

## ESD TOGGLE CLAMPS

The ESD toggle clamps from AMF 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 ESD toggle clamps from AMF have been tested and certified by an independent expert regarding leakage resistance, discharge time and surface tension.

### The features at a glance:

- > 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 DIN EN 61340-5-1 < 100 Volt



## No. 6800ESD

### ESD vertical toggle clamp

With protective cap and handle made of electrostatic conductive (dissipative) material.

With open clamping arm and horizontal base.

Galvanised and passivated. Rivets made of stainless steel, which, for sizes 2 and 3, run in hardened bushings. Bearing positions are greased.

Ergonomic, oil-resistant handle with large grip surface and soft components. Safety clamping piece with finger protection, retainer for the clamping screw at the end of the clamping arm.

**Complete with tempered, galvanised clamping screw No. 6890ESD.**



**NEW!**



Order no.	Size	F1 [kN]	F2 [kN]	Clamping screw	Weight [g]
562483	0	0,5	0,7	M4 x 25	60
562484	1	0,6	1,1	M5 x 30	105
562486	2	0,8	1,2	M6 x 35	175
562487	3	1,2	2,5	M8 x 45	410

### Application:

The ESD toggle clamp has been specially developed for use in ESD protection zones (EPA – electrostatic protected area) for working on electrostatically sensitive components, assemblies or devices in accordance with the standard DIN EN 61340-5-1.

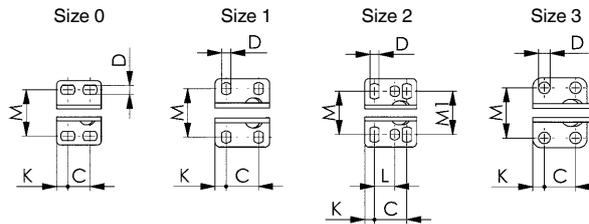
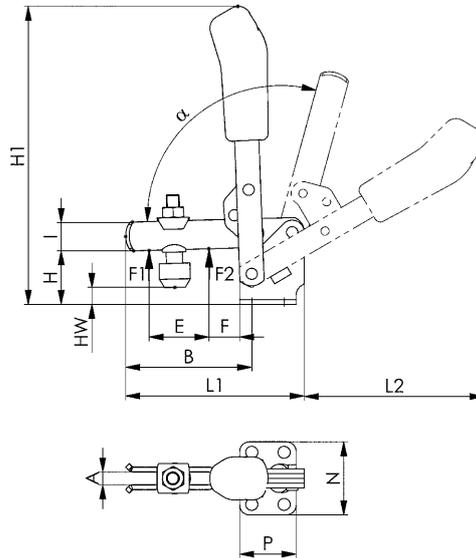
### Features:

- 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 Sekunden
- Surface tension (electric field strength) according to DIN EN 61340-5-1 < 100 Volt

### Note:

The ESD vertical toggle clamp is non-insulating. It must not be used in areas where open voltages are used.

For further technical information please request the data sheet.



### Recommendations



No. 6890ESD,  
page 114

### Dimensions:

Order no.	Size	A	B	C	D	E	F	H	H1	HW min.	HW max.	I	K	L	L1	L2	M	M1	N	P	$\alpha$	$\alpha^*$
562483	0	4	31	8,5 - 13,5	4,5	14	5,0	18	81	-1,5	3,5	8	5,5	-	49	50	23,0	-	32	22	95°	-
562484	1	5	39	16,0	4,5	18	6,0	19	98	-4,0	2,0	10	5,5	-	61	58	22,5 - 26,0	-	34	27	95°	-
562486	2	6	52	20,0	5,5	25	11,0	23	140	-3,0	4,5	12	6,0	12,5	78	89	23,0 - 31,0	27	43	32	105°	60°
562487	3	8	79	20,0	7,5	37	19,0	33	186	2,0	11,0	18	7,5	-	112	112	32,5	-	46	35	105°	60°

Subject to technical alterations.

## No. 6830ESD

### ESD horizontal toggle clamp

With protective cap and handle made of electrostatic conductive (dissipative) material.

With open clamping arm and horizontal base.

Galvanised and passivated. Rivets made of stainless steel, which, for sizes 2 and 3, run in hardened bushings. Bearing positions are greased.

Ergonomic, oil-resistant handle with large grip surface and soft components. Retainer for the clamping screw at the end of the clamp arm.

Complete with tempered, galvanised clamping screw No. 6890ESD.



**NEW!**



Order no.	Size	F1 [kN]	F2 [kN]	Clamping screw	Weight [g]
562488	0	0,25	0,4	M4 x 25	35
562489	1	0,8	1,1	M5 x 30	105
562490	2	1,0	1,2	M6 x 35	185
562491	3	1,8	2,5	M8 x 45	320

### Application:

The ESD horizontal toggle clamp has been specially developed for use in ESD protection zones (EPA – electrostatic protected area) for working on electrostatically sensitive components, assemblies or devices in accordance with the standard DIN EN 61340-5-1.

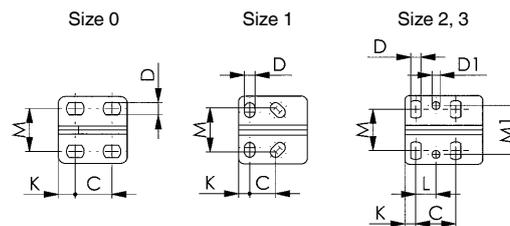
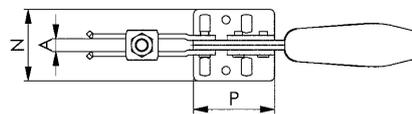
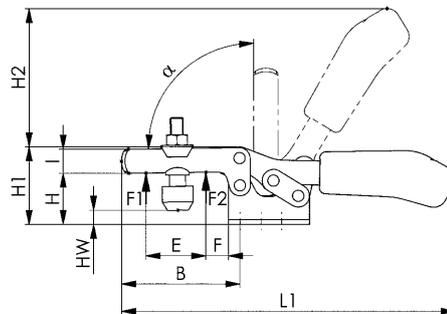
### Features:

- 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 Sekunden
- Surface tension (electric field strength) according to DIN EN 61340-5-1 < 100 Volt

### Note:

The ESD horizontal toggle clamp is non-insulating. It must not be used in areas where open voltages are used.

For further technical information please request the data sheet.



### Recommendations



No. 6890ESD,  
page 114

### Dimensions:

Order no.	Size	A	B	C	D	D1	E	F	H	H1	H2	HW min.	HW max.	I	K	L	L1	M	M1	N	P	$\alpha$
562488	0	4	28	11,5 - 15,5	4,6	-	9,0	5,5	41,5	23,0	34	-5,5	0,0	7,5	6,3	-	79	16,0	-	25,0	25,5	90°
562489	1	5	42	13,0 - 14,5	5,2	-	18,7	8,0	19,0	30,0	49	-3,0	2,5	10,0	5,5	-	120	18,0 - 21,5	-	34,0	34,0	90°
562490	2	6	64	26,0	5,6	5,6	32,0	16,0	24,0	45,0	68	-1,5	5,0	13,2	6,0	12,7	162	19,5 - 29,5	28,5	42,0	38,0	90°
562491	3	8	73	25,7	6,5	5,1	38,0	14,0	32,0	48,5	86	-2,0	9,0	15,0	7,0	13,0	206	22,0 - 31,8	31,6	45,5	50,0	90°

Subject to technical alterations.

