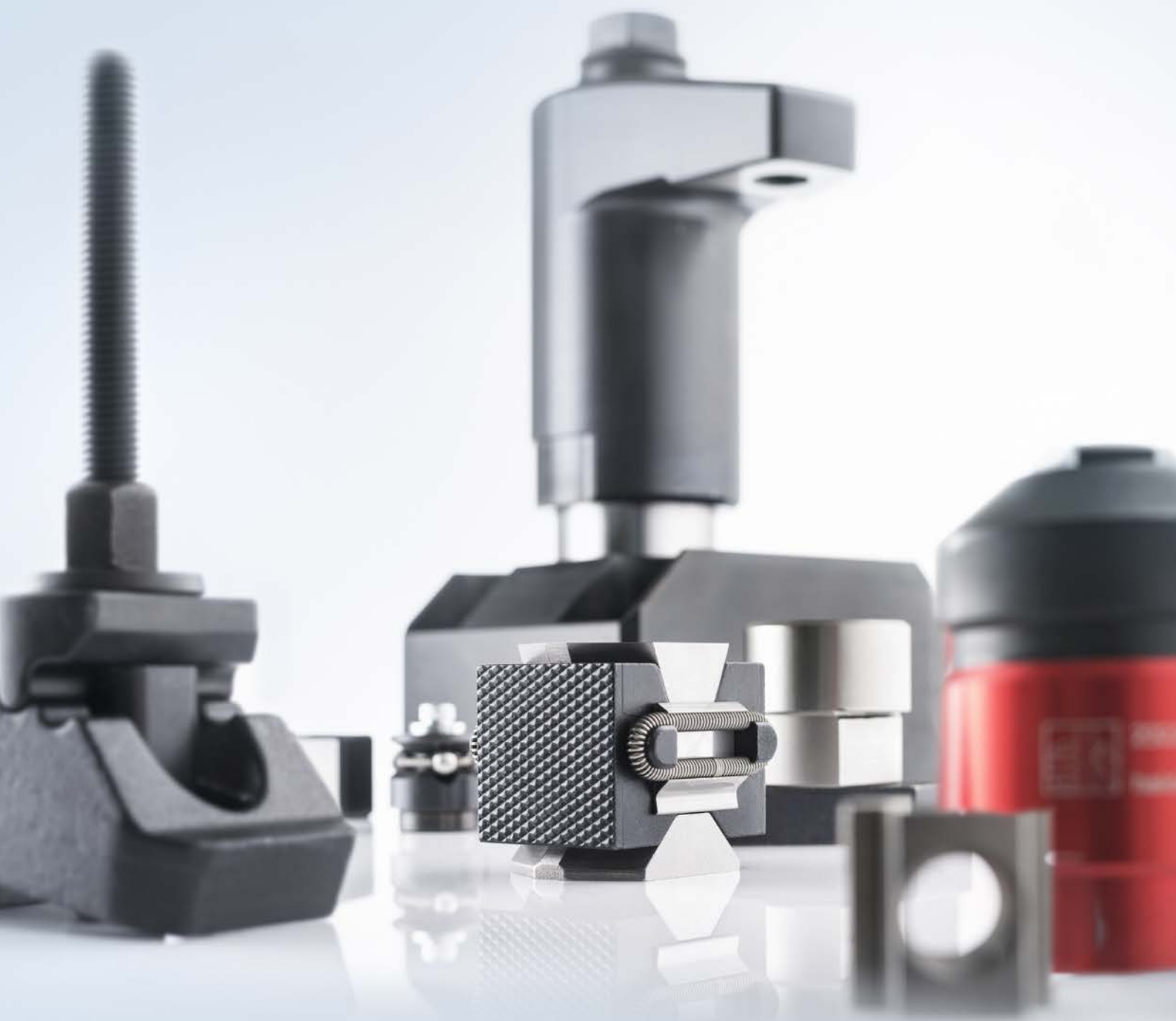


3 CLAMPING ELEMENTS



	Product group	Page
	Nuts for T-Slots	384
	Clamping Screws	391
	Spherical / Plain Washers	398
	Clamping Nuts	406
	Precision Slot Nuts	410
	Positioning Clamping Elements	417
	Positioning Bushings	424
	Clamps	430
	Straight Clamps, slotted	440
	Clamping Element Systems	445
	Horizontal Clamping Elements	454
	Supporting Elements	478
	Floating Clamps	482
	Push-Pull Clamps	498
	Eccentric Clamping Elements	500
	Down-Thrust Clamps	511
	Toggle Clamps	530
	Compact Clamps	557
	Centering Clamping Elements	561
	Shaft Clamps	572
	Clamping Plates	574

Nuts for T-Slots • DIN 508

EH 23010.



PRODUCT DESCRIPTION

These nuts for T-slots (slot nuts) are manufactured according to DIN 508. The range is extended by other dimensions that are not included in DIN.

Material

- Heat-treated steel, quality 8, bright
- Heat-treated steel, tempered, quality 10, blackened
- Stainless steel 1.4301

Assembly

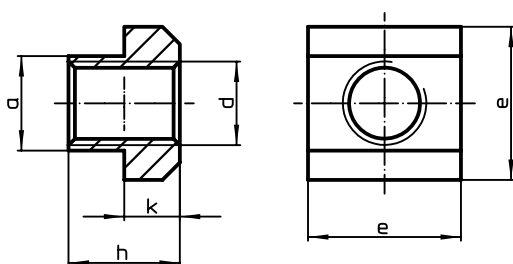
The entire loading capacity of the T-nut can only be applied if the screwing is guaranteed to be made over the total thread length of the T-nut.

MORE INFORMATION

Notes

Special types on request.

DRAWING



ORDER INFORMATION

T-slot size	d	a	Dimensions e	h	k	For T-slots DIN 650	Testing force to DIN 508 F min.		Heat-treated steel, quality 8, bright	Heat-treated steel, tempered, quality 10, blackened	Art. No.	Stainless steel 1.4301
[mm]			[mm]			[mm]	[kN]	[g]				
5	M 4	4.6	9	6.5	3	5	7.0	2.4	23010.0051	23010.0052	–	–
6	M 5	5.6	10	8.0	4	6	11.4	3.4	23010.0061	23010.0062	–	–
8	M 6	7.6	13	10.0	6	8	16.0	8.3	23010.0081	23010.0082	23010.0721	–
10	M 6	9.6	15	12.0	6	10	16.0	14.0	23010.0103 ¹⁾	23010.0104 ¹⁾	–	–
	M 8	9.6	15	12.0	6	10	29.0	12.0	23010.0101	23010.0102	23010.0731	–
12	M 8	11.6	18	14.0	7	12	29.0	23.0	23010.0123 ¹⁾	23010.0124 ¹⁾	–	–
	M10	11.6	18	14.0	7	12	46.0	20.0	23010.0121	23010.0122	23010.0741	–
14	M 6	13.6	22	16.0	8	14	16.0	43.0	–	23010.0146 ¹⁾	–	–
	M 8	13.6	22	16.0	8	14	29.0	41.0	–	23010.0145 ¹⁾	–	–
	M10	13.6	22	16.0	8	14	46.0	38.0	23010.0143 ¹⁾	23010.0144 ¹⁾	–	–
	M12	13.6	22	16.0	8	14	67.0	34.0	23010.0141	23010.0142	23010.0751	–
16	M 8	15.6	25	18.0	9	16	29.0	62.0	–	23010.0166 ¹⁾	–	–
	M10	15.6	25	18.0	9	16	46.0	58.0	–	23010.0165 ¹⁾	–	–
	M12	15.6	25	18.0	9	16	67.0	55.0	23010.0163 ¹⁾	23010.0164 ¹⁾	–	–
	M14	15.6	25	18.0	9	16	–	49.0	23010.0161 ¹⁾	23010.0162 ¹⁾	23010.0761 ¹⁾	–
18	M 8	17.6	28	20.0	10	18	29.0	89.0	–	23010.0187 ¹⁾	–	–
	M10	17.6	28	20.0	10	18	46.0	85.0	–	23010.0186 ¹⁾	–	–
	M12	17.6	28	20.0	10	18	67.0	98.0	–	23010.0185 ¹⁾	–	–
	M14	17.6	28	20.0	10	18	–	74.0	23010.0183 ¹⁾	23010.0184 ¹⁾	–	–
	M16	17.6	28	20.0	10	18	128.0	68.0	23010.0181	23010.0182	23010.0781	–
20	M12	19.6	32	24.0	12	20	67.0	131.0	–	23010.0205 ¹⁾	–	–
	M16	19.6	32	24.0	12	20	128.0	116.0	23010.0203 ¹⁾	23010.0204 ¹⁾	–	–
	M18	19.6	32	24.0	12	20	–	107.0	23010.0201 ¹⁾	23010.0202 ¹⁾	–	–

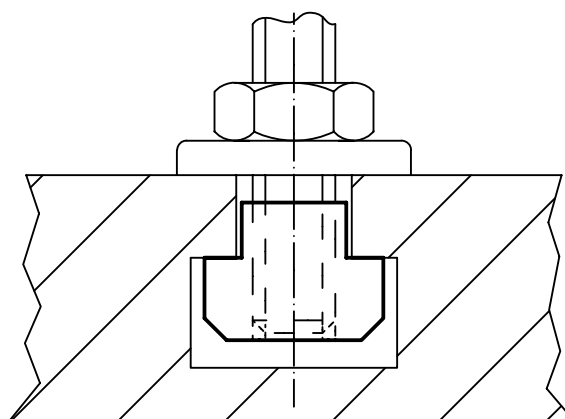
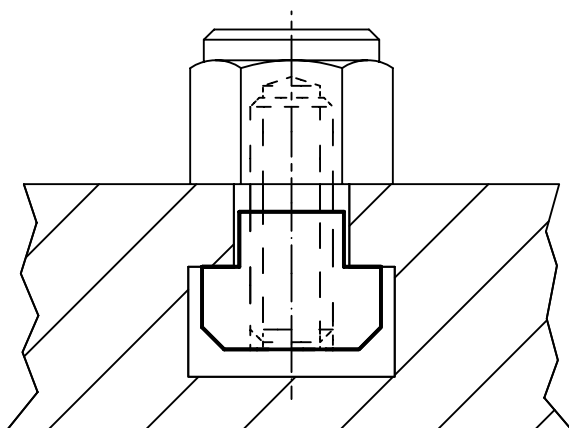
¹⁾ DIN standards do not include these dimensions.



T-slot size	Dimensions					For T-slots DIN 650	Testing force to DIN 508 F min.		Art. No.		
	d	a	e	h	k				Heat-treated steel, quality 8, bright	Heat-treated steel, tempered, quality 10, blackened	Stainless steel 1.4301
[mm]	[mm]					[mm]	[kN]	[g]			
22	M12	21.6	35	28.0	14	22	67.0	189.0	—	23010.0225 ¹⁾	—
	M16	21.6	35	28.0	14	22	128.0	172.0	—	23010.0226 ¹⁾	—
	M18	21.6	35	28.0	14	22	—	162.0	23010.0223 ¹⁾	23010.0224 ¹⁾	—
	M20	21.6	35	28.0	14	22	196.0	149.0	23010.0221	23010.0222	—
24	M16	23.6	40	32.0	16	24	128.0	262.0	—	23010.0246 ¹⁾	—
	M20	23.6	40	32.0	16	24	196.0	236.0	23010.0243 ¹⁾	23010.0244 ¹⁾	—
	M22	23.6	40	32.0	16	24	—	221.0	23010.0241 ¹⁾	23010.0242 ¹⁾	—
28	M16	27.6	44	36.0	18	28	128.0	375	—	23010.0286 ¹⁾	—
	M20	27.6	44	36.0	18	28	196.0	349	—	23010.0284 ¹⁾	—
	M22	27.6	44	36.0	18	28	—	332	—	23010.0283 ¹⁾	—
	M24	27.6	44	36.0	18	28	282.0	317	23010.0281	23010.0282	—
32	M27	31.5	50	40.0	20	32	—	460	—	23010.0322 ¹⁾	—
36	M24	35.5	54	44.0	22	36	282.0	663	—	23010.0364 ¹⁾	—
	M30	35.5	54	44.0	22	36	448.0	585	23010.0361	23010.0362	—
42	M36	41.5	65	52.0	26	42	653.0	1000	23010.0421	23010.0422	—
48	M42	47.5	75	60.0	30	48	653.0	1500	23010.0481	23010.0482	—
54	M48	53.4	85	70.0	34	54	653.0	2264	23010.0541	23010.0542	—

¹⁾ DIN standards do not include these dimensions.

APPLICATION EXAMPLE



Nuts for T-Slots • DIN 508, semi-finished

EH 23010.



PRODUCT DESCRIPTION

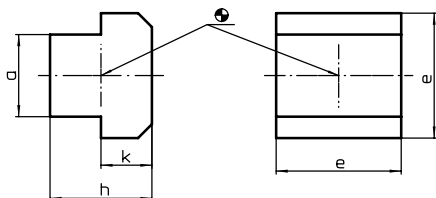
These nuts for T-slots (slot nuts) semi-finished are manufactured according to DIN 508. The range is extended by other dimensions that are not included in DIN.

Material

▪ Heat-treated steel, bright

▪ Stainless steel 1.4301

DRAWING



ORDER INFORMATION

T-slot size [mm]	Dimensions [mm]				 [g]	Art. No.	
	a	e	h	k		Heat-treated steel	Stainless steel
6	5.6	10	8	4	4.4	23010.0060	—
8	7.6	13	10	6	10.0	23010.0080	23010.0720
10	9.6	15	12	6	17.0	23010.0100	23010.0730
12	11.6	18	14	7	27.0	23010.0120	23010.0740
14	13.6	22	16	8	46.0	23010.0140	23010.0750
16	15.6	25	18	9	68.0	23010.0160 ¹⁾	23010.0760 ¹⁾
18	17.6	28	20	10	95.0	23010.0180	23010.0780
20	19.6	32	24	12	149.0	23010.0200 ¹⁾	—
22	21.6	35	28	14	210.0	23010.0220	—
24	23.6	40	32	16	300.0	23010.0240 ¹⁾	—
28	27.6	44	36	18	430.0	23010.0280	—
32	31.5	50	40	20	580.0	23010.0320 ¹⁾	—
36	35.5	54	44	22	800.0	23010.0360	—
42	41.5	65	52	26	1250.0	23010.0420	—
48	47.5	75	60	30	1900.0	23010.0480	—
54	53.4	85	70	34	3141.0	23010.0540	—

¹⁾ DIN standards do not include these dimensions.

Nuts for T-Slots • DIN 508 with antislipping device
EH 23010.



PRODUCT DESCRIPTION

These nuts for T-slots (slot nuts) are manufactured according to DIN 508. The spring element avoids vertical and horizontal slipping of the nut.

Material

Ball

- Ball-bearing steel, hardened

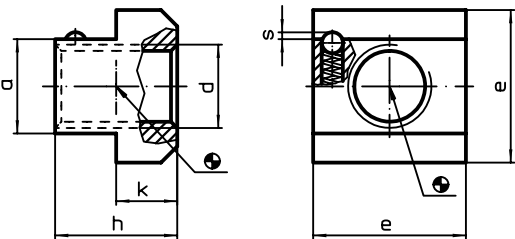
T-nut

- Heat-treated steel, tempered, quality 10, blackened

Spring

- Stainless steel

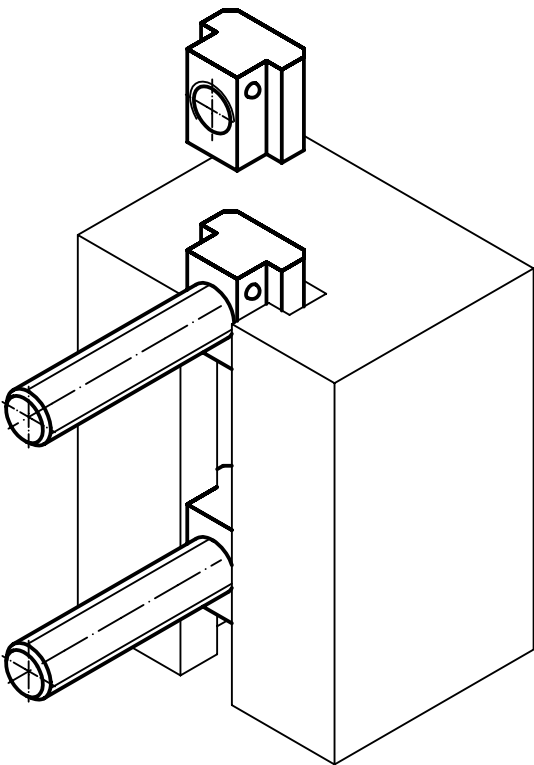
DRAWING



ORDER INFORMATION

T-slot size	Dimensions						Spring load			Art. No.
	d	a	e	h	k	s	F ₁ ~	F ₂ ~		
[mm]							[N]		[g]	
10	M 8	9.6	15	12	6	0.65	3.25	4.75	12	23010.0811
12	M10	11.6	18	14	7	0.80	4.70	12.60	20	23010.0813
14	M12	13.6	22	16	8	0.90	8.50	14.20	34	23010.0815
18	M16	17.6	28	20	10	1.00	7.80	13.50	68	23010.0819
22	M20	21.6	35	28	14	1.60	5.00	12.80	147	23010.0823

APPLICATION EXAMPLE



Nuts for T-Slots • extended
EH 23020.



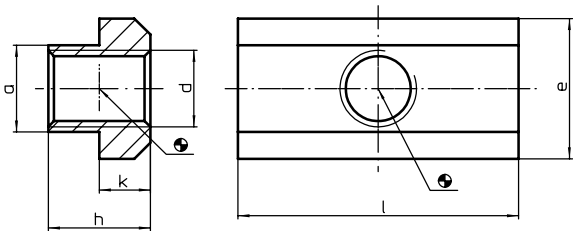
PRODUCT DESCRIPTION

Nuts for T-slots "extended" are, in comparison to the version according to DIN 508, of an extended design and are particularly suitable for assembly in the slot cross.

Material

- Heat-treated steel, tempered, quality 10, blackened

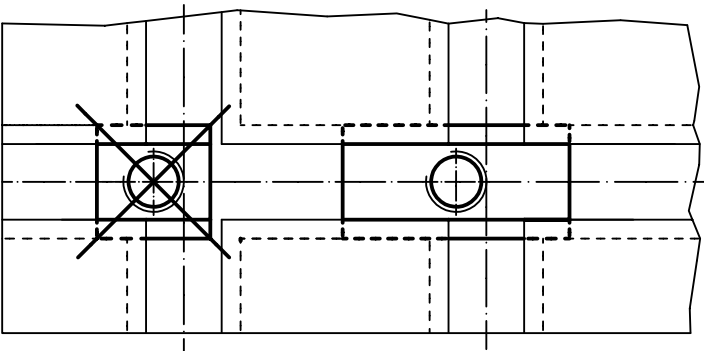
DRAWING



ORDER INFORMATION

T-slot size [mm]	Dimensions						 [g]	Art. No.
	d	a	e	l	h	k		
6	M 5	5.6	10	20	8	4	7.9	23020.0060
8	M 6	7.6	13	26	10	6	19.0	23020.0080
10	M 8	9.6	15	30	12	6	29.0	23020.0100
12	M10	11.6	18	36	14	7	48.0	23020.0120
14	M 6	13.6	22	44	16	8	91.0	23020.0146
	M12	13.6	22	44	16	8	80.0	23020.0140
16	M14	15.6	25	50	18	9	120.0	23020.0160
18	M16	17.6	28	56	20	10	160.0	23020.0180
20	M18	19.6	32	64	24	12	257.0	23020.0200
22	M20	21.6	35	70	28	14	359.0	23020.0220
28	M24	27.6	44	88	36	18	741.0	23020.0280
36	M30	35.5	54	108	44	22	1394.0	23020.0360

APPLICATION EXAMPLE



Nuts for T-Slots • rhombus

EH 23020.



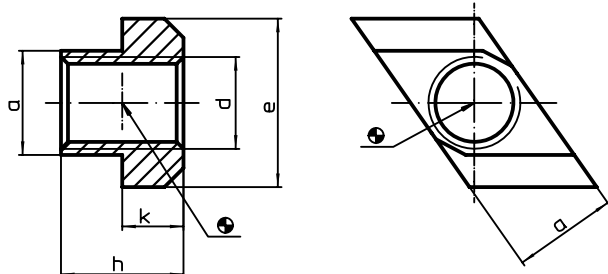
PRODUCT DESCRIPTION

Nuts for T-slots "rhombus" do not have to be inserted lengthwise, but can be inserted directly into the slot.

Material

- Heat-treated steel, tempered, blackened

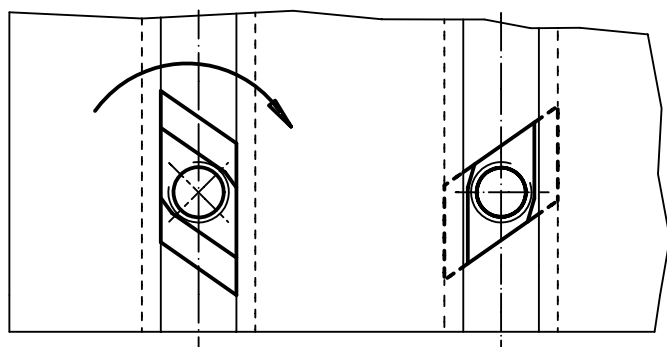
DRAWING



ORDER INFORMATION

T-slot size	Dimensions						Art. No.
[mm]	d	a	e	h	k		
6	M 5	5.7	10	8	4	2.1	23020.0560
8	M 6	7.6	13	10	6	5.4	23020.0580
10	M 8	9.6	15	12	6	8.8	23020.0600
12	M10	11.6	18	14	7	14.0	23020.0620
14	M12	13.6	22	16	8	23.0	23020.0640
16	M14	15.6	25	18	9	33.0	23020.0660
18	M16	17.6	28	20	10	46.0	23020.0680
20	M18	19.6	32	24	12	69.0	23020.0700
22	M20	21.6	35	28	14	98.0	23020.0720
28	M24	27.6	44	36	18	213.0	23020.0780
36	M30	35.5	54	44	22	423.0	23020.0860
42	M36	41.5	65	52	26	676.0	23020.0920

APPLICATION EXAMPLE



Nuts for T-Slots • rhombus, semi-finished

EH 23020.



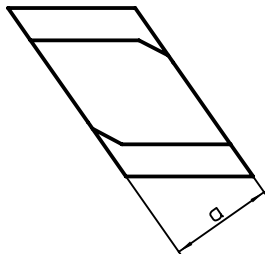
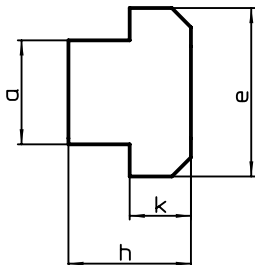
PRODUCT DESCRIPTION

Nuts for T-slots "rhombus" do not have to be inserted lengthwise, but can be inserted directly into the slot.

Material

- Heat-treated steel, bright

DRAWING



ORDER INFORMATION

T-slot size [mm]	Dimensions				 [g]	Art. No.
	a	e	h	k		
6	5.7	10	8	4	3.2	23020.0561
8	7.6	13	10	6	7.1	23020.0581
10	9.6	15	12	6	13.0	23020.0601
12	11.6	18	14	7	21.0	23020.0621
14	13.6	22	16	8	35.0	23020.0641
16	15.6	25	18	9	69.0	23020.0661
18	17.6	28	20	10	73.0	23020.0681
20	19.6	32	24	12	143.0	23020.0701
22	21.6	35	28	14	158.0	23020.0721
28	27.6	44	36	18	324.0	23020.0781
36	35.5	54	44	22	635.0	23020.0861

T-Bolts • DIN 787

EH 23030.



PRODUCT DESCRIPTION

T-bolts when combined with DIN 6330 fixture nuts (EH 23070.) and DIN 6340 plain washers (EH 23060.) become complete clamping bolts. These T-bolts are characterised by the rolled thread.

Material

- Heat-treated steel, black, forged, T-slot guidance milled

MORE INFORMATION

Notes

Special types on request.

References

For torques and strengths please refer to appendix - Technical Data -

Further products

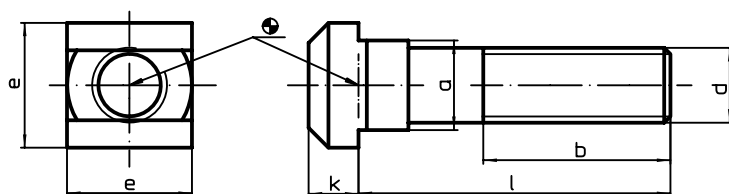
Shaft / Plain Washers, DIN 6340

heat-treated..... → p. 403

Fixture Nuts, DIN 6330 (height 1,5 d) . → p. 406



DRAWING



ORDER INFORMATION

T-slot size	Dimensions							Art. No.
[mm]	d	l	a	b	e	k		[g]
quality 10.9								
6	M 6	25	5.6	15	10	4	7.7	23030.0061
		40	5.6	28	10	4	10.0	23030.0062
		63	5.6	40	10	4	14.0	23030.0063
8	M 8	32	7.6	22	13	6	19.0	23030.0081
		50	7.6	35	13	6	25.0	23030.0082
		80	7.6	50	13	6	34.0	23030.0083
10	M10	40	9.6	30	15	6	33.0	23030.0101
		63	9.6	45	15	6	44.0	23030.0102
		100	9.6	60	15	6	61.0	23030.0103
12	M12	50	11.6	35	18	7	54.0	23030.0121
		63	11.6	40	18	7	66.0	23030.0125¹⁾
		80	11.6	55	18	7	79.0	23030.0122
		125	11.6	75	18	7	111.0	23030.0123
		160	11.6	100	18	7	136.0	23030.0126
14	M12	200	11.6	120	18	7	164.0	23030.0124
		50	13.6	35	22	8	76.0	23030.0141
		63	13.6	45	22	8	85.0	23030.0145¹⁾
		80	13.6	55	22	8	97.0	23030.0142
		125	13.6	75	22	8	129.0	23030.0143
		160	13.6	100	22	8	170.0	23030.0146
		200	13.6	120	22	8	182.0	23030.0144

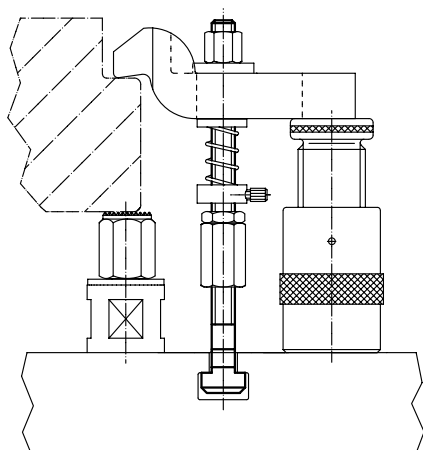
¹⁾ DIN standards do not include these dimensions.



T-slot size	Dimensions							Art. No.
d	l	a	b	e	k			
[mm]	[mm]						[g]	
quality 8.8								
16	M14	63	15.6	45	25	9	116.0	23030.0150 ¹⁾
		100	15.6	65	25	9	154.0	23030.0152 ¹⁾
		160	15.6	100	25	9	213.0	23030.0154 ¹⁾
		250	15.6	150	25	9	301.0	23030.0156 ¹⁾
	M16	63	15.6	45	25	9	136.0	23030.0161 ¹⁾
		80	15.6	55	25	9	158.0	23030.0165 ¹⁾
		100	15.6	63	25	9	185.0	23030.0162 ¹⁾
		160	15.6	100	25	9	263.0	23030.0163 ¹⁾
		200	15.6	125	25	9	315.0	23030.0166 ¹⁾
		250	15.6	150	25	9	381.0	23030.0164 ¹⁾
18	M16	63	17.6	45	28	10	162.0	23030.0181
		80	17.6	55	28	10	178.0	23030.0185 ¹⁾
		100	17.6	63	28	10	210.0	23030.0182
		160	17.6	100	28	10	289.0	23030.0183
		200	17.6	125	28	10	335.0	23030.0186 ¹⁾
		250	17.6	150	28	10	406.0	23030.0184
20	M20	80	19.6	55	32	12	282.0	23030.0201 ¹⁾
		100	19.6	65	32	12	320.0	23030.0205 ¹⁾
		125	19.6	85	32	12	450.0	23030.0202 ¹⁾
		160	19.6	100	32	12	442.0	23030.0206 ¹⁾
		200	19.6	125	32	12	523.0	23030.0203 ¹⁾
		250	19.6	150	32	12	624.0	23030.0207 ¹⁾
22	M20	315	19.6	190	32	12	757.0	23030.0204 ¹⁾
		80	21.6	55	35	14	330.0	23030.0221
		100	21.6	65	35	14	371.0	23030.0225 ¹⁾
		125	21.6	85	35	14	422.0	23030.0222
		160	21.6	100	35	14	498.0	23030.0226 ¹⁾
		200	21.6	125	35	14	550.0	23030.0223
		250	21.6	150	35	14	678.0	23030.0227 ¹⁾
28	M24	315	21.6	190	35	14	800.0	23030.0224
		100	27.6	70	44	18	639.0	23030.0281
		125	27.6	85	44	18	713.0	23030.0285 ¹⁾
		160	27.6	110	44	18	808.0	23030.0282
		200	27.6	125	44	18	914.0	23030.0286 ¹⁾
		250	27.6	150	44	18	1068.0	23030.0283
		315	27.6	190	44	18	1275.0	23030.0287
36	M30	400	27.6	240	44	18	1497.0	23030.0284 ¹⁾
		125	35.5	80	54	22	1203.0	23030.0361
		200	35.5	135	54	22	1562.0	23030.0362
		315	35.5	200	54	22	2061.0	23030.0363
42	M36	500	35.5	300	54	22	4825.0	23030.0364
		160	41.5	100	65	26	2167.0	23030.0421
		250	41.5	175	65	26	2779.0	23030.0422
		400	41.5	250	65	26	7325.0	23030.0423
		600	41.5	340	65	26	5500.0	23030.0424 ¹⁾

¹⁾ DIN standards do not include these dimensions.

APPLICATION EXAMPLE



Studs • DIN 6379 for T-nuts

EH 23040.



PRODUCT DESCRIPTION

Studs combined with T-nuts DIN 508 (EH 23010./23020.), fixture nuts DIN 6330 (EH 23070.) and plain washers DIN 6340 (EH 23060.) become complete clamping studs. These studs are characterised by the rolled thread.

Material

- Heat-treated steel

MORE INFORMATION

References

For torques and strengths please refer to appendix - Technical Data - Studs with elongated dimension b_1 also available.

Further products

Nuts for T-Slots, DIN 508 → p. 384

Studs, DIN 6379 b_1 long for nut for

T-Slots → p. 395

Studs, with internal hexagon, similar to DIN 6379, for nuts for T-Slots → p. 397

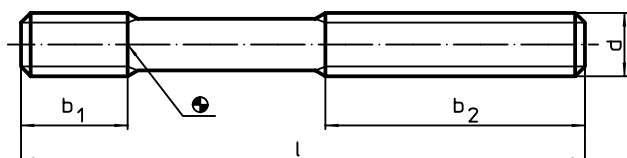
Shaft / Plain Washers, DIN 6340

heat-treated → p. 403

Fixture Nuts, DIN 6330 (height 1,5 d) . → p. 406



DRAWING



ORDER INFORMATION

Dimensions					Art. No.
d	l	b ₁	b ₂		
[mm]				[g]	
quality 10.9					
M 6	32	9	16	5.3	23040.0061¹⁾
	50	9	30	8.4	23040.0062
	63	9	40	11.0	23040.0064¹⁾
	80	9	50	13.0	23040.0063
M 8	40	11	20	12.0	23040.0081
	63	11	40	19.0	23040.0082
	100	11	63	31.0	23040.0083
	160	11	100	49.0	23040.0084¹⁾
M10	50	13	25	24.0	23040.0101
	80	13	50	39.0	23040.0102
	100	13	75	50.0	23040.0106¹⁾
	125	13	75	61.0	23040.0103
	160	13	100	78.0	23040.0105¹⁾
	200	13	122 ²⁾	98.0	23040.0104
M12	50	15	25	35.0	23040.0121
	63	15	32	44.0	23040.0122¹⁾
	80	15	50	56.0	23040.0123
	100	15	63	70.0	23040.0124¹⁾
	125	15	75	88.0	23040.0125
	160	15	100	112.0	23040.0127¹⁾
	200	15	122 ²⁾	141.0	23040.0126

¹⁾ DIN standards do not include these dimensions.

²⁾ Dimension differ from DIN standard.

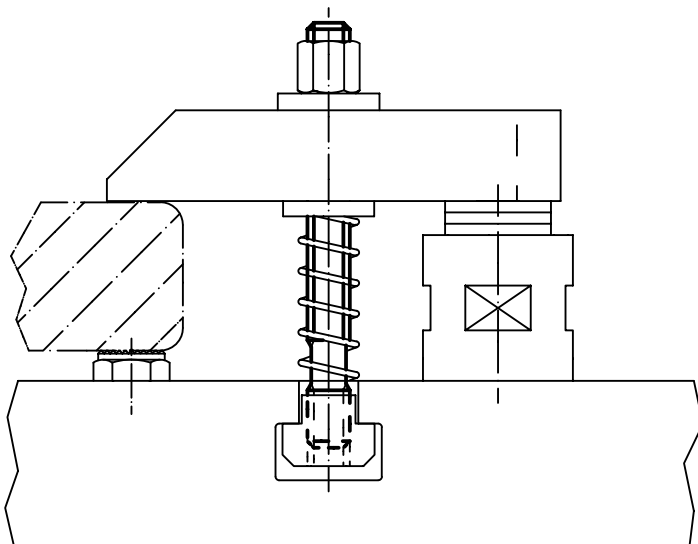


Dimensions					Art. No.
d	l	b ₁	b ₂		
[mm]					
quality 8.8					
M14	63	17	32	60.0	23040.0141¹⁾
	100	17	63	96.0	23040.0142¹⁾
	160	17	100	154.0	23040.0143¹⁾
	250	17	160	241.0	23040.0144¹⁾
M16	63	19	32	80.0	23040.0161
	80	19	50	103.0	23040.0162¹⁾
	100	19	63	129.0	23040.0163
	125	19	75	162.0	23040.0164¹⁾
	160	19	100	207.0	23040.0165
	200	19	122 ²⁾	260.0	23040.0167¹⁾
	250	19	160	325.0	23040.0166
	315	19	180	409.0	23040.0168¹⁾
	500	19	315	652.0	23040.0169¹⁾
M20	80	27	32	160.0	23040.0201
	125	27	70	252.0	23040.0202
	160	27	100	323.0	23040.0207¹⁾
	200	27	122 ²⁾	405.0	23040.0203
	250	27	160	508.0	23040.0204¹⁾
	315	27	200 ²⁾	639.0	23040.0205
	400	27	250	815.0	23040.0208¹⁾
M24	500	27	315	548.0	23040.0206¹⁾
	100	35	45	289.0	23040.0241
	125	35	70 ²⁾	380.0	23040.0246¹⁾
	160	35	100	466.0	23040.0242
	200	35	122 ²⁾	585.0	23040.0247¹⁾
	250	35	160	730.0	23040.0243
	315	35	190	923.0	23040.0248¹⁾
	400	35	250	1173.0	23040.0244
M30	500	35	315	1466.0	23040.0249¹⁾
	630	35	315	1860.0	23040.0245¹⁾
	125	43	56	573.0	23040.0301
	200	43	122 ²⁾	921.0	23040.0302
	315	43	200 ²⁾	1462.0	23040.0303
M36	500	43	315	2000.0	23040.0304
	700	43	400	3000.0	23040.0305¹⁾
	160	51	80	1065.0	23040.0361
	250	51	160	1674.0	23040.0362
	400	51	250	3000.0	23040.0363
	700	51	400	8000.0	23040.0364¹⁾

¹⁾ DIN standards do not include these dimensions.

²⁾ Dimension differ from DIN standard.

APPLICATION EXAMPLE



Studs • DIN 6379 b₁ long for nut for T-Slots

EH 23040.



PRODUCT DESCRIPTION

Studs combined with T-nuts DIN 508 (EH 23010./23020.), fixture nuts DIN 6330 (EH 23070.) and plain washers DIN 6340 (EH 23060.) become complete clamping studs. These studs are characterised by the rolled thread.

Material

- Heat-treated steel

MORE INFORMATION

References

For torques and strengths please refer to appendix - Technical Data -

Further products

Nuts for T-Slots, DIN 508 → p. 384

Studs, DIN 6379 for T-nuts → p. 393

Studs, with internal hexagon, similar to DIN 6379, for nuts for T-Slots → p. 397

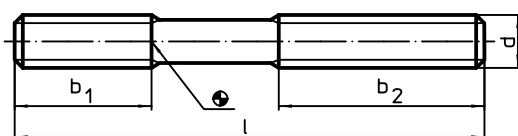
Shaft / Plain Washers, DIN 6340

heat-treated → p. 403

Fixture Nuts, DIN 6330 (height 1,5 d) . → p. 406



DRAWING



ORDER INFORMATION

d	Dimensions				Art. No.
	l	b ₁	b ₂		
	[mm]				
quality 10.9					
M 6	50	15	30	8.4	23040.0562
	63	15	40	11.0	23040.0563
	80	15	50	14.0	23040.0564
M 8	63	20	40	19.0	23040.0582
	100	20	63	31.0	23040.0583
	160	20	100	49.0	23040.0584
M10	80	25	50	39.0	23040.0602
	100	25	75	49.0	23040.0603
	125	25	75	61.0	23040.0604
	160	25	100	78.0	23040.0605¹⁾
	200	25	122	98.0	23040.0606
M12	63 ²⁾	–	–	44.0	23040.0622
	80 ²⁾	–	–	56.0	23040.0623
	100	30	63	71.0	23040.0624¹⁾
	125	30	75	88.0	23040.0625
	160	30	100	112.0	23040.0626
	200	30	122	140.0	23040.0627
quality 8.8					
M16	80 ²⁾	–	–	100.0	23040.0662
	125	40	63	161.0	23040.0664
	160	40	75	207.0	23040.0665
	200	40	100	260.0	23040.0666¹⁾
	250	40	125	325.0	23040.0667
	315	40	200	402.0	23040.1168¹⁾

¹⁾ DIN standards do not include these dimensions.

²⁾ Throughgoing thread

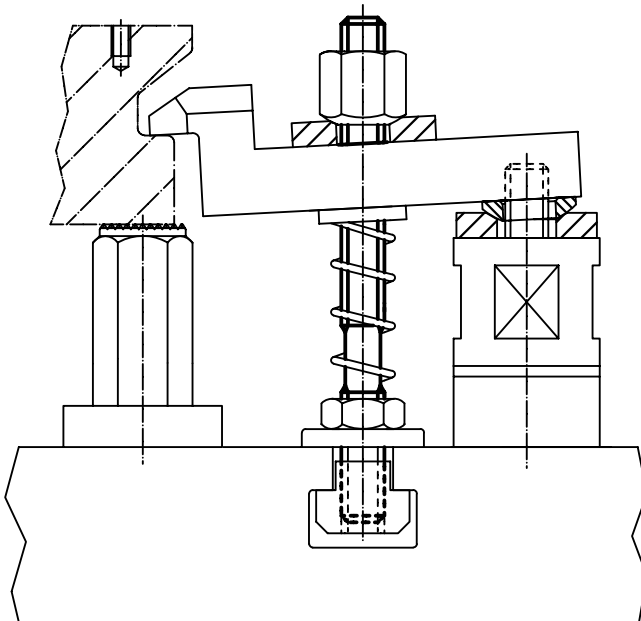


d	Dimensions				Art. No.
	l	b ₁	b ₂		
	[mm]			[g]	
M20	125 ²⁾	—	—	253.0	23040.1202¹⁾
	160 ²⁾	—	—	328.0	23040.1207¹⁾
	200	55	100	404.0	23040.1203¹⁾
	250	55	125	509.0	23040.1204¹⁾
	315	55	180	641.0	23040.1205¹⁾
	400	55	250	815.0	23040.1208¹⁾
	500	55	315	1071.0	23040.1206¹⁾
M24	125 ²⁾	—	—	365.0	23040.1246¹⁾
	160 ²⁾	—	—	467.0	23040.1242¹⁾
	200 ²⁾	—	—	585.0	23040.1247¹⁾
	250 ²⁾	—	—	733.0	23040.1243¹⁾
	315	70	180	926.0	23040.1248¹⁾
	400	70	250	1175.0	23040.1244¹⁾
	500	70	315	1468.0	23040.1249¹⁾

¹⁾ DIN standards do not include these dimensions.

²⁾ Throughgoing thread

APPLICATION EXAMPLE



Studs • with internal hexagon, similar to DIN 6379, for nuts for T-Slots

EH 23040.



PRODUCT DESCRIPTION

Studs combined with T-nuts DIN 508 (EH 23010./23020.), fixture nuts DIN 6330 (EH 23070.) and plain washers DIN 6340 (EH 23060.) become complete clamping studs. These studs are characterised by the rolled thread.

Material

- Heat-treated steel

Assembly

The stud has an internal hexagon additionally. This guarantees a fast and simple assembling and dismounting.

MORE INFORMATION

References

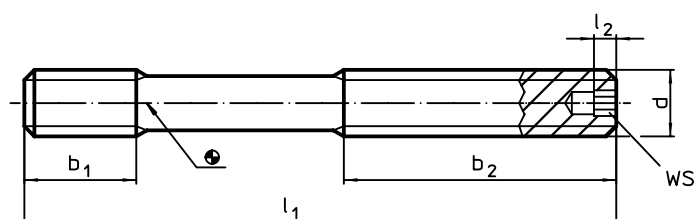
For torques and strengths please refer to appendix - Technical Data -

Further products

- Nuts for T-Slots, DIN 508 → p. 384
- Studs, DIN 6379 for T-nuts → p. 393
- Studs, DIN 6379 b1 long for nut for T-Slots → p. 395
- Shaft / Plain Washers, DIN 6340 heat-treated → p. 403
- Fixture Nuts, DIN 6330 (height 1,5 d) . → p. 406



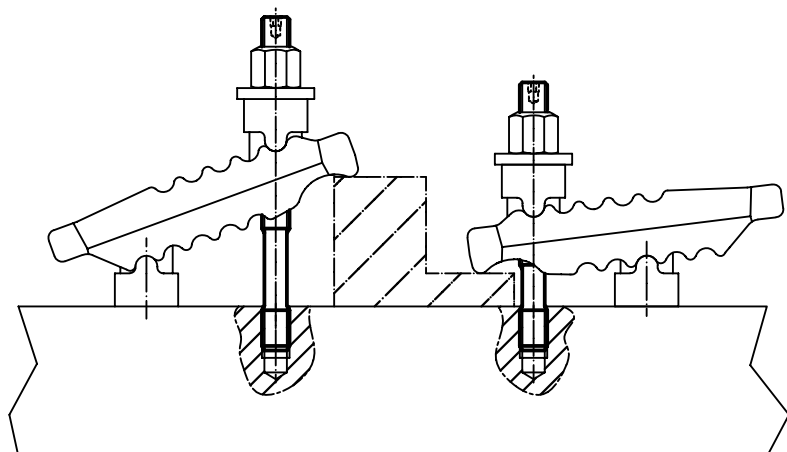
DRAWING



ORDER INFORMATION

Dimensions					WS		Art. No.
d	l ₁	b ₁ [mm]	b ₂	l ₂	[mm]	[g]	
quality 10.9							
M12	100	15	63	4	4	73	23040.0724
	125	15	75	4	4	91	23040.0725
	160	15	100	4	4	115	23040.0726
quality 12.9							
M16	125	19	75	4	4	165	23040.0763
	160	19	100	4	4	212	23040.0764
	200	19	122	4	4	262	23040.0765
M20	160	27	100	5	5	320	23040.0783
	200	27	122	5	5	411	23040.0784
	250	27	160	5	5	522	23040.0785
M24	200	35	122	5	5	589	23040.0804
	250	35	160	5	5	745	23040.0805

APPLICATION EXAMPLE



Spherical Washers / Conical Seats • DIN 6319

EH 23050.



PRODUCT DESCRIPTION

Spherical washers / Conical seats are used as washers in a screw connection to compensate non-parallel surfaces.

Material

Conical seat

- Case-hardened steel, case-hardened, manganese phosphated
- Heat-treated steel, tempered, manganese phosphated

Spherical washer

- Case-hardened steel, case-hardened, manganese phosphated

Assembly

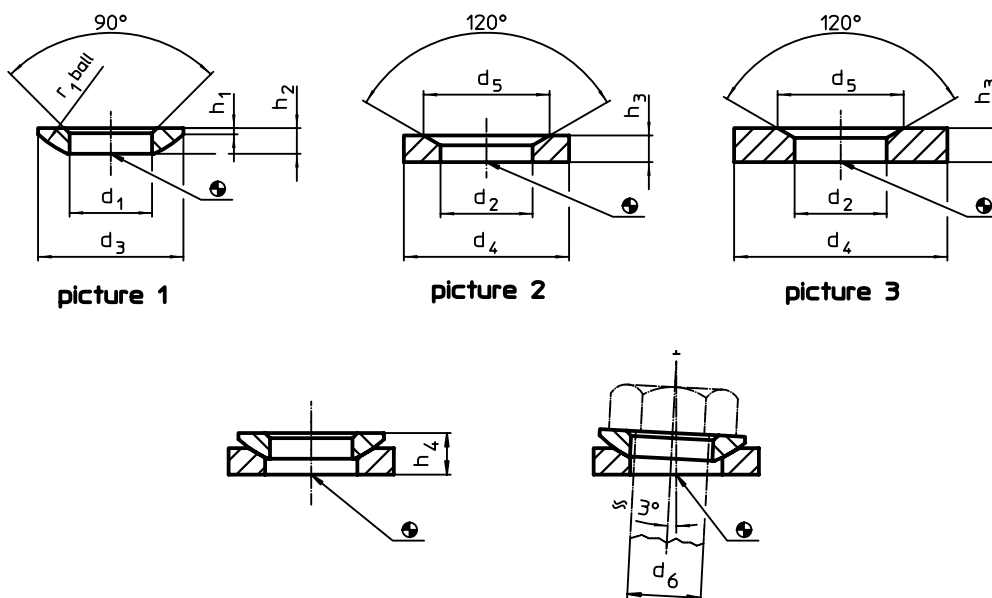
Conical seats form D are to be used only for plain, closed round areas.
For larger holes only use form G!

MORE INFORMATION

Further products

Spherical Washers / Conical Seats, similar to DIN 6319, stainless steel . . . → p. 400
Fixture Nuts, DIN 6330 (height 1,5 d) . . . → p. 406

DRAWING



ORDER INFORMATION

d ₁ H13	d ₂ H13	d ₃	d ₄	d ₅	Dimensions			h ₄	with conical seat form D ~	with conical seat form G ~	r ₁	For pin d ₆	For screws d ₆	Load capacity for static load max.	Torque for screwed connections max.		Art. No.
					h ₁	h ₂	h ₃										
[mm]												[mm]	[mm]	[kN]	[Nm]	[g]	
spherical washers from case-hardened steel, form C – picture 1																	
6.4	–	12	–	–	0.7	2.3	–	4.2	5.4	9.0	6	M 6	9	10 ¹⁾	1.0	23050.0006	
8.4	–	17	–	–	0.6	3.2	–	5.6	7.1	12.0	8	M 8	17	25 ¹⁾	2.8	23050.0008	
10.5	–	21	–	–	0.8	4.0	–	6.5	7.3	15.0	10	M10	26	46 ¹⁾	5.1	23050.0010	
13.0	–	24	–	–	1.1	4.6	–	8.0	9.0	17.0	12	M12	38	82 ¹⁾	8.0	23050.0012	
15.0	–	28	–	–	1.4	5.0	–	8.5	9.5	22.0	14	M14	53	130 ¹⁾	12.0	23050.0014	
17.0	–	30	–	–	1.3	5.3	–	9.6	10.4	22.0	16	M16	73	206 ¹⁾	13.0	23050.0016	
21.0	–	36	–	–	2.0	6.3	–	11.7	12.2	27.0	20	M20	117	407 ¹⁾	23.0	23050.0020	
23.0	–	40	–	–	2.5	7.6	–	13.5	–	29.5	22	M22	146	542 ¹⁾	35.0	23050.0022 ²⁾	
25.0	–	44	–	–	2.4	8.2	–	15.2	15.7	32.0	24	M24	168	698 ¹⁾	43.0	23050.0024	
28.0	–	50	–	–	3.3	10.2	–	17.0	–	36.0	27	M27	221	1021 ¹⁾	74.0	23050.0027 ²⁾	
31.0	–	56	–	–	3.6	11.2	–	19.2	19.7	41.0	30	M30	269	1355 ¹⁾	103.0	23050.0030	
34.0	–	62	–	–	4.4	13.0	–	21.8	–	45.0	33	M33	326 ³⁾	1969 ³⁾¹⁾	150.0	23050.0033 ²⁾	
37.0	–	68	–	–	4.6	14.0	–	23.5	–	50.0	36	M36	394	2372 ¹⁾	193.0	23050.0036	
40.0	–	75	–	–	5.6	16.0	–	26.8	–	54.0	39	M39	460 ³⁾	3276 ³⁾¹⁾	280.0	23050.0039 ²⁾	
43.0	–	78	–	–	6.5	17.0	–	29.0	–	58.0	42	M42	542	3802 ¹⁾	310.0	23050.0042	

¹⁾ Torques of screws with standard thread, eventual pre-loads to be considered, coefficient of friction $\mu_{\text{total}} 0.14$.

²⁾ DIN standards do not include these dimensions.

³⁾ Figures theoretically determined



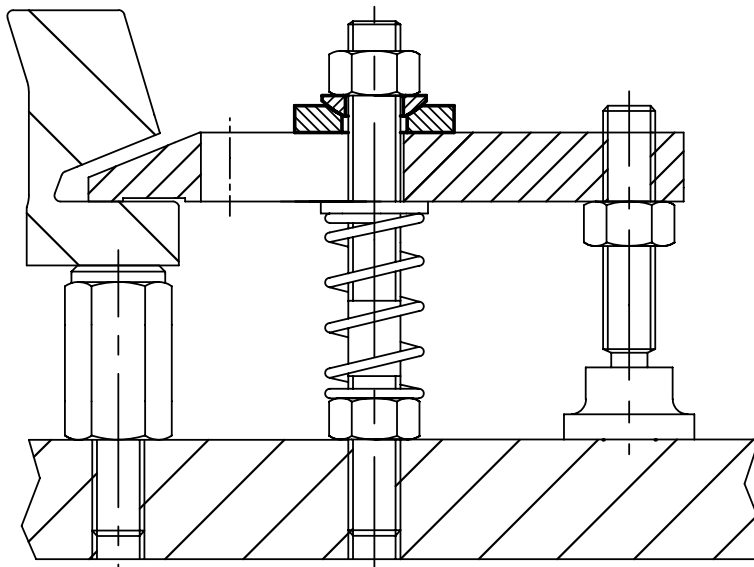
d ₁ H13	d ₂ H13	Dimensions								r ₁	For pin d ₆	For screws d ₆	Load capacity for static load max.	Torque for screwed connections max.		Art. No.
		d ₃	d ₄	d ₅	h ₁	h ₂	h ₃	with conical seat form D ~	with conical seat form G ~							
[mm]											[mm]	[mm]	[kN]	[Nm]	[g]	
50.0	–	92	–	–	8.0	21.0	–	35.5	–	67.0	48	M48	714	5730 ¹⁾	549.0	23050.0048
54.0	–	96	–	–	9.3	22.0	–	38.3	–	72.0	52	M52	832 ³⁾	7876 ³⁾¹⁾	610.0	23050.0052 ²⁾
58.0	–	103	–	–	9.8	23.0	–	39.3	–	79.0	56	M56	960 ³⁾	9793 ³⁾¹⁾	760.0	23050.0056 ²⁾
62.0	–	112	–	–	11.0	25.0	–	43.6	–	86.0	60	M60	1122 ³⁾	12219 ³⁾¹⁾	990.0	23050.0060 ²⁾
66.0	–	120	–	–	12.0	27.0	–	46.6	–	93.0	64	M64	1269 ³⁾	14762 ³⁾¹⁾	1220.0	23050.0064 ²⁾
conical seats from case-hardened steel, form D – picture 2																
–	7.1	–	12	11.0	–	–	2.8	–	–	–	6	M 6	9	10 ¹⁾	1.3	23050.0106
	9.6	–	17	14.5	–	–	3.5	–	–	–	8	M 8	17	25 ¹⁾	3.7	23050.0108
	12.0	–	21	18.5	–	–	4.2	–	–	–	10	M10	26	46 ¹⁾	13.0	23050.0110
	14.2	–	24	20.0	–	–	5.0	–	–	–	12	M12	38	82 ¹⁾	10.0	23050.0112
	16.5	–	28	24.8	–	–	5.6	–	–	–	14	M14	53	130 ¹⁾	15.0	23050.0114
	19.0	–	30	26.0	–	–	6.2	–	–	–	16	M16	73	206 ¹⁾	18.0	23050.0116
	23.2	–	36	31.0	–	–	7.5	–	–	–	20	M20	117	407 ¹⁾	31.0	23050.0120
	26.0	–	40	34.0	–	–	8.5	–	–	–	22	M22	146	542 ¹⁾	44.0	23050.0122 ²⁾
	28.0	–	44	37.0	–	–	9.5	–	–	–	24	M24	168	698 ¹⁾	61.0	23050.0124
	31.5	–	50	43.0	–	–	10.5	–	–	–	27	M27	221	1021 ¹⁾	87.0	23050.0127 ²⁾
	35.0	–	56	49.0	–	–	12.0	–	–	–	30	M30	269	1355 ¹⁾	125.0	23050.0130
	38.5	–	62	55.0	–	–	14.0	–	–	–	33	M33	326 ³⁾	1969 ³⁾¹⁾	180.0	23050.0133 ²⁾
	42.0	–	68	60.0	–	–	15.0	–	–	–	36	M36	394	2372 ¹⁾	230.0	23050.0136
	45.0	–	75	67.0	–	–	17.0	–	–	–	39	M39	460 ³⁾	3276 ³⁾¹⁾	330.0	23050.0139 ²⁾
	49.0	–	78	70.0	–	–	18.0	–	–	–	42	M42	542	3802 ¹⁾	360.0	23050.0142
	56.0	–	92	82.0	–	–	22.0	–	–	–	48	M48	714	5730 ¹⁾	640.0	23050.0148
	60.0	–	96	85.0	–	–	24.0	–	–	–	52	M52	832 ³⁾	7876 ³⁾¹⁾	740.0	23050.0152 ²⁾
	65.0	–	103	93.0	–	–	25.0	–	–	–	56	M56	960 ³⁾	9793 ³⁾¹⁾	900.0	23050.0156 ²⁾
	70.0	–	112	102.0	–	–	28.0	–	–	–	60	M60	1122 ³⁾	12219 ³⁾¹⁾	1160.0	23050.0160 ²⁾
	75.0	–	120	110.0	–	–	30.0	–	–	–	64	M64	1269 ³⁾	14762 ³⁾¹⁾	1430.0	23050.0164 ²⁾
conical seats from heat-treated steel, form G – picture 3																
–	7.1	–	17	11.0	–	–	4.0	–	–	–	6	M 6	9	10 ¹⁾	5.6	23050.0206
	9.6	–	24	14.5	–	–	5.0	–	–	–	8	M 8	17	25 ¹⁾	14.0	23050.0208
	12.0	–	30	18.5	–	–	5.0	–	–	–	10	M10	26	46 ¹⁾	22.0	23050.0210
	14.2	–	36	20.0	–	–	6.0	–	–	–	12	M12	38	82 ¹⁾	39.0	23050.0212
	16.5	–	40	24.8	–	–	6.0	–	–	–	14	M14	53	130 ¹⁾	47.0	23050.0214
	19.0	–	44	26.0	–	–	7.0	–	–	–	16	M16	73	206 ¹⁾	65.0	23050.0216
	23.2	–	50	31.0	–	–	8.0	–	–	–	20	M20	117	407 ¹⁾	93.0	23050.0220
	28.0	–	60	37.0	–	–	10.0	–	–	–	24	M24	168	698 ¹⁾	165.0	23050.0224
	35.0	–	68	49.0	–	–	12.0	–	–	–	30	M30	269	1355 ¹⁾	235.0	23050.0230

¹⁾ Torques of screws with standard thread, eventual pre-loads to be considered, coefficient of friction μ_{total} 0.14.

²⁾ DIN standards do not include these dimensions.

³⁾ Figures theoretically determined

APPLICATION EXAMPLE



Spherical Washers / Conical Seats • similar to DIN 6319, stainless steel

EH 23050.



PRODUCT DESCRIPTION

Spherical washers / Conical seats are used as washers in a screw connection to compensate non-parallel surfaces.

Material

Conical seat

- Stainless steel 1.4305
- Stainless steel A4

Spherical washer

- Stainless steel 1.4305
- Stainless steel A4

Assembly

Conical seats form D are to be used only for plain, closed round areas.

For larger holes only use form G!

Characteristic

Types from stainless steel A4 with marking (knurling) according drawing.

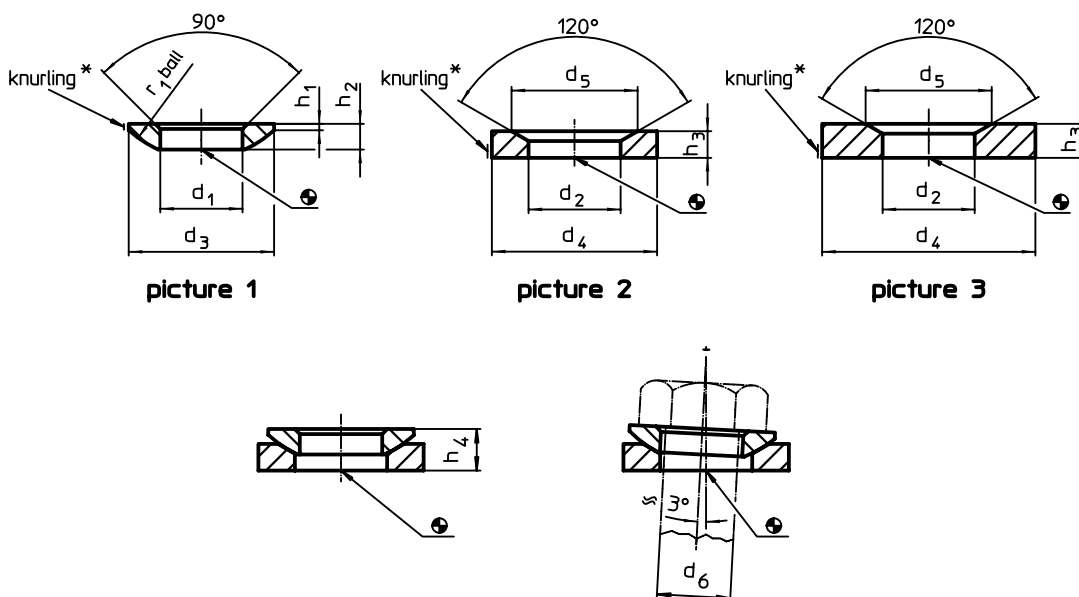
MORE INFORMATION

Further products

Spherical Washers / Conical Seats,
DIN 6319 → p. 398

Fixture Nuts, DIN 6330 (height 1,5 d) . → p. 406

DRAWING



* Knurling = material identification for stainless steel A4 type

ORDER INFORMATION

d ₁ H13	d ₂ H13	d ₃	d ₄	d ₅	Dimensions						r ₁	For pin d ₆	For screws d ₆	Load capac- ity for static load max.	Torque for screwed connec- tions ¹⁾ max.		Art. No.	
					h ₁	h ₂	h ₃	h ₄	Stainless steel 1.4305	Stainless steel A4								
					with conical seat form D ~	with conical seat form G ~												
[mm]											[mm]	[mm]	[kN]	[Nm]	[g]			
spherical washers from stainless steel, form C – picture 1																		
6.4	–	12	–	–	0.7	2.3	–	4.0	5.2	9	6	M 6	6	6	1.0	23050.0306	23050.0606	
8.4	–	17	–	–	0.6	3.2	–	5.3	6.8	12	8	M 8	12	16	2.8	23050.0308	23050.0608	
10.5	–	21	–	–	0.8	4.0	–	6.3	7.1	15	10	M10	16	32	5.0	23050.0310	23050.0610	
13.0	–	24	–	–	1.1	4.6	–	7.9	8.9	17	12	M12	24	56	7.7	23050.0312	23050.0612	
17.0	–	30	–	–	1.3	5.3	–	9.3	10.1	22	16	M16	45	135	13.0	23050.0316	23050.0616	
21.0	–	36	–	–	2.0	6.3	–	11.6	12.1	27	20	M20	71	280	23.0	23050.0320	23050.0620	
25.0	–	44	–	–	2.4	8.2	–	14.9	15.4	32	24	M24	105	455	46.0	23050.0324	23050.0624	
31.0	–	56	–	–	3.6	11.2	–	18.8	18.8	41	30	M30	191	1050	104.0	23050.0330	23050.0630	
37.0	–	68	–	–	4.6	14.0	–	23.4	–	50	36	M36	–	–	193.0	23050.0336	23050.0636	
43.0	–	78	–	–	6.5	17.0	–	28.3	–	58	42	M42	–	–	313.0	23050.0342	23050.0642	
50.0	–	92	–	–	8.0	21.0	–	35.0	–	67	48	M48	–	–	545.0	23050.0348	23050.0648	

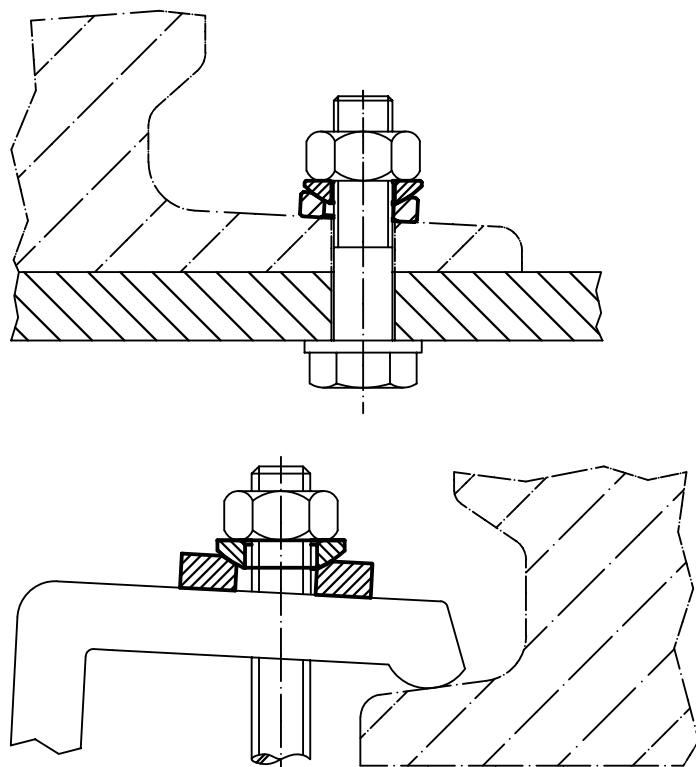
¹⁾ Torques of screws with standard thread, eventual pre-loads to be considered, coefficient of friction μ_{total} 0.14.



Dimensions											For pin d ₆	For screws d ₆	Load capa- city for static load max.	Torque for screwed connec- tions ¹⁾ max.		Art. No.	
d ₁ H13	d ₂ H13	d ₃	d ₄	d ₅	h ₁	h ₂	h ₃	h ₄ with conical seat form D ~	h ₄ with conical seat form G ~	r ₁						Stainless steel 1.4305	Stainless steel A4
[mm]											[mm]	[mm]	[kN]	[Nm]	[g]		
conical seats from stainless steel, form D – picture 2																	
-	7.1	-	12	11.0	-	-	2.8	-	-	-	6	M 6	6	6	1.3	23050.0406	23050.0666
	9.6	-	17	14.5	-	-	3.5	-	-	-	8	M 8	12	16	3.7	23050.0408	23050.0668
	12.0	-	21	18.5	-	-	4.2	-	-	-	10	M10	16	32	6.6	23050.0410	23050.0670
	14.2	-	24	20.0	-	-	5.0	-	-	-	12	M12	24	56	10.0	23050.0412	23050.0672
	19.0	-	30	26.0	-	-	6.2	-	-	-	16	M16	45	135	19.0	23050.0416	23050.0676
	23.2	-	36	31.0	-	-	7.5	-	-	-	20	M20	71	280	32.0	23050.0420	23050.0680
	28.0	-	44	37.0	-	-	9.5	-	-	-	24	M24	105	455	63.0	23050.0424	23050.0684
	35.0	-	56	49.0	-	-	12.0	-	-	-	30	M30	191	1050	127.0	23050.0430	23050.0686
	42.0	-	68	60.0	-	-	15.0	-	-	-	36	M36	-	-	234.0	23050.0436	23050.0688
	49.0	-	78	70.0	-	-	18.0	-	-	-	42	M42	-	-	362.0	23050.0442	23050.0692
56.0	-	92	82.0	-	-	22.0	-	-	-	48	M48	-	-	642.0	23050.0448	23050.0694	
conical seats from stainless steel, form G – picture 3																	
-	7.1	-	17	11.0	-	-	4.0	-	-	-	6	M 6	6	6	5.8	23050.0466	23050.0706
	9.6	-	24	14.5	-	-	5.0	-	-	-	8	M 8	12	16	15.0	23050.0468	23050.0708
	12.0	-	30	18.5	-	-	5.0	-	-	-	10	M10	16	32	22.0	23050.0470	23050.0710
	14.2	-	36	20.0	-	-	6.0	-	-	-	12	M12	24	56	40.0	23050.0472	23050.0712
	19.0	-	44	26.0	-	-	7.0	-	-	-	16	M16	45	135	66.0	23050.0476	23050.0716
	23.2	-	50	31.0	-	-	8.0	-	-	-	20	M20	71	280	95.0	23050.0480	23050.0720
	28.0	-	60	37.0	-	-	10.0	-	-	-	24	M24	105	455	171.0	23050.0484	23050.0724
	35.0	-	68	49.0	-	-	12.0	-	-	-	30	M30	191	1050	236.0	23050.0490	23050.0730

¹⁾ Torques of screws with standard thread, eventual pre-loads to be considered, coefficient of friction μ_{total} 0.14.

APPLICATION EXAMPLE



Compact Spherical Washers / Conical Seats • similar to DIN 6319

EH 23050.



PRODUCT DESCRIPTION

The compact spherical washer / conical seat is a permanently fastened component of spherical washer and conical seat offering the following benefits:

- Function-safety
- Secured against loss
- Quick and rational assembly
- Simplified stock holding
- Swiveling range max. 4°.

Material

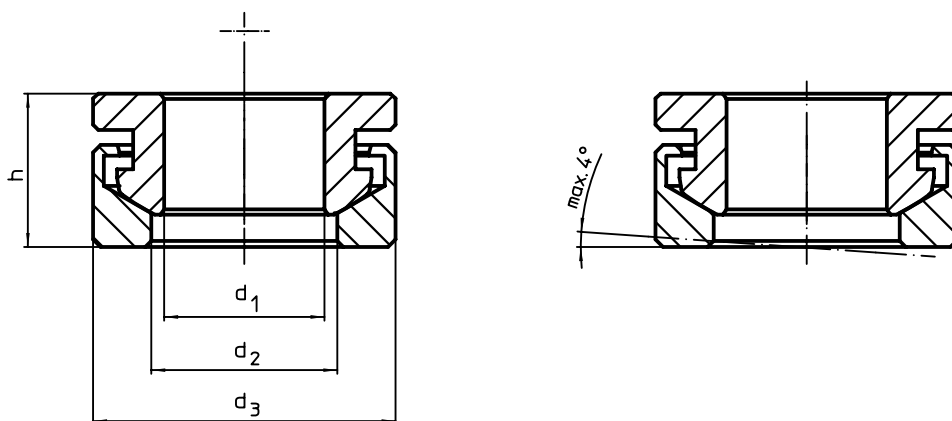
Conical seat

- Heat-treated steel, heat treated
- Stainless steel 1.4305

Spherical washer

- Case-hardened steel, case-hardened
- Stainless steel 1.4305

DRAWING

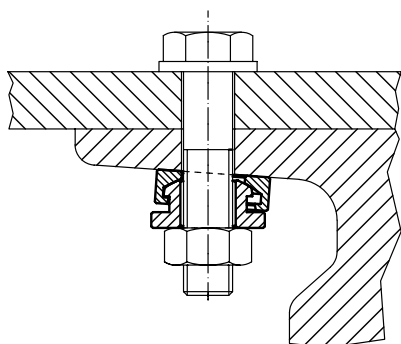


ORDER INFORMATION

d ₁ H13	Dimensions				For pin d ₆	For screws d ₆	Load capacity for static load max.	Torque for screwed connections ¹⁾ max.	[g]	Load capacity for static load max.	Torque for screwed connections ¹⁾ max.	Art. No.	
	d ₂	d ₃	h	[mm]								Heat-treated steel	Stainless steel
				[mm]			[kN]	[Nm]		[kN]	[Nm]		
6.4	7.4	13	7.0	6	M 6	9	10	4.0	9	10	23050.0506	–	–
8.4	9.7	17	8.5	8	M 8	17	25	9.1	17	25	23050.0508	–	–
10.5	12.0	21	10.4	10	M10	26	46	17.0	26	46	23050.0510	–	–
13.0	14.8	25	13.1	12	M12	38	82	28.0	38	82	23050.0512	–	–
17.0	19.7	32	17.0	16	M16	73	206	60.0	73	206	23050.0516	–	–
21.0	24.6	40	20.3	20	M20	117	407	113.0	117	407	23050.0520	–	–
6.4	7.4	13	7.0	6	M 6	6	6	4.0	6	6	–	23050.0556	–
8.4	9.7	17	8.5	8	M 8	12	16	9.1	12	16	–	23050.0558	–
10.5	12.0	21	10.4	10	M10	16	32	17.0	16	32	–	23050.0560	–
13.0	14.8	25	13.1	12	M12	24	56	28.0	24	56	–	23050.0562	–
17.0	19.7	32	17.0	16	M16	45	135	60.0	45	135	–	23050.0566	–
21.0	24.6	40	20.3	20	M20	71	280	113.0	71	280	–	23050.0570	–

¹⁾ Torques of screws with standard thread, eventual pre-loads to be considered, coefficient of friction μ_{total} 0.14.

APPLICATION EXAMPLE



Shaft / Plain Washers • DIN 6340 heat-treated
EH 23060.



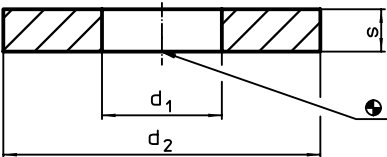
PRODUCT DESCRIPTION

The heat-treated shaft / plain washers (washers) are manufactured according to DIN 6340.

Material

- Heat-treated steel, tempered, punched, mechanically trued, phosphatized

DRAWING

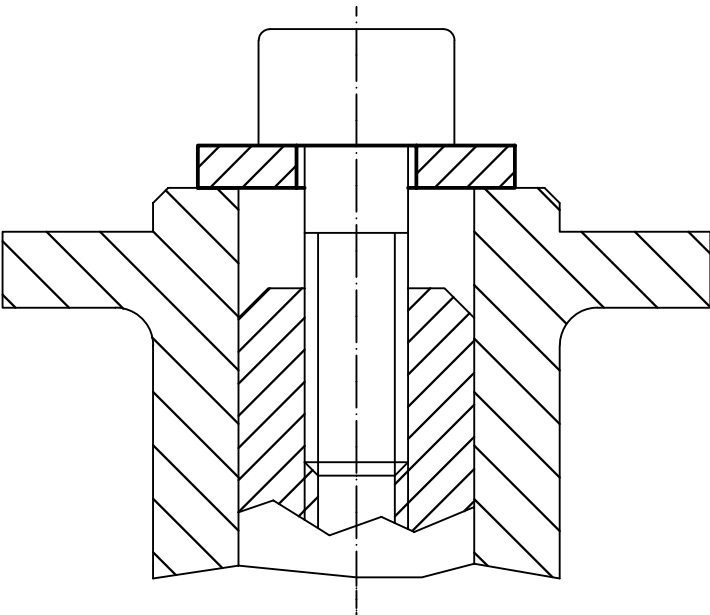


ORDER INFORMATION

d ₁	Dimensions		For screws		Art. No.
	d ₂ [mm]	s	[mm]	[g]	
6.4	17	3	M 6	3.8	23060.0006
8.4	23	4	M 8	9.8	23060.0008
10.5	28	4	M10	15.0	23060.0010
13.0	35	5	M12	28.0	23060.0012
15.0	40	5	M14	40.0	23060.0014¹⁾
17.0	45	6	M16	55.0	23060.0016
19.0	45	6	M18	53.0	23060.0018¹⁾
21.0	50	6	M20	65.0	23060.0020
23.0	50	8	M22	86.0	23060.0022¹⁾
25.0	60	8	M24	122.0	23060.0024
31.0	68	10	M30	199.0	23060.0030
38.0	80	12	M36	360.0	23060.0036¹⁾

¹⁾ DIN standards do not include these dimensions.

APPLICATION EXAMPLE



Washers • high precision design

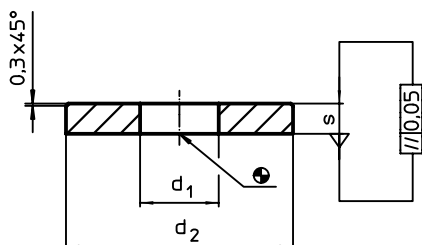
EH 23060.

**PRODUCT DESCRIPTION**

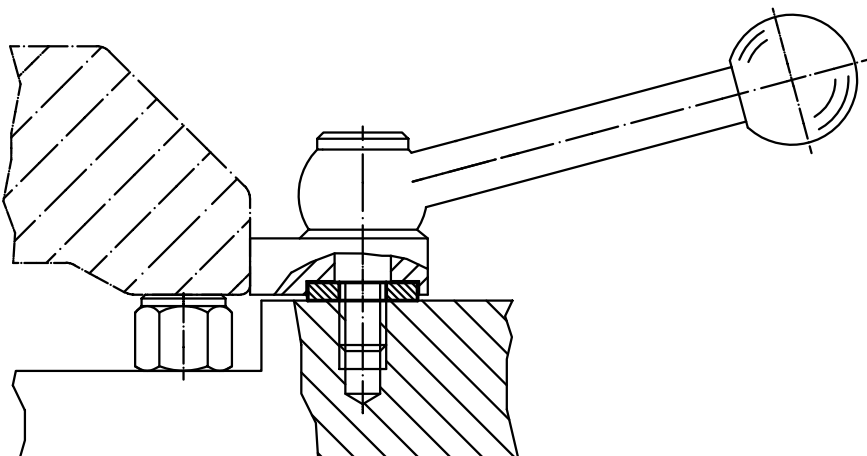
The precisely manufactured washers have an allowance in parallelism of 0,05 mm.

Material

- Heat-treated steel, tempered, blackened
- Stainless steel 1.4305

DRAWING**ORDER INFORMATION**

d ₁	Dimensions		For screws		Art. No.	
	d ₂	s			Heat-treated steel	Stainless steel
	[mm]		[mm]	[g]		
3.2	8	2	M 3	0.7	—	23060.0153
4.2	12	2	M 4	1.5	—	23060.0154
5.3	13	3	M 5	2.5	23060.0105	23060.0155
6.4	17	3	M 6	4.6	23060.0106	23060.0156
8.4	24	4	M 8	12.0	23060.0108	23060.0158
10.5	30	4	M10	19.0	23060.0110	23060.0160
13.0	36	5	M12	34.0	23060.0113	23060.0163
17.0	45	5	M16	52.0	23060.0117	23060.0167

APPLICATION EXAMPLE



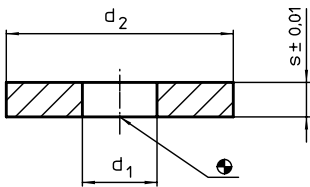
PRODUCT DESCRIPTION

For extending the clamping height of the EH 23310. down-thrust clamps and as height compensation for support points.

Material

- Steel, case-hardened, ground

DRAWING



ORDER INFORMATION

d ₁	Dimensions		For screws		Art. No.
	d ₂ [mm]	s ±0.01	[mm]	[g]	
25	59.5	3	M24	53	23061.2403
		4	M24	71	23061.2404
		5	M24	89	23061.2405
		10	M24	178	23061.2410
		20	M24	358	23061.2420

Fixture Nuts • DIN 6330 (height 1,5 d)

EH 23070.



PRODUCT DESCRIPTION

Fixture nuts according to DIN 6330 have a spherical surface to match conical seats DIN 6319 (EH 23050.).

With this combination of fixture nut and conical seat, non-parallel clamping surfaces can be compensated.

Material

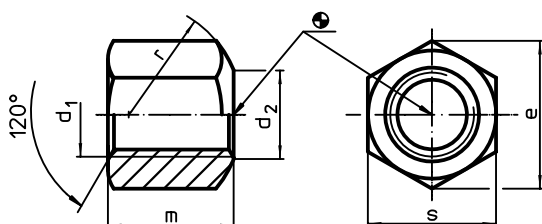
- Heat-treated steel, tempered, quality 10, phosphated
- Stainless steel 1.4305

MORE INFORMATION

References

For torques and strengths please refer to appendix - Technical Data -

DRAWING



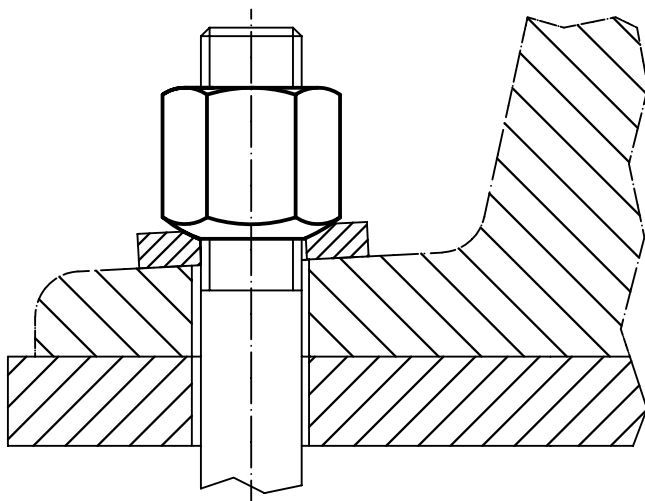
ORDER INFORMATION

Dimensions							Art. No.	
d ₁	d ₂	e	m	r	s		Heat-treated steel	Stainless steel
[mm]						[g]		
with lateral spherical bearing surface, form B								
M 6	7.0	11.5	9	9.0	10	3.8	23070.0006	–
M 8	9.0	15.0	12	11.0	13	8.4	23070.0008	23070.0108 ¹⁾
M10	11.5	18.5	15	15.0	16	20.0	23070.0010	–
					17	20.0	–	23070.0110 ¹⁾
M12	14.0	20.8	18	17.0	18	24.0	23070.0012	–
					19	29.0	–	23070.0112 ¹⁾
M14	16.0	24.2	21	20.0	21	39.0	23070.0014 ²⁾	–
M16	18.0	27.7	24	22.0	24	55.0	23070.0016	23070.0116 ¹⁾
M18	20.0	31.2	27	24.5	27	82.0	23070.0018 ²⁾	–
M20	22.0	34.6	30	27.0	30	110.0	23070.0020	23070.0120 ¹⁾
M22	24.0	39.3	33	29.0	34	162.0	23070.0022 ²⁾	–
M24	26.0	41.6	36	32.0	36	192.0	23070.0024	–
M30	32.0	53.1	45	41.0	46	396.0	23070.0030	–
M36	38.0	63.5	54	50.0	55	684.0	23070.0036	–

¹⁾ DIN standard do not include these material.

²⁾ DIN standards do not include these dimensions.

APPLICATION EXAMPLE



Collar Nuts • DIN 6331 (height 1,5 d)

EH 23080.



PRODUCT DESCRIPTION

The collar nuts (flanged nuts) are manufactured according to DIN 6331.

Material

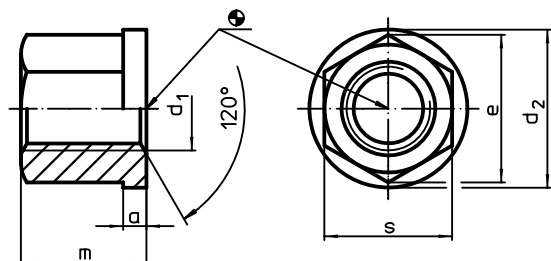
- Heat-treated steel, tempered, quality 10, phosphated
- Stainless steel 1.4305

MORE INFORMATION

References

For torques and strengths please refer to appendix - Technical Data -

DRAWING



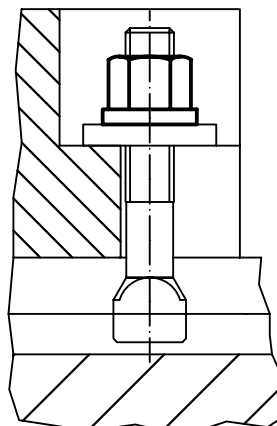
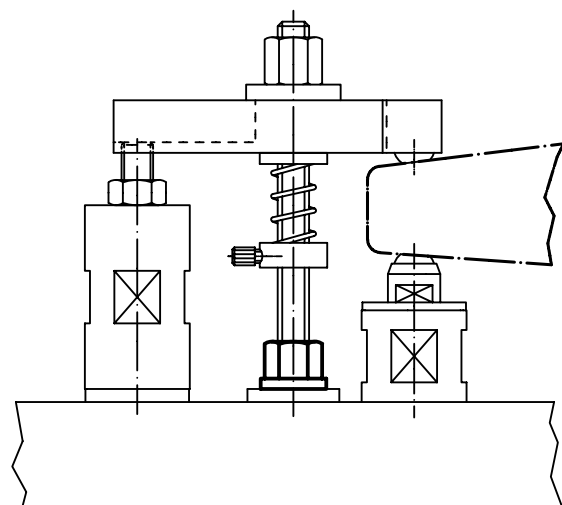
ORDER INFORMATION

Dimensions							Art. No.	
d ₁	a	d ₂	e	m	s		Heat-treated steel	Stainless steel
[mm]							[g]	
M 6	3.0	14	11.5	9	10	5.4	23080.0006	—
M 8	3.5	18	15.0	12	13	12.0	23080.0008	23080.0108 ¹⁾
M10	4.0	22	18.5	15	16	22.0	23080.0010	—
					17	25.0	—	23080.0110 ¹⁾
M12	4.0	25	20.8	18	18	30.0	23080.0012	—
					19	36.0	—	23080.0112 ¹⁾
M14	4.5	28	24.2	21	21	47.0	23080.0014 ²⁾	—
M16	5.0	31	27.7	24	24	67.0	23080.0016	23080.0116 ¹⁾
M18	5.5	34	31.2	27	27	97.0	23080.0018 ²⁾	—
M20	6.0	37	34.6	30	30	129.0	23080.0020	23080.0120 ¹⁾
M22	6.0	40	39.3	33	34	179.0	23080.0022 ²⁾	—
M24	6.0	45	41.6	36	36	213.0	23080.0024	—
M30	8.0	58	53.1	45	46	468.0	23080.0030	—
M36	10.0	68	63.5	54	55	783.0	23080.0036	—

¹⁾ DIN standard do not include these material.

