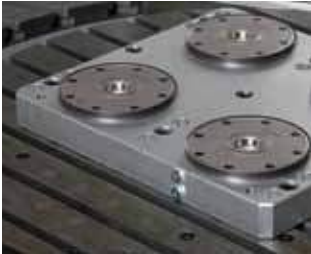


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Vice Clamping System For compact clamping of different workpieces: • Positive Clamping System • 5 Axis Clamping System • Centric Clamp		Page 286 Page 292 Page 306

TRUST IN KIPP



The HEINRICH KIPP WERK is your engineering partner when it comes to clamping technology, standard elements and operating parts.

We offer a comprehensive range of products with more than 15000 parts. All have one thing in common. They function reliably, are durable and will be available for a long time to come. You have the word of tradition-steeped, owner-managed KIPP.

As a manufacturer, the HEINRICH KIPP WERK has many years of development experience with an extensive vertical range of manufacturing and logistic capabilities. With KIPP, you are always on the safe side.



THE CLAMPING TECHNOLOGY SPECIALISTS



Flexible Clamping System

Modular Clamping System

Multi Clamping System

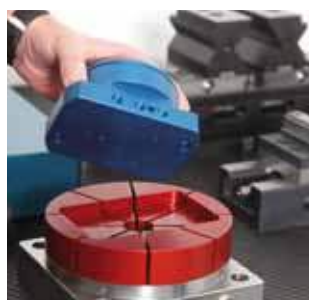
One Touch Clamping System

Zero Point Clamping System

Vice Clamping System

You want complete solutions for your particular production environment. KIPP offers more than 2000 clamping components. Working together with you, our project team plans, develops and realises clamping fixtures for small and medium-sized production runs. You profit from the experience of our specialists, who devote their efforts to advancing this technology daily. We have already realised innumerable clamping system arrangements successfully.

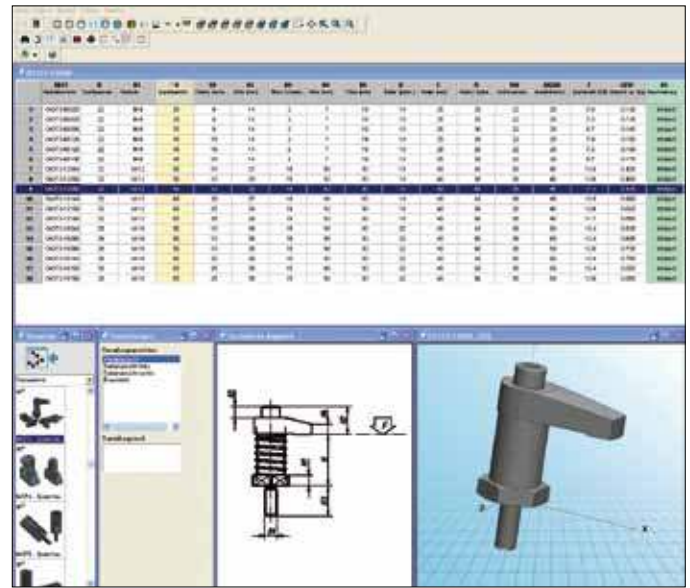
Our team focuses on the systematic organisation of your entire fixture inventory. Your set-up times are reduced as soon as our clamping system is incorporated into your production process. Unproductive time is reduced and your machining conditions improved.



CD-ROM: 2D AND 3D CAD LIBRARY

KIPP CD-ROM offers:

- Product selection by a variety of search criteria
- 3D product picture, drawing, table of dimensions and product information
- CAD download (2D and 3D)



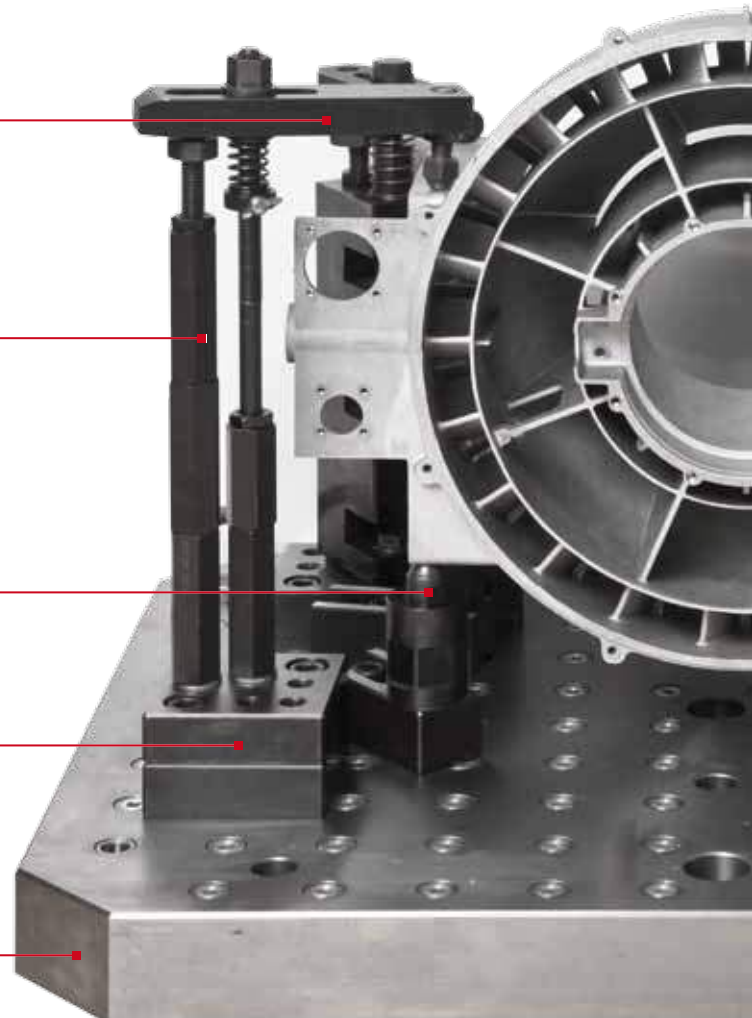
Adjustable Straps

Tie-Rod Bolts for height adjustment

Toggle Locator for support

Height Spacers as dividers

Grid Plate





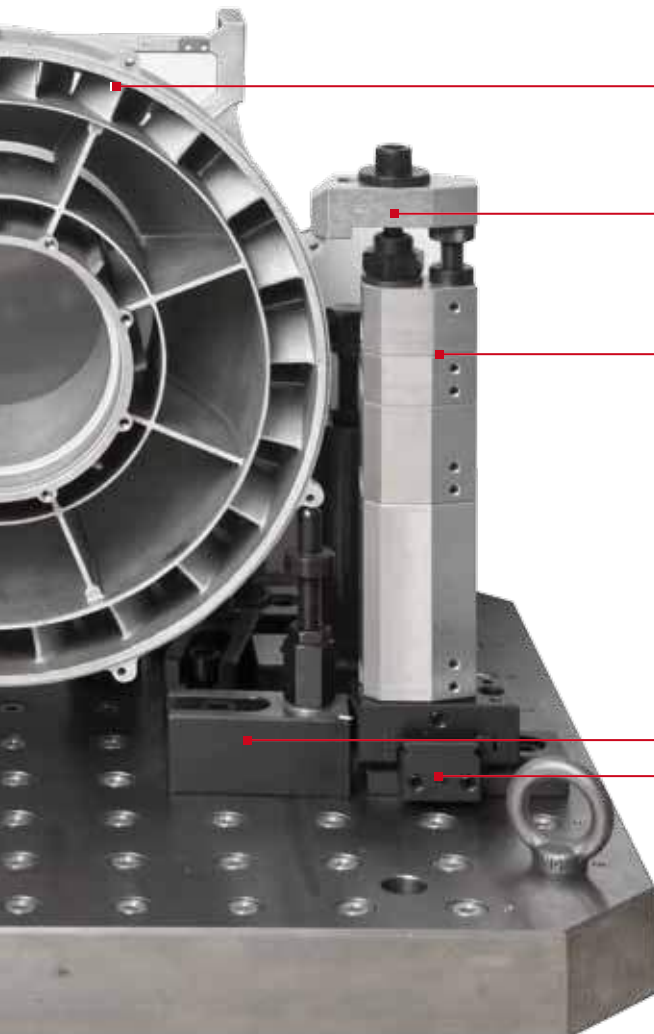
Product drawings can be downloaded free of charge from www.kippparts.com.

2D and 3D CAD systems.

It generates native standard parts for the relevant CAD system used and standards that secure optimal further processing. With this software you have a strong partner to assist you.

Thanks to the modules it contains, that can be started directly from the CAD system, the standard parts system allows intuitive working from the CAD system.

The KIPP CAD Library serves primarily to improve cost-effectiveness and achieves a major rationalisation effect in design.



Workpiece

Adjustable Clamping Unit

Various Height Spacers

Adjustable Support

Adjustable Locators

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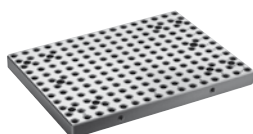
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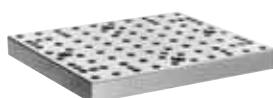
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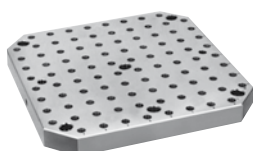
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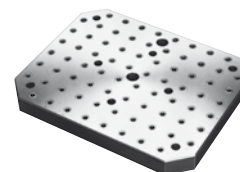
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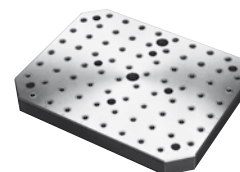
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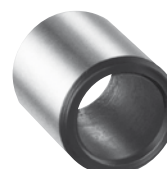
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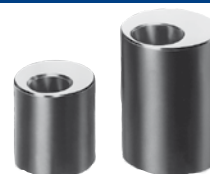
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Flexible Clamping System

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Locating Keys
K0855



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Centering Pins
for central hole
K0856



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Centering Pins
for aligning hole
K0857



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Centering Pins
for aligning hole
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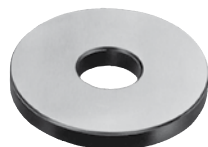
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Aluminium Protection Plugs
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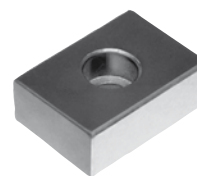
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Flexible Clamping System

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Swing C-Washers

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Modular Clamping System

Basic and add-on elements

MC Plates
K0874



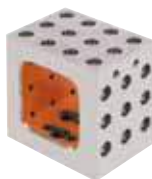
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Adjustable Angle Plates
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Modular Clamping System

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K0900



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K0901



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new article



extended article

Multi Clamping System

Multiple Fixturing Systems
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K0902



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Multiple Fixturing Systems
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K0904



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Stops
K0905



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Carbide-Coated Stop
clamping surface serrated
K0905



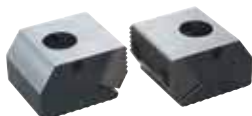
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V-Block Stop
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Hold-down Stop
K0907



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K0908



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T-Blocks Round
K0909



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Taper Clamps clamping
surfaces smooth or serrated
K0039



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Taper Clamps
with machining allowance
K0649



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K0037



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Double Edge Clamps
with machining allowance
K0038



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One Touch Clamping System

Positioning elements

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One Touch Clamping System

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K0924



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Mini Swing Clamps
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Side Clamps
with thrust bolts
K0931



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Toe Clamps
K0932



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Toe Clamps
K0933



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Positive Clamping System
K0934



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Mounting Plates
for positive clamping system
K0934



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Zero Point Clamping System

ZERO lock

ZERO lock clamping plates,
twofold with mounting clamp
outer diameter 129 mm
K0509



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ZERO lock clamping plates,
fourfold, with mounting clamp,
outer diameter 129 mm
K0509



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ZERO lock clamping plates,
sixfold with mounting clamp,
outer diameter 129 mm
K0509



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ZERO lock interchangeable pallets
K0510



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ZERO lock interchangeable pallets
with T-grooves
K0511



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ZERO lock interchangeable pallet
with grid 50
K0512



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ZERO lock spigot
K0513



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ZERO lock mounting clamp
outer diameter 129 mm
K0503



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ZERO lock mounting clamp
outer diameter 129 mm
K0504



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ZERO lock compact mounting clamp
outer diameter 90 mm
K0505



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ZERO lock compact mounting clamp
outer diameter 90 mm
K0506



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Set of ZERO lock clamps
K0507



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ZERO lock shim washer
K0508



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ZERO lock alignment gauge
K0514



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K0515



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ZERO lock locking spigot
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ZERO lock pneumatic controller,
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Zero Point Clamping System

BALL lock

Locating Cylinders
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Form A (pressed in at rear)
K0937



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Receiver Bushings
Form B (screwed in at front)
K0938



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Vice Clamping System

Positive Clamping System

Positive Clamping System
for self-installation
K0500



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Positive Clamping System
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K0501



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K0502



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K0502



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5 Axis Clamping System

3 Axis Clamping System
for grid plates
K0939



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5 Axis Clamping System
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3 Axis Clamping System
for T-slots
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5 Axis Clamping System
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Clamping jaw, standard
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Clamping jaw, natural finish
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Vice Clamping System

Round clamping head
K0945



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K0947



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Stop set
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Base plates, movable
for grid plates
K0949



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Edge Clamps
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K0950



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Locating Bolts
Form B
K0815



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Fixing set for T-slots
K0951



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T-slot plate
K0952



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Centric Clamp

Centric clamp,
jaw with 80 mm
K0586



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Attachment step jaw
with grip rail
K0587



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Attachment universal jaw
K0588



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V-groove jaw
horizontal and vertical
K0589



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Shuttle valve, complete
with grip rail
K0590



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Inserts
for step jaw or shuttle valve
K0591



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Base plate
K0592



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Centric clamp,
jaw with 100 mm
K0593



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Vice Clamping System

V-groove jaws
K0594



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Shuttle valve
K0603



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Jaw blank
made of aluminium
K0595



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Rhombic T-Slot Nuts
K0604



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Step jaw
K0596



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T-Slot Nuts
K0605



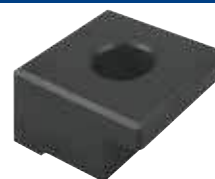
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Attachment step jaw
K0597



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Stepped Clamps
K0606



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Screw-in jaws
K0598



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Hinge stops
K0607



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Soft jaw
with grinding allowance
K0599



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Step jaws
K0600



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Low tension jaw with spring leaf
for raw workpieces
K0601



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V-groove jaw
K0602

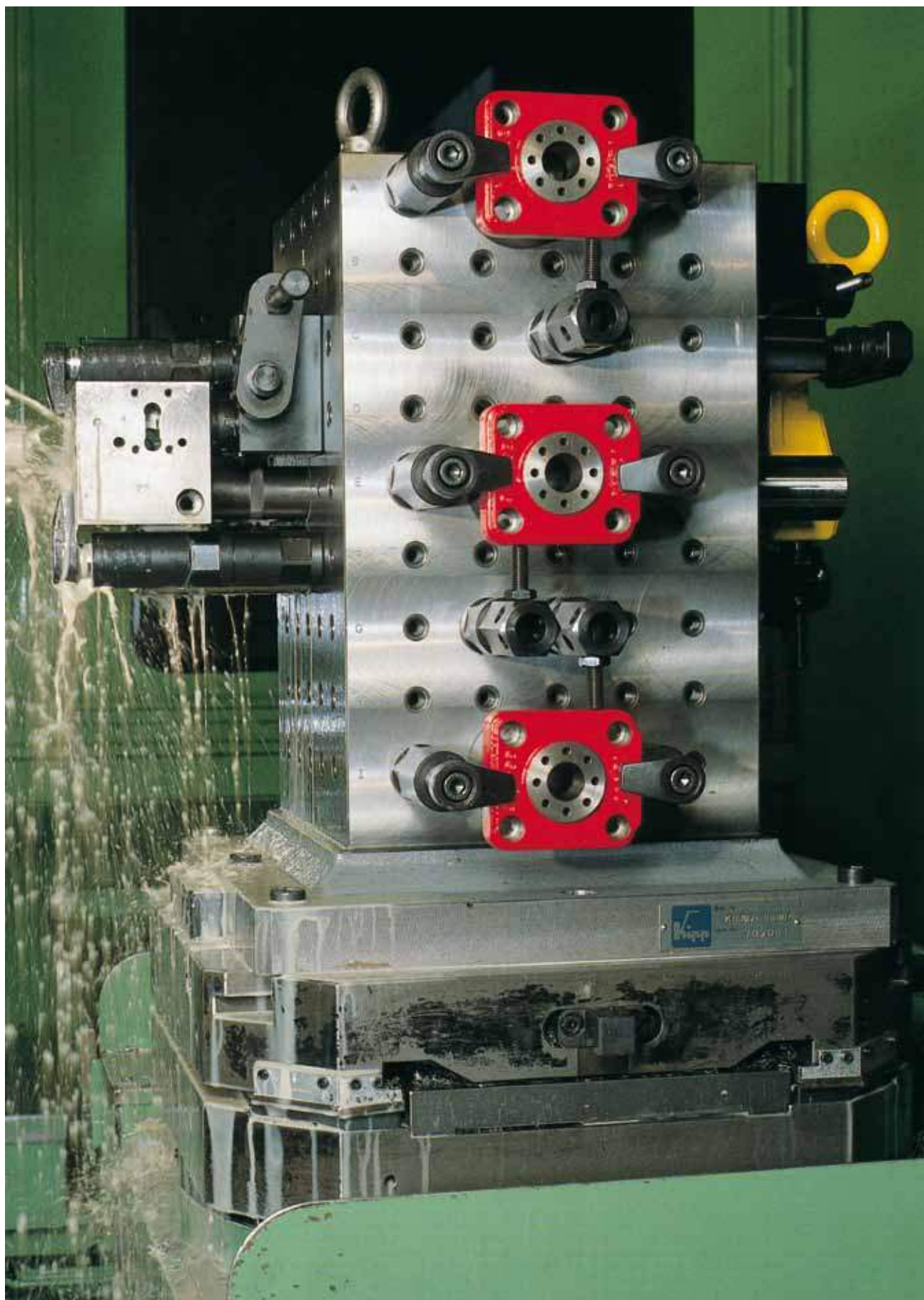


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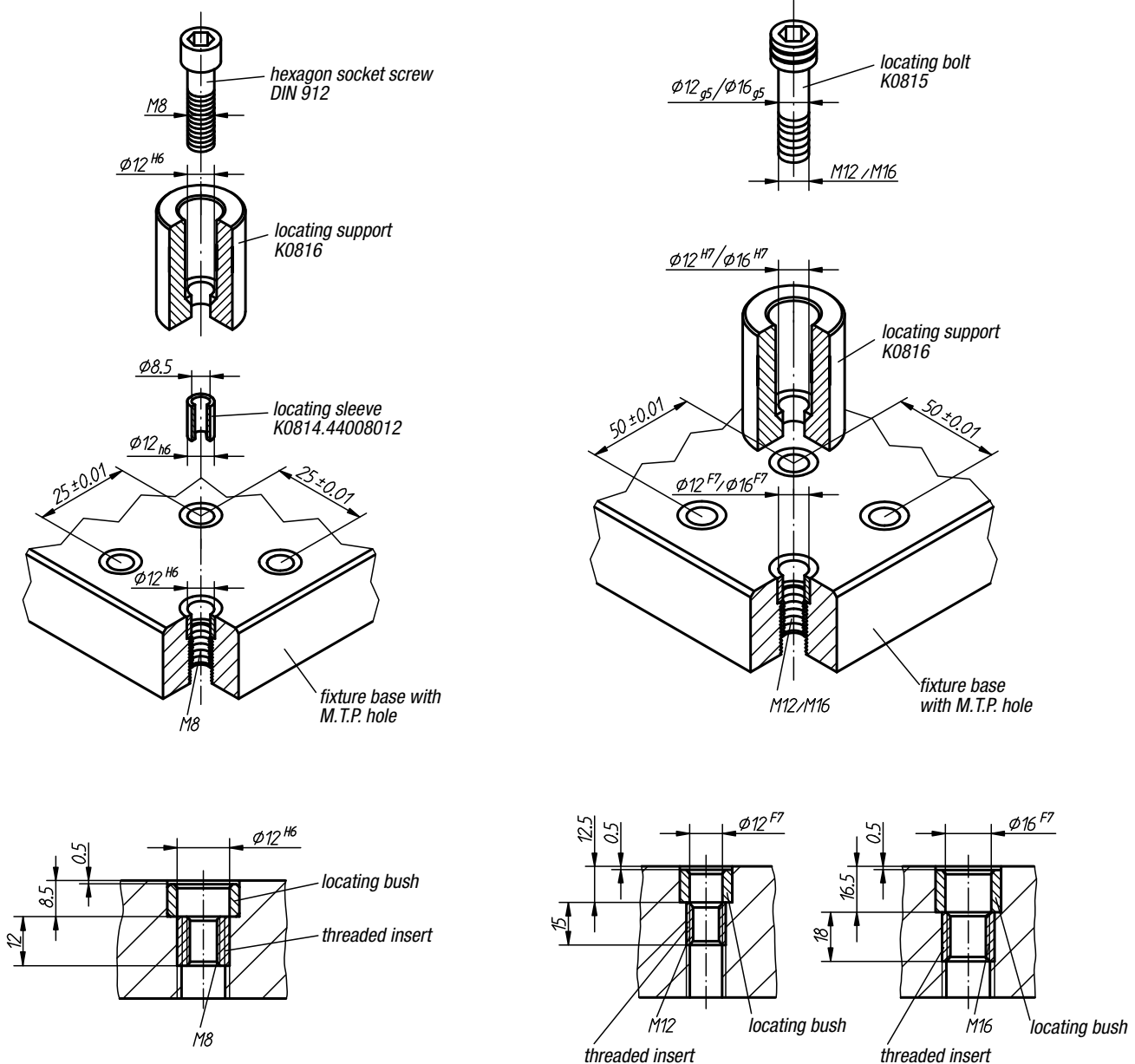
Flexible Clamping System



**Fixture Bases
Building Block
Elements
Locators
Supports
Clamps and
Adjustable Elements
Accessories**



M.T.P Holes and Pitches



M.T.P. hole:

The characteristic feature of the M.T.P. hole is its dual function: the coaxial arrangement of the locating and the threaded parts allows positioning and fastening at the same time with one M.T.P. hole (see illustrations). As a result, the size of the fixture elements can be reduced to a minimum and their flexibility increased accordingly.

Each M.T.P. hole consists of two parts:

- bush with locating hole. Material: Tool steel, hardened.
- threaded insert. Material: Tempered steel, heat-treated, tensile strength approx. 1100-1300 N/mm².

Since the bushes with locating holes are recessed 0,5 mm from the surface of the fixture bases, the mounting surfaces can be reworked if necessary in the event of wear.