## No. 6840ESD

### ESD push-pull type toggle clamp

With protective cap and handle made of electrostatic conductive (dissipative) material.

Without angle base. Push and pull-clamping (Equal operation of rod and lever). Long rod-guide with attaching thread and nut. Galvanised and passivated. Rivets made of stainless steel, which, for sizes 2 and 3, run in hardened bushings. Lever-parts and push-pull type toggle clamp made of tempered steel. Bearing positions are greased. Push-pull toggle clamp with threaded front for direct mounting in vertical metal plates or in fixtures.

Ergonomic, oil-resistant handle with large grip surface and soft components.

Complete with tempered, galvanised clamping screw  
No. 6880ESD.



**NEW!**



Order no.	Size	F1 [kN]	F2 [kN]	Clamping screw	Weight [g]
562492	0	0,8	0,8	M4 x 20	60
562493	1	1,0	1,0	M4 x 20	100
562494	2	2,0	2,0	M6 x 25	245
562495	3	2,5	2,5	M8 x 35	330

### Application:

The ESD push-pull type toggle clamp has been specially developed for use in ESD protection zones (EPA – electrostatic protected area) for working on electrostatically sensitive components, assemblies or devices in accordance with the standard DIN EN 61340-5-1.

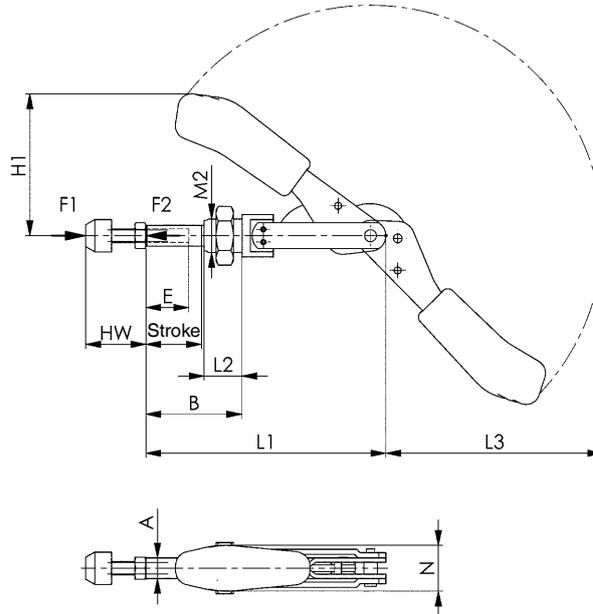
### Features:

- 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 DIN EN 61340-5-1 < 100 Volt

### Note:

The ESD push-pull type toggle clamp is non-insulating. It must not be used in areas where open voltages are used.

For further technical information please request the data sheet.



### Recommendations



No. 6843,  
page 50



No. 6880ESD,  
page 114

### Dimensions:

Order no.	Size	A	B min.	B max.	E	H1	Stroke	HW min.	HW max.	L1	L2	L3	M2	N
562492	0	6,5	10,5	26,5	13	37,0	16	12	20	66,5	10	54	M10 x 1,0	15
562493	1	8,0	17,5	37,5	20	45,5	20	12	20	91,0	16	74	M12 x 1,5	18
562494	2	10,0	20,0	46,0	20	66,0	26	17	25	114,0	19	105	M16 x 1,5	22
562495	3	12,0	24,0	56,0	30	82,5	32	22	35	140,0	22	127	M20 x 1,5	27

Subject to technical alterations.

## No. 6844ESD

### ESD push-pull type toggle clamp

With protective cap and handle made of electrostatic conductive (dissipative) material.

short version. For push and pull-clamping. Long rod-guide with attaching thread and nut.

Galvanised and passivated. Piston rod is made of non-rusting steel. Shoulder screws tempered. Bearing positions are greased. Ergonomic, oil-resistant handle with large grip surface and soft components.

Complete with tempered, galvanised clamping screw No. 6880ESD.



**NEW!**



Order no.	Size	F1 [kN]	F2 [kN]	Clamping screw	Weight [g]
562496	2	1,0	1,0	M6 x 25	130
562497	3	2,5	2,5	M8 x 35	320

### Application:

The ESD push-pull type toggle clamp has been specially developed for use in ESD protection zones (EPA – electrostatic protected area) for working on electrostatically sensitive components, assemblies or devices in accordance with the standard DIN EN 61340-5-1.

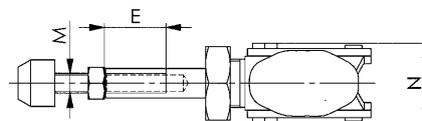
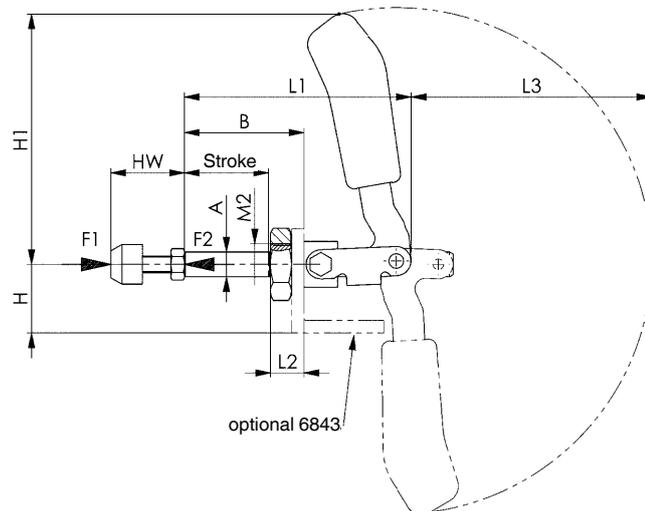
### Features:

- 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 Sekunden
- Surface tension (electric field strength) according to DIN EN 61340-5-1 < 100 Volt

### Note:

The ESD push-pull type toggle clamp is non-insulating. It must not be used in areas where open voltages are used.

For further technical information please request the data sheet.



### Recommendations



No. 6843,  
page 50



No. 6880ESD,  
page 114

### Dimensions:

Order no.	Size	A	B	E	H	H1	Stroke	HW min.	HW max.	L1	L2	L3	M	M2	N
562496	2	10	36	15	24	73	24,5	17	25	68,5	13	68	M6	M16 x 1,5	30,5
562497	3	12	57	25	33	123	40,0	22	35	108,0	16	115	M8	M20 x 1,5	33,0

Subject to technical alterations.

