2	7,2	6,2	9,6	12,0	10	3,3	M 5x15	4	3,0	5,4	9
<b>12454.W0112</b>	Cap Head	15,0	17,0	7,5	8,5	7,3	10,2	14,8	12	4,0	M 6x16	5	4,5	9,1	17
<b>12454.W0116</b>	Cap Head	18,5	21,5	9,9	11,4	9,8	14,9	18,4	16	5,3	M 8x20	6	9,0	22,0	30

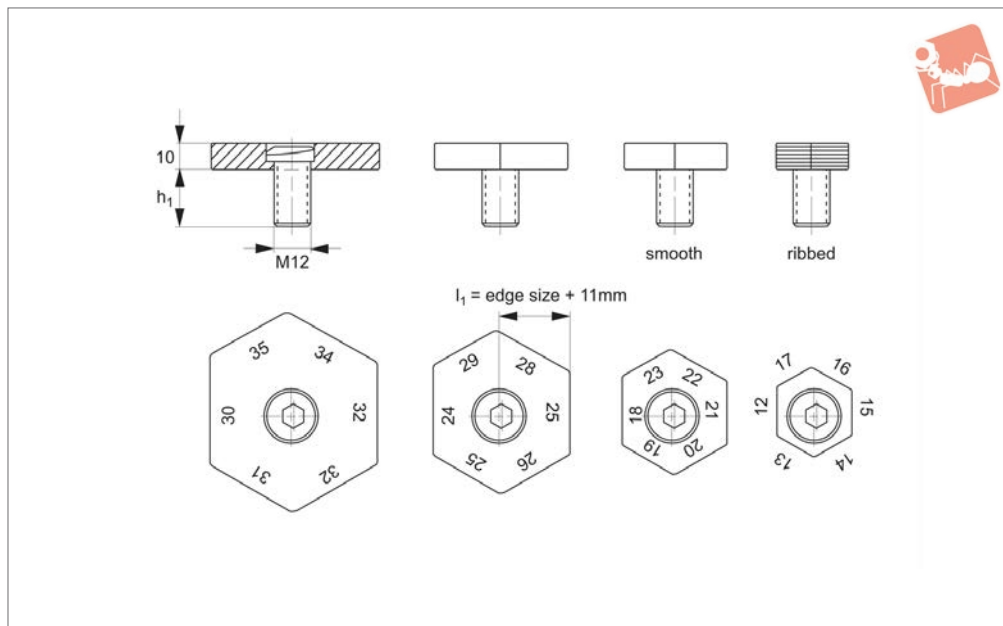




# Variable Hexagon Clamps

low height

## Multi-Clamping Systems



**12040**

MULTI-CLAMPING SYSTEMS

### Material

Body: steel, hardened and blackened.  
Screw: steel, eccentric, heat treated (10,9) and blackened.

### Technical Notes

Hexagon clamps actuated by means of an

eccentric screw (provided). Available with either smooth or ribbed faces.

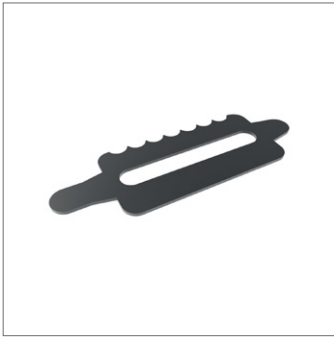
### Tips

Max. clamping section is 25mm. Each of the clamp's faces increases the distance from the centre line by 1mm, thus work-

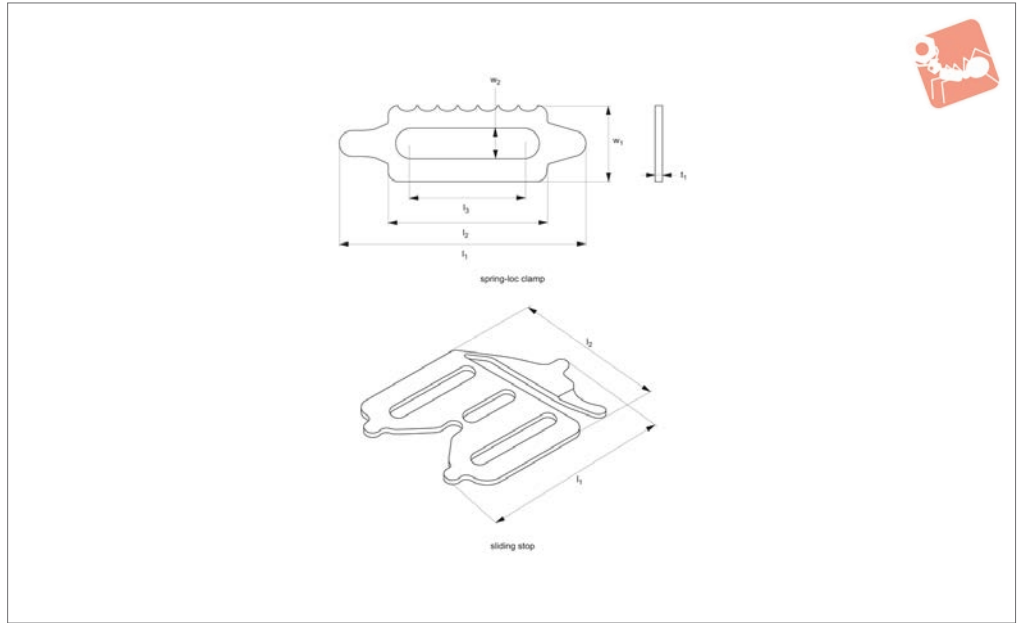
pieces of varying sizes can be held using just one clamp and is actuated by a simple rotation of the clamp face.

Reorder screw 12112.W0512.

Order No.	Finish	h <sub>1</sub>	l <sub>1</sub>	Clamp stroke	Clamping force kN max.	Weight g
12040.W0002	Clamp, smooth	22	12 - 17	2	18	100
12040.W0004	Clamp, smooth	22	18 - 23	2	18	132
12040.W0006	Clamp, smooth	22	24 - 29	2	18	204
12040.W0008	Clamp, smooth	22	30 - 35	2	18	299
12040.W0012	Clamp, ribbed	22	12 - 17	2	18	77
12040.W0014	Clamp, ribbed	22	18 - 23	2	18	132
12040.W0016	Clamp, ribbed	22	24 - 29	2	18	204
12040.W0018	Clamp, ribbed	22	30 - 35	2	18	299



**12042**



**Material**

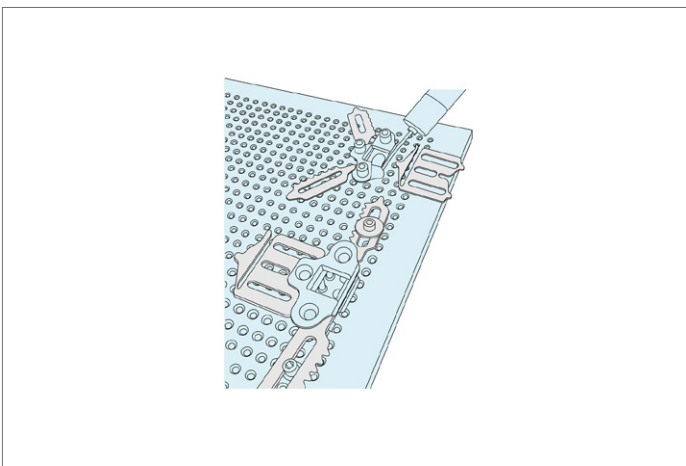
Stainless steel.

**Technical Notes**

Spring-loc clamp, extremely low profile

clamp capable of approx. 10lbs of pressure. A quick and flexible approach to holding parts during engraving or vision systems.

Order No.	Description	$l_1$	$l_2$	$l_3$	$w_1$	$w_2$	Qty/pack	Stroke $s_1$	Weight g
12042.W0100	Spring-Loc Clamp	76.2	63.5	-	-	-	2	1.83	113.0
12042.W0200	Sliding Stop	76.2	59.8	38.1	25.4	6.6	4	1.83	82.0





# Mitee-Grip Tape

for holding small and thin components

# Multi-Clamping Systems

- Place the grip tape sheet on a subplate leaving a 6mm border on all sides.
- We recommend the part being lightly clamped to prevent movement.  
**NOTE:** For very thin workpieces use a top plate for even pressure.
- The ideal application temperature is 100°C, when the adhesive is fully liquid. 80°C is the melting temperature of the adhesive and is therefore the minimum temperature for application. Some customers use an oven and record time and temperature to determine best application. A hot plate may also be used at higher temps if monitored carefully. Most parts will 'float' when the grip tape has liquefied.
- Use air or water to cool adhesives, being careful to prevent water from going between subplate and workpiece whilst hot.
- Cooled part is ready for machining. We recommend the use of a coolant to keep the part cool. To release the component, re-heat the adhesive. The component will require cleaning to remove wax residue - we have found an ultrasonic cleaner or warm alcohol-based wipe is effective.



10784

MULTI-CLAMPING SYSTEMS

### Material

A heat activated, wax-based compound embedded in precision paper. Coated on a nylon mesh or in a stick form.

### Technical Notes

Maintains parallelism on precision parts. Very useful for thin parts, micro-machining, optical and quartz components as well as jewellery related items.

### Tips

Approx. clamping force is 40 PSI.

### Important Notes

- Place the Mitee-Grip sheet on the subplate leaving a 6mm border on all sides. Melt the wax stick onto the wax subplate.
- In some cases the part should be lightly clamped to prevent movement. Over thin workpieces, use a top plate for even pressure.
- Heat parts to between +85°C and +90°C. Heating from the bottom is best.
- Use air or water to cool, being careful to

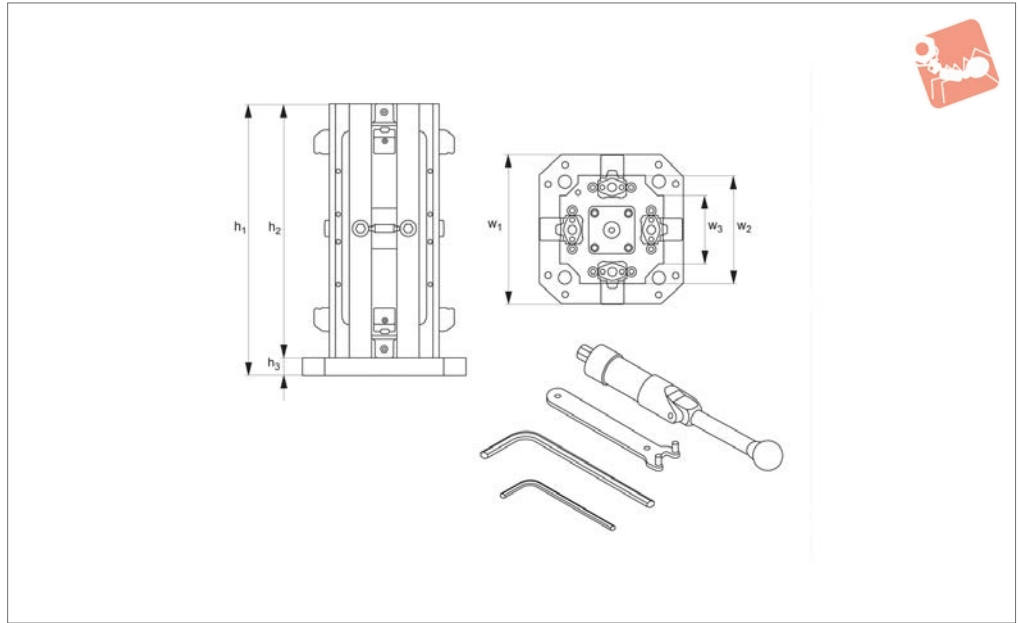
prevent water going between subplate and workpiece whilst hot.

5. The part is now ready to machine. Use a coolant to keep it cool. To remove the part, re-heat to between +80°C and +90°C.

Order No.	Description	Size
10784.W0230	Compound	1 Stick
10784.W0235	Compound	3 Sticks
10784.W0240	Paper Roll	305x1524
10784.W0245	Paper Roll	305x7620
10784.W0250	Mesh Roll	254x1524
10784.W0252	Mesh Roll	254x7620



### 19762



#### Material

Body: 80000 PSI ductile cast iron.  
Sideways flame hardened to 40 HRc max.

#### Technical Notes

Vice jaws not included, order separately.  
See part no. 19790.  
Jaw capacity dependent upon selection of either machinable or hard jaws. See technical pages.

Replacement parts available.

#### Tips

Supplied with actuation handle, hex key and wrench.  
Base plate designed to adapt to wide range of machine tables.  
8-station vice columns can be located on a

pallet using edge location with shims or spacers (not supplied).

#### Important Notes

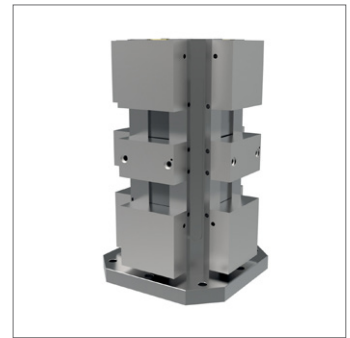
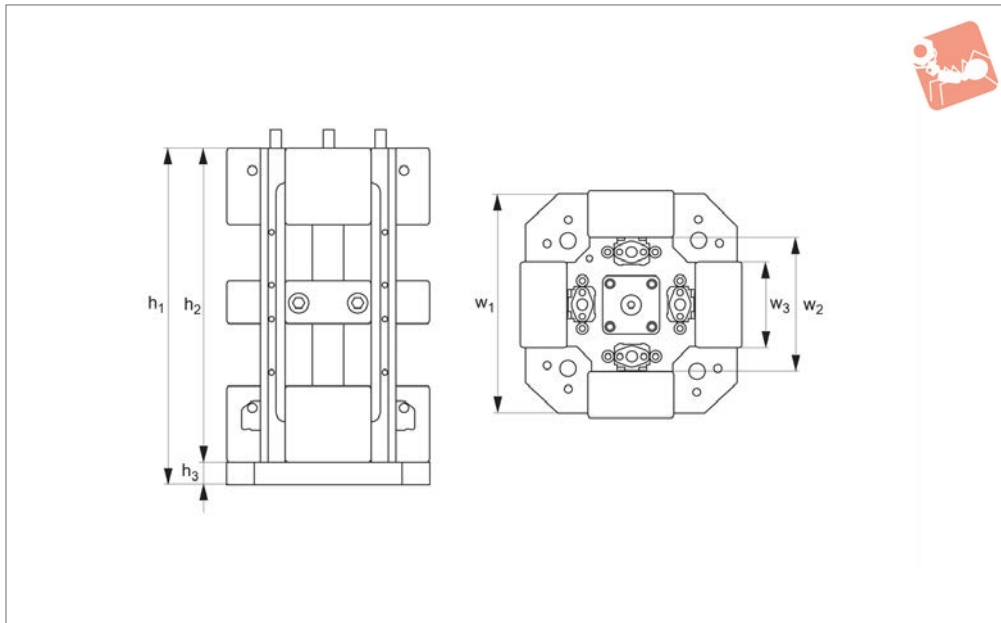
Not compatible with 19768 compact 8-vice column.  
**All dimensions are in inches unless stated \*.**

Order No.	Vice size	Clamp pressure lb max.	Base type	$h_1$	$h_2$	$h_3$	$w_1$	$w_2$ $\pm 0.001$	$w_3$	Weight lb
19762.W0040	4"	6000	Inch	17.90	16.75	1.15	10.75	7	4	150
19762.W0041	4"	6000	Metric	17.90	16.75	1.15	400*	7	4	150
19762.W0060	6"	12000	Inch	22.65	21.25	1.40	14.00	9	6	280
19762.W0061	6"	12000	Metric	22.65	21.25	1.40	400*	9	6	280
19762.W0080	8"	16000	Inch	31.10	29.50	1.60	18.00	12	8	750



# 8 Station Vice - ReLock 8 with machinable soft jaws

## Vice Clamping



**19764**

VICE CLAMPING

### Material

Body: 80000 PSI ductile cast iron.  
Sideways flame hardened to 40 HRC max.  
Machinable jaws: aluminium.

### Technical Notes

Replacement parts available.

### Tips

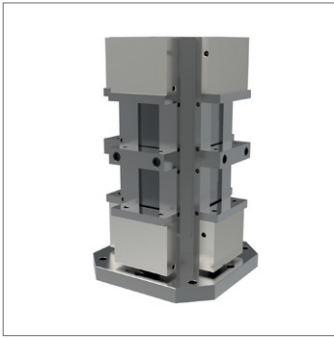
Supplied with actuation handle, hex key and wrench.  
Base plate designed to adapt to wide range of machine tables.  
8-station vice columns can be located on a

pallet using edge location with shims or spacers (not supplied).

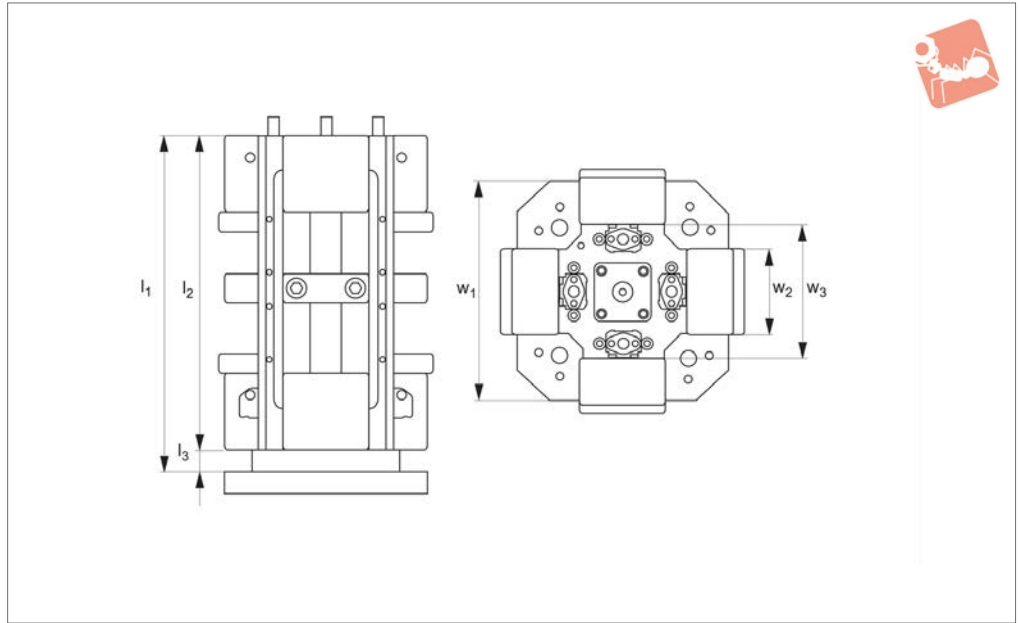
### Important Notes

**All dimensions are in inches unless stated \*.**

Order No.	Vice size	Set contents	Clamp pressure lb max.	Base type	Jaw capacity	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	w <sub>1</sub>	w <sub>2</sub> ±0.001	w <sub>3</sub>	Weight lb
<b>19764.W0040</b>	4"	Vice - 1 x 19762.W0040, Machinable jaws - 4 x 19790.W0401	6000	Inch	4,125 to 15,000	17.90	16.75	1.15	10.75	4	7	160
<b>19764.W0041</b>	4"	Vice - 1 x 19762.W0041, Machinable jaws - 4 x 19790.W0401	6000	Metri c	4,125 to 15,000	17.90	16.75	1.15	400*	4	7	160
<b>19764.W0060</b>	6"	Vice - 1 x 19762.W0060, Machinable jaws - 4 x 19790.W0601	12000	Inch	5,125 to 19,500	22.65	21.25	1.40	14.00	6	9	292
<b>19764.W0061</b>	6"	Vice - 1 x 19762.W0061, Machinable jaws - 4 x 19790.W0601	12000	Metri c	5,125 to 19,500	22.65	21.25	1.40	400*	6	9	292
<b>19764.W0080</b>	8"	Vice - 1 x 19762.W0080, Machinable jaws - 4 x 19762.W0801	16000	Inch	7,625 to 27,500	31.10	29.50	1.60	18.00	8	12	764



## 19766



VICE CLAMPING

### Material

Body: 80000 PSI ductile cast iron.  
Sideways flame hardened to 40 HRC max.  
Carrier jaws: aluminium.  
Hard jaws: steel.

### Technical Notes

Replacement parts available.

### Tips

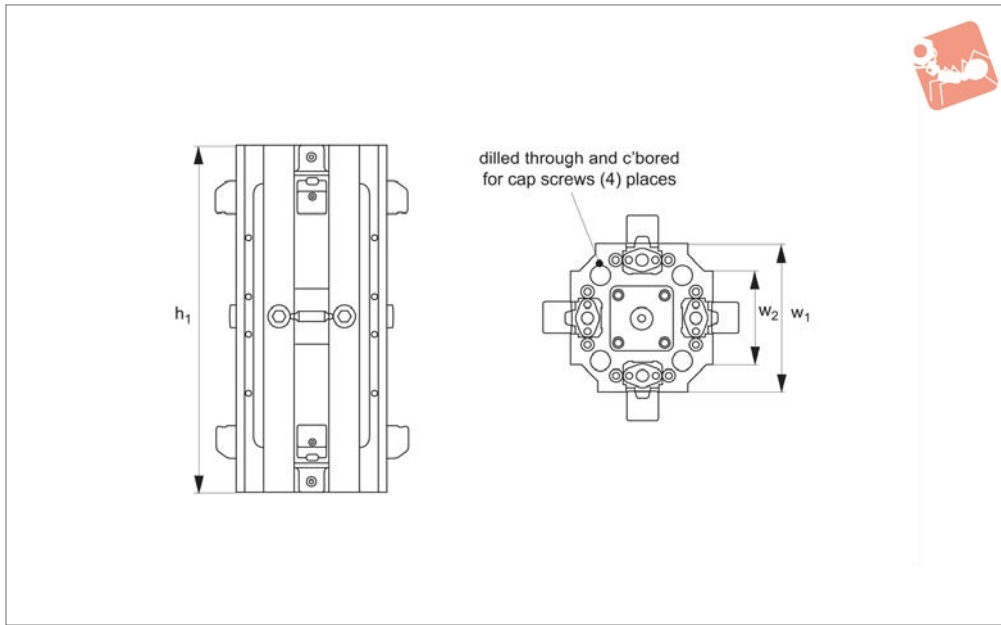
Supplied with actuation handle, hex key and wrench. Base plate designed to adapt to wide range of machine tables.  
8-station vice columns can be located on a pallet using edge location with shims or spacers (not supplied).

### Important Notes

**All dimensions are in inches unless stated \*.**

Order No.	Vice size	Set contents	$l_1$	Clamp pressure lb max.	Base type	Jaw capacity	$l_2$	$l_3$	$w_1$	$w_2$	$w_3$ $\pm 0.001$	Weight lb
<b>19766.W0040</b>	4"	Vice - 1 x 19762.W0040, Carrier jaws - 4 x 19796.W0403,17,90 Hard jaws - 4 x 19892.W0401		6000	Imperial	4,125 to 15,000	16,75	1,15	10,75	4	7	170
<b>19766.W0041</b>	4"	Vice - 1 x 19762.W0041, Carrier jaws - 4 x 19796.W0403,17,90 Hard jaws - 4 x 19892.W0401		6000	Metric	4,125 to 15,000	16,75	1,15	400*	4	7	170
<b>19766.W0060</b>	6"	Vice - 1 x 19762.W0060, Carrier jaws - 4 x 19796.W0603,22,65 Hard jaws - 4 x 19892.W0601		12000	Imperial	5,125 to 19,500	21,25	1,40	14,00	6	9	305
<b>19766.W0061</b>	6"	Vice - 1 x 19762.W0061, Carrier jaws - 4 x 19796.W0603,22,65 Hard jaws - 4 x 19892.W0601		12000	Metric	5,125 to 19,500	21,25	1,40	400*	6	9	305
<b>19766.W0080</b>	8"	Vice - 1 x 19762.W0080, Carrier jaws - 4 x 19796.W0803,31,10 Hard jaws - 4 x 19892.W0801		16000	Imperial	7,625 to 27,500	29,50	1,60	18,00	8	12	780





### 19768

VICE CLAMPING

#### Material

Body: 80000 PSI ductile cast iron.  
 Sideways flame hardened to 40 HRC max.  
 Machinable jaws: aluminium.  
 Carrier jaws: aluminium.  
 Hard jaws: steel.

#### Technical Notes

Jaw capacity dependent upon selection of

either machinable or hard jaws, see technical pages.  
 Designed for machining centres with small working envelopes. Through mounting holes are included to mount directly to a pallet without the need for a base plate.

#### Tips

Supplied with actuation handle, hex key

and wrench and mounting kit.  
 Adaptor plate 19770 can be used to attach this compact vice column to a pallet or indexer.

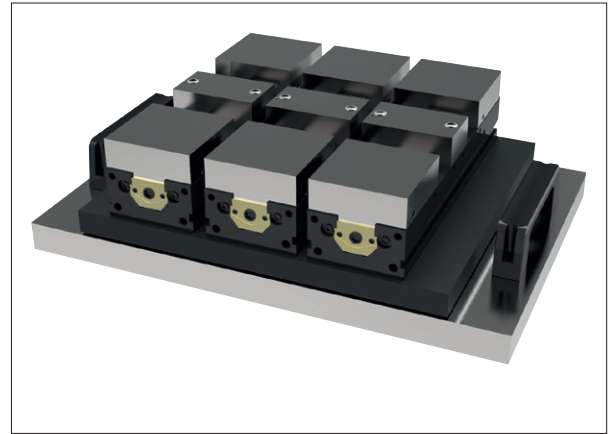
#### Important Notes

All dimensions are in inches.

Order No.	Vice size	Set contents	Clamp pressure lb max.	Jaw capacity	Recommended foot lb	$h_1$	$w_1$ $\pm 0.001$	$w_2$
19768.W0010	4"	Vice - 1 x 19768.W0010. No jaws.	6000	-	45-50	13.9	7	4
19768.W0020	4"	Vice - 1 x 19768.W0010, Machinable jaws - 4 x 19790.W0401.	6000	2,700 to 12,150	45-50	13.9	7	4
19768.W0030	4"	Vice - 1 x 19768.W0010, Carrier jaws - 4 x 19796.W0403, Hard jaws - 4 x 19792.W0401.	6000	1,575 to 13,150	45-50	13.9	7	4



The compact design of the ReLock vice allows you to mount the vices very closely to each other without interference. The SnapLock line of jaws allows you to literally “snap” jaws and accessories on and off the vice without the use of bolts or pins.



VICE CLAMPING

ReLock 2 and 8-Station Capacities

Maximum workpiece capacities for selected vice configuration. All dimensions in inches.	Jaw type/configuration	Vice size		
	Machinable jaws	4"	6"	8"
		4,125	5,125	7,625
		6,875	9,060	12,812
		9,500	11,625	17,125
		12,250	15,562	22,312
		15,000	19,500	27,500
	Carrier and hard jaws	4"	6"	8"
		3,000	4,000	6,000
		7,375	9,500	13,250
		7,250	9,500	14,000
		11,625	15,000	21,250
		16,000	20,500	28,500

All dimensions in inches

- Workpiece
- Vice jaws



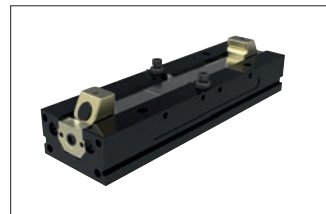
The ReLock Vice System combines high manufactured tolerances with unequalled versatility in providing two-station and 8-station production vices.

ReLock CNC Vices, available with machinable soft jaws, hard jaws, master jaws and parallels, or fixture plates, allow the machinist a variety of configurations with the same vice. Bodies are manufactured from 80,000 psi ductile cast iron, and guide parts are flame hardened and ground to accuracies of  $\pm 0.0005"$ .

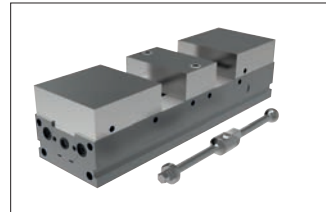
Manual and hydraulic two-station and 8-station vices are available in widths of 4", 6" and 8".

- Reduced setup times - when used with out SnapLock system, jaws can be changed or indexed in a matter of seconds.
- Extremely versatile: comprehensive array of jaws and accessories for vertical or horizontal machining.
- Accurate and durable: designed and precision manufactured from high grade materials.

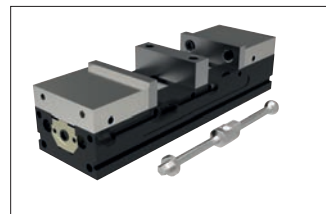
## Advantages



**19752 Double Station Vice.**



**19754 Double Station Vice with soft jaws.**



**19756 Double Station Vice with hard jaws.**

**19764 8-Station Vice with soft jaws.**

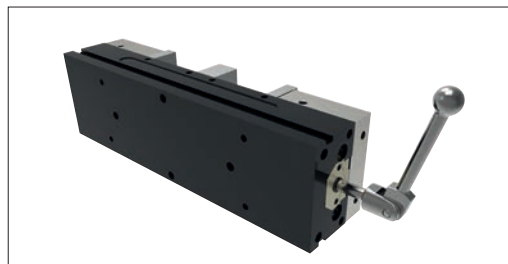


## Features and Benefits



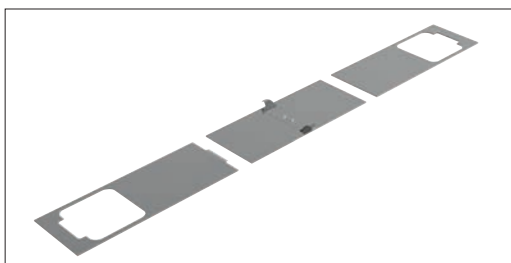
### Optimised Table Space

Compact modular design allows a multitude of mounting configurations. Vices can be mounted close together without hindering the removal or attachment of jaws. The ReLock 8-station (shown) is ideal for horizontal machining centres, as well as for use with rotary indexers on vertical machining centres.



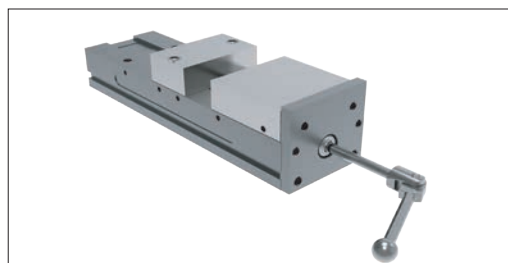
### Locating and Mounting

Locating and mounting options are simple and accurate. The bottom surface of the system has four precision dowel pin holes for locating and four drilled and counterbored holes drilled through from the top surface for rugged mounting. Side clamp slots are also incorporated.



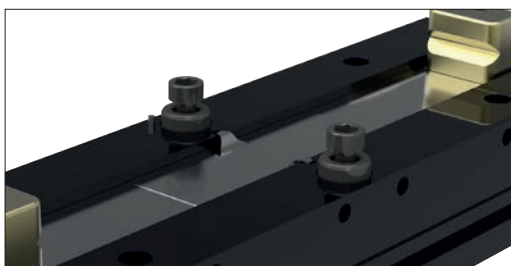
### ReLock Chip Shields

ReLock's unique three piece telescopic chip shield wraps completely around the SnapLock knuckles, keeping swarf from getting into the vice's clamping mechanism. Shields can be quickly and easily removed for maintenance purposes.



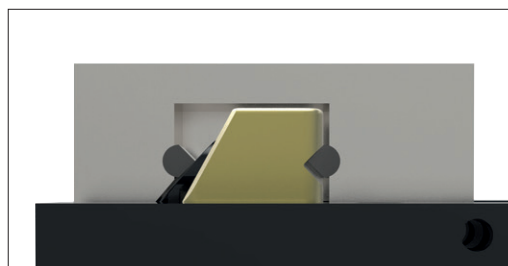
### Single Station Conversion

Used in conjunction with SnapLock carrier jaws, the conversion plate allows the ReLock system to be converted from a double to a single station vice – ideal for larger workpieces.



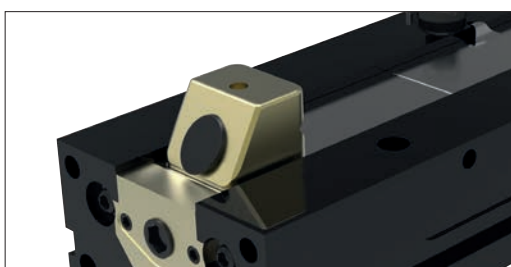
### Centre Jaw Location

The ReLock's centre jaw locating studs allow quick jaw mounting and indexing to accuracies of  $\pm 0.0005"$ . Foolproof pin eliminates the possibility of the jaws being accidentally mounted in reverse.



### SnapLock Knuckle

Exclusive SnapLock knuckle allows SnapLock soft jaws and SoftLock carrier to be attached and removed in seconds.



### Auto Offset Mechanism

Exclusive automatic offset mechanism allows non-simultaneous workpiece clamping and unclamping to one of the three optional offset settings: 4" and 6": 0.030", 0.125", or 0.250"; 8": 0.125", 0.250", or 0.375". The offset setting is the distance the rear jaw backs away from the workpiece before the front jaw begins to back away from the workpiece.

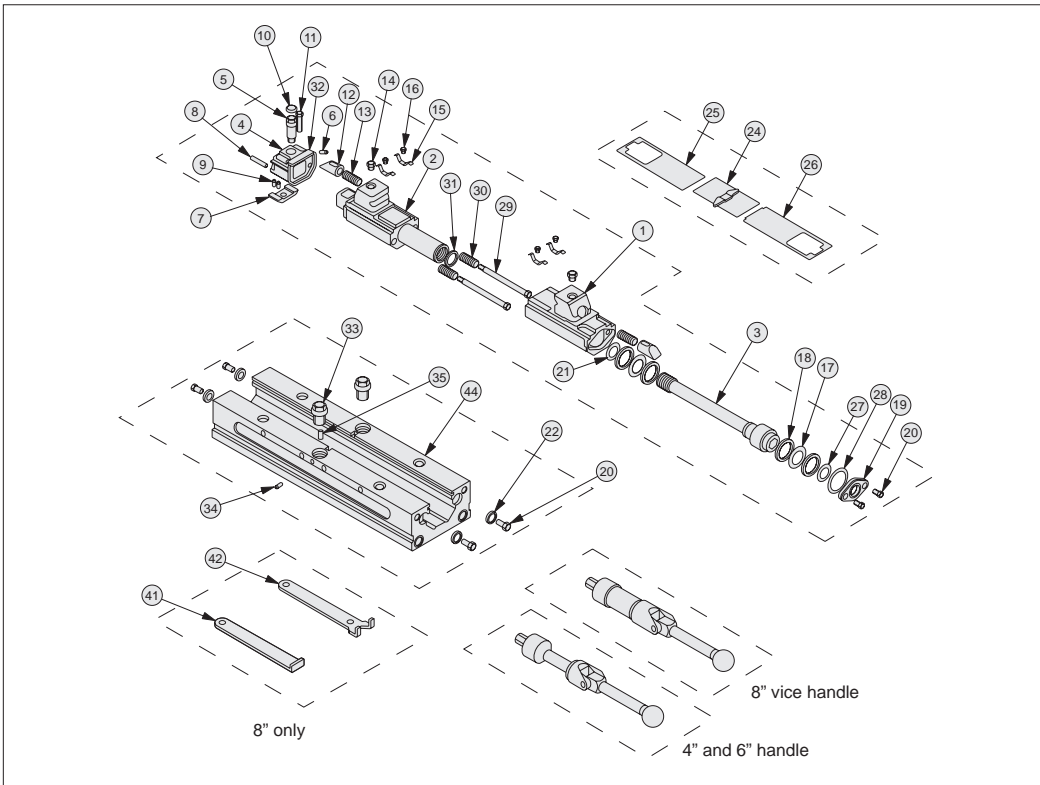


# ReLock Vice Parts List

## ReLock 2

### 19752 - 19756 Clamping & Height Setting

Spares available on request.  
Please contact our sales office.



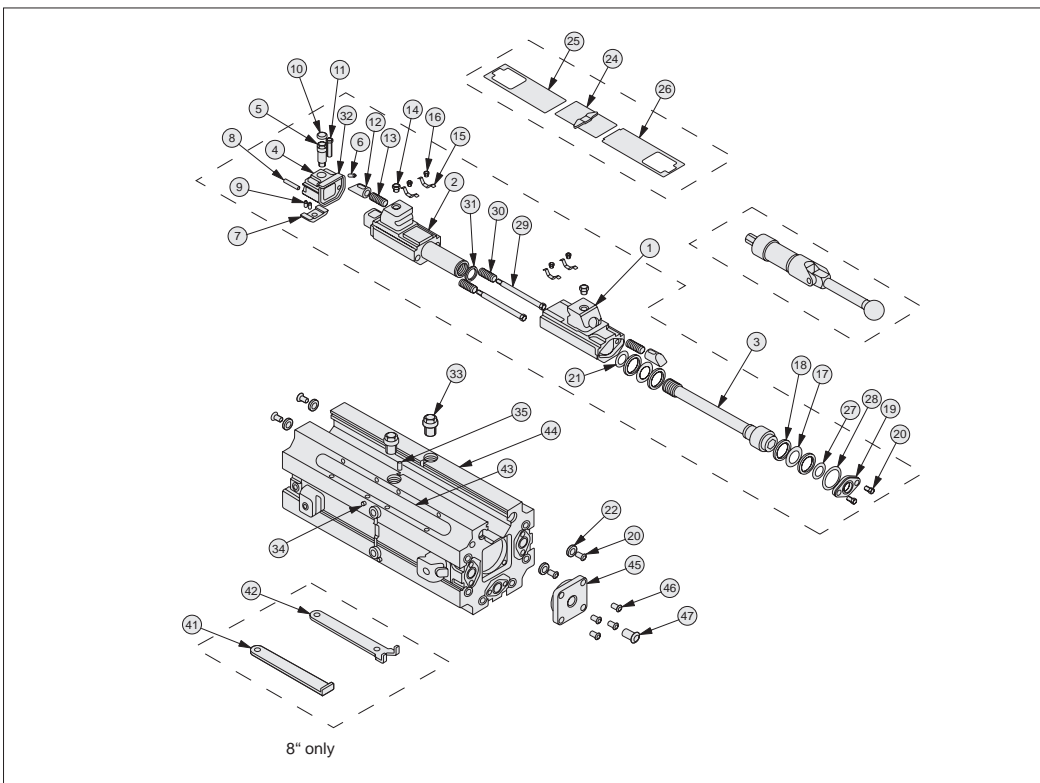
VICE CLAMPING

# ReLock Vice Parts List

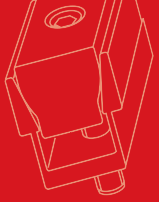
## ReLock 8

### 19762 - 19766 Clamping & Height Setting

Spares available on request.  
Please contact our sales office.



ov-W19752-A-T-W19766-A-T-relock-vice-parts-list-relock-2-relock-8-rmh - Updated - 26-10-2022



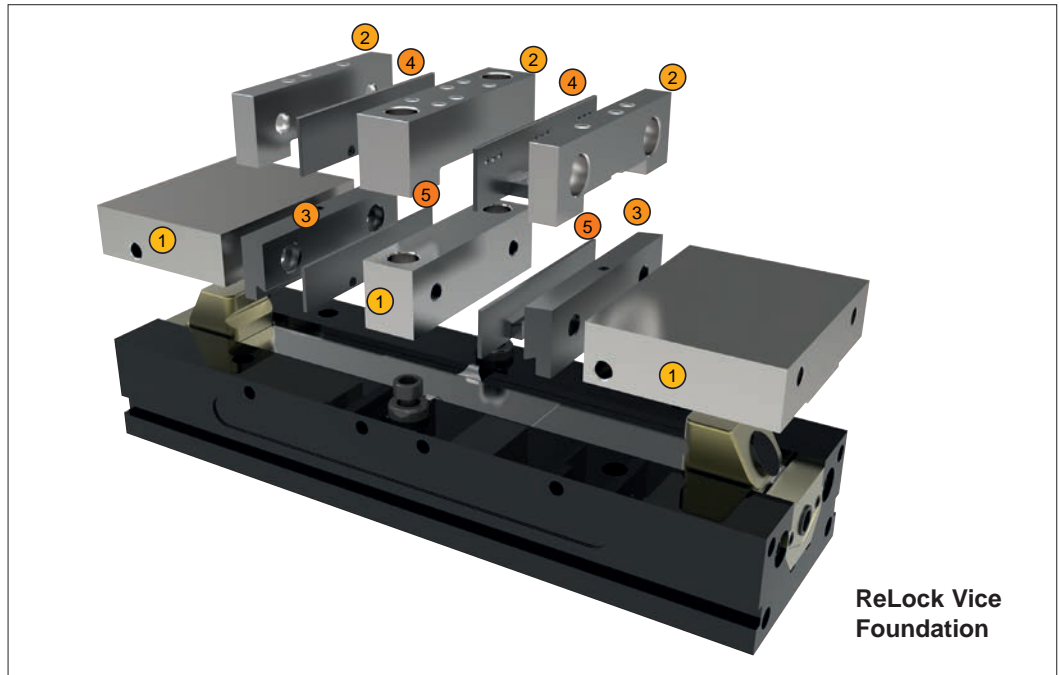
## Foundation

The ReLock vice is the foundation for a fully flexible vice system, with a multitude of interchangeable jaws, parallels or mill angles to suit your application.

Base vice - ReLock 2 or ReLock 8.

- SnapLock® Carrier Jaws - accepts both AccuSnap® and QuickChange™ Jaw systems.
- AccuSnap or QuickChange Parallels and Mill Angles - select the approach best suited to your application.

## Flexibility



### 1 SnapLock Carrier Jaws

SnapLock carrier jaws allow mounting of AccuSnap and QuickChange master jaws by using an industry standard bolt size and pattern. Carrier jaws snap on and off the SnapLock knuckles in seconds.

### 2 3 AccuSnap and QuickChange Master Jaws

AccuSnap QuickChange master jaws easily mount to the SnapLock carrier jaws by using an industry bolt size and pattern. AccuSnap master jaws patented locking receptacle accepts all AccuSnap accessories.

### 4 5 AccuSnap and QuickChange Parallels

AccuSnap and QuickChange parallels are designed for a range of set up variations when you need to position a workpiece between hardened jaws. AccuSnap parallels snap in and out of the AccuSnap master jaws in seconds. QuickChange parallels slide into position via a dovetail slot and gib.

Also available:

### Machinable Fixture Jaws

AccuSnap and QuickChange machinable fixture jaws can be customised quickly to fixture a wide range of workpieces. The jaws snap or slide in and out of the master jaws in seconds. Available in either aluminium or hardened steel.

### SnapLock Reversible Machinable Fixture Jaws

SnapLock reversible machinable fixture jaws are the most versatile method of fixturing on the ReLock System. Customising options are endless. Jaws can be machined on two faces for additional set up. Manufactured from high quality aluminium.

### Fixture Plate

Ideal for a wide variety of fixturing applications, such as holding many small parts or parts with difficult clamping or locating requirements. Fixture plates can be attached or removed in seconds and are offered in two widths. Manufactured from high quality aluminium.

### Modular Workstops

AccuSnap modular workstops quickly mount to parallels in many different positions. As many as three stops can be mounted to a single parallel to accommodate multi-piece set-ups.

### Universal Workstop

The universal workstop easily mounts to the side of the ReLock in numerous positions. Optional extension is available for larger workpieces.

### Workstop Presetting Gauge

The AccuSnap workstop presetting gauge, in combination with a standard micrometer, allows you to precisely preset your modular workstop positions in relation to the X, Y, and Z machine datums.

### Single Station Conversion Plate

The single station conversion plate quickly converts the ReLock from double station to single station vice for larger workpieces.



## Initial Cleaning

After unpacking your vice and checking the contents, wipe all surfaces with a clean rag or cloth to remove any debris or rust inhibitor that is present. This will ensure that the vice will operate at its maximum efficiency.

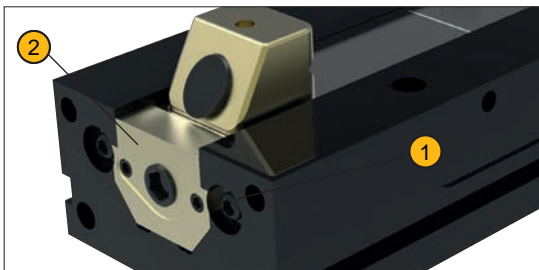
## Operating Instructions

Behind the rear knuckle (opposite the handle end) you will find two hex screws. One is to adjust the automatic offset mechanism (discussed later) and the other is to adjust the brake mechanism for the vice (see drawing A).

## Tighten Brake Mechanism

Simply tighten the brake screw in a clockwise rotation until it is snug. **DO NOT OVERTIGHTEN.** Failure to set brake properly will:

- not allow vice to open and close properly and/or
- will not allow the automatic offset mechanism to operate correctly.



① Offset Mechanism

② Break assembly

Drawing A

## Do not fully close vice without jaws properly mounted on vice knuckles.

The ReLock vice should only be fully closed when:

- a three piece SnapLock Machine Jaw Set is on vice
- a SnapLock Carrier Jaw Set and AccuSnap or QuickChange Master Jaw configuration is on vice

**Failure to do this could result in damage to the centre chip shield.**

## Automatic Offset Mechanism

Behind the rear knuckle (opposite the handle end) you will find two hex screws. One is to adjust the automatic offset mechanism and the other is to adjust the brake mechanism for the vice (see drawing A on previous page). The automatic offset mechanism allows the user to set the distance that one jaw will break (i.e. open) before the next jaw breaks. The offset can be set to three distances: .030, .125, .250. The automatic part of the mechanism allows the user to change workpiece sizes without any further adjustment to the offset mechanism. For example: You set your offset to .250 and you are setting up a job that the workpiece is a 3" square then you switch to the next job where the workpiece is 4" square, the offset mechanism will automatically break the back jaw .250 for both workpieces. Similarly, you can change the offset for both jobs simply by turning the adjustment screw to the desired distance. This feature is especially useful in a horizontal machining centre application. This will prevent both workpieces from falling out of your fixture at the same time and allows you to set the distance.

## Jaw Opening & Closing

When closing the vice, the front jaw (handle end) will open first. Once contact is made to the workpiece, the back jaw will move. When contact is made by the back jaw both jaws will tighten together to your desired pressure. **DO NOT OVER-TORQUE VICES.** Over-torqueing will cause damage to the vice and could cause harm to the operator.

Recommended clamping pressures:

4": 0-6,000 lbs.      6": 0-12,000 lbs. 8": 0-16,000 lbs.



### Mounting Information

#### 2-station Vices

This vice has two, standard mounting options:

1. The bottom of the vice has four (4) locating holes and four (4) cap screw holes for mounting. The cap screw holes can be accessed through the top of the vice. When SnapLock Jaws are mounted on the vice the cap screw holes are completely covered preventing any coolant, fluid or chips from entering the holes. This option will allow you to mount vices very close to each other without interference.
2. The other option is to utilise the slots on either side of the vice in conjunction with toe or strap clamps.

#### 8-station Vices

All standard baseplates come with a 50mm centre bushing and edge locating. Please refer to catalogue for specific mounting specifications.

### Maintenance and Cleaning

Like any piece of quality equipment, the ReLock vice will need to periodic cleaning and maintenance to prevent lock-up and ensure maximum efficiency. The entire side segment of the vice can be easily removed and replaced.

1. Remove all jaws and accessories from the vice.
2. Remove the two retaining screws on one of the ends (or top only of 8-Station Vice).
3. Loosen the brake mechanism to allow the segment to slide freely. Do not remove screw.
4. Use the SnapLock pry wrench to lift and slide the centre chip shield locking wings onto bed of vice.
5. Slide the entire segment out of the vice way.
6. Be sure to set the chip shields aside until needed for re-assembly.
7. Place segment on table or flat surface.
8. Use the vice handle to separate the two sections of the slide segment making sure that the segment does not turn with the lead screw.
9. Remove rubber seal from the lead screw and inspect for damage.
10. Completely clean all surfaces and holes from all coolant, fluids and chips.
11. Grease both the external and internal threads of the lead screw.
12. Remove the two screws from the handle end of the front segment and remove plate.
13. Push the lead screw through the front segment to expose thrust washers.
14. Grease all thrust washers, push front segment back onto lead screw and replace plate with screws.
15. Remove the screw from the top of each knuckle and grease the SnapLock plunger assembly.
16. Re-assemble plunger assembly.
17. Clean entire vice body especially the centre way before re-assembling vice.
18. Place seal back onto the lead screw making sure to push it past the threads.
19. Assemble two slide segment units back together by again preventing the segments from turning while screwing the lead screw back into the rear segment.
20. Once external threads are not visible, place the seal back into the slot provided by using a small screwdriver or tool. Make sure that the seal is properly installed. Failure to do this can result in damage to the vices' internal mechanisms.
21. Place the outside chip shields onto the proper knuckles. Shields are notched to fit only one end. Failure to do this will allow coolant and chips into the lead screw area and cause binding.
22. Slide rear segment into the vice.
23. Place the centre chip shield into the slot prying the wings onto the bed of the vice.
24. Slide the rest of the segment in to position making sure that the outside chip shields slide under the centre chip shield.
25. Replace retaining screws in vice.

**This maintenance procedure should be done periodically.**

**The frequency of this procedure depends on how much you use your vice.**



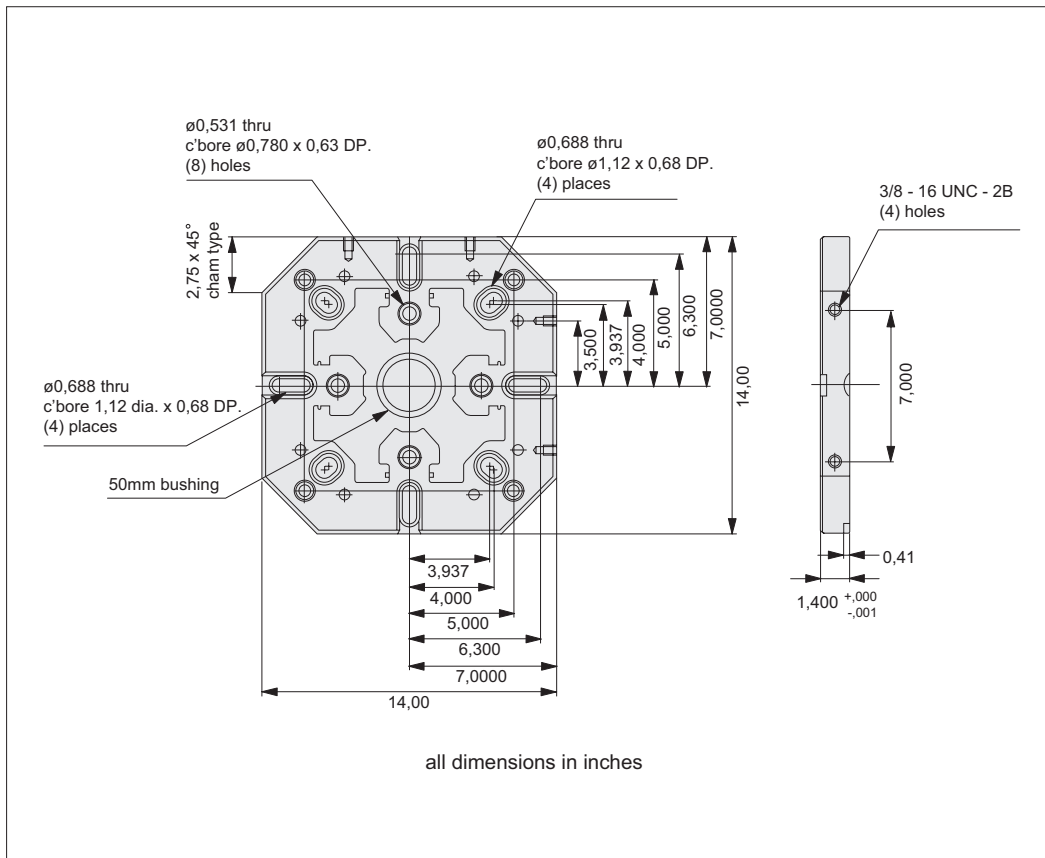


# 8-Station Vice Baseplate Mounting Information



## Clamping & Height Setting

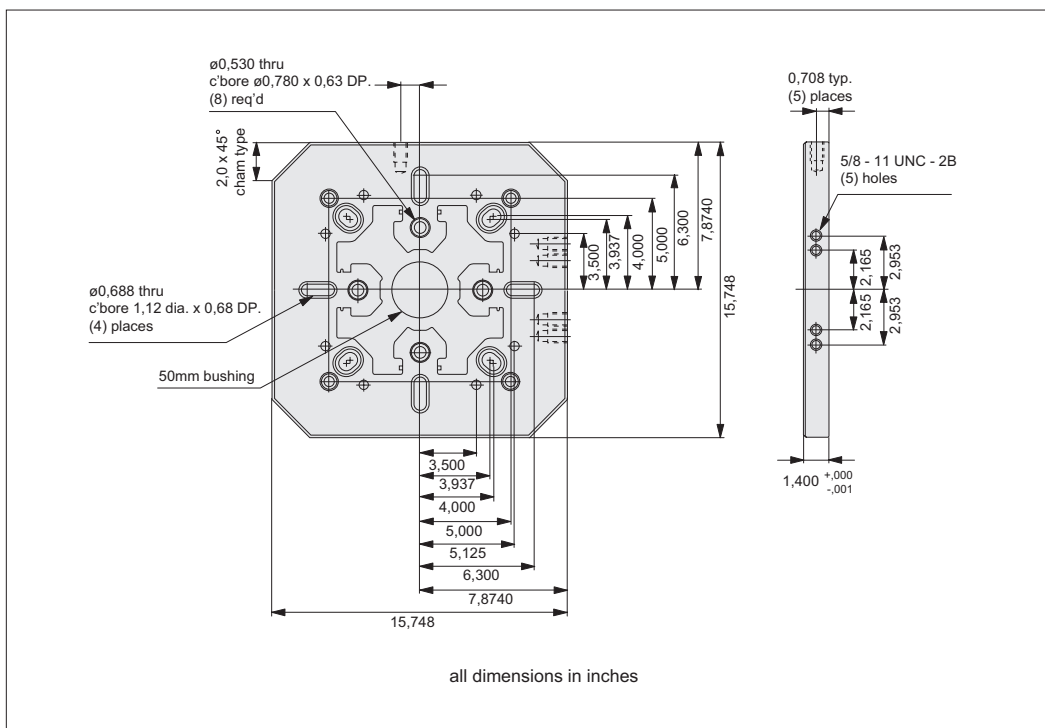
### Universal Baseplate for 6" ReLock 8-Station Vice



Details of baseplate included with vice no. **19762.W0060**.

VICE CLAMPING

### 400mm Baseplate for 6" ReLock 8-Station Vice



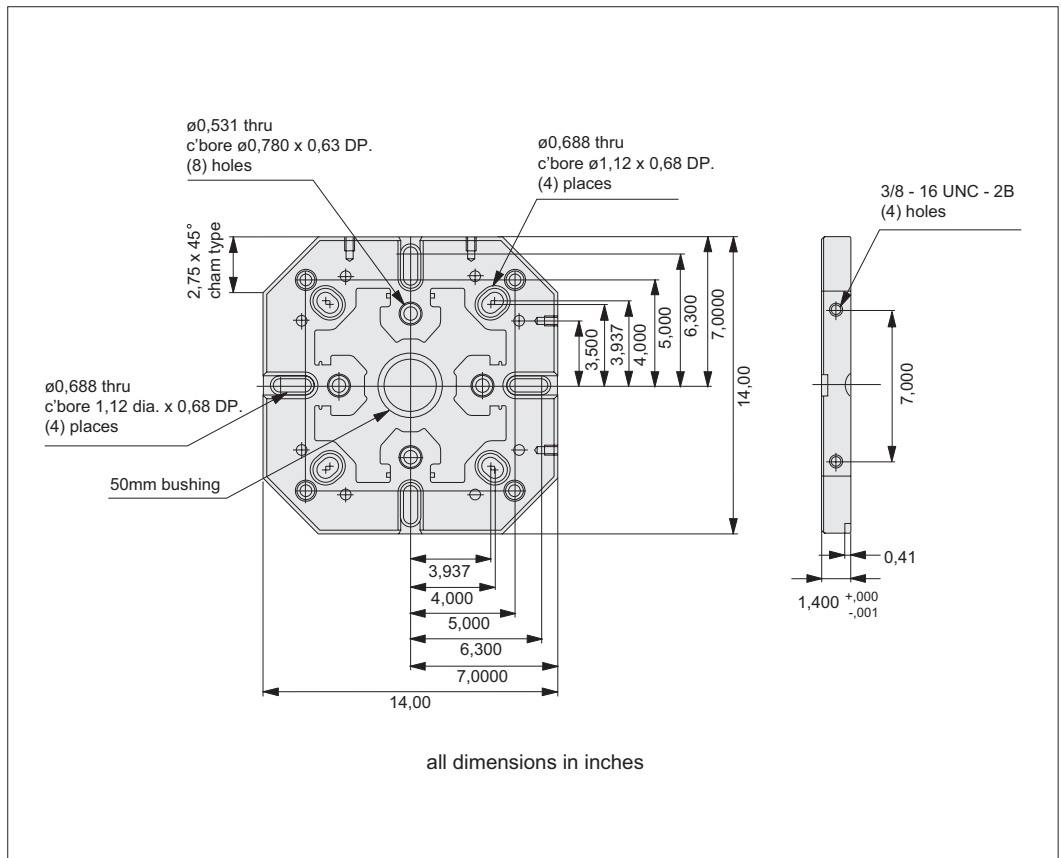
Details of baseplate included with vice no. **19762.W0061**.

ov-W19762.W0060-61-A-T-8-station-mounting-information-6-inch-rmh - Updated - 26-10-2022



## Universal Baseplate for 6" ReLock 8-Station Vice

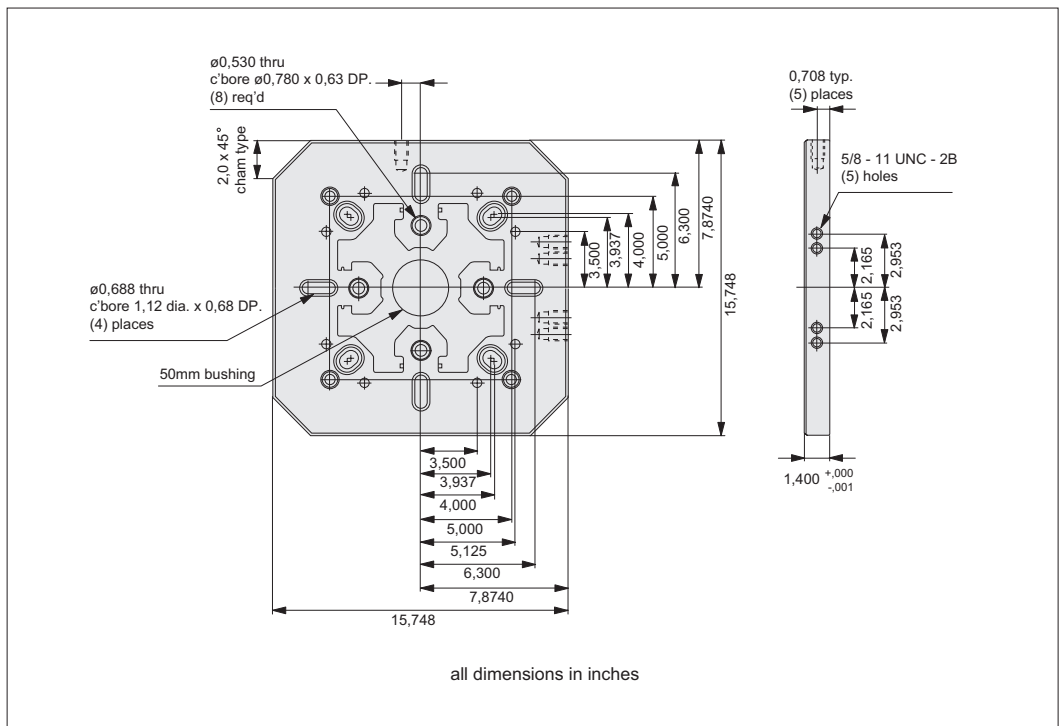
Details of baseplate included with vice no. **19762.W0060**.



VICE CLAMPING

## 400mm Baseplate for 6" ReLock 8-Station Vice

Details of baseplate included with vice no. **19762.W0061**.



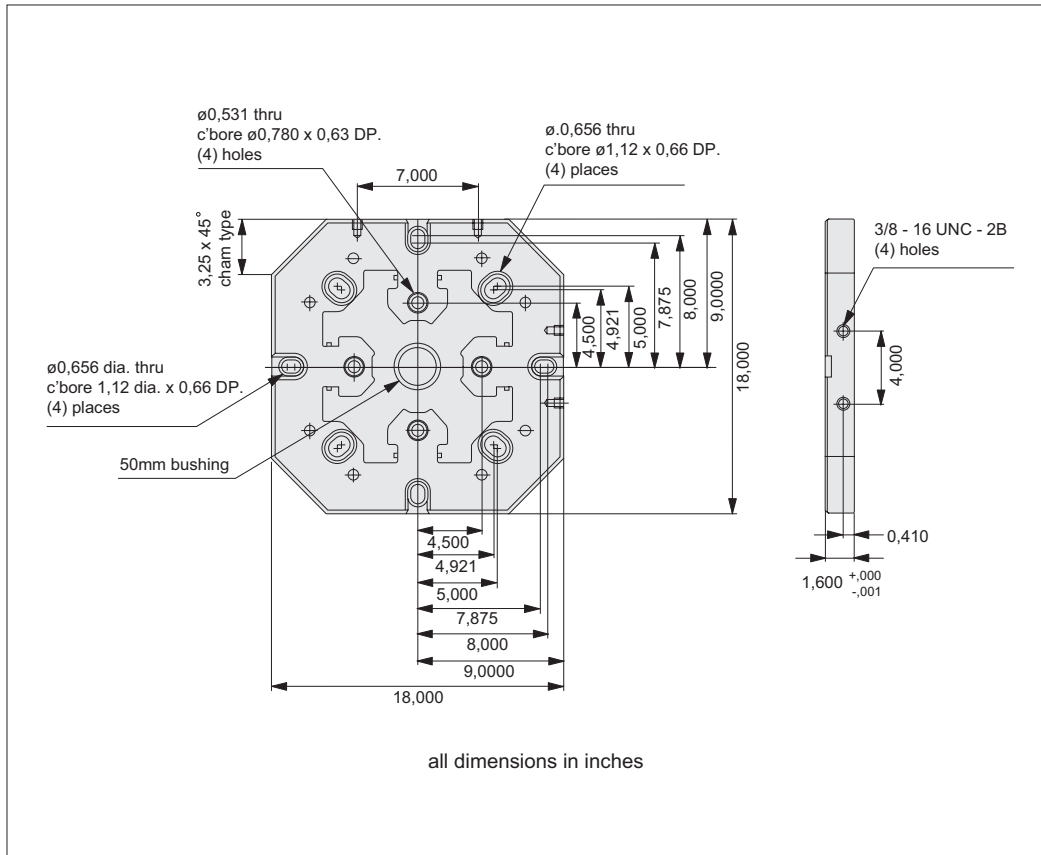


# 8-Station Vice Baseplate Mounting Information



## Clamping & Height Setting

### Universal Baseplate for 8" ReLock 8-Station Vice



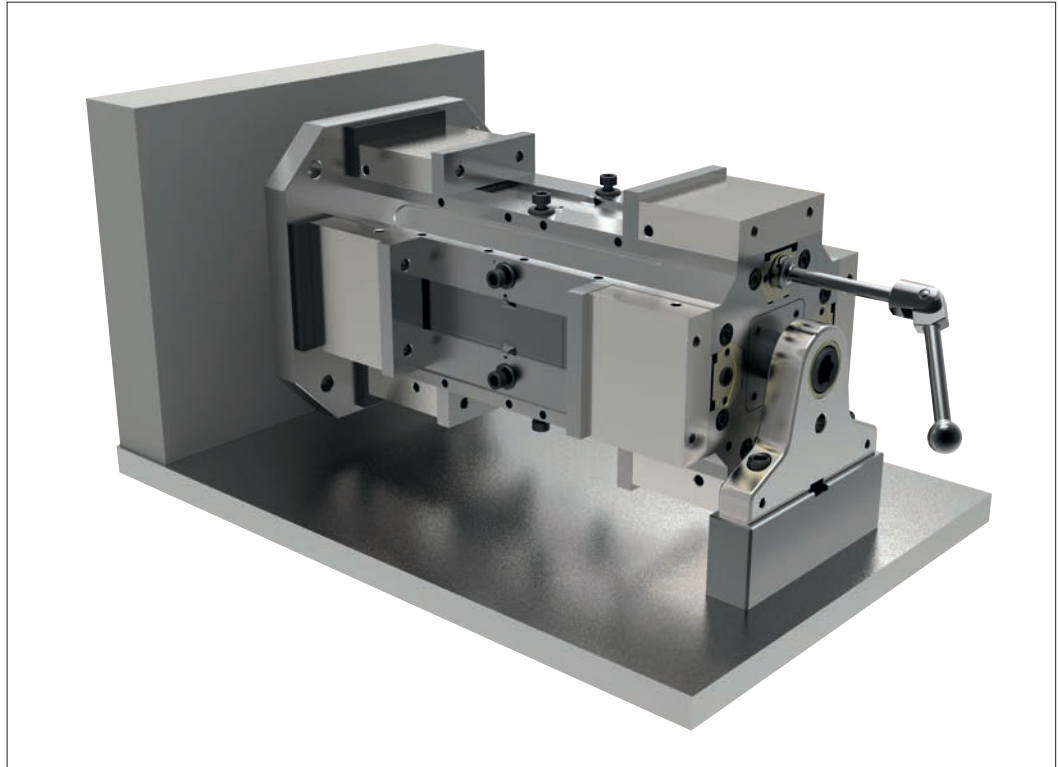
Details of baseplate included with vice no. **19762.W0080**

VICE CLAMPING

ov-W19762.W0080-A-T-8-station-vice-baseplate-mounting-information-8-inch-rmh - Updated - 26-10-2022

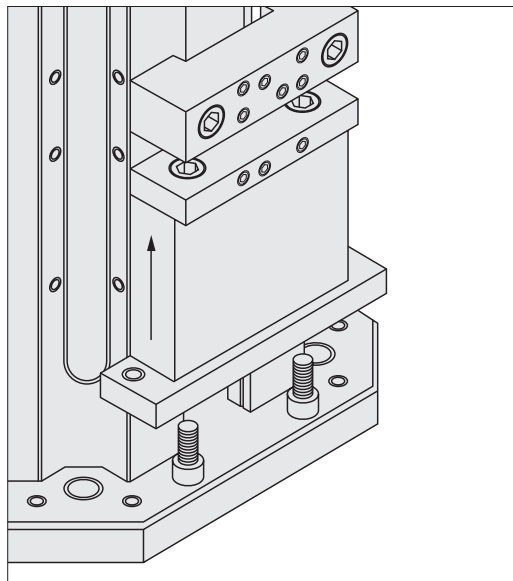


The ReLock 8-Station's compact and lightweight unibody design is perfect for horizontal machining centres. The unibody is manufactured from 80,000 psi ductile cast iron and the guide parts are flame hardened and precision ground to accuracies of  $\pm 0,0005''$ . It's also ideal for use with rotary indexers on vertical machining centre applications.



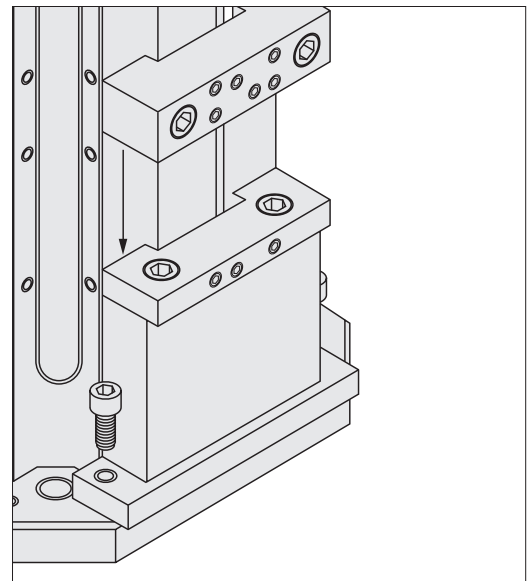
## Single Station Conversion Plate

Easy mounting instructions for the Single Station Conversion Plate **19769** on a ReLock 8-Station vice.



### Step 1

Crank bottom jaw toward centre of vice. Mount single station conversion plate **19769** to the back carrier jaw as shown.



