Eccentric Clamps

EH 23410.

PRODUCT DESCRIPTION

Eccentric clamps enable fast and safe clamping and releasing with a relatively large adjustment range and high tensioning force. The eccentric plain washer enables a stepless radial clamping effect in any clamping position. Furthermore, the eccentric clamp is self-locking. The clamp can be used as a stepless stop by removing the thrust washer.

Material

Gear lever handle
- Steel, ground, blackened
- Stainless steel 1.4305, dull blasted

Body
- Steel, case-hardened, blackened
- Stainless steel 1.4305, nickel-plated

Screw
- Steel, hardened, blackened
- Stainless steel 1.4021, heat-treated, nickel-plated

Ball knob
- Thermosetting plastic PF 31, black, DIN 319

Assembly

Fix with screw bolt M 10 (WS 6). Ensure a tightening torque of max. 40 Nm.

Operation

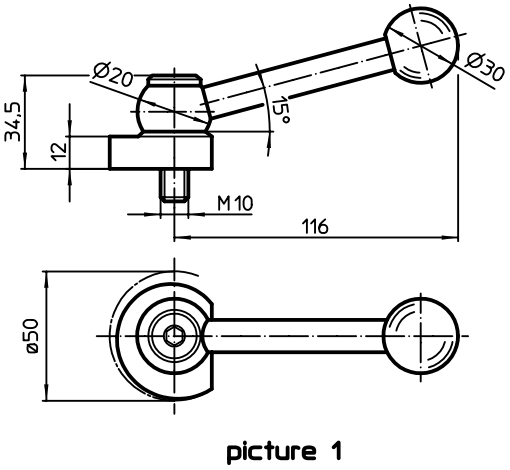
The screw bolt and the washer are adjustable. Once screwed in, the clamping catch can easily be turned to the desired position. For Art. No. 23410.0050 / .0051, the serration helps to put the tension lever to the preferred position.

MORE INFORMATION

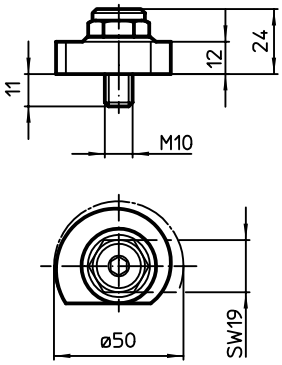
Notes

Left turn type can be supplied on request.

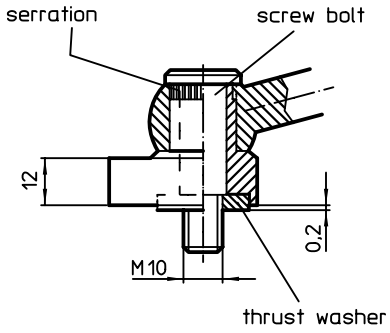
DRAWING

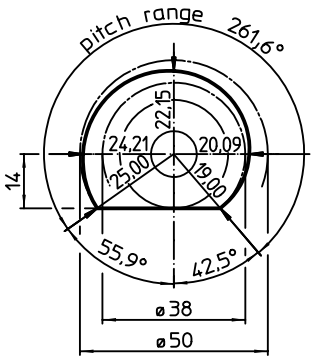


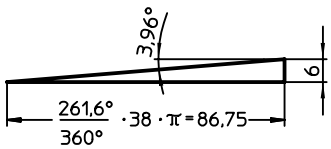
picture 1



picture 2







ORDER INFORMATION

[g]	Art. No. Steel	Art. No. Stainless steel
with tension lever – picture 1		
317	23410.0050	23410.0051
with clamping screw – picture 2		
159	23410.0150	23410.0151

Eccentric Clamping Modules • with shaft location

EH 23410.

PRODUCT DESCRIPTION

The clamping effect remains unchanged and is self-locking in any angle position.

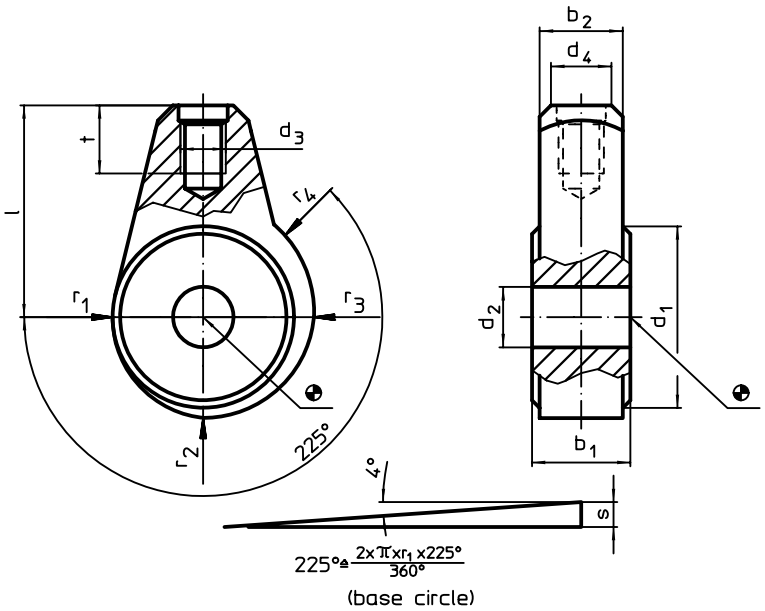
Material
- Sintered steel, case-hardened

Further products
Gear Lever Handles . . . . . → p. 597

MORE INFORMATION

References
Possible applications in combination with
e.g. gear lever handles EH 24350.