²⁾ DIN standards do not include these dimensions.

APPLICATION EXAMPLE



Collar Nuts with Conical Seat

EH 23080.



PRODUCT DESCRIPTION

With this combination of fixture nut and conical seat, non-parallel clamping surfaces can be compensated.

The fixture nut with conical seat is a fixed unit consisting of fixture nut and conical seat with the following advantages / characteristics:

- Functionally reliable
- Captive
- Fast and efficient mounting
- Simplified storage
- Swivel range max. 3°

Material

Conical seat

- Heat-treated steel, tempered, blackened

Nut

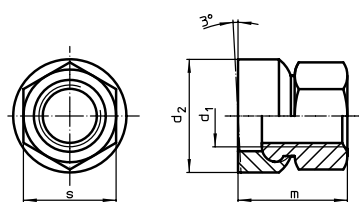
- Heat-treated steel, tempered, blackened

MORE INFORMATION

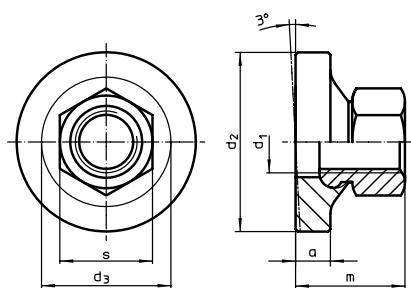
References

For torques and strengths please refer to appendix - Technical Data -

DRAWING



picture 1

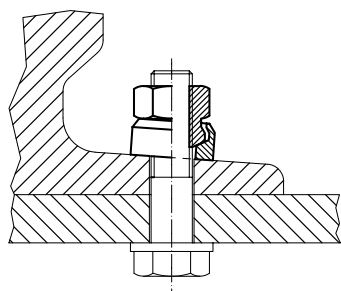


picture 2

ORDER INFORMATION

Dimensions							Art. No.
d ₁	a	d ₂	d ₃	m ~	s		
[mm]							
with small bearing surface – picture 1							
M 8	–	17	–	14.0	13	13	23080.0508
M10	–	21	–	17.5	16	24	23080.0510
M12	–	24	–	21.5	18	37	23080.0512
M16	–	30	–	28.0	24	73	23080.0516
M20	–	36	–	35.0	30	141	23080.0520
M24	–	44	–	42.5	36	259	23080.0524
M30	–	55	–	56.0	46	544	23080.0530
with large bearing surface – picture 2							
M 8	4.0	24	17.8	14.0	13	20	23080.0608
M10	5.5	30	21.2	17.5	16	39	23080.0610
M12	7.0	36	25.2	21.5	18	68	23080.0612
M16	8.0	44	30.9	28.0	24	124	23080.0616
M20	9.5	50	39.9	35.0	30	213	23080.0620
M24	11.0	60	49.6	42.5	36	378	23080.0624
M30	14.0	68	61.3	56.0	46	691	23080.0630

APPLICATION EXAMPLE



Extension Nuts • (height 3 d)
EH 23090.



PRODUCT DESCRIPTION

In comparison to a hexagon nut according to DIN 6330, the extension nuts are elongated and are particularly suitable as a connecting piece for stud bolts.

Material

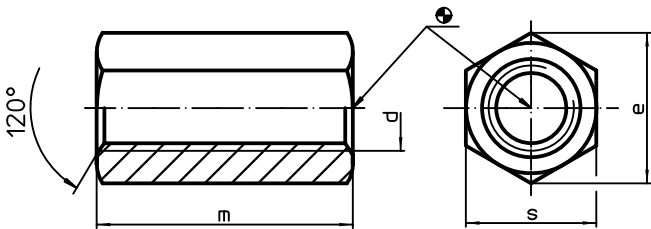
- Heat-treated steel, tempered, quality 10, phosphated

MORE INFORMATION

References

For torques and strengths please refer to appendix - Technical Data -

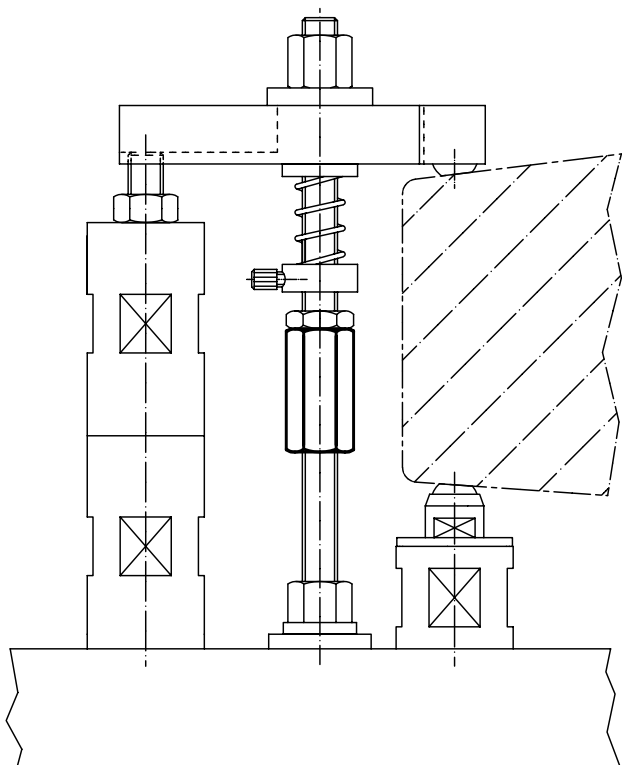
DRAWING



ORDER INFORMATION

d	Dimensions				Art. No.
	e	m	s		
	[mm]			[g]	
M 6	11.5	18	10	8.7	23090.0006
M 8	15.0	24	13	19.0	23090.0008
M10	18.5	30	16	35.0	23090.0010
M12	20.8	36	18	50.0	23090.0012
M14	24.2	42	21	79.0	23090.0014
M16	27.7	48	24	119.0	23090.0016
M20	34.6	60	30	228.0	23090.0020
M24	41.6	72	36	403.0	23090.0024
M30	53.1	90	46	819.0	23090.0030
M36	63.5	108	55	1386.0	23090.0036

APPLICATION EXAMPLE



Drive Blocks • DIN 2079

EH 23100.

PRODUCT DESCRIPTION

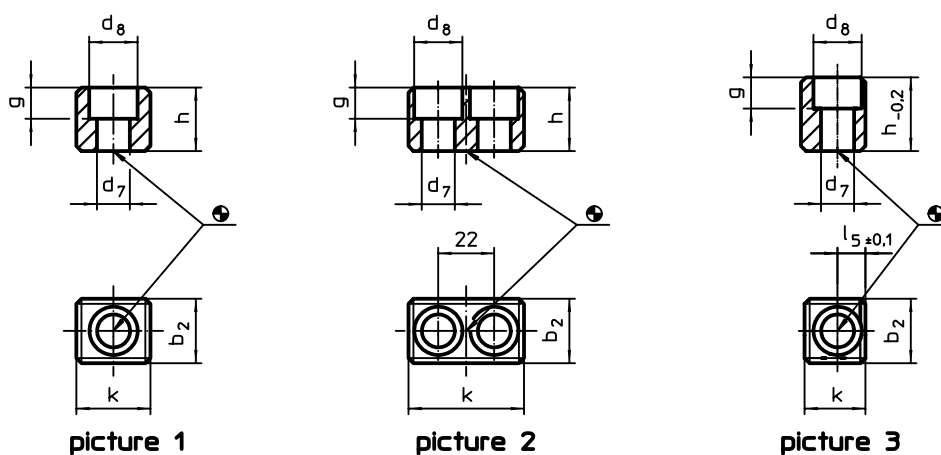
These drive blocks are manufactured according to DIN 2079.

Material

- Alloyed case-hardened steel, case-hardened, blackened, ground



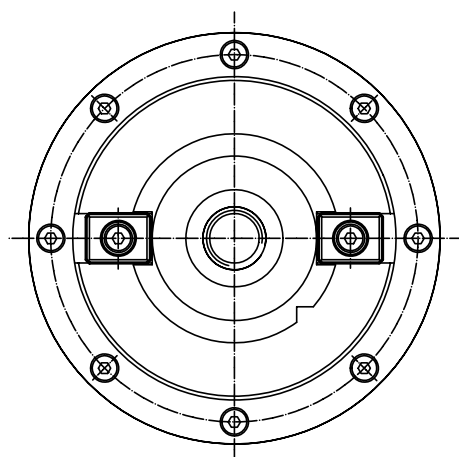
DRAWING



ORDER INFORMATION

Spindle head No.	Dimensions							For screws ISO 4762		Art. No.
	k	b ₂ h5	d ₇	d ₈	g	h	l _s ±0.1			
	[mm]									
for spindle heads no. 30 to 60, form A – picture 1										
30	16.5	15.9	6.4	10.4	6.2	16.0	–	M 6 x 16	26	23100.0030
40	19.5	15.9	6.4	10.4	6.2	16.0	–	M 6 x 16	32	23100.0040
45	19.5	19.0	8.4	13.5	8.3	19.0	–	M 8 x 20	40	23100.0045
50 – 55	26.5	25.4	13.0	19.0	12.3	25.0	–	M12 x 25	88	23100.0050
60	45.5	25.4	13.0	19.0	12.3	25.0	–	M12 x 25	181	23100.0060
for spindle heads no. 60 form B – picture 2										
60	45.5	25.4	13.0	19.0	12.3	25.0	–	M12 x 25	140	23100.0160
for spindle heads no. 30 to 50, form C – picture 3										
30	13.5	15.9	6.4	10.4	6.2	24.5	5.5	M 6 x 25	32	23100.0230
40	16.5	15.9	6.4	10.4	6.2	24.5	7.0	M 6 x 25	40	23100.0240
45	17.5	19.0	8.4	13.5	10.0	26.0	7.5	M 8 x 25	48	23100.0245
50	24.0	25.4	13.0	19.0	12.3	29.0	11.0	M12 x 30	90	23100.0250

APPLICATION EXAMPLE



Fixed Slot Tenons
EH 23110.



PRODUCT DESCRIPTION

To be used for locating fixtures and clamping elements onto machine tables with T-slots to DIN 650.

Material

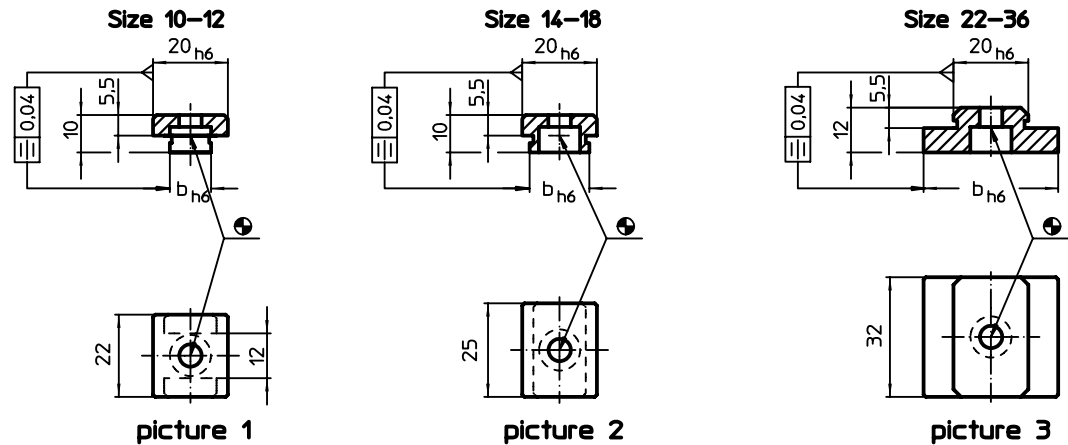
- Steel, case-hardened, blackened, ground

MORE INFORMATION

References

For size 20 refer to 23130.0020.

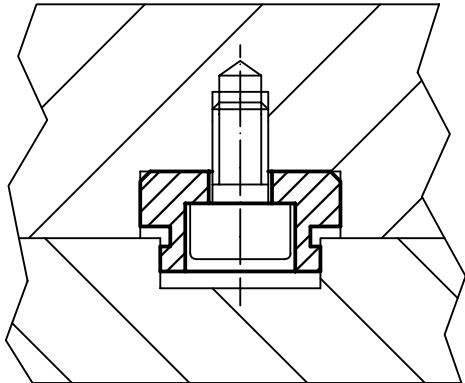
DRAWING



ORDER INFORMATION

T-slot size machine b h6 [mm]	For screws ISO 4762 [mm]	 [g]	Art. No.
size 10-12 – picture 1			
10	M6	19	23110.0010
12	M6	20	23110.0012
size 14-18 – picture 2			
14	M6	28	23110.0014
16	M6	30	23110.0016
18	M6	32	23110.0018
size 22-36 – picture 3			
22	M6	58	23110.0022
24	M6	63	23110.0024
28	M6	68	23110.0028
36	M6	81	23110.0036

APPLICATION EXAMPLE



Fixed Slot Tenons • with cylindrical fastening

EH 23110.



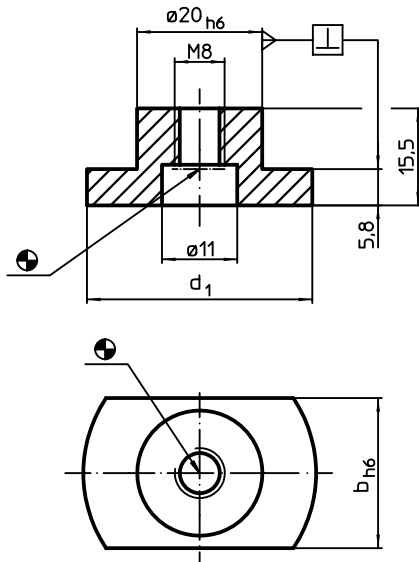
PRODUCT DESCRIPTION

To be used for locating fixtures and clamping elements onto mounting pallets or pallets with cylindrical location holes. They can be inserted in holes as well as in slots.

Material

- Steel, case-hardened, blackened, ground

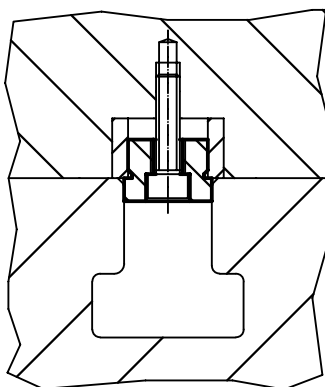
DRAWING



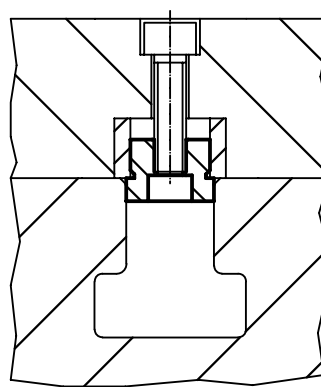
ORDER INFORMATION

T-slot size machine b_{h6} [mm]	Dimensions d_1 [mm]	For screws ISO 4762		[g]	Art. No.
		(picture 1)	(picture 2)		
10	30	M6	M8	28	23110.0110
12	30	M6	M8	30	23110.0112
14	30	M6	M8	33	23110.0114
16	30	M6	M8	36	23110.0116
18	30	M6	M8	45	23110.0118
20	36	M6	M8	45	23110.0120
22	40	M6	M8	54	23110.0122
28	42	M6	M8	65	23110.0128
36	48	M6	M8	86	23110.0136

APPLICATION EXAMPLE



picture 1



picture 2

Centering Pins
EH 23110.



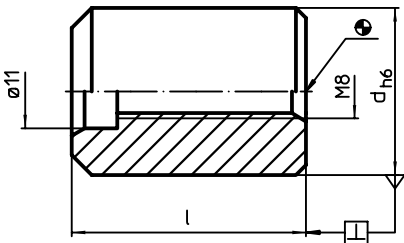
PRODUCT DESCRIPTION

The centering pins are used for centering fixtures on pallets.

Material

- Alloyed case-hardened steel, case-hardened, ground

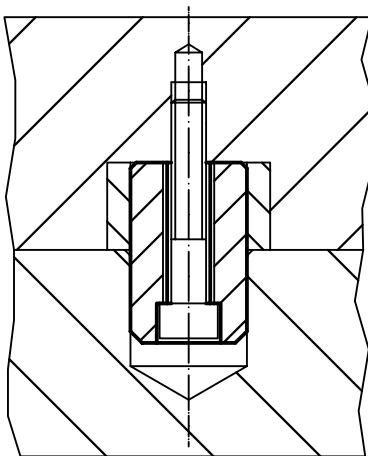
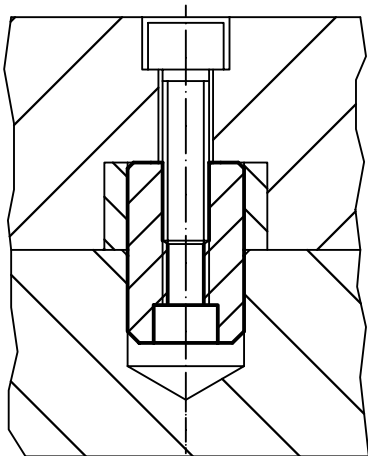
DRAWING



ORDER INFORMATION

Dimensions			Art. No.
d h6	l [mm]		
20	31	70	23110.0510
25	35	118	23110.0520
50	31	473	23110.0530
	45	695	23110.0540

APPLICATION EXAMPLE



Centering Pins • stepped

EH 23110.



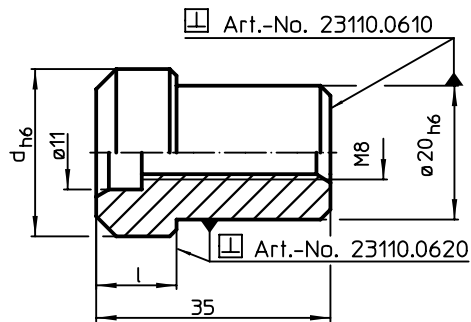
PRODUCT DESCRIPTION

The stepped centering pins are used for centering fixtures on pallets.

Material

- Alloyed case-hardened steel, case-hardened, ground

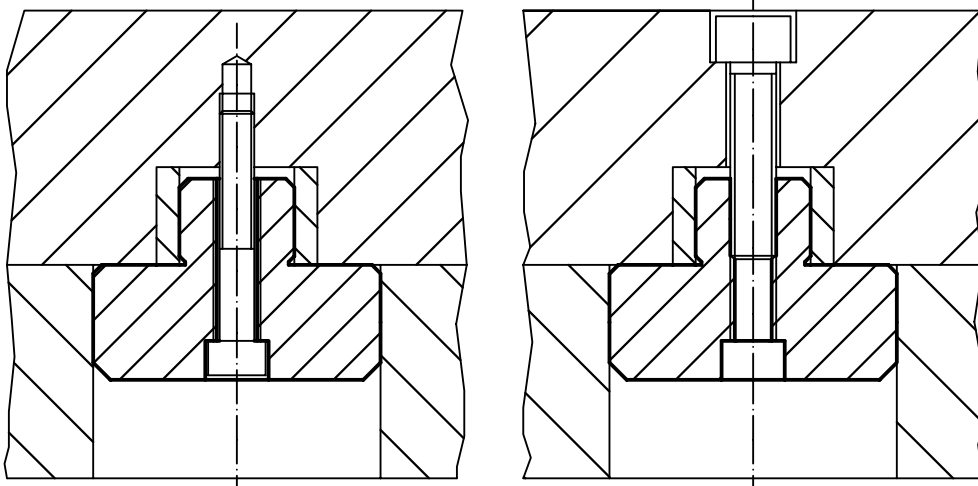
DRAWING



ORDER INFORMATION

Dimensions			Art. No.
d h6	l		
[mm]		[g]	
25	12	87	23110.0610
50	20	330	23110.0620

APPLICATION EXAMPLE



Loose Slot Tenons • DIN 6323

EH 23120.



PRODUCT DESCRIPTION

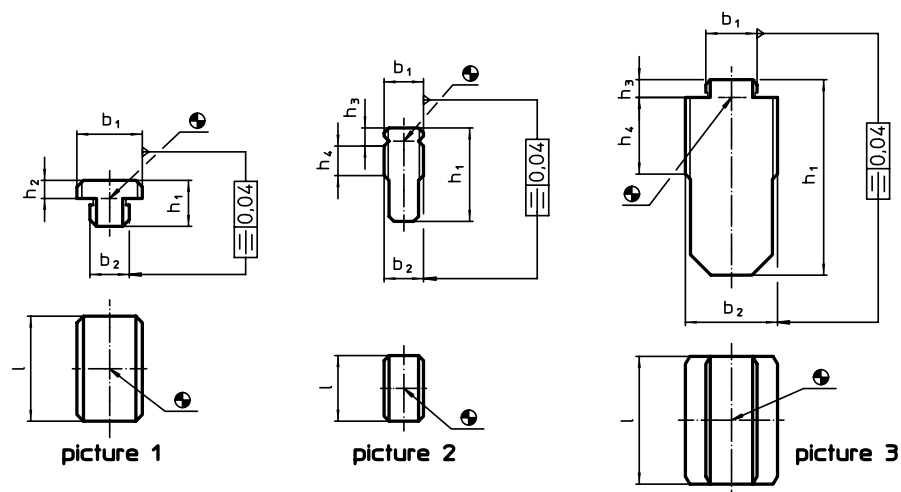
To be used for locating fixtures and clamping elements onto machine tables with T-slots to DIN 650.

Being simply pushed into position after fixture or clamping element has been roughly positioned, they cannot cause damage to the machine as could protruding fixed slot tenons or low slot tenons.

Material

- Steel, case-hardened, blackened, ground

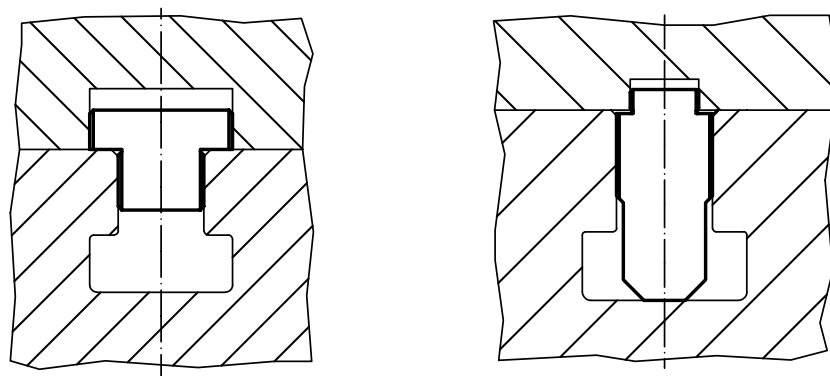
DRAWING



ORDER INFORMATION

T-slot size fixture b ₁ h ₆ [mm]	T-slot size machine b ₂ h ₆ [mm]	Dimensions						Art. No.
		h ₁	h ₂	h ₃	h ₄	l		
				[mm]			[g]	
form A, b ₁ > b ₂ – picture 1								
12	10	12.0	3.6	–	–	20	20	23120.0010
	12	14.0	5.5	–	–	32	52	23120.0012
	14	14.0	5.5	–	–	32	56	23120.0014
	16	14.0	5.5	–	–	32	61	23120.0016
	18	14.0	5.5	–	–	32	65	23120.0018
form B, b ₁ = b ₂ – picture 2								
12	12	28.6	–	5.5	9	20	45	23120.0011
20	20	45.5	–	7.0	16	32	199	23120.0020
form C, b ₁ < b ₂ – picture 3								
20	22	50.5	–	7.0	18	40	305	23120.0022
	28	61.5	–	7.0	24	40	472	23120.0028
	36	76.5	–	7.0	30	50	952	23120.0036

APPLICATION EXAMPLE



Low Slot Tenons

EH 23130.



PRODUCT DESCRIPTION

To be used for locating fixtures and clamping elements onto machine tables with T-slots to DIN 650.

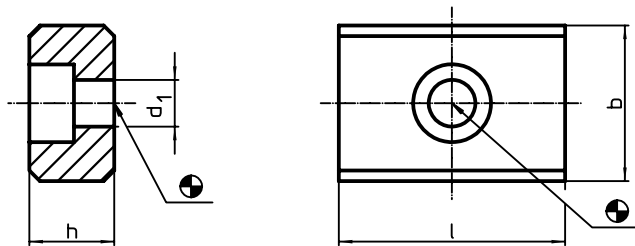
Material

- Steel, case-hardened, blackened, ground

Assembly

They are bolted into the alignment slots of the fixture. Low slot tenons are suitable for use where a fixture will only be used on machines having an identical slot width.

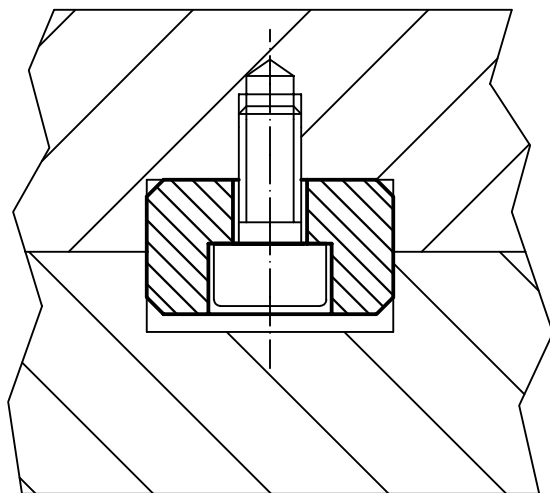
DRAWING



ORDER INFORMATION

b h6	Dimensions			For screws ISO 4762	 [g]	Art. No.
	h	l	d ₁			
				[mm]		
10	8	20	4.5	M4	11	23130.0010
12	8	20	5.5	M5	11	23130.0012
14	10	22	6.6	M6	18	23130.0014
16	10	22	6.6	M6	22	23130.0016
18	10	22	6.6	M6	25	23130.0018
20	10	22	6.6	M6	29	23130.0020
22	12	32	6.6	M6	60	23130.0022
24	12	32	6.6	M6	65	23130.0024

APPLICATION EXAMPLE



POSITIONING CLAMPING PINS

QUICK AND EASY

The positioning clamping pin is centred and clamped with four balls in the locating bush by tightening the clamping bolt. The clamping bolt can be operated manually via a removable handle or using a hex key.

PRODUCT BENEFITS AT A GLANCE

- Benefits thanks to spring pre-loading:
 - Low-wear.
 - Clamping balls and locating hole are protected from being overloaded.
 - No overstressing of the clamping bolt, preventing the pin from jamming.
- Spring pre-loading also dampens vibrations during chip removal.
- Protection against inadvertent loosening of the pin (e.g. caused by vibration).
- High repeatability of ± 0.03 mm.
- Handling facilitated during installation / disassembly thanks to spanner flats and knurls.
- Flat construction height.
- Operation by optional removable handle or using a hex key.

**Sample application EH 23111.**

Positioning clamping pin for quick workpiece changes at the machine table.



[www.halder.com/
PositioningClampingPins-Video](http://www.halder.com/PositioningClampingPins-Video)

Positioning Clamping Pins

EH 23111.



PRODUCT DESCRIPTION

The positioning clamping pin allows fast clamping, fastening, adjusting, changing and securing of workpieces, plates, fixture systems etc.

Material

- Heat-treated steel, tempered, blackened
- Stainless steel 1.4542, precipitation-hardened

Operation

By tightening the clamping bolt, the positioning clamping pin is centred and clamped in the locating bushing by means of four balls. The clamping bolt can be operated manually via a removable handle (Art. No. 23111.0900/0902) or using a hexagon key.

MORE INFORMATION

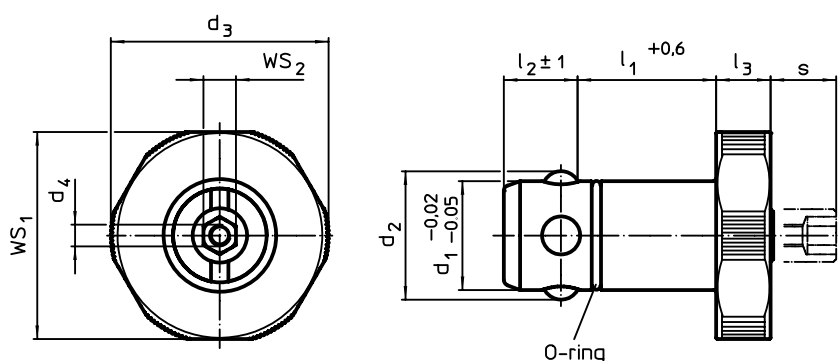
Accessories

Suitable bushings are available.

Further products

Manual Handles, for positioning clamping pins → p. 420
 Bushings, for positioning clamping pins → p. 421
 Locating Bushings, for positioning clamping pins, for press fit → p. 422
 Locating Bushings, for positioning clamping pins, for screw fit → p. 423

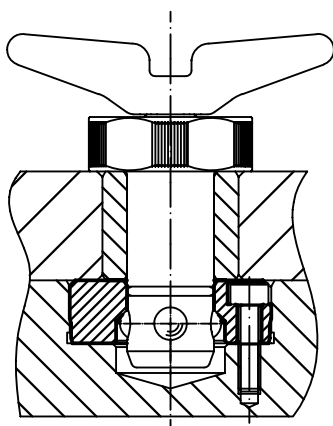
DRAWING

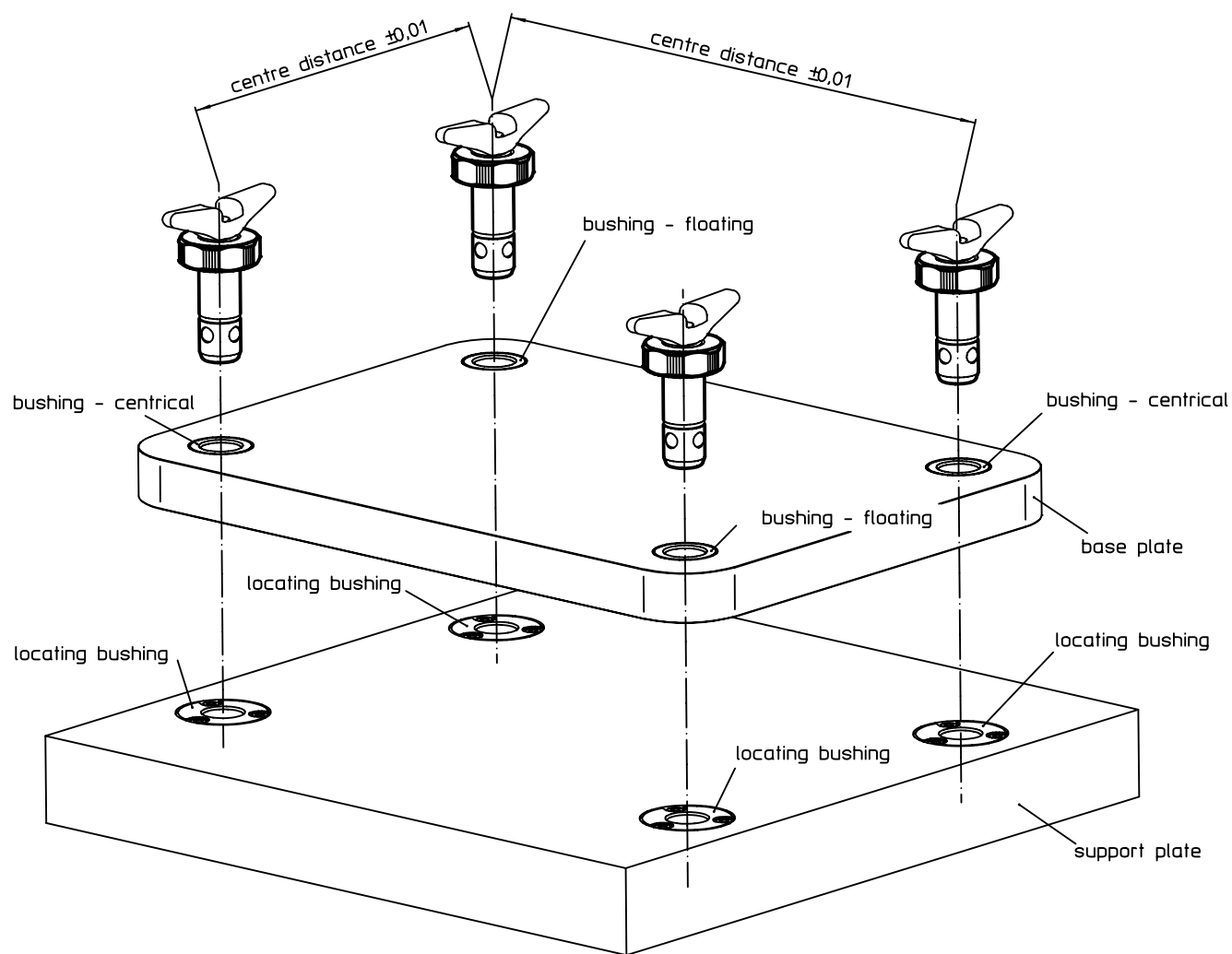


ORDER INFORMATION

d ₁ -0.02 -0.05	l ₁ +0.6	Dimensions						For base plates ±0.05	WS ₁	WS ₂	Holding force		Art. No.	
		d ₂	d ₃	d ₄	l ₂ ±1	l ₃	s max.						Heat-treated steel	Stainless steel
		[mm]											[mm]	[mm]
16	25	18.7	32	M4	13.6	10	9	20	30	6	5	116	23111.0016	23111.0116
	30	18.7	32	M4	13.6	10	9	25	30	6	5	125	23111.0018	23111.0118
20	25	23.6	40	M4	13.6	10	9	20	38	6	6	178	23111.0020	23111.0120
	30	23.6	40	M4	13.6	10	9	25	38	6	6	191	23111.0022	23111.0122
25	25	29.0	45	M4	18.6	10	9	20	43	10	8	270	23111.0025	23111.0125
	30	29.0	45	M4	18.6	10	9	25	43	10	8	287	23111.0027	23111.0127
30	25	34.6	55	M4	18.6	10	9	20	53	10	10	390	23111.0030	23111.0130
	30	34.6	55	M4	18.6	10	9	25	53	10	10	416	23111.0032	23111.0132

APPLICATION EXAMPLE





Manual Handles • for positioning clamping pins
EH 23111.



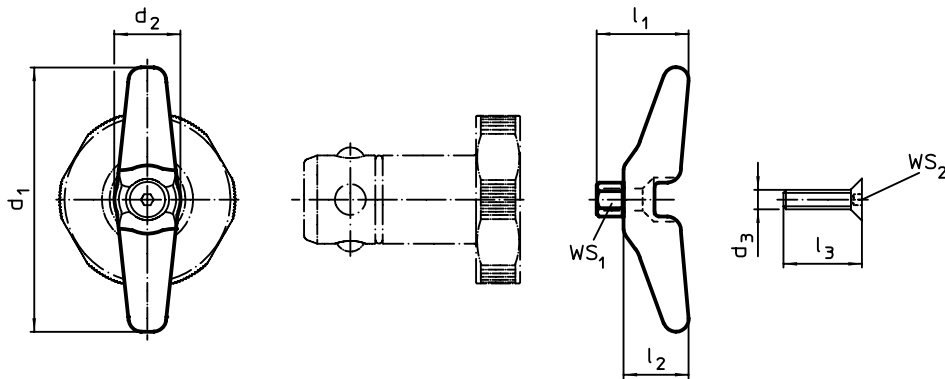
PRODUCT DESCRIPTION

The manual handle enables an easy and fast operation of the positioning clamping pin.

Material
▪ Stainless steel

Assembly
The handle is tightened to the positioning clamping pin with the M 4 screw included in the delivery.

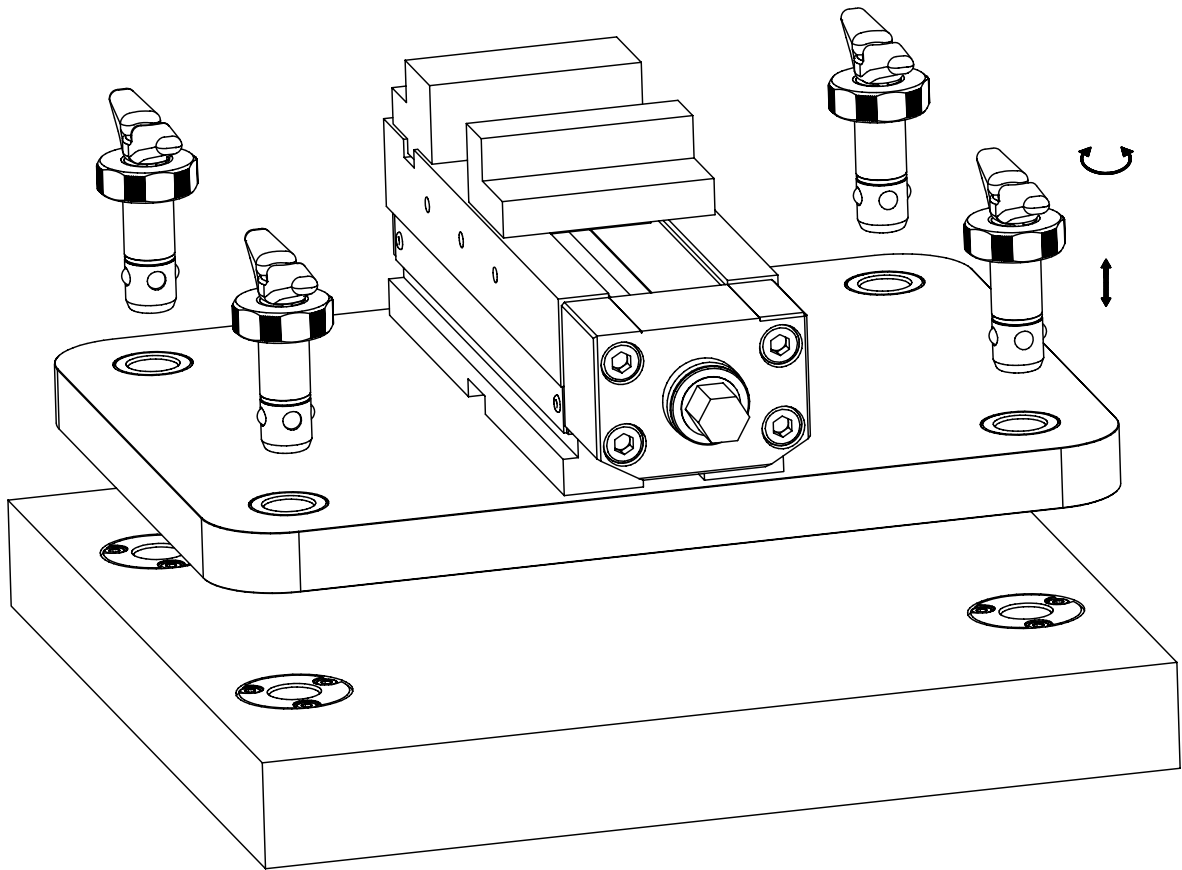
DRAWING



ORDER INFORMATION

For pin Ø [mm]	d ₁	d ₂	Dimensions				WS ₁ [mm]	WS ₂ [mm]	 [g]	Art. No.
			d ₃	l ₁	l ₂	l ₃				
16/20	60	15	M4	20	15	16	6	2.5	48	23111.0900
25/30	80	15	M4	25	20	20	10	2.5	76	23111.0902

APPLICATION EXAMPLE



Bushings • for positioning clamping pins

EH 23111.



PRODUCT DESCRIPTION

These bushings for positioning clamping pins are available as centric and floating versions. Please observe the mounting instruction.

Material

- Case-hardened steel, case-hardened, blackened
- Stainless steel 1.4112, hardened

Assembly

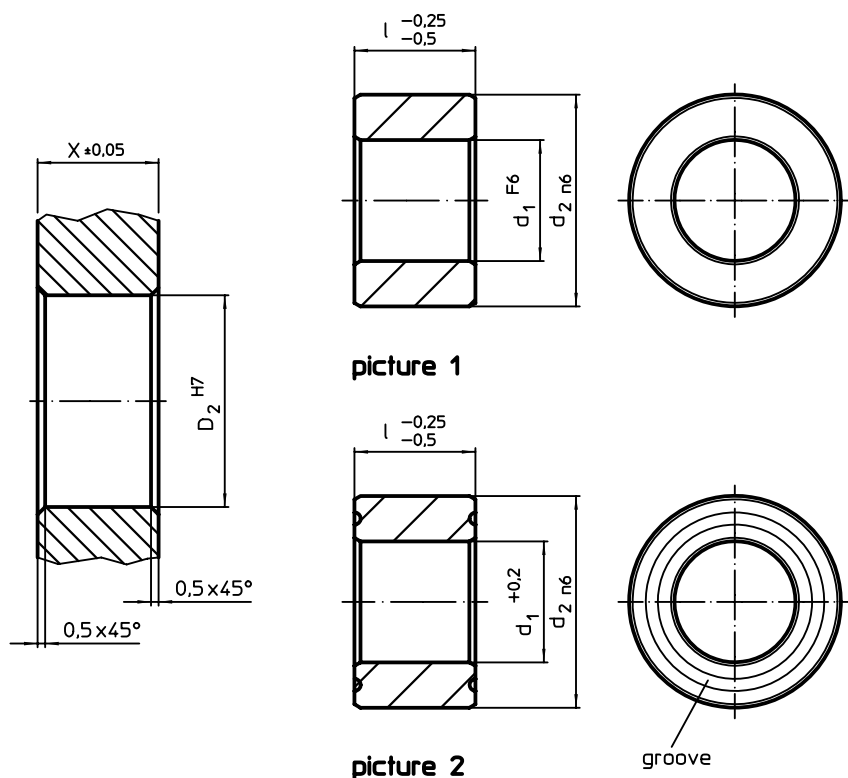
Two centering bushings and two floating bushings are to be mounted into the plate to

be clamped in order to guarantee an optimal repeatability.

Characteristic

The floating bushing has a groove that serves as a differentiation mark.

DRAWING



ORDER INFORMATION

d ₁	Dimensions		Location hole			Art. No.	
	l -0.25 -0.5 [mm]	d ₂ n6	X ±0.05 [mm]	D ₂ H7 [mm]		Case-hardened steel	Stainless steel
central – picture 1							
16.0 F6	20	25	20	25	44	23111.0702	23111.0802
	25	25	25	25	56	23111.0704	23111.0804
20.0 F6	20	35	20	35	110	23111.0706	23111.0806
	25	35	25	35	120	23111.0708	23111.0808
25.0 F6	20	35	20	35	73	23111.0710	23111.0810
	25	35	25	35	92	23111.0712	23111.0812
30.0 F6	20	45	20	45	136	23111.0714	23111.0814
	25	45	25	45	171	23111.0716	23111.0816
floating – picture 2							
16.8 +0.2	20	25	20	25	41	23111.0732	23111.0832
	25	25	25	25	51	23111.0734	23111.0834
20.8 +0.2	20	35	20	35	95	23111.0736	23111.0836
	25	35	25	35	120	23111.0738	23111.0838
25.8 +0.2	20	35	20	35	66	23111.0740	23111.0840
	25	35	25	35	84	23111.0742	23111.0842
30.8 +0.2	20	45	20	45	129	23111.0744	23111.0844
	25	45	25	45	161	23111.0746	23111.0846

Locating Bushings • for positioning clamping pins, for press fit

EH 23111.



PRODUCT DESCRIPTION

These locating bushes for positioning clamping pins are mounted in the counterpart.

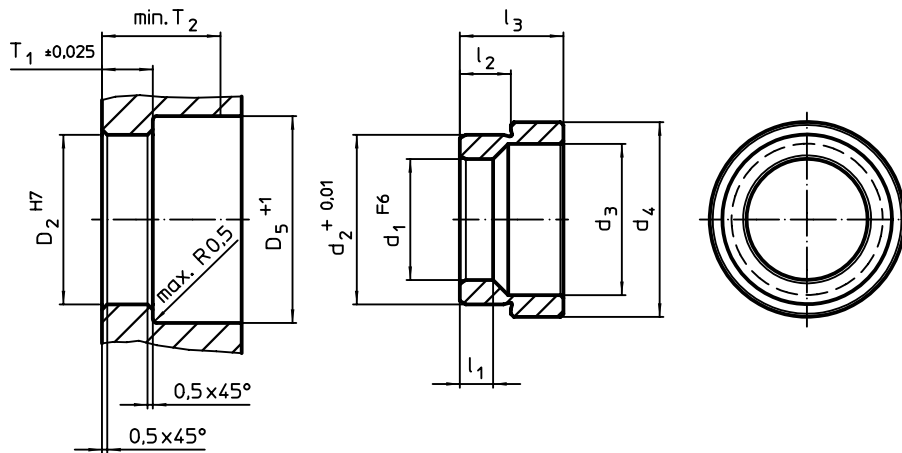
Material

- Case-hardened steel, case-hardened, blackened
- Stainless steel 1.4112, hardened

Assembly

The press fit locating bushing for positioning clamping pins are inserted in the machine table or the base plate with light pressure.

DRAWING



ORDER INFORMATION

Dimensions							Location hole					Art. No.	
d_1 F6	d_2 +0.01	d_3	d_4	l_1	l_2	l_3	D_2 H7	D_5 +1	T_1 ±0.02	T2 min.		Case-hard- ened steel	Stainless steel
[mm]							[mm]				[g]		
16	22.03	20	28.6	5.25	6.90	12.1	22	31	7.25	22	22	23111.0762	23111.0862
20	28.03	25	32.2	5.25	8.42	17.1	28	34	8.75	22	39	23111.0764	23111.0864
25	35.03	31	40.2	5.25	10.22	21.0	35	42	10.55	28	79	23111.0766	23111.0866
30	42.03	37	48.2	5.25	10.63	21.8	42	50	10.95	28	118	23111.0768	23111.0868

Locating Bushings • for positioning clamping pins, for screw fit

EH 23111.



PRODUCT DESCRIPTION

These locating bushes for positioning clamping pins are mounted in the counterpart.

Material

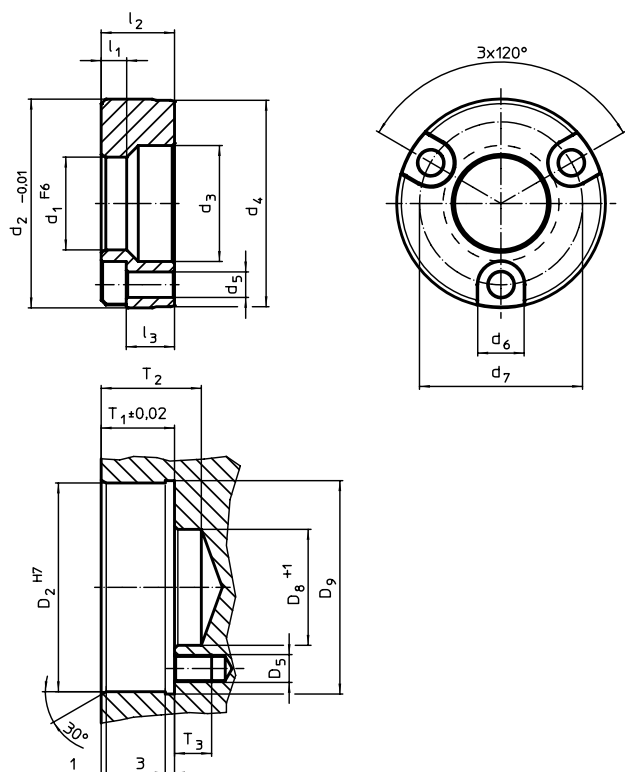
- Case-hardened steel, case-hardened, blackened
- Stainless steel 1.4112, hardened

Assembly

The screw fit locating bushings for positioning clamping pins are inserted in the machine table or in the base plate and are screwed on.

Supplied with mounting screws.

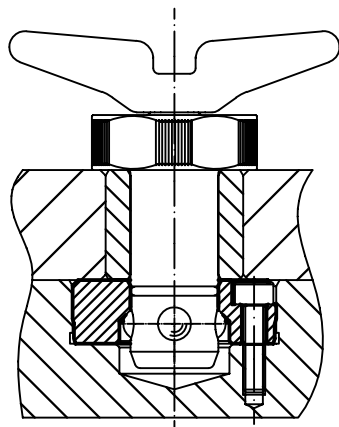
DRAWING



ORDER INFORMATION

Dimensions										Location hole							Art. No.	Case-hardened steel	Stainless steel
d ₁ F6	d ₂ -0.01	d ₃	d ₄	d ₅	d ₆	d ₇	l ₁	l ₂	l ₃ ~	D ₂ H7	D ₅	D ₆ +1	D ₈	D ₉	T ₁ ±0.02	T2	T3		
[mm]										[mm]							[g]		
16	36.99	20	36.5	4.5	8	29	5.25	11.56	7.0	37	M4	20	38.5	11.91	22	12	73		
20	44.99	25	44.5	5.5	10	35	5.25	15.82	10.0	45	M5	25	46.5	16.21	22	12	132		
25	54.99	31	54.5	6.6	11	42	5.25	19.94	13.5	55	M6	31	56.5	20.32	28	14	264		
30	59.99	37	59.5	6.6	11	48	5.25	21.77	15.0	60	M6	37	61.5	22.15	28	14	318		

APPLICATION EXAMPLE



Positioning Bushings • with collar, DIN 172 A

EH 23112.



PRODUCT DESCRIPTION

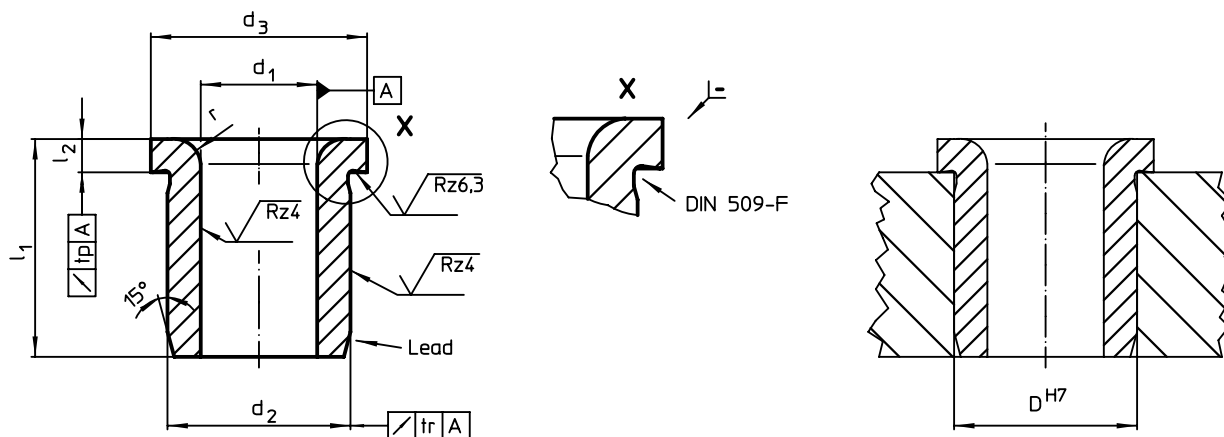
Positioning or drill bushings are used to drill repetitive holes in the same location to ensure repeatability.

The hardened and ground positioning bushings can be used as wear-resistant guide for drills, shafts etc.

Material

- Case-hardened steel, case-hardened

DRAWING



ORDER INFORMATION

d ₁ F7	l ₁	Dimensions				Location hole D H7		Art. No.
		d ₂ n6	d ₃	l ₂	r			
[mm]							[g]	
2.0	6	5	8	2.0	1.0	5	1.2	23112.0020
	9	5	8	2.0	1.0	5	1.6	23112.0021
2.1	6	5	8	2.0	1.0	5	1.2	23112.0022
	9	5	8	2.0	1.0	5	1.5	23112.0023
2.5	6	5	8	2.0	1.0	5	1.1	23112.0024
	9	5	8	2.0	1.0	5	1.4	23112.0025
3.0	8	6	9	2.5	1.0	6	1.9	23112.0030
	12	6	9	2.5	1.0	6	2.6	23112.0031
	16	6	9	2.5	1.0	6	3.2	23112.0032
3.1	8	6	9	2.5	1.0	6	1.9	23112.0033
	12	6	9	2.5	1.0	6	2.5	23112.0034
	16	6	9	2.5	1.0	6	3.2	23112.0035
3.5	8	7	10	2.5	1.0	7	2.4	23112.0036
	12	7	10	2.5	1.0	7	3.4	23112.0037
	16	7	10	2.5	1.0	7	4.3	23112.0038
4.0	8	7	10	2.5	1.0	7	2.3	23112.0040
	12	7	10	2.5	1.0	7	3.1	23112.0041
	16	7	10	2.5	1.0	7	3.9	23112.0042
4.1	8	8	11	2.5	1.0	8	3.0	23112.0043
	12	8	11	2.5	1.0	8	4.2	23112.0044
	16	8	11	2.5	1.0	8	5.3	23112.0045
4.5	8	8	11	2.5	1.0	8	2.9	23112.0046
	12	8	11	2.5	1.0	8	3.9	23112.0047
	16	8	11	2.5	1.0	8	5.0	23112.0048
5.0	8	8	11	2.5	1.0	8	1.8	23112.0050
	12	8	11	2.5	1.0	8	3.6	23112.0051
	16	8	11	2.5	1.0	8	4.5	23112.0052



d ₁ F7	l ₁	Dimensions				Location hole D H7		Art. No.
		d ₂ n6	d ₃	l ₂	r			
[mm]						[mm]	[g]	
5.1	10	10	13	3.0	1.5	10	5.5	23112.0053
	16	10	13	3.0	1.5	10	8.2	23112.0054
	20	10	13	3.0	1.5	10	10.0	23112.0055
5.5	10	10	13	3.0	1.5	10	5.3	23112.0056
	16	10	13	3.0	1.5	10	7.9	23112.0057
	20	10	13	3.0	1.5	10	9.6	23112.0058
6.0	10	10	13	3.0	1.5	10	4.9	23112.0060
	16	10	13	3.0	1.5	10	7.3	23112.0061
	20	10	13	3.0	1.5	10	8.8	23112.0062
6.1	10	12	15	3.0	1.5	12	7.7	23112.0063
	16	12	15	3.0	1.5	12	12.0	23112.0064
	20	12	15	3.0	1.5	12	14.0	23112.0065
6.5	10	12	15	3.0	1.5	12	7.4	23112.0066
	16	12	15	3.0	1.5	12	11.0	23112.0067
	20	12	15	3.0	1.5	12	14.0	23112.0068
7.0	10	12	15	3.0	1.5	12	7.0	23112.0070
	16	12	15	3.0	1.5	12	10.0	23112.0071
	20	12	15	3.0	1.5	12	13.0	23112.0072
7.1	10	12	15	3.0	1.5	12	6.9	23112.0073
	16	12	15	3.0	1.5	12	10.0	23112.0074
	20	12	15	3.0	1.5	12	13.0	23112.0075
7.5	10	12	15	3.0	1.5	12	6.5	23112.0076
	16	12	15	3.0	1.5	12	9.7	23112.0077
	20	12	15	3.0	1.5	12	12.0	23112.0078
8.0	10	12	15	3.0	1.5	12	6.0	23112.0080
	16	12	15	3.0	1.5	12	9.0	23112.0081
	20	12	15	3.0	1.5	12	11.0	23112.0082
8.1	12	15	18	3.0	2.0	15	13.0	23112.0083
	20	15	18	3.0	2.0	15	25.0	23112.0084
	25	15	18	3.0	2.0	15	26.0	23112.0085
8.5	12	15	18	3.0	2.0	15	13.0	23112.0086
	20	15	18	3.0	2.0	15	20.0	23112.0087
	25	15	18	3.0	2.0	15	25.0	23112.0088
9.0	12	15	18	3.0	2.0	15	12.0	23112.0090
	20	15	18	3.0	2.0	15	19.0	23112.0091
	25	15	18	3.0	2.0	15	23.0	23112.0092
9.1	12	15	18	3.0	2.0	15	12.0	23112.0093
	20	15	18	3.0	2.0	15	19.0	23112.0094
	25	15	18	3.0	2.0	15	23.0	23112.0095
9.5	12	15	18	3.0	2.0	15	11.0	23112.0096
	20	15	18	3.0	2.0	15	18.0	23112.0097
	25	15	18	3.0	2.0	15	22.0	23112.0098
10.0	12	15	18	3.0	2.0	15	10.0	23112.0100
	20	15	18	3.0	2.0	15	17.0	23112.0101
	25	15	18	3.0	2.0	15	20.0	23112.0102
10.1	12	18	22	4.0	2.0	18	19.0	23112.0103
	20	18	22	4.0	2.0	18	30.0	23112.0104
	25	18	22	4.0	2.0	18	37.0	23112.0105
10.5	12	18	22	4.0	2.0	18	19.0	23112.0106
	20	18	22	4.0	2.0	18	29.0	23112.0107
	25	18	22	4.0	2.0	18	36.0	23112.0108
11.0	12	18	22	4.0	2.0	18	18.0	23112.0110
	20	18	22	4.0	2.0	18	28.0	23112.0111
	25	18	22	4.0	2.0	18	34.0	23112.0112
11.1	12	18	22	4.0	2.0	18	18.0	23112.0113
	20	18	22	4.0	2.0	18	28.0	23112.0114
	25	18	22	4.0	2.0	18	34.0	23112.0115
11.5	12	18	22	4.0	2.0	18	17.0	23112.0116
	20	18	22	4.0	2.0	18	26.0	23112.0117
	25	18	22	4.0	2.0	18	33.0	23112.0118
12.0	12	18	22	4.0	2.0	18	16.0	23112.0120
	20	18	22	4.0	2.0	18	25.0	23112.0121
	25	18	22	4.0	2.0	18	31.0	23112.0122

→

d ₁ F7	l ₁	Dimensions				Location hole D H7		Art. No.
		d ₂ n6	d ₃	l ₂	r			
[mm]						[mm]	[g]	
12.1	16	22	26	4.0	2.0	22	37.0	23112.0123
	28	22	26	4.0	2.0	22	62.0	23112.0124
	36	22	26	4.0	2.0	22	78.0	23112.0125
12.5	16	22	26	4.0	2.0	22	36.0	23112.0126
	28	22	26	4.0	2.0	22	60.0	23112.0127
	36	22	26	4.0	2.0	22	76.0	23112.0128
13.0	16	22	26	4.0	2.0	22	34.0	23112.0130
	28	22	26	4.0	2.0	22	58.0	23112.0131
	36	22	26	4.0	2.0	22	73.0	23112.0132
14.0	16	22	26	4.0	2.0	22	32.0	23112.0140
	28	22	26	4.0	2.0	22	53.0	23112.0141
	36	22	26	4.0	2.0	22	67.0	23112.0142
15.0	16	22	26	4.0	2.0	22	29.0	23112.0150
	28	22	26	4.0	2.0	22	48.0	23112.0151
	36	22	26	4.0	2.0	22	61.0	23112.0152
16.0	16	26	30	4.0	2.0	26	45.0	23112.0160
	28	26	30	4.0	2.0	26	76.0	23112.0161
	36	26	30	4.0	2.0	26	97.0	23112.0162
16.1	16	26	30	4.0	2.0	26	45.0	23112.0163
	28	26	30	4.0	2.0	26	76.0	23112.0164
	36	26	30	4.0	2.0	26	96.0	23112.0165
16.5	16	26	30	4.0	2.0	26	44.0	23112.0166
	28	26	30	4.0	2.0	26	73.0	23112.0167
	36	26	30	4.0	2.0	26	93.0	23112.0168
17.0	16	26	30	4.0	2.0	26	42.0	23112.0171
	28	26	30	4.0	2.0	26	70.0	23112.0172
	36	26	30	4.0	2.0	26	89.0	23112.0173
18.0	16	26	30	4.0	2.0	26	39.0	23112.0181
	28	26	30	4.0	2.0	26	64.0	23112.0182
	36	26	30	4.0	2.0	26	82.0	23112.0183
19.0	20	30	34	5.0	3.0	30	71.0	23112.0191
	36	30	34	5.0	3.0	30	125.0	23112.0192
	45	30	34	5.0	3.0	30	154.0	23112.0193
20.0	20	30	34	5.0	3.0	30	67.0	23112.0201
	36	30	34	5.0	3.0	30	117.0	23112.0202
	45	30	34	5.0	3.0	30	143.0	23112.0203
20.1	20	30	34	5.0	3.0	30	66.0	23112.0204
	36	30	34	5.0	3.0	30	115.0	23112.0205
	45	30	34	5.0	3.0	30	142.0	23112.0206
22.0	20	30	34	5.0	3.0	30	56.0	23112.0221
	36	30	34	5.0	3.0	30	96.0	23112.0222
	45	30	34	5.0	3.0	30	120.0	23112.0223
25.0	20	35	39	5.0	3.0	35	80.0	23112.0251
	36	35	39	5.0	3.0	35	138.0	23112.0252
	45	35	39	5.0	3.0	35	171.0	23112.0253
30.0	25	42	46	5.0	3.0	42	139.0	23112.0301
	45	42	46	5.0	3.0	42	245.0	23112.0302
	56	42	46	5.0	3.0	42	303.0	23112.0303

Positioning Bushings • without collar, DIN 179 A

EH 23112.



PRODUCT DESCRIPTION

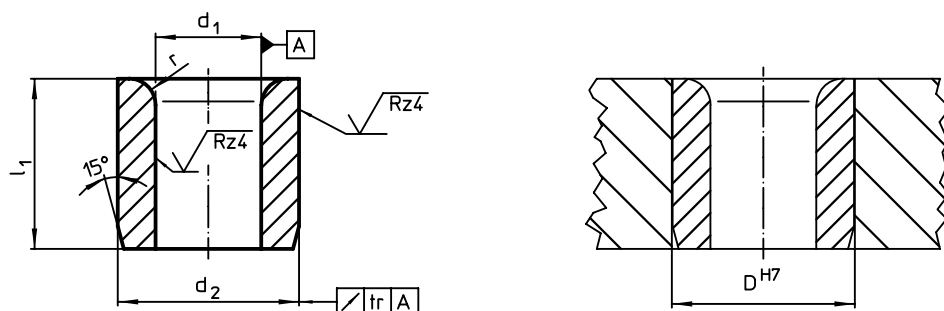
Positioning or drill bushings are used to drill repetitive holes in the same location to ensure repeatability.

The hardened and ground positioning bushings can be used as wear-resistant guide for drills, shafts etc.

Material

- Case-hardened steel, case-hardened

DRAWING



ORDER INFORMATION

d ₁ F7	Dimensions			Location hole D H7		Art. No.
	l ₁	d ₂ n6	r			
	[mm]			[mm]	[g]	
2.0	6	5	1.0	5	0.7	23112.0520
	9	5	1.0	5	1.1	23112.0521
2.1	6	5	1.0	5	0.7	23112.0522
	9	5	1.0	5	1.1	23112.0523
2.5	6	5	1.0	5	0.7	23112.0524
	9	5	1.0	5	1.0	23112.0525
3.0	8	6	1.0	6	1.9	23112.0530
	12	6	1.0	6	1.9	23112.0531
	16	6	1.0	6	2.6	23112.0532
3.1	8	6	1.0	6	1.2	23112.0533
	12	6	1.0	6	1.9	23112.0534
	16	6	1.0	6	3.2	23112.0535
3.5	8	7	1.0	7	2.4	23112.0536
	12	7	1.0	7	2.6	23112.0537
	16	7	1.0	7	3.6	23112.0538
4.0	8	7	1.0	7	1.5	23112.0540
	12	7	1.0	7	3.0	23112.0541
	16	7	1.0	7	3.2	23112.0542
4.1	8	8	1.0	8	2.2	23112.0543
	12	8	1.0	8	3.4	23112.0544
	16	8	1.0	8	4.6	23112.0545
4.5	8	8	1.0	8	2.1	23112.0546
	12	8	1.0	8	3.1	23112.0547
	16	8	1.0	8	4.2	23112.0548
5.0	8	8	1.0	8	1.8	23112.0550
	12	8	1.0	8	3.4	23112.0551
	16	8	1.0	8	3.7	23112.0552
5.1	10	10	1.5	10	4.4	23112.0553
	16	10	1.5	10	7.1	23112.0554
	20	10	1.5	10	8.9	23112.0555
5.5	10	10	1.5	10	4.1	23112.0556
	16	10	1.5	10	6.7	23112.0557
	20	10	1.5	10	8.4	23112.0558

→

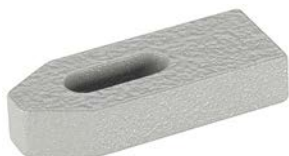
d ₁ F7	Dimensions			Location hole D H7	 [g]	Art. No.
	l ₁	d ₂ n6	r			
	[mm]			[mm]		
6.0	10	10	1.5	10	3.8	23112.0560
	16	10	1.5	10	6.1	23112.0561
	20	10	1.5	10	7.7	23112.0562
6.1	10	12	1.5	12	6.3	23112.0563
	16	12	1.5	12	10.0	23112.0564
	20	12	1.5	12	13.0	23112.0565
6.5	10	12	1.5	12	6.0	23112.0566
	16	12	1.5	12	9.7	23112.0567
	20	12	1.5	12	12.0	23112.0568
7.0	10	12	1.5	12	5.6	23112.0570
	16	12	1.5	12	9.1	23112.0571
	20	12	1.5	12	11.0	23112.0572
7.1	10	12	1.5	12	5.5	23112.0573
	16	12	1.5	12	9.0	23112.0574
	20	12	1.5	12	11.0	23112.0575
7.5	10	12	1.5	12	5.1	23112.0576
	16	12	1.5	12	8.4	23112.0577
	20	12	1.5	12	11.0	23112.0578
8.0	10	12	1.5	12	4.7	23112.0580
	16	12	1.5	12	7.6	23112.0581
	20	12	1.5	12	9.6	23112.0582
8.1	12	15	2.0	15	11.0	23112.0583
	20	15	2.0	15	19.0	23112.0584
	25	15	2.0	15	24.0	23112.0585
8.5	12	15	2.0	15	11.0	23112.0586
	20	15	2.0	15	18.0	23112.0587
	25	15	2.0	15	23.0	23112.0588
9.0	12	15	2.0	15	10.0	23112.0590
	20	15	2.0	15	17.0	23112.0591
	25	15	2.0	15	22.0	23112.0592
9.1	12	15	2.0	15	10.0	23112.0593
	20	15	2.0	15	17.0	23112.0594
	25	15	2.0	15	21.0	23112.0595
9.5	12	15	2.0	15	9.5	23112.0596
	20	15	2.0	15	16.0	23112.0597
	25	15	2.0	15	20.0	23112.0598
10.0	12	15	2.0	15	8.8	23112.0600
	20	15	2.0	15	15.0	23112.0601
	25	15	2.0	15	19.0	23112.0602
10.1	12	18	2.0	18	16.0	23112.0603
	20	18	2.0	18	27.0	23112.0604
	25	18	2.0	18	33.0	23112.0605
10.5	12	18	2.0	18	15.0	23112.0606
	20	18	2.0	18	26.0	23112.0607
	25	18	2.0	18	32.0	23112.0608
11.0	12	18	2.0	18	14.0	23112.0610
	20	18	2.0	18	24.0	23112.0611
	25	18	2.0	18	31.0	23112.0612
11.1	12	18	2.0	18	14.0	23112.0613
	20	18	2.0	18	24.0	23112.0614
	25	18	2.0	18	30.0	23112.0615
11.5	12	18	2.0	18	13.0	23112.0616
	20	18	2.0	18	23.0	23112.0617
	25	18	2.0	18	29.0	23112.0618
12.0	12	18	2.0	18	13.0	23112.0620
	20	18	2.0	18	22.0	23112.0621
	25	18	2.0	18	27.0	23112.0622
12.1	16	22	2.0	22	32.0	23112.0623
	28	22	2.0	22	57.0	23112.0624
	36	22	2.0	22	74.0	23112.0625
12.5	16	22	2.0	22	31.0	23112.0626
	28	22	2.0	22	66.0	23112.0627
	36	22	2.0	22	69.0	23112.0628



d ₁ F7	Dimensions			Location hole D H7		Art. No.
	l ₁	d ₂ n6	r			
	[mm]			[mm]	[g]	
13.0	16	22	2.0	22	30.0	23112.0630
	28	22	2.0	22	53.0	23112.0631
	36	22	2.0	22	69.0	23112.0632
14.0	16	22	2.0	22	27.0	23112.0640
	28	22	2.0	22	49.0	23112.0641
	36	22	2.0	22	63.0	23112.0642
15.0	16	22	2.0	22	24.0	23112.0650
	28	22	2.0	22	44.0	23112.0651
	36	22	2.0	22	56.0	23112.0652
16.0	16	26	2.0	26	45.0	23112.0660
	28	26	2.0	26	71.0	23112.0661
	36	26	2.0	26	92.0	23112.0662
16.1	16	26	2.0	26	40.0	23112.0663
	28	26	2.0	26	71.0	23112.0664
	36	26	2.0	26	91.0	23112.0665
16.5	16	26	2.0	26	39.0	23112.0666
	28	26	2.0	26	68.0	23112.0667
	36	26	2.0	26	88.0	23112.0668
17.0	16	26	2.0	26	37.0	23112.0671
	28	26	2.0	26	65.0	23112.0672
	36	26	2.0	26	84.0	23112.0673
18.0	16	26	2.0	26	33.0	23112.0681
	28	26	2.0	26	59.0	23112.0682
	36	26	2.0	26	76.0	23112.0683
19.0	20	30	3.0	30	64.0	23112.0691
	36	30	3.0	30	117.0	23112.0692
	45	30	3.0	30	147.0	23112.0693
20.0	20	30	3.0	30	59.0	23112.0701
	36	30	3.0	30	108.0	23112.0702
	45	30	3.0	30	136.0	23112.0703
20.1	20	30	3.0	30	59.0	23112.0704
	36	30	3.0	30	108.0	23112.0705
	45	30	3.0	30	135.0	23112.0706
22.0	20	30	3.0	30	49.0	23112.0721
	36	30	3.0	30	90.0	23112.0722
	45	30	3.0	30	113.0	23112.0723
25.0	20	35	3.0	35	71.0	23112.0751
	36	35	3.0	35	130.0	23112.0752
	45	35	3.0	35	163.0	23112.0753
30.0	25	42	3.0	42	129.0	23112.0801
	45	42	3.0	42	235.0	23112.0802
	56	42	3.0	42	293.0	23112.0803

Clamps • DIN 6314 flat

EH 23140.



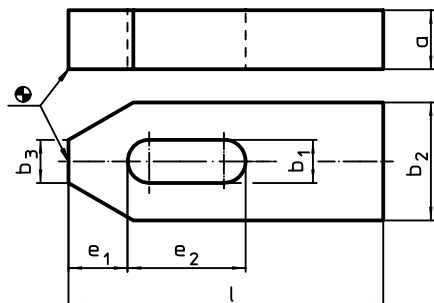
PRODUCT DESCRIPTION

This clamp (clamping claw) according to DIN 6314 is mainly used in mechanical clamping technology for clamping workpieces.

Material

- Heat-treated steel, varnished

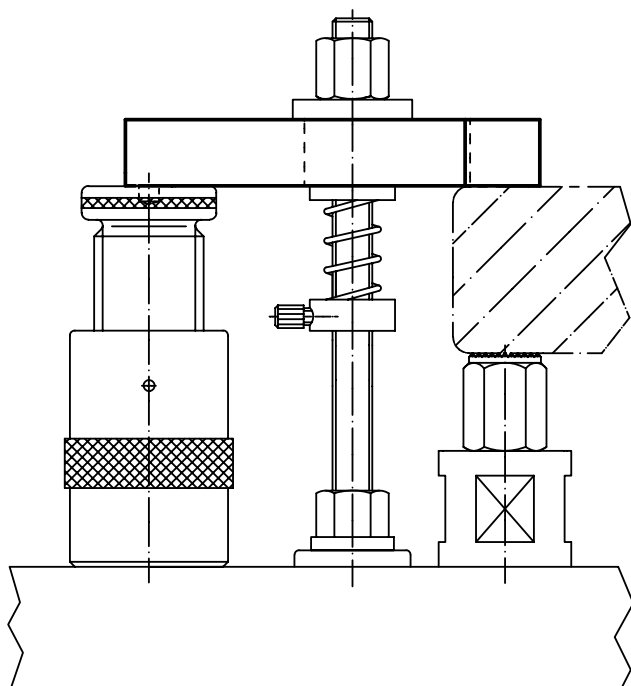
DRAWING



ORDER INFORMATION

Nominal dimension b_1 [mm]	l	a	Dimensions				For screws			Art. No.
			b_2	b_3	e_1	e_2	[mm]	[in]		
6.6	50	10	20	8	10	20	M 6	1/4	61	23140.0007
9.0	60	12	25	10	13	22	M 8	5/16	112	23140.0009
11.0	80	15	30	12	15	30	M10	3/8	228	23140.0011
14.0	100	20	40	14	21	40	M12, M14	1/2	492	23140.0014
	125	20	40	14	21	50	M12, M14	1/2	623	23140.0015
18.0	125	25	50	18	26	45	M16, M18	5/8	980	23140.0018
	160	25	50	18	26	65	M16, M18	5/8	1246	23140.0019
22.0	160	30	60	22	30	60	M20, M22	3/4	1793	23140.0022
	200	30	60	22	30	80	M20, M22	3/4	2244	23140.0023
26.0	200	30	70	26	35	80	M24	1	2617	23140.0026
	250	30	70	26	35	105	M24	1	3823	23140.0027
33.0	250	40	80	34	45	100	M30	1 1/4	4980	23140.0034
	315	50	80	34	45	130	M30	1 1/4	7840	23140.0035

APPLICATION EXAMPLE



Clamps • DIN 6315 B forked

EH 23150.



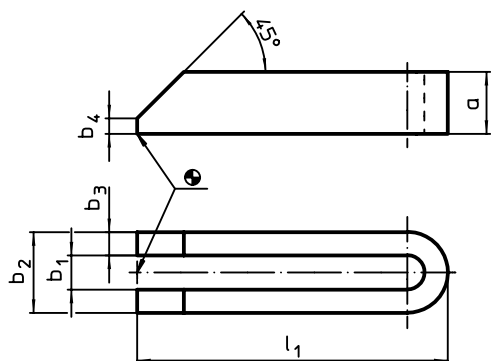
PRODUCT DESCRIPTION

This clamp (clamping claw) according to DIN 6314 B is forked and is mainly used in mechanical clamping technology for clamping workpieces.

Material

- Heat-treated steel, varnished

DRAWING



ORDER INFORMATION

Nominal dimension b_1 [mm]	l_1	a	Dimensions			For screws		 [g]	Art. No.
			b_2 [mm]	b_3	b_4	[mm]	[in]		
6.6	60	12	19	6	3	M 6	1/4	65	23150.0007
9.0	80	15	25	8	4	M 8	5/16	141	23150.0009
11.0	100	20	31	10	5	M10	3/8	299	23150.0011
14.0	125	25	38	12	6	M12, M14	1/2	578	23150.0014
	160	25	38	12	6	M12, M14	1/2	715	23150.0015
	200	25	38	12	6	M12, M14	1/2	905	23150.0016
18.0	160	30	48	15	8	M16, M18	5/8	1077	23150.0018
	200	30	48	15	8	M16, M18	5/8	1346	23150.0019
	250	40	48	15	10	M16, M18	5/8	2300	23150.0020
22.0	200	40	52	15	10	M20, M22	3/4	1809	23150.0022
	250	40	62	20	10	M20, M22	3/4	3020	23150.0023
	315	40	62	20	10	M20, M22	3/4	3800	23150.0024
26.0	200	40	66	20	10	M24	1	2359	23150.0026
	250	40	66	20	10	M24	1	2360	23150.0027
	315	40	66	20	10	M24	1	3802	23150.0028
	500	50	66	20	10	M24	1	7640	23150.0030
33.0	250	50	74	20	12	M30	1 1/4	3720	23150.0034
	315	50	74	20	12	M30	1 1/4	4780	23150.0035
	400	50	74	20	12	M30	1 1/4	6458	23150.0036
40.0	400	60	100	30	12	M36	1 1/2	10920	23150.0040¹⁾
	600	60	100	30	12	M36	1 1/2	18002	23150.0041¹⁾

¹⁾ DIN standards do not include these dimensions.

Clamps • DIN 6316 with goose-neck

EH 23160.



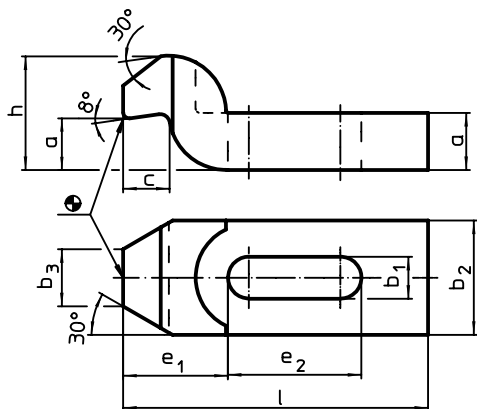
PRODUCT DESCRIPTION

This clamp (clamping claw) according to DIN 6316 with goose-neck is mainly used in mechanical clamping technology for clamping workpieces.

Material

- Heat-treated steel, varnished

DRAWING

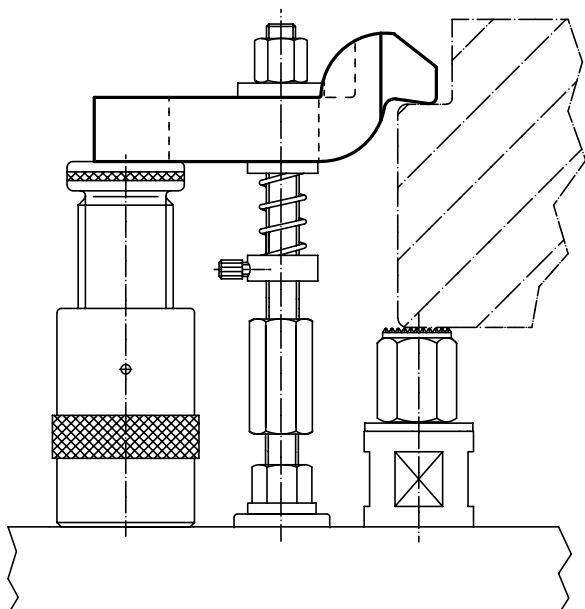


ORDER INFORMATION

Nominal dimension b_1 [mm]	Dimensions								For screws			Art. No.
	l	a	b_2	b_3	c	e_1	e_2	h	[mm]	[in]	[g]	
6.6	60	10	20	10	8	20	20	20	M 6	1/4	81	23160.0007
9.0	80	12	25	12	9	25	25	24	M 8	5/16	165	23160.0009
11.0	100	15	30	15	12	32	32	30	M10	3/8	307	23160.0011
14.0	125	20	40	20	16	40	40	40	M12, M14	1/2	680	23160.0014
18.0	125	25	50	25	20	49	40	50	M16, M18	5/8	1059	23160.0018¹⁾
	160	25	50	25	20	49	50	50	M16, M18	5/8	1356	23160.0019
22.0	160	30	60	30	24	55	55	60	M20	3/4	1937	23160.0022¹⁾
	200	30	60	30	24	55	70	60	M20	3/4	2100	23160.0023
26.0	200	35	70	35	28	72	60	70	M24	1	3364	23160.0026¹⁾
	250	35	70	35	28	72	80	70	M24	1	4115	23160.0027
33.0	250	40	80	40	40	91	80	80	M30	1 1/4	4500	23160.0034¹⁾
	315	50	80	40	40	91	100	100	M30	1 1/4	8340	23160.0035

¹⁾ DIN standards do not include these dimensions.

APPLICATION EXAMPLE





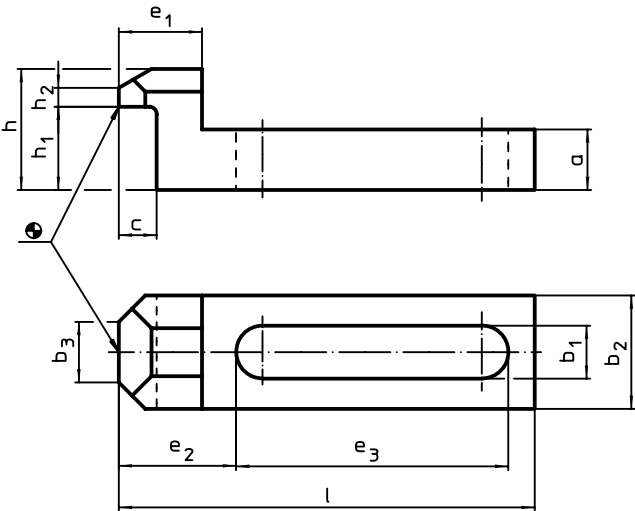
PRODUCT DESCRIPTION

This clamp (clamping claw) according to DIN 6314 B is stepped and is mainly used in mechanical clamping technology for clamping workpieces.

Material

- Heat-treated steel, tempered, blackened

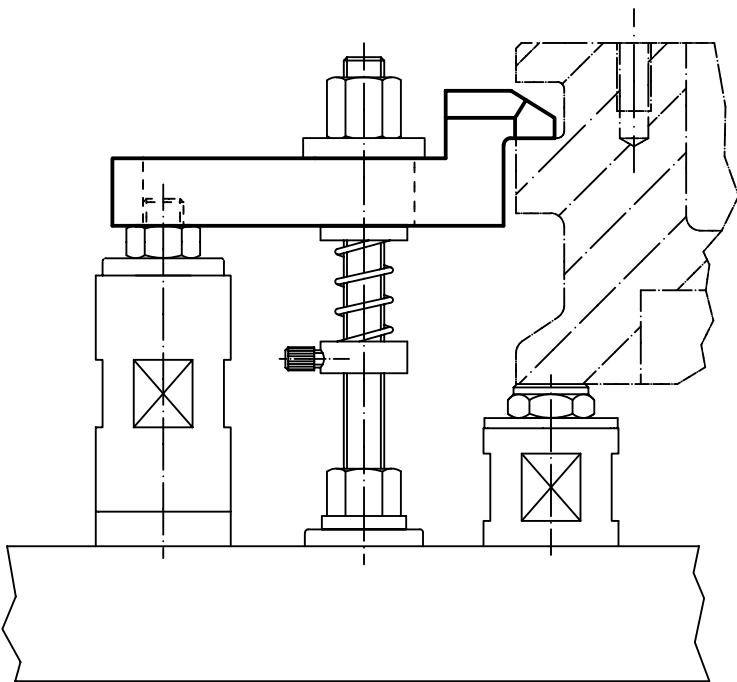
DRAWING



ORDER INFORMATION

Nominal dimension b ₁ [mm]	Dimensions											For screws			Art. No.
	l	a	b ₂	b ₃	c	e ₁	e ₂	e ₃	h	h ₁	h ₂				
	[mm]											[mm]	[in]	[g]	
6.6	55	8	15	8	5	11	15.5	36	16	11	2	M 6	1/4	39	23160.0107
9.0	70	10	20	10	8	15	19.5	46	20	14	3	M 8	5/16	80	23160.0109
11.0	90	13	25	12	10	19	26.5	58	25	18	4	M10	3/8	168	23160.0111
13.0	115	16	30	15	12	24	32.5	75	32	23	5	M12	1/2	325	23160.0113
17.0	145	20	40	20	14	29	38.5	99	40	28	6	M16	5/8	685	23160.0117

APPLICATION EXAMPLE



Clamps • with nose, closed
EH 23170.