Positioning of Fixture Bases

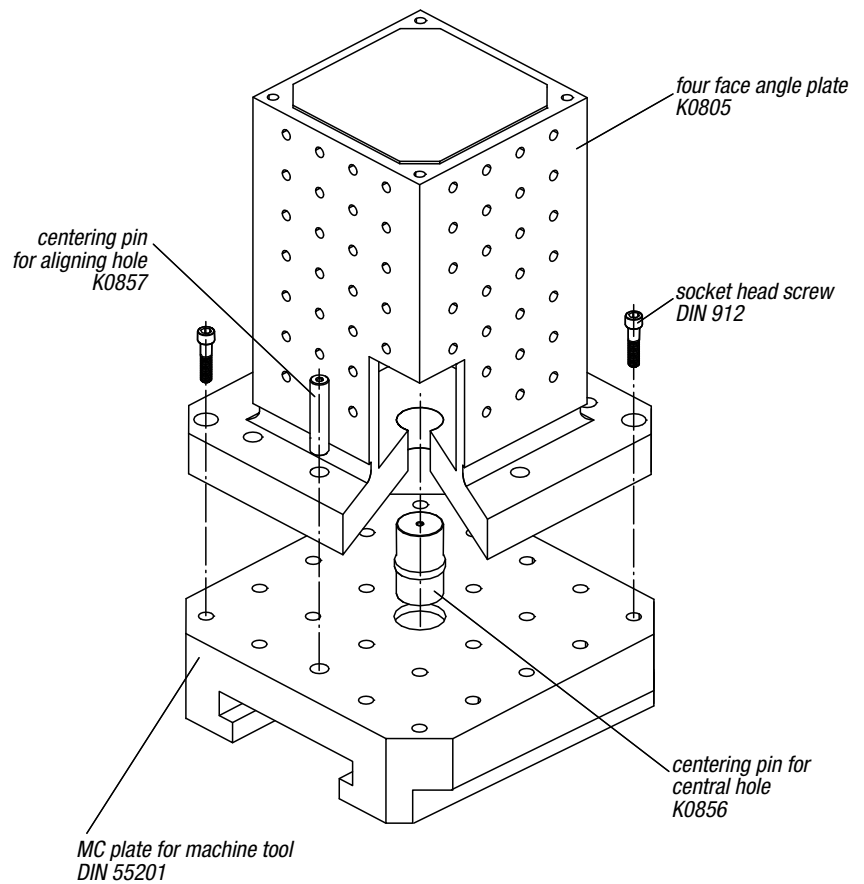


Angle Grid Plates K0802, Double Angle Grid Plates K0803, Four Face Angle Grid Plates K0805 and MC Plates K0806 have two positioning options:

a) Positioning on MC Plates for machine tools as per DIN 55 201.

Positioning operation:

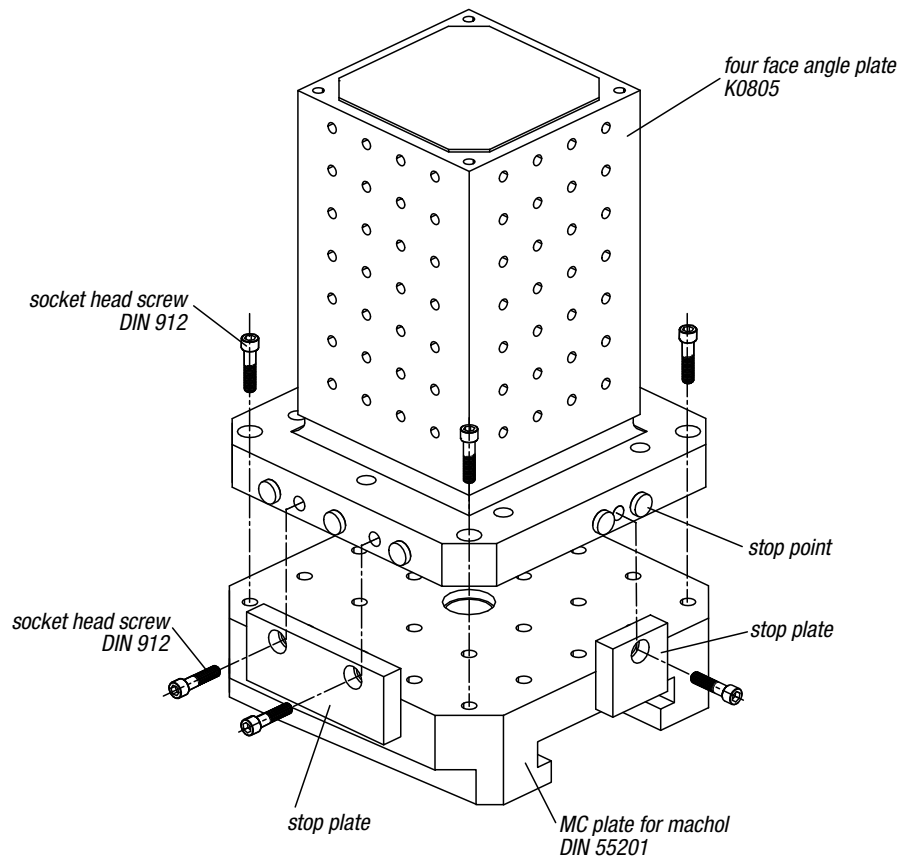
1. Insert Centering Pin into the central hole of the MC Plate.
2. Centre the Angle Grid Plates, and MC Plates on the central hole.
3. Use the Centering Pin for the alignment hole to align the Fixture Bases.



b) Positioning on MC Plates for machine tools according to JIS 6337-1980.

Positioning operation:

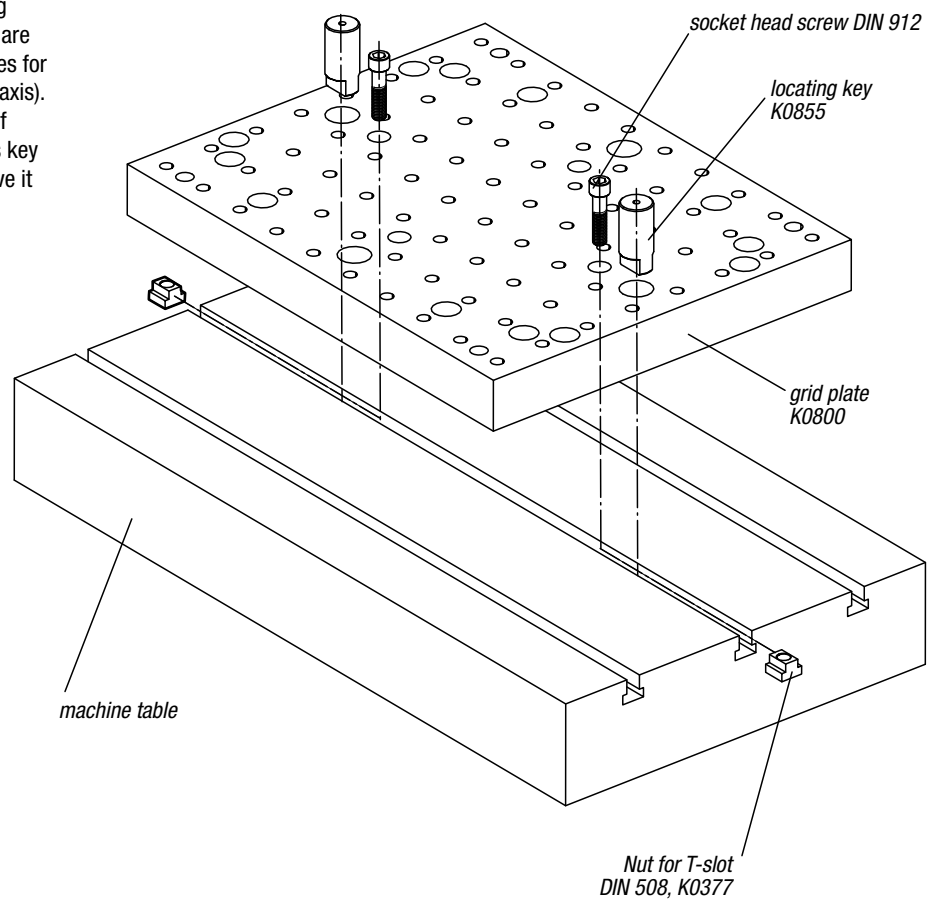
1. Mount stop plates on the machine table.
2. Attach stop points to the determining planes (stop plates) using Socket Head Screws.



on Machine Tables



Locating Keys are used for positioning Grid Plates K0800. The Fixture Bases are each provided with four precision holes for the Locating Keys (two holes in each axis). An M6 screw inserted into the head of the Locating Key is used to insert this key accurately into the T-slots or to remove it from these slots.



Grid Plate

**Material:**

Grey cast iron GJL 250

Surface finish:

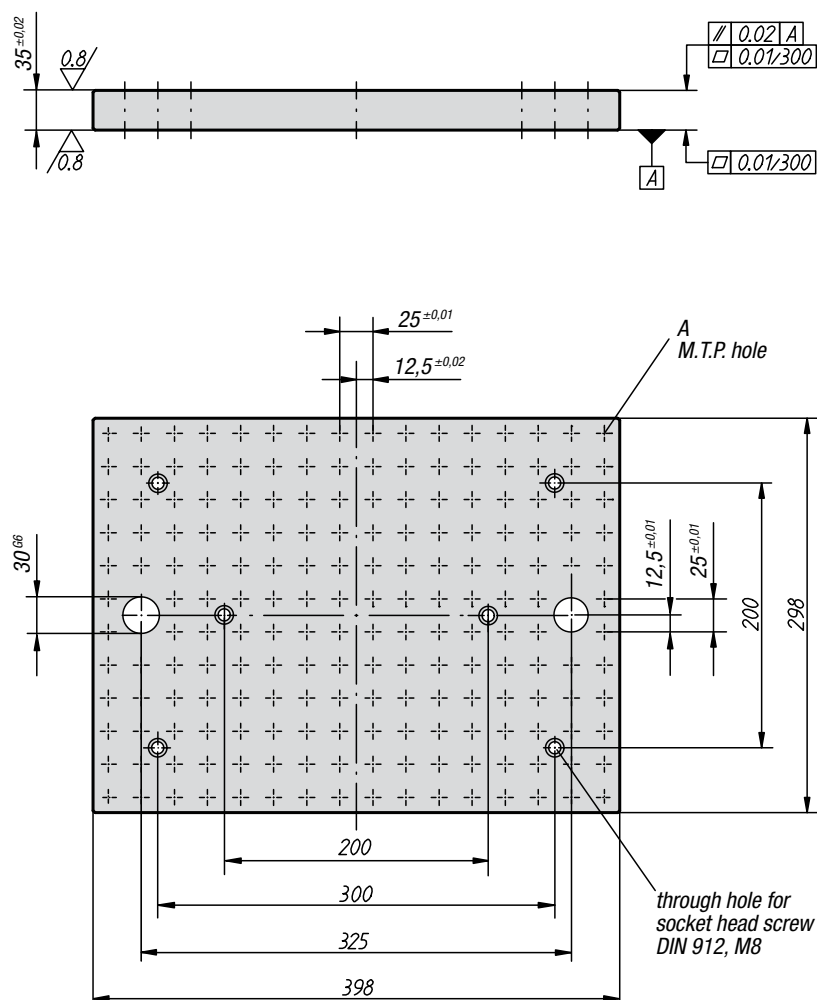
Mounting surfaces ground

Sample order:

K0800.083040

Note:

Pitch of M.T.P. holes is $25 \pm 0,01$ mm. Protection Plugs for M.T.P. holes and lifting Eye Bolts are standard equipment.



Grid Plate

Order No.	A Locating hole	A Thread	Number of M.T.P. hole	Approx. weight kg
K0800.083040	12 H6	M8	188	19



Material:
Grey cast iron G.JL 250

Surface finish:
Mounting surfaces ground

Sample order:
K0801.003040

Note:
Pitch of M.T.P. holes is $50 \pm 0,01$ mm. Protection Plugs for M.T.P. holes and lifting Eye Bolts are standard equipment. The Grid Plates are used in conjunction with Angle Grid Plates K0807 (see Fig. 1). The Grid Plates are positioned using Locating Bolts K0815.1... inserted into the fastening holes. The DIN 912 Socket Head Screws are only used for additional fastening. Fig. 2 shows a further application variant. The Double Angle Plates K0804 are dimensionally matched to the Grid Plates.

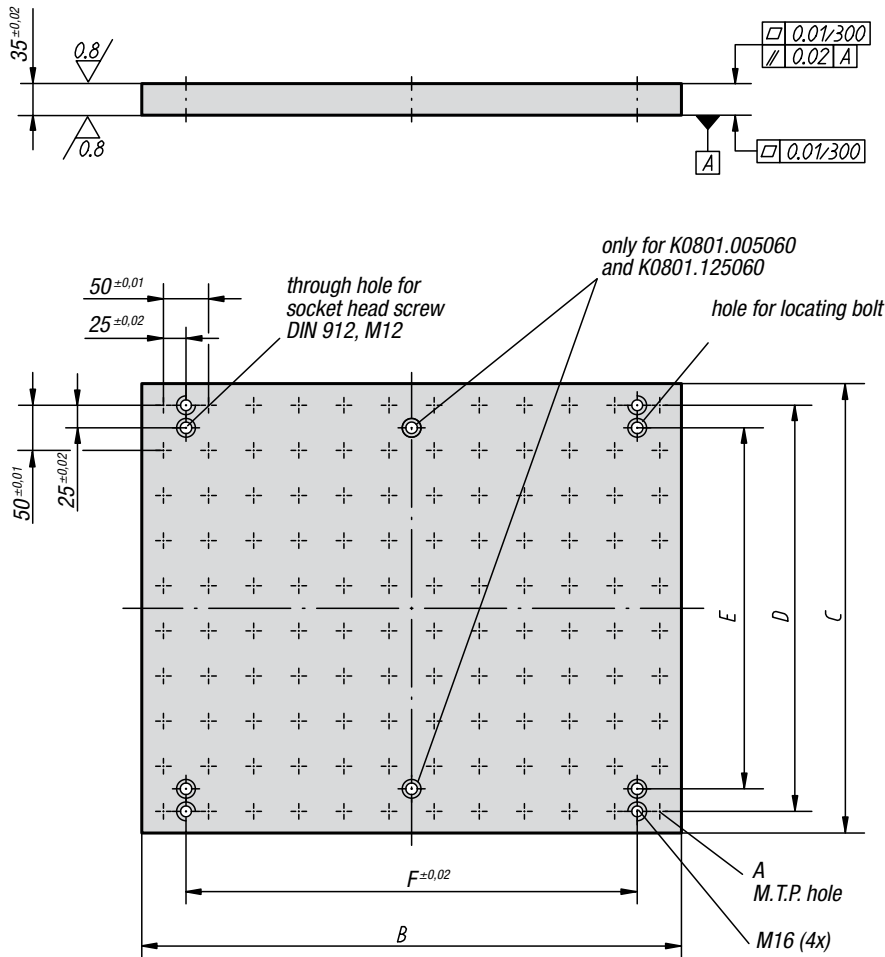
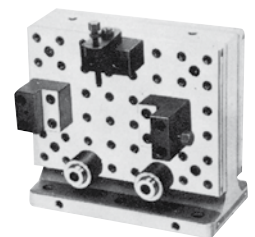
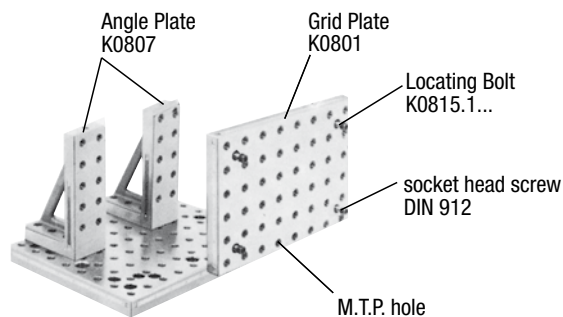


Fig. 1

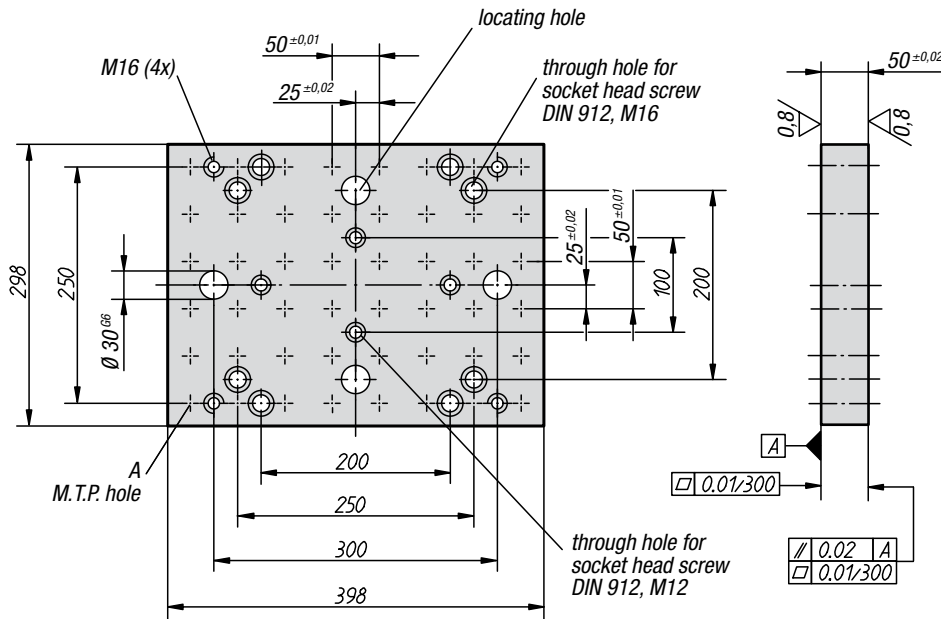
Fig. 2



Grid Plates

Order No.	A Locating hole	A Thread	B	C	D	E	F	Number of M.T.P. hole	Suitable Locating Bolt	Approx. weight kg
K0801.003040	–	–	398	298	250	200	300	–	K0815.112055	31
K0801.004050	–	–	498	398	350	300	400	–	K0815.112055	51
K0801.005060	–	–	598	498	450	400	500	–	K0815.112055	77
K0801.123040	12 F7	M12	398	298	250	200	300	48	K0815.112055	29
K0801.124050	12 F7	M12	498	398	350	300	400	80	K0815.112055	48
K0801.125060	12 F7	M12	598	498	450	400	500	120	K0815.112055	73

Grid Plates

**Material:**

Grey cast iron GJL 250

Surface finish:

Mounting surfaces ground

Sample order:

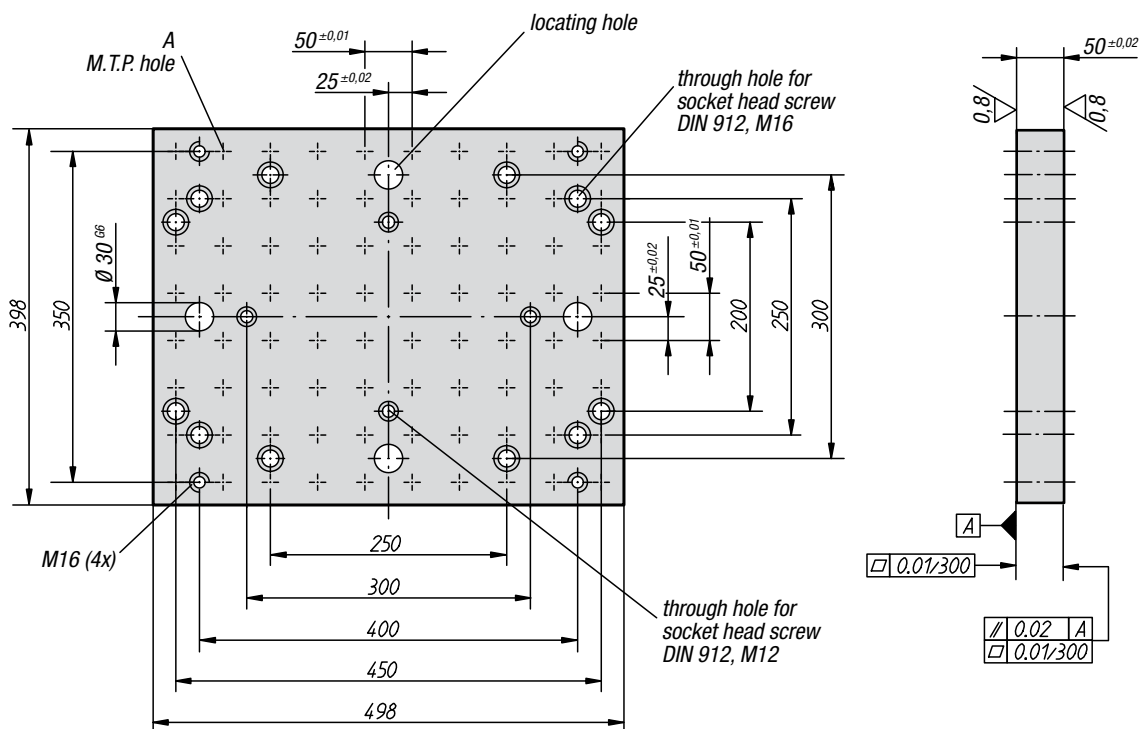
K0800.003040

Note:

Pitch of M.T.P. holes is 50 ± 0.01 mm. Protection Plugs for M.T.P. holes and lifting Eye Bolts are standard equipment. For large workpieces, the Grid Plates can be connected together using Joint Blocks K0854.400.