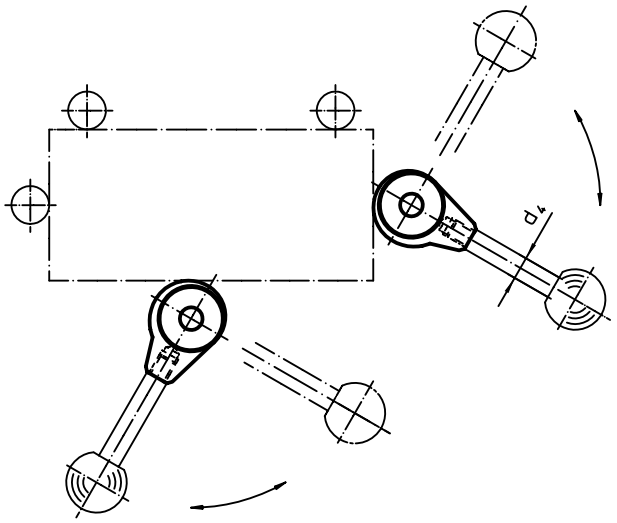
DRAWING



ORDER INFORMATION

Dimensions												d_4 Gear lever handle Ø EH 24350.		Art. No.
d_1	d_2 H9	b_1 -0.05 -0.15	b_2	d_3	l	r_1	r_2	r_3	r_4	s	t			
[mm]												[mm]	[g]	
24	**8**	13	11	M 6	28	12.0	13.32	14.64	15.30	3.3	9	8	50	23410.0210
30	**10**	15	13	M 8	32	15.0	16.65	18.30	19.12	4.1	12	10	100	23410.0220
35	**12**	17	15	M10	36	17.5	19.42	21.34	22.31	4.8	15	12	150	23410.0230

APPLICATION EXAMPLE



3

Down-Thrust Clamps • swivelling, size 25

EH 23310.

PRODUCT DESCRIPTION

Universal mechanical clamping element for fast and comfortable changing and clamping of workpieces by means of manually swivelling clamping claw.
The clamps have the following advantages:

- Rapid manual clamping by means of clamping screw, adjustable clamping lever or adjustable eccentric quick clamp.
- Easy and quick changing of the workpiece by swinging away the clamping claw to the left or right. The positioning ring 23310.0345 allows infinitely variable adjustment (only with variants art no. 23310.0027 - .0029).
- The use of positioning ring 23310.0345 allows a repeatable precise clamping. Here h_1 min. increases by at least 6 mm (stroke minus 6 mm).
- Compact design, thus little space taken-up for clamping.
- Easy adjustment even to large clamping heights due to the height adjusting cylinders.

As the force applied by the operator is not known for the versions with levers, the clamping force is given in the tables as a guide value. The average value was determined by tests.

Material

Clamp

- Case-hardened steel, case-hardened, blackened and ground

Tension lever

- Zinc die-cast, plastic coated, orange similar to RAL 2004, matt structure
- Zinc die-cast, plastic coated, black, similar to RAL 9005

Assembly

Down-thrust clamps can be attached in two ways:

1. in a T-slot, using a nut for T-slots DIN 508 (EH 23010.)
2. with the set screw directly in the mountingplate of, for example, a fixture

The cylinder must make contact over the whole surface.

MORE INFORMATION

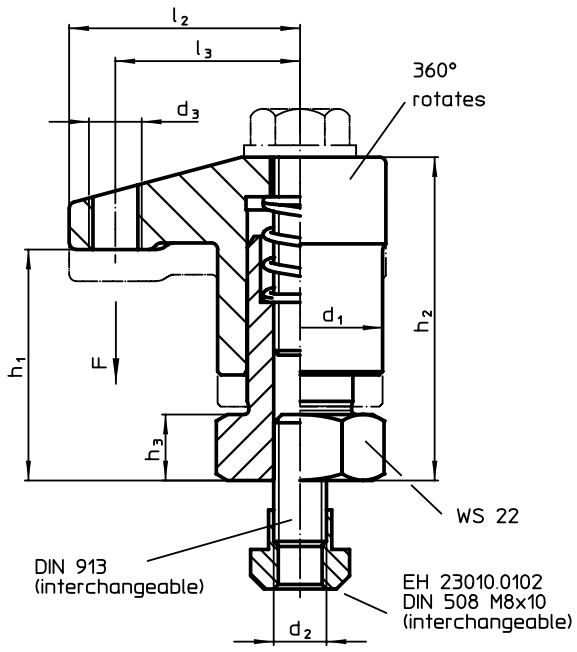
References

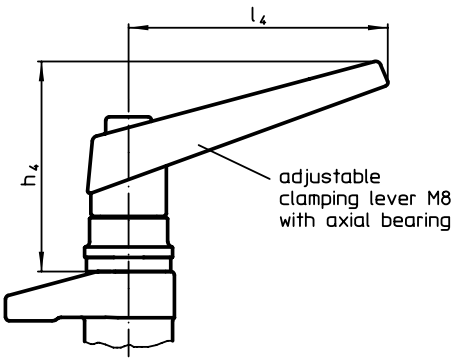
The clamping height can be increased with EH 23310. height adjusting cylinders and EH 1007. washers, and equally lowered by using clamping elements e.g. EH 22730.

Further products

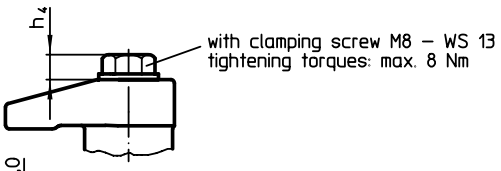
Positioning Rings, for down-thrust clamp . . . . . → p. 526
Height Adjusting Cylinders . . . . . → p. 527
Spacers . . . . . → p. 763

DRAWING

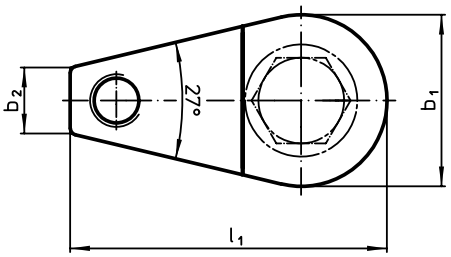


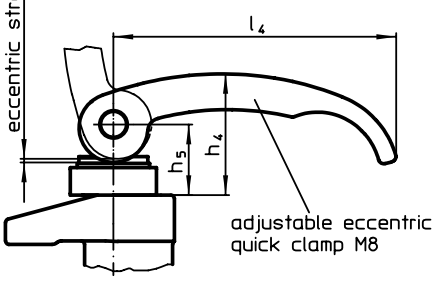


picture 1



picture 2





picture 3

Down-Thrust Clamps • swivelling, size 32

EH 23310.