## No. 6890ESD

### ESD clamping screw

With protective cap made of electrostatic conductive (dissipative) material.

For open clamping arms, tempered, galvanized and passivated. Tensile strength class 8.8, with removable protective cap and nut-washer element.



**NEW!**



Order no.	Size	Screw DIN 933	Washer size	D	D1	L	L3	Weight [g]
562598	0	M4 x 25	0	11,0	7	32	13 - 20	5
562599	1	M5 x 30	1	12,5	8	38	17 - 24	10
562600	2	M6 x 35	2	15,0	10	45	18 - 28	22
562601	3	M8 x 45	3	15,0	10	58	22 - 34	40

#### Application:

The ESD clamping screw has been specially developed for use in ESD protection zones (EPA – electrostatic protected area) for working on electrostatically sensitive components, assemblies or devices in accordance with the standard DIN EN 61340-5-1.

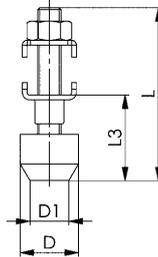
#### Features:

- 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 Sekunden
- Surface tension (electric field strength) according to DIN EN 61340-5-1 < 100 Volt

#### Note:

The ESD clamping screw is non-insulating. It must not be used in areas where open voltages are used.

For further technical information please request the data sheet.



## No. 6880ESD

### ESD clamping screw

With protective cap made of electrostatic conductive (dissipative) material.

For push-pull type toggle clamps, tempered, galvanised and passivated. Tensile strength class 8.8, with nut and removable protective cap.



**NEW!**



Order no.	Size	Screw DIN 933	D	D1	L	L3	Weight [g]
562602	0+1	M4 x 20	11,0	7	27	12 - 20	4
562603	2	M6 x 25	15,0	10	35	17 - 25	15
562604	3	M8 x 35	19,0	13	48	22 - 35	26

#### Application:

The ESD clamping screw has been specially developed for use in ESD protection zones (EPA – electrostatic protected area) for working on electrostatically sensitive components, assemblies or devices in accordance with the standard DIN EN 61340-5-1.

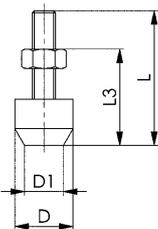
#### Features:

- 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 Sekunden
- Surface tension (electric field strength) according to DIN EN 61340-5-1 < 100 Volt

#### Note:

The ESD clamping screw is non-insulating. It must not be used in areas where open voltages are used.

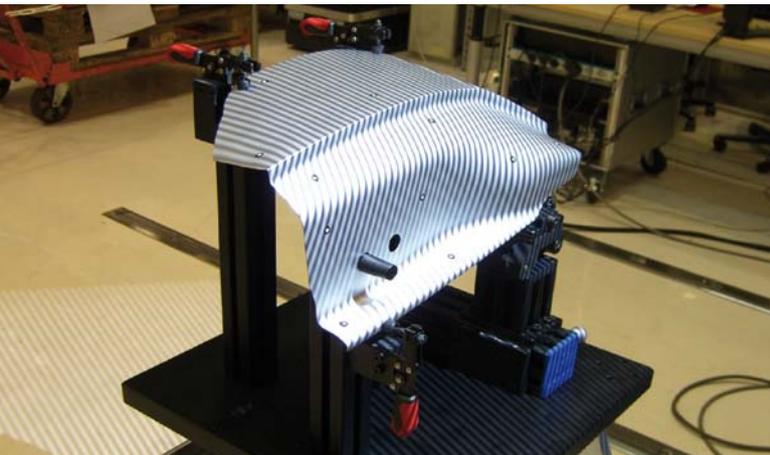
For further technical information please request the data sheet.



# AMF TOGGLE CLAMPS FOR OPTICAL MEASUREMENT TECHNOLOGY

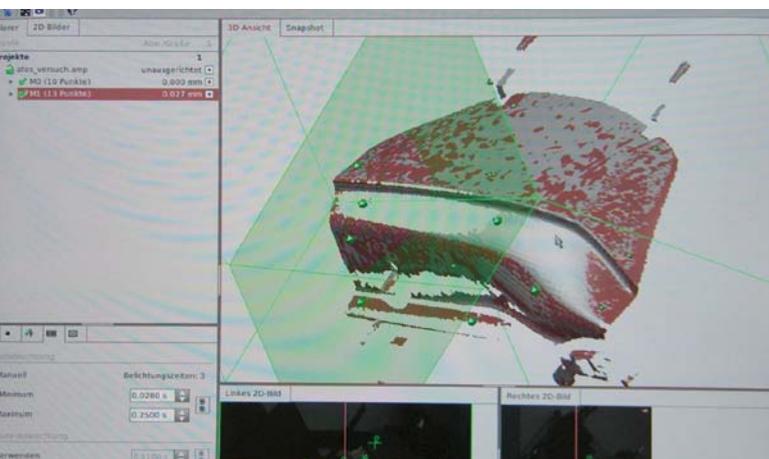
The new black toggle clamps are especially suited for the optical measurement of workpieces. The complete matte-black surface of the clamps prevents reflections. As a result, in the later evaluation of the measurement results on the PC, all unneeded clamp parts can be suppressed and only the actual workpiece is visible.

All black toggle clamps are blackened using a special process. This offers effective protection against corrosion and film rust formation. In addition, environmentally damaging emissions are not created with this process.



## MARKING AND MEASURING OF THE WORKPIECE

For overlaying of several pictures, circular markings are attached to the object. A stripe pattern is projected onto the object surface by a white-light projector and photographed by two cameras from different angles of view.



## EVALUATION

Within seconds, highly precise 3D coordinates of up to 4 million object points per measurement are calculated. For this, the black device with the black toggle clamps are „suppressed“.



## VISUALISATION AND RESULT

Variances from the CAD are calculated. The 3D coordinates of the measurement points can be measured exactly and visualised in colour.

The complete 3D data set and the comparison results can be exported into common formats for further processing.

## No. 6800B

### Vertical toggle clamp, black

**With open clamping arm and horizontal base.**

Matte black surface. Rivets made of stainless steel, which, for sizes 2 and 3, run in hardened bushings. Bearings are pre-lubricated.

Ergonomic, oil-resistant black handle with large grip surface and soft components. Safety clamping piece with finger protection. Lock washer for the thrust bolt at the end of the clamping arm.