### Step 2

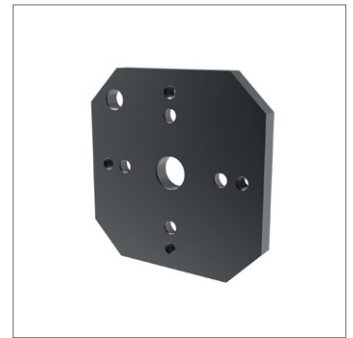
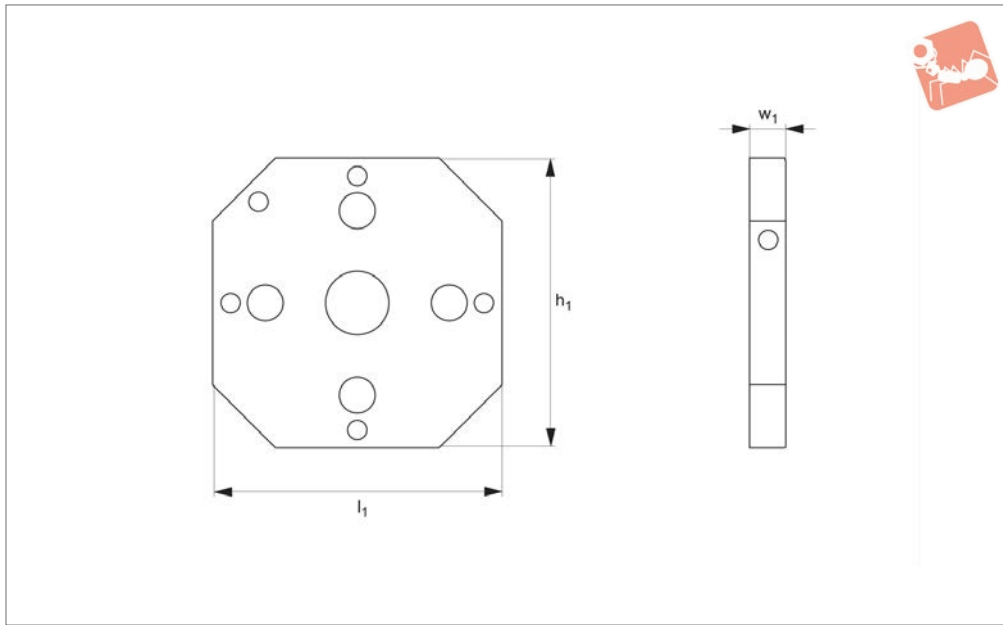
Crank bottom jaw down until the single station conversion plate touches baseplate. Mount the single station conversion plate to the baseplate.



# Adapter Plate - ReLock 8

8 station vice pallet or indexer mounting

## Vice Clamping



**19770**

VICE CLAMPING

### Material

Body: 80000 PSI ductile cast iron.  
Sideways flame hardened to 40 HRC max.

column vice to pallet or indexer.

### Important Notes

All dimensions are in inches.

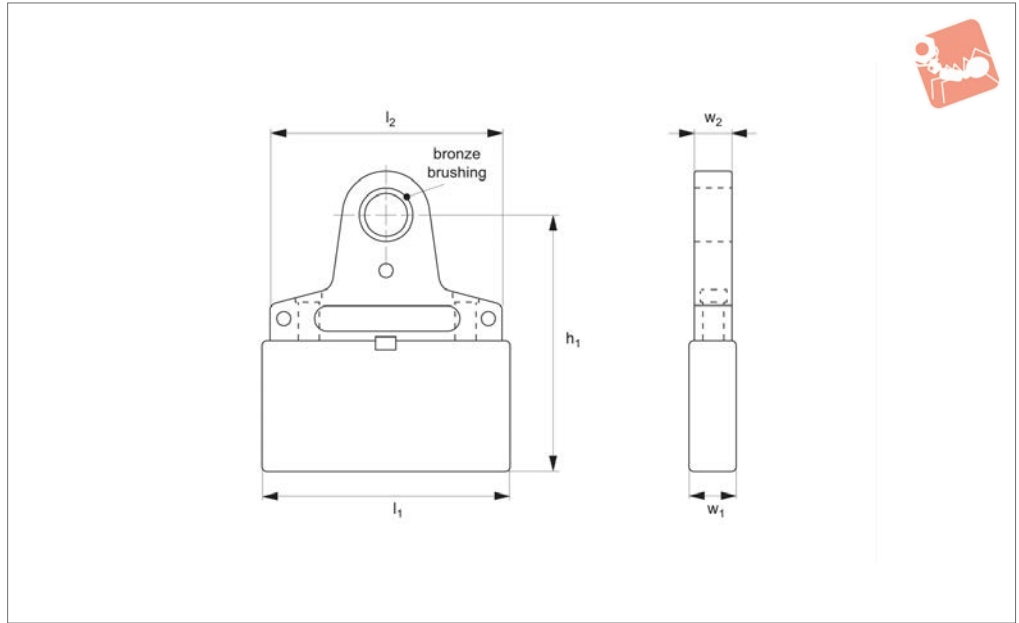
### Technical Notes

Adapter plate simplifies attachment of 8-

Order No.	Vice size	$l_1$	$h_1$	$w_1$
19770.W0004	4"	9	9	0.75
19770.W0006	6"	12	12	1.00



19771



VICE CLAMPING

**Material**

Body: 80000 PSI ductile cast iron.  
Sideways flame hardened to 40 HRC max.

required height.

**Important Notes**

All dimensions are in inches.

**Technical Notes**

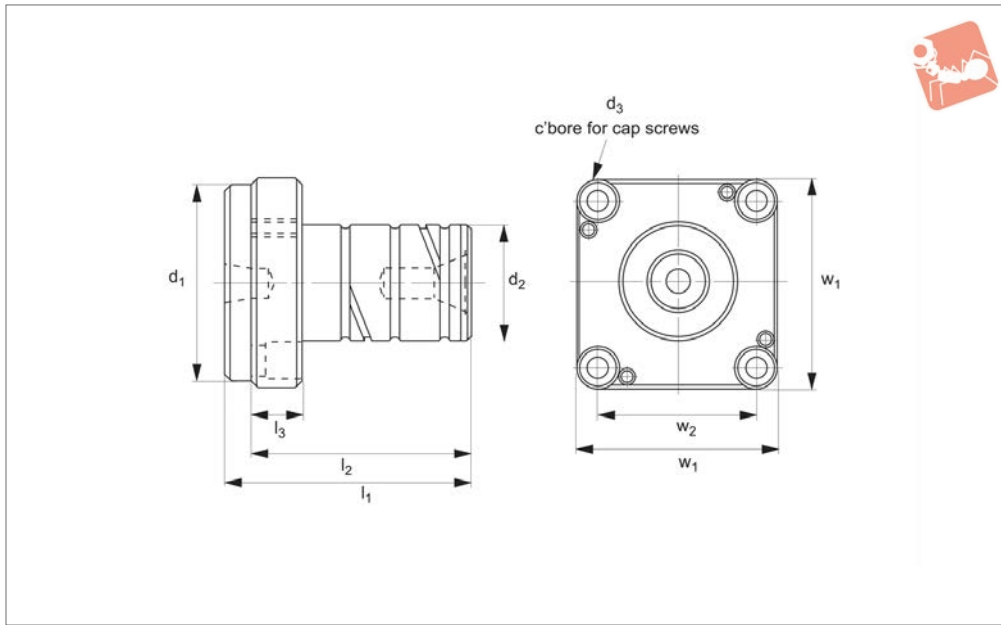
Support plate, modify base to your

Order No.	$l_1$	$h_1$	$l_2$	$w_1$	$w_2$
19771.W0001	10	12	9.5	2	1.5



# Alignment Nose - ReLock 8 for 8 station vice

## Vice Clamping



**19772**

VICE CLAMPING

### Material

Body: 80000 PSI ductile cast iron.  
Sideways flame hardened to 40 HRc max.

19771 and adapter plate 19770 for lasting precision to 0,001" total indicator reading (T.I.R.).

### Technical Notes

Works in conjunction with support bracket

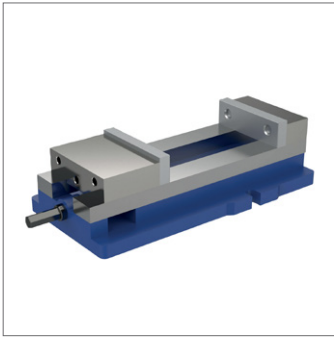
### Important Notes

**All dimensions are in inches.**

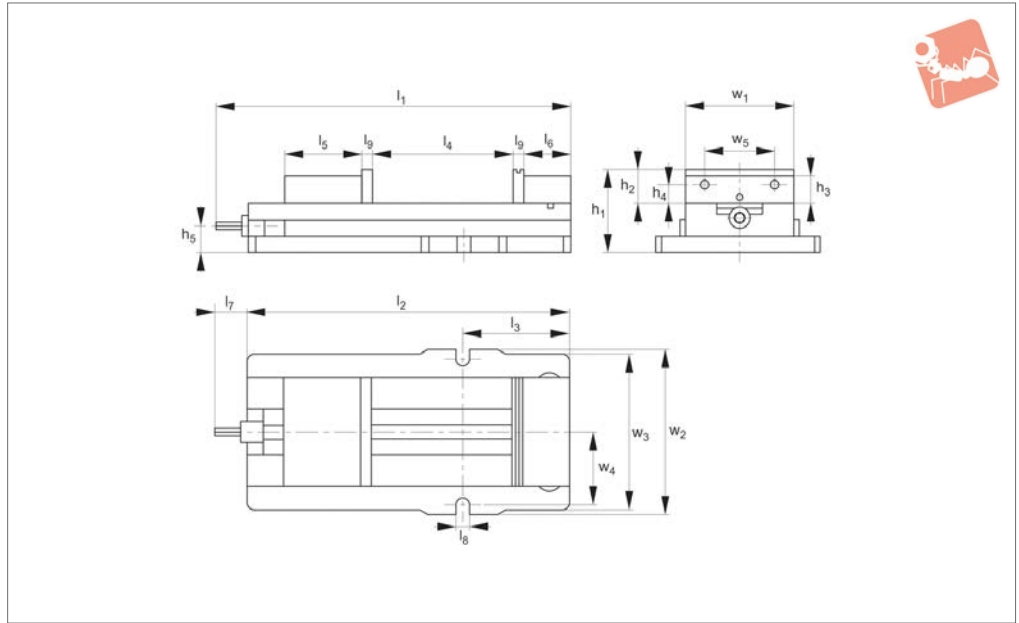
Order No.	For vice size	$l_1$	$d_1$ +0.0000 -0.0002	$d_2$	$d_3$	$l_2$	$l_3$	$w_1$ +0.000 -0.005	$w_2$
<b>19772.W0004</b>	4 "	3.000	2.750	19.672	5/16-18	2.750	0.469	2.875	2.207
<b>19772.W0006</b>	6 "	3.125	3.375	19.672	3/8-16	2.875	0.593	3.500	2.726
<b>19772.W0008</b>	8 "	3.250	5.125	19.672	1/2-13	3.000	0.718	5.250	4.187



VICE CLAMPING



### 19750



#### Material

Ductile iron.

#### Technical Notes

Up to 8200 lbs of clamping force.  
Base height matched to size 2,875"  
(73,025mm) ± 0,0005".  
Repeatability within 0,001".

Hardened vice base and jaw plates.

Outside rail edges of the body are machined.

Sealed bearing system reduces clamping pressure and increases bearing life.  
Stationary jaw has machined keyway for alignment of the vice and includes

alignment rail for quick setups.

Footprint and distance from keyway to stationary jaw same as major competitor.

#### Tips

**All dimensions are in inches.**

Order No.	Type	Style	Clamping pressure lb max.	$h_1$	$l_1$	$w_1$	$h_2$	$h_3$	$h_4$	$h_5$	Weight lb	
<b>19750.W0006</b>	Single Station	Machinable Jaws	8200	4.625	19.376	6	1.5	1.5	0.96	1.53	81	
Order No.	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$l_7$	$l_8$	$l_9$	$w_2$	$w_3$	$w_4$	$w_5$
<b>19750.W0006</b>	17.206	5.7	9	4.85	2.04	2.17	0.73	0.7	8.77	8.29	3.875	3.87

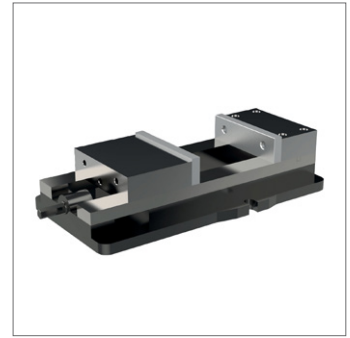
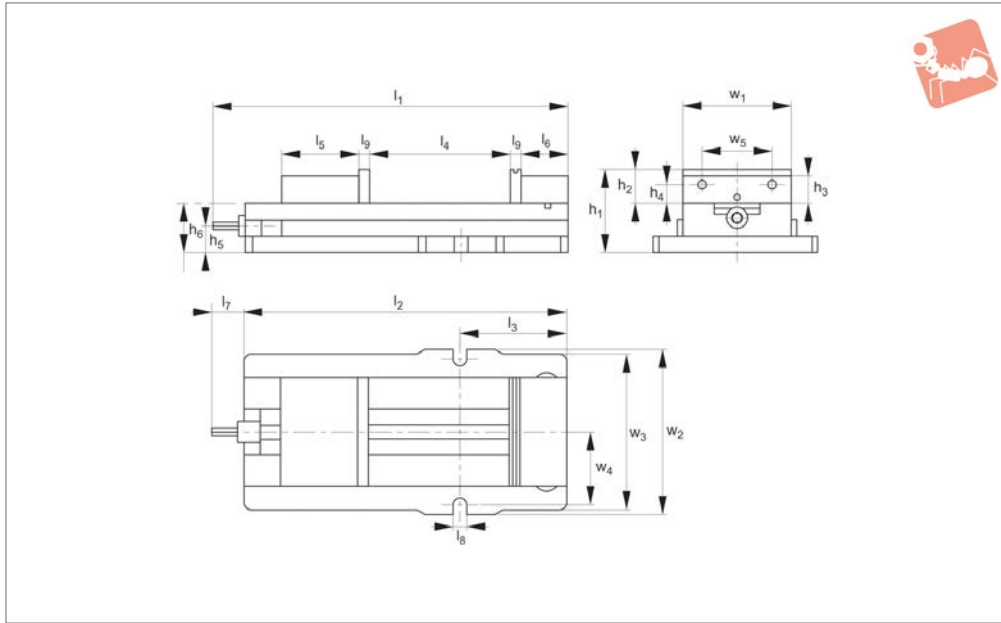




# 8" Single Station Parlec Vice

machinable jaws

## Vice Clamping



**19751**

VICE CLAMPING

### Material

Ductile iron. Powder coated paint resists flaking and peeling. 80000 psi ductile iron body with increased nickel content for improved corrosion resistance.

### Technical Notes

Hardened vice base and jaw plates. Sealed

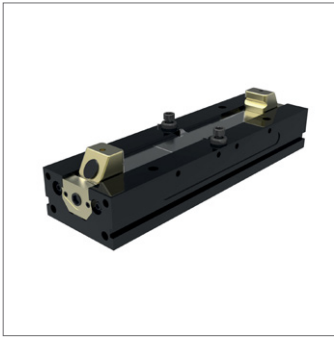
and lubricated needle roller thrust bearing for maximum life and minimum torque. Up to 12000lbs. (53379N) of clamping force. Repeatability within 0,001" (0,025mm). Outside rails of body are machined within 0,0005" (0,013mm) square to jaw. Bed height matched to size

3.310" ±0,0005" (84,07mm ±0,013mm). Footprint and distance from the keyway to stationary jaw meets industry standard.

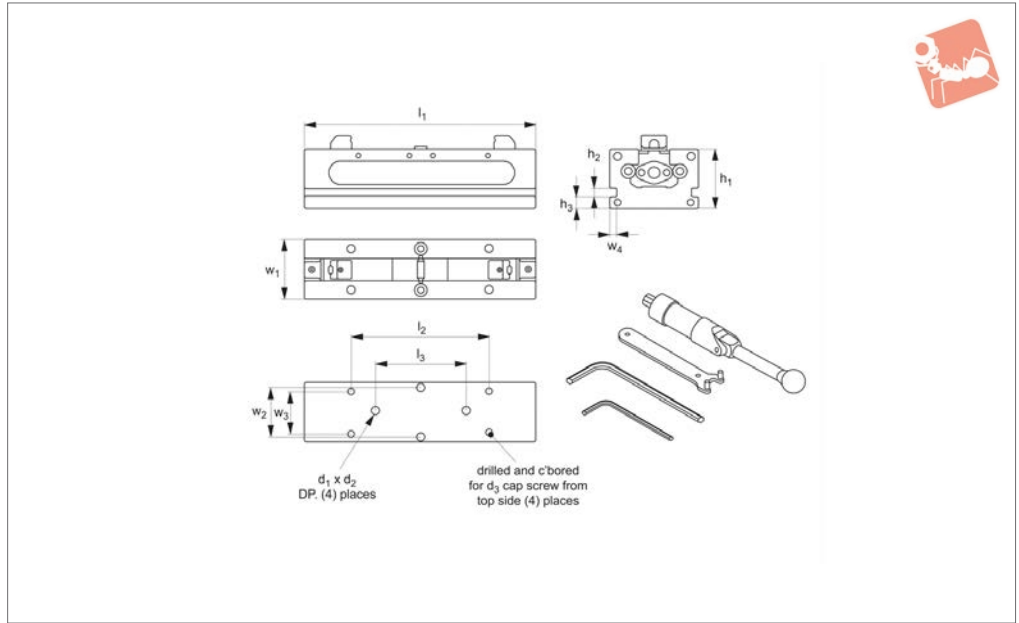
### Important Notes

**All dimensions are in inches.**

Order No.	Type	Style	Clamping pressure lb max.	h <sub>1</sub>	l <sub>1</sub>	w <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub>	Weight lb		
<b>19751.W0008</b>	Single Station	Machinable Jaws	12000	5.51	24.47	8	2.2	1.565	1.22	1.655	175		
Order No.	h <sub>6</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub> max.	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>
<b>19751.W0008</b>	3.31	21.61	8.34	11	5.75	3.681	2.66	0.875	1.075	11.5	11	4.94	4.75



## 19752



VICE CLAMPING

### Material

Body: 80000 PSI ductile cast iron.  
Sideways flame hardened to 40 HRC max.

### Technical Notes

Vice jaws not included, order separately - see part no. 19790.

Jaw capacity dependent upon selection of either machinable or hard jaws, see technical pages.  
Replacement parts available.

### Tips

Supplied with actuation handle, hex key

and wrench.

### Important Notes

All dimensions are in inches.

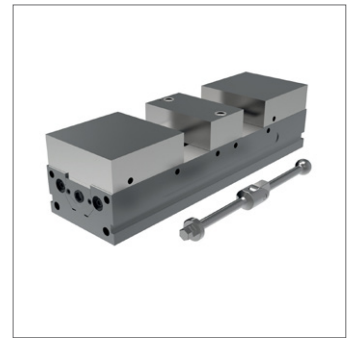
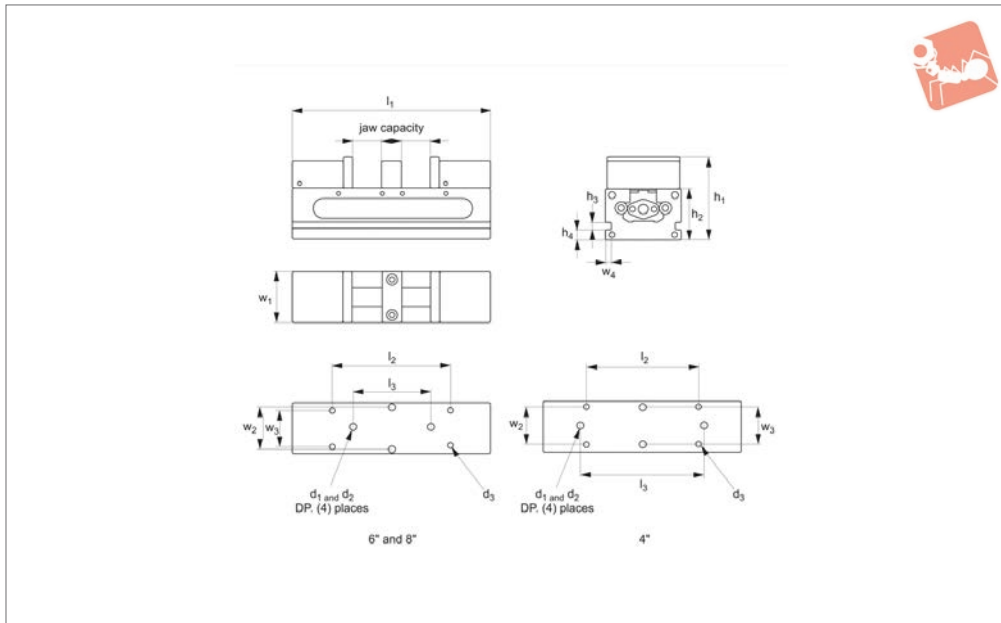
Order No.	Vice size	Clamping pressure lb max.	$h_1$ ±0.0005	$l_1$	$w_1$ +0.000 -0.002	$h_2$	$h_3$	$d_1$	$d_2$	$d_3$	$l_2$	$l_3$ ±0.001	$w_2$ ±0.001	$w_3$	$w_4$	Weight lb
19752.W0004	4"	6000	2,50	16,0	4	0,375	0,50	0,501	0,56	5/16-18	9	10	3	3	0,190	33
19752.W0006	6"	12000	3,25	20,5	6	0,562	0,75	0,501	0,63	3/8-16	12	10	5	4	0,250	68
19752.W0008	8"	16000	4,00	28,5	8	0,625	0,75	0,751	0,90	1/2-13	16	14	6	6	0,312	110



# Double Station Vice

## ReLock 2 - with machinable soft jaws

# Vice Clamping



## 19754

VICE CLAMPING

### Material

Body: 80000 PSI ductile cast iron.  
Sideways flame hardened to 40 HRC max.  
Machinable jaws: aluminium.

### Tips

Supplied with actuation handle, hex key and wrench.

### Technical Notes

Replacement parts available.

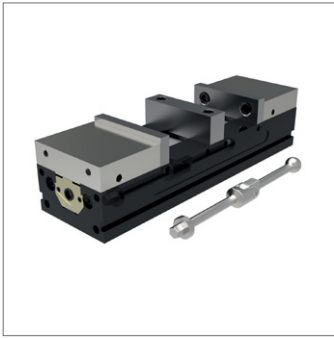
### Important Notes

All dimensions are in inches.

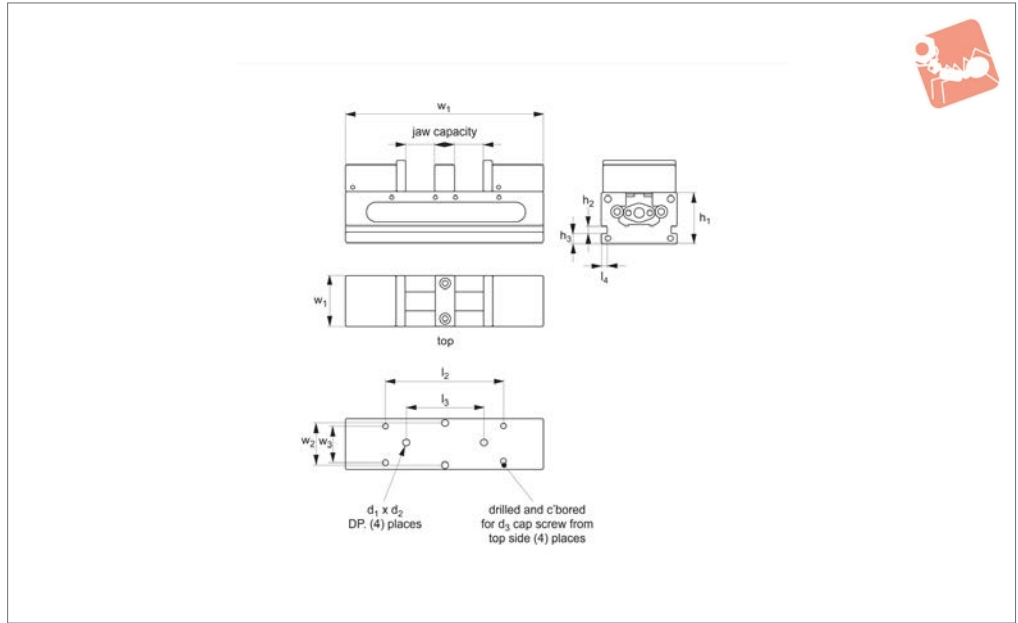
Order No.	Vice size	Set contents	Clamp pressure lb max.	Jaw capacity	$h_1$	$l_1$	$w_1$ +0.000 -0.002	$h_2$ ±0.005	Weight lb
19754.W0004	4"	Vice - 1 x 19752.W0004, Machinable jaws - 1 x 19790.W0401	6000	4,125 to 15,000	4"	16.0	4	2.50	40
19754.W0006	6"	Vice - 1 x 19752.W0006, Machinable jaws - 1 x 19790.W0601	12000	5,125 to 19,500	6"	20.5	6	3.25	86
19754.W0008	8"	Vice - 1 x 19752.W0008, Machinable jaws - 1 x 19790.W0801	16000	7,625 to 27,500	8"	28.5	8	4.00	149

Order No.	$h_3$	$h_4$	$d_1$	$d_2$ ±0.0005	$d_3$	$l_2$	$l_3$ ±0.001	$w_2$	$w_3$	$w_4$
19754.W0004	0.375	0.50	0.56	0.501	0.3125	9	10	3	3	0.190
19754.W0006	0.562	0.75	0.63	0.501	0.3125	12	10	5	4	0.250
19754.W0008	0.625	0.75	0.90	0.751	0.3125	16	14	6	6	0.312



# 19756



VICE CLAMPING

### Material

Body: 80000 PSI ductile cast iron.  
 Sideways flame hardened to 40 HRC max.  
 Carrier jaws: aluminium.  
 Hard jaws: steel.

### Technical Notes

Replacement parts available.

### Tips

Supplied with actuation handle, hex key

and wrench.

### Important Notes

All dimensions are in inches.

Order No.	Vice size	Set contents	Clamping pressure lb max.	Jaw capacity	$h_1$ $\pm 0.0005$	$l_1$	$w_1$ $+0.000 -0.002$
19756.W0004	4"	Vice - 1 x 19752.W0004, Carrier jaws - 1 x 19796.W0403, Hard jaws - 1 x 19892.W0401	6000	3,00 to 16,00	2.50	16.0	4
19756.W0006	6"	Vice - 1 x 19752.W0006, Carrier jaws - 1 x 19796.W0603, Hard jaws - 1 x 19892.W0601	12000	4,00 to 20,50	3.25	20.5	6
19756.W0008	8"	Vice - 1 x 19752.W0008, Carrier jaws - 1 x 19796.W0803, Hard jaws - 1 x 19892.W0801	16000	6,00 to 28,50	4.00	28.5	8

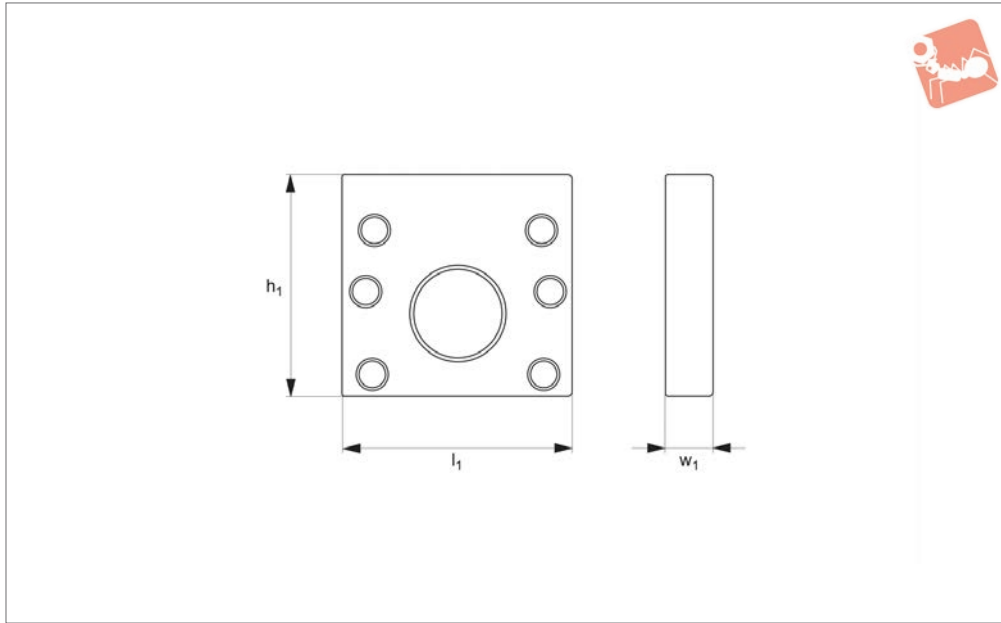
Order No.	$h_2$	$h_3$	$d_1$	$d_2$	$d_3$	$l_2$	$l_3$ $\pm 0.001$	$l_4$	$w_2$ $\pm 0.03$	$w_3$
19756.W0004	0.375	0.50	0.501	0.56	5/16-18	9	10	0.190	3	3
19756.W0006	0.562	0.75	0.501	0.63	3/8-16	12	10	0.250	5	4
19756.W0008	0.652	0.75	0.751	0.90	1/2-13	16	14	0.312	6	6



# Conversion Plate

ReLock 2 - converts a double to single station vice

# Vice Clamping



## 19759

VICE CLAMPING

### Technical Notes

For use on 8-station vice. Converts a double station vice to a single station in conjunction with SnapLock carrier jaws.

### Important Notes

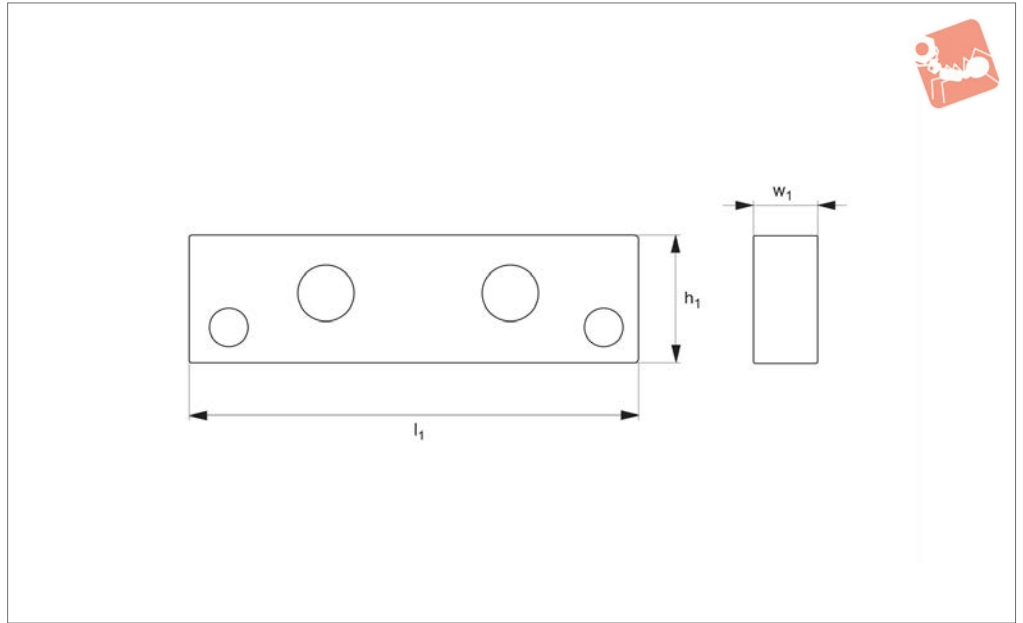
Not compatible with 19768 compact 8-vice column.

**All dimensions are in inches.**

Order No.	Vice size	$h_1$	$l_1$	$w_1$
19759.W0004	4"	4.163	4	0.72
19759.W0006	6"	5.538	6	0.72
19759.W0008	8"	7.093	8	0.97



19769



VICE CLAMPING

**Material**

Body: 80000 PSI ductile cast iron.  
Sideways flame hardened to 40 HRc max.

**Important Notes**

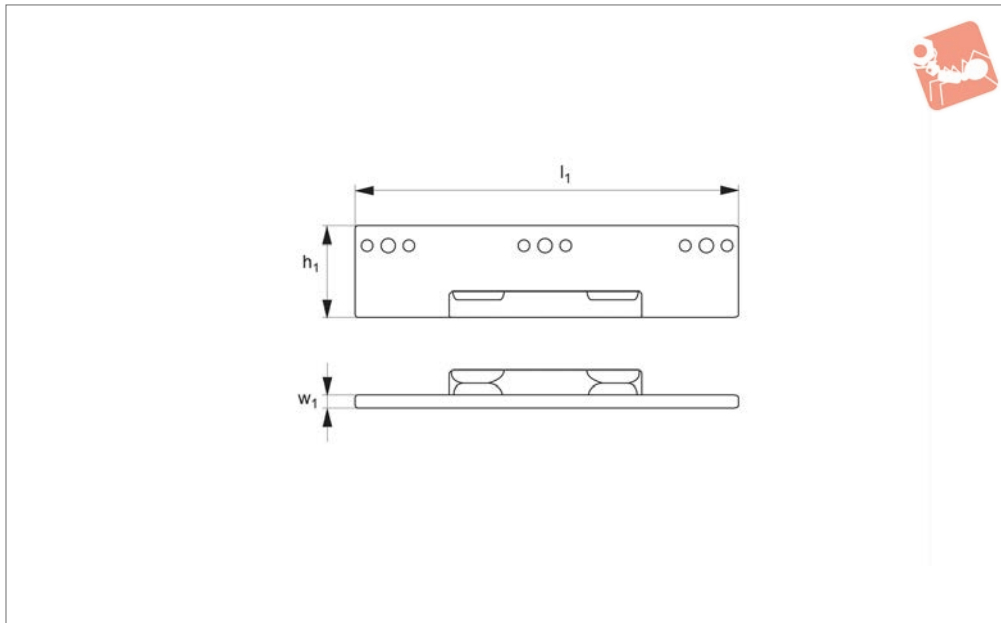
All dimensions are in inches.

Order No.	$h_1$	$l_1$	$w_1$
19769.W0004	1.35	5.50	0.72
19769.W0006	2.00	8.00	0.72
19769.W0008	2.50	10.25	0.97



# Vice Parallels - AccuSnap

for use with with AccuSnap master jaws 19810



**19812**

VICE CLAMPING

**Material**

Body: 80000 psi ductile cast iron.

**Technical Notes**

Use in conjunction with AccuSnap master

jaws 19810.

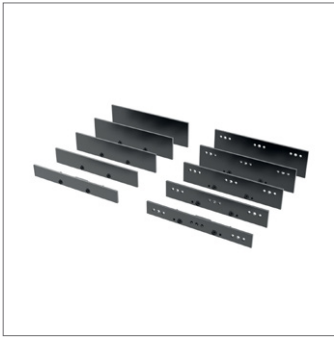
Parallels snap into position quickly and easily. Can be used with AccuSnap modular workstops (except sizes 19812.W0401,

W0402, W0601, W0602 and W0801).

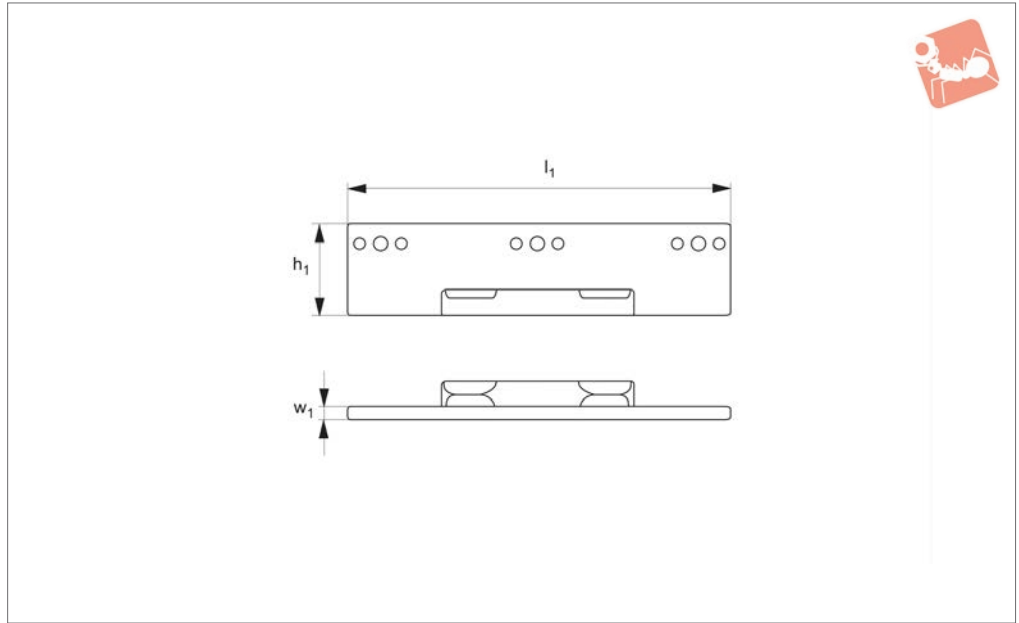
**Important Notes**

All dimensions are in inches.

Order No.	Vice size	$l_1$	$h_1$ $\pm 0.0005$	$w_1$
19812.W0401	4"	3.98	0.500	0.118
19812.W0402	4"	3.98	0.625	0.118
19812.W0403	4"	3.98	0.750	0.118
19812.W0404	4"	3.98	0.875	0.118
19812.W0405	4"	3.98	1.000	0.118
19812.W0406	4"	3.98	1.125	0.118
19812.W0407	4"	3.98	1.250	0.118
19812.W0408	4"	3.98	1.312	0.118
19812.W0601	6"	5.98	0.750	0.118
19812.W0602	6"	5.98	1.000	0.118
19812.W0603	6"	5.98	1.125	0.118
19812.W0604	6"	5.98	1.250	0.118
19812.W0605	6"	5.98	1.375	0.118
19812.W0606	6"	5.98	1.500	0.118
19812.W0607	6"	5.98	1.625	0.118
19812.W0608	6"	5.98	1.750	0.118
19812.W0609	6"	5.98	1.812	0.118
19812.W0801	8"	7.98	1.000	0.118
19812.W0802	8"	7.98	1.250	0.118
19812.W0803	8"	7.98	1.375	0.118
19812.W0804	8"	7.98	1.500	0.118
19812.W0805	8"	7.98	1.625	0.118
19812.W0806	8"	7.98	1.750	0.118
19812.W0807	8"	7.98	1.875	0.118
19812.W0808	8"	7.98	2.000	0.118
19812.W0809	8"	7.98	2.125	0.118
19812.W0810	8"	7.98	2.250	0.118



### 19814



**Material**

Body: 80000 psi ductile cast iron.

**Technical Notes**

Use in conjunction with AccuSnap master

jaws. Parallels snap into position quickly and easily.  
Can be used with AccuSnap modular work-stops.

Holder racks available see part no. 19838.

**Important Notes**

**All dimensions are in inches.**

Order No.	Vice size	Type	Set contents: 1 pair each x dim. $h_1$										$l_1$	$w_1$
			$\pm 0.0005$											
19814.W0040	4"	Basic	0,500	0,750	1,000	1,250	1,312						3.98	0.118
19814.W0060	6"	Basic	0,750	1,000	1,250	1,500	1,750						5.98	0.118
19814.W0080	8"	Basic	1,000	1,250	1,500	1,750	2,000	2,250					7.98	0.118
19814.W0140	4"	Advanced	0,500	0,625	0,750	0,875	1,000	1,125	1,250	1,312			3.98	0.118
19814.W0160	6"	Advanced	0,750	1,000	1,125	1,250	1,375	1,500	1,625	1,750	1,812		5.98	0.118
19814.W0180	8"	Advanced	1,000	1,250	1,375	1,500	1,625	1,750	1,875	2,000	2,125	2,250	7.98	0.118

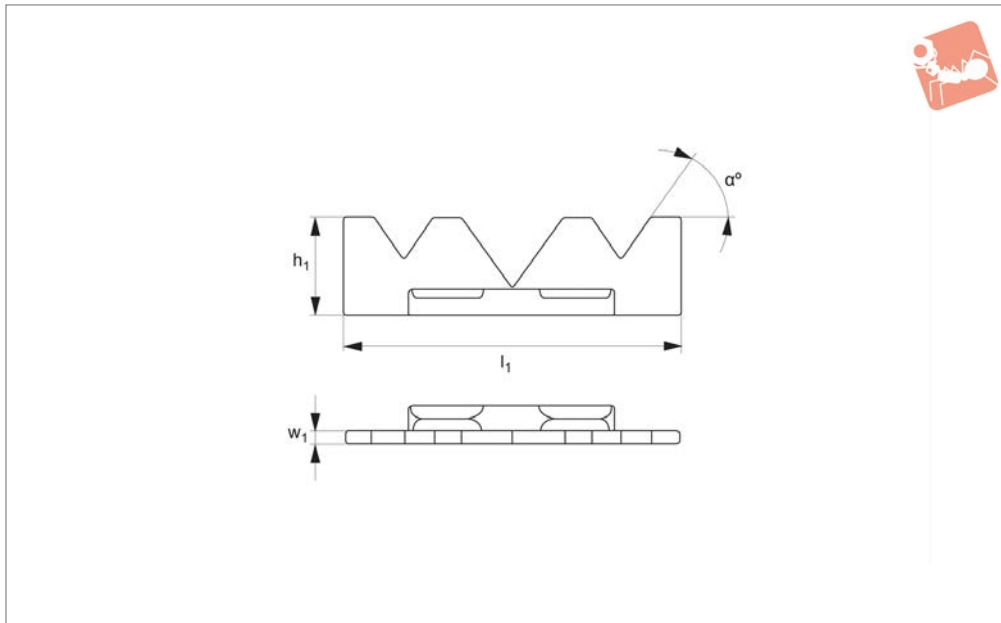




# Vice Mill Angles - AccuSnap

for use with AccuSnap master jaws 19810

## Vice Clamping



19816

VICE CLAMPING

### Material

Body: 80000 psi ductile cast iron.

jaws.

### Technical Notes

Use in conjunction with AccuSnap master

### Important Notes

All dimensions are in inches.

Order No.	Vice size	Type	$l_1$	$h_1$	$w_1$	$\alpha$
19816.W0040	4"	Individual	4	1.240	0.118	20
19816.W0041	4"	Individual	4	1.240	0.118	25
19816.W0042	4"	Individual	4	1.240	0.118	30
19816.W0043	4"	Individual	4	1.240	0.118	35
19816.W0044	4"	Individual	4	1.240	0.118	40
19816.W0045	4"	Individual	4	1.240	0.118	45
19816.W0060	6"	Individual	6	1.174	0.118	20
19816.W0061	6"	Individual	6	1.174	0.118	25
19816.W0062	6"	Individual	6	1.174	0.118	30
19816.W0063	6"	Individual	6	1.174	0.118	35
19816.W0064	6"	Individual	6	1.174	0.118	40
19816.W0065	6"	Individual	6	1.174	0.118	45
19816.W0080	8"	Individual	8	2.230	0.118	20
19816.W0081	8"	Individual	8	2.230	0.118	25
19816.W0082	8"	Individual	8	2.230	0.118	30
19816.W0083	8"	Individual	8	2.230	0.118	35
19816.W0084	8"	Individual	8	2.230	0.118	40
19816.W0085	8"	Individual	8	2.230	0.118	45
19816.W0140	4"	Matched Set	4	1.240	0.118	20
19816.W0141	4"	Matched Set	4	1.240	0.118	25
19816.W0142	4"	Matched Set	4	1.240	0.118	30
19816.W0143	4"	Matched Set	4	1.240	0.118	35
19816.W0144	4"	Matched Set	4	1.240	0.118	40
19816.W0145	4"	Matched Set	4	1.240	0.118	45
19816.W0160	6"	Matched Set	6	1.174	0.118	20
19816.W0161	6"	Matched Set	6	1.174	0.118	25
19816.W0162	6"	Matched Set	6	1.174	0.118	30
19816.W0163	6"	Matched Set	6	1.174	0.118	35
19816.W0164	6"	Matched Set	6	1.174	0.118	40
19816.W0165	6"	Matched Set	6	1.174	0.118	45
19816.W0180	8"	Matched Set	8	2.230	0.118	20
19816.W0181	8"	Matched Set	8	2.230	0.118	25
19816.W0182	8"	Matched Set	8	2.230	0.118	30
19816.W0183	8"	Matched Set	8	2.230	0.118	35



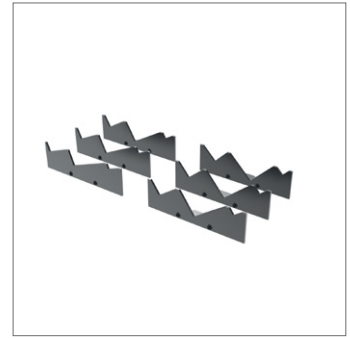
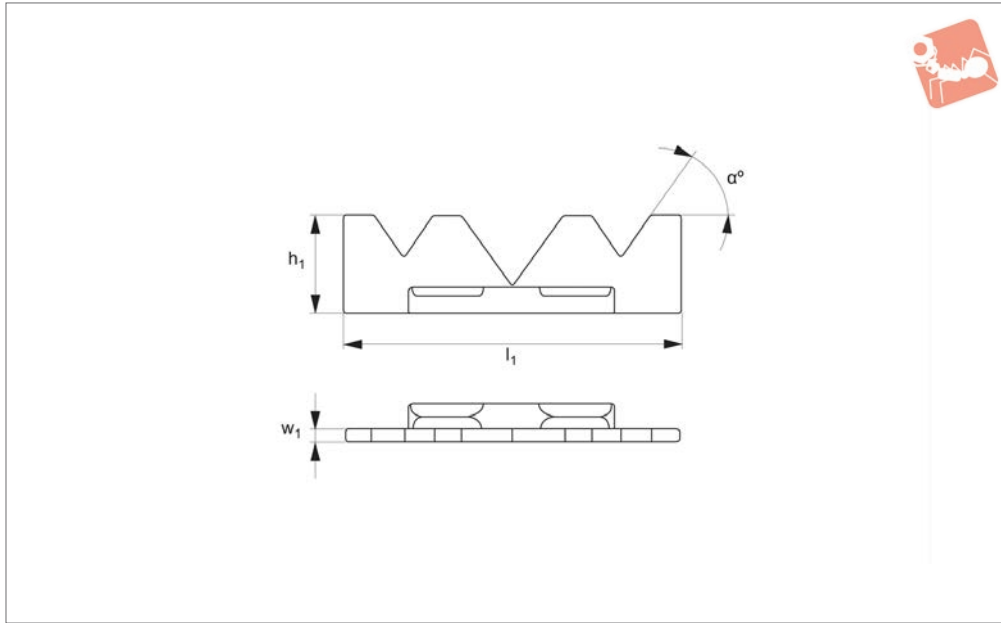
Order No.	Vice size	Type	$l_1$	$h_1$	$w_1$	$\alpha$
19816.W0184	8"	Matched Set	8	2.230	0.118	40
19816.W0185	8"	Matched Set	8	2.230	0.118	45



# Vice Mill Angle Sets - AccuSnap

for use with AccuSnap master jaws 19810

## Vice Clamping



**19818**

VICE CLAMPING

### Material

Body: 80000 psi ductile cast iron.

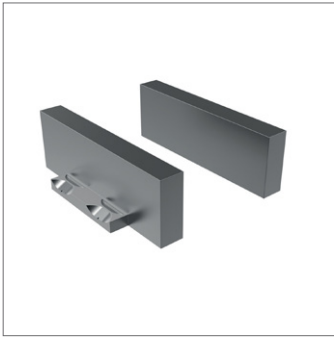
### Important Notes

All dimensions are in inches.

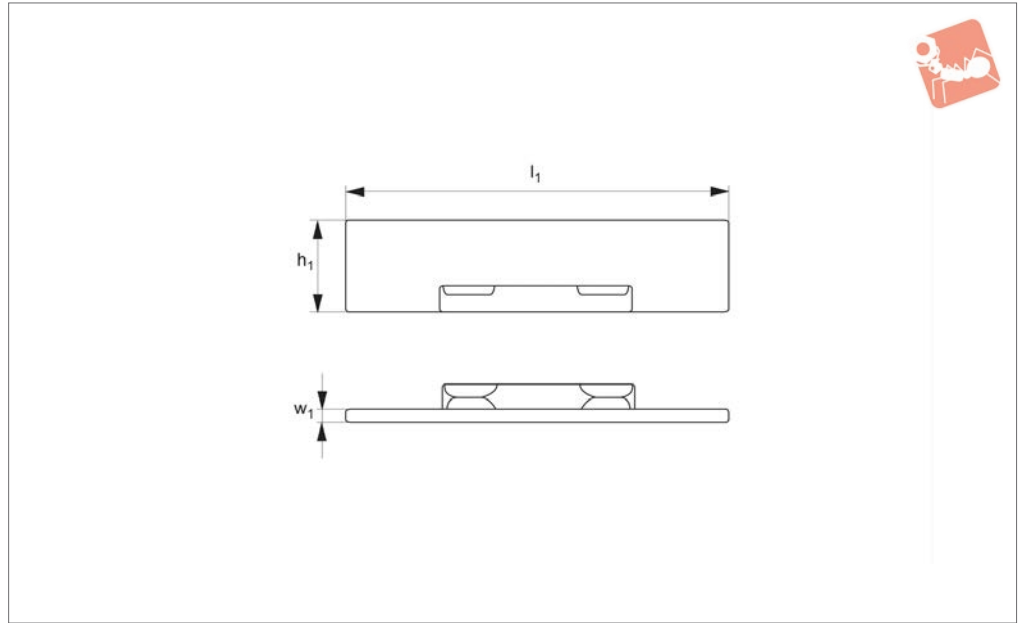
### Technical Notes

For use with our AccuSnap master jaws.

Order No.	For vice size	$l_1$	$h_1$	$w_1$	Set contents 1 each of $a^\circ$
19818.W0040	4"	4	1.24	0.118	20° 25° 30° 35° 40° 45°
19818.W0060	6"	6	1.74	0.118	20° 25° 30° 35° 40° 45°
19818.W0080	8"	8	2.23	0.118	20° 25° 30° 35° 40° 45°



## 19820



### Material

Aluminium or steel.

Jaws snap in position quickly and easily.

**All dimensions are in inches.**

### Technical Notes

For use with our AccuSnap master jaws.

### Important Notes

Sold individually. For a pair please order quantity of 2.

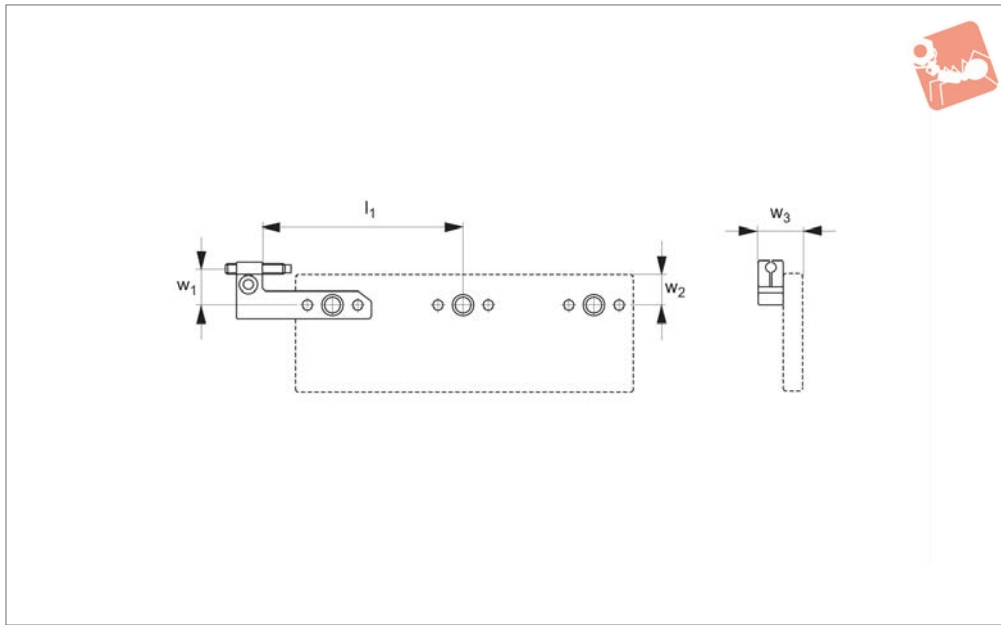
Order No.	For vice size	Material	$l_1$	$h_1$	$w_1$
19820.W0040	4"	Aluminium	3.98	1.5	0.690
19820.W0041	4"	Aluminium	3.98	1.5	1.255
19820.W0060	6"	Aluminium	5.98	2.0	0.750
19820.W0061	6"	Aluminium	5.98	2.0	1.500
19820.W0080	8"	Aluminium	7.98	2.5	1.250
19820.W0081	8"	Aluminium	7.98	2.5	2.500
19820.W0140	4"	Steel	3.98	1.5	0.690
19820.W0141	4"	Steel	3.98	1.5	1.255
19820.W0160	6"	Steel	5.98	2.0	0.750
19820.W0161	6"	Steel	5.98	2.0	1.500
19820.W0180	8"	Steel	7.98	2.5	1.250
19820.W0181	8"	Steel	7.98	2.5	2.500



# Workstops For Vice - AccuSnap

for use with AccuSnap parallel sets 19812 & 19814

## Vice Clamping



### 19830

VICE CLAMPING

#### Material

Body: 80000 psi ductile cast iron.

#### Technical Notes

Ideal for off-line setup. Provides accurate workpiece location and repeatability.

For use with our AccuSnap parallel sets (please order separately).

#### Important Notes

Install using locating dowel pin into one of three stop locations on face of parallel

(not supplied). Secure workstop by tightening screw.

**All dimensions are in inches.**

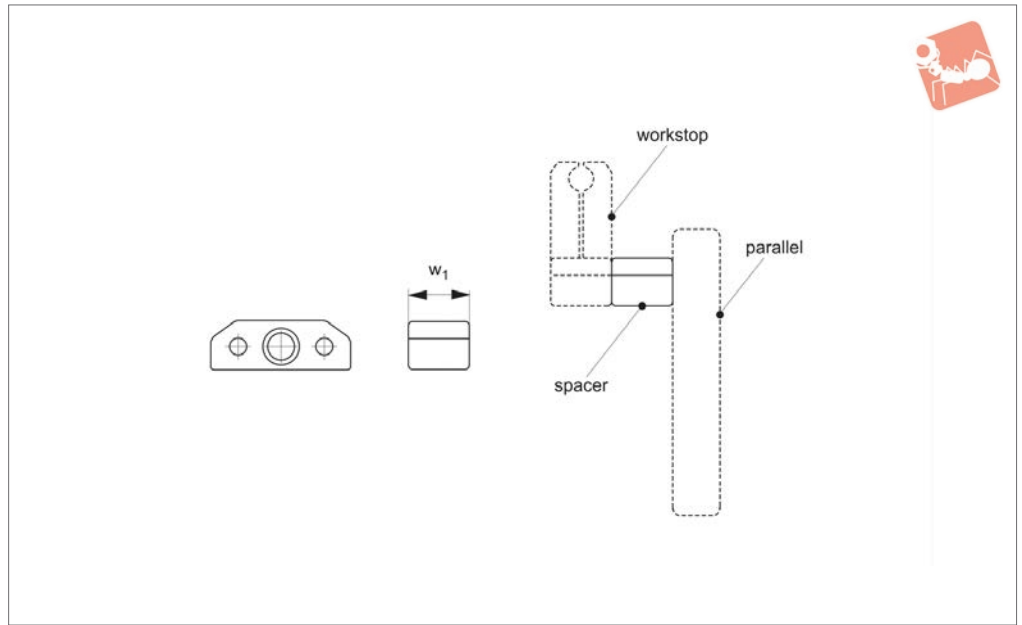
Order No.	For vice size	Type	$l_1$	$w_1$	$w_2$	$w_3$
19830.W0040	4"	Right Hand	1.75	0.469	0.493	0.28
19830.W0041	4"	Right Hand	2.50	0.469	0.493	0.28
19830.W0042	4"	Right Hand	1.75	0.969	0.493	0.28
19830.W0043	4"	Right Hand	2.50	0.969	0.493	0.28
19830.W0060	6"	Right Hand	2.68	0.657	0.493	0.47
19830.W0061	6"	Right Hand	3.68	0.657	0.493	0.47
19830.W0062	6"	Right Hand	2.68	1.157	0.493	0.47
19830.W0063	6"	Right Hand	3.68	1.157	0.493	0.47
19830.W0080	8"	Right Hand	3.50	0.626	0.618	0.44
19830.W0081	8"	Right Hand	5.00	0.626	0.618	0.44
19830.W0082	8"	Right Hand	3.50	1.126	0.618	0.44
19830.W0083	8"	Right Hand	5.00	1.126	0.618	0.44
19830.W0140	4"	Left Hand	1.75	0.469	0.493	0.28
19830.W0141	4"	Left Hand	2.50	0.469	0.493	0.28
19830.W0142	4"	Left Hand	1.75	0.969	0.493	0.28
19830.W0143	4"	Left Hand	2.50	0.969	0.493	0.28
19830.W0160	6"	Left Hand	2.68	0.657	0.493	0.47
19830.W0161	6"	Left Hand	3.68	0.657	0.493	0.47
19830.W0162	6"	Left Hand	2.68	1.157	0.493	0.47
19830.W0163	6"	Left Hand	3.68	1.157	0.493	0.47
19830.W0180	8"	Left Hand	3.50	0.626	0.618	0.44
19830.W0181	8"	Left Hand	5.00	0.626	0.618	0.44
19830.W0182	8"	Left Hand	3.50	1.126	0.618	0.44
19830.W0183	8"	Left Hand	5.00	1.126	0.618	0.44



VICE CLAMPING



### 19832



**Material**

Body: 80000 psi ductile cast iron.

**Technical Notes**

For use with AccuSnap workstop no. 19830,

spaces enables workstop to be offset from parallel face. For use with our AccuSnap workstop and parallel sets (please order separately).

**Important Notes**

**All dimensions are in inches.**

Order No.	For vice size	w <sub>1</sub>
19832.W0040	4"	0.375
19832.W0060	6"	0.375
19832.W0080	8"	0.500

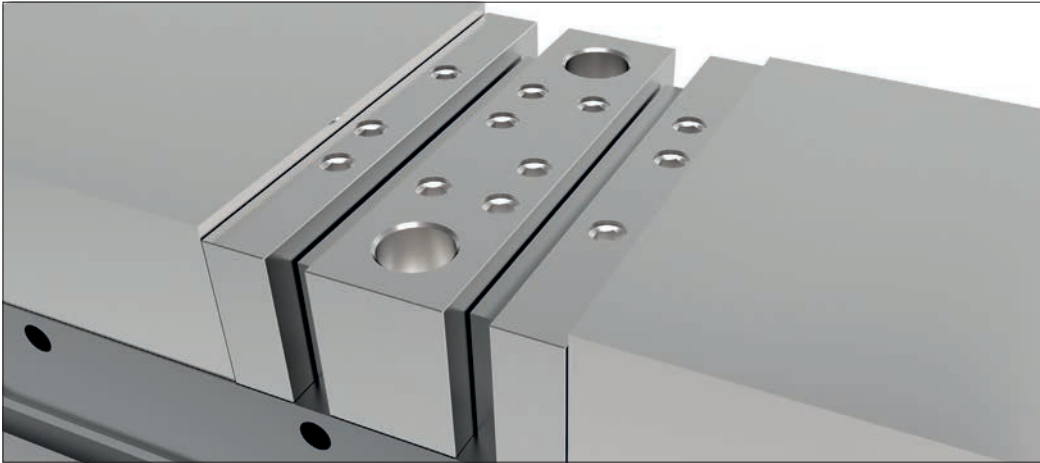
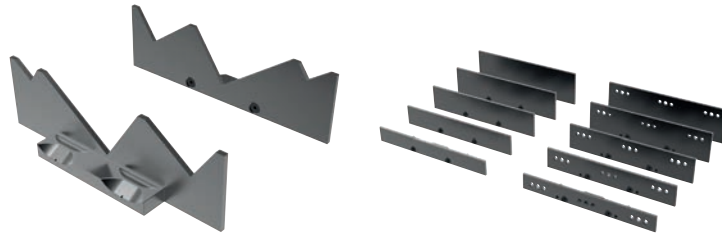


# AccuSnap Jaws and Parallels

for use on SnapLock Jaw System for ReLock Vices

19810 - 19838  
Clamping & Height Setting

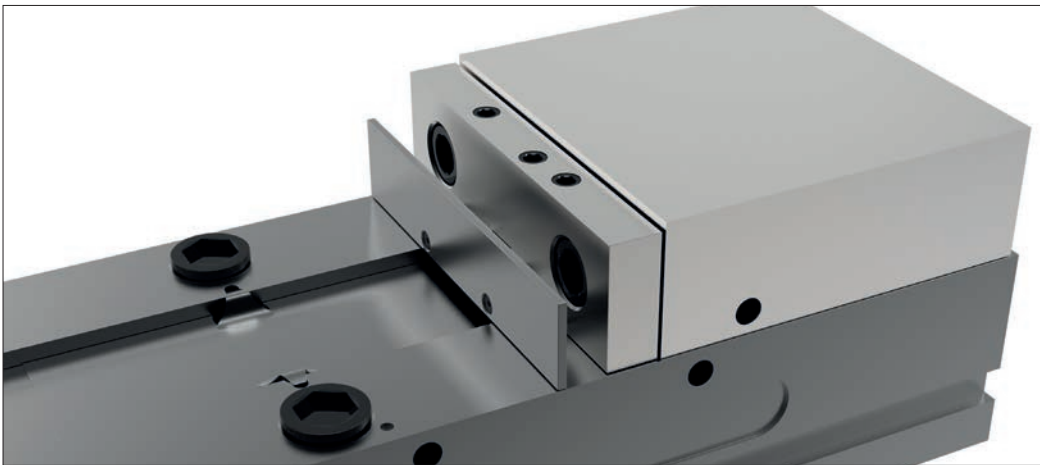
- Fast, accurate and versatile.
- Reduces setup time drastically.
- $\pm 0,0002''$  repeatability.
- Adaptable to most vice systems.



### Step 1:

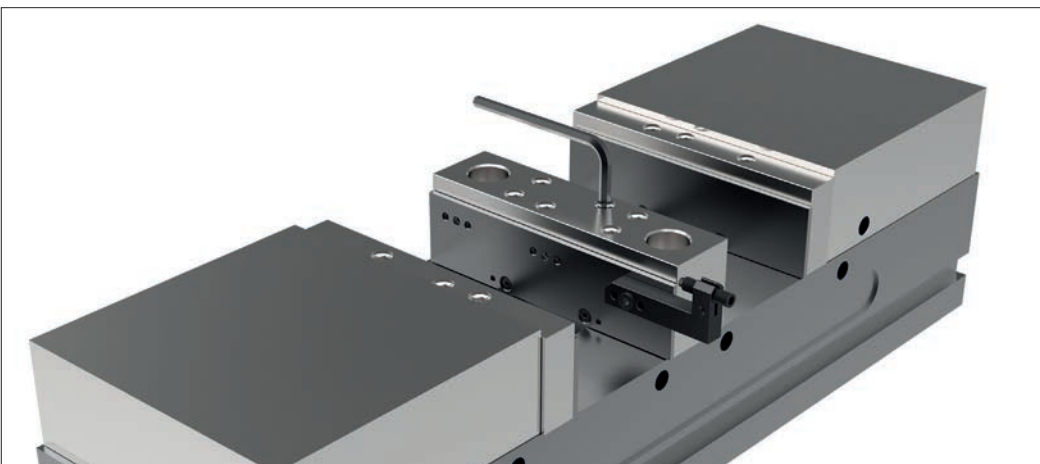
Before mounting AccuSnap master jaws, thoroughly inspect, clean and remove any burrs or chips from the mounting surface.

Simply attach the AccuSnap master jaws to the carrier jaw system using the industry standard bolt system.



### Step 2:

Snap in the parallels or soft jaws that you require for your set-up and begin machining. Two lock screws are provided for extra holding assurance, but are not necessary to hold parallels in place. Do not overtighten lock screws.



### Step 3:

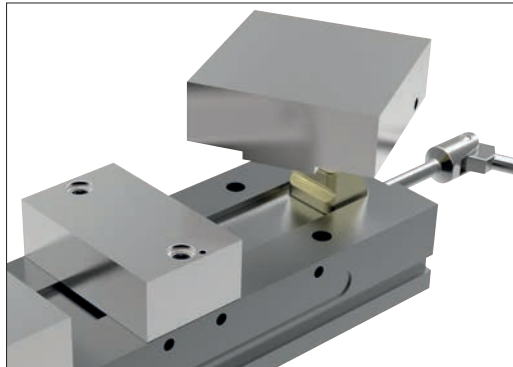
When finished with your job, unlock parallels (if needed) and turn the kick out screw to eject the jaw or parallel.

You are ready to repeat the process for your next job.



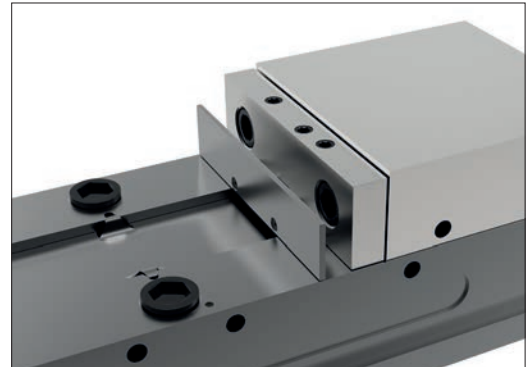
## ReLock Accessories

Both the AccuSnap and QuickChange vice jaw systems can be used in conjunction with most vice systems.



### SnapLock Machinable Fixture Jaws

Jaws can be attached, reversed, removed or indexed in a matter of seconds. The jaws are extremely versatile, allowing endless customising possibilities. Jaws are manufactured from steel and high quality aluminium.



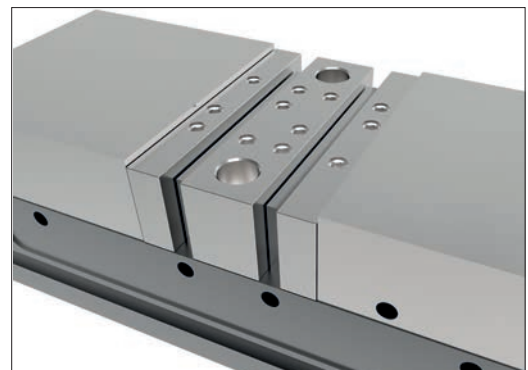
### SnapLock Carrier Jaws

Carrier jaws allow mounting of AccuSnap and QuickChange master jaws or standard bolt-on jaws using an industry standard bolt pattern.



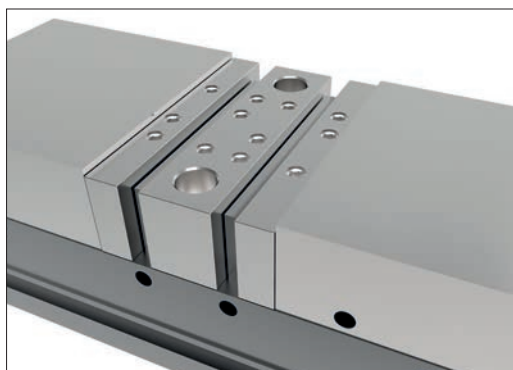
### QuickChange Vice System

QuickChange jaws slide into position via a dovetail slot, as shown. The system includes master jaws, parallels, V-blocks, mill angles and machinable soft jaws. Adaptable to most vice systems.



### AccuSnap Vice Jaw System

The AccuSnap vice jaw system (pictured), shows master jaws and parallels being used for workpiece set-up. The AccuSnap system allows setup change-over in seconds with extreme accuracy.



### AccuSnap Machinable Fixture Jaws

Ideal for many workholding options of smaller workpieces. Jaws are offered in two thicknesses, from either aluminium or pre-hardened steel.



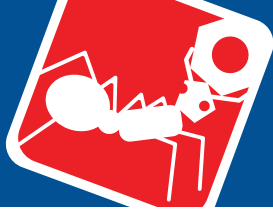
### AccuSnap Workstops

Easily mount to AccuSnap parallels in a variety of configurations. Provides extreme workpiece location accuracy and repeatability. Can be used in conjunction with the AccuSnap presetting gauge to accurately reference your X, Y and Z machine datums.



# How to use the SnapLock Jaw System

19790-19862  
Clamping & Height Setting



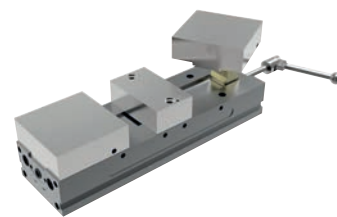
The SnapLock system's allows simple, quick changeovers between machinable and carrier jaws.

## SnapLock Machinable Fixture Jaws

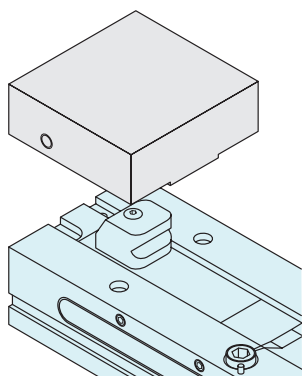
- Can be attached, reversed, removed or indexed in a matter of seconds.
- Extremely versatile, allowing endless customisation possibilities.
- Manufactured from high quality aluminium.

## SnapLock Carrier Jaws

- Allows mounting of AccuSnap and QuickChange master jaws or standard bolt-on jaws using an industry standard bolt size and pattern.