PRODUCT DESCRIPTION

Universal mechanical clamping element for fast and comfortable changing and clamping of workpieces by means of manually swivelling clamping claw.
The clamps have the following advantages:

- Rapid manual clamping by means of clamping screw, adjustable clamping lever or adjustable eccentric quick clamp.
- Easy and quick changing of the workpiece by swinging away the clamping claw to the left or right. The positioning ring 23310.0348 allows infinitely variable adjustment.
- The use of positioning ring 23310.0348 allows a repeatable precise clamping. Here h_1 min. increases by at least 6 mm (stroke minus 6 mm).
- Compact design, thus little space taken-up for clamping.
- Easy adjustment even to large clamping heights due to the height adjusting cylinders.

As the force applied by the operator is not known for the versions with levers, the clamping force is given in the tables as a guide value. The average value was determined by tests.

Material

Clamp

- Case-hardened steel, case-hardened, blackened and ground

Tension lever

- Zinc die-cast, plastic coated, orange similar to RAL 2004, matt structure
- Zinc die-cast, plastic coated, black, similar to RAL 9005

Assembly

Down-thrust clamps can be attached in two ways:

1. in a T-slot, using a nut for T-slots DIN 508 (EH 23010.)
2. with the set screw directly in the mounting plate of, for example, a fixture

The cylinder must make contact over the whole surface.

MORE INFORMATION

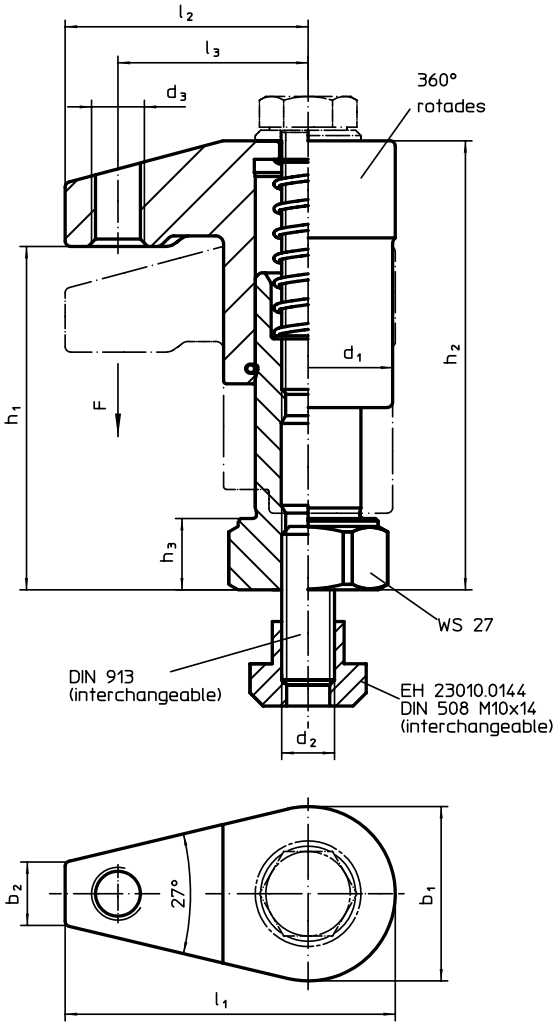
References

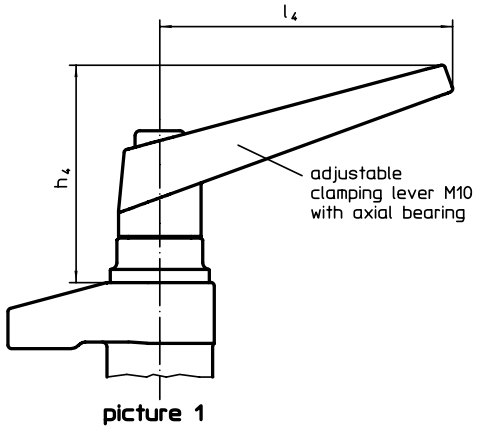
The clamping height can be increased with height adjusting cylinders EH 23310. and reduced with the clamping inserts, e.g. EH 22730.

Further products

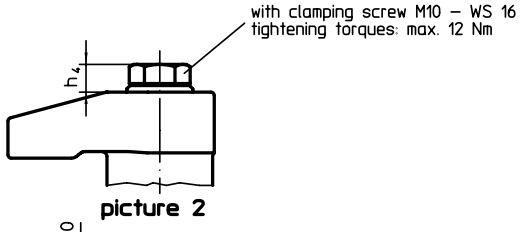
Positioning Rings, for down-thrust clamp . . . . . → p. 526
Height Adjusting Cylinders . . . . . → p. 527

DRAWING

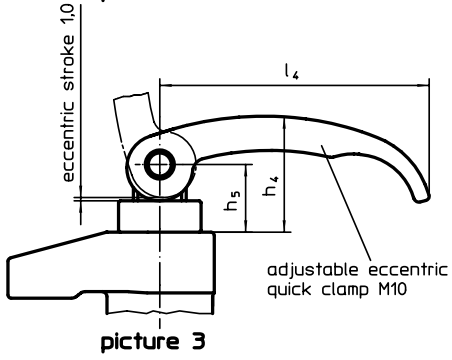




picture 1



picture 2



picture 3

Down-Thrust Clamps • swivelling, size 40

EH 23310.

PRODUCT DESCRIPTION

Universal mechanical clamping element for fast and comfortable changing and clamping of workpieces by means of manually swivelling clamping claw.
The clamps have the following advantages:

- Rapid manual clamping by means of clamping screw, adjustable clamping lever, or double eccentric lever.
- Easy and rapid changing of workpieces by swinging away the clamping claw to the left or right. The positioning ring 23310.0350 allows infinitely variable adjustment.
- Continuously variable setting by means of positioning ring 23310.0350.
- The use of positioning ring 23310.0350 allows a repeatable precise clamping. Here h_1 min. increases by at least 7 mm (stroke minus 7 mm).
- Compact design, thus only a small amount of space is required for clamping.
- Easy adjustment even to large clamping heights due to the height adjusting cylinders.