Grid Plates

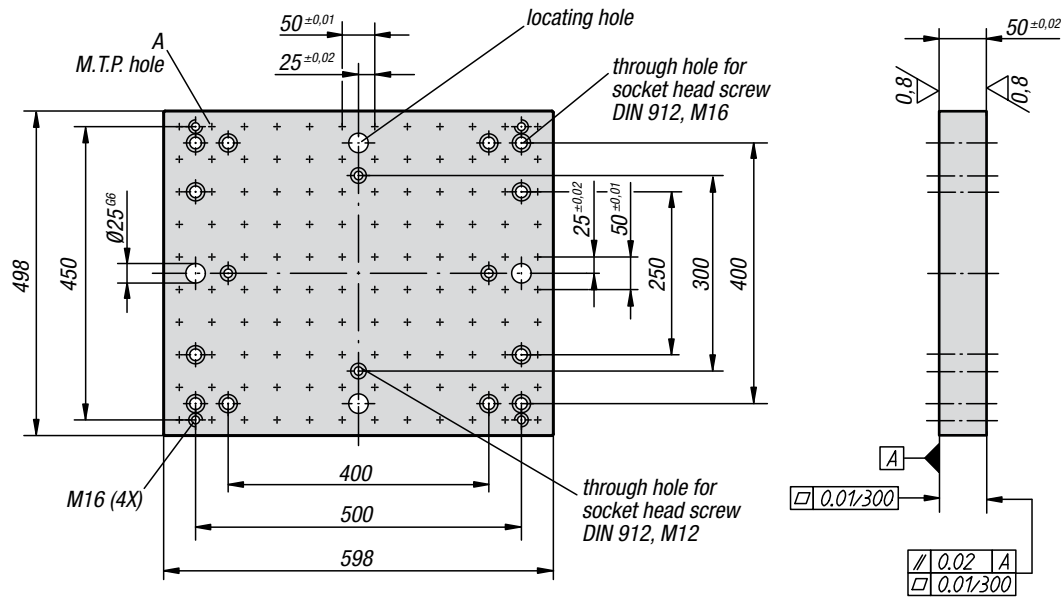
Order No.	A Locating hole	A Thread	Number of M.T.P. hole	Approx. weight kg
K0800.003040	-	-	-	42
K0800.123040	12 F7	M12	48	40



Grid Plates

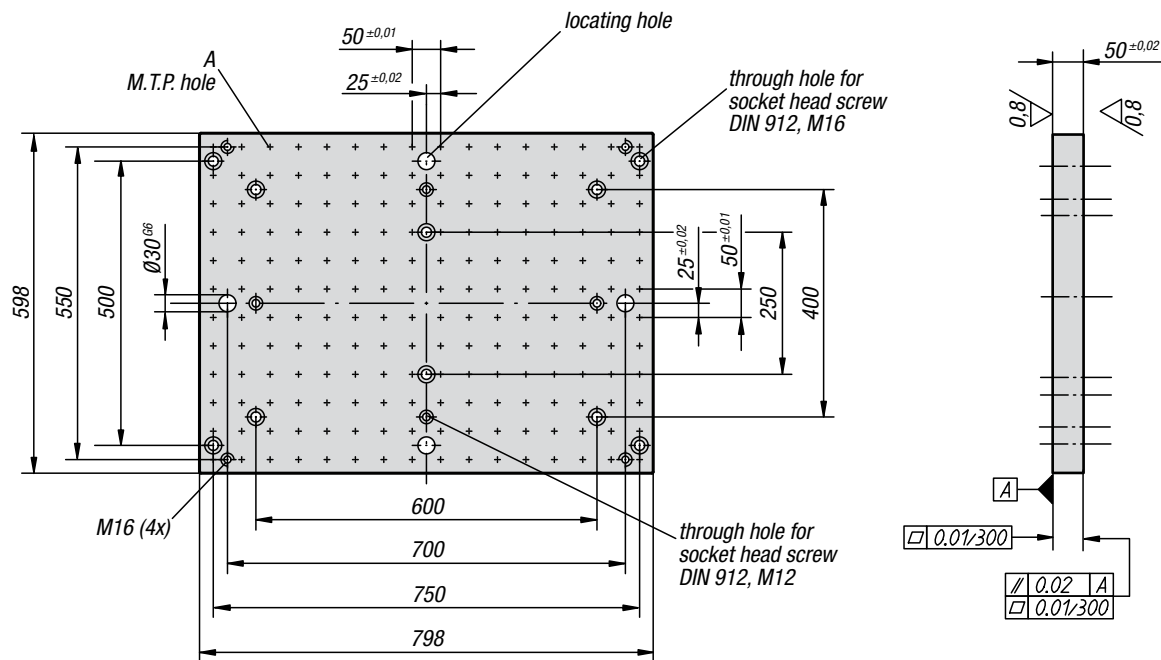
Order No.	A Locating hole	A Thread	Number of M.T.P. hole	Approx. weight kg
K0800.004050	-	-	-	70
K0800.124050	12 F7	M12	80	67

Grid Plates



Grid Plates

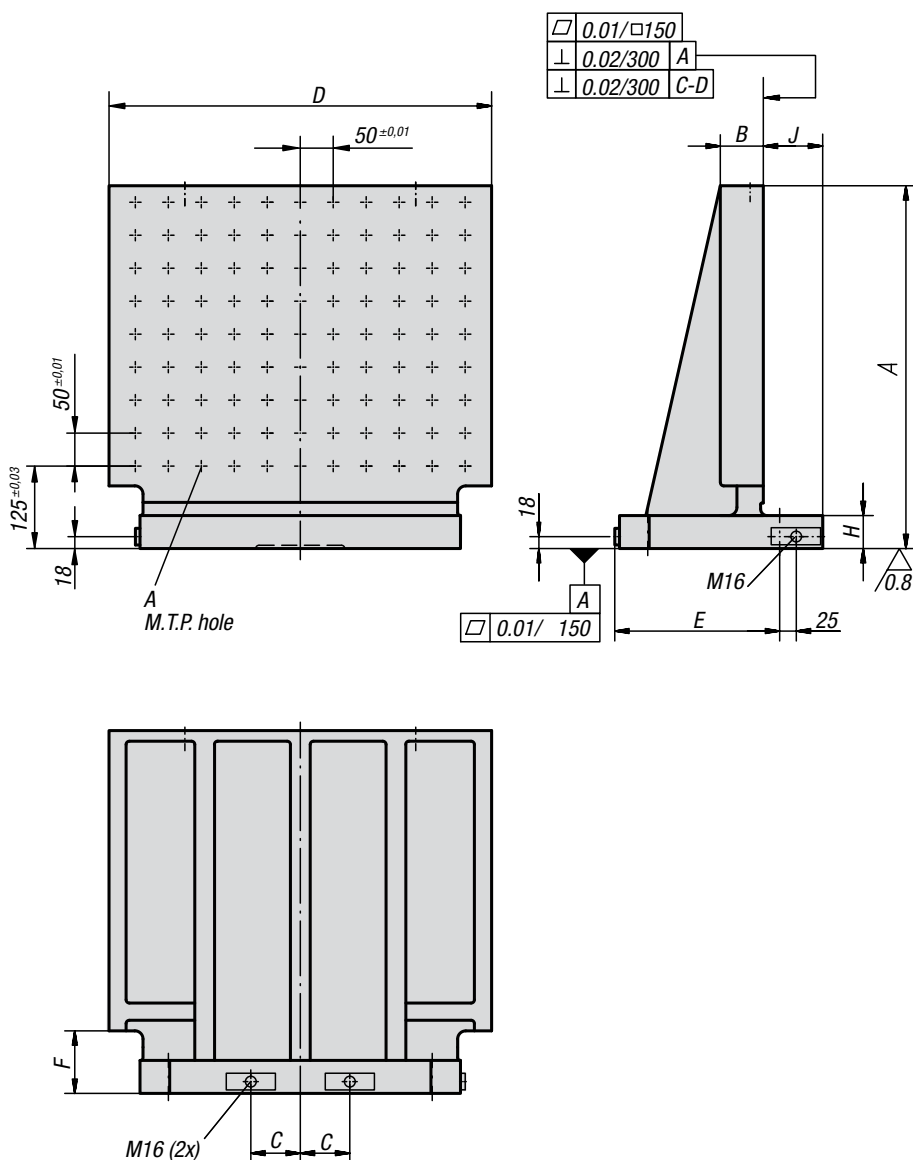
Order No.	A Locating hole	A Thread	Number of M.T.P. hole	Approx. weight kg
K0800.005060	-	-	-	106
K0800.125060	12 F7	M12	120	101
K0800.165060	16 F7	M16	120	98



Grid Plates

Order No.	A Locating hole	A Thread	Number of M.T.P. hole	Approx. weight kg
K0800.006080	-	-	-	172
K0800.126080	12 F7	M12	192	164
K0800.166080	16 F7	M16	192	157

Angle Plates



Material:
Meehanite casting GJL 300

Surface finish:
Reference surfaces precision-machined. With the version without M.T.P. holes the mounting surfaces are prepared with additional measure of 1 mm.

Sample order:
K0802.004047

Note:
Pitch of M.T.P. holes is $50 \pm 0,01$ mm. Protection Plugs for M.T.P. holes and lifting Eye Bolts are standard equipment. The Angle Grid Plates are matched to MC Plates for machine tools according to DIN 55201 and to MC Plates for machine tools according to JIS 6337-1980. Other dimensions on request.

Angle Plates without M.T.P. holes

Order No. without M.T.P. holes	A	B	C	D	E	E1	F	G	H	J	Approx. weight kg
K0802.004047	450	61	55	470	200	24±0,2	85	20	45	89	98
K0802.005058	550	66	75	580	250	24±0,2	95	20	50	89	161
K0802.006376	700	76	100	760	315	49±0,2	100	25	55	114	313
K0802.008090	800	81	135	900	400	49±0,2	100	25	60	114	434

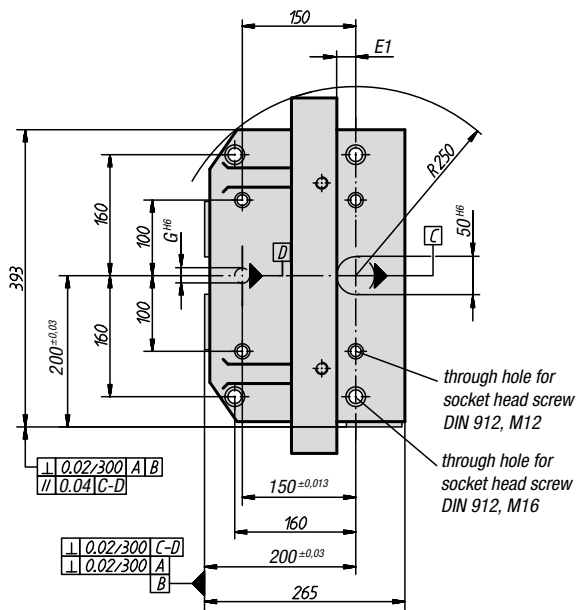
Angle Plates with M.T.P. holes

Order No. with M.T.P. holes	A	B	C	D	E	E1	F	G	H	J	A Locating hole	A Thread	Number of M.T.P. hole	Approx. weight kg
K0802.124047	50	60	60	60	200	25±0,03	85	20	20	90	12F7	M12	63	95
K0802.125058	550	65	65	65	250	25±0,03	95	20	20	90	12F7	M12	99	157
K0802.165058	550	65	65	65	250	25±0,03	95	20	20	90	16F7	M16	99	154
K0802.166376	700	75	75	75	315	50±0,03	100	25	25	115	16F7	M16	180	298

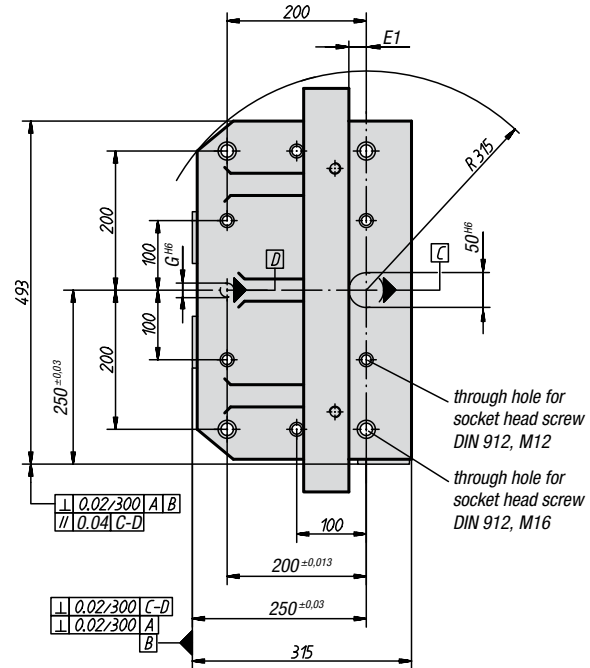
Angle Plates



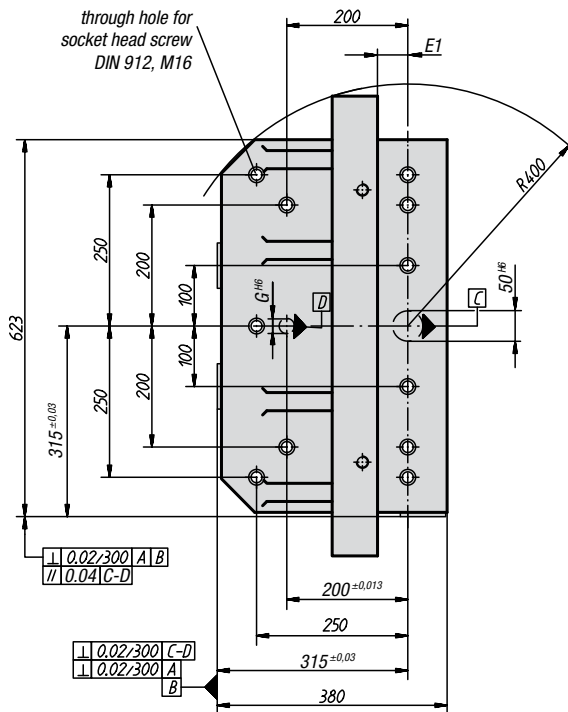
K0802.004047
K0802.124047



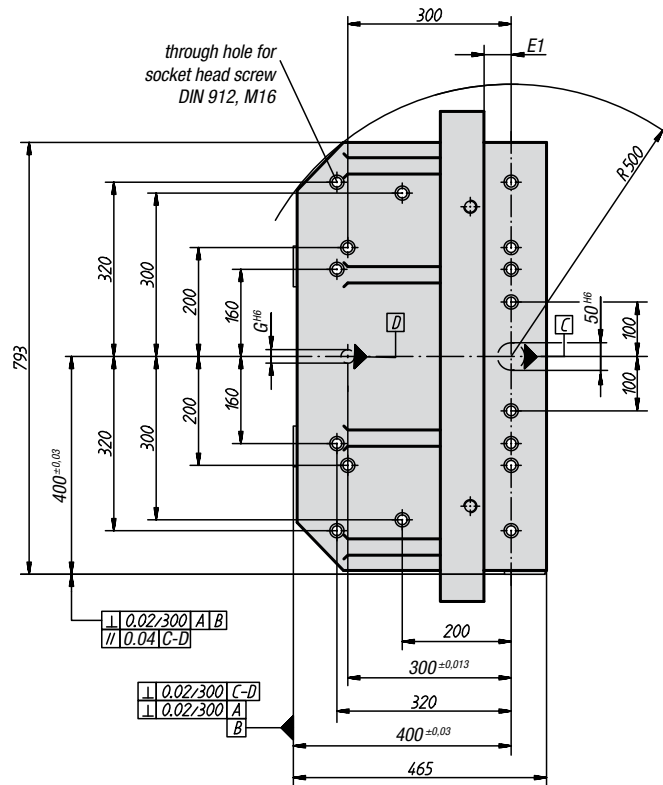
K0802.005058
K0802.125058
K0802.165058



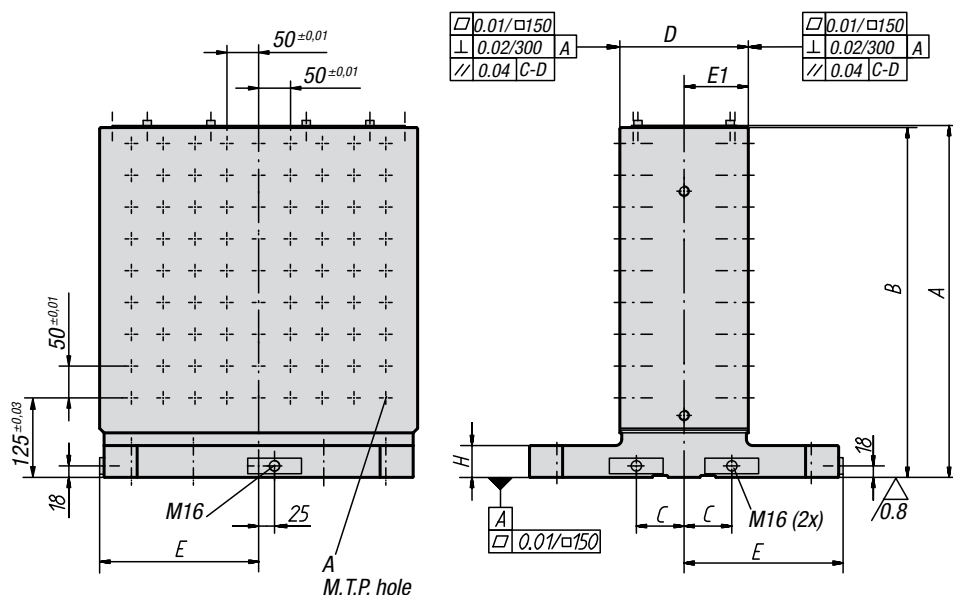
K0802.006376
K0802.166376



K0802.008090



Double Angle Plates



Material:

Meehanite casting GJL 300

Surface finish:

Reference surfaces precision-machined. With the version without M.T.P. holes the mounting surfaces are prepared with additional measure of 0,5 mm $\pm 0,2$ mm.

Sample order:

K0803.1240151

Note:

Pitch of M.T.P. holes is $50 \pm 0,01$ mm. Protection Plugs for M.T.P. holes and lifting Eye Bolts are standard equipment. A cover prevents the cavities of the Grid Plates from filling up with chips. Workpieces can be mounted on both mounting surfaces either using fixturing elements or directly. Code numbers for the mounting surfaces prevent mounting on the wrong angle side when various workpieces are set up. The Double Angle Plates are matched to MC Plates for machine tools according to DIN 55201 and to MC Plates for machine tools according to JIS 6337-1980. Other dimensions on request.

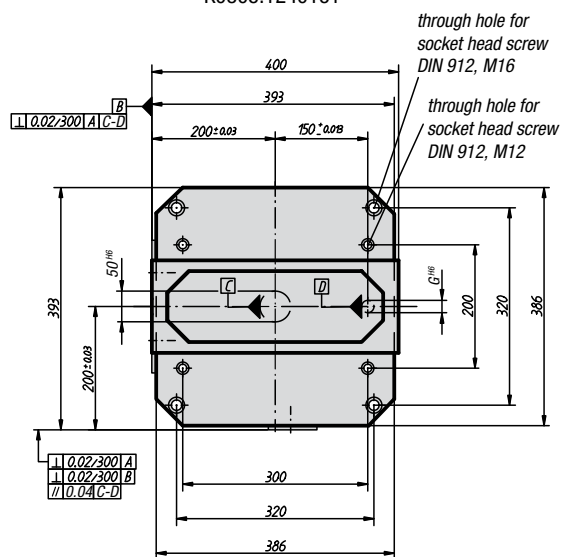
Double Angle Plates with M.T.P. holes

Order No. with M.T.P. holes	A	B	C	D	E	E1	G	H	A Locating hole	A Thread	Number of M.T.P. hole	Approx. weight kg
K0803.1240151	553	550	55	150 $\pm 0,03$	200	75 $\pm 0,03$	20	50	12F7	M12	126	198
K0803.1250201	653	650	75	200 $\pm 0,03$	250	100 $\pm 0,03$	20	50	12F7	M12	198	287
K0803.1650201	653	650	75	200 $\pm 0,03$	250	100 $\pm 0,03$	20	50	16F7	M16	198	285
K0803.126325	703	700	100	250 $\pm 0,03$	315	125 $\pm 0,03$	25	55	12F7	M12	264	482
K0803.166325	703	700	100	250 $\pm 0,03$	315	125 $\pm 0,03$	25	55	16F7	M16	264	478
K0803.168030	803	800	135	300 $\pm 0,03$	400	150 $\pm 0,03$	25	60	16F7	M16	420	710

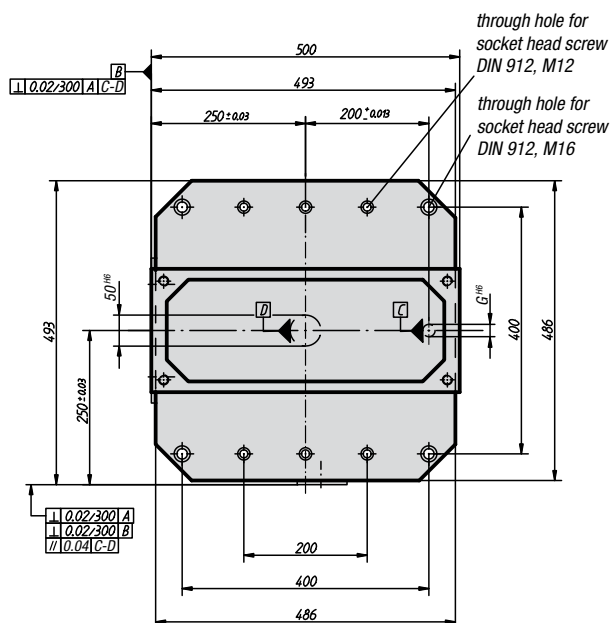
Double Angle Plates



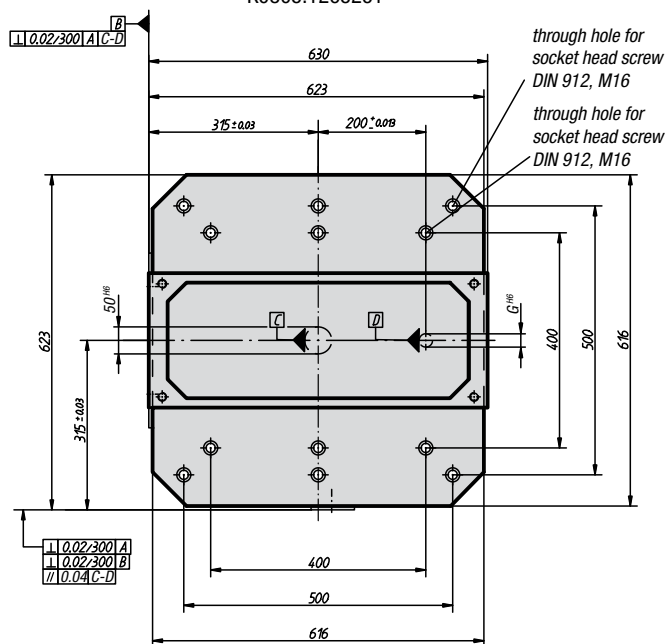
K0803.0040151
K0803.1240151



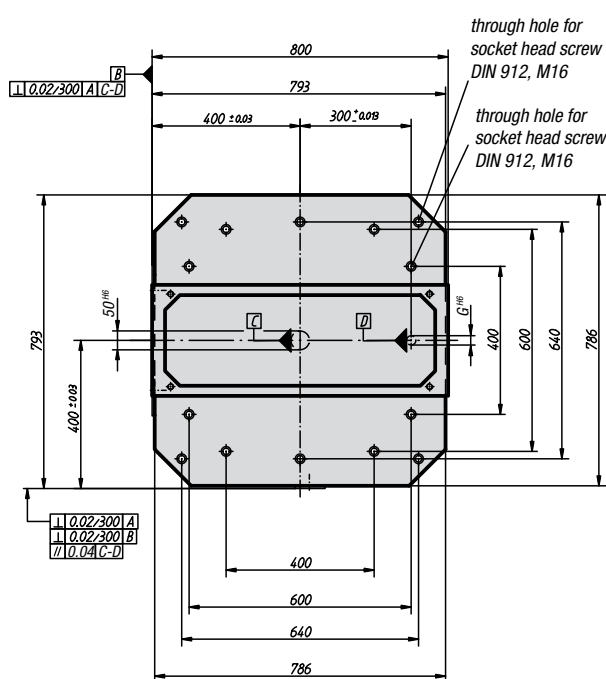
K0803.005020
K0803.0050201
K0803.1250201