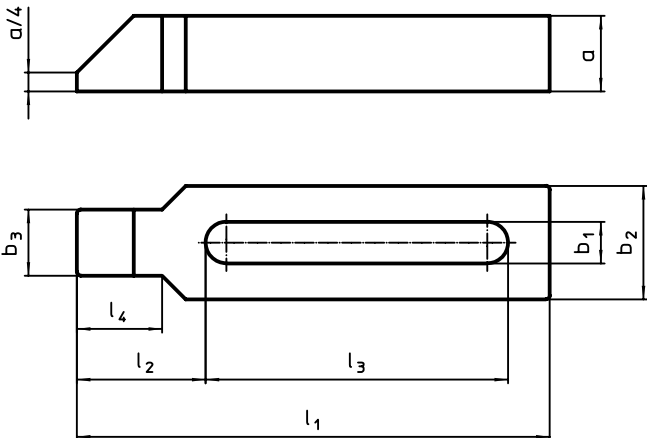
PRODUCT DESCRIPTION

This clamp (clamping claw) according to DIN 6317 with nose is mainly used in mechanical clamping technology for clamping workpieces. Due to the closed design of the clamp, it is suitable for use with rotating workpieces. Thanks to the closed slot, the clamp is suitable for an application with rotating workpieces.

Material

- Heat-treated steel, varnished

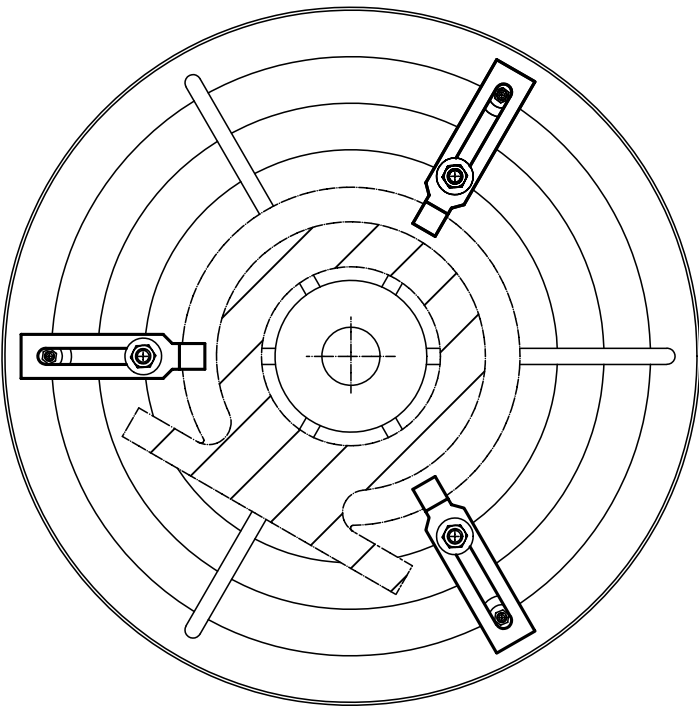
DRAWING



ORDER INFORMATION

Nominal dimension b ₁ [mm]	l ₁	a	Dimensions					For screws			Art. No.
			b ₂	b ₃	l ₂	l ₃	l ₄	[mm]	[in]		
22	250	40	60	35	68	160	45	M20, M22	3/4	3025	23170.0022
	315	40	60	35	68	220	45	M20, M22	3/4	3810	23170.0023
26	250	40	70	43	83	140	56	M24	1	3639	23170.0026
	315	40	70	43	83	200	56	M24	1	4560	23170.0027
	500	50	70	43	83	370	56	M24	1	9483	23170.0029
33	315	50	80	50	88	200	56	M30	1 1/4	6242	23170.0030
	400	50	80	50	88	283	56	M30	1 1/4	7798	23170.0031

APPLICATION EXAMPLE



Clamps • with flat-faced ball, similar to DIN 6314

EH 23180.



PRODUCT DESCRIPTION

This clamp (clamping claw) according to DIN 6314 with flat-faced ball is mainly used in mechanical clamping technology for clamping workpieces.

Material

Ball

- Ball-bearing steel, hardened, bright

Clamp

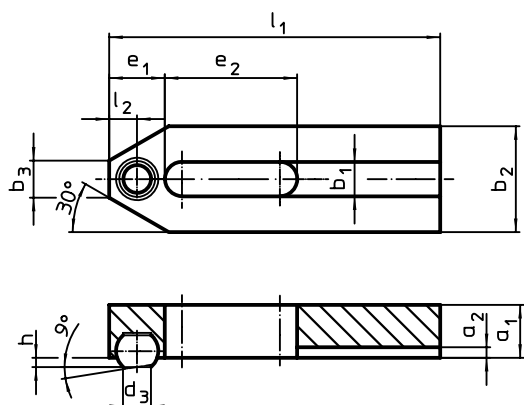
- Heat-treated steel, blackened

MORE INFORMATION

Notes

Ball protected against rotating.

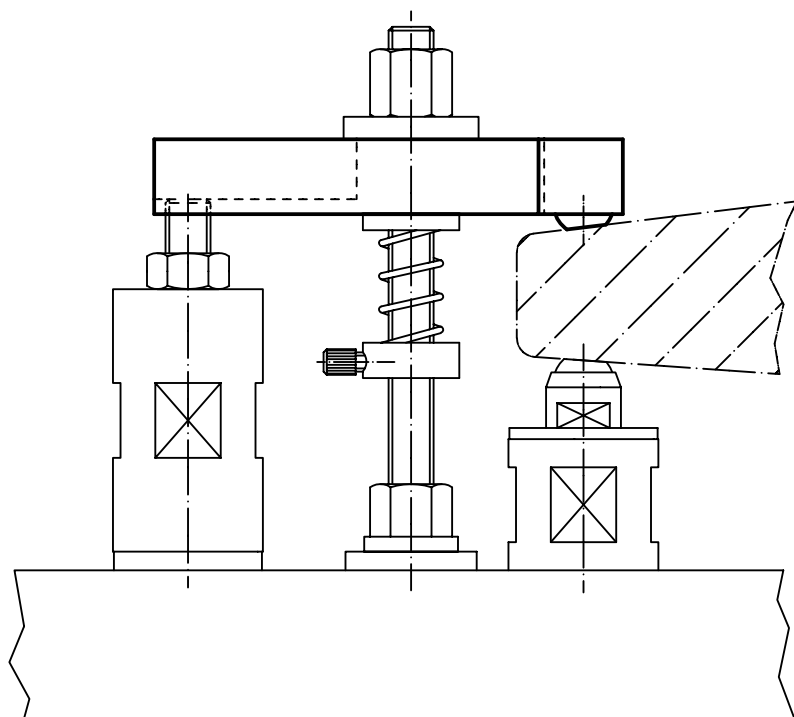
DRAWING



ORDER INFORMATION

Nominal dimension b_1 [mm]	Dimensions											 [g]	Art. No.
	l_1	d_3	a_1	a_2	b_2	b_3	e_1	e_2	h	l_2	ball diameter		
6.6	50	5.8	10	2.5	20	8	10	20	1.6	5.0	8.5	60	23180.0007
9.0	60	7.2	12	3.0	25	10	13	22	2.0	6.5	10.0	109	23180.0009
11.0	80	8.6	15	3.5	30	12	15	30	2.7	7.5	12.0	218	23180.0011
13.0	125	10.5	20	4.0	40	14	21	50	3.5	10.5	16.0	616	23180.0014

APPLICATION EXAMPLE



Clamps • with nose

EH 23180.



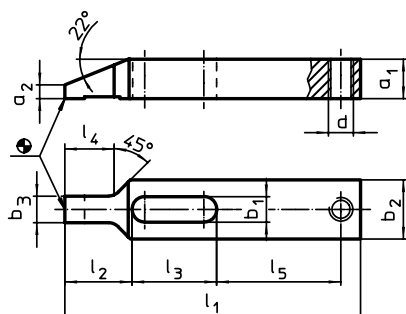
PRODUCT DESCRIPTION

This clamp (clamping claw) with nose is mainly used in mechanical clamping technology for clamping workpieces.

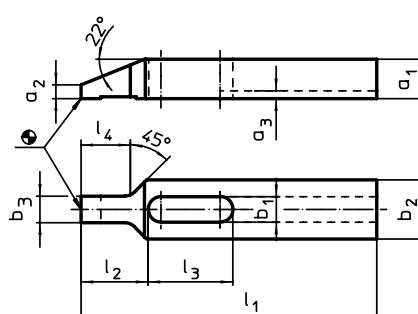
Material

- Heat-treated steel, tempered, blackened

DRAWING



picture 1

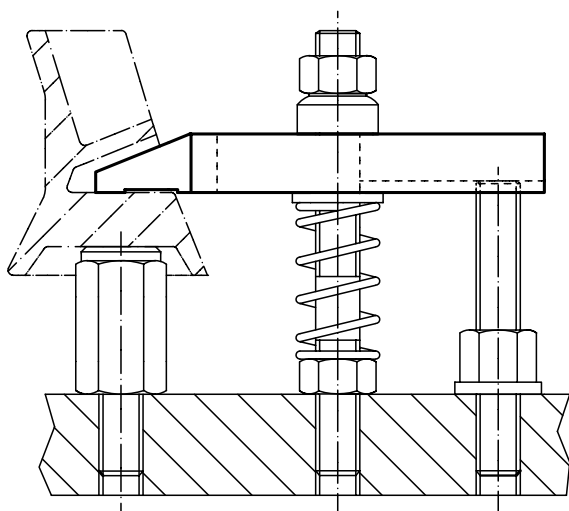


picture 2

ORDER INFORMATION

Nominal dimension b ₁ [mm]	Dimensions												Art. No.
	l ₁	a ₁	a ₂	a ₃	b ₂	b ₃	d	l ₂	l ₃	l ₄	l ₅		
	[mm]												
with thread for adjusting screw – picture 1													
6.6	80	8	2.5	–	15	7.5	M 6	17	23	13	34	54	23180.0107
9.0	100	12	4.0	–	20	9.5	M 8	22	29	17	42	133	23180.0109
11.0	125	15	5.0	–	25	11.5	M10	28	36	21	52	261	23180.0111
13.0	150	20	7.0	–	30	13.5	M12	34	43	25	63	504	23180.0113
17.0	175	25	9.0	–	35	15.5	M16	40	52	29	70	828	23180.0117
with keyway – picture 2													
6.6	80	8	2.5	2.5	15	7.5	–	17	23	13	–	50	23180.0207
9.0	100	12	4.0	3.0	20	9.5	–	22	29	17	–	127	23180.0209
11.0	125	15	5.0	3.5	25	11.5	–	28	36	21	–	251	23180.0211
13.0	150	20	7.0	4.0	30	13.5	–	34	43	25	–	488	23180.0213
17.0	175	25	9.0	4.5	35	15.5	–	40	52	29	–	812	23180.0217
22.0	225	35	15.5	5.5	50	19.5	–	52	62	33	–	2200	23180.0222
26.0	250	40	17.5	5.5	60	21.5	–	60	71	36	–	3340	23180.0226

APPLICATION EXAMPLE



Clamps • with soft face, similar to DIN 6314

EH 23190.



PRODUCT DESCRIPTION

This clamp (clamping claw) according to DIN 6314 with soft face is mainly used in mechanical clamping technology for clamping workpieces.

The soft face protects the workpiece from damage. With the combination of nut DIN 6330 B (EH 23070.) / conical seat DIN 6319 G (EH 23050.) on the clamping bolt and thrust pad DIN 6311 (EH 22560. removable) on the adjusting screw compensates for the lack of parallelity. The clamp can be used either way (soft or hard clamping surface).

Material

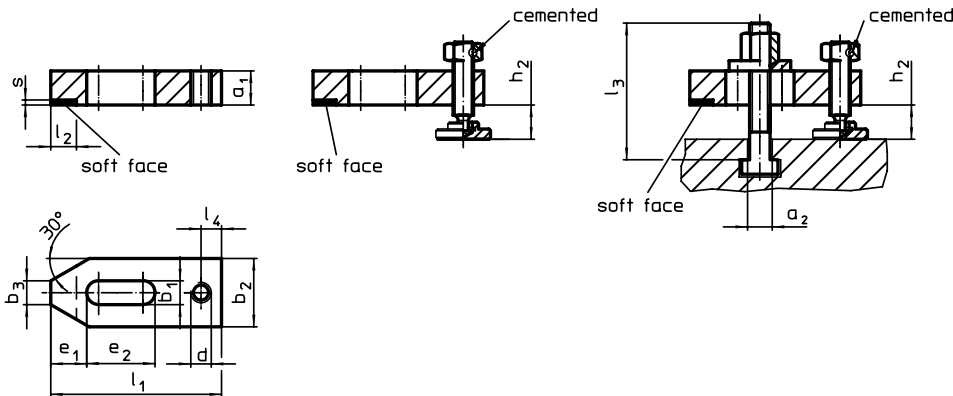
Soft face

- Brass, brazed

Clamp

- Heat-treated steel, blackened

DRAWING



picture 1

picture 2

picture 3

ORDER INFORMATION

Nominal dimension b ₁ [mm]	Dimensions												T-slot size [mm]	Clamping height		 [g]	Art. No.
	a ₁	l ₃	a ₂	b ₂	b ₃	d	e ₁	e ₂	l ₁	l ₂ ±1	l ₄	s		h ₂ min.	h ₂ max.		
	[mm]													[mm]			
without accessories – picture 1																	
9	12	–	–	25	10	M 8	13	22	60	10	8	2	–	–	–	111	23190.0010
11	15	–	–	30	12	M10	15	30	80	12	10	2	–	–	–	221	23190.0020
14	20	–	–	40	14	M12	21	40	100	15	12	3-0.5	–	–	–	478	23190.0030
18	25	–	–	50	18	M16	26	45	125	20	16	3-0.5	–	–	–	949	23190.0040
only with adjusting screw – picture 2																	
9	12	–	–	25	10	M 8	13	22	60	10	8	2	–	8	23	150	23190.0011
															43	160	23190.0012
11	15	–	–	30	12	M10	15	30	80	12	10	2	–	10	38	295	23190.0021
															58	310	23190.0022
14	20	–	–	40	14	M12	21	40	100	15	12	3-0.5	–	10	31	590	23190.0031
															71	620	23190.0032
18	25	–	–	50	18	M16	26	45	125	20	16	3-0.5	–	12	42	1150	23190.0041
															87	1220	23190.0042
with adjusting screw and clamping bolt – picture 3																	
9	12	50	7.6	25	10	M 8	13	22	60	10	8	2	8	8	16	200	23190.0015
		80	7.6	25	10	M 8	13	22	60	10	8	2	8	8	43	220	23190.0016
11	15	65	9.6	30	12	M10	15	30	80	12	10	2	10	10	22	385	23190.0025
		100	9.6	30	12	M10	15	30	80	12	10	2	10	10	58	420	23190.0026
14	20	80	11.6	40	14	M12	21	40	100	15	12	3-0.5	12	10	28	740	23190.0035
		125	11.6	40	14	M12	21	40	100	15	12	3-0.5	12	10	71	805	23190.0036
		80	13.6	40	14	M12	21	40	100	15	12	3-0.5	14	10	26	755	23190.0037
		125	13.6	40	14	M12	21	40	100	15	12	3-0.5	14	10	71	820	23190.0038
18	25	100	15.6	50	18	M16	26	45	125	20	16	3-0.5	16	12	31	1470	23190.0045
		160	15.6	50	18	M16	26	45	125	20	16	3-0.5	16	12	87	1630	23190.0046
		100	17.6	50	18	M16	26	45	125	20	16	3-0.5	18	12	32	1490	23190.0047
		160	17.6	50	18	M16	26	45	125	20	16	3-0.5	18	12	87	1650	23190.0048

Clamps • with exchangeable soft jaw

EH 23190.



PRODUCT DESCRIPTION

This clamp (clamping claw) with exchangeable soft jaw is mainly used in mechanical clamping technology for clamping workpieces.

The soft jaw made from brass or plastic protects the workpiece from damage.

Material

Soft jaw

- Brass
- Plastic

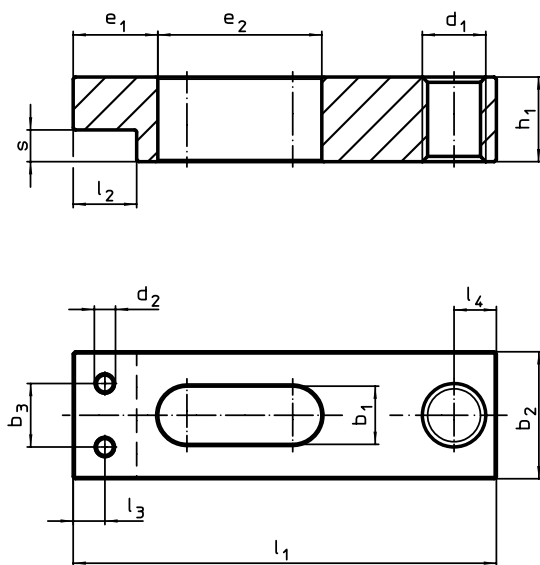
Clamp

- Heat-treated steel, blackened

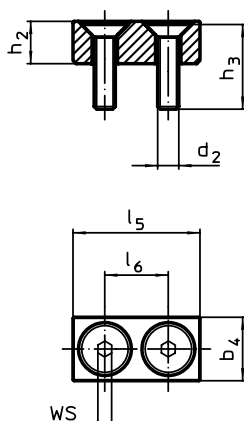
Assembly

The soft jaws are mounted or disassembled with two screws. These are included in the scope of delivery.

DRAWING



picture 1



picture 2

ORDER INFORMATION

Nominal dimension b ₁ +0.5 [mm]	Dimensions																WS [mm]	 min. max.		 [g]	Art. No.	
	l ₁	b ₂	b ₃	b ₄	d ₁	d ₂	e ₁	e ₂	h ₁	h ₂	h ₃	l ₂	l ₃	l ₄	l ₅	l ₆		s				
	[mm]																	[mm]	[°C]			[g]
plain clamp without soft jaw – picture 1																						
5.5	40	12	6	–	M 6	M 2	8	15.5	8	–	–	6	3.0	4	–	–	3	–	–	–	21.0	23190.0050
7.0	50	16	9	–	M 6	M2,5	10	22.0	10	–	–	8	4.0	5	–	–	4	–	–	–	46.0	23190.0051
9.0	63	20	11	–	M 8	M 3	12	29.0	12	–	–	10	5.0	6	–	–	4	–	–	–	86.0	23190.0052
11.0	80	25	14	–	M10	M 4	15	36.0	16	–	–	13	6.5	8	–	–	6	–	–	–	183.0	23190.0053
14.0	100	32	16	–	M12	M 5	18	44.0	20	–	–	16	8.0	10	–	–	8	–	–	–	366.0	23190.0054
18.0	160	50	30	–	M16	M 8	30	63.0	30	–	–	28	14.0	16	–	–	12	–	–	–	1440.0	23190.0055
soft jaw from brass – picture 2																						
5.5	–	–	–	6	–	M 2	–	–	–	4	8	–	–	–	12	6	–	1.3	–	250	3.9	23190.0060
7.0	–	–	–	8	–	M2,5	–	–	–	6	10	–	–	–	16	9	–	1.5	–	250	7.8	23190.0061
9.0	–	–	–	10	–	M 3	–	–	–	6	12	–	–	–	20	11	–	2.0	–	250	11.0	23190.0062
11.0	–	–	–	13	–	M 4	–	–	–	9	16	–	–	–	25	14	–	2.5	–	250	26.0	23190.0063
14.0	–	–	–	16	–	M 5	–	–	–	12	20	–	–	–	32	16	–	3.0	–	250	53.0	23190.0064
18.0	–	–	–	28	–	M 8	–	–	–	16	30	–	–	–	50	30	–	5.0	–	250	187.0	23190.0065
soft jaw from plastic – picture 2																						
5.5	–	–	–	6	–	M 2	–	–	–	4	8	–	–	–	12	6	–	1.3	0	50	2.2	23190.0070
7.0	–	–	–	8	–	M2,5	–	–	–	6	10	–	–	–	16	9	–	1.5	0	50	3.4	23190.0071
9.0	–	–	–	10	–	M 3	–	–	–	6	12	–	–	–	20	11	–	2.0	0	50	4.0	23190.0072
11.0	–	–	–	13	–	M 4	–	–	–	9	16	–	–	–	25	14	–	2.5	0	50	7.7	23190.0073
14.0	–	–	–	16	–	M 5	–	–	–	12	20	–	–	–	32	16	–	3.0	0	50	14.0	23190.0074
18.0	–	–	–	28	–	M 8	–	–	–	16	30	–	–	–	50	30	–	5.0	0	50	49.0	23190.0075



PRODUCT DESCRIPTION

Supporting elements are used in combination with clamps.

Material

- Knurled screw**
- Brass

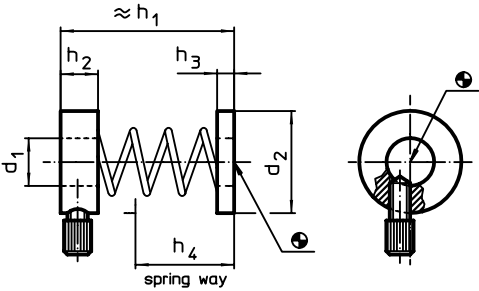
Rings

- Aluminium, highly refractory

Spring

- Stainless steel

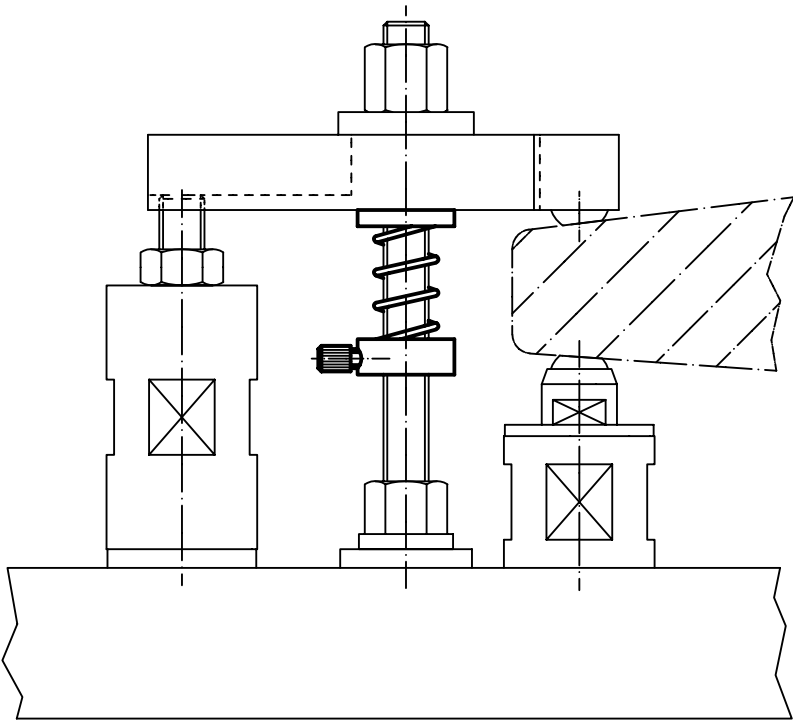
DRAWING



ORDER INFORMATION

Dimensions						For screw		Art. No.
d ₁	d ₂	h ₁	h ₂	h ₃	h ₄	[mm]	[g]	
8.5	24	35	11	5	14	M 6, M8	24	23200.0010
14.0	28	51	11	5	29	M10, M12	28	23200.0020
16.5	35	60	12	5	35	M16	44	23200.0030

APPLICATION EXAMPLE



Clamps • slotted, with adjustable counter piece

EH 23185.

**PRODUCT DESCRIPTION**

The thrust pad and the counter element are connected with the clamp and therefore secured against loss. Consequently, the clamp is quickly ready for use. The clamp is equipped with two flat noses and can be turned around depending on the case of application.

Material

- Steel, tempered, zinc-plated by galvanization

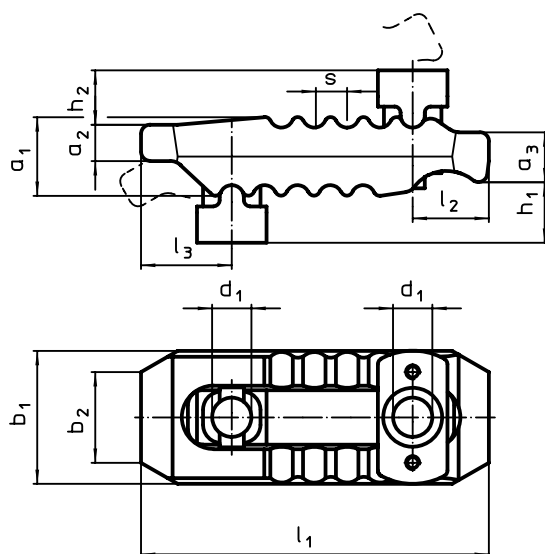
T-bolts DIN 787 (EH 23030.) or alternatively studs DIN 6379 (EH 23040.) can be used for the clamping.

MORE INFORMATION**References**

Larger clamping heights can be reached by the use of a support extension (EH 23185.).

Further products

Support Extensions, for straight clamps, slotted, with adjustable counter piece → p. 444

DRAWING**ORDER INFORMATION**

Nominal dimension d_1 [mm]	Dimensions											T-slot size [mm]	Clamping force ¹⁾ max. [kN]	 [g]	Art. No.
	h_1	h_2	a_1	a_2	a_3	b_1	b_2	l_1	l_2	l_3	s				
13	0 – 55	18	27	12	17	44	30	115	25	30	11	10, 12, 14	30	650	23185.0013
17	0 – 70	20	36	17	21	55	41	150	35	36	12	12, 14, 16, 18	40	1382	23185.0017
21	0 – 80	30	42	20	27	62	30	187	44	44	14	16, 18, 20, 22	60	2241	23185.0021
25	0 – 100	31	51	24	34	70	30	235	60	47	17	20, 22, 24, 28	75	3479	23185.0025
		35	56	24	35	73	30	285	62	51	17	20, 22, 24, 28	75	4282	23185.0026

¹⁾ stated clamping forces in optimal clamping position (smallest distance of the socket head screw to the clamping position). Clamping forces can vary depending on clamping, strength class of the socket head screw and condition of the thread (lubrication).

Clamps • slotted, with adjustable counter piece, with T-bolt

EH 23185.



PRODUCT DESCRIPTION

The thrust pad and the counter element are connected with the clamp and therefore secured against loss. Consequently, the clamp is quickly ready for use. The clamp is equipped with two flat noses and can be turned around depending on the case of application.

Material

Screw

- Heat-treated steel

Nut

- Heat-treated steel

Disc

- Heat-treated steel

Clamp

- Steel, tempered, zinc-plated by galvanization

MORE INFORMATION

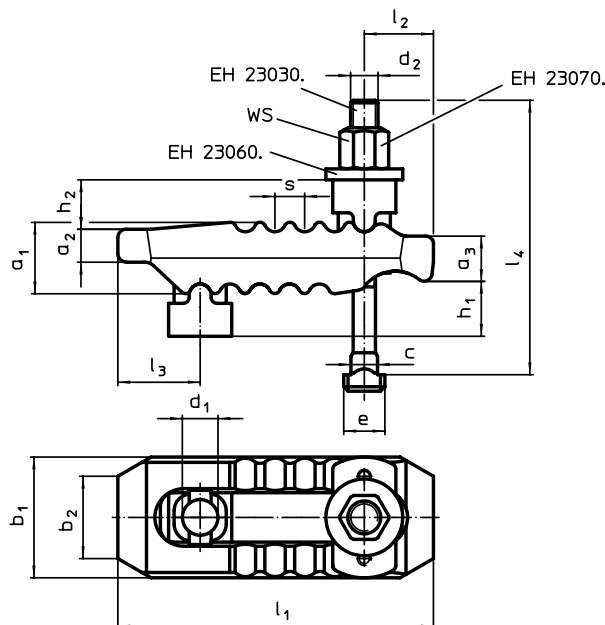
References

Larger clamping heights can be reached by the use of a support extension (EH 23185.).

Further products

Support Extensions, for straight clamps, slotted, with adjustable counter piece → p. 444

DRAWING



ORDER INFORMATION

Nominal dimension d ₁ [mm]	T-slot size [mm]	Dimensions															WS [mm]	Clamping force ¹⁾ max. [kN]	 [g]	Art. No.
		d ₂	l ₄	h ₁	h ₂	a ₁	a ₂	a ₃	b ₁	b ₂	l ₁	l ₂	l ₃	e	c	s				
		[mm]																		
13	10	M10	100	0 – 40	18	27	12	17	44	30	115	25	30	15	9.6	11	16	25	660	23185.0110
	12	M12	125	0 – 55	18	27	12	17	44	30	115	25	30	18	11.6	11	18	30	821	23185.0112
	14	M12	125	0 – 55	18	27	12	17	44	30	115	25	30	18	11.6	11	18	30	841	23185.0113
17	12	M12	160	0 – 70	20	36	17	21	55	41	150	35	36	18	11.6	12	18	35	1683	23185.0114
	14	M12	160	0 – 70	20	36	17	21	55	41	150	35	36	22	13.6	12	18	35	1701	23185.0115
	16	M16	160	0 – 70	20	36	17	21	55	41	150	35	36	25	15.6	12	24	40	1850	23185.0116
	18	M16	160	0 – 70	20	36	17	21	55	41	150	35	36	25	17.6	12	24	40	1895	23185.0117
21	16	M16	200	0 – 80	30	42	20	27	62	30	187	44	44	25	15.6	14	24	55	2679	23185.0118
	18	M16	200	0 – 80	30	42	20	27	62	30	187	44	44	25	17.6	14	24	55	2703	23185.0119
	20	M20	200	0 – 80	30	42	20	27	62	30	187	44	44	32	19.6	14	30	60	2780	23185.0120
	22	M20	200	0 – 80	30	42	20	27	62	30	187	44	44	32	21.6	14	30	60	3005	23185.0121
25	20	M20	250	0 – 100	31	51	24	34	70	30	235	60	47	32	19.6	17	30	70	4420	23185.0122
	22	M20	250	0 – 100	31	51	24	34	70	30	235	60	47	32	21.6	17	30	70	4460	23185.0123
	24	M24	250	0 – 100	31	51	24	34	70	30	235	60	47	44	23.6	17	36	75	4900	23185.0124
	28	M24	250	0 – 100	31	51	24	34	70	30	235	60	47	44	27.7	17	36	75	5000	23185.0125

¹⁾ stated clamping forces in optimal clamping position (smallest distance of the socket head screw to the clamping position). Clamping forces can vary depending on clamping, strength class of the socket head screw and condition of the thread (lubrication).

Clamps • slotted, with adjustable counter piece, with stud

EH 23185.

**PRODUCT DESCRIPTION**

The thrust pad and the counter element are connected with the clamp and therefore secured against loss. Consequently, the clamp is quickly ready for use. The clamp is equipped with two flat noses and can be turned around depending on the case of application.

Material**Screw**

- Heat-treated steel

Nut

- Heat-treated steel

Disc

- Heat-treated steel

Clamp

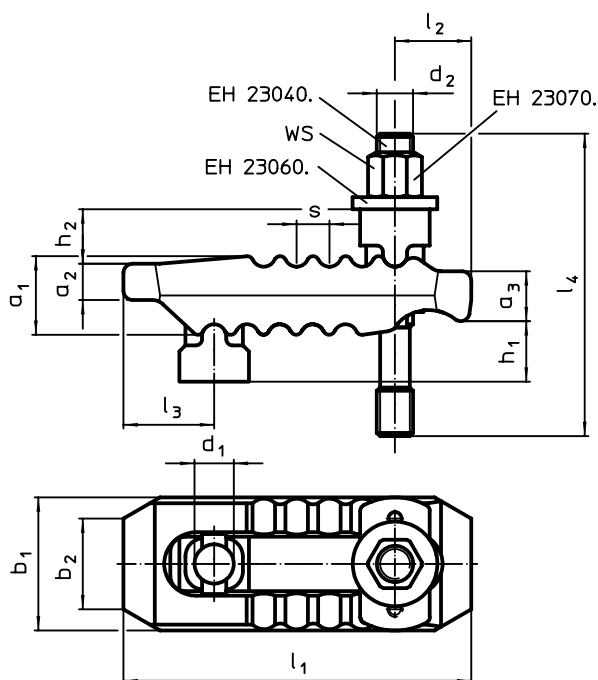
- Steel, tempered, zinc-plated by galvanization

MORE INFORMATION**References**

Larger clamping heights can be reached by the use of a support extension (EH 23185.).

Further products

Support Extensions, for straight clamps, slotted, with adjustable counter piece → p. 444

DRAWING**ORDER INFORMATION**

Nominal dimension d ₁ [mm]	Dimensions														WS [mm]	Clamping force ¹⁾ max. [kN]		Art. No.
	d ₂	l ₄	h ₁	h ₂	a ₁	a ₂	a ₃	b ₁	b ₂	l ₁	l ₂	l ₃	s					
	[mm]																	
13	M12	100	0 – 30	18	27	12	17	44	30	115	25	30	11	18	30	789	23185.0212	
		125	0 – 55	18	27	12	17	44	30	115	25	30	11	18	30	803	23185.0213	
17	M12	125	0 – 50	20	36	17	21	55	41	150	35	36	12	18	40	1599	23185.0214	
		160	0 – 70	20	36	17	21	55	41	150	35	36	12	18	40	1623	23185.0215	
	M16	125	0 – 40	20	36	17	21	55	41	150	35	36	12	24	40	1731	23185.0216	
		160	0 – 70	20	36	17	21	55	41	150	35	36	12	24	40	1779	23185.0217	
21	M16	160	0 – 40	30	42	20	27	62	30	187	44	44	14	24	60	2512	23185.0218	
		200	0 – 80	30	42	20	27	62	30	187	44	44	14	24	60	2621	23185.0219	
	M20	160	0 – 40	30	42	20	27	62	30	187	44	44	14	30	60	2749	23185.0220	
		200	0 – 80	30	42	20	27	62	30	187	44	44	14	30	60	2831	23185.0221	
25	M20	200	0 – 70	31	51	24	34	70	30	235	60	47	17	30	75	4220	23185.0222	
		250	0 – 100	31	51	24	34	70	30	235	60	47	17	30	75	4320	23185.0223	
	M24	200	0 – 50	31	51	24	34	70	30	235	60	47	17	36	75	4540	23185.0224	
		250	0 – 100	31	51	24	34	70	30	235	60	47	17	36	75	4680	23185.0225	

¹⁾ stated clamping forces in optimal clamping position (smallest distance of the socket head screw to the clamping position). Clamping forces can vary depending on clamping, strength class of the socket head screw and condition of the thread (lubrication).

Clamps • slotted, with adjustable counter piece, with stud with internal hexagon

EH 23185.

3



PRODUCT DESCRIPTION

The thrust pad and the counter element are connected with the clamp and therefore secured against loss. Consequently, the clamp is quickly ready for use. The clamp is equipped with two flat noses and can be turned around depending on the case of application.

Material

Screw

- Heat-treated steel

Nut

- Heat-treated steel

Disc

- Heat-treated steel

Clamp

- Steel, tempered, zinc-plated by galvanization

Assembly

The internal hexagon in the stud enables quick assembly and disassembly.

MORE INFORMATION

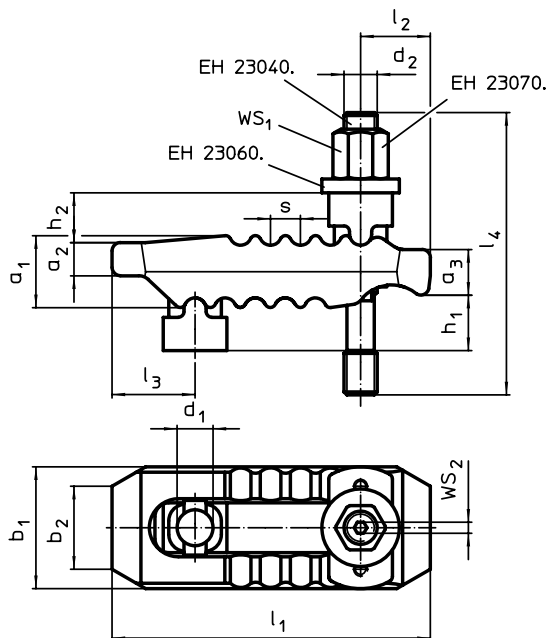
References

Larger clamping heights can be reached by the use of a support extension (EH 23185.).

Further products

Support Extensions, for straight clamps, slotted, with adjustable counter piece → p. 444

DRAWING



ORDER INFORMATION

Nominal dimension d ₁ [mm]	Dimensions														WS ₁	WS ₂	Clamping force ¹⁾ max.		Art. No.
	d ₂	l ₄	h ₁	h ₂	a ₁	a ₂	a ₃	b ₁	b ₂	l ₁	l ₂	l ₃	s						
	[mm]														[mm]	[mm]	[kN]	[g]	
13	M12	100	0 – 30	18	27	12	17	44	30	115	25	30	11	18	4	30	1700	23185.0312	
		125	0 – 55	18	27	12	17	44	30	115	25	30	11	18	4	30	800	23185.0313	
17	M12	125	0 – 50	20	36	17	21	55	41	150	35	36	12	18	4	40	1632	23185.0314	
		160	0 – 70	20	36	17	21	55	41	150	35	36	12	18	4	40	1659	23185.0315	
	M16	125	0 – 40	20	36	17	21	55	41	150	35	36	12	24	4	40	1766	23185.0316	
		160	0 – 70	20	36	17	21	55	41	150	35	36	12	24	4	40	1812	23185.0317	
21	M16	160	0 – 40	30	42	20	27	62	30	187	44	44	14	24	4	60	2578	23185.0318	
		200	0 – 80	30	42	20	27	62	30	187	44	44	14	24	4	60	2629	23185.0319	
	M20	160	0 – 40	30	42	20	27	62	30	187	44	44	14	30	5	60	2758	23185.0320	
		200	0 – 80	30	42	20	27	62	30	187	44	44	14	30	5	60	2836	23185.0321	
25	M20	200	0 – 70	31	51	24	34	70	30	235	60	47	17	30	5	75	4180	23185.0322	
		250	0 – 100	31	51	24	34	70	30	235	60	47	17	30	5	75	4361	23185.0323	
	M24	200	0 – 50	31	51	24	34	70	30	235	60	47	17	36	5	75	4500	23185.0324	
		250	0 – 100	31	51	24	34	70	30	235	60	47	17	36	5	75	4650	23185.0325	

¹⁾ stated clamping forces in optimal clamping position (smallest distance of the socket head screw to the clamping position). Clamping forces can vary depending on clamping, strength class of the socket head screw and condition of the thread (lubrication).

Support Extensions • for straight clamps, slotted, with adjustable counter piece

EH 23185.



PRODUCT DESCRIPTION

The support extension is screwed on the counter piece of the clamp EH 23185. for an extension of the clamping height (dimension h_2). The clamping height can be adjusted stepless by means of the support extension.

Material

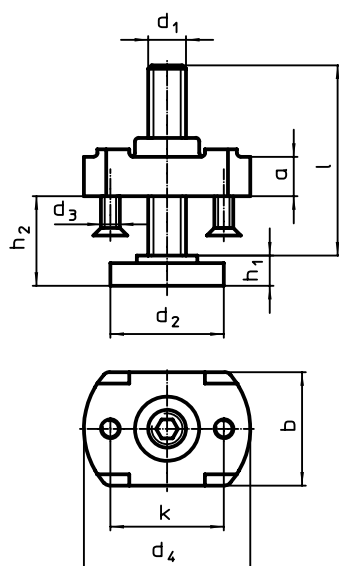
Body

- Steel, tempered, zinc-plated by galvanization

Supporting bolt

- Heat-treated steel, quality 8.8, black

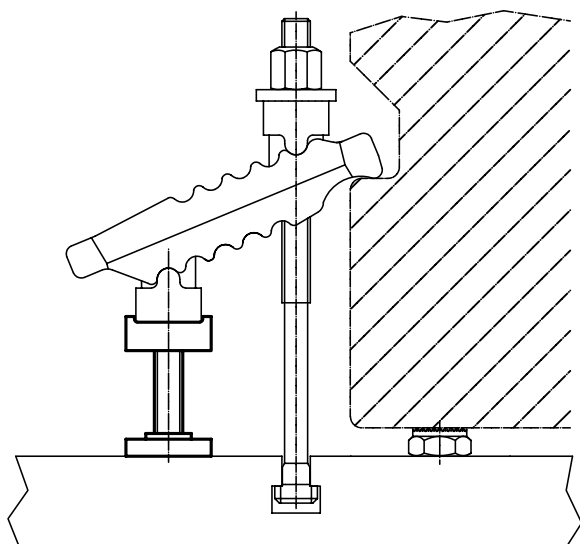
DRAWING



ORDER INFORMATION

Dimensions										for clamps d _i		Art. No.
d ₁	l	d ₂	d ₃	d ₄	h ₁	h ₂	a	b	k			
[mm]										[mm]	[g]	
M10	39	30	M5	44	8	8 – 30	10	30	30	13	148	23185.0410
M12	49	36	M5	54	10	10 – 37	16	42	35	17	345	23185.0412
	94	36	M5	54	10	10 – 80	16	42	35	17	473	23185.0413
M16	55	42	M5	60	13	13 – 41	20	50	40	21	494	23185.0416
	90	42	M5	60	13	13 – 73	20	50	40	21	640	23185.0417
M20	69	50	M6	70	16	16 – 52	25	46	50	25	925	23185.0420
	109	50	M6	70	16	16 – 91	25	46	50	25	1001	23185.0421

APPLICATION EXAMPLE



Clamping Element Systems

EH 23700.



PRODUCT DESCRIPTION

Material

Body

- Steel, blackened

Wearing parts

- Heat-treated steel

Pull-rod

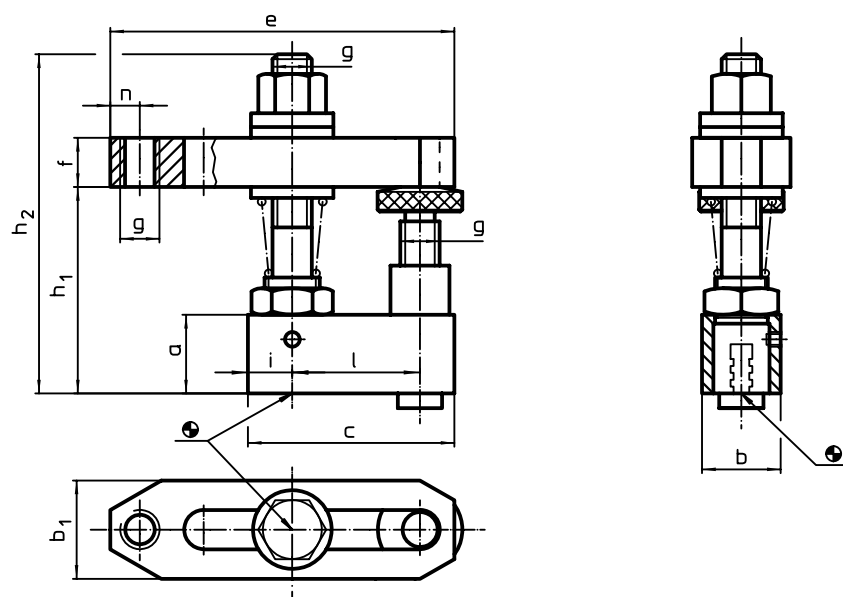
- Special steel

MORE INFORMATION

Further products

- Straight Clamps, long → p. 447
- Intermediate Elements → p. 448
- Intermediate Elements, with support... → p. 449
- Base Elements → p. 450
- Base Elements, swivelling → p. 451
- Base Elements, low → p. 452
- Base Elements, for location hole → p. 453

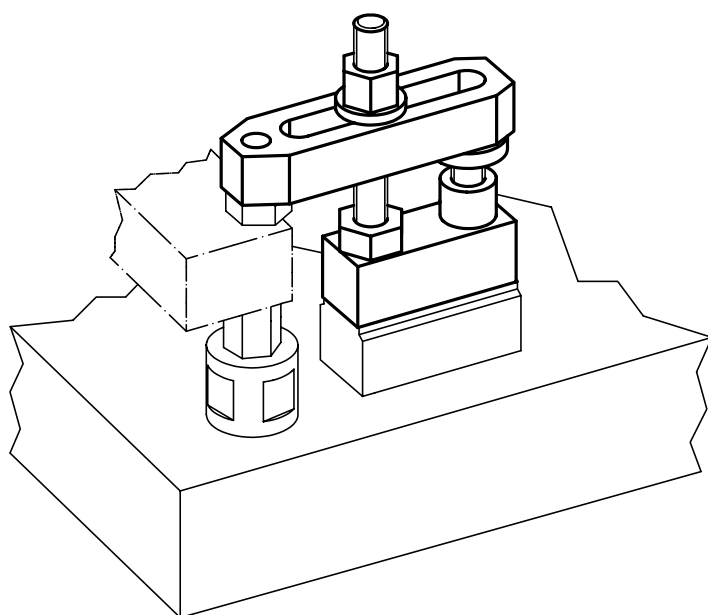
DRAWING



ORDER INFORMATION

Dimensions													Art. No.
a	b	c	b ₁	e	f	g	h ₁	h ₂	i	l	n		
[mm]												[g]	
25	25	65	35	110	20	M12	48 – 78	112	12.5	40	10	870	23700.0012
30	30	78	40	142	30	M16	60 – 96	145	14.0	50	13	1703	23700.0016

APPLICATION EXAMPLE



Straight Clamps • short
EH 23700.

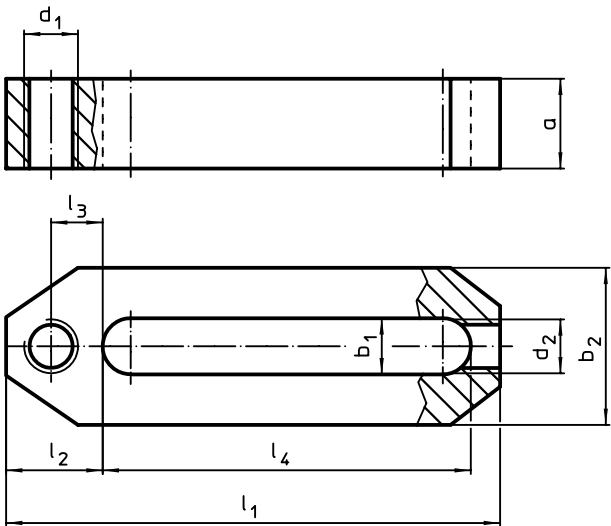


PRODUCT DESCRIPTION

Material

- Heat-treated steel, tempered, blackened

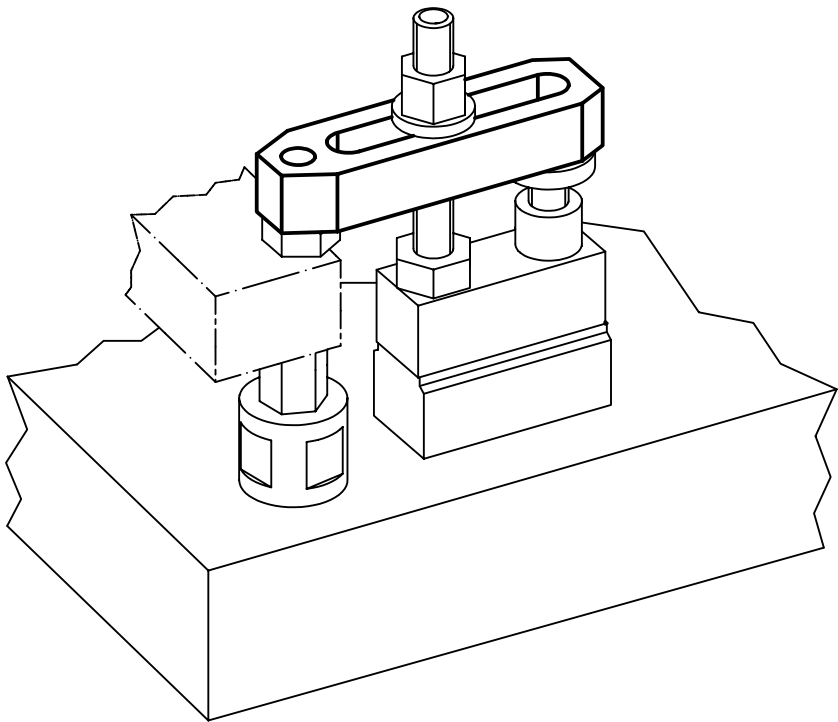
DRAWING



ORDER INFORMATION

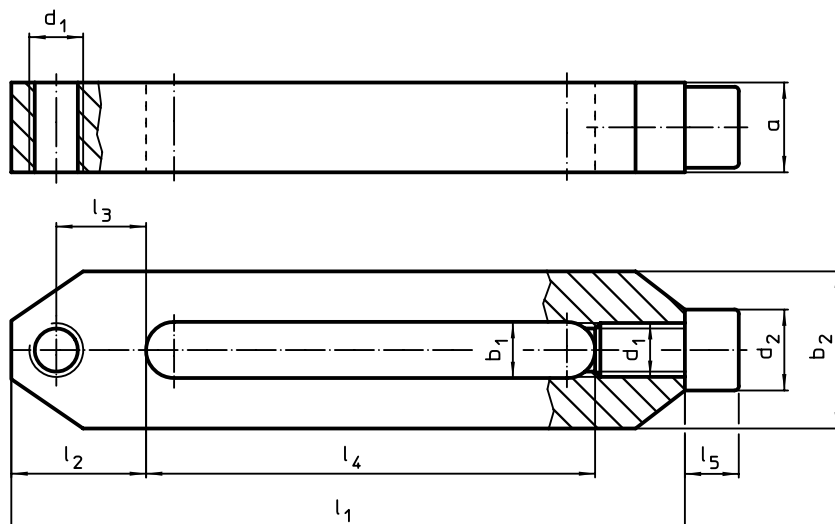
Dimensions										Art. No.
b_1	l_1	a	b_2	d_1	d_2	l_2	l_3	l_4		
[mm]									[g]	
12.5	110	20	35	M12	M10	21.5	11.5	82		
17.0	142	30	40	M16	M12	28.0	15.0	107	370	23700.0022
									781	23700.0026

APPLICATION EXAMPLE

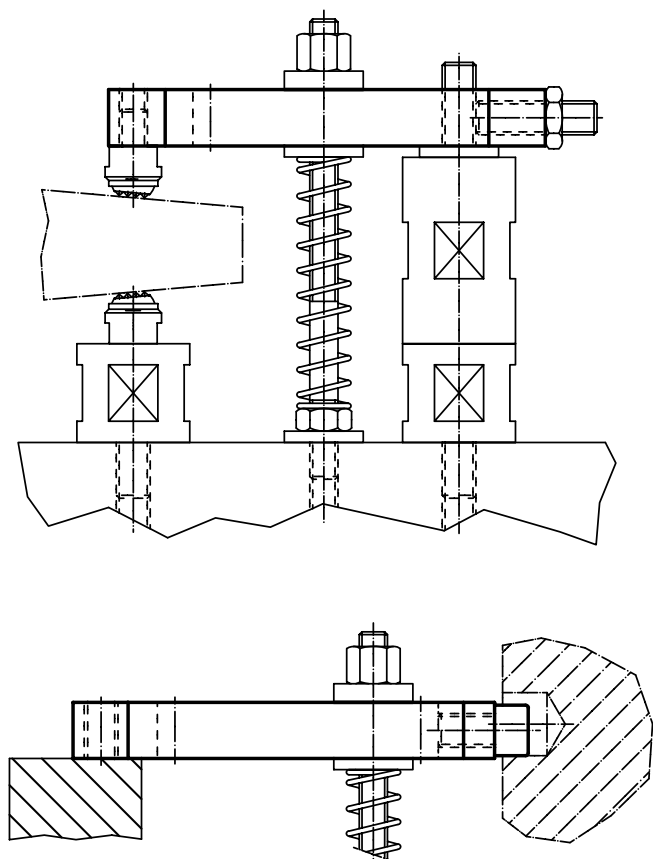


**PRODUCT DESCRIPTION****Material**

- Heat-treated steel, tempered, blackened

DRAWING**ORDER INFORMATION**

Dimensions											Art. No.
b ₁	l ₁	a	b ₂	d ₁	l ₂	l ₃	l ₄	l ₅	d ₂		
[mm]										[g]	
12.5	156	20	35.0	M12	30	20	106	12	18	601	23700.0042
17.0	196	30	45.5	M16	35	22	136	16	24	1430	23700.0046

APPLICATION EXAMPLE

Intermediate Elements
EH 23700.



PRODUCT DESCRIPTION

Material

Body

- Steel, blackened

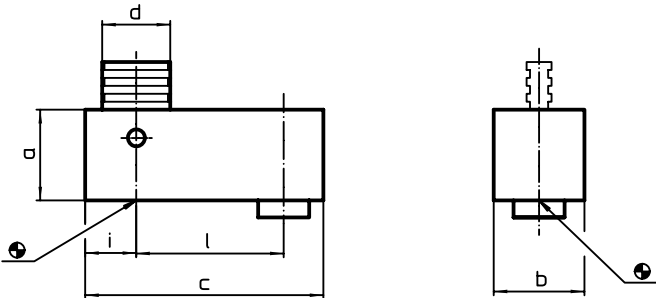
Wearing parts

- Heat-treated steel

Pull-rod

- Special steel

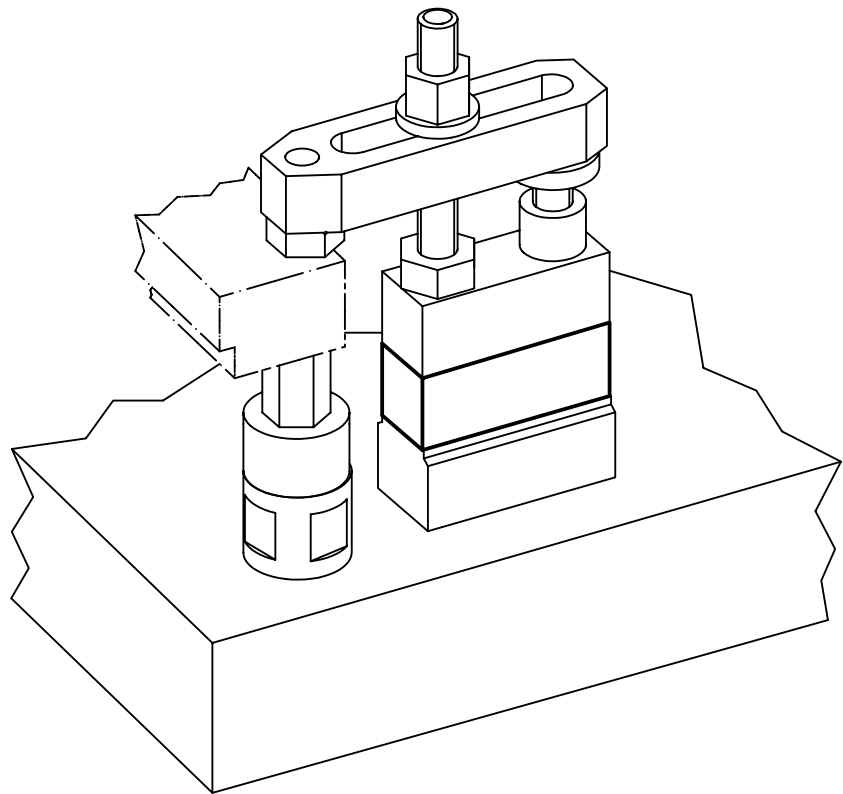
DRAWING



ORDER INFORMATION

Dimensions							Art. No.
a	b	c	d	i	l		
[mm]						[g]	
25	25	65	16	12.5	40	261	23700.0121
50	25	65	16	12.5	40	580	23700.0122
100	25	65	16	12.5	40	1201	23700.0123
30	30	78	22	14.0	50	468	23700.0161
60	30	78	22	14.0	50	1032	23700.0162
120	30	78	22	14.0	50	2149	23700.0163
240	30	78	22	14.0	50	4340	23700.0164

APPLICATION EXAMPLE



**PRODUCT DESCRIPTION****Material****Body**

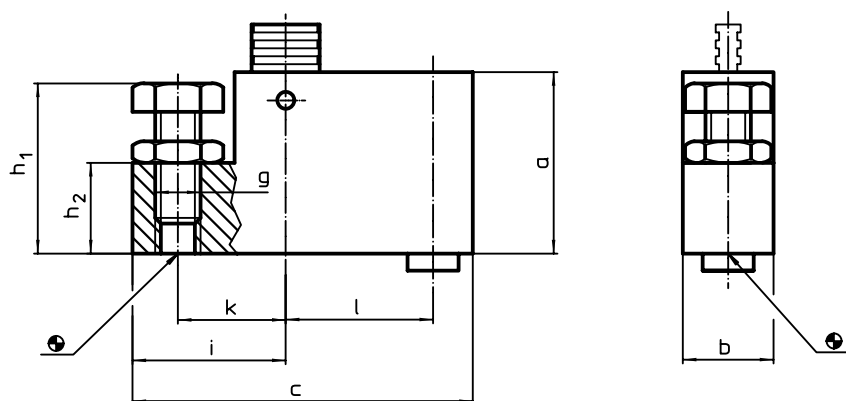
- Steel, blackened

Wearing parts

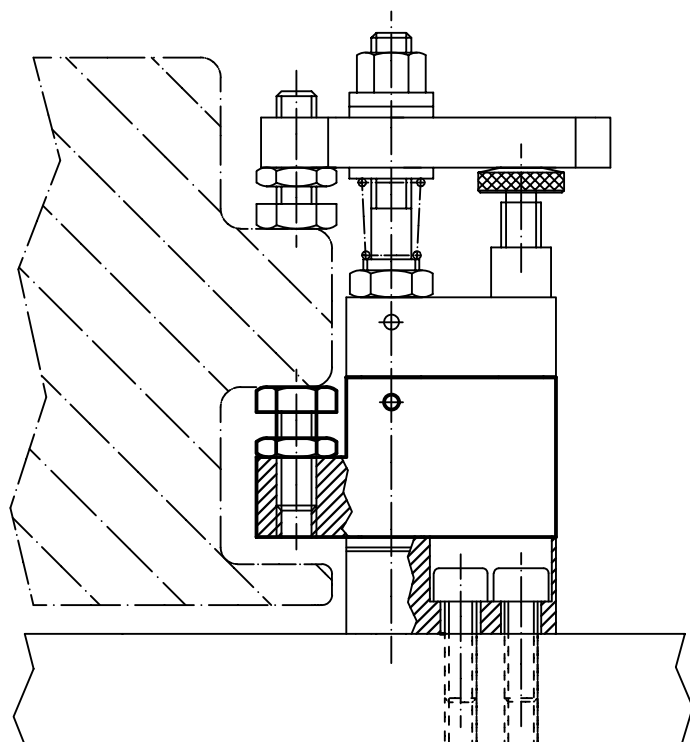
- Heat-treated steel

Pull-rod

- Special steel

DRAWING**ORDER INFORMATION**

Dimensions											Art. No.
a	b	c	g	h ₁	h ₂	i	k	l			
[mm]										[g]	
50	25	92	M12	38 – 53	25	39.5	28	40		733	23700.0212
60	30	112	M16	48 – 68	30	48.0	34	50		1331	23700.0216

APPLICATION EXAMPLE

Base Elements

EH 23700.



PRODUCT DESCRIPTION

Material

Body

- Steel, blackened

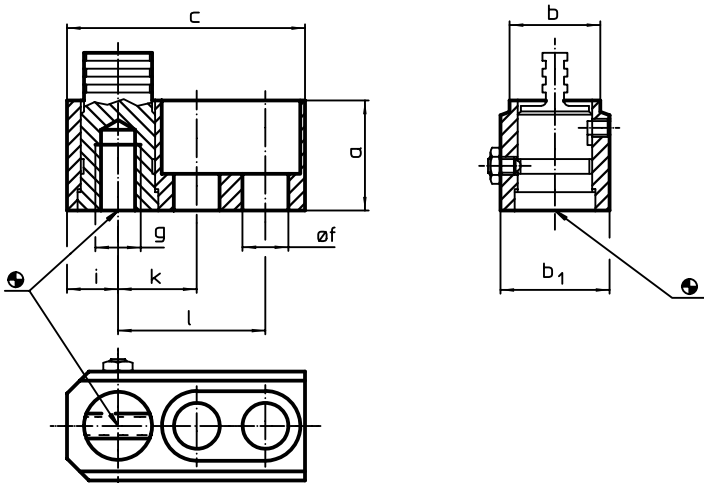
Wearing parts

- Heat-treated steel

Pull-rod

- Special steel

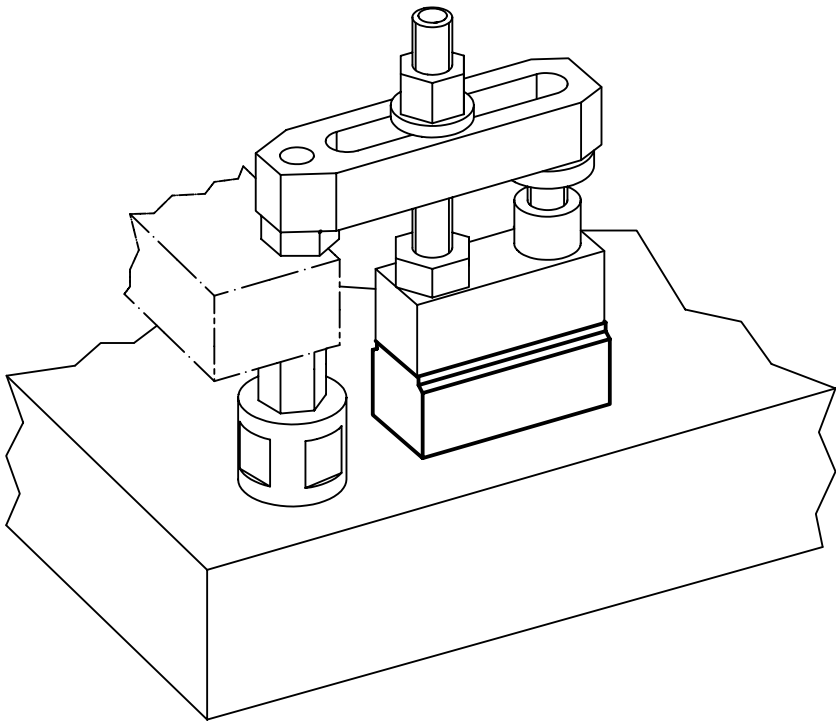
DRAWING



ORDER INFORMATION

Dimensions										Art. No.
a	b	c	b ₁	f	g	i	k	l		
[mm]									[g]	
30	25	65	30	12.5	M12	12.5	20	40		
40	30	80	40	17.0	M16	16.0	25	50	641	

APPLICATION EXAMPLE





PRODUCT DESCRIPTION

Material

- Body**
- Steel, blackened

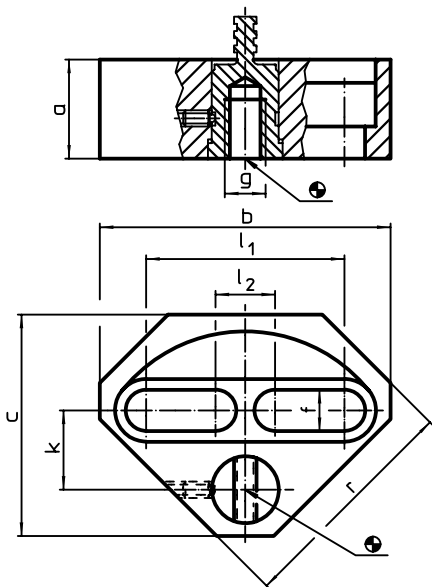
Wearing parts

- Heat-treated steel

Pull-rod

- Special steel

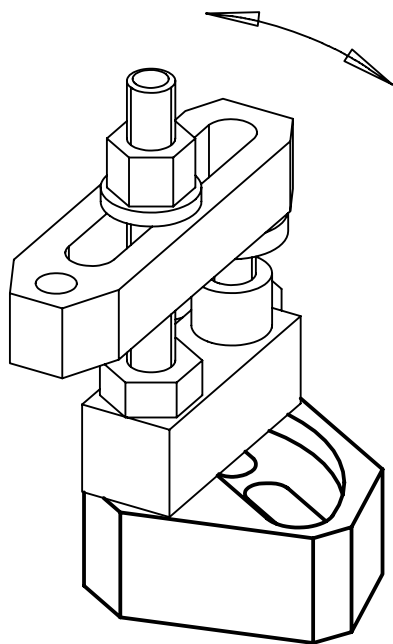
DRAWING



ORDER INFORMATION

Dimensions										Art. No.
a	b	c	f	g	k	l ₁	l ₂	r		
[mm]									[g]	
29.7	90	70	12.5	M12	24	57	25	73	758	23700.0412
39.7	110	86	17.0	M16	30	71	31	90	1507	23700.0416

APPLICATION EXAMPLE



Base Elements • low
EH 23700.



PRODUCT DESCRIPTION

Material

Body

- Steel, blackened

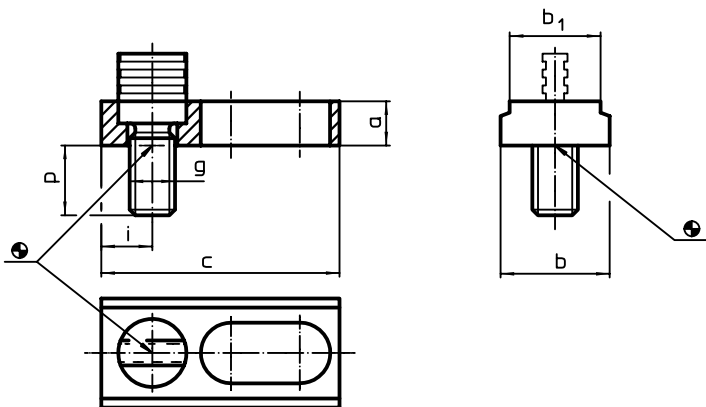
Wearing parts

- Heat-treated steel

Pull-rod

- Special steel

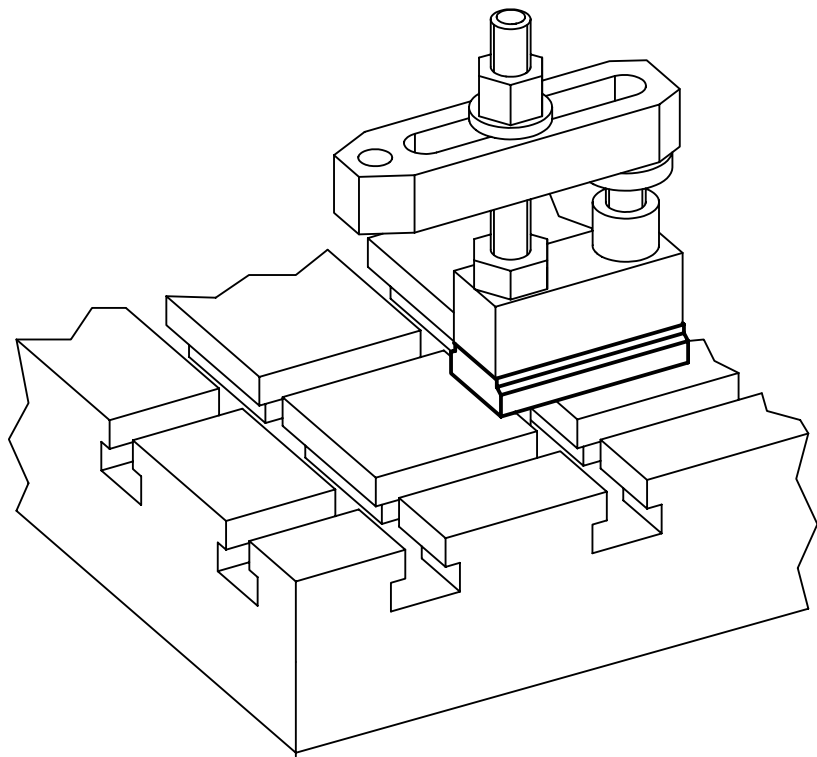
DRAWING



ORDER INFORMATION

Dimensions								Art. No.
a	b	c	b ₁ [mm]	g	i	p		
12	30	65	25	M12	12.5	23	[g] 146	23700.0612

APPLICATION EXAMPLE





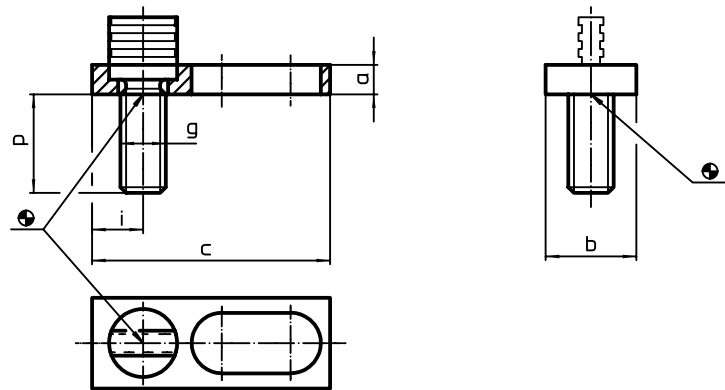
PRODUCT DESCRIPTION

Material

- Body**
- Steel, blackened

- Wearing parts**
- Heat-treated steel
- Pull-rod**
- Special steel

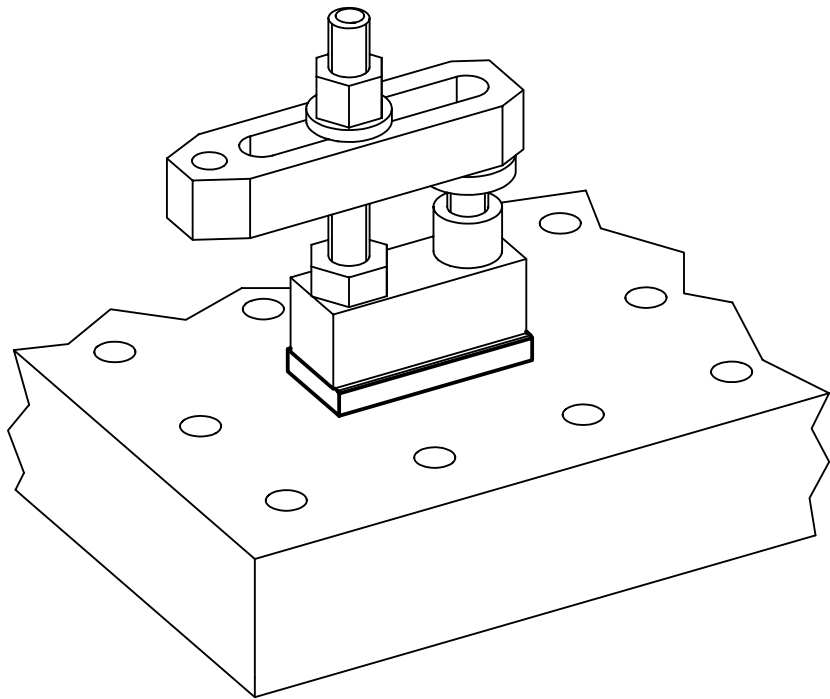
DRAWING



ORDER INFORMATION

Dimensions							Art. No.
a	b	c	g	i	p		
[mm]						[g]	
8	25	65	M12	12.5	27	95	23700.0712
12	30	78	M16	14.0	33	194	23700.0716

APPLICATION EXAMPLE



Down-Hold Clamps • with cranked tension lever

EH 23210.

**PRODUCT DESCRIPTION**

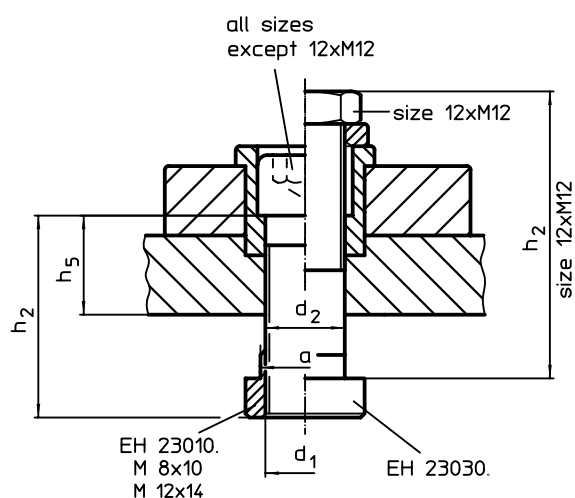
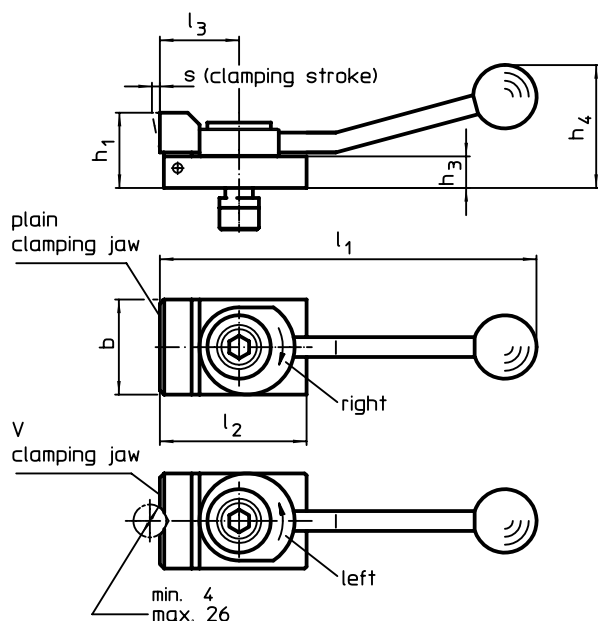
The quick-acting clamping element simultaneously presses the workpieces towards both, the stops and fixture plate. The low profile construction enables the entire surface to be machined. In conjunction with cylindrical stops EH 23280., a special fixture can be replaced.

Material

- Steel, case-hardened, blackened

MORE INFORMATION**Further products**

Stops, cylindrical → p. 473

DRAWING**ORDER INFORMATION**

T-slot size	Dimensions													Clamping force horizontal max.		Art. No.
	d ₁	a	b	d ₂	h ₁	h ₂	h ₃	h ₄	h ₅	l ₁	l ₂	l ₃	s			
	[mm]	[mm]														
with flat clamping jaw, clamping to the right																
10	M 8	9.6	32	8.4	20	30	8	40	12.6	132	50	32	3	3.5	266	23210.0101
12	M12	11.6	48	12.5	38	63	16	62	—	190	72	40	4	7.0	880	23210.0321
14	M12	13.6	48	12.5	38	40	16	62	19.1	190	72	40	4	7.0	858	23210.0341
with flat clamping jaw, clamping to the left																
10	M 8	9.6	32	8.4	20	30	8	40	12.6	132	50	32	3	3.5	265	23210.0105
12	M12	11.6	48	12.5	38	63	16	62	—	190	72	40	4	7.0	868	23210.0325
14	M12	13.6	48	12.5	38	40	16	62	19.1	190	72	40	4	7.0	860	23210.0345
with V-clamping jaw, clamping to the right																
10	M 8	9.6	32	8.4	20	30	8	40	12.6	132	50	32	3	3.5	264	23210.0102
12	M12	11.6	48	12.5	38	63	16	62	—	190	72	40	4	7.0	889	23210.0322
14	M12	13.6	48	12.5	38	40	16	62	19.1	190	72	40	4	7.0	838	23210.0342
with V-clamping jaw, clamping to the left																
10	M 8	9.6	32	8.4	20	30	8	40	12.6	132	50	32	3	3.5	263	23210.0106
12	M12	11.6	48	12.5	38	63	16	62	—	190	72	40	4	7.0	900	23210.0326
14	M12	13.6	48	12.5	38	40	16	62	19.1	190	72	40	4	7.0	841	23210.0346

Down-Hold Clamps • without clamping lever

EH 23210.



PRODUCT DESCRIPTION

By tightening the ball-ended thrust screw the workpiece is simultaneously pressed towards the stops and fixture plate. The favourable leverage enables high horizontal clamping forces. When using T-Nuts EH 23010. / EH 23020. (DIN 508) they can also be applied to other slot sizes.

Material

- Steel, case-hardened, blackened, ground

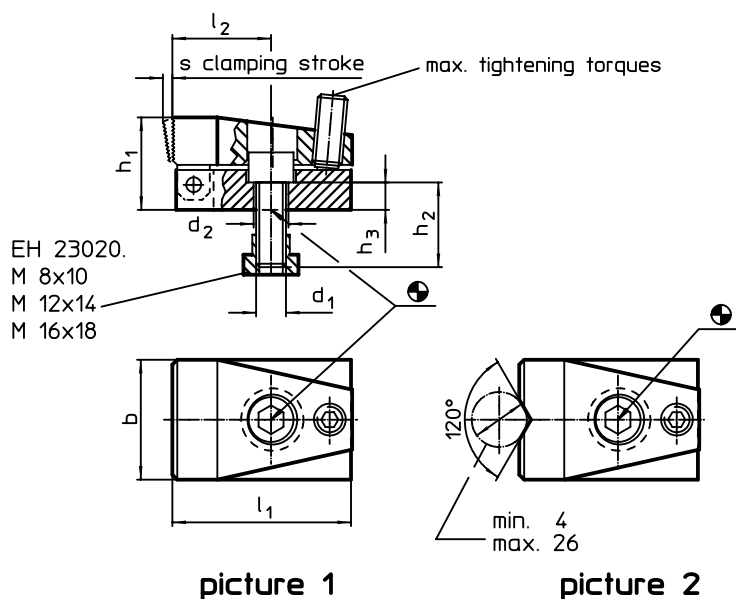
MORE INFORMATION

Further products

Nuts for T-Slots, DIN 508 → p. 384

Nuts for T-Slots, extended. → p. 388

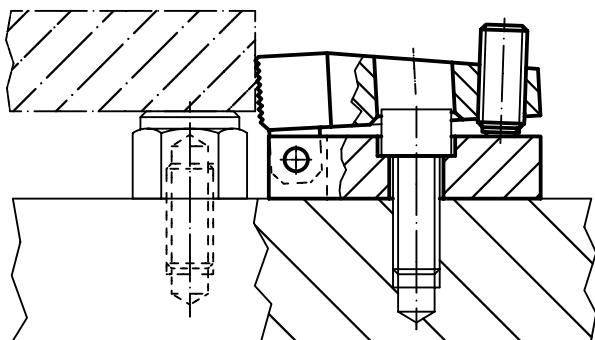
DRAWING



ORDER INFORMATION

T-slot size	d ₁	d ₂	b	Dimensions						Clamping force horizontal max.	Tightening torque max.		Art. No.
[mm]				h ₁	h ₂	h ₃	l ₁	l ₂	s	[kN]	[Nm]	[g]	
with flat clamping jaw – picture 1													
10	M 8	8.4	32	24	20	8	52	28	3	7.0	3	265	23210.0501
14	M12	12.5	48	37	30	11	72	40	4	15.0	9	838	23210.0521
18	M16	16.5	68	47	35	13	86	41	7	21.5	20	1760	23210.0541
with V-clamping jaw – picture 2													
10	M 8	8.4	32	24	20	8	52	28	3	7.0	3	266	23210.0502
14	M12	12.5	48	37	30	11	72	40	4	15.0	9	829	23210.0522
18	M16	16.5	68	47	35	13	86	41	7	21.5	20	1730	23210.0542

APPLICATION EXAMPLE



Down-Hold Clamps • without clamping lever, with support

EH 23210.



PRODUCT DESCRIPTION

By tightening the ball-ended thrust screw the workpiece is simultaneously pressed towards the stops and fixture plate. The favourable leverage enables high horizontal clamping forces. When using T-Nuts EH 23010. / EH 23020. (DIN 508) they can also be applied to other slot sizes.

Material

- Steel, case-hardened, blackened, ground

rest buttons EH 22690., self-aligning pads
EH 22730. / EH 22740.

MORE INFORMATION

References

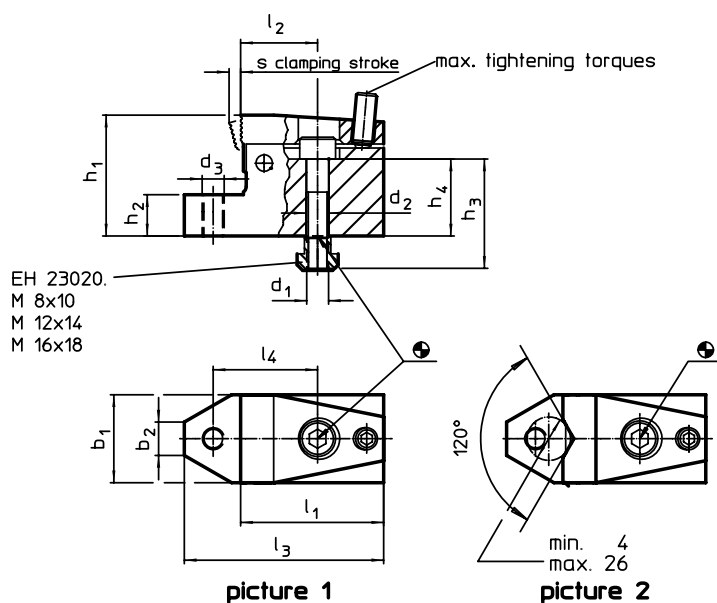
The integrated support is equipped with a locating thread to fit for example screwed

Further products

Nuts for T-Slots, DIN 508 → p. 384

Nuts for T-Slots, extended → p. 388

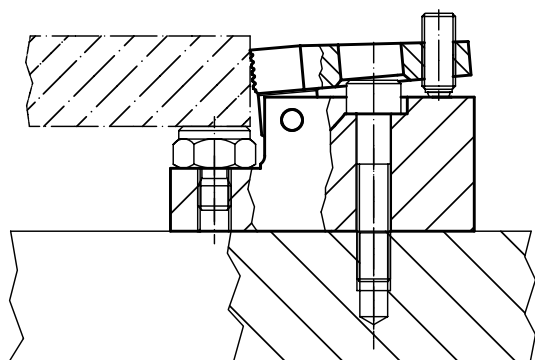
DRAWING



ORDER INFORMATION

T-slot size	d ₁	d ₂	d ₃	b ₁	b ₂	h ₁	Dimensions								s	Clamping force horizontal max.	Tightening torque max.		Art. No.
[mm]							h ₂ ±0.01	h ₃ ~	h ₄ ~	l ₁	l ₂	l ₃	l ₄			[kN]	[Nm]	[g]	
with flat clamping jaw – picture 1																			
10	M 8	8.4	M 8	32	12.1	44	15	40	28	52	28	72.5	38	3	7.0	3	566		23210.0551
14	M12	13.0	M12	48	16.0	53	15	45	27	72	40	100.0	55	4	15.0	9	1349		23210.0561
18	M16	17.0	M16	68	18.8	72	20	60	38	86	41	126.0	63	7	21.5	20	3000		23210.0571
with V-clamping jaw – picture 2																			
10	M 8	8.4	M 8	32	12.1	44	15	40	28	52	28	72.5	38	3	7.0	3	571		23210.0552
14	M12	13.0	M12	48	16.0	53	15	45	27	72	40	100.0	55	4	15.0	9	1340		23210.0562
18	M16	17.0	M16	68	18.8	72	20	60	38	86	41	126.0	63	7	21.5	20	3000		23210.0572

APPLICATION EXAMPLE



Holding Plates • for down-hold clamps
EH 23210.



