

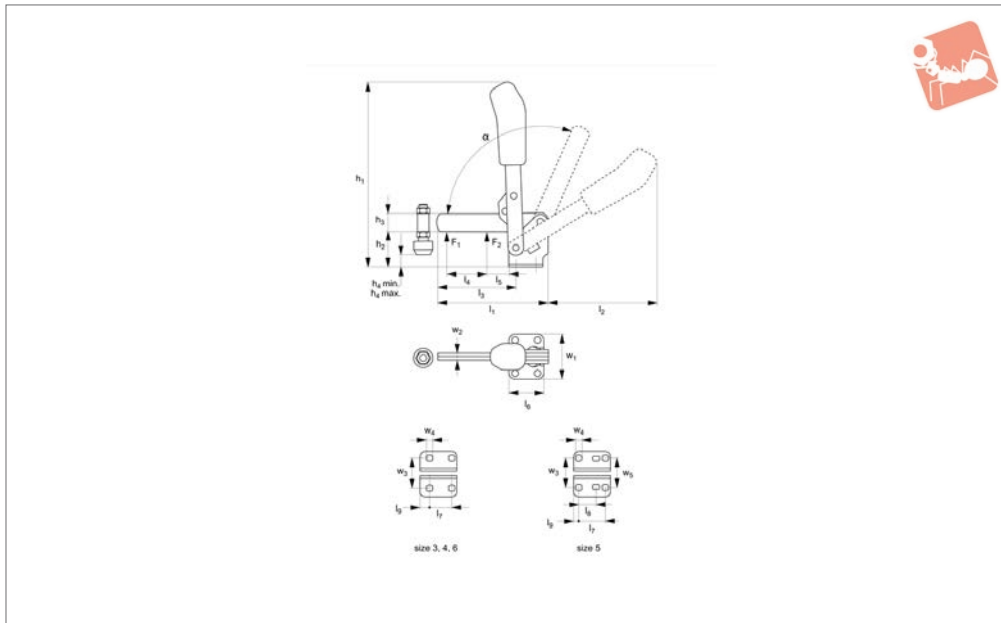


# Vertical Acting Toggle Clamps

solid arm - horizontal base



## Steel Toggle Clamps



**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 (symbola/symbol/symbola/symbol\*) can be changed by pressing in a stop pin on the clamp body. Temperature range -10°C to +80°C.

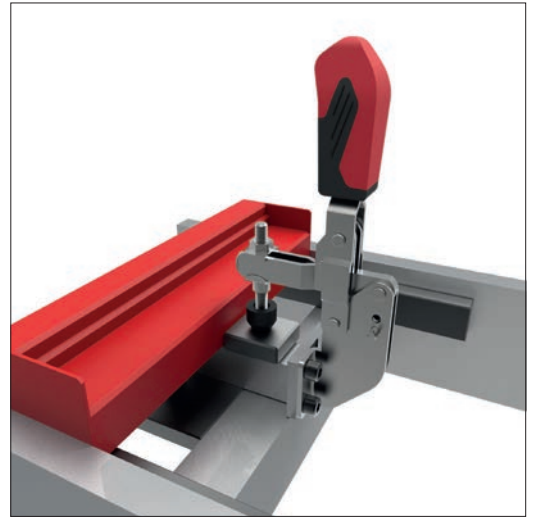
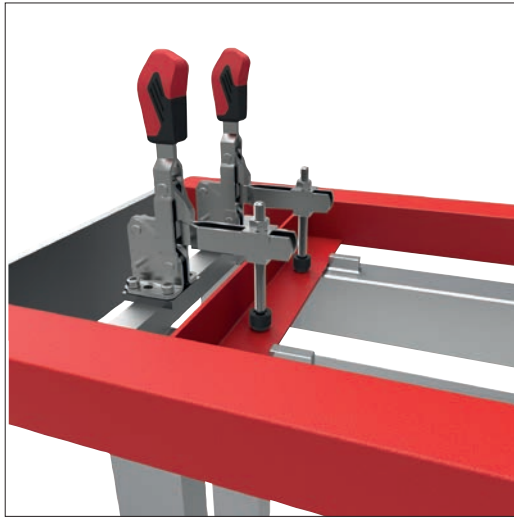
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	Weight g
40150.W0003	3	1.4	2.5	M 8x45	186	33.5	18	0	12.0	108.5	116.5	81.0	340
40150.W0004	4	2.0	3.0	M 8x65	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