**Complete with tempered, matte-black clamping screw no. 6890B.**

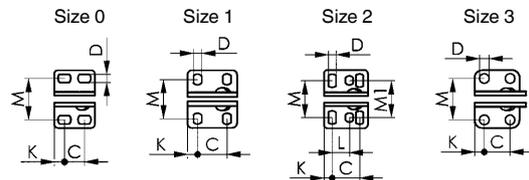
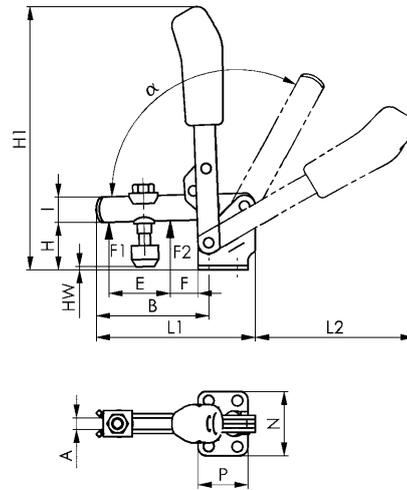


Order no.	Size	F1 [kN]	F2 [kN]	Clamping screw	Weight [g]
90167	0	0,5	0,7	M4x34,5	60
90175	1	0,6	1,1	M5x38,0	105
90183	2	0,8	1,2	M6x46,0	175
90191	3	1,2	2,5	M8x63,0	410

#### Note:

These clamps are suitable for photogrammetric use. The matte-black surface of the clamps prevents reflection while photographing.

For suitable clamping arm extension see no. 6896.



#### Recommendations



No. 6890B,  
page 157



No. 6802B,  
page 117



No. 6800BS,  
page 123

#### Dimensions:

Order no.	Size	A	B	C	D	E	F	H	H1	HW min.	HW max.	I	K	L	L1	L2	M	M1	N	P	$\alpha$	$\alpha^*$
90167	0	4	32	8,5-13,5	4,5	14	5,5	18	81,0	-4,0	6,5	8	5,5	-	49,0	50,0	23,0	-	32	22	95°	-
90175	1	5	39	16	4,5	18	6,0	19	97,5	-3,7	1,6	10	5,5	-	61,0	58,0	22,5-26	-	34	27	95°	-
90183	2	6	52	20	5,5	25	11,0	23	140,0	-4,4	4,4	12	6,0	12,5	78,0	89,0	23,0-31	27	43	32	105°	60°
90191	3	8	79	20	7,5	36	19,0	33	188,0	-2,8	7,0	18	7,5	-	111,5	111,5	32,5	-	46	35	105°	60°

\* The opening angle can be changed by pressing in a stop pin.

CAD



Subject to technical alterations.

## No. 6802B

### Vertical toggle clamp, black

#### With open clamping arm and vertical base.

Matte black surface. Rivets made of stainless steel, which, for sizes 2 and 3, run in hardened bushings. Bearings are pre-lubricated.

Ergonomic, oil-resistant black handle with large grip surface and soft components. Safety clamping piece with finger protection. Lock washer for the thrust bolt at the end of the clamping arm.

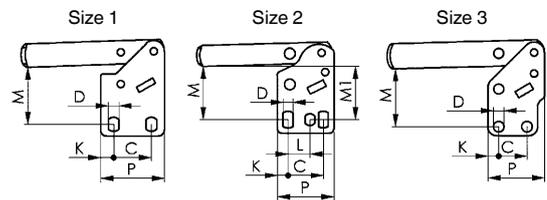
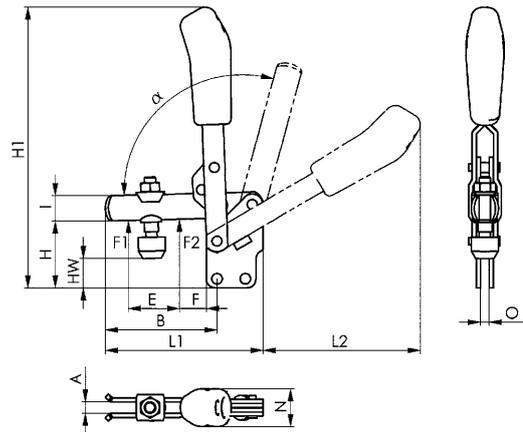
**Complete with tempered, matte-black clamping screw no. 6890B.**

Order no.	Size	F1 [kN]	F2 [kN]	Clamping screw	Weight [g]
90415	1	0,6	1,1	M5x38	105
90472	2	0,8	1,2	M6x46	175
90498	3	1,2	2,5	M8x63	410

#### Note:

These clamps are suitable for photogrammetric use. The matte-black surface of the clamps prevents reflection while photographing.

For suitable clamping arm extension see no. 6896.



#### Recommendations



No. 6890B,  
page 157



No. 6802BS,  
page 124



No. 6841B,  
page 122

#### Dimensions:

Order no.	Size	A	B	C	D	E	F	H	H1	HW min.	HW max.	I	K	L	L1	L2	M	M1	N	O	P	$\alpha$	$\alpha^*$
90415	1	5	39	16	4,5	18	6	29	110,5	6,8	12	10	5,5	-	61	58	23,5-25	-	19	5	27	95°	-
90472	2	6	52	20	5,5	25	11	38	144,5	10,5	19	12	6,0	12,5	78	80	28,5-32	30	21	5	32	105°	60°
90498	3	8	79	20	7,5	36	19	48	201,0	11,4	21	18	7,5	-	112	113	41	-	27	6	40	105°	60°

\* The opening angle can be changed by pressing in a stop pin.



## No. 6830B

### Horizontal toggle clamp, black

**With open clamping arm and horizontal base.**

Matte black surface. Rivets made of stainless steel, which, for sizes 2 and 3, run in hardened bushings. Bearings are pre-lubricated.

Ergonomic, oil-resistant black handle with large grip surface and soft components. Lock washer for the thrust bolt at the end of the clamping arm.

**Complete with tempered, matte-black clamping screw no. 6890B.**

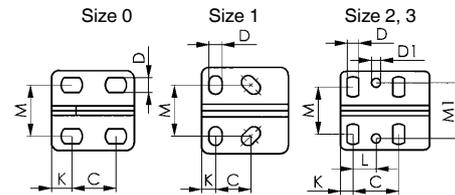
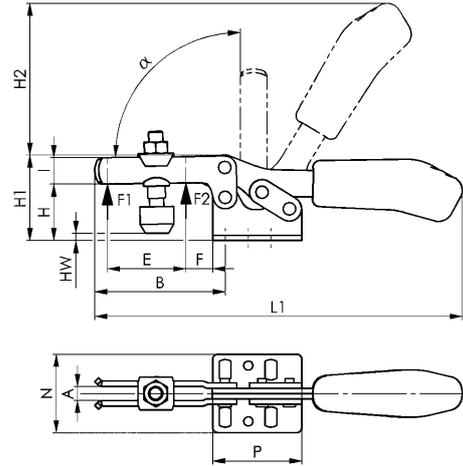
Order no.	Size	F1 [kN]	F2 [kN]	Clamping screw	Weight [g]
90423	0	0,3	0,4	M4x34,5	35
90480	1	0,8	1,1	M5x38	105
90506	2	1,0	1,2	M6x46	185
90522	3	1,8	2,5	M8x63	320

#### Note:

These clamps are suitable for photogrammetric use. The matte-black surface of the clamps prevents reflection while photographing.