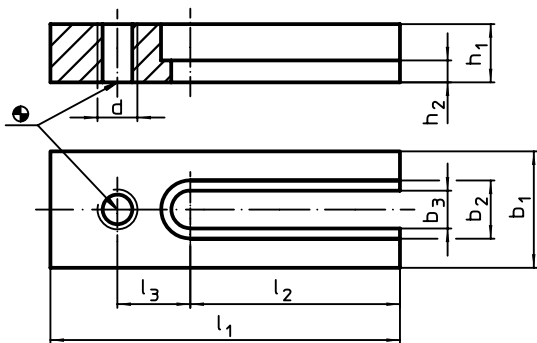
PRODUCT DESCRIPTION

By using the holding plates, the down-hold clamps can also be placed in any desired position across the T-slots.

Material

- Heat-treated steel, tempered, blackened

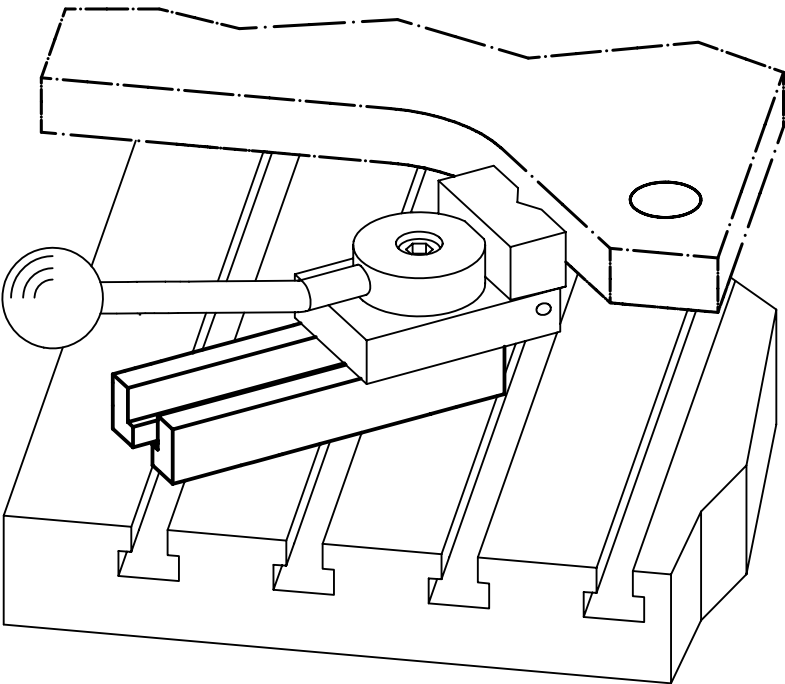
DRAWING



ORDER INFORMATION

Dimensions									For down-hold clamps		Art. No.
b ₁	b ₂	b ₃	d	h ₁ -0.4	h ₂	l ₁	l ₂	l ₃			
[mm]									[mm]	[g]	
30	15	9	M 8	15	6.5	100	63	20	M 8	243	23210.0730
40	20	13	M12	20	7.5	120	72	25	M12	515	23210.0740
60	26	17	M16	30	13.0	140	80	30	M16	1456	23210.0760
80	32	21	M20	40	18.0	200	110	50	–	3900	23210.0770
90	38	25	M24	50	24.0	220	130	55	–	5850	23210.0780

APPLICATION EXAMPLE



Sub-Part Clamps

EH 23211.

3



PRODUCT DESCRIPTION

The sub-part clamp and the sub-part stop enable workpieces to be clamped on the front face. This allows the full area of the machine table to be used to clamp the workpiece.

- Hold-down effect due to inclined arrangement of the clamping jaw
- Clamping of large workpieces on the whole of the machine table
- Large clamping forces up to 20 kN
- Clamping path 10.6 mm by means of clamping screw M 16 (WS 14)
- Solid version made of vibration-eliminating ductile iron
- Optimum adaptation to the workpiece and material, through the use of clamping inserts and interchangeable jaws
- Form and forced-fit assembly in a T-slot is possible
- Minimum interference contours, even for large workpieces
- Location holes at the sides for fastening of longitudinal stops

Material

- Ductile cast iron (GGG 60)

Assembly

The workpiece is positioned and then clamped on the ground precision support. The machine and fixture system parts in the Halder product range can be installed in the locating thread to reach a customised clamping.

The location holes on the sides allow optional longitudinal stops to be installed.

MORE INFORMATION

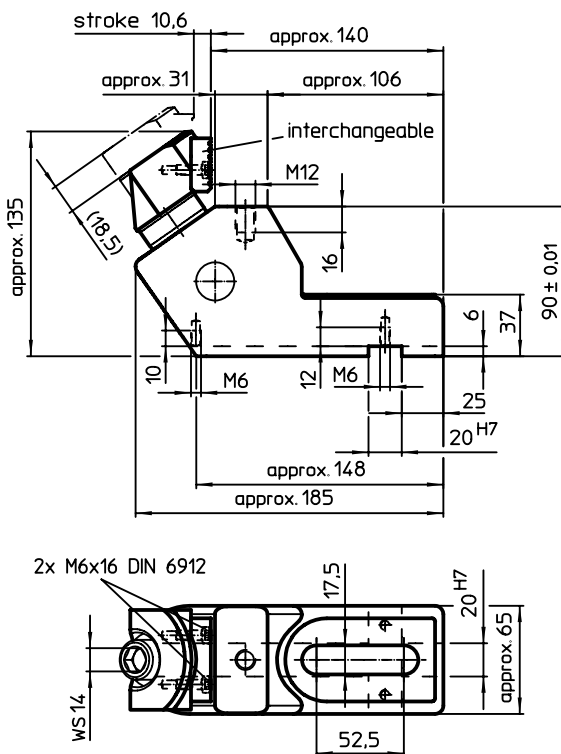
Notes

The delivery includes the interchangeable jaw 1138.400 (ribbed/smooth) - this can be changed to the interchangeable jaw 1138.100 (soft).

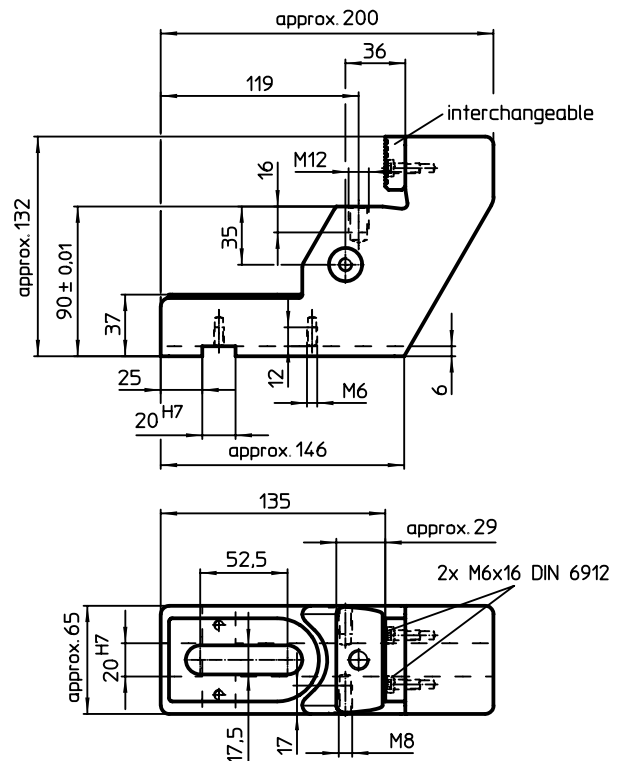
Further products

- Nuts for T-Slots, DIN 508 → p. 384
- Nuts for T-Slots, extended → p. 388
- Fixed Slot Tenons → p. 411
- Fixed Slot Tenons, with cylindrical fastening → p. 412
- Clamping Vices, replacement jaw, soft → p. 785

DRAWING



picture 1

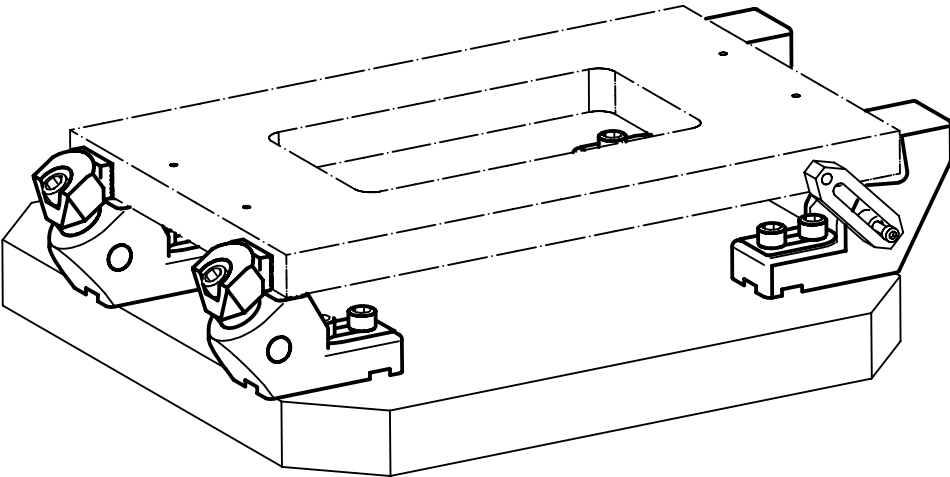


picture 2

ORDER INFORMATION

Clamping force horizontal max. [kN]	Tightening torque max. [Nm]	 [kg]	Art. No.
sub-part clamp – picture 1			
20	50	5	23211.0010
sub-part stop – picture 2			
–	–	5	23211.0020

APPLICATION EXAMPLE



Push-Pull Clamps

EH 23229.



PRODUCT DESCRIPTION

The clamp is suitable for easy and safe positioning of workpieces or components prior to clamping or assembly.

As the push/pull clamp is threaded on both sides it is possible to fix elements that are adapted to the workpiece, e.g. prisms, clamping bolts, self-aligning pads.

Material

Pin

- Steel, blackened

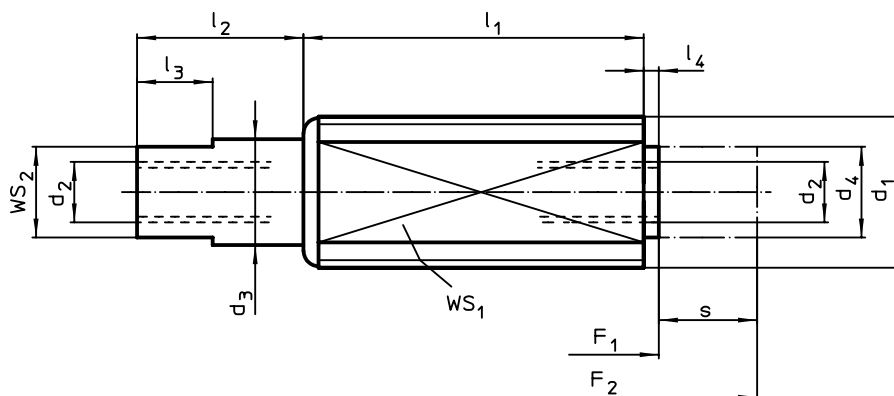
Body

- Steel, zinc-plated

Spring

- Stainless steel 1.4310

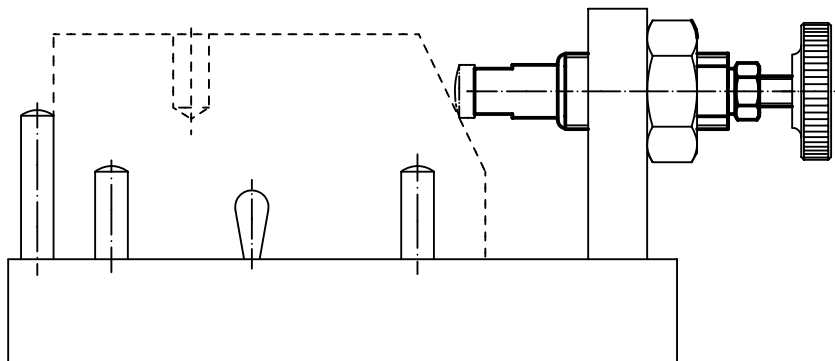
DRAWING



ORDER INFORMATION

Dimensions								Stroke s ~	WS		Spring load			Art. No.
d ₁	d ₂	d ₃	d ₄	l ₁ -1	l ₂ ±0.5	l ₃	l ₄ -0.5		WS ₁	WS ₂	F ₁ ~	F ₂ ~		
[mm]								[mm]	[mm]		[N]		[g]	
light spring load														
M12	M4 x 8	7	6	11.0	4.5	5	1.5	3.5	10	6	5	20	5.1	23229.0005
				18.5	7.0	5	1.5	6.0	10	6	5	20	8.7	23229.0010
				26.0	11.0	5	1.5	10.0	10	6	5	20	13.0	23229.0015
standard spring load														
M12	M4 x 8	7	6	11.0	4.5	5	1.5	3.0	10	6	10	45	5.3	23229.0020
				18.5	7.0	5	1.5	5.0	10	6	10	45	8.7	23229.0025
				26.0	11.0	5	1.5	8.0	10	6	10	45	14.0	23229.0030
M18 x 1,5	M6 x 12	11	10	18.0	6.0	6	2.0	4.0	16	9	30	120	22.0	23229.0050
				31.5	11.5	6	2.0	7.0	16	9	30	120	42.0	23229.0055
				45.0	16.0	6	2.0	12.5	16	9	60	180	63.0	23229.0060
heavy spring load														
M12	M4 x 8	7	6	11.0	4.5	5	1.5	3.0	10	6	20	90	5.4	23229.0035
				18.5	7.0	5	1.5	5.0	10	6	20	90	9.0	23229.0040
				26.0	11.0	5	1.5	8.0	10	6	20	90	14.0	23229.0045

APPLICATION EXAMPLE



Push Plungers • with pin, protected against rotating

EH 23230.



PRODUCT DESCRIPTION

The push plunger is suitable for easy and safe positioning of workpieces or components prior to clamping or assembly.

Locating pins of your own profile or design can be attached to our threaded pin types.

Material

Pin

- Steel, case-hardened, blackened

Body

- Steel, zinc-plated by galvanization

Grub Screw

- Steel, blackened, with brass pad

Mounting block

- Zinc die-cast, plastic coated, black

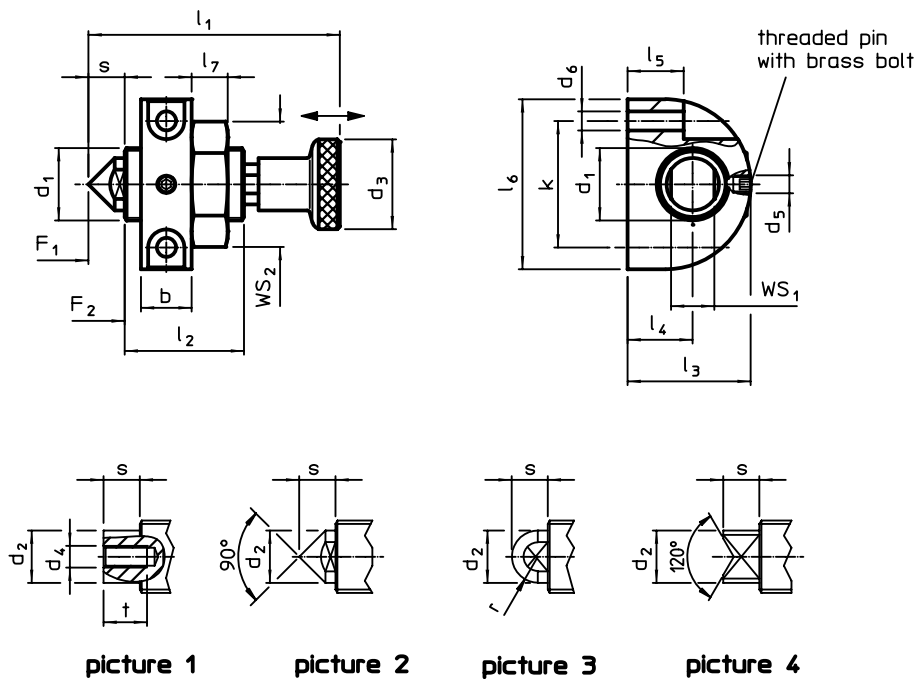
Knob

- Steel, blackened

Lock nut

- Steel, blackened

DRAWING



ORDER INFORMATION

Dimensions																	Stroke s	WS		Spring load ¹⁾		max.		Art. No.
d ₁	d ₂	d ₃	d ₄	d ₅	d ₆	l ₁	l ₂	l ₃	l ₄	l ₅ -0.2	l ₆	l ₇	t min.	r	b	k	[mm]	WS ₁	WS ₂	F ₁	F ₂	[°C]	[g]	
with female thread – picture 1																								
M12 x 1,5	9.0	21	M4	M4	4.3	46.0	19	26	14	11.5	35	6	8	–	12	25	6	8	19	16	35	100	85	23230.0510
M16 x 1,5	12.0	21	M5	M5	5.3	56.0	27	34	18	15.5	47	8	10	–	14	35	8	10	24	25	71	100	153	23230.0512
M20 x 1,5	14.5	25	M6	M5	5.3	69.5	33	34	18	15.5	47	10	12	–	14	35	10	12	30	40	130	100	213	23230.0514
with tipped point – picture 2																								
M12 x 1,5	9.0	21	–	M4	4.3	46.0	19	26	14	11.5	35	6	–	–	12	25	6	8	19	16	35	100	85	23230.0530
M16 x 1,5	12.0	21	–	M5	5.3	56.0	27	34	18	15.5	47	8	–	–	14	35	8	10	24	25	71	100	152	23230.0532
M20 x 1,5	14.5	25	–	M5	5.3	69.5	33	34	18	15.5	47	10	–	–	14	35	10	12	30	40	130	100	209	23230.0534
with rounded pin – picture 3																								
M12 x 1,5	9.0	21	–	M4	4.3	46.0	19	26	14	11.5	35	6	–	4.5	12	25	6	8	19	16	35	100	84	23230.0550
M16 x 1,5	12.0	21	–	M5	5.3	56.0	27	34	18	15.5	47	8	–	6.0	14	35	8	10	24	25	71	100	155	23230.0552
M20 x 1,5	14.5	25	–	M5	5.3	69.5	33	34	18	15.5	47	10	–	7.2	14	35	10	12	30	40	130	100	213	23230.0554
with prism – picture 4																								
M12 x 1,5	9.0	21	–	M4	4.3	46.0	19	26	14	11.5	35	6	–	–	12	25	6	4	19	16	35	100	84	23230.0570
M16 x 1,5	12.0	21	–	M5	5.3	56.0	27	34	18	15.5	47	8	–	–	14	35	8	6	24	25	71	100	152	23230.0572
M20 x 1,5	14.5	25	–	M5	5.3	69.5	33	34	18	15.5	47	10	–	–	14	35	10	8	30	40	130	100	208	23230.0574

¹⁾ statistical average value

Locating Clamps

EH 23230.



PRODUCT DESCRIPTION

Suitable for a simultaneous "positioning" and "clamping" of workpieces. The locating element is a precision element which can be assembled from either side. The clamping and locating part adapted to the workpiece is screwed to the cylindrical support. Clamping and locating parts are manufactured by the user according to the individual requirements.

Material

Handle

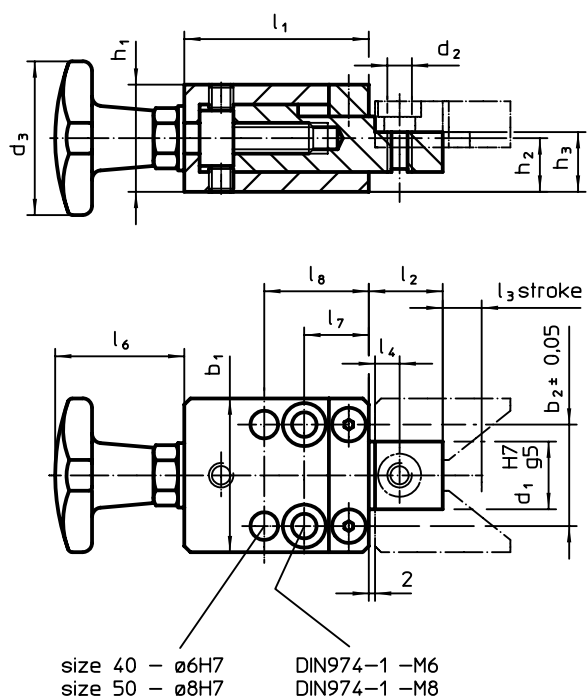
- Grey cast iron DIN 6335, orange plastic-coated

- Thermosetting plastic PF 31, black, DIN 319

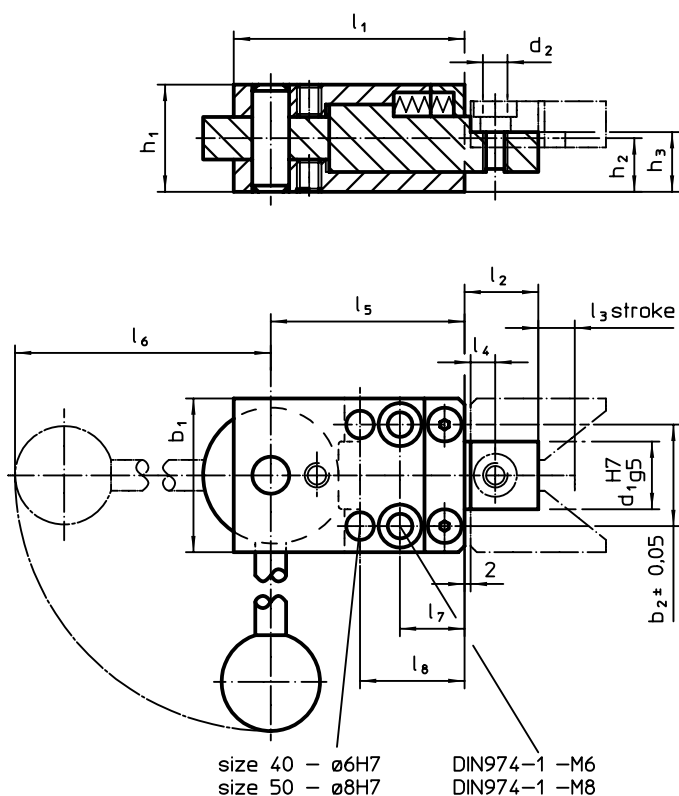
Clamp

- Steel, case-hardened, blackened, ground

DRAWING



picture 1



picture 2

ORDER INFORMATION

Dimensions																Art. No.
b_1	$b_2 \pm 0.05$	$d_1 H7 g5$	d_2	d_3	h_1	h_2	h_3	l_1	l_2	l_3	l_4	l_5	l_6	l_7	l_8	
[mm]																[g]
with palm grip – picture 1																
40	27	18	M6	40	29.8	14.9	16.9	50	19	9	8	–	33	17	28	505 23230.0040
50	33	22	M8	50	34.8	17.4	19.4	60	24	10	10	–	42	21	34	862 23230.0050
with spiral eccentric clamping lever – picture 2																
40	27	18	M6	–	29.8	14.9	16.9	60	19	3	8	50	96	17	28	566 23230.0440
50	33	22	M8	–	34.8	17.4	19.4	75	24	4	10	63	145	21	34	1071 23230.0450

Clamping Vices

EH 23231.



PRODUCT DESCRIPTION

The clamping vice is a solid, compact clamping module with a horizontally acting clamping force and a robust mechanical spindle.

- Clamping force up to max. 80 kN
- Clamping stroke 25 mm via screw drive WS 36
- Fixture via 4 cap screws M 24, quality 8.8 (tightening torque 600 Nm) with a hole spacing 100 x 100 mm
- Suitable clamping jaws 23231.0020 - .0033 are available

Material

- Steel, case-hardened, ground

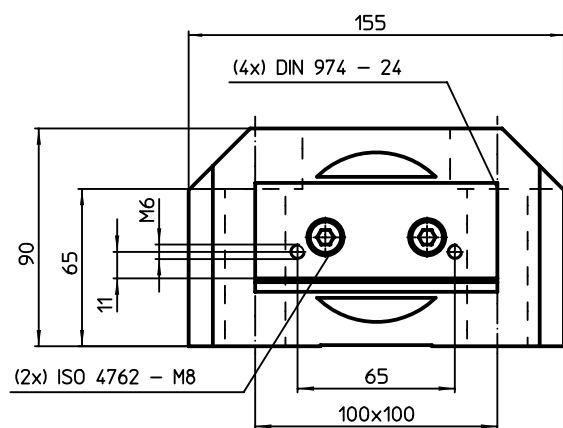
MORE INFORMATION

Further products

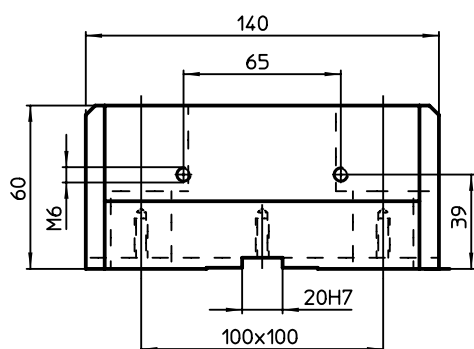
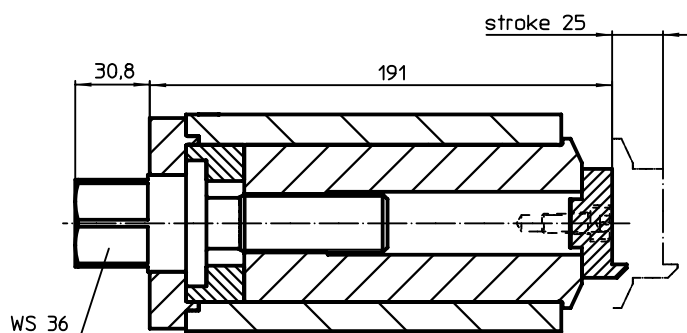
Standard Jaws, for vices → p. 465

Interchangeable Jaws, for vices, with
pull-down effect → p. 466
Clamping Vices, moveable jaw → p. 784
Clamping Vices, fixed jaw → p. 784
Clamping Vices, replacement jaw, soft → p. 785
Clamping Vices, replacement jaw,
ribbed/flat. → p. 785

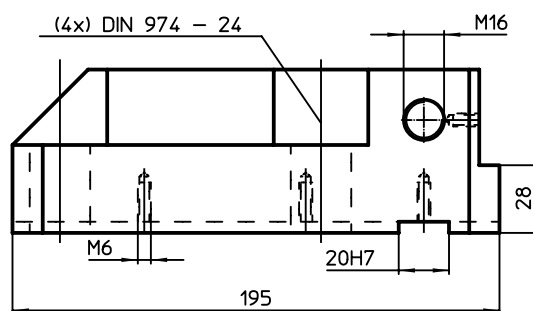
DRAWING



picture 1



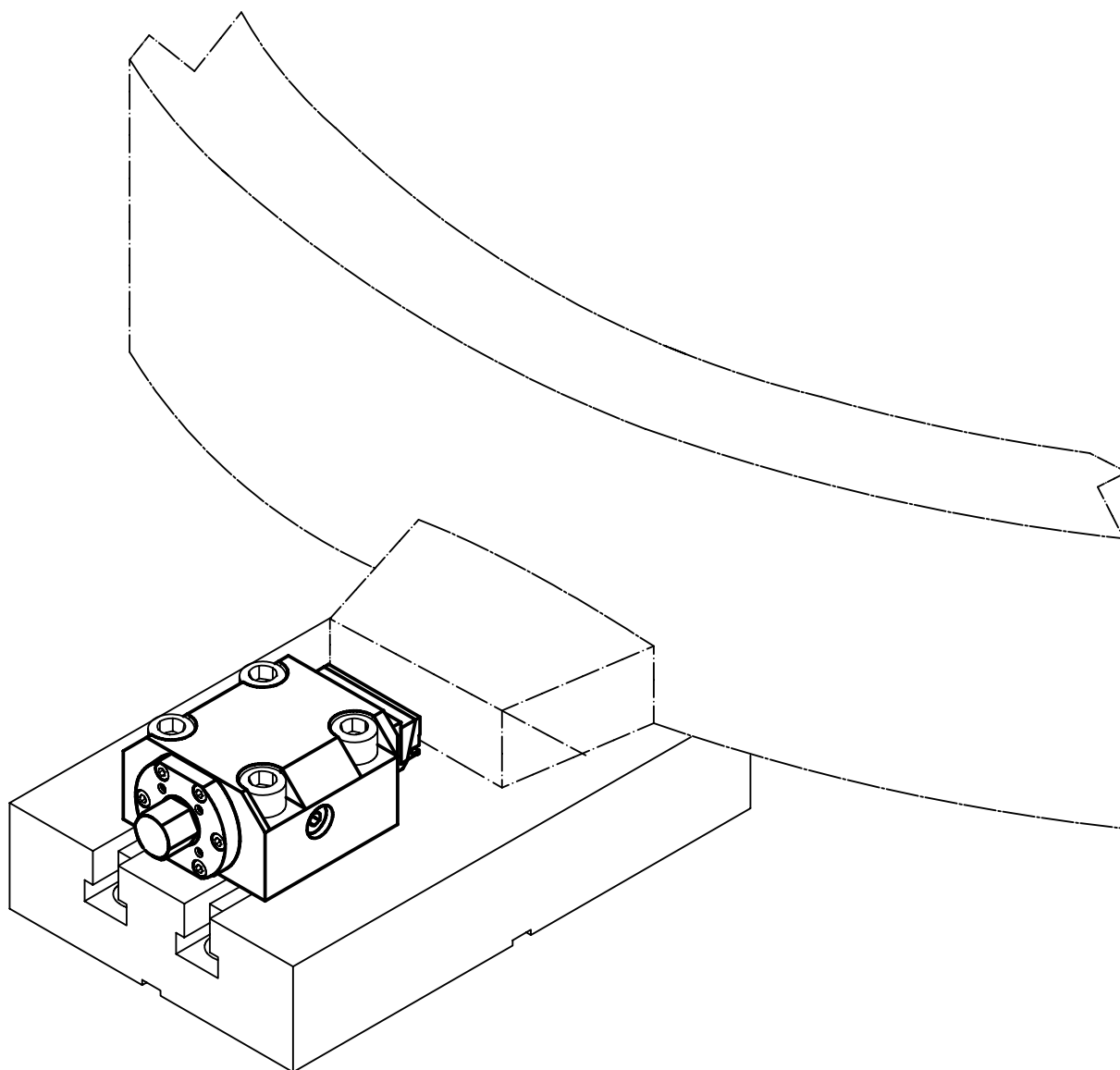
picture 2



ORDER INFORMATION

Clamping force horizontal max. [kN]	Tightening torque max. [Nm]	 [kg]	Art. No.
moveable jaw – picture 1			
80	200	16	23231.0010
fixed jaw – picture 2			
–	–	10	23231.0011

APPLICATION EXAMPLE



Standard Jaws • for vices

EH 23231.



PRODUCT DESCRIPTION

These jaws are accessories for the clamping vice EH 23231.

Material

Thrust Pad

- Heat-treated steel, induction hardened

Jaw

- Case-hardened steel

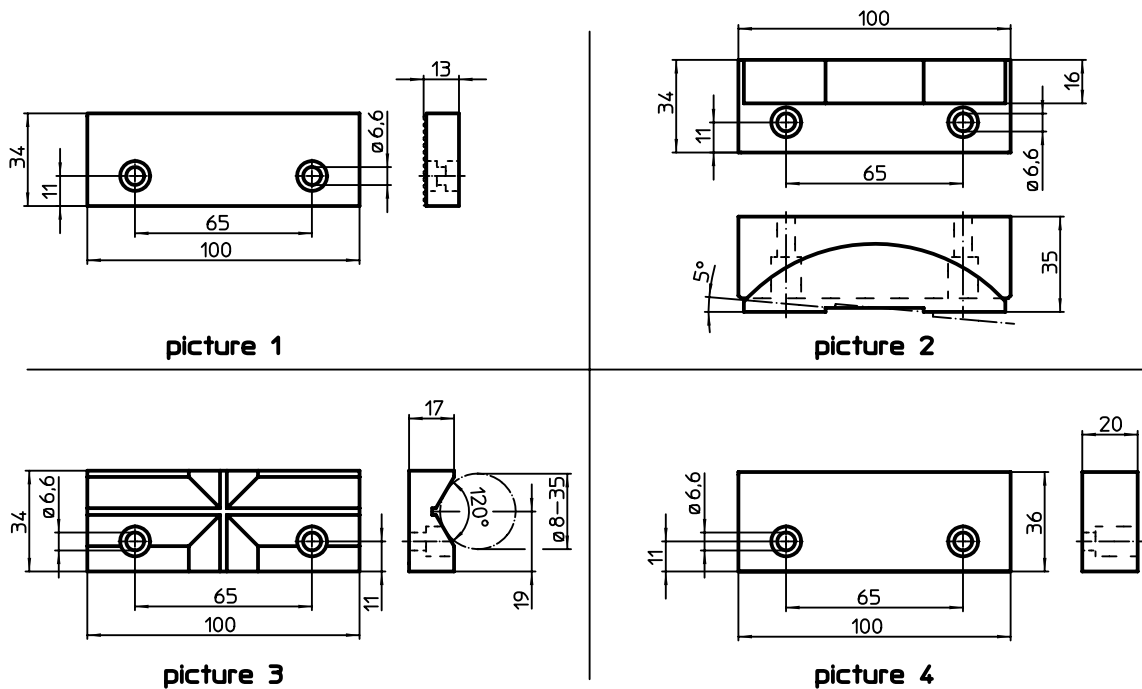
- Case-hardened steel, case-hardened
- Heat-treated steel
- Tool steel

MORE INFORMATION

Notes

The delivery includes tightening screws.

DRAWING



ORDER INFORMATION

Nominal dimension [mm]	 [g]	Art. No.
reversible jaw, smooth/ribbed made of tool steel – picture 1		
100	333	23231.0020
floating jaw (body: of heat-treated steel, plunger: of heat-treated steel, induction-hardened) – picture 2		
100	810	23231.0021
V-clamping jaw of case-hardened steel, case-hardened – picture 3		
100	372	23231.0022
clamping jaw, soft of case-hardened steel – picture 4		
100	554	23231.0023

Interchangeable Jaws • for vices, with pull-down effect

EH 23231.



PRODUCT DESCRIPTION

These jaws are accessories for the clamping vice EH 23231.

Material

Base support

- Case-hardened steel, case-hardened

Roller

- Cold worked steel, hardened

Jaw

- Case-hardened steel, case-hardened
- Heat-treated steel, hardened

Assembly

The base support (picture 1) is fixtured at the adapter of the clamping vice with the

standardly delivered screws. The interchangeable jaws - held by 2 permanent magnets - can be inserted and exchanged with a manual handle.

Assembly-/Disassembly instruction:

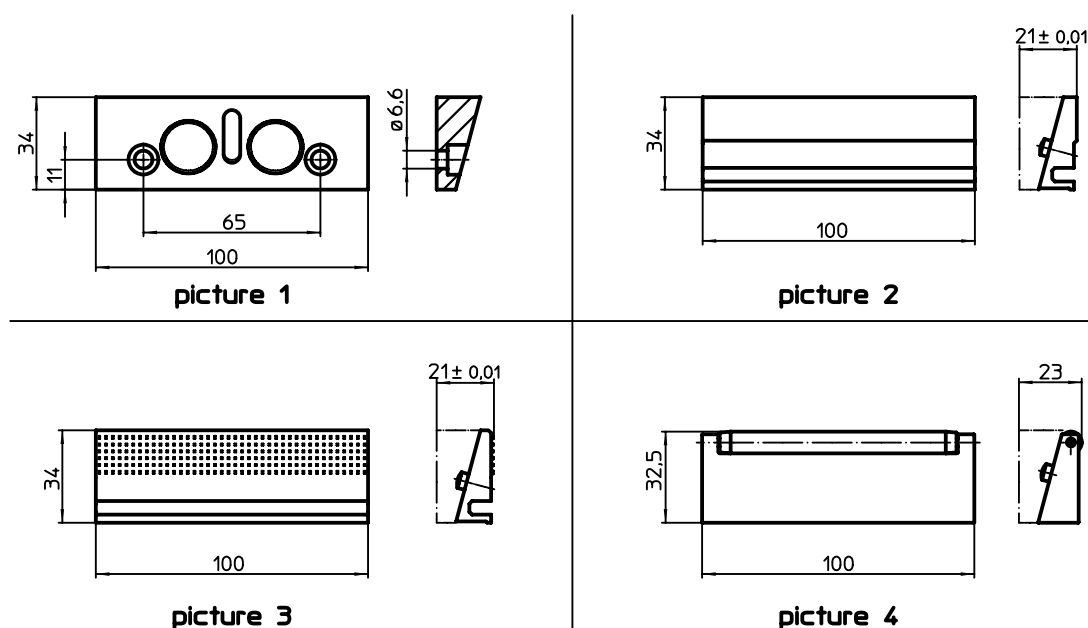
1. Pull the jaw upwards with the manual handle until the alignment pin strikes against the slot.
2. Twist the jaw sideways and remove.
3. New jaw can be inserted.

MORE INFORMATION

Notes

The delivery includes tightening screws.

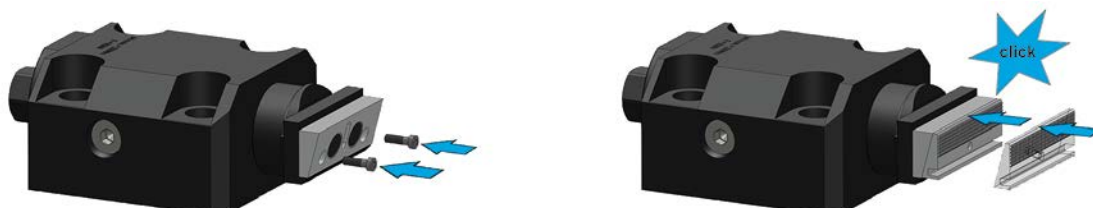
DRAWING



ORDER INFORMATION

Nominal dimension [mm]	[g]	Art. No.
base support of case-hardened steel – picture 1		
100	289	23231.0030
interchangeable jaw, smooth of case-hardened steel – picture 2		
100	246	23231.0031
interchangeable jaw, ribbed of case-hardened steel – picture 3		
100	246	23231.0032
interchangeable jaw with roller (body: head-treated steel, hardened / roller: cold worked steel, hardened) – picture 4		
100	313	23231.0033

APPLICATION EXAMPLE



Stabilizing Clamping Jaws

EH 23240.



PRODUCT DESCRIPTION

Due to the big clamping jaw, this clamping element is suitable for lateral clamping of high workpieces. The clamping force acts forwards and downwards. Clamping plate is turnable, i.e. to the ground or ribbed side.

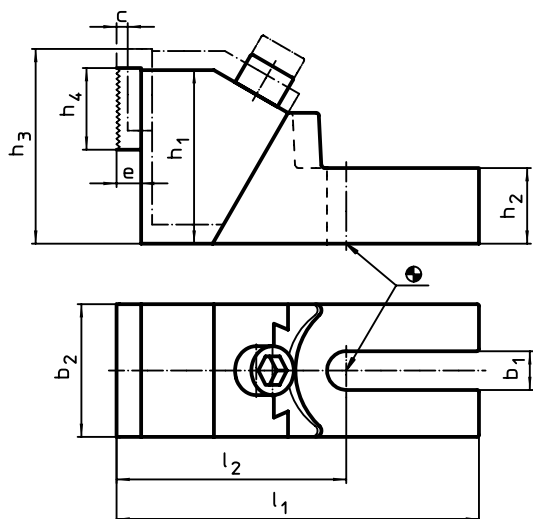
Material

Body
▪ Cast iron

Clamping jaws

▪ Steel, case-hardened

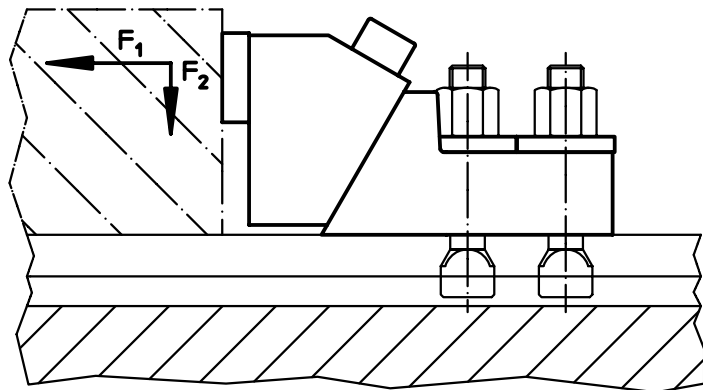
DRAWING



ORDER INFORMATION

Dimensions										T-slot size a	Clamping force			Art. No.
b ₁	c	h ₁	h ₂	h ₃	h ₄	b ₂	l ₁	l ₂	e		F ₁	F ₂		
[mm]										[mm]	[kN]		[kg]	
19	8	85	37	99	40	65	177.5	112.5	12	12	8	1.2	4	23240.0012
										14	15	2.2		
										16	20	3.0		
										18	28	4.2		
26	11	100	45	118	40	75	226.5	136.5	12	20	30	4.5	7	23240.0020
										22	30	4.5		
										24	32	4.8		
										28	32	4.8		
										30	36	5.4		

APPLICATION EXAMPLE



Taper Clamping Units

EH 23250.



PRODUCT DESCRIPTION

Taper clamping units are particularly suitable for horizontal and vertical multiple clampings. The taper clamps are compact in build and therefore enable clamping without geometric interference.

Material

Body

- Tool steel, hardened, bright

Screw

- Heat-treated steel, tempered, quality 12.9

Spring

- Spring steel wire
- NBR (O-Ring)

Clamping jaws

- Tool steel, hardened, blackened and ground

Assembly

Can be mounted in a threaded hole or with T-nuts for horizontal or vertical multiple clamping.

Operation

Inserting the socket head screw moves the two clamping chucks outwards and presses the workpieces against a stop. Using the double taper, an additional vertical

clamping force will be achieved. Stroke of taper clamping units with M 5 = $\pm 0,5$, M 8 = $\pm 0,5$, M 12 = ± 1 and M 16 = $\pm 1,5$. Can be mounted in a threaded hole or with T-nuts for horizontal or vertical multiple clamping.

MORE INFORMATION

References

For further taper clamping units, refer to section "Multiple Clamping Systems"

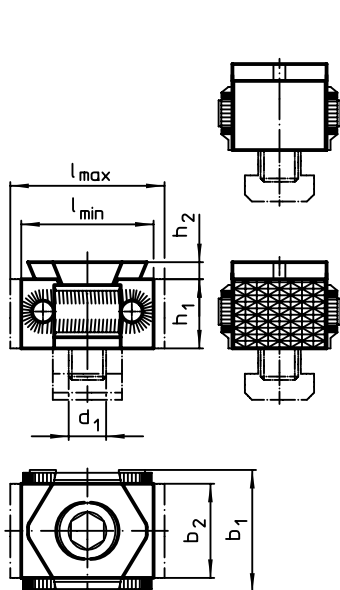
Accessories

T-nuts EH 23010. have to be purchased separately.

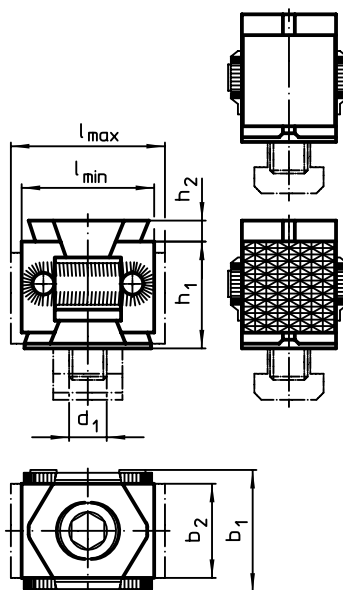
Further products

Nuts for T-Slots, DIN 508 → p. 384
 Coverings, for taper clamping units... → p. 470
 Taper Clamping Units, plain / ribbed, M8 → p. 897
 Taper Clamping Units, plain / ribbed, M12 → p. 898
 Taper Clamping Units, with screw fastened thread, M12. → p. 899

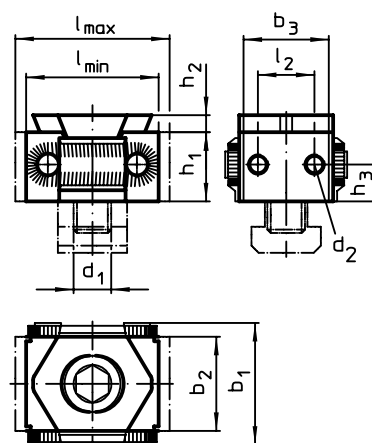
DRAWING



picture 1



picture 2



picture 3

ORDER INFORMATION

Dimensions										Clamping force max.	Tight- ening torque max.		Art. No.
d ₁	l	l ₂	b ₁	b ₂	b ₃	d ₂	h ₁	h ₂	h ₃				
[mm]													
single taper, ribbed clamping jaw, two-sided – picture 1													
M 8	27 – 31	–	29	21	–	–	15	2.5	–	20	43	72	23250.0008
M12	42 – 49	–	41	30	–	–	22	4.0	–	30	85	233	23250.0012
M16	57 – 65	–	56	42	–	–	29	5.0	–	50	210	581	23250.0016

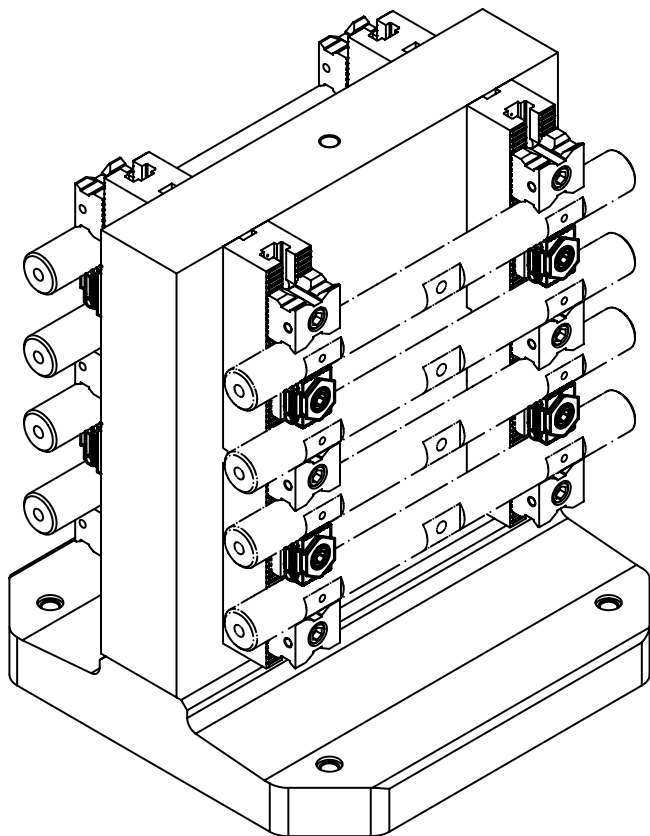
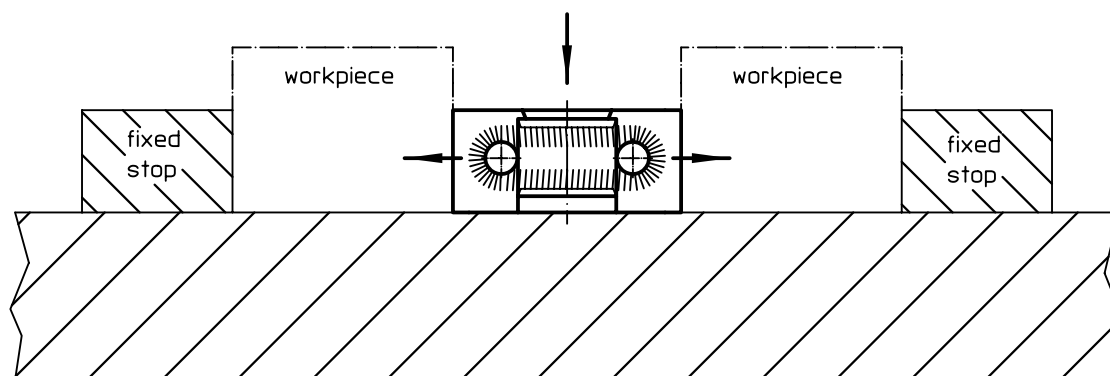
¹⁾ Taper surfaces not ground, spring: O-ring (NBR)



d ₁	l	l ₂	Dimensions							Clamping force max. [kN]	Tight- ening torque max. [Nm]	 [g]	Art. No.
			b ₁	b ₂	b ₃	d ₂	h ₁	h ₂	h ₃				
			[mm]										
single taper, flat clamping jaw, two-sided – picture 1													
M 5	20 – 25	–	22	15	–	–	11	4.2	–	7	10	30	23250.0065¹⁾
M 8	27 – 31	–	29	21	–	–	15	2.5	–	20	43	73	23250.0048
M12	42 – 49	–	41	30	–	–	22	4.0	–	30	85	234	23250.0052
M16	57 – 64	–	56	42	–	–	29	5.0	–	50	210	577	23250.0056
double taper, ribbed clamping jaw, two-sided – picture 2													
M12	42 – 49	–	41	30	–	–	36	5.0	–	50	85	350	23250.0112
M16	58 – 66	–	56	42	–	–	50	5.0	–	80	210	906	23250.0116
double taper, flat clamping jaw, two-sided – picture 2													
M12	41 – 48	–	41	30	–	–	36	5.0	–	50	85	343	23250.0142
M16	58 – 66	–	56	42	–	–	50	5.0	–	80	210	895	23250.0146
single taper, clamping jaw with screw-fastened thread, two-sided – picture 3													
M 8	33 – 37	12	29	21	–	M5	15	2.5	7.5	20	43	84	23250.0158
M12	46 – 53	18	41	30	28	M5	22	4.0	11.0	30	85	247	23250.0162
M16	61 – 70	26	56	42	40	M5	29	5.0	14.5	50	210	618	23250.0166

¹⁾ Taper surfaces not ground, spring: O-ring (NBR)

APPLICATION EXAMPLE



Coverings • for taper clamping units
EH 23250.



PRODUCT DESCRIPTION

Protects against damage from scales of wood and dirt.

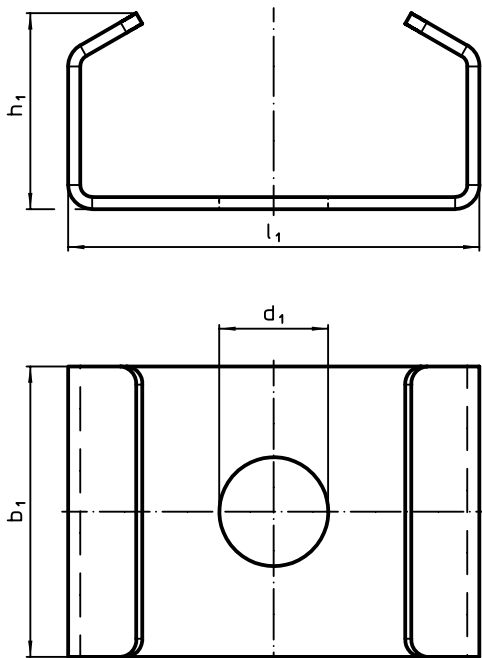
Material

- Steel

Assembly

The cover is mounted under the taper clamping unit.

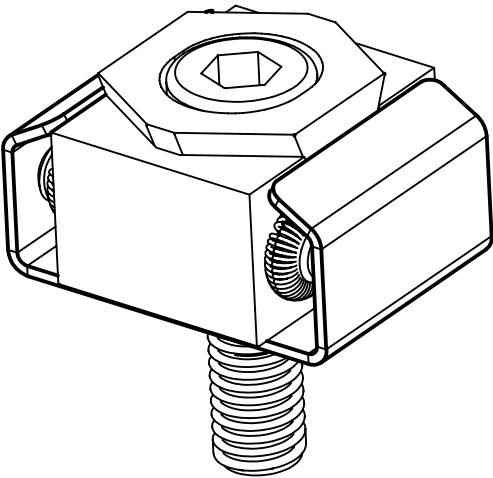
DRAWING



ORDER INFORMATION

d ₁	For screw	Dimensions			For taper clamping units	 [g]	Art. No.
		b ₁ [mm]	h ₁	l ₁			
9	M 8	24	16.2	34	23250.0008/.0048/.0158	12	23250.0408
13	M12	38	22.1	44	23250.0012/.0052/.0142/.0162	26	23250.0412

APPLICATION EXAMPLE



Double Edge Clamps

EH 23251.



PRODUCT DESCRIPTION

Inserting the socket head screw moves the two clamping chucks outwards and presses the workpiece against a stop.

Material

Body

- Aluminium Al

Taper

- Case-hardened steel, blackened

Screw

- Steel

Assembly

Can be mounted in a threaded hole or with T-nuts for horizontal or vertical multiple clamping.

MORE INFORMATION

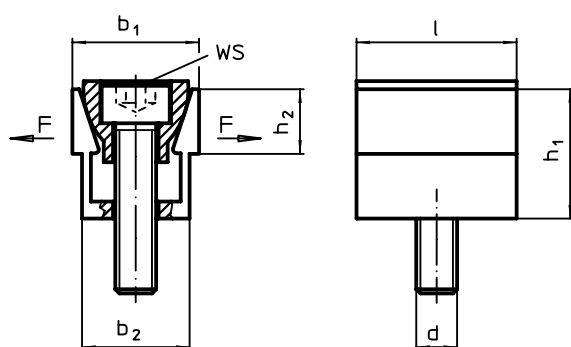
Accessories

T-nuts EH 23010. have to be purchased separately.

Further products

Nuts for T-Slots, DIN 508 → p. 384

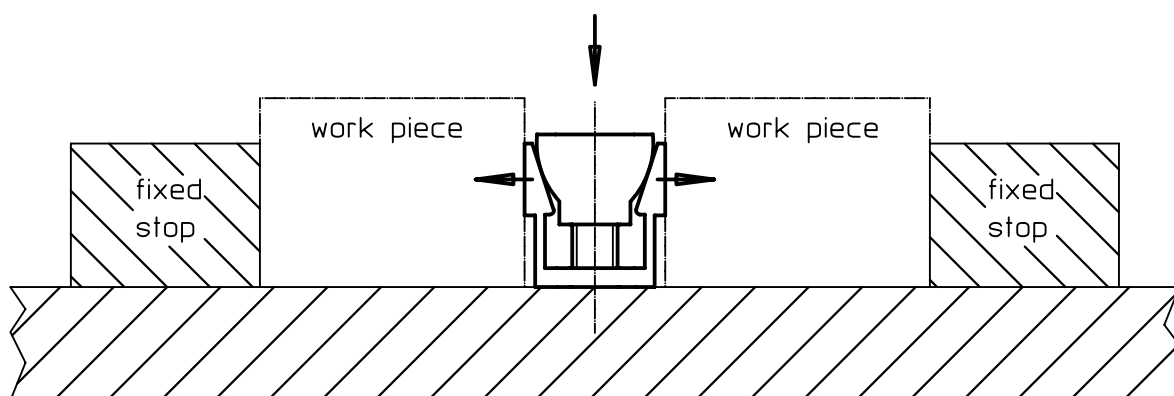
DRAWING



ORDER INFORMATION

Dimensions							WS	Clamping force max.	Tightening torque max.		Art. No.
b ₁	b ₁ max. spread	b ₂	h ₁	h ₂	l	d					
[mm]							[mm]	[kN]	[Nm]	[g]	
18.6	20.3	16.1	19.0	9.5	23.8	M 6	5	6.7	14.3	37	23251.0006
24.8	26.9	20.8	25.9	12.7	31.7	M 8	6	8.9	14.5	87	23251.0008
37.3	39.9	30.8	38.6	19.0	47.6	M12	10	15.6	38.4	280	23251.0012
49.7	53.0	41.2	51.5	25.4	63.5	M16	14	26.7	74.6	700	23251.0016

APPLICATION EXAMPLE



Double Edge Clamps • machinable chucks

EH 23251.



PRODUCT DESCRIPTION

Inserting the socket head screw moves the two clamping chucks outwards and presses the workpiece against a stop. The chucks can be machined to the needed workpiece contour. The locking plate is needed only for this machining, not for the workpiece clamping.

Material

Body

- Aluminium Al

Taper

- Case-hardened steel, blackened

Screw

- Steel

Locking plate

- Aluminium Al

Assembly

Can be mounted in a threaded hole or with T-nuts for horizontal or vertical multiple clamping.

MORE INFORMATION

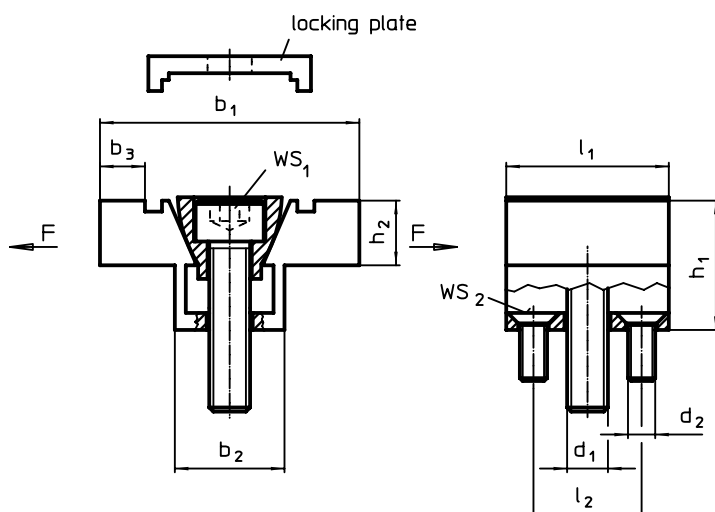
Accessories

T-nuts EH 23010. have to be purchased separately.

Further products

Nuts for T-Slots, DIN 508 → p. 384

DRAWING

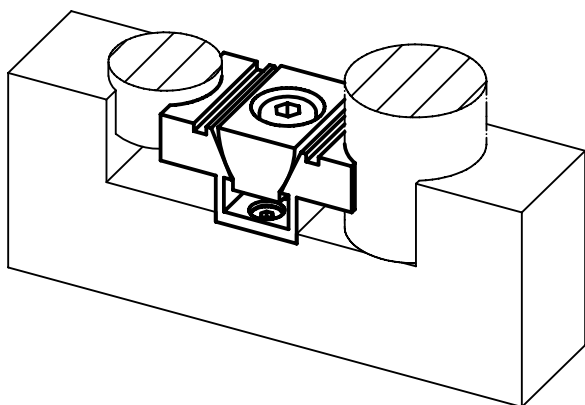


ORDER INFORMATION

Dimensions									WS ₁	WS ₂	Clamping force max.	Tightening torque max.		Art. No.
b ₁	b ₂	b ₃ ¹⁾	h ₁	h ₂	l ₁	l ₂	d ₁	d ₂	[mm]	[mm]	[kN]	[Nm]	[g]	
38.1	16.1	6.6	19.1	9.4	23.9	15.9	M 6	M4	5	2.5	6.7	14.3	67	23251.0106
50.8	20.8	9.9	25.4	12.7	31.8	20.6	M 8	M4	6	2.5	8.9	14.5	128	23251.0108
76.2	30.9	14.8	38.1	19.1	47.5	30.5	M12	M5	10	3.0	15.6	38.4	427	23251.0112
101.6	41.3	20.3	50.8	25.4	63.5	41.3	M16	M6	14	4.0	26.7	74.6	1068	23251.0116

¹⁾ machinable material allowance

APPLICATION EXAMPLE



**PRODUCT DESCRIPTION**

The T-slot guide enables a quick and precise location of the workpiece. The cylindrical form of the stop facilitates to determine the 0-point coordinate. The short form, which is ground to a height tolerance of $\pm 0,01$ mm, can also be used for locating.

Material**Stop**

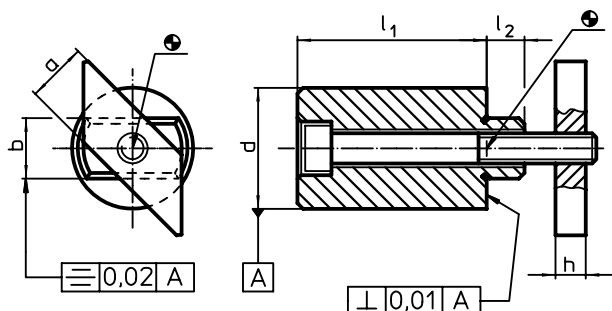
- Steel, case-hardened, ground

Holding plate

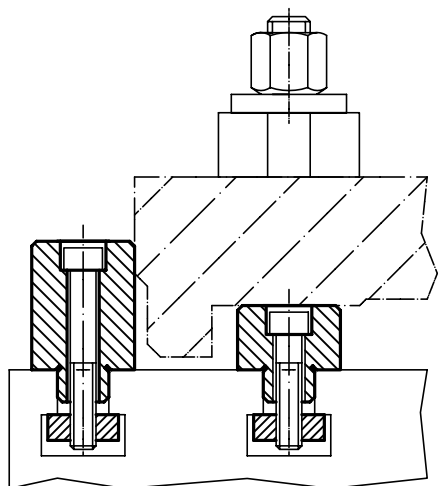
- Steel, blackened

Screw

- Steel, quality 8.8 (ISO 4762)

DRAWING**ORDER INFORMATION**

T-slot size	Dimensions						Screw ISO 4762		Art. No.
[mm]	l_1	a -0.6	b h6	d ± 0.01	h	l_2	[mm]	[g]	
10	15 ± 0.01	10	10	20	6	8	M 6 x 25	53	23280.0110
	25 ± 0.20	10	10	20	6	8	M 6 x 35	76	23280.0210
12	15 ± 0.01	12	12	20	6	8	M 6 x 25	59	23280.0112
	25 ± 0.20	12	12	20	6	8	M 6 x 35	82	23280.0212
14	25 ± 0.01	14	14	32	8	9	M 8 x 35	203	23280.0114
	50 ± 0.20	14	14	32	8	9	M 8 x 60	354	23280.0214
16	25 ± 0.01	16	16	32	8	10	M 8 x 45	221	23280.0116
	50 ± 0.20	16	16	32	8	10	M 8 x 70	378	23280.0216
18	25 ± 0.01	18	18	40	10	15	M10 x 50	367	23280.0118
	50 ± 0.20	18	18	40	10	15	M10 x 75	615	23280.0218
22	25 ± 0.01	20	22	40	14	15	M10 x 55	440	23280.0122
	50 ± 0.20	20	22	40	14	15	M10 x 80	716	23280.0222
28	25 ± 0.01	22	28	46	16	20	M12 x 60	661	23280.0128
	50 ± 0.20	22	28	46	16	20	M12 x 90	1259	23280.0228

APPLICATION EXAMPLE

Pitbull® Clamps

EH 23290.

**PRODUCT DESCRIPTION**

Pitbull® clamps for low mounting height with a high clamping force and down hold effect. The O-ring serves to lift the clamp off when releasing.

Material**Body**

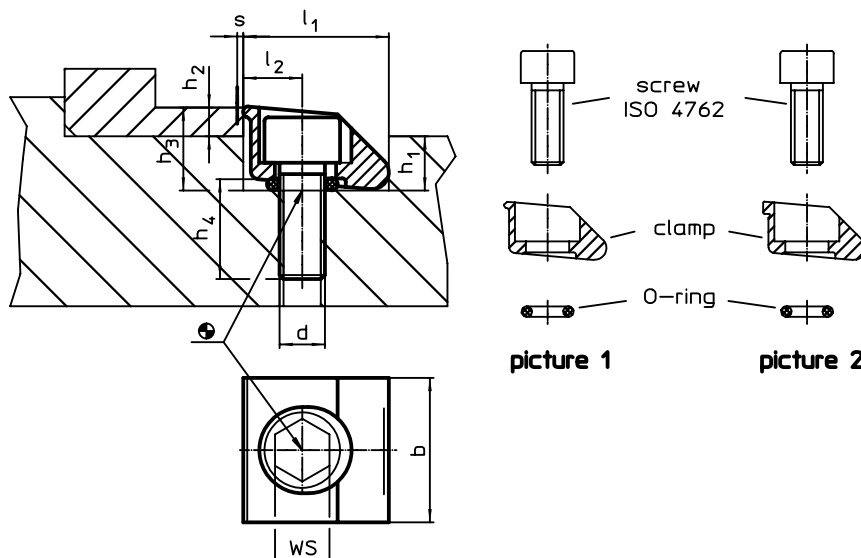
- Steel, hardened

Screw

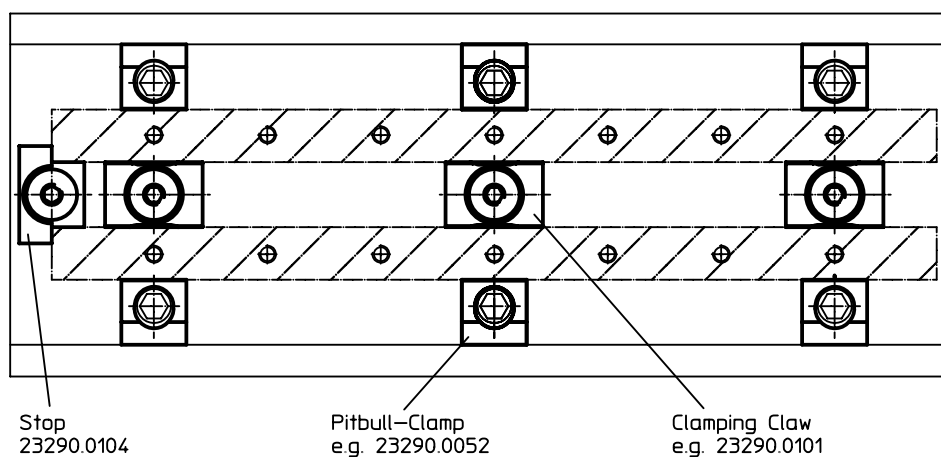
- Heat-treated steel, heat treated

O-ring

- NBR

DRAWING**ORDER INFORMATION**

Dimensions								Clamp- ing way s	WS	Clamping force max.	Tightening torque max.				Art. No.
d	b	l ₁ H9	l ₂	h ₁	h ₂ min.	h ₃ ~	h ₄ ~					min.	max.		
[mm]												[mm]	[mm]		
with knife edge – picture 1															
M 4	12.7	12.70	5.1	4.8	2.6	7.4	8	0.4	3	2.6	6	-30	80	7.5	23290.0052
M 6	19.1	19.05	7.6	7.1	3.8	10.9	11	0.6	5	3.8	17	-30	80	22.0	23290.0054
M10	25.4	25.40	10.2	11.4	6.4	17.8	17	1.2	8	15.0	80	-30	80	66.0	23290.0056
M12	38.1	38.10	15.2	16.3	9.5	25.8	21	1.9	10	20.8	140	-30	80	195.0	23290.0058
blunt edged – picture 2															
M 4	12.7	12.70	5.1	4.8	2.6	7.4	8	0.4	3	2.6	6	-30	80	6.2	23290.0062
M 6	19.1	19.05	7.6	7.1	3.8	10.9	11	0.6	5	5.7	17	-30	80	22.0	23290.0064
M10	25.4	25.40	10.2	11.4	6.4	17.8	17	1.2	8	15.1	80	-30	80	65.0	23290.0066
M12	38.1	38.10	15.2	16.3	9.5	25.8	21	1.9	10	22.0	140	-30	80	201.0	23290.0068

APPLICATION EXAMPLE

Clamping Claws

EH 23290.

3



PRODUCT DESCRIPTION

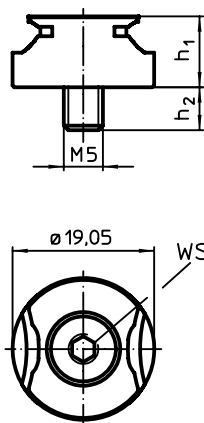
The clamping claws are designated for the installation in clamping chucks and fixtures. Only a counterbore or rather a nut with threaded hole is needed for the installation. The sharp edges of the clamping claw are impressed in the workpiece and therefore they avoid a lateral and horizontal movement.

The stop can be used for the positioning of workpieces.

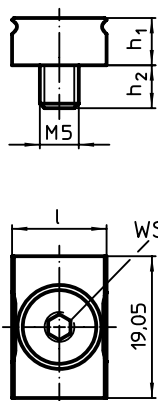
Material

- Steel, hardened, blackened

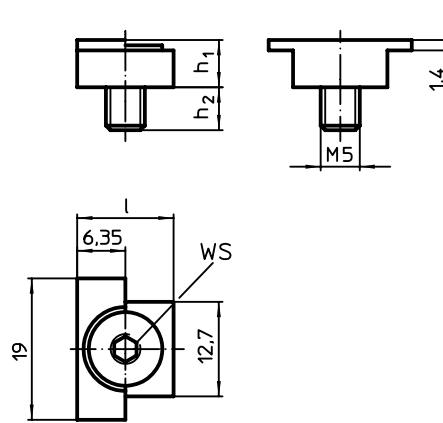
DRAWING



picture 1



picture 2

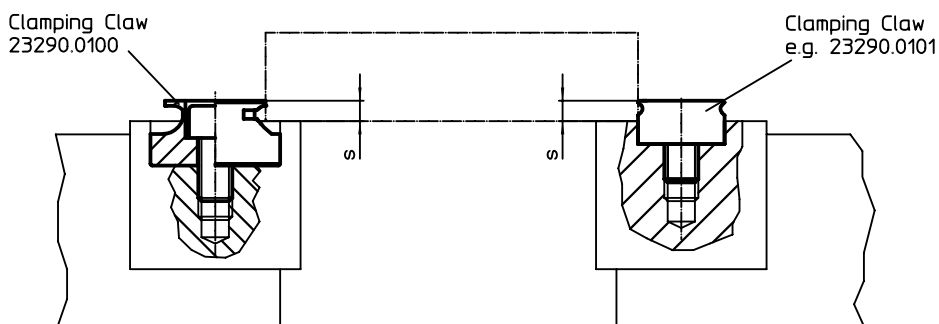


picture 3

ORDER INFORMATION

Dimensions				WS		Art. No.
l	h ₁	h ₂	s			
[mm]				[mm]	[g]	
clamping claw, round – picture 1						
–	9.53	5.9	1.5 – 3.0	4	20.0	23290.0100
clamping claw – picture 2						
12.70	6.35	6.0	1.5 – 1.9	3	12.0	23290.0101
19.05	7.92	8.1	1.5 – 3.0	3	22.0	23290.0102
25.40	7.92	8.1	1.5 – 3.0	3	31.0	23290.0103
stop – picture 3						
12.70	6.35	6.0	–	3	9.5	23290.0104

APPLICATION EXAMPLE



Supporting Plates

EH 23210.



PRODUCT DESCRIPTION

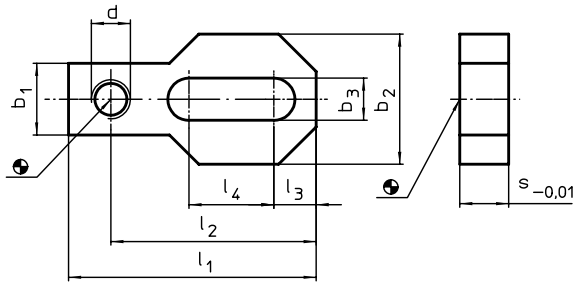
Various seating elements (e.g. pins EH 22690. or self-aligning pads EH 22730., EH 22731. and EH 22740.) can be mounted on the supporting plates.

The supporting plate can be moved flexibly between two threads or T-slots. Suitable for clamping devices M 20 - M 24.

Material

- Steel, case-hardened

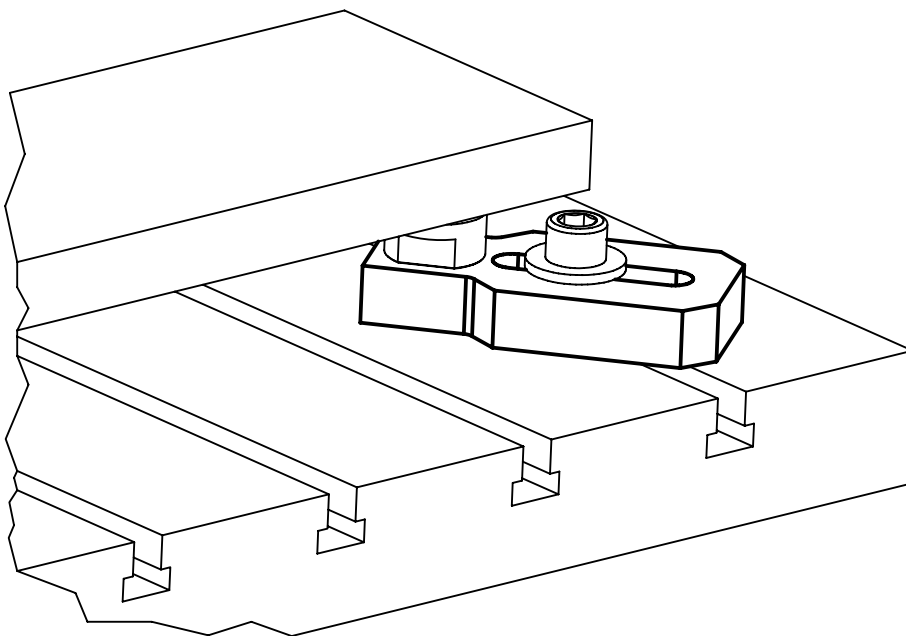
DRAWING



ORDER INFORMATION

Dimensions										Art. No.
d	l ₁	l ₂	l ₃	l ₄	b ₁	b ₂	b ₃	s -0.01		
[mm]									[kg]	
M20	180	150	30	80	60	90	21	30	3	23210.0870
M24	220	188	35	100	70	100	25	30	4	23210.0880

APPLICATION EXAMPLE

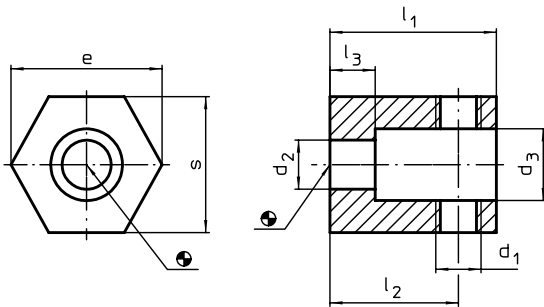


**PRODUCT DESCRIPTION**

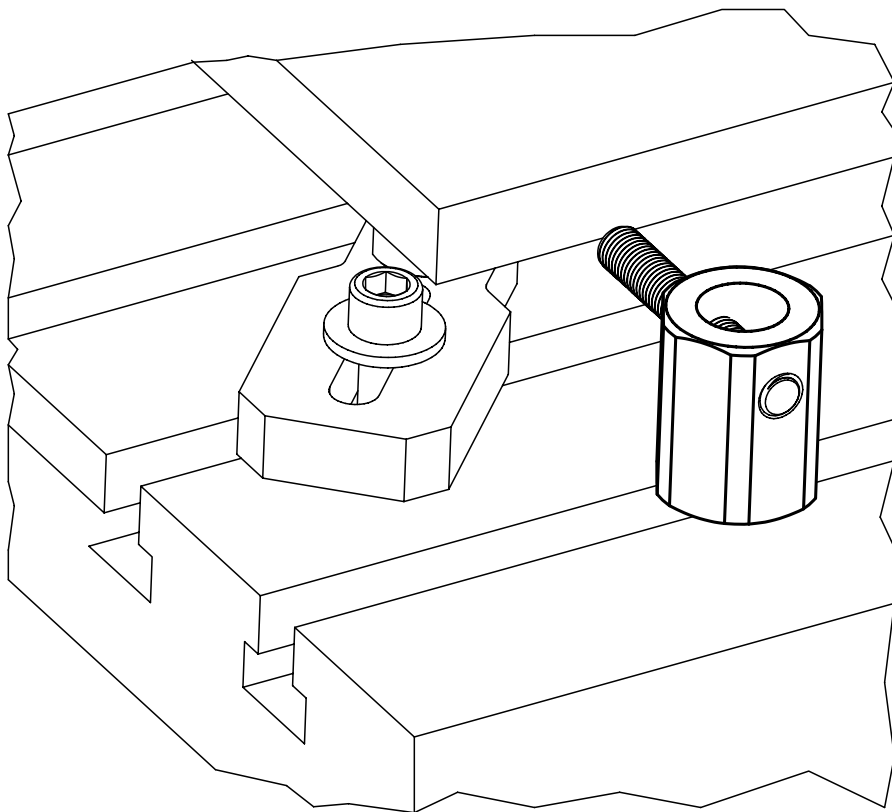
With the stop a flexible stop for a workpiece can be realised. Together with a grub screw (e.g. EH 22540.), a workpiece can be mounted and aligned. The grub screw should be secured in position with a hexagon nut. Suitable for clamping devices M 20 - M 24.

Material

- Steel, blackened

DRAWING**ORDER INFORMATION**

Dimensions										Art. No.
d ₁	d ₂	d ₃	l ₁	l ₂	l ₃	s	e			
[mm]									[g]	
M20	26	38	85	60	20	65	70		1659	23281.0024

APPLICATION EXAMPLE

Bedding Supports

EH 23220.



PRODUCT DESCRIPTION

The bedding support is used to **support** overdetermined clamping points on components. The benefits of the bedding support are:

- Support for unstable components, without distortion
- Eliminates tool vibration during machining
- Compact, low construction
- Supports ribs, beads and shackles, for reinforcement of clamped components
- Distortion-free support of raw parts
- Easy handling
- Flat and long design allows clamping with adjustable clamping lever even outside the workpiece.

Material

Handle

- Zinc die-cast

Clamp

- Steel, case-hardened, blackened, ground

Operation

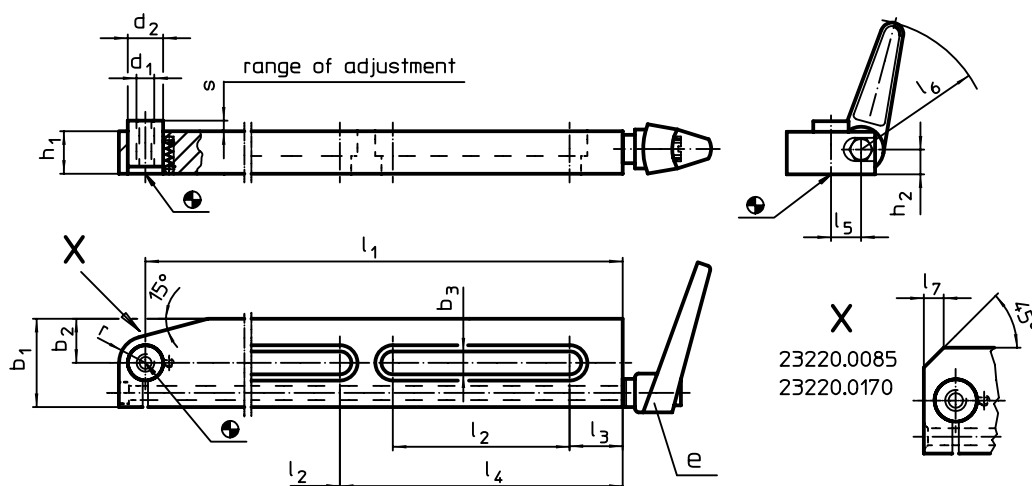
1. By releasing the clamping lever, the support bolt contacts the workpiece with a light spring load.

2. By clamping the clamping lever, the support pin is blocked without displacement.

3. The clamping lever is released after removal of the workpiece. Then push the support pin into the starting position and clamp using the lever.

By screwing grub screws or supports into the support pin's female thread, the support height can be adjusted.