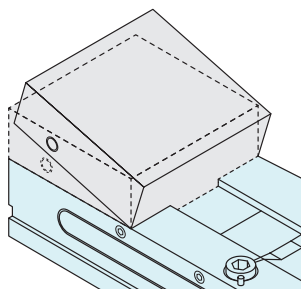


## Operation



### Step 1

Align the SnapLock outer jaw over the appropriate ReLock vice knuckle

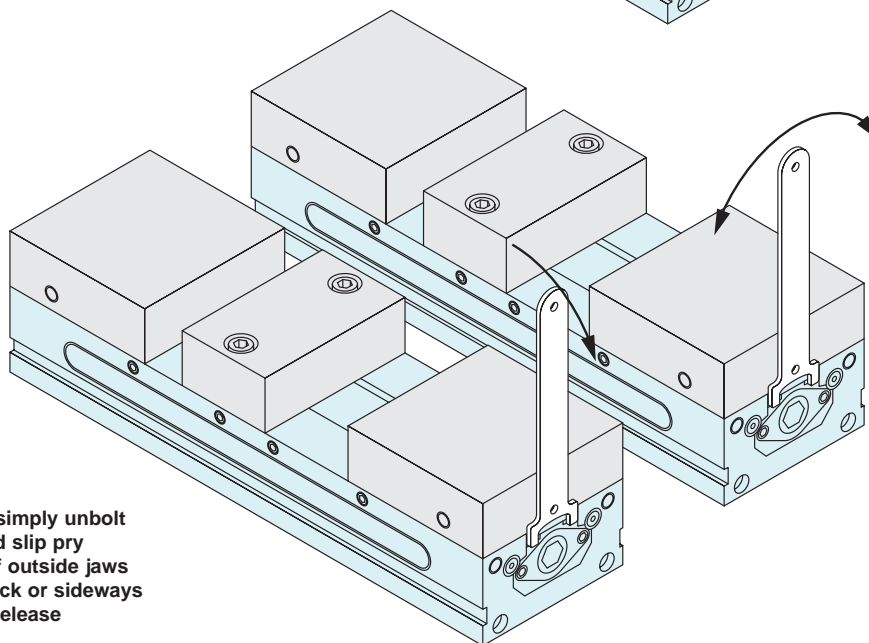
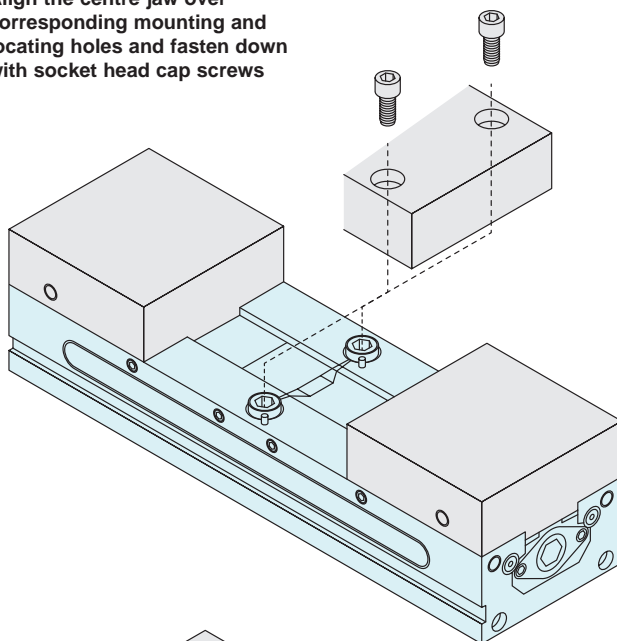


### Step 2

Place the front edge of the jaw over the knuckle and press firmly down to "snap" into place

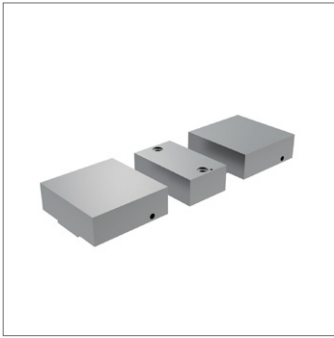
### Step 3

Align the centre jaw over corresponding mounting and locating holes and fasten down with socket head cap screws

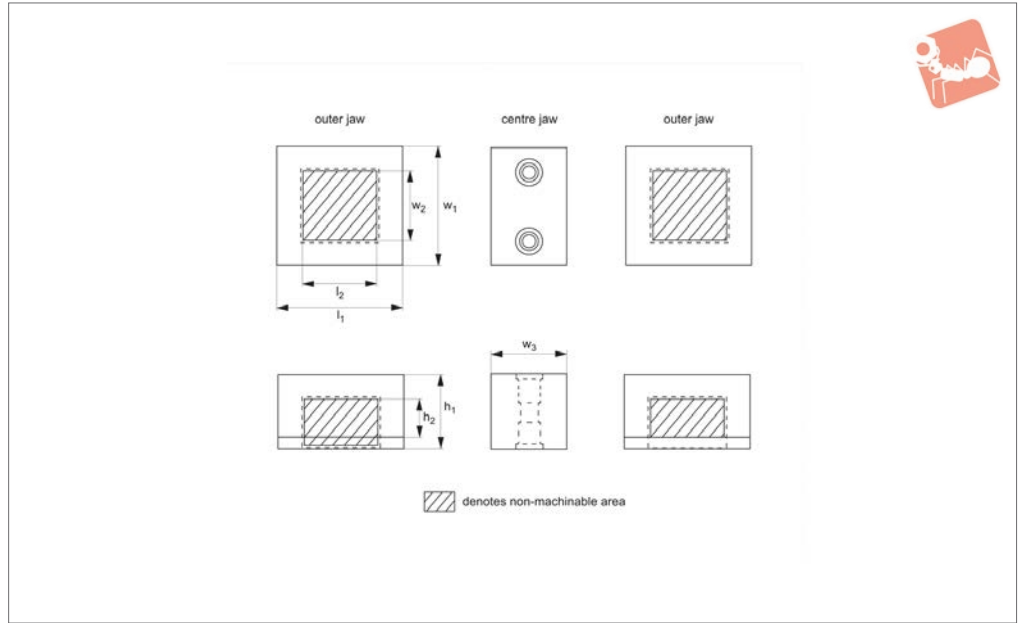


### Step 4

For jaw removal, simply unbolt the centre jaw and slip pry wrench in slots of outside jaws as shown; pull back or sideways on the handle to release



## 19790



VICE CLAMPING

### Material

Aluminium. Some sizes are available in steel (1018 or 4140), please call for details.

### Technical Notes

Jaws are reversible for additional work-

piece setup.

For jaw capacity when used with vice, see technical pages.

### Tips

Only for use with our ReLock Vice system.

### Important Notes

**All dimensions are in inches.**

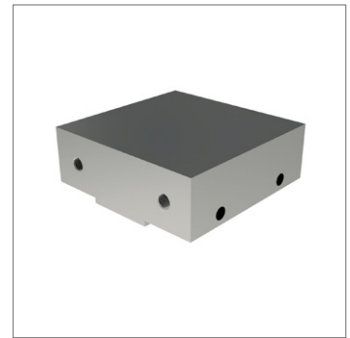
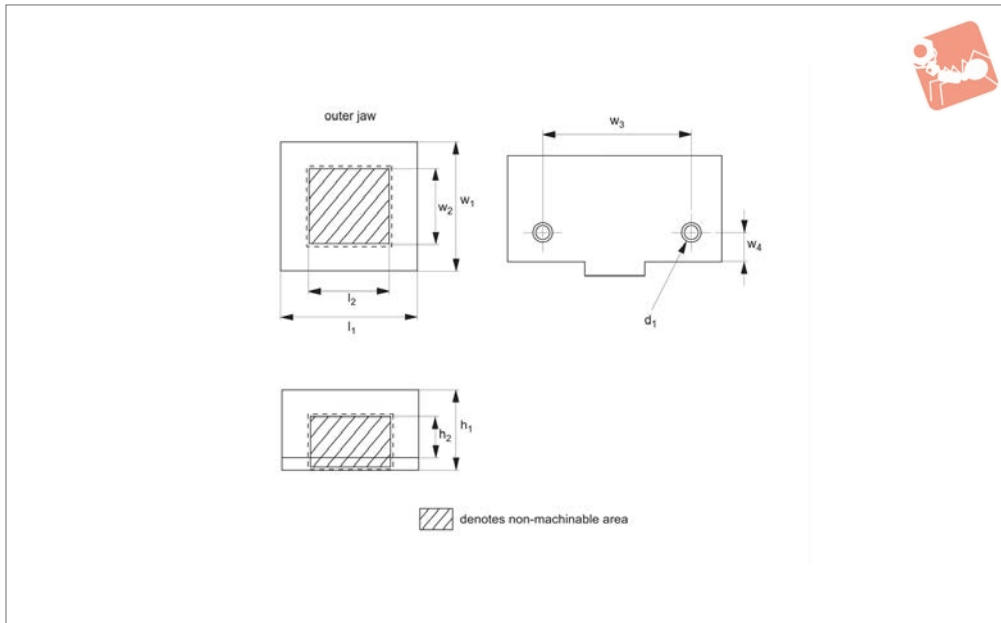
Order No.	For vice size	Contents	Type	l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>
19790.W0401	4"	2 x Outer, 1 x Centre	Std.	4.250	2.250	3.94	2.060	2.5	1.50	1.06
19790.W0402	4"	1 x Centre	Std.	-	-	3.94	-	2.5	1.50	-
19790.W0403	4"	1 x Outer	Std.	4.250	2.250	3.94	2.060	-	1.50	1.06
19790.W0411	4"	2 x Outer, 1 x Centre	Tall	4.250	2.250	3.94	2.060	2.5	2.75	1.06
19790.W0412	4"	1 x Centre	Tall	-	-	3.94	-	2.5	2.75	-
19790.W0413	4"	1 x Outer	Tall	4.250	2.250	3.94	2.060	-	2.75	1.06
19790.W0421	4"	2 x Outer, 1 x Centre	Wide	4.250	-	5.94	-	2.5	1.50	-
19790.W0422	4"	1 x Centre	Wide	-	-	5.94	-	2.5	1.50	-
19790.W0423	4"	1 x Outer	Wide	4.250	2.250	5.94	2.060	-	1.50	1.06
19790.W0601	6"	2 x Outer, 1 x Centre	Std.	5.812	3.063	5.94	2.810	3.5	2.00	1.28
19790.W0602	6"	1 x Centre	Std.	-	-	5.94	-	3.5	2.00	-
19790.W0603	6"	1 x Outer	Std.	5.812	3.063	5.94	2.810	-	2.00	1.28
19790.W0611	6"	2 x Outer, 1 x Centre	Tall	5.812	3.063	5.94	2.810	3.5	3.25	1.28
19790.W0612	6"	1 x Centre	Tall	-	-	5.94	-	3.5	3.25	-
19790.W0613	6"	1 x Outer	Tall	5.812	3.063	5.94	2.810	-	3.25	1.28
19790.W0621	6"	2 x Outer, 1 x Centre	Wide	5.812	3.063	7.94	2.810	3.5	2.00	1.28
19790.W0622	6"	1 x Centre	Wide	-	-	7.94	-	3.5	2.00	-
19790.W0623	6"	1 x Outer	Wide	5.812	3.063	7.94	2.810	-	2.00	1.28
19790.W0801	8"	2 x Outer, 1 x Centre	Std.	7.500	3.125	7.94	2.625	4.5	2.50	1.50
19790.W0802	8"	1 x Centre	Std.	-	-	7.94	-	4.5	2.50	-
19790.W0803	8"	1 x Outer	Std.	7.500	3.125	7.94	2.625	-	2.50	1.50
19790.W0811	8"	2 x Outer, 1 x Centre	Tall	7.500	3.125	7.94	2.625	4.5	3.75	1.50
19790.W0812	8"	1 x Centre	Tall	-	-	7.94	-	4.5	3.75	-
19790.W0813	8"	1 x Outer	Tall	7.500	3.125	7.94	2.625	-	3.75	1.50
19790.W0821	8"	2 x Outer, 1 x Centre	Wide	7.500	3.125	9.94	2.625	4.5	2.50	1.50
19790.W0822	8"	1 x Centre	Wide	-	-	9.94	-	4.5	2.50	-
19790.W0823	8"	1 x Outer	Wide	7.500	3.125	9.94	2.625	-	2.50	1.50



# Machinable Vice Jaws - SnapLock

for ReLock single station vices

## Vice Clamping



**19792**

VICE CLAMPING

### Material

Aluminium. Some sizes are available in steel (1018 or 4140), please call for details.

plate no. 19759 to convert 2 station ReLock vice into a single station vice. For jaw capacity when used with vice, see technical pages.

### Important Notes

All dimensions are in inches.

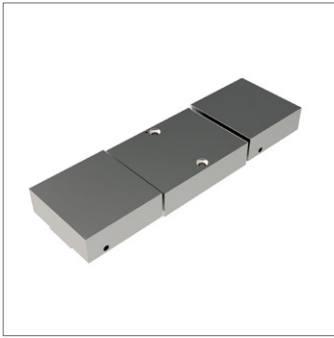
### Technical Notes

For use with single station conversion

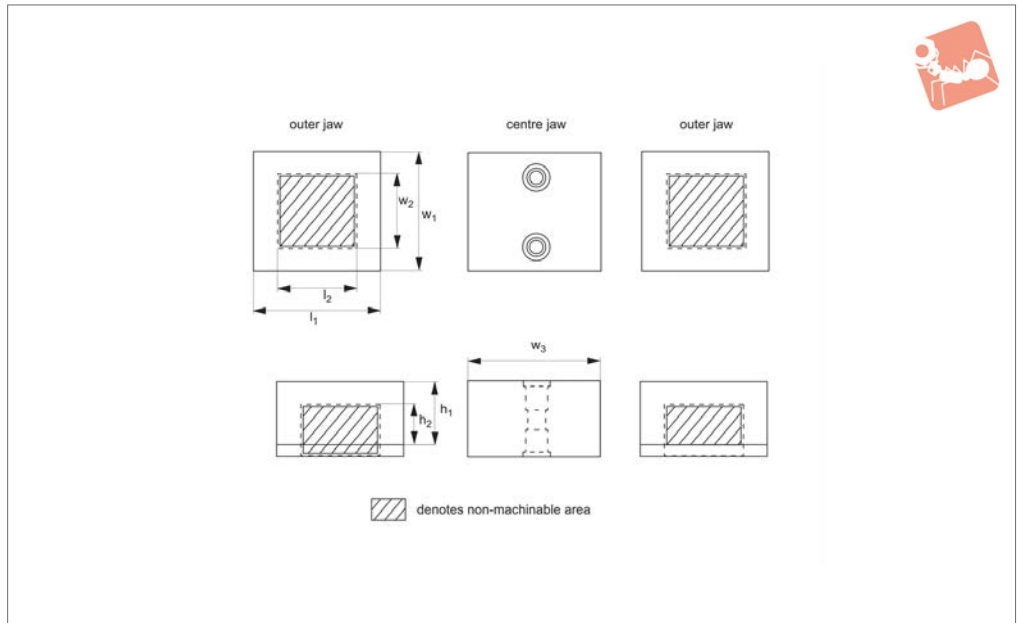
### Tips

Only for use with our ReLock Vice system.

Order No.	For vice size	Contents	Type	$l_1$	$l_2$	$w_1$	$w_2$	$w_3$	$w_4$	$h_1$	$h_2$	$d_1$
19792.W0040	4"	1 x Outer	Std.	4.250	2.250	3.94	2.060	2.500	0.687	1.50	1.06	3/8-16x0,63
19792.W0041	4"	1 x Outer	Tall	4.250	2.250	3.94	2.060	2.500	0.687	2.75	1.06	3/8-16x0,63
19792.W0060	6"	1 x Outer	Std.	5.812	3.063	5.94	2.810	3.875	0.937	2.00	1.28	1/2-13x0,75
19792.W0061	6"	1 x Outer	Tall	5.812	3.063	5.94	2.810	3.875	0.937	3.25	1.28	1/2-13x0,75
19792.W0080	8"	1 x Outer	Std.	7.500	3.125	7.94	2.625	4.750	1.218	2.00	1.50	5/8-11x1,30
19792.W0081	8"	1 x Outer	Tall	7.500	3.125	7.94	2.625	4.750	1.218	3.75	1.50	5/8-11x1,30



## 19794



VICE CLAMPING

### Material

Aluminium.

### Technical Notes

Jaws are reversible for additional work-piece setup.

For jaw capacity when used with vice, see technical pages.

### Tips

Only for use with our ReLock Vice system.

### Important Notes

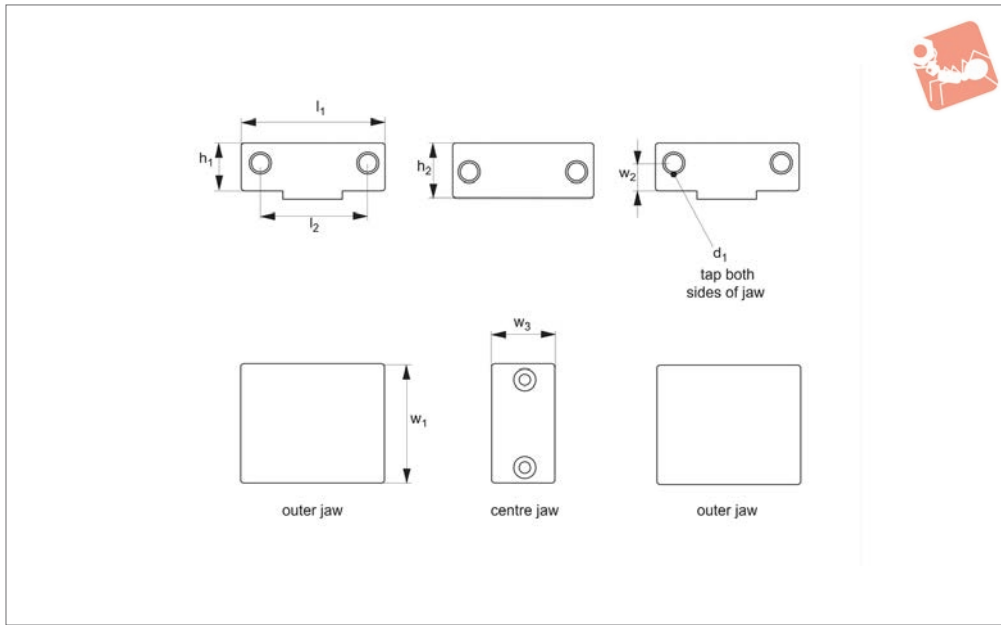
All dimensions are in inches.

Order No.	For vice size	Contents	Type	$l_1$	$l_2$	$w_1$	$w_2$	$w_3$	$h_1$	$h_2$
19794.W0041	4"	Outer Jaw - 2 x 19790.W0403, Centre Jaw - 1 x 19794.W0042	Std.	4.250	2.250	3.94	2.060	6.500	1.50	1.06
19794.W0042	4"	1 x Centre Jaw	Std.	4.250	2.250	3.94	2.060	6.500	1.50	1.06
19794.W0043	4"	Outer Jaw - 2 x 19790.W0413, Centre Jaw - 1 x 19794.W0044	Tall	4.250	2.250	3.94	2.060	6.500	2.75	1.06
19794.W0044	4"	1 x Centre Jaw	Tall	4.250	2.250	3.94	2.060	6.500	2.75	1.06
19794.W0045	4"	Outer Jaw - 2 x 19790.W0423, Centre Jaw - 1 x 19794.W0046	Wide	4.250	2.250	5.94	2.060	6.500	1.50	1.06
19794.W0046	4"	1 x Centre Jaw	Wide	4.250	2.250	5.94	2.060	6.500	1.50	1.06
19794.W0061	6"	Outer Jaw - 2 x 19790.W0603, Centre Jaw - 1 x 19794.W0062	Std.	5.812	3.063	5.94	2.810	7.875	2.00	1.28
19794.W0062	6"	1 x Centre Jaw	Std.	5.812	3.063	5.94	2.810	7.875	2.00	1.28
19794.W0063	6"	Outer Jaw - 2 x 19790.W0613, Centre Jaw - 1 x 19794.W0064	Tall	5.812	3.063	5.94	2.810	7.875	3.25	1.28
19794.W0064	6"	1 x Centre Jaw	Tall	5.812	3.063	5.94	2.810	7.875	3.25	1.28
19794.W0065	6"	Outer Jaw - 2 x 19790.W0623, Centre Jaw - 1 x 19794.W0066	Wide	5.812	3.063	7.94	2.810	7.875	2.00	1.28
19794.W0066	6"	1 x Centre Jaw	Wide	5.812	3.063	7.94	2.810	7.875	2.00	1.28
19794.W0081	8"	Outer jaw - 2 x 19790.W0803, Centre jaw - 1 x 19794.W0082	Std.	7.500	3.125	7.94	2.625	11.500	2.50	1.50
19794.W0082	8"	1 x Centre Jaw	Std.	7.500	3.125	7.94	2.625	11.500	2.50	1.50
19794.W0083	8"	Outer Jaw - 2 x 19790.W0813, Centre Jaw - 1 x 19794.W0084	Tall	7.500	3.125	7.94	2.625	11.500	3.75	1.50
19794.W0084	8"	1 x Centre Jaw	Tall	7.500	3.125	7.94	2.625	11.500	3.75	1.50
19794.W0085	8"	Outer Jaw - 2 x 19790.W0823, Centre Jaw - 1 x 19794.W0086	Wide	7.500	3.125	9.94	2.625	11.500	2.50	1.50
19794.W0086	8"	1 x Centre Jaw	Wide	7.500	3.125	9.94	2.625	11.500	2.50	1.50



# Carrier Jaws - SnapLock

ReLock vices with AccuSnap & QuickChange master



19796

VICE CLAMPING

**Material**

Outside jaws: aluminium.  
Centre jaws: steel.

**Technical Notes**

Carrier jaws can be used in conjunction

with AccuSnap and QuickChange master jaws.

Outside jaws can be used in conjunction with single station conversion plates.

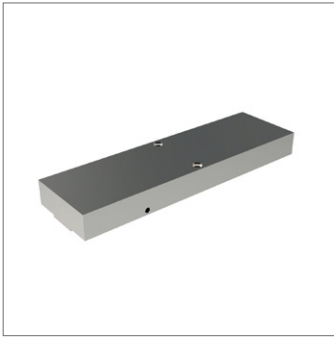
**Tips**

Only for use with our ReLock Vice system.

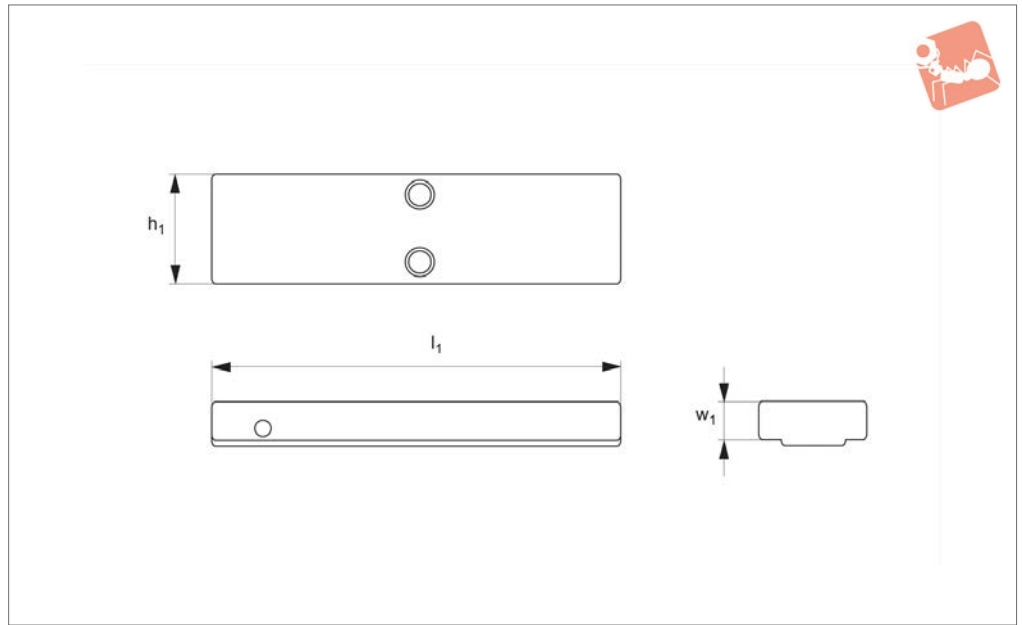
**Important Notes**

All dimensions are in inches.

Order No.	Vice size	Contents	Material	$l_1$	$l_2$	$w_1$	$w_2$	$w_3$	$h_1$	$h_2$	$d_1$
19796.W0401	4"	2 x Outer, 1 x Centre	Aluminium	3.94	2.500	3.812	0.687	1.25	1.12	1.35	3/8-16
19796.W0403	4"	2 x Outer	Aluminium	3.94	2.500	3.812	0.687	-	1.12	-	3/8-16
19796.W0601	6"	2 x Outer, 1 x Centre	Aluminium	5.94	3.875	4.750	0.937	1.50	1.52	1.85	1/2-13
19796.W0603	6"	2 x Outer	Aluminium	5.94	3.875	4.750	0.937	-	1.52	-	1/2-13
19796.W0801	8"	2 x Outer, 1 x Centre	Aluminium	7.94	4.750	6.125	1.218	1.98	2.12	2.35	5/8-11
19796.W0803	8"	2 x Outer	Aluminium	7.94	4.750	6.125	1.218	-	2.12	-	5/8-11
19796.W1401	4"	2 x Outer, 1 x Centre	Steel	3.94	2.500	3.812	0.687	1.25	1.12	1.35	3/8-16
19796.W1402	4"	1 x Centre	Steel	3.94	2.500	-	0.687	1.25	1.12	1.35	3/8-16
19796.W1403	4"	2 x Outer	Steel	3.94	2.500	3.812	0.687	-	1.12	-	3/8-16
19796.W1601	6"	2 x Outer, 1 x Centre	Steel	5.94	3.875	4.750	0.937	1.50	1.52	1.85	1/2-13
19796.W1602	6"	1 x Centre	Steel	5.94	3.875	-	0.937	1.50	-	1.85	1/2-13
19796.W1603	6"	2 x Outer	Steel	5.94	3.875	4.750	0.937	-	1.52	-	1/2-13
19796.W1801	8"	2 x Outer, 1 x Centre	Steel	7.94	4.750	6.125	1.218	1.98	2.12	2.35	5/8-11
19796.W1802	8"	1 x Centre	Steel	7.94	4.750	-	1.218	1.98	-	2.35	5/8-11
19796.W1803	8"	2 x Outer	Steel	7.94	4.750	6.125	1.218	-	2.12	-	5/8-11



## 19798



### Material

Aluminium.

### Technical Notes

Ideal for holding many small parts or work-

pieces with difficult clamping or locating points.

### Tips

Only for use with our ReLock Vice system.

### Important Notes

All dimensions are in inches.

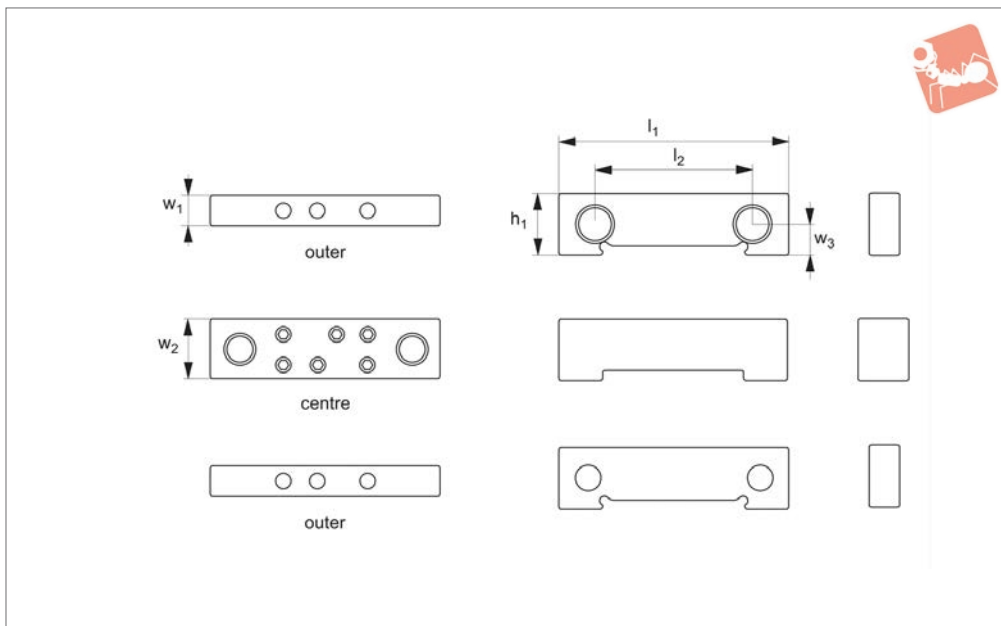
Order No.	Vice size	$l_1$	$w_1$	$h_1$
19798.W0040	4"	16.0	1.5	4
19798.W0041	4"	16.0	1.5	6
19798.W0060	6"	20.5	2.0	6
19798.W0061	6"	20.5	2.0	8
19798.W0080	8"	28.5	2.5	8
19798.W0081	8"	28.5	2.5	10



# Master Jaws - AccuSnap

for use on SnapLock carrier jaws 19796

## Vice Clamping



# 19810

VICE CLAMPING

### Material

Body: 80000 psi ductile cast iron.

### Technical Notes

Adaptable to most vice jaw systems. When

used with ReLock vice, mount AccuSnap master jaws to SnapLock carrier jaws to fit all AccuSnap jaw components. Install AccuSnap master jaws to SnapLock carrier

jaws on vice for squareness.

### Important Notes

All dimensions are in inches.

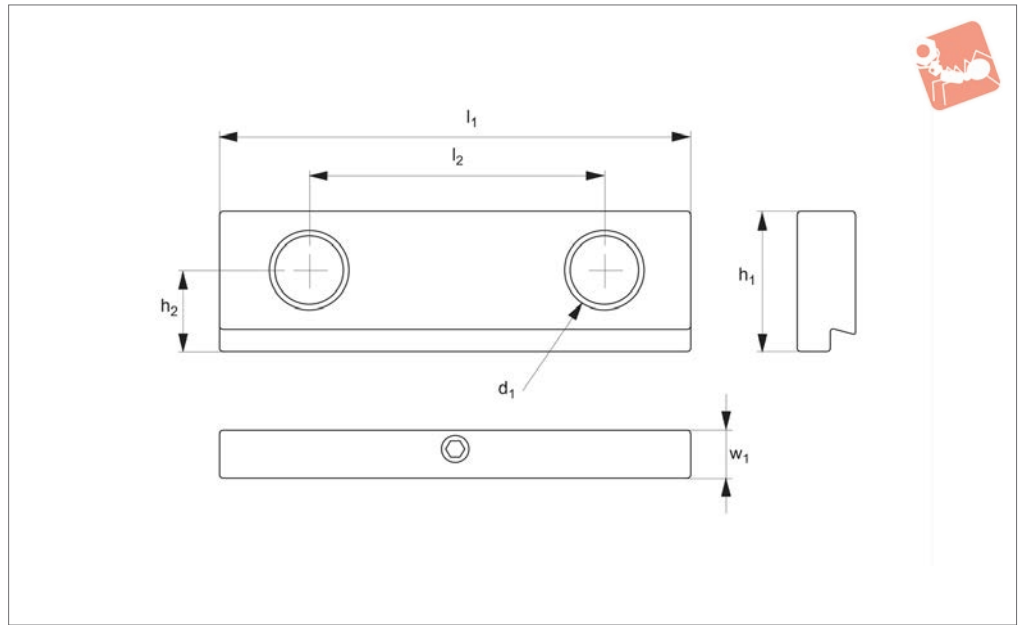
Order No.	Vice size	Contents	$l_1$ $\pm 0.001$	$l_2$	$w_1$ $\pm 0.0005$	$w_2$ $\pm 0.0005$	$w_3$	$h_1$ $\pm 0.001$
19810.W0401	4"	2 x Outer, 1 x Centre	3.98	2.500	0.560	-	0.687	1.35
19810.W0403	4"	2 x Outer	3.98	2.500	0.560	-	0.687	1.35
19810.W0402	4"	1 x Centre	3.98	2.500	-	1.25	0.687	1.35
19810.W0601	6"	2 x Outer, 1 x Centre	5.98	3.875	0.750	-	0.937	1.85
19810.W0603	6"	2 x Outer	5.98	3.875	0.750	-	0.937	1.85
19810.W0602	6"	1 x Centre	5.98	3.875	-	1.50	0.937	1.85
19810.W0801	8"	2 x Outer, 1 x Centre	7.98	4.750	1.125	-	1.218	2.35
19810.W0802	8"	2 x Outer	7.98	4.750	1.125	-	1.218	2.35
19810.W0803	8"	1 x Centre	7.98	4.750	-	2.00	1.218	2.35



VICE CLAMPING



### 19850



#### Material

Body: 80000 psi ductile cast iron.

#### Technical Notes

These master jaws enable our ReLock vice snap lock carrier jaws to accept all

QuickChange jaw components, providing complete flexibility. Install QuickChange master jaws to SnapLock carrier jaws on vice for squareness. Prior to installation of master jaws remove any burrs, chips or dirt

from vice mounting surface.

#### Important Notes

**All dimensions are in inches.**

Order No.	For vice size	$l_1$	$l_2$	$h_1$	$h_2$	$w_1$	$d_1$
19850.W0040	4"	4.06	2.500	1.235	0.687	0.560	3/8-16 S.H.C.S.
19850.W0060	6"	6.12	3.875	1.735	0.937	0.735	1/2-13 S.H.C.S.
19850.W0080	8"	8.12	4.750	2.230	1.128	1.105	5/8-11 S.H.C.S.

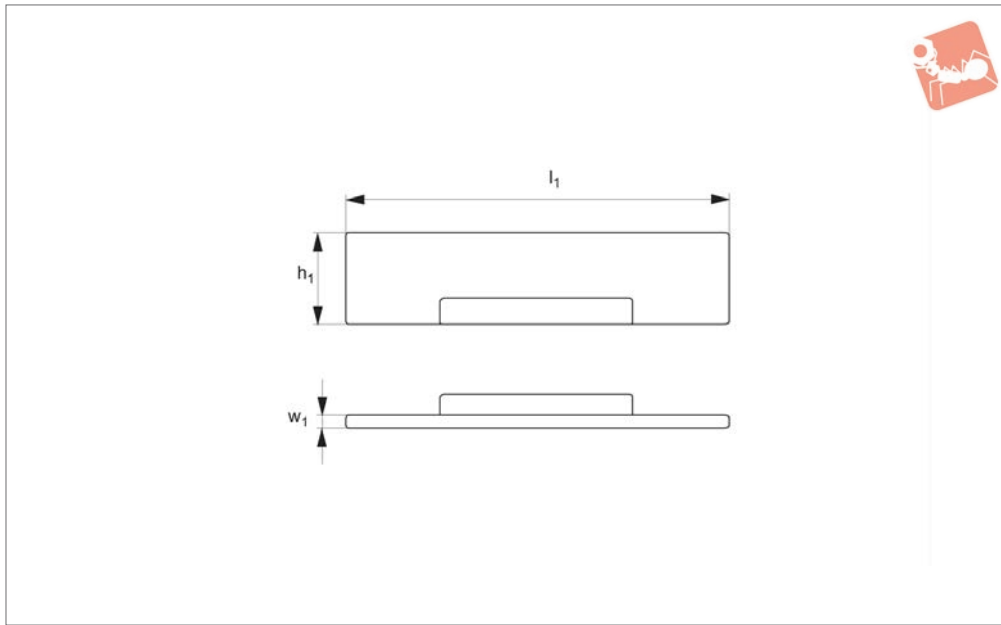




# Vice Parallels - QuickChange

for use with QuickChange master jaws 19850

## Vice Clamping



**19852**

VICE CLAMPING

### Material

Body: 80000 psi ductile cast iron.

jaws no. 19850.

### Technical Notes

Designed for use with QuickChange master

### Important Notes

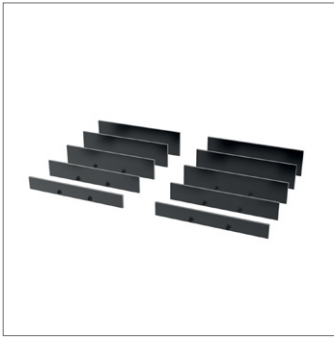
Supplied as a pair.

**All dimensions are in inches.**

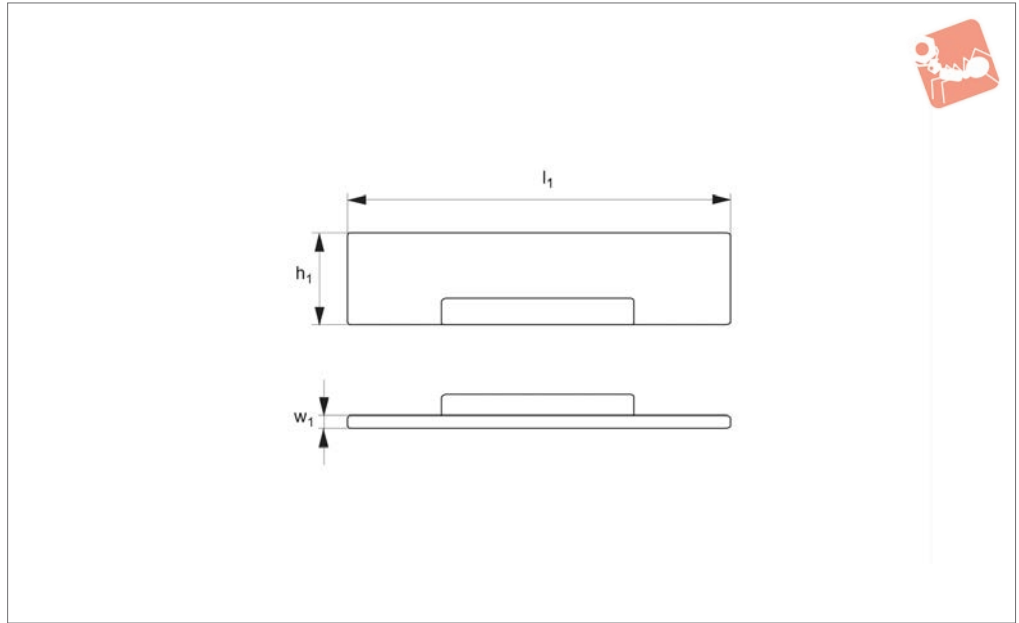
Order No.	For vice size	$l_1$	$h_1$ $\pm 0.0005$	$w_1$
19852.W0041	4"	3.98	0.500	0.118
19852.W0042	4"	3.98	0.625	0.118
19852.W0043	4"	3.98	0.750	0.118
19852.W0044	4"	3.98	0.875	0.118
19852.W0045	4"	3.98	1.000	0.118
19852.W0046	4"	3.98	1.062	0.118
19852.W0047	4"	3.98	1.125	0.118
19852.W0048	4"	3.98	1.190	0.118
19852.W0061	6"	5.98	0.750	0.118
19852.W0062	6"	5.98	0.875	0.118
19852.W0063	6"	5.98	1.000	0.118
19852.W0064	6"	5.98	1.125	0.118
19852.W0065	6"	5.98	1.250	0.118
19852.W0066	6"	5.98	1.375	0.118
19852.W0067	6"	5.98	1.500	0.118
19852.W0068	6"	5.98	1.625	0.118
19852.W0069	6"	5.98	1.690	0.118
19852.W0081	8"	7.98	1.000	0.118
19852.W0082	8"	7.98	1.250	0.118
19852.W0083	8"	7.98	1.375	0.118
19852.W0084	8"	7.98	1.500	0.118
19852.W0085	8"	7.98	1.625	0.118
19852.W0086	8"	7.98	1.750	0.118
19852.W0087	8"	7.98	1.875	0.118
19852.W0088	8"	7.98	2.000	0.118
19852.W0089	8"	7.98	2.125	0.118



VICE CLAMPING



## 19854



### Material

Body: 80000 psi ductile cast iron.

jaws no. 19850.

### Technical Notes

Designed for use with QuickChange master

### Important Notes

All dimensions are in inches.

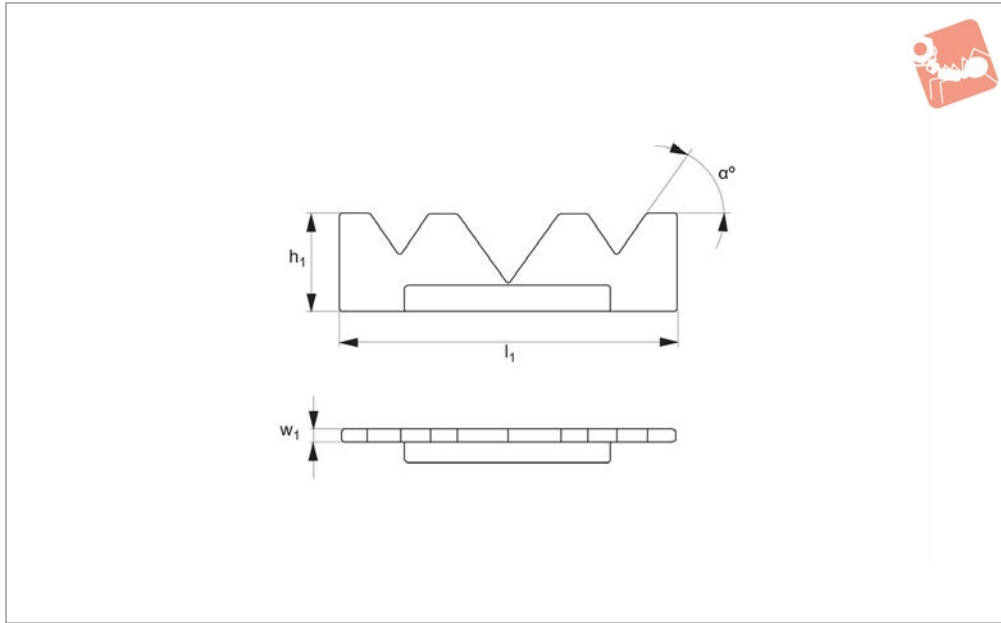
Order No.	For vice size	Type	$l_1$	$w_1$	Set contents 1 pair per size $h_1$ $\pm 0.0005$
19854.W0040	4"	Basic	3.98	0.118	0,500 0,750 1,000 1,125 1,190
19854.W0060	6"	Basic	5.98	0.118	0,750 1,000 1,250 1,500 1,625
19854.W0080	8"	Basic	7.98	0.118	1,000 1,250 1,500 1,750 2,000
19854.W0140	4"	Advanced	3.98	0.118	0,500 0,625 0,750 0,875 1,000 1,125 1,062 1,190
19854.W0160	6"	Advanced	5.98	0.118	0,750 0,875 1,000 1,125 1,250 1,375 1,500 1,625 1,690
19854.W0180	8"	Advanced	7.98	0.118	1,000 1,250 1,375 1,500 1,625 1,750 1,875 2,000 2,125



# Vice Mill Angles - QuickChange

for use with QuickChange master jaws 19850

## Vice Clamping



### 19856

VICE CLAMPING

#### Material

Body: 80000 psi ductile cast iron.

19850.

All dimensions are in inches.

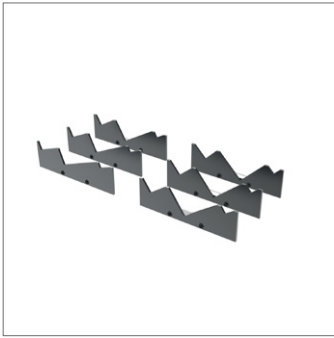
#### Technical Notes

For use with QuickChange master jaw

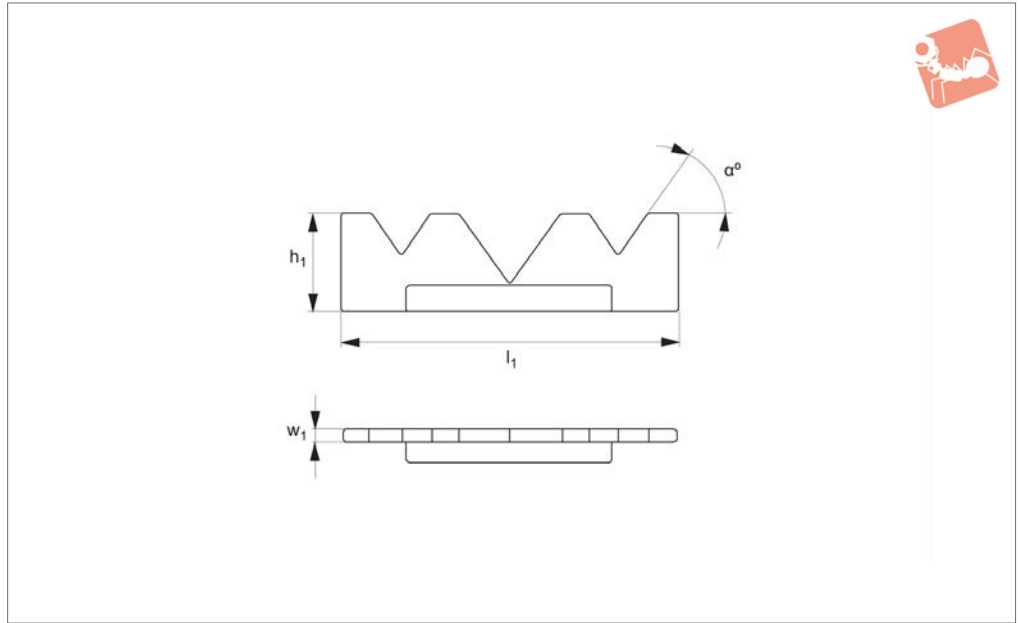
#### Important Notes

Sold individually, for a pair please order quantity of 2.

Order No.	For vice size	$l_1$	$h_1$	$w_1$	$\alpha$
19856.W0040	4"	4	1.24	0.118	20
19856.W0041	4"	4	1.24	0.118	25
19856.W0042	4"	4	1.24	0.118	30
19856.W0043	4"	4	1.24	0.118	35
19856.W0044	4"	4	1.24	0.118	40
19856.W0045	4"	4	1.24	0.118	45
19856.W0060	6"	6	1.74	0.118	20
19856.W0061	6"	6	1.74	0.118	25
19856.W0062	6"	6	1.74	0.118	30
19856.W0063	6"	6	1.74	0.118	35
19856.W0064	6"	6	1.74	0.118	40
19856.W0065	6"	6	1.74	0.118	45
19856.W0080	8"	8	2.23	0.118	20
19856.W0081	8"	8	2.23	0.118	25
19856.W0082	8"	8	2.23	0.118	30
19856.W0083	8"	8	2.23	0.118	35
19856.W0084	8"	8	2.23	0.118	40
19856.W0085	8"	8	2.23	0.118	45



19858



VICE CLAMPING

**Material**

Body: 80000 psi ductile cast iron.

19850.

**Important Notes**

All dimensions are in inches.

**Technical Notes**

For use with QuickChange master jaw

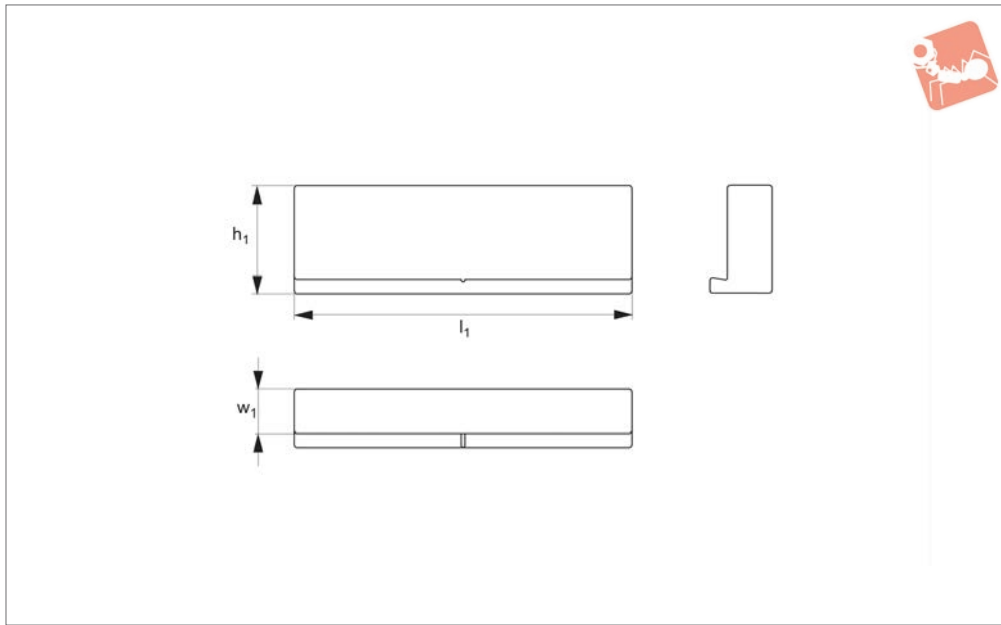
Order No.	For vice size	$l_1$	$h_1$	$w_1$	Set contents 1 pair each of $\alpha^\circ$
19858.W0040	4"	4	1.24	0.118	20° 25° 30° 35° 40° 45°
19858.W0060	6"	6	1.74	0.118	20° 25° 30° 35° 40° 45°
19858.W0080	8"	8	2.23	0.118	20° 25° 30° 35° 40° 45°



# Machinable Vice Jaws - QuickChange

for use with QuickChange master jaws 19850

## Vice Clamping



### 19862

VICE CLAMPING

**Material**  
Aluminium or steel.

19850.

All dimensions are in inches.

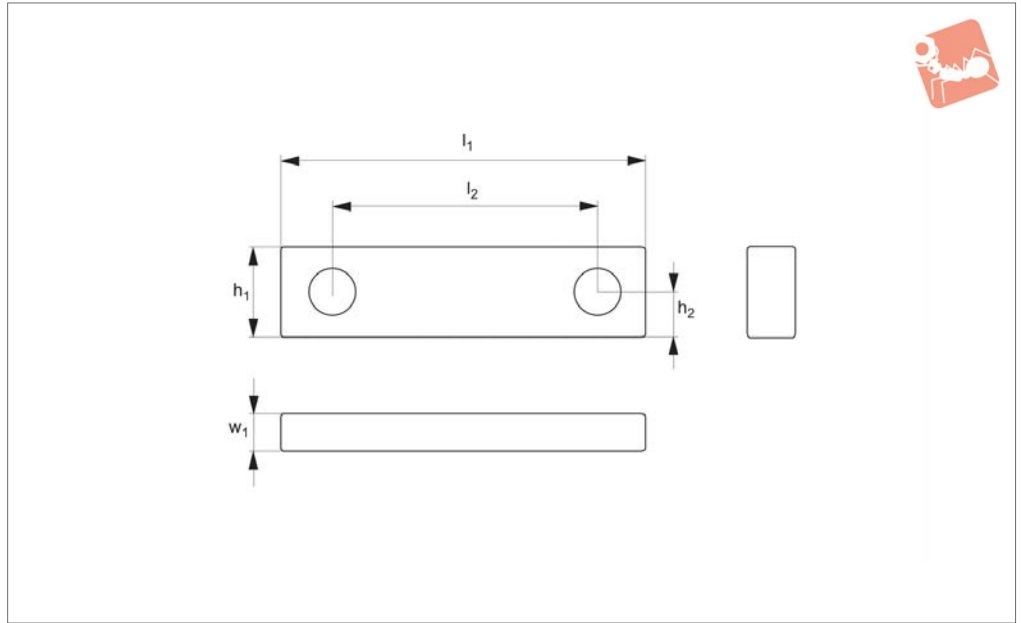
**Technical Notes**  
For use with QuickChange master jaw

**Important Notes**  
Sold as individually, for a pair please order quantity of 2.

Order No.	For vice size	Material	$l_1$	$h_1$	$w_1$
19862.W0040	4"	Aluminium	4	1.5	0.69
19862.W0041	4"	Aluminium	4	1.5	1.38
19862.W0060	6"	Aluminium	6	2.0	0.75
19862.W0061	6"	Aluminium	6	2.0	1.50
19862.W0080	8"	Aluminium	8	2.5	1.25
19862.W0081	8"	Aluminium	8	2.5	2.50
19862.W0140	4"	Steel	4	1.5	0.69
19862.W0141	4"	Steel	4	1.5	1.38
19862.W0160	6"	Steel	6	2.0	0.75
19862.W0161	6"	Steel	6	2.0	1.50
19862.W0180	8"	Steel	8	2.5	1.25
19862.W0181	8"	Steel	8	2.5	2.50



## 19890



VICE CLAMPING

### Material

Aluminium.

### Important Notes

All dimensions are in inches.

### Technical Notes

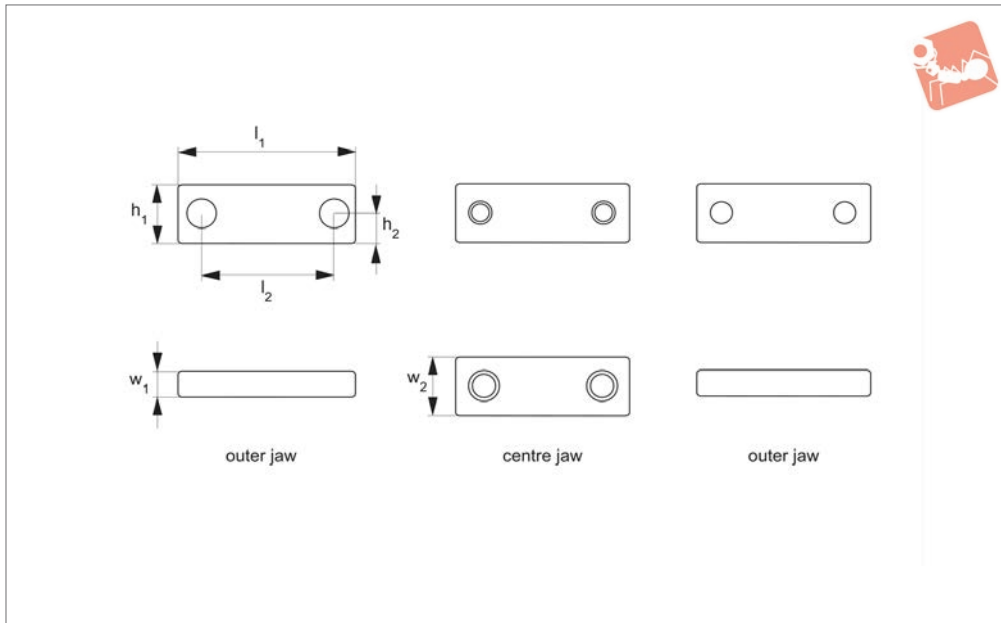
For use with most industry standard vices.

Order No.	For vice size	$l_1$	$l_2$	$h_1$	$h_2$	$w_1$
19890.W0040	4"	5	2.500	1.5	0.687	1.00
19890.W0060	6"	7	3.875	2.0	0.937	1.25
19890.W0080	8"	9	4.750	2.5	1.128	2.00



# Hard Vice Jaws - Universal bolt-on

## Vice Clamping



# 19892

VICE CLAMPING

### Material

Steel.

### Technical Notes

Centre jaw only for use with ReLock vice

system. Outside jaws fit most standard vice bolt hold patterns.

Install these hard jaws on SnapLock carrier jaws on vice for squareness.

### Important Notes

All dimensions are in inches.

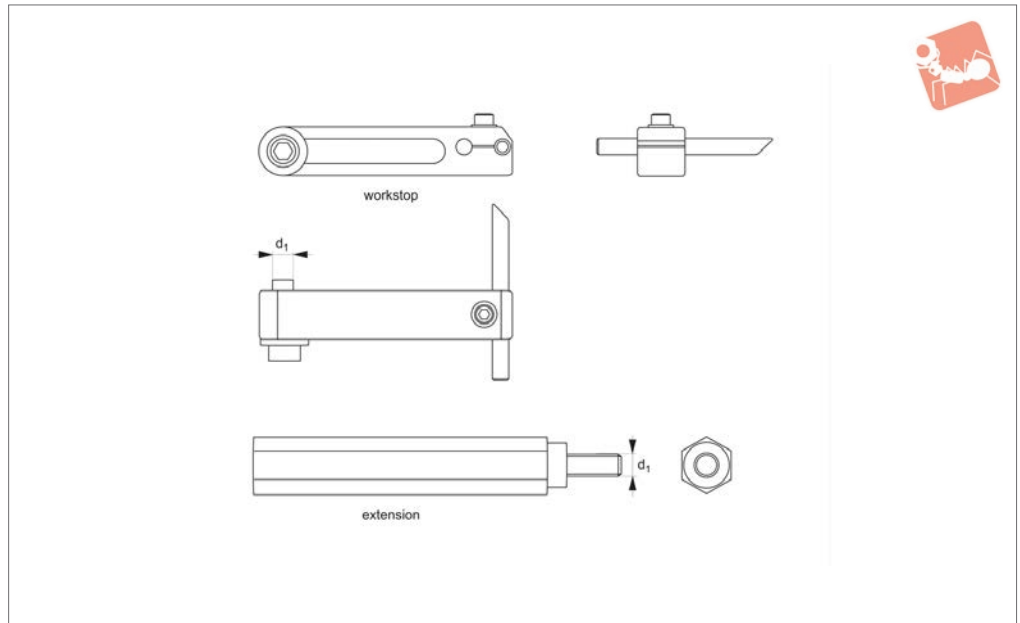
Order No.	For vice size	$l_1$	$l_2$	$h_1$	$h_2$	$w_1$	$w_2$	Set contents
19892.W0401	4"	3.98	2.500	1.35	0.687	0.560	1.25	2 x Outer, 1 x Centre
19892.W0402	4"	3.98	-	1.35	-	-	1.25	1 x Centre
19892.W0403	4"	3.98	2.500	1.35	0.687	0.560	-	2 x Outer
19892.W0601	6"	5.98	3.875	1.85	0.937	0.750	1.50	2 x Outer, 1 x Centre
19892.W0602	6"	5.98	-	1.85	-	-	1.50	1 x Centre
19892.W0603	6"	5.98	3.875	1.85	0.937	0.750	-	2 x Outer
19892.W0801	8"	7.98	4.750	2.35	1.218	1.125	1.98	2 x Outer, 1 x Centre
19892.W0802	8"	7.98	-	2.35	-	-	1.98	1 x Centre
19892.W0803	8"	7.98	4.750	2.35	1.218	1.125	-	2 x Outer



VICE CLAMPING



## 19894



### Material

Steel.

### Technical Notes

Multiple extension pieces can be used to create longer offset.

### Important Notes

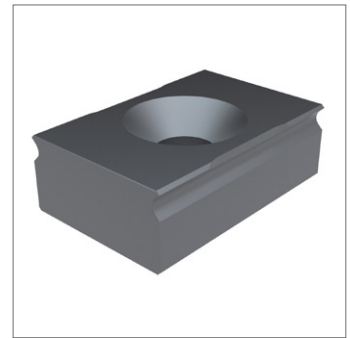
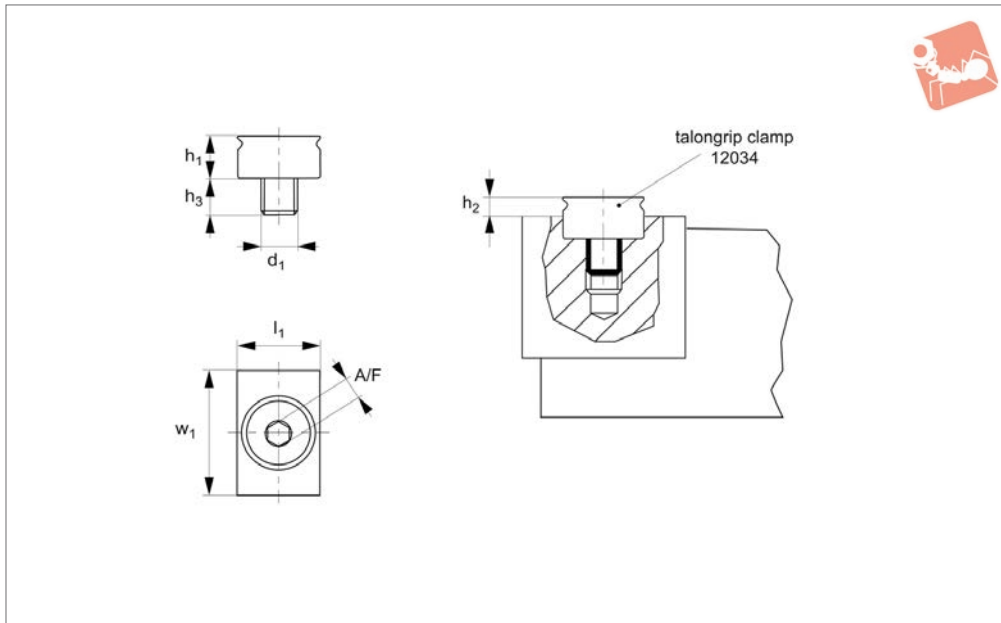
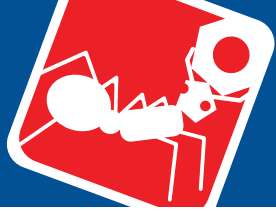
**\*Design change was made to the 19752.W... vice:** 3/8-16 tapped hole was modified to a 5/16-18 tapped hole. Check your vice to verify the size you need before

ordering.

**All dimensions are in inches.**

Order No.	For vice size	Type	Extension length	Thread size $d_1$
19894.W0401	4"	Workstop	-	5/16-18
19894.W0402	4"	Extension	4	5/16-18
19894.W0601	6"	Workstop	-	5/16-18*
19894.W0602	6"	Extension	6	5/16-18*
19894.W0611	6"	Workstop	-	3/8-16*
19894.W0612	6"	Extension	6	3/8-16*
19894.W0801	8"	Workstop	-	1/2-13
19894.W0802	8"	Extension	8	1/2-13





## 12034

VICE CLAMPING

### Material

Steel, hardened (HRC 52-54).

### Technical Notes

Typically used in conjunction with pitbull

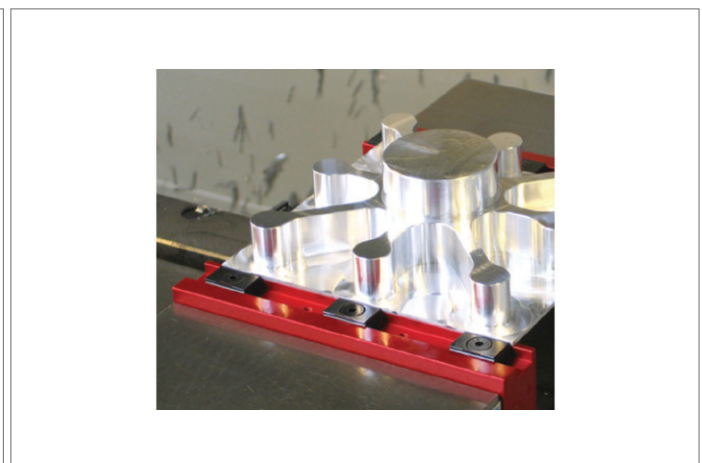
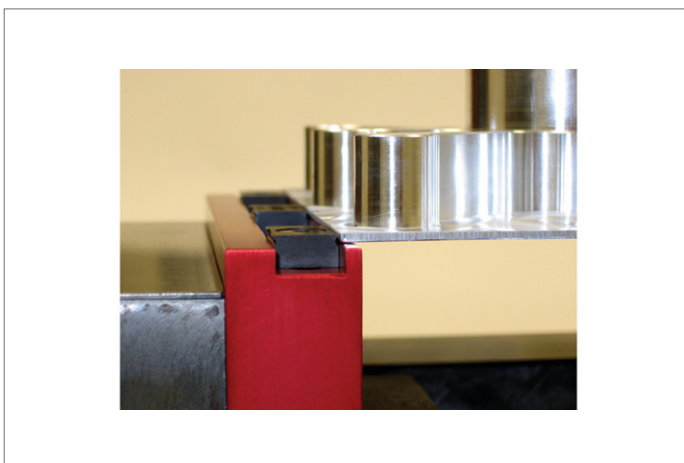
(part no. 12301) or Dynaforce (part no. 12010) clamps.

Allows aggressive clamping on as little as 1,5mm of material.

### Tips

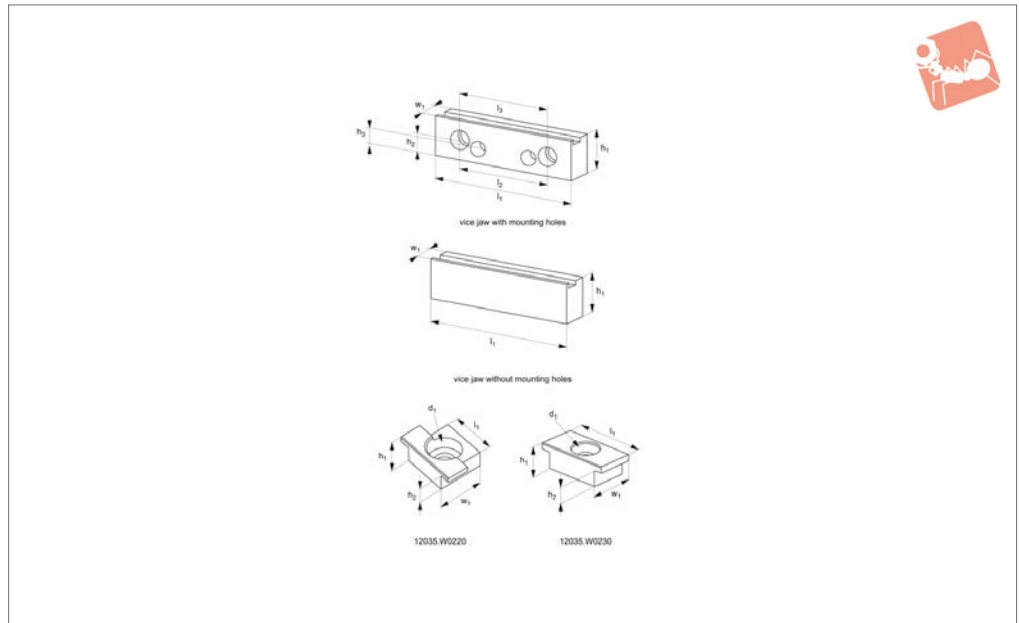
A further option includes an adaptor to suit 100mm and 150mm vices - see part no. 12035.

Order No.	d <sub>1</sub>	Grip height h <sub>2</sub>	h <sub>1</sub>	h <sub>3</sub>	l <sub>1</sub>	w <sub>1</sub>	A/F	Qty/pack	Weight g
12034.W0050	M 5	1,5 to 1,9	6.4	6.0	12.7	19.1	3	2	12
12034.W0075	M 5	1,5 to 3,0	7.9	8.1	19.1	19.1	3	2	22
12034.W0100	M 5	1,5 to 3,0	7.9	8.1	25.4	19.1	3	2	30
12034.W0150	M 8	1,5 to 5,6	12.7	6.0	25.4	25.4	5	1	37





## 12035



### Material

Steel, heat-treated.

### Technical Notes

The vice jaws for the Talongrip clamps increase the functionality of your 100 and 150mm vices (4" or 6").

This is a simple bolt-on system that allows

you to perform aggressive machining operations whilst clamping on as little as 1,5mm.

Ideal for small batch sizes or when building a fixture is not economical.

### Tips

Supplied with one jawstop (either part no.

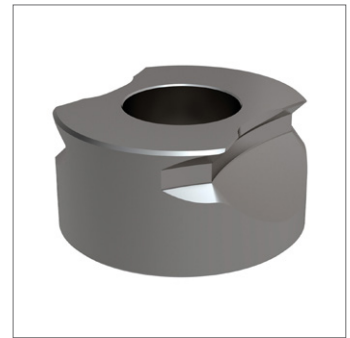
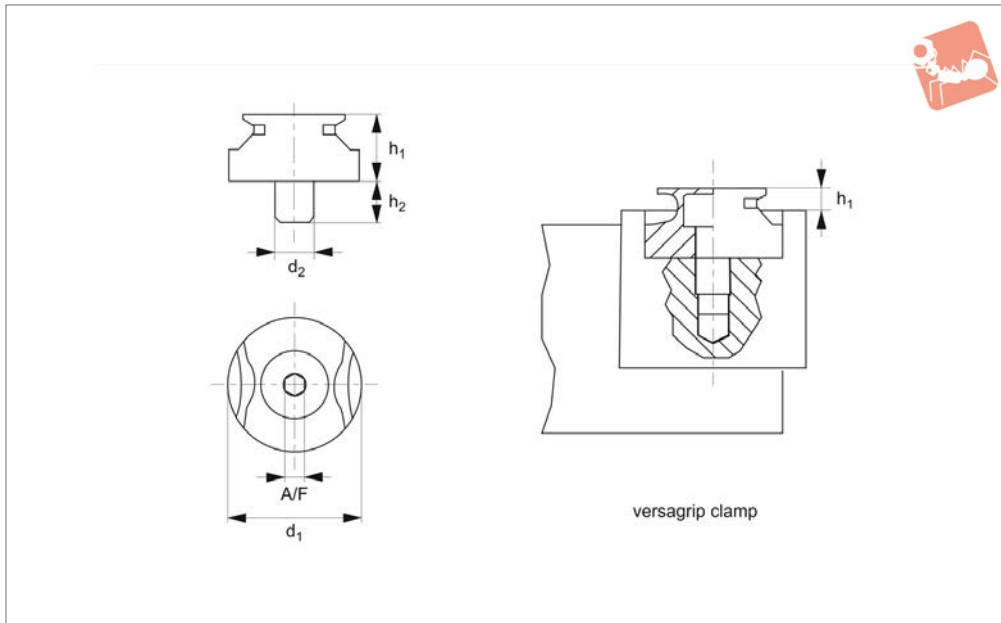
12035.W0220 or .W0230 - see table) and for individual Talongrips (either part no. 12034.W0050 or .W0075).

