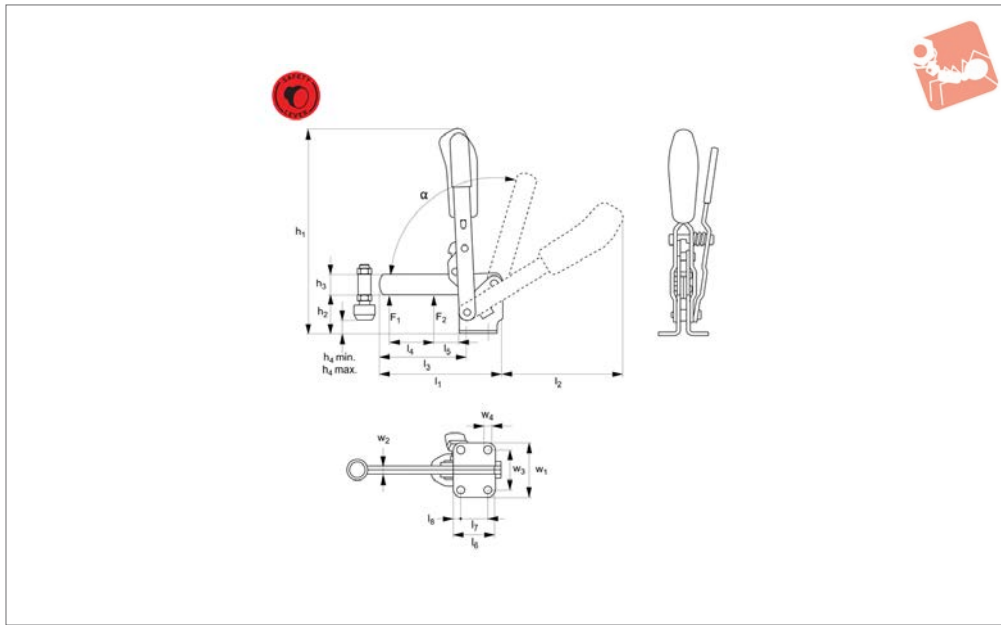




# Vertical Acting Toggle Clamps

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.

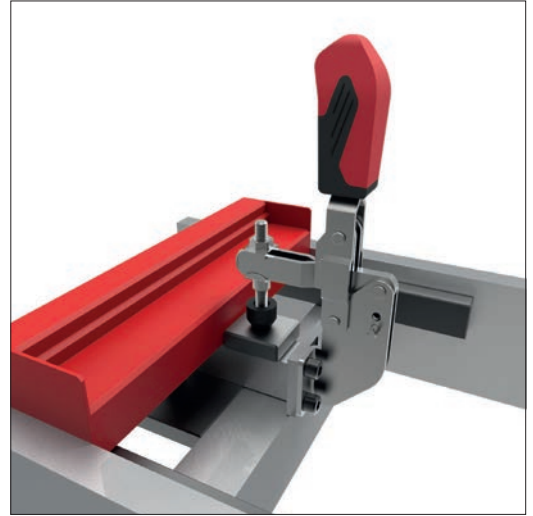
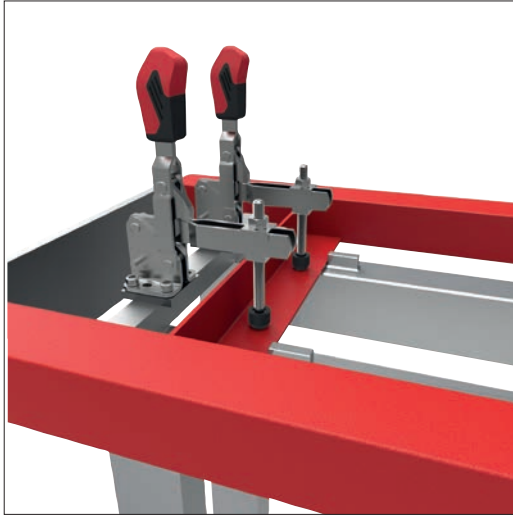
Order No.	Size	F <sub>1</sub> kN	F <sub>2</sub> kN	Clamping screw	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub> min.	h <sub>4</sub> max.	h <sub>5</sub>	Weight g
<b>40160.W0003</b>	3	1.4	2.5	M 8x45	186	48.0	18	0	12	35	470
<b>40160.W0004</b>	4	2.0	3.0	M 8x65	220	42.5	20	-8	21	53	690

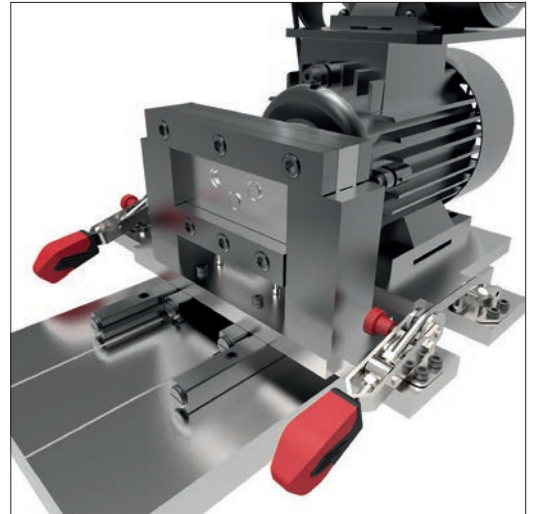
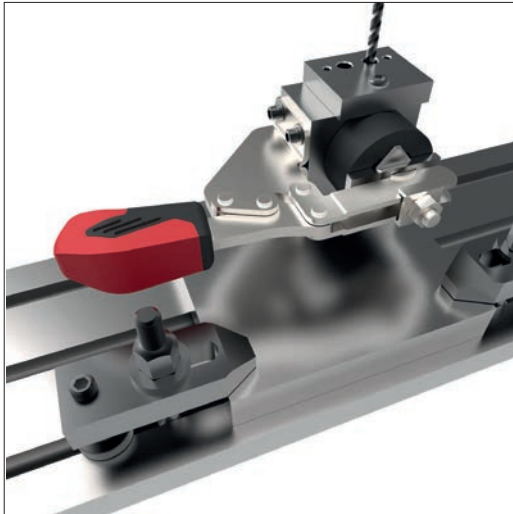
Order No.	h <sub>6</sub>	h <sub>7</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>3</sub>	w <sub>4</sub>	$\alpha$	$\alpha^*$
<b>40160.W0003</b>	20	7.5	112	112	81	43	19	46	6	32	7.1	105°	60°
<b>40160.W0004</b>	32	13.0	140	130	101	61	16	64	8	45	8.5	105°	60°