As the force applied by the operator is not known for the versions with levers, the clamping force is given in the tables as a guide value. The average value was determined by tests.

Material

Clamp

- Case-hardened steel, case-hardened, blackened and ground

Tension lever

- Zinc die-cast, plastic coated, orange similar to RAL 2004, matt structure
- Alloyed case-hardened steel, case-hardened, blackened

Assembly

Down-thrust clamps can be attached in two ways:

1. in a T-slot, using a nut for T-slots DIN 508 (EH 23010.)
2. with the set screw directly in the mounting plate of, for example, a fixture

The cylinder must make contact over the whole surface.
Exceeding of the clamping height is inhibited by the height limitation.

MORE INFORMATION

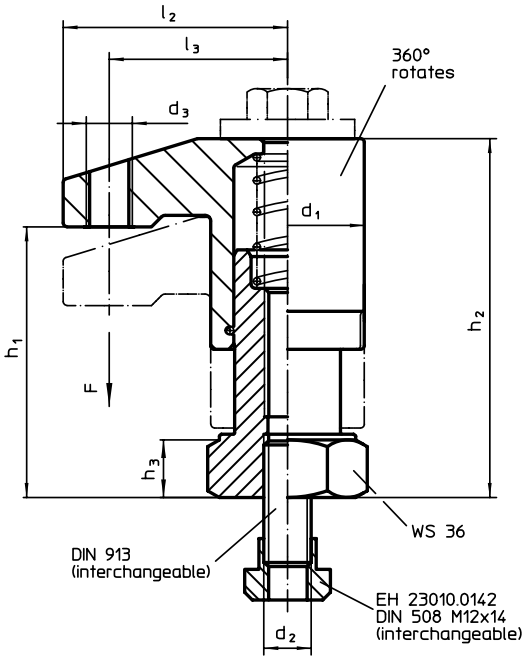
References

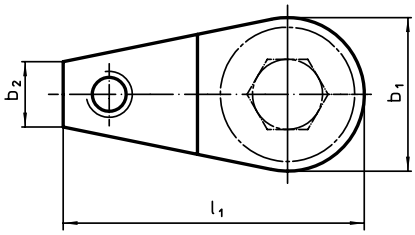
The clamping height can be increased by using height adjusting cylinders EH 23310. and disks EH 1107. and EH 1108. It can be reduced by employing clamping inserts, e.g. EH 22730.

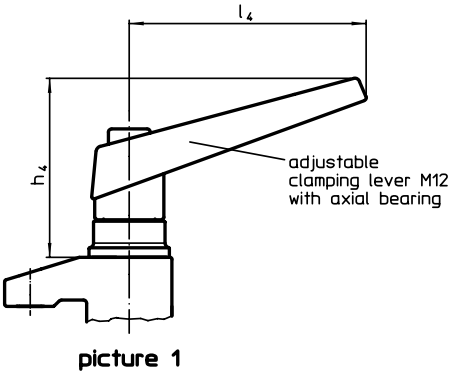
Further products

Positioning Rings, for down-thrust clamp . . . . . → p. 526
Height Adjusting Cylinders . . . . . → p. 527
Spacers . . . . . → p. 763
Wrenches . . . . . → p. 786

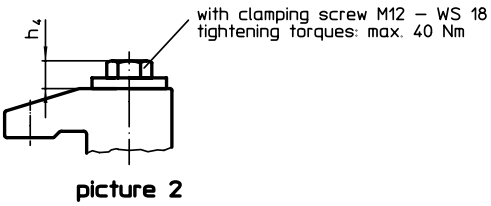
DRAWING



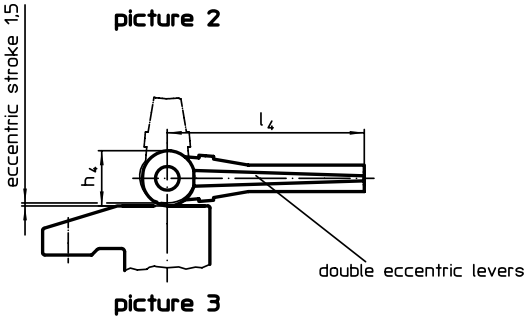




picture 1



picture 2



picture 3

Down-Thrust Clamps • swivelling, low construction, size 44

EH 23310.

PRODUCT DESCRIPTION

Universal mechanical clamping element for fast and comfortable changing and clamping of workpieces by means of manually swivelling clamping claw.
The clamps have the following advantages:

- Rapid manual clamping by means of clamping screw or double eccentric lever.
- Easy and rapid changing of workpieces by swinging away the clamping claw to the left or right.
- Low design, thus little space taken-up for clamping.
- Easy adjustment even to large clamping heights due to the height adjusting cylinders.

As the force applied by the operator is not known for the versions with levers, the clamping force is given in the tables as a guide value. The average value was determined by tests.

Material

- Case-hardened steel, case-hardened, blackened and ground

Assembly

Down-thrust clamps can be attached in two ways:

1. in a T-slot, using a nut for T-slots DIN 508 (EH 23010.)
2. with the set screw directly in the mounting plate of, for example, a fixture

The cylinder must make contact over the whole surface.