### Important Notes

Set includes a pair of vice jaws, four talongrip clamps and one stop (part no.12035.W0220).

Order No.	For vice size	Type	Jaw type	Vice jaw	Vice jaw Stop	Talongrip clamps	Weight g
12035.W0010	4"	Vice jaw set	With holes	2 Off	1 pc 12035.W0220	4 pc 12034.W0050	1370
12035.W0015	4"/6"	Vice jaw set	With holes	2 Off	1 pc 12035.W0220	4 pc 12034.W0050	2290
12035.W0020	6"	Vice jaw set	With holes	2 Off	1 pc 12035.W0220	4 pc 12034.W0050	3220
12035.W0025	6"/8"	Vice jaw set	With holes	2 Off	1 pc 12035.W0230	4 pc 12034.W0075	5570
12035.W0110	-	Vice jaw set	W/o holes	2 Off	1 pc 12035.W0220	4 pc 12034.W0050	1490
12035.W0115	-	Vice jaw set	W/o holes	2 Off	1 pc 12035.W0220	4 pc 12034.W0050	2570
12035.W0120	-	Vice jaw set	W/o holes	2 Off	1 pc 12035.W0230	4 pc 12034.W0050	3420
12035.W0220	-	Jaw stop small	-	-	-	-	6
12035.W0230	-	Jaw stop large	-	-	-	-	10

Order No.	d <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	w <sub>1</sub>
12035.W0010	-	37.6	-	17.5	100	-	63.5	25.4
12035.W0015	-	43.9	23.9	17.5	150	98.6	63.5	25.4
12035.W0020	-	43.9	-	23.9	200	-	98.6	25.4
12035.W0025	-	62.2	30.9	23.9	200	120.7	98.3	31.8
12035.W0110	-	37.6	-	-	100	-	-	25.4
12035.W0115	-	43.9	-	-	150	-	-	25.4
12035.W0120	-	43.9	-	-	200	-	-	25.4
12035.W0220	M 5	6.4	5.0	-	19	-	-	12.7
12035.W0230	M 5	7.9	5.7	-	19	-	-	12.7



## 12036.1

VICE CLAMPING

### Material

Steel, hardened (HRC 52-54).

### Technical Notes

The hardened grip has penetrating teeth designed to bite into the workpiece

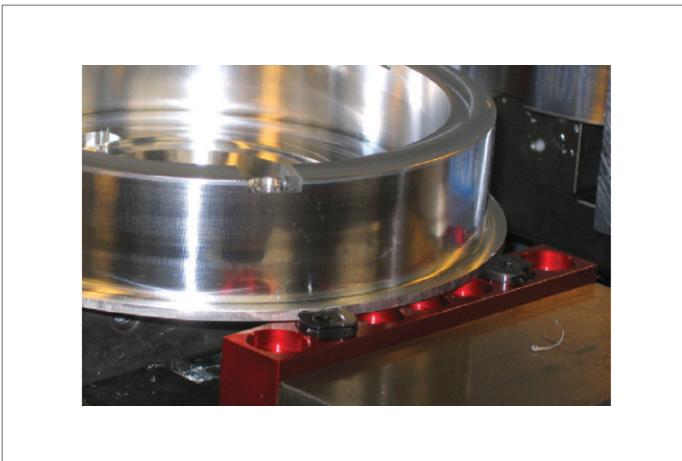
preventing lateral and its horizontal movement.

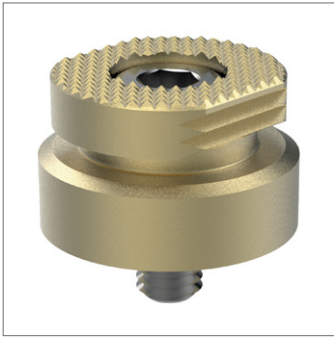
These grips will even hold flame cut parts and parts with negative drafts.

### Tips

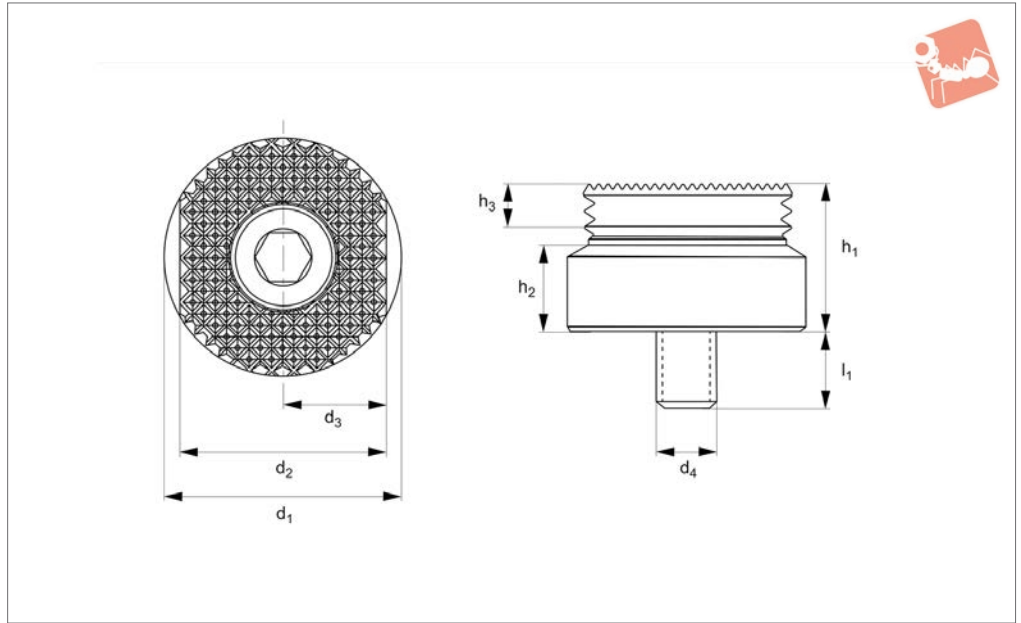
A further option includes an adaptor to suit 100mm and 150mm vices - see part no. 12037.

Order No.	$h_1$	$h_2$	$d_1$	$d_2$	Grip height $h_1$	A/F	Qty/pack	Weight g
12036.W0175	9.5	5.9	19.1	M5	1,5 to 3,0	4	2	18





12036.2



VICE CLAMPING

**Technical Notes**

Designed for those aggressive operations on harder materials while providing the versatility to hold just about any shape. Standard gripping height (.200") or

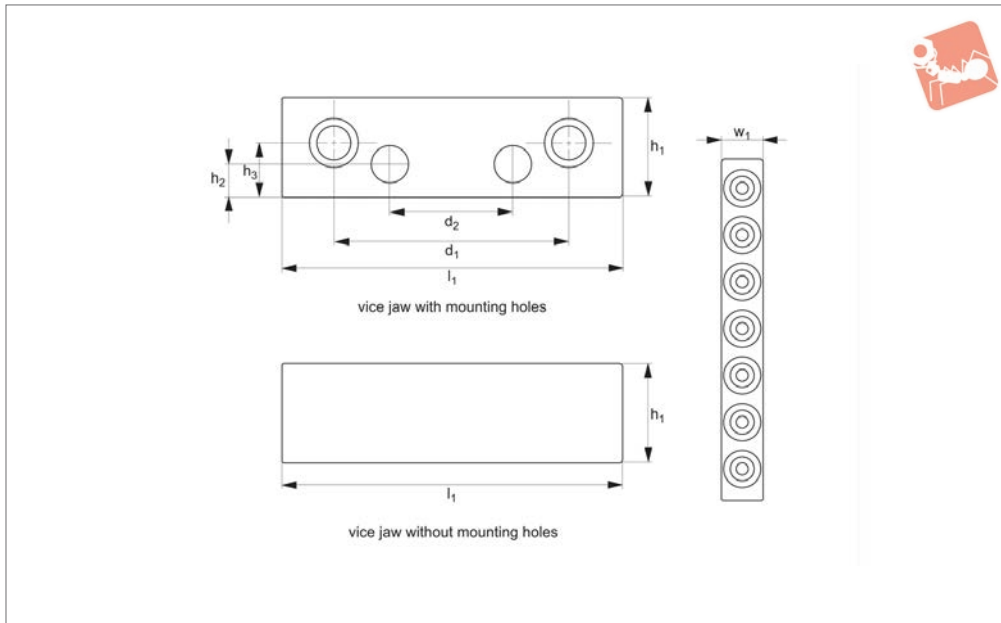
elevated workpiece for cutter clearance around jaws by resting part on the original Versagrip gripper or custom made pucks in the Versa pockets. Rotatable, flat, serrated top face for additional holding force in

horizontal pockets in jaws or hard stops.

**Tips**

Max. vice torque per pair of grips - 6" vice: 35-40 Lb/Fts (47,5-54,2 Nm.).

Order No.	$h_1$	$h_2$	$h_3$	$d_1$	$d_2$	$d_3$	$d_4$	$l_1$	Qty/pack	Weight g
12036.W0570	11.94	6.73	5.21	19,00-19,05	16.61	8.31	M 5	6.05	2	18



**12037**

VICE CLAMPING

**Material**

Steel, hardened (52-54 HRC).

**Technical Notes**

The Versagrip jaws increase the functionality of your 100 and 150mm vices. This is a simple bolt-on system that allows you to perform aggressive machining operations

whilst clamping on as little as 1,5mm for irregular shaped parts.

Ideal for small batch sizes or when building a fixture is not economical.

**Tips**

Has penetrating teeth designed to bite into your workpiece to prevent lateral and hori-

zontal movement. They will hold flame cut parts, castings and even parts with negative draft.

**Important Notes**

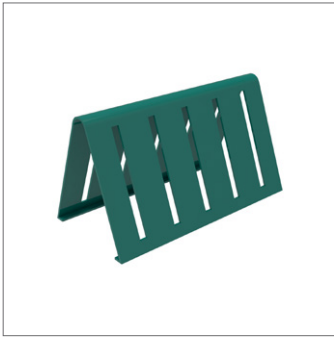
Set includes a pair of vice jaws, and four Versagrip clamps, part no. 12036.W0175.

Order No.	For vice size	Type	Jaw type	Vice jaw	Versagrip clamps	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	l <sub>1</sub>	w <sub>1</sub>	Number of holes	Weight g
12037.W0015	4"/6"	Vice jaw set	With holes	2 off	4 pc 12036.W0175	98,55	63,5	47,75	23,87	17,47	150	25,4	7	2460
12037.W0020	6"	Vice jaw set	With holes	2 off	4 pc 12036.W0175	98,55		47,75	23,87		200	25,4	9	3470
12037.W0115		Vice jaw set	W/o holes	2 off	4 pc 12036.W0175			47,75			150	25,4	7	2780
12037.W0120		Vice jaw set	W/o holes	2 off	4 pc 12036.W0175			47,75			200	25,4	9	3640

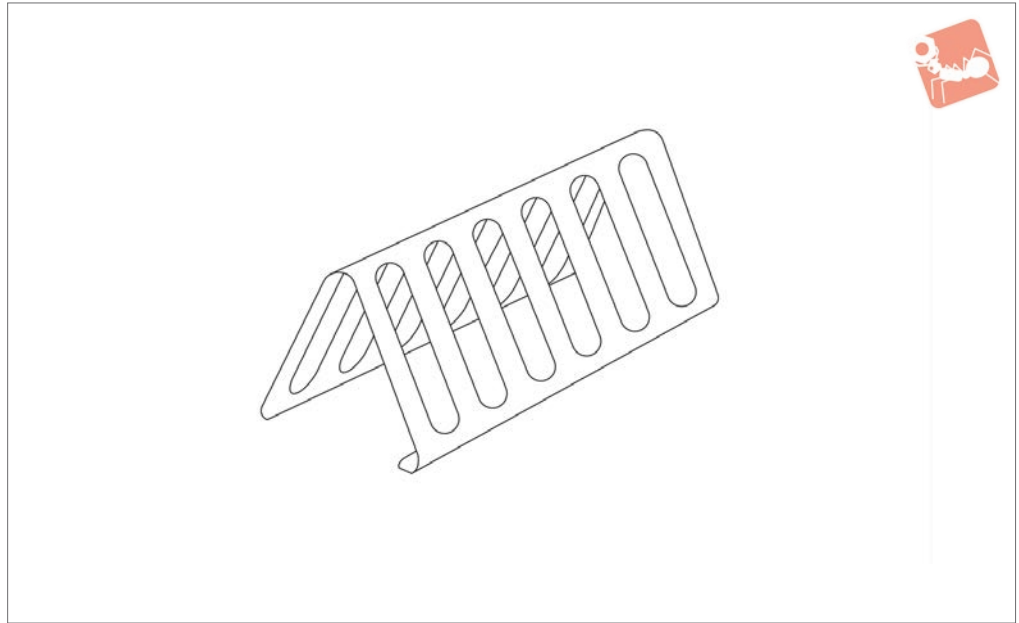




VICE CLAMPING



## 19838



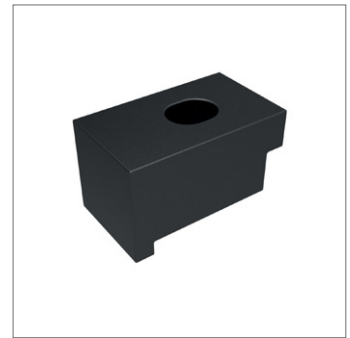
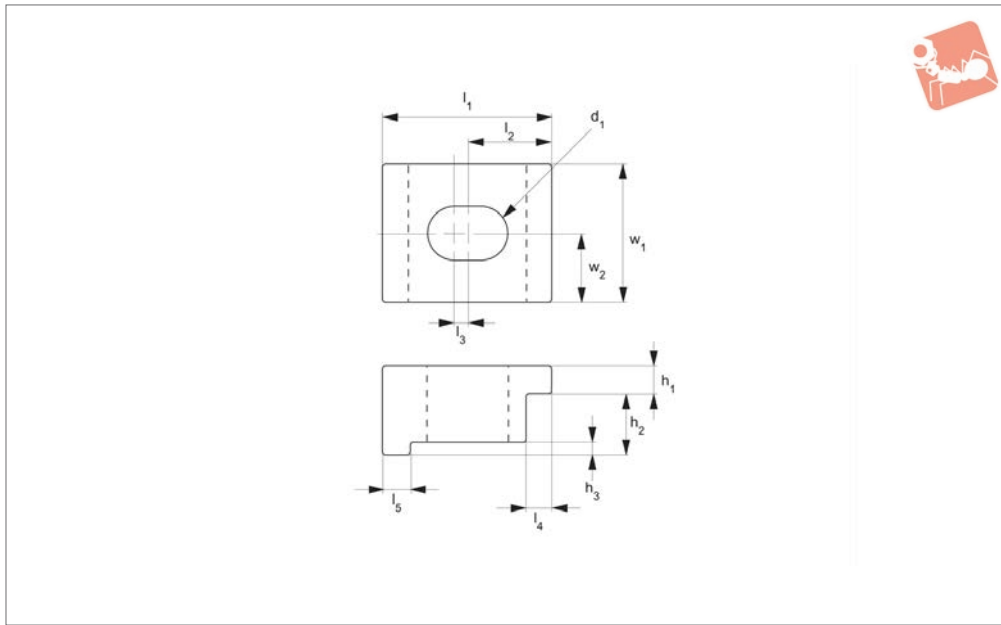
### Material

Steel.

### Technical Notes

Provides convenient storage of parallel sets.

Order No.	For vice size	Suitable for parallel kits
19838.W0040	4"	19814.W0140
19838.W0041	4"	19814.W0040
19838.W0060	6"	19814.W0160
19838.W0061	6"	19814.W0060



19896

VICE CLAMPING

**Material**

Steel (1018), case hardened, black oxide finish.

table. Fits into side groove on side of clamp - suitable for most industry standard vices.

**Technical Notes**

Used to secure vice to fixture of machine

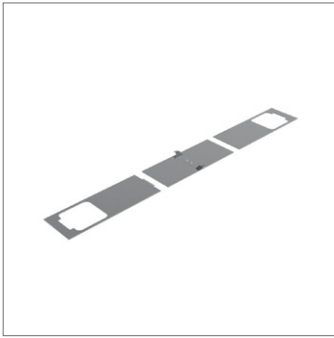
**Important Notes**

All dimensions are in inches.

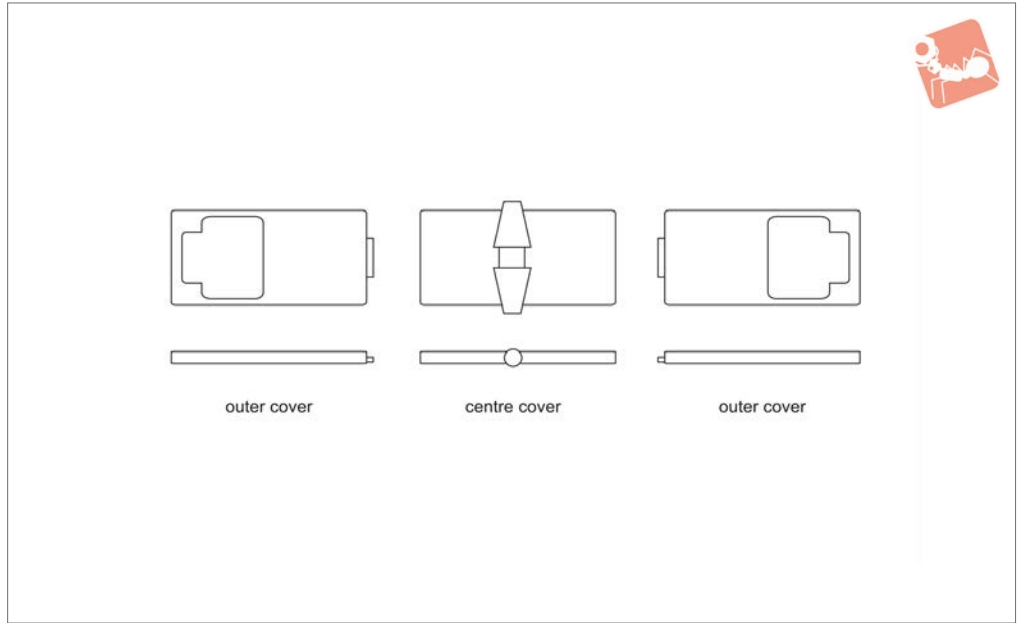
Order No.	For thread $d_1$	For vice size	$h_1$	$h_2$	$h_3$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$w_1$	$w_2$
19896.W0040	3/8	4"	0.25	0.50	0.13	1.50	0.63	0.13	0.19	0.25	1.25	0.625
19896.W0041	1/2	4"	0.25	0.50	0.13	1.50	0.63	0.13	0.19	0.25	1.25	0.625
19896.W0060	3/8	6"	0.50	0.75	0.19	2.12	0.85	0.13	0.25	0.25	1.25	0.625
19896.W0061	1/2	6"	0.50	0.75	0.19	2.12	0.85	0.13	0.25	0.25	1.25	0.625
19896.W0062	3/8	6"	0.50	0.75	0.19	2.12	0.85	0.13	0.25	0.25	1.25	0.625



VICE CLAMPING



## 19899



### Technical Notes

Fits double station and eight station vices.  
Shield covers protects vice screw and

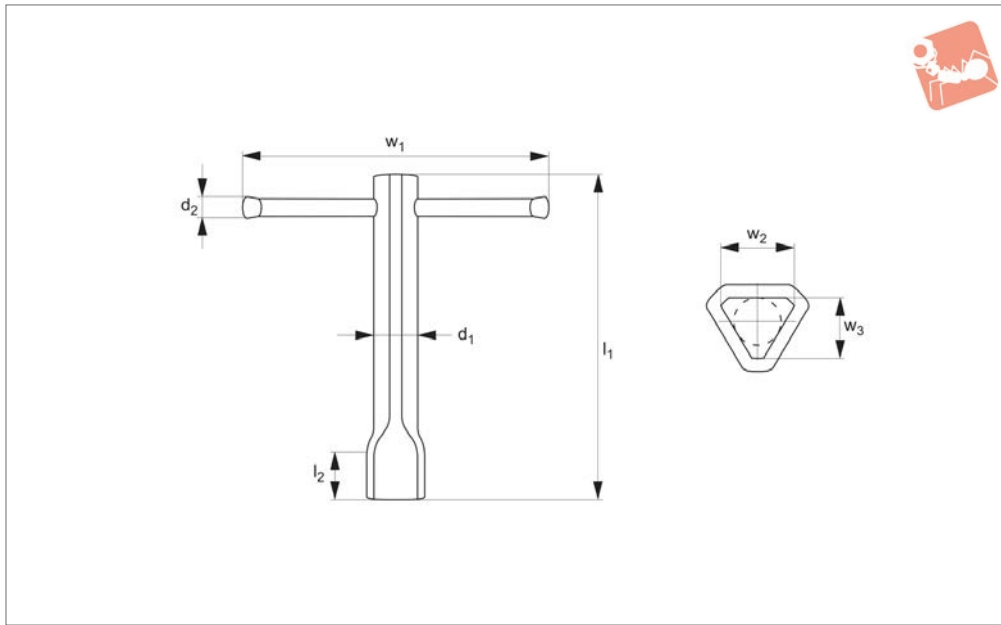
mechanism from swarf and other debris.

### Important Notes

**All dimensions are in inches.**

Order No.	For vice size	Set contents
19899.W0040	4"	2 x Outer, 1 x Centre
19899.W0060	6"	2 x Outer, 1 x Centre
19899.W0080	8"	2 x Outer, 1 x Centre





### 91990

HEX KEYS & WRENCHES

#### Material

Steel, zinc plated.

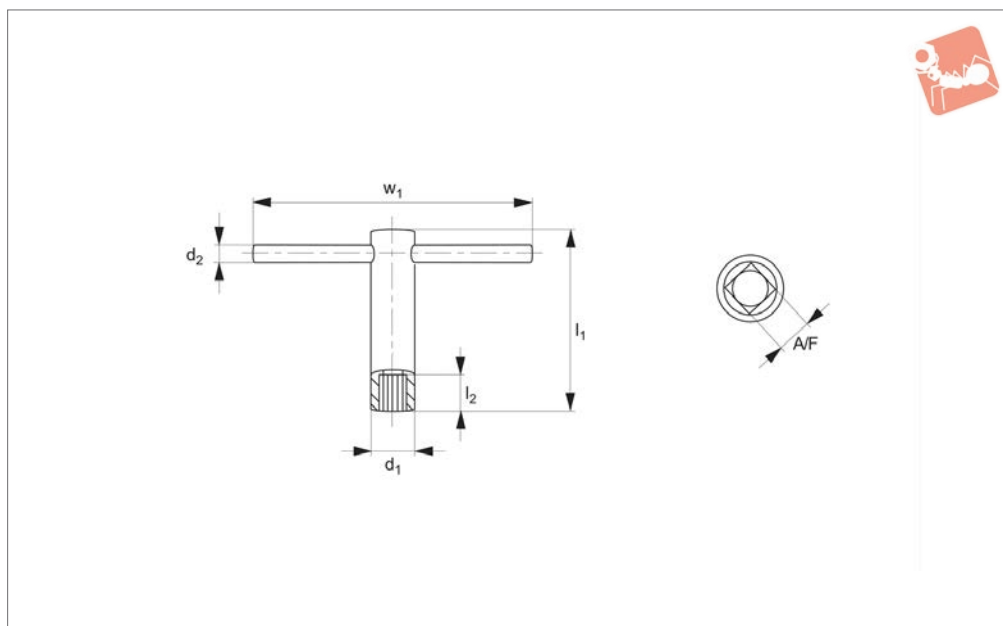
#### Technical Notes

For use with triangular screws to DIN 22424, and triangular nuts to DIN 22425.

Order No.	For thread	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	Weight g
91990.W0004	M 4	9	4	90	4	50	7.7	6.8	20
91990.W0005	M 5	12	6	100	5	65	9.4	8.3	30
91990.W0006	M 6	14	6	115	6	80	11.4	10.1	60
91990.W0008	M 8	16	8	125	8	100	13.7	12.1	80
91990.W0010	M10	20	8	140	10	125	17.1	15.1	160
91990.W0012	M12	20	10	160	12	160	18.9	16.6	240
91990.W0016	M16	25	12	180	16	200	23.5	20.6	400



**92000**



**Material**

Steel (C35/C45).

Body and socket: tempered, hardened and

brown finish.

**Technical Notes**

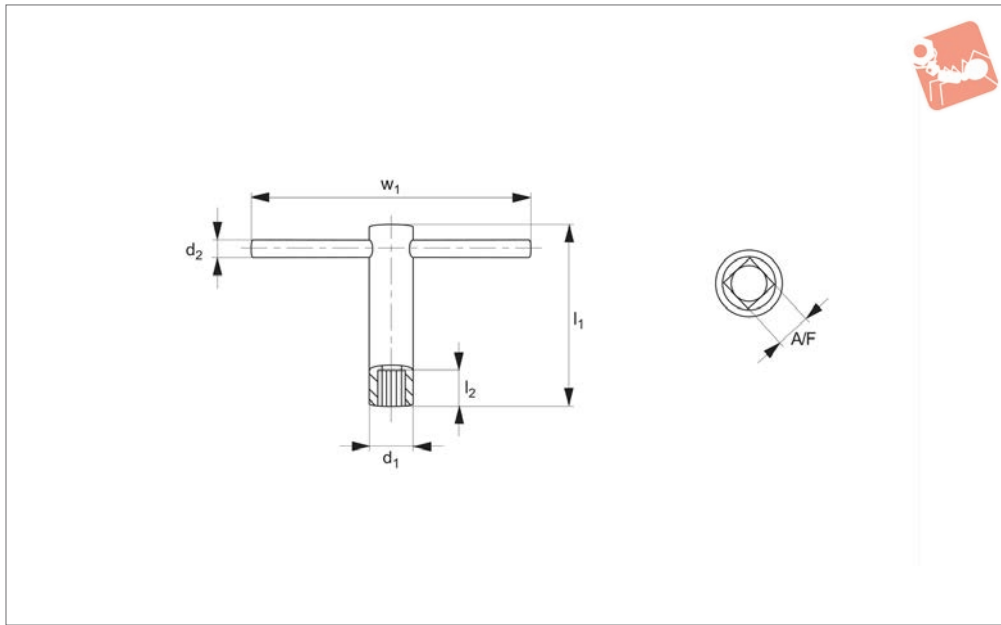
Produced to DIN 904.

Order No.	A/F	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	Weight g
92000.W0004	4	12.0	6.0	60	11	160	85
92000.W0005	5	12.0	6.0	60	11	160	85
92000.W0006	6	12.0	6.0	80	12	160	100
92000.W0007	7	14.6	6.0	80	15	160	130
92000.W0008	8	16.0	9.0	80	15	180	180
92000.W0009	9	18.0	9.0	100	18	180	245
92000.W0010	10	20.0	11.0	100	18	200	340
92000.W0012	12	24.0	12.0	100	21	250	520
92000.W0013	13	24.0	12.0	100	22	250	520
92000.W0014	14	28.0	14.6	120	24	320	875
92000.W0017	17	34.0	16.0	160	28	400	1625
92000.W0019	19	36.0	16.0	200	30	400	2035
92000.W0022	22	42.0	18.0	200	34	500	2900
92000.W0024	24	45.0	20.0	250	36	630	4270



# Square Drive Socket T-Wrench - Long

long - female



### 92010

HEX KEYS & WRENCHES

#### Material

Body: steel (C35/C45).

Socket: tempered, hardened and brown

finish.

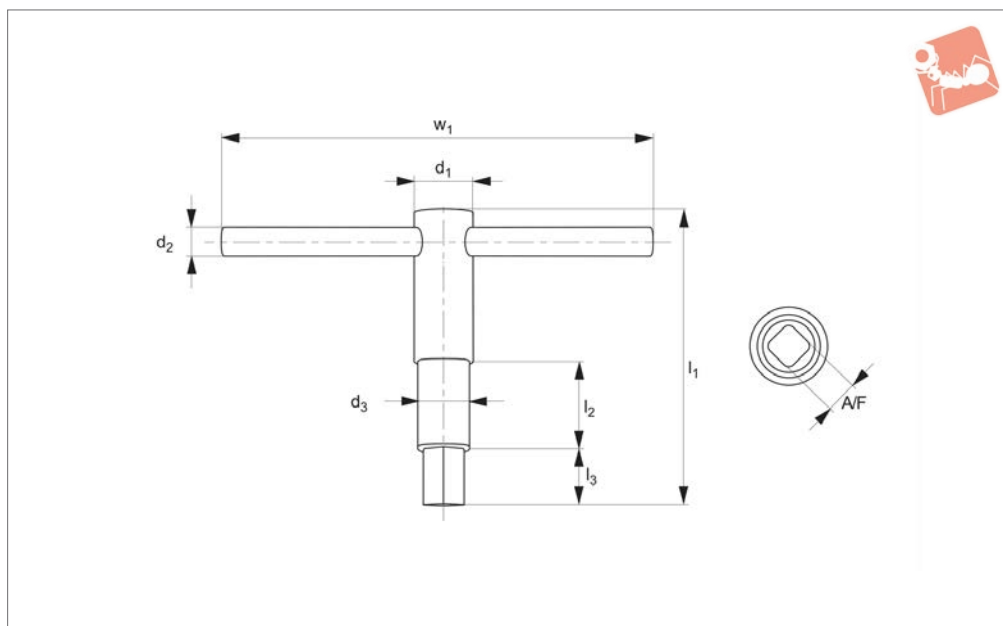
#### Technical Notes

Produced to DIN 904L.

Order No.	A/F	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	Weight g
92010.W0005	5	12	6.0	120	11	160	100
92010.W0006	6	12	6.0	160	12	160	110
92010.W0008	8	16	9.0	160	15	180	210
92010.W0009	9	18	9.0	200	18	200	390
92010.W0010	10	20	11.0	200	18	200	390
92010.W0012	12	24	12.0	200	21	250	600
92010.W0013	13	24	12.0	200	22	250	600
92010.W0014	14	28	14.6	200	24	320	795
92010.W0017	17	34	16.0	250	28	400	1500
92010.W0019	19	36	16.0	320	30	400	1700



**92050**



**Material**

Body and socket; steel (C35/C45), tempered, hardened and with brown finish.

**Technical Notes**

Produced to DIN 905.  
92050.W0004 and 92050.W0007 are not to

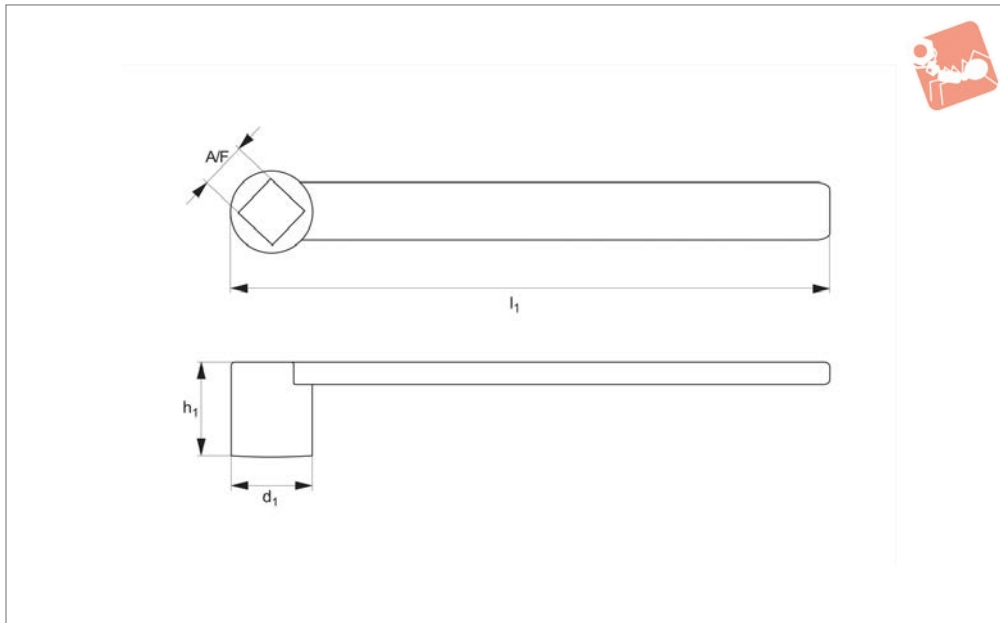
DIN standard.

Order No.	A/F	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	w <sub>1</sub>	Weight g
92050.W0004	-4	12.0	6.0	6	60	20	9	160	70
92050.W0005	5	12.0	6.0	8	60	20	11	160	70
92050.W0006	6	12.0	6.0	10	80	22	12	160	80
92050.W0007	-7	14.6	6.0	12	80	26	15	160	115
92050.W0008	8	16.0	9.0	14	80	26	15	180	180
92050.W0009	9	16.0	9.0	14	80	26	17	180	180
92050.W0010	10	20.0	11.0	18	100	30	18	200	320
92050.W0011	11	20.0	11.0	18	100	30	20	200	320
92050.W0012	12	24.0	12.0	20	100	38	21	250	450
92050.W0013	13	24.0	12.0	20	100	38	22	250	450
92050.W0014	14	28.0	14.6	22	120	38	24	320	780
92050.W0017	17	34.0	16.0	25	160	50	28	400	1500
92050.W0019	19	36.0	16.0	28	200	50	30	400	1850
92050.W0022	22	42.0	20.0	32	200	65	34	630	3100



# Square Socket Wrench female

## Hex Keys & Wrenches



**92060**

HEX KEYS & WRENCHES

### Material

Steel (C35/C45) hardened, tempered, with brown finish.

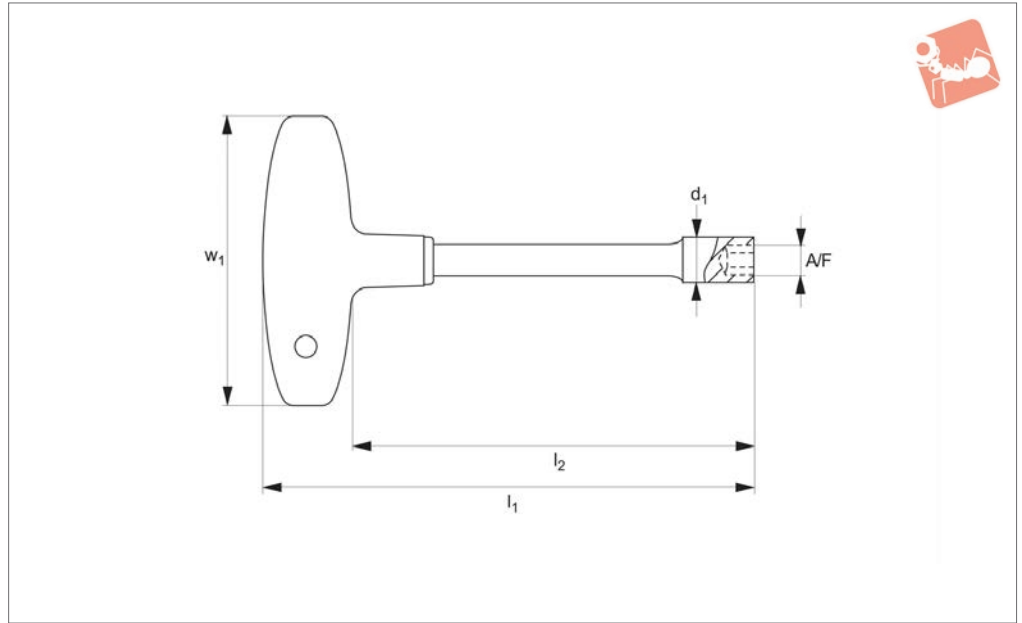
### Technical Notes

Produced to DIN 248.

Order No.	A/F	d <sub>1</sub>	h <sub>1</sub>	l <sub>1</sub>	Weight g
92060.W0008	8	17	20.0	160	85
92060.W0010	10	21	22.5	195	165
92060.W0012	12	24	26.5	235	275
92060.W0013	13	26	27.5	250	300
92060.W0014	14	27	30.5	270	420
92060.W0017	17	30	37.0	315	530
92060.W0019	19	35	41.0	345	715
92060.W0022	22	39	46.0	385	900
92060.W0024	24	43	49.0	415	975



**92070**



**Material**

Blade: chrome vanadium, hardened, chrome plated.

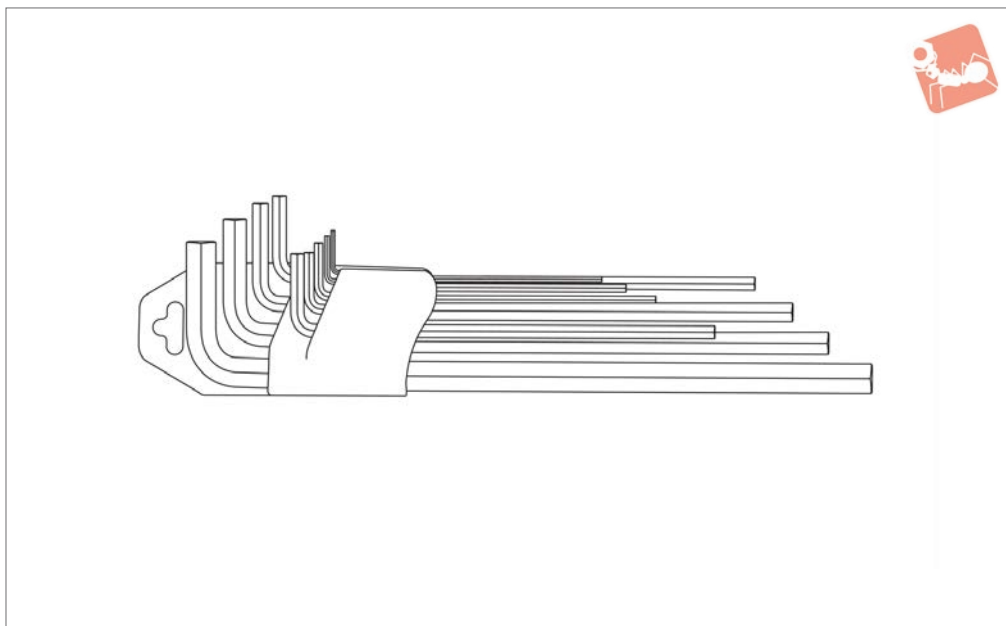
Handle: shock resistant black plastic.

Order No.	A/F	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	Weight g
92070.W0008	8	16	151	125	100	140
92070.W0010	10	17	151	125	100	150



# Hexagon Keys - Long

in clip set - blackened or nickel plated



**90180**

HEX KEYS & WRENCHES

**Material**

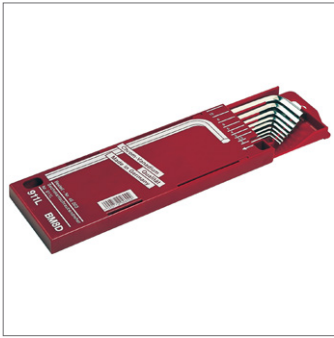
Keys: steel, hardened chrome vanadium.  
Blackened or nickel plated.  
Clip: part nos. 90180.W0007 and .W0009;

plastic polyamide, red. Part no. 90180.  
W0908; plastic polyamide, yellow.

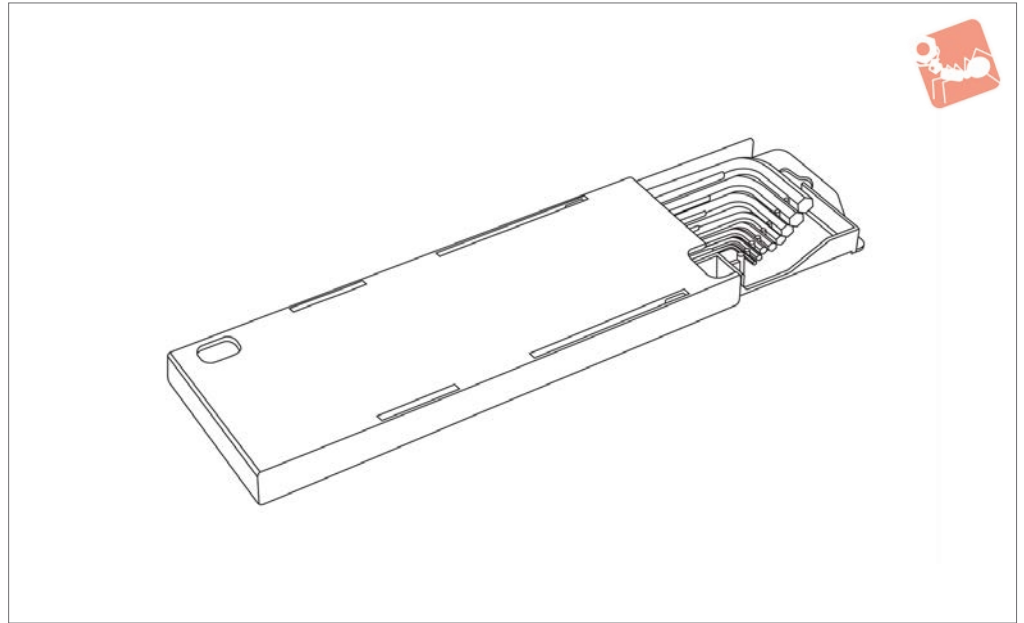
**Technical Notes**

High quality hex. key sets.  
Parts to DIN 911 LC/LD and ISO 2936 LC/LD.

Order No.	Pieces	Finish	Contents A/F mm/inch	Weight g
90180.W0007	9 metric	Nickel Plated	1,5, 2, 2,5, 3, 4, 5, 6, 8, 10	415
90180.W0009	9 metric	Blackened	1,5, 2, 2,5, 3, 4, 5, 6, 8, 10	415
90180.W0908	9 inch	Nickel Plated	5/64", 3/32", 1/8", 5/32", 3/16", 7/32", 1/4", 5/32"	395



**90210**



**Material**

Keys: steel, hardened chrome vanadium, nickel plated.

Box: red impact resistant plastic.

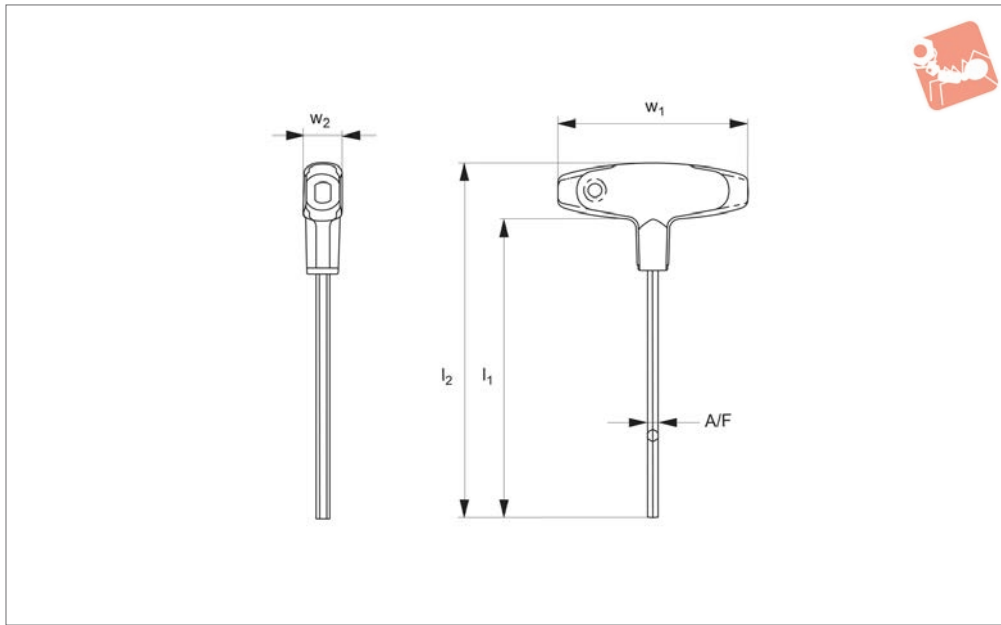
Parts to DIN 911 LD and ISO 2936 LD.

**Technical Notes**

High quality hex. key sets.

Order No.	Box l x w x h	Pieces	Contents A/F	Weight g
90210.W0008	265x88x17	8	2, 2,5, 3, 4, 5, 6, 8, 10	535





**90300**

HEX KEYS & WRENCHES

**Material**

Blade: steel, hardened chrome vanadium, nickel plated.

Handle: ergonomic soft red plastic.

Features hang-up hole.

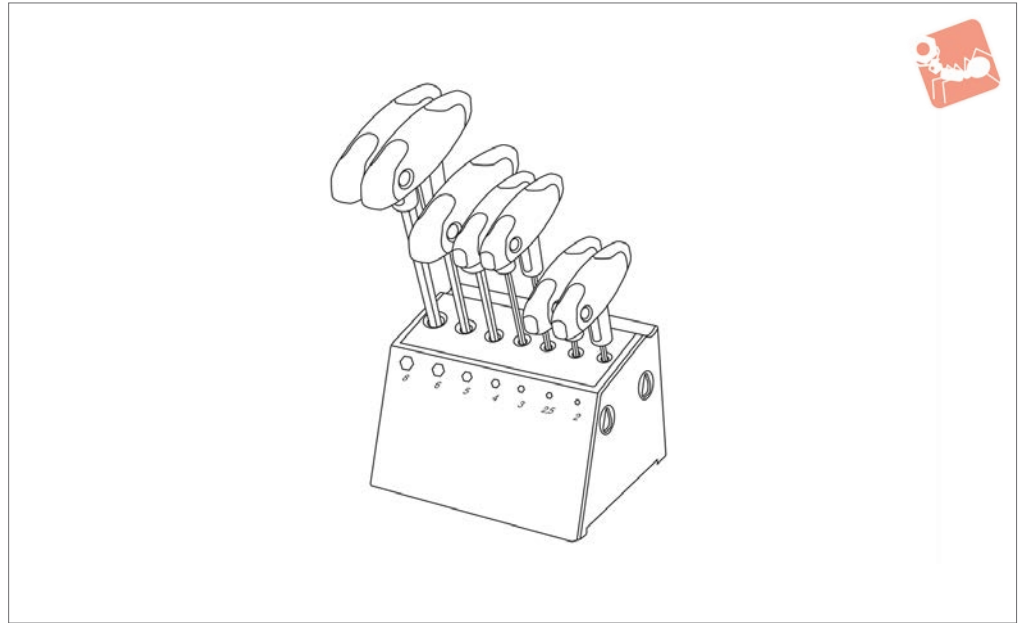
**Technical Notes**

Grip shape optimised for comfortable use.

Order No.	$l_1$	$l_2$	$w_1$	$w_2$	A/F	A/F inch	Weight g
90300.W0020	100	125	80	15.5	2	5/64"	18
90300.W0025	100	125	80	15.5	2.5	-	24
90300.W0026	200	225	80	15.5	2.5	-	30
90300.W0030	100	125	80	15.5	3	-	24
90300.W0031	150	175	80	15.5	3	-	30
90300.W0041	150	175	80	15.5	4	5/32"	36
90300.W0043	300	325	80	15.5	4	5/32"	50
90300.W0051	150	181	100	19.5	5	-	60
90300.W0053	350	381	100	19.5	5	-	100
90300.W0062	200	231	100	19.5	6	-	84
90300.W0063	350	381	100	19.5	6	-	130
90300.W0082	200	231	100	19.5	8	5/16"	125
90300.W0083	350	381	100	19.5	8	5/16"	200
90300.W0100	100	138	100	19.5	10	-	165
90300.W0102	350	338	100	19.5	10	-	350



**90310**



**Material**

Blade: steel, hardened chrome vanadium, nickel plated.  
Handle: shock resistant red plastic, with

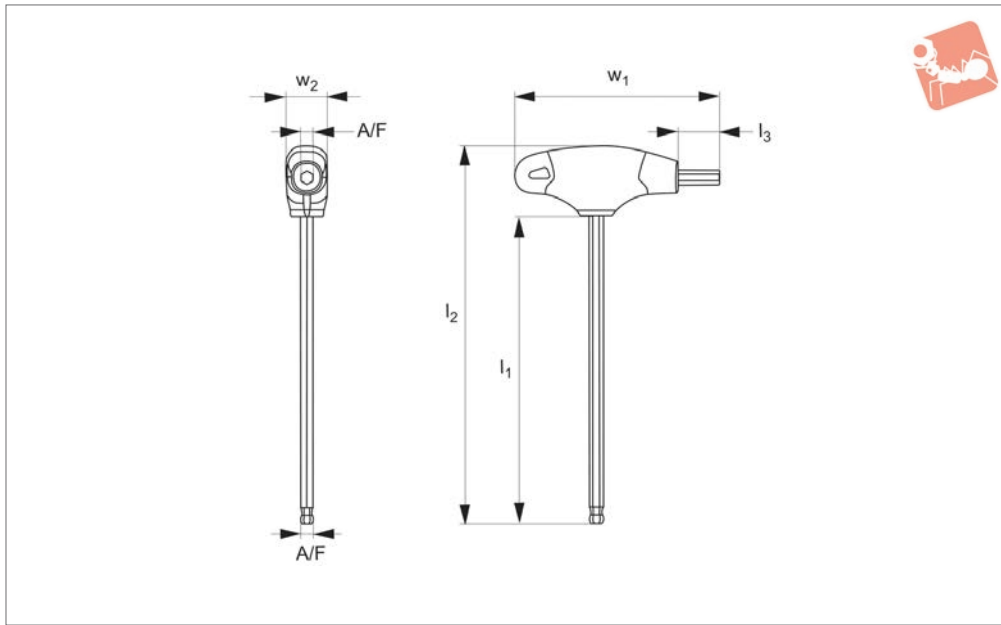
black plastic grip.

Stand: shock resistant plastic.

**Tips**

Stand features clips for connecting additional workshop stands.

Order No.	Pieces	A/F 2 x l	A/F 2,5 x l	A/F 3 x l	A/F 4 x l	A/F 5 x l	A/F 6 x l	A/F 8 x l	Weight g
90310.W0022	7	100	100	150	150	150	200	200	650



## 90370

HEX KEYS & WRENCHES

### Material

Blade: steel, hardened chrome vanadium, nickel plated, with black tip.  
 Grip: ergonomic soft red plastic.

### Technical Notes

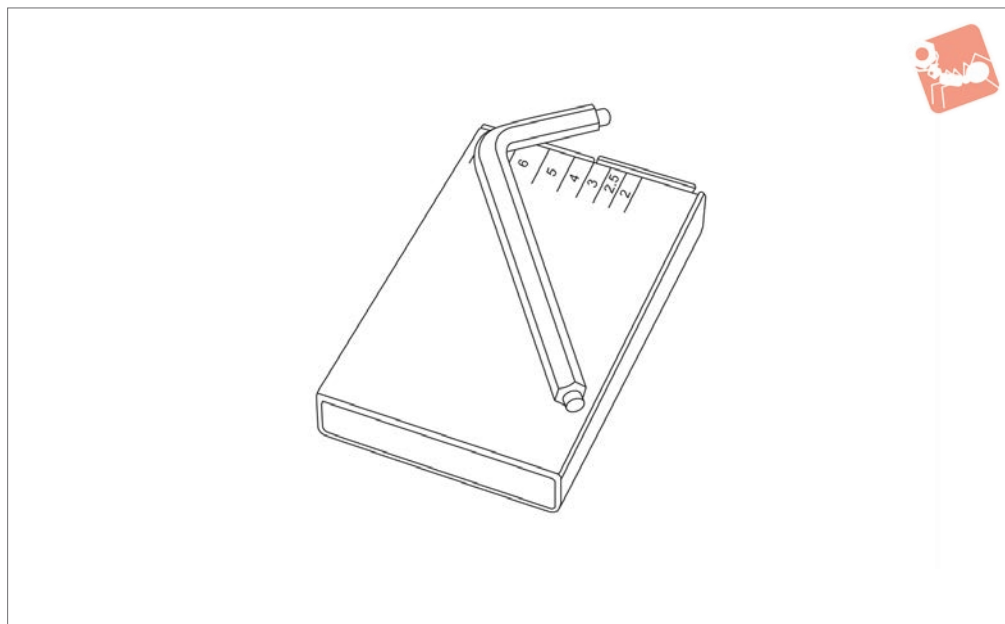
Long arm, with ball end hexagon, for speed.  
 Short arm, standard hexagon, for final

tightening.

Order No.	$l_1$	$l_2$	$l_3$	$w_1$	$w_2$	A/F	Weight g
90370.W0031	125	151	15	75	16	3	25
90370.W0041	125	151	15	75	16	4	33
90370.W0051	150	184	20	100	21	5	60
90370.W0061	150	184	20	100	21	6	83



**90490**



**Material**

Key: Steel, hardened chrome vanadium, nickel plated.  
Box: red plastic, shock resistant.

**Technical Notes**

Used with socket head cap screws (DIN

6912), these hexagon keys, with pilot pin provide added security to components in a variety of applications. Sizes 2 and 2,5mm are standard hex. keys.

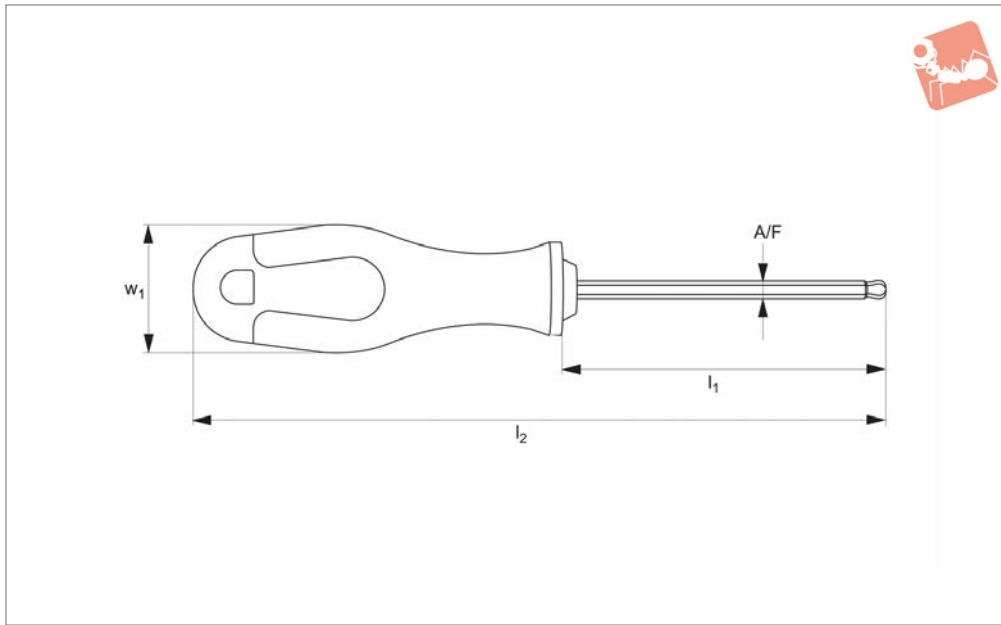
**Tips**

Other sizes available on request.

Order No.	Box l x w x h	Pieces	Contents A/F	Weight g
90490.W0007	133x72x14	7	2, 2,5, 3, 4, 5, 6, 8	175



# Ball-Ended Hex. Keys straight handle



**90510**

HEX KEYS & WRENCHES

### Material

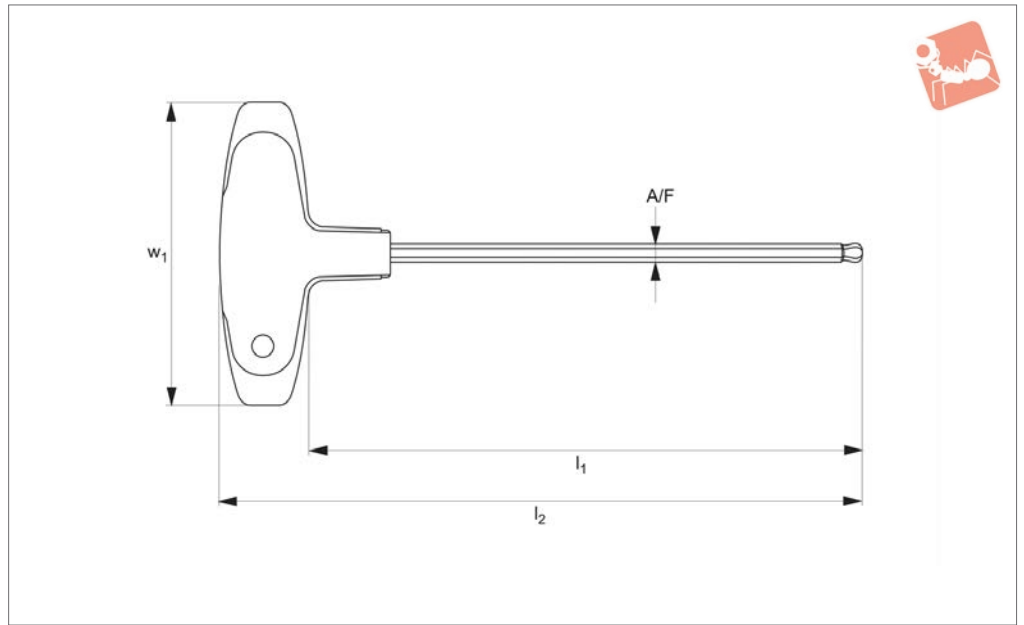
Blade: steel, hardened chrome vanadium,  
nickel plated

Handle: ergonomic red plastic, with soft  
black grip.

Order No.	$l_1$	$l_2$	$w_1$	A/F	Weight g
90510.W0002	100	190	19	2.5	35
90510.W0003	100	190	19	3.0	35
90510.W0004	100	200	21	4.0	50
90510.W0005	100	200	21	5.0	75



**90520**



**Material**

Handle: ergonomic soft red plastic handle.  
Blade: steel, hardened chrome vanadium, nickel plated.

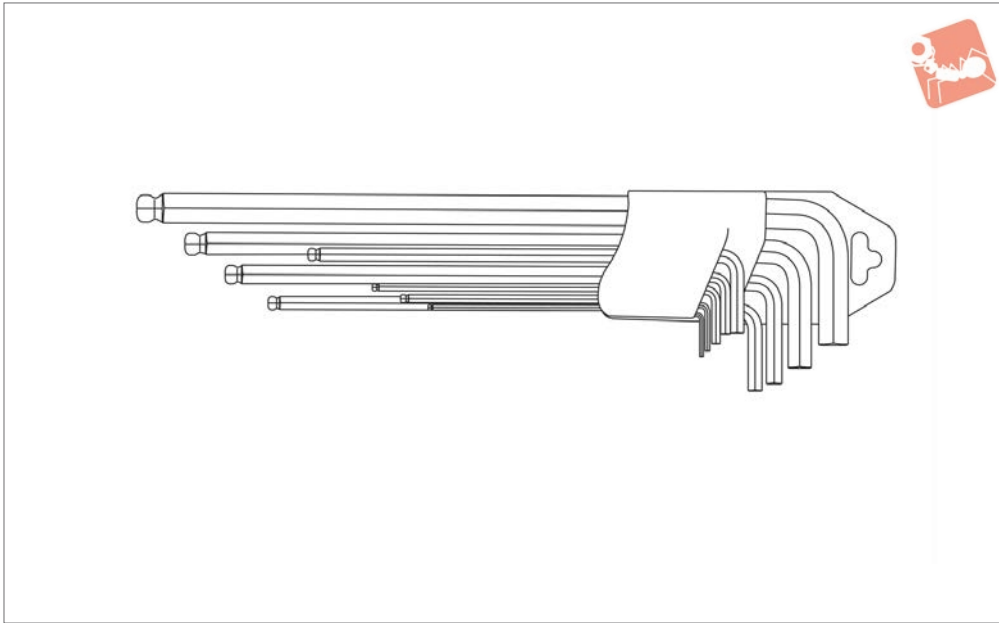
Handle: ergonomic soft red plastic handle.

Order No.	$l_1$	$l_2$	$w_1$	A/F	Weight g
90520.W0004	150	175	80	4	40
90520.W0005	150	181	100	5	65
90520.W0006	150	181	100	6	80
90520.W0008	200	231	100	8	130



# Hex Keys Set - Ball Ended clip set - long

## Hex Keys & Wrenches



**90530**

HEX KEYS & WRENCHES

### Material

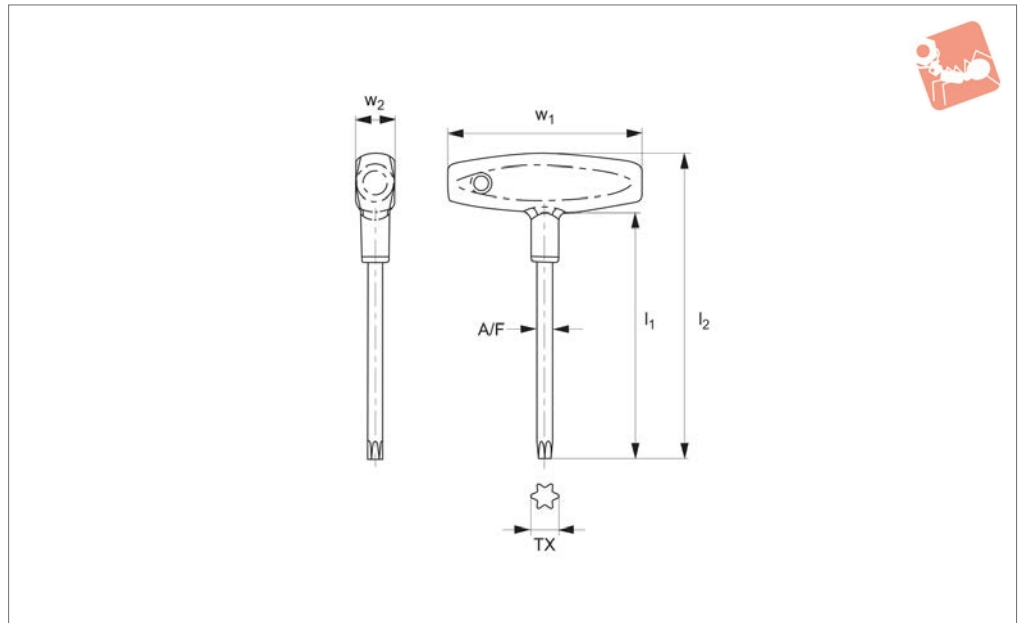
Keys: steel, hardened chrome vanadium,  
blackened or nickel plated.

Clip: ergonomic red plastic.

Order No.	Pieces	Finish	Contents A/F	Weight g
90530.W0009	9	Blackened	1,5, 2, 2,5, 3, 4, 5, 6, 8, 10	440
90530.W0109	9	Nickel Plated	1,5, 2, 2,5, 3, 4, 5, 6, 8, 10	440



**90620**



**Material**

Blade: steel, hardened chrome vanadium.  
 Handle: shock resistant green plastic.

**Technical Notes**

Torx is a registered trademark of Camcar/ Textron Inc.

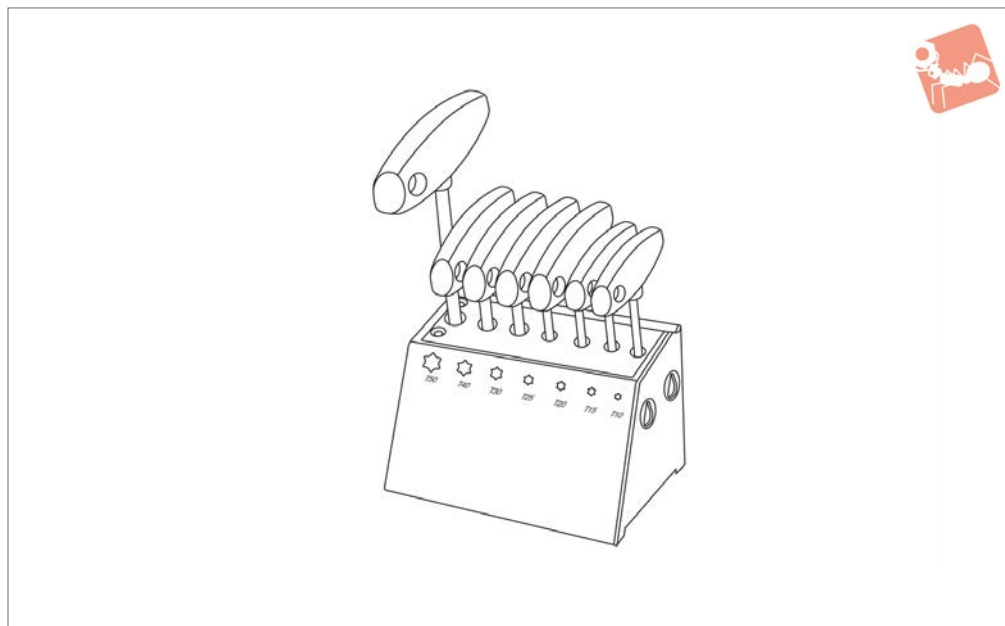
Order No.	TX size	$l_1$	$l_2$	$w_1$	$w_2$	A/F	Weight g
90620.W0009	TX 9	100	125	80	15.5	2.5	35
90620.W0010	TX 10	100	125	80	15.5	2.7	35
90620.W0015	TX 15	100	125	80	15.5	3.3	36
90620.W0020	TX 20	100	125	100	19.5	3.9	60
90620.W0025	TX 25	100	125	100	19.5	4.4	60
90620.W0027	TX 27	100	131	100	19.5	5.0	70
90620.W0030	TX 30	100	131	100	19.5	5.5	75
90620.W0040	TX 40	100	131	100	19.5	6.7	80
90620.W0050	TX 50	150	188	120	23.5	8.8	160





# T-Handled TX Keys Set with workstand

## Hex Keys & Wrenches



### 90630

HEX KEYS & WRENCHES

#### Material

Blade: steel, hardened chrome vanadium.  
Chrome plated, with black tip.

Handle: shock resistant green plastic.

Workstand: shock resistant green plastic.

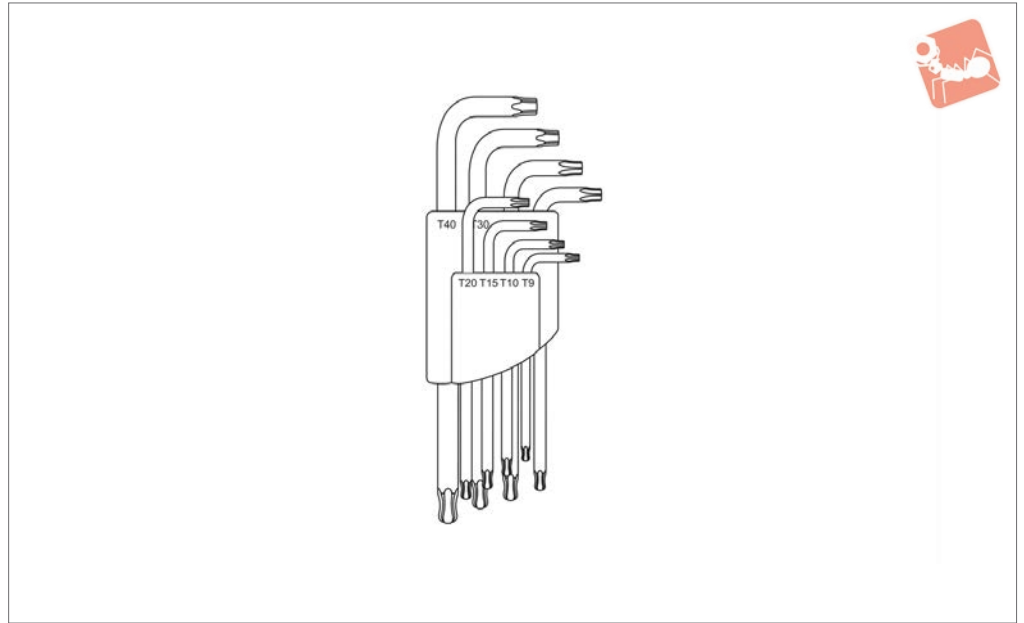
#### Technical Notes

With T-handled TX keys part no. 90620.