DRAWING

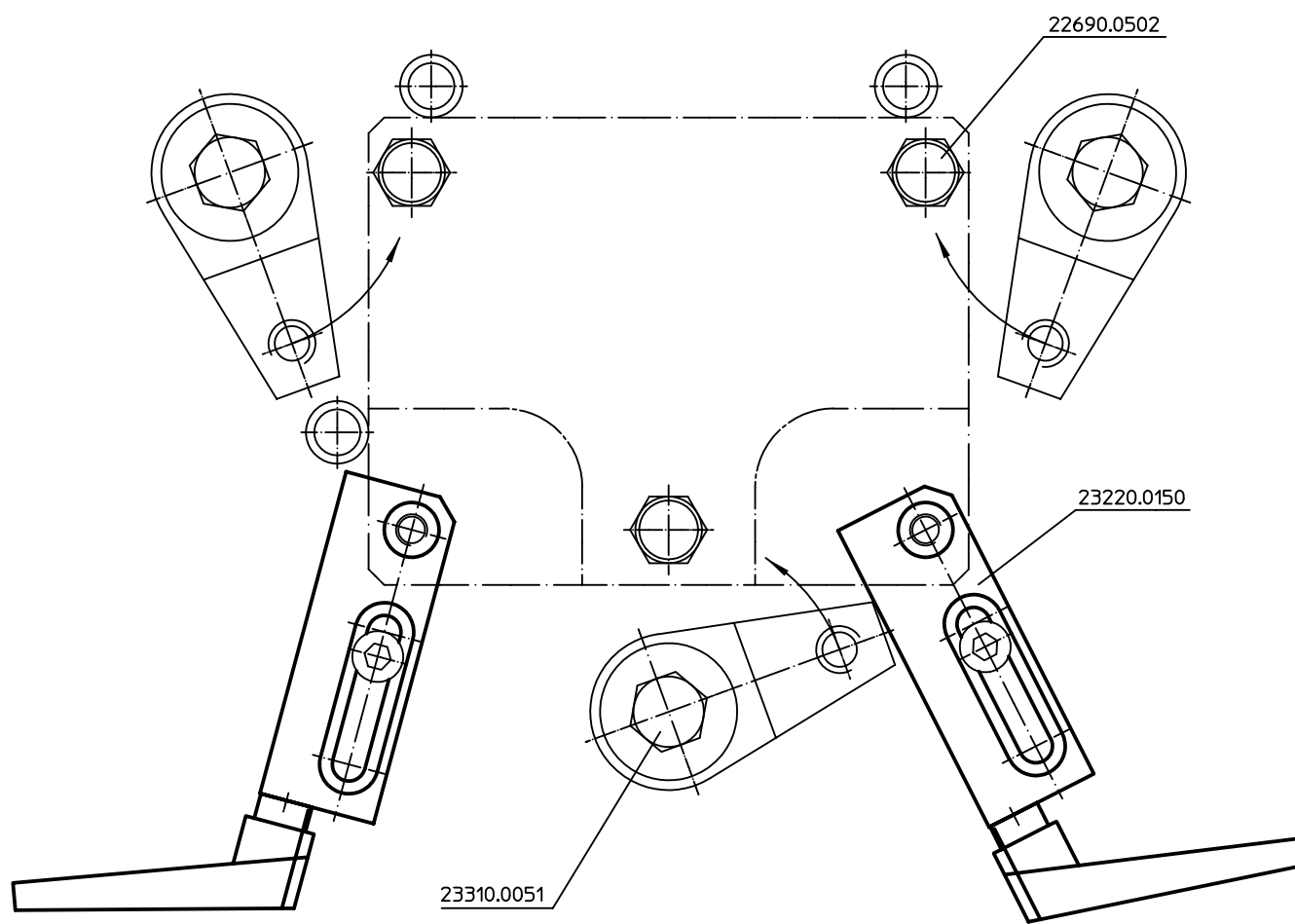


Sizes 8,5 x 75, 13 x 150 and 17 x 170 have only one slot.

ORDER INFORMATION

Dimensions															Stroke s	Load capacity max.	e		Art. No.
b ₃	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆	l ₇	b ₁	b ₂	d ₁	d ₂	h ₁	h ₂	r					
[mm]															[mm]	[kN]		[g]	
8.5	75	35	13	–	13	62	5	30	10	M 8	13	19.5	11.5	–	3	0.5	24400.0311	342	23220.0085
13.0	150	90	20	–	17	74	–	50	25	M10	20	24.0	14.0	15	6	2.5	24400.0411	1379	23220.0150
17.0	170	100	25	–	27	108	11	60	20	M16	26	34.0	21.5	–	11	5.0	24400.0611	2721	23220.0170
13.0	300	100	30	160	17	74	–	50	25	M10	20	24.0	14.0	15	6	2.5	24400.0411	2448	23220.0300
25.0	387	110	30	200	30	89	–	85	40	M20	32	40.0	25.0	24	11	10.0	24420.0210	7350	23220.0450

APPLICATION EXAMPLE



Supporting Elements

EH 23220.



PRODUCT DESCRIPTION

The support element is used to **support** overdetermined clamping points on components. The benefits of the support element are:

- Support for unstable components
- Eliminates tool vibration during machining
- Supports ribs, beads and shackles, for reinforcement of clamped components
- Distortion-free support of raw parts
- Easy handling

Material

Housing

- Aluminium, red anodised

Body

- Case-hardened steel, nitrided, manganese phosphated and ground

Assembly

Fix the support element (2 x M 6 thread) onto the device. Pay attention to the operator's side!

Alternative: Dismantle the M 12 x 10 threaded pin and replace it by an M 12 x 30 threaded pin and assemble the support element with a wrench (WS 21), e.g. for T-slot mounting (no defined operator's side ensured). Threaded pin M 12 x 30 and T-nut DIN 508 M 12 x 14, quality 10, are part of the standard supply volume.

Lowering of the support element by 16 mm is possible.

Operation

By turning the clamping cam (WS 6 internal hexagon) on the outer surface of the red protective sleeve, the support pin contacts the workpiece with a slight spring load.

1. By turning on (15 Nm) 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 direction (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.

MORE INFORMATION

Notes

For safe functioning, the thread bore M 12 must always be closed.

References

Additional flexible possibility of fitting with holding plate 23210.0740.

In the M 8 threaded pin on the support bolt various locating and seating pins (EH 22...) can be mounted. Custom-made extensions can also be fitted.

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

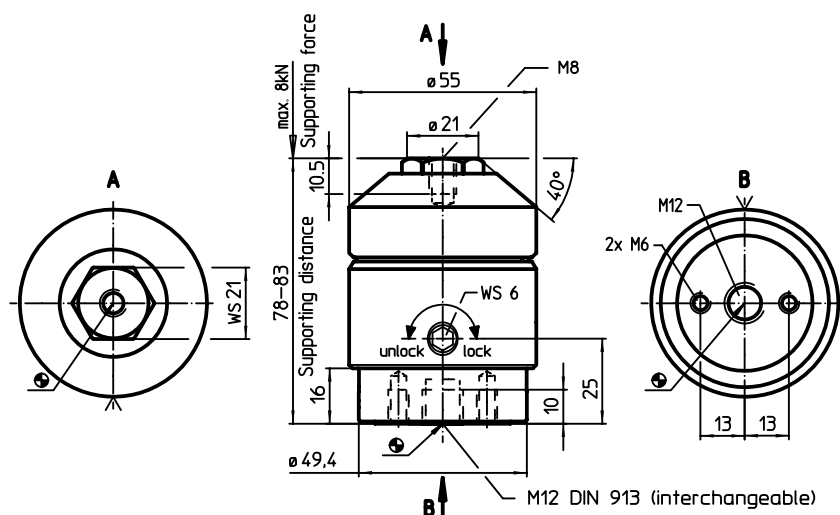
Further products

Holding Plates, for down-hold clamps. → p. 457

Height Adjusting Cylinders → p. 527

Spacers → p. 763

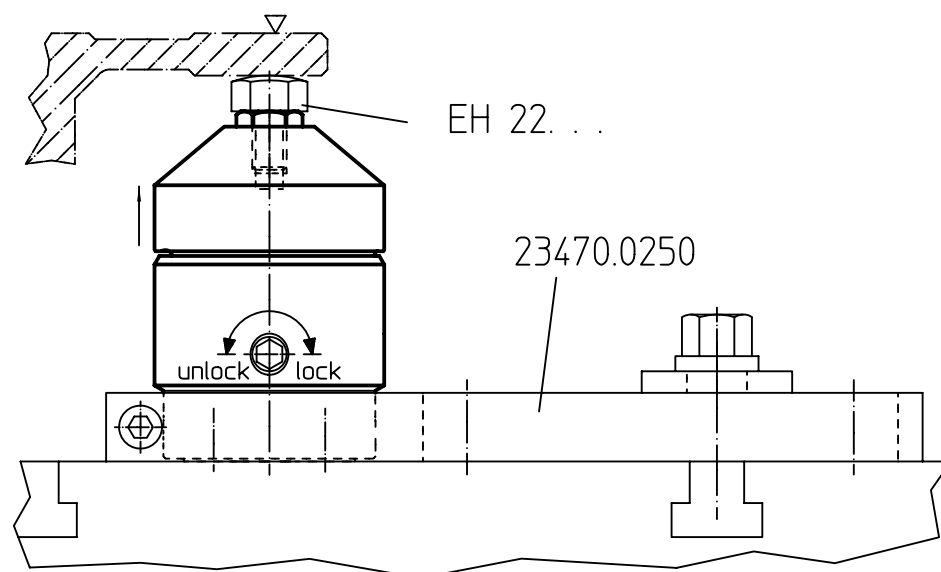
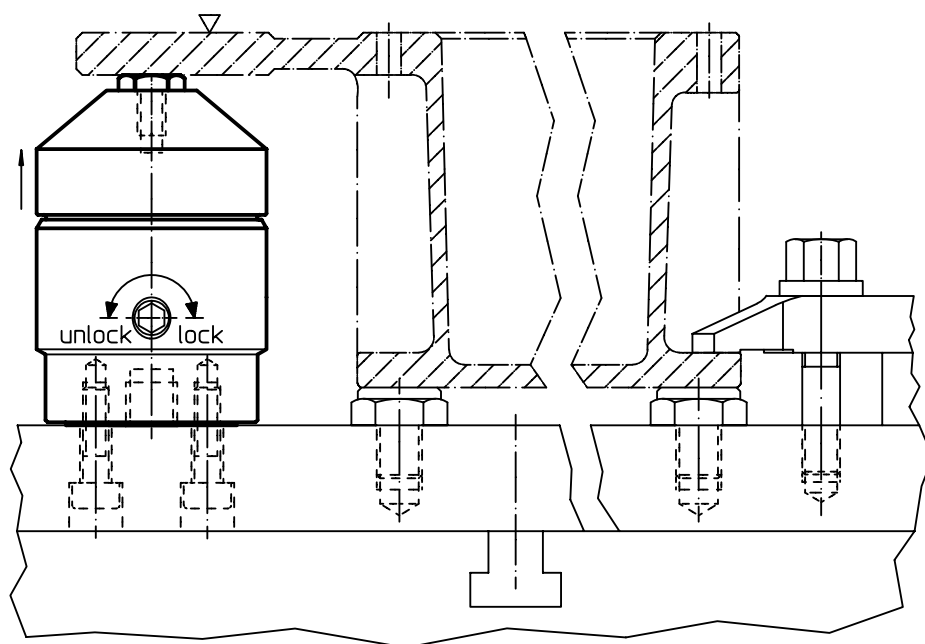
DRAWING



ORDER INFORMATION

	Art. No.
 [g]	23220.0400

APPLICATION EXAMPLE



FLOATING CLAMPS

COMPLICATED... AND SENSITIVE? NO PROBLEM.

THE RIGHT CLAMPING ELEMENT FOR EVERY WORKPIECE.

The floating clamp is used to clamp and support additional clamping points on components. A big plus is the distortion-free clamping of raw materials. Vibrations are avoided during processing. This allows for the distortion-free clamping of such components as ribs and beads.



[www.halder.com/
FloatingClamps-Video](http://www.halder.com/FloatingClamps-Video)

THEY ARE AVAILABLE IN FIVE MODELS:

- M12: combined clamping and locking
& separate clamping and locking

Each is also available as a compact design – suitable for low clamping heights

- M16: combined clamping and locking



Floating Clamps • compact construction, combined clamping and locking M 12

EH 23320.



PRODUCT DESCRIPTION

The floating clamp is used to **clamp and support** additional clamping points on components.

The benefits of the floating clamp are:

- Avoids vibration during the processing
- Clamps ribs, beads and shackles to reinforce clamped components
- Distortion-free clamping of raw parts
- Compact version with reduced height.

Material

Adjustable body

- Aluminium, red anodised

Body

- Case-hardened steel, nitrided, manganese phosphated and ground

Clamping jaws

- Case-hardened steel, nitrided, manganese phosphated

Assembly

1. Mount the floating clamp onto the device (mounting holes for M 6, see drawing).
2. Adjust the height limit stop and the rotating area with the sleeve, and clamp with set screw (4x WS 2.5). When setting the height limit upwards provide generous clearance (workpiece tolerance).

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 (WS 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.

MORE INFORMATION

Notes

For specific clamping situations, the standard clamping jaws supplied can be exchanged or replaced (see catalogue drawing: screw ISO 4762 - M8 - 12.9, M max. = 43 Nm).

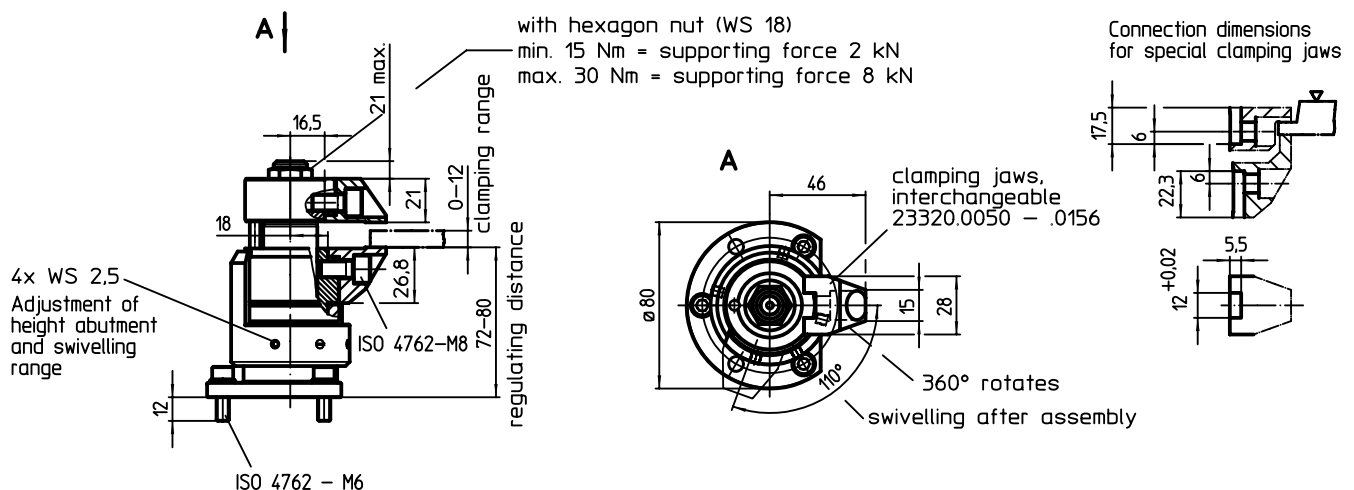
Accessories

As an accessory, we offer clamping jaws with an increased clamping range, refer to 23320.0050-.0058, as well as pivot jaws, refer to 23320.0148-.0156.

Further products

- Nuts for T-Slots, DIN 508 → p. 384
- Nuts for T-Slots, extended → p. 388
- Standard Clamping Jaws, for floating clamp M 12 → p. 491
- Clamping Jaws, for floating clamp M 12 → p. 492

DRAWING

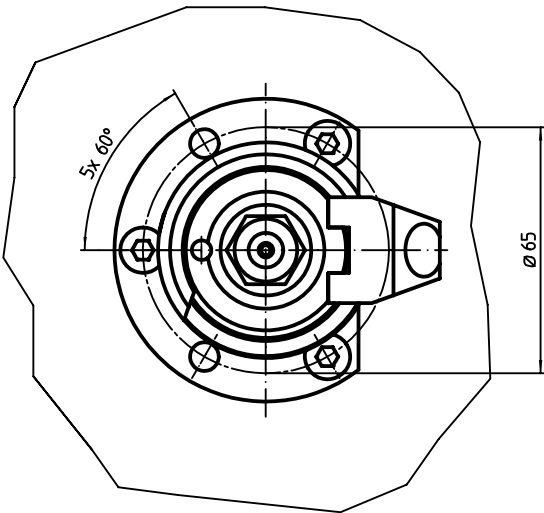
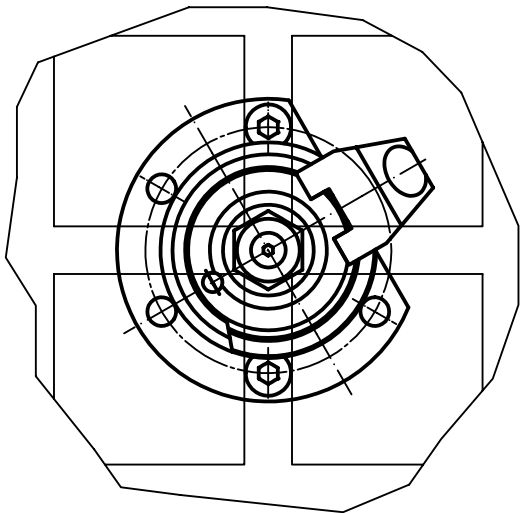
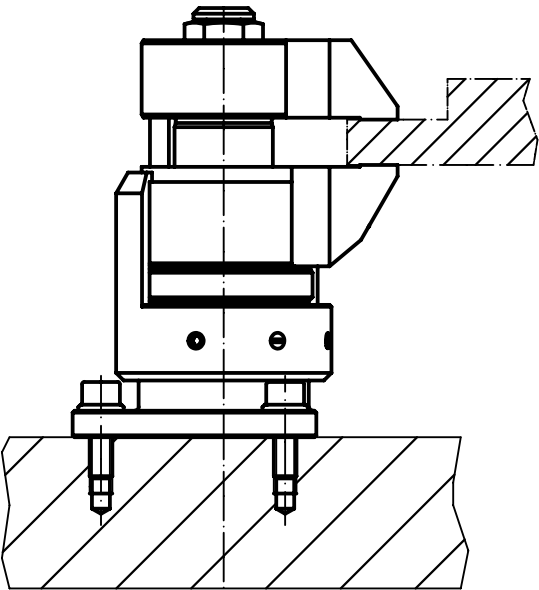
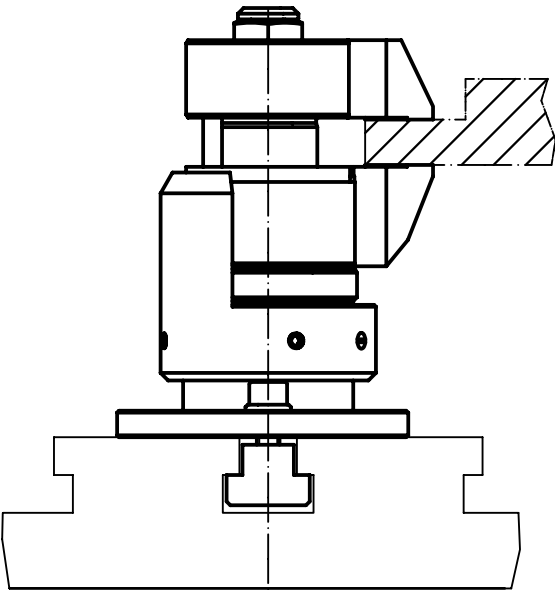


ORDER INFORMATION

	Art. No.
 [g] 1654	23320.0008

APPLICATION EXAMPLE

3



Floating Clamps • compact construction, separate clamping and locking M 12

EH 23320.



PRODUCT DESCRIPTION

Floating clamps with separate clamping and locking are used to clamp and support additional clamping points on **extremely pliable** workpieces. Both, clamping and supporting force can be designed individually.

The benefits of the floating clamp are:

- Avoids vibration during the processing
- Clamps ribs, beads and shackles to reinforce clamped components
- Distortion-free clamping of raw parts
- Compact version with reduced height.

Material

Adjustable body

- Aluminium, blue anodised

Body

- Case-hardened steel, nitrided, manganese phosphated and ground

Clamping jaws

- Case-hardened steel, nitrided, manganese phosphated

Assembly

1. Mount the floating clamp onto the device (mounting holes for M 6, see drawing).
2. Adjust the height limit stop and the rotating area with the sleeve, and clamp with set screw (4x WS 2.5). When setting the height limit upwards provide generous clearance (workpiece tolerance).

Operation

1. Push the floating clamp downwards.
2. Pivot the clamping jaws inwards.
3. Release floating clamp. The bottom jaw contacts the workpiece with the force of the contact spring.
4. Tighten the fixture nut (WS 18) (max. torque 15 Nm). **The jaws clamp the workpiece - the clamp is still floating.**
5. Then tighten the hexagon collar nut (WS

10) (max. torque 10 Nm).

6. The workpiece clamping process is complete.

7. Releasing is performed in the reverse order: Release hexagon collar nut (WS 10) - release hexagon nut (WS 18) - pivot out the clamping jaws

8. Floating clamp is in end position.

MORE INFORMATION

Notes

For specific clamping situations, the standard clamping jaws supplied can be exchanged or replaced (see catalogue drawing: screw ISO 4762 - M8 - 12.9, M max. = 43 Nm).

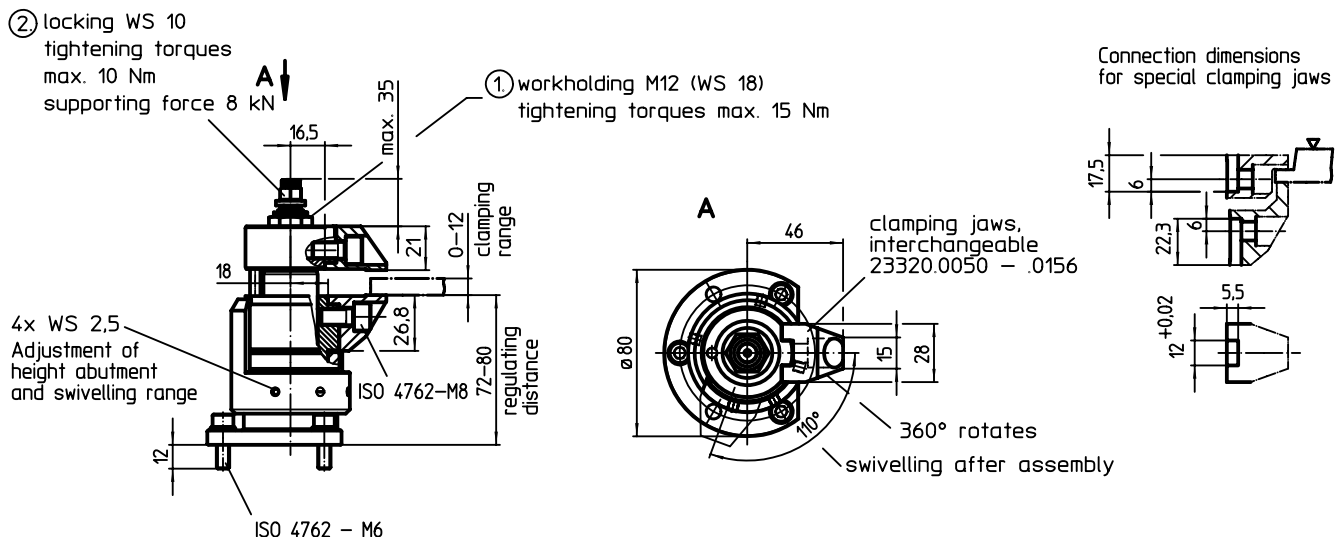
Accessories

As an accessory, we offer clamping jaws with an increased clamping range, refer to 23320.0050-.0058, as well as pivot jaws, refer to 23320.0148-.0156.

Further products

- Nuts for T-Slots, DIN 508 → p. 384
- Nuts for T-Slots, extended → p. 388
- Standard Clamping Jaws, for floating clamp M 12 → p. 491
- Clamping Jaws, for floating clamp M 12 → p. 492

DRAWING

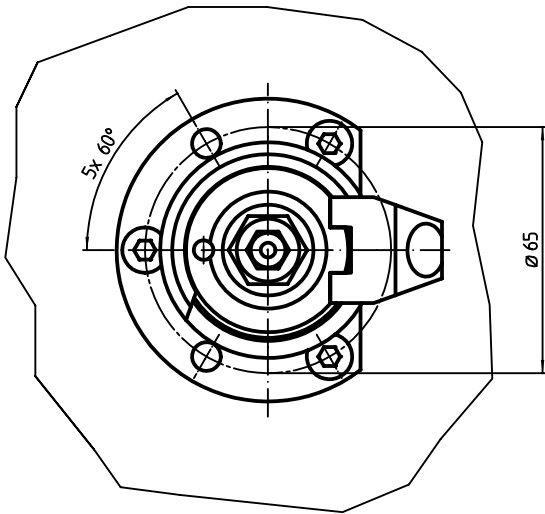
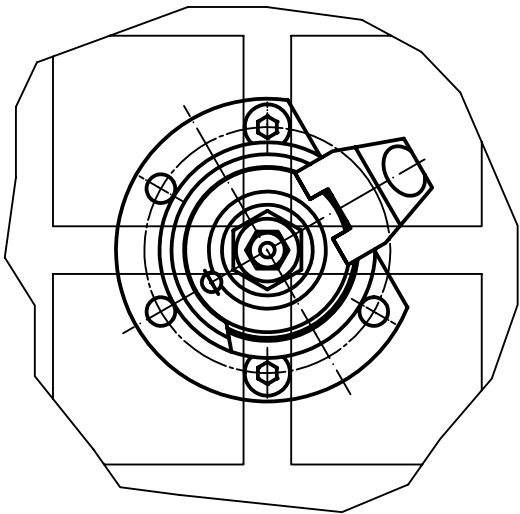
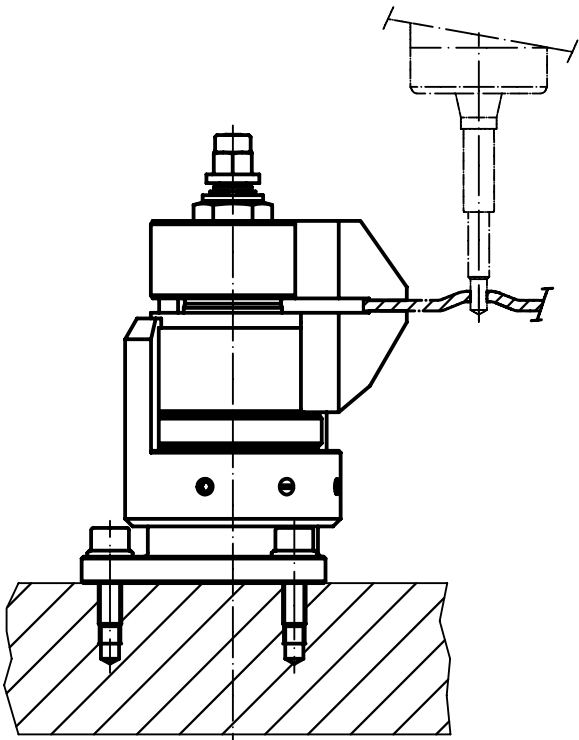
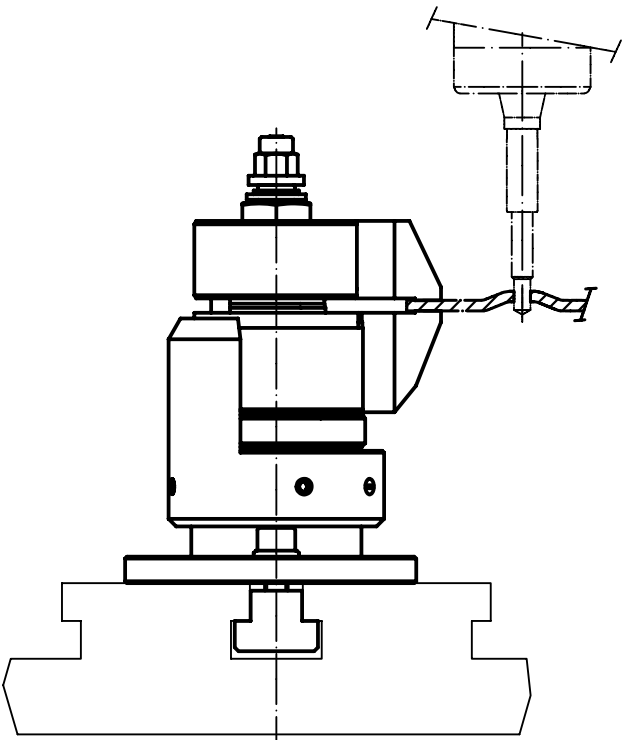


ORDER INFORMATION

	Art. No.
 [g] 1663	23320.0010

APPLICATION EXAMPLE

3



Floating Clamps • combined clamping and locking M 12

EH 23320.



PRODUCT DESCRIPTION

The floating clamp is used to **clamp and support** additional clamping points on components.

The benefits of the floating clamp are:

- Avoids vibration during the processing
- Clamps ribs, beads and shackles to reinforce clamped components
- Distortion-free clamping of raw parts.

Material

Adjustable body

- Aluminium, red anodised

Body

- Case-hardened steel, nitrided, manganese phosphated and ground

Clamping jaws

- Case-hardened steel, nitrided, manganese phosphated

Assembly

1. Mount the floating clamp (M 12 connection thread) onto the device with a wrench (WS 46).
2. Adjust the height limit stop and the rotating area with the red sleeve and clamp with a set screw (3 x WS 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 (WS 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.

MORE INFORMATION

Notes

The thread bore must always be closed for safe functioning, e.g. set screw M 12 x 10. For specific clamping situations, the standard clamping jaws supplied can be exchanged or replaced (see catalogue drawing: screw ISO 4762 - M8 - 12.9, M max. = 43 Nm).

References

Additional flexible possibility of fitting with holder 23470.0250 or holding plate for down-hold clamps 23210.0740.

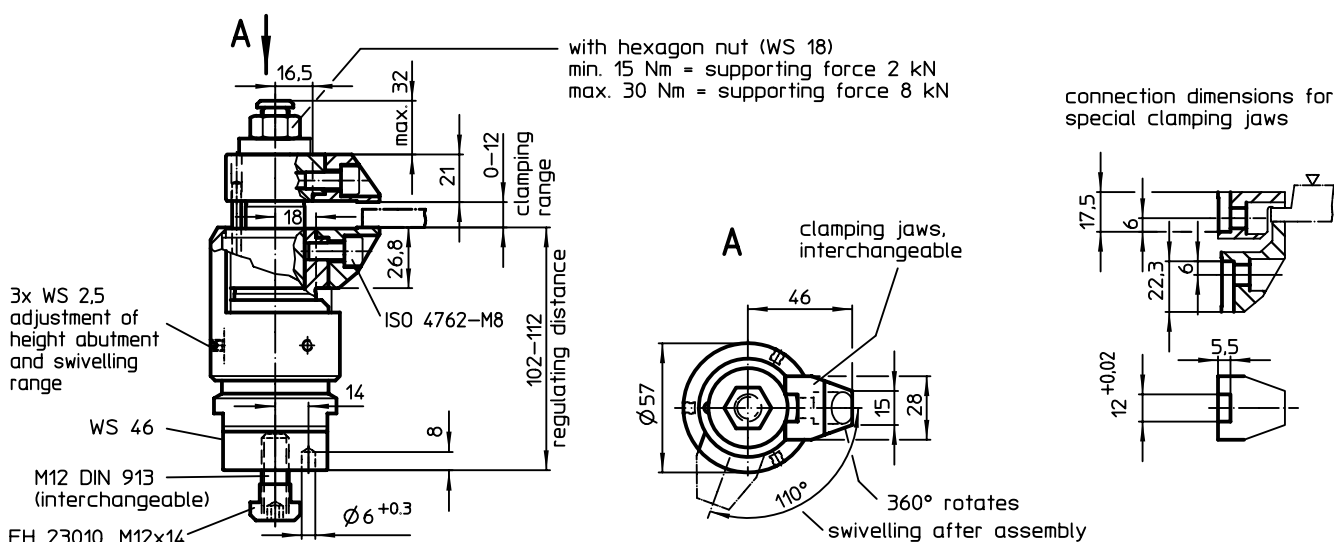
Accessories

As an accessory, we offer clamping jaws with an increased clamping range, refer to 23320.0050-.0058, as well as pivot jaws, refer to 23320.0148-.0156.

Further products

Holding Plates, for down-hold clamps. → p. 457
 Floating Clamps, separate clamping and locking M 12. → p. 489
 Standard Clamping Jaws, for floating clamp M 12. → p. 491
 Clamping Jaws, for floating clamp M 12. → p. 492

DRAWING

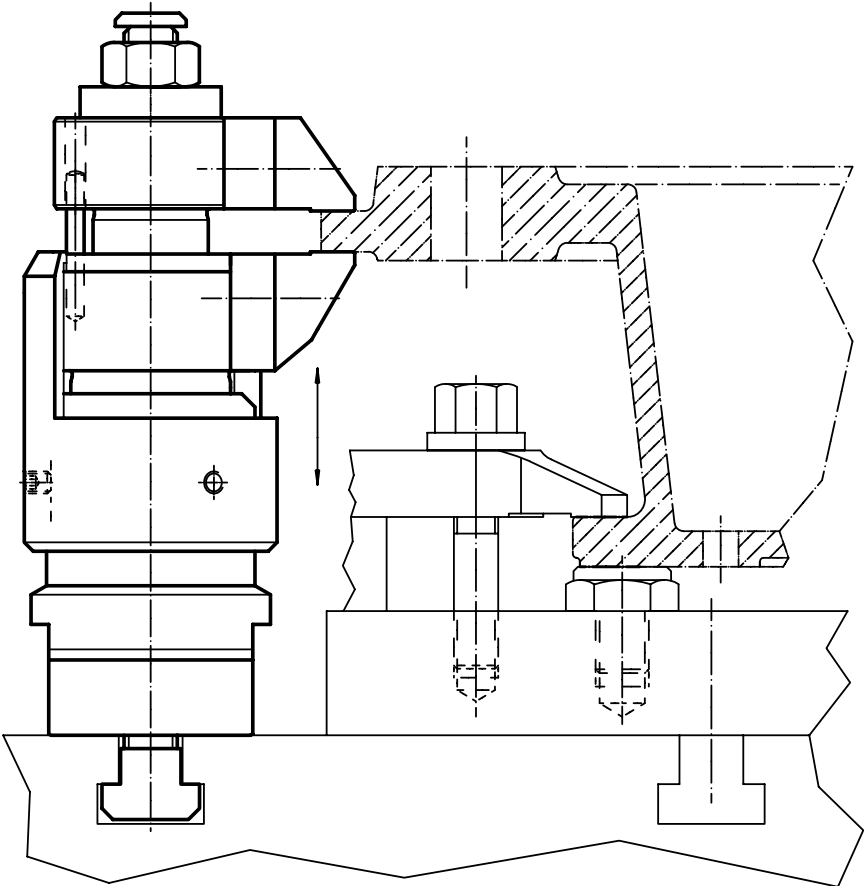
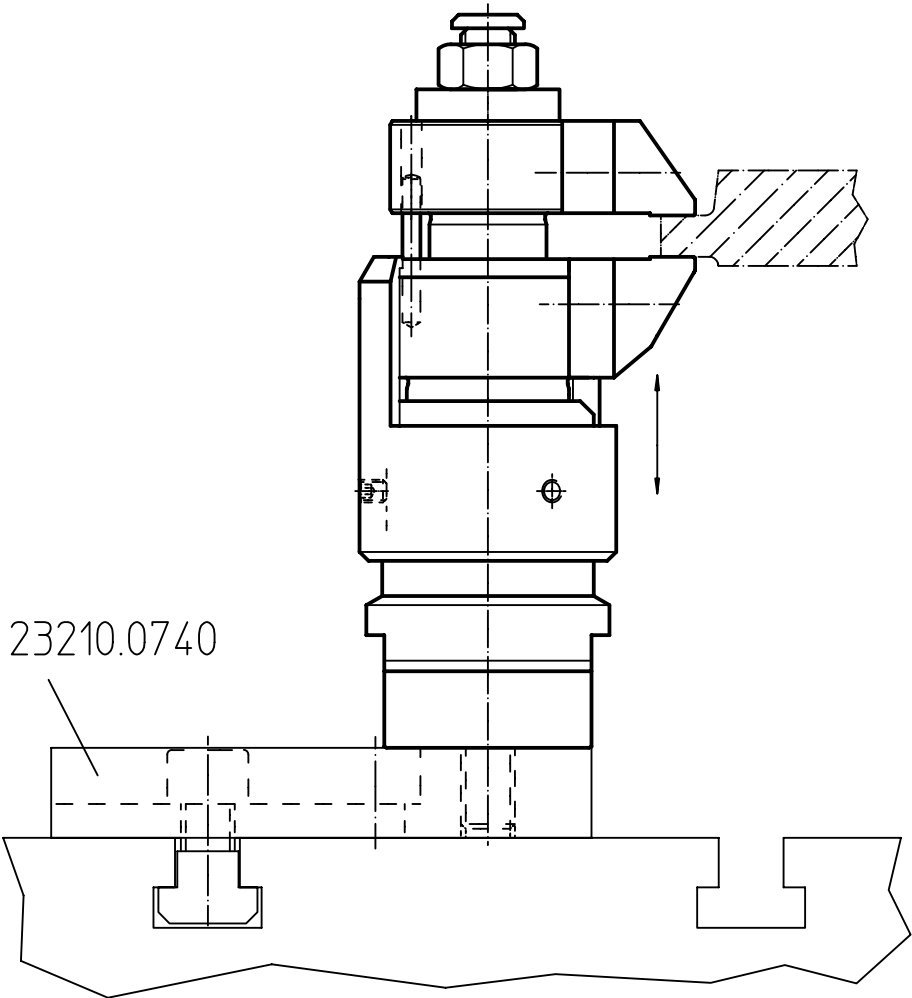


ORDER INFORMATION

[g]	Art. No.
2103	23320.0012

APPLICATION EXAMPLE

3



Floating Clamps • separate clamping and locking M 12

EH 23320.



PRODUCT DESCRIPTION

Floating clamps with separate clamping and locking are used to clamp and support additional clamping points on extremely pliable workpieces. Both, clamping and supporting force can be designed individually.

The benefits of the floating clamp are:

- Avoids vibration during the processing
- Clamps ribs, beads and shackles to reinforce clamped components
- Distortion-free clamping of raw parts.

Material

Adjustable body

- Aluminium, blue anodised

Body

- Case-hardened steel, nitrided, manganese phosphated and ground

Clamping jaws

- Case-hardened steel, nitrided, manganese phosphated

Assembly

1. Mount the floating clamp (M 12 connection thread) onto the device with a wrench (WS 46).
2. Adjust the height limit stop and the rotating area with the blue sleeve and clamp with a set screw (3 x WS 2.5). When setting the height limit, consider tolerance of workpiece.

Operation

1. Push the floating clamp downwards.
2. Pivot the clamping jaws inwards.
3. Release floating clamp. The bottom jaw contacts the workpiece with the force of the contact spring.
4. Tighten the fixture nut (WS 18) (max. torque 15 Nm). **The jaws clamp the workpiece - the clamp is still floating.**
5. Then tighten the hexagon collar nut (WS 10) (max. torque 10 Nm).
6. The workpiece clamping process is complete.

7. Releasing is performed in the reverse order: Release hexagon collar nut (WS 10) - release hexagon nut (WS 18) - pivot out the clamping jaws
8. Floating clamp is in end position.

MORE INFORMATION

Notes

The thread bore must always be closed for safe functioning, e.g. set screw M 12 x 10. For specific clamping situations, the standard clamping jaws supplied can be exchanged or replaced (see catalogue drawing: screw ISO 4762 - M8 - 12.9, M max. = 43 Nm).

References

Additional flexible possibility of fitting with holder 23470.0250 or holding plate for down-hold clamps 23210.0740.

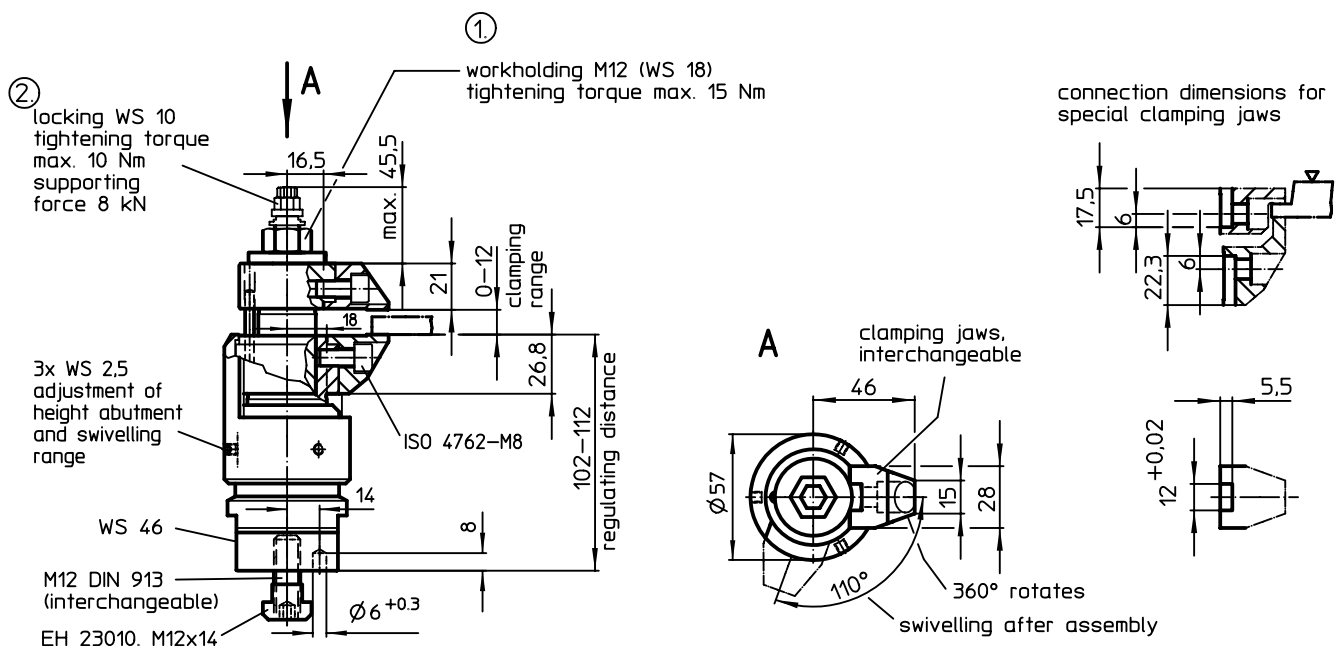
Accessories

As an accessory, we offer clamping jaws with an increased clamping range, refer to 23320.0050-.0058, as well as pivot jaws, refer to 23320.0148-.0156.

Further products

Holding Plates, for down-hold clamps → p. 457
 Floating Clamps, combined clamping and locking M 12 → p. 487
 Standard Clamping Jaws, for floating clamp M 12 → p. 491
 Clamping Jaws, for floating clamp M 12 → p. 492

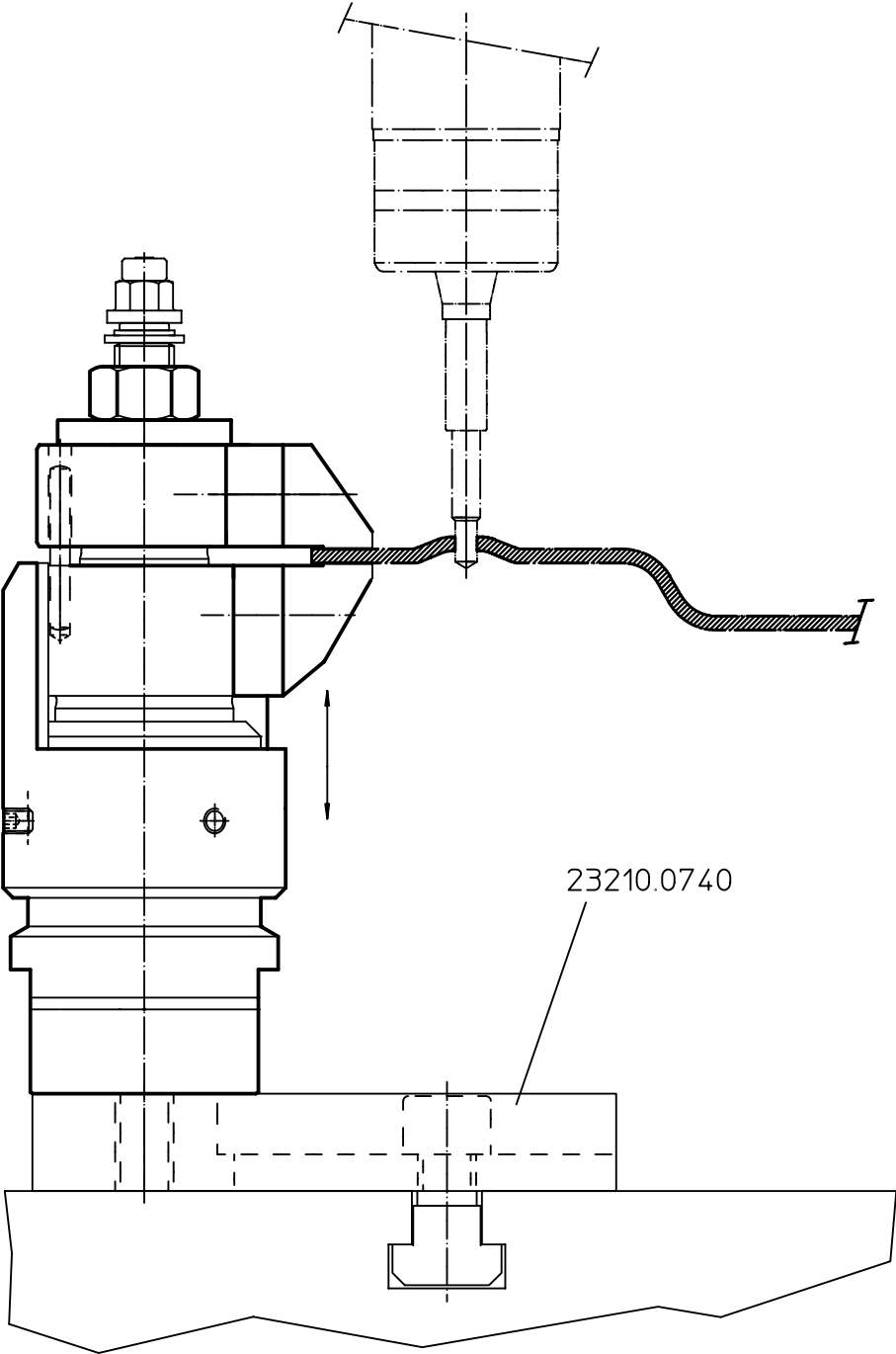
DRAWING



ORDER INFORMATION

 [g]	Art. No.
379	23320.0014

APPLICATION EXAMPLE



Standard Clamping Jaws • for floating clamp M 12
EH 23320.



PRODUCT DESCRIPTION

The clamping jaws can be used for floating clamps 23320.0008, 23320.0010, 23320.0012, and 23320.0014.

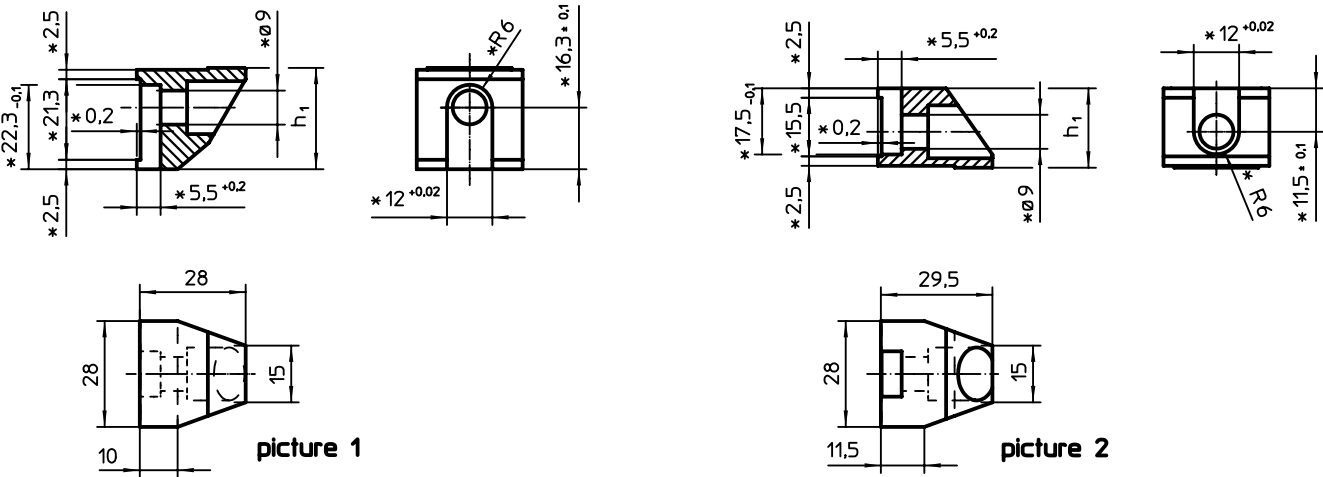
Material

- Case-hardened steel, nitrided, manganese phosphated

Assembly

When using custom-made jaws, it is important to insert the tightening screw (M 8-12.9, 43 Nm) 10 mm deep into the clamp housing on the upper clamping jaw and 9 mm deep into the clamp housing on the lower clamping jaw.

DRAWING



* Specifications and material of especially designed jaws have to be taken into consideration.

ORDER INFORMATION

Clamping range	Dimensions		Art. No.
[mm]	h_1 -0.1 [mm]	[g]	
lower standard clamping jaw – picture 1			
–	26.8	99	23320.0050
upper standard clamping jaw – picture 2			
0 – 12	21.0	69	23320.0052

Clamping Jaws • for floating clamp M 12

EH 23320.



PRODUCT DESCRIPTION

The clamping jaws can be used for floating clamps 23320.0008, 2332.0010, 23320.0012, and 23320.0014.

The upper clamping jaw (23320.0054, 23320.0056, and 23320.0058 - pictures 1 to 3) can be used to extend the clamping range.

Various standard parts can be screwed into in the upper clamping jaw as required, using locating thread M 8 (23320.0154 / .0156 - pictures 4 + 5) - see "Further products".

The lower clamping jaw with pivot function (23320.0148 - picture 6) adapts to the profiles of the workpiece.

Material

Ball

- Ball-bearing steel

Clamping jaws

- Case-hardened steel, nitrided, manganese phosphated

MORE INFORMATION

Notes

The tightening torque of the floating clamp must be adapted/reduced situationally.

Observe the surface pressure due the the

reduced contact surface of the clamping jaws.

Further products

Seating Pins, ribbed or pointed → p. 309

Ball-Ended Thrust Screws, headless, ball protected against rotating → p. 320

Ball-Ended Thrust Screws, headless, flat-faced ball → p. 327

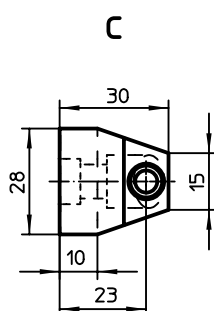
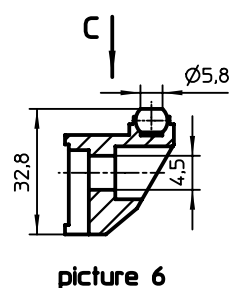
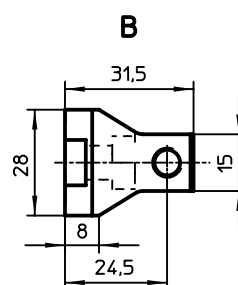
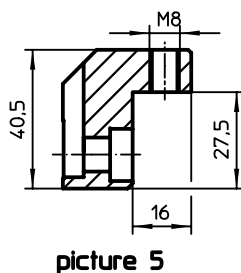
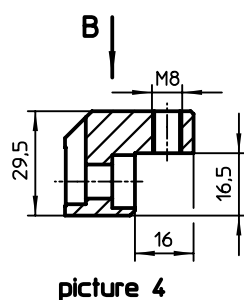
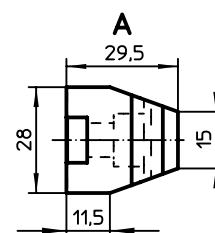
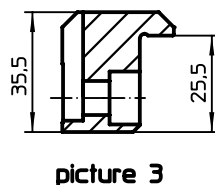
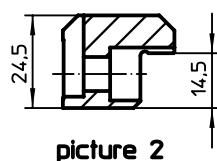
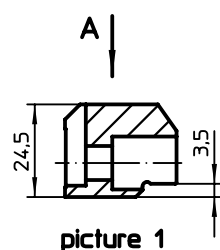
Thrust Screws, with brass pad → p. 334

Thrust Screws, with plastic pad → p. 335

Self-Aligning Pads, adjustable → p. 343

Self-Aligning Pads, adjustable, self-resetting → p. 344

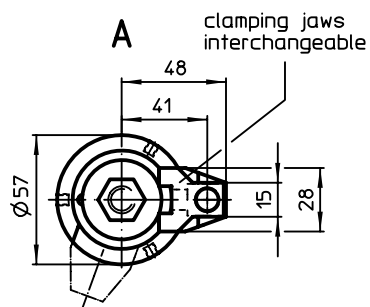
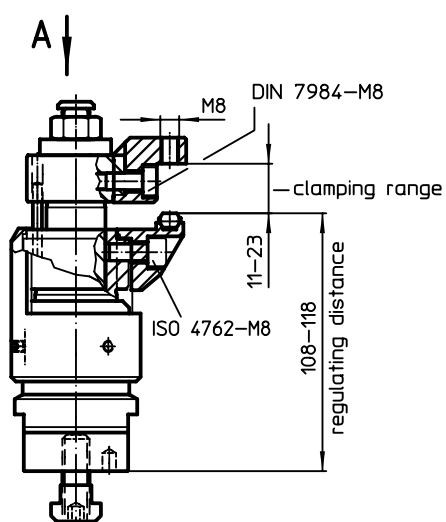
DRAWING



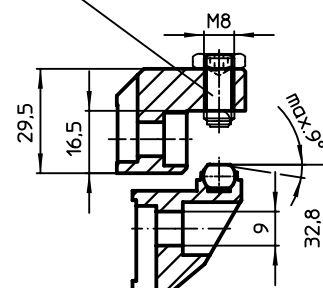
ORDER INFORMATION

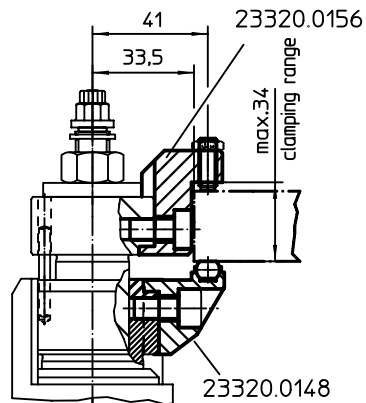
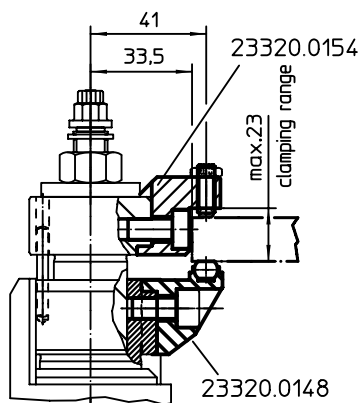
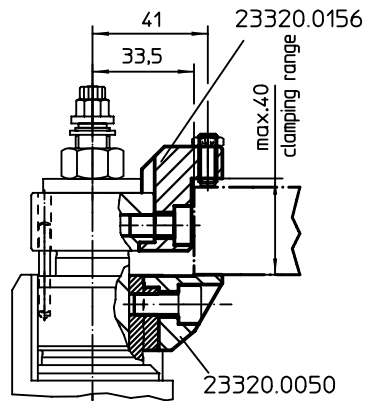
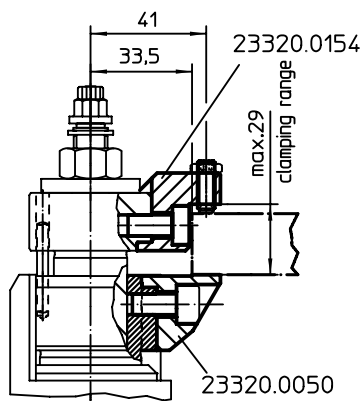
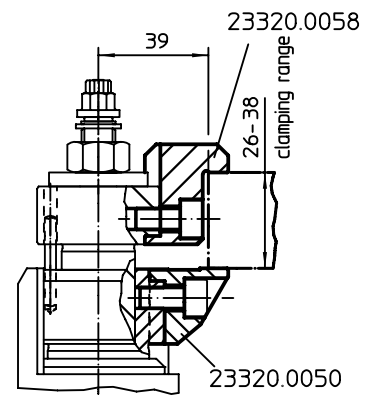
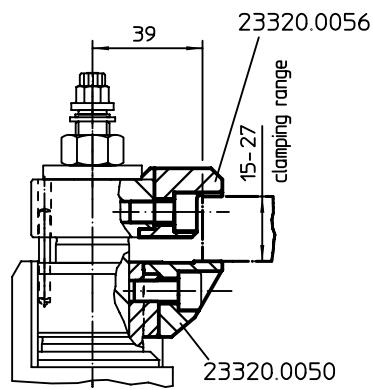
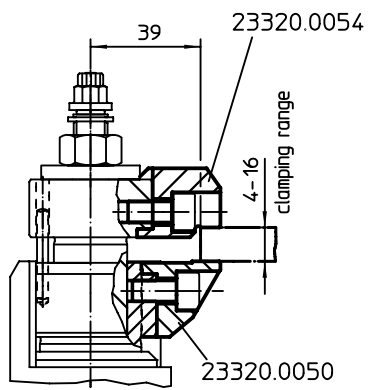
Clamping range max. in combination with 23320.0050 [mm]	Clamping range max. in combination with 23320.0148 [mm]	 [g]	Art. No.
upper exchange clamping jaw – picture 1			
4 – 16	–	91	23320.0054
upper exchange clamping jaw – picture 2			
15 – 27	–	88	23320.0056
upper exchange clamping jaw – picture 3			
26 – 38	–	130	23320.0058
upper clamping jaw with location hole – picture 4			
29	23	83	23320.0154
upper clamping jaw with location hole – picture 5			
40	34	112	23320.0156
lower clamping jaw with flat-faced ball and pivot function, plain surface, protected against rotating – picture 6			
–	–	98	23320.0148

APPLICATION EXAMPLE



e.g. Ball-Ended Thrust Screw (EH 22720.)





Floating Clamps • combined clamping and locking M 16

EH 23320.



PRODUCT DESCRIPTION

The floating clamp is used to **clamp and support** additional clamping points on components.

The benefits of the floating clamp are:

- Especially suitable for large workpieces with heavy machining
- Avoids vibration during the processing
- Clamps ribs, beads and shackles to reinforce clamped components
- Distortion-free clamping of raw parts

Material

Adjustable body

- Aluminium, red anodised

Body

- Case-hardened steel, nitrided, manganese phosphated and ground

Clamping jaws

- Case-hardened steel, nitrided, manganese phosphated

Assembly

1. Mount the floating clamp (M 16 connection thread) onto the device with a wrench (WS 55).
2. Adjust the height limit stop and the rotating area with the red sleeve and clamp with a set screw (3 x WS 3). 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 low spring load.
3. Tighten the floating clamp with a hexagonal nut (WS 24) having a min. torque of 50 Nm and a maximum torque of 115 Nm. **In the clamping process, the workpiece is clamped and simultaneously supported.**
4. Releasing is done in reverse order.

MORE INFORMATION

Accessories

For custom clamping situation, the standard upper clamping jaw supplied can be replaced by the exchange clamping jaws (23320.0062 / .0064 / .0066).

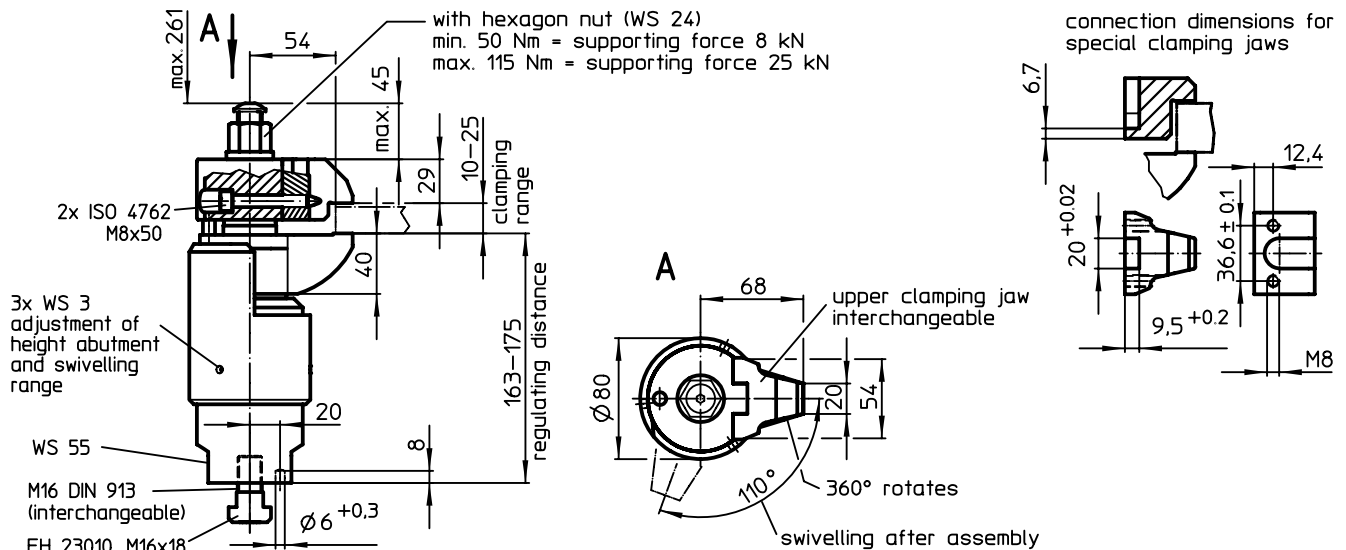
Further products

Clamping Jaws, for floating clamp

M 16..... → p. 497

Wrenches → p. 786

DRAWING

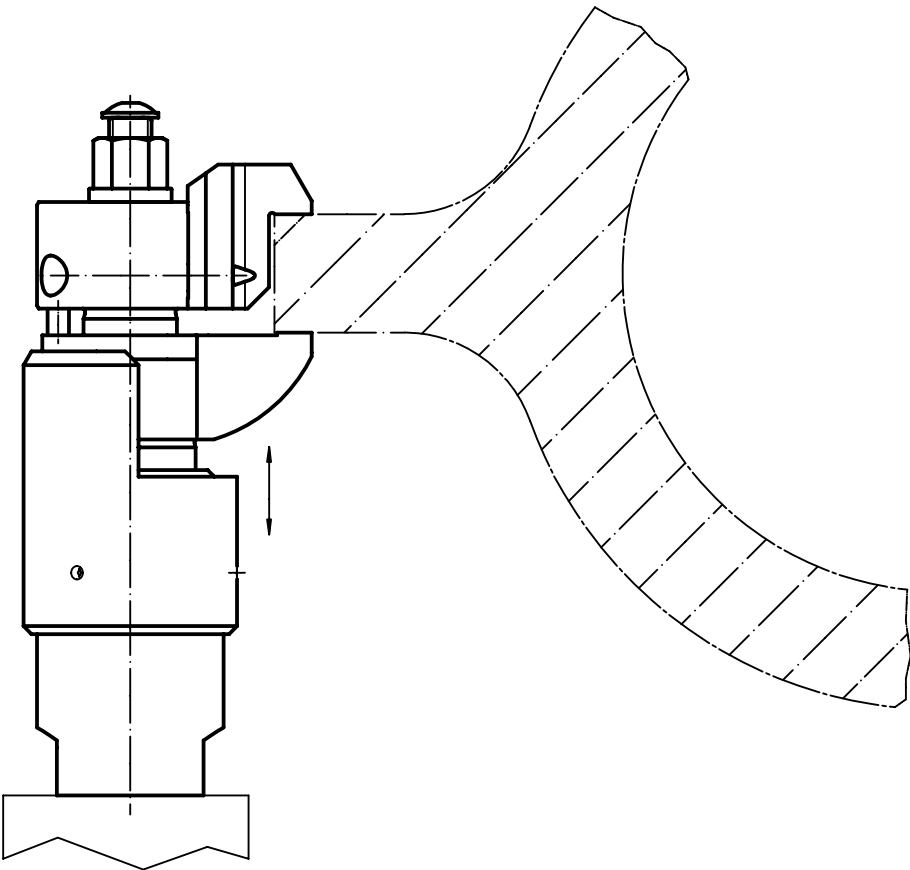


ORDER INFORMATION

		Art. No.
	[g]	
	6597	23320.0016

APPLICATION EXAMPLE

3



Clamping Jaws • for floating clamp M 16

EH 23320.

3



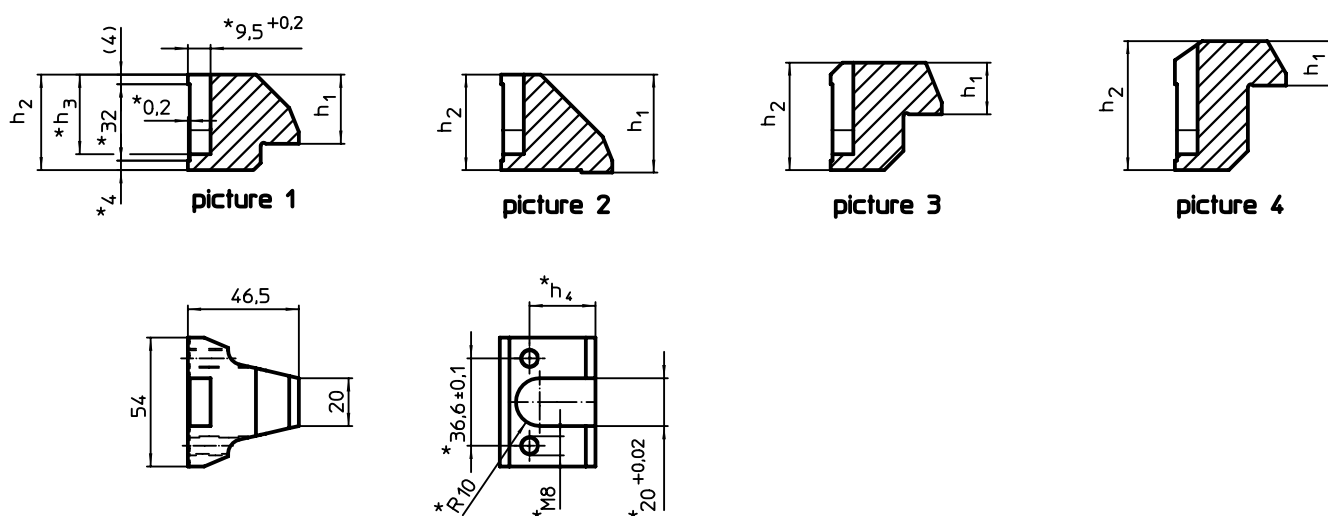
PRODUCT DESCRIPTION

The clamping jaws can be used for the floating clamp 23320.0016 to increase or decrease the clamping range.

Material

- Case-hardened steel, nitrided, manganese phosphated

DRAWING

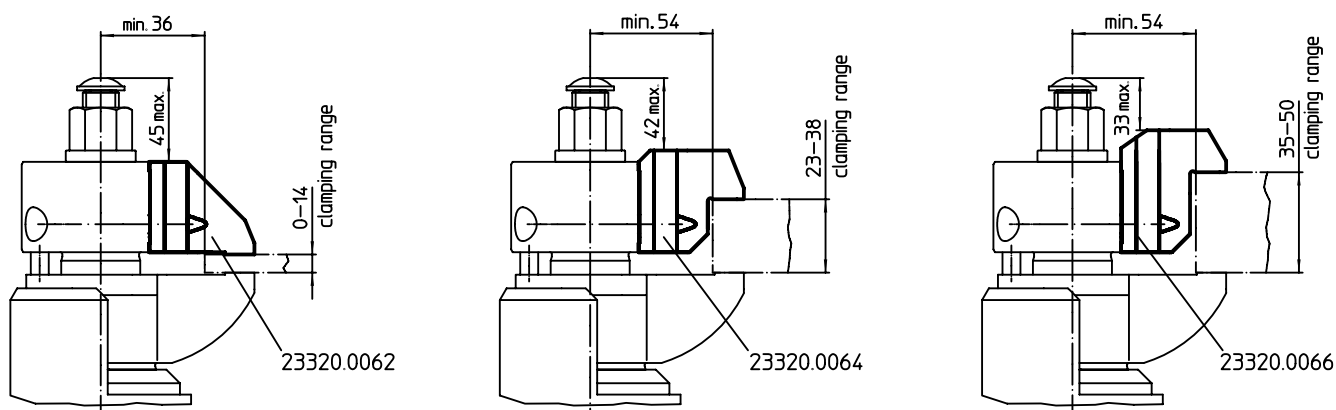


* Specifications and material of especially designed jaws have to be taken into consideration.

ORDER INFORMATION

Clamping range	Dimensions					Art. No.
[mm]	h_1	h_2	h_3	h_4		
					[g]	
upper standard clamping jaw – picture 1						
10 – 25	29.0	40	33.3	27.6	402	23320.0060
upper exchange clamping jaw – picture 2						
0 – 14	41.0	40	33.3	27.6	380	23320.0062
upper exchange clamping jaw – picture 3						
23 – 38	21.6	45	38.3	32.6	435	23320.0064
upper exchange clamping jaw – picture 4						
35 – 50	18.6	54	47.3	41.6	500	23320.0066

APPLICATION EXAMPLE



Clamping Devices Actima

EH 23260.



PRODUCT DESCRIPTION

The compact clamping element can be converted between pull and push clamping strain, depending on the model. The travel path is 10 mm. Within the short clamp travel of 2 mm, self-locking occurs in any position. The maximum permitted clamping force is 4.9 kN.

Material

Housing

- Thermoplastic, black

Body

- Steel, blackened

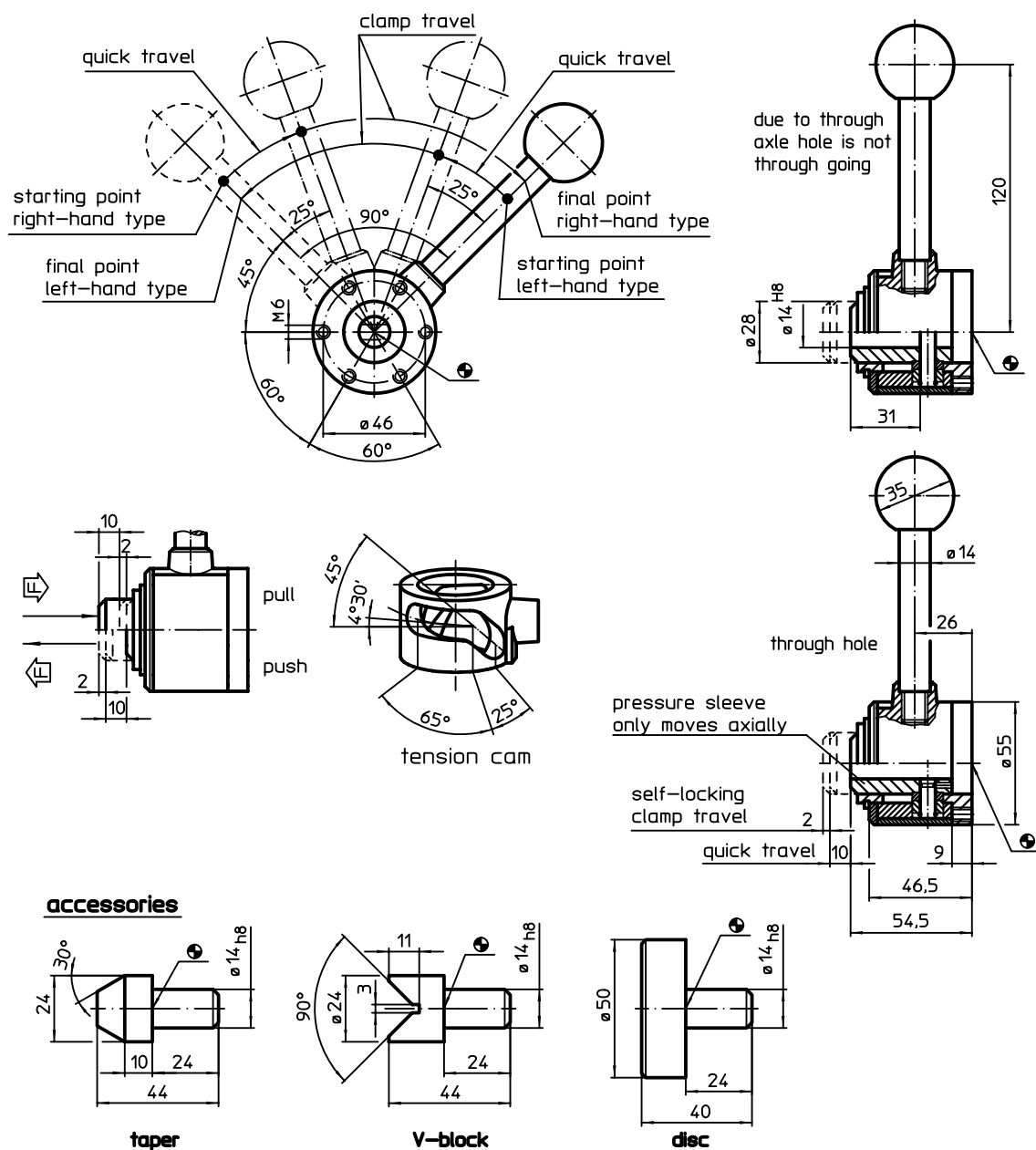
Ball knob

- DIN 7708 - thermosetting plastic (PF 31), red similar to RAL 3003

Accessories

- Steel, blackened

DRAWING



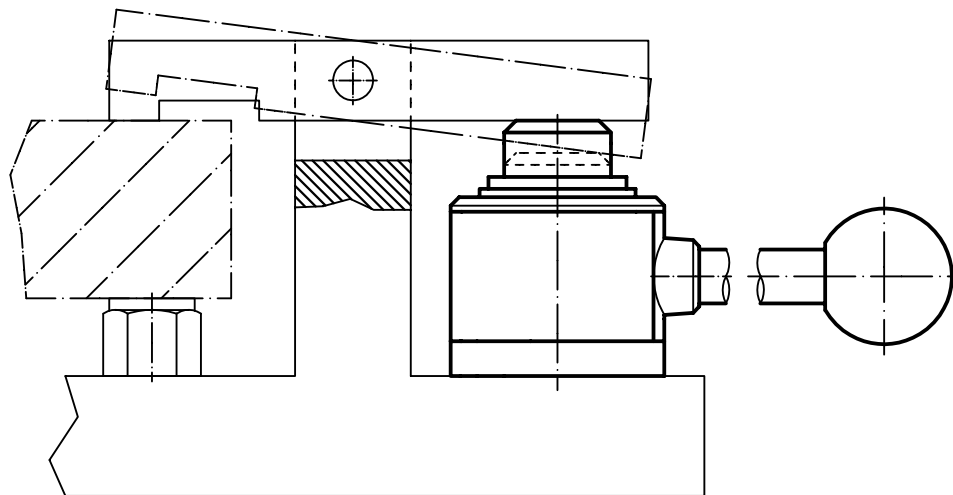
ORDER INFORMATION

Travel path	s Clamping way	Clamping force max.		Art. No.	
				with transverse axis in the bore	with throughgoing bore
[mm]	[mm]	[kN]	[g]		
pull to right					
10	2	4.9	751	23260.0003	23260.0013
pull to left					
10	2	4.9	749	23260.0005	23260.0015
push to right					
10	2	4.9	751	23260.0002	23260.0012
push to left					
10	2	4.9	749	23260.0004	23260.0014

ACCESSORIES

	 [g]	Art. No.
disc		
	270	23260.0042
taper		
	85	23260.0044
V-block		
	82	23260.0046

APPLICATION EXAMPLE



Eccentric Clamping Clamps

EH 23270.



PRODUCT DESCRIPTION

These clamps have a high clamping force for low clamping heights. The body from brass provides a gentle but safe clamping.

Material

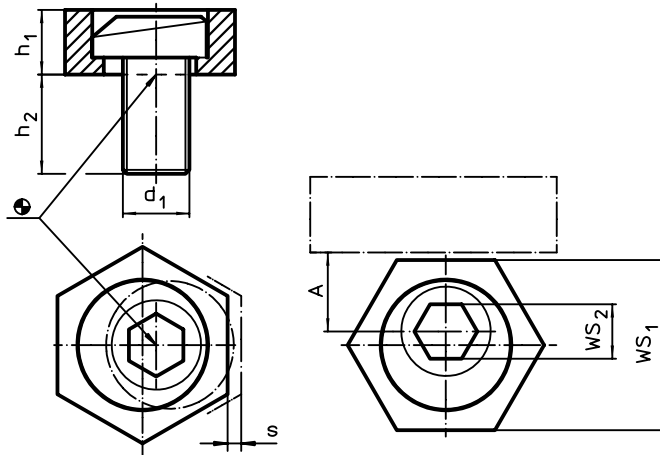
Eccentric screw

- Steel

Body

- Brass

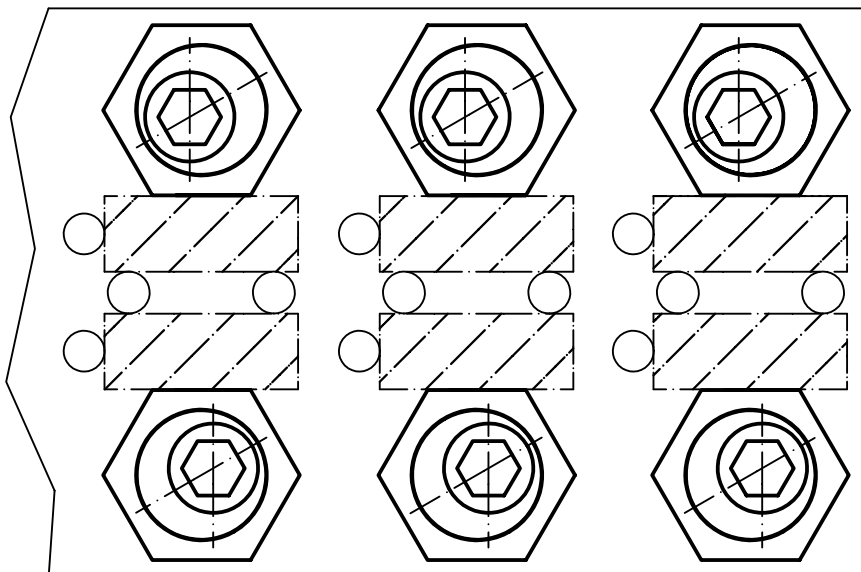
DRAWING



ORDER INFORMATION

d ₁	Dimensions			A	WS ₁	WS ₂	Clamping force max.	Tightening torque max.		Art. No.
	h ₁	h ₂	s							
[mm]				[mm]	[mm]	[mm]	[kN]	[Nm]	[g]	
M 4	2.8	9.6	0.75	3.8	7.93	3	0.9	2.5	3.5	23270.0104
M 6	4.8	11.2	1.00	7.8	15.86	4	3.4	10.0	11.0	23270.0106
M 8	4.8	15.0	1.00	10.2	20.60	5	3.6	18.0	20.0	23270.0108
M10	6.3	19.0	1.30	10.2	20.60	7	7.0	26.0	27.0	23270.0110
M12	9.5	22.8	2.00	12.7	25.40	8	9.0	75.0	54.0	23270.0112
M16	12.7	28.5	2.50	15.0	30.13	12	12.0	120.0	108.0	23270.0116

APPLICATION EXAMPLE



Eccentric Clamping Washers

EH 23270.



PRODUCT DESCRIPTION

The eccentric clamping washers are especially suitable for the clamping of raw parts, e.g. cut-off portions, cast iron parts and forgings.

Material

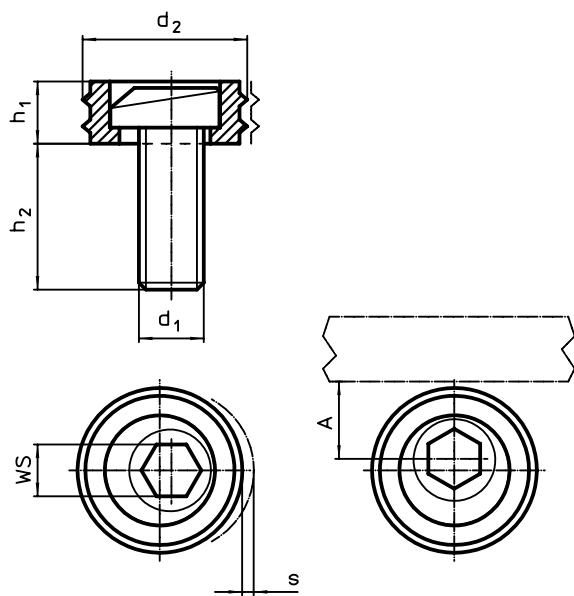
Eccentric screw

- Steel

Body

- Steel, case-hardened

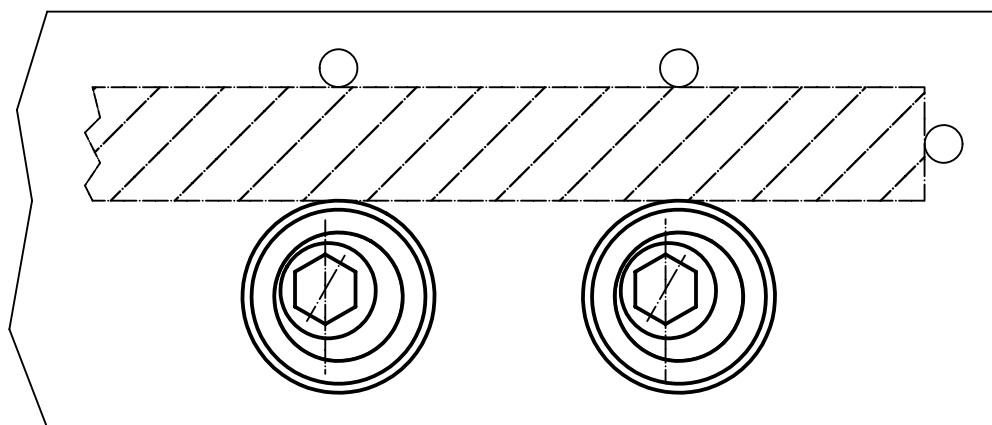
DRAWING



ORDER INFORMATION

d ₁	d ₂	Dimensions			A	WS	Clamping force max.	Tightening torque max.		Art. No.
		h ₁	h ₂	s						
		[mm]			[mm]	[mm]	[kN]	[Nm]	[g]	
M10	20.6	6.4	16.0	1.6	10.3	7	9.0	26	23	23270.0210
M12	25.4	9.6	22.5	2.0	12.7	8	17.8	88	41	23270.0212
M16	30.1	12.7	26.8	2.5	15.0	12	26.7	135	92	23270.0216

APPLICATION EXAMPLE



Eccentric Clamps

EH 23271.



PRODUCT DESCRIPTION

The eccentric clamp allows clamping with pull-down effect on different workpiece forms at low height.