MORE INFORMATION

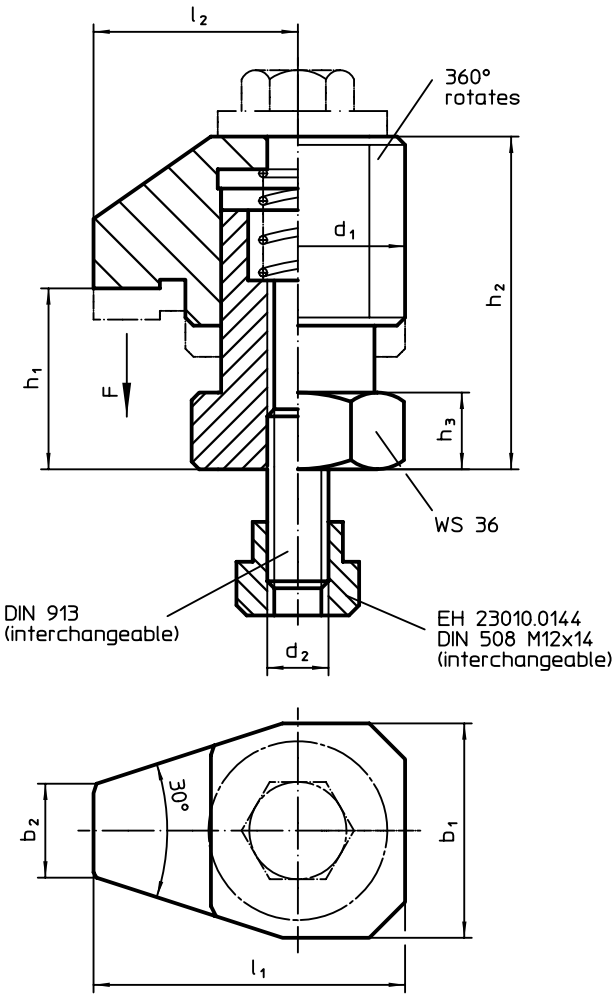
References

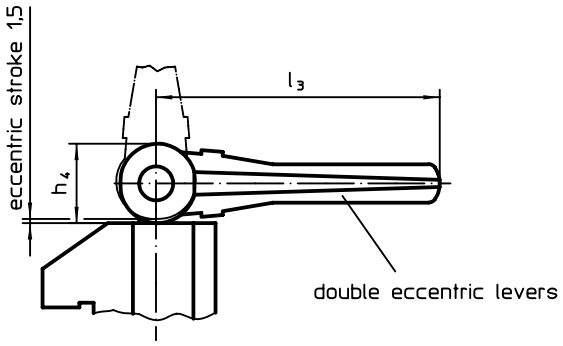
The clamping height can be increased using height adjusting cylinders EH 23310. and with spacers EH 1107. and EH 1108.

Further products

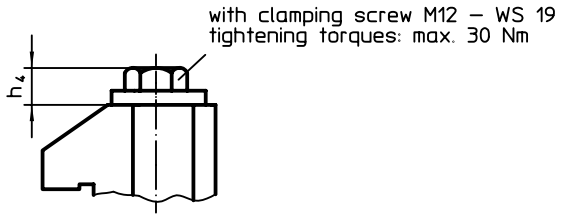
Height Adjusting Cylinders . . . . . → p. 527
Spacers . . . . . → p. 763
Wrenches . . . . . → p. 786

DRAWING





picture 1



picture 2

Down-Thrust Clamps • swivelling, size 60

EH 23310.

PRODUCT DESCRIPTION

Universal mechanical clamping element for fast and comfortable changing and clamping of workpieces by means of manually swivelling clamping claw.
The clamps have the following advantages:

- Rapid manual clamping by means of clamping screw.
- Easy and rapid changing of workpieces by swinging away the clamping claw to the left or right. The positioning ring 23310.0360 allows infinitely variable adjustment.
- The use of positioning ring 23310.0360 allows a repeatable precise clamping. Here h_1 min. increases by at least 10 mm (stroke minus 10 mm).
- Compact design, thus little space taken-up for clamping.
- Easy adjustment even to large clamping heights due to the height adjusting cylinders.

Material

Clamp

- Case-hardened steel, case-hardened, blackened and ground

Assembly

Down-thrust clamps can be attached in two ways:

1. in a T-slot, using a nut for T-slots DIN 508 (EH 23010.)
2. with the set screw directly in the mounting plate of, for example, a fixture

The cylinder must make contact over the whole surface.

MORE INFORMATION

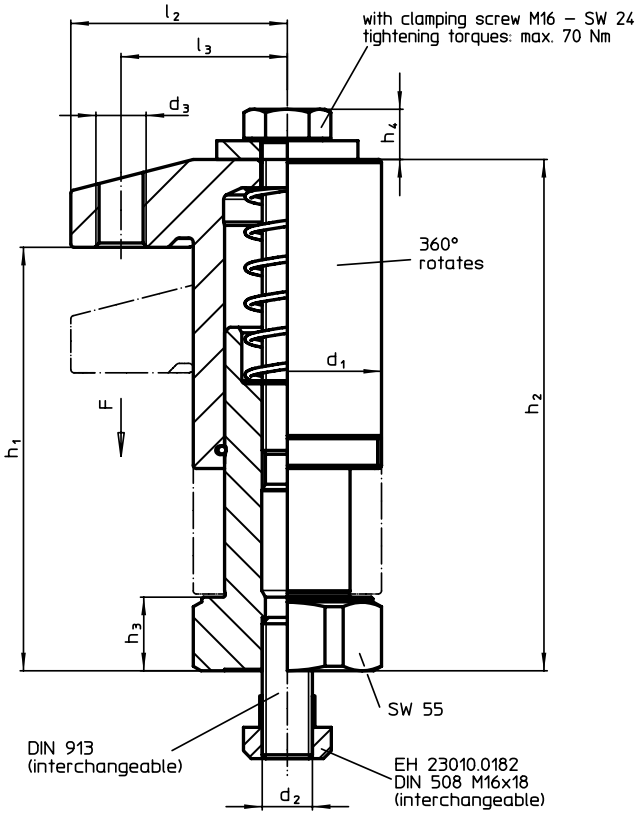
References

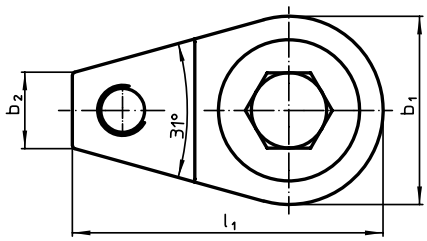
The clamping height can be increased with height adjusting cylinders EH 23310. and with spacers EH 1617. and reduced with clamping inserts.

Further products

Positioning Rings, for down-thrust clamp . . . . . → p. 526
Wrenches . . . . . → p. 786
Spacers . . . . . → p. 819

DRAWING





ORDER INFORMATION

d_1	b_1	b_2	d_3	Dimensions h_1	h_2	h_3	l_1	l_2	l_3	Stroke	Clamping force	Tightening torque max.		Art. No.
[mm]										[mm]	[kN]	[Nm]	[g]	
with clamping screw														
60	60	24	M16	68 – 98	96 – 123	17	99	69	53	30	15	70	2307	23310.0065
				95 – 135	126 – 163	24	99	69	53	40	15	70	3020	23310.0067

Down-Thrust Clamps • swivelling, size 82.5

EH 23310.