Order No.	Pieces	TX10 x l	TX15 x l	TX20 x l	TX25 x l	TX30 x l	TX40 x l	TX50 x l	Weight g
90630.W0001	7	100	100	100	100	100	100	150	660



**90640**

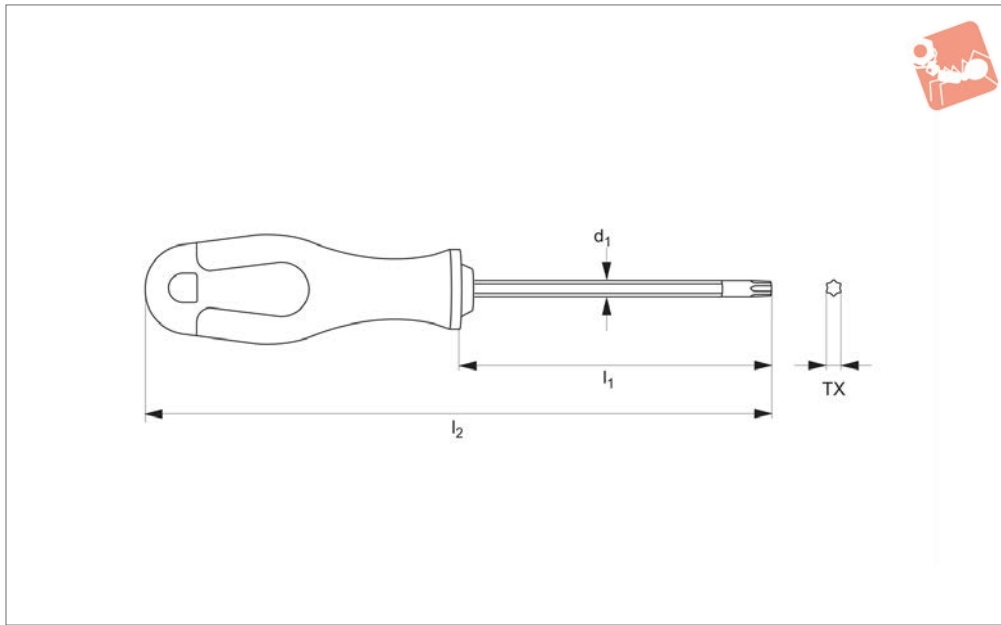


**Material**

Blade: steel, hardened chrome vanadium, blackened.

Clip: green and black impact resistant plastic.

Order No.	Pieces	Contents TX	Weight g
90640.W0008	8	TX9, TX10, TX15, TX20, TX25, TX27, TX30, TX40	165



## 90650

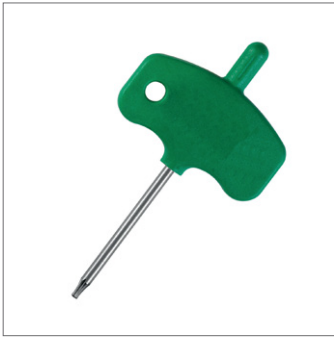
HEX KEYS & WRENCHES

### Material

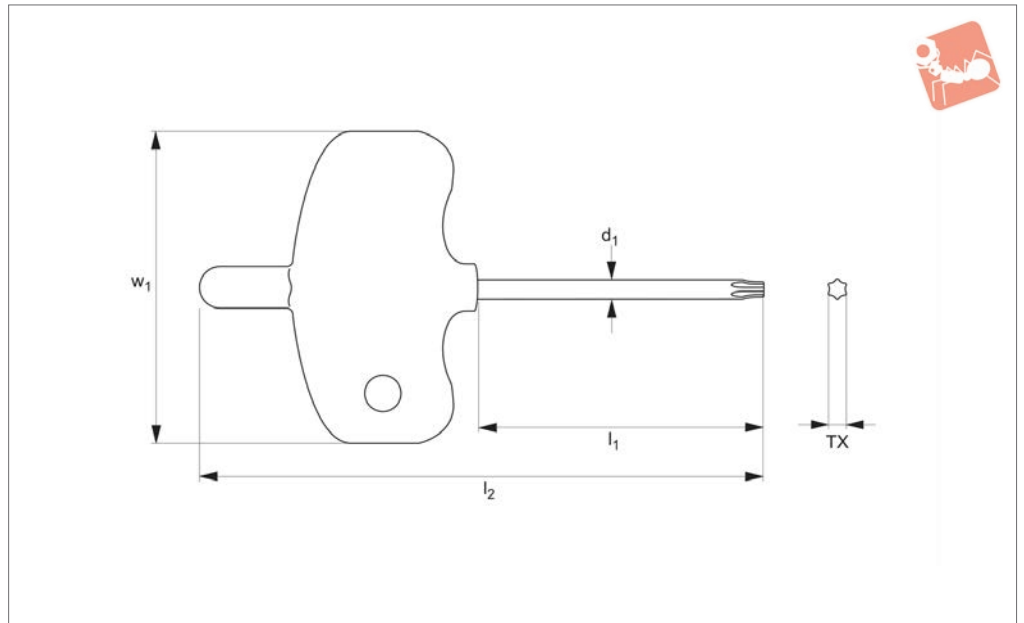
Blade: steel, hardened chrome vanadium, blackened.

Handle: green and black impact resistant plastic.

Order No.	TX	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	Weight g
90650.W0008	TX 8	2.3	60	140	37
90650.W0009	TX 9	2.5	60	140	37
90650.W0010	TX10	2.7	80	160	39
90650.W0015	TX15	3.3	80	170	41
90650.W0020	TX20	3.9	100	190	56
90650.W0025	TX25	4.4	100	200	60



**90670**

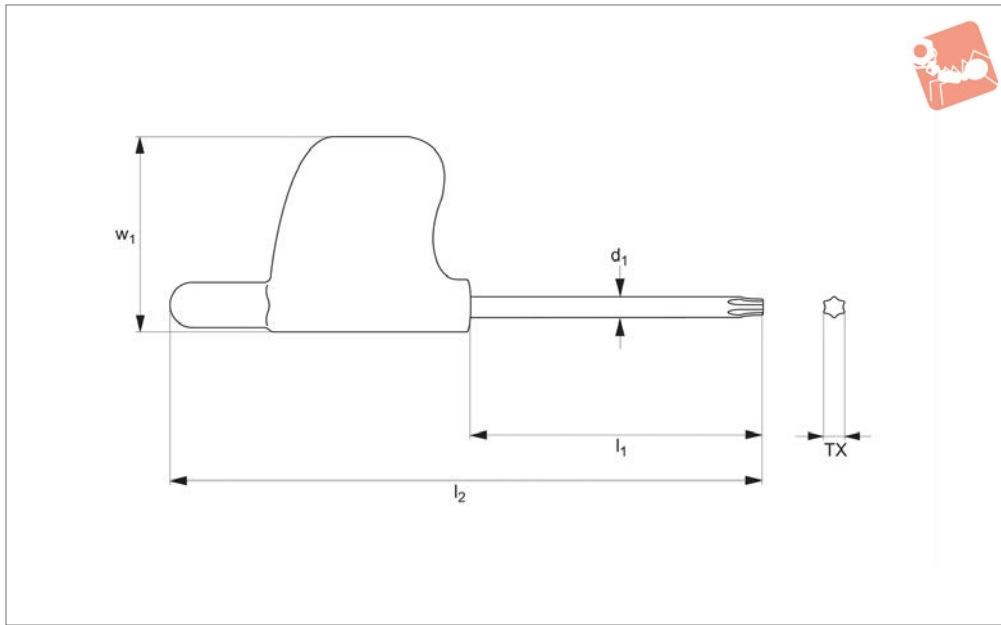


**Material**

Blade: steel, hardened chrome vanadium, blackened.

Handle: shock resistant green plastic.

Order No.	TX	$d_1$	$l_1$	$l_2$	$w_1$	Weight g
90670.W0006	TX 6	1.7	35	70	38	14
90670.W0007	TX 7	2.0	35	70	38	14
90670.W0008	TX 8	2.3	40	75	38	14
90670.W0009	TX 9	2.5	40	75	38	15
90670.W0010	TX10	2.7	40	75	38	15



**90680**

HEX KEYS & WRENCHES

**Material**

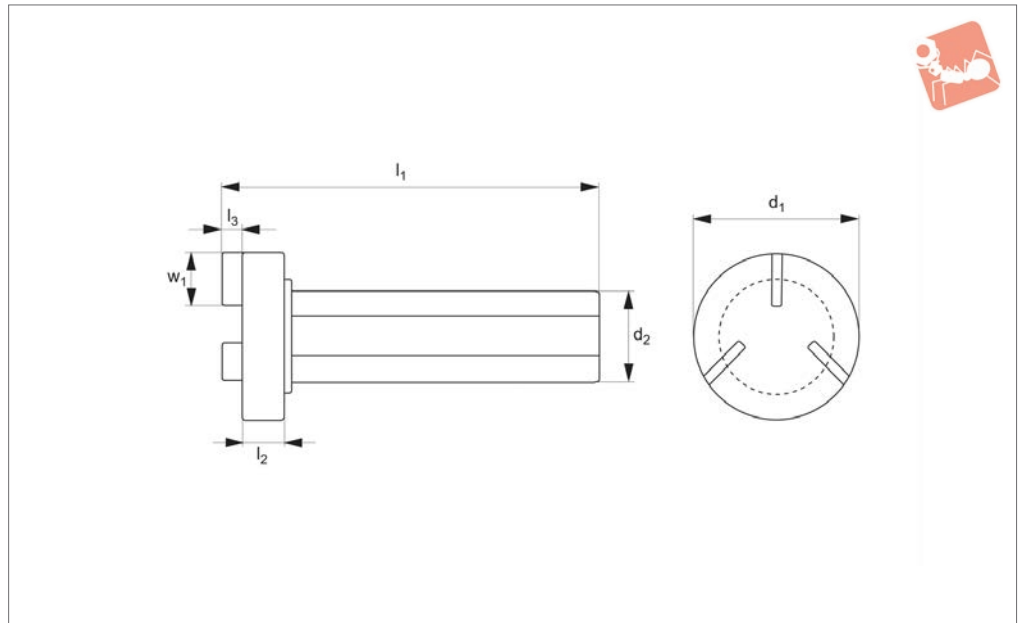
Blade: steel, hardened chrome vanadium.

Handle: shock resistant green plastic.

Order No.	TX	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	Weight g
90680.W0005	TX 5	1.4	35	69	22	4
90680.W0006	TX 6	1.7	35	69	22	4
90680.W0007	TX 7	2.0	35	69	22	4
90680.W0008	TX 8	2.3	40	74	22	6
90680.W0009	TX 9	2.5	40	74	22	6
90680.W0010	TX10	2.7	40	74	22	7
90680.W0015	TX15	3.3	45	79	22	8
90680.W0020	TX20	3.9	45	79	22	8



**91080**



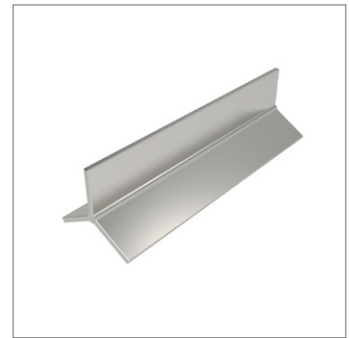
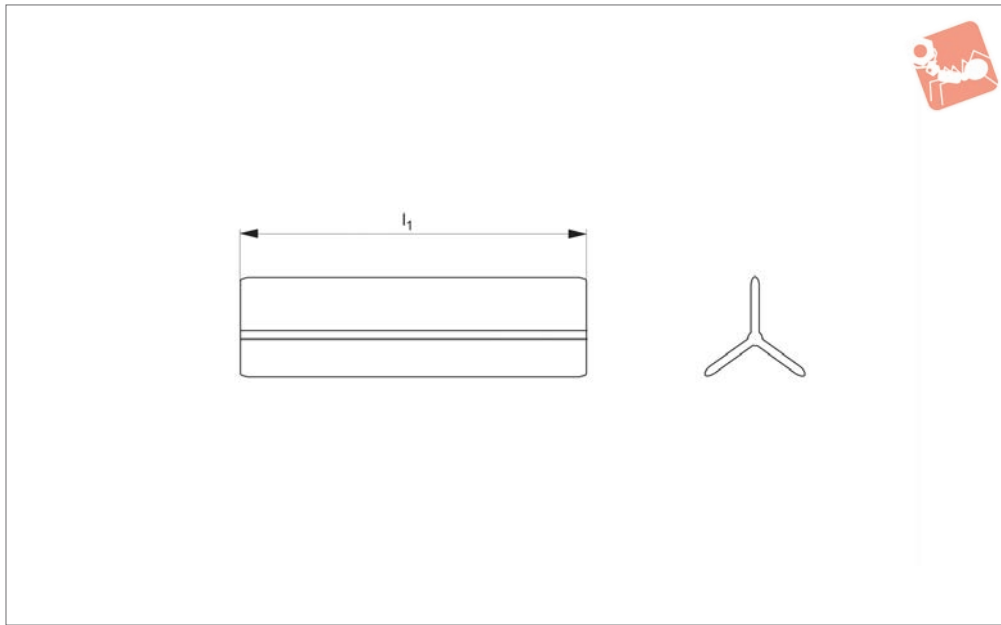
**Material**

Steel head and fins.  
Red plastic handle.

**Technical Notes**

Simplifies insertion and removal of collets in the spindle nose on CNC lathes.

Order No.	Collet size	Fins	$d_1$	$d_2$	$l_1$	$l_2$	$l_3$	$w_1$	Weight g
91080.W0005	5C	3	31.8	27.9	109.2	12.7	7.6	7.6	159
91080.W0010	16C	3	44.5	27.9	109.2	12.7	7.6	7.6	277
91080.W0015	3J	4	44.5	27.9	109.2	12.7	7.6	7.6	281



## 91082

HEX KEYS & WRENCHES

### Material

Aluminium

### Technical Notes

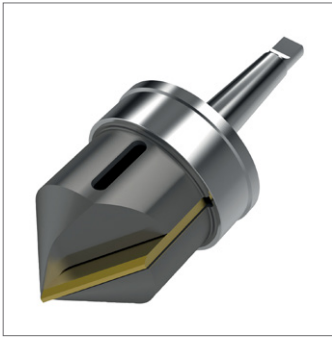
Front loading collet stop:  
1. Cut stop to desired length.

2. Insert stop into collet slots, tighten, face off and deburr.  
3. Remove and insert machined end into collet. Face off to desired length and deburr.

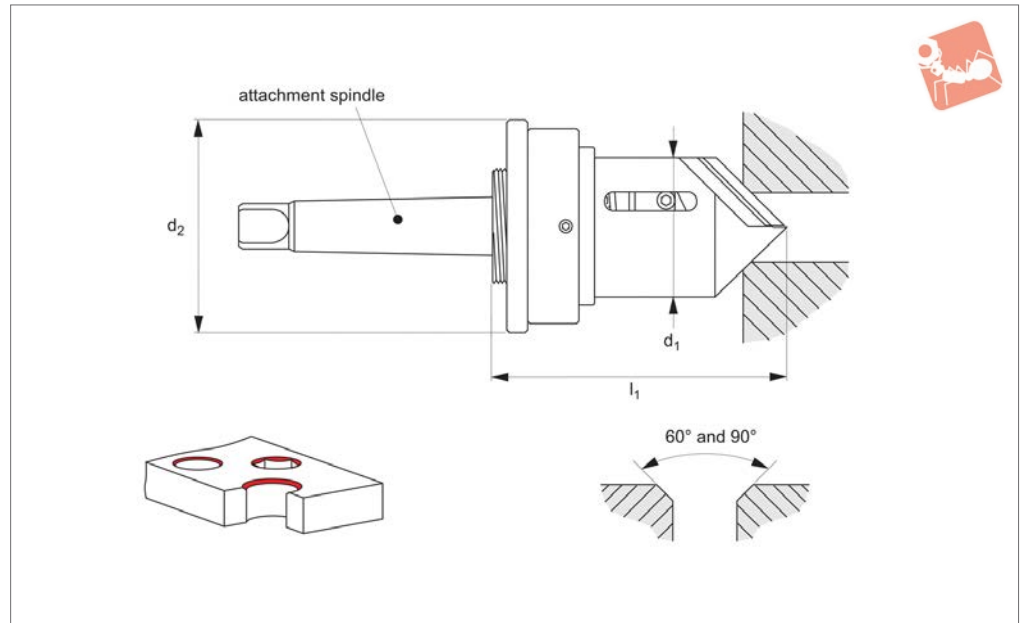
4. Seat into collet and clamp workpiece. Once seated the collet need not be removed for adjustment.

Self-centering and re-usable.

Order No.	Collet size	$l_1$	Weight g
91082.W0020	5C	610	168



## 91000



### Material

#### Standard pilot cone type:

Supplied with standard HSS blade of 14. cutting angle.

#### CRN pilot cone type:

Supplied with HSS TIN coated blade of 20. cutting angle.

### Technical Notes

Consists of four main elements;

1. Body and drill attachment spindle.
2. Pilot cone - unique to the desired chamfer, provides full support during cutting and ensures concentric chamfer.

3. Blades - 1 x HSS blade at 14. cutting angle supplied.

4. Blade adjustment lock nut.

The CRN pilot cone type gives better results for harder materials and/or larger batches as these have a higher hardness rating and lower friction characteristics.

### Tips

Used to achieve high quality concentric chamfering quickly and easily, without risk of damage/cutting into workpiece.

Recommended cutting speed= 10 - 20 m/

min. For hand drill chamfering tool we recommend a cutting speed of 3 - 40 rpm. Available with attachment spindles to suit most pillar drills, CNCs or hand drills. Chamfer angle quoted is inclusive angle.

### Important Notes

To extend the life of the blade and pilot cone we recommend lubrication with cutting fluid or soluble oil.

On initial set-up, make minor height adjustment of pilot cone via the blade adjustment lock nut to ensure best possible positioning.

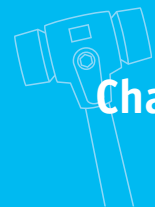
Order No.	Pilot cone type	Chamfer dia. min.   max.	Inc. chamfer angle °	Attachment spindle	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>
91000.W1860-1	Standard	4-17	60°	Ø10	18	26	64
91000.W1890-1	Standard	4-17	90°	Ø10	18	26	55
91000.W4260-1	Standard	5-41	60°	Ø10/Ø16	42	65	108
91000.W4290-1	Standard	5-41	90°	Ø10/Ø16	42	65	85
91000.W4260-2	Standard	5-41	60°	CM2	42	65	108
91000.W4290-2	Standard	5-41	90°	CM2	42	65	85
91000.W6060-2	Standard	21-59	60°	CM2	60	70	106
91000.W6090-2	Standard	21-59	90°	CM2	60	70	94
91000.W8060-2	Standard	42-77	60°	CM2	80	90	114
91000.W8090-2	Standard	42-77	90°	CM2	80	90	100
91000.W8190-3	Standard	62-97	90°	CM3	100	110	104
91000.W8290-3	Standard	82-117	90°	CM3	120	130	104
91000.W1860-19	CRN	4-17	60°	Ø10	18	26	64
91000.W1890-19	CRN	4-17	90°	Ø10	18	26	55
91000.W4260-19	CRN	5-41	60°	Ø10/Ø16	42	65	108
91000.W4290-19	CRN	5-41	90°	Ø10/Ø16	42	65	85
91000.W4260-29	CRN	5-41	60°	CM2	42	65	108
91000.W4290-29	CRN	5-41	90°	CM2	42	65	85





# Inner Chamfering Tools

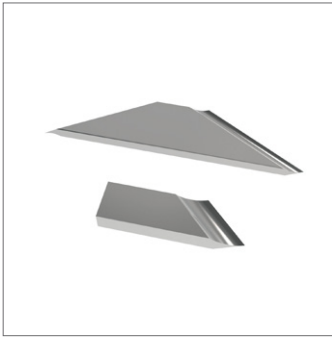
for drill attachment



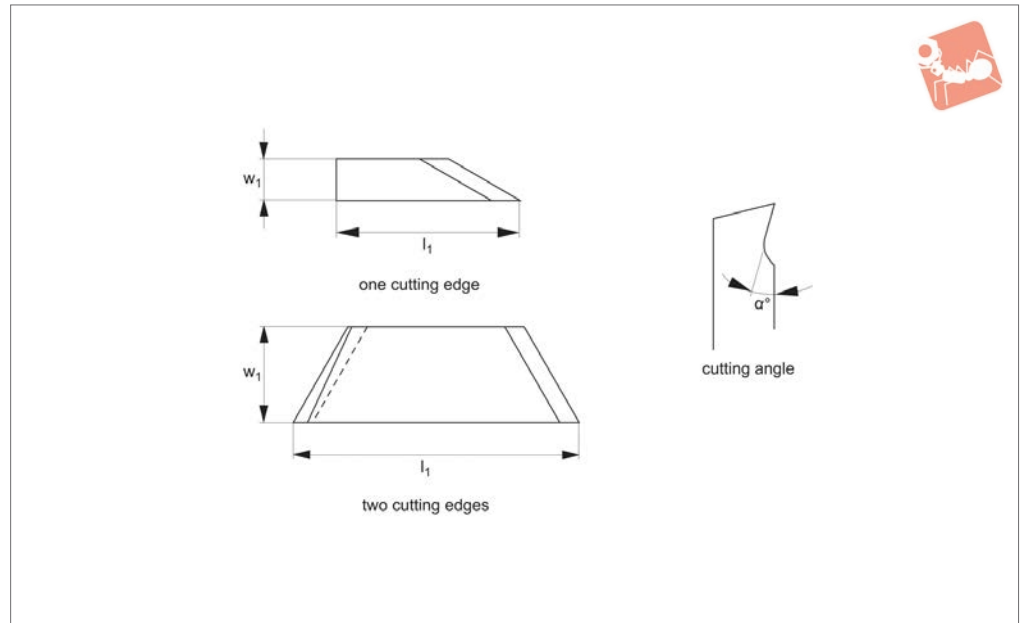
# Chamfering Tools



CHAMFERING TOOLS



## 91002



### Material

**HSS:** high speed steel, for most standard materials.

**HSS TIN:** high speed steel with TIN coating for difficult to machine materials such as stainless steel, titanium and Inconel.

**Carbide:** for hard materials.

### Technical Notes

A blade with a 14. cutting angle is the most commonly used as it covers the widest range of standard materials, please see material suitability table for further advice.

### Important Notes

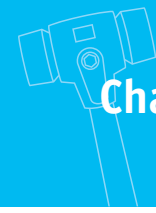
Recommended cutting speed= 10 - 20 m/min. To extend the life of the blade and the pilot cone we recommend lubrication with cutting fluid or soluble oil.

Order No.	Blade material	For chamfer dia. min.   max.	Inc. chamfer angle	Cutting angle $\alpha$	No. of cutting edges	$w_1$	$l_1$
91002.W1860-00	HSS	4-17	60°	0°	1	8.7	38.5
91002.W1860-14	HSS	4-17	60°	14°	1	8.7	38.5
91002.W1860-20	HSS	4-17	60°	20°	1	8.7	38.5
91002.W1860-25	HSS	4-17	60°	25°	1	8.7	38.5
91002.W1890-00	HSS	4-17	90°	0°	1	8.7	30.0
91002.W1890-14	HSS	4-17	90°	14°	1	8.7	30.0
91002.W1890-20	HSS	4-17	90°	20°	1	8.7	30.0
91002.W1890-25	HSS	4-17	90°	25°	1	8.7	30.0
91002.W1899-00	HSS	4-17	120°	0°	1	20.0	26.0
91002.W1899-14	HSS	4-17	120°	14°	1	20.0	26.0
91002.W1899-20	HSS	4-17	120°	20°	1	20.0	26.0
91002.W1899-25	HSS	4-17	120°	25°	1	20.0	26.0
91002.W4260-00	HSS	5-41	60°	0°	2	20.0	90.0
91002.W4260-14	HSS	5-41	60°	14°	2	20.0	90.0
91002.W4260-20	HSS	5-41	60°	20°	2	20.0	90.0
91002.W4260-25	HSS	5-41	60°	25°	2	20.0	90.0
91002.W4282-00	HSS	5-41	82°	0°	2	20.0	73.0
91002.W4282-14	HSS	5-41	82°	14°	2	20.0	73.0
91002.W4282-20	HSS	5-41	82°	20°	2	20.0	73.0
91002.W4282-25	HSS	5-41	82°	25°	2	20.0	73.0
91002.W4290-00	HSS	5-41	90°	0°	2	20.0	73.0
91002.W4290-14	HSS	5-41	90°	14°	2	20.0	73.0
91002.W4290-20	HSS	5-41	90°	20°	2	20.0	73.0
91002.W4290-25	HSS	5-41	90°	25°	2	20.0	73.0
91002.W4299-00	HSS	5-41	120°	0°	2	20.0	60.0
91002.W4299-14	HSS	5-41	120°	14°	2	20.0	60.0
91002.W4299-20	HSS	5-41	120°	20°	2	20.0	60.0
91002.W4299-25	HSS	5-41	120°	25°	2	20.0	60.0
91002.W6060-00	HSS	21-59 to 77/117	60°	0°	2	20.0	90.0
91002.W6060-14	HSS	21-59 to 77/117	60°	14°	2	20.0	90.0
91002.W6060-20	HSS	21-59 to 77/117	60°	20°	2	20.0	90.0



# Blades For Inner Chamfering Tools

for use with 91000

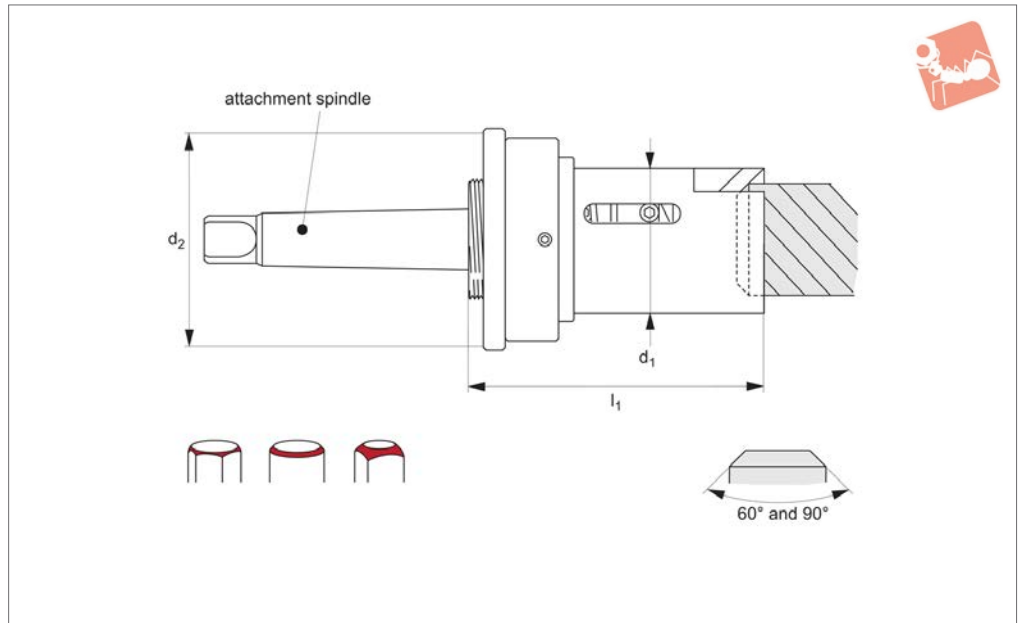


## Chamfering Tools

Order No.	Blade material	For chamfer dia. min.   max.	Inc. chamfer angle	Cutting angle $\alpha$	No. of cutting edges	$w_1$	$l_1$
<b>91002.W6060-25</b>	HSS	21-59 to 77/117	60°	25°	2	20.0	90.0
<b>91002.W6090-00</b>	HSS	21-59 to 77/117	90°	0°	2	20.0	73.0
<b>91002.W6090-14</b>	HSS	21-59 to 77/117	90°	14°	2	20.0	73.0
<b>91002.W6090-20</b>	HSS	21-59 to 77/117	90°	20°	2	20.0	73.0
<b>91002.W6090-25</b>	HSS	21-59 to 77/117	90°	25°	2	20.0	73.0
<b>91002.W1760-20</b>	HSS TIN	4-17	60°	20°	1	8.7	38.5
<b>91002.W4160-20</b>	HSS TIN	5-41 to 77/117	60°	20°	2	20.0	90.0
<b>91002.W1790-20</b>	HSS TIN	4-17	90°	20°	1	8.7	30.0
<b>91002.W4190-20</b>	HSS TIN	5-41 to 77/117	90°	20°	2	20.0	73.0
<b>91002.W4360-00</b>	Carbide	5-41 to 77/117	60°	0°	2	20.0	90.0
<b>91002.W4390-00</b>	Carbide	5-41 to 77/117	90°	0°	2	20.0	73.0



## 91020



### Material

#### Standard pilot cone type:

Supplied with standard HSS blade of 14. cutting angle.

#### CRN pilot cone type:

Supplied with HSS TIN coated blade of 20. cutting angle.

### Technical Notes

Consists of four main elements:

1. Body and drill attachment spindle.
2. Pilot cone - unique to the desired chamfer, provides full support during cutting and ensures concentric chamfer.
3. Blades - 1 x HSS blade at 14. cutting angle supplied.
4. Blades adjusted lock nut.

The CRN pilot cone type version gives better results for harder material and larger batches as these have a higher hardness rating and lower friction characteristics.

Used to achieve high quality concentric chamfering quickly and easily, without risk of damage/cutting into the workpiece. The specially designed pilot cone provides full support to the blade throughout cutting and ensures a concentric chamfer.

Available with attachment spindles to suit most pillar drills, CNCs or hand drills. Chamfer angle quoted is inclusive angle.

### Tips

Recommended cutting speed= 10 - 20 m/min.

To extend the life of the blade and the pilot cone we recommend lubrication with cutting fluid or soluble oil.

On initial set-up, make minor height adjustment of pilot cone via the blade adjustment lock nut, to ensure the best possible positioning.

### Important Notes

For replacement blades see part no. 91022.

Order No.	Pilot cone type	Chamfer dia. min.   max.	Inc. chamfer angle	Attachment spindle	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>
91020.W1860-1	Standard	4-17	60°	Ø10	18	26	54
91020.W1890-1	Standard	4-17	90°	Ø10	18	26	54
91020.W3660-1	Standard	4-37	60°	Ø10/Ø16	42	65	105
91020.W3690-1	Standard	4-37	90°	Ø10/Ø16	42	65	85
91020.W3660-2	Standard	4-37	60°	CM2	42	65	105
91020.W3690-2	Standard	4-37	90°	CM2	42	65	85
91020.W4660-2	Standard	10-45	60°	CM2	48	65	109
91020.W4690-2	Standard	10-45	90°	CM2	48	65	85
91020.W6060-2	Standard	21-57	60°	CM2	60	70	109
91020.W6090-2	Standard	21-57	90°	CM2	60	70	85
91020.W8060-2	Standard	41-77	60°	CM2	80	90	118
91020.W8090-2	Standard	41-77	90°	CM2	80	90	95
91020.W8190-3	Standard	60-97	90°	CM3	100	110	107
91020.W8290-3	Standard	80-117	90°	CM3	120	130	110
91020.W1860-19	CRN	4-17	60°	Ø10	18	26	54
91020.W1890-19	CRN	4-17	90°	Ø10	18	26	54
91020.W3660-19	CRN	4-37	60°	Ø10/Ø16	42	65	105
91020.W3690-19	CRN	4-37	90°	Ø10/Ø16	42	65	85
91020.W3660-29	CRN	4-37	60°	CM2	42	65	105



# Outer Chamfering Tools

for drill attachment

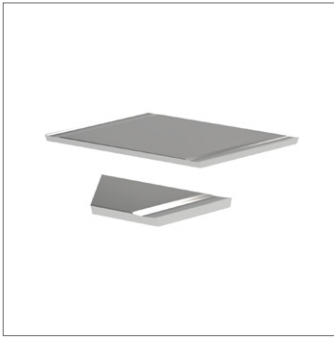


## Chamfering Tools

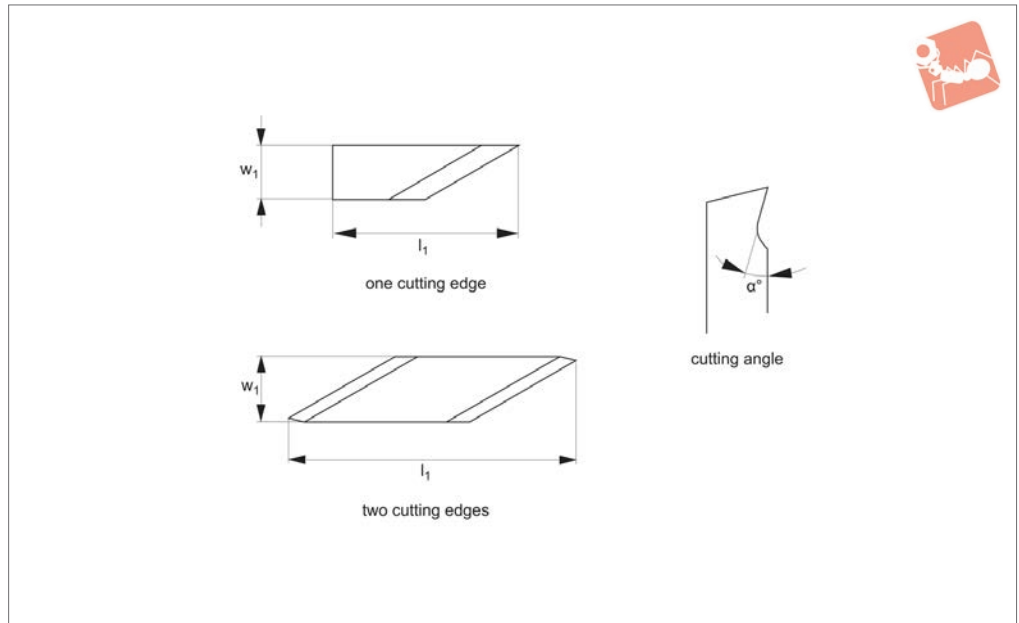
Order No.	Pilot cone type	Chamfer dia. min.   max.	Inc. chamfer angle	Attachment spindle	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>
91020.W3690-29	CRN	4-37	90°	CM2	42	65	85



CHAMFERING TOOLS



### 91022



#### Material

**HSS:** high speed steel, for most standard materials.

**HSS TIN:** high speed steel with TIN coating for difficult to machine materials such as stainless steel, titanium and Inconel.

#### Technical Notes

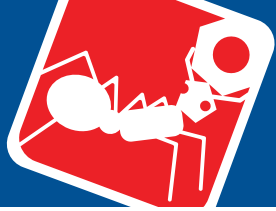
A blade with a 14. cutting angle is most

commonly used as it covers the widest range of standard materials, please see material suitability table for further advice.

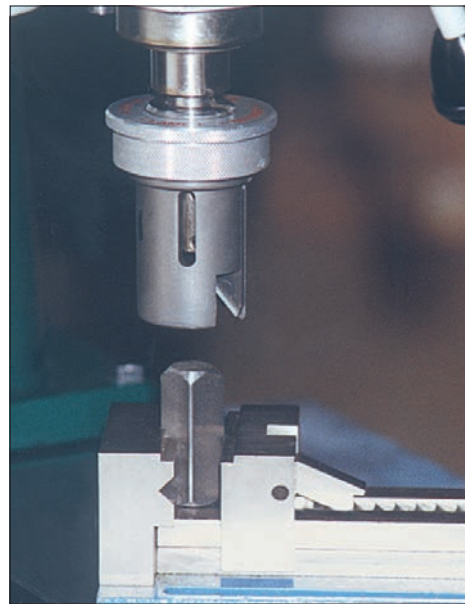
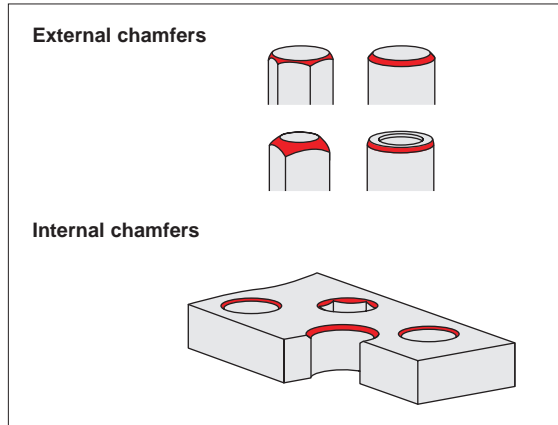
#### Tips

Recommended cutting speed= 10 - 20 m/min. To extend the life of the blade and pilot cone we recommend lubrication with cutting fluid or soluble oil.

Order No.	Blade material	For chamfer dia. min.   max.	Inc. chamfer angle	Cutting angle $\alpha$	No. of cutting edges	$w_1$	$l_1$
91022.W1860-00	HSS	4-17	60°	0°	1	8.7	30
91022.W1860-14	HSS	4-17	60°	14°	1	8.7	30
91022.W1860-20	HSS	4-17	60°	20°	1	8.7	30
91022.W1860-25	HSS	4-17	60°	25°	1	8.7	30
91022.W1890-00	HSS	4-17	90°	0°	1	8.7	30
91022.W1890-14	HSS	4-17	90°	14°	1	8.7	30
91022.W1890-20	HSS	4-17	90°	20°	1	8.7	30
91022.W1890-25	HSS	4-17	90°	25°	1	8.7	30
91022.W3660-00	HSS	5-41 to 77/117	60°	0°	2	20.0	88
91022.W3660-14	HSS	5-41 to 77/117	60°	14°	2	20.0	88
91022.W3660-20	HSS	5-41 to 77/117	60°	20°	2	20.0	88
91022.W3660-25	HSS	5-41 to 77/117	60°	25°	2	20.0	88
91022.W3690-00	HSS	5-41 to 77/117	90°	0°	2	20.0	69
91022.W3690-14	HSS	5-41 to 77/117	90°	14°	2	20.0	69
91022.W3690-20	HSS	5-41 to 77/117	90°	20°	2	20.0	69
91022.W3690-25	HSS	5-41 to 77/117	90°	25°	2	20.0	69
91022.W1760-20	HSS TIN	4-17	60°	20°	1	8.7	30
91022.W1790-20	HSS TIN	4-17	90°	20°	1	8.7	30
91022.W4160-20	HSS TIN	5-41 to 77/117	60°	20°	2	20.0	88
91022.W4190-20	HSS TIN	5-41 to 77/117	90°	20°	2	20.0	69

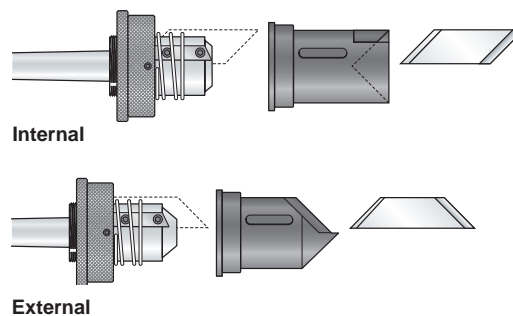


Wixroyd chamfering tools are mainly used as drill extensions to add high quality, consistent inner and outer chamfers. The chamfer angles achievable on a wide range of metals are between 60° to 120° inclusive.



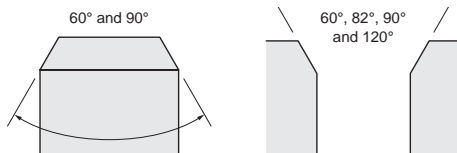
## Construction

- Concentric chamfers.
- Excellent surface finish.
- Reduces risk of cutting into the workpiece.
- Controlled machining torque.



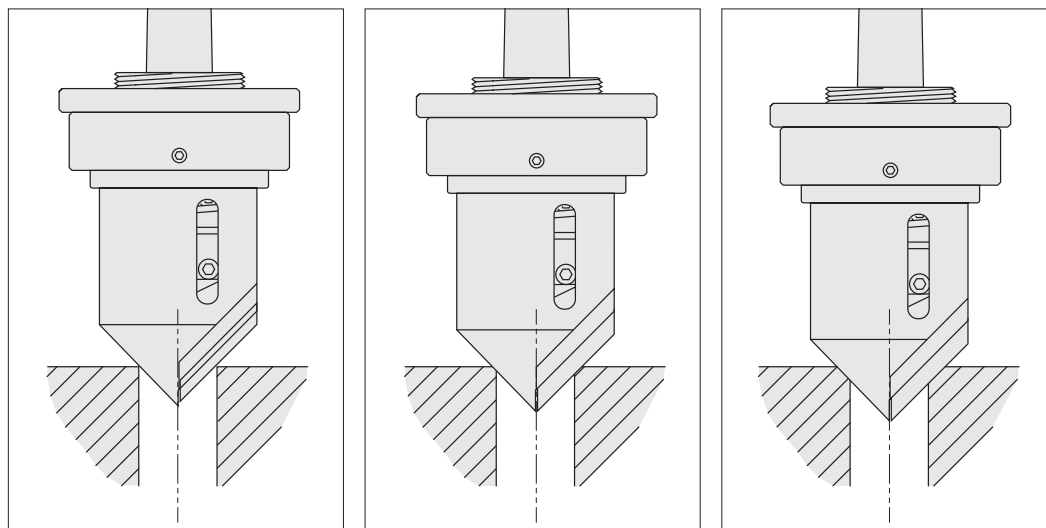
Chamfering tools consist of three main elements: an attachment spindle, pilot cone and cutting blade.

A variety of spindle attachments are available from CM1 to CM3 inclusive.



Our chamfer tools act by gradually shaving material away from a right angled corner to create a transitional, angled edge between two planes.

Example: with a blade protrusion of 0,1mm the device will make 10 revolutions to cut 1mm.



- 1 When the chamfer tools spindle is lowered, it's pilot cone firstly centres the workpiece before retracting to allow the blade to come into contact with the material and start cutting of the chamfer.
- 2 Adjusting the output of the blade controls the thickness of the chip count NOT the value or angle of the chamfer e.g. with a blade protrusion of 0,1mm the chamfering tool requires 10 revolutions to cut 1mm of the chamfer.
- 3 Concentric chamfer achieved.

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**Recommended Cutting Speed**

Typical rpm for varying chamfer diameters, when using cutting speed of between 10 and 20 m/min.

We recommend a cutting speed of between 10 and 20m/min.

Therefore typical value for chamfers of varying diameter are as follows.

Diameter	RPM range
10 mm	320 to 640 rpm
15 mm	210 to 420 rpm
20 mm	160 to 320 rpm
30 mm	110 to 220 rpm
40 mm	80 to 160 rpm
50 mm	55 to 110 rpm

We do however recommend you use the following formula to check the most suitable rpm used.

$$Rpm = (cutting\ speed \times 1000) / (diameter \times 3.14)$$

Blade cutting angle	0°	14°	20°	25°
Suitable for material	Brass, bronze, cast iron, stainless steel	Steel, special bronze, perspex	Soft steel, copper, AU 4G, plastic, stainless steel	Aluminium, soft iron, sheet metal

**Important Note:**

**We recommend the chamfering tool is lubricated with cutting fluid or soluble oil to ensure the long life of the cutting blade edge, and to reduce wear of the pilot cone.**

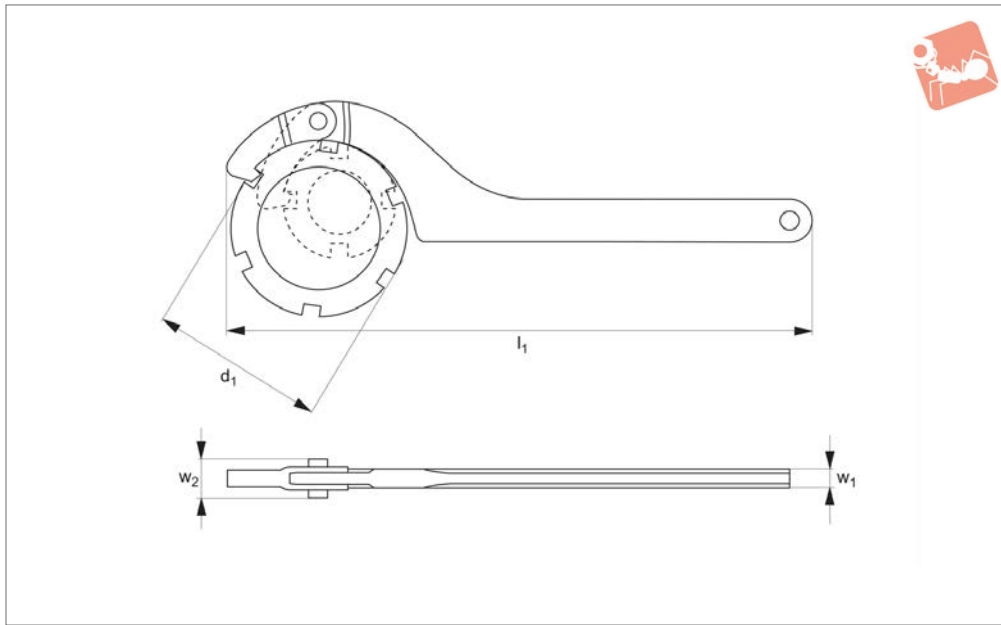
**We offer blades with a variety of cutting angles to best suit the material in which a chamfer is required.**

**Typically a blade cutting angle of 14° suits most applications; please refer to table above.**





# Hook Spanners - with Hook Nose hinge type - traditional



### 95100

#### Material

Steel (C35/C45), hardened, blackened, or stainless steel.

#### Technical Notes

Spanners for adjustment of nuts to DIN 1804, DIN 981 and DIN 11851.

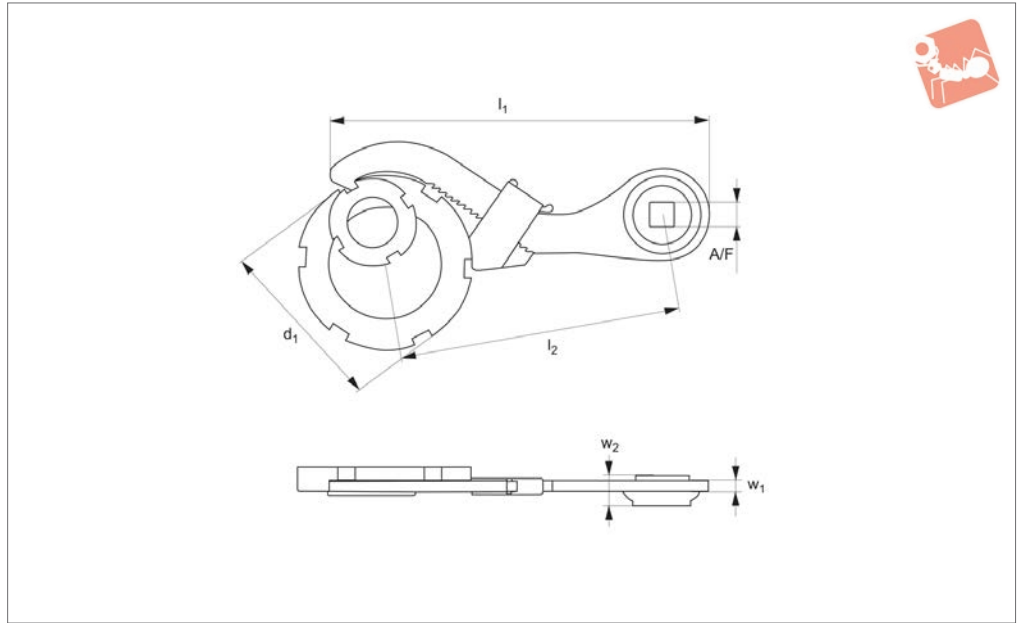
Rounded edges.

Order No.	Finish	d <sub>1</sub> for nut Ø	Thread size of nut DIN 1804 M	Weight g
95100.W0035	Blackened steel	20-35	8-18	40
95100.W0060	Blackened steel	35-60	20-38	85
95100.W0070	Blackened steel	60-90	20-38	250
95100.W0075	Blackened steel	90-155	20-38	425
95100.W0080	Blackened steel	155-230	20-38	1015
95100.W0901	Stainless steel	20-35	8-18	35
95100.W0902	Stainless steel	35-60	20-38	75
95100.W0903	Stainless steel	60-90	40-60	185
95100.W0904	Stainless steel	90-155	58-110	320
95100.W0905	Stainless steel	155-230	105-170	860

Order No.	Thread size of nut DIN 981 M	DIN 11851-F DN	l <sub>1</sub>	w <sub>1</sub>	w <sub>2</sub>
95100.W0035	1-4	-	135	3	8
95100.W0060	5-8	-	175	4	11
95100.W0070	5-8	-	240	6	13
95100.W0075	5-8	-	300	7	15
95100.W0080	5-8	-	420	8	18
95100.W0901	1-4	-	135	3	8
95100.W0902	5-8	Oct-20	175	4	11
95100.W0903	9-13	25-40	240	5	13
95100.W0904	14-24	50-100	300	6	15
95100.W0905	24-36	125-150	420	8	18



**95105**



SPANNERS & HOOK SPANNERS

**Material**

Special steel, hardened and blued.

**Technical Notes**

Spanner for adjustment of nuts to DIN

1804 and DIN 981. For use with torque wrenches for more accurate installation and adjustment.

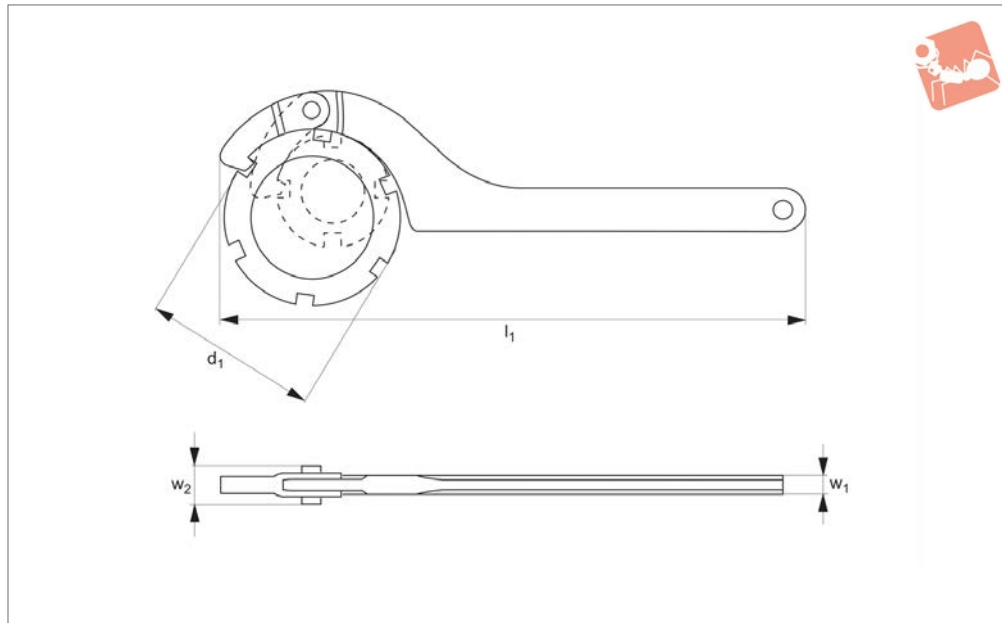
The required torque wrench value is dependent upon dimension  $l_2$ . Please refer to the operating manual of your torque wrench.

dent upon dimension  $l_2$ . Please refer to the operating manual of your torque wrench.

Order No.	$d_1$ for nut $\emptyset$	$l_1$	$l_2$	$w_1$	$w_2$	Drive A/F	Weight g
95105.W0042	20-42	135	100	4	16.0	1/2"	165
95105.W0090	45-90	192	150	6	16.0	1/2"	310
95105.W0165	95-165	272	200	10	16.0	1/2"	680
95105.W0166	95-165	298	220	10	20.5	3/4"	910



# Hook Spanners - with Hook Nose hinge type - long version



### 95110

#### Material

Steel (C35/C45), edgewise ground, hardened.

Available in steel (blackened or nickel plated), or stainless steel.

#### Technical Notes

Spanners for adjustment of nuts to DIN

1804, DIN 981 and DIN 11851. Extended hook and shank, strengthened rivet, spring washer.

Rounded edges for better handling.

#### Tips

The long version spanner allows greater torque to be applied.

Order No.	Finish	$d_1$ for nut $\varnothing$	Thread size of nut DIN 1804 M	Weight g
95110.W0035	Blackened steel	20-35	8-18	85
95110.W0060	Blackened steel	35-60	20-38	170
95110.W0090	Blackened steel	60-90	40-60	360
95110.W0155	Blackened steel	90-155	58-110	610
95110.W0230	Blackened steel	155-230	105-170	1200
95110.W0535	Nickel plated steel	20-35	8-18	85
95110.W0560	Nickel plated steel	35-60	20-38	170
95110.W0590	Nickel plated steel	60-90	40-60	360
95110.W0655	Nickel plated steel	90-155	58-110	610
95110.W0730	Nickel plated steel	155-230	105-170	1200
95110.W0901	Stainless steel	20-35	8-18	85
95110.W0902	Stainless steel	35-60	20-38	170
95110.W0903	Stainless steel	60-90	40-60	360
95110.W0904	Stainless steel	90-155	58-110	580
95110.W0905	Stainless steel	155-230	105-170	1200

Order No.	Thread size of nut DIN 981 M	DIN 11851-F DN	$l_1$	$w_1$	$w_2$
95110.W0035	1-4	-	165	4	10.5
95110.W0060	5-8	-	210	5	12.5
95110.W0090	9-13	-	280	6	14.5
95110.W0155	14-24	-	335	7	17.5
95110.W0230	24-36	-	460	8	17.5
95110.W0535	1-4	-	165	4	10.5
95110.W0560	5-8	-	210	5	12.5
95110.W0590	9-13	-	280	6	14.5
95110.W0655	14-24	-	335	7	17.5
95110.W0730	24-36	-	460	8	17.5
95110.W0901	1-4	-	165	4	10.5
95110.W0902	5-8	Oct-20	210	5	12.5
95110.W0903	9-13	25-40	280	6	14.5

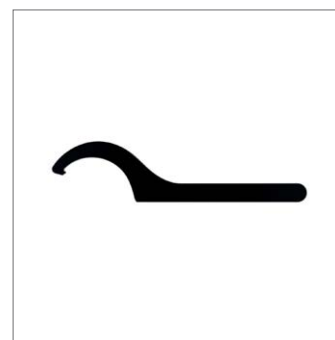
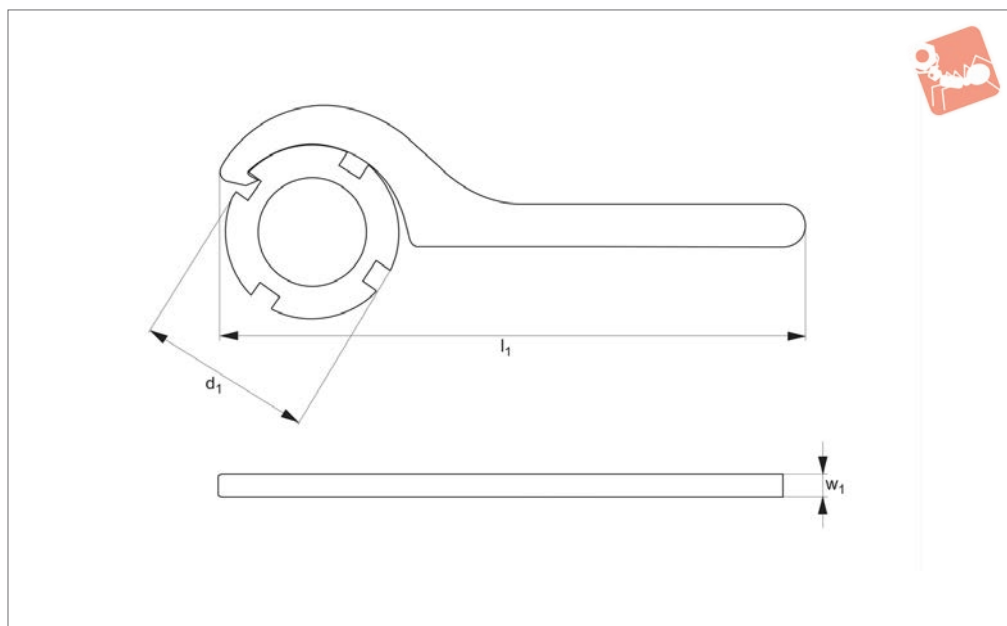


Order No.	Thread size of nut DIN 981 M	DIN 11851-F DN	$l_1$	$w_1$	$w_2$
95110.W0904	14-24	50-100	335	6	17.5
95110.W0905	24-36	125-150	460	8	17.5



# Hook Spanners - with Hook Nose fixed

## Spanners & Hook Spanners



### 95400

SPANNERS & HOOK SPANNERS

#### Material

Steel (C35/C45), hardened and blackened.  
Edgewise ground.

request, subject to minimum order quantities.

DIN 981.

#### Tips

Items marked ( ), width varies from DIN standard. For slotted nuts to DIN 1804 and

#### Technical Notes

To DIN 1810A. Specials available on

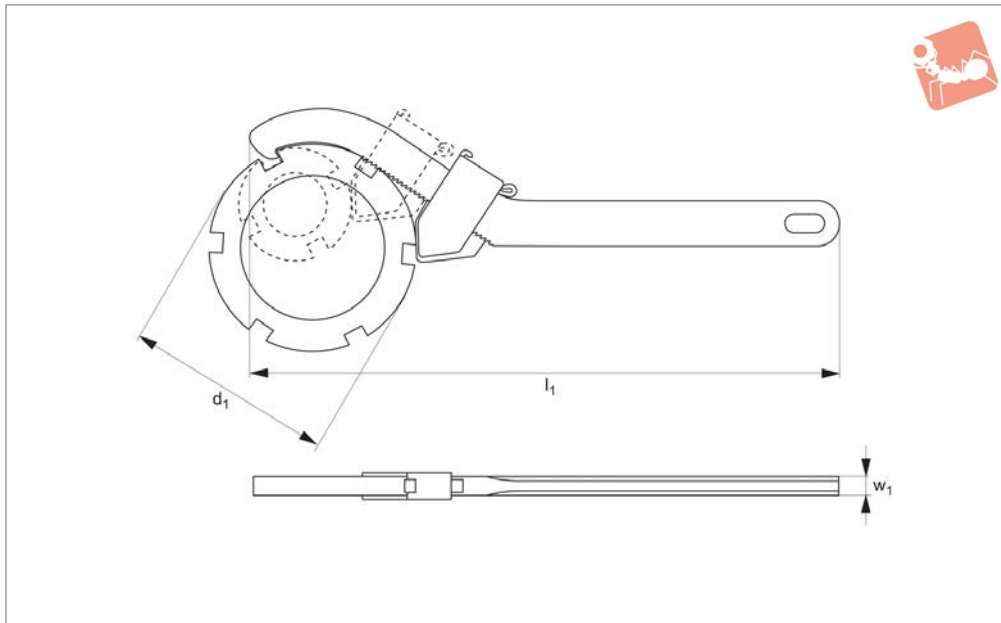
Order No.	d <sub>1</sub> for nut Ø	l <sub>1</sub>	w <sub>1</sub>	Weight g
95400.W0014	12-24	110	3	25
95400.W0020	16-20	110	3	25
95400.W0028	25-28	136	4	45
95400.W0032	30-32	136	4	50
95400.W0036	34-36	170	5	90
95400.W0038	(38-45)	170	5	95
95400.W0042	40-42	170	5	90
95400.W0050	45-50	206	6	155
95400.W0055	52-55	206	6	160
95400.W0062	58-62	240	7	260
95400.W0064	(65-70)	240	7	255
95400.W0075	68-75	240	7	255
95400.W0090	80-90	280	8	410
95400.W0092	(85-92)	280	8	410
95400.W0100	95-100	280	8	405
95400.W0102	(98-105)	290	8	405
95400.W0115	110-115	335	10	745
95400.W0130	120-130	335	10	720
95400.W0146	135-145	385	10*	1000
95400.W0166	155-165	385	10*	965
95400.W0196	180-195	470	10*	1500
95400.W0221	205-220	470	10*	1580
95400.W0246	230-245	568	10*	2250
95400.W0271	260-270	568	10*	2250
95400.W0300	280-300	680	15	5150
95400.W0320	300-320	695	15	5100
95400.W0345	320-345	695	15	5200
95400.W0375	350-375	735	15	5200
95400.W0400	380-400	770	15	6700
95400.W0500	480-500	988	20	13000





# Hook Spanners - with Hook Nose

adjustable - spring loaded



**95420**

SPANNERS & HOOK SPANNERS

### Material

Steel (C35/C45), hardened and blackened.

### Tips

For slotted nuts DIN 1804 and DIN 981.

Order No.	d <sub>1</sub> for nut Ø	l <sub>1</sub>	w <sub>1</sub>	Weight g
95420.W0002	20-42	180	4	100
95420.W0005	45-90	240	6	250
95420.W0009	95-165	335	10	710





Applications and Size Ranges Hook Wrenches DIN 1810A

95400

SPANNERS & HOOK SPANNERS

Size	DIN 1804	DIN 981	DIN 981	DIN 981	KMT	DIN 70852	DIN 11851-F
	M	M	KM	KML		M	DN
12 - 14	-	-	-	-	-	-	-
16 - 20	6 8	-	-	-	-	10	-
25 - 28	10 12	15 17	2 3	-	- 0	- 16	-
30 - 32	14 16	- 20	- 4	-	- 1	- 18	-
34 - 36	18 20	-	-	-	-	- 22	-
38 - 45	26	25 30	5 6	-	-	24 -	10 15
40 - 42	22 24	-	-	-	4 -	26 28	-
45 - 50	26 28 - 30	30 -	6 -	-	-	- 35	-
52 - 55	32 35	35 -	7 -	-	-	-	20
58 - 62	38 40 - 42	40 -	8 -	-	-	- 45	- 25
65 - 70	-	45 50	9 10	-	- 9	48 52	- 32
68 - 75	45 48 - 50	- 55	- 11	-	- 10	50 55	-
80 - 90	52 - 55 58 - 60	60 -	12 -	-	- 12	60 70	-
85 - 92	-	65 70	13 14	-	-	65 -	- 50
95 - 100	62 - 65 68 - 70	-	-	-	13 14	75 80	-
98 - 105	-	75 80	15 16	-	- 15	-	-
110 - 115	72 - 75 80	85 -	17 -	-	16 -	-	65
120 - 130	85 90	90 100	18 20	-	17 19	- 105	-
135 - 145	95 100	110 120	22 -	- 24	20 22	- 115	-
155 - 165	105 - 110 115 - 120	120 - 130 130 - 140	24 26	26 28	24 26	125 135	-
180 - 195	125 - 130 140	140 - 150 150	28 30	30 -	- 32	150 -	-
205 - 220	150 160	- 170 - 190	- 34	- 38	34 -	175 180	-
230 - 245	170 180	180 -	36 -	-	-	190 -	-
Size	DIN 1804	DIN 981	DIN 981				
	M	Tr	HM				
260 - 270	190 200	220x4 210x4	3044 42 T	-	-	-	-
280 - 300	-	220x4 140x4	44 T 48 T	-	-	-	-
300 - 320	-	240x4 250x4	48 T 50 T	-	-	-	-
320 - 345	-	250x4 -	50 T -	-	-	-	-
350 - 375	-	-	-	-	-	-	-
380 - 400	-	-	-	-	-	-	-
480 - 500	-	-	-	-	-	-	-



We specialise in the non-standard, supplying a range of DIN hand tools from socket wrenches to hook spanners, pin spanners to drill drifts, and beyond. These parts have various applications for DIN and other standard nuts and tooling. **The following pages cross reference the suitability of our hand tools to specific DIN sizings.**

## Adjustable Hook Wrenches with Nose

Size	DIN 1804 M	DIN 981 M	DIN 981 KM	DIN 981 KML	DIN 11851-F DN	95420 and 95105
20 - 42	8 - 24	12 - 25	1 - 5	-	10	
45 - 90	26 - 60	30 - 65	6 - 13	-	15 - 50	
95 - 165	62 - 120	75 - 140	15 - 26	24 - 28	65 - 100	

## Hook Wrenches

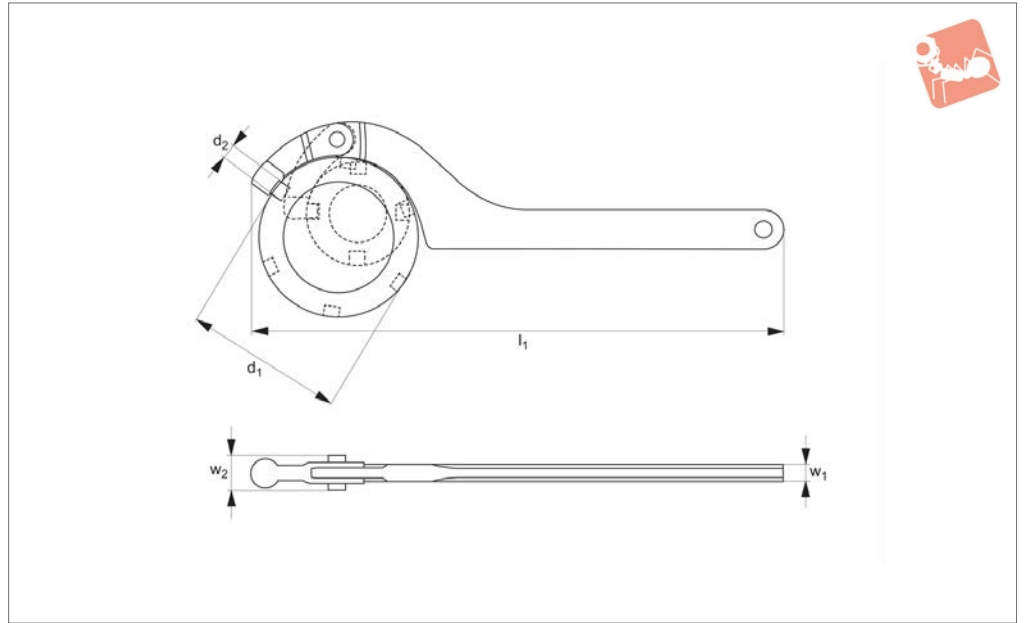
Size	DIN 1804 M	DIN 981 M	DIN 981 KM	DIN 981 KML	DIN 11851-F KMT	DIN 11851-F DN	DIN 70852 M	95100 and 95110
20 - 35	8 - 18	12 - 20	1 - 4	-	0 - 2	-	10 - 20	
35 - 60	20 - 38	25 - 40	5 - 8	-	3 - 7	10 - 20	22 - 42	
60 - 90	40 - 60	45 - 65	9 - 13	-	8 - 12	25 - 40	42 - 70	
90 - 155	58 - 110	70 - 130	14 - 24	24, 26	13 - 24	50 - 100	70 - 125	
155 - 230	105 - 170	120 - 190	24 - 36	26 - 38	24 - 38	125 - 150	125 - 190	

## Hook Wrenches DIN 1810B

1810B Size	DIN 1816 M	776 Size	1810B Size	DIN 1816 M	776 Size	95151, 95152, 95450, 95154
16 - 18	6	16 - 22		72	95 - 155	
20 - 22	8	22 - 35	110 - 115	75	95 - 155	
25 - 28	10	22 - 35		80	95 - 155	
30 - 32	12	22 - 35	120 - 130	85	95 - 155	
	14	22 - 35		90	95 - 155	
	16	22 - 35	135 - 145	95	95 - 155	
34 - 36	18	22 - 35		100	95 - 155	
	20	35 - 60		105	95 - 155	
40 - 42	22	35 - 60	155 - 165	110	95 - 155	
	24	35 - 60		115	165 - 230	
	26	35 - 60		120	165 - 230	
45 - 50	28	35 - 60		125	165 - 230	
	30	35 - 60	180 - 195	130	165 - 230	
	32	35 - 60		140	165 - 230	
52 - 55	35	35 - 60	205 - 220	150	165 - 230	
	38	35 - 60		160	165 - 230	
58 - 62	40	60 - 90	230 - 245	170	165 - 230	
	42	60 - 90		180	-	
	45	60 - 90	260 - 270	190	-	
68 - 75	48	60 - 90		200	-	
	50	60 - 90				
	52	60 - 90				
80 - 90	55	60 - 90				
	58	60 - 90				
	60	60 - 90				
95 - 100	62	95 - 155				
	65	95 - 155				
	68	95 - 155				
	70	95 - 155				



**95151**



**Material**

Steel (C35/C45), tempered, hardened, with brown finish.

Edgewise ground.

circumferences to DIN 1816.

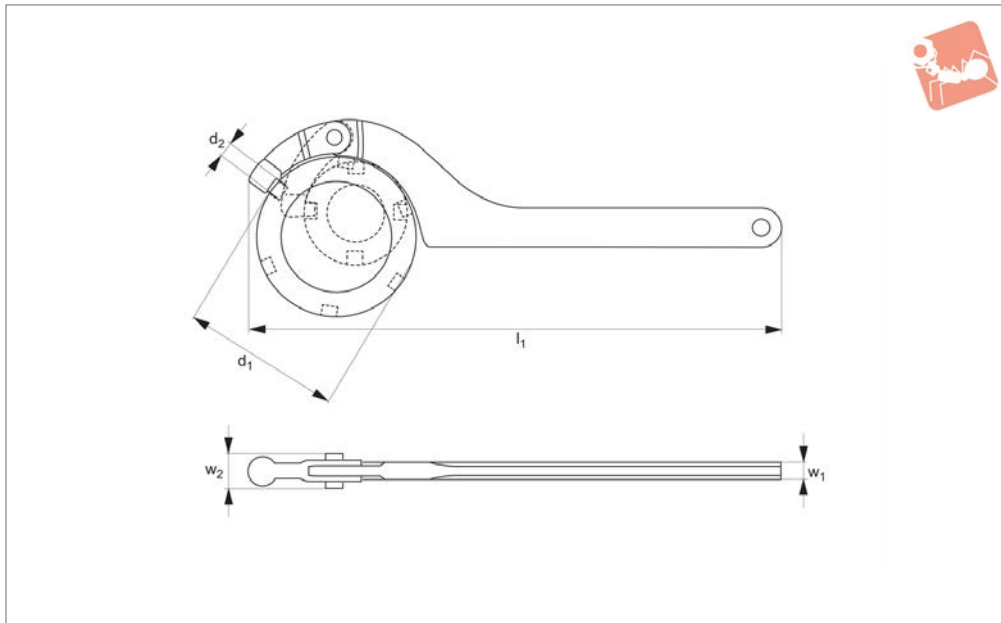
**Technical Notes**

For round nuts with set pin holes on outer

Order No.	d <sub>1</sub> for nut Ø	d <sub>2</sub>	l <sub>1</sub>	w <sub>1</sub>	w <sub>2</sub>	Weight g
95151.W0035	20-35	2.5	135	3	8	40
95151.W0036	20-35	3.0	135	3	8	40
95151.W0060	35-60	4.0	175	4	11	85
95151.W0061	35-60	5.0	175	4	11	85
95151.W0090	60-90	5.0	245	6	13	250
95151.W0091	60-90	6.0	245	6	13	250
95151.W0155	90-155	6.0	300	7	15	425
95151.W0156	90-155	8.0	300	7	15	425
95151.W0230	155-230	8.0	420	8	18	1015



# Hook Spanners - with Pin Nose hinge type - long version



**95152**

### Material

Steel (C35/C45), tempered, hardened, blue finish or nickel plated. Edgewise ground.

circumferences to DIN 1816.