Material

- Case-hardened steel, case-hardened and blue zinc-plated

Assembly

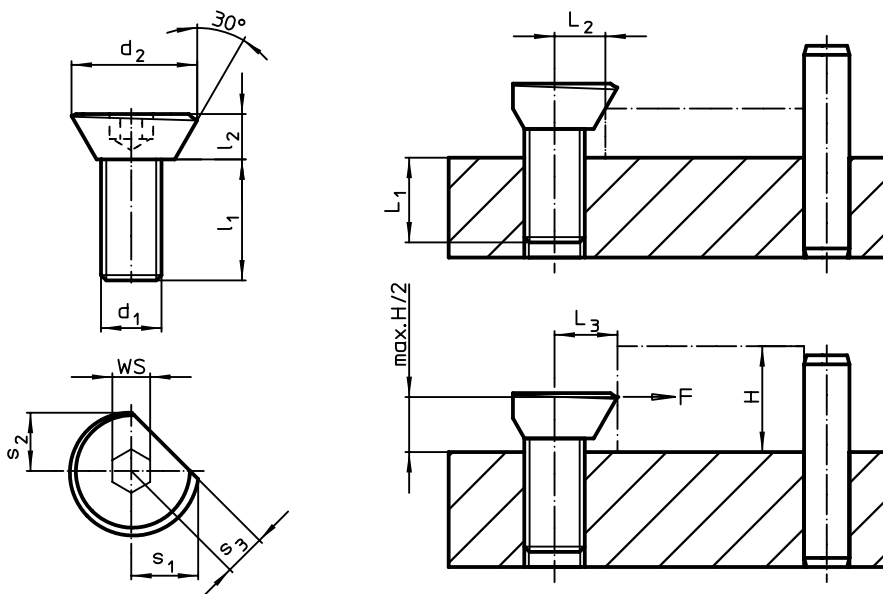
1. Manufacture a thread with the corresponding distance L_2 / L_3 to the workpiece.
2. Screw in the eccentric clamp at the necessary height and set it relative to the workpiece with its flat side.

3. Insert the workpiece and tighten the clamping pin using the internal hexagon. The proper tension is achieved after approx. 1/3 turn.

The threaded hole must be lubricated on a regular basis.

The rotational movement during tightening must always be completed towards the stops in order to prevent the workpiece from turning away from the stops.

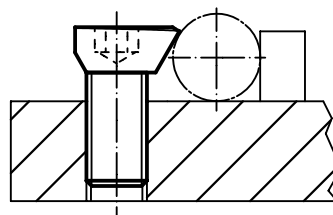
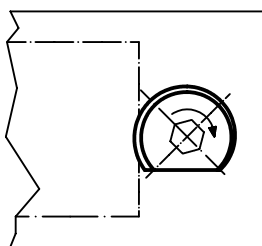
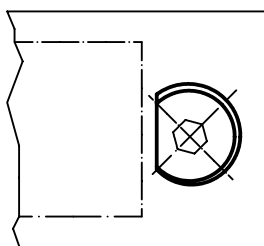
DRAWING



ORDER INFORMATION

Dimensions							L_1	L_2	L_3 ± 0.2	WS	Clamping force max.	Tightening torque max.		Art. No.
d_1	d_2	l_1	l_2	s_1	s_2	s_3	[mm]	[mm]	[mm]	[mm]	[kN]	[Nm]	[g]	
M 3	6.7	6	2	3.5	2.9	2.2	3	3.0	3.2	2.0	0.05	1.0	0.6	23271.0003
M 4	8.7	8	3	4.6	4.0	3.0	4	3.5	4.2	2.5	0.09	1.5	1.4	23271.0004
M 5	10.9	10	4	5.7	5.0	3.5	5	4.2	5.2	3.0	0.10	2.0	2.8	23271.0005
M 6	13.5	12	5	7.1	6.1	4.5	6	5.4	6.4	4.0	0.30	4.5	4.9	23271.0006
M 8	16.9	16	6	8.9	7.7	5.5	8	6.6	8.0	5.0	2.70	20.0	11.0	23271.0008
M10	20.9	20	7	11.1	9.4	6.5	10	8.3	9.8	6.0	4.00	30.0	20.0	23271.0010
M12	26.1	24	9	13.5	11.6	8.0	12	10.1	12.0	8.0	5.40	44.0	35.0	23271.0012

APPLICATION EXAMPLE



Double Eccentric Levers • with fulcrum pin

EH 23380.



PRODUCT DESCRIPTION

Clamping on both sides.

Material

Fulcrum Pins

- Steel, case-hardened

Lever

- Alloyed case-hardened steel, case-hardened, blackened

Safety ring

- Spring steel

MORE INFORMATION

References

Can be used in combination with swing bolts DIN 444, M12 (EH 22980.).

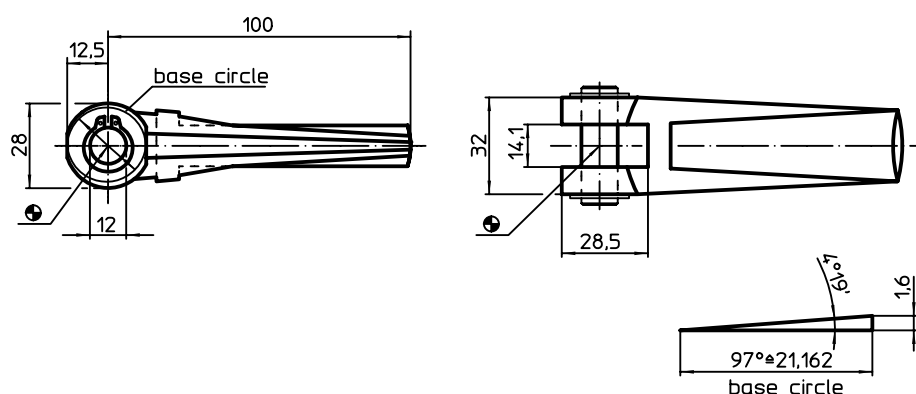
Further products

Swing Bolts, DIN 444, form B → p. 375

Swing Bolts, DIN 444, form B, quality

8.8 high precision design. → p. 376

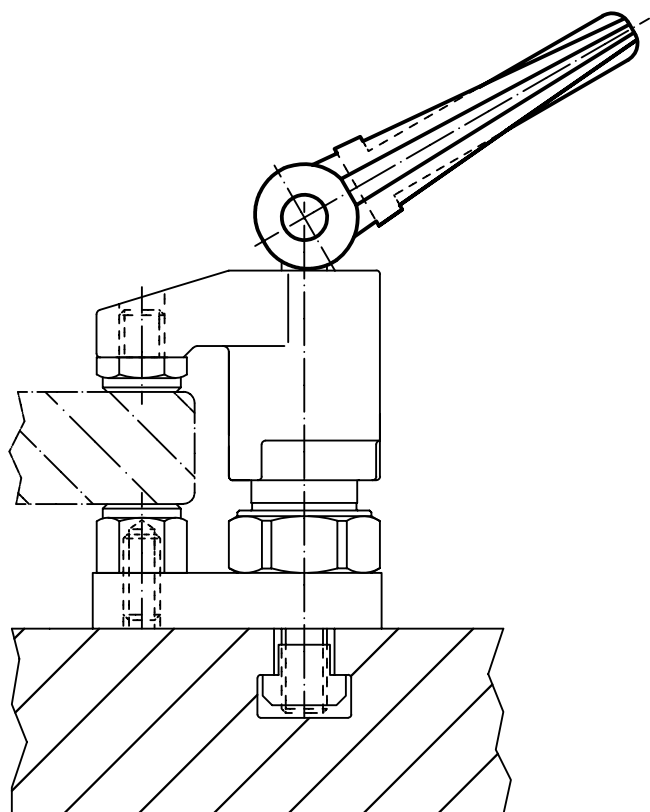
DRAWING



ORDER INFORMATION

Dimensions Bore Hole [mm]	 [g]	Art. No.
12	341	23380.0012

APPLICATION EXAMPLE



Eccentric Levers • with fulcrum pin

EH 23390.



PRODUCT DESCRIPTION

The eccentric levers have an eccentric clamping range of 160°.

Material

- Stainless steel 1.4301

Fulcrum Pins

- Stainless steel 1.4021, heat-treated

Safety ring

- Stainless steel 1.4310

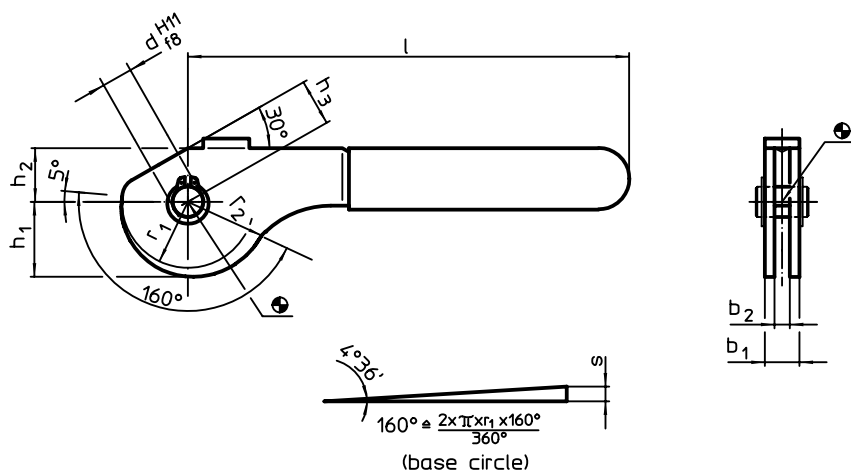
Eccentric part

- Steel St. 52-3, zinc phosphated

Plastic cap

- PVC, red

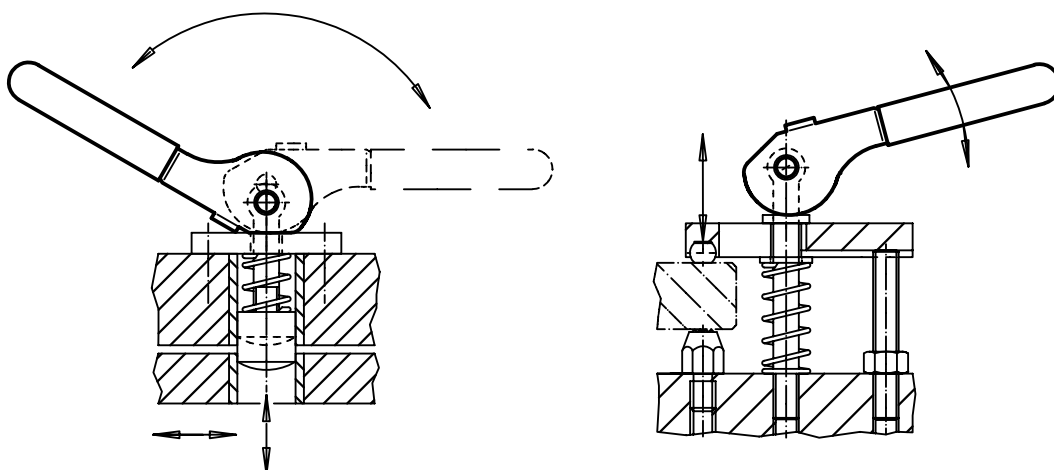
DRAWING



ORDER INFORMATION

Dimensions									Eccentric stroke s	Total stroke r ₂ -h ₃	max.		Art. No.
b ₁	d H11 f8	l	r ₁	r ₂	b ₂	h ₁	h ₂	h ₃	[mm]	[mm]	[°C]	[g]	
steel													
13	8	114	17.2	21.07	9	19.54	14	12	3.87	9.07	60	92	23390.0408
17	10	138	21.6	26.45	12	24.54	17	15	4.85	11.45	60	179	23390.0410
20	12	157	28.0	34.29	14	31.81	21	18	6.29	16.29	60	286	23390.0412
stainless steel													
13	8	114	17.2	21.07	9	19.54	14	12	3.87	9.07	60	94	23390.0508
17	10	138	21.6	26.45	12	24.54	17	15	4.85	11.45	60	179	23390.0510
20	12	157	28.0	34.29	14	31.81	21	18	6.29	16.29	60	290	23390.0512

APPLICATION EXAMPLE



Eccentric Quick Clamps • with female thread

EH 23390.



PRODUCT DESCRIPTION

For quick and easy clamping and releasing of workpieces.
When using the "adjustable" design (picture 2) the lever position can be moved.

Material

Support washer

- Thermoplastic PA, glass-fiber reinforced
- Thermoplastic POM, glass-fiber reinforced

Lever

- Zinc die-cast, plastic coated, black, similar to RAL 9005

Threaded part

- Steel, zinc-plated by galvanization
- Stainless steel 1.4305

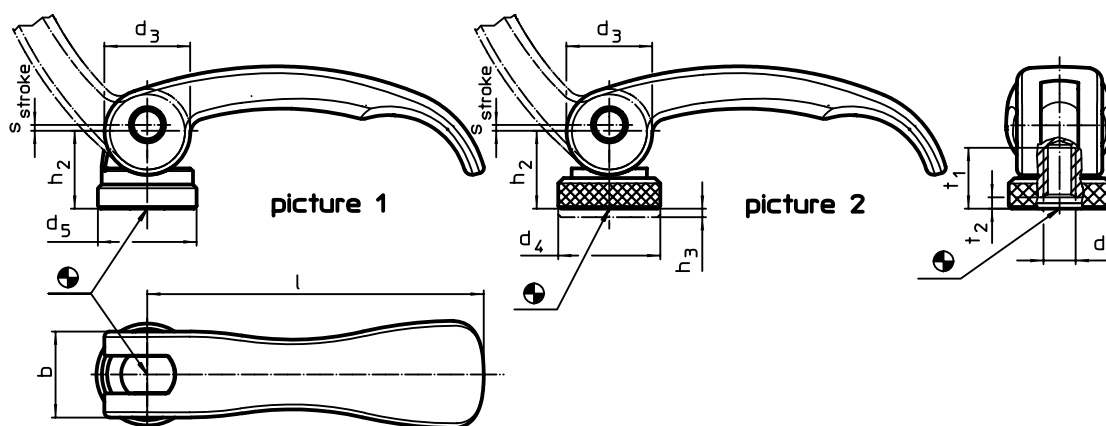
Inner parts

- Steel, zinc-plated by galvanization
- Stainless steel 1.4305

Adjusting nut

- Steel, zinc-plated by galvanization
- Stainless steel 1.4305

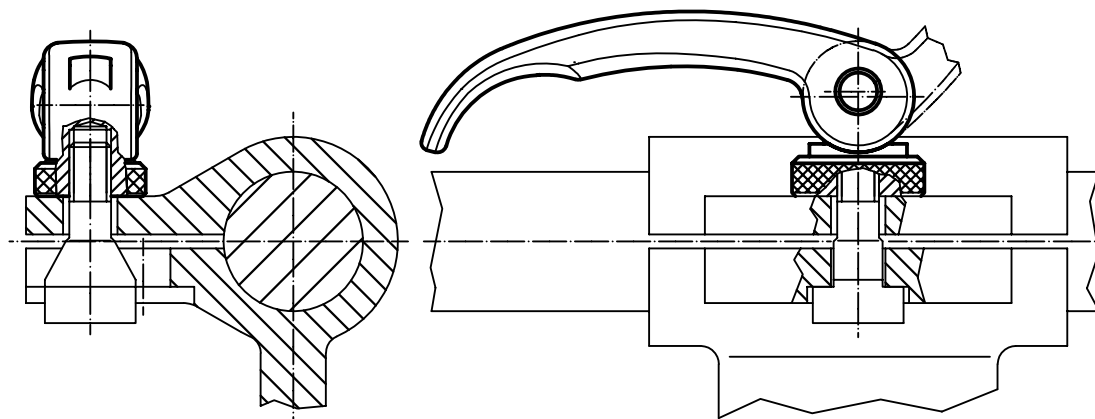
DRAWING



ORDER INFORMATION

Dimensions										Stroke s at 90° lever position	max.		Art. No.	
l	d ₁	d ₃	d ₄	d ₅	h ₂ max.	Regulating- range h ₃ min.	b	t ₁	t ₂ min. in clamp- ing position	[mm]	[°C]	[g]	Steel	Stainless steel
[mm]														
with female thread – picture 1														
63	M5	16	–	18.5	16.4	–	16	13	3.0	0.75	80	60	23390.0003	23390.0203
	M6	16	–	18.5	16.4	–	16	13	3.0	0.75	80	58	23390.0001	23390.0201
82	M8	20	–	22.5	19.5	–	20	15	3.7	1.00	80	118	23390.0002	23390.0202
with female thread, adjustable – picture 2														
63	M5	16	19	–	16.4	1.5	16	13	3.0	0.75	80	66	23390.0103	23390.0303
	M6	16	19	–	16.4	1.5	16	13	3.0	0.75	80	65	23390.0101	23390.0301
82	M8	20	25	–	19.5	2.5	20	15	3.7	1.00	80	131	23390.0102	23390.0302

APPLICATION EXAMPLE



Eccentric Quick Clamps • with screw

EH 23390.



PRODUCT DESCRIPTION

For quick and easy clamping and releasing of workpieces.
When using the "adjustable" design (picture 2) the lever position can be moved.

Material

Support washer

- Thermoplastic PA, glass-fiber reinforced
- Thermoplastic POM, glass-fiber reinforced

Lever

- Zinc die-cast, plastic coated, black, similar to RAL 9005

Inner parts

- Steel, zinc-plated by galvanization
- Stainless steel 1.4305

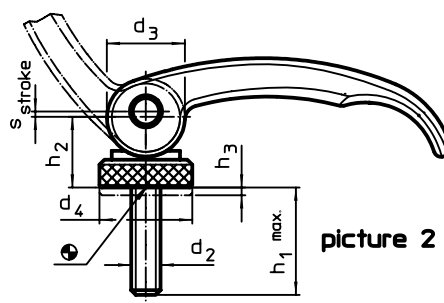
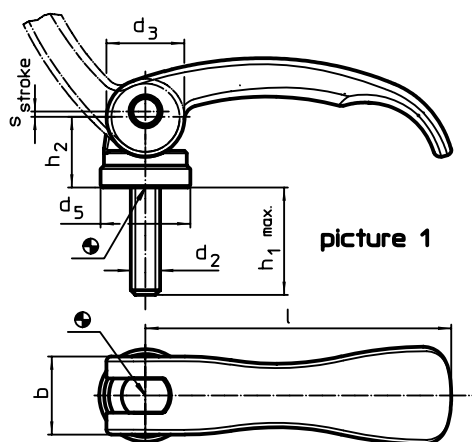
Screw

- Steel, zinc-plated by galvanization
- Stainless steel 1.4305

Adjusting nut

- Steel, zinc-plated by galvanization
- Stainless steel 1.4305

DRAWING



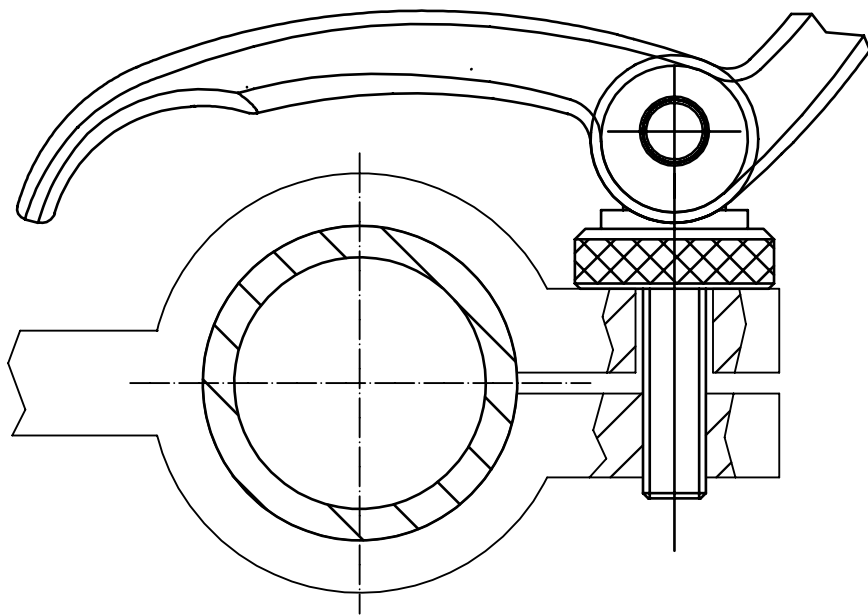
ORDER INFORMATION

l	Dimensions							Stroke s at 90° lever position	 max.	 [g]	Art. No.		
	d ₂	h ₁ max. in clamping position	d ₃	d ₄	d ₅	h ₂ max.	Regulating- range h ₃ min.				b	Steel	Stainless steel
	[mm]										[mm]	[°C]	
with screw – picture 1													
63	M5	16	16	–	18.5	16.4	–	16	0.75	80	62	23390.0030	23390.0230
		20	16	–	18.5	16.4	–	16	0.75	80	63	23390.0031	23390.0231
		25	16	–	18.5	16.4	–	16	0.75	80	63	23390.0032	23390.0232
		30	16	–	18.5	16.4	–	16	0.75	80	65	23390.0033	23390.0233
		35	16	–	18.5	16.4	–	16	0.75	80	65	23390.0034	23390.0234
		40	16	–	18.5	16.4	–	16	0.75	80	65	23390.0035	23390.0235
	M6	50	16	–	18.5	16.4	–	16	0.75	80	67	23390.0036	23390.0236
		16	16	–	18.5	16.4	–	16	0.75	80	63	23390.0009	23390.0209
		20	16	–	18.5	16.4	–	16	0.75	80	65	23390.0010	23390.0210
		25	16	–	18.5	16.4	–	16	0.75	80	65	23390.0011	23390.0211
		30	16	–	18.5	16.4	–	16	0.75	80	65	23390.0012	23390.0212
		35	16	–	18.5	16.4	–	16	0.75	80	66	23390.0013	23390.0213
82	M8	40	16	–	18.5	16.4	–	16	0.75	80	68	23390.0014	23390.0214
		50	16	–	18.5	16.4	–	16	0.75	80	69	23390.0016	23390.0216
		20	20	–	22.5	19.5	–	20	1.00	80	128	23390.0019	23390.0219
		25	20	–	22.5	19.5	–	20	1.00	80	129	23390.0020	23390.0220
		30	20	–	22.5	19.5	–	20	1.00	80	132	23390.0021	23390.0221
		35	20	–	22.5	19.5	–	20	1.00	80	134	23390.0022	23390.0222
		40	20	–	22.5	19.5	–	20	1.00	80	136	23390.0023	23390.0223
		50	20	–	22.5	19.5	–	20	1.00	80	138	23390.0025	23390.0225
		60	20	–	22.5	19.5	–	20	1.00	80	142	23390.0027	23390.0227



Dimensions									Stroke s at 90° lever position	 max.	 [g]	Art. No.		
I	d ₂	h ₁ max. in clamping position	d ₃	d ₄	d ₅	h ₂ max.	Regulating- range h ₃ min.	b				Steel	Stainless steel	
[mm]									[mm]	[°C]	[g]			
with screw, adjustable – picture 2														
63	M5	16	16	19	–	16.4	1.5	16	0.75	80	68	23390.0130	23390.0330	
		20	16	19	–	16.4	1.5	16	0.75	80	69	23390.0131	23390.0331	
		25	16	19	–	16.4	1.5	16	0.75	80	69	23390.0132	23390.0332	
		30	16	19	–	16.4	1.5	16	0.75	80	71	23390.0133	23390.0333	
		35	16	19	–	16.4	1.5	16	0.75	80	71	23390.0134	23390.0334	
		40	16	19	–	16.4	1.5	16	0.75	80	72	23390.0135	23390.0335	
		50	16	19	–	16.4	1.5	16	0.75	80	73	23390.0136	23390.0336	
	M6	16	16	19	–	16.4	1.5	16	0.75	80	69	23390.0109	23390.0309	
		20	16	19	–	16.4	1.5	16	0.75	80	70	23390.0110	23390.0310	
		25	16	19	–	16.4	1.5	16	0.75	80	72	23390.0111	23390.0311	
		30	16	19	–	16.4	1.5	16	0.75	80	72	23390.0112	23390.0312	
		35	16	19	–	16.4	1.5	16	0.75	80	70	23390.0113	23390.0313	
		40	16	19	–	16.4	1.5	16	0.75	80	74	23390.0114	23390.0314	
		50	16	19	–	16.4	1.5	16	0.75	80	75	23390.0116	23390.0316	
	82	M8	20	20	25	–	19.5	2.5	20	1.00	80	142	23390.0119	23390.0319
			25	20	25	–	19.5	2.5	20	1.00	80	145	23390.0120	23390.0320
30			20	25	–	19.5	2.5	20	1.00	80	146	23390.0121	23390.0321	
35			20	25	–	19.5	2.5	20	1.00	80	140	23390.0122	23390.0322	
40			20	25	–	19.5	2.5	20	1.00	80	149	23390.0123	23390.0323	
50			20	25	–	19.5	2.5	20	1.00	80	152	23390.0125	23390.0325	
60			20	25	–	19.5	2.5	20	1.00	80	155	23390.0127	23390.0327	

APPLICATION EXAMPLE



Fulcrum Pins
EH 23400.



PRODUCT DESCRIPTION

Material

Fulcrum Pins

- Stainless steel 1.4021, heat-treated

Safety ring

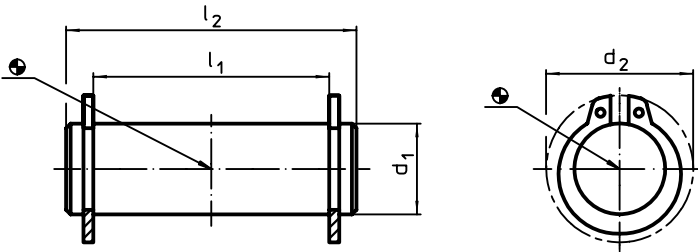
- Stainless steel 1.4310

MORE INFORMATION

References

Suitable for eccentric levers EH 23390. and similar applications.

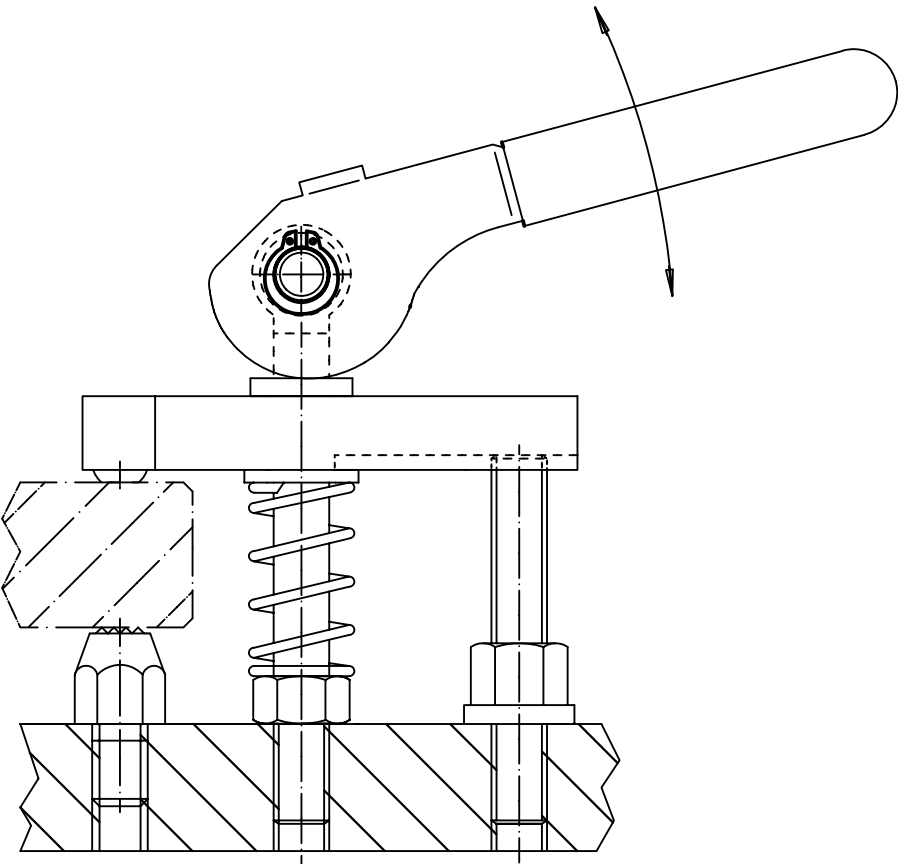
DRAWING



ORDER INFORMATION

d ₁ f8	Dimensions			 [g]	Art. No.
	l ₁ -0.5 [mm]	d ₂	l ₂		
8	14	14.7	18	9.8	23400.0082
	21	14.7	27	12.0	23400.0085
10	18	17.0	24	19.0	23400.0102
	29	17.0	35	21.0	23400.0105
12	21	19.0	27	26.0	23400.0122
	31	19.0	37	34.0	23400.0125

APPLICATION EXAMPLE



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

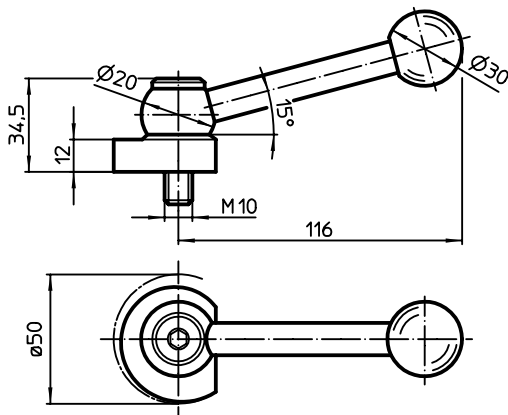
The screw bolt and the washer are adjustable. Once screwed in, the clamping catch can easily be turned to the desired position. For Art. No. 23410.0050 / .0051, the serration helps to put the tension lever to the preferred position.

MORE INFORMATION

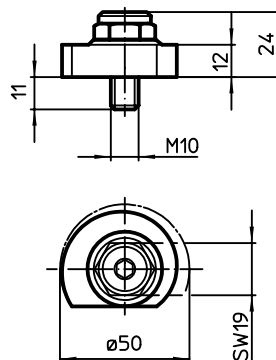
Notes

Left turn type can be supplied on request.

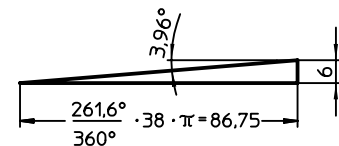
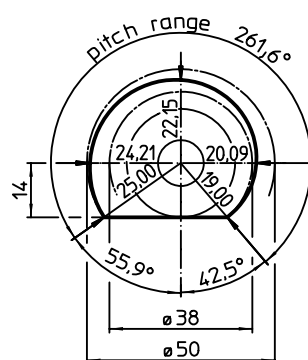
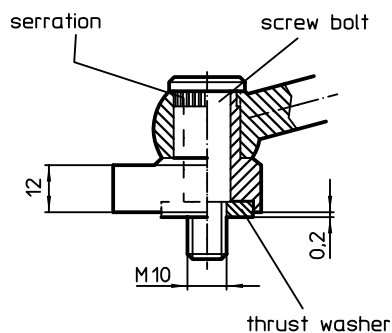
DRAWING



picture 1



picture 2



ORDER INFORMATION

	Art. No.	
	Steel	Stainless steel
[g]		
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

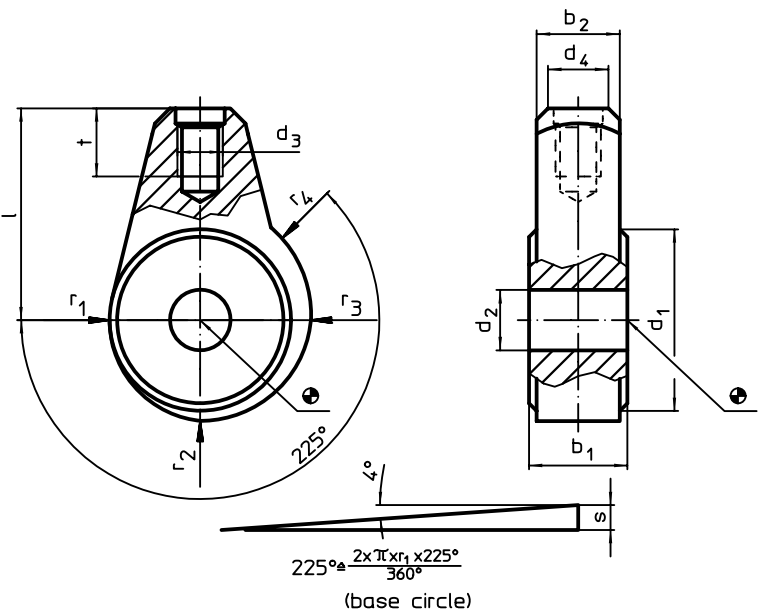
Gear Lever Handles → p. 597

MORE INFORMATION

References

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

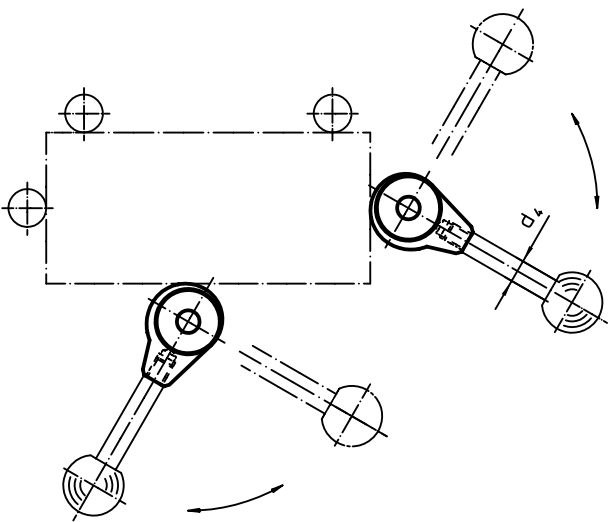
DRAWING



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



DOWN-THRUST CLAMPS

CLAMPED TO EXACTLY THE RIGHT SPOT

The down-thrust clamp is a universal mechanical clamping element for the fast and convenient changing and clamping of workpieces using clamping elements that can be swivelled by hand. Fast tool changes are important to cost-efficient production. The various down-thrust clamps from Erwin Halder KG offer simple and compact handling and, thanks to their height adjusting cylinders, are able to reach high clamping heights.

A special version has been created for point-accurate repeat clamping: a special positioning ring allows workpieces to always be securely clamped to the same point.



Down-Thrust Clamps • swivelling, size 25

EH 23310.

3



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 mounting plate of, for example, a fixture
The cylinder must make contact over the whole surface.

MORE INFORMATION

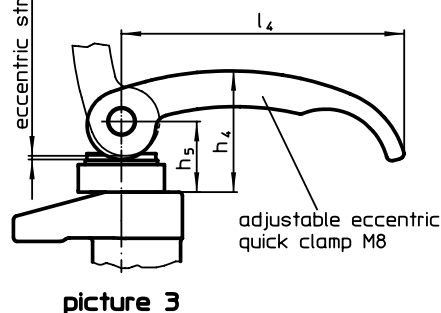
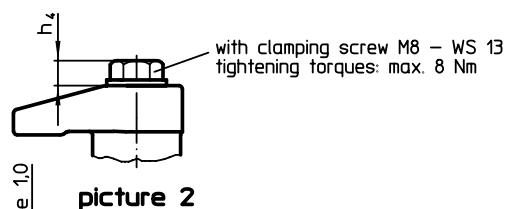
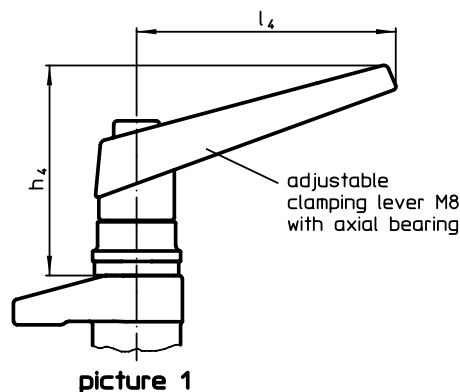
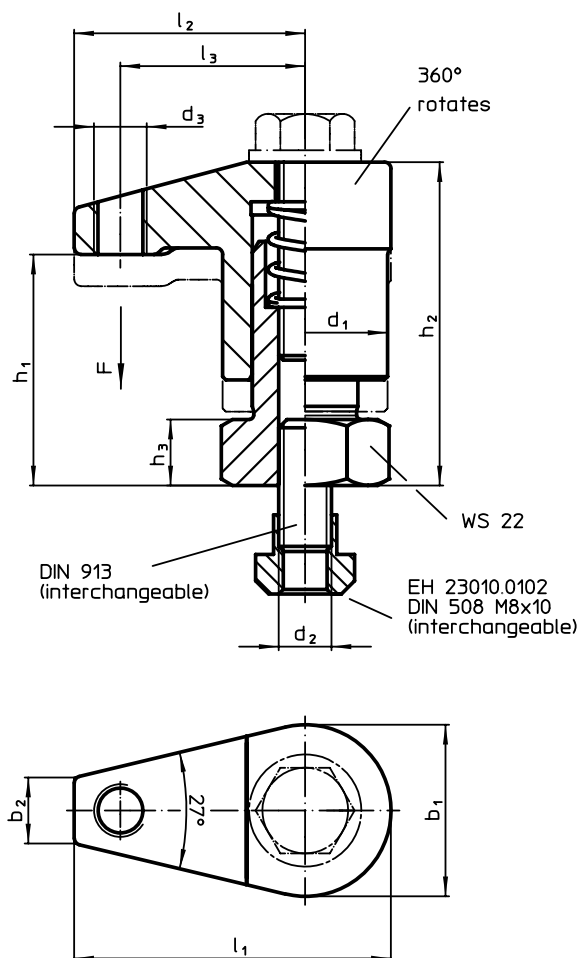
References

The clamping height can be increased with 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

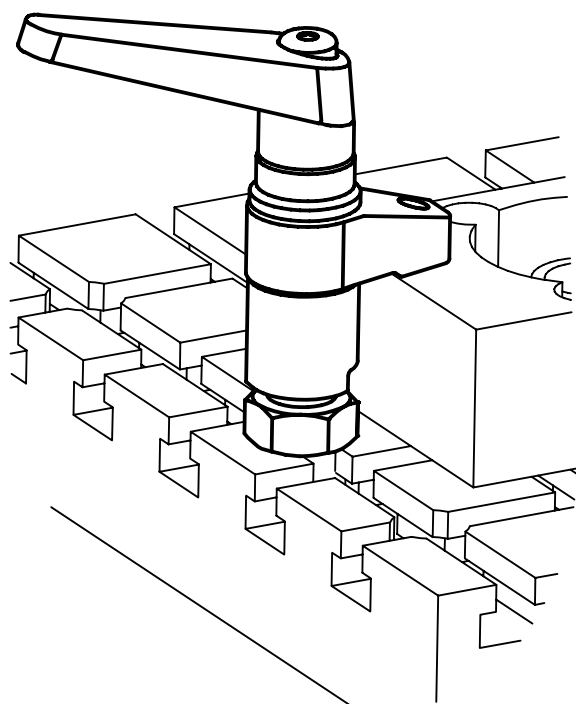


ORDER INFORMATION

Dimensions														Stroke	Clamp- ing force	Tight- ening torque max.		Art. No.
d ₁	b ₁	b ₂	d ₂	d ₃	h ₁	h ₂	h ₃	h ₄	h ₅	l ₁	l ₂	l ₃	l ₄					
[mm]														[mm]	[kN]	[Nm]	[g]	
with adjustable clamping lever with axial bearing – picture 1																		
25	26	10	M8	M8	30 – 35	44 – 49	10	60.0	–	48	35	28	74	5	3 ¹⁾	–	377	23310.0024
					35 – 45	54 – 64	10	60.0	–	48	35	28	74	10	3 ¹⁾	–	259	23310.0028
with clamping screw – picture 2																		
25	26	10	M8	M8	30 – 35	44 – 49	10	6.9	–	48	35	28	–	5	5	8	212	23310.0025
					35 – 45	54 – 64	10	6.9	–	48	35	28	–	10	5	8	419	23310.0027
with eccentric quick clamp, adjustable – picture 3																		
25	26	10	M8	M8	30 – 35	44 – 49	10	35.0	20.5	48	35	28	82	5	2 ¹⁾	–	203	23310.0026
					35 – 45	54 – 64	10	35.0	20.5	48	35	28	82	10	2 ¹⁾	–	261	23310.0029

¹⁾ Average value established in trials.

APPLICATION EXAMPLE



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.

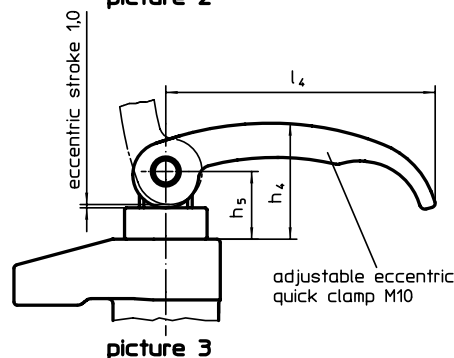
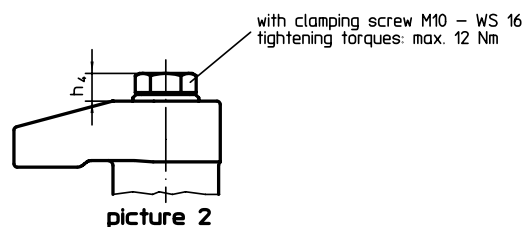
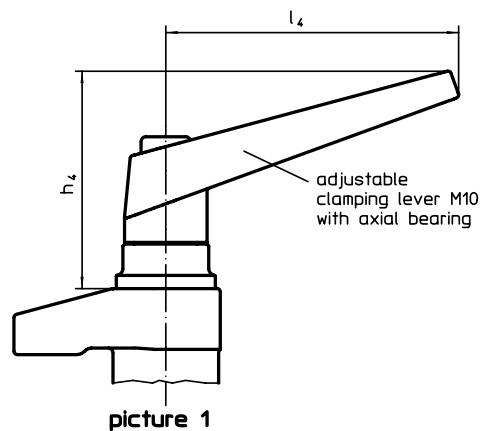
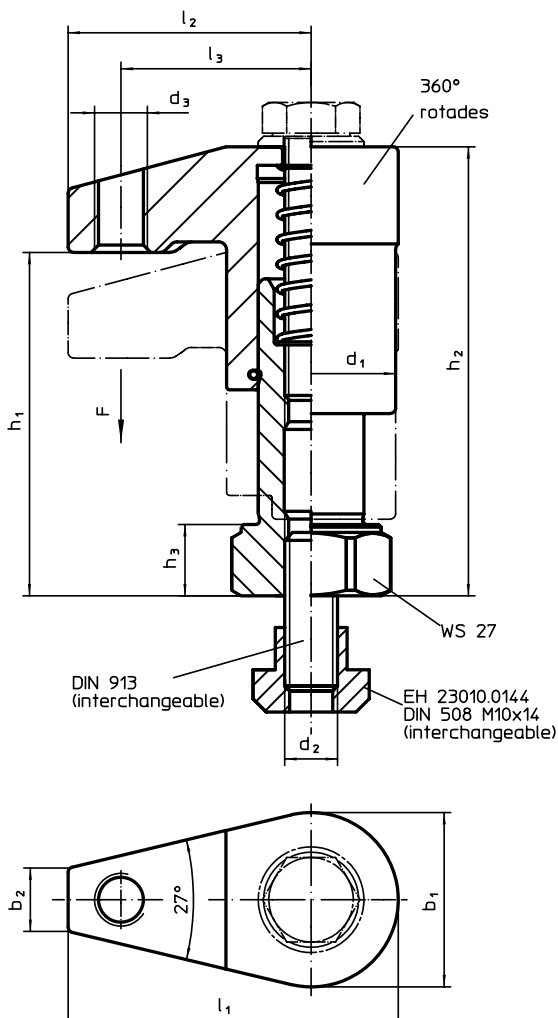
Further products

Positioning Rings, for down-thrust

clamp. → p. 526

Height Adjusting Cylinders → p. 527

DRAWING

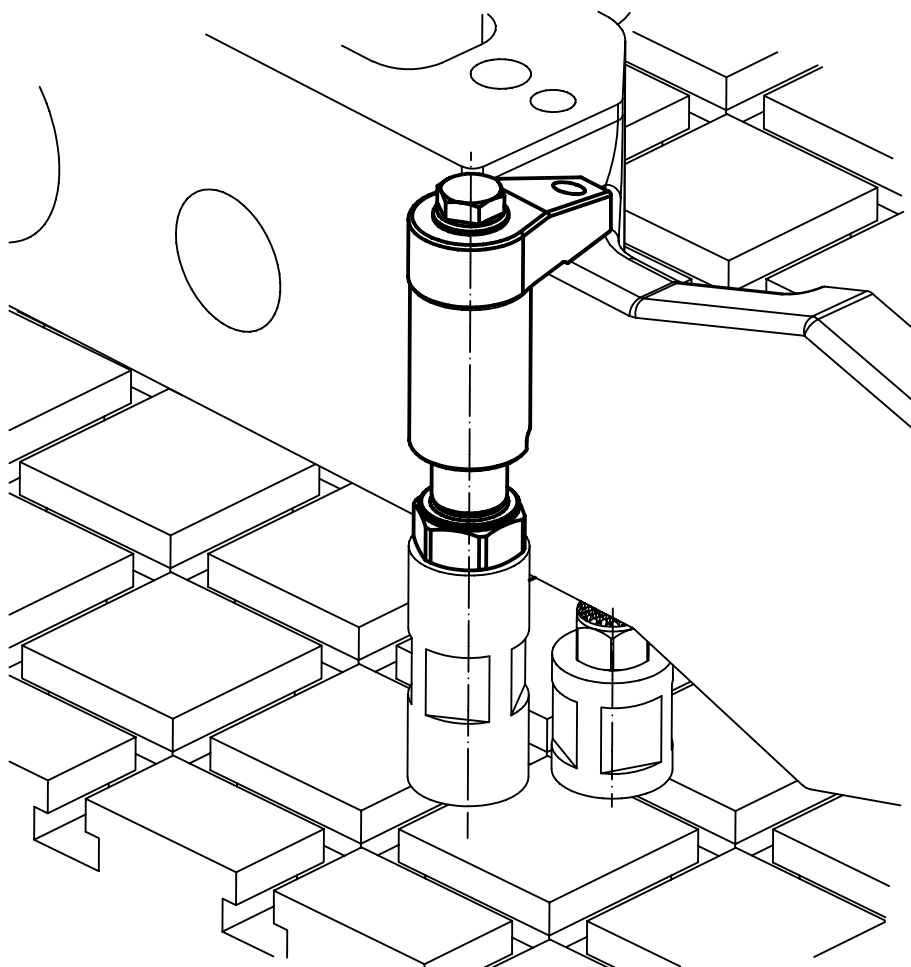


ORDER INFORMATION

Dimensions														Stroke	Clamp- ing force	Tight- ening torque max.		Art. No.
d ₁	b ₁	b ₂	d ₂	d ₃	h ₁	h ₂	h ₃	h ₄	h ₅	l ₁	l ₂	l ₃	l ₄					
[mm]														[mm]	[kN]	[Nm]	[g]	
with adjustable clamping lever with axial bearing – picture 1																		
32	33	12	M10	M10	45 – 65	65 – 85	13	66.0	–	62.5	46	36	89	20	4.5 ¹⁾	–	729	23310.0040
					63 – 88	83 – 108	13	66.0	–	62.5	46	36	89	20	4.5 ¹⁾	–	838	23310.0043
with clamping screw – picture 2																		
32	33	12	M10	M10	45 – 65	65 – 85	13	8.4	–	62.5	46	36	–	20	7.5	12	512	23310.0041
					63 – 88	83 – 108	13	8.4	–	62.5	46	36	–	20	7.5	12	620	23310.0044
with eccentric quick clamp, adjustable – picture 3																		
32	33	12	M10	M10	45 – 65	65 – 85	13	35.0	20.5	62.5	46	36	82	20	3.0 ¹⁾	–	559	23310.0042
					63 – 88	83 – 108	13	35.0	20.5	62.5	46	36	82	20	3.0 ¹⁾	–	666	23310.0045

¹⁾ Average value established in trials.

APPLICATION EXAMPLE



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

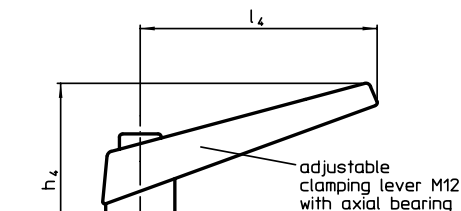
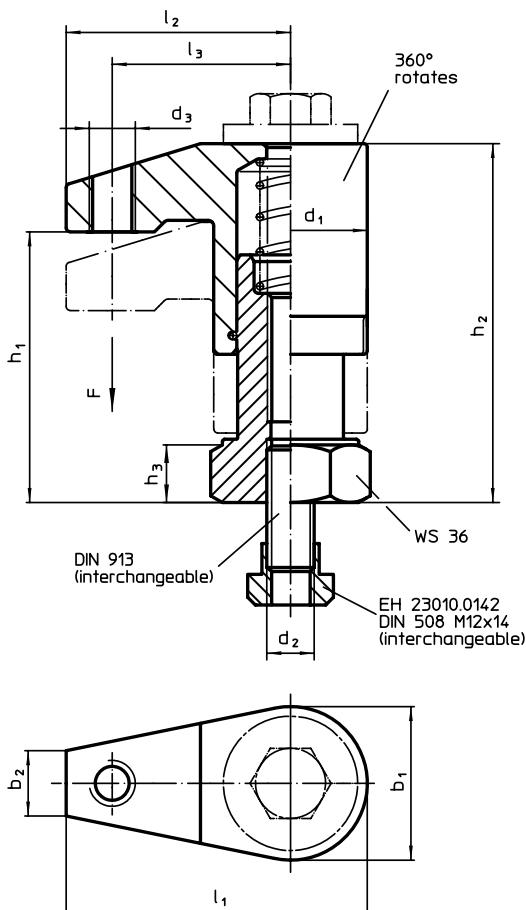
References

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.

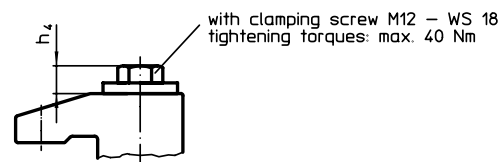
Further products

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

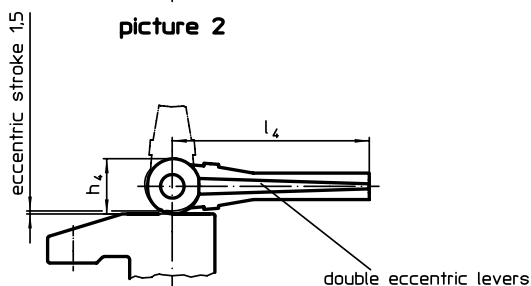
DRAWING



picture 1



picture 2



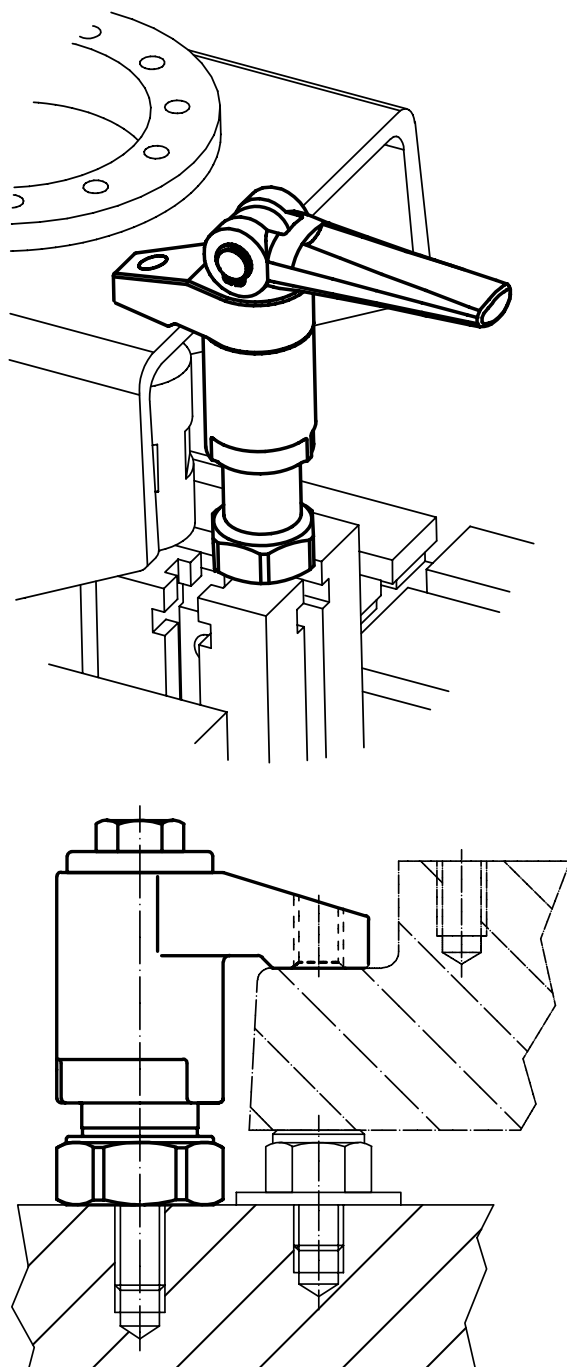
picture 3

ORDER INFORMATION

Dimensions													Stroke	Clamp- ing force	Tightening torque max.		Art. No.
d ₁	b ₁	b ₂	d ₂	d ₃	h ₁	h ₂	h ₃	h ₄	l ₁	l ₂	l ₃	l ₄					
[mm]													[mm]	[kN]	[Nm]	[g]	
with adjustable clamping lever with axial bearing – picture 1																	
40	40	17	M12	M12	50 – 70	73 – 93	15	82	75	55	43	108	20	6 ¹⁾	–	1194	23310.0050
					68 – 98	91 – 121	15	82	75	55	43	108	30	6 ¹⁾	–	1359	23310.0053
					95 – 135	118 – 158	22	82	75	55	43	108	40	6 ¹⁾	–	1639	23310.0056
with clamping screw – picture 2																	
40	40	17	M12	M12	50 – 70	73 – 93	15	13	75	55	43	–	20	10	40	853	23310.0051
					68 – 98	91 – 121	15	13	75	55	43	–	30	10	40	964	23310.0054
					95 – 135	118 – 158	22	13	75	55	43	–	40	10	40	1266	23310.0057
with double eccentric levers – picture 3																	
40	40	17	M12	M12	50 – 70	73 – 93	15	28	75	55	43	100	20	4 ¹⁾	–	1213	23310.0052
					68 – 98	91 – 121	15	28	75	55	43	100	30	4 ¹⁾	–	1370	23310.0055
					95 – 135	118 – 158	22	28	75	55	43	100	40	4 ¹⁾	–	1616	23310.0058

¹⁾ Average value established in trials.

APPLICATION EXAMPLE



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.

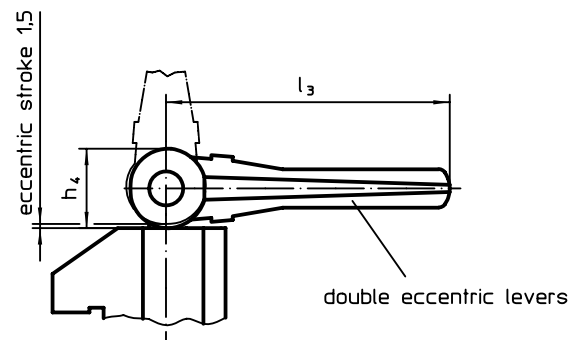
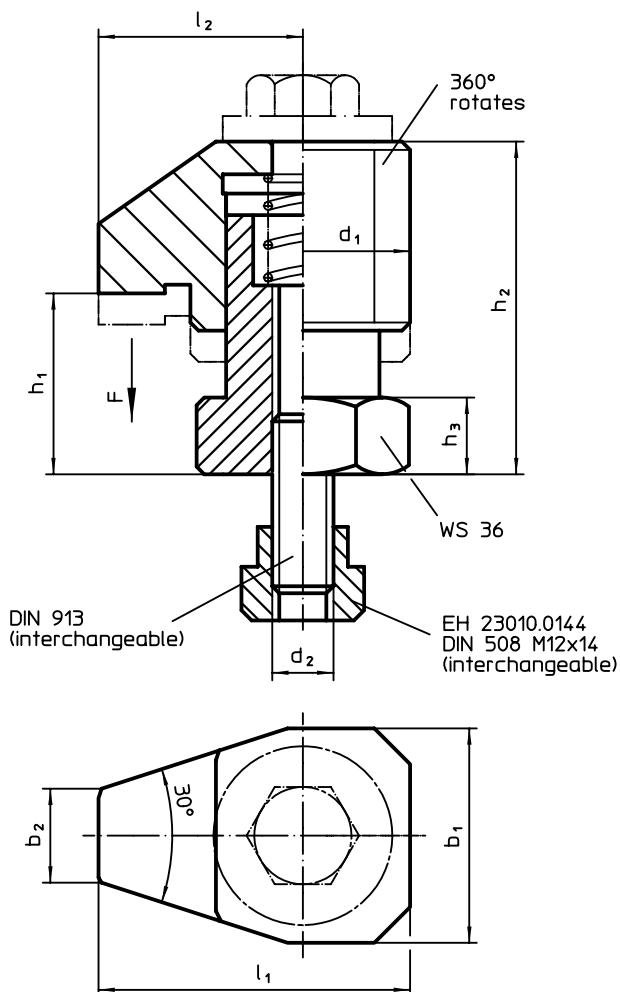
Further products

Height Adjusting Cylinders → p. 527

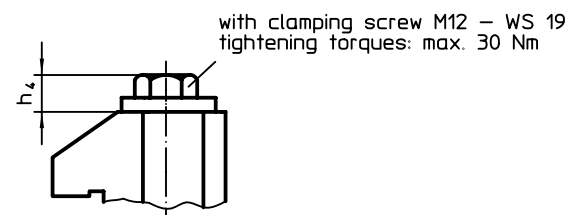
Spacers → p. 763

Wrenches → p. 786

DRAWING



picture 1



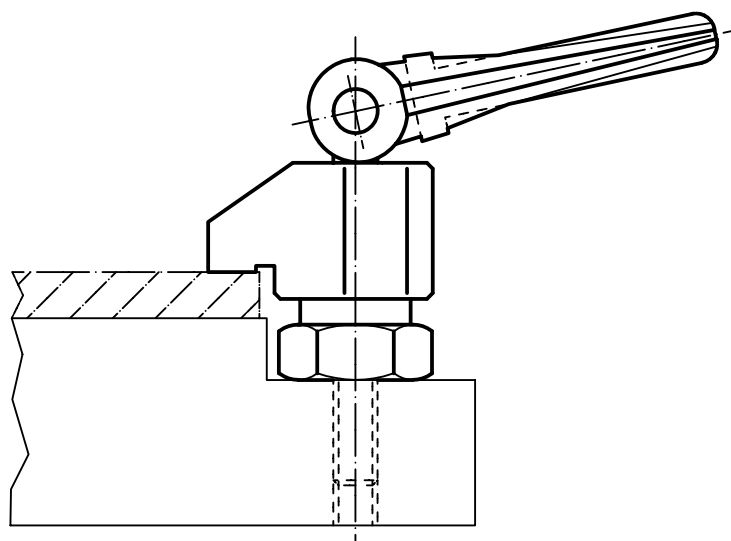
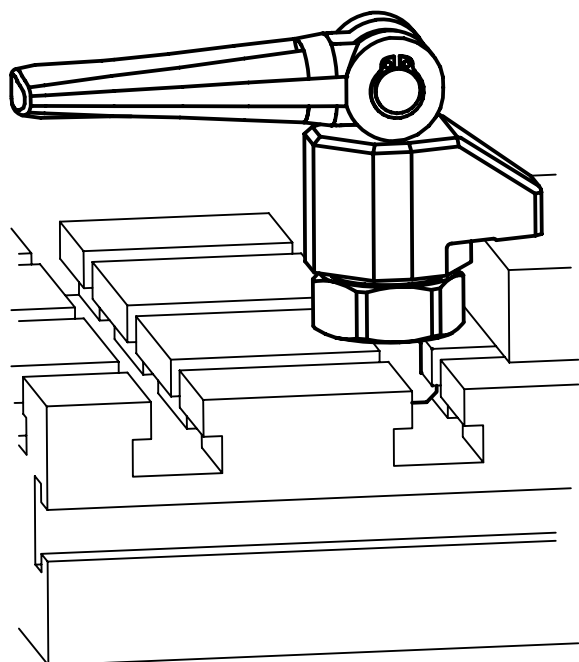
picture 2

ORDER INFORMATION

Dimensions											Stroke	Clamp- ing force	Tightening torque max.		Art. No.
d ₁	b ₁	b ₂	d ₂	h ₁	h ₂	h ₃	h ₄	l ₁	l ₂	l ₃					
[mm]											[mm]	[kN]	[Nm]	[g]	
with double eccentric levers – picture 1															
44	42	18	M12	25 – 30	54 – 59	15	28	61	40	100	5	4 ¹⁾	–	1022	23310.0034
with clamping screw – picture 2															
44	42	18	M12	25 – 30	54 – 59	15	13	61	40	–	5	10	30	708	23310.0035

¹⁾ Average value established in trials.

APPLICATION EXAMPLE



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

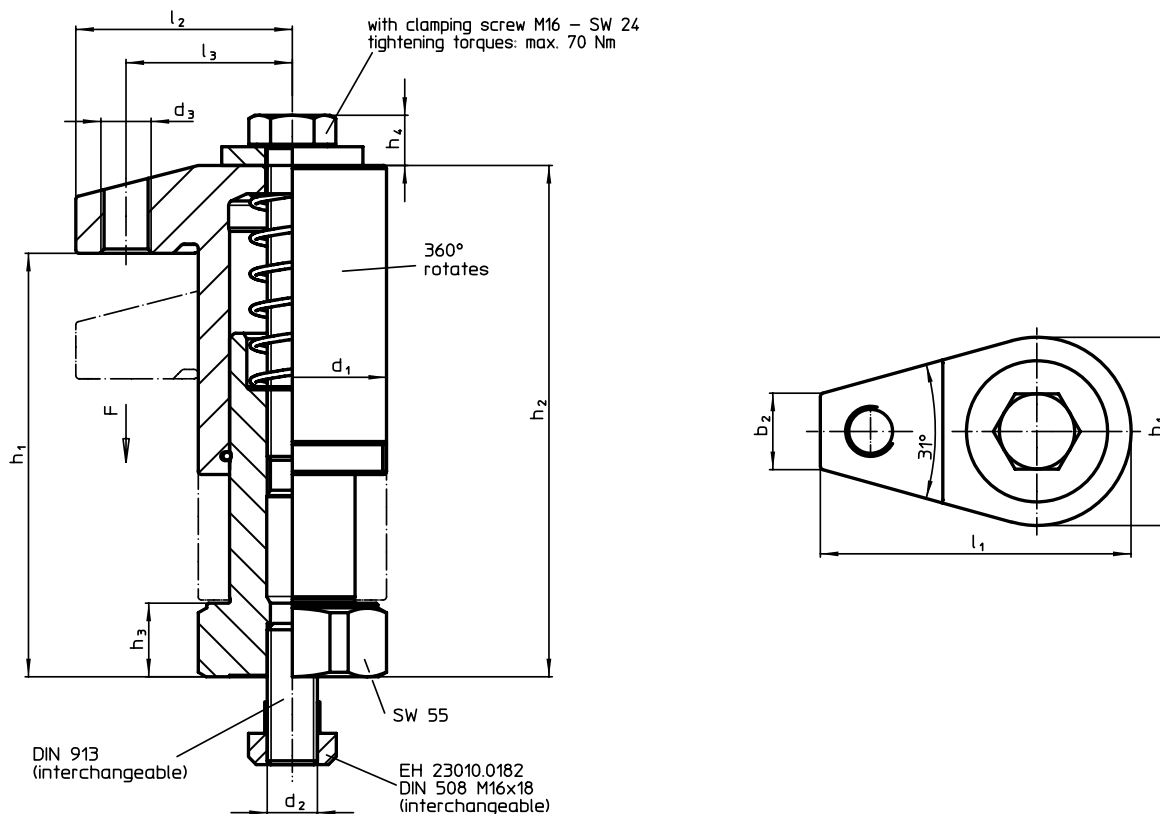
References

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

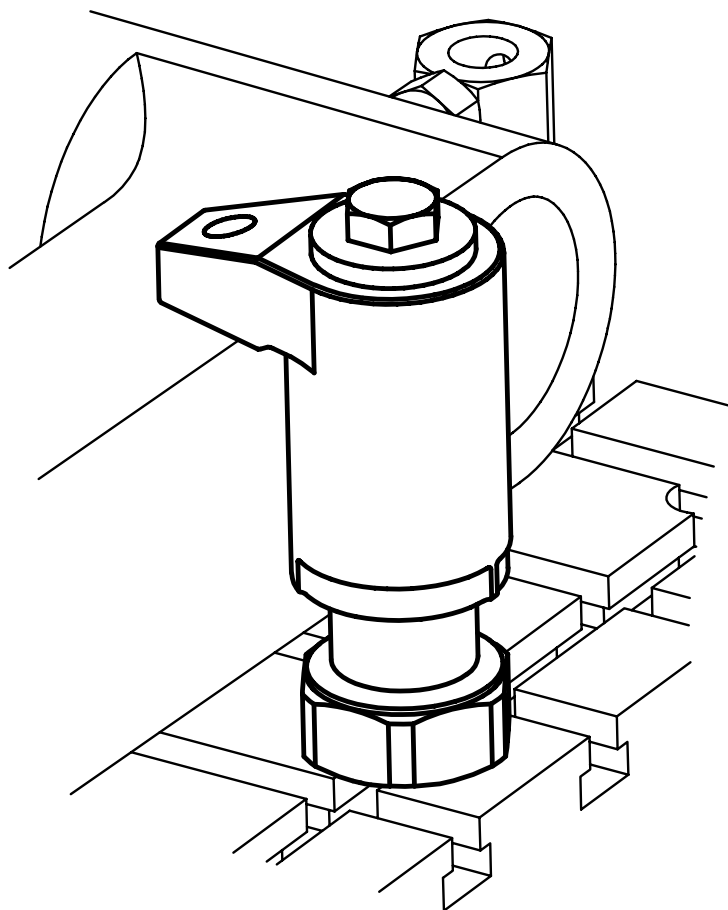
DRAWING



ORDER INFORMATION

Dimensions										Stroke	Clamp- ing force	Tight- ening torque max.		Art. No.
d_1	b_1	b_2	d_3	h_1	h_2	h_3	l_1	l_2	l_3	[mm]	[kN]	[Nm]	[g]	
[mm]														
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

APPLICATION EXAMPLE



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

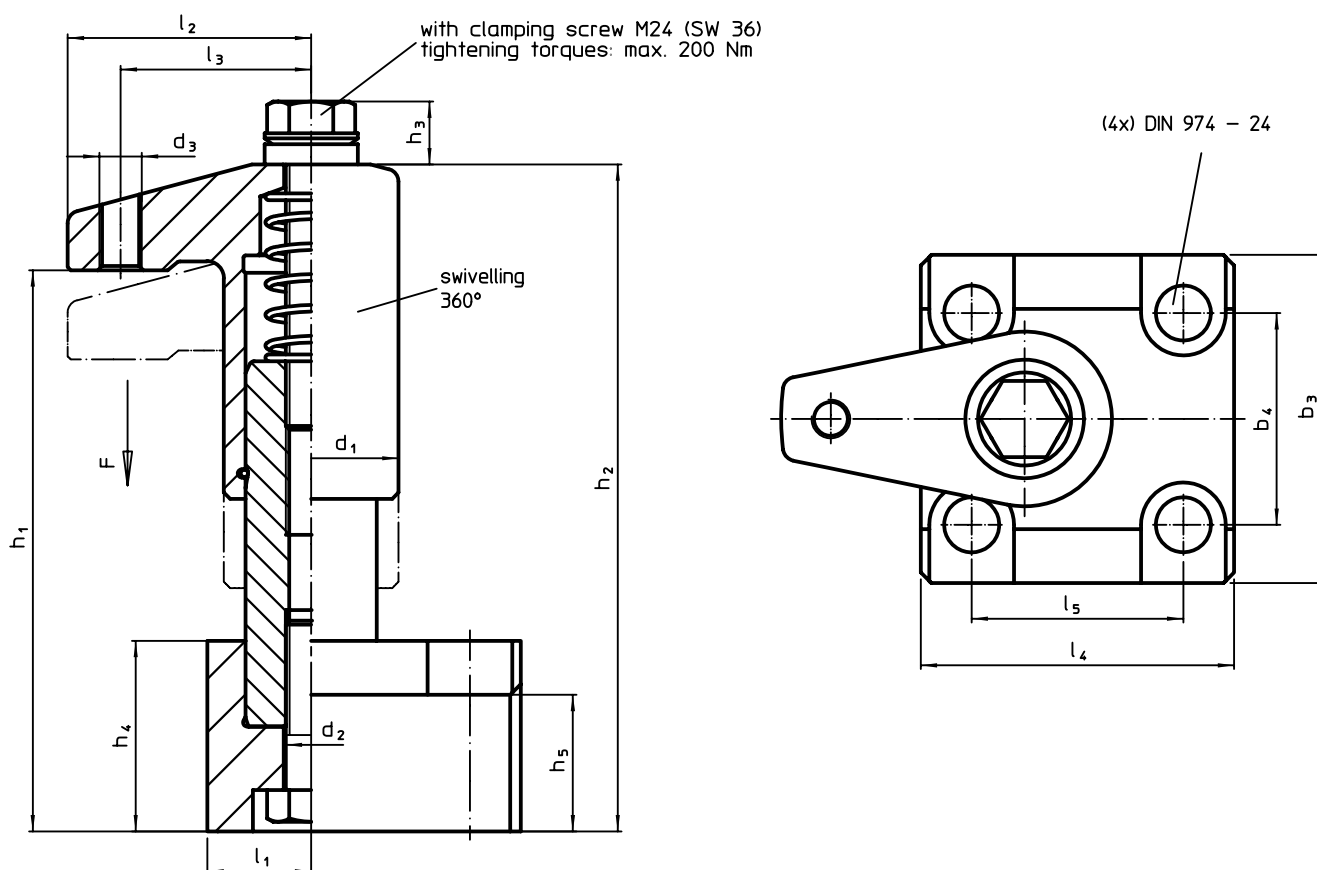
References

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

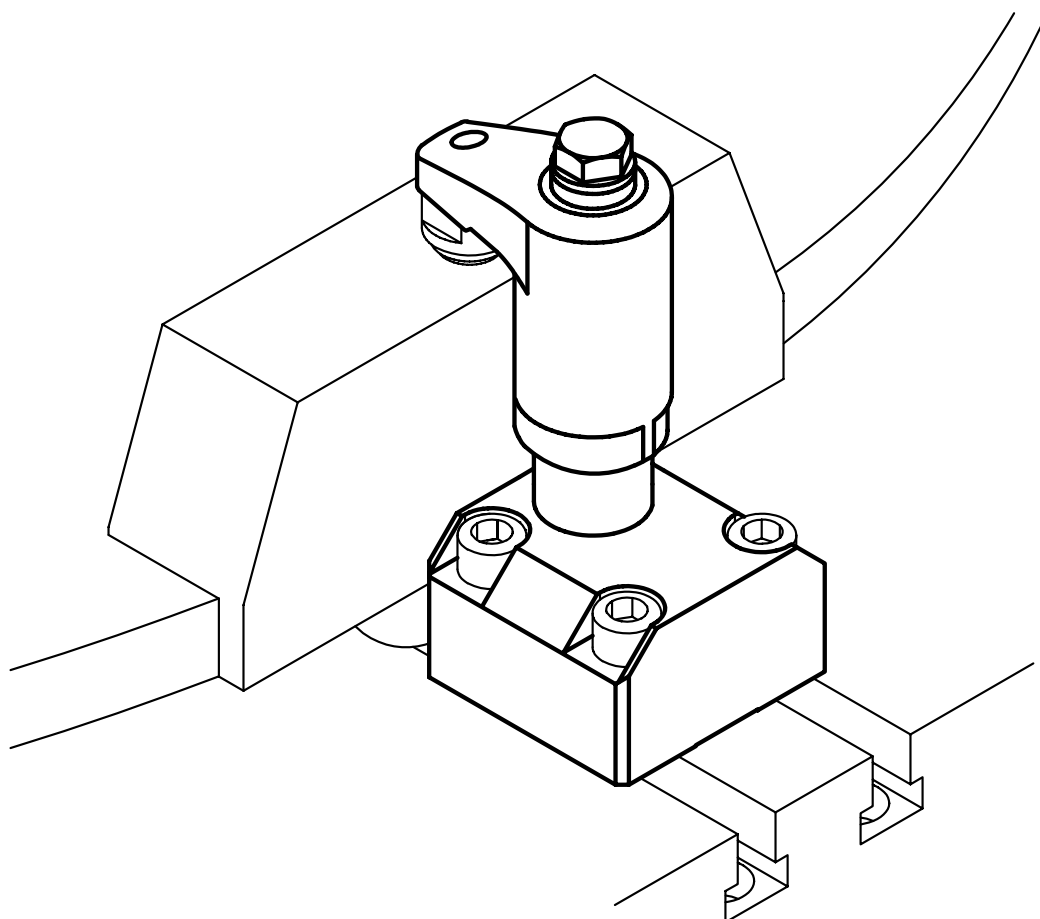
DRAWING



ORDER INFORMATION

Dimensions															Stroke	Clamp- ing force	Tightening torque max.		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	[mm]	[kN]	[Nm]	[kg]	
[mm]															[mm]	[kN]	[Nm]	[kg]		
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

APPLICATION EXAMPLE



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

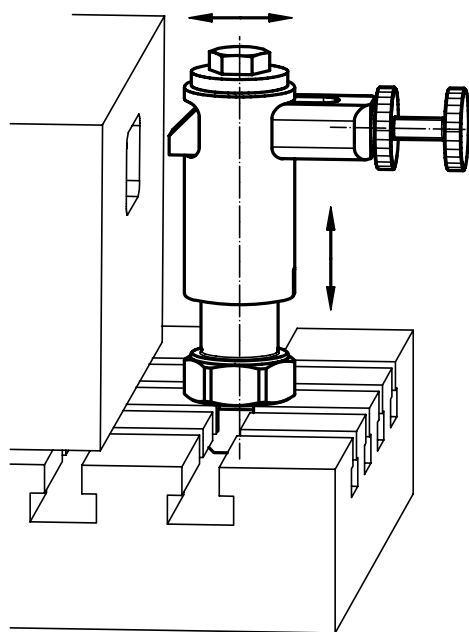
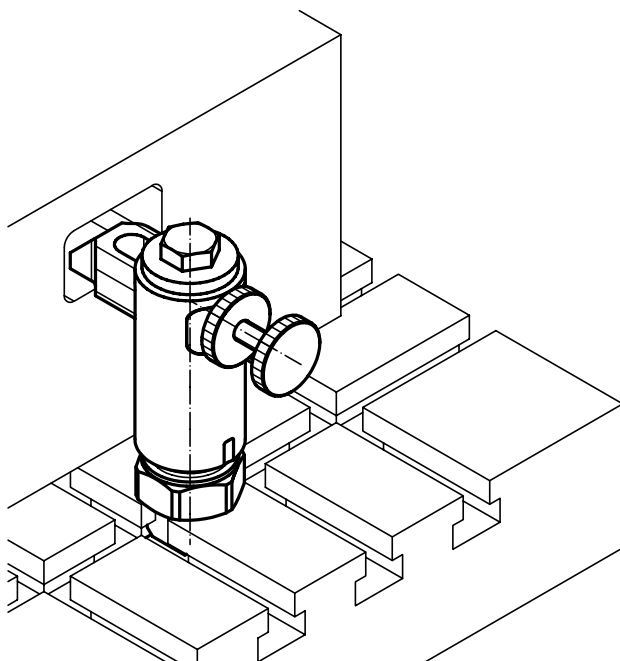
References

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.

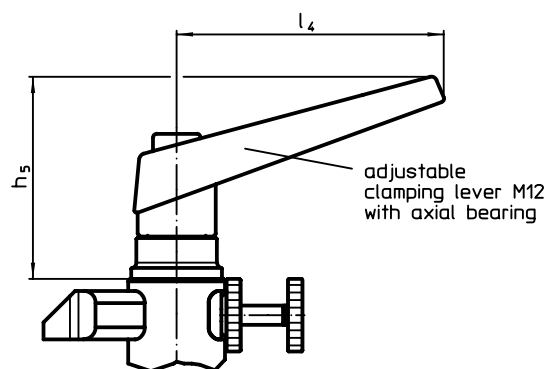
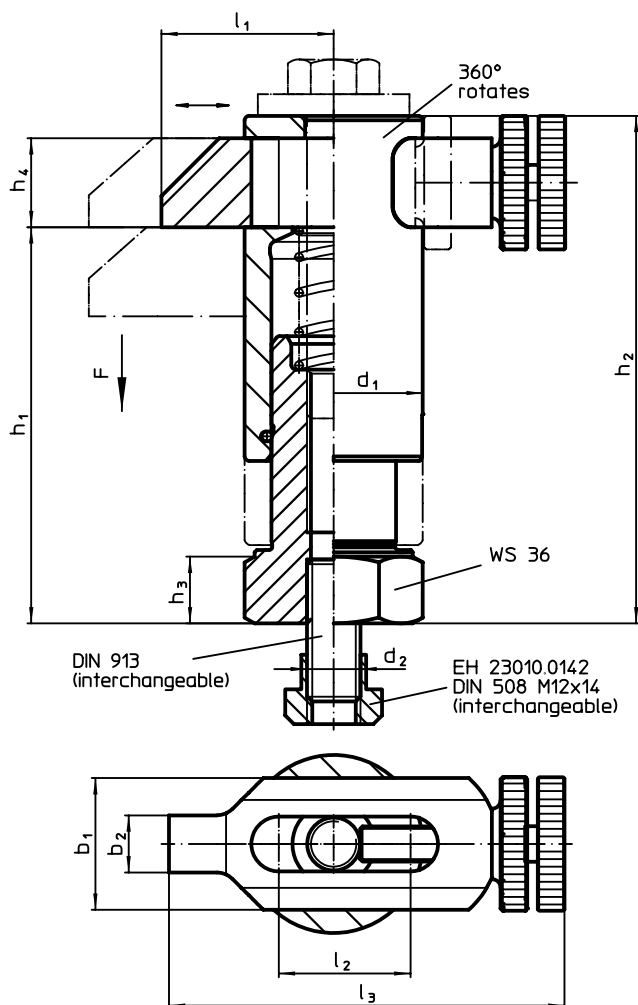
Further products

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

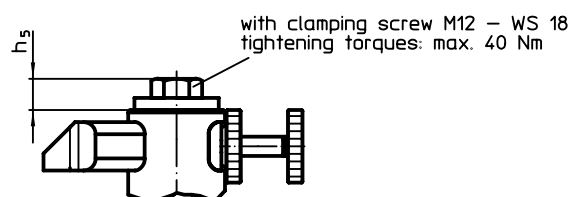
APPLICATION EXAMPLE



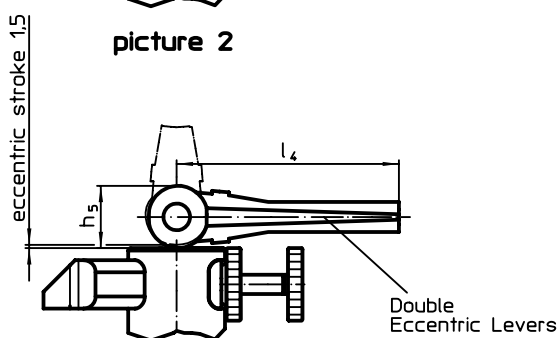
DRAWING



picture 1



picture 2



picture 3

ORDER INFORMATION

Dimensions													Stroke [mm]	Clamp- ing force [kN]	Tightening torque max. [Nm]	 [g]	Art. No.
d ₁	b ₁	b ₂	d ₂	h ₁	h ₂	h ₃	h ₄	h ₅	l ₁	l ₂	l ₃	l ₄					
[mm]																	
with adjustable clamping lever with axial bearing – picture 1																	
40	30	13	M12	70 – 90	95 – 115	15	20	82	38 – 55	30	90 – 107	108	20	6 ¹⁾	–	1400	23310.0083
				88 – 118	113 – 143	15	20	82	38 – 55	30	90 – 107	108	30	6 ¹⁾	–	1560	23310.0086
with clamping screw – picture 2																	
40	30	13	M12	70 – 90	95 – 115	15	20	13	38 – 55	30	90 – 107	–	20	10	40	1075	23310.0084
				88 – 118	113 – 143	15	20	13	38 – 55	30	90 – 107	–	30	10	40	1239	23310.0087
with double eccentric levers – picture 3																	
40	30	13	M12	70 – 90	95 – 115	15	20	28	38 – 55	30	90 – 107	100	20	4 ¹⁾	–	1396	23310.0085
				88 – 118	113 – 143	15	20	28	38 – 55	30	90 – 107	100	30	4 ¹⁾	–	1562	23310.0088

¹⁾ Average value established in trials.

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).