PRODUCT DESCRIPTION

The down-thrust clamp is a universal mechanical clamp that allows fast and easy exchange and clamping of workpieces - as the clamping claw can be easily manually swivelled to clear the workpiece.

The down-thrust clamps have the following advantages:

- Compact design
- Clamping force of up to max. 30 kN via a clamping screw WS 36
- Clamping claw swivels 360°
- Clamping stroke 30 mm
- Clamping height max. 250 mm
- Integrated clamping height stop for safe use
- Easy and quick workpiece change by swivelling the clamping claw to the left or right. The positioning ring 23310.0351 allows infinitely variable adjustment and permits precise repeat clamping.

Material

- Case-hardened steel, case-hardened, blackened and ground

Assembly

Fixture via 4 cap screws M 24 with a hole spacing 100 x 100 mm

MORE INFORMATION

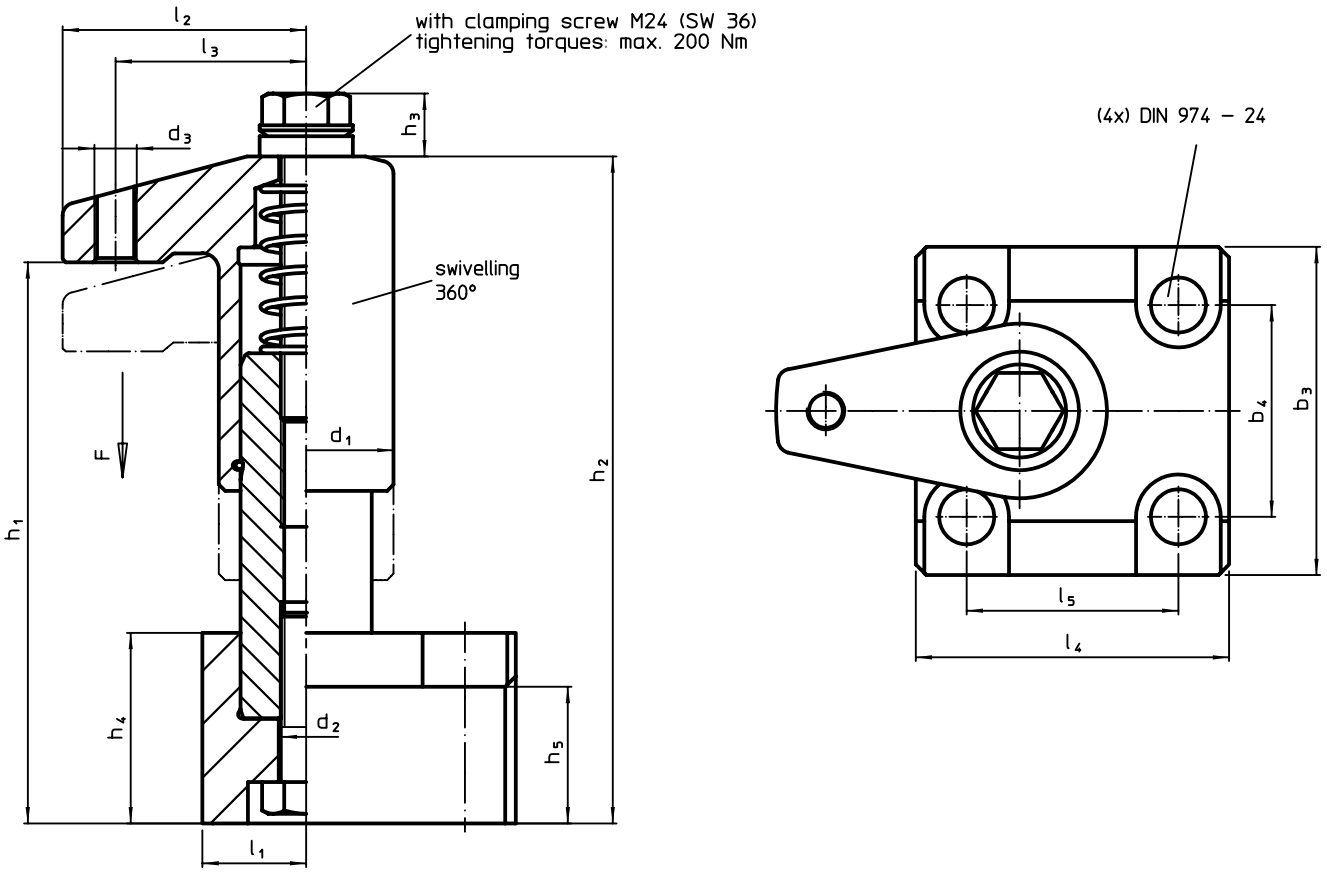
References

The clamping height can be reduced by using clamping inserts, e.g. EH 22730.

Further products

Positioning Rings, for down-thrust clamp . . . . . → p. 526
Wrenches . . . . . → p. 786

DRAWING



ORDER INFORMATION

Dimensions [mm]																Stroke [mm]	Clamping force [kN]	Tightening torque max. [Nm]	[kg]	Art. No.
d_1	b_3	b_4	d_2	d_3	d_4	h_1	h_2	h_3	h_4	h_5	l_1	l_2	l_3	l_4	l_5					
82.5	155	100	M24	M20	49	220 – 250	270 – 320	30	90	65	49	115	91.5	148	100	30	30	200	21	23310.0070

Down-Thrust Clamps • moveable, size 40

EH 23310.