For suitable clamping arm extension see no. 6896.

For suitable sensor monitor for size 3 see no. 6897S.



#### Recommendations



No. 6890B,  
page 157



No. 6832B,  
page 119



No. 6841B,  
page 122

#### Dimensions:

Order no.	Size	A	B	C	D	D1	E	F	H	H1	H2	HW min.	HW max.	I	K	L	L1	M	M1	N	P	$\alpha$
90423	0	4	28	11,5-15,5	4,6	-	9,0	5,5	14,5	23,0	34,0	-7,4	2,7	7,5	6,25	-	79	16,0	-	25,0	25,5	90°
90480	1	5	42	13,0-14,5	5,2	-	18,8	8,0	19,0	30,0	49,0	-3,6	1,8	10,0	5,50	-	120	18,0-21,5	-	34,0	34,0	90°
90506	2	6	64	26,0	5,6	5,6	32,0	16,0	24,0	45,0	66,3	-2,6	5,0	13,2	6,00	12,7	162	19,5-29,5	28,5	42,0	38,0	90°
90522	3	8	73	25,7	6,5	5,1	37,0	14,0	32,0	48,5	86,0	-7,4	5,0	15,0	7,00	-	206	22,0-31,8	31,6	45,5	50,0	90°

CAD



Subject to technical alterations.

## No. 6832B

### Horizontal toggle clamp, black

**With open clamping arm and vertical base.**

Matte black surface. Rivets made of stainless steel, which, for sizes 2 and 3, run in hardened bushings. Bearings are pre-lubricated.

Ergonomic, oil-resistant black handle with large grip surface and soft components. Lock washer for the thrust bolt at the end of the clamping arm.

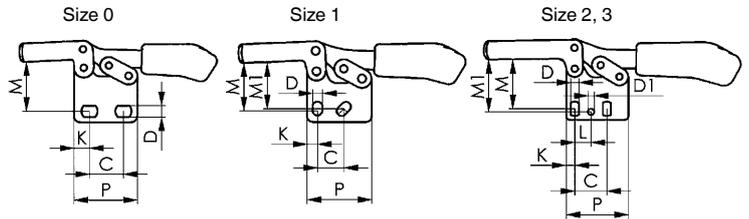
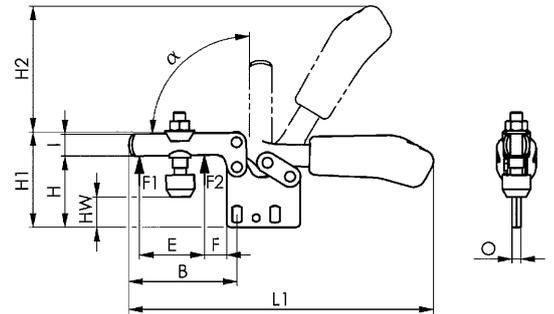
**Complete with tempered, matte-black clamping screw no. 6890B.**

Order no.	Size	F1 [kN]	F2 [kN]	Clamping screw	Weight [g]
90290	0	0,3	0,4	M4x34,5	35
90308	1	0,8	1,1	M5x38	105
482471	1	0,8	1,1	-	95
90530	2	1,0	1,2	M6x46	185
456400	2	1,0	1,2	-	170
90381	3	1,8	2,5	M8x63	320
482497	3	1,8	2,5	-	280

### Note:

These clamps are suitable for photogrammetric use. The matte-black surface of the clamps prevents reflection while photographing.

For suitable clamping arm extension see no. 6896.



### Recommendations



No. 6890B,  
page 157



No. 6830B,  
page 118



No. 6800B,  
page 116

### Dimensions:

Order no.	Size	A	B	C	D	D1	E	F	H	H1	H2	HW min.	HW max.	I	K	L	L1	M	M1	N	O	P	α
90290	0	4	28,0	11,5-15,5	4,6	-	9,0	5,5	24,5	33	34	2,2	13,7	7,5	6,25	-	79,0	20,0	-	12	3	25,5	90°
90308	1	5	41,7	13,0-15,5	5,2	-	18,5	8,0	31,5	43	49	8,9	14,8	10,0	5,50	-	119,7	23,5-25,5	24,5	18	5	34,0	90°
482471	1	5	41,7	13,0-15,5	5,5	-	18,5	8,0	31,5	43	49	-	-	10,0	5,50	-	119,7	23,5-25,5	24,5	18	5	34,0	90°
90530	2	6	64,0	26,0	5,6	5,6	32,0	16,0	40,0	61	68	14,0	22,0	13,2	6,00	12,7	164,0	29,5-34,0	34,0	21	5	38,0	90°
456400	2	6	64,0	26,0	5,6	5,6	32,0	16,0	40,0	61	68	-	-	13,2	6,00	12,7	164,0	29,5-34,0	34,0	21	5	38,0	90°
90381	3	8	73,0	25,7	6,5	5,1	39,0	12,0	49,0	65	86	9,5	22,0	15,0	7,00	13,0	206,0	37,5-42,5	42,0	27	6	50,0	90°
482497	3	8	73,0	25,7	6,5	5,1	39,0	12,0	49,0	65	86	-	-	15,0	7,00	13,0	206,0	37,5-42,5	42,0	27	6	50,0	90°



CAD

## No. 6835B-2

### Horizontal toggle clamp, black

With open clamping arm and vertical, open base.

Matte black surface. Stainless steel rivets, which run in hardened bushes. Bearings are pre-lubricated.

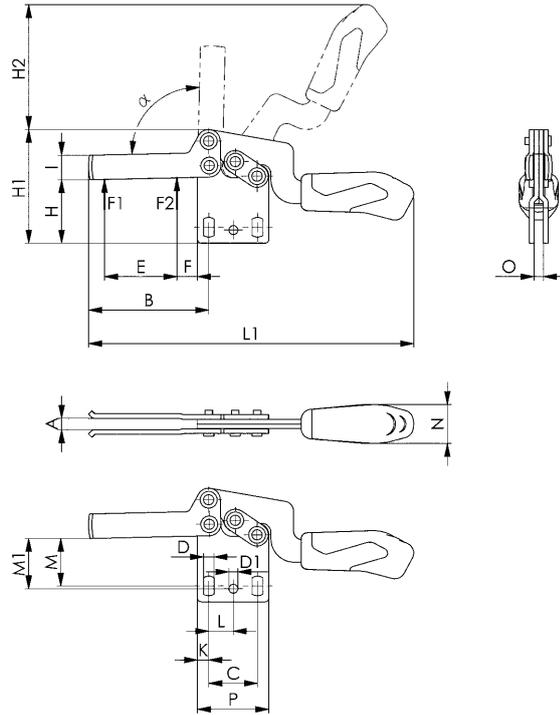
Ergonomic, oil-resistant black handle with large grip surface and soft components. Lock washer for the thrust bolt at the end of the clamping arm.