Rounded edges for better handling. Sizes 16-22 without retaining ring.

### Technical Notes

For round nuts with set pin holes on outer

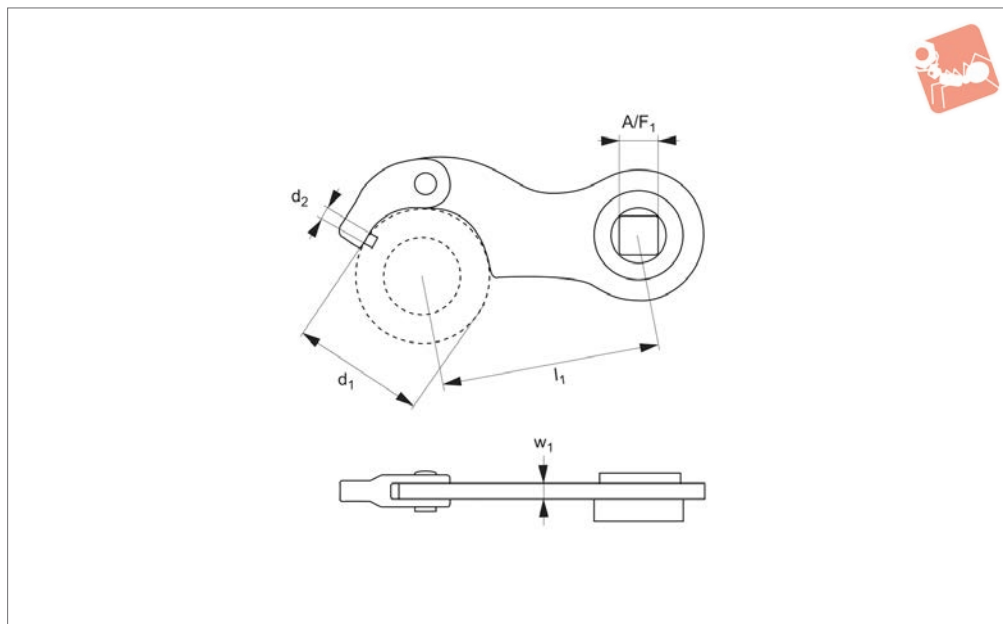
### Tips

Longer handle shaft ( $l_1$ ) enables higher torque to be applied.

Order No.	Finish	$d_1$ for nut $\varnothing$	$d_2$	$l_1$	$w_1$	$w_2$	Weight g
95152.W0122	Blackened	16-22	2.5	135	3	7.5	50
95152.W0135	Blackened	22-35	3.0	165	4	10.5	85
95152.W0160	Blackened	35-60	4.0	205	5	12.5	170
95152.W0190	Blackened	60-90	5.0	280	6	14.5	380
95152.W0191	Blackened	60-90	6.0	280	6	14.5	380
95152.W0255	Blackened	95-155	6.0	335	7	17.5	610
95152.W0256	Blackened	95-155	8.0	335	7	17.5	610
95152.W0330	Blackened	165-230	8.0	460	8	17.5	1200
95152.W0331	Blackened	165-230	10.0	460	8	17.5	1200
95152.W0622	Nickel plated	16-22	2.5	135	3	7.5	50
95152.W0635	Nickel plated	22-35	3.0	165	4	10.5	85
95152.W0660	Nickel plated	35-60	4.0	205	5	12.5	170
95152.W0690	Nickel plated	60-90	6.0	280	6	14.5	380
95152.W0755	Nickel plated	95-155	6.0	335	7	17.5	610
95152.W0830	Nickel plated	165-230	10.0	460	8	17.5	1200



**95154**



**Material**

Special steel, hardened and blued.  
Drive: square socket.

**Technical Notes**

For nuts with radial holes to DIN 1816.

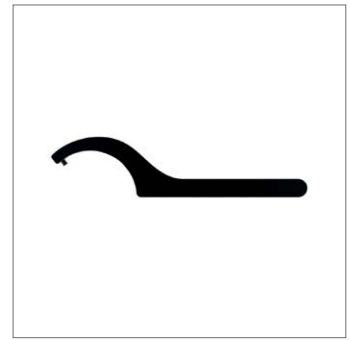
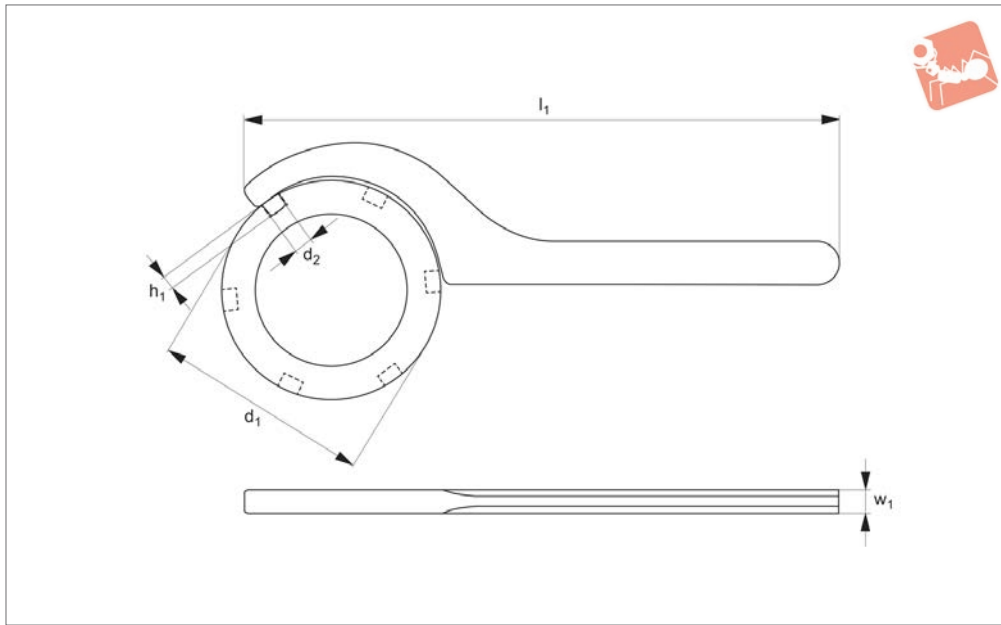
Order No.	d <sub>1</sub> min.   max.	A/F	d <sub>2</sub>	l <sub>1</sub>	w <sub>1</sub>	Weight g
95154.W0160	35-60	1/2"	4	75	5	185
95154.W0191	60-90	1/2"	6	100	6	320



# Hook Spanners - with Pin Nose

fixed

# Spanners & Hook Spanners



95450

SPANNERS & HOOK SPANNERS

### Material

Body: steel (C35/C45), hardened and blackened. Edgewise ground.

including stainless steel models - subject to minimum order quantities.

holes to DIN 1816.

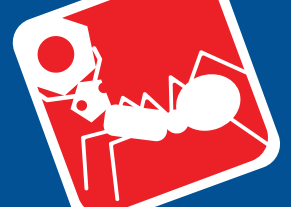
### Technical Notes

To DIN 1816. Specials available on request,

### Tips

Items marked ( ), width varies from DIN standard. For round nuts with set pin

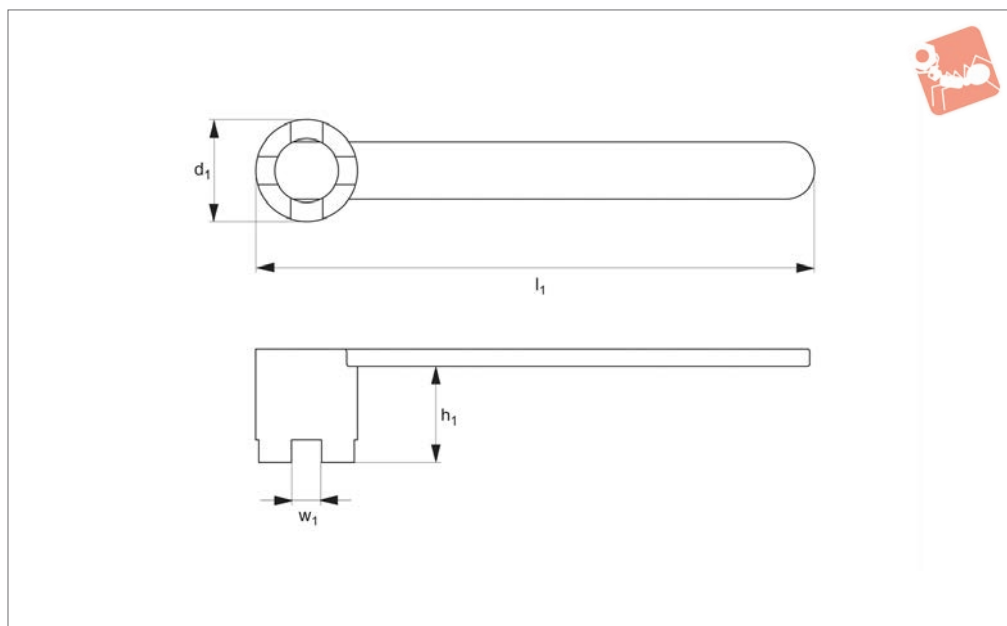
Order No.	d <sub>1</sub> for nut Ø	d <sub>2</sub>	l <sub>1</sub>	w <sub>1</sub>	h <sub>1</sub>	Weight g
95450.W0014	12-14	2.0	110	3	2.0	25
95450.W0018	16-18	2.5	110	3	2.5	25
95450.W0022	20-22	2.5	110	3	2.5	25
95450.W0028	25-28	3.0	136	4	3.0	55
95450.W0032	30-32	4.0	136	4	3.0	55
95450.W0036	34-36	4.0	170	5	3.5	100
95450.W0042	40-42	4.0	170	5	3.5	100
95450.W0050	45-50	5.0	206	6	4.0	165
95450.W0055	52-55	5.0	206	6	4.0	165
95450.W0062	58-62	5.0	240	7	5.0	270
95450.W0075	68-75	6.0	240	7	5.0	270
95450.W0090	80-90	6.0	280	8	6.0	410
95450.W0100	95-100	8.0	280	8	6.0	410
95450.W0115	110-115	8.0	335	(8)	8.0	610
95450.W0130	120-130	8.0	335	(8)	8.0	610
95450.W0146	135-145	8.0	380	(8)	8.0	790
95450.W0166	155-165	8.0	380	(8)	8.0	790
95450.W0196	180-195	10.0	470	(10)	8.0	1500
95450.W0221	205-220	10.0	470	(10)	8.0	1580
95450.W0246	230-245	10.0	568	(10)	10.0	2250
95450.W0271	260-270	10.0	568	(10)	10.0	2250





# Spanner for Shell and Mill Arbors

for screws to DIN 6367



**92100**

### Material

Steel (C35/C45) hardened, tempered, with brown finish.

### Technical Notes

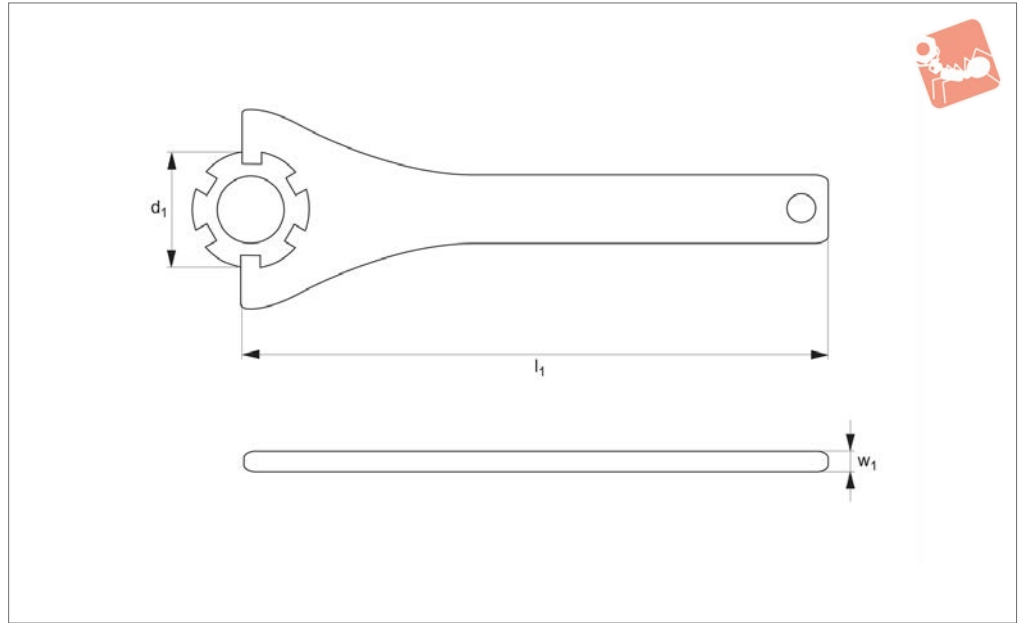
Nominal size refers to diameter of mandrel on milling arbor.

Order No.	Size	For nut to DIN 6367	$d_1$	$h_1$	$l_1$	$w_1$	Weight g
92100.W0013	13	M 6	18	16	160	6.1	75
92100.W0016	16	M 8	22	20	180	8.1	110
92100.W0022	22	M10	28	25	200	10.1	200
92100.W0027	27	M12	35	32	225	12.1	400
92100.W0032	32	M16	42	36	250	16.1	570
92100.W0040	40	M20	52	40	280	20.2	800
92100.W0050	50	M24	63	45	315	24.2	1100
92100.W0060	60	M30	76	50	355	28.2	1750





**92120**



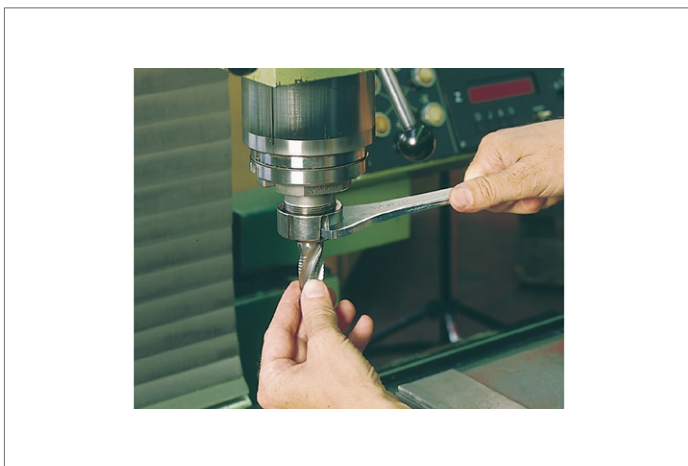
**Material**

Steel (C35/C45), hardened, zinc plated.

**Technical Notes**

For use on clamping nuts to DIN 6499D.

Order No.	Size	For nut to DIN 6499D	d <sub>1</sub>	l <sub>1</sub>	w <sub>1</sub>	Weight g
92120.W0016	16	16	32	163	4	125
92120.W0020	20	20	35	183	5	190
92120.W0025	25	25	42	203	6	255
92120.W0032	32	32	50	253	6	359
92120.W0040	40	40	63	285	6	480
92120.W0050	50	-	78	350	7	810

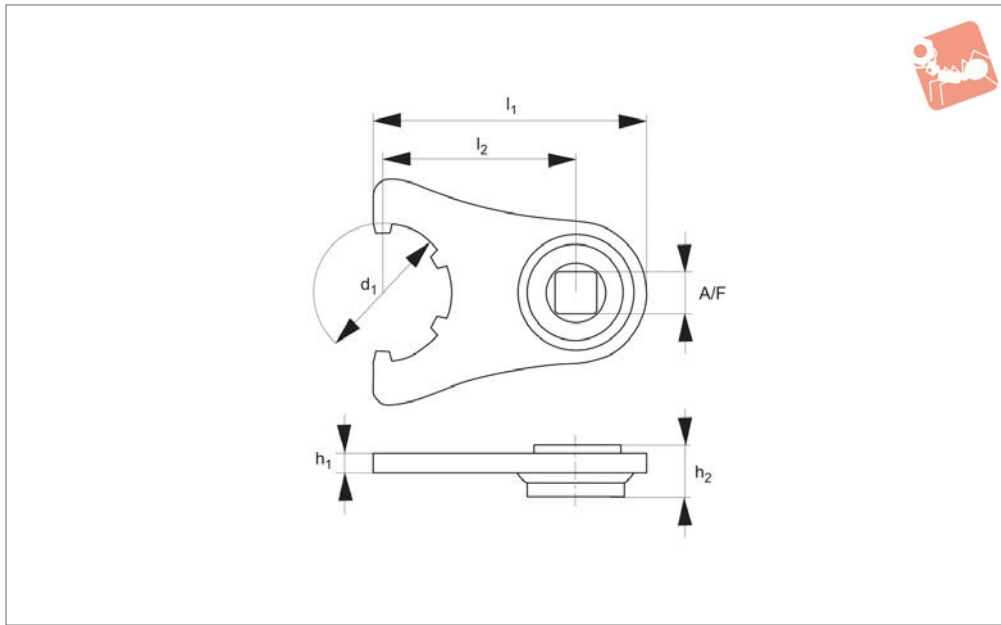






# Collet Spanner

for use with torque wrench



**92121**

### Material

Special steel, hardened and zinc-plated.

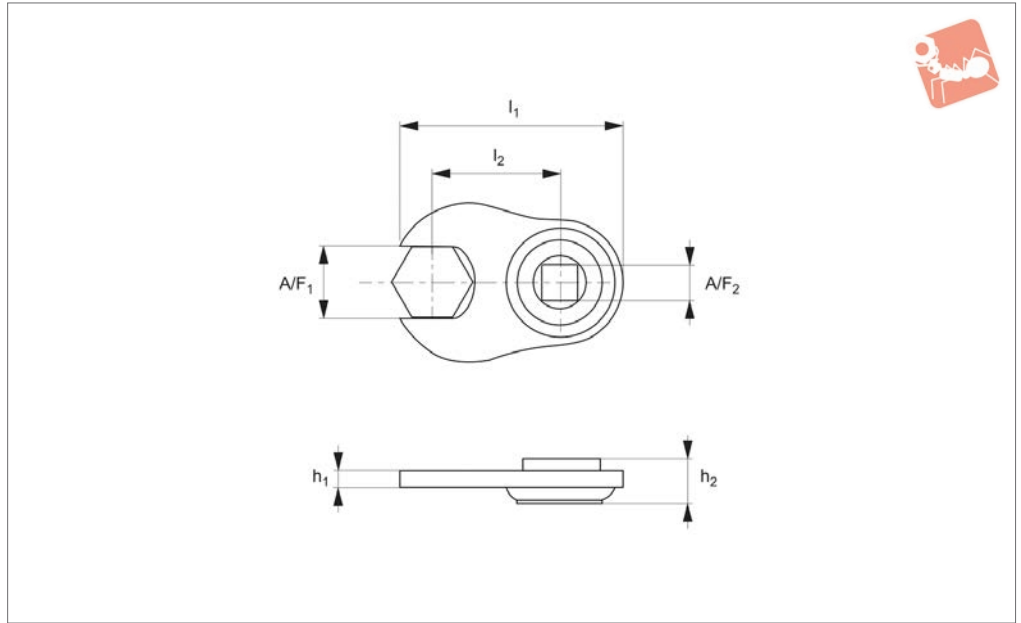
### Technical Notes

Controlled tightening prevents damage to spindle changing tools on machines.

Order No.	Size	A/F	d <sub>1</sub>	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	Weight g
92121.W0016	16	1/2"	32	5	16	69	45	140
92121.W0025	25	1/2"	42	6	16	85	60	200
92121.W0032	32	1/2"	50	6	16	85	60	215
92121.W0040	40	1/2"	63	6	16	85	60	220



92122



SPANNERS & HOOK SPANNERS

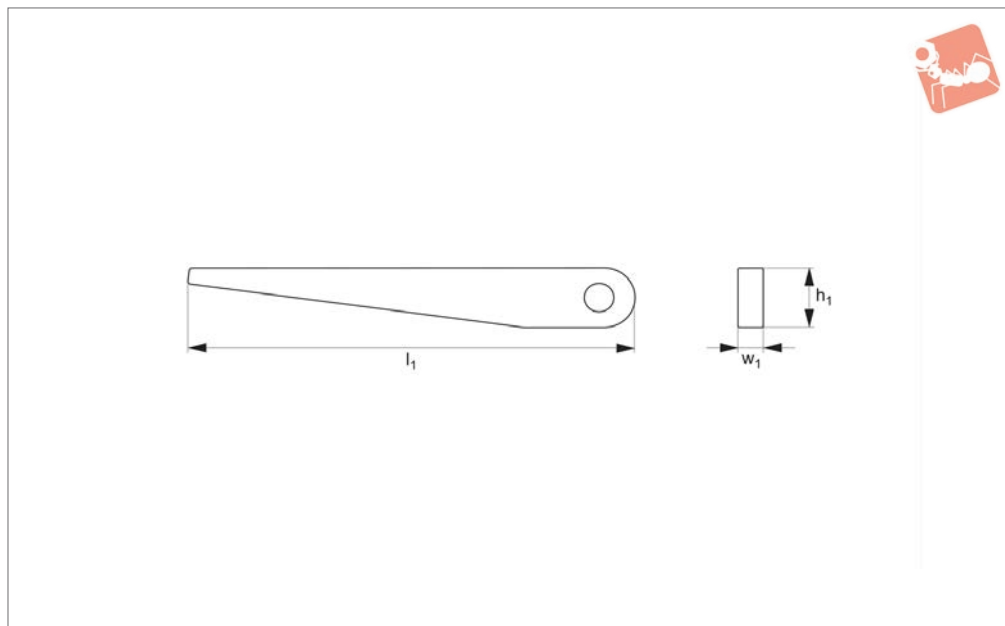
**Material**

Special steel, hardened and zinc-plated.

**Technical Notes**

Controlled tightening prevents damage to spindle changing tools on machines.

Order No.	A/F <sub>1</sub>	A/F <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	Weight g
92122.W0025	25	1/2"	6	16	78	45	170
92122.W0036	36	1/2"	7	16	101	60	255
92122.W0046	46	1/2"	8	16	108	60	340



## 92200

SPANNERS & HOOK SPANNERS

### Material

Steel (C35/C45), hardened and brown finish.

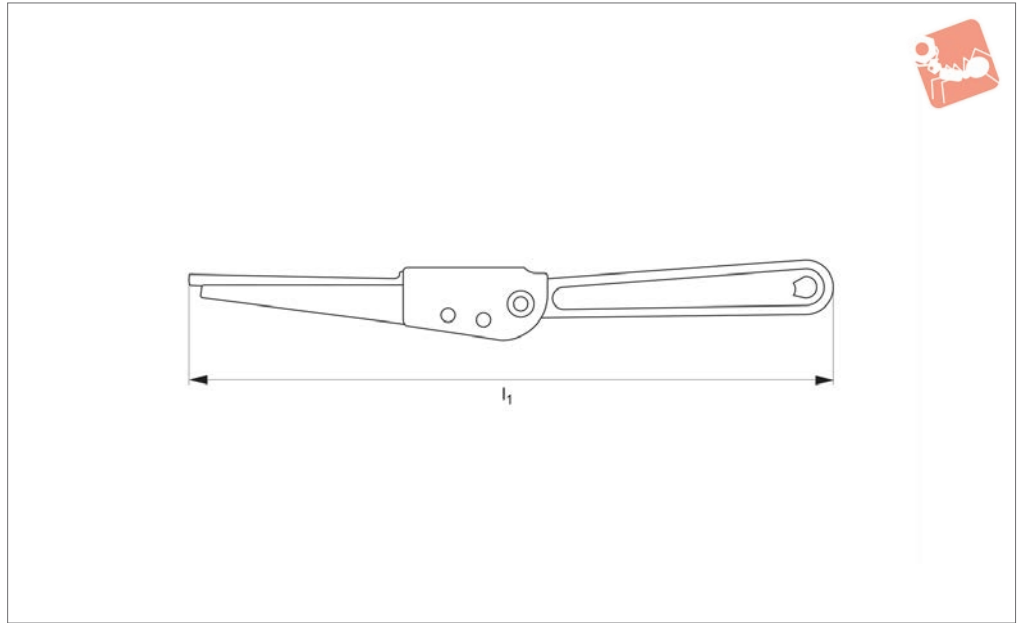
### Technical Notes

Produced to DIN 317.  
For machine tapers DIN 228.

Order No.	Size	Morse taper	$h_1$	Taper metric	$l_1$	$w_1$	Weight g
92200.W0000	0	0	12	4 & 6	90	3	14
92200.W0001	1	1 & 2	20	-	140	5	70
92200.W0003	3	3	25	-	190	7	150
92200.W0004	4	4	30	-	225	10	310
92200.W0005	5	5 & 6	35	-	265	15	650



92220



**Material**

Body: steel (C35/C45), hardened and blackened.  
Grip: powder coated, red.

With finger protection.

**Tips**

This semi-automatic drill drift simplifies

the removal of machine tapers (to DIN 228).

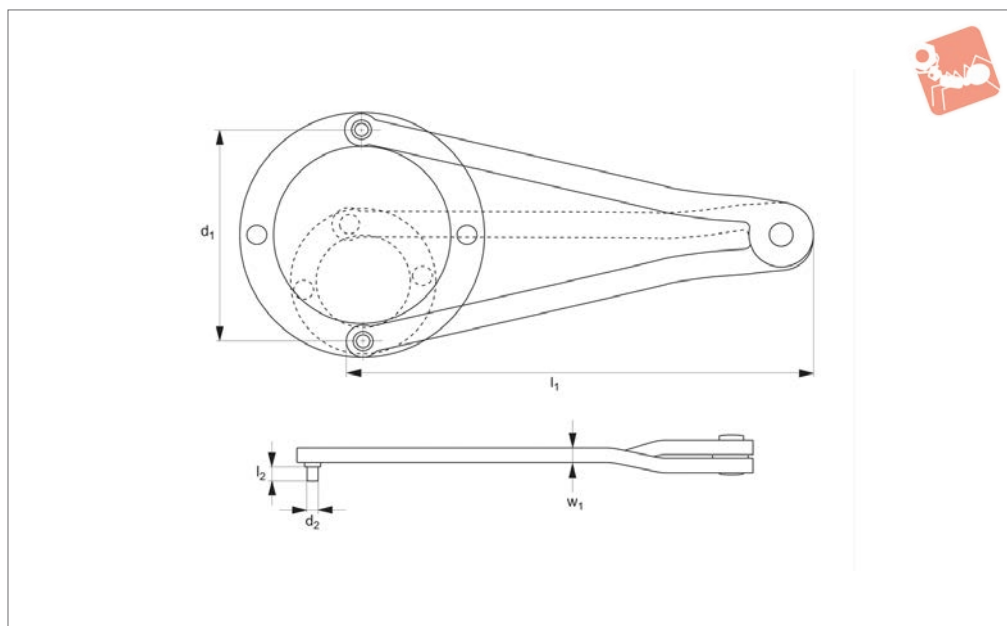
Order No.	For morse taper	$l_1$	Weight g
92220.W0003	1-3	330	370
92220.W0006	4-6	380	530





# Adjustable Pin Face Spanners with welded pins

## Spanners & Hook Spanners



**94000.1**

SPANNERS & HOOK SPANNERS

### Material

Carbon steel (C35/C45), tempered.

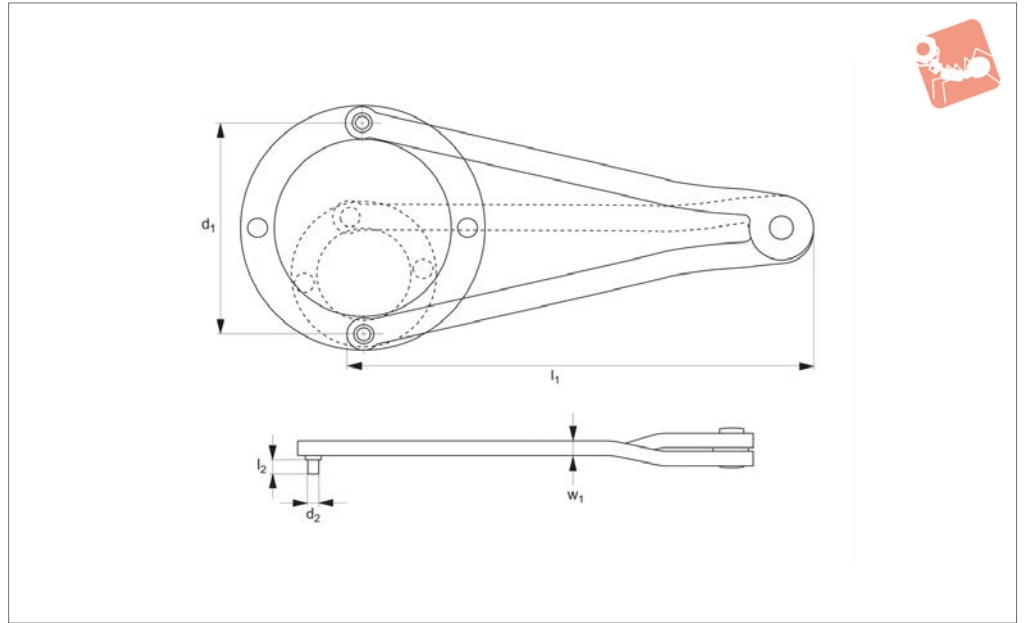
### Technical Notes

Size 7-40 with riveted pins, from size 11-60 pins electrically welded.

Order No.	d <sub>1</sub> for nut min.   max.	d <sub>2</sub> -0.1mm   tol. h12	l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	Weight g
94000.W0041	7-40	1.5	115	2.0	3	40
94000.W0042	7-40	2.0	115	2.5	3	40
94000.W0043	7-40	2.5	115	3.0	3	40
94000.W0061	11-60	3.0	160	4.0	4	140
94000.W0062	11-60	4.0	160	5.0	4	140
94000.W0063	11-60	5.0	160	6.0	4	140
94000.W0101	14-100	5.0	215	6.0	6	300
94000.W0102	14-100	6.0	215	7.0	6	300
94000.W0103	14-100	8.0	215	8.0	6	300
94000.W0125	22-125	8.0	260	8.0	6	500
94000.W0126	22-125	10.0	260	10.0	6	500
94000.W0127	22-125	12.0	260	12.0	6	500



94000.2



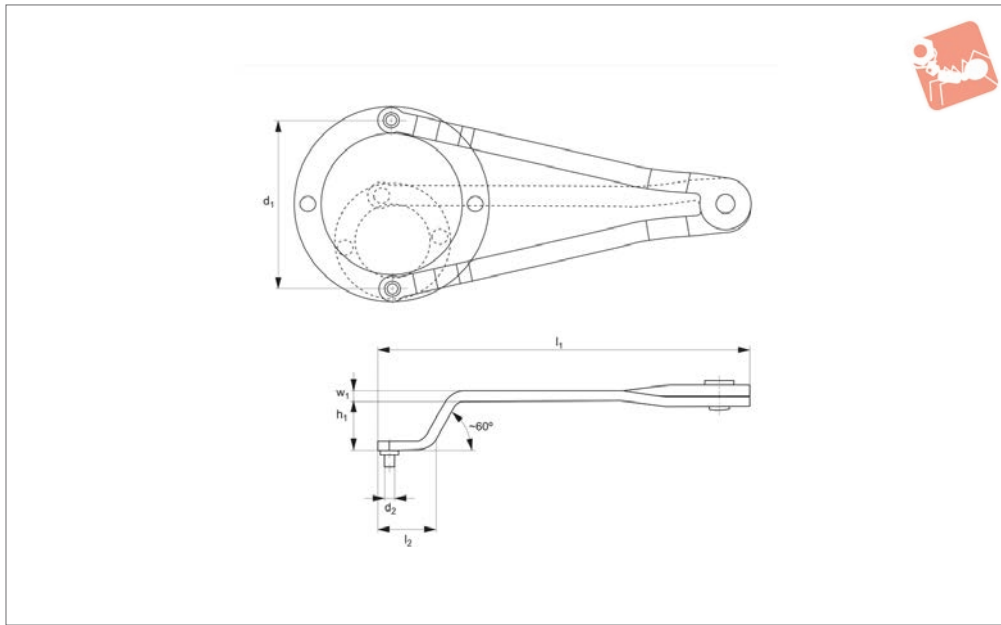
**Material**

Stainless steel.

Order No.	$d_1$ for nut min.   max.	$d_2$ -0.1mm   tol. h12	$l_1$	$l_2$	$w_1$	Weight g
94000.W0561	11-60	3	162	4	4	115
94000.W0562	11-60	4	162	5	4	115



# Adjustable Pin Face Spanner - Off set with welded pins

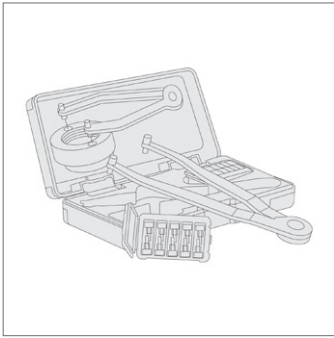


**94002**

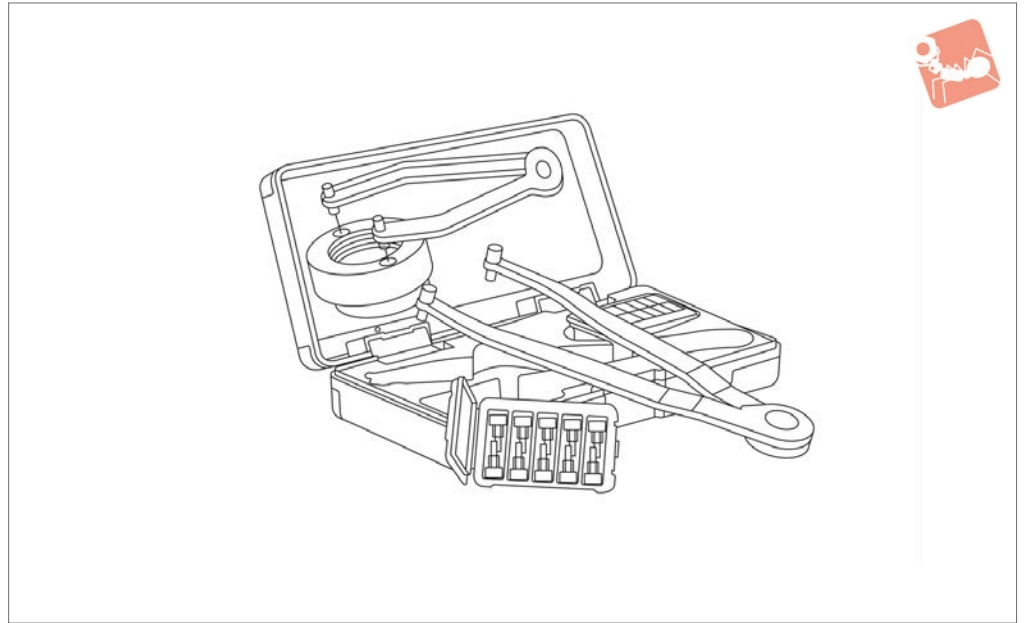
### Material

Special steel, hardened and blued.

Order No.	d <sub>1</sub> for nut Ø	d <sub>2</sub> -0.1mm tol. h12	h <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	Weight g
94002.W0061	11-60	3	20	153	24	4	120
94002.W0062	11-60	4	20	153	24	4	120
94002.W0101	14-90	5	27	205	31	6	310
94002.W0102	14-90	6	27	205	31	6	310



94020



**Material**

Spanner: steel (C35/C45), zinc plated.  
Pins: hardened steel, blackened.

**Technical Notes**

Set contains 1 pieces adjustable pin face

spanner to suit interchangeable pins. Pin set contains two pieces each of pin diameter 1.5, 2, 2.5, 3 and 4. Supplied in robust storage box.

Order No.	Box l x w x h	For nut diameter	Pin diameter	Weight g
94020.W0061	165x87x36	8-100	1.5, 2, 2.5, 3, 4	335

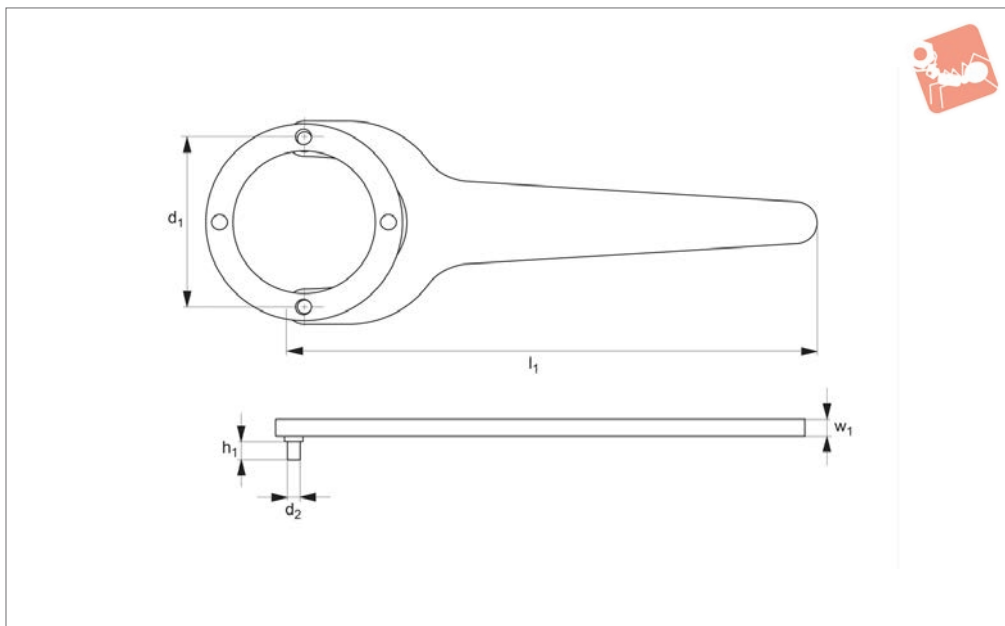




# Face Spanner - with Pins

fixed

## Spanners & Hook Spanners



**95340**

SPANNERS & HOOK SPANNERS

### Material

Steel (C35/C45), tempered and blackened.

Pins spot welded.

### Technical Notes

Produced to DIN 3116A.

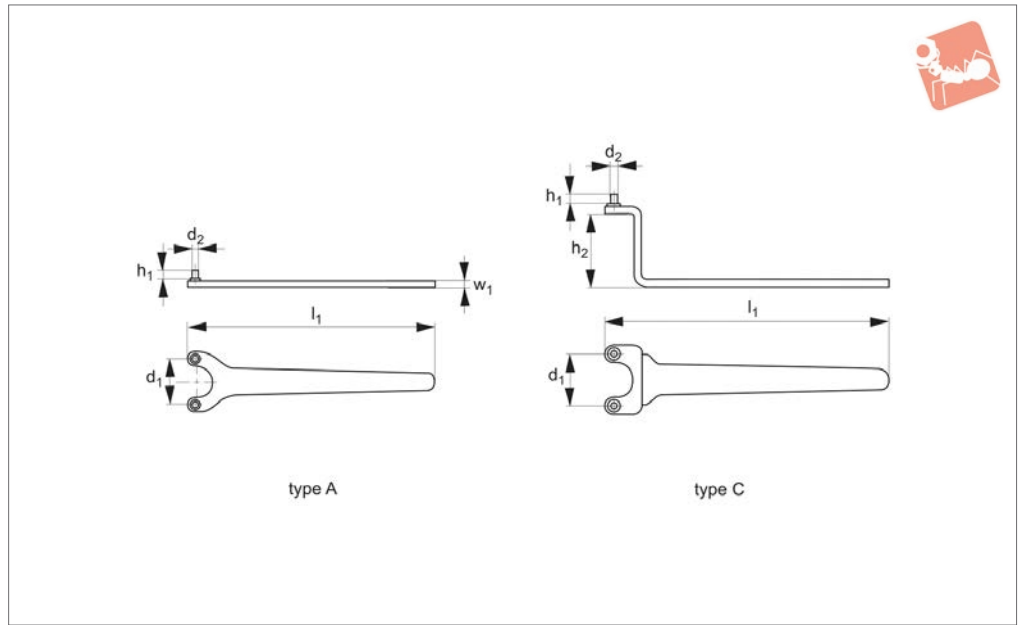
### Tips

()= not to DIN standard.

Order No.	d <sub>1</sub> for nut Ø	d <sub>2</sub> -0.1   tol. h12	h <sub>1</sub>	l <sub>1</sub>	w <sub>1</sub>	Weight g
95340.W0013	13	2.5	3.0	90	3	27
95340.W0015	15	3.0	3.5	90	3	27
95340.W0020	(20)	3.0	4.0	122	4	50
95340.W0021	(20)	4.0	5.0	122	4	50
95340.W0025	25	3.0	4.0	137	4	65
95340.W0026	(25)	4.0	5.0	137	4	65
95340.W0030	30	4.0	5.0	164	4	85
95340.W0035	35	5.0	6.0	180	5	120
95340.W0036	(35)	4.0	5.0	180	5	120
95340.W0040	40	4.0	5.0	167	5	120
95340.W0045	45	4.0	5.0	187	5	145
95340.W0050	50	5.0	6.0	198	5	175
95340.W0060	60	5.0	6.0	213	6	220
95340.W0075	75	6.0	7.0	243	6	330
95340.W0090	90	7.0	7.5	270	6	410



### 95342.1



#### Material

Special steel, zinc plated, with electrically welded pins.

#### Technical Notes

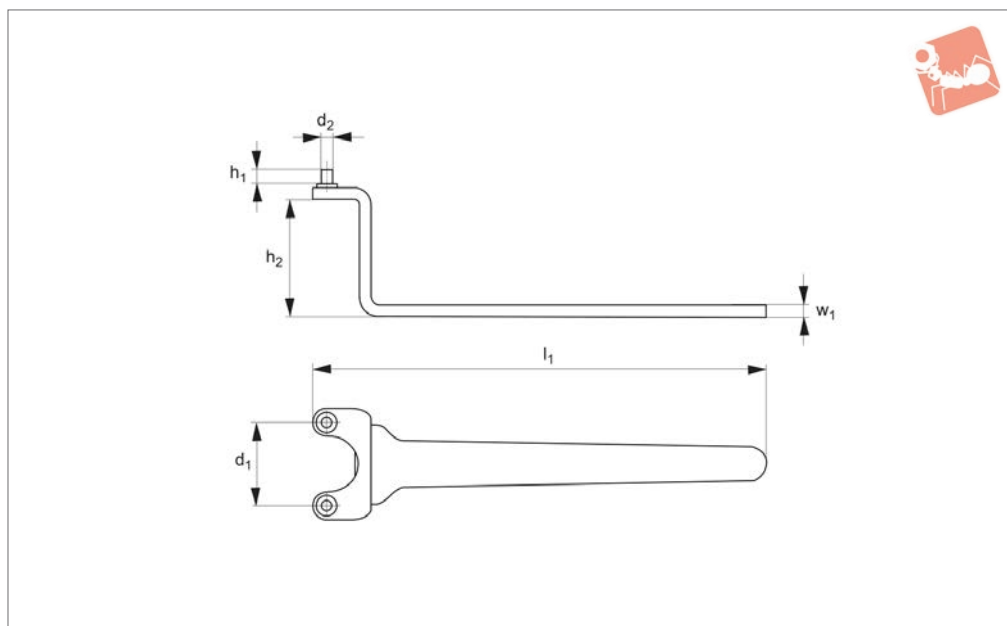
Size 35 for flange nut DIN 44716-D of angle grinder DIN 44706 for clamping,

grinding and cutting-off wheels.

Order No.	Type	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	w <sub>1</sub>	Weight g
95342.W0030	A	30	4	5	-	164	4	85
95342.W0035	A	35	5	6	-	180	5	120
95342.W0135	C	35	-5	6	50	200	5	200



# Face Spanner - Off set with fixed pins



### 95342.2

SPANNERS & HOOK SPANNERS

#### Material

Special steel, blued, with electrically welded pins.

#### Technical Notes

This wrench is used for adjusting timing

belt tensioners (AUDI, VW).

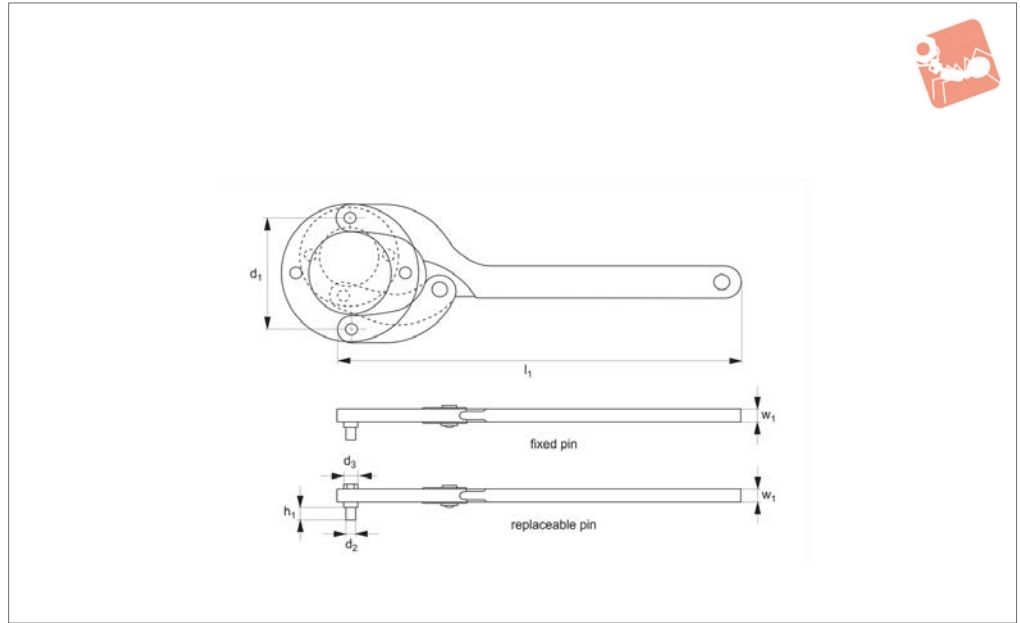
#### Important Notes

Pin diameter = nominal diameter -0.1mm (tolerance class h12).

Order No.	Type	d <sub>1</sub>	d <sub>2</sub>	h <sub>1</sub>	h <sub>2</sub>	l <sub>1</sub>	w <sub>1</sub>	Weight g
95342.W0118	C	18	3	4	15	140	4	95



### 95350



#### Material

Steel (C35/C45), tempered and blackened.

welded.

For replacement pins see part no. 95360.

#### Technical Notes

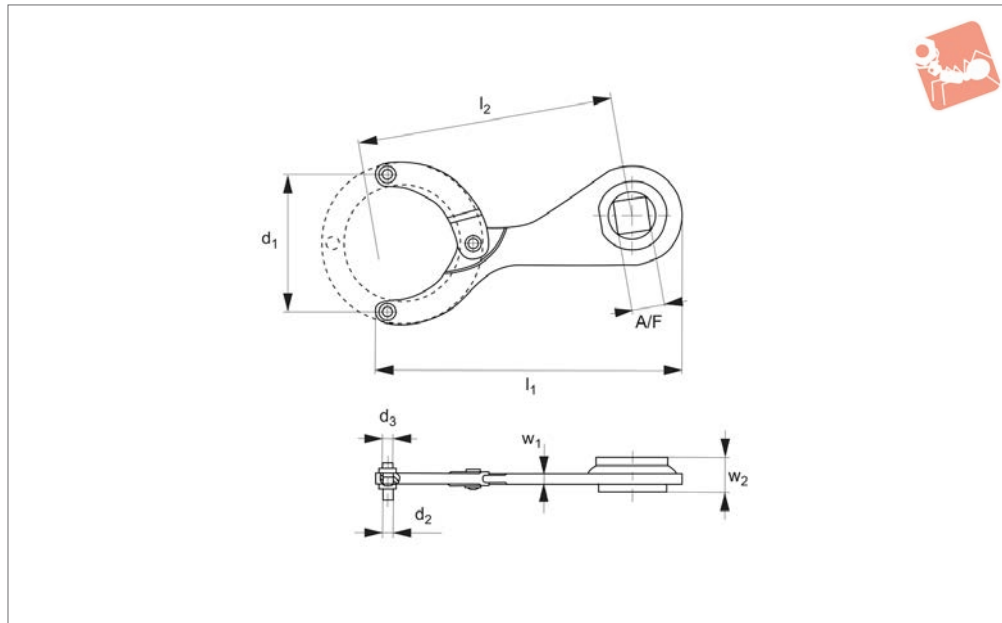
Fixed or replaceable pins, fixed pin spot

Order No.	Type	d <sub>1</sub> for nut Ø	d <sub>2</sub> -0.1   tol. h12	d <sub>3</sub>	h <sub>1</sub>	l <sub>1</sub>	w <sub>1</sub>	Weight g
95350.W0041	Fixed Pin	18-40	3	-	4.0	150	5	100
95350.W0042	Fixed Pin	18-40	4	-	5.0	150	5	100
95350.W0081	Fixed Pin	40-80	4	-	5.0	220	6	265
95350.W0082	Fixed Pin	40-80	5	-	6.0	220	6	265
95350.W0083	Fixed Pin	40-80	6	-	7.0	220	6	265
95350.W0125	Fixed Pin	80-125	6	-	7.0	295	8	650
95350.W0126	Fixed Pin	80-125	7	-	7.5	295	8	650
95350.W0127	Fixed Pin	80-125	8	-	8.0	295	8	650
95350.W0201	Fixed Pin	125-200	8	-	8.0	405	10	1590
95350.W0202	Fixed Pin	125-200	10	-	10.0	405	10	1590
95350.W0541	Replaceable Pin	18-40	3	M 4	4.0	150	5	100
95350.W0542	Replaceable Pin	18-40	4	M 4	5.0	150	5	100
95350.W0581	Replaceable Pin	40-80	4	M 6	5.0	220	6	265
95350.W0582	Replaceable Pin	40-80	5	M 6	6.0	220	6	265
95350.W0583	Replaceable Pin	40-80	6	M 6	7.0	220	6	265
95350.W0625	Replaceable Pin	80-125	6	M 6	7.0	295	8	650
95350.W0626	Replaceable Pin	80-125	7	M 6	7.5	295	8	650
95350.W0627	Replaceable Pin	80-125	8	M 6	8.0	295	8	650
95350.W0701	Replaceable Pin	125-200	8	M 8	8.0	405	10	1590
95350.W0702	Replaceable Pin	125-200	10	M 8	10.0	405	10	1590



# Adjustable Face Spanner

with replaceable pins - for torque socket wrench



### 95352

SPANNERS & HOOK SPANNERS

#### Material

Special steel, hardened and blackened.

#### Technical Notes

Replaceable, hardened pins.

Pin diameter = nominal diameter -0,1mm (tolerance class h12). See part 95360 for replacement pins.

For use with torque wrench, for more accu-

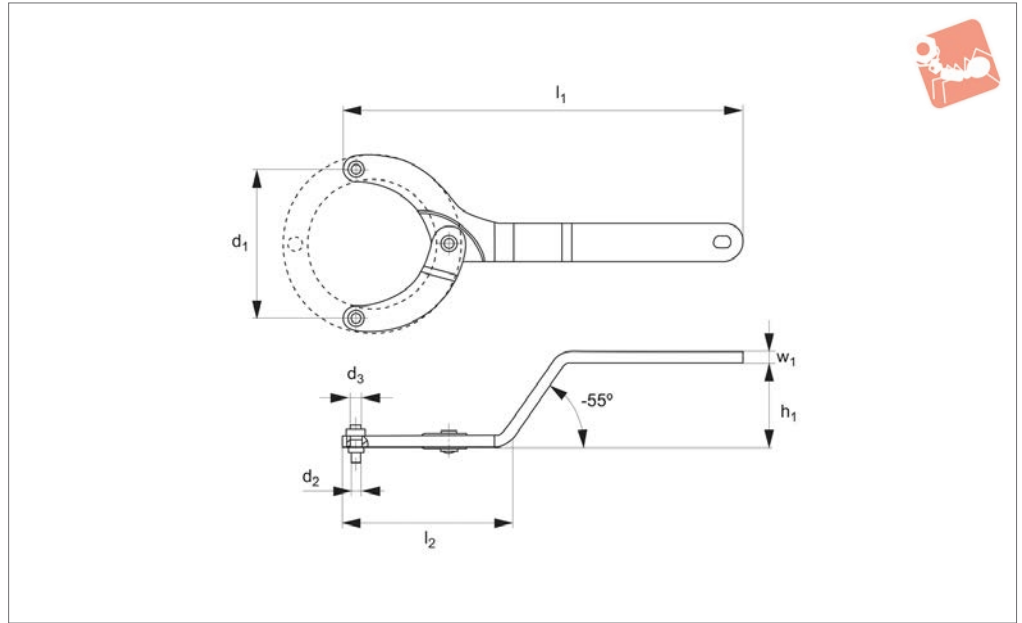
rate installation and adjustment.

The required torque wrench value is dependent upon dimension  $l_2$ . Please refer to the operating manual of your torque wrench.

Order No.	$d_1$ for nut $\emptyset$	$d_2$ -0.1	$d_3$	$l_1$	$l_2$	$w_1$	$w_2$	Drive A/F	Weight g
95352.W0042	18-40	4	M 4	120	100	5	16.0	1/2"	155
95352.W0082	40-80	5	M 6	180	150	6	20.5	3/4"	450
95352.W0083	40-80	6	M 6	180	150	6	20.5	3/4"	455
95352.W0125	80-125	6	M 6	250	220	8	20.5	3/4"	795
95352.W0127	80-125	8	M 6	250	220	8	20.5	3/4"	800



**95353**



**Material**

Spanner: steel C35/C45, hardened, with blue finish.

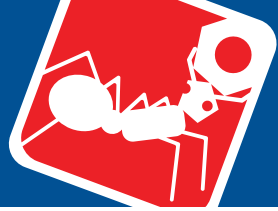
Pins: hardened steel, blackened.

(tolerance class h12). See part 95360 for replacement pins.

**Technical Notes**

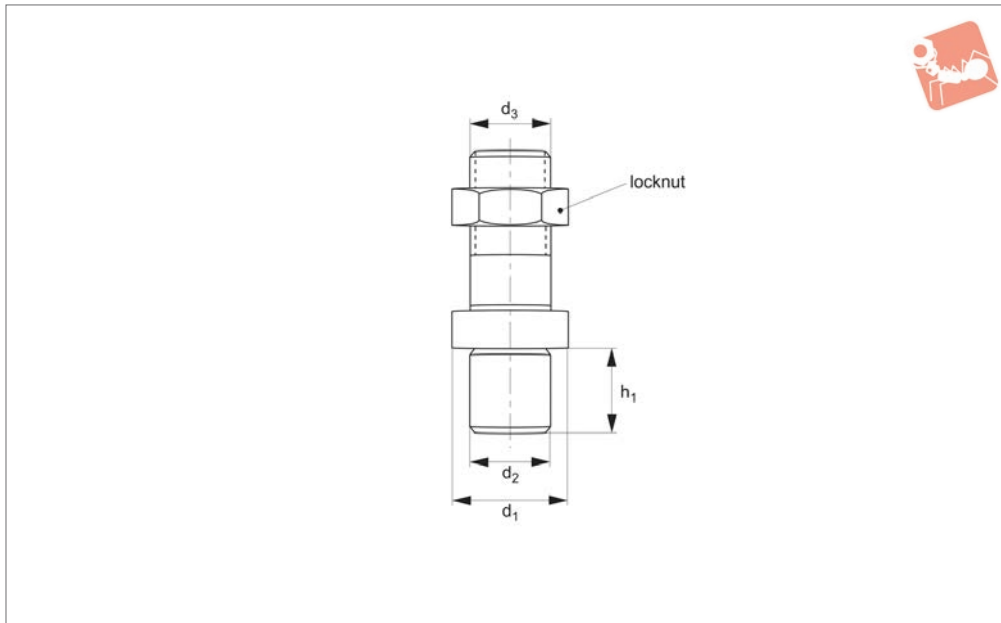
Pin diameter = nominal diameter -0,1mm

Order No.	d <sub>1</sub> for nut Ø	d <sub>2</sub> -0.1	d <sub>3</sub>	h <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	w <sub>1</sub>	Weight g
95353.W0041	18-40	3	M 4	33	158	57	5	114
95353.W0042	18-40	4	M 4	33	158	57	5	114
95353.W0081	40-80	4	M 6	45	215	92	6	290
95353.W0082	40-80	5	M 6	45	215	92	6	290
95353.W0083	40-80	6	M 6	45	215	92	6	295
95353.W0125	80-125	6	M 6	63	290	130	8	695
95353.W0126	80-125	8	M 6	63	290	130	8	700



# Replacement Pins for face spanners

# Spanners & Hook Spanners



**95360**

SPANNERS & HOOK SPANNERS

### Material

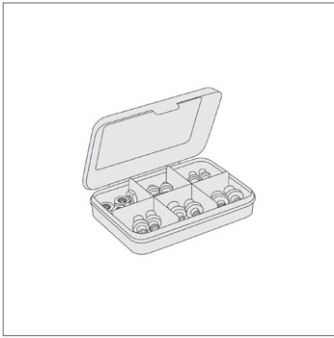
Steel (C35/C45), tempered, hardened, with blue finish.

### Technical Notes

Sold as individual pins. Suitable for a variety of spanners, for example 95350,

95352, 95353. See individual product table for pin thread required.

Order No.	d <sub>1</sub>	d <sub>2</sub> pin tol. h <sub>12</sub>  -0,1	d <sub>3</sub>	h <sub>1</sub>	Weight g
95360.W0002	5.5	3	M 4	4.0	2
95360.W0003	7.0	4	M 4	5.0	2
95360.W0010	8.5	4	M 6	4.5	3
95360.W0011	8.5	5	M 6	5.5	5
95360.W0012	10.0	6	M 6	6.5	7
95360.W0013	11.0	7	M 6	7.0	8
95360.W0014	12.0	8	M 6	7.5	9
95360.W0017	12.0	8	M 8	7.5	14
95360.W0019	15.0	10	M 8	9.5	19



**95362**



**Material**

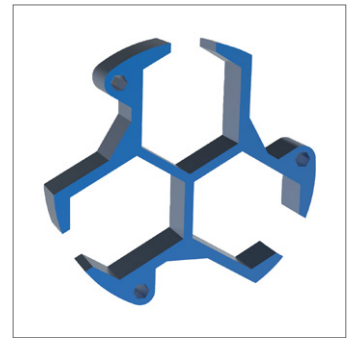
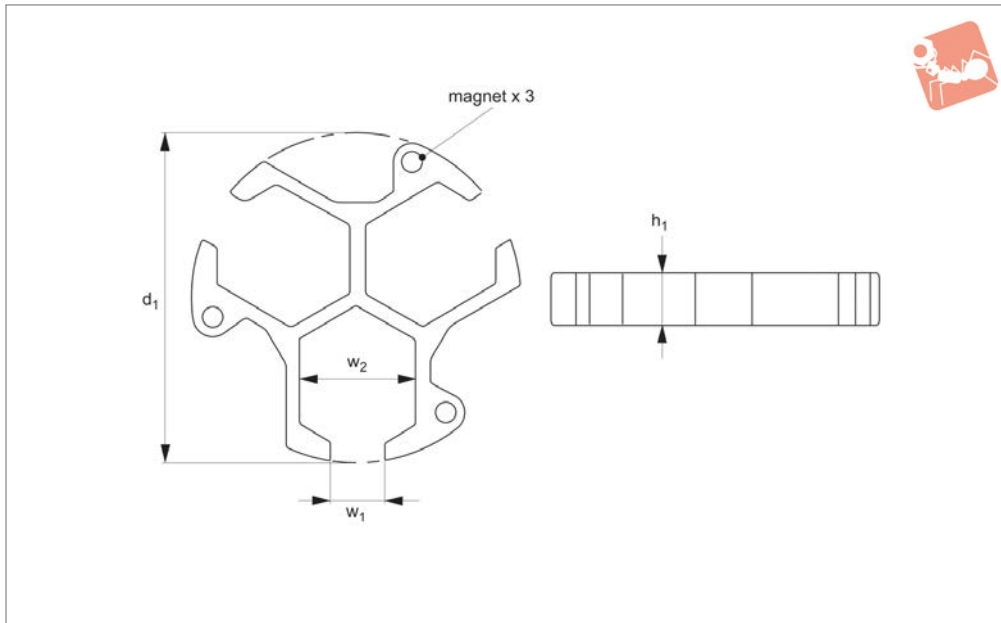
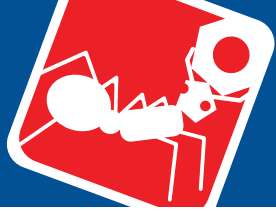
Special steel, hardened and blued.

**Technical Notes**

Two pins each per size, including nuts in a clearly arranged assortment box.

Order No.	Box l x w x h	For use with 95350, 95352, 95353	Pin diameter -0.1mm tol. h12	Nut (DIN 439)	Weight g
95362.W0006	90 x 65 x 20	40-80 / 80-125	4, 5, 6, 7, 8	10xM 6	95





## 97100

SPANNERS & HOOK SPANNERS

### Material

Body: anodised aluminium (high wear resistance).

### Technical Notes

The Posi-stop replaces all forms of distance

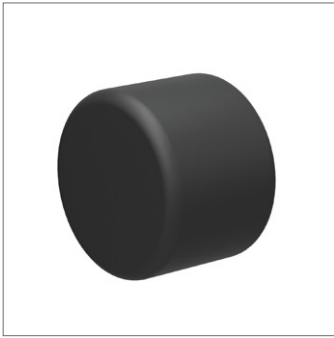
sleeves and soft jaws normally used when turning short workpieces. They mount securely against the chuck face using three strong magnets and provide a fixed reference surface.

### Tips

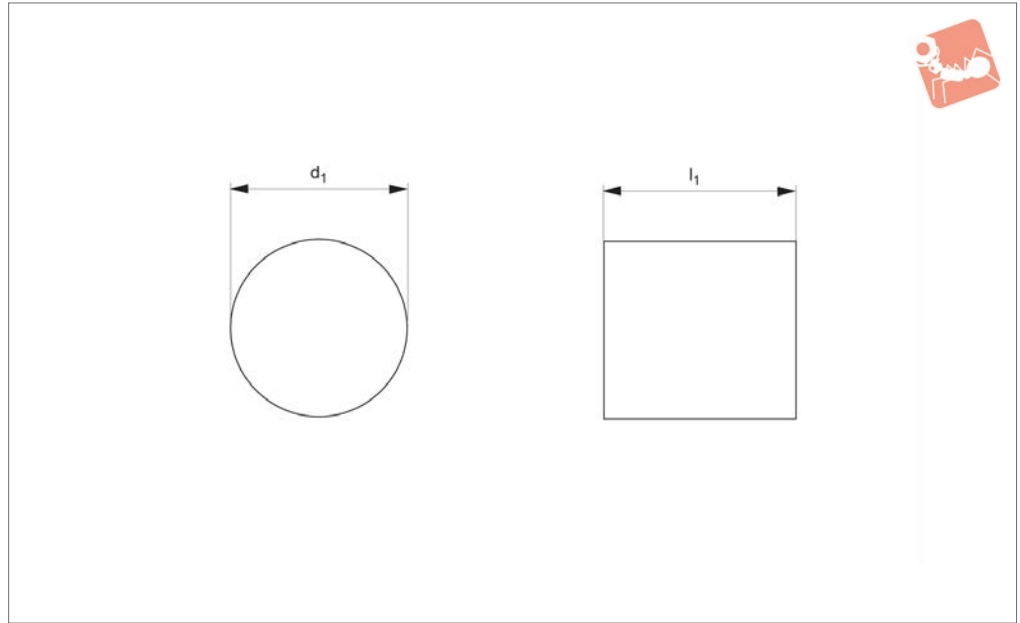
\* $w_1$  - standard width jaw is 25mm, this can easily be milled or sawn larger for chucks with wider jaws up to 54mm.

Order No.	$d_1$	$h_1$ $\pm 0.01$	$w_1$	$w_2$	Type
97100.W0015	150	15	25	55	Single
97100.W0020	150	20	25	55	Single
97100.W0025	150	25	25	55	Single
97100.W0030	150	30	25	55	Single
97100.W0035	150	35	25	55	Single
97100.W0040	150	40	25	55	Single
97100.W0503	-	1 of each - 15, 20, 25	-	-	Set of 3
97100.W0504	-	1 of each - 15, 20, 25, 30	-	-	Set of 4
97100.W0505	-	1 of each - 15, 20, 25, 30, 35	-	-	Set of 5
97100.W0506	-	1 of each - 15, 20, 25, 30, 35, 40	-	-	Set of 6





## 97103



### Material

Flame resistant neoprene foam.

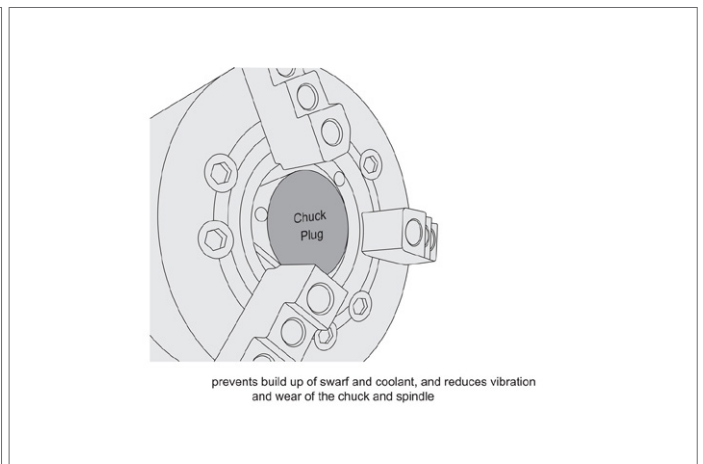
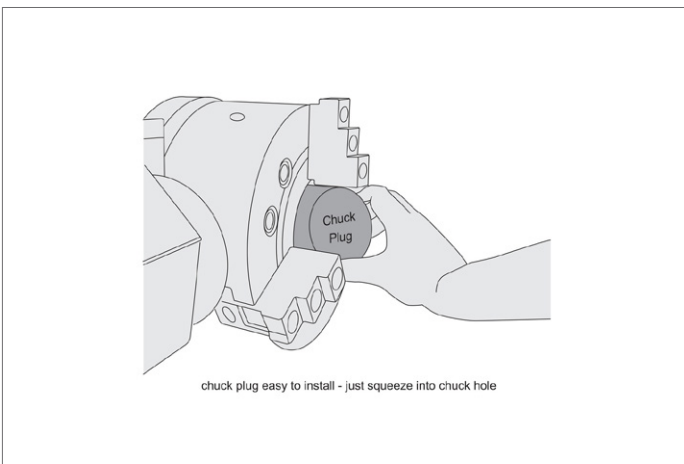
through holes to keep swarf and coolant from the spindle bore.

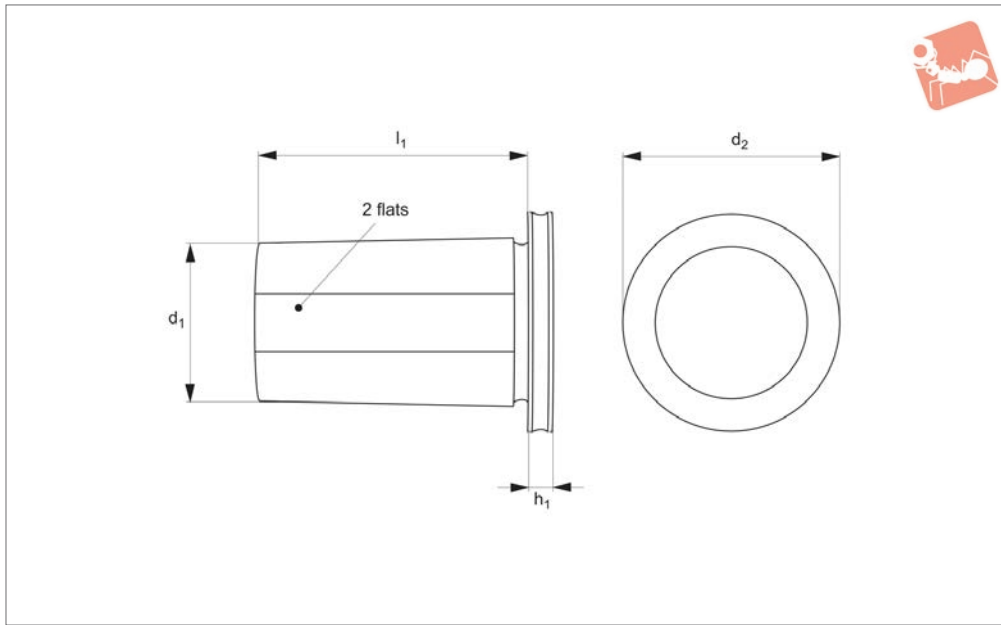
### Technical Notes

The chuck plug is used to plug lathe chuck

Just squeeze the plug into the chuck hole.