PRODUCT DESCRIPTION

The moveable down-thrust clamps are used, amongst other things, when swivel movements are not possible because of the workpiece.
The clamps have the following advantages:

- Easier and quicker workpiece change by moving the clamping claws forwards or backwards.
- The clamping range in horizontal direction is between l_1 min. and l_1 max.
- To change the workpiece, the clamping claw can be pushed back from l_1 max. by dimension l_2.
- Rapid manual clamping by means of the clamping screw, the adjustable clamping lever, or the double eccentric tension lever.
- As with all down-thrust clamps, the clamping claw of this version can also be swivelled away to the left or right. The use of positioning ring 23310.0350 allows the clamping position to be fixed. Here h_1 min. increases by at least 7 mm (stroke minus 7 mm).
- Compact design, therefore less space requirement when clamping.
- Easily adjustable even to large clamping heights, using the height adjusting cylinders.

As the force applied by the operator is not known for the versions with levers, the clamping force is given in the tables as a guide value. The average value was determined by tests.

Material

Clamp

- Case-hardened steel, case-hardened, blackened and ground

Tension lever

- Zinc die-cast, plastic coated, orange similar to RAL 2004, matt structure
- Alloyed case-hardened steel, case-hardened, blackened

Assembly

Down-thrust clamps can be attached in two ways:

1. in a T-slot, using a nut for T-slots DIN 508 (EH 23010.)
2. with the set screw directly in the mounting plate of, for example, a fixture

The cylinder must make contact over the whole surface.

Operation

1. Push clamping claw backwards.
2. Insert workpiece.
3. Push clamping claw forwards.
4. Adjust clamping position of clamping claw using the knurled screw.
5. Secure / lock the clamping position using the knurled nut.

MORE INFORMATION

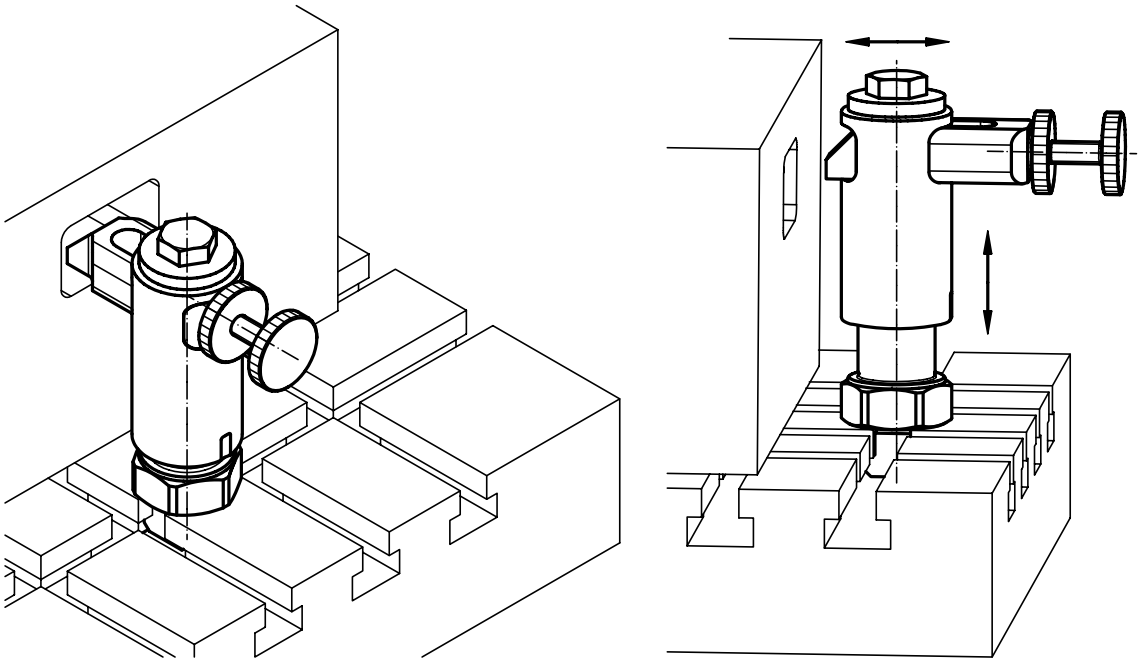
References

The clamping height can be increased by using height adjusting cylinders EH 23310. and disks EH 1107. and EH 1108. It can be reduced by employing clamping inserts, e.g. EH 22730.

Further products

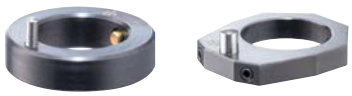
Positioning Rings, for down-thrust clamp . . . . . → p. 526
Height Adjusting Cylinders . . . . . → p. 527
Spacers . . . . . → p. 763
Wrenches . . . . . → p. 786

APPLICATION EXAMPLE



Positioning Rings • for down-thrust clamp

EH 23310.



PRODUCT DESCRIPTION

After aligning, the clamp positioning ring is fitted on the spindle with the effect, that repeated clamping is always exactly on the same point. The positioning ring is adjustable 360° on the down-thrust clamp. After mounting, the clamping claw can swing 110° to the left or right (only for the swiveling versions).

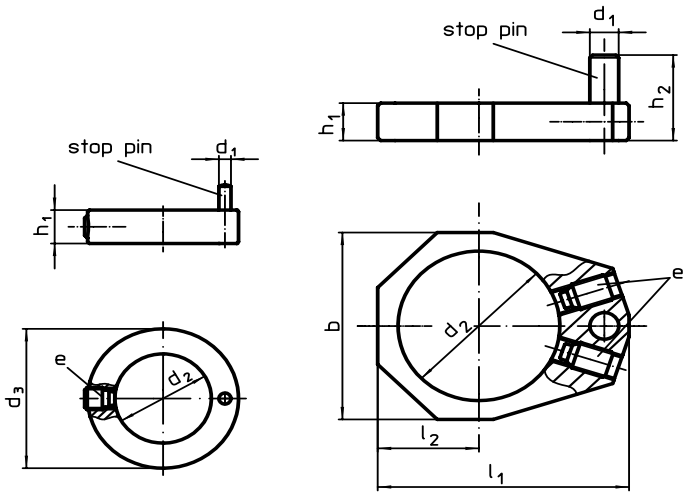
Material

- Steel, blackened

Assembly

Before mounting the positioning ring, pull-off the clamping claw of down-thrust clamp.