Order no.	Size	F1 [kN]	F2 [kN]	Weight [g]
90670	2	1,0	1,2	190

#### Note:

These clamps are suitable for photogrammetric use. The matte-black surface of the clamps prevents reflection while photographing.

For suitable clamping arm extension see no. 6896.



#### Recommendations



No. 6896,  
page 161



No. 6890B,  
page 157

#### Dimensions:

Order no.	Size	A	B	C	D	D1	E	F	H	H1	H2	I	K	L	L1	M	M1	N	O	P	$\alpha$
90670	2	6,2	64	26,0	5,6	4,8	38,6	11,0	34	61	67	13,2	6	13,1	173,5	23,0-28,0	27	21	5	38	90°

CAD



Subject to technical alterations.

## No. 6835B-3

### Horizontal toggle clamp, black

With open clamping arm and vertical, open base.

Matte black surface. Stainless steel rivets, which run in hardened bushes. Bearings are pre-lubricated.

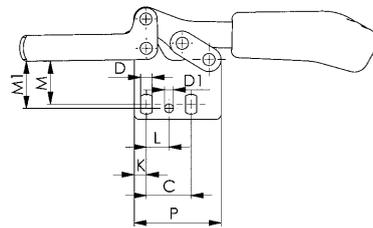
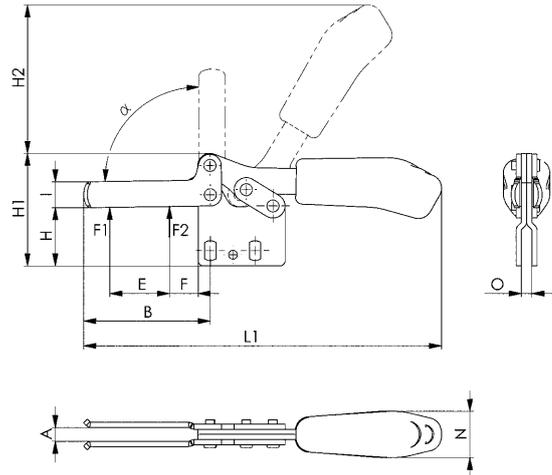
Ergonomic, oil-resistant black handle with large grip surface and soft components. Lock washer for the thrust bolt at the end of the clamping arm.

Order no.	Size	F1 [kN]	F2 [kN]	Weight [g]
90696	3	1,8	2,5	320

#### Note:

These clamps are suitable for photogrammetric use. The matte-black surface of the clamps prevents reflection while photographing.

For suitable clamping arm extension see no. 6896.



#### Recommendations



No. 6896,  
page 161



No. 6890B,  
page 157

#### Dimensions:

Order no.	Size	A	B	C	D	D1	E	F	H	H1	H2	I	K	L	L1	M	M1	N	O	P	$\alpha$
90696	3	8,0	73	25,7	6,5	5,1	34,5	16,5	34	65	86	15,0	7	13,0	206,0	22,5-27,5	27	27	6	50	90°



CAD

## No. 6841B

### Push-pull type toggle clamp, black

**With small angle base.** Push- and pull-clamping. (Equal operation of rod and lever). Long rod-guide with attaching thread and nut. Matte black surface. Stainless steel rivets. Lever-parts and rod of tempered steel. Bearings are pre-lubricated. Ergonomic, oil-resistant black handle with large grip surface and soft components. Lever can be set to any angle relative to base.

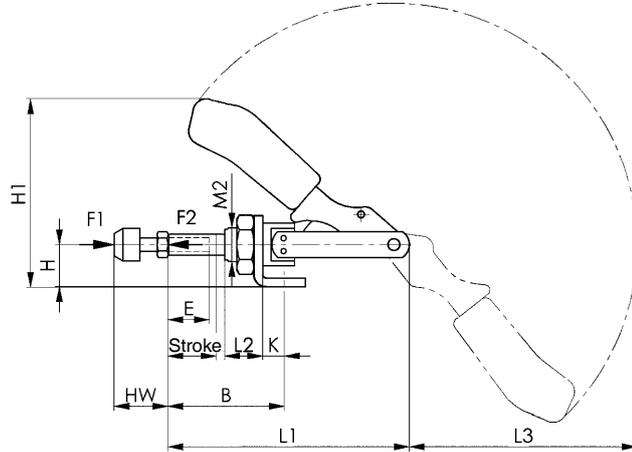
**Complete with tempered, matte-black clamping screw no. 6880B.**



Order no.	Size	F1 [kN]	F2 [kN]	Clamping screw	Weight [g]
90548	1	1,0	1,0	M4x20	125
91280	2	2,0	2,0	M6x25	245

#### Note:

These clamps are suitable for photogrammetric use. The matte-black surface of the clamps prevents reflection while photographing.



#### Recommendations



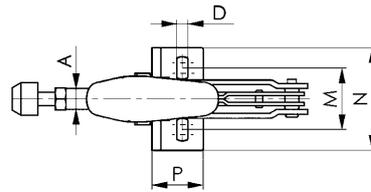
No. 6880B,  
page 158



No. 6800B,  
page 116



No. 6830B,  
page 118



#### Dimensions:

Order no.	Size	A	B min.	B max.	D	E	H	H1	Stroke	HW min.	HW max.	K	L1	L2	L3	M	M2	N	P
90548	1	8,0	24,5	44,5	4,5	20	15	60	20	12	20	7,0	91	16	72	16,0-19,5	M12x1,5	30	20
91280	2	10,0	32,5	57,5	5,6	25	20	95	26	17	25	12,5	114	19	105	31,8-36,0	M16x1,5	50	34

## No. 6845B

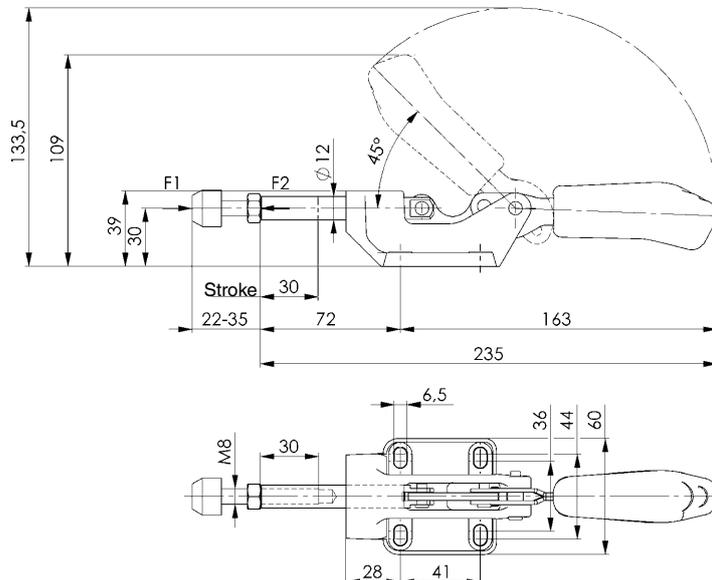
### Push-pull type toggle clamp, black

#### Push clamp.

(Opposed operation of rod and lever). Version with long rod guide. Basic body of malleable cast iron, matt black surface. Lever parts and rod of tempered steel, matte-black galvanised. Stainless steel rivets, which run in hardened bushes. Bearings are pre-lubricated. Ergonomic, oil-resistant handle with large grip surface and soft components.