Order No.	$d_1$	Optimal bore length $l_1$	Bore length $l_1$ min.   max.	Qty/pack
97103.W0035	35	33	30-34	2
97103.W0048	48	45	42-47	2
97103.W0055	55	52	49-54	2
97103.W0070	70	66	62-68	2
97103.W0080	80	75	72-78	2
97103.W0086	86	81	76-83	2
97103.W0097	97	91	87-94	2
97103.W0107	107	100	97-104	2
97103.W0113	113	106	100-109	2





## 97104

### Material

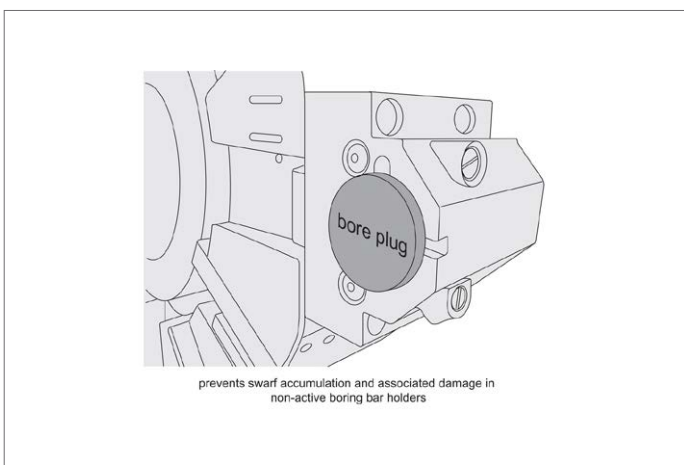
Body: aluminium (hard coat anodized).

coolant build up in boring bar holders, and as a result also prolongs tool holder life.

### Technical Notes

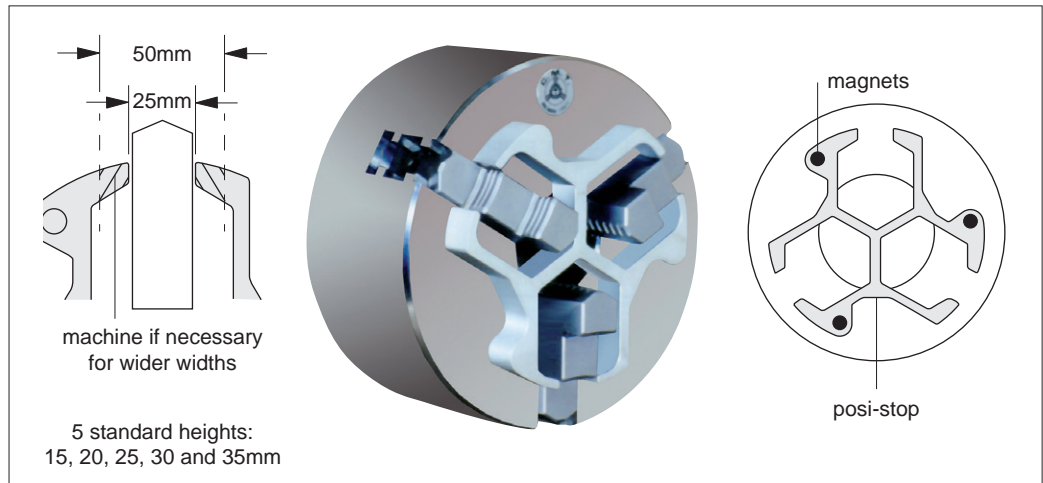
The bore plug is used to prevent swarf and

Order No.	d <sub>1</sub>	h <sub>1</sub>	l <sub>1</sub>	d <sub>2</sub>	Type
97104.W0025	25	6.4	68.5	36.5	Metric
97104.W0032	32	6.4	68.5	42.9	Metric
97104.W0040	40	6.4	68.5	49.2	Metric
97104.W0050	50	6.4	68.5	61.9	Metric
97104.W0100I	1"	0,25"	2,75"	1,44"	Inch
97104.W0125I	1-1/4"	0,25"	2,75"	1,69"	Inch
97104.W0150I	1-1/2"	0,25"	2,75"	1,94"	Inch
97104.W0200I	2"	0,25"	2,75"	2,44"	Inch





### 97100 Posi-Stops

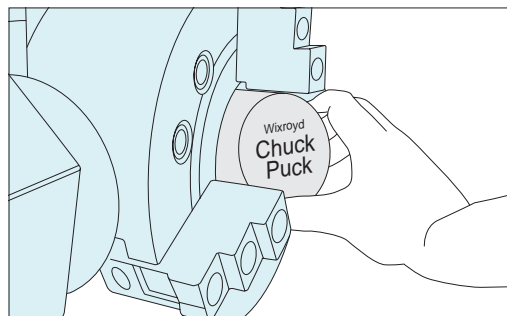


Chuck “Posi-stops” provide a quick and accurate method of moving workpieces away from the face of the chuck. Often used to enable the workpiece to be machined more closely to its extremity or for shorter workpieces.

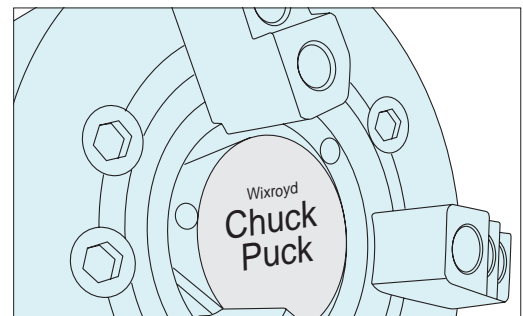
Each posi-stop has strong magnets on the bottom face so that the stop snaps firmly over the chuck jaws and onto the chuck face. There are five standard thicknesses; 15, 20, 25, 30 and 35mm (accuracy  $\pm 0.01\text{mm}$ ) or they can be purchased as a set.

The posi-stops are made for a standard jaw width of 25mm but they can easily be opened up (mill or saw) to accommodate wider jaw widths.

### 97103 Chuck Puck

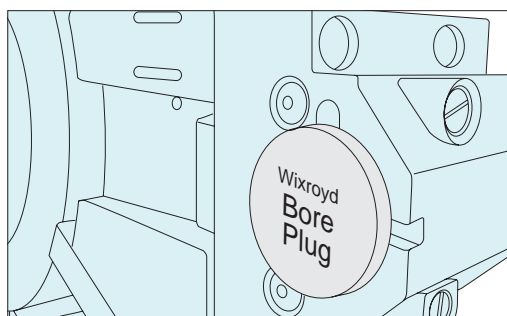


Chuck plug easy to install - just squeeze into the chuck hole.

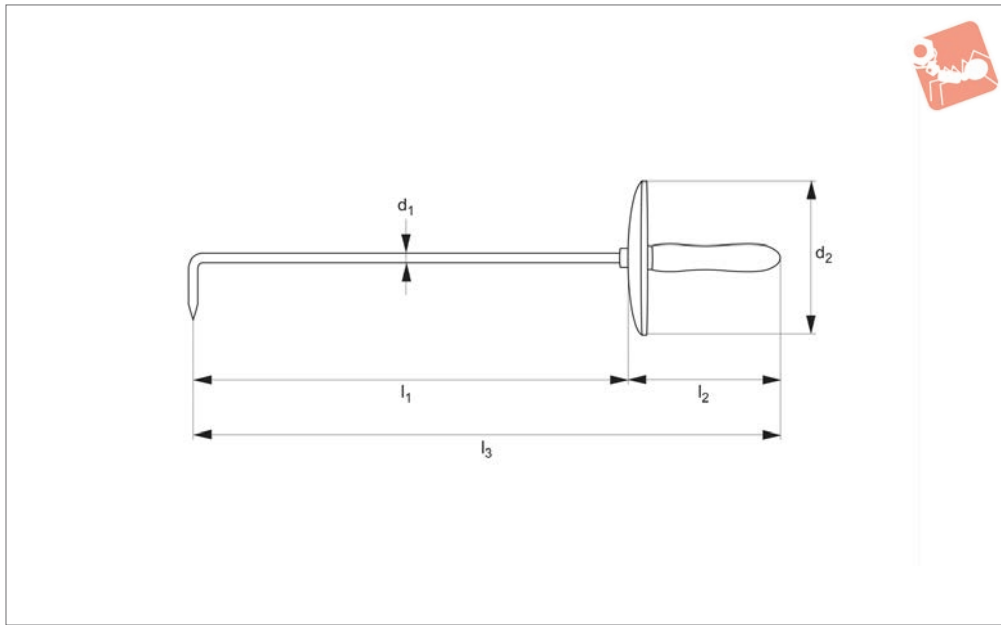


Prevents build up of swarf and coolant, reduces vibration as well as wear of the chuck and spindle.

### 97104 Bore Plug



Prevents swarf accumulation and associated damage in non-active boring bar holders.



**97050**

SPANNERS & HOOK SPANNERS

**Material**

Hook and guard: steel.  
Handle: wood.

**Technical Notes**

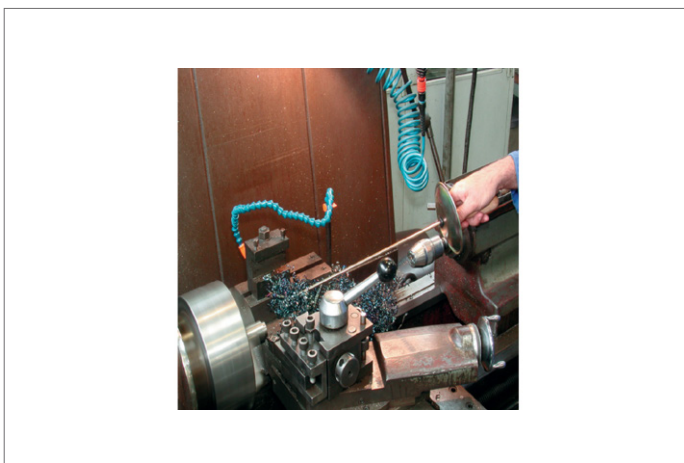
Excellent for removing swarf or chips from in and around workpieces for mills and

lathes. Extended hook minimises risk to operator.  
Part number 97050.W2050 has rigid fixing (brazed-soldered).  
All other parts have flexible fixing (rubber).

**Important Notes**

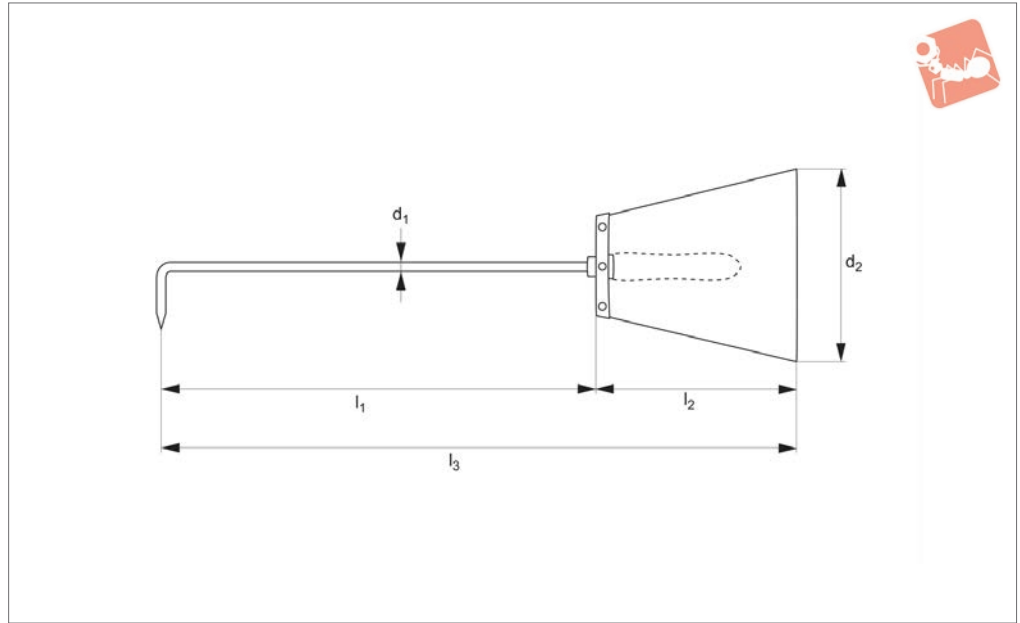
Take all necessary safety precautions when using this product in or around working machinery. If in doubt shut down machine.

Order No.	Guard fixing	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>
97050.W2020	Flexible-circlip	5	180	125	305	115
97050.W2030	Flexible-circlip	6	280	130	410	130
97050.W2040	Flexible-circlip	6	400	130	530	140
97050.W2050	Rigid-welded	6	400	130	530	140





**97052**



**Material**

Hook: steel.  
Guard: plastic.  
Handle: wood.

**Technical Notes**

Excellent for removing swarf or chips from

in and around workpieces for mills and lathes. Extended hook minimises risk to operator.

**Important Notes**

Take all necessary safety precautions when using this product in or around working

machinery. If in doubt shut down machine.

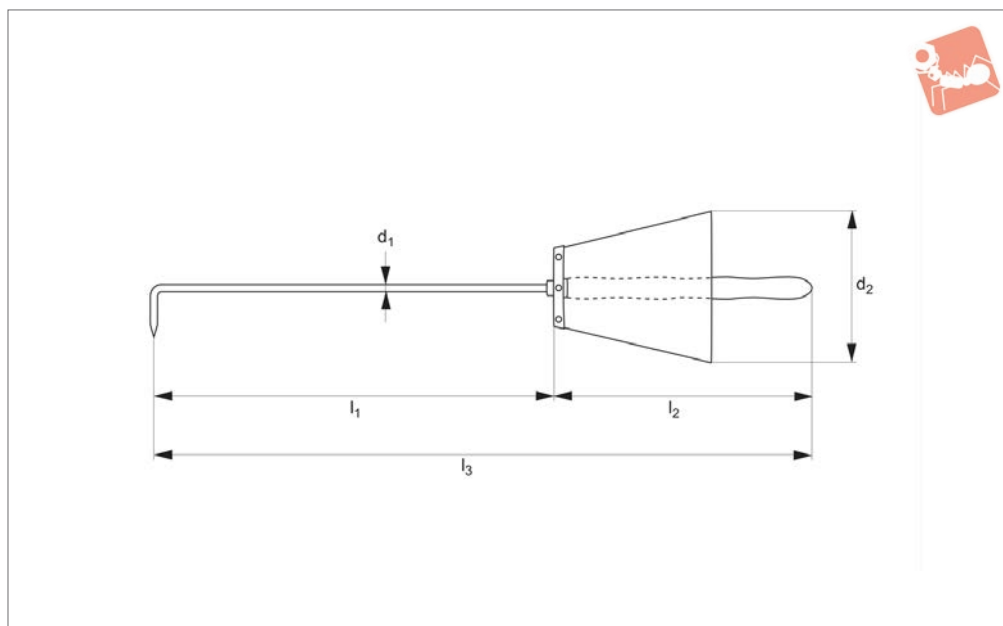
Order No.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>
97052.W2060	6	400	180	570	180
97052.W2070	7	500	180	670	180



# Chip Hooks

full plastic guard - long handle

## Spanners & Hook Spanners



**97053**

SPANNERS & HOOK SPANNERS

### Material

Hook: steel.  
Guard: plastic.  
Handle: wood.

in and around workpieces for mills and lathes. Extended hook minimises risk to operator.

machinery. If in doubt shut down machine.

### Technical Notes

Excellent for removing swarf or chips from

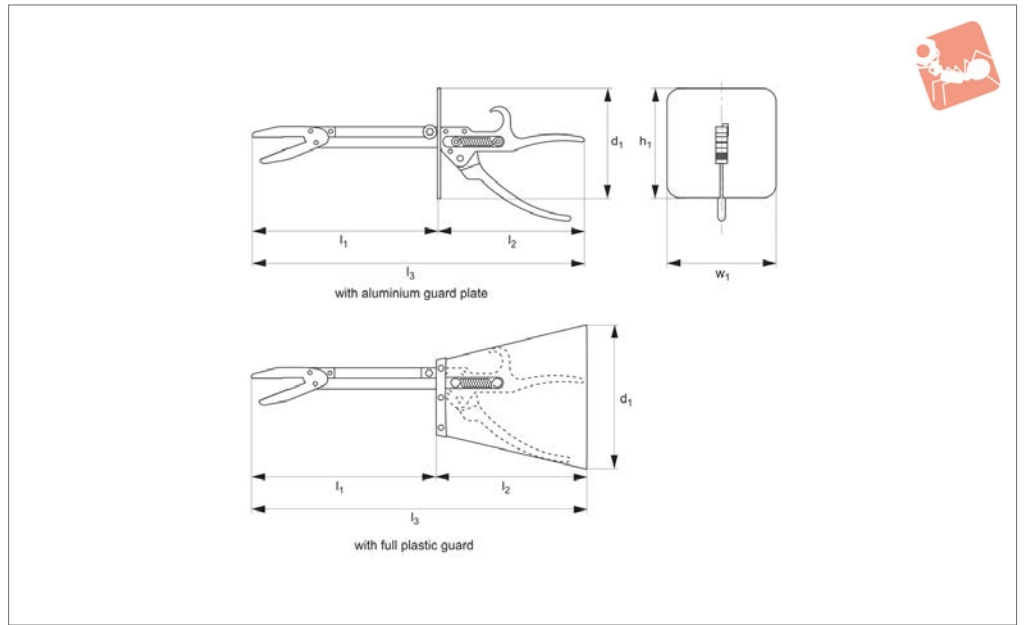
### Important Notes

Take all necessary safety precautions when using this product in or around working

Order No.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>
97053.W2080	7	500	320	820	180
97053.W2090	8	800	320	1120	180
97053.W2100	8	1000	320	1320	180



97060



**Material**

Handle and cutter: steel.  
Guard: plastic or aluminium.

**Important Notes**

Take all necessary safety precautions when using this product in or around working

machinery. If in doubt shut down machinery.

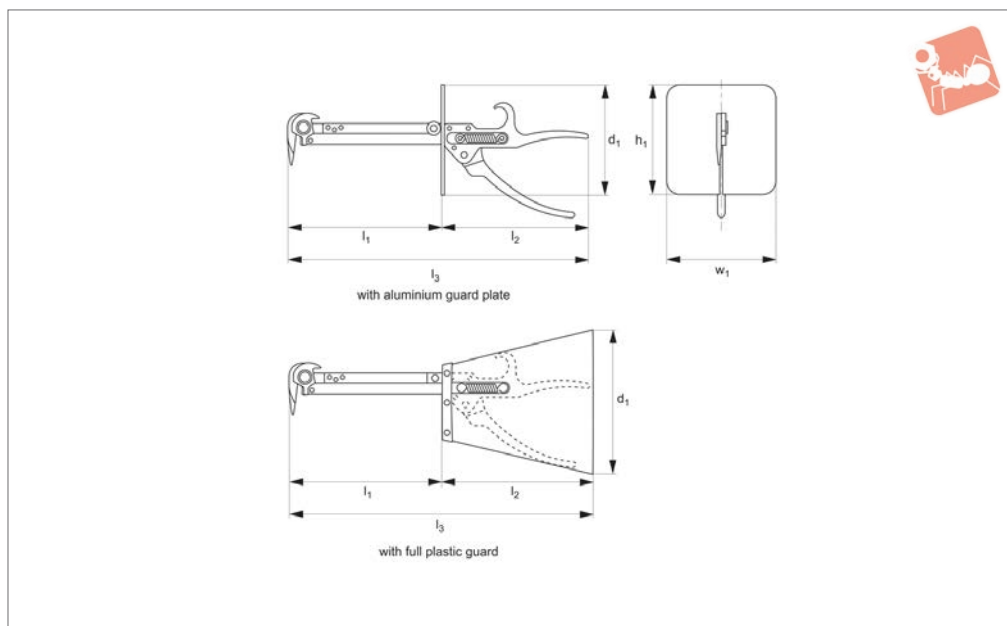
Order No.	Guard material	d <sub>1</sub>	h <sub>1</sub> x w <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>
97060.W1025	Aluminium	-	85x85	175	155	330
97060.W1035	Plastic	180	-	175	180	355





# Chip Cutter and Hook with hand guard

## Spanners & Hook Spanners



**97061**

SPANNERS & HOOK SPANNERS

### Material

Handle and cutter: steel.  
Guard: plastic or aluminium.

### Technical Notes

Max. capacity of cutter is clip section of

1,5mm<sup>2</sup> (e.g. 0,25mm x 6mm).

### Tips

Part no. 97061 has added benefit of hook as well as cutter for improved removal of difficult to reach swarf/chips.

### Important Notes

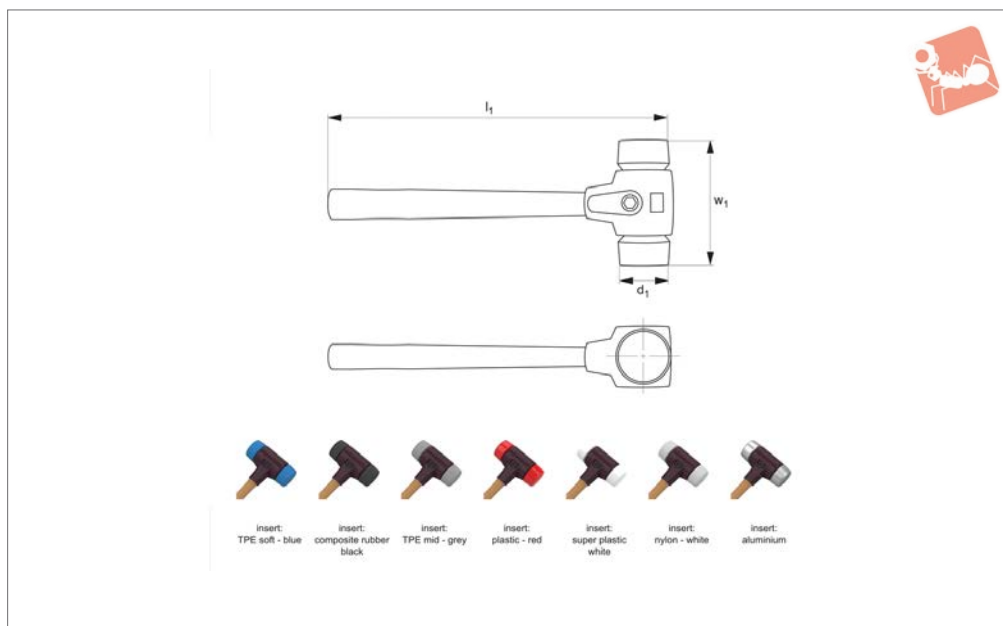
Take all necessary safety precautions when using this product in or around working machinery. If in doubt shut down machinery.

Order No.	Guard material	d <sub>1</sub>	h <sub>1</sub> x w <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>
97061.W1050	Aluminium	-	85x85	165	155	320
97061.W1060	Plastic	180	-	165	180	345





**98001**



### Material

Handle: wood.  
Housing: cast iron.  
Inserts: see table.

### Technical Notes

For full details of inserts see part no.

98004.

### Tips

Simplex mallets are a flexible modular system with replaceable handle, housing and inserts. Suitable replacement items for Simplex Mallet 98001 are;

- handle no. 98003
- housing no. 98002
- inserts no. 98004

Order No.	Inserts	$\varnothing d_1$	$w_1$	$l_1$	Weight g
98001.W0130	TPE Soft - Blue	30	90	300	345
98001.W0140	TPE Soft - Blue	40	110	330	620
98001.W0150	TPE Soft - Blue	50	135	350	1170
98001.W0160	TPE Soft - Blue	60	145	405	1530
98001.W0230	Composite Rubber - Black	30	90	300	340
98001.W0240	Composite Rubber - Black	40	110	330	650
98001.W0250	Composite Rubber - Black	50	135	350	1170
98001.W0260	Composite Rubber - Black	60	145	405	1600
98001.W0280	Composite Rubber - Black	80	175	490	2950
98001.W0330	TPE - Mid Grey	30	90	300	335
98001.W0340	TPE - Mid Grey	40	110	330	600
98001.W0350	TPE - Mid Grey	50	135	350	1070
98001.W0360	TPE - Mid Grey	60	145	405	1420
98001.W0430	Plastic - Red	30	90	300	345
98001.W0440	Plastic - Red	40	110	330	635
98001.W0450	Plastic - Red	50	135	350	1120
98001.W0460	Plastic - Red	60	145	405	1520
98001.W0530	Superplastic - White	30	90	300	320
98001.W0540	Superplastic - White	40	110	330	610
98001.W0550	Superplastic - White	50	135	350	1040
98001.W0560	Superplastic - White	60	145	405	1440
98001.W0580	Superplastic - White	80	175	490	2660
98001.W0630	Nylon - White	30	90	300	340
98001.W0640	Nylon - White	40	110	330	650
98001.W0650	Nylon - White	50	135	350	1130
98001.W0660	Nylon - White	60	145	405	1500
98001.W0680	Nylon - White	80	175	490	2880
98001.W0730	Aluminium	30	90	300	400
98001.W0740	Aluminium	40	110	330	750
98001.W0750	Aluminium	50	135	350	1380
98001.W0760	Aluminium	60	145	405	1950



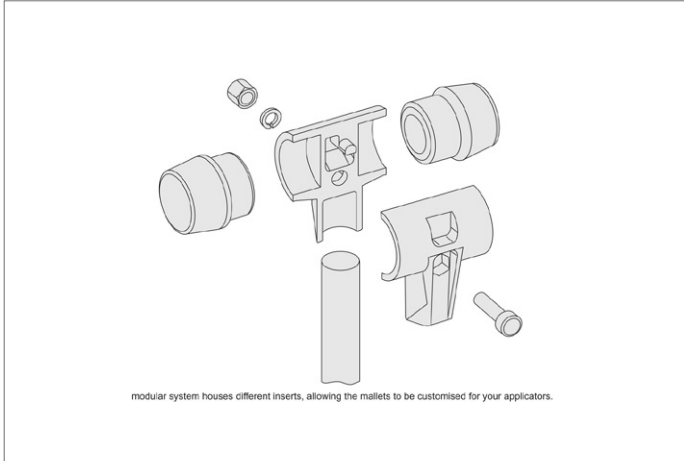
# Simplex Mallets - Complete

cast iron housing - wooden handle



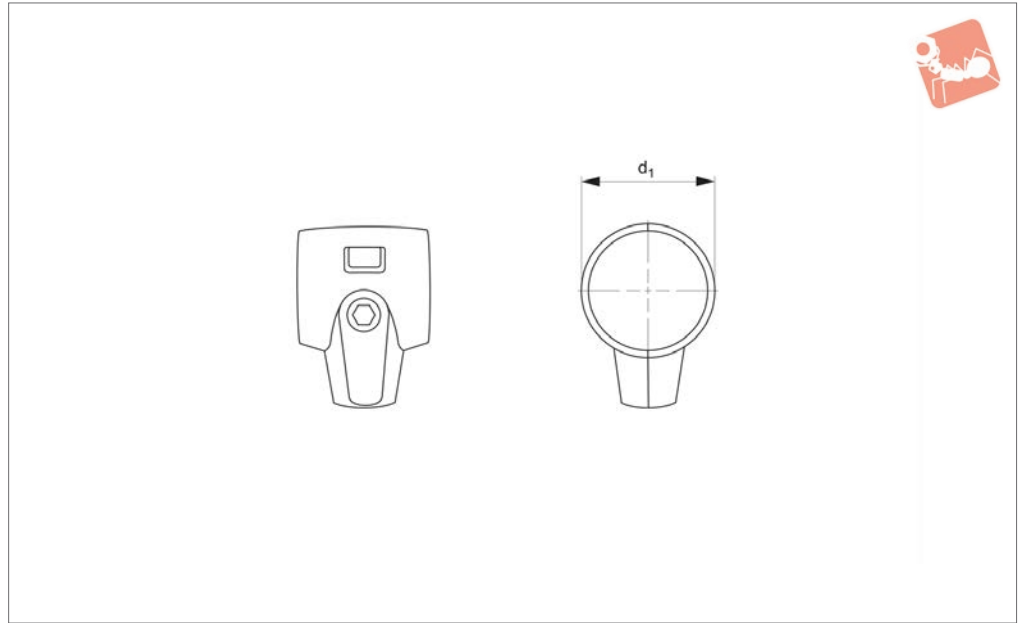
## Mallets & Hammers

Order No.	Inserts	$\varnothing d_1$	$w_1$	$l_1$	Weight g
98001.W0780	Aluminium	80	175	490	3860





**98002**



### Material

Cast iron housing (two parts to complete the mallet head housing).

Order No.	For mallet head dia. $d_1$	$d_1$
98002.W0131	30	30
98002.W0141	40	40
98002.W0151	50	50
98002.W0161	60	60
98002.W0181	80	80
98002.W0191	100	100
98002.W1101	125/140	125/140

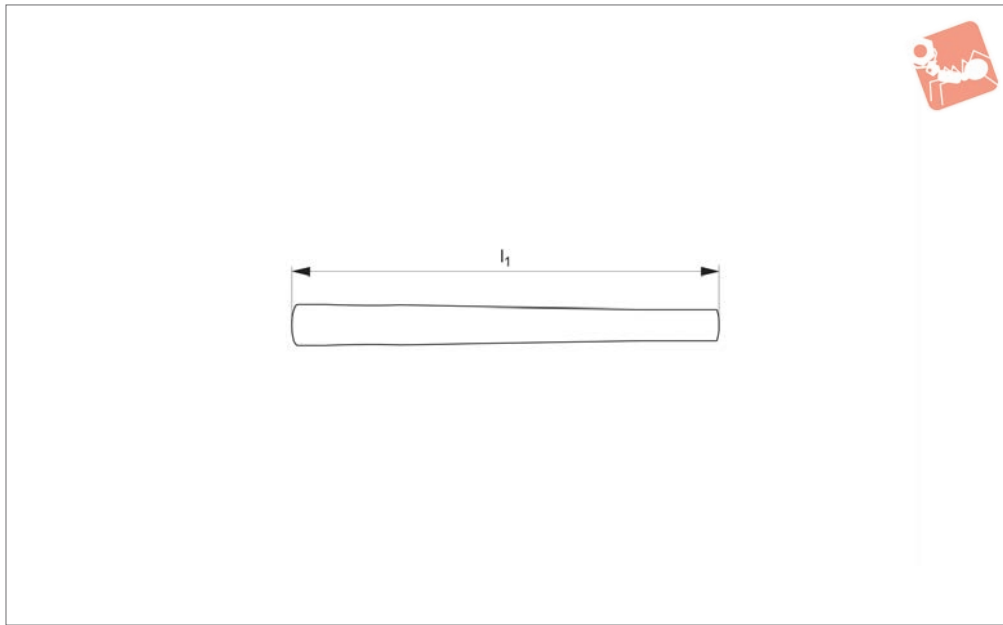


# Handle - for Simplex Mallets

wood - for no. 98001 and 98201



## Mallets & Hammers



**98003**

MALLETS & HAMMERS

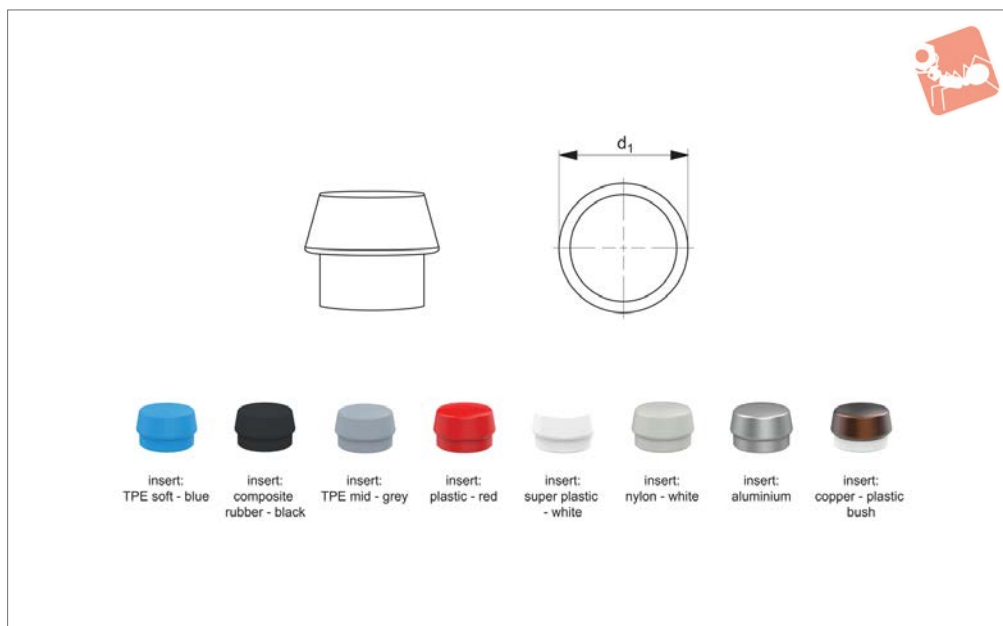
### Material

Wood.

Order No.	For mallet head dia. $d_1$	$l_1$
98003.W0231	30	260
98003.W0241	40	275
98003.W0251	50	310
98003.W0261	60	335
98003.W0281	80	395



## 98004



### Important Notes

Aluminium inserts, part nos. 98004.W0733-W0788 not for use in light alloy

housings part no. 98022.  
 Copper inserts part no. 98004.W0833 and W0844 only for use in reinforced housing

part no. 98002.

Order No.	For mallet head dia. $d_1$	Insert type
98004.W0133	30	TPE Soft - Blue
98004.W0144	40	TPE Soft - Blue
98004.W0155	50	TPE Soft - Blue
98004.W0166	60	TPE Soft - Blue
98004.W0233	30	Composite Rubber - Black
98004.W0244	40	Composite Rubber - Black
98004.W0255	50	Composite Rubber - Black
98004.W0266	60	Composite Rubber - Black
98004.W0288	80	Composite Rubber - Black
98004.W0333	30	TPE Mid - Grey
98004.W0344	40	TPE Mid - Grey
98004.W0355	50	TPE Mid - Grey
98004.W0366	60	TPE Mid - Grey
98004.W0433	30	Plastic - Red
98004.W0444	40	Plastic - Red
98004.W0455	50	Plastic - Red
98004.W0466	60	Plastic - Red
98004.W0533	30	Superplastic - White
98004.W0544	40	Superplastic - White
98004.W0555	50	Superplastic - White
98004.W0566	60	Superplastic - White
98004.W0588	80	Superplastic - White
98004.W0600	100	Superplastic - White
98004.W0611	125	Superplastic - White
98004.W0622	140	Superplastic - White
98004.W0633	30	Nylon - White
98004.W0644	40	Nylon - White
98004.W0655	50	Nylon - White
98004.W0666	60	Nylon - White
98004.W0688	80	Nylon - White
98004.W0733	30	Aluminium
98004.W0744	40	Aluminium
98004.W0755	50	Aluminium
98004.W0766	60	Aluminium
98004.W0788	80	Aluminium



# Inserts - for Simplex Mallets

for no. 98001, 98103 & 98101

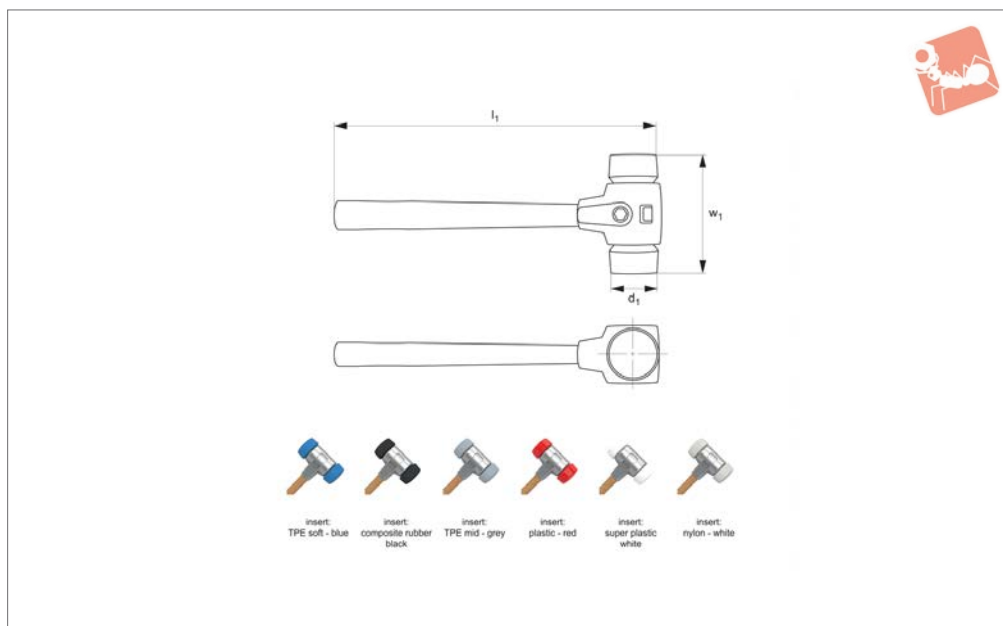


## Mallets & Hammers

Order No.	For mallet head dia. $d_1$	Insert type
98004.W0833	30	Copper - With Plastic Bush
98004.W0844	40	Copper - With Plastic Bush



**98021**



### Material

Handle: wood.  
Housing: light alloy.  
Inserts: see table.

### Technical Notes

For full range of inserts see part no. 98004.

### Tips

Simplex mallets are a flexible modular system with replaceable handle, housing and inserts. Suitable replacement items for Simplex Mallet 98021 are:

- handle no. 98003

- housing no. 98022  
- inserts no. 98004

### Important Notes

Soft metal inserts (nos. 98004.W0733-W0788) must not be used in light alloy housing mallets.

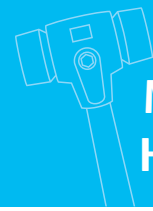
Order No.	Insert type	Ø d <sub>1</sub>	w <sub>1</sub>	l <sub>1</sub>	Weight g
98021.W0130	TPE - Soft Blue	30	90	300	200
98021.W0140	TPE - Soft Blue	40	110	330	360
98021.W0150	TPE - Soft Blue	50	135	350	655
98021.W0160	TPE - Soft Blue	60	145	405	825
98021.W0230	TPE - Rubber	30	90	300	210
98021.W0240	TPE - Rubber	40	110	330	405
98021.W0250	TPE - Rubber	50	135	350	740
98021.W0260	TPE - Rubber	60	145	405	980
98021.W0330	TPE - Mid Grey	30	90	300	205
98021.W0340	TPE - Mid Grey	40	110	330	360
98021.W0350	TPE - Mid Grey	50	135	350	635
98021.W0360	TPE - Mid Grey	60	145	405	825
98021.W0430	Plastic - Red	30	90	300	205
98021.W0440	Plastic - Red	40	110	330	390
98021.W0450	Plastic - Red	50	135	350	635
98021.W0460	Plastic - Red	60	145	405	920
98021.W0530	Superplastic - White	30	90	300	215
98021.W0540	Superplastic - White	40	110	330	360
98021.W0550	Superplastic - White	50	135	350	675
98021.W0560	Superplastic - White	60	145	405	855
98021.W0630	Nylon - White	30	90	300	215
98021.W0640	Nylon - White	40	110	330	395
98021.W0650	Nylon - White	50	135	350	720
98021.W0660	Nylon - White	60	145	405	930



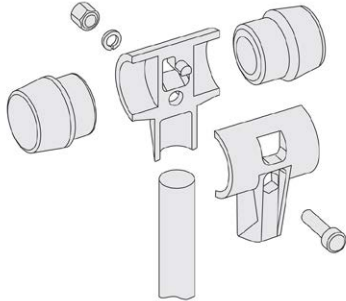


# Simplex Mallets - Complete

light alloy housing - wooden handle



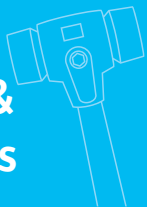
## Mallets & Hammers



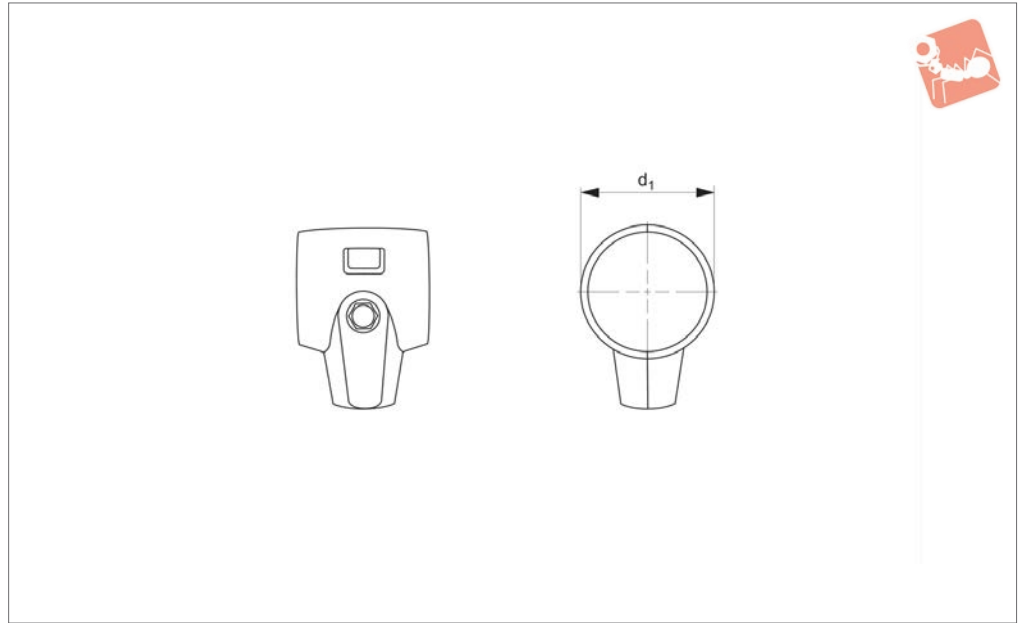
modular system houses different inserts, allowing the mallets to be customised for your applications



MALLETS & HAMMERS



**98022**



**Material**

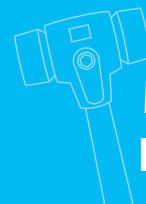
Light alloy housing (two parts).

Order No.	For mallet head dia. $d_1$	$d_1$
98022.W0131	30	30
98022.W0141	40	40
98022.W0151	50	50
98022.W0161	60	60

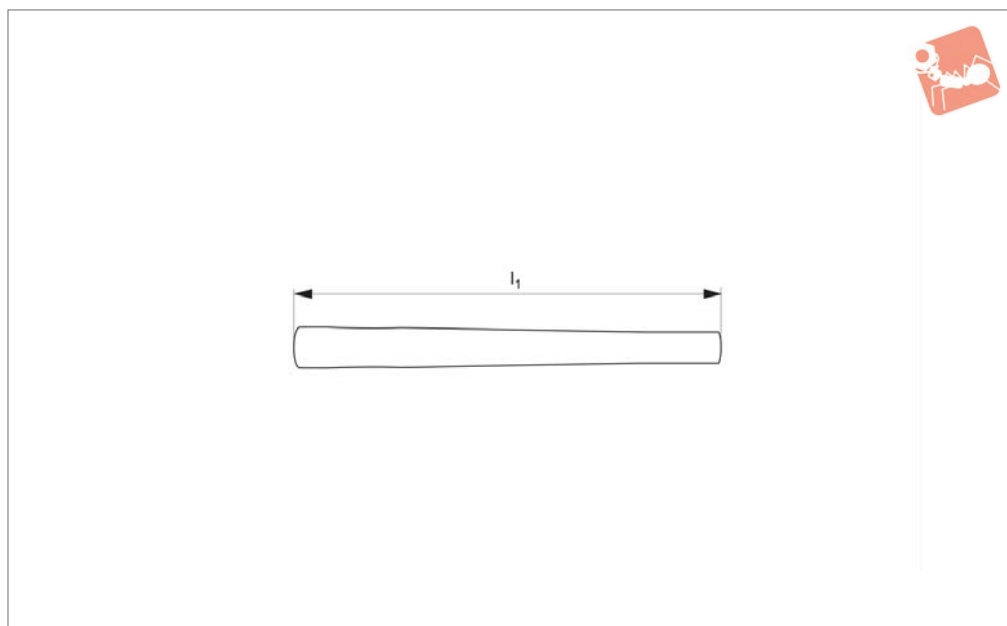


# Simplex Mallets

wooden handle for no. 98021



## Mallets & Hammers



**98023**

MALLETS & HAMMERS

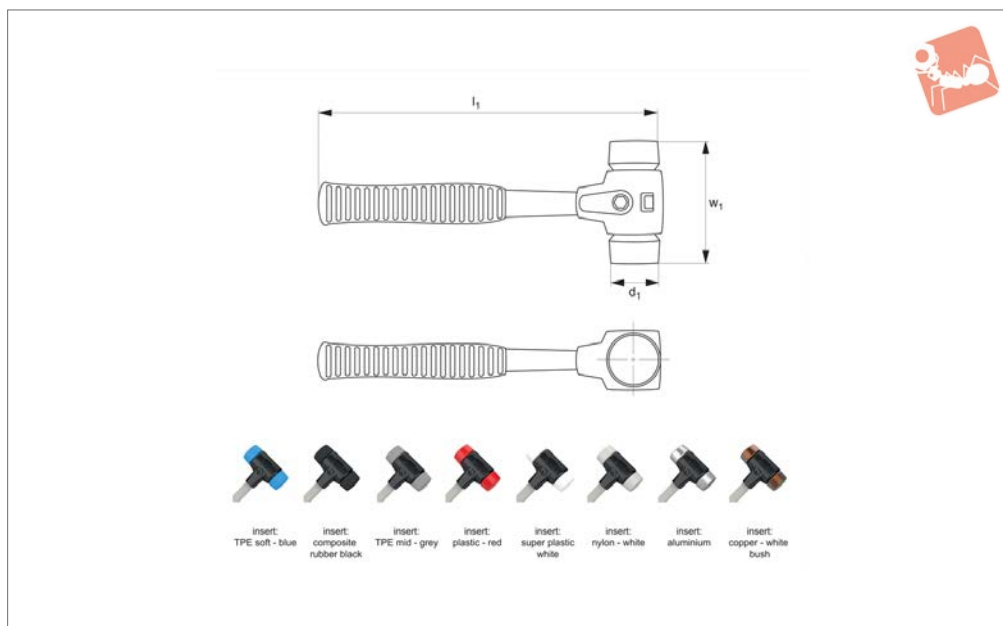
### Material

Wooden handle.

Order No.	For mallet head dia. $d_1$	$l_1$
98023.W0231	30	260
98023.W0241	40	270
98023.W0251	50	310
98023.W0261	60	335
98023.W0281	80	395



### 98101



#### Material

Handle: fibreglass.  
Housing: reinforced cast iron.  
Inserts: see table.

#### Technical Notes

For full details of inserts see part no.

98004.

#### Tips

Simplex mallets are a flexible modular system with replaceable handle, housing and inserts. Suitable replacement items for Simplex Mallet 98101 are;

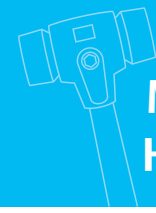
- handle no. 98103
- housing no. 98102
- inserts no. 98004

Order No.	Inserts	$\varnothing d_1$	$w_1$	$l_1$	Weight g
98101.W0130	TPE Soft - Blue	30	90	300	450
98101.W0140	TPE Soft - Blue	40	110	330	850
98101.W0150	TPE Soft - Blue	50	135	330	1190
98101.W0160	TPE Soft - Blue	60	145	410	1710
98101.W0230	Composite Rubber - Black	30	90	300	460
98101.W0240	Composite Rubber - Black	40	110	330	890
98101.W0250	Composite Rubber - Black	50	135	330	1250
98101.W0260	Composite Rubber - Black	60	145	410	1830
98101.W0280	Composite Rubber - Black	80	175	490	3420
98101.W0330	TPE Mid - Grey	30	90	300	450
98101.W0340	TPE Mid - Grey	40	110	330	850
98101.W0350	TPE Mid - Grey	50	135	330	1170
98101.W0360	TPE Mid - Grey	60	145	410	1710
98101.W0430	Plastic - Red	30	90	300	450
98101.W0440	Plastic - Red	40	110	330	870
98101.W0450	Plastic - Red	50	135	330	1230
98101.W0460	Plastic - Red	60	145	410	1800
98101.W0530	Superplastic - White	30	90	300	450
98101.W0540	Superplastic - White	40	110	330	860
98101.W0550	Superplastic - White	50	135	330	1200
98101.W0560	Superplastic - White	60	145	410	1750
98101.W0580	Superplastic - White	80	175	490	3240
98101.W0630	Nylon - White	30	90	300	460
98101.W0640	Nylon - White	40	110	330	880
98101.W0650	Nylon - White	50	135	330	1240
98101.W0660	Nylon - White	60	145	410	1820
98101.W0680	Nylon - White	80	175	490	3390
98101.W0730	Aluminium	30	90	300	520
98101.W0740	Aluminium	40	110	330	1000
98101.W0750	Aluminium	50	135	330	1490
98101.W0760	Aluminium	60	145	410	2240



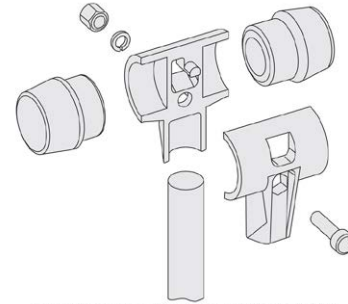
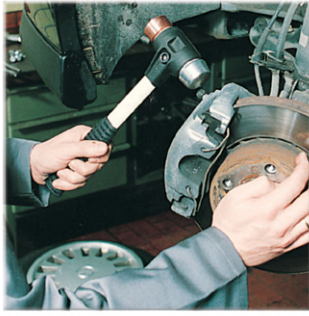
# Simplex Mallets - Complete

reinforced cast iron housing - fibreglass handle

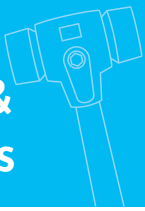


## Mallets & Hammers

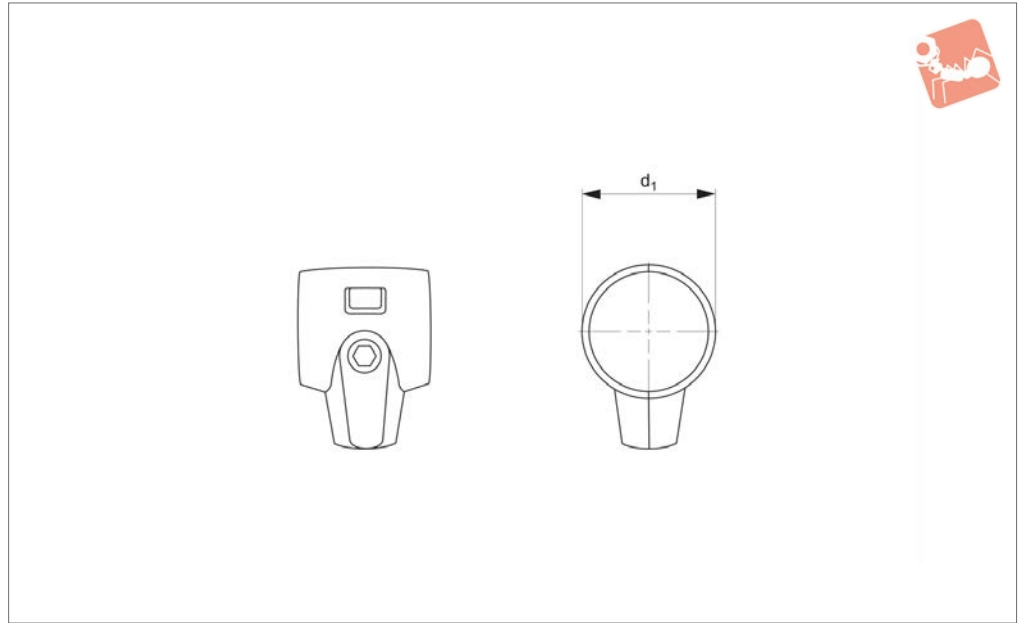
Order No.	Inserts	$\varnothing d_1$	$w_1$	$l_1$	Weight g
<b>98101.W0780</b>	Aluminium	80	175	490	4290
<b>98101.W0830</b>	Copper - With Bush	30	90	300	690
<b>98101.W0840</b>	Copper - With Bush	40	110	330	1410



modular system houses different inserts, allowing the mallets to be customised for your applications



**98102**



**Material**

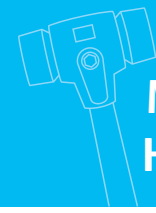
Reinforced housing (two parts, malleable cast iron).

Order No.	For mallet head dia. $d_1$	$d_1$
98102.W0131	30	30
98102.W0141	40	40
98102.W0151	50	50
98102.W0161	60	60
98102.W0181	80	80

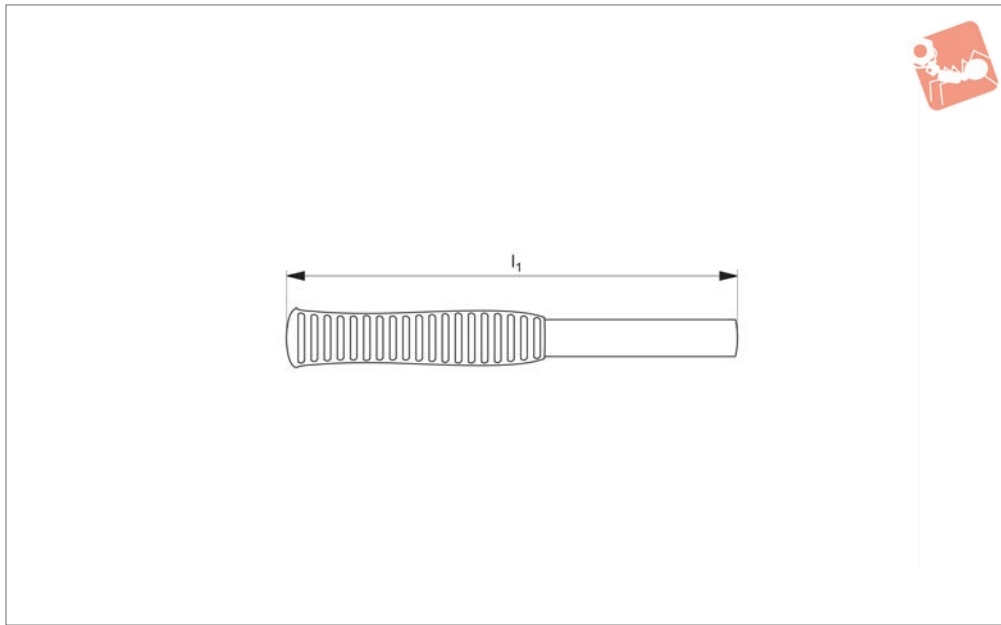


# Handle - for Simplex Mallets

fibreglass - for no. 98101



## Mallets & Hammers



**98103**

MALLETS & HAMMERS

### Material

Handle: fibreglass.

Grip: rubber.

Order No.	For mallet head $d_1$	$l_1$
98103.W0231	30	260
98103.W0241	40/50	267
98103.W0261	60	340
98103.W0281	80	400
98103.W0282	80	700



Application Selection Chart

MALLETS & HAMMERS

**Application selection chart**

TPE-soft	Composite rubber	TPE-mid	Plastic	Super plastic	Nylon	Alu	Copper	98301 wood	98301 steel	98301 fibre	98310	98321	98401	98330
Soft	Med	Med	Hard	Med	Hard	Hard	Hard							
Range of inserts for Simplex mallets 98001 to 98224								Range of mallet handle types						

**Construction applications**

Paving		•	•		•										
Floor tiling	•		•												
Curbstone setting / Masonry work		•			•										
Concrete form set-up		•		•											
Scaffold construction		•		•	•	•									
Tent and hall construction					•	•		•							
Gardening and landscaping		•			•										
Home construction		•	•												

**Metal-working industry applications**

Automotive assembly and repair work				•	•	•	•	•	•	•	•	•	•	•	•
Positioning of workpieces in a vice								•	•	•	•	•	•		
Straightening work						•		•	•	•	•				
Joining of workpieces						•		•	•	•	•			•	•
Repair and maintenance work				•			•	•	•	•	•			•	•
Car body work				•	•		•	•	•	•	•	•	•	•	•
Sheet metal working				•	•	•		•	•	•	•	•	•		•
Dent removal	•	•		•	•	•					•	•	•	•	•
Housing assembly					•	•		•	•	•		•	•	•	•
Mould construction						•	•								•
Assembly of sharp-edged workpieces					•	•		•	•	•					•

**Wood-working applications**

Furniture assembly	•		•										•		•
Window and door construction	•		•										•		•
Prefabricated house construction		•													
Joiner's work	•		•										•		•
Carpenter's work		•													
Floor parqueting / laminating													•		

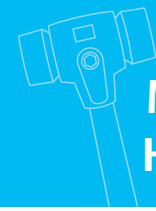
**Agriculture and forestry applications**

Fence construction		•			•			•							
Wood splitting with wedge					•			•							
Maintenance and repair work on agricultural machinery						•		•							•

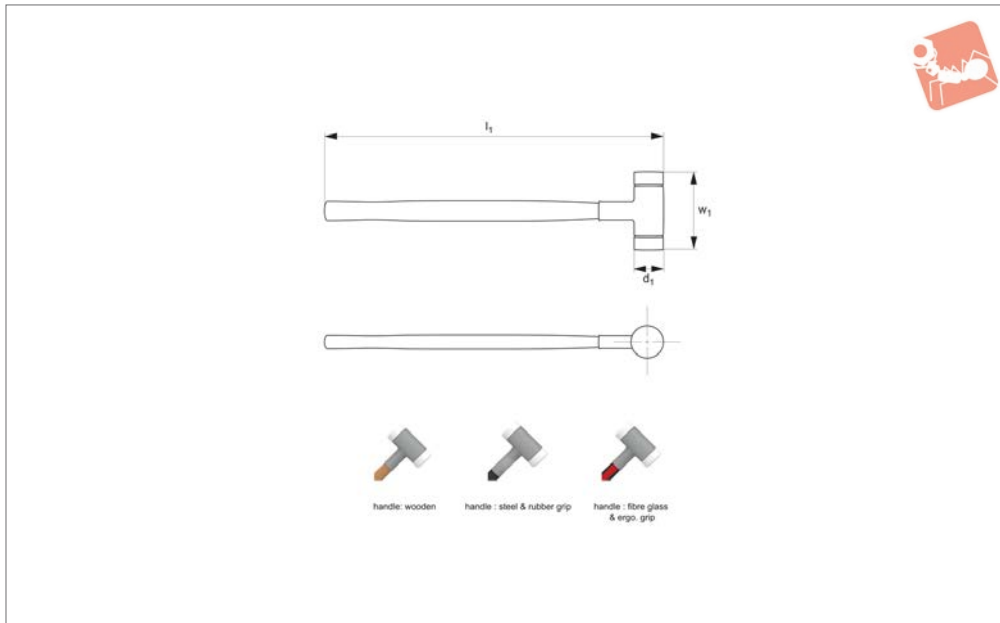




# Non-Rebound Mallets - Complete with nylon inserts



## Mallets & Hammers



**98301**

MALLETS & HAMMERS

### Material

Housing: steel, shot filled.  
 Inserts: nylon, made from extruded tube material.  
 Handle: wood, fibreglass or steel. Steel and fibreglass handles include rubber grip.

### Technical Notes

Shot filled housing results in a non-rebound action and assists in full transmission of impact force.  
 Inserts are replaceable.

### Tips

Both handle and inserts can be replaced.  
 For replacement items see;  
 - handle no. 98302  
 - inserts no. 98303

Order No.	Handle type	Ø d <sub>1</sub>	w <sub>1</sub>	l <sub>1</sub>	Weight g
98301.W0020	Wood	20	105	300	245
98301.W0025	Wood	25	105	305	325
98301.W0030	Wood	30	110	330	460
98301.W0035	Wood	35	110	335	560
98301.W0040	Wood	40	115	360	715
98301.W0045	Wood	45	120	365	830
98301.W0050	Wood	50	120	370	990
98301.W0060	Wood	60	145	370	1705
98301.W0070	Wood	70	150	370	2215
98301.W0080	Wood	80	168	380	3210
98301.W0125	Steel	25	105	270	385
98301.W0130	Steel	30	110	290	585
98301.W0135	Steel	35	110	295	690
98301.W0140	Steel	40	115	300	805
98301.W0145	Steel	45	120	305	935
98301.W0150	Steel	50	120	310	1150
98301.W0160	Steel	60	145	325	1750
98301.W0170	Steel	70	150	335	2250
98301.W0240	Fibreglass	40	116	370	790
98301.W0250	Fibreglass	50	120	380	1040
98301.W0260	Fibreglass	60	145	390	1625

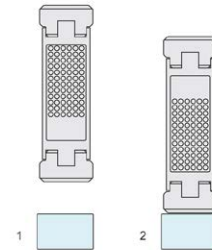
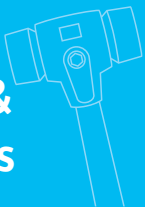


diagram showing the shot-filled housing of the non-rebound mallet

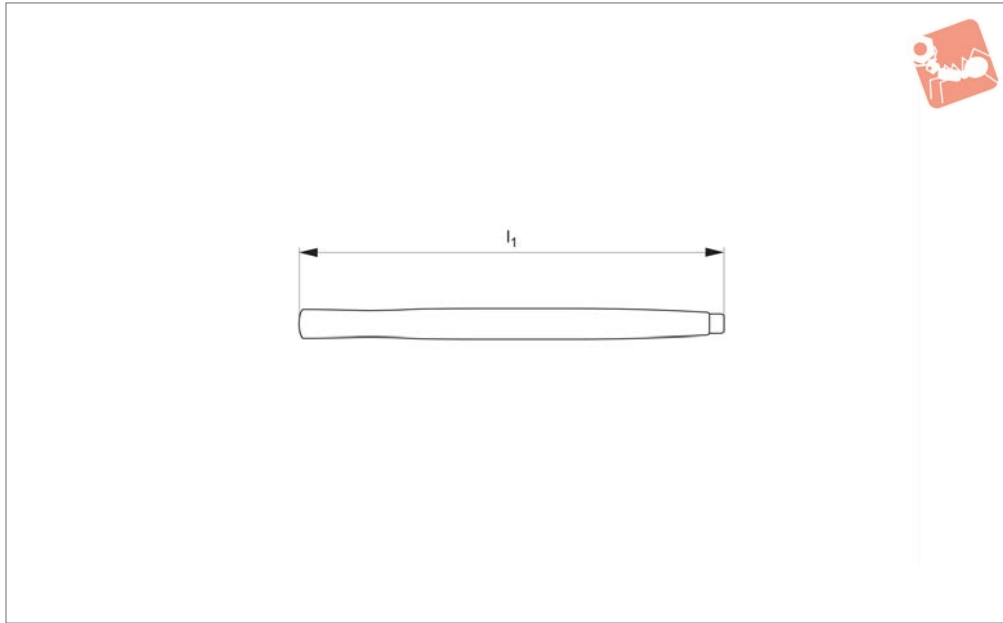


# Handle - for Non-Rebound Mallets

wood - for no. 98301



## Mallets & Hammers



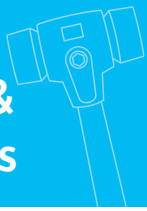
**98302**

MALLETS & HAMMERS

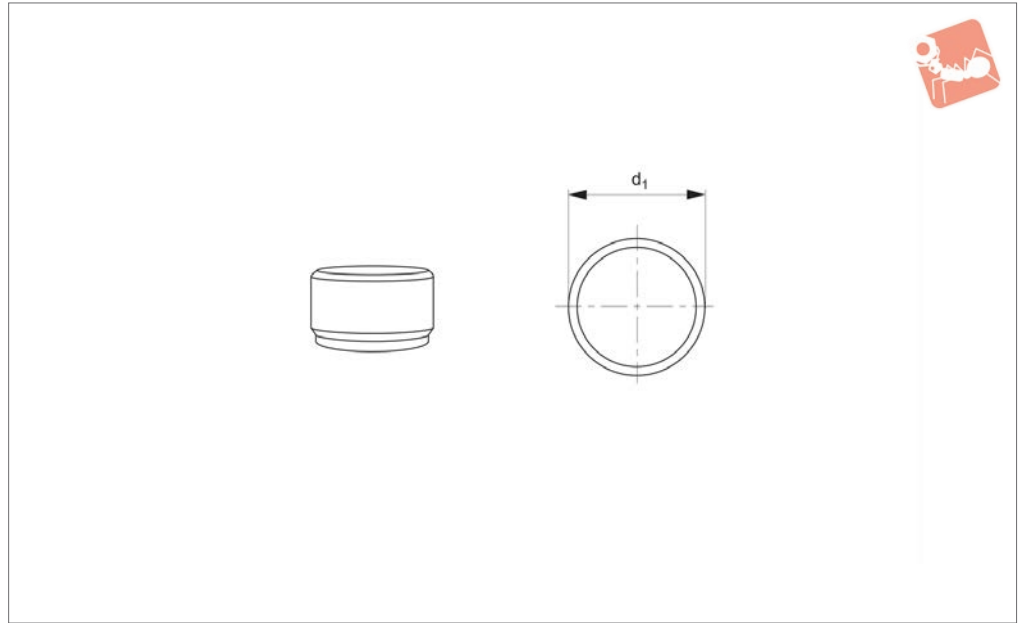
### Material

Hickory wood.

Order No.	For mallet head dia. $d_1$	$l_1$
98302.W0320	20	280
98302.W0325	25	280
98302.W0330	30/35	300
98302.W0340	40/45/50	315
98302.W0360	60/70/80	300



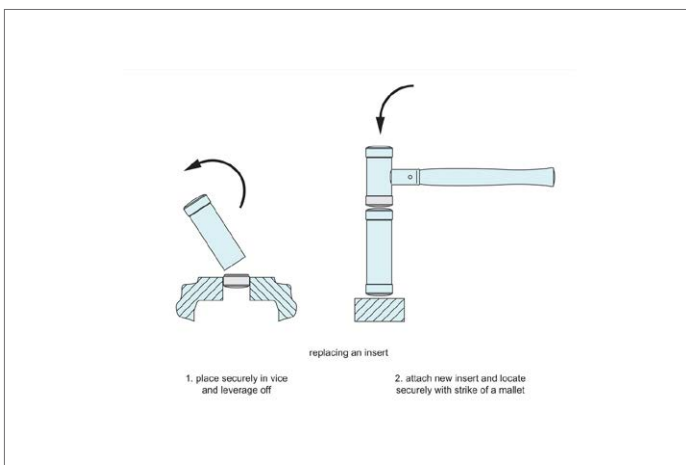
**98303**



### Material

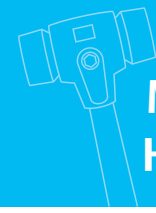
Nylon, white.

Order No.	For mallet head dia. $d_1$	Insert type
98303.W0420	20	Nylon - White
98303.W0425	25	Nylon - White
98303.W0430	30	Nylon - White
98303.W0435	35	Nylon - White
98303.W0440	40	Nylon - White
98303.W0445	45	Nylon - White
98303.W0450	50	Nylon - White
98303.W0460	60	Nylon - White
98303.W0470	70	Nylon - White
98303.W0480	80	Nylon - White

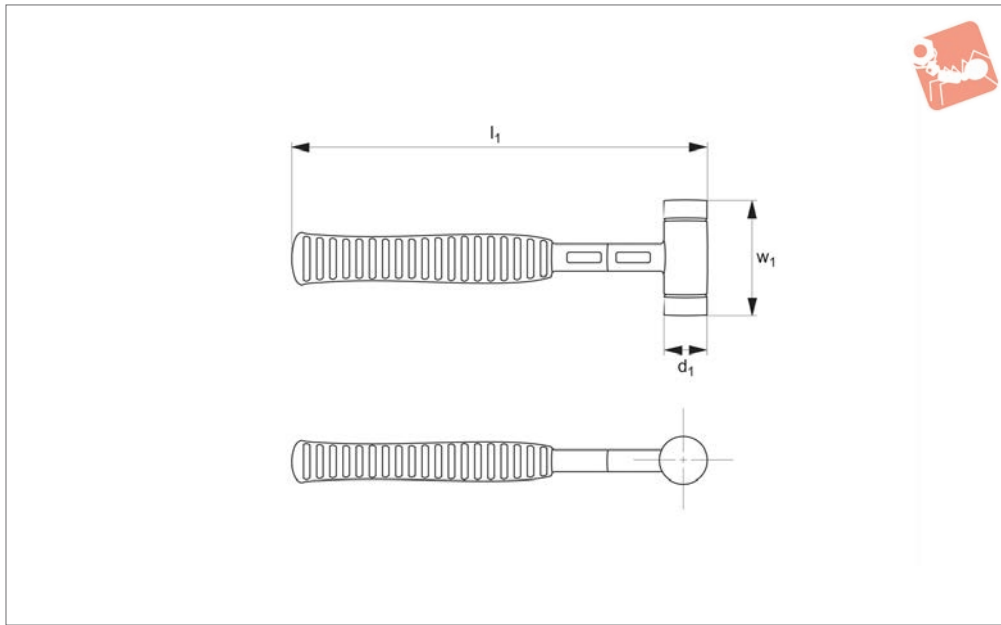




# Non-Rebound Mallets - Complete steel housing and handle



## Mallets & Hammers



**98310**

MALLETS & HAMMERS

### Material

Housing: steel, polyurethane coating.  
Handle: steel, ergonomic rubber grip.

rebound action and assists in full transmission of impact force.

workpieces in vices, sheet-metal working, dent removal.