DRAWING

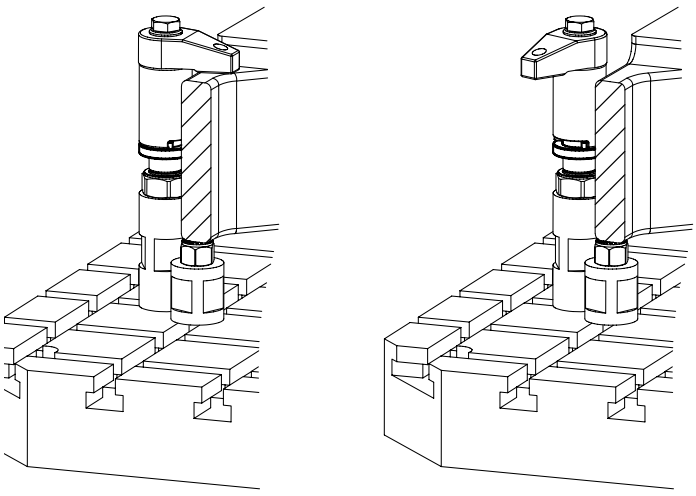


picture 1 picture 2

ORDER INFORMATION

Dimensions [mm]									For down-thrust clamp	[g]	Art. No.
h_1	h_2	d_1	d_2	d_3	l_1	l_2	b	e			
for down-thrust clamps size 25 – picture 1											
6	10	2	16	25	–	–	–	22760.0040	23310.0027 - 23310.0029	14	23310.0345
for down-thrust clamps size 32 – picture 1											
6	10	3	20	32	–	–	–	22760.0042	23310.0040 - 23310.0045	23	23310.0348
for down-thrust clamps, size 40 – picture 2											
7	16	5	28	–	43.5	17.5	35	22760.0052	23310.0050-.0058/23310.0083-.0088	32	23310.0350
for down-thrust clamps size 60 – picture 2											
10	20	8	40	–	66.5	27.5	56	22760.0064	23310.0065, 23310.0067	151	23310.0360
for down-thrust clamps, size 82,5 – picture 2											
15	40	10	62	–	93.0	39.0	78	22760.0104	23310.0070	355	23310.0351

APPLICATION EXAMPLE



Height Adjusting Cylinders

EH 23310.

PRODUCT DESCRIPTION

The height adjusting cylinders can be used to extend the clamping height of down-thrust clamps EH 23310. They are also used in combination with seating pins (EH 22680.), pins (EH 22690.) and self-aligning pads (EH 22730. - EH 22741.).

Material

- Steel, case-hardened, blackened, ground

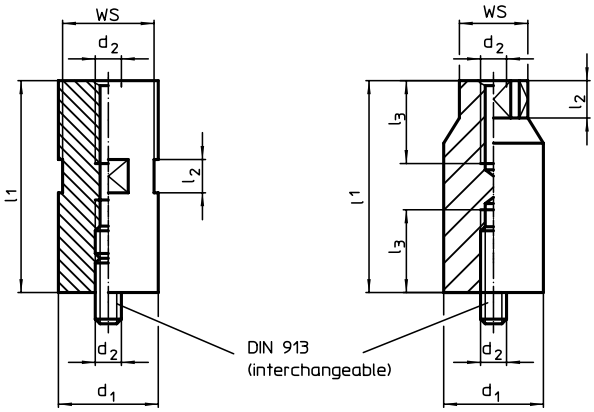
MORE INFORMATION

Further products

Seating Pins, ribbed or pointed . . . . . → p. 309
Seating Pins, pin shape. . . . . → p. 310
Pins . . . . . → p. 311
Seating Pins, adjustable . . . . . → p. 314
Self-Aligning Pads . . . . . → p. 338
Self-Aligning Pads, with hard metal ball, ribbed . . . . . → p. 339
Self-Aligning Pads, self-resetting. . . . . → p. 340
Self-Aligning Pads, with hard metal ball, ribbed and self-resetting . . . . . → p. 342
Self-Aligning Pads, adjustable. . . . . → p. 343
Self-Aligning Pads, adjustable, self-resetting . . . . . → p. 344

3

DRAWING



picture 1 picture 2

ORDER INFORMATION

Dimensions					WS		Art. No.
d_1 -0.1	l_1	d_2	l_2	l_3			
[mm]					[mm]	[g]	
picture 1							
25	**20 ±0.01**	**M 8**	10	–	22	75	23310.0125
	40 ±0.01	**M 8**	20	–	22	150	23310.0126
	80 ±0.01	**M 8**	20	–	22	306	23310.0127
32	**35 ±0.01**	**M10**	20	–	27	202	23310.0130
	70 ±0.01	**M10**	20	–	27	411	23310.0132
	140 ±0.01	**M10**	20	–	27	848	23310.0134
40	**35 ±0.01**	**M12**	20	–	36	336	23310.0140
	70 ±0.01	**M12**	20	–	36	673	23310.0141
	140 ±0.01	**M12**	20	–	36	1366	23310.0142
	35 ±0.01	**M16**	20	–	36	331	23310.0145
	70 ±0.01	**M16**	20	–	36	663	23310.0146
	140 ±0.01	**M16**	20	–	36	1330	23310.0147
60	**35 ±0.01**	**M12**	20	–	55	765	23310.0160
	70 ±0.01	**M12**	20	–	55	1533	23310.0161
	140 ±0.01	**M12**	20	–	55	3096	23310.0162
	35 ±0.01	**M16**	20	–	55	763	23310.0165
	70 ±0.01	**M16**	20	–	55	1522	23310.0166
	140 ±0.01	**M16**	20	–	55	3056	23310.0167
	50 ±0.01	**M20**	20	–	55	1087	23310.0170
	100 ±0.01	**M20**	20	–	55	2130	23310.0171
	200 ±0.01	**M20**	20	–	55	4335	23310.0172
70	**50 ±0.01**	**M24**	25	–	65	1361	23310.0241
	100 ±0.01	**M24**	25	–	65	2721	23310.0242
picture 2							
90	**200 ±0.02**	**M24**	35	50	65	8860	23310.0243
	300 ±0.02	**M24**	35	50	65	13820	23310.0244