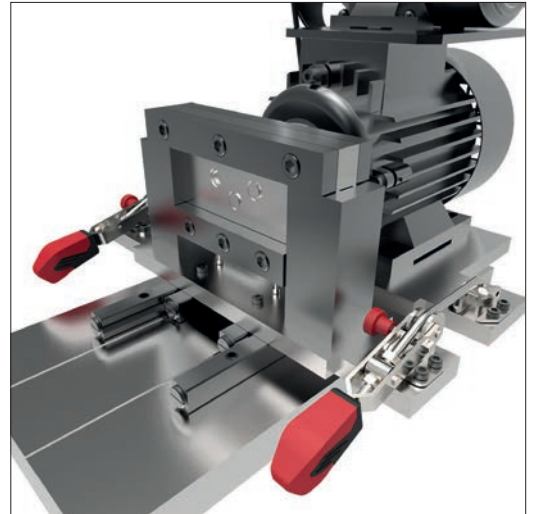
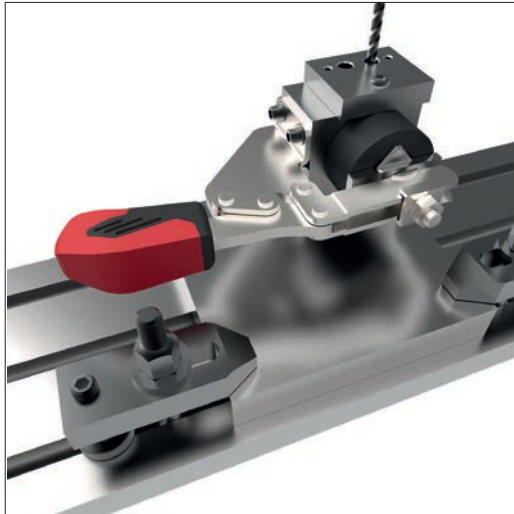
Order No.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	w <sub>5</sub>	α	α*
40150.W0003	43	19.5	35	20.0	-	7.5	46	6	32.5	7.5	-	105°	60°
40150.W0004	61	17.0	53	32.0	-	13.0	64	8	45.0	8.6	-	105°	60°
40150.W0005	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°



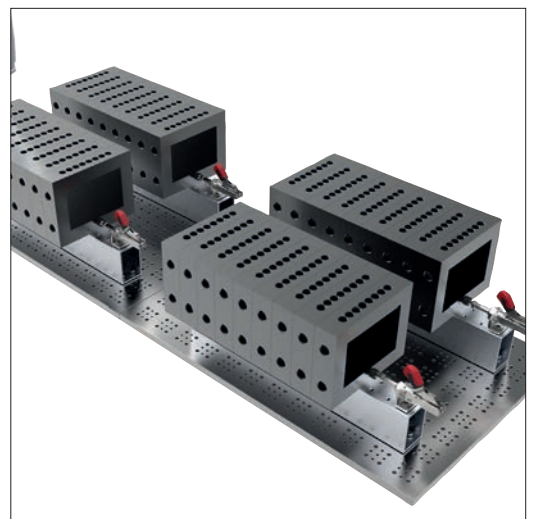
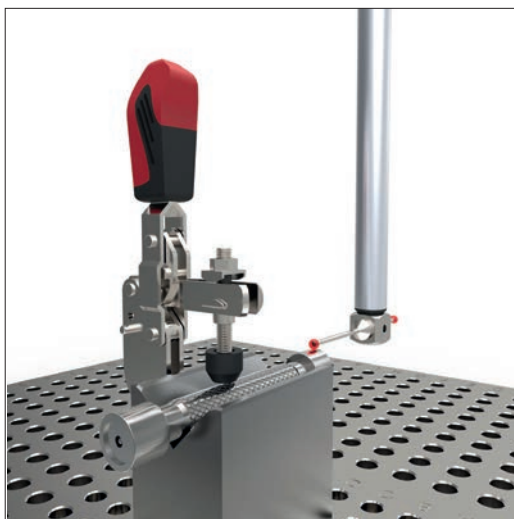
## Welding Fixtures