K0803.006325
K0803.0063251
K0803.1263251



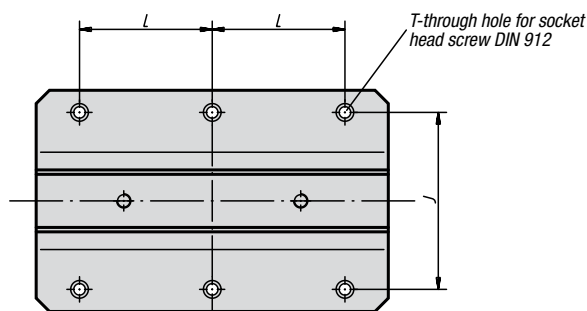
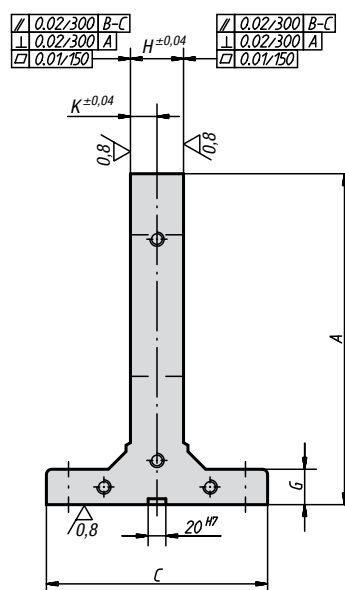
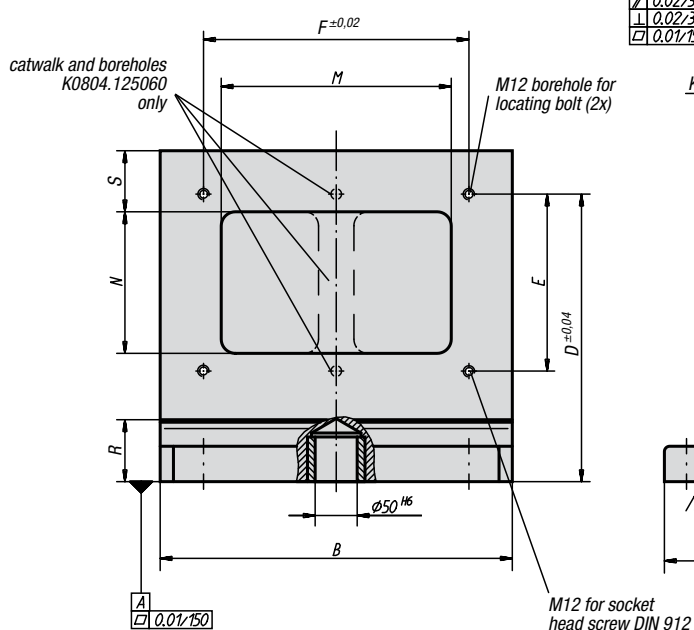
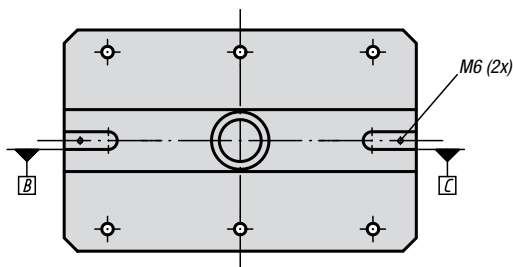
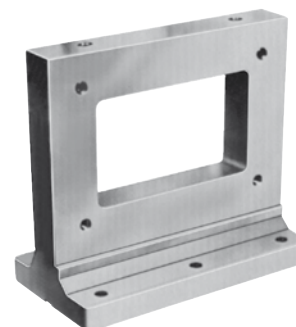
K0803.008030
K0803.168030



Double Angle Plates without M.T.P. holes

Order No. without M.T.P. holes	A	B	C	D	E	E1	G	H	Approx. weight kg
K0803.0040151	553	550	55	151±0,2	200	75,5±0,2	20	50	202
K0803.005020	553	550	75	201±0,2	250	101,5±0,2	20	50	257
K0803.0050201	653	650	75	201±0,2	250	101,5±0,2	20	50	293
K0803.006325	703	700	100	251±0,2	315	125,5±0,2	25	55	471
K0803.0063251	803	800	100	251±0,2	315	125,5±0,2	25	55	537
K0803.008030	803	800	135	301±0,2	400	150,5±0,2	25	60	726

Double Angle Plates



Material:

Meehanite casting GJL 300

Surface finish:

Reference surfaces precision-machined

Sample order:

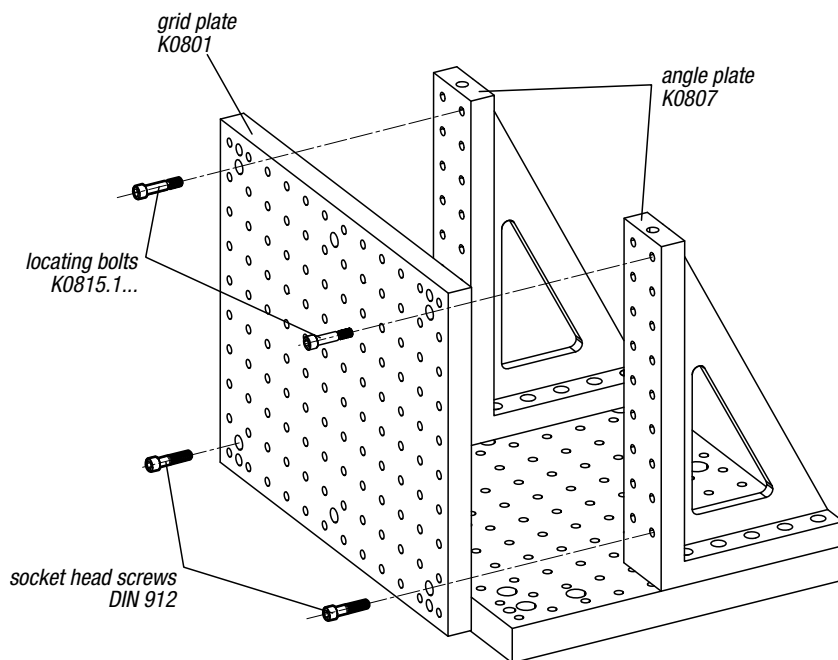
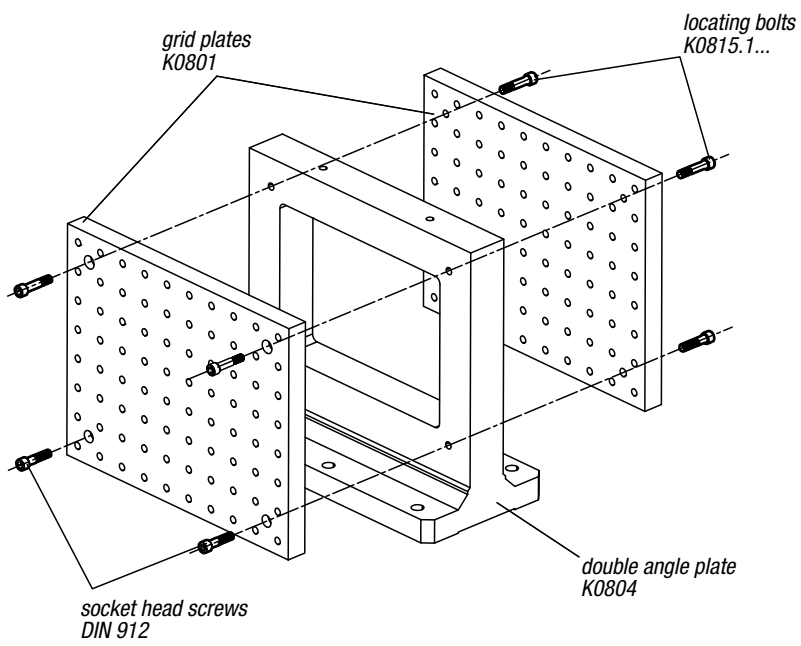
K0804.123040

Note:

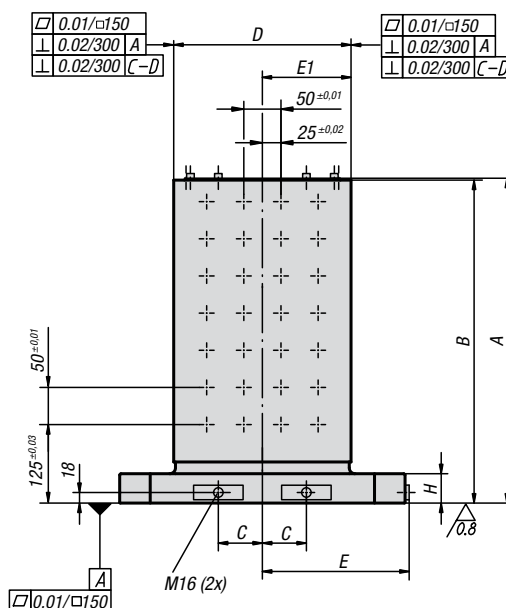
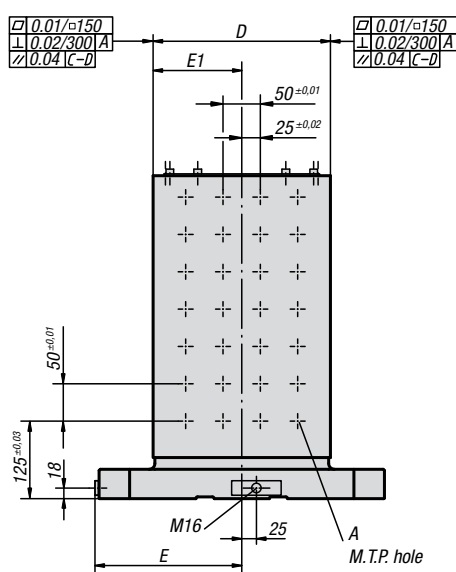
Grid Plates K0801 can be positioned and mounted on both sides of the Double Angle Plates. This permits economical changing of fixtures. The Double Angle Plates are positioned using Centering Bolts K0856 and T-Blocks.

Double Angle Plates

Order No.	A	B	C	D	E	F	G	H	J	K	L	M	N	R	S	T	Approx. weight kg
K0804.123040	374	398	250	325	200	300	40	60	200	30	150	260	160	70	69	M12	64
K0804.124050	474	498	250	425	300	400	40	70	200	35	200	360	260	70	69	M12	100
K0804.125060	574	598	300	525	400	500	50	70	200	35	200	458	360	75	70	M16	153



Four Face Angle Plates



Material:

Meehanite casting GJL 300

Surface finish:

Reference surfaces precision machined.
The angle plates are pre-machined with a 0.5 mm overmeasure.

Sample order:

K0805.008050

Note:

Pitch of M.T.P. holes is $50 \pm 0,01$ mm. Protection Plugs for M.T.P. holes and lifting Eye Bolts are standard equipment. A cover prevents the cavities of the Grid Plates from filling up with chips. Workpieces can be mounted on all four mounting surfaces either using fixturing elements or directly. Code numbers for the mounting surfaces prevent mounting on the wrong face when various workpieces are set up. The Four Face Angle Plates are matched to MC Plates for machine tools according to DIN 55201 and to MC Plates for machine tools according to JIS 6337-1980. Other dimensions on request.

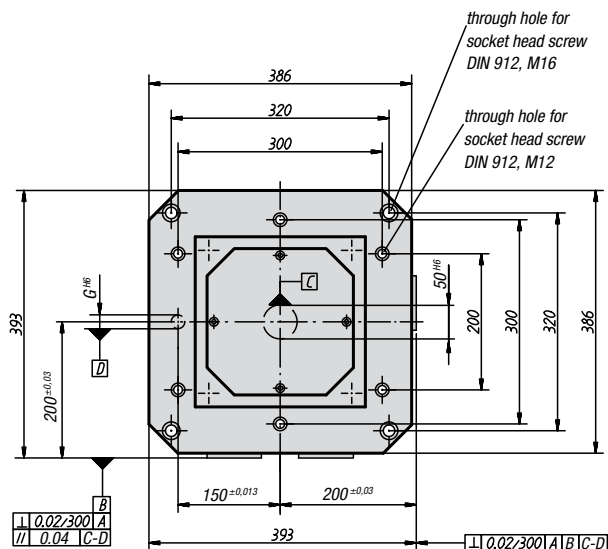
Four Face Angle Plates with M.T.P. holes

Order No. with M.T.P. holes	A	B	C	D	E	E1	G	H	A Locating hole	A Thread	Number of M.T.P. hole	Approx. weight kg
K0805.1240251	553	550	55	250±0,03	200	125±0,03	20	50	12 F7	M12	144	172
K0805.1250301	653	650	75	300±0,03	250	150±0,03	20	50	12 F7	M12	220	262
K0805.1650301	653	650	75	300±0,03	250	150±0,03	20	50	12 F7	M16	220	258
K0805.126335	703	700	100	350±0,03	315	175±0,03	25	55	12 F7	M12	288	381
K0805.166335	703	700	100	350±0,03	315	175±0,03	25	55	16 F7	M16	288	377
K0805.168050	803	800	135	500±0,03	400	250±0,03	25	60	16 F7	M16	504	715

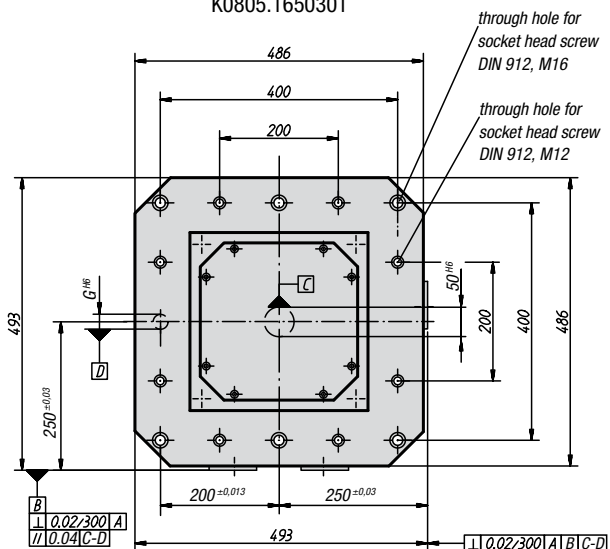
Four Face Angle Plates



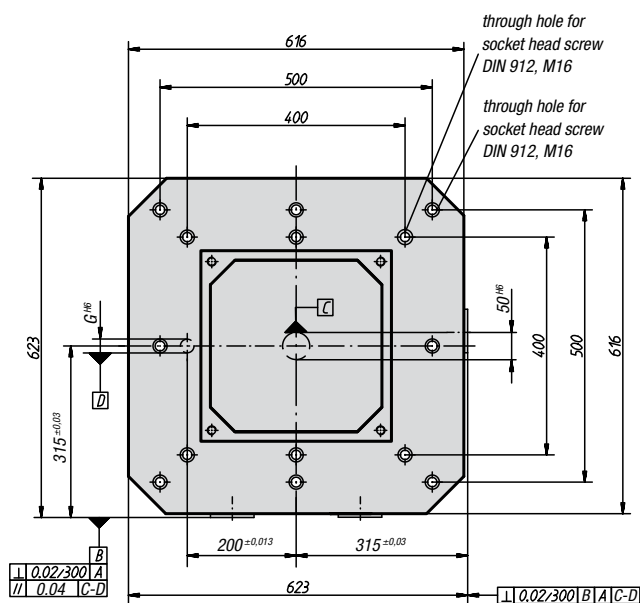
K0805.0040251
K0805.1240251



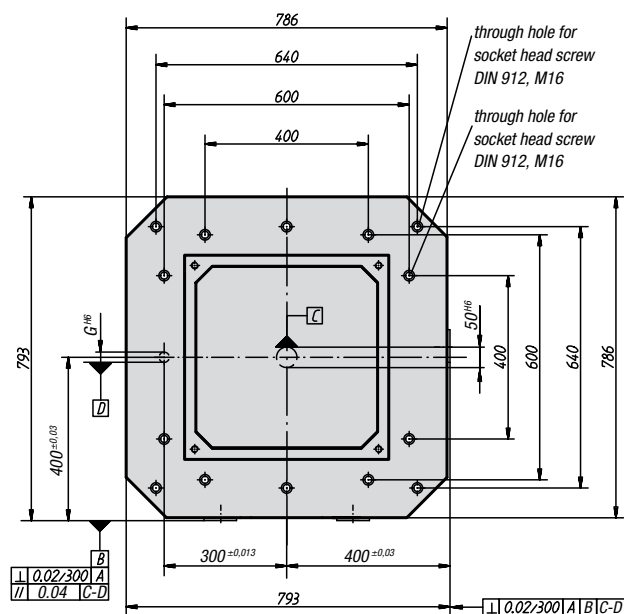
K0805.005030
K0805.0050301
K0805.1250301
K0805.1650301



K0805.006335
K0805.0063351
K0805.126335
K0805.166335



K0805.008050
K0805.168050



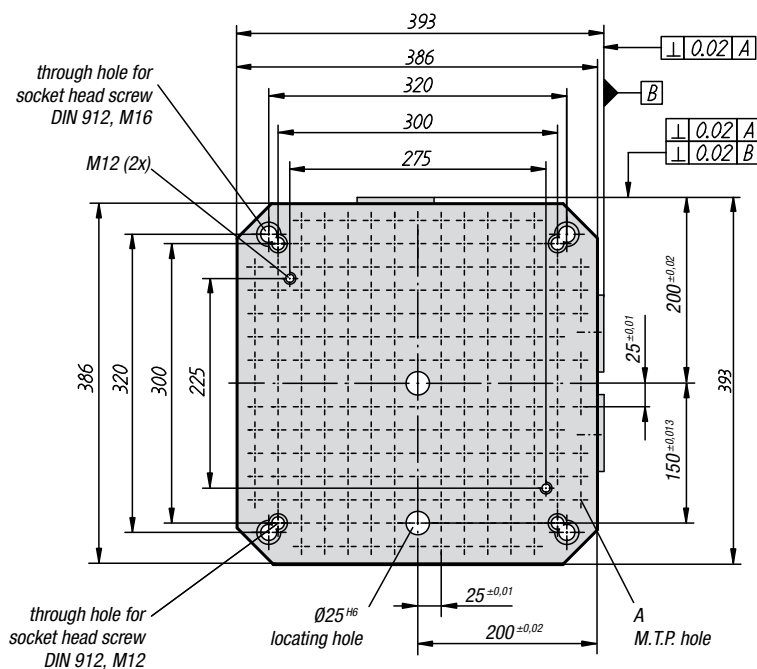
Four Face Angel Plates without M.T.P. holes

Order No. without M.T.P. holes	A	B	C	D	E	E1	G	H	Approx. weight kg
K0805.005030	553	550	75	301 ±0,2	250	150,5 ±0,2	20	50	237
K0805.006335	703	700	100	351 ±0,2	315	175,5 ±0,2	25	55	389
K0805.008050	803	800	135	501 ±0,2	400	250,5 ±0,2	25	60	744
K0805.0040251	553	550	55	251 ±0,2	251	125,5 ±0,2	20	50	176
K0805.0050301	653	650	75	301 ±0,2	250	150,5 ±0,2	20	50	268
K0805.0063351	803	800	100	351 ±0,2	315	175,5 ±0,2	25	55	425

MC Plates



K0806.084040

**Material:**

Grey cast iron GJL 250

Surface finish:

Mounting surfaces ground

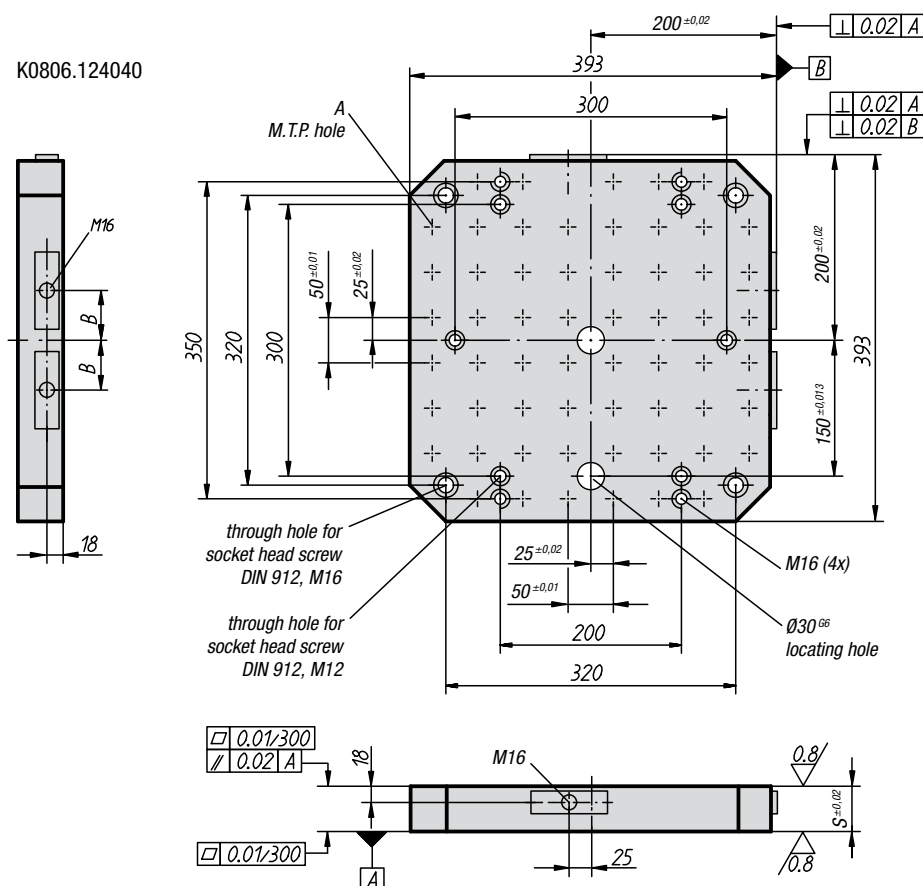
Sample order:

K0806.008050

Note:

Pitch of M.T.P. holes is 25 ± 0.01 mm or 50 ± 0.01 mm. Protection Plugs for M.T.P. holes and lifting Eye Bolts are standard equipment. The MC Plates are matched to MC Plates for machine tools according to DIN 55201 and to MC Plates for machine tools according to JIS 6337-1980. The MC Plates are also available without M.T.P. holes. See order numbers without letter A and number for M.T.P. holes. Other dimensions on request.