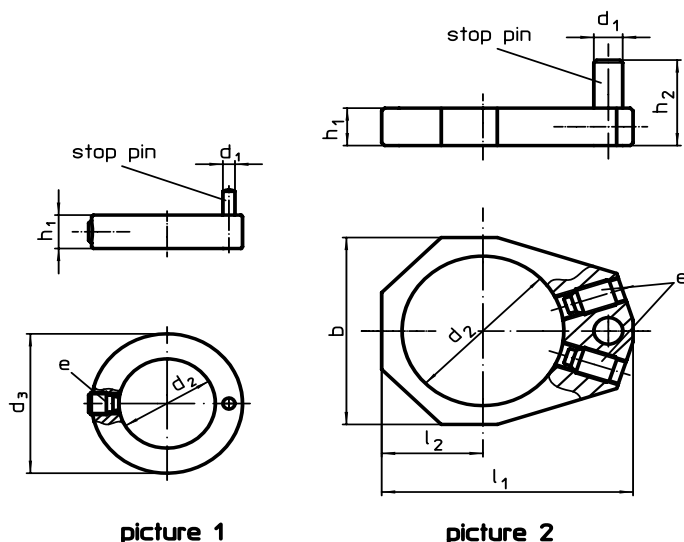
Material

- Steel, blackened

Assembly

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

DRAWING



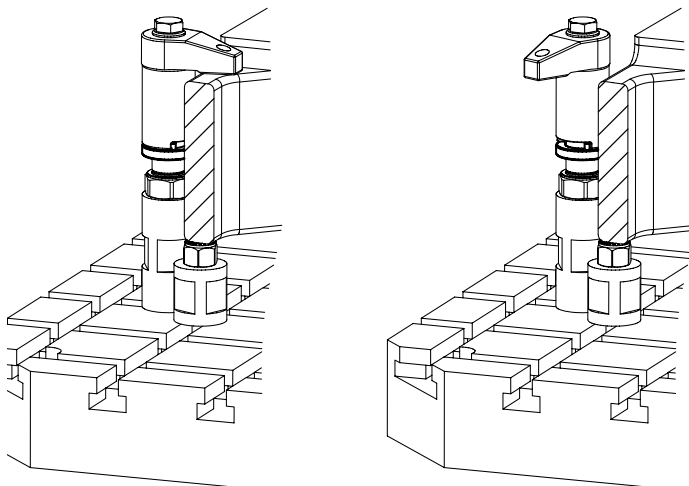
picture 1

picture 2

ORDER INFORMATION

Dimensions										For down-thrust clamp		Art. No.
h_1	h_2	d_1	d_2	d_3	l_1	l_2	b	e			[g]	
[mm]												
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

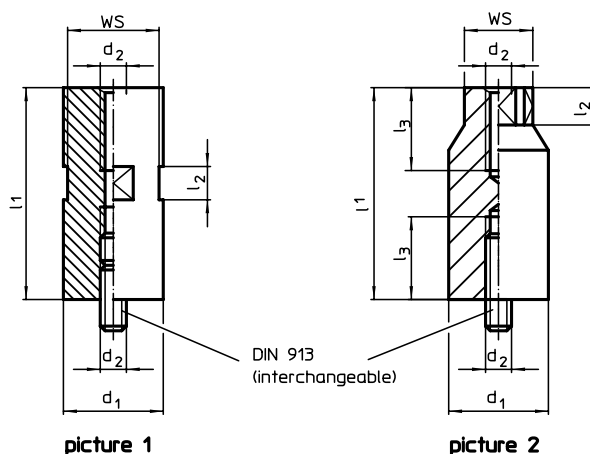
MORE INFORMATION

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

DRAWING



picture 1

picture 2

ORDER INFORMATION

d ₁ -0.1	l ₁	Dimensions			WS		Art. No.
		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
70	200 ±0.01	M20	20	–	55	4335	23310.0172
	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

Clamping Claws

EH 23370.



PRODUCT DESCRIPTION

Clamping claws are used as precision clamping element in conventional fixtures. A locating hole is provided in the body of the fixture. The hole depth has to be adapted to the desired clamping height.

For the version with ground support surface (picture 1), a support can be attached to the rounded claw part (radius 22) to absorb the counter force. This support can be flat, half-rounded or V-shaped.

For the version with positioning bushing (picture 2), a support to absorb the counterforce is not necessary. The positioning bushing, which must be inserted into the fixture, serves as a support for the clamping claw. This bushing is included in the scope of delivery and can also be ordered separately as an accessory.

Clamping is achieved by means of an enclosed hexagon screw DIN 933 (ISO 4017).

Material

Bushing

- Case-hardened steel, case-hardened

Body

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

Disc

- Heat-treated steel, tempered, punched, mechanically trued, phosphatized

Spring

- Spring steel wire

Clamping screw

- Heat-treated steel

MORE INFORMATION

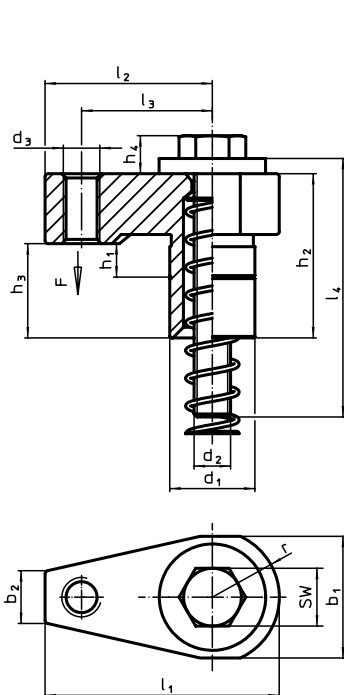
Notes

The tightening torque depends on the specific mounting situation.

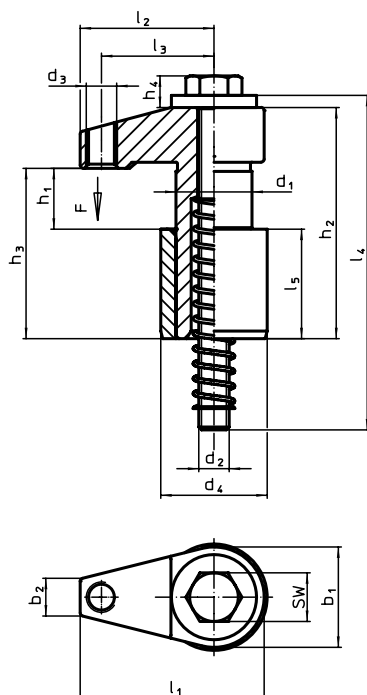
References

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

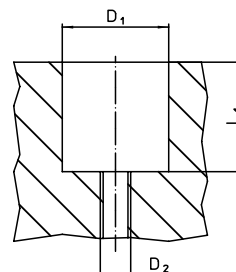
DRAWING



picture 1



picture 2



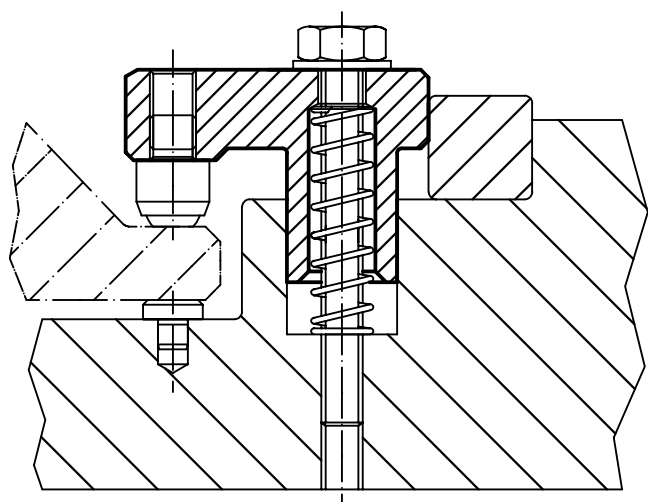
ORDER INFORMATION

Dimensions															Stroke	WS	Location hole			Clamp- ing force	Tight- ening torque max.		Art. No.	
d ₁ f7	h ₁	b ₁	d ₂	d ₃	d ₄ n6	h ₂	h ₃	h ₄	l ₁	l ₂	l ₃	l ₄	l ₅	r ±0.02			D1 H7	D2	L1					
[mm]															[mm]	[mm]	[mm]			[kN]	[Nm]	[g]		
with ground supporting surface – picture 1																								
28	0 – 11	40.0	M12	M12	–	31	54	13	77.0	55.0	43	85	–	22	11	18	28	M12	49	10.0	30	523	23370.0031	
	0 – 25	40.0	M12	M12	–	53	76	13	77.0	55.0	43	120	–	22	25	18	28	M12	51	10.0	30	614	23370.0053	
	20 – 41	40.0	M12	M12	–	83	106	13	77.0	55.0	43	150	–	22	21	18	28	M12	64	10.0	30	770	23370.0083	



d ₁ f7	Dimensions														Stroke	WS	Location hole			Clamp- ing force	Tight- ening torque max.		Art. No.
	h ₁	b ₁	d ₂	d ₃	d ₄ n6	h ₂	h ₃	h ₄	l ₁	l ₂	l ₃	l ₄	l ₅	r ±0.02			D1 H7	D2	L1				
	[mm]																[mm]	[mm]	[mm]				
with positioning bushing – picture 2																							
16	0 – 5	2.0	M 6	M 6	26	31	18	7	37.0	27.0	22	50	16	–	5	10	26	M 6	19	2.5	5	118	23370.0118
	3 – 8	20.0	M 6	M 6	26	37	24	7	37.0	27.0	22	60	16	–	5	10	26	M 6	22	2.5	5	128	23370.0124
20	0 – 8	26.0	M 8	M 8	30	40	24	10	48.0	35.0	28	65	20	–	8	13	30	M 8	25	5.0	10	218	23370.0128
	6 – 15	26.0	M 8	M 8	30	51	35	10	48.0	35.0	28	75	20	–	9	13	30	M 8	30	5.0	10	243	23370.0135
25	0 – 15	33.0	M10	M10	35	60	40	11	60.5	43.5	37	90	36	–	15	16	35	M10	41	7.5	20	483	23370.0140
	10 – 20	33.0	M10	M10	35	78	58	11	60.5	43.5	37	110	36	–	10	16	35	M10	49	7.5	20	552	23370.0145
30	0 – 25	40.3	M12	M12	42	73	50	13	75.0	55.0	43	120	45	–	25	18	42	M12	51	10.0	30	859	23370.0150
	20 – 41	40.3	M12	M12	42	106	83	13	75.0	55.0	43	150	45	–	21	18	42	M12	64	10.0	30	1034	23370.0183

APPLICATION EXAMPLE



picture 1

TOGGLE CLAMPS

FULL CLAMPING FORCE, EXTRA EASY

3

CLAMP PARTS SECURELY AND WITH NO EFFORT.

Short set-up times are paramount for an economical production process. Even a minor cog in the production machinery - like a clamping system - can increase cost significantly. Aside from precise and secure clamping of the workpieces, the toggle clamps engineered by Erwin Halder KG afford the user superior ease of use and let them exchange the parts they need to process with unsurpassed speed and ease. The Halder toggle clamp sets itself apart further by its ergonomic handle combined with the sturdy and long-lasting design and a safety clamping piece.



Vertical Toggle Clamps • with horizontal base

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for continuous use.

A oil resistant ergonomic 2-component handle, with increased grip area with soft surface for high ease of use.

The quickly adjustable clamping screws are provided by a retainer.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated
- Stainless steel

Rivet

- Stainless steel
- Steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization
- Stainless Steel

Clamping cap

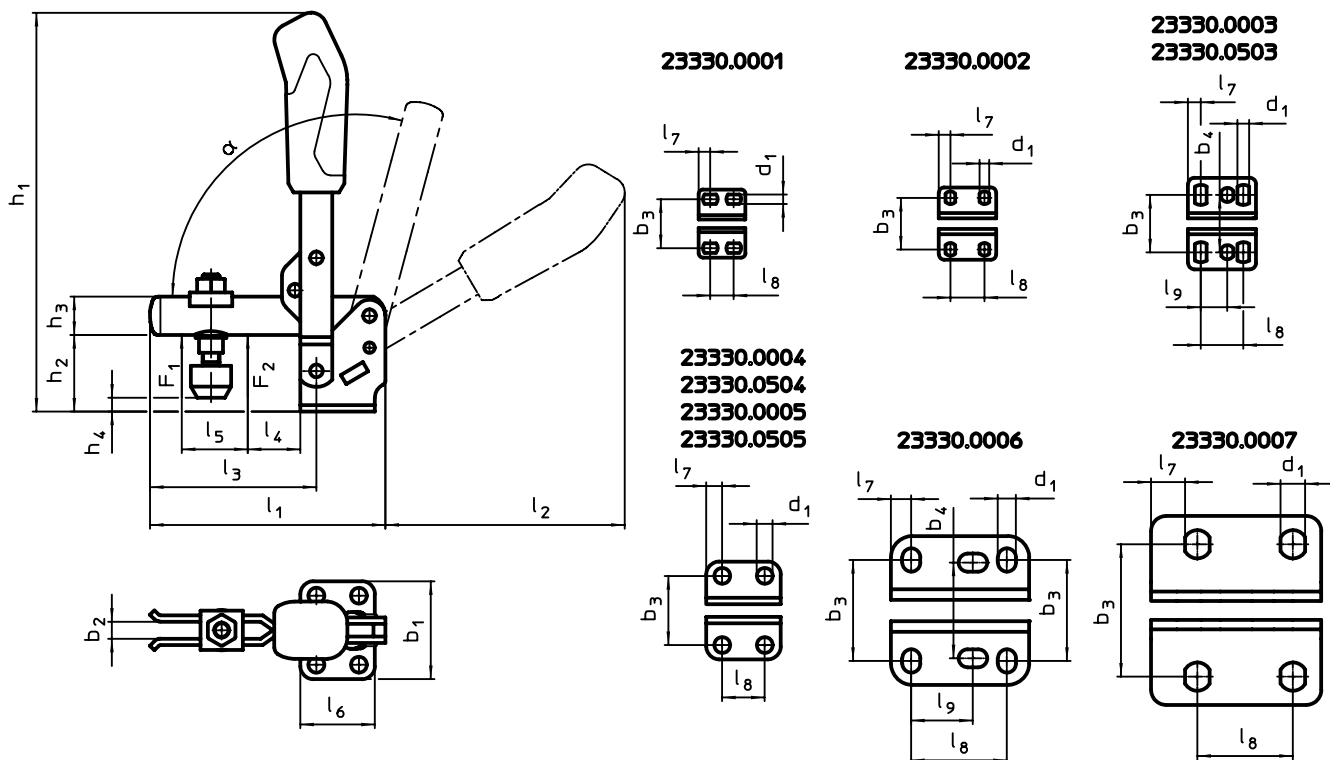
- Rubber, black

MORE INFORMATION

References

Replacement clamping screws are available as accessories in the online shop.

DRAWING



ORDER INFORMATION

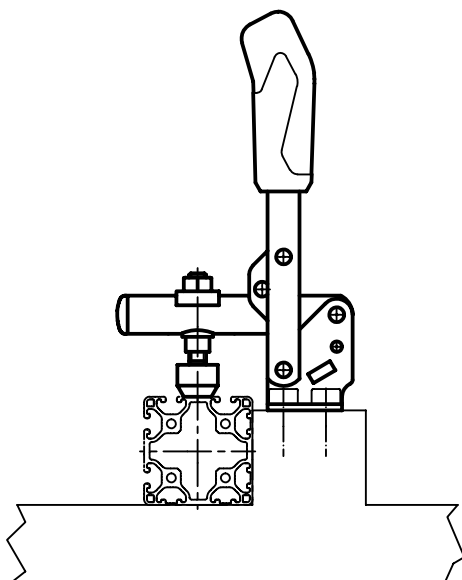
Nominal size	Clamping screw	Dimensions																				Holding force		α			Art. No.
		d ₁	b ₁	b ₂	b ₃	b ₄	h ₁	h ₂	h ₃	h ₄ min.	h ₄ max.	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆	l ₇	l ₈	l ₉	F ₁	F ₂					
	[mm]	[mm]																				[kN]		min. max.		[°C]	[g]
steel																											
1	M 4 x 25	4.5	32	4	23.0	–	81.0	18.0	8	-1.5	3.5	49	50	31.0	5.5	14	22	5.5	8.5 – 13.5	–	0.5	0.7	95°	-10	80	66	23330.0001
2	M 5 x 30	4.5	34	5	22.5 – 26.0	–	98.5	19.0	10	-4.0	2.0	61	59	39.0	6.0	18	27	5.5	16.0	–	0.6	1.1	95°	-10	80	114	23330.0002
3	M 6 x 35	5.5	43	6	23.0 – 31.0	27	129.0	23.0	12	-3.0	4.5	78	80	52.0	11.0	25	32	6.0	20.0	12.5	0.8	1.2	105° ¹⁾	-10	80	192	23330.0003
4	M 8 x 45	7.5	46	8	32.5	–	186.0	33.0	18	2.0	11.0	112	112	79.0	19.0	37	35	7.5	20.0	–	1.2	2.5	105° ¹⁾	-10	80	410	23330.0004
5	M 8 x 65	8.6	64	10	43.5 – 46.5	–	221.0	42.5	20	-6.0	22.5	141	130	101.0	16.0	54	53	13.0	32.0	–	1.7	3.0	105° ¹⁾	-10	80	687	23330.0005
6	M12 x 80	8.5	70	14	45.0 – 50.0	45	281.0	55.8	25	-3.0	27.5	195	185	140.0	34.0	73	65	9.5	45.0	26.5 – 31.5	3.0	5.0	115° ¹⁾	-10	80	1492	23330.0006
7	M12 x 110	13.0	100	14	37.5 – 72.5	–	333.0	81.0	30	-2.5	55.0	231	206	165.5	28.0	89	90	24.5	50.5	–	3.4	5.5	140° ¹⁾	-10	80	2000	23330.0007
stainless steel																											
3	M 6 x 35	5.5	43	6	23.0 – 31.0	27	129.0	23.0	12	-3.0	4.5	78	80	52.0	11.0	25	32	6.0	20.0	12.5	0.8	1.2	105° ¹⁾	-10	80	195	23330.0503
4	M 8 x 45	7.5	46	8	32.5	–	186.0	33.0	18	2.0	11.0	112	112	79.0	19.0	37	35	7.5	20.0	–	1.2	2.5	105° ¹⁾	-10	80	430	23330.0504
5	M 8 x 65	8.6	64	10	43.5 – 46.5	–	221.0	42.5	20	-6.0	22.5	141	130	101.0	16.0	54	53	13.0	32.0	–	1.7	3.0	105° ¹⁾	-10	80	697	23330.0505

¹⁾ The opening angle of the handle can be changed to 60° by pressing in a stop pin.

ACCESSORIES

	Dimensions		Art. No.	
	d ₂		Steel	Stainless Steel
	[mm]			
clamping screw				
	M 4 x 25	6.2	23330.9001	–
	M 5 x 30	11.0	23330.9002	–
	M 6 x 35	16.0	23330.9003	23330.9503
	M 8 x 45	38.0	23330.9005	23330.9504
	M 8 x 65	57.0	23330.9006	23330.9505
	M12 x 80	147.0	23330.9007	–
	M12 x 110	170.0	23330.9008	–

APPLICATION EXAMPLE



Vertical Toggle Clamps • with vertical base

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for continuous use.

A oil resistant ergonomic 2-component handle, with increased grip area with soft surface for high ease of use.

The quickly adjustable clamping screws are provided by a retainer.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization

Clamping cap

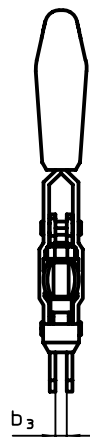
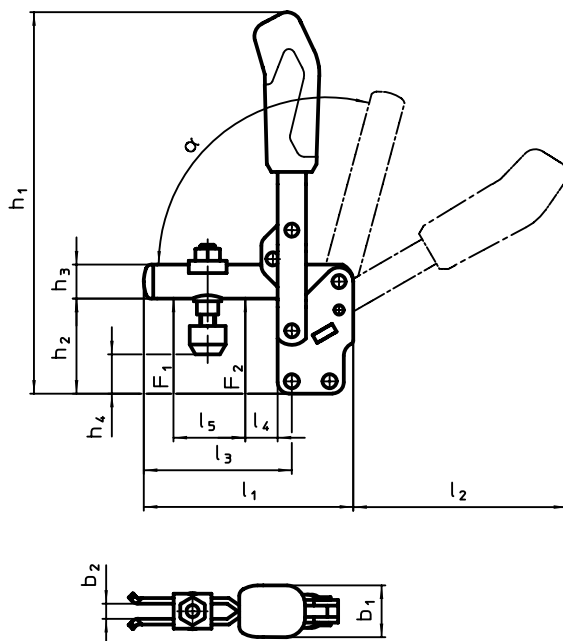
- Rubber, black

MORE INFORMATION

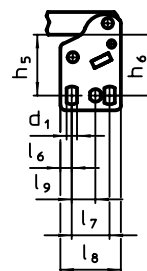
References

Replacement clamping screws are available as accessories in the online shop.

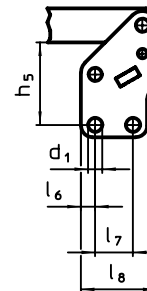
DRAWING



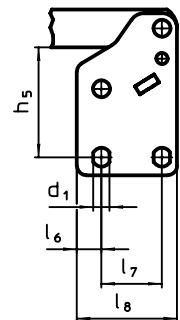
23330.0013



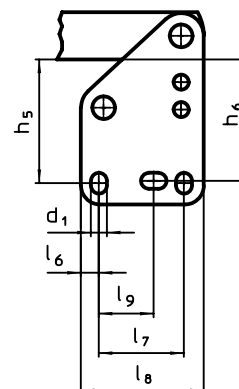
23330.0014



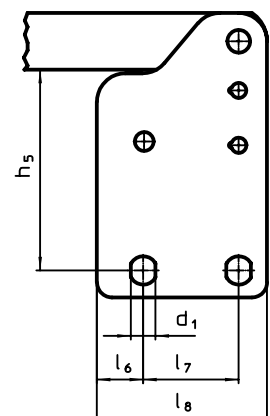
23330.0015



23330.0016



23330.0017



ORDER INFORMATION

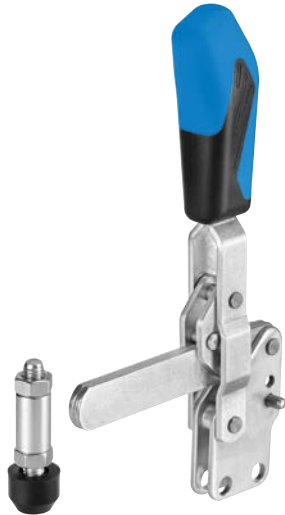
Nominal size	Clamping screw	Dimensions																				Holding force		α			Art. No.		
		d ₁	b ₁	b ₂	b ₃	h ₁	h ₂	h ₃	h ₄	h ₄	h ₅	h ₆	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆	l ₇	l ₈	l ₉	F ₁	F ₂					min.	max.
		[mm]	[mm]																			[kN]							
3	M 6 x 35	5.5	21	6	5	144.5	38	12	11.5	19.5	28.5 – 32	30	78	80	52	11	25	6.0	20.0	32	12.5	0.8	1.2	60°	-10	80	197	23330.0013	
4	M 8 x 45	7.5	27	8	6	200.0	48	18	16.5	25.0	41.0	–	112	114	79	19	36	7.5	20.0	40	–	1.2	2.5	60°	-10	80	417	23330.0014	
5	M 8 x 65	8.6	35	10	8	244.0	65	20	16.5	45.5	55.5	–	141	130	101	16	54	13.0	32.0	53	–	1.7	3.0	60°	-10	80	689	23330.0015	
6	M12 x 80	8.5	36	14	10	301.0	77	25	18.0	49.0	66.0	64	195	183	140	35	72	9.5	45.0	65	26.5 – 31.5	3.0	5.0	60°	-10	80	1511	23330.0016	
7	M12 x 110	13.0	39	14	10	369.0	117	30	33.0	90.5	102.0	–	231	206	165	28	89	24.5	50.5	90	–	3.4	5.5	60°	-10	80	2000	23330.0017	

ACCESSORIES

	d_2 [mm]	 [g]	Art. No.
clamping screw			
	M 6 x 35	16	23330.9003
	M 8 x 45	38	23330.9005
	M 8 x 65	57	23330.9006
	M12 x 80	147	23330.9007
	M12 x 110	170	23330.9008

Vertical Toggle Clamps • with vertical base and solid support arm

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for maintenance-free continuous use.

An oil resistant ergonomic 2-component handle, with slip-proof, soft surface and large grip area for high ease of use.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization

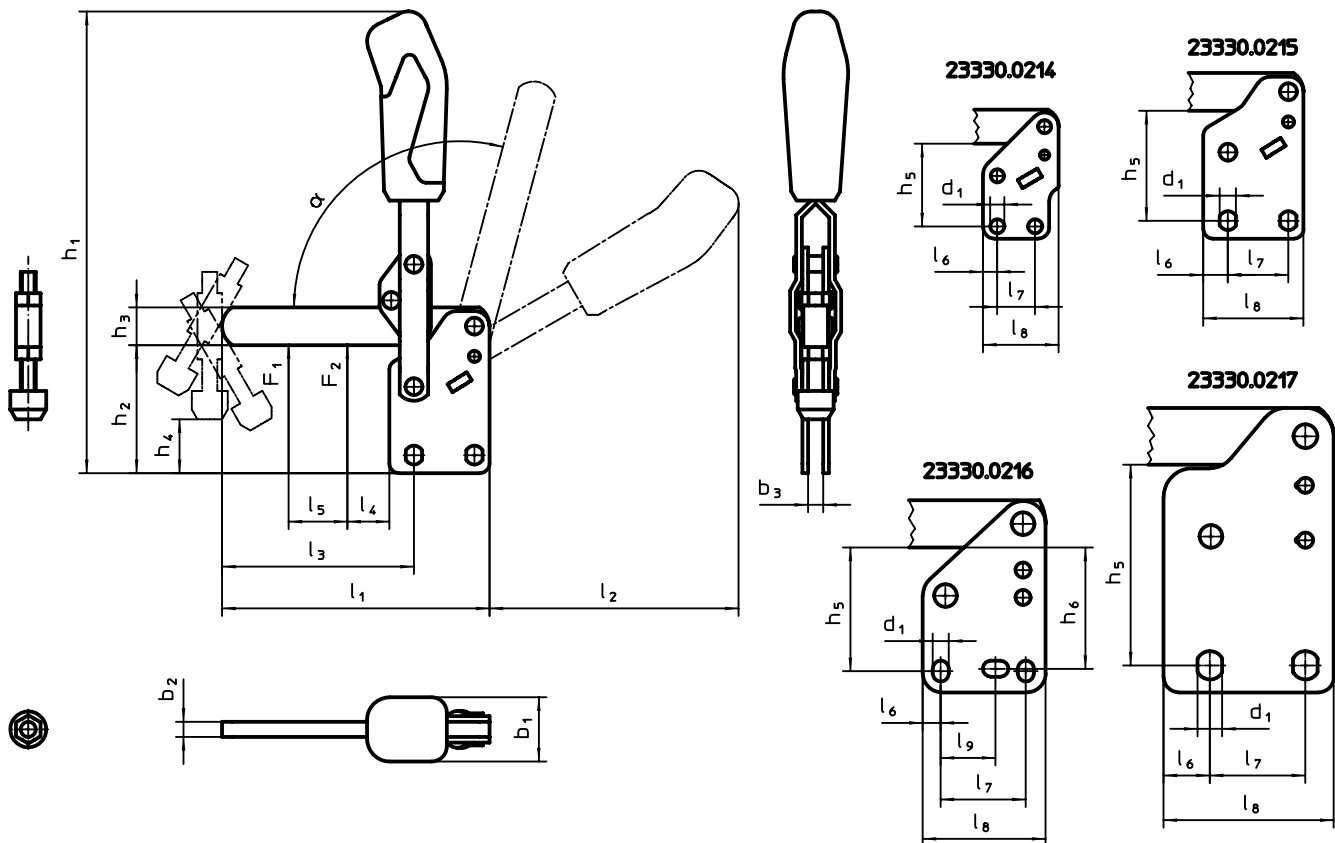
Clamping cap

- Rubber, black

Assembly

The clamping screw must be welded to the support arm in the desired position.

DRAWING



ORDER INFORMATION

Nominal size	Clamping screw	Dimensions																			Holding force		α			Art. No.		
		d ₁	b ₁	b ₂	b ₃	h ₁	h ₂	h ₃	h ₄ min.	h ₄ max.	h ₅	h ₆	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆	l ₇	l ₈	l ₉	F ₁	F ₂		min.		max.	
	[mm]	[mm]																			[kN]			[°C]		[g]		
4	M 8 x 45	7.5	27	6	6	200	48	18	14.5	26.0	41.0	–	108.5	116.0	81.0	19.5	43	7.5	20.0	40	–	1.4	2.5	105°	-10	80	426	23330.0214
5	M 8 x 65	8.6	34	8	8	244	65	20	13.0	44.0	55.5	–	141.5	129.5	101.0	17.0	61	13.0	32.0	53	–	2.0	3.0	105°	-10	80	679	23330.0215
6	M12 x 80	8.5	36	10	10	302	77	25	15.0	47.0	66.0	64	196.5	184.0	141.0	30.5	88	9.5	45.0	65	26.5 – 31.5	3.0	5.0	115°	-10	80	1506	23330.0216
7	M12 x 110	13.0	39	10	10	369	117	30	28.5	86.5	102.0	–	232.0	206.0	165.5	20.5	90	24.5	50.5	90	–	3.5	5.5	140°	-10	80	2000	23330.0217

Vertical Toggle Clamps • with vertical base and safety lock

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for continuous use.

A oil resistant ergonomic 2-component handle, with increased grip area with soft surface for high ease of use.

The quickly adjustable clamping screws are provided by a retainer.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization

Clamping cap

- Rubber, black

Plastic cap

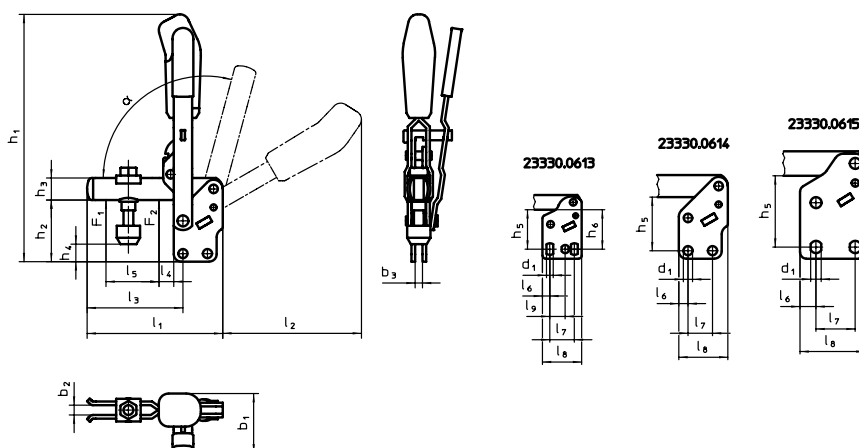
- PVC, black

MORE INFORMATION

References

Replacement clamping screws are available as accessories in the online shop.

DRAWING



ORDER INFORMATION

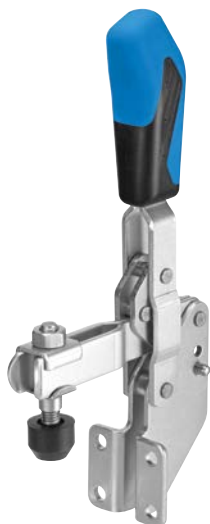
No- minal size	Clamp- ing screw	Dimensions																			Holding force		α			Art. No.		
		d ₁	b ₁	b ₂	b ₃	h ₁	h ₂	h ₃	h ₄ min.	h ₄ max.	h ₅	h ₆	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆	l ₇	l ₈	l ₉	F ₁					F ₂	
	[mm]	[mm]																			[kN]		min.	max.	[g]			
3	M6 x 35	5.5	38	6	5	154	38	12	11.5	19.5	28.5 – 32	30	78	89	52	11	25	6.0	20	32	12.5	1.0	1.2	95°	-10	80	237	23330.0613
4	M8 x 45	7.5	48	8	6	200	48	18	10.0	18.5	41.0	–	111	114	79	19	37	7.5	20	40	–	1.4	2.5	105°	-10	80	484	23330.0614
5	M8 x 65	8.6	53	10	8	244	65	20	16.5	45.5	55.5	–	141	130	101	16	54	13.0	32	53	–	2.0	3.0	105°	-10	80	776	23330.0615

ACCESSORIES

	d_2 [mm]	[g]	Art. No.
clamping screw			
	M6 x 35	16	23330.9003
	M8 x 45	38	23330.9005
	M8 x 65	57	23330.9006

Vertical Toggle Clamps • with angle base

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for continuous use.

A oil resistant ergonomic 2-component handle, with increased grip area with soft surface for high ease of use.

The quickly adjustable clamping screws are provided by a retainer.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization

Clamping cap

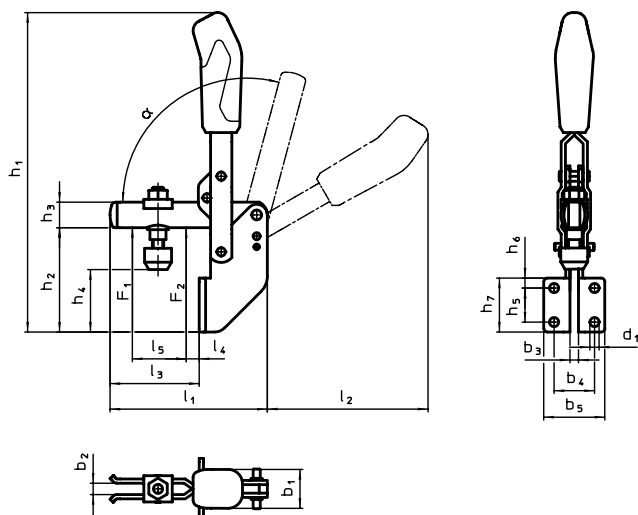
- Rubber, black

MORE INFORMATION

References

Replacement clamping screws are available as accessories in the online shop.

DRAWING



ORDER INFORMATION

Nominal size	Clamp- ing screw	Dimensions																			Holding force		α			Art. No.	
		d ₁	b ₁	b ₂	b ₃	b ₄	b ₅	h ₁	h ₂	h ₃	h ₄ min.	h ₄ max.	h ₅	h ₆	h ₇	l ₁	l ₂	l ₃	l ₄	l ₅	F ₁	F ₂		min.	max.		
	[mm]	[mm]																			[kN]			[°C]	[g]		
	3	M6 x 35	5.5	21	6	5	25.5	37.0	176.5	60	12	34	41.5	20	6	32	77	81	41	6	25	1.0	1.2	60°	-10	80	231
4	M8 x 45	6.5	27	8	6	28.5	42.5	223.0	71	18	40	48.5	24	7	38	111	112	63	11	37	1.4	2.5	60°	-10	80	483	23330.0024
5	M8 x 65	8.5	35	10	8	32.0	52.0	280.0	102	20	53	81.5	32	54	96	141	129	84	11	54	2.0	3.0	60°	-10	80	802	23330.0025

ACCESSORIES

	d_2	Weight	Art. No.
	[mm]	[g]	
clamping screw			
	M6 x 35	16	23330.9003
	M8 x 45	38	23330.9005
	M8 x 65	57	23330.9006

Vertical Toggle Clamps • with angle base and safety lock

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for continuous use.

A oil resistant ergonomic 2-component handle, with increased grip area with soft surface for high ease of use.

The quickly adjustable clamping screws are provided by a retainer.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization

Clamping cap

- Rubber, black

Plastic cap

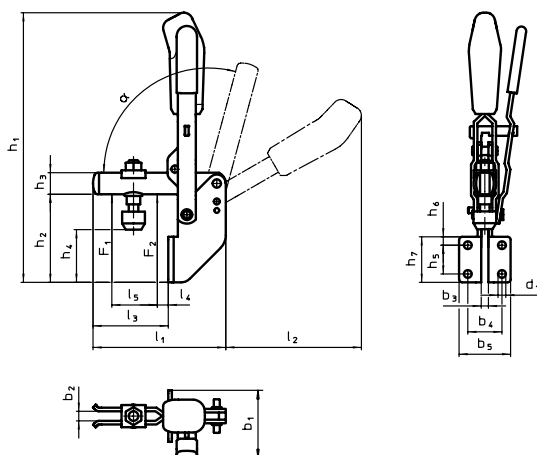
- PVC, black

MORE INFORMATION

References

Replacement clamping screws are available as accessories in the online shop.

DRAWING



ORDER INFORMATION

Nominal size	Clamping screw	Dimensions																			Holding force		α			Art. No.	
		d ₁	b ₁	b ₂	b ₃	b ₄	b ₅	h ₁	h ₂	h ₃	h ₄ min.	h ₄ max.	h ₅	h ₆	h ₇	l ₁	l ₂	l ₃	l ₄	l ₅	F ₁	F ₂					
	[mm]	[mm]																			[kN]		min.	max.	[°C]	[g]	
3	M6 x 35	6.1	45	6	5	25.5	37	176.5	61	12	34	41.5	20	6	32	77	63	40	9	25	1.0	1.2	105°	-10	80	272	23330.0623
4	M8 x 45	6.5	55	8	6	28.5	43	223.0	71	18	40	48.5	24	7	38	112	111	65	11	43	1.4	2.5	105°	-10	80	551	23330.0624
5	M8 x 65	8.5	63	10	8	32.0	52	280.0	102	20	53	81.5	32	54	96	140	129	84	17	50	2.0	3.0	105°	-10	80	885	23330.0625

ACCESSORIES

	d_2	Weight	Art. No.
	[mm]	[g]	
clamping screw			
	M6 x 35	16	23330.9003
	M8 x 45	38	23330.9005
	M8 x 65	57	23330.9006

Vertical Toggle Clamps • with horizontal base and solid support arm

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for maintenance-free continuous use.

An oil resistant ergonomic 2-component handle, with slip-proof, soft surface and large grip area for high ease of use.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization

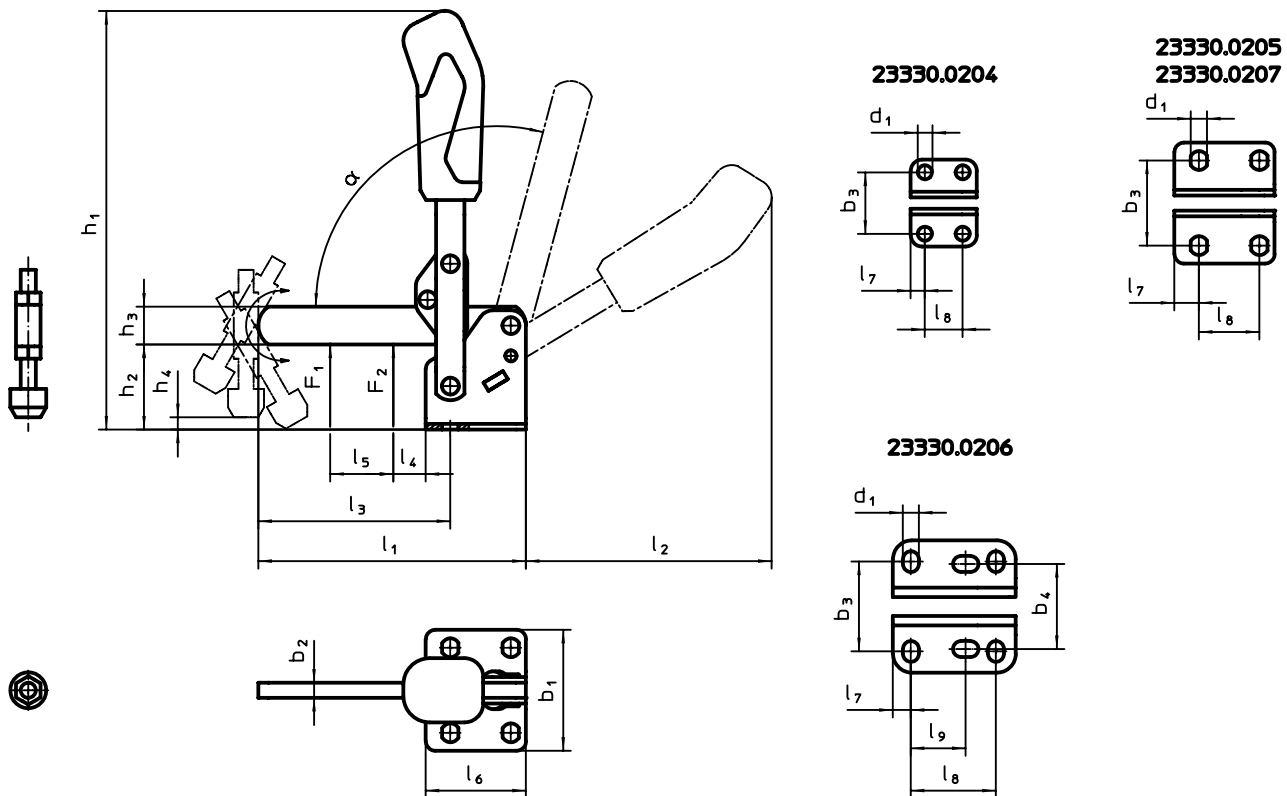
Clamping cap

- Rubber, black

Assembly

The clamping screw must be welded to the support arm in the desired position.

DRAWING



ORDER INFORMATION

Nominal size	Clamping screw	Dimensions																		Holding force		α				Art. No.
		d ₁	b ₁	b ₂	b ₄	h ₁	h ₂	h ₃	h ₄ min.	h ₄ max.	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆	l ₇	l ₈	l ₉	F ₁	F ₂		min.	max.		
	[mm]	[mm]																		[kN]		[°C]		[g]		
4	M 8 x 45	7.5	46	6	–	186	33.5	18	0	12.0	108.5	116.5	81.0	19.5	43	35	7.5	20.0	–	1.4	2.5	105°	-10	80	426	23330.0204
5	M 8 x 65	8.6	64	8	–	221	42.5	20	-8	21.0	141.5	129.5	101.0	17.0	61	53	13.0	32.0	–	2.0	3.0	105°	-10	80	686	23330.0205
6	M12 x 80	8.5	70	10	45	281	55.5	25	-6	25.5	196.5	184.0	141.0	30.5	88	65	9.5	45.0	26.5 – 31.5	3.0	5.0	105°	-10	80	1503	23330.0206
7	M12 x 110	13.0	100	10	–	331	81.0	30	-5	51.0	232.0	206.0	166.5	20.5	90	90	24.5	50.5	–	3.5	5.5	105°	-10	80	2000	23330.0207

Vertical Toggle Clamps • with horizontal base and safety lock

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for continuous use.

A oil resistant ergonomic 2-component handle, with increased grip area with soft surface for high ease of use.

The quickly adjustable clamping screws are provided by a retainer.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization

Clamping cap

- Rubber, black

Plastic cap

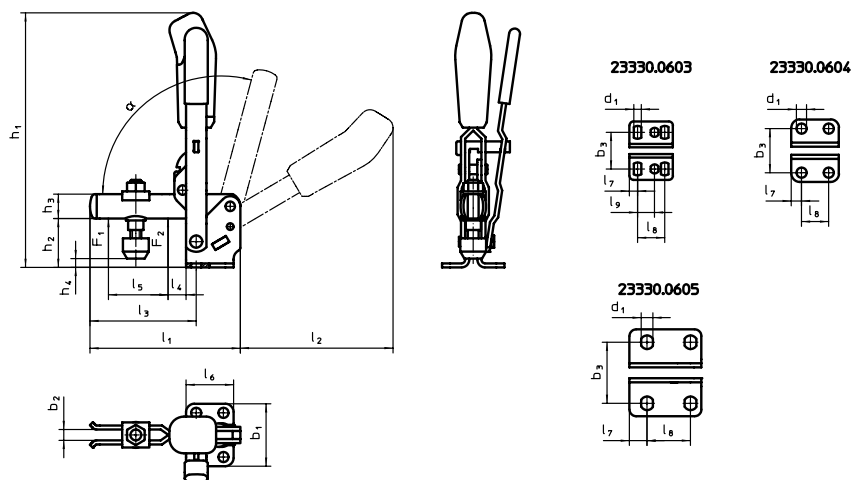
- PVC, black

MORE INFORMATION

References

Replacement clamping screws are available as accessories in the online shop.

DRAWING



ORDER INFORMATION

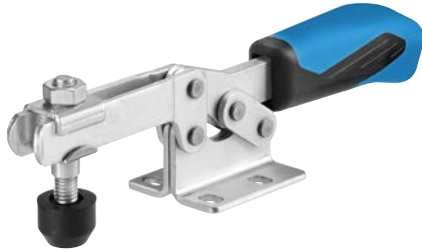
Nominal size	Clamping screw	Dimensions																			Holding force		α				Art. No.
		d ₁	b ₁	b ₂	b ₃	h ₁	h ₂	h ₃	h ₄ min.	h ₄ max.	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆	l ₇	l ₈	l ₉	F ₁	F ₂	min.		max.			
		[mm]																			[kN]			[°C]			
3	M6 x 35	5.5	43	6	23.0 – 31	139.5	23.0	12	-3	4.5	78	89	52	11	25	32	6.0	20	12.5	1.0	1.2	105°	-10	80	238	23330.0603	
4	M8 x 45	7.5	46	8	32.5	186.0	33.0	18	2	11.0	112	112	79	19	36	35	7.5	20	–	1.4	2.5	105°	-10	80	484	23330.0604	
5	M8 x 65	8.6	64	10	45.0	221.0	42.5	20	-6	22.5	141	130	101	16	54	53	13.0	32	–	2.0	3.0	105°	-10	80	775	23330.0605	

ACCESSORIES

	d_2		Art. No.
	[mm]	[g]	
clamping screw			
	M6 x 35	16	23330.9003
	M8 x 45	38	23330.9005
	M8 x 65	57	23330.9006

Horizontal Toggle Clamps • with horizontal base

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for continuous use.

A oil resistant ergonomic 2-component handle, with increased grip area with soft surface for high ease of use.

The quickly adjustable clamping screws are provided by a retainer.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated
- Stainless steel

Rivet

- Stainless steel
- Steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization
- Stainless Steel

Clamping cap

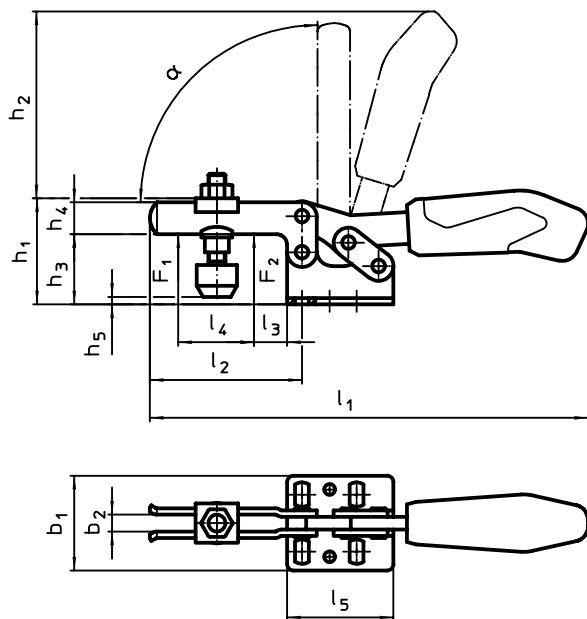
- Rubber, black

MORE INFORMATION

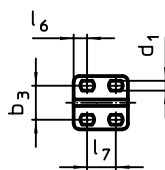
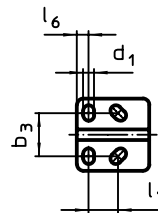
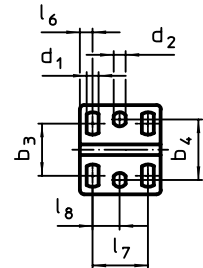
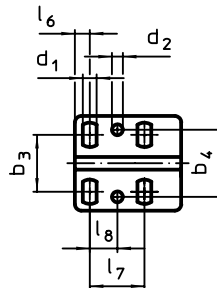
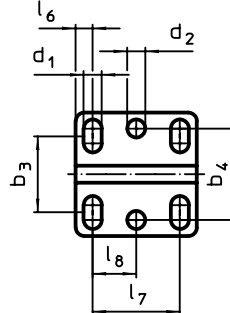
References

Replacement clamping screws are available as accessories in the online shop.

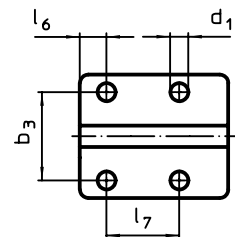
DRAWING



23330.1001

23330.1002
23330.150223330.1003
23330.150323330.1004
23330.150423330.1005
23330.1505

23330.1006



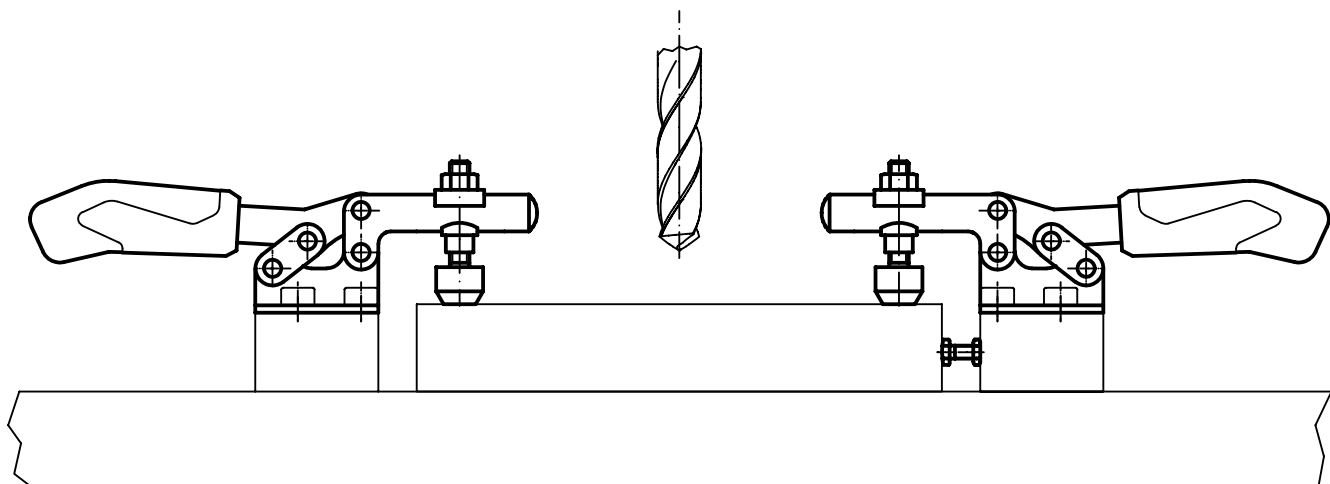
ORDER INFORMATION

Nominal size	Clamp- ing screw	Dimensions																				Holding force		α				Art. No.
		d ₁	d ₂	b ₁	b ₂	b ₃	b ₄	h ₁	h ₂	h ₃	h ₄	h ₅ min.	h ₅ max.	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆	l ₇	l ₈	F ₁	F ₂		min.	max.		
	[mm]	[mm]																				[kN]		[°C]		[g]		
steel																												
1	M 4 x 25	4.6	–	25.0	4	16.0	–	23.0	34	14.5	7.5	-5.5	0.0	79	28	5.5	9.0	25.5	6.3	11.5 – 15.5	–	0.25	0.4	90°	-10	80	38	23330.1001
2	M 5 x 30	5.2	–	34.0	5	18.0 – 21.5	–	30.0	49	19.0	10.0	-3.0	2.5	120	42	8.0	18.7	34.0	5.5	13.0 – 14.5	–	0.80	1.1	90°	-10	80	112	23330.1002
3	M 6 x 35	5.6	5.6	42.0	6	19.5 – 29.5	28.5	45.0	68	24.0	13.2	-1.5	5.0	162	64	16.0	32.0	38.0	6.0	26.0	12.7	1.00	1.2	90°	-10	80	190	23330.1003
4	M 8 x 45	6.5	5.1	45.5	8	22.0 – 31.8	31.6	48.5	86	32.0	15.0	-2.0	9.0	206	73	14.0	38.0	50.0	7.0	25.7	13.0	1.80	2.5	90°	-10	80	337	23330.1004
5	M 8 x 65	8.5	8.5	58.0	10	29.0 – 43.0	43.0	75.0	126	45.0	20.0	-4.0	24.0	287	113	27.0	63.0	57.0	8.0	41.0	20.5	2.00	3.0	90°	-10	80	726	23330.1005
6	M12 x 80	8.5	–	58.0	10	41.5	–	73.0	128	46.0	25.0	1.7	25.0	321	123	16.0	78.0	77.0	12.5	41.5	–	3.00	5.0	90°	-10	80	1112	23330.1006
stainless steel																												
2	M 5 x 30	5.2	–	34.0	5	18.0 – 21.5	–	30.0	49	19.0	10.0	-3.0	2.5	120	42	8.0	18.7	34.0	5.5	13.0 – 14.5	–	0.80	1.1	90°	-10	80	113	23330.1502
3	M 6 x 35	5.6	5.6	42.0	6	19.5 – 29.5	28.5	45.0	68	24.0	13.2	-1.5	5.0	162	64	16.0	32.0	38.0	6.0	26.0	12.7	1.00	1.2	90°	-10	80	189	23330.1503
4	M 8 x 45	6.5	5.1	45.5	8	22.0 – 31.8	31.6	48.5	86	32.0	15.0	-2.0	9.0	206	73	14.0	38.0	50.0	7.0	25.7	13.0	1.80	2.5	90°	-10	80	341	23330.1504
5	M 8 x 65	8.5	8.5	58.0	10	29.0 – 43.0	43.0	75.0	126	45.0	20.0	-4.0	24.0	287	113	27.0	63.0	57.0	8.0	41.0	20.5	2.00	3.0	90°	-10	80	744	23330.1505

ACCESSORIES

	Dimensions		Art. No.	
	d ₂		Steel	Stainless Steel
	[mm]		[g]	
clamping screw				
	M 4 x 25	6.2	23330.9001	–
	M 5 x 30	11.0	23330.9002	23330.9502
	M 6 x 35	16.0	23330.9003	23330.9503
	M 8 x 45	38.0	23330.9005	23330.9504
	M 8 x 65	57.0	23330.9006	23330.9505
	M12 x 80	147.0	23330.9007	–

APPLICATION EXAMPLE



Horizontal Toggle Clamps • with horizontal base / increased holding force

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for continuous use.

A oil resistant ergonomic 2-component handle, with increased grip area with soft surface for high ease of use.

The quickly adjustable clamping screws are provided by a retainer.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

Handle

- Plastic

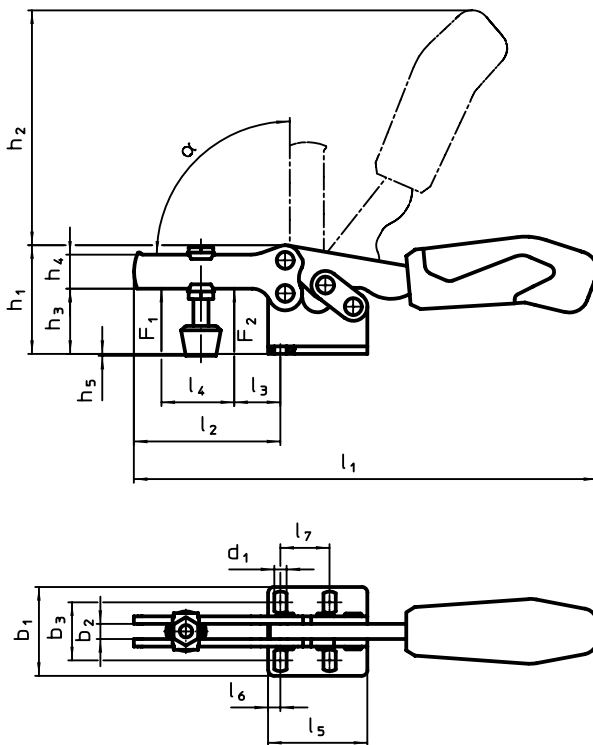
Clamping screw

- Steel, tempered, zinc-plated by galvanization

Clamping cap

- Rubber, black

DRAWING

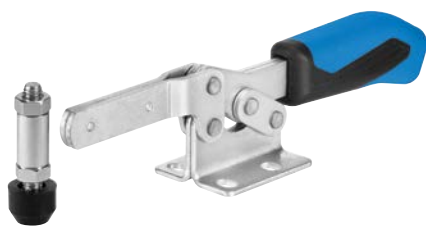


ORDER INFORMATION

Nominal size	Clamping screw	Dimensions																Holding force		α				Art. No.
		d ₁	b ₁	b ₂	h ₁	h ₂	h ₃	h ₄	h ₅ min.	h ₅ max.	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆	l ₇	F ₁	F ₂		min.	max.		
	[mm]	[mm]																[kN]		[°C]		[g]		
2	M 5 x 35	4.3	27.5	5	35	46	19.0	12	0	10.0	126	46	16.5	20	38.0	6.0	13.5	1.1	1.7	90°	-10	80	136	23330.1302
4	M 8 x 58	6.5	47.0	8	58	112	33.5	18	-1	13.0	242	78	22.0	43	52.5	6.5	26.0	2.5	4.0	90°	-10	80	557	23330.1304
5	M10 x 76	8.6	60.0	10	77	135	41.0	24	-2	16.5	329	120	23.0	69	76.0	10.5	41.5	3.5	8.0	90°	-10	80	1261	23330.1305

Horizontal Toggle Clamps • with horizontal base and solid support arm

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for maintenance-free continuous use.

An oil resistant ergonomic 2-component handle, with slip-proof, soft surface and large grip area for high ease of use.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization

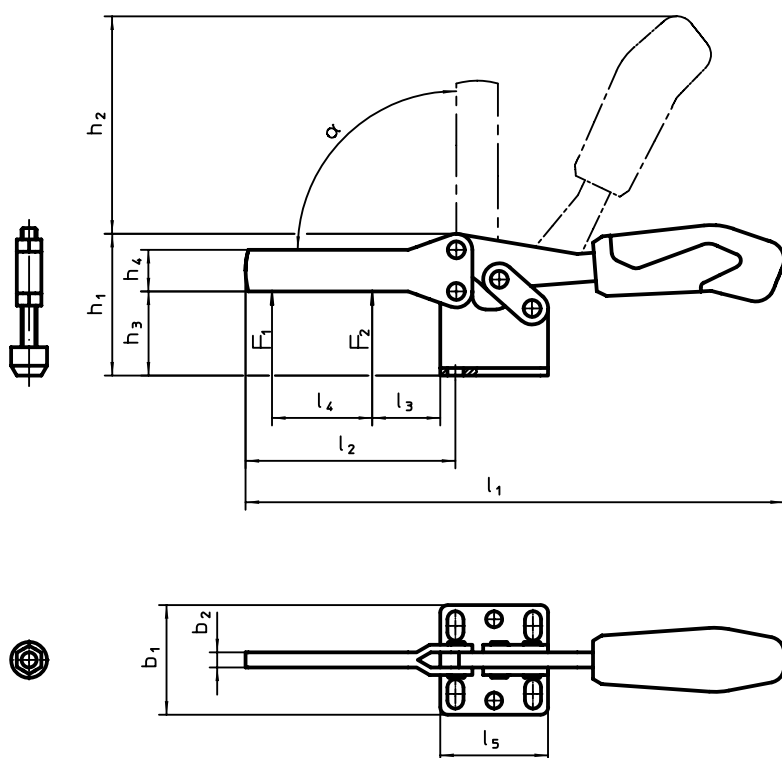
Clamping cap

- Rubber, black

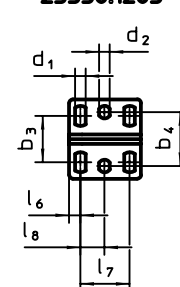
Assembly

The clamping screw must be welded to the support arm in the desired position.

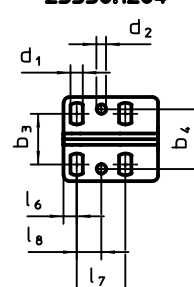
DRAWING



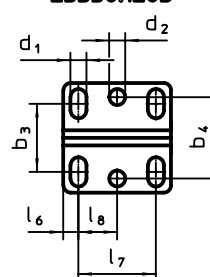
23330.1203



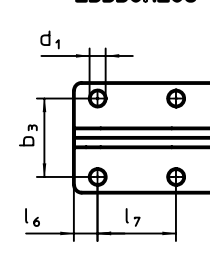
23330.1204



23330.1205



23330.1206

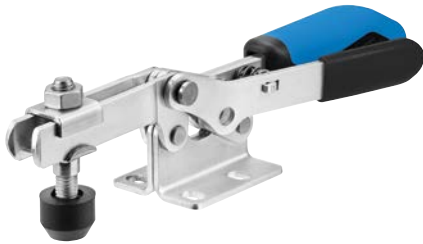


ORDER INFORMATION

Nominal size	Clamping screw	Dimensions																		Holding force		α	min. max.		Art. No.
		d_1	d_2	b_1	b_2	b_3	b_4	h_1	h_2	h_3	h_4	h_5 min. max.	l_1	l_2	l_3	l_4	l_5	l_6	l_7	l_8	F_1	F_2			
	[mm]																				[kN]		[°C]	[g]	
3	M 6 x 35	5.6	5.6	42.0	5	19.5 – 29.5	28.5	45.0	66	24	13	-2.0 7.5	161	63	24	35	38	6.0	26.0	13	1.0 1.2	90°	-10 80	196	23330.1203
4	M 8 x 45	6.5	5.1	45.5	6	22.0 – 31.8	32.0	48.5	86	32	15	-3.5 11.0	205	72	32	44	50	7.0	26.0	13	1.8 2.5	90°	-10 80	400	23330.1204
5	M 8 x 65	8.5	8.5	58.0	8	29.0 – 43.0	43.0	75.0	114	45	20	-6.0 22.0	280	111	45	66	57	8.0	41.0	21	2.0 3.0	90°	-10 80	716	23330.1205
6	M12 x 80	8.5	-	58.0	10	41.5	-	73.0	128	46	25	-13.0 12.5	320	121	46	78	77	12.5	41.5	-	3.0 5.0	90°	-10 80	1222	23330.1206

Horizontal Toggle Clamps • with horizontal base and safety lock

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for continuous use.

A oil resistant ergonomic 2-component handle, with increased grip area with soft surface for high ease of use.

The quickly adjustable clamping screws are provided by a retainer.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization

Clamping cap

- Rubber, black

Plastic cap

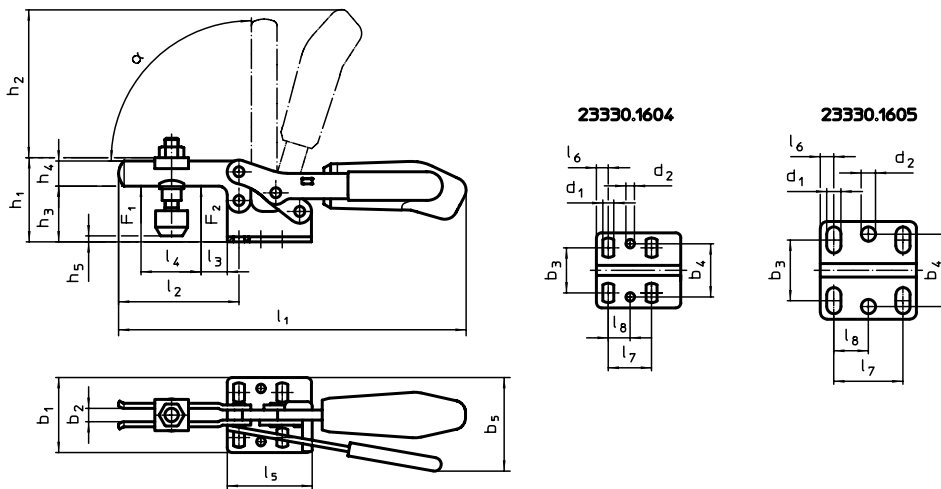
- PVC, black

MORE INFORMATION

References

Replacement clamping screws are available as accessories in the online shop.

DRAWING



ORDER INFORMATION

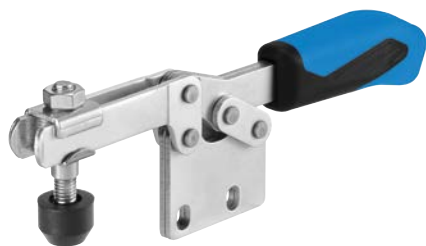
Nominal size	Clamping screw	Dimensions																			Holding force		α			Art. No.		
		d_1	d_2	b_1	b_2	b_3		b_4	b_5	h_1	h_2	h_3	h_4	l_1	l_2	l_3	l_4	l_5	l_6	l_7	l_8	F_1					F_2	
	[mm]	[mm]																			[kN]		min. max.		[°C]	[g]		
4	M8 x 45	6.5	5.1	45.5	8	22 – 31.8		31.6	56	48.5	86.0	32	15	206	73	14	38	50	7	25.7	13	1.8	2.5	90°	-10	80	401	23330.1604
5	M8 x 65	8.5	8.5	58.0	10	29 – 43.0		43.0	83	75.0	126.5	45	20	287	113	27	63	57	8	41.0	21	2.0	3.0	90°	-10	80	833	23330.1605

ACCESSORIES

	d_2		Art. No.
	[mm]	[g]	
clamping screw			
	M8 x 45	38	23330.9005
	M8 x 65	57	23330.9006

Horizontal Toggle Clamps • with vertical base

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for continuous use.

A oil resistant ergonomic 2-component handle, with increased grip area with soft surface for high ease of use.

The quickly adjustable clamping screws are provided by a retainer.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization

Clamping cap

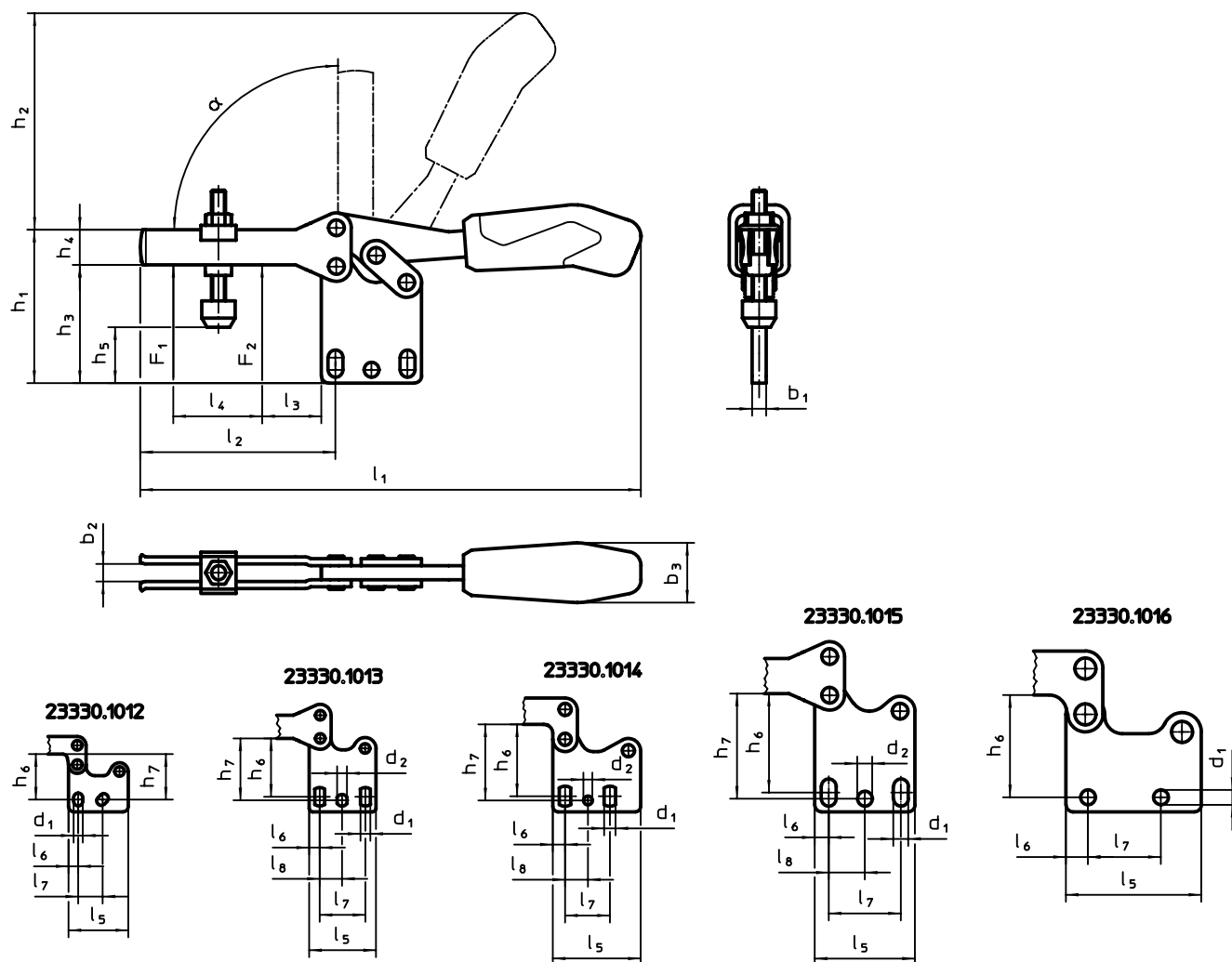
- Rubber, black

MORE INFORMATION

References

Replacement clamping screws are available as accessories in the online shop.

DRAWING



ORDER INFORMATION

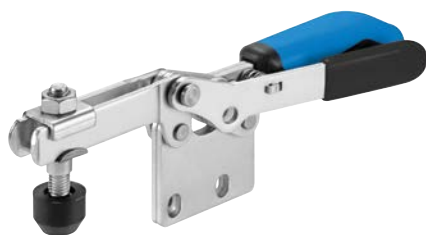
Nominal size	Clamp- ing screw	Dimensions																				Holding force		α			Art. No.		
		d ₁	d ₂	b ₁	b ₂	b ₃	h ₁	h ₂	h ₃	h ₄	h ₅ min.	h ₅ max.	h ₆	h ₇	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆	l ₇	l ₈	F ₁					F ₂	
		[mm]																				[kN]						[°C]	
	[mm]																												
2	M5 x 30	5.2	–	5	5	18	43.0	49	31.5	10.0	8.0	15	23.5 – 25.5	24.5	120	42	8	18.5	34	5.5	13.0 – 14.5	–	0.8	1.1	90°	-10	80	112	23330.1012
3	M6 x 35	5.6	5.6	5	6	21	55.0	68	40.0	13.2	15.0	22	29.5 – 34.0	34.0	164	64	16	32.0	38	6.0	26.0	12.7	1.0	1.2	90°	-10	80	194	23330.1013
4	M8 x 45	6.5	5.1	6	8	27	65.0	86	49.0	15.0	14.5	26	37.5 – 42.5	42.0	206	73	14	38.5	50	7.0	25.7	13.0	1.8	2.5	90°	-10	80	341	23330.1014
5	M8 x 65	8.5	8.5	8	10	34	97.0	115	66.5	20.0	17.5	46	52.0 – 59.0	59.0	287	113	27	63.0	57	8.0	41.0	20.5	2.0	3.0	90°	-10	80	726	23330.1015
6	M8 x 65	8.5	–	10	10	35	92.5	128	65.0	25.0	21.5	45	57.0	–	321	123	16	78.0	77	12.5	41.5	–	3.0	5.0	90°	-10	80	1132	23330.1016

ACCESSORIES

	d_2		Art. No.
	[mm]	[g]	
clamping screw			
	M5 x 30	11	23330.9002
	M6 x 35	16	23330.9003
	M8 x 45	38	23330.9005
	M8 x 65	57	23330.9006

Horizontal Toggle Clamps • with vertical base and safety lock

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for continuous use.

A oil resistant ergonomic 2-component handle, with increased grip area with soft surface for high ease of use.

The quickly adjustable clamping screws are provided by a retainer.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization

Clamping cap

- Rubber, black

Plastic cap

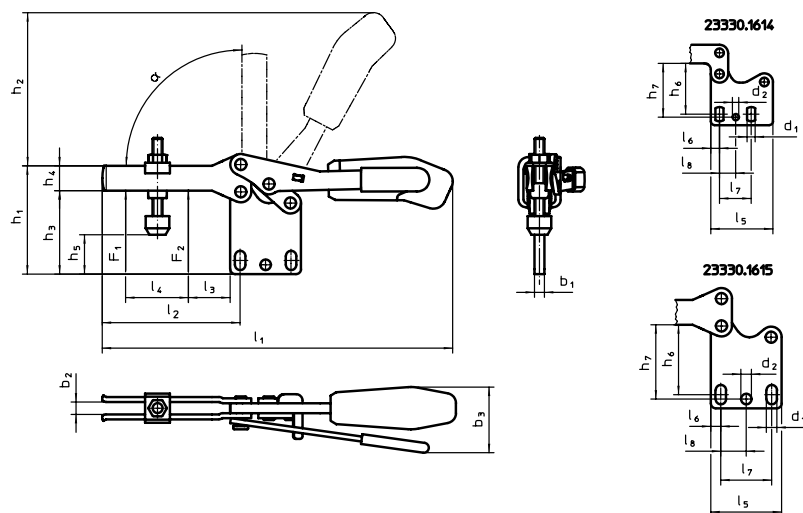
- PVC, black

MORE INFORMATION

References

Replacement clamping screws are available as accessories in the online shop.

DRAWING



ORDER INFORMATION

Nominal size	Clamp- ing screw	Dimensions																		Holding force		α			Art. No.					
		d ₁	d ₂	b ₁	b ₂	b ₃	h ₁	h ₂	h ₃	h ₄	h ₅	h ₅	h ₆	h ₇	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆	l ₇					l ₈	F ₁	F ₂	min.	max.
		[mm]																		[kN]						[°C]		[g]		
4	M8 x 45	6.5	5.1	6	8	48	65	86	49.0	15	14.5	26	37.5 – 42.5	42	206	73	14	38	50	7	25.7	13.0	1.8	2.5	90°	-10	80	401	23330.1614	
5	M8 x 65	8.5	8.5	8	10	51	97	115	66.5	20	17.5	46	52.0 – 59.0	59	287	113	27	63	57	8	41.0	20.5	2.0	3.0	90°	-10	80	834	23330.1615	

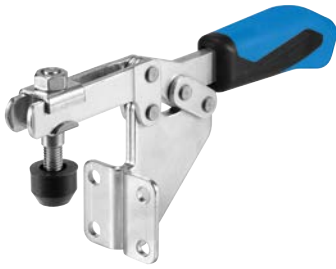
ACCESSORIES

	d ₂		Art. No.
	[mm]	[g]	
clamping screw			
	M8 x 45	38	23330.9005
	M8 x 65	57	23330.9006

Horizontal Toggle Clamps • with angle base

EH 23330.

3



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for continuous use.

A oil resistant ergonomic 2-component handle, with increased grip area with soft surface for high ease of use.

The quickly adjustable clamping screws are provided by a retainer.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization

Clamping cap

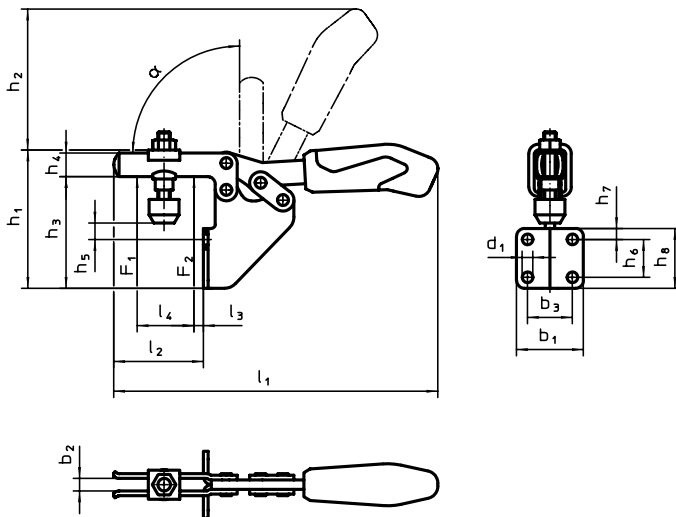
- Rubber, black

MORE INFORMATION

References

Replacement clamping screws are available as accessories in the online shop.

DRAWING



ORDER INFORMATION

Nominal size	Clamping screw	Dimensions																Holding force		α				Art. No.	
		d ₁	b ₁	b ₂	b ₃	h ₁	h ₂	h ₃	h ₄	h ₅ min.	h ₅ max.	h ₆	h ₇	h ₈	l ₁	l ₂	l ₃	l ₄	F ₁		F ₂	min.			max.
		[mm]	[mm]																[kN]		[°C]		[g]		
2	M5 x 30	5.2	31.0	5.0	19.0	68.0	49	57	10.0	14	20.0	13.5	8	28	120	32	4.0	18.5	0.8	1.1	90°	-10	80	154	23330.1022
3	M6 x 35	5.6	37.0	6.2	25.5	94.0	68	73	13.2	22	29.5	20.0	6	32	162	52	10.5	32.0	1.0	1.2	90°	-10	80	247	23330.1023
4	M8 x 45	6.8	42.5	8.0	28.5	86.5	86	70	15.0	5	16.0	24.0	7	38	206	59	6.5	37.0	1.8	2.5	90°	-10	80	400	23330.1024
5	M8 x 65	8.5	52.0	10.0	32.0	133.0	120	102	20.0	11	40.0	32.0	40	82	282	93	15.0	63.0	2.0	3.0	90°	-10	80	901	23330.1025

ACCESSORIES

	d_2		Art. No.
	[mm]	[g]	
clamping screw			
	M5 x 30	11	23330.9002
	M6 x 35	16	23330.9003
	M8 x 45	38	23330.9005
	M8 x 65	57	23330.9006

Toggle Clamps Push-Pull Type • with angle base

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for maintenance-free continuous use.

An oil resistant ergonomic 2-component handle, with slip-proof, soft surface and large grip area for high ease of use.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel
- Steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization

Clamping cap

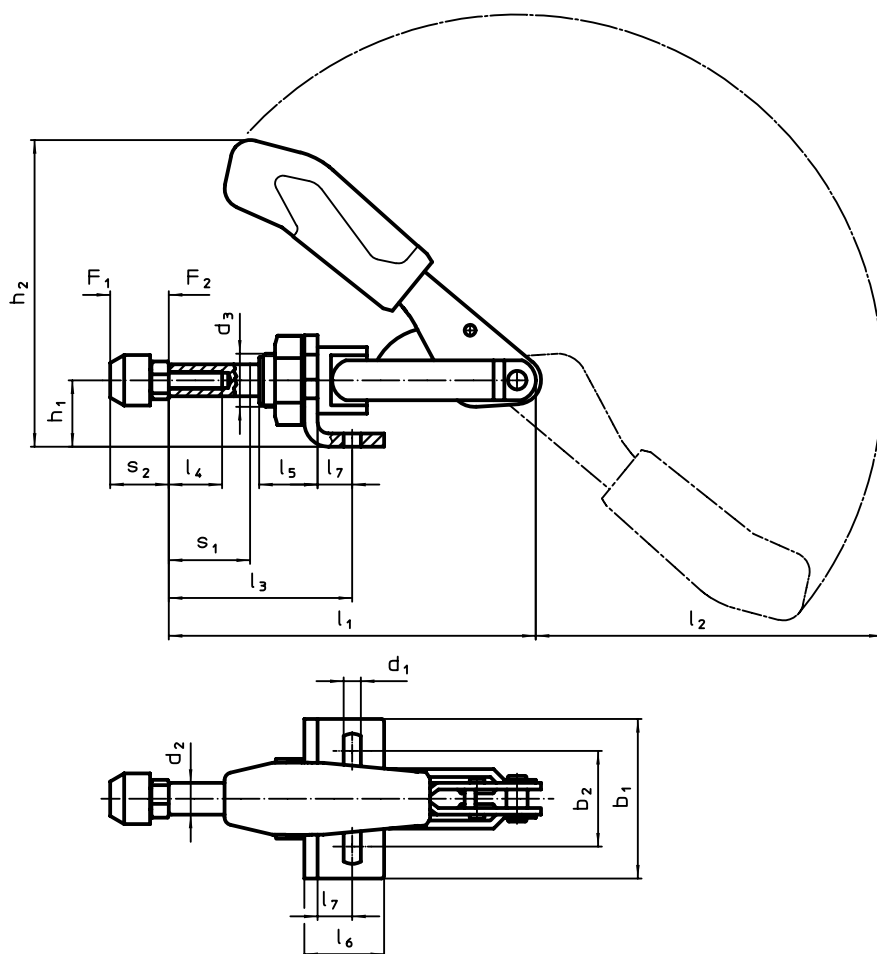
- Rubber, black

MORE INFORMATION

References

Replacement clamping screws are available as accessories in the online shop.

DRAWING



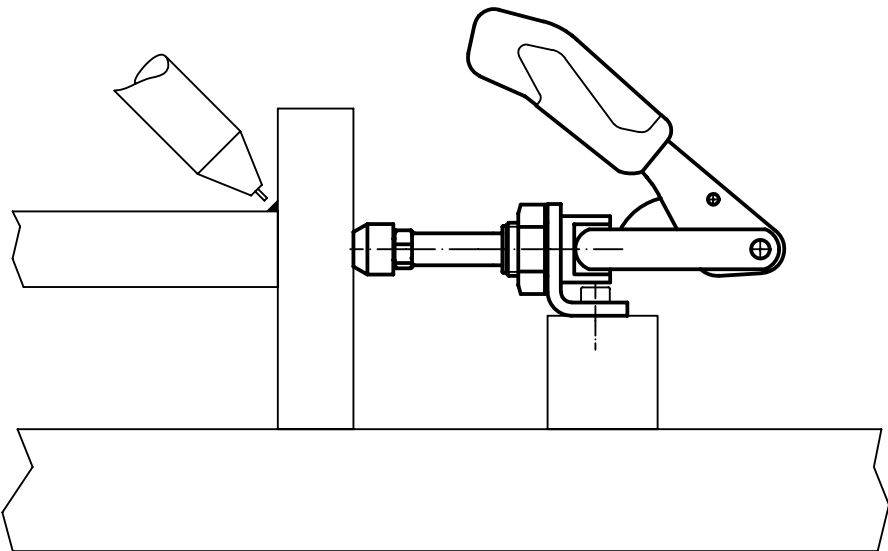
ORDER INFORMATION

Nominal size	Clamp- ing screw	Dimensions																		Stroke s ₁	Holding force					Art. No.
		d ₁	d ₂	d ₃	b ₁	b ₂	h ₁	h ₂	l ₁	l ₂	l ₃	l ₃	l ₄	l ₅	l ₆	l ₇	s ₂	s ₂								
											min.	max.					min.	max.								
		[mm]																			[mm]	[kN]		min.		
1	M 4 x 20	4.5	6.5	M10 x 1	25	16.0	12	49.3	66.5	54.0	17.0	33.0	13	10	16	6.5	12	20	16	0.8	0.8	-10	80	73	23330.2001	
2	M 4 x 20	4.5	8.0	M12 x 1,5	30	16.0 – 19.5	15	60.5	91.0	74.0	24.5	44.5	20	16	20	7.0	12	20	20	1.0	1.0	-10	80	124	23330.2002	
3	M 6 x 25	5.6	10.0	M16 x 1,5	50	31.8 – 36.0	20	85.5	114.0	105.0	32.5	58.5	20	19	34	12.5	17	25	26	2.0	2.0	-10	80	328	23330.2003	
4	M 8 x 35	6.5	12.0	M20 x 1,5	60	29.5 – 42.5	25	108.0	140.0	127.5	37.0	69.0	30	22	30	13.0	22	35	32	2.5	2.5	-10	80	505	23330.2004	
6	M12 x 50	8.5	16.0	M24 x 1,5	65	29.0 – 46.0	30	129.5	171.5	158.0	41.5	81.5	50	25	35	15.5	30	50	40	4.5	4.5	-10	80	927	23330.2006	

ACCESSORIES

d ₂ [mm]	 [g]	Art. No.
clamping screw		
M 4 x 20	3.6	23330.9011
M 6 x 25	11.0	23330.9013
M 8 x 35	25.0	23330.9014
M12 x 50	73.0	23330.9016

APPLICATION EXAMPLE



Toggle Clamps Push-Pull Type • with fastening thread

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

These toggle clamps can be used in the metal working industry when drilling, welding, bending, grinding, testing and fitting as well as in the wood and plastic industry in glueing, drilling, cutting and milling jigs.