**Complete with tempered, matte-black clamping screw no. 6880B-3.**

Order no.	Size	F1 [kN]	Clamping screw	Weight [g]
99663	3	4	M8 x 44	540



Subject to technical alterations.

## No. 6800BS

### Vertical toggle clamp with safety latch, black

For open and clamped positions. With open clamping arm and horizontal base.

Matte black surface. Stainless steel rivets, which run in hardened bushes. Bearings are pre-lubricated.

Ergonomic, oil-resistant black handle with large grip surface and soft components. Safety clamping piece with finger protection.

Lock washer for the thrust bolt at the end of the clamping arm.

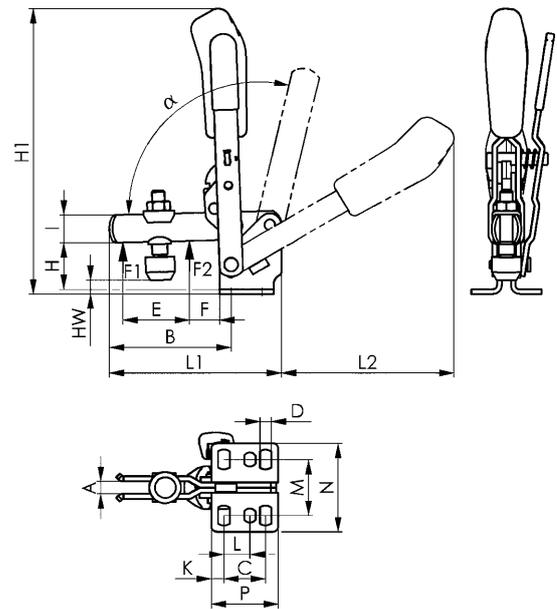
Complete with tempered, matte-black clamping screw no. 6890B.

Order no.	Size	F1 [kN]	F2 [kN]	Clamping screw	Weight [g]
91348	2	1,0	1,2	M6x46	260

#### Note:

These clamps are suitable for photogrammetric use. The matte-black surface of the clamps prevents reflection while photographing.

For suitable clamping arm extension see no. 6896.



#### Recommendations



No. 6890B,  
page 157



No. 6800B,  
page 116



No. 6802B,  
page 117

#### Dimensions:

Order no.	Size	A	B	C	D	E	F	H	H1	HW min.	HW max.	I	K	L	L1	L2	M	N	P	$\alpha$	$\alpha^*$
91348	2	6	52	20	5,5	26	11	23	139	-4,4	4,4	12	6	12,5	78	88	23-31	43	32	105°	60°

\* The opening angle can be changed by pressing in a stop pin.



## No. 6802BS

### Vertical toggle clamp with safety latch, black

For open and clamped positions. With open clamping arm and vertical base.

Matte black surface. Stainless steel rivets, which run in hardened bushes. Bearings are pre-lubricated.

Ergonomic, oil-resistant black handle with large grip surface and soft components. Safety clamping piece with finger protection. Lock washer for the thrust bolt at the end of the clamping arm.

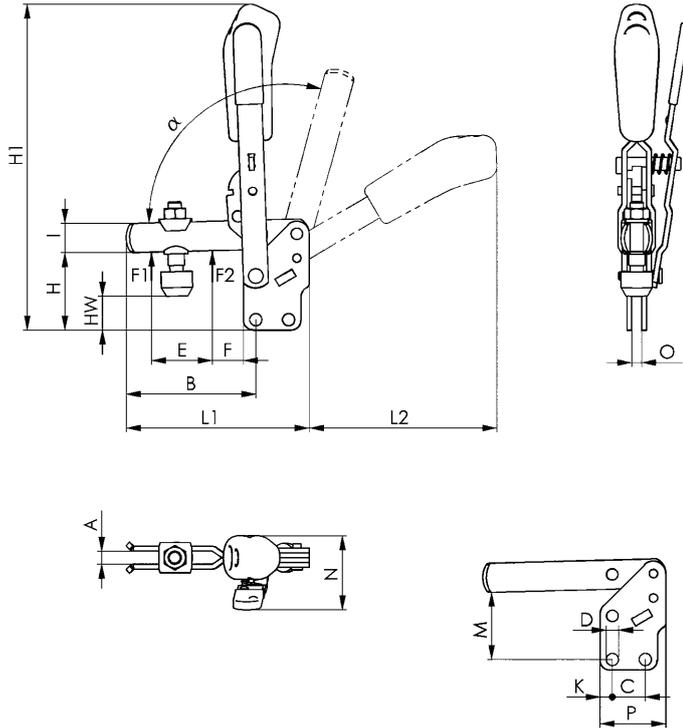
Complete with tempered, matte-black clamping screw no. 6890B.

Order no.	Size	F1 [kN]	F2 [kN]	Clamping screw	Weight [g]
99689	3	1,4	2,5	M8x63	470

#### Note:

These clamps are suitable for photogrammetric use. The matte-black surface of the clamps prevents reflection while photographing.

For suitable clamping arm extension see no. 6896.



#### Recommendations



No. 6890B,  
page 157



No. 6802B,  
page 117



No. 6800B,  
page 116

#### Dimensions:

Order no.	Size	A	B	C	D	E	F	H	H1	HW min.	HW max.	I	K	L1	L2	M	N	O	P	$\alpha$	$\alpha^*$
99689	3	8	79	20	7,5	37	19	48	200	16,5	25	18	7,5	112	114	41	45,5	6	40	105°	60°

CAD



Subject to technical alterations.

## No. 6832BS

### Horizontal toggle clamp with safety latch, black

For open and clamped positions. With open clamping arm and vertical base.

Matte black surface. Stainless steel rivets, which run in hardened bushes. Bearings are pre-lubricated.

Ergonomic, oil-resistant black handle with large grip surface and soft components. Lock washer for the thrust bolt at the end of the clamping arm.