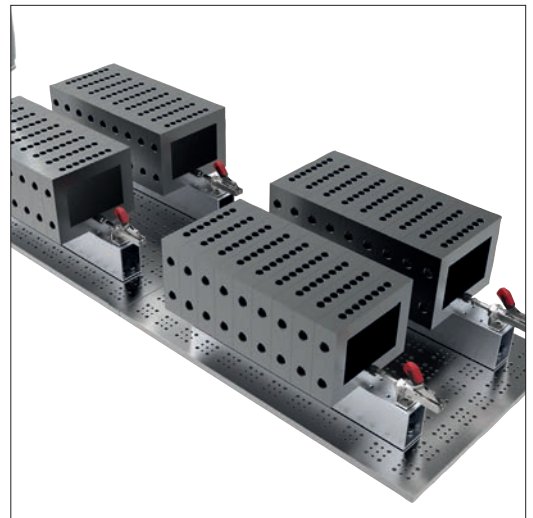
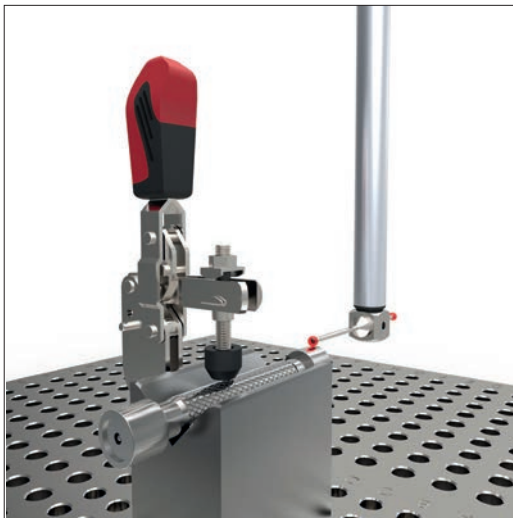
## Welding Fixtures



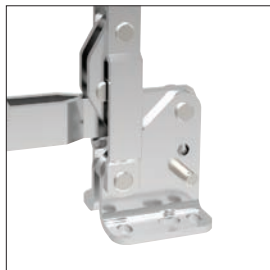
## Machining and Jig Assemblies



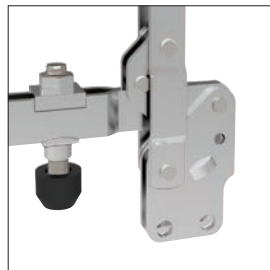
## Cmm's



SAFETY LEVER TOGGLE CLAMPS



Horizontal base



Vertical base



Angled base

### Mounting Base Variations



Vertical acting



Horizontal acting



Push-pull

### Clamping Variations



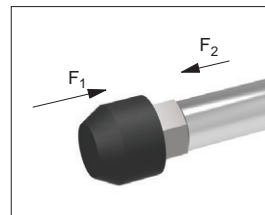
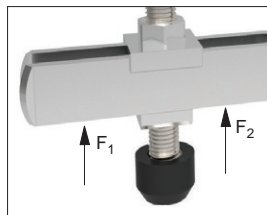
Hook type



Latch type

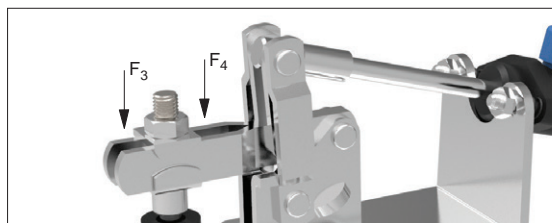
### Explanation of forces

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).



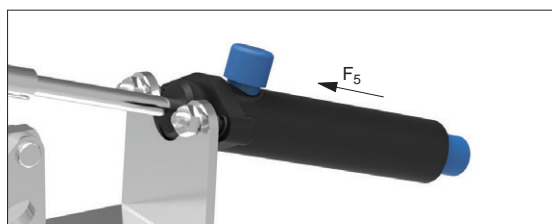
### Holding Forces $F_1$ or $F_2$

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 $F_5$

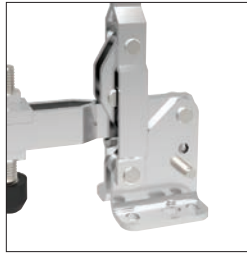
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### Quality Features



Ergonomic soft grip  
2-component handle



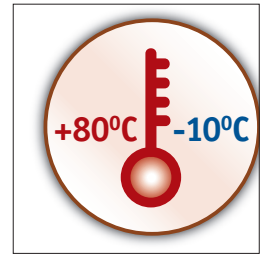
Stainless rivets and  
hardened bushings



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.