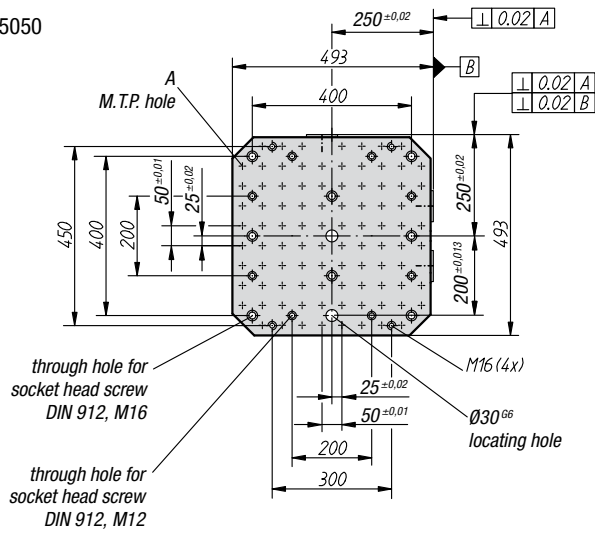
K0806.124040



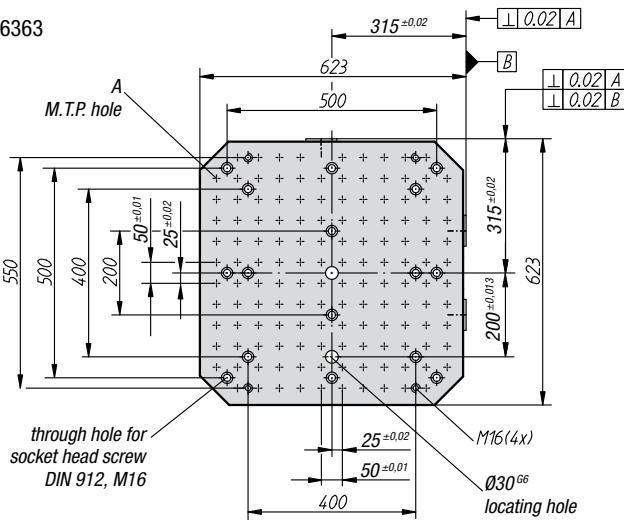
MC Plates

Order No. with M.T.P. holes	Order No. without M.T.P. holes	A Locating hole	A Thread	B	S	Number of M.T.P. hole
K0806.084040	-	12 F7	M8	55	40	204
K0806.124040	K0806.004040	12 F7/-	M12/-	55	50	59/-
K0806.125050	K0806.005050	12 F7/-	M12/-	75	50	93/-
K0806.126363	K0806.006363	12 F7/-	M12/-	100	50	139/-
K0806.168080	K0806.008080	12 F7/-	M16/-	135	60	237/-

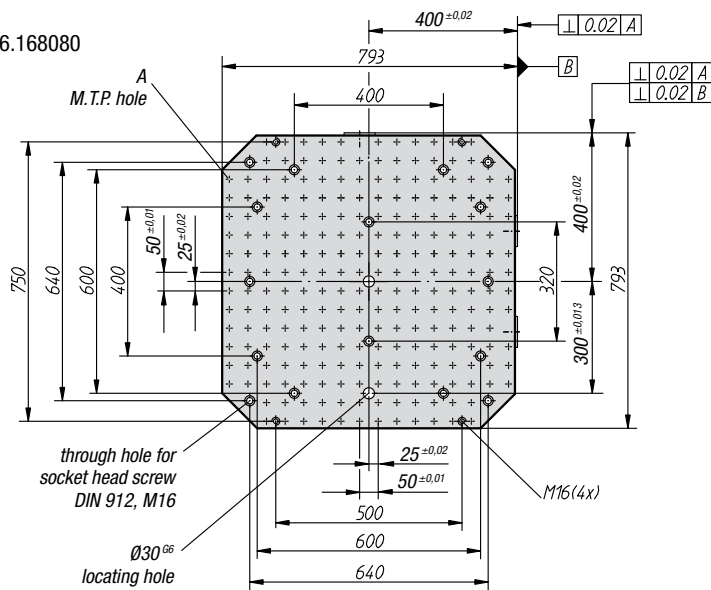
K0806.125050



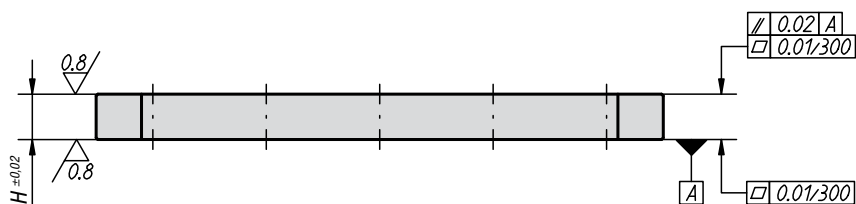
K0806.126363



K0806.168080



MC Plate

**Material:**

Grey cast iron GJL 250

Surface finish:

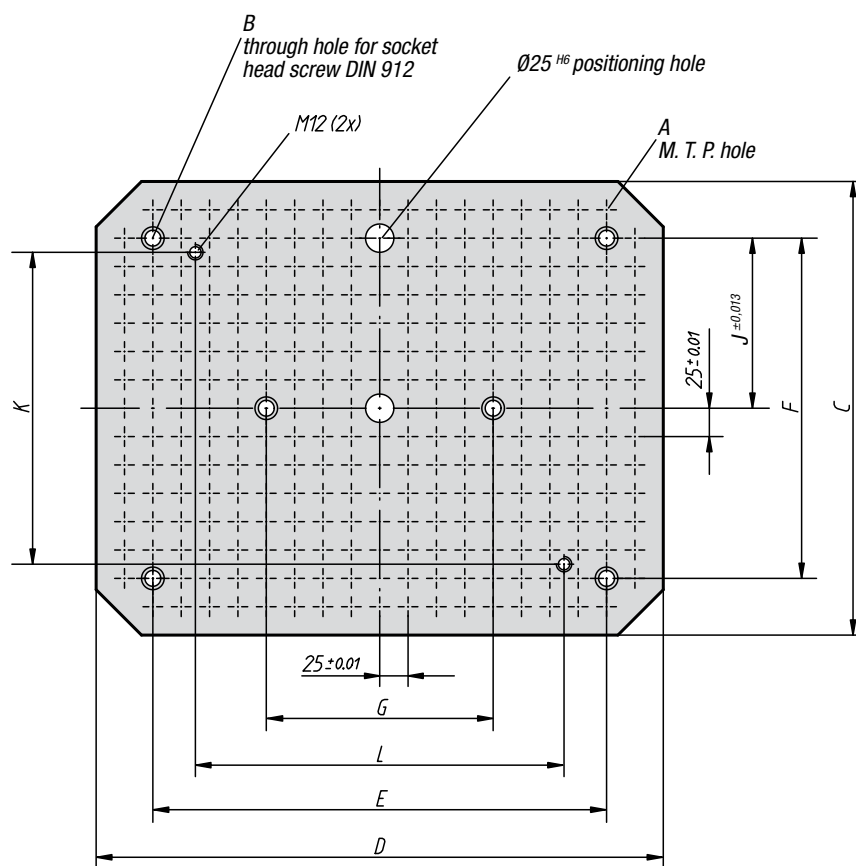
Mounting surfaces ground

Sample order:

K0806.084050

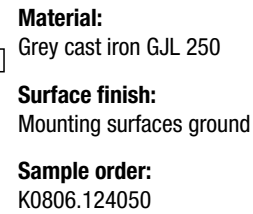
Note:

Pitch of M.T.P. holes is $25 \pm 0,01$ mm. Protection Plugs for M.T.P. holes and lifting Eye Bolts are standard equipment. The MC Plates are matched to MC Plates for machine tools according to DIN 55201.



MC Plate

Order No.	A Locating hole	A Thread	B	C	D	E	F	G	H	J	K	L	Number of M.T.P. hole	Approx. weight kg
K0806.084050	12 H6	M8	M12	400	500	400	300	200	40	150	275	325	273	49



Technical drawing of a rectangular plate with a grid of holes. The plate has a central grid of 10x10 holes. There are 4 larger holes (A) and 4 smaller holes (B) around the perimeter. Dimensions include overall width D, height L, and various hole spacings and diameters.

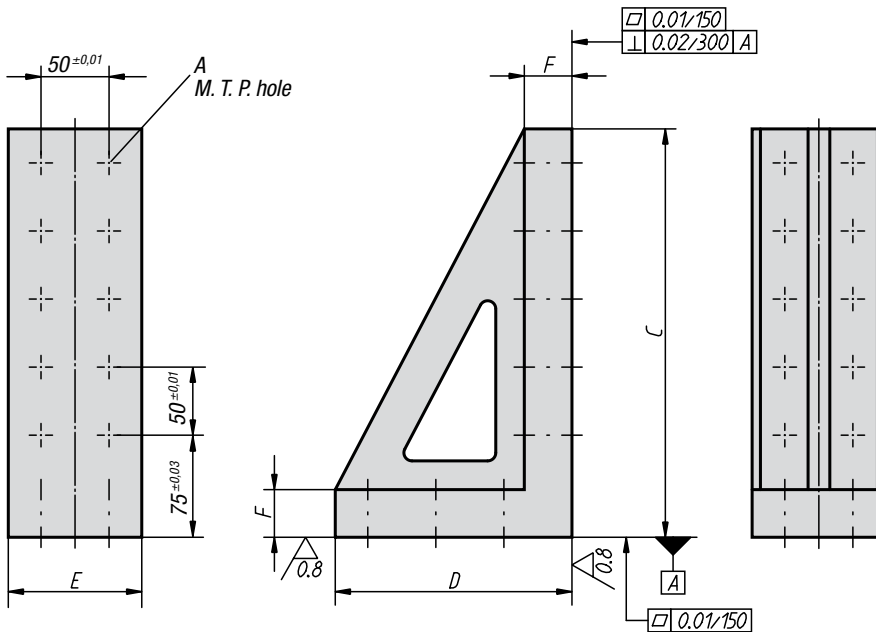
Key features and dimensions:

- Hole A:** M. T. P. hole (Metric Threaded Plug hole).
- Hole B:** through hole for socket head screw DIN 912.
- Positioning hole:** $\varnothing 30^{+0.06}$.
- Dimensions:**
 - Overall width: D
 - Overall height: L
 - Distance from top edge to first row of holes: $J \pm 0.013$
 - Distance between rows of holes: 25 ± 0.02
 - Distance between columns of holes: 50 ± 0.01
 - Distance from center to edge: 25 ± 0.02
 - Distance from center to hole A: 50 ± 0.01
 - Distance from center to hole B: 50 ± 0.01
 - Distance from center to hole C: 25 ± 0.02
 - Distance from center to hole D: 25 ± 0.02
 - Distance from center to hole E: 25 ± 0.02
 - Distance from center to hole F: 25 ± 0.02
 - Distance from center to hole G: 25 ± 0.02
 - Distance from center to hole H: 25 ± 0.02
 - Distance from center to hole I: 25 ± 0.02
 - Distance from center to hole J: 25 ± 0.02
 - Distance from center to hole K: 25 ± 0.02
 - Distance from center to hole L: 25 ± 0.02
 - Distance from center to hole M: 25 ± 0.02
 - Distance from center to hole N: 25 ± 0.02
 - Distance from center to hole O: 25 ± 0.02
 - Distance from center to hole P: 25 ± 0.02
 - Distance from center to hole Q: 25 ± 0.02
 - Distance from center to hole R: 25 ± 0.02
 - Distance from center to hole S: 25 ± 0.02
 - Distance from center to hole T: 25 ± 0.02
 - Distance from center to hole U: 25 ± 0.02
 - Distance from center to hole V: 25 ± 0.02
 - Distance from center to hole W: 25 ± 0.02
 - Distance from center to hole X: 25 ± 0.02
 - Distance from center to hole Y: 25 ± 0.02
 - Distance from center to hole Z: 25 ± 0.02

MC Plates

Order No.	A Locating hole	A Thread	B Hole for	C	D	E	F	G	H	J	K	L	M	Number of M.T.P. hole	Approx. weight kg
K0806.124050	12 F7	M12	M12	400	500	400	300	200	50	150	200	300	300	76	67
K0806.125063	12 F7	M12	M12	500	630	400	400	400	50	200	200	400	500	116	107
K0806.165063	16 F7	M16	M12	500	630	400	400	400	50	200	200	400	500	116	105
K0806.166380	16 F7	M16	M16	630	800	600	400	400	50	200	200	500	700	188	205

Angle Plates

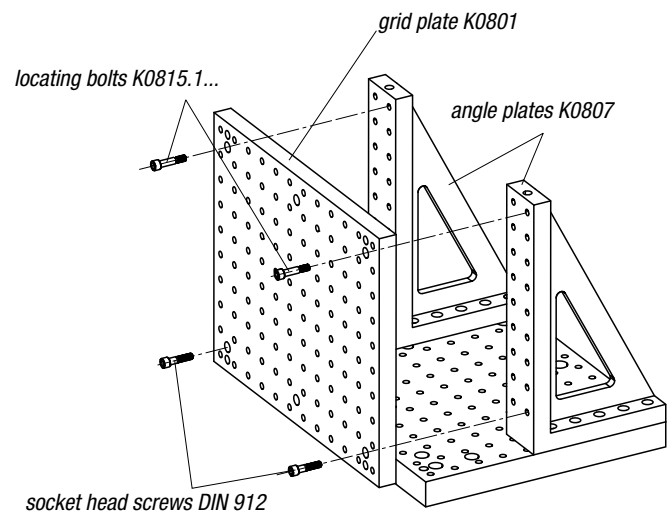
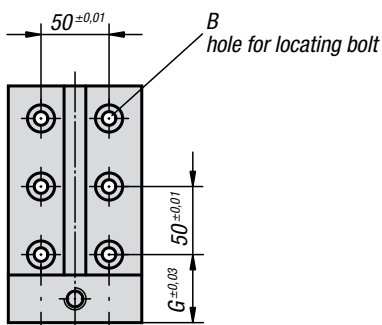


Material:
Meehanite casting GJL 300

Surface finish:
Support and mounting surfaces precision-machined

Sample order:
K0807.121030

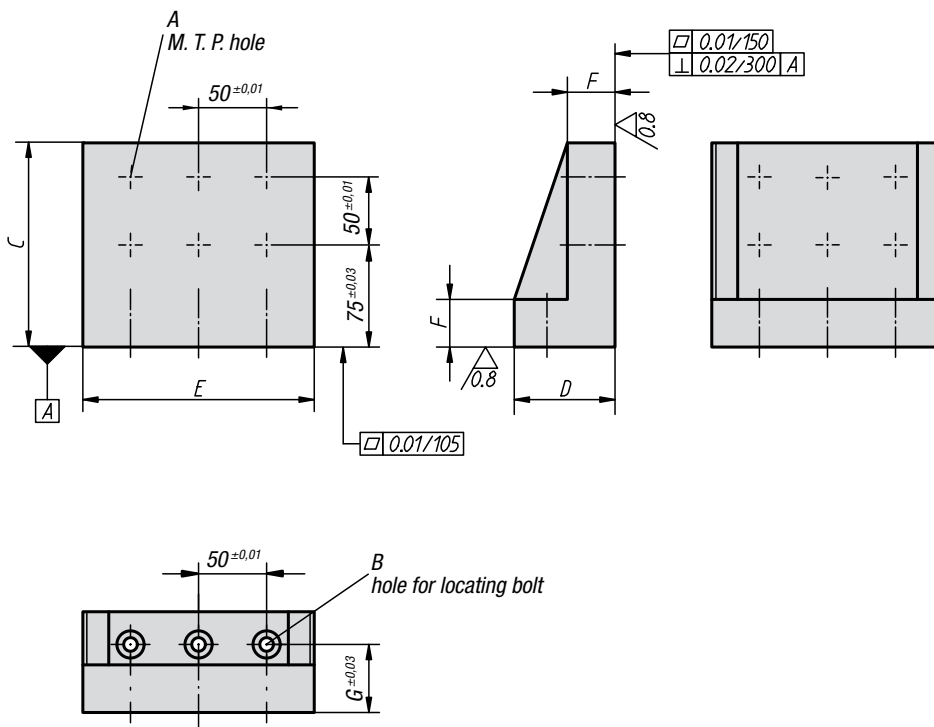
Note:
Pitch of M.T.P. holes is 50 ± 0.01 mm. Angle Plates are versatile elements for vertical positioning of workpieces to be machined. Angle Plates K0807 can also be as supports for Grid Plates K0801. For positioning and fastening of Angle Plates K0807 on Grid Plates K0800 Locating Bolts K0815 are used.



Angle Plate

Order No.	A Locating hole	A Thread	B Ø for Locating Bolt	C	D	E	F	G	Number of M.T.P. hole	Number of mounting holes	Approx. weight kg
K0807.121030	12 F7	M12	12 F7	300	174	98	35	50	10	6	12
K0807.121040	12 F7	M12	12 F7	400	224	98	35	50	14	8	17
K0807.121050	12 F7	M12	12 F7	500	274	98	35	50	18	10	23
K0807.161030	16 F7	M16	16 F7	300	179	98	40	55	10	6	13
K0807.161040	16 F7	M16	16 F7	400	229	98	40	55	14	8	19
K0807.161050	16 F7	M16	16 F7	500	279	98	40	55	18	10	25

Angle Plates



Material:

Meehanite casting GJL 300

Surface finish:

Support and mounting surfaces precision-machined

Sample order:

K0808.121715

Note:

Pitch of M.T.P. holes is $50 \pm 0,01$ mm. Angle Plates are versatile elements for vertical positioning of workpieces to be machined. Locating Bolts are used for fastening the Angle Plates: for Angle Plates K0808.121715 to K0808.121760 Locating Bolts K0815.12055; for Angle Plates K0808.161715 to K0808.161725 Locating Bolts K0815.16075.

Angle Plate

Order No.	A Locating hole	A Thread	B Ø for Locating Bolt	C	D	E	F	G	Number of M.T.P. hole	Number of mounting holes	Approx. weight kg
K0808.121715	12 F7	M12	12 F7	150	74	170	35	50	6	3	8
K0808.121725	12 F7	M12	12 F7	250	124	170	35	50	12	4	14
K0808.121760	12 F7	M12	12 F7	600	374	170	35	50	33	12	52
K0808.161715	16 F7	M16	16 F7	150	79	170	40	55	6	3	9
K0808.161725	16 F7	M16	16 F7	250	129	170	40	55	12	4	16

Flexible Clamping device for vertical working



**Material:**

Meehanite casting GJL 300

Surface finish:

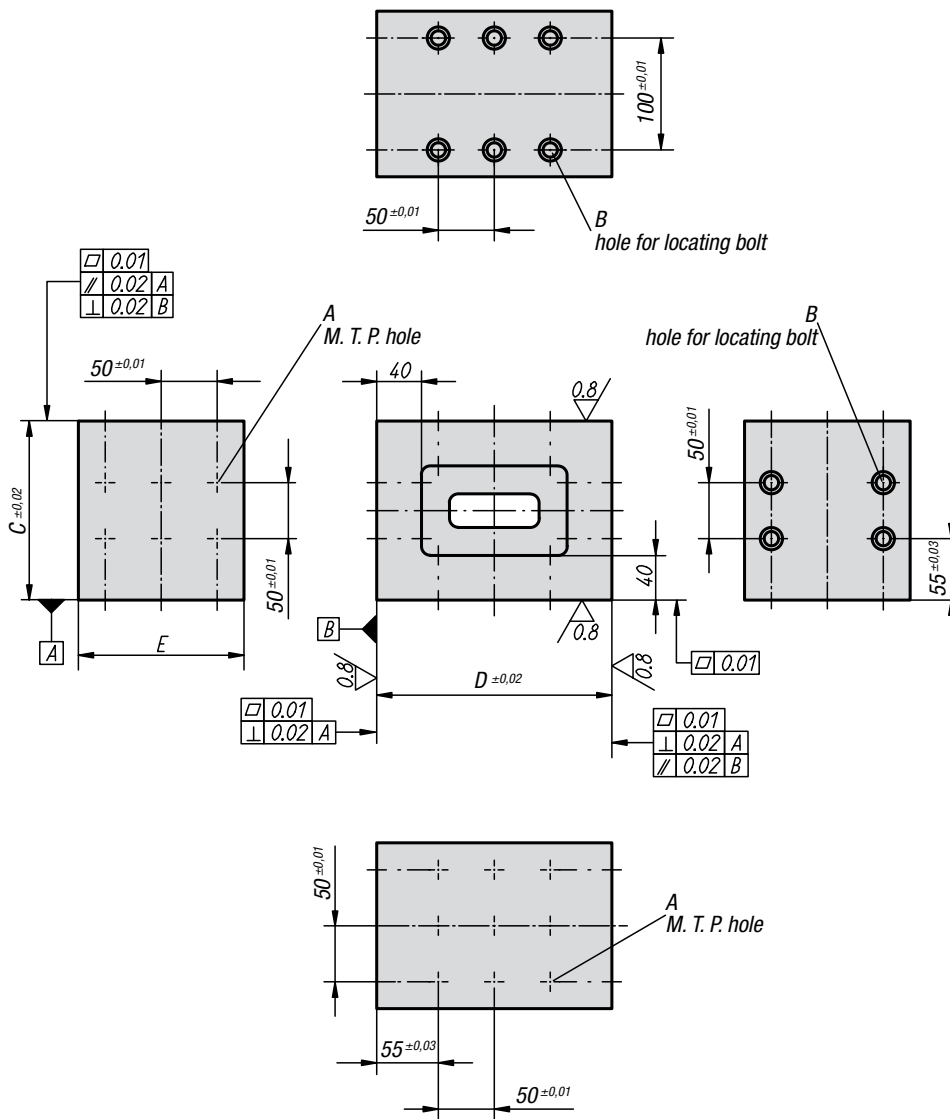
Support and mounting surfaces ground

Sample order:

K0809.090121621

Note:

Pitch of M.T.P. holes is $50 \pm 0,01$ mm. Consoles can be used for mounting low workpieces or as small bases. They can also be used as parallel gauge blocks for inspection work. The Consoles K0809.090121621 and K0809.090122126 are fastened with Locating Bolts K0815.112065, and Consoles K0809.090161621 and K0809.090162126 with Locating Bolts K0815.16075.