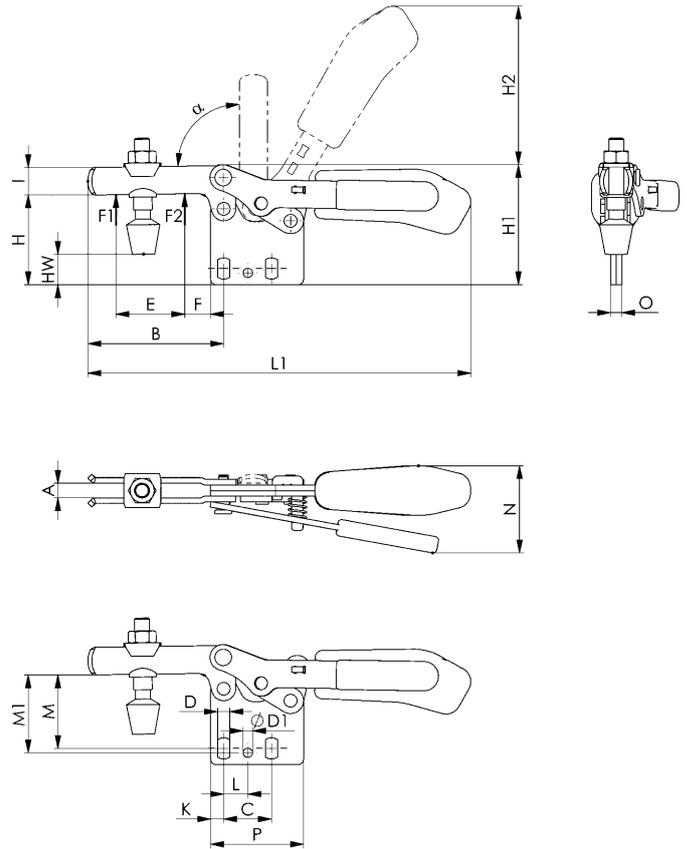
Complete with tempered, matte-black clamping screw no. 6890B.

Order no.	Size	F1 [kN]	F2 [kN]	Clamping screw	Weight [g]
99648	3	1,8	2,5	M8x63	390

#### Note:

These clamps are suitable for photogrammetric use. The matte-black surface of the clamps prevents reflection while photographing.

For suitable clamping arm extension see no. 6896.



#### Recommendations



No. 6896,  
page 161



No. 6890B,  
page 157



No. 6835BS-2,  
page 126

#### Dimensions:

Order no.	Size	A	B	C	D	D1	E	F	H	H1	H2	HW min.	HW max.	I	K	L	L1	M	M1	N	O	P	$\alpha$
99648	3	8	73	25,7	6,5	5,1	37	14	49	65	86	9	22	15	7	13	206	38-42	42	47	6	50	90°



CAD

## No. 6835BS-2

### Horizontal toggle clamp with safety latch, black

For open and clamped positions. With open clamping arm and vertical, open base.

Matte black surface. Stainless steel rivets, which run in hardened bushes. Bearings are pre-lubricated.

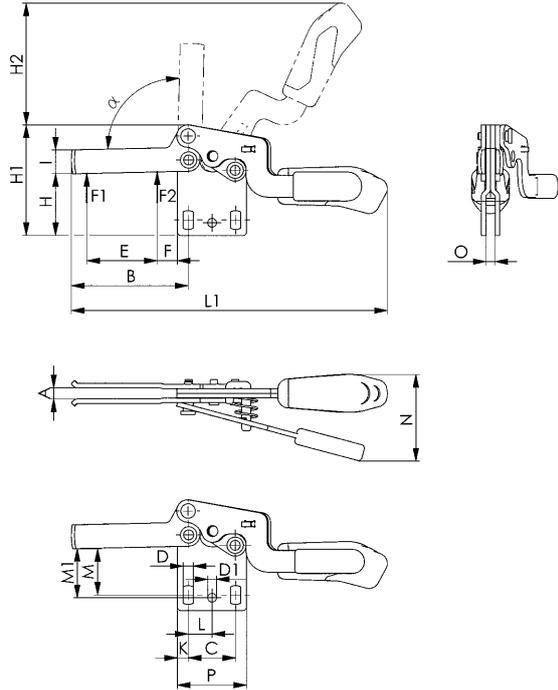
Ergonomic, oil-resistant black handle with large grip surface and soft components. Lock washer for the thrust bolt at the end of the clamping arm.

Order no.	Size	F1 [kN]	F2 [kN]	Weight [g]
90712	2	1,0	1,2	230

#### Note:

These clamps are suitable for photogrammetric use. The matte-black surface of the clamps prevents reflection while photographing.

For suitable clamping arm extension see no. 6896.



#### Recommendations



No. 6896,  
page 161



No. 6890B,  
page 157



No. 6832BS,  
page 125

#### Dimensions:

Order no.	Size	A	B	C	D	D1	E	F	H	H1	H2	I	K	L	L1	M	M1	N	O	P	$\alpha$
90712	2	6,2	64	26,0	5,6	4,8	38,6	11,0	34	61	67	13,2	6	13,1	173,5	23,0-28,0	27	48,0	5	38	90°

CAD



Subject to technical alterations.

## No. 6835BS-3

### Horizontal toggle clamp with safety latch, black

For open and clamped positions. With open clamping arm and vertical, open base.

Matte black surface. Stainless steel rivets, which run in hardened bushes. Bearings are pre-lubricated.

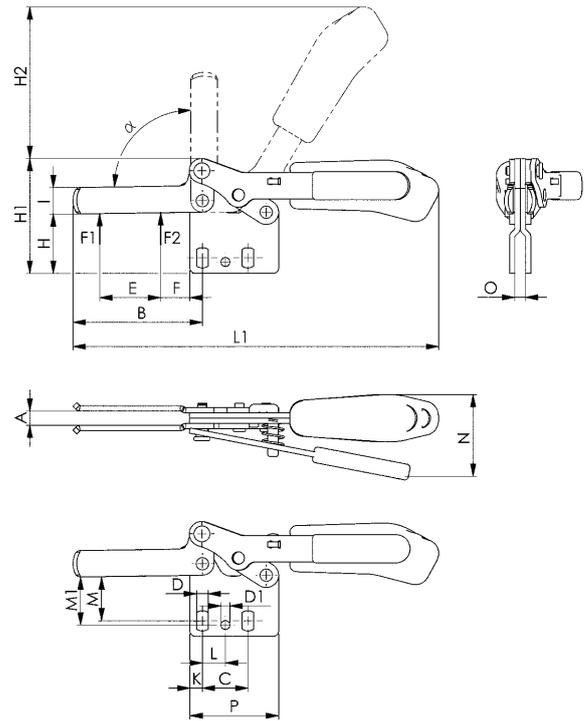
Ergonomic, oil-resistant black handle with large grip surface and soft components. Lock washer for the thrust bolt at the end of the clamping arm.

Order no.	Size	F1 [kN]	F2 [kN]	Weight [g]
90662	3	1,8	2,5	350

#### Note:

These clamps are suitable for photogrammetric use. The matte-black surface of the clamps prevents reflection while photographing.

For suitable clamping arm extension see no. 6896.



#### Recommendations



No. 6896,  
page 161



No. 6890B,  
page 157

#### Dimensions:

Order no.	Size	A	B	C	D	D1	E	F	H	H1	H2	I	K	L	L1	M	M1	N	O	P	$\alpha$
90662	3	8,0	73	25,7	6,5	5,1	34,5	16,5	34	65	86	15,0	7	13,0	206,0	22,5-27,5	27	46,5	6	50	90°