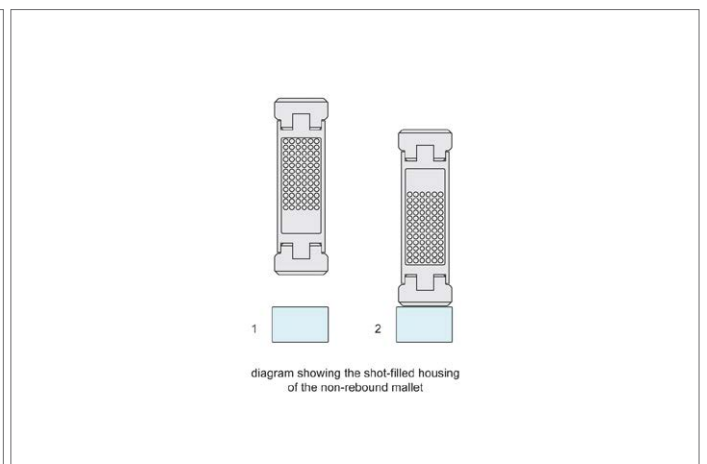
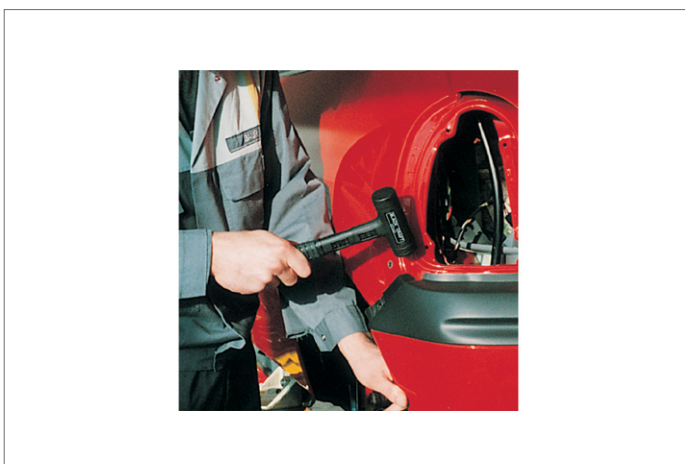
### Technical Notes

Shot filled housing results in a non-

### Tips

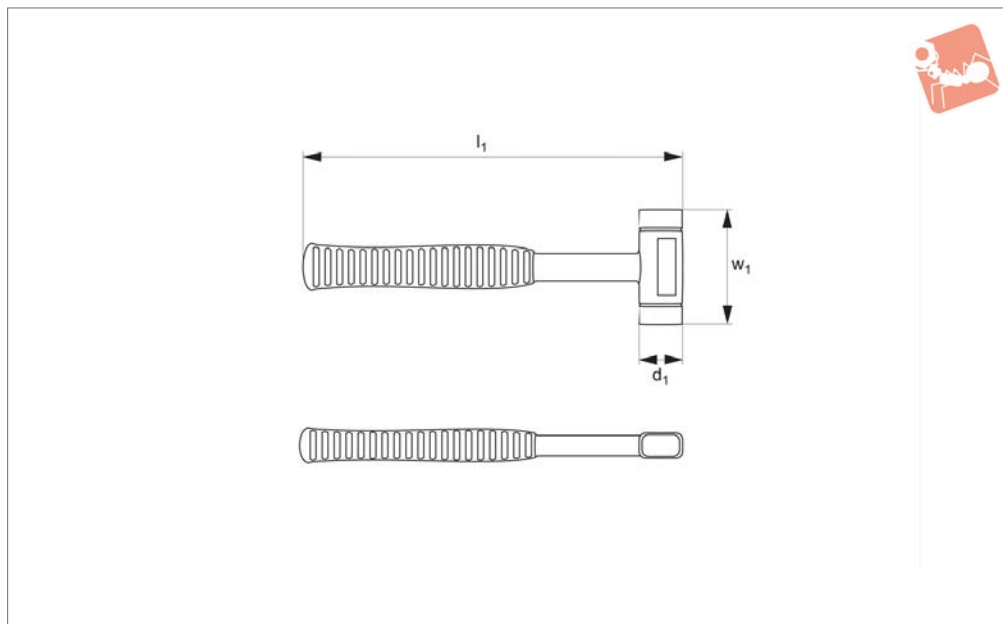
Ideal for uses including: automobile assembly and repair work, positioning of

Order No.	$\varnothing d_1$	$w_1$	$l_1$	Weight g
98310.W0040	40	110	300	640
98310.W0050	50	115	310	900
98310.W0060	60	120	315	1300





**98321**



**Material**

Housing: from cut steel plate.  
 Handle: sheet metal, ergonomic rubber grip.  
 Inserts: polyurethane, yellow. Medium hard.

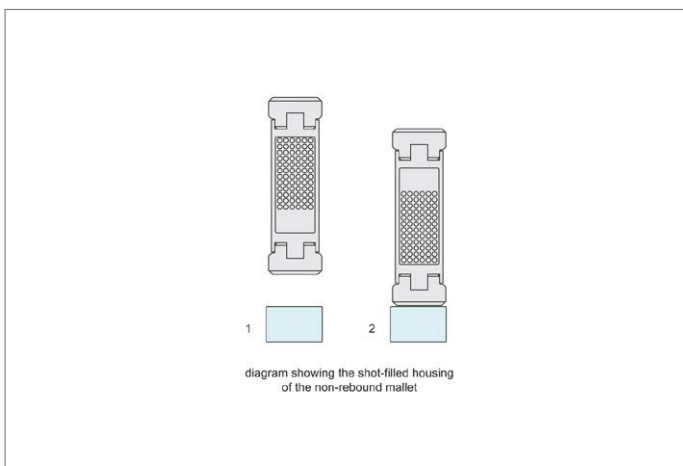
**Technical Notes**

Shot filled housing results in a non-rebound action and assists in full transmission of impact force.  
 Inserts are replaceable.

**Tips**

For replacement inserts see;  
 - inserts no. 98322

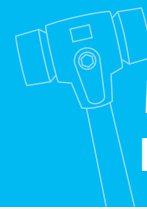
Order No.	$d_1$	$w_1$	$l_1$	Weight g
98321.W0040	30x40	117	300	680



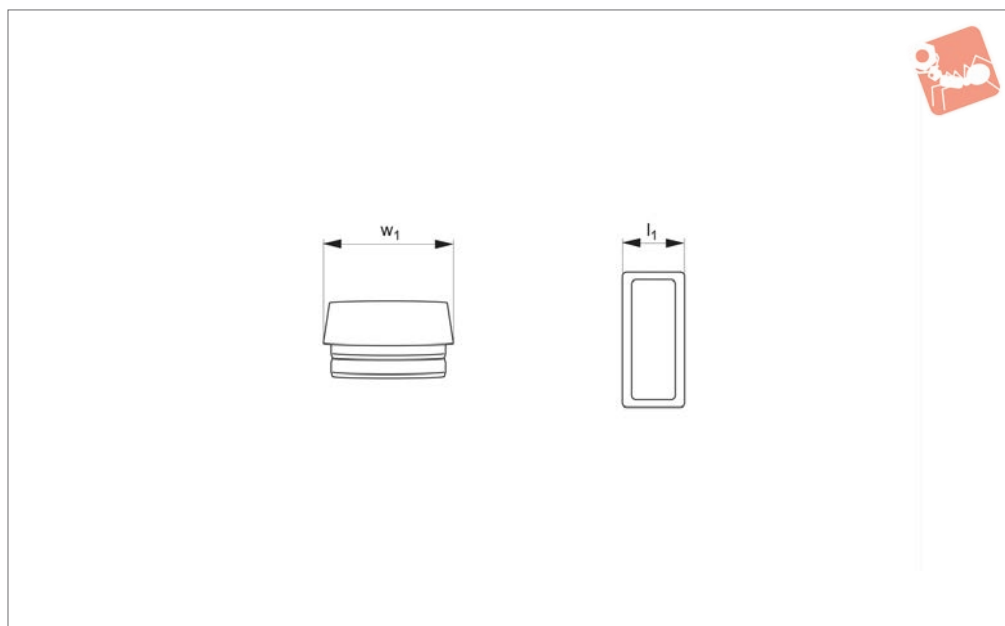


# Inserts - for Non-Rebound Mallets

for no. 98321



## Mallets & Hammers



**98322**

MALLETS & HAMMERS

### Material

Polyurethane, yellow.

### Technical Notes

Replacement inserts for secural mallet, part no. 98321.

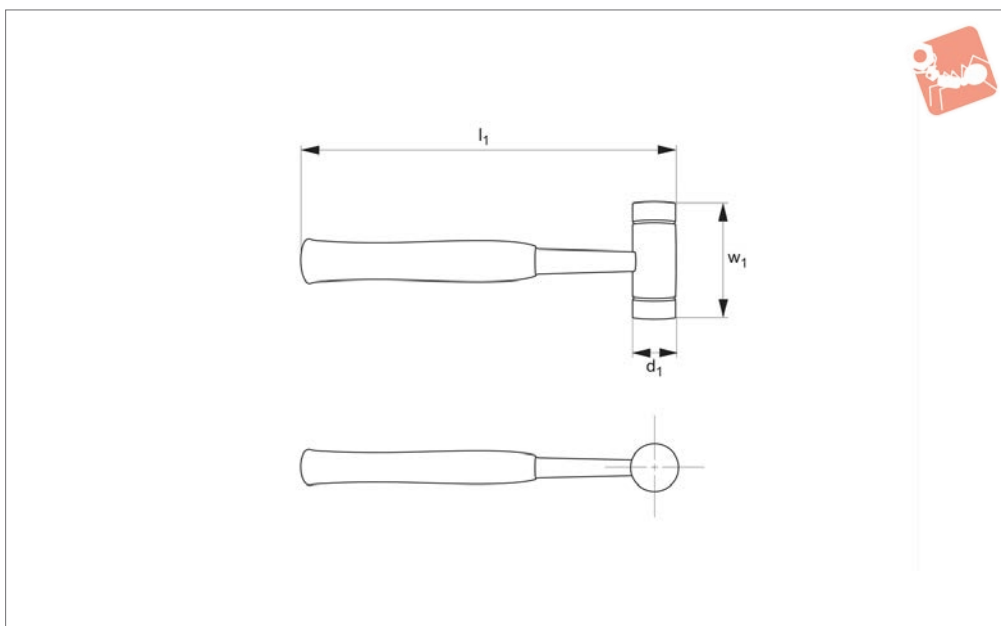
**Order No.**  
98322.W0141

For mallet size  $l_1 \times w_1$   
30x40

Insert type  
Polyurethane



**98330**



### Material

Head: steel.  
 Handle: steel tube, with rubber grip.  
 Hammer faces: 1 x heat treated steel, induction hardened. 1 x nylon, white.

### Technical Notes

Nylon insert can be replaced, see replacement part nos. 98363.W0480 and 98363.W0482.

### Tips

For replacement nylon insert see; - inserts no. 98363

Order No.	$\varnothing d_1$	$w_1$	$l_1$	Weight g
98330.W0030	30	104	290	600
98330.W0035	35	104	295	800





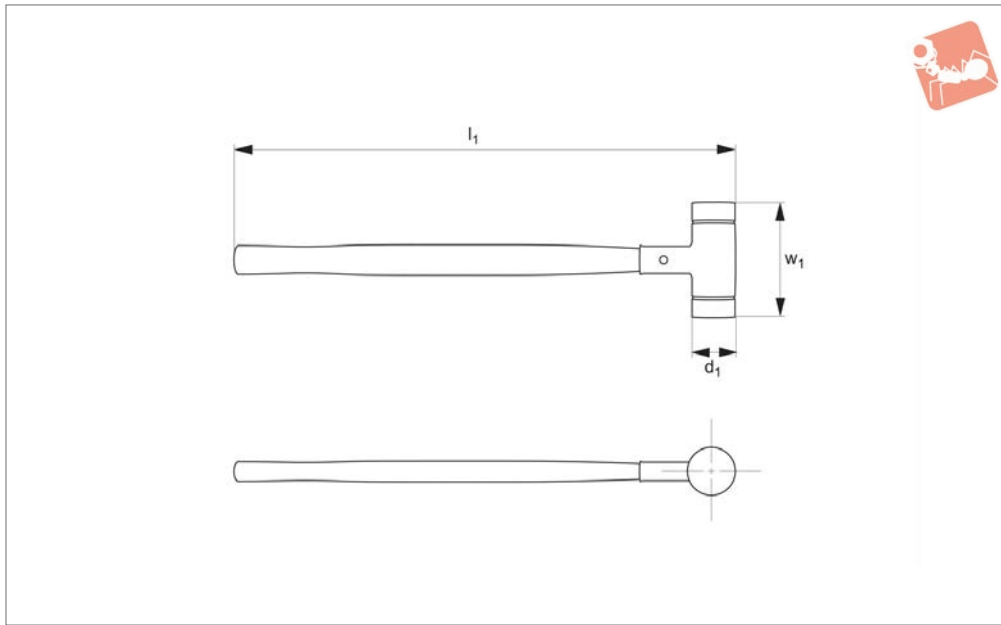


# Non-Rebound Sledge Hammer

steel housing - wooden handle - complete



## Mallets & Hammers



**98361**

MALLETS & HAMMERS

### Material

Housing: steel, shot filled.  
 Inserts: nylon, made from extruded tube material.  
 Handle: wood.

### Technical Notes

Shot filled housing results in a non-

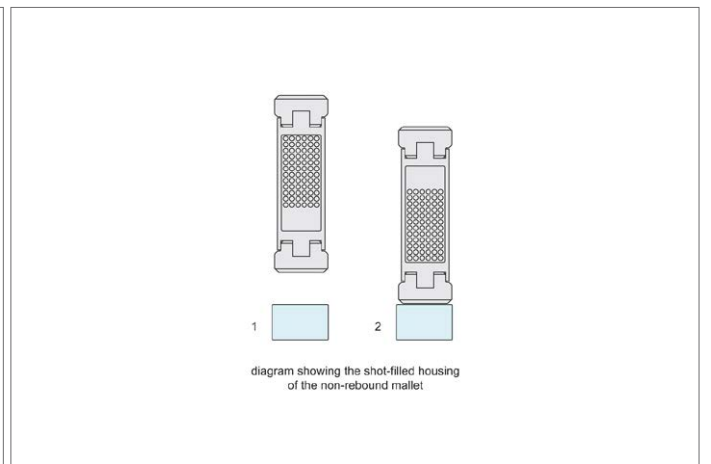
rebound action and assists in full transmission of impact force.  
 Inserts are replaceable see part no. 98363.

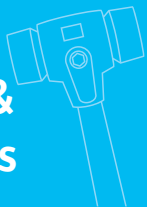
### Tips

Both handle and inserts can be replaced.  
 For replacement items see;  
 - handle no. 98362

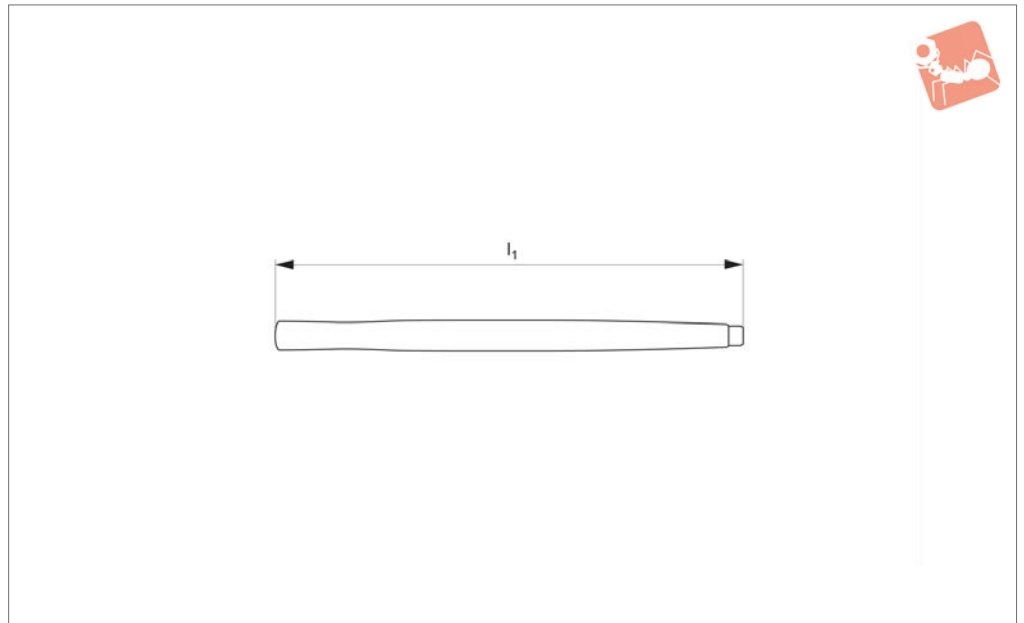
- inserts no. 98363

Order No.	Insert type	$\varnothing d_1$	$w_1$	$l_1$	Weight g
98361.W0080	Nylon	80	200	880	4410
98361.W0100	Nylon	100	210	1000	7050
98361.W0120	Nylon	100	265	1000	9300



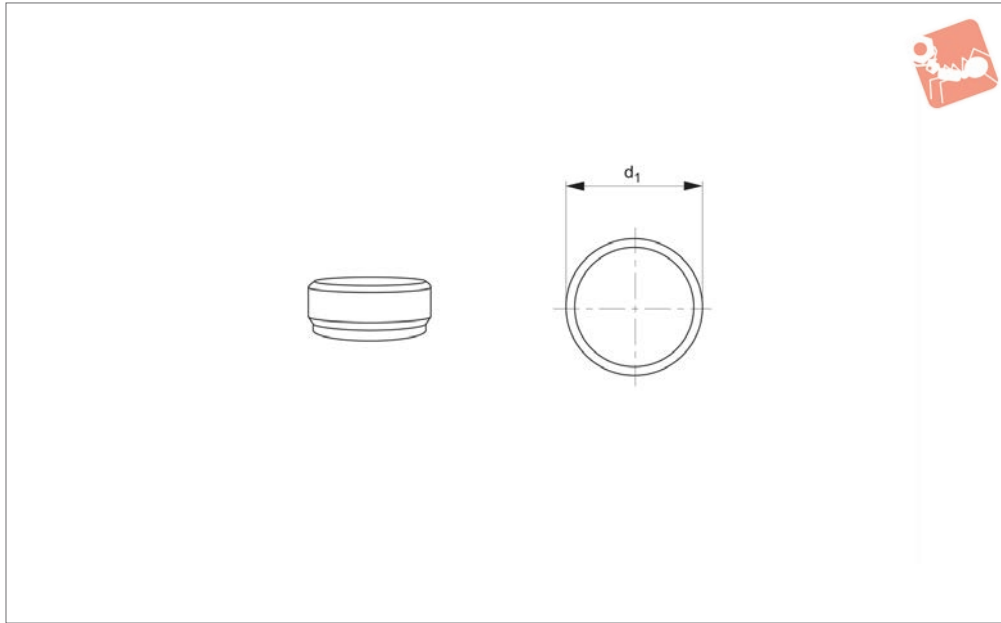
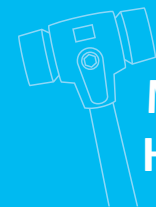


98362



**Material**  
Wood.

Order No.	For mallet head dia. $d_1$	$l_1$
98362.W0381	80	800
98362.W0382	100	900

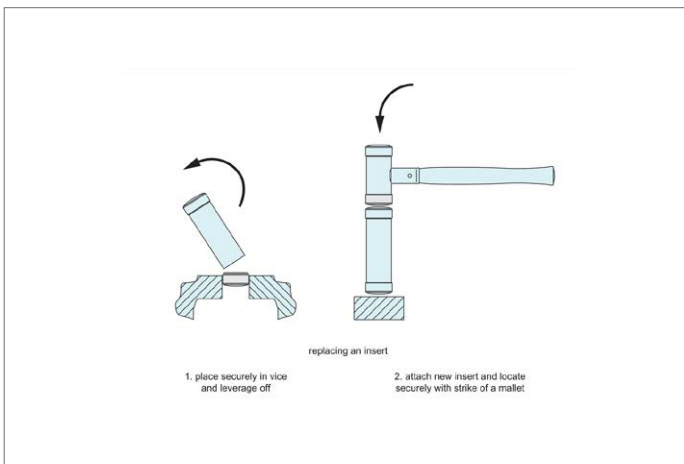


**98363**

MALLETS & HAMMERS

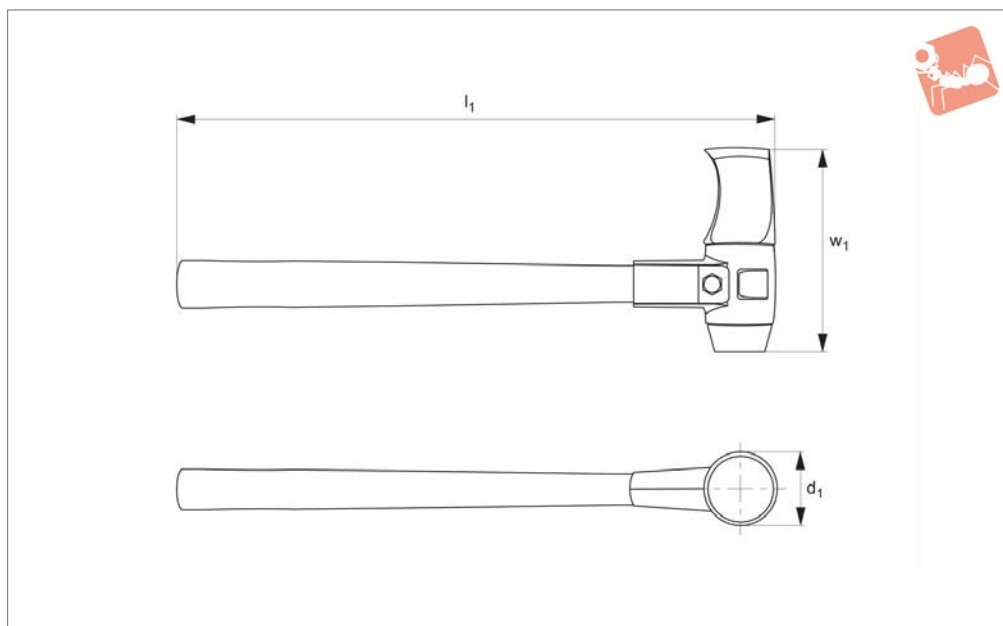
**Material**  
Nylon, white.

Order No.	For mallet head dia. $d_1$	Insert type
98363.W0480	80	Nylon - White
98363.W0482	100	Nylon - White





**98381**



**Material**

Housing: malleable cast iron.  
Handle: hickory wood.

Inserts: superplastic, white. Medium hard.  
Splitting Maul: carbon steel, drop-forged and hardened, with turned nose.

**Technical Notes**

Two tools in one; splitting maul for wood

harvesting and soft face mallet for hammering stakes and fencing posts.

**Tips**

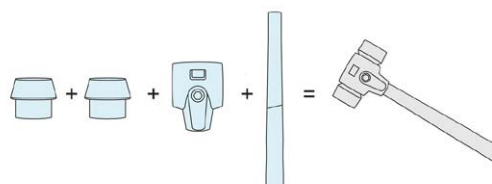
Simplex maul mallets are a flexible modular system with replaceable handle, housing and inserts. Suitable replacement items for Simplex maul mallet 98381 are;  
- handle no. 98383

- housing no. 98382  
- inserts no. 98384

**Important Notes**

Do not strike steel with the splitting insert - can result in splintering and injury. Use only original Wixroyd Simplex Mallet parts when replacing handle or inserts.

Order No.	Inserts	Head $d_1$	$w_1$	$l_1$	Weight g
98381.W0065	Splitting Maul/Superplastic	60	65	900	4100

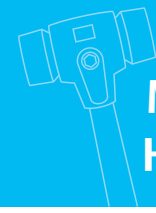


modular splitting maul/mallet system allows this product to be reverted to a traditional mallet if required

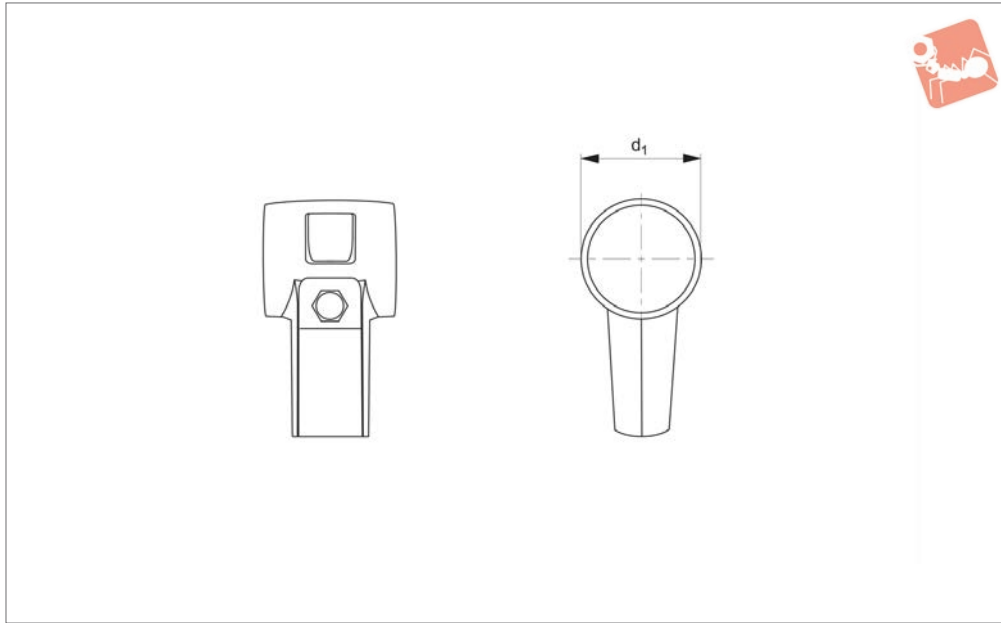


# Housing - for Split Maul Mallets

cast iron - for no. 98381



Mallets & Hammers



**98382**

MALLETS & HAMMERS

**Material**

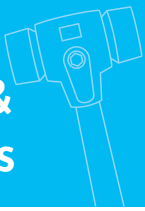
Malleable cast iron housing.

must only be used with spare parts of the Simplex Splitting Maul.

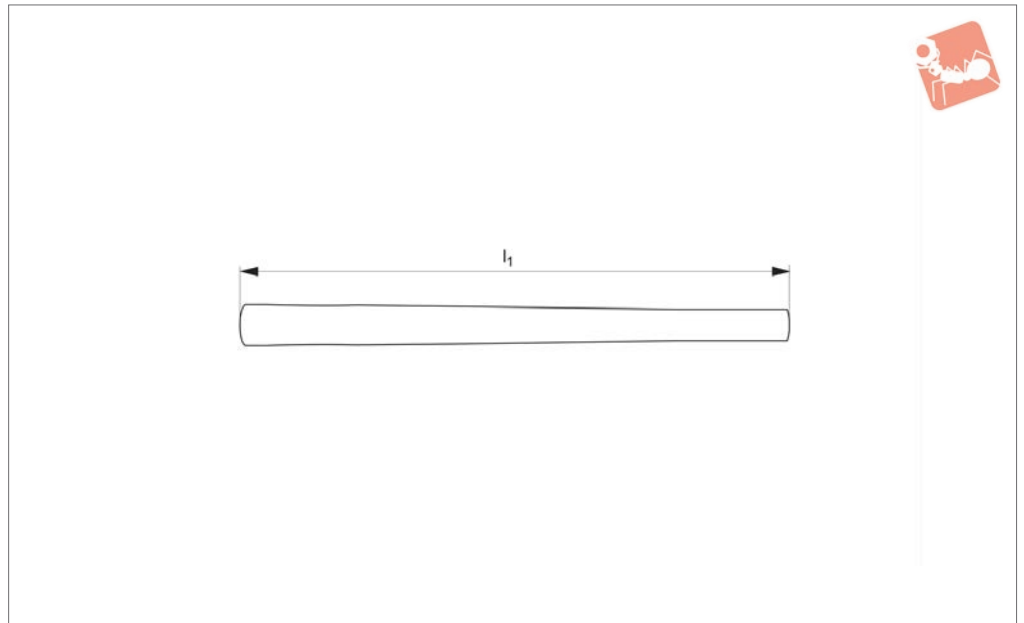
**Important Notes**

Cast iron housing part no. 98382.W0160

Order No.	For mallet head $d_1$	$d_1$	Weight g
98382.W0160	160	160	1900



98383



**Material**  
Hickory wood.

must only be mounted into cast iron housing of part no. 98382.W0160.

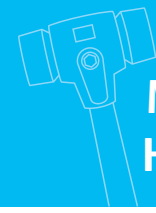
**Important Notes**  
Hickory handles part no. 98383.W0260

Order No.	For mallet head dia. $d_1$	$l_1$	Weight g
98383.W0260	160	850	750

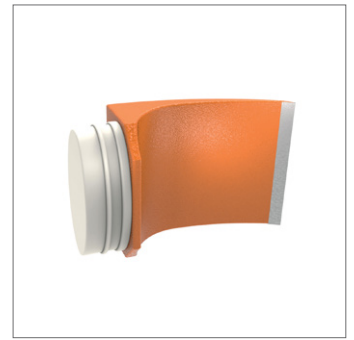
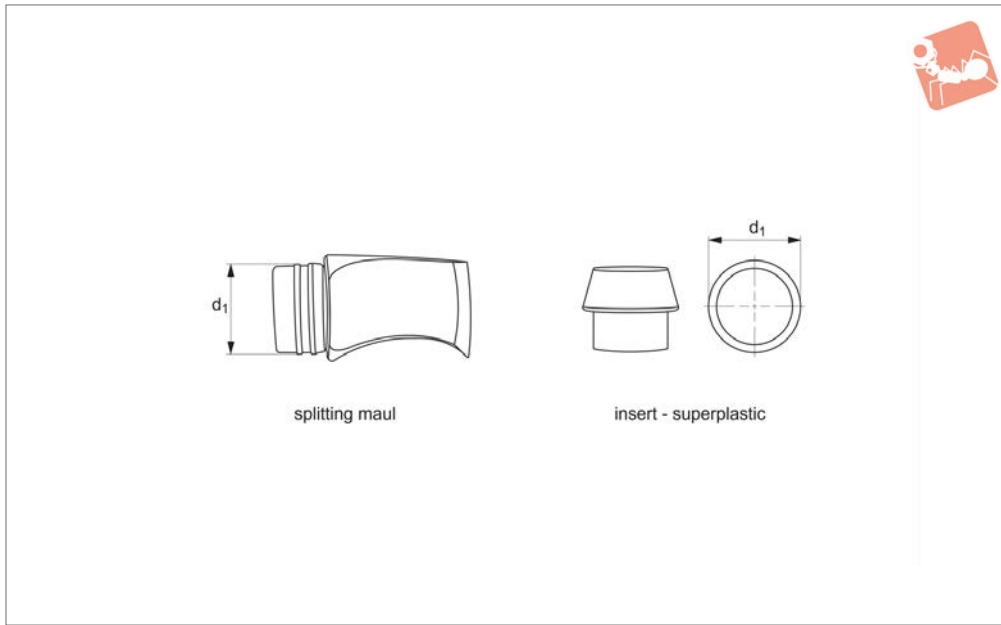


# Inserts - for Split Maul Mallets

for no. 98381



## Mallets & Hammers



**98384**

MALLETS & HAMMERS

### Material

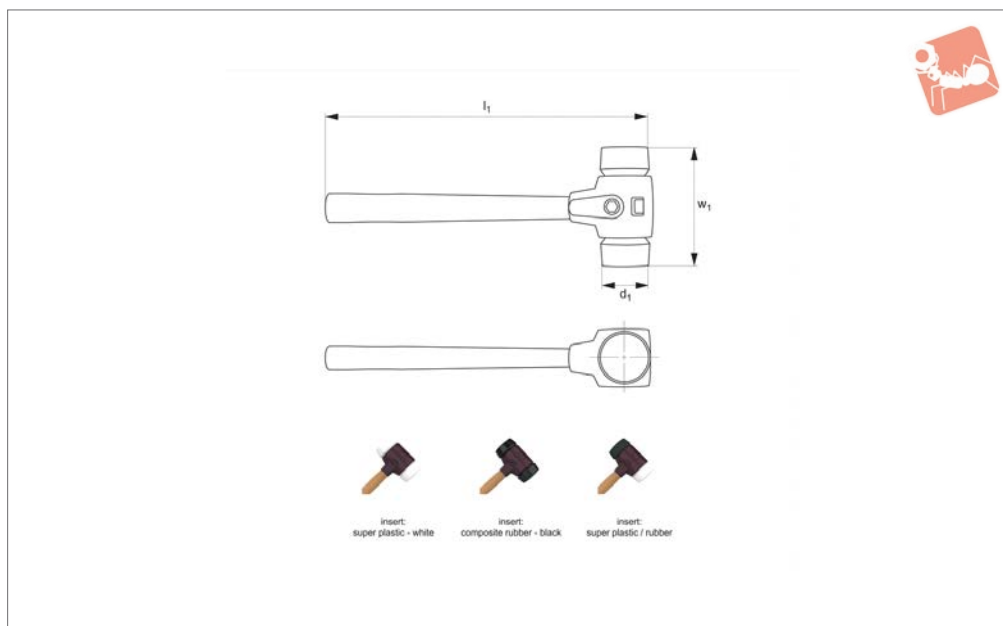
Splitting Maul: carbon steel, drop forged and tempered.

Plastic Insert: superplastic, white.

Order No.	For mallet head $d_1$	Insert type	$d_1$	Weight g
98384.W0360	160	Splitting Maul	160	1340
98384.W0460	160	Insert - Superplastic	160	1340



**98201**



**Material**

Handle: wood.  
Housing: cast iron.  
Inserts: see table.

modular system with replaceable handle, housing and inserts. Suitable replacement items for Simplex sledge hammer 98201 are;

- inserts no. 98204

**Tips**

Simplex sledge hammers are a flexible

- handle no. 98202
- housing no. 98002

Order No.	Inserts	Ø d <sub>1</sub>	w <sub>1</sub>	l <sub>1</sub>	Weight g
98201.W0081	Superplastic - White	80	175	800	3090
98201.W0100	Superplastic - White	100	200	1000	5200
98201.W0125	Superplastic - White	125	215	1040	7700
98201.W0140	Superplastic - White	140	215	1045	7900
98201.W1081	Composite Rubber - Black	80	175	800	3270
98201.W1100	Composite Rubber - Black	100	200	1000	5500
98201.W2081	Composite Rubber Superplastic	80	175	800	3170
98201.W2100	Composite Rubber Superplastic	100	200	1000	5350





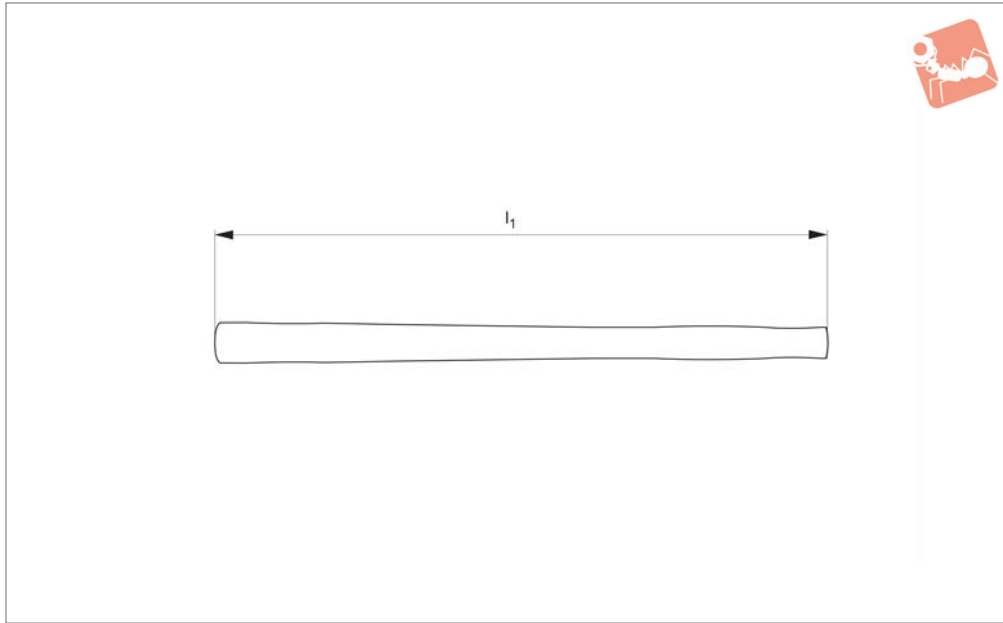


# Handle - for Simplex Sledge Hammers

wood - for no. 98201



## Mallets & Hammers



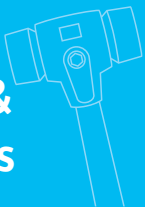
**98202**

MALLETS & HAMMERS

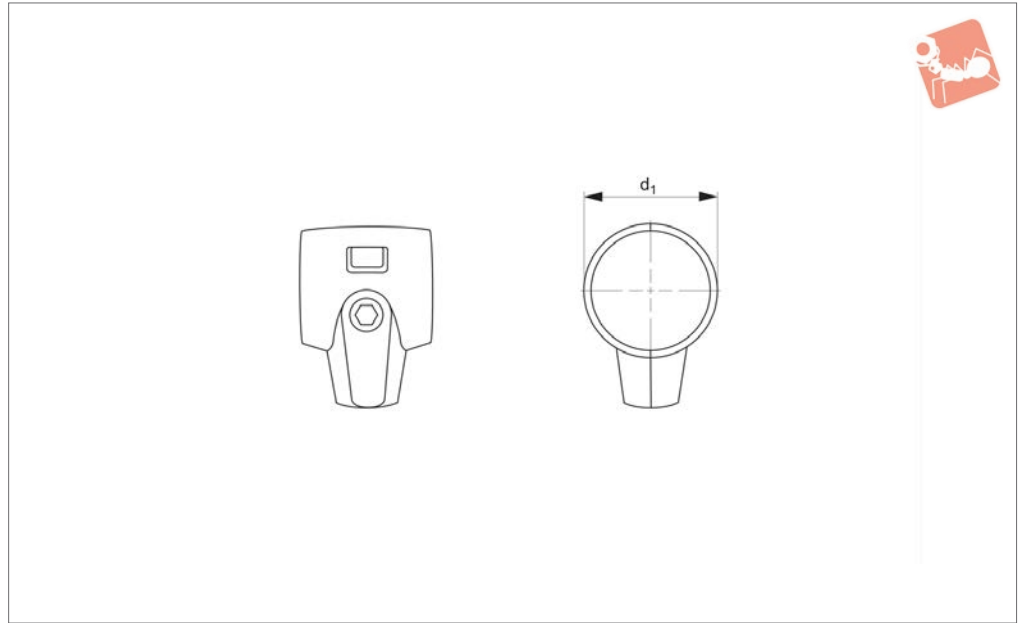
### Material

Wood.

Order No.	For mallet head dia. $d_1$	$l_1$
98202.W0208	80	700
98202.W0210	100/125/140	900



**98203**



**Material**

Cast iron housing (2 parts).

Order No.	For mallet head dia. $d_1$	$d_1$
98203.W0260	30	30
98203.W0270	40	40
98203.W0280	50	50
98203.W0290	60	60
98203.W0300	80	80
98203.W0310	100	100
98203.W0325	125	125
98203.W0340	140	140

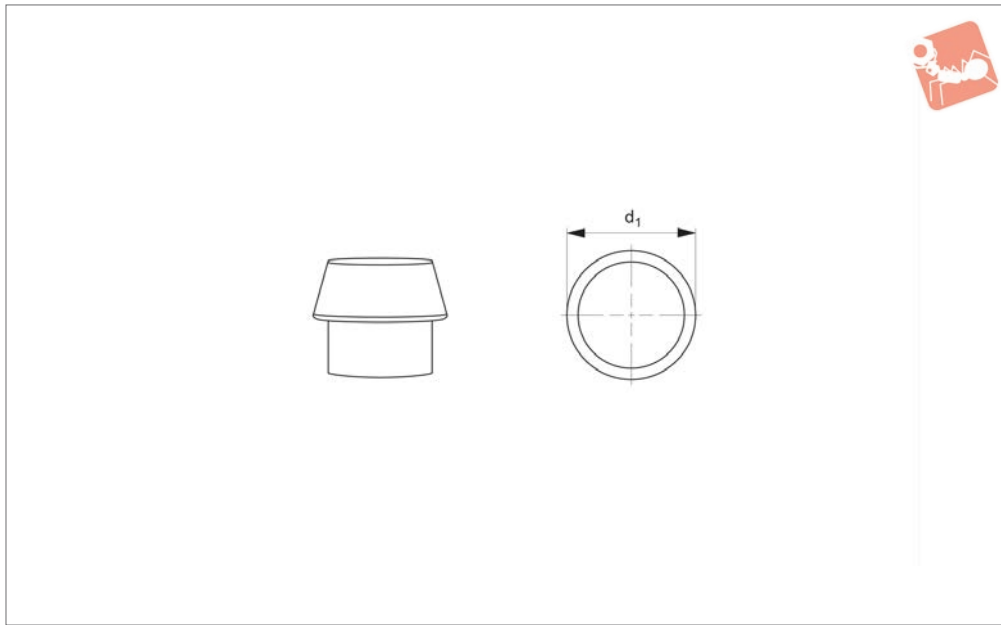


# Inserts - for Simplex Sledge Hammers

for no. 98201



## Mallets & Hammers



**98204**

MALLETS & HAMMERS

### Material

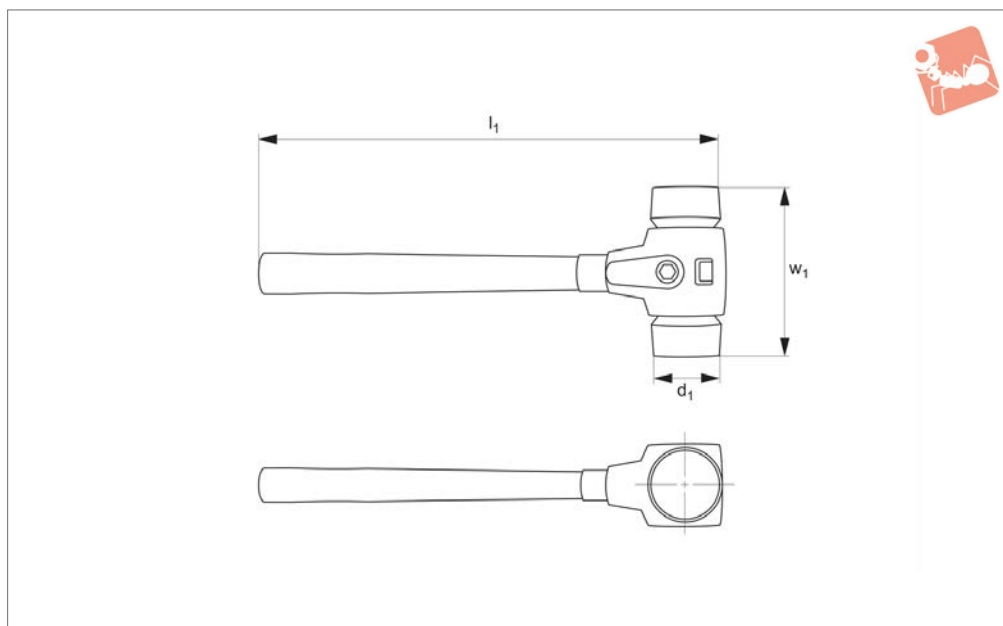
Black: composite rubber.

White: superplastic.

Order No.	For mallet head dia. $d_1$	Insert type
98204.W0288	80	Composite Rubber - Black
98204.W0588	80	Superplastic - White
98204.W0590	100	Superplastic - White
98204.W0592	125	Superplastic - White
98204.W0594	140	Superplastic - White



**98221**



MALLETS & HAMMERS

**Material**

Insert: aluminium.  
Handle: fibreglass.

**Tips**

Simplex sledge hammers are a flexible

modular system with replaceable handle, housing and inserts. Suitable replacement items for Simplex sledge hammer 98221 are;

- housing no. 98102
- inserts no. 98224

- handle no. 98223

Order No.	$\varnothing d_1$	$w_1$	$l_1$	Weight g
98221.W0081	80	175	800	4650

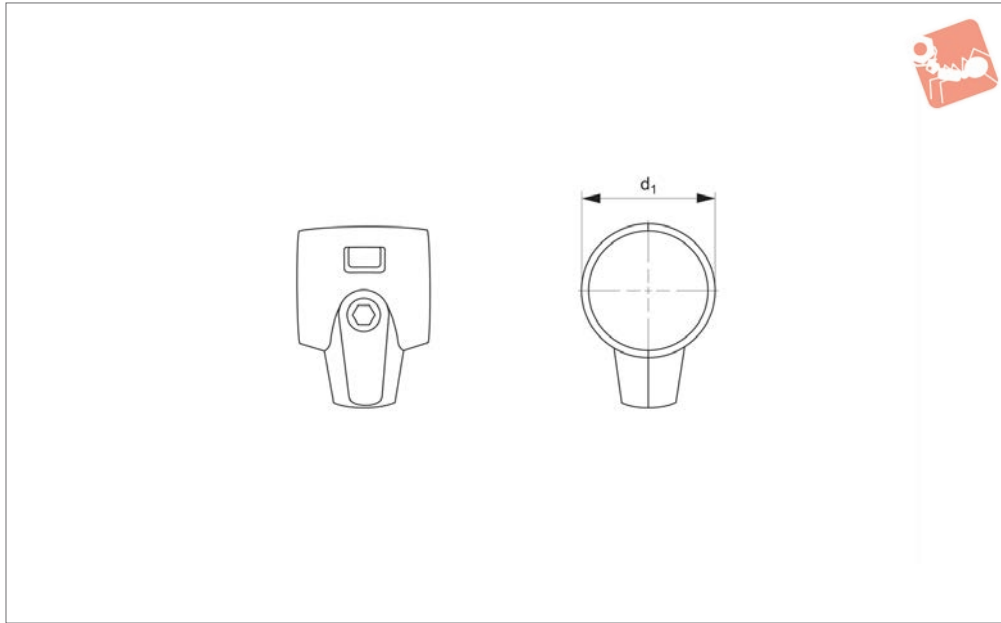


# Simplex Sledge Hammers - Type C

reinforced housing, for 98221



## Mallets & Hammers



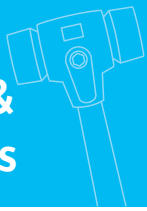
### 98222

MALLETS & HAMMERS

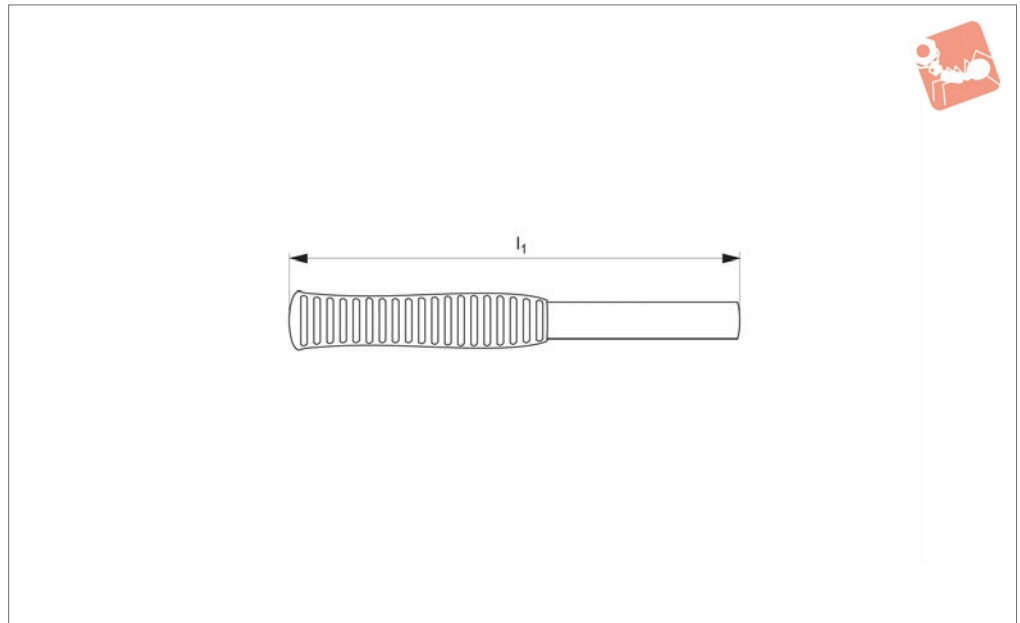
#### Material

Reinforced housing (2 parts, malleable cast iron).

Order No.	For mallet head dia. $d_1$
98222.W0141	40
98222.W0151	40
98222.W0161	50
98222.W0171	60
98222.W0181	80



98223



**Material**

Handle: fibreglass.  
Grip: rubber.

**Important Notes**

Fibreglass handles must only be mounted on reinforced malleable cast iron housing -

black, part no. 98102.W0181.

**Order No.**  
98223.W0208

For mallet head dia.  $d_1$   
80

$l_1$   
700

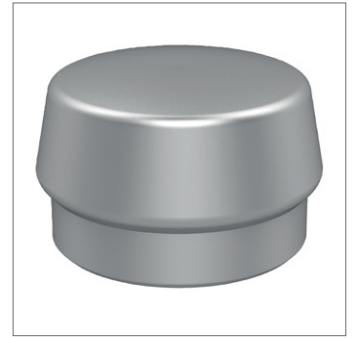
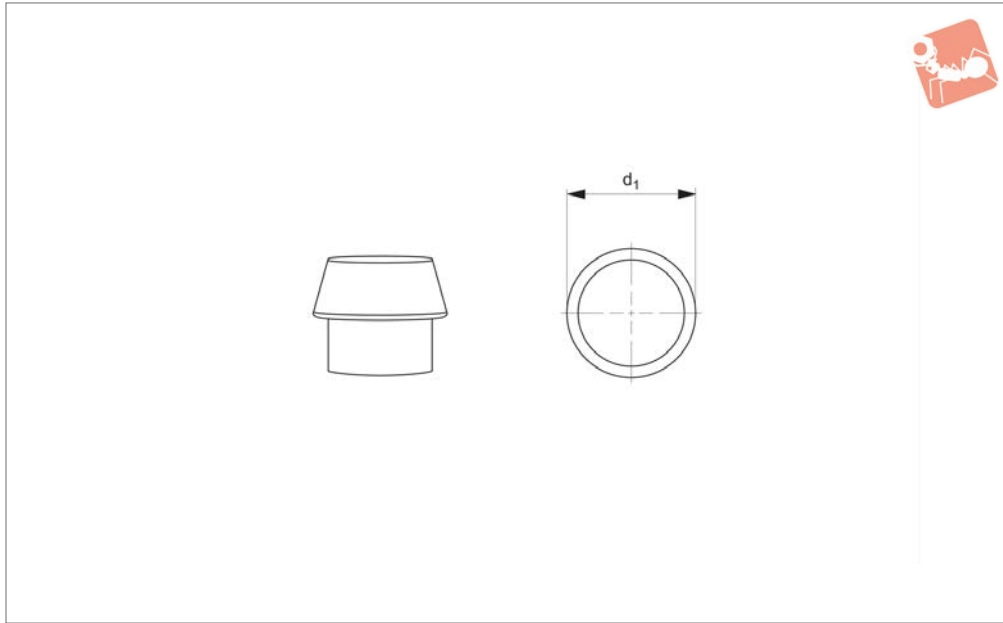


# Inserts - for Simplex Sledge Hammers

for no. 98221



## Mallets & Hammers



**98224**

MALLETS & HAMMERS

**Material**  
Aluminium.

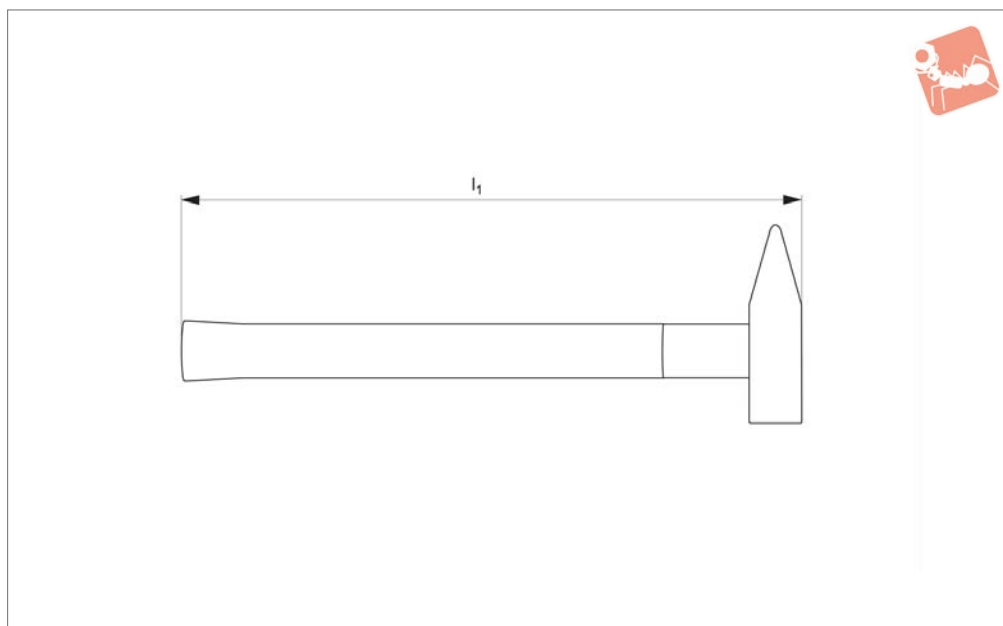
**Order No.**  
98224.W0788

For mallet head dia.  $d_1$   
80

Insert type  
Aluminium



98501



**Material**

Head: drop-forged, high quality steel. Face ground, chamfered edge.  
Handle: hickory wood, with protective

rubber sleeve to reduce rebound and increase power of impact while reducing shock and vibration in the user's arm.

**Tips**

For replacement handle see; - inserts no. 98502

Order No.	$h_1$	Weight g
98501.W0030	300	300
98501.W0032	320	500
98501.W0035	350	800
98501.W0036	360	1000



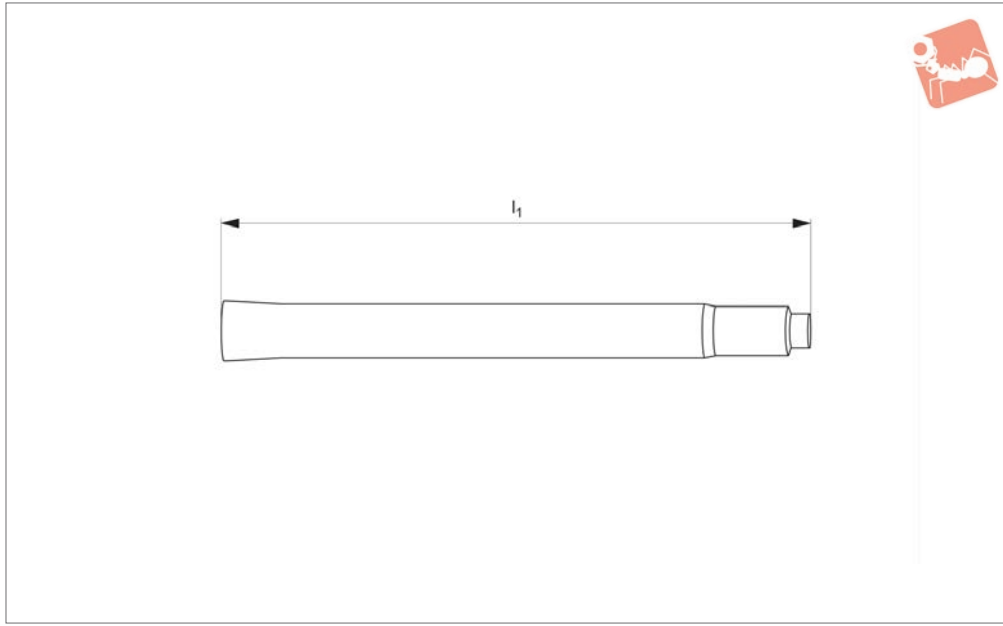


# Handle - for Maxx Craft Hammer

wood - for no. 98501



## Mallets & Hammers



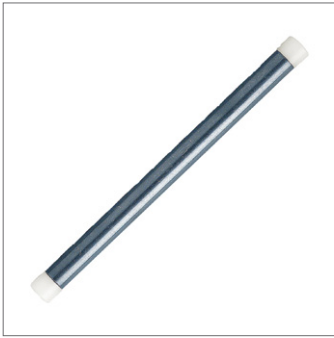
**98502**

MALLETS & HAMMERS

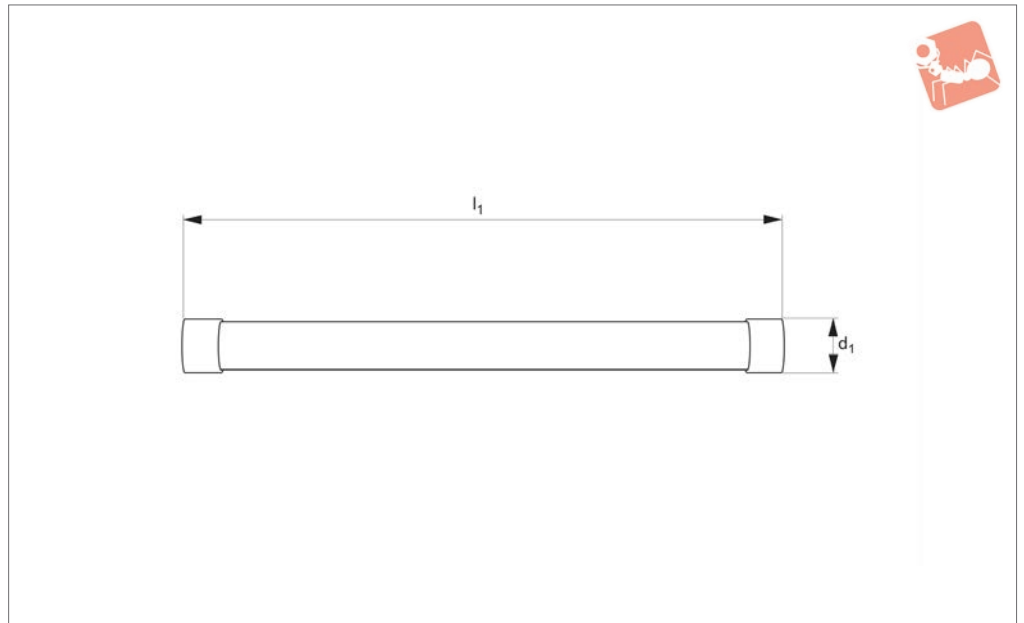
### Material

Hickory wood.

Order No.	For	$l_1$	Weight g
98502.W0203	MaxxCraft 300	265	100
98502.W0205	MaxxCraft 500	280	120
98502.W0208	MaxxCraft 800	305	170
98502.W0210	MaxxCraft 1000	310	180



**98401**



**Material**

Steel body with nylon inserts.

**Tips**

For replacement inserts see;  
- inserts no. 98402

**Technical Notes**

Inserts are replaceable see part no. 98402.

Order No.	Insert type	Ø d <sub>1</sub>	l <sub>1</sub>	Weight g
98401.W0010	Nylon - White	10	168	90
98401.W0012	Nylon - White	12	170	130
98401.W0015	Nylon - White	15	175	200

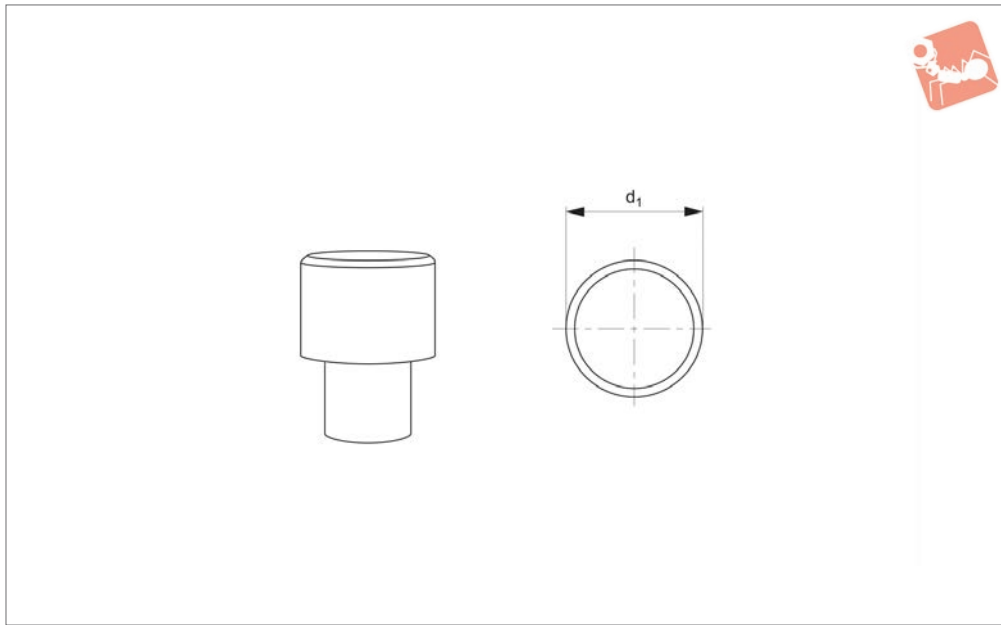


# Inserts - for Rebound Punches

for no. 98401



## Mallets & Hammers



**98402**

MALLETS & HAMMERS

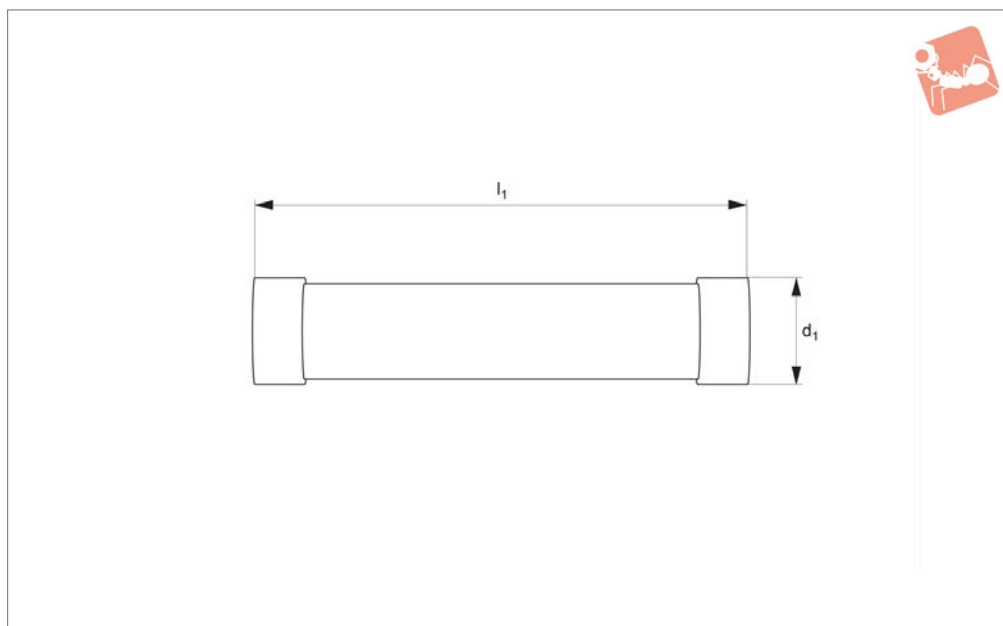
### Material

Nylon, white.

Order No.	Type	For mallet head dia. $d_1$
98402.W0110	Nylon - White	10
98402.W0112	Nylon - White	12
98402.W0115	Nylon - White	15



**98421**



**Material**

Housing: steel.  
Insert: nylon, white.

rebound action and assists in full transmission of impact force.  
Inserts are replaceable. See part no. 98422.

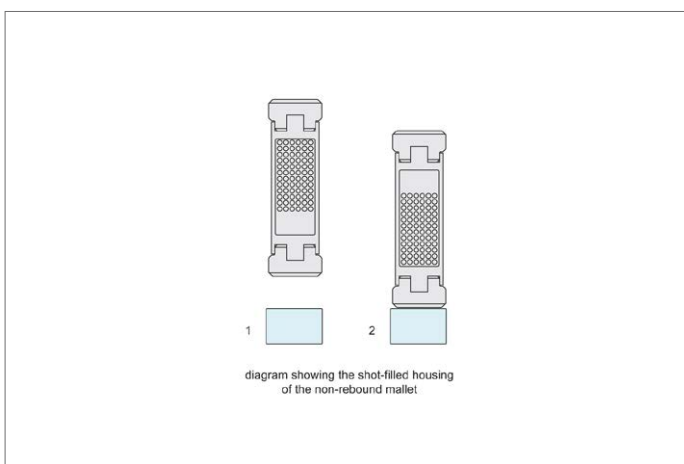
**Tips**

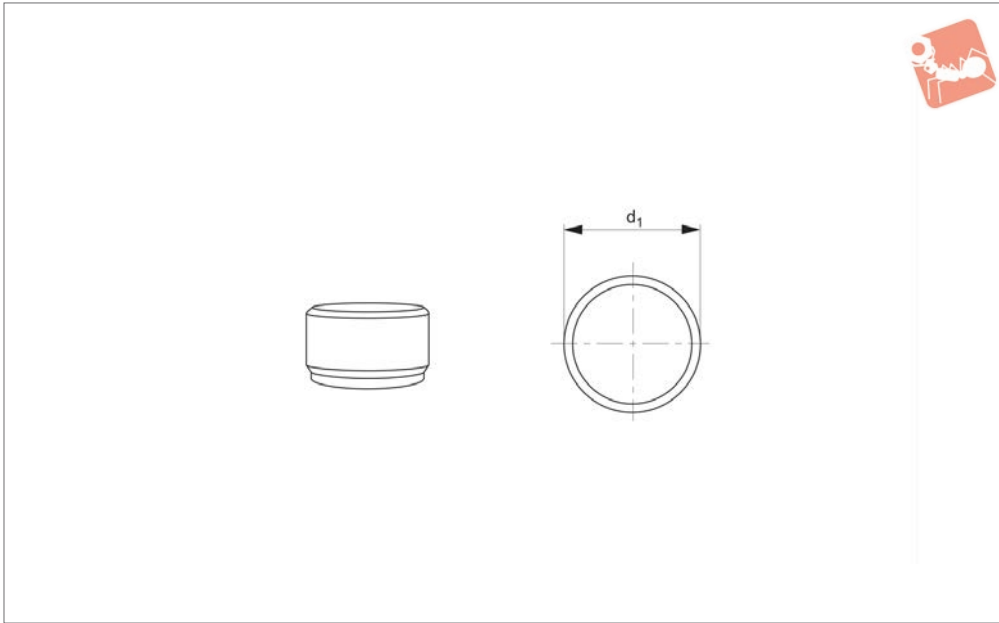
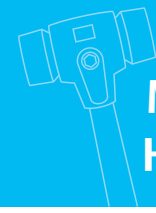
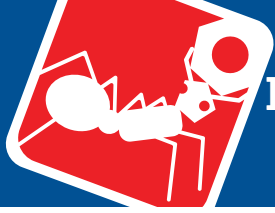
For replacement inserts see;  
- inserts no. 98422

**Technical Notes**

Shot filled housing results in a non-

Order No.	Insert type	$\varnothing d_1$	$l_1$	Weight g
98421.W0020	Nylon - White	20	150	215
98421.W0025	Nylon - White	25	150	340
98421.W0030	Nylon - White	30	155	470
98421.W0035	Nylon - White	35	155	630
98421.W0040	Nylon - White	40	160	785
98421.W0045	Nylon - White	45	160	965
98421.W0050	Nylon - White	50	165	1250





### 98422

MALLETS & HAMMERS

#### Material

Insert: nylon, white.

Order No.	Type	For mallet head $d_1$
98422.W0120	Nylon - White	20
98422.W0125	Nylon - White	25
98422.W0130	Nylon - White	30
98422.W0135	Nylon - White	35
98422.W0140	Nylon - White	40
98422.W0145	Nylon - White	45
98422.W0150	Nylon - White	50