Consoles

Order No.	A Locating hole	A Thread	B Ø for Locating Bolt	C	D	E	Number of M.T.P. hole	Number of mounting holes	Approx. weight kg
K0809.090121621	12 F7	M12	12 F7	160	210	148	15	10	26
K0809.090122126	12 F7	M12	12 F7	210	260	148	21	14	37
K0809.090161621	16 F7	M16	16 F7	160	210	148	15	10	25
K0809.090162126	16 F7	M16	16 F7	210	260	148	21	14	36

**Material:**

Meehanite casting GJL 300

Surface finish:

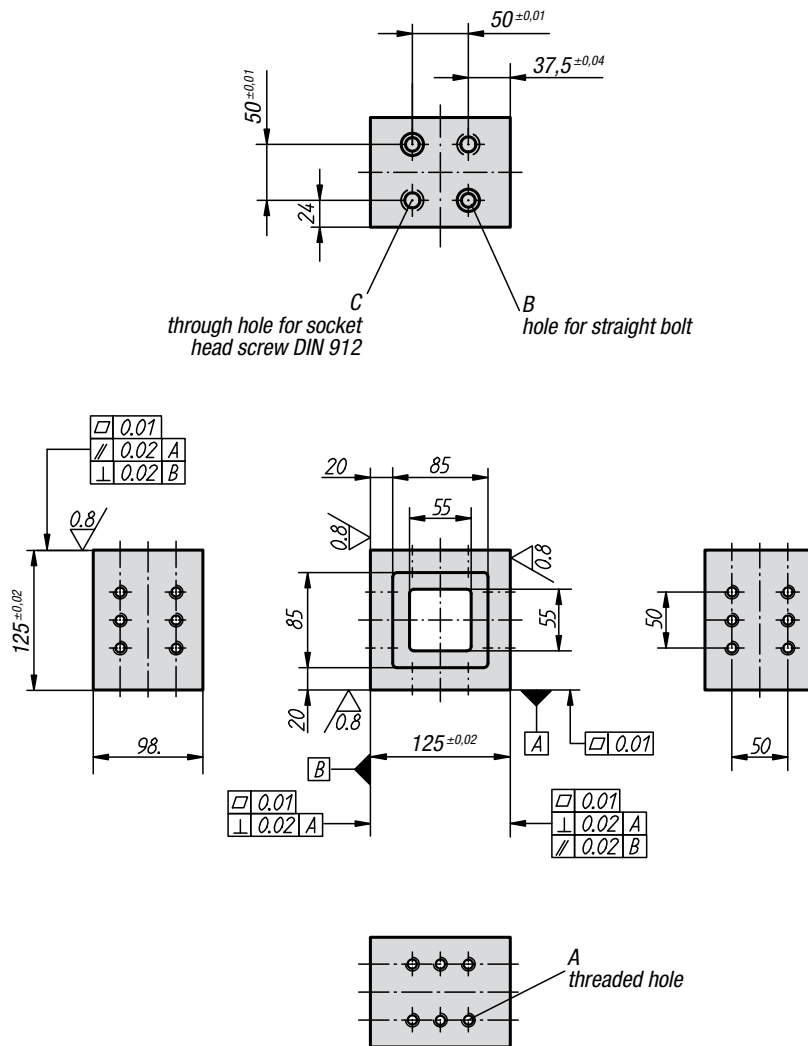
Support and mounting surfaces ground

Sample order:

K0809.09512125

Note:

The Mini Consoles are positioned using two Straight Bolts K0817 and fastened using two Socket Head Screws DIN 912. They can be used as stop elements as well as support and building block elements.

**Mini Consoles**

Order No.	A	B	C Through hole for	Suitable Straight Bolts	Approx. weight kg
K0809.09512125	M12	12 F7	M12	K0817.12	6,3
K0809.09516125	M16	16 F7	M16	K0817.16	6,2

Fixing Blocks

Form M



Material:

Tempered steel

Surface finish:

black oxide finish

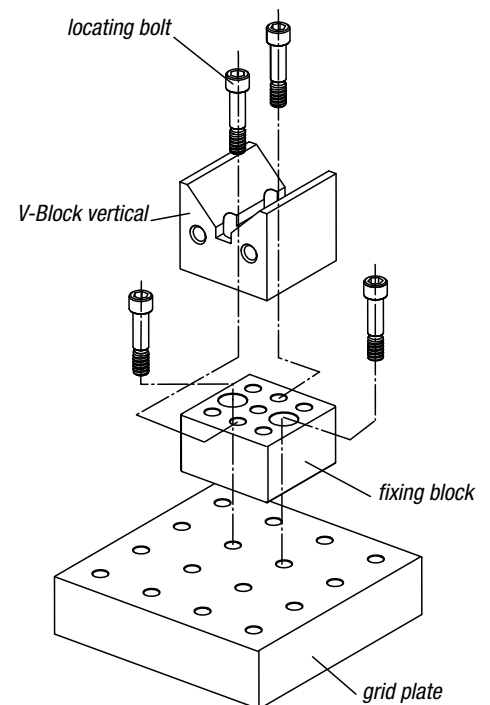
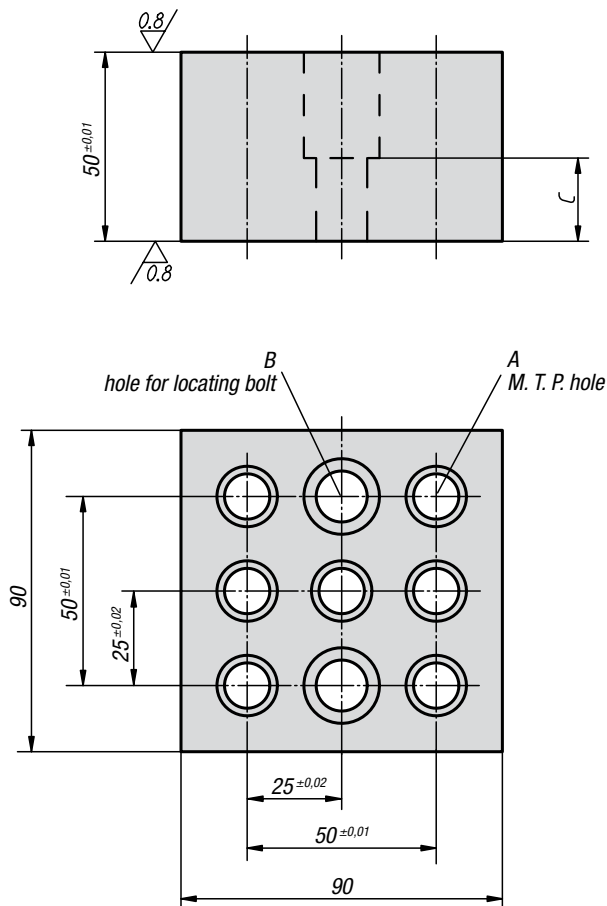
Support surfaces ground

Sample order:

K0810.12112050

Note:

Fixing Blocks are used as height spacers for all system elements which have no movable support and locating faces. These include e.g. Location Supports K0816, V-Blocks, Vertical K0819.600. They also make it possible to locate and fasten elements within the pitch of 50 ± 0.01 mm (see example of application).



Fixing Blocks Form M

Order No.	A Locating hole	A Thread	B Ø for Locating Bolt	C	Number of M.T.P. hole	Number of mounting holes	Suitable Locating Bolt	Approx. weight kg
K0810.12112050	12 F7	M12	12 F7	22	7	2	K0815.112055	2,39
K0810.12116050	16 F7	M16	16 F7	26	7	2	K0815.116055	2,08

Height Spacers

Form D

**Material:**

Tempered steel

Surface finish:

black oxide finish

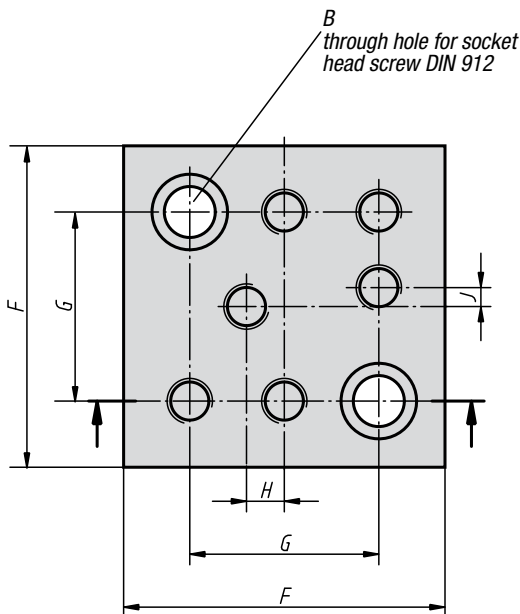
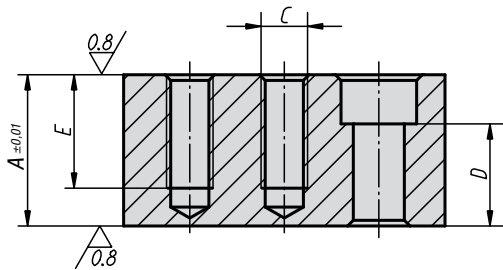
Support surfaces ground

Sample order:

K0811.14012025

Note:

Height Spacers are used to achieve a certain support height. The additional tapped holes in the Height Spacers are used for mounting further fixturing elements.



Height Spacers Form D

Order No.	A	B Hole for	C	D	E	F	G	H	J	Approx. weight kg
K0811.14012025	25	M12	M12	12	25	85	50	10	5	1,2
K0811.14012032	32	M12	M12	19	32	85	50	10	5	1,55
K0811.14012040	40	M12	M12	27	30	85	50	10	5	1,99
K0811.14012050	50	M12	M12	37	30	85	50	10	5	2,48
K0811.14016025	25	M16	M16	8	25	85	50	10	5	1,03
K0811.14016032	32	M16	M16	15	32	85	50	10	5	1,34
K0811.14016040	40	M16	M16	23	35	85	50	10	5	1,7
K0811.14016050	50	M16	M16	33	35	85	50	10	5	2,2

Height Spacers

Form M

**Material:**

Tempered steel

Surface finish:

black oxide finish

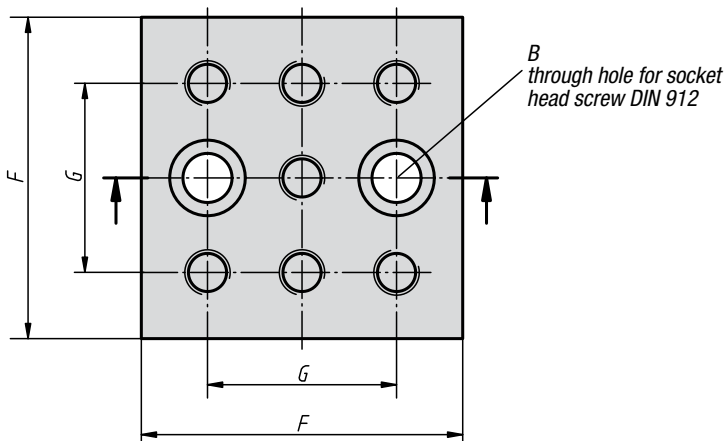
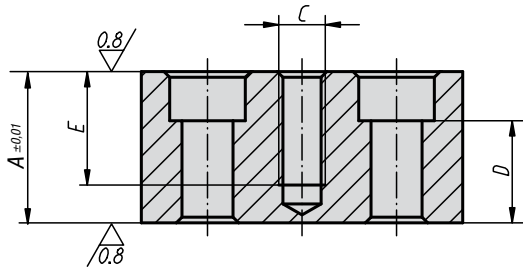
Support surfaces ground

Sample order:

K0811.14112025

Note:

Height Spacers are used to achieve a certain support height. The additional tapped holes in the Height Spacers are used for mounting further fixturing elements.



Height Spacers Form M

Order No.	A	B Hole for	C	D	E	F	G	Approx. weight kg
K0811.14112025	25	M12	M12	12	25	85	50	1,18
K0811.14112032	32	M12	M12	19	32	85	50	1,52
K0811.14112040	40	M12	M12	27	30	85	50	1,94
K0811.14112050	50	M12	M12	37	30	85	50	2,44
K0811.14116025	25	M16	M16	8	25	85	50	0,99
K0811.14116032	32	M16	M16	15	32	85	50	1,29
K0811.14116040	40	M16	M16	23	35	85	50	1,63
K0811.14116050	50	M16	M16	33	35	85	50	2,06

Height Spacers

Form E

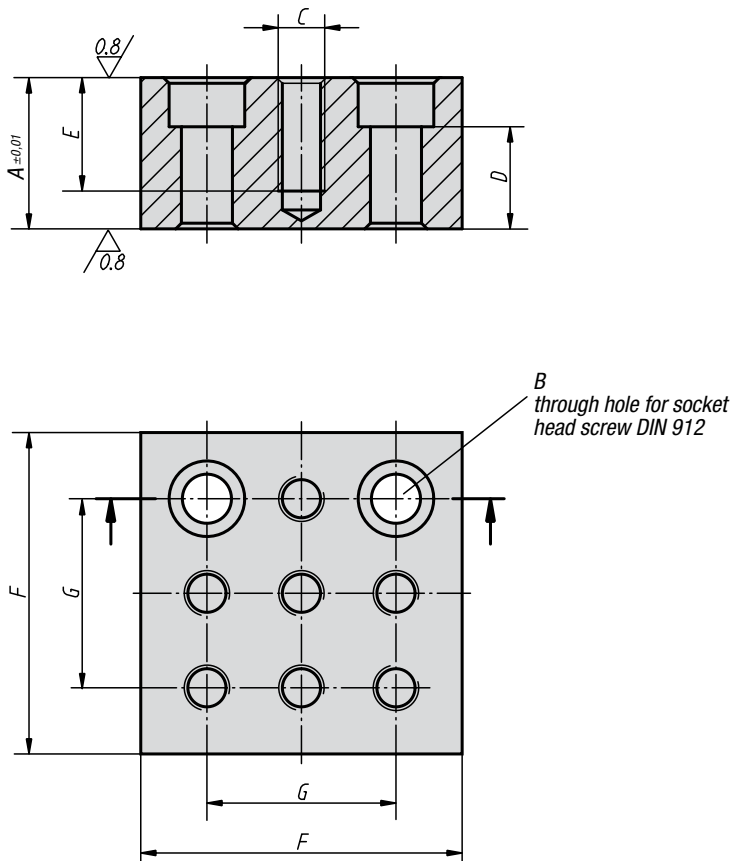


Material:
Tempered steel

Surface finish:
black oxide finish
Support surfaces ground

Sample order:
K0811.14212025

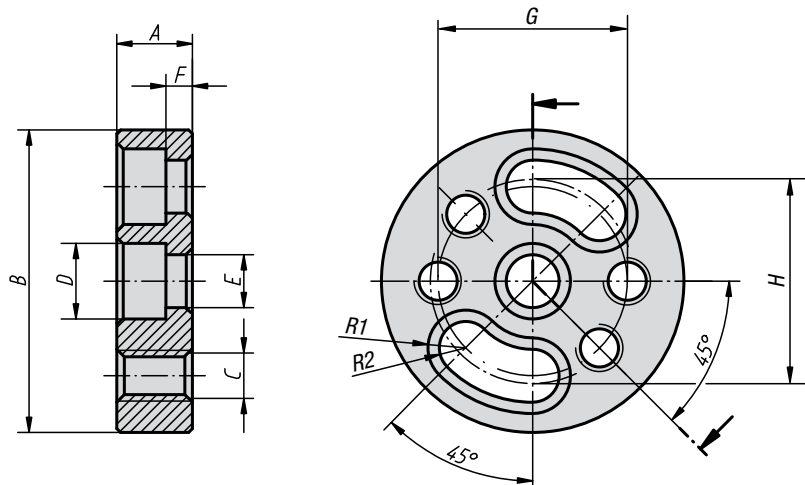
Note:
Height Spacers are used to achieve a certain support height. The additional tapped holes in the Height Spacers are used for mounting further fixturing elements.



Height Spacers Form E

Order No.	A	B Hole for	C	D	E	F	G	Approx. weight kg
K0811.14212025	25	M12	M12	12	25	85	50	1,18
K0811.14212032	32	M12	M12	19	25	85	50	1,53
K0811.14212040	40	M12	M12	27	30	85	50	1,94
K0811.14212050	50	M12	M12	37	30	85	50	2,46
K0811.14216025	25	M16	M16	8	25	85	50	0,99
K0811.14216032	32	M16	M16	15	32	85	50	1,285
K0811.14216040	40	M16	M16	23	35	85	50	1,63
K0811.14216050	50	M16	M16	33	35	85	50	2,06

Rotary Plates

**Material:**

Tempered steel

Surface finish:

black oxide finish

Sample order:

K0812.24212020

Note:

If Adjustable Clamps K0909.920 and K0909.930 have to be positioned against the workpiece at an angle of 30°, for example, this is possible using the Rotary Plate. Rack Plates CL K0909.940 is mounted on the Rotary Plate as adapters, the Clamps are fitted and rotated to the right position.

Rotary Plates

Order No.	A	B	C	D	E	F	G	H	R1	R2	Approx. weight kg
K0812.24212020	20	80	M12	20	14	7	50	50	10	7	0,485
K0812.24216025	25	100	M16	26	18	7	50	70,7	13	9	0,86

Height Spacers

Form H

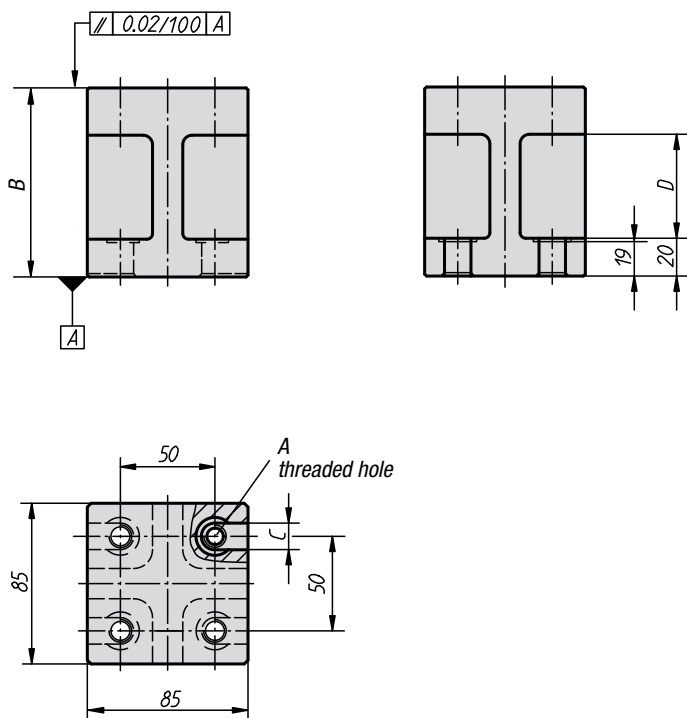


Material:
Meehanite casting GJL 300

Surface finish:
black oxide finish

Sample order:
K0811.33012100

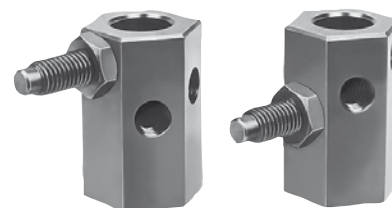
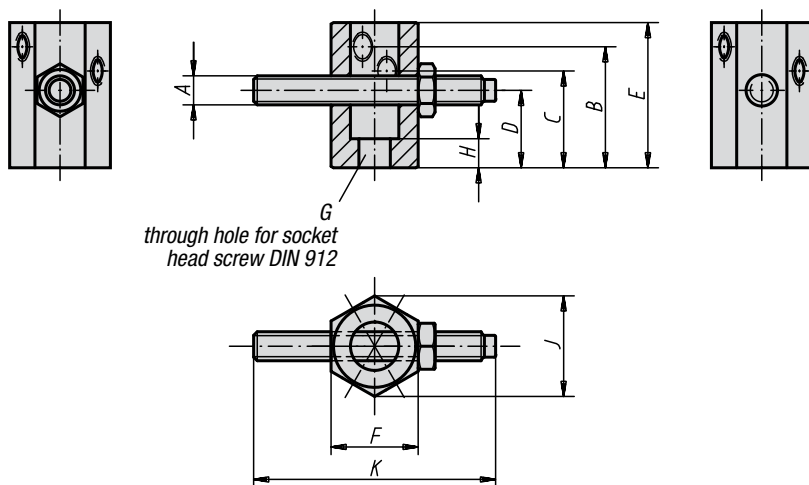
Note:
Height Spacers Form H are fastened using DIN 912
Socket Head Screws.



Height Spacers Form H

Order No.	A	B	C	D	Approx. weight kg
K0811.33012100	M12	100	14	55	3,155
K0811.33012125	M12	125	14	80	3,695
K0811.33016100	M16	100	18	55	2,96
K0811.33016125	M16	125	18	80	3,49

Adjustable Stops



Material, surface finish:

Body tempered steel, black oxide finish; adjusting bolt tempered steel, heat-treated and black oxide finish

Sample order:

K0813.16063

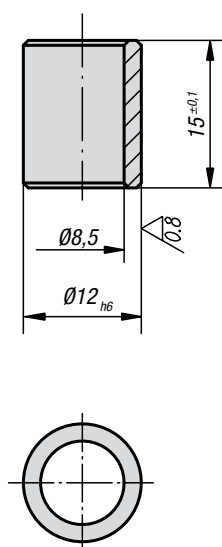
Note:

The Adjustable Stops have three tapped holes to hold the adjusting bolt.

Adjustable Stops

Order No.	A	B	C	D	E	F	G Hole for	H	J	K	Approx. weight kg
K0813.08032	M8	32	25	20	40	21	M8	7	24,3	50	0,085
K0813.12050	M12	50	40	32	60	36	M12	12	41,6	100	0,420
K0813.16063	M16	63	50	40	80	46	M16	16	53,1	100	0,880

Locating Sleeve



Material:

Tool steel

Surface finish:

hardened and black oxide finish, locating diameter ground

Sample order:

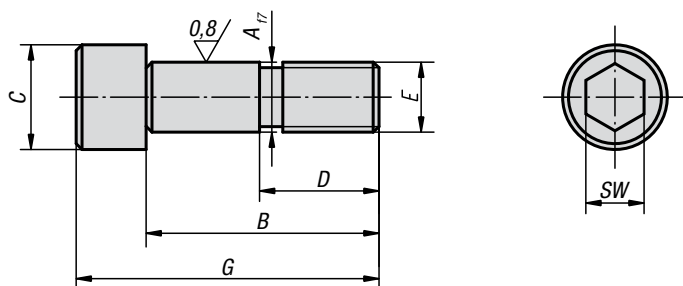
K0814.44008012

Locating Sleeve

Order No.	Approx. weight kg
K0814.44008012	0,007

Locating Bolts

Form A



Material:
Tempered steel

Surface finish:
Heat-treated and black oxide finish;
shank ground

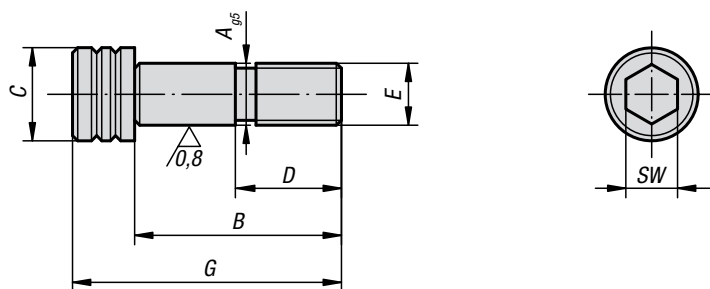
Sample order:
K0815.112045

Locating Bolts Form A

Order No.	A	B	C	D	E	G	SW	Approx. weight kg
K0815.112045	12	45	18	22	M12	57	10	0,052
K0815.112055	12	55	18	22	M12	67	10	0,059
K0815.112065	12	65	18	22	M12	77	10	0,068
K0815.112075	12	75	18	22	M12	87	10	0,076
K0815.116055	16	55	24	25	M16	71	14	0,12
K0815.116065	16	65	24	25	M16	81	14	0,134
K0815.116075	16	75	24	25	M16	91	14	0,145

Locating Bolts

Form B



Material:
Tempered steel

Surface finish:
Heat-treated and black oxide finish;
shank ground

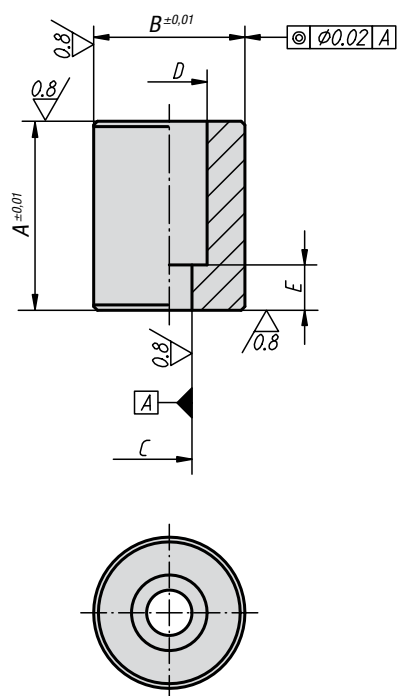
Sample order:
K0815.12065

Locating Bolts Form B

Order No.	A	B	C	D	E	G	SW	Approx. weight kg
K0815.12045	12	45	18	22	M12	57	10	0,050
K0815.12055	12	55	18	22	M12	67	10	0,060
K0815.12065	12	65	18	22	M12	77	10	0,065
K0815.12075	12	75	18	22	M12	87	10	0,075
K0815.16055	16	55	24	25	M16	71	14	0,115
K0815.16065	16	65	24	25	M16	81	14	0,130
K0815.16075	16	75	24	25	M16	91	14	0,145

Note:
Locating Bolts Form B are distinguished from Form A ones by two grooves on the screwhead.