## Machining and Jig Assemblies

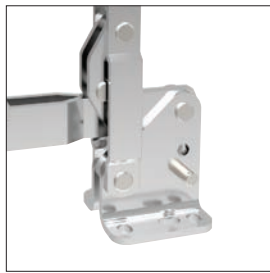


## Cmm's

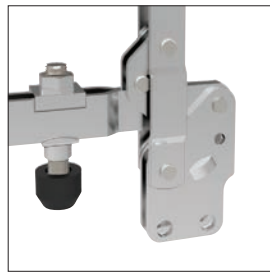




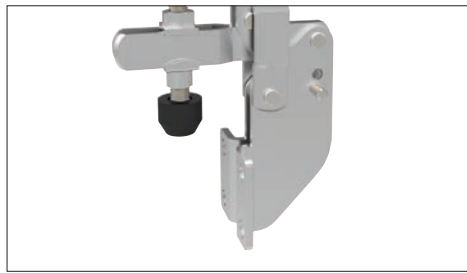
STEEL TOGGLE CLAMPS



Horizontal base



Vertical base



Angled base

### Mounting Base Variations



Vertical acting



Horizontal acting



Push-pull

### Clamping Variations



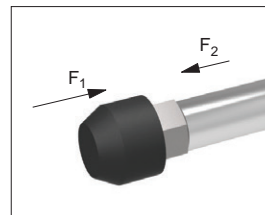
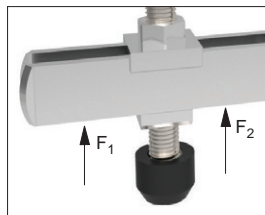
Hook type



Latch type

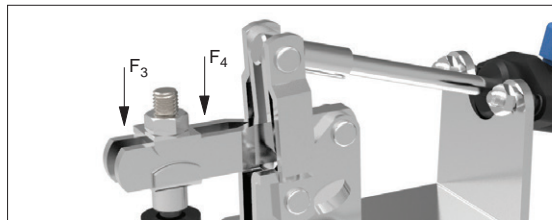
### Explanation of forces

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).



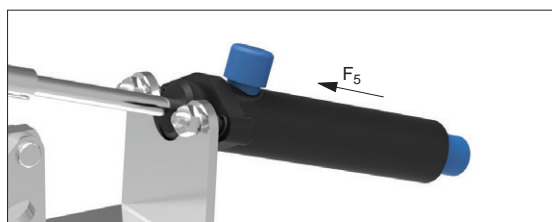
### Holding Forces $F_1$ or $F_2$

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 $F_5$

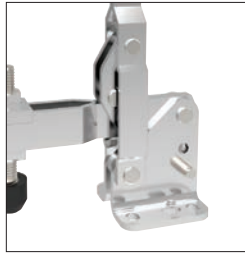
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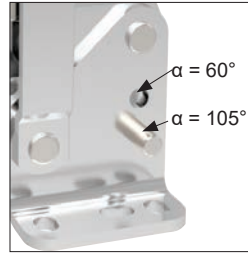
### Quality Features



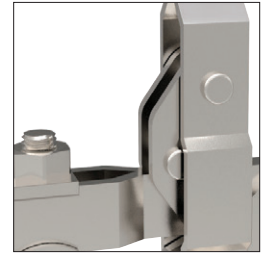
Ergonomic soft grip  
2-component handle



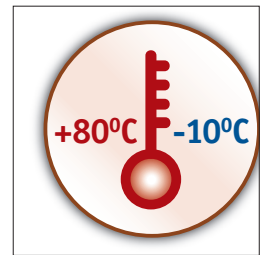
Stainless rivets and  
hardened bushings



Moveable stop for  
variable opening angle



Operator  
finger protection



Temperature resistant

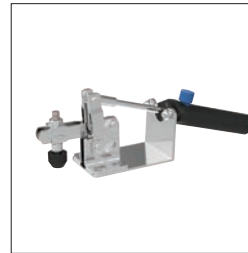
### Unique Features



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.