The "toggle" principle of the toggle clamp allows a large and quick opening of the clamp. If unclamped the workpieces are completely cleared for unimpeded removal. The large power transmission results maximum clamping force by low hand force. The clamps are self-arresting they remain locked, resisting the force produced when machining components.

The toggle clamps are manufactured from high quality components and are designed for maintenance-free continuous use.

An oil resistant ergonomic 2-component handle, with slip-proof, soft surface and large grip area for high ease of use.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization

Clamping cap

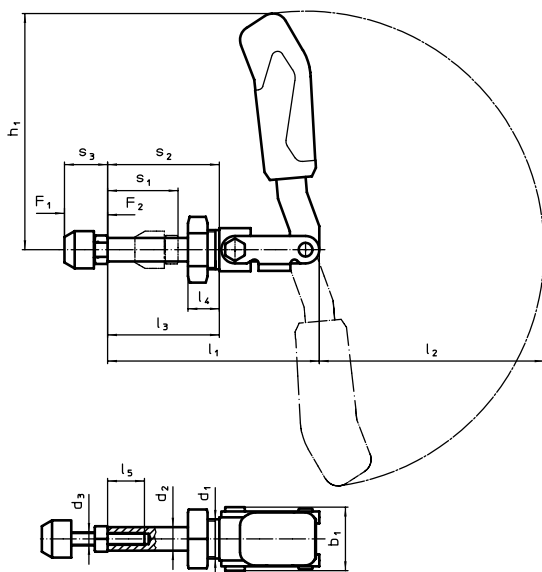
- Rubber, black

MORE INFORMATION

References

Replacement clamping screws are available as accessories in the online shop.

DRAWING



ORDER INFORMATION

Nominal size	Clamping screw	Dimensions													Stroke s_1	Holding force		Temperature range		Weight	Art. No.
		d_1	d_2	d_3	b_1	h_1	l_1	l_2	l_3	l_4	l_5	s_2	s_3 min.	s_3 max.		F_1	F_2	min.	max.		
	[mm]						[mm]							[mm]		[kN]		[°C]		[g]	
3	M 6 x 25	M16 x 1,5	10	M 6	30.5	73	68.5	68	36	13	15	36	17	25	21.5	1.0	1.0	-10	80	152	23330.2103
4	M 8 x 35	M20 x 1,5	12	M 8	33.0	123	108.0	115	57	16	25	57	22	35	40.0	2.5	2.5	-10	80	327	23330.2104
6	M12 x 50	M24 x 1,5	16	M12	49.0	149	175.0	139	92	24	45	92	30	50	67.0	4.0	4.0	-10	80	927	23330.2106

ACCESSORIES

d_2		Art. No.
[mm]	[g]	
clamping screw		
M 6 x 25	11	23330.9013
M 8 x 35	25	23330.9014
M12 x 50	73	23330.9016

Toggle Clamps Hook Type • with horizontal base

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

The toggle clamps are manufactured from high quality components and are designed for maintenance-free continuous use.

An oil resistant ergonomic 2-component handle, with slip-proof, soft surface and large grip area for high ease of use.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated
- Stainless steel

Rivet

- Stainless steel

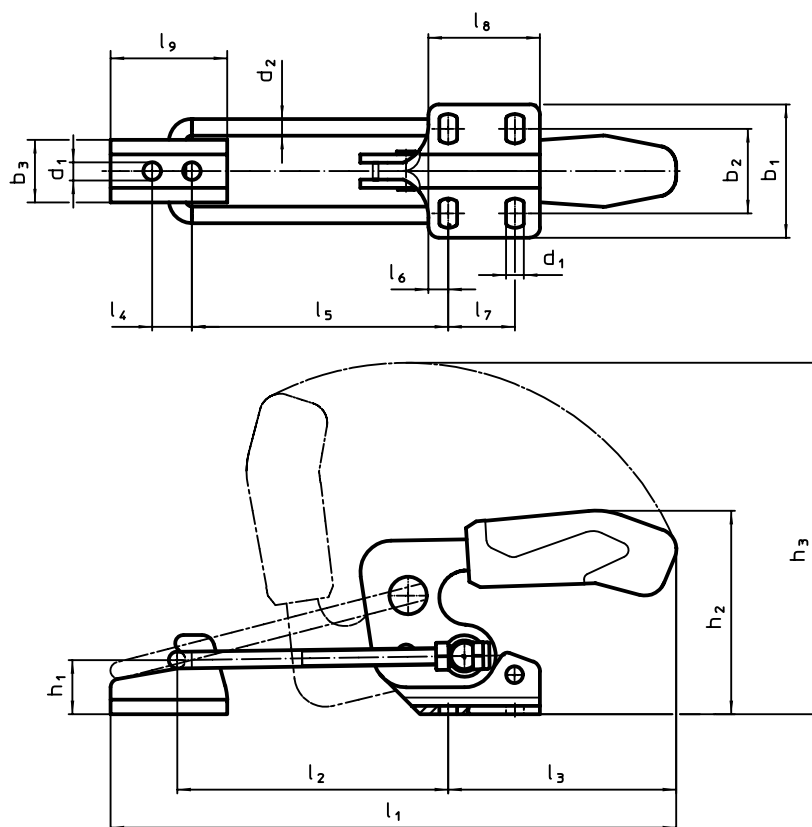
Handle

- Plastic

Counter catch

- Steel, zinc-plated by galvanization, passivated
- Stainless steel

DRAWING



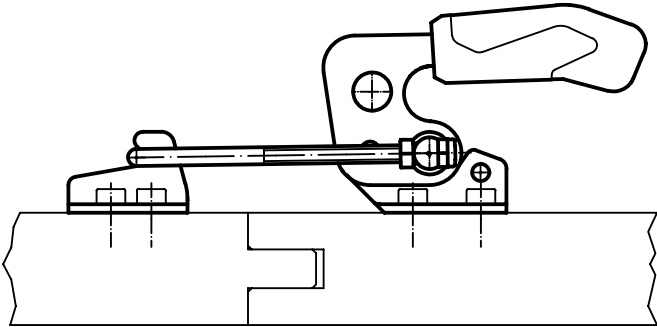
ORDER INFORMATION

Nominal size	Dimensions																				Holding force F ₁				Art. No.
	d ₁	d ₂	b ₁	b ₂	b ₃	h ₁	h ₂	h ₃	l ₁ min.	l ₁ max.	l ₂ min.	l ₂ max.	l ₃	l ₄	l ₅ min.	l ₅ max.	l ₆	l ₇	l ₈	l ₉					
	[mm]																				[kN]	min.	max.	[g]	
																					[°C]				
steel																									
3	5.2	4	38.0	19.5 – 23.5	18	12	47.0	99.0	125	159	42.0	76	69	11	38.0	72	6.4	13	26.0	26	1.6	-10	80	143	23330.3003
4	6.5	6	48.0	24.5 – 32.0	23	19	70.0	135.5	169	216	53.5	101	93	14	48.6	96	8.0	19	35.0	39	3.2	-10	80	365	23330.3004
5	8.5	8	64.3	35.0 – 46.0	30	26	94.5	171.5	209	273	66.0	130	111	19	59.0	123	9.5	32	53.5	56	7.0	-10	80	821	23330.3005
stainless steel																									
3	5.2	4	38.0	19.5 – 23.5	18	12	47.0	99.0	125	159	42.0	76	69	11	38.0	72	6.4	13	26.0	26	1.6	-10	80	144	23330.3103
4	6.5	6	48.0	24.5 – 32.0	23	19	70.0	135.5	169	216	53.5	101	93	14	48.6	96	8.0	19	35.0	39	3.2	-10	80	365	23330.3104
5	8.5	8	64.3	35.0 – 46.0	30	26	94.5	171.5	209	273	66.0	130	111	19	59.0	123	9.5	32	53.5	56	7.0	-10	80	821	23330.3105

ACCESSORIES

	Nominal size	l_9	b_3	d_1	l_4		Art. No.	
		[mm]	[mm]	[mm]	[mm]	[g]	Steel	Stainless steel
counter catch (accessories for toggle clamps hook type)								
	3	26	18	5.2	11	15	23330.9023	23330.9523
	4	39	23	6.5	14	42	23330.9024	23330.9524
	5	56	30	8.5	19	108	23330.9025	23330.9525

APPLICATION EXAMPLE



Toggle Clamps Hook Type • vertical, with horizontal base

EH 23330.



PRODUCT DESCRIPTION

Due to their favourable power to movement ratio and their easy action the toggle clamps are versatile applicable for a wide range of uses.

The toggle clamps are manufactured from high quality components and are designed for maintenance-free continuous use.

An oil resistant ergonomic 2-component handle, with slip-proof, soft surface and large grip area for high ease of use.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

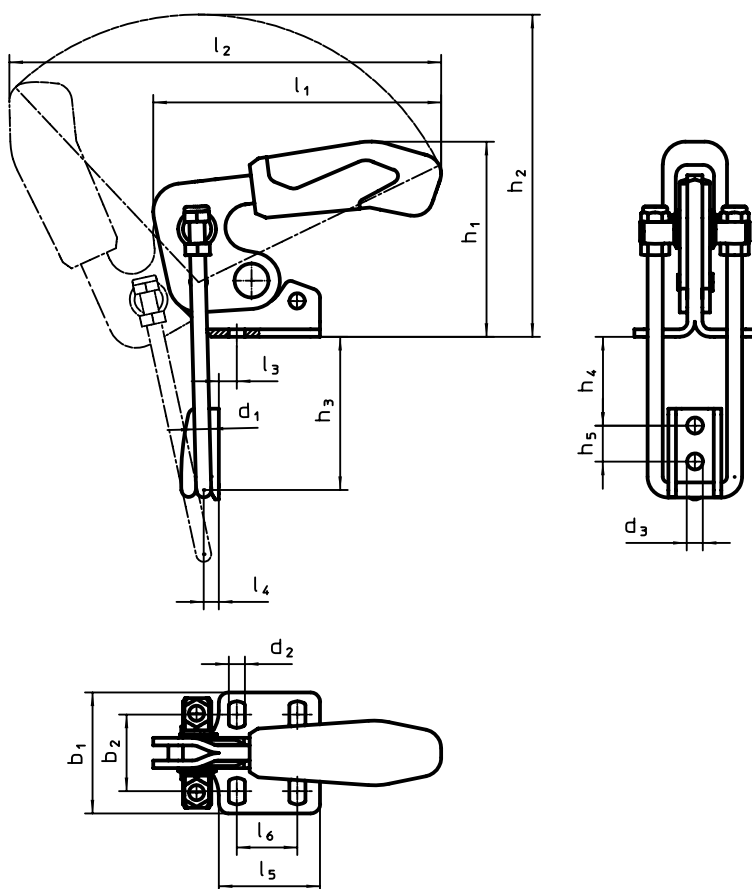
Handle

- Plastic

Counter catch

- Steel, zinc-plated by galvanization, passivated

DRAWING

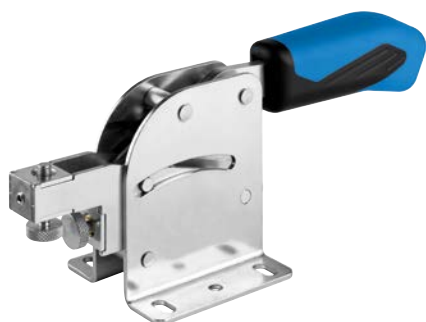


ORDER INFORMATION

Nominal size	Dimensions																		Holding force				Art. No.
	d ₁	d ₂	d ₃	b ₁	b ₂	h ₁	h ₂	h ₃ min.	h ₃ max.	h ₄ min.	h ₄ max.	h ₅	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆					
	[mm]																		F ₁	min.	max.		
																			[kN]	[°C]	[g]		
3	4	5.2	5.2	38	19.5 – 23.5	47.0	99	24.0	49	5	30	11	91	158	6.4	5	26	13	1.6	-10	80	150	23330.5003
4	6	6.5	6.5	48	24.5 – 32.0	70.0	136	34.5	64	7	36	14	125	190	8.0	6	35	19	3.2	-10	80	358	23330.5004
5	8	8.5	8.5	65	35.0 – 46.0	94.5	168	43.0	81	9	47	19	151	239	9.5	8	54	32	7.0	-10	80	791	23330.5005

Combination Clamps • with horizontal base

EH 23330.



PRODUCT DESCRIPTION

The combination clamp combines a toggle clamp push-pull type and a vertical toggle clamp in one clamp. Thus the use of different toggle clamps is not necessary. The horizontal and vertical clamping movement is achieved by simple operation using an ergonomic handle. Simultaneous exact positioning and secure clamping of the component is guaranteed. The toggle clamps are manufactured from high quality components and are designed for maintenance-free continuous use.

An oil resistant ergonomic 2-component handle, with slip-proof, soft surface and large grip area for high ease of use.

Material

Clamp

- Steel, zinc-plated by galvanization, passivated

Rivet

- Stainless steel

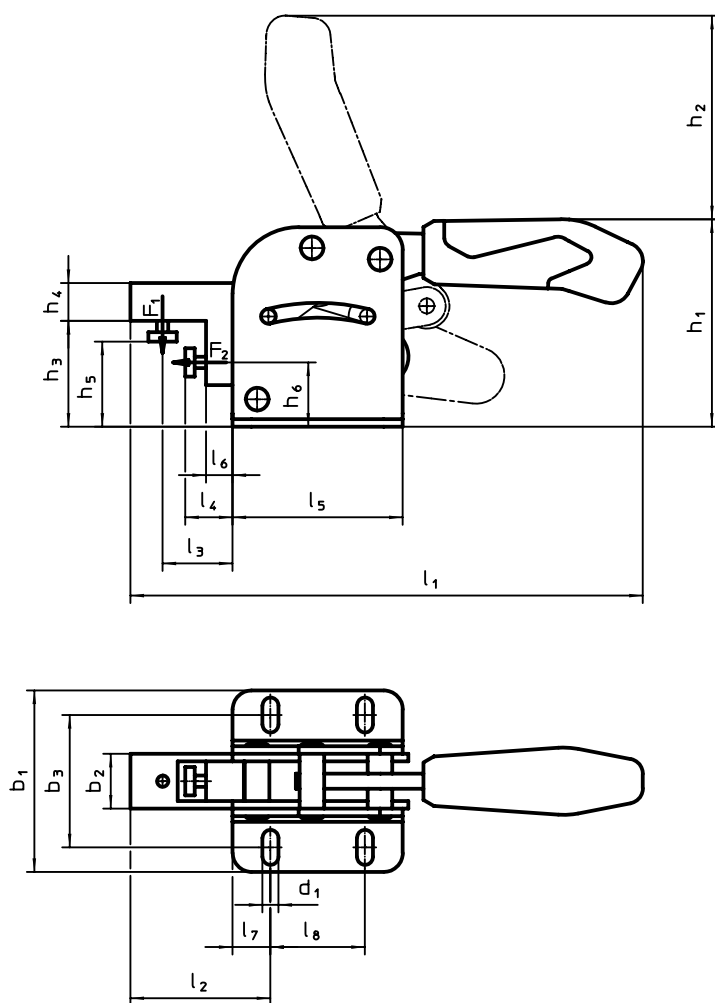
Handle

- Plastic

Clamping screw

- Steel, tempered, zinc-plated by galvanization

DRAWING



ORDER INFORMATION

Nominal size	Dimensions																				Holding force					Art. No.			
	d ₁	b ₁	b ₂	b ₃		h ₁	h ₂	h ₃	h ₄	h ₅ min.	h ₅ max.	h ₆	l ₁	l ₂	l ₃	l ₄ min.	l ₄ max.	l ₅	l ₆	l ₇	l ₈	F ₁	F ₂	min.	max.				
	[mm]																				[kN]		[°C]					[g]	
2	5.5	53	17.0	34.5 – 39.5		74	62	36.0	12	25	32	22	150	33	15	5	10	55	0.5	7.5	40	1	1	-10	80	330	23330.4002		
3	6.5	75	19.5	48.5 – 61.5		94	87	46.0	16	30	40	28	219	56	32	14	24	75	9.0	12.5	50	2	2	-10	80	714	23330.4003		
4	8.5	96	29.0	60.0 – 80.0		110	106	55.5	20	40	50	34	270	74	37	20	30	90	14.0	20.0	50	3	3	-10	80	1618	23330.4004		

COMPACT CLAMPS

PRECISE IN ANY POSITION

Our compact clamps are suitable for use as all-purpose clamping elements on machined and non-machined parts. Their self-locking clamping lever makes it possible to use the clamps in both vertical and horizontal position.

FEATURES

- Exact clamping with pin-point accuracy.
- Simple and universal handling.
- High clamping force at low tightening torque levels and abrasion-resistant thanks to clamping lever with bearings.
- Large and continuous clamping area.
- Clamping lever entirely retractable for hindrance-free exchange of workpieces.
- Threaded clamping lever can be used with many clamping elements, e.g. ball-ended thrust screws (EH 22700, - EH 22720.), self-aligning pads (EH 22730./EH 22740.) etc.
- Large adjusting range at constant clamping force.
- Continuous height adjustment by height adapters 23690.0112/.0116.
- Simple and versatile attachment options.
- Corrosion-resistant.
- Resistant to dirt and chips.



Compact Clamps

EH 23690.

3



PRODUCT DESCRIPTION

The compact clamps are all purpose clamping elements. Due to the self-locking tension lever application can either take place in horizontal or vertical position in both, machined and raw workpieces.

Features:

- Exact and position precise clamping
- Easy, universal handling
- High clamping force at low tightening torques, abrasion-resistant due to tension lever with bearings
- Continuous, large clamping area
- Tension lever entirely retractable for hindrance-free exchange of workpieces
- Tension lever with locating thread for various clamping elements, e.g. ball-ended thrust screws (EH 22700. - EH 22720.), self-aligning pads (EH 22730. / EH 22740.) etc.
- Large adjusting range at constant clamping force
- Continuous increase of the clamping range by height adapters 23690.0112 / .0116
- Easy and flexible mounting options
- Corrosion-resistant
- Resistant to dirt and chips

Material

Body

- Heat-treated steel, black coated

Tension lever

- Heat-treated steel, tempered, silver coated

Assembly

Assembly and Set-Up:

1. Take out stop pin ISO 4762-M 6 x 10.
2. Move back and take out tension lever.
3. Tightening by 2 screws with internal hexagon (included in supply volume).

4. Place tension lever in sliding rail and then insert.
5. Tighten stop pin ISO 4762 - M 6 x 10.

Operation

Clamping Process:

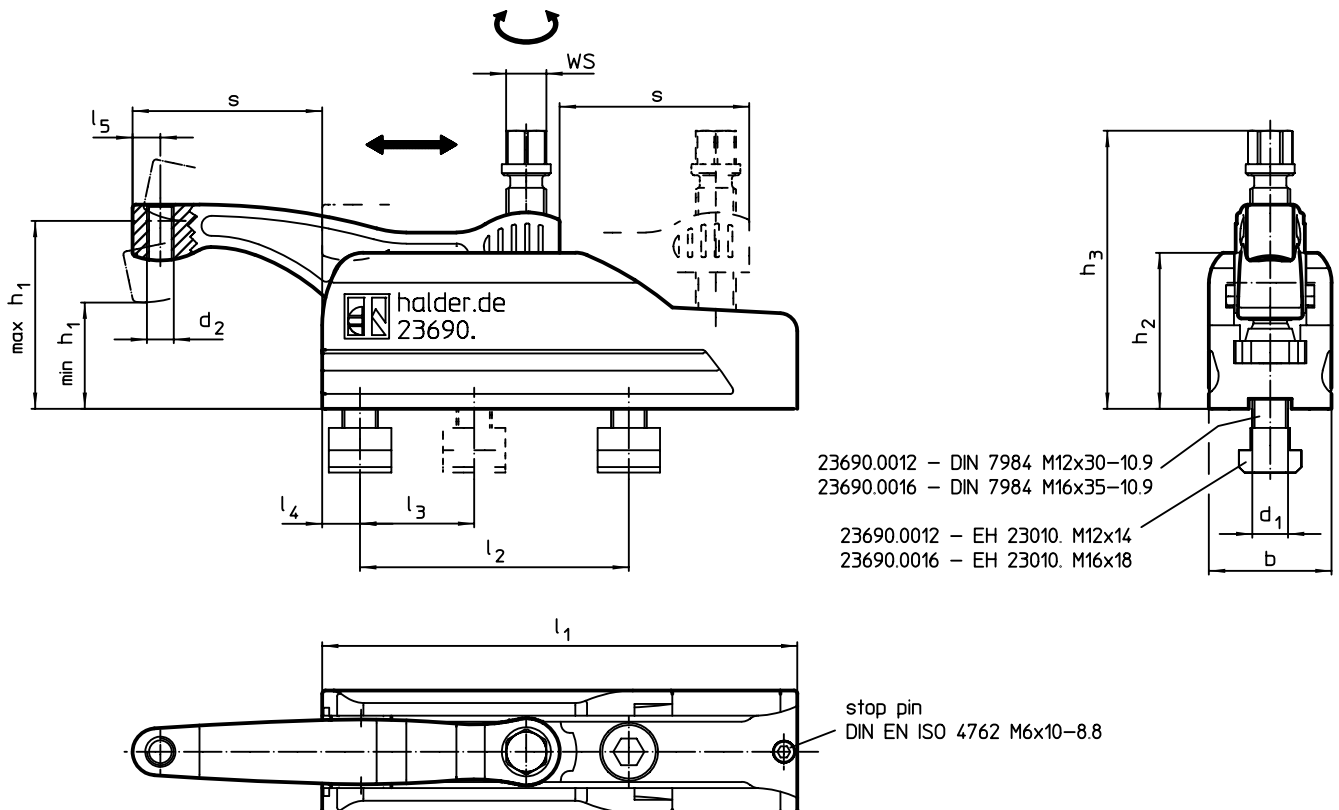
1. Slide tension lever to clamping position.
2. Clamping is made via a hexagon collar screw.
3. Releasing is done in reverse order.

MORE INFORMATION

Further products

Height Adapters, for compact clamp . . → p. 560

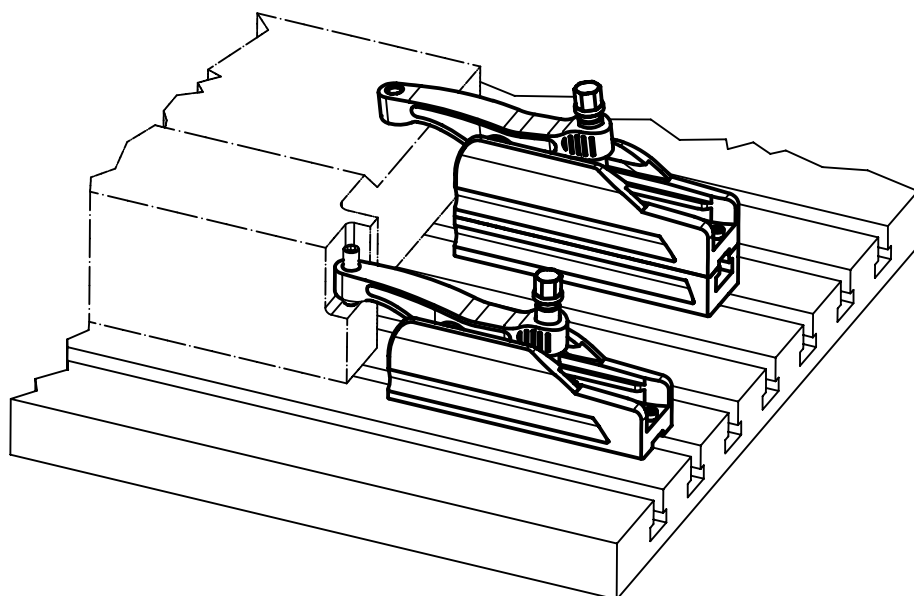
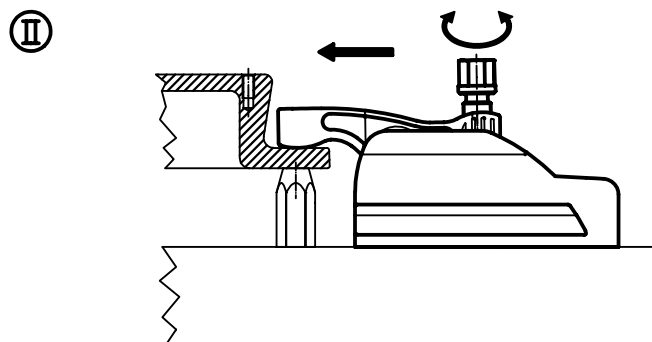
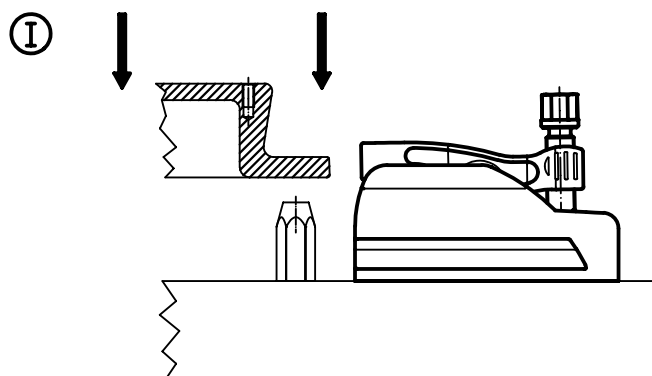
DRAWING



ORDER INFORMATION

Dimensions													WS	Clamp- ing force max.	Tightening torque max.		Art. No.
d ₁	d ₂	h ₁ min.	h ₁ max.	h ₂	h ₃	s max.	l ₁	l ₂ +1	l ₃	l ₄	l ₅	b					
[mm]																	
M12	M 8	40	60	59	95	43	134	70	50	13	10.0	45	16	15	45	1840	23690.0012
M16	M12	47	85	70	126	85	213	120	50	17	12.5	55	18	25	75	4000	23690.0016

APPLICATION EXAMPLE



Height Adapters • for compact clamp

EH 23690.



PRODUCT DESCRIPTION

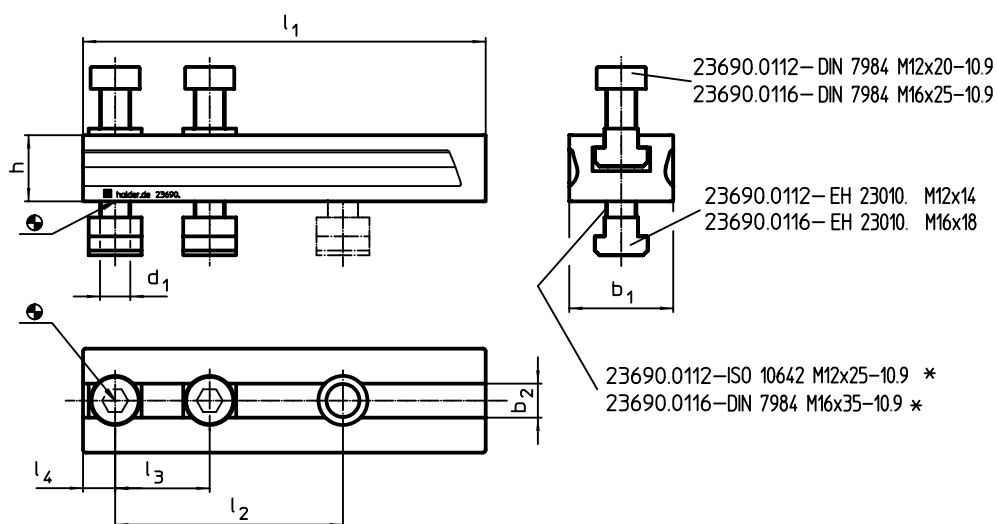
The height adapter for compact clamps allows a clamping height increase and has the following characteristics:

- Continuous covering of clamping height
- T-slot in the height adapter allows exact positioning by moving the compact clamp at specified grid spacings
- Height can be expanded user-defined

Material

- Heat-treated steel, black coated

DRAWING

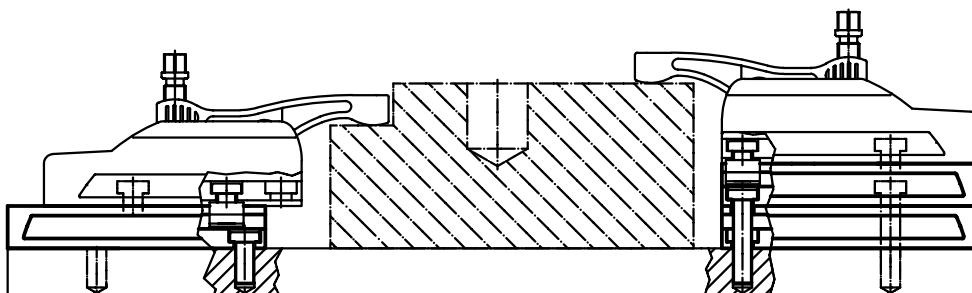


* When using more height adapters the screws ISO 10642 or DIN 7984 have to be replaced by screws extended by the dimension h.

ORDER INFORMATION

Dimensions									Art. No.
d_1	l_1	l_2 +1	l_3	l_4	h	b_1	b_2 H12		
[mm]								[g]	
M12	134	70	50	13	20	45	14	874	23690.0112
M16	213	120	50	17	35	55	18	3000	23690.0116

APPLICATION EXAMPLE



CENTERING CLAMPING ELEMENTS

THE FORCE LIES AT THE CENTRE

Centering clamping elements are used to centre and clamp parts that come with a location hole. Precise self-centring with an accuracy of ± 0.025 mm. The ground clamping segments make it possible to achieve force closure when centring parts with a rough or machined surface and pull the parts down to fixture plates. The centering clamping element is distinguished by its long adjustment travel and low construction height. Can be screwed on at the top and the bottom.



[www.halder.com/
CenteringClampingElements-Video](http://www.halder.com/CenteringClampingElements-Video)



Centering Clamping Elements • with clamping segments

EH 23340.



PRODUCT DESCRIPTION

For clamping and centering of workpieces with internal bore. Exact self centering with a precision of $\pm 0,025$ mm. Due to the clamping segments being ground, workpieces with raw and/or machined surfaces can be frictionally connected, centered and held down at the seats. Large adjustment stroke and a low building height are a feature of the centering clamping element.

Mounting from either top or bottom.

Material

Body

- Tool steel, hardened, blackened

Spring

- Stainless steel

Clamping segments

- Stainless steel 1.4112, hardened and ground

Assembly

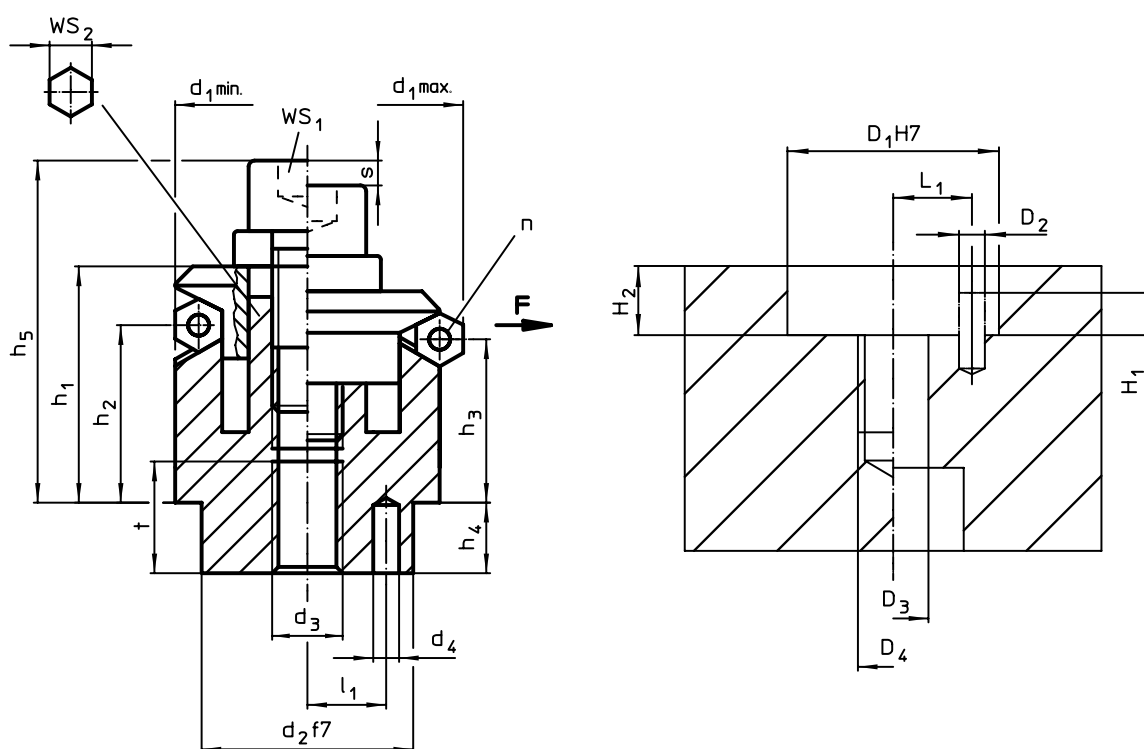
Assembly instructions for mounting from above: Remove clamping plate and screw. Screw in threaded pin from below, and tighten from above using female WS_2 .

MORE INFORMATION

Further products

Centering Clamping Elements, with clamping balls → p. 564

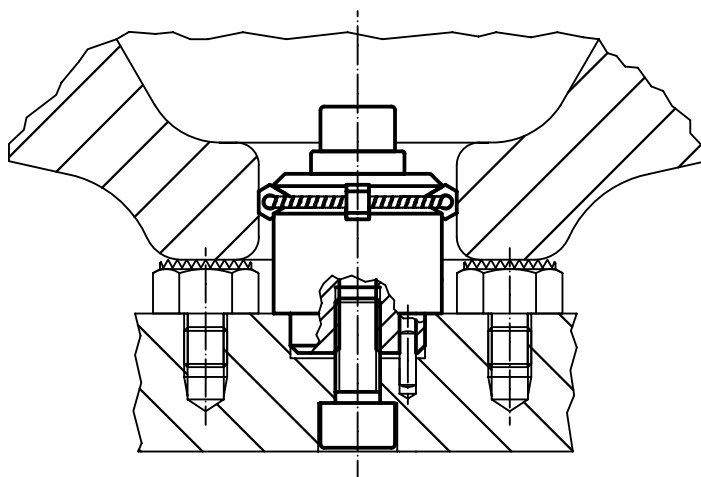
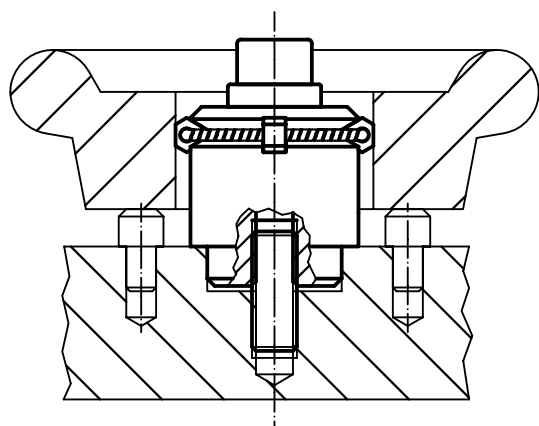
DRAWING



ORDER INFORMATION

Dimensions												Number of segments n	Stroke s	WS		Clamping force F max.	Tightening torque max.	Location hole								Art. No.
d ₁ min.	d ₁ max.	d ₂ f7	d ₃	d ₄ +0.3	h ₁ -1	h ₂	h ₃	h ₄	h ₅ -2	l ₁ ±0.1	t			WS ₁	WS ₂			D ₁ H7	D ₂	D ₃	D ₄	H ₁	H ₂ +0.5	L ₁ ±0.1		
[mm]														[mm]	[mm]			[kN]	[Nm]	[mm]						
14.5	18.5	12	M 4	2.0	14.3	9.8	8.6	5.5	19.3	4.5	6	3	2.3	3	5	3.5	5	12	2.0	4	M 4	2.0	5.5	4.5	26	23340.0014
18.5	22.5	15	M 5	2.5	16.6	11.5	10.4	7.5	22.8	5.5	7	3	2.3	4	5	4.5	10	15	2.5	5	M 5	2.5	7.5	5.5	45	23340.0018
22.5	26.5	20	M 6	3.0	19.7	14.1	13.0	6.0	28.7	7.0	8	3	2.3	5	6	5.0	17	20	3.0	6	M 6	3.0	6.0	7.0	72	23340.0022
26.5	30.5	20	M 6	3.0	19.9	14.2	13.0	6.0	28.9	7.0	8	3	2.3	5	6	5.0	17	20	3.0	6	M 6	3.0	6.0	7.0	96	23340.0026
30.5	38.5	25	M 6	4.0	23.2	14.0	11.7	7.0	32.2	9.0	8	3	4.6	5	6	5.0	17	25	4.0	6	M 6	4.0	7.0	9.0	131	23340.0030
38.5	46.5	30	M 8	4.0	27.2	18.0	15.5	7.5	39.2	11.0	10	6	4.6	6	8	6.5	43	30	4.0	8	M 8	4.0	7.5	11.0	259	23340.0038
46.5	54.5	30	M 8	4.0	27.2	18.0	15.7	7.5	39.2	11.0	10	6	4.6	6	8	6.5	43	30	4.0	8	M 8	4.0	7.5	11.0	348	23340.0046
54.5	70.5	45	M10	5.0	40.7	23.7	19.1	9.0	54.7	15.0	12	6	9.2	8	10	8.0	79	45	5.0	10	M10	5.0	9.0	15.0	675	23340.0054
70.5	86.5	60	M12	5.0	46.0	28.3	23.6	10.0	63.0	17.0	15	6	9.2	10	12	10.0	141	60	5.0	12	M12	5.0	10.0	17.0	1346	23340.0070
86.5	102.5	60	M16	5.0	51.1	30.3	25.6	10.0	72.1	25.0	15	6	9.2	14	17	10.0	354	60	5.0	16	M16	5.0	10.0	25.0	2000	23340.0086

APPLICATION EXAMPLE



Centering Clamping Elements • with clamping balls

EH 23340.



PRODUCT DESCRIPTION

To be used for accurate centering and clamping of workpieces with locating hole on which light spherical marks are acceptable. Exact self-centering with a precision of $\pm 0,025$ mm. The clamping balls frictionally center and hold workpieces with raw or pre-machined surfaces down to the bearing points. Large adjustment stroke and a small building height are a feature of this center clamping element.

Mounting from either top or bottom.

Material

Body

- Tool steel, hardened, blackened

Spring

- Stainless steel

Clamping balls

- Stainless steel 1.4112, hardened and ground

Assembly

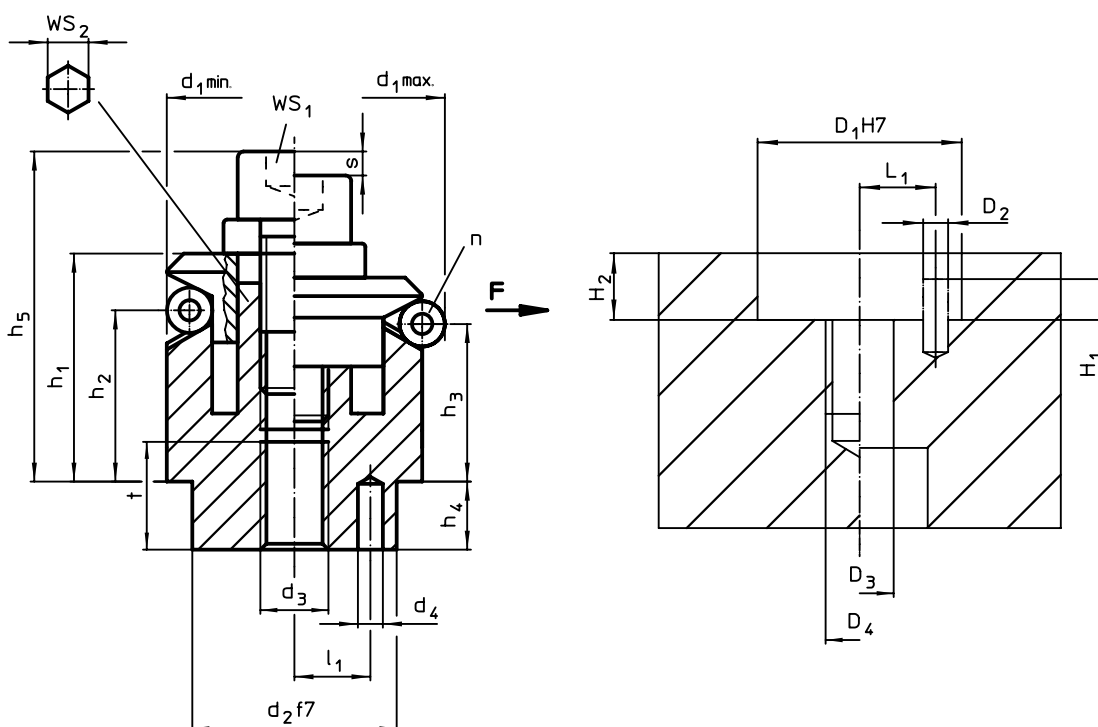
Assembly instructions for mounting from above: Remove clamping plate and screw. Screw in threaded pin from below, and tighten from above using female WS_2 .

MORE INFORMATION

Further products

Centering Clamping Elements, with clamping segments → p. 562

DRAWING



ORDER INFORMATION

Dimensions														Number of balls n	Stroke s	WS		Clamp- ing force F max.	Tight- ening torque max.	Location hole									Art. No.
d ₁ min.	d ₁ max.	d ₂ f7	d ₃	d ₄ +0.3	h ₁ -1	h ₂	h ₃	h ₄	h ₅ -2	l ₁ ±0.1	ball diam- eter	t	WS ₁			WS ₂	D ₁ H7			D ₂	D ₃	D ₄	H ₁	H ₂ +0.5	L ₁ ±0.1				
[mm]																[mm]	[mm]			[kN]	[Nm]	[mm]							
11.7	14.2	10	M 4	1.5	8.6	3.9	3.2	3.5	14.7	3.5	2.5	4	3	3	1.3	3	–	0.5	5	10	1.5	4	M 4	2.0	3.5	3.5	18	23340.0212	
14.5	18.5	12	M 4	2.0	14.2	9.8	8.6	5.5	19.2	4.5	4.0	6	3	3	2.3	3	5	3.5	5	12	2.0	4	M 4	2.5	5.5	4.5	26	23340.0214	
18.5	22.5	15	M 5	2.5	16.5	11.6	10.4	7.5	22.7	5.5	4.0	7	3	3	2.3	4	5	4.5	10	15	2.5	5	M 5	3.5	7.5	5.5	38	23340.0218	
22.5	26.5	20	M 6	3.0	19.6	14.1	12.9	6.0	28.6	7.0	4.0	8	3	3	2.3	5	6	5.0	17	20	3.0	6	M 6	3.5	6.0	7.0	73	23340.0222	
26.5	30.5	20	M 6	3.0	19.8	14.1	13.0	6.0	28.8	7.0	4.0	8	3	3	2.3	5	6	5.0	17	20	3.0	6	M 6	3.5	6.0	7.0	93	23340.0226	
30.5	38.5	25	M 6	4.0	23.2	14.1	11.8	7.0	32.2	9.0	8.0	8	3	3	4.6	5	6	5.0	17	25	4.0	6	M 6	3.5	7.0	9.0	119	23340.0230	

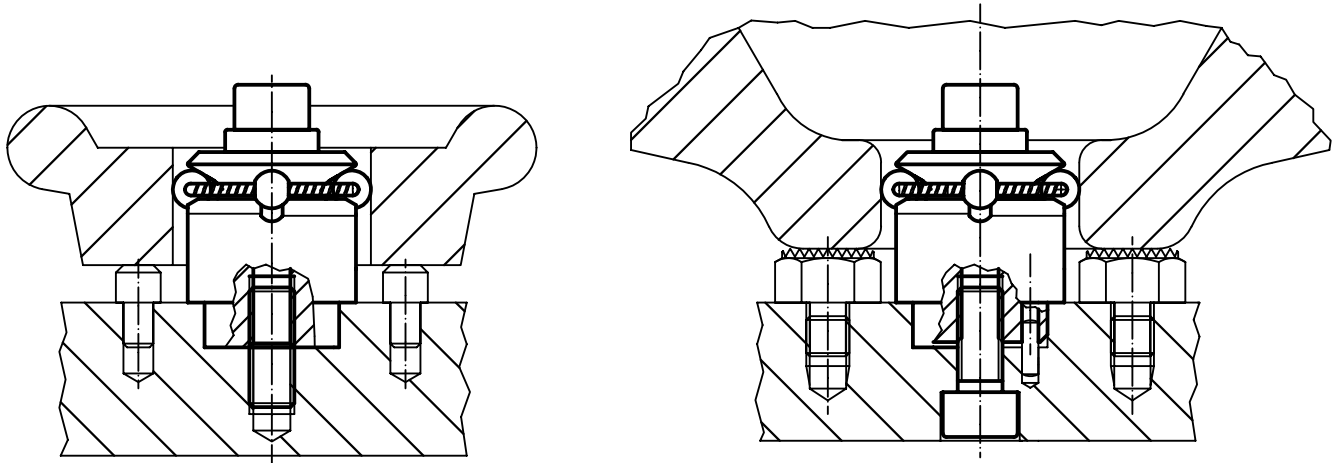
¹⁾ no WS_2 clamping screw and threaded pin to be mounted from top



Dimensions													Number of balls n	Stroke s	WS		Clamp- ing force F max.	Tight- ening torque max.	Location hole									Art. No.
d ₁ min.	d ₁ max.	d ₂ f7	d ₃	d ₄ +0.3	h ₁ -1	h ₂	h ₃	h ₄	h ₅ -2	l ₁ ±0.1	ball diam- eter	t			WS ₁	WS ₂			D ₁ H7	D ₂	D ₃	D ₄	H ₁	H ₂ +0.5	L ₁ ±0.1			
[mm]													[mm]	[mm]		[kN]	[Nm]	[mm]								[g]		
38.5	46.5	30	M 8	4.0	27.2	18.0	15.7	7.5	39.2	11.0	8.0	10	6	4.6	6	8	6.5	43	30	4.0	8	M 8	4.5	7.5	11.0	254	23340.0238	
46.5	54.5	30	M 8	4.0	27.1	18.0	15.7	7.5	39.2	11.0	8.0	10	6	4.6	6	8	6.5	43	30	4.0	8	M 8	6.5	7.5	11.0	342	23340.0246	
54.5	70.5	45	M10	5.0	40.6	23.7	19.1	9.0	54.6	15.0	16.0	12	6	9.2	8	10	8.0	79	45	5.0	10	M10	6.5	9.0	15.0	664	23340.0254	
70.5	86.5	60	M12	5.0	46.1	28.3	23.7	10.0	63.1	17.0	16.0	15	6	9.2	10	12	10.0	141	60	5.0	12	M12	6.5	10.0	17.0	1312	23340.0270	
86.5	102.5	60	M16	5.0	51.2	30.3	25.6	10.0	72.2	25.0	16.0	15	6	9.2	14	17	10.0	354	60	5.0	16	M16	6.5	10.0	25.0	2000	23340.0286	

¹⁾ no WS₂ clamping screw and threaded pin to be mounted from top

APPLICATION EXAMPLE



Centering Clamping Elements • with clamping segments, operation from the bottom

EH 23340.



PRODUCT DESCRIPTION

For centering and clamping in blind holes of workpieces with locating hole. Exact self-centering with a precision of $\pm 0,025$ mm. Components with raw or machined surface can be centered positively and are pulled down on the contact points due to the ground clamping elements. The centering clamping element is characterised by large setting ranges and a compact construction height.

Mounting from either top or bottom.

Material

Body

- Tool steel, hardened, blackened

Spring

- Stainless steel

Clamping segments

- Stainless steel 1.4112, hardened and ground

Assembly

Assembly instructions for mounting from above: Remove clamping plate and screw.

Screw in threaded pin from below, and tighten from above using female WS_2 .

Operation

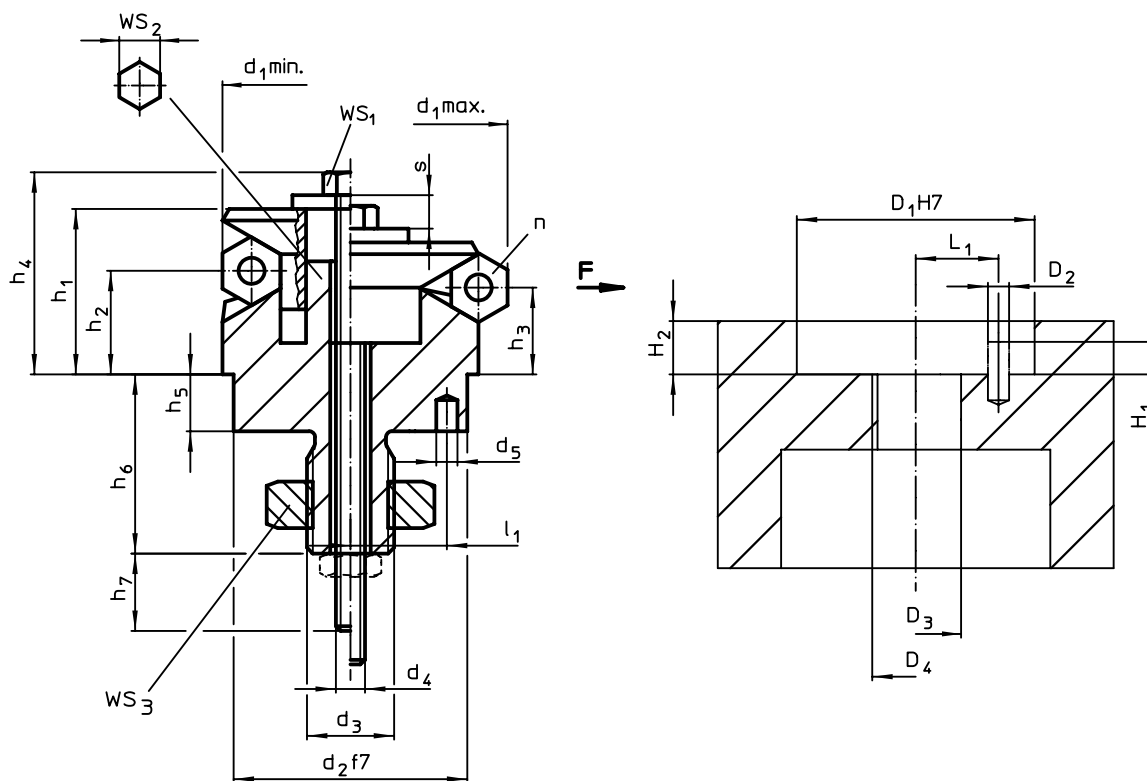
Operation from bottom manually or automatically with either pneumatic or hydraulic actuation.

MORE INFORMATION

Further products

Centering Clamping Elements, with clamping balls, operation from the bottom → p. 568

DRAWING



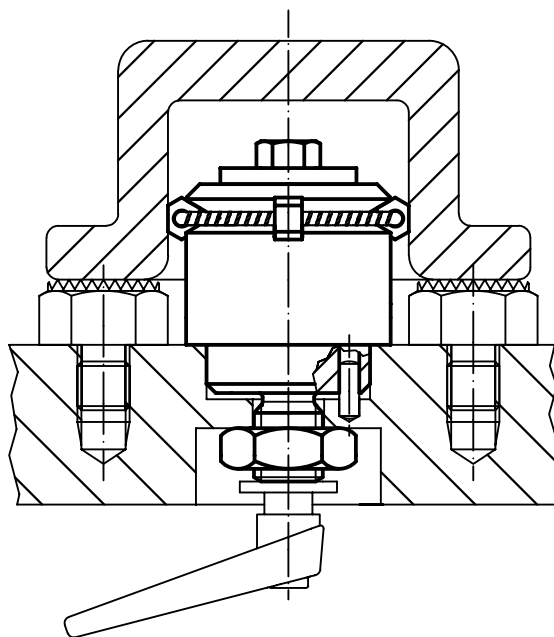
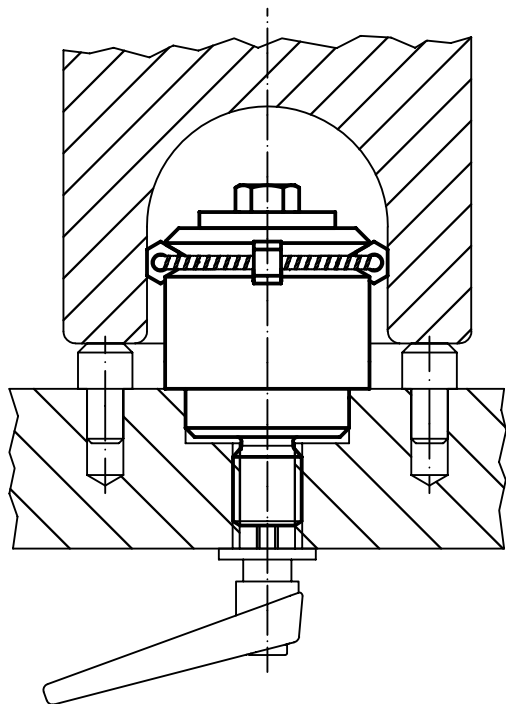
ORDER INFORMATION

Dimensions														Number of segments n	Stroke s	WS			Clamp- ing force F max.	Tight- ening torque max.	Location hole								Art. No.
d ₁ min.	d ₁ max.	d ₂ f7	d ₃	d ₄	d ₅ +0.3	h ₁	h ₂	h ₃	h ₄ -2	h ₅	h ₆ +1	h ₇ ~	l ₁ ±0.1			WS ₁	WS ₂	WS ₃			D ₁ H7	D ₂	D ₃	D ₄	H ₁	H ₂ +0.5	L ₁ ±0.1		
[mm]														[mm]	[mm]			[kN]	[Nm]	[mm]							[g]		
14.5	18.5	12	M 6	M 3	2.0	14.2	9.8	8.6	17.0	5.5	14.1	12	4.5	3	2.3	5.5	3	10	3.5	2	12	2.0	6	M 6	2.5	5.5	4.5	21	23340.0114
18.5	22.5	15	M 8	M 4	2.5	16.6	11.5	10.4	20.5	7.5	18.2	14	5.5	3	2.3	7.0	5	13	4.0	5	15	2.5	8	M 8	3.5	7.5	5.5	51	23340.0120
22.5	26.5	20	M10	M 5	3.0	19.7	14.1	13.0	24.4	6.0	17.4	15	7.0	3	2.3	8.0	6	16	4.5	10	20	3.0	10	M10	3.5	6.0	7.0	82	23340.0122
26.5	30.5	20	M10	M 5	3.0	19.9	14.2	13.0	24.6	6.0	17.4	15	7.0	3	2.3	8.0	6	16	4.5	10	20	3.0	10	M10	3.5	6.0	7.0	104	23340.0126
30.5	38.5	25	M12	M 6	4.0	23.2	14.0	11.7	28.8	7.0	21.9	20	9.0	3	4.6	10.0	6	18	4.5	17	25	4.0	12	M12	3.5	7.0	9.0	154	23340.0130



Dimensions														Number of segments n	Stroke s	WS			Clamp- ing force F max.	Tight- ening torque max.	Location hole									Art. No.
d ₁ min.	d ₁ max.	d ₂ f7	d ₃	d ₄	d ₅ +0.3	h ₁	h ₂	h ₃	h ₄ -2	h ₅	h ₆ +1	h ₇ ~	l ₁ ±0.1			WS ₁	WS ₂	WS ₃			D ₁ H7	D ₂	D ₃	D ₄	H ₁	H ₂ +0.5	L ₁ ±0.1			
[mm]																[mm]	[mm]				[kN]	[Nm]	[mm]							
38.5	46.5	30	M12	M 6	4.0	27.2	18.0	15.5	33.1	7.5	22.5	20	11.0	6	4.6	10.0	8	18	6.5	17	30	4.0	12	M12	4.5	7.5	11.0	272	23340.0138	
46.5	54.5	30	M12	M 6	4.0	27.2	18.0	15.7	33.1	7.5	22.5	20	11.0	6	4.6	10.0	8	18	6.5	17	30	4.0	12	M12	6.5	7.5	11.0	339	23340.0146	
54.5	70.5	45	M14 x 1,5	M 8	5.0	40.7	23.7	19.1	50.0	9.0	24.5	32	15.0	6	9.2	13.0	10	21	8.0	43	45	5.0	14	M14 x 1,5	6.5	9.0	15.0	690	23340.0154	
70.5	86.5	60	M16 x 1,5	M 8	5.0	46.0	28.1	23.5	55.3	10.0	29.4	20	17.0	6	9.2	13.0	12	24	10.0	43	60	5.0	16	M16 x 1,5	6.5	10.0	17.0	1349	23340.0170	
86.5	102.5	60	M16 x 1,5	M10	5.0	51.1	30.1	25.5	61.5	10.0	29.4	25	25.0	6	9.2	16.0	12	24	12.5	79	60	5.0	16	M16 x 1,5	6.5	10.0	25.0	2000	23340.0186	

APPLICATION EXAMPLE



Centering Clamping Elements • with clamping balls, operation from the bottom

EH 23340.



PRODUCT DESCRIPTION

To be used for accurate centering and clamping in blind holes of workpieces with locating hole. Exact self-centering with a precision of $\pm 0,025$ mm. The clamping balls frictionally center and hold workpieces with raw or pre-machined surfaces down to the bearing points. Large adjustment stroke and a small building height are a feature of this center clamping element.

Mounting from either top or bottom.

Material

Body

- Tool steel, hardened, blackened

Spring

- Stainless steel

Clamping balls

- Stainless steel 1.4112, hardened and ground

Assembly

Assembly instructions for mounting from above: Remove clamping plate and screw.

Screw in threaded pin from below, and tighten from above using female WS_2 .

Operation

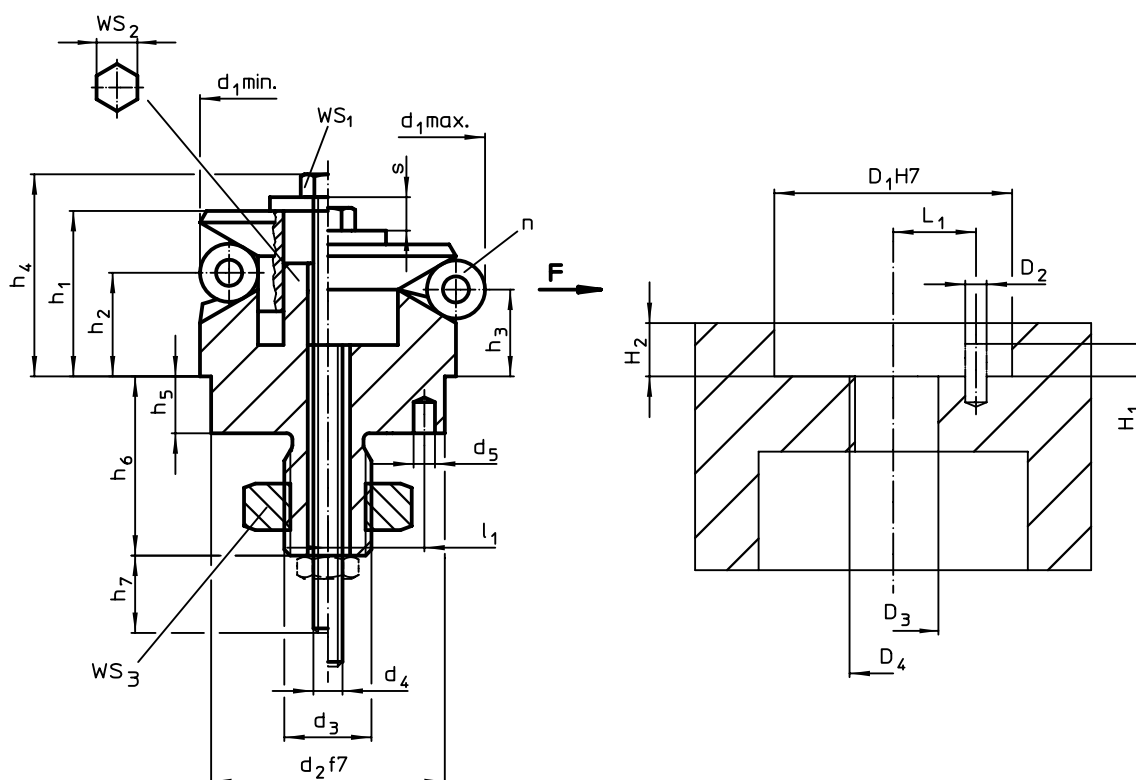
Operation from bottom manually or automatically with either pneumatic or hydraulic actuation.

MORE INFORMATION

Further products

Centering Clamping Elements, with clamping segments, operation from the bottom → p. 566

DRAWING



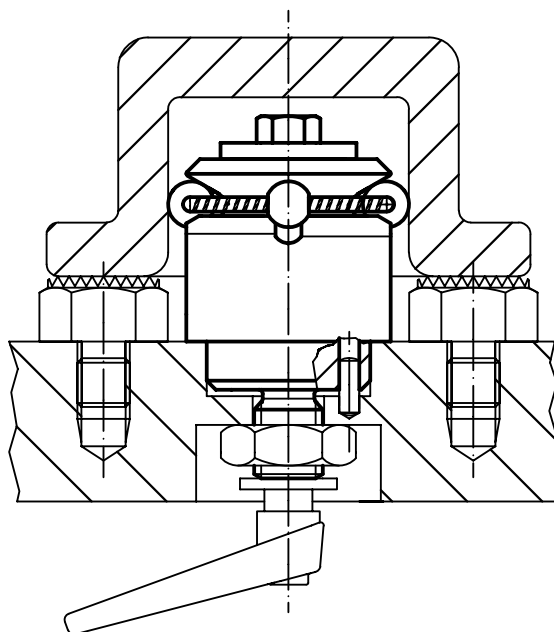
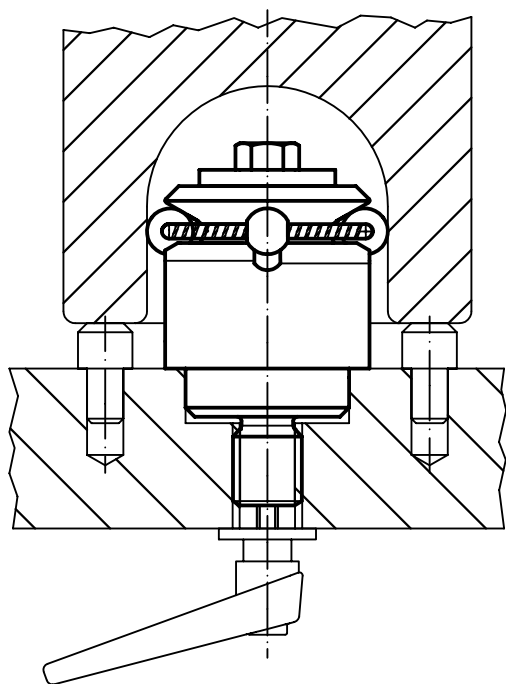
ORDER INFORMATION

Dimensions															Number of balls n	Stroke s	WS			Clamping force F max.	Tightening torque max.	Location hole									Art. No.
d ₁ min.	d ₁ max.	d ₂ f7	d ₃	d ₄	d ₅ +0.3	h ₁	h ₂	h ₃	h ₄ -2	h ₅	h ₆ +1	h ₇ ~	l ₁ ±0.1	ball diameter			WS ₁	WS ₂	WS ₃			D ₁ H7	D ₂	D ₃	D ₄	H ₁	H ₂ +0.5	L ₁ ±0.1			
[mm]																	[mm]	[mm]				[kN]	[Nm]	[mm]							
11.7	14.2	10	M 5	M 3	1.5	9.9	3.9	3.2	12.7	3.5	11.0	13	3.5	2.5	3	1.3	5.5	4	8	0.5	2	10	1.5	5	M 5	2.0	3.5	3.5	13	23340.0312	
14.5	18.5	12	M 6	M 3	2.0	14.2	9.8	8.6	17.0	5.5	14.1	12	4.5	4.0	3	2.3	5.5	3	10	3.5	2	12	2.0	6	M 6	2.5	5.5	4.5	28	23340.0314	
18.5	22.5	15	M 8	M 4	2.5	16.5	11.6	10.4	20.4	7.5	18.2	14	5.5	4.0	3	2.3	7.0	5	13	4.0	5	15	2.5	8	M 8	3.5	7.5	5.5	52	23340.0318	
22.5	26.5	20	M10	M 5	3.0	19.6	14.1	12.9	24.3	6.0	17.4	15	7.0	4.0	3	2.3	8.0	6	16	4.5	10	20	3.0	10	M10	3.5	6.0	7.0	83	23340.0322	
26.5	30.5	20	M10	M 5	3.0	19.8	14.1	13.0	24.5	6.0	17.4	15	7.0	4.0	3	2.3	8.0	6	16	4.5	10	20	3.0	10	M10	3.5	6.0	7.0	103	23340.0326	
30.5	38.5	25	M12	M 6	4.0	23.2	14.1	11.8	28.8	7.0	21.9	20	9.0	8.0	3	4.6	10.0	6	18	4.5	17	25	4.0	12	M12	3.5	7.0	9.0	153	23340.0330	



Dimensions															Number of balls n	Stroke s	WS			Clamping force F max.	Tightening torque max.	Location hole								Art. No.
d ₁ min.	d ₁ max.	d ₂ f7	d ₃	d ₄	d ₅ +0.3	h ₁	h ₂	h ₃	h ₄ -2	h ₅	h ₆ +1	h ₇ ~	l ₁ ±0.1	ball diameter			WS ₁	WS ₂	WS ₃			D ₁ H7	D ₂	D ₃	D ₄	H ₁	H ₂ +0.5	L ₁ ±0.1		
[mm]																	[mm]	[mm]				[kN]	[Nm]	[mm]						
38.5	46.5	30	M12	M 6	4.0	27.1	18.0	15.5	33.0	7.5	22.5	20	11.0	8.0	6	4.6	10.0	8	18	6.5	17	30	4.0	12	M12	4.5	7.5	11.0	269	23340.0338
46.5	54.5	30	M12	M 6	4.0	27.2	18.0	15.7	33.1	7.5	22.5	20	11.0	8.0	6	4.6	10.0	8	18	6.5	17	30	4.0	12	M12	6.5	7.5	11.0	353	23340.0346
54.5	70.5	45	M14 x 1,5	M 8	5.0	40.6	23.7	19.1	49.9	9.0	24.5	32	15.0	16.0	6	9.2	13.0	10	21	8.0	43	45	5.0	14	M14 x 1,5	6.5	9.0	15.0	702	23340.0354
70.5	86.5	60	M16 x 1,5	M 8	5.0	46.1	28.3	23.7	55.4	10.0	29.4	20	17.0	16.0	6	9.2	13.0	12	24	10.0	43	60	5.0	16	M16 x 1,5	6.5	10.0	17.0	1326	23340.0370
86.5	102.5	60	M16 x 1,5	M10	5.0	51.2	30.3	25.7	61.6	10.0	29.4	25	25.0	16.0	6	9.2	16.0	12	24	12.5	79	60	5.0	16	M16 x 1,5	6.5	10.0	25.0	2000	23340.0386

APPLICATION EXAMPLE



Centering Clamping Mandrels

EH 23340.



PRODUCT DESCRIPTION

For clamping and centering of workpieces with internal bore.

Material

Body

- Steel, blackened

Clamping screw

- Case-hardened steel, case-hardened

Assembly

The centering clamping mandrel can be machined to the required seating diameter (e.g. by turning/milling). It must be noticed that before machining the centering clamping

mandrel, it will be expanded approx. 0.1 mm over the clamping diameter. To machine the mandrel, a nut will be provided.

MORE INFORMATION

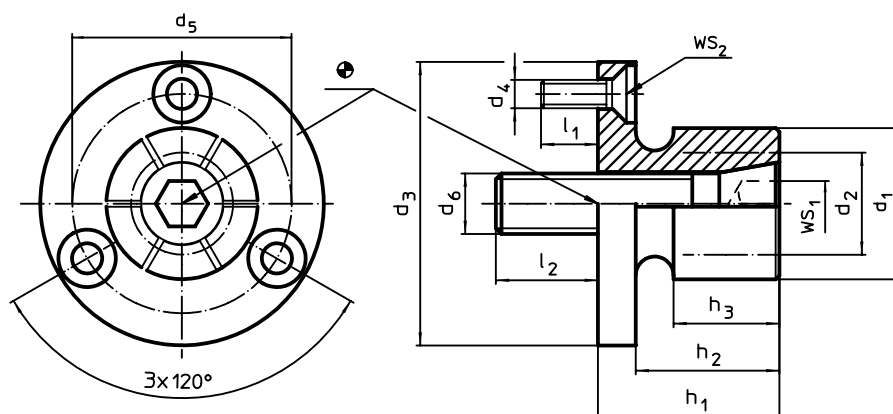
Notes

Special types on request.

Further products

Centering Clamping Mandrels, with lateral handling → p. 571

DRAWING



Centering Clamping Mandrels • with lateral handling

EH 23340.



PRODUCT DESCRIPTION

For clamping and centering of workpieces with internal bore.

Material

Body

- Steel, blackened

Clamping screw

- Heat-treated steel

Assembly

The centering clamping mandrel can be machined to the required seating diameter (e.g. by turning/milling). It must be noticed that before machining the centering clamping

mandrel, it will be expanded approx. 0,1 mm over the clamping diameter. To machine the mandrel, a locking ring will be provided.

Operation

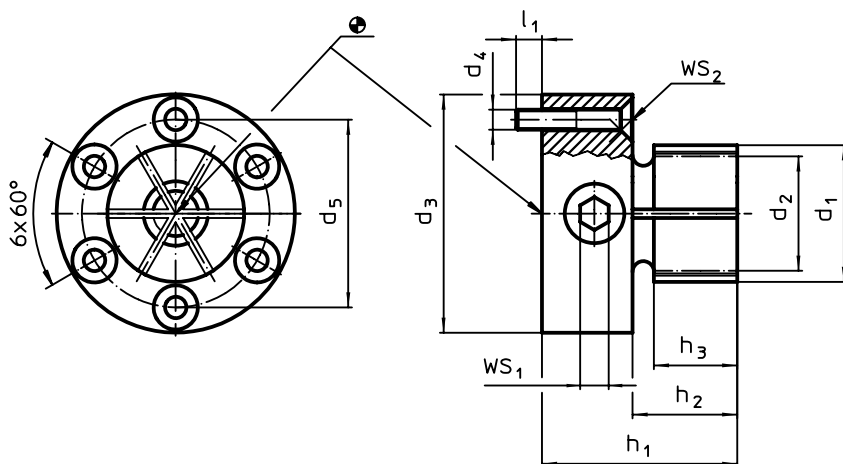
Thanks to the lateral handling it can also be used for blind hole drilling.

MORE INFORMATION

Further products

Centering Clamping Mandrels → p. 570

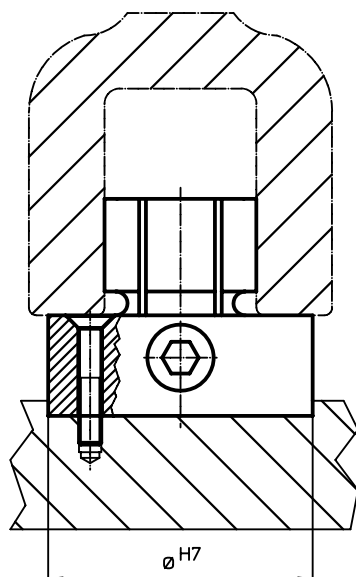
DRAWING



ORDER INFORMATION

Dimensions									WS		Clamping force max.	Tightening torque max.	Location hole H7		Art. No.
d ₁	d ₂ min.	d ₃ -0.05	d ₄	d ₅	h ₁	h ₂	h ₃	l ₁	WS ₁	WS ₂					
[mm]									[mm]		[kN]	[Nm]	[mm]	[g]	
28.7	17.8	50	M4	39.4	41	22	17.5	7	6	2.5	20	66	50	363	23340.0125

APPLICATION EXAMPLE



Shaft Clamps

EH 23341.



PRODUCT DESCRIPTION

Shaft clamps are used to clamp round workpieces, e.g. shafts, axels, tubes or rods both axially and radially.

Material

Body

- Steel, blackened
- Stainless steel 1.4305

Spring

- Stainless steel

Clamping screw

- Steel, zinc-plated
- Stainless Steel

Assembly

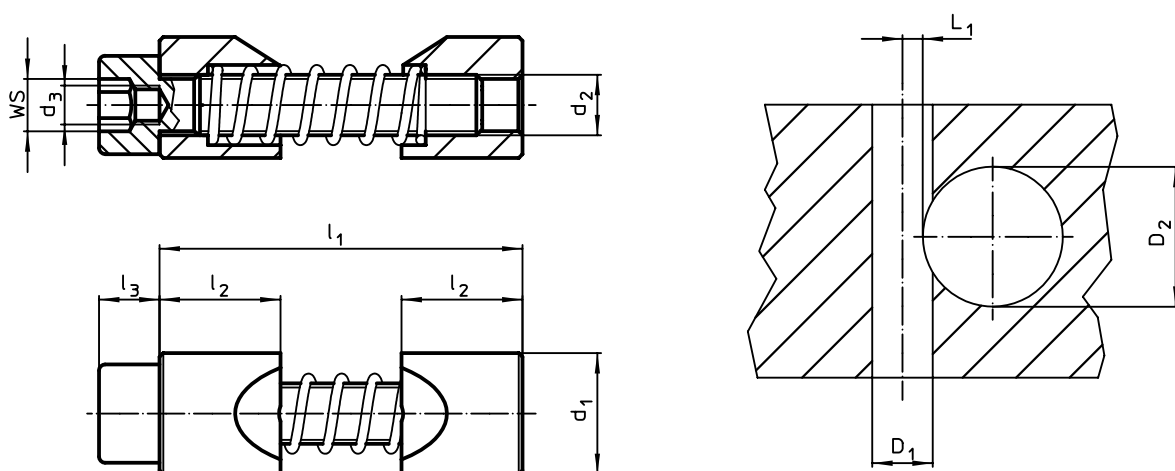
1. Expand the clamping jaws to the diameter of the shaft to be clamped.
2. Insert shaft clamp into hole using the assembly tool.
3. Insert and position the shaft.
4. Clamp using cylinder screw WS (observe tightening torque).

MORE INFORMATION

Notes

The thread d_3 serves to hold the assembly tool (optional).

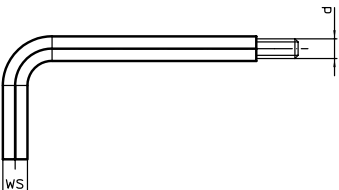
DRAWING



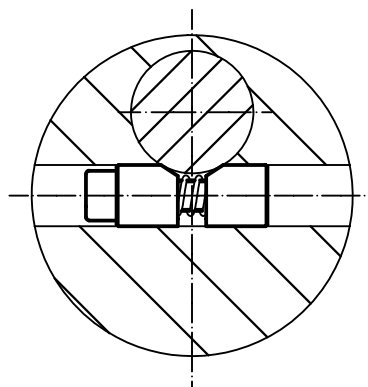
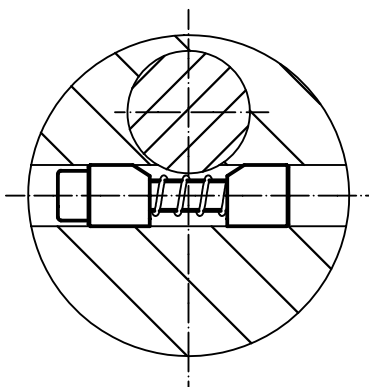
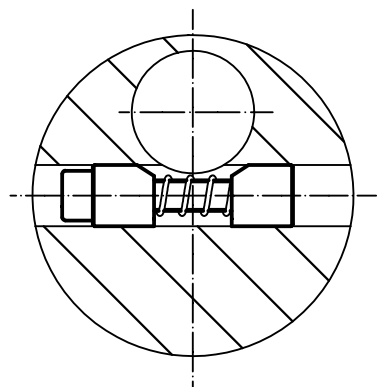
ORDER INFORMATION

d ₁ h11	d ₂	Dimensions				WS	Tight- ening torque max.	Location hole				Art. No.	
		d ₃	l ₁ max.	l ₂	l ₃			Hub bore D ₁ H7	Shaft diameter D ₂	L ₁ +0.2		Steel	Stainless steel
		[mm]						[mm]	[Nm]	[mm]		[g]	
8	M 4	M2,5	27	8	4	3	2.9	8	6 – 10	2.8	8	23341.0008	23341.0508
10	M 5	M 3	33	10	5	4	6.0	10	10 – 15	3.3	12	23341.0010	23341.0510
12	M 6	M 4	39	12	6	5	10.0	12	15 – 20	3.5	21	23341.0012	23341.0512
16	M 8	M 5	46	16	8	6	25.0	16	20 – 30	4.0	52	23341.0016	23341.0516
20	M10	M 6	53	20	10	8	46.0	20	30 – 40	4.8	98	23341.0020	23341.0520
25	M12	M 8	70	25	12	10	82.0	25	40 – 60	5.6	183	23341.0025	23341.0525
30	M16	M 10	81	30	16	14	206.0	30	60 – 125	7.9	344	23341.0030	23341.0530

ACCESSORIES

	WS	d		Art. No.
	[mm]	[mm]	[g]	
special hexagon key				
	3	M2,5	5	23341.1008
	4	M 3	9	23341.1010
	5	M 4	17	23341.1012
	6	M 5	28	23341.1016
	8	M 6	57	23341.1020
	10	M 8	95	23341.1025
	14	M 10	250	23341.1030

APPLICATION EXAMPLE



Screw Jacks

EH 23470.



PRODUCT DESCRIPTION

Trapezoidal self-locking thread, spindle with final safety device. The holders, which can be secured by means of the T-slots, make it possible to tighten the jacks so that they will not slip out of position when a workpiece is changed. They also allow to fit screw jacks to vertical clamping surfaces. Screw jacks are frequently used for supporting workpieces. Use of the self-aligning cap ensures a correctly aligned bearing surface. Using the centering plate as an intermediate element, it is possible to fit a number of screw jacks sizes 52, 70 and 100 together one above the other.

Material

Caps

- Steel, case-hardened, blackened

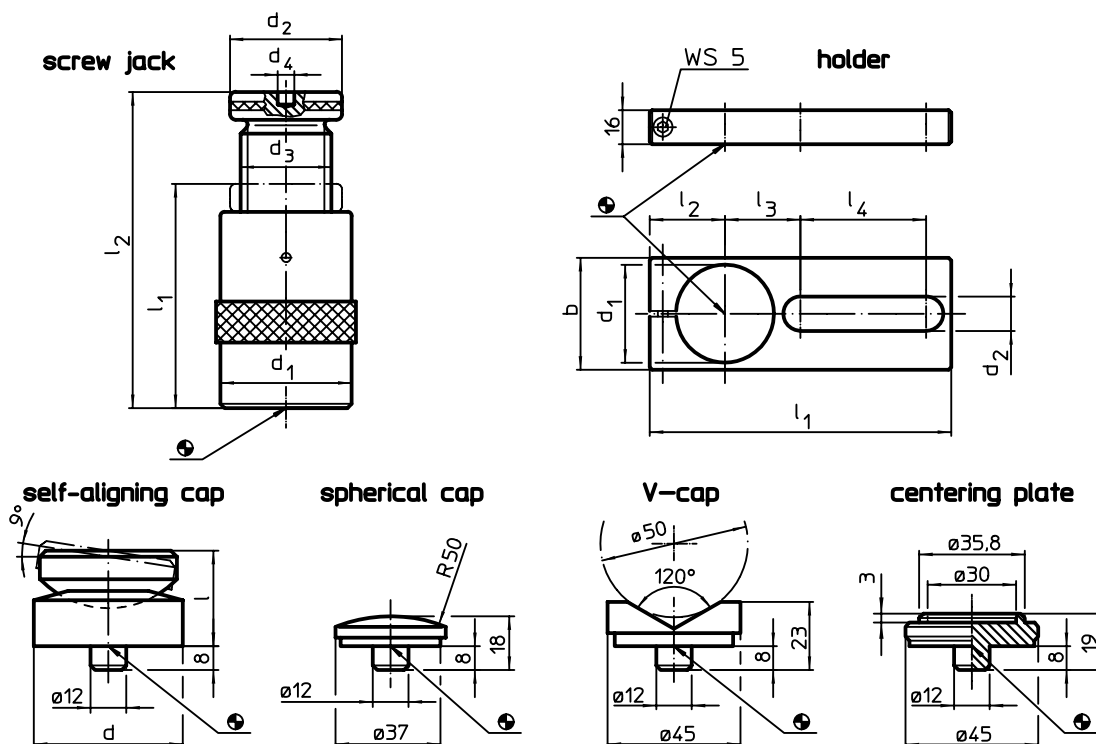
Holders

- Steel, blackened

Screw Jacks

- Steel 1.0503 varnished

DRAWING



ORDER INFORMATION

l ₂ Clamping height max. [mm]	Dimensions					Load capacity [kN]	 [g]	Art. No.
	l ₁ min.	d ₁ [mm]	d ₂ 	d ₃ 	d ₄ [mm]			
screw jack								
50	38	31	31	Tr 20 x 4	–	15	191	23470.0005
52	42	50	50	Tr 30 x 4	12	60	539	23470.0006
70	50	50	50	Tr 30 x 4	12	60	645	23470.0007
100	70	50	50	Tr 30 x 4	12	60	900	23470.0010
140	100	69	69	Tr 40 x 7	12	100	2614	23470.0014
210	140	80	70	Tr 50 x 8	12	170	4336	23470.0021
300	190	100	80	Tr 65 x 10	12	350	9680	23470.0030

ACCESSORIES

	Dimensions									For screw jacks		Art. No.
	d	d ₁	b	d ₂	l [mm]	l ₁	l ₂	l ₃	l ₄	[mm]	[g]	
holder												
	–	31	40	18.5	–	175	30	35	90	50	516	23470.0232
		50	60	20.5	–	190	38	46	90	52/ 70/100	879	23470.0250
		69	80	24.5	–	210	48	54	90	140	1279	23470.0270
self-aligning cap												
	50	–	–	–	32	–	–	–	–	52/ 70/100	399	23470.0350
	65	–	–	–	35	–	–	–	–	140/210	716	23470.0365
spherical cap												
	–	–	–	–	–	–	–	–	–	52/ 70/100/140/210/300	75	23470.0171
V-cap												
	–	–	–	–	–	–	–	–	–	52/ 70/100/140/210/300	138	23470.0172
centering plate												
	–	–	–	–	–	–	–	–	–	52/ 70/100	107	23470.0170