Locating Supports

**Material:**

Tempered steel

Surface finish:heat-treated,
diameter support surfaces ground**Sample order:**

K0816.08020

Note:

Depending on the system (M8, M12, M16), the Locating Supports are located and secured using a Locating Bolt or using a Locating Sleeve with Socket Head Screw.

Locating Supports

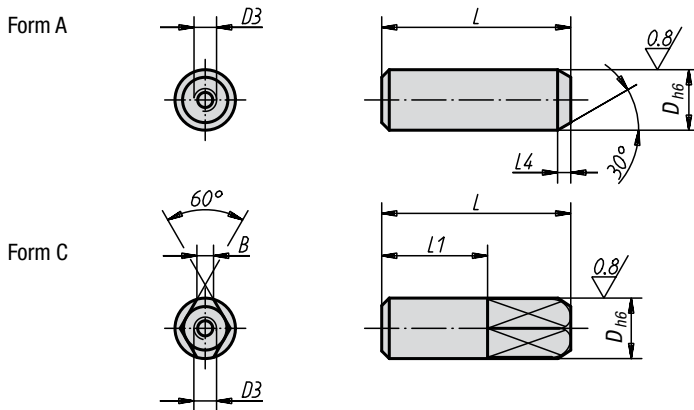
Order No.	A	B	C Ø for Locating Sleeve	D	E	Suitable Locating Sleeve	Approx. weight kg
K0816.08020	20	25	12 H6	16	9	K0814.44008012	0,06
K0816.08032	32	25	12 H6	16	9	K0814.44008012	0,085
K0816.08050	50	25	12 H6	16	9	K0814.44008012	0,125
K0816.08063	63	25	12 H6	16	9	K0814.44008012	0,155

Locating Supports

Order No.	A	B	C Ø for Locating Bolt	D	E	Suitable Locating Bolt	Approx. weight kg
K0816.12025	25	40	12 H7	20	12	K0815.112045	0,2
K0816.12050	50	40	12 H7	20	12	K0815.12045	0,385
K0816.12075	75	40	12 H7	20	12	K0815.12045	0,57
K0816.12100	100	50	12 H7	20	22	K0815.12055	1,325
K0816.12125	125	50	12 H7	20	22	K0815.12055	1,645
K0816.16050	50	50	16 H7	26	15	K0815.16055	0,6
K0816.16075	75	50	16 H7	26	15	K0815.16055	0,88
K0816.16100	100	50	16 H7	26	25	K0815.16065	1,185
K0816.16125	125	50	16 H7	26	25	K0815.16065	1,455

Straight Bolts peelable

Form A and C



Material:

Tool steel

Surface finish:

Hardened and ground (56 +2 HRC)

Sample order:

K0817.12

Note:

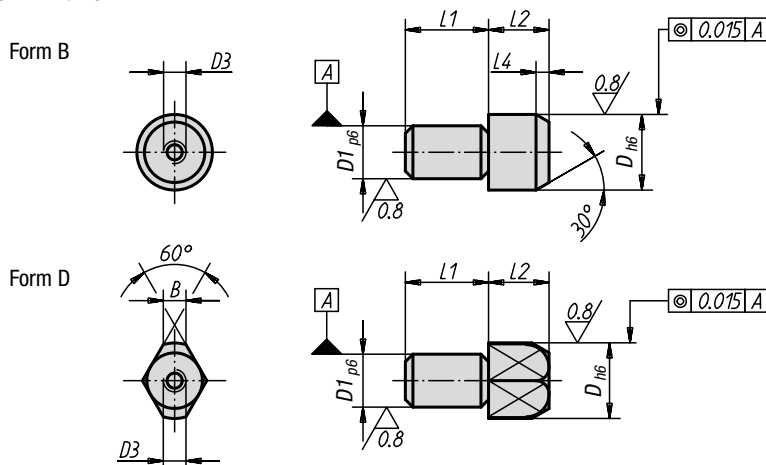
Locating Pins can be removed easily with an extractor

Straight Bolts Form A and C

Order No. Form A	Order No. Form C	D	D3	L	L1	L4	B
K0817.08	K0817.082	8	M3	25	14	3	-/2,2
K0817.10	K0817.102	10	M3	30	17	3	-/3
K0817.12	K0817.122	12	M5	34	20	4	-/3,5
K0817.16	K0817.162	16	M5	42	26	4	-/5
K0817.20	K0817.202	20	M5	47	30	5	-/6
K0817.25	K0817.252	25	M5	49	30	5	-/8

Straight Bolts peelable

Form B and D



Material:

Tool steel

Surface finish:

Hardened and ground (55-60 HRC)

Sample order:

K0818.20

Note:

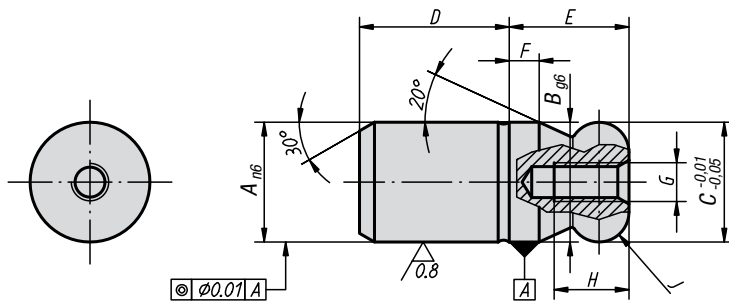
Locating Pins can be removed easily with an extractor

Straight Bolts Form B and D

Order No. Form B	Order No. Form D	D	D1	D3	L1	L2	L4	B
K0818.10	K0818.102	10	7	M3	11	11	3	-/3
K0818.12	K0818.122	12	8	M5	13	12	4	-/3,5
K0818.16	K0818.162	16	12	M5	18	14	4,5	-/5
K0818.20	K0818.202	20	14	M5	22	15	5	-/6
K0818.22	K0818.222	22	16	M5	22	17	5	-/7
K0818.25	K0818.252	25	18	M5	25	17	5	-/8

Straight Bolts

with ball end Form A



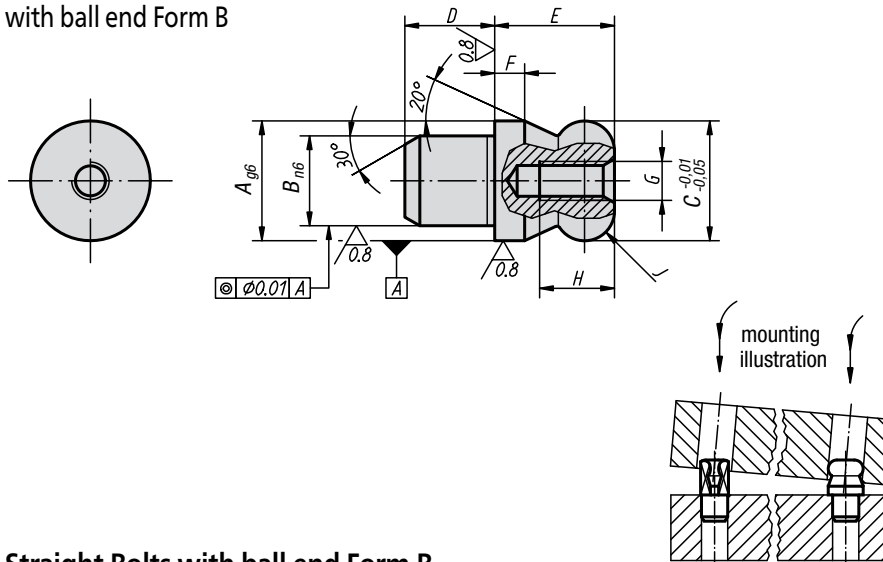
Straight Bolts with ball end Form A

Order No. steel	Order No. stainless steel	A	B	C	D	E	F	G	H	J	Approx. weight kg
K0350.08	K0350.508	8	8	8	10	8	2	M3	6	R 2	0,006
K0350.10	K0350.510	10	10	10	13	10	2,5	M3	6	R 2,5	0,012
K0350.12	K0350.512	12	12	12	15	12	3	M4	8	R 3	0,021
K0350.16	K0350.516	16	16	16	20	16	4	M5	10	R 4	0,051
K0350.20	K0350.520	20	20	20	25	20	5	M5	10	R 5	0,101
K0350.25	-	25	25	25	25	25	6	M5	10	R 6	0,176
K0350.30	-	30	30	30	30	30	8	M6	12	R 8	0,307
K0350.40	-	40	40	40	40	40	10	M6	12	R 10	0,729
K0350.50	-	50	50	50	50	50	12	M6	12	R 12	1,422

K0351

Straight Bolts

with ball end Form B



Straight Bolts with ball end Form B

Order No. steel	Order No. stainless steel	A	B	C	D	E	F	G	H	J	Approx. weight kg
K0351.10	K0351.510	10	7	10	7	10	2,5	M3	6	R 2,5	0,007
K0351.12	K0351.512	12	8	12	8	12	3	M4	8	R 3	0,011
K0351.16	K0351.516	16	12	16	12	16	4	M5	10	R 4	0,030
K0351.20	K0351.520	20	14	20	14	20	5	M5	10	R 5	0,057
K0351.22	-	22	16	22	16	22	5,5	M5	10	R 5,5	0,079
K0351.25	-	25	18	25	18	25	6	M5	10	R 6	0,116



Material:

Tool steel or stainless steel 1.4305

Surface finish:

Steel hardened and ground,
stainless steel ground and kolsterised

Sample order:

K0350.12

Note:

Straight Bolts with ball end facilitate mounting operations as they are specifically designed for this process.

The tendency to jam parts, also known as „drawer effect“, is caused by forces not effective in the bolt axis or by parts being mounted at a slanted angle. This tendency is minimized by the ball end and the ball incline (see also mounting illustration K0351 Form B).



Material:

Tool steel or stainless steel 1.4305

Surface finish:

Steel hardened and ground,
stainless steel ground and kolsterised

Sample order:

K0351.20

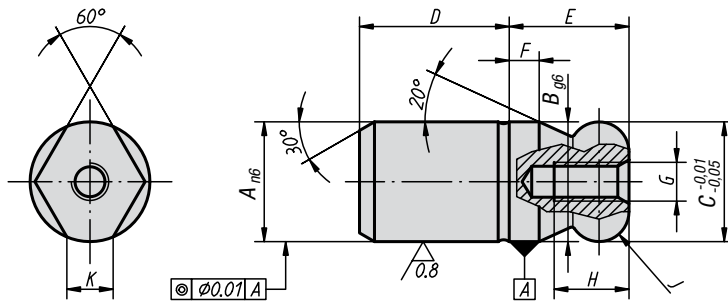
Note:

Straight Bolts with ball end facilitate mounting operations as they are specifically designed for this process.

The tendency to jam parts, also known as „drawer effect“, is caused by forces not effective in the bolt axis or by parts being mounted at a slanted angle. This tendency is minimized by the ball end and the ball incline (see mounting illustration).

Straight Bolts

with flattened ball end Form C



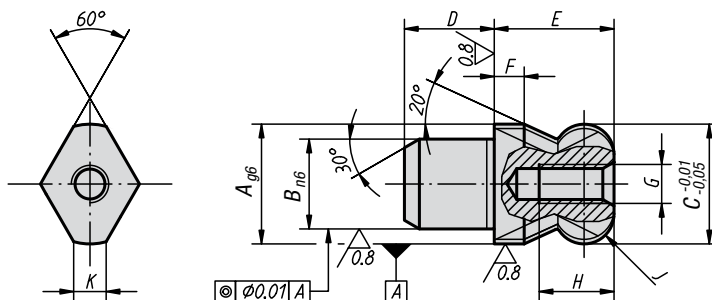
Straight Bolts with flattened ball end Form C

Order No. steel	Order No. stainless steel	A	B	C	D	E	F	G	H	J	K	Approx. weight kg
K0350.082	K0350.5082	8	8	8	10	8	2	M3	6	R 2	1,9	0,005
K0350.102	K0350.5102	10	10	10	13	10	2,5	M3	6	R 2,5	2,5	0,011
K0350.122	K0350.5122	12	12	12	15	12	3	M4	8	R 3	2,5	0,017
K0350.162	K0350.5162	16	16	16	20	16	4	M5	10	R 4	4,3	0,044
K0350.202	K0350.5202	20	20	20	25	20	5	M5	10	R 5	5	0,088
K0350.252	-	25	25	25	25	25	6	M5	10	R 6	5,6	0,149
K0350.302	-	30	30	30	30	30	8	M6	12	R 8	8,8	0,270
K0350.402	-	40	40	40	40	40	10	M6	12	R 10	12,8	0,657
K0350.502	-	50	50	50	50	50	12	M6	12	R 12	16,7	1,243

K0351

Straight Bolts

with flattened ball end Form D



Straight Bolts with flattened ball end Form D

Order No. steel	Order No. stainless steel	A	B	C	D	E	F	G	H	J	K	Approx. weight kg
K0351.102	K0351.5102	10	7	10	7	10	2,5	M3	6	R 2,5	2,5	0,005
K0351.122	K0351.5122	12	8	12	8	12	3	M4	8	R 3	2,5	0,008
K0351.162	K0351.5162	16	12	16	12	16	4	M5	10	R 4	4,3	0,023
K0351.202	K0351.5202	20	14	20	14	20	5	M5	10	R 5	5	0,045
K0351.222	-	22	16	22	16	22	5,5	M5	10	R 5,5	5	0,062
K0351.252	-	25	18	25	18	25	6	M5	10	R 6	5,6	0,091



Material:

Tool steel or stainless steel 1.4305

Surface finish:

Steel hardened and ground,
stainless steel ground and kolsterised

Sample order:

K0350.162

Note:

Straight Bolts with ball end facilitate mounting operations as they are specifically designed for this process.

The tendency to jam parts, also known as „drawer effect“, is caused by forces not effective in the bolt axis or by parts being mounted at a slanted angle.

This tendency is minimized by the ball end and the ball incline (see also mounting illustration K0351 Form B).



Material:

Tool steel or stainless steel 1.4305

Surface finish:

Steel hardened and ground,
stainless steel ground and kolsterised

Sample order:

K0351.162

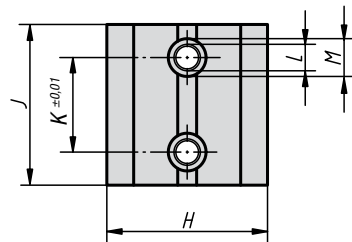
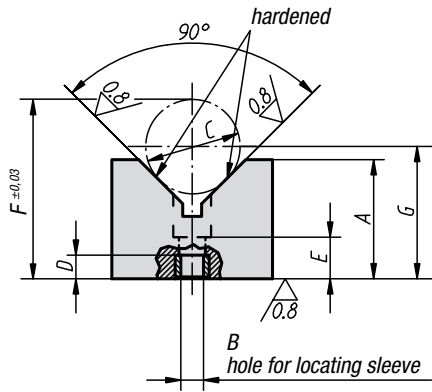
Note:

Straight Bolts with ball end facilitate mounting operations as they are specifically designed for this process.

The tendency to jam parts, also known as „drawer effect“, is caused by forces not effective in the bolt axis or by parts being mounted at a slanted angle.

This tendency is minimized by the ball end and the ball incline (see also mounting illustration K0351 Form B).

V-Block, vertical



Material:
Tempered steel

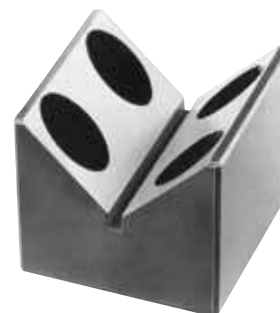
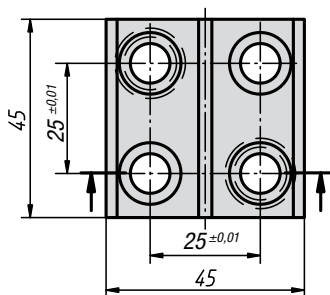
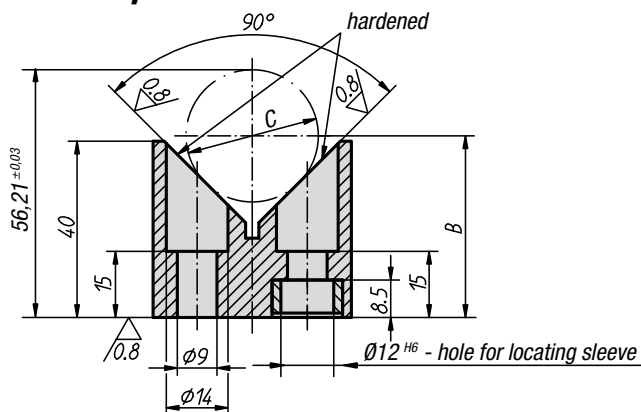
Surface finish:
black oxide finish
V-Block surface and support surface ground

Sample order:
K0819.60008032

V-Block vertical

Order No.	A	B Ø for Locating Sleeve	C min.	C max.	C Test-Ø	D	E	F	G	H	J	K	L	M	Approx. weight kg
K0819.60008032	32	12 H6	10	25	15±0,003	8,5	13	40,1	C/2 x √2+22	25	45	25	9	14	0,21

V-Block, vertical



Material:
Tempered steel

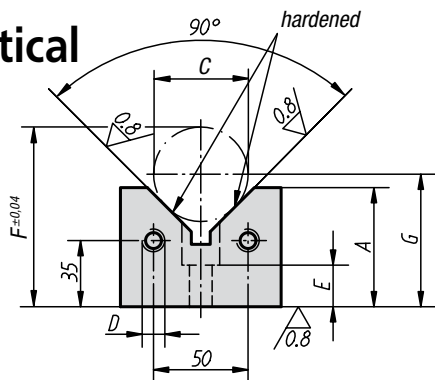
Surface finish:
black oxide finish
V-Block surface and support surface ground

Sample order:
K0819.60008040

V-Block vertical

Order No.	C min.	C max.	C Test-Ø	B	Approx. weight kg
K0819.60008040	15	50	30±0,003	A/2 x √2+20	0,39

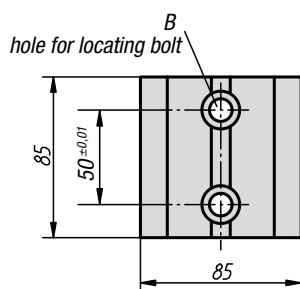
V-Blocks vertical



Material:
Tempered steel

Surface finish:
black oxide finish
V-Block surfaces and support surfaces ground

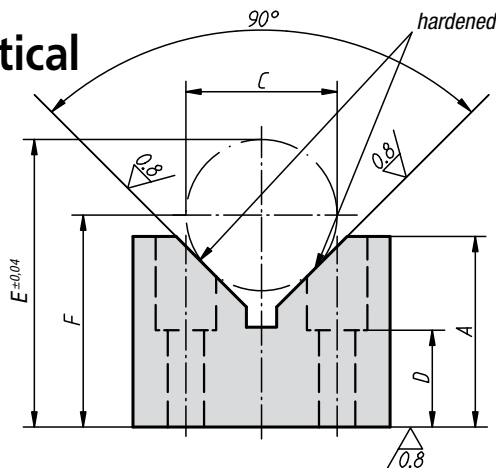
Sample order:
K0819.60012063



V-Blocks vertical

Order No.	A	B Ø for Locating Bolt	C min.	C max.	C Test-Ø	D	E	F	G	Suitable Locating Bolt	Approx. weight kg
K0819.60012063	63	12 F7	15	80	50±0,003	M12	22	95,071	$C/2 \times \sqrt{2+34,716}$	K0815.112055	2,825
K0819.60012075	75	12 F7	15	100	70±0,003	M12	22	124,142	$C/2 \times \sqrt{2+39,645}$	K0815.112055	3,17
K0819.60016063	63	16 F7	15	80	50±0,003	M16	25	95,071	$C/2 \times \sqrt{2+34,716}$	K0815.116065	2,69
K0819.60016075	75	16 F7	15	100	70±0,003	M16	25	124,142	$C/2 \times \sqrt{2+39,645}$	K0815.116065	2,995

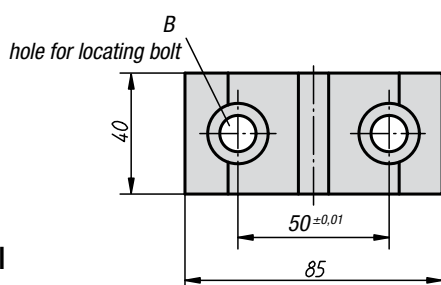
V-Blocks vertical



Material:
Tempered steel

Surface finish:
black oxide finish
V-Block surfaces and support surfaces ground

Sample order:
K0819.60512063

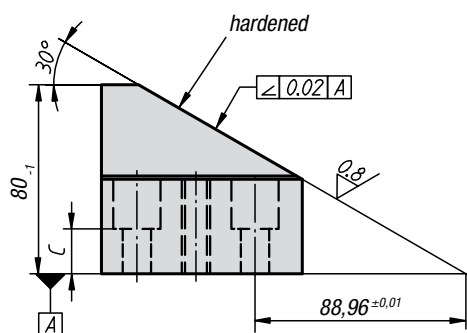


V-Blocks vertical

Order No.	A	B Ø for Locating Bolt	C min.	C max.	C Test-Ø	D	E	F	Suitable Locating Bolt	Approx. weight kg
K0819.60512063	63	12 F7	15	80	50±0,003	32	95,071	$C/2 \times \sqrt{2+34,716}$	K0815.112065	1,211
K0819.60512075	75	12 F7	15	100	70±0,003	32	124,142	$C/2 \times \sqrt{2+39,645}$	K0815.112065	1,363
K0819.60516063	63	16 F7	15	80	50±0,003	25	95,071	$C/2 \times \sqrt{2+34,716}$	K0815.116065	1,04
K0819.60516075	75	16 F7	15	100	70±0,003	25	124,142	$C/2 \times \sqrt{2+39,645}$	K0815.116065	1,162

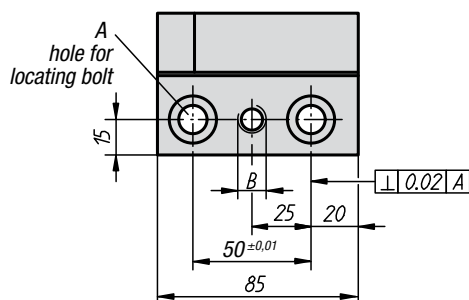
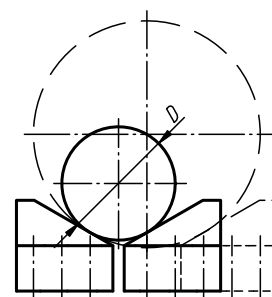
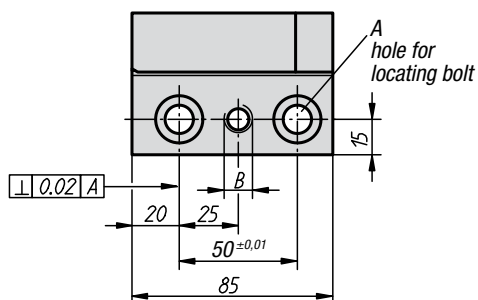
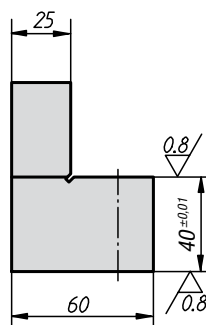


Technical drawing of a stepped part. The part has a total width of 60 and a total height of 40. The top surface is divided into two sections: a left section with a width of 25 and a right section with a width of 35. The top surface has a tolerance of 0.8. The vertical edge on the left has a tolerance of 0.01. The bottom surface has a tolerance of 0.8. The part is shown in a perspective view with a dashed line indicating the hidden edge.



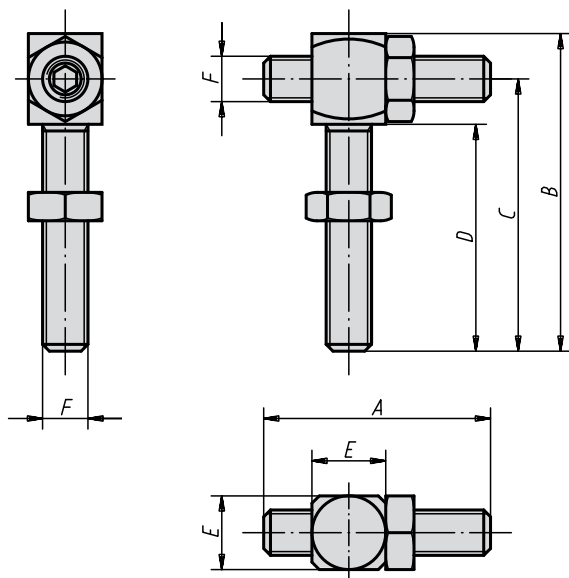
Sample order:
K0819.6301230

Note:
Right-Hand and Left-Hand Split V-Blocks are used for positioning round parts. Split V-Blocks permit adjustment to the respective workpiece diameter.

[illegible]

Order No. Right-Hand	Order No. Left-Hand	A	B	C	D min.	D max.	Suitable Locating Bolt	Approx. weight kg
K0819.6301230	K0819.6311230	12 F7	M12	23	50	600	K0815.112055	1,82
K0819.6301630	K0819.6311630	16 F7	M16	20	50	600	K0815.116055	1,69

Mini Adjustable Stops

**Material:**

Tempered steel heat-treated

Surface finish:

Black oxide finish

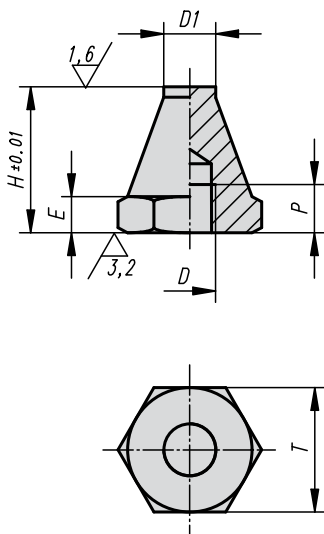
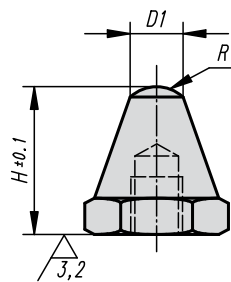
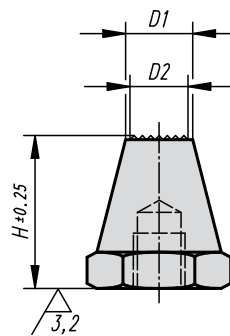
Sample order:

K0820.10

Mini Adjustable Stops

Order No.	A	B	C	D	E	F	Approx. weight kg
K0820.08	40	56	48	40	13	M8	0,090
K0820.10	50	70	60	50	17	M10	0,180
K0820.12	60	84	72	60	19	M12	0,360
K0820.16	80	112	96	80	24	M16	0,870

Thrust Bolts

Form A
face surfaceForm B
convex surfaceForm C
serrated surface**Material:**

Body in tempered steel

Surface finish:

Body heat-treated with black oxide finish

Sample order:

K0294.106012

Note:

The Thrust Bolts act as supports for rough and machined parts and as stops. They can also be integrated into standard clamping or support elements. To change these parts into male threaded feet, just screw and glue a grub screw or threaded stud in tap D.

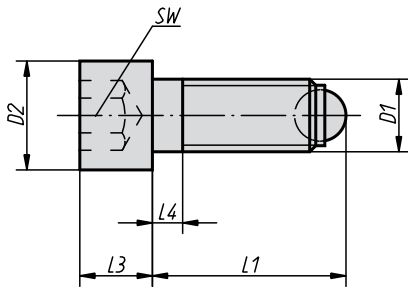
Thrust Bolts

Order No. Form A	Order No. Form B	Order No. Form C	D	D1	D2	E	H	P	R	T	Approx. weight kg
K0294.106012	K0294.206012	K0294.306012	M6	6	-/-/5	3	12,5	4	-/5/-	11	0,005
K0294.106025	K0294.206025	K0294.306025	M6	6	-/-/5	3	25	7	-/5/-	11	0,008
K0294.108015	K0294.208015	K0294.308015	M8	8	-/-/6	4	15	6	-/8,5/-	13	0,009
K0294.108030	K0294.208030	K0294.308030	M8	8	-/-/6	4	30	9	-/8,5/-	13	0,018
K0294.110020	K0294.210020	K0294.310020	M10	10	-/-/8	5	20	9	-/9/-	17	0,017
K0294.110040	K0294.210040	K0294.310040	M10	10	-/-/8	5	40	13	-/9/-	17	0,035
K0294.112025	K0294.212025	K0294.312025	M12	12	-/-/9,5	6	25	11	-/12,75/-	19	0,025
K0294.112050	K0294.212050	K0294.312050	M12	12	-/-/9,5	6	50	16	-/12,75/-	19	0,062
K0294.116030	K0294.216030	K0294.316030	M16	16	-/-/13	8	30	12	-/17/-	24	0,050
K0294.116060	K0294.216060	K0294.316060	M16	16	-/-/13	8	60	20	-/17/-	24	0,112

Ball Pressure Screws with hexagon socket head

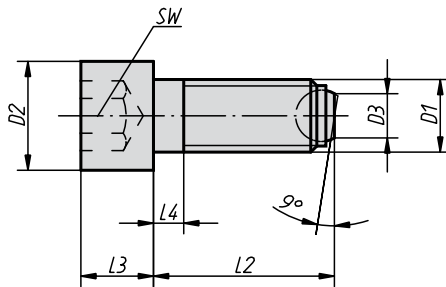


Form A
with full ball



Form B
with flattened ball

Form BV
flattened ball
with torsion protection



Form F
with serrated,
flattened ball

Form FV
serrated, flattened ball
with torsion protection

Material:

Screw in tempered steel, ball in ball-bearing steel

Surface finish:

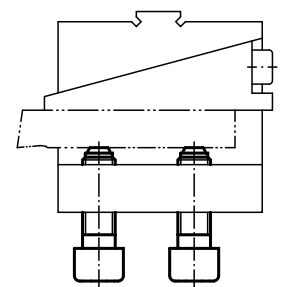
Black screw, quality class 10.9;
ball hardened, natural finish

Sample order:

K0380.10820

Note:

Form A with full ball is used when a clean, polished pressure surface is required. Surfaces which are not plane and parallel can be firmly clamped or supported with form B with flattened ball because the movable ball can adapt itself up to 9°.



Ball Pressure Screws with hexagon socket head



Ball Pressure Screws with hexagon socket head

Order No. Form A	Order No. Form B	Order No. Form F	D1	L1	L2	D2	D3	L3	L4	Ball-Ø	SW	Load capacity max. kN (static load only)	Approx. weight g
K0380.10620	K0380.20620	-	M6	20,8/-	-/20	10	-/3,2	6	3	4	5	-/9	6,6
K0380.10630	K0380.20630	-	M6	30,8/-	-/30	10	-/3,2	6	3	4	5	-/9	8,7
K0380.10640	K0380.20640	-	M6	40,8/-	-/40	10	-/3,2	6	16	4	5	-/9	11,0
K0380.10820	K0380.20820	-	M8	21,2/-	-/20	13	-/4,5	8	3,5	5,5	6	-/15	13,5
K0380.10835	K0380.20835	-	M8	36,2/-	-/35	13	-/4,5	8	3,5	5,5	6	-/15	19,0
K0380.10850	K0380.20850	-	M8	51,2/-	-/50	13	-/4,5	8	22	5,5	6	-/15	25,0
K0380.11025	K0380.21025	K0380.31025	M10	26,7/-/-	-/25/25	16	-/6/6	10	4,5	7	8	-/20/20	26,0
K0380.11040	K0380.21040	K0380.31040	M10	41,7/-/-	-/40/40	16	-/6/6	10	4,5	7	8	-/20/20	34,0
K0380.11230	K0380.21230	K0380.31230	M12	32/-/-	-/30/30	18	-/7,2/7,2	12	5	8,5	10	-/30/30	40,0
K0380.11060	K0380.21060	K0380.31060	M10	61,7/-/-	-/60/60	16	-/6/6	10	28	7	8	-/20/20	47,0
K0380.11250	K0380.21250	K0380.31250	M12	52/-/-	-/50/50	18	-/7,2/7,2	12	5	8,5	10	-/30/30	56,0
K0380.11280	K0380.21280	K0380.31280	M12	82/-/-	-/80/80	18	-/7,2/7,2	12	44	8,5	10	-/30/30	83,0
K0380.11640	K0380.21640	K0380.31640	M16	43,3/-/-	-/40/40	24	-/10,7/10,7	16	6	12	14	-/60/60	91,0
K0380.11660	K0380.21660	K0380.31660	M16	63,3/-/-	-/60/60	24	-/10,7/10,7	16	6	12	14	-/60/60	122,0
K0380.11680	K0380.21680	K0380.31680	M16	83,3/-/-	-/80/80	24	-/10,7/10,7	16	36	12	14	-/60/60	154,0
K0380.12050	K0380.22050	-	M20	54,2/-	-/50	30	-/13,5	20	7,5	15	17	-/90	190,0
K0380.12080	K0380.22080	-	M20	84,2/-	-/80	30	-/13,5	20	28	15	17	-/90	260,0
K0380.120100	K0380.220100	-	M20	104,2/-	-/100	30	-/13,5	20	48	15	17	-/90	310,0
K0380.12460	K0380.22460	-	M24	64,7/-	-/60	36	-/15,8	24	9	18	19	-/120	330,0
K0380.12490	K0380.22490	-	M24	94,7/-	-/90	36	-/15,8	24	30	18	19	-/120	435,0
K0380.124120	K0380.224120	-	M24	124,7/-	-/120	36	-/15,8	24	60	18	19	-/120	540,0

Order No. Form BV	Order No. Form FV	D1	L2	D2	D3	L3	L4	Ball-Ø	SW	Load capacity max. kN (static load only)	Approx. weight g
K0380.40820	-	M8	20	13	4,5	8	3,5	5,5	6	9	13,5
K0380.40835	-	M8	35	13	4,5	8	3,5	5,5	6	9	19,0
K0380.40850	-	M8	50	13	4,5	8	22	5,5	6	9	25,0
K0380.41025	K0380.51025	M10	25	16	6	10	4,5	7	8	12	26,0
K0380.41040	K0380.51040	M10	40	16	6	10	4,5	7	8	12	34,0
K0380.41060	K0380.51060	M10	60	16	6	10	28	7	8	12	47,0
K0380.41230	K0380.51230	M12	30	18	7,2	12	5	8,5	10	18	40,0
K0380.41250	K0380.51250	M12	50	18	7,2	12	5	8,5	10	18	56,0
K0380.41280	K0380.51280	M12	80	18	7,2	12	44	8,5	10	18	83,0
K0380.41640	K0380.51640	M16	40	24	10,7	16	6	12	14	36	91,0
K0380.41660	K0380.51660	M16	60	24	10,7	16	6	12	14	36	122,0
K0380.41680	K0380.51680	M16	80	24	10,7	16	36	12	14	36	154,0

Ball Pressure Screws without head

with flattened ball



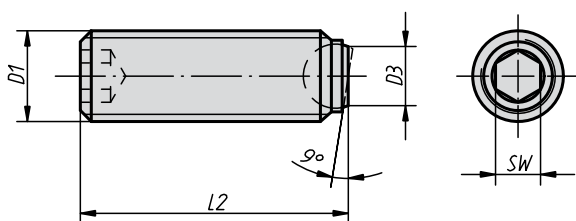
Form B
ball in steel

Form C
ball in Delrin

Form F
serrated ball in steel

Form BV
with flattened ball
and torsion protection

Form FV
with serrated, flattened ball
and torsion protection



Material, surface finish:

Screw in tempered steel, quality class 10.9, black;
ball in ball-bearing steel, hardened with natural finish
or delrin

Sample order:

K0383.41012

Note:

Surfaces which are not plane and parallel can be
firmly clamped or supported with form C, B or BV with
flattened ball because the movable ball can adapt itself
up to 9°.

Further lengths have been designed especially so
that Ball Pressure Screws can be glued up. They
allow mechanical connecting elements with external
thread to be made cost-effectively for small and
medium-sized series.

Ball Pressure Screws without head, with flattened ball and torsion protection

Order No. Form BV	Order No. Form FV	D1	L2	D3	Ball-Ø	SW	Load capacity max. kN (static load only)	Approx. weight g
K0383.50820	-	M8	20,3	4,1	5,5	4	9	5,7
K0383.50830	-	M8	30,3	4,1	5,5	4	9	8,9
K0383.51025	K0383.61025	M10	25,3	5,6	7	5	12	11,2
K0383.51035	K0383.61035	M10	35,3	5,6	7	5	12	16,2
K0383.51230	K0383.61230	M12	30,2	7	8,5	6	18	19,6
K0383.51240	K0383.61240	M12	40,2	7	8,5	6	18	28,5
K0383.51635	K0383.61635	M16	35	10,7	12	8	36	41,0
K0383.51650	K0383.61650	M16	50	10,7	12	8	36	48,0

Ball Pressure Screws without head

with flattened ball

Ball Pressure Screws without head, with flattened ball

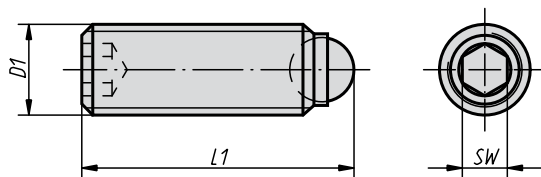
Order No. Form C	Order No. Form B	Order No. Form F	D1	L2	D3	Ball-Ø	SW	Load capacity max. kN (static load only)
K0383.7046	-	-	M4	5,8	1,8	2,5	2	0,3
K0383.7048	-	-	M4	7,8	1,8	2,5	2	0,3
K0383.70410	-	-	M4	9,8	1,8	2,5	2	0,3
K0383.70412	-	-	M4	11,8	1,8	2,5	2	0,3
K0383.70416	-	-	M4	15,8	1,8	2,5	2	0,3
K0383.7058	-	-	M5	7,6	2,1	3	2,5	0,5
K0383.70510	-	-	M5	9,6	2,1	3	2,5	0,5
K0383.70512	-	-	M5	11,6	2,1	3	2,5	0,5
K0383.70516	-	-	M5	15,6	2,1	3	2,5	0,5
K0383.70520	-	-	M5	19,6	2,1	3	2,5	0,5
K0383.70525	-	-	M5	24,6	2,1	3	2,5	0,5
K0383.70610	K0383.20610	-	M6	10,1	3	4	3	0,9/9
K0383.70612	-	-	M6	12,1	3	4	3	0,9
K0383.70616	K0383.20616	-	M6	16,1	3	4	3	0,9/9
K0383.70620	K0383.20620	-	M6	20,1	3	4	3	0,9/9
K0383.70625	K0383.20625	-	M6	25,1	3	4	3	0,9/9
-	K0383.20650	-	M6	50,1	3	4	3	9
-	K0383.20660	-	M6	60,1	3	4	3	9
K0383.70810	K0383.20810	-	M8	10,3	4,1	5,5	4	1,5/10
K0383.70812	K0383.20812	-	M8	12,3	4,1	5,5	4	1,5/10
K0383.70816	-	-	M8	16,3	4,1	5,5	4	1,5
K0383.70820	K0383.20820	-	M8	20,3	4,1	5,5	4	1,5/15
K0383.70825	K0383.20825	-	M8	25,3	4,1	5,5	4	1,5/15
K0383.70830	K0383.20830	-	M8	30,3	4,1	5,5	4	1,5/15
-	K0383.20850	-	M8	50,3	4,1	5,5	4	15
-	K0383.20860	-	M8	60,3	4,1	5,5	4	15
-	K0383.20880	-	M8	80,3	4,1	5,5	4	15
-	K0383.21012	K0383.41012	M10	12,3	5,6	7	5	20
-	K0383.21016	K0383.41016	M10	16,3	5,6	7	5	20
-	K0383.21020	-	M10	20,3	5,6	7	5	20
-	K0383.21025	K0383.41025	M10	25,3	5,6	7	5	20
-	K0383.21035	K0383.41035	M10	35,3	5,6	7	5	20
-	K0383.21216	K0383.41216	M12	16,2	7	8,5	6	30
-	K0383.21220	K0383.41220	M12	20,2	7	8,5	6	30
-	K0383.21230	K0383.41230	M12	30,2	7	8,5	6	30
-	K0383.21240	K0383.41240	M12	40,2	7	8,5	6	30
-	K0383.21620	K0383.41620	M16	20	10,7	12	8	60
-	K0383.21625	K0383.41625	M16	25	10,7	12	8	60
-	K0383.21635	K0383.41635	M16	35	10,7	12	8	60
-	K0383.21650	K0383.41650	M16	50	10,7	12	8	60
-	K0383.22030	-	M20	30	13,5	15	10	90
-	K0383.22040	-	M20	40	13,5	15	10	90
-	K0383.22060	-	M20	60	13,5	15	10	90
-	K0383.22435	-	M24	35	15,8	18	12	120
-	K0383.22450	-	M24	50	15,8	18	12	120
-	K0383.22480	-	M24	80	15,8	18	12	120

Ball Pressure Screws without head

with full ball

Form A
ball in steel

Form D
ball in Delrin



Ball Pressure Screws without head with full ball

Order No. Form A	Order No. Form D	D1	L1	Ball-Ø	SW	Load capacity max. kN (static load only)	Approx. weight g
K0383.1046	K0383.3046	M4	6	2,5	2	3,5/0,3	0,4
K0383.10410	K0383.30410	M4	10	2,5	2	3,5/0,3	0,7
K0383.10412	-	M4	12	2,5	2	3,5	0,8
K0383.10416	K0383.30416	M4	16	2,5	2	3,5/0,3	1,1
K0383.1058	K0383.3058	M5	8	3	2,5	4,5/0,5	0,8
K0383.10510	K0383.30510	M5	10	3	2,5	4,5/0,5	0,9
K0383.10512	K0383.30512	M5	12	3	2,5	4,5/0,5	1,3
K0383.10516	K0383.30516	M5	16	3	2,5	4,5/0,5	1,5
K0383.10520	K0383.30520	M5	20	3	2,5	4,5/0,5	2,3
K0383.10525	K0383.30525	M5	25	3	2,5	4,5/0,5	2,5
K0383.10610	K0383.30610	M6	10,8	4	3	9/0,9	1,5
K0383.10616	K0383.30616	M6	16,8	4	3	9/0,9	2,4
K0383.10620	K0383.30620	M6	20,8	4	3	9/0,9	3,0
K0383.10625	K0383.30625	M6	25,8	4	3	9/0,9	3,9
K0383.10650	-	M6	50,8	4	3	9	10,6
K0383.10660	-	M6	60,8	4	3	9	13,5
K0383.10810	K0383.30810	M8	11,2	5,5	4	10/1,5	2,6
K0383.10812	K0383.30812	M8	13,2	5,5	4	10/1,5	3,2
K0383.10820	K0383.30820	M8	21,2	5,5	4	15/1,5	5,7
K0383.10825	K0383.30825	M8	26,2	5,5	4	15/1,5	7,3
K0383.10830	K0383.30830	M8	31,2	5,5	4	15/1,5	8,9
K0383.10850	-	M8	51,2	5,5	4	15	18,8
K0383.10860	-	M8	61,2	5,5	4	15	24,0
K0383.10880	-	M8	81,2	5,5	4	15	30,7
K0383.11012	K0383.31012	M10	13,7	7	5	20/2	5,0
K0383.11016	K0383.31016	M10	17,7	7	5	20/2	6,8
K0383.11020	K0383.31020	M10	21,7	7	5	20/2	8,7
K0383.11025	K0383.31025	M10	26,7	7	5	20/2	11,2
K0383.11035	K0383.31035	M10	36,7	7	5	20/2	16,2
K0383.11216	K0383.31216	M12	18	8,5	6	30/3	10,0
K0383.11220	K0383.31220	M12	22	8,5	6	30/3	12,4
K0383.11230	K0383.31230	M12	32	8,5	6	30/3	19,6
K0383.11240	K0383.31240	M12	42	8,5	6	30/3	28,5
K0383.11620	-	M16	23,3	12	8	60	22,0
K0383.11625	-	M16	28,3	12	8	60	28,0
K0383.11635	-	M16	38,3	12	8	60	41,0
K0383.11650	-	M16	53,3	12	8	60	48,0
K0383.12030	-	M20	34,2	15	10	90	54,0
K0383.12040	-	M20	44,2	15	10	90	74,0
K0383.12060	-	M20	64,2	15	10	90	120,0
K0383.12435	-	M24	39,7	18	12	120	90,0
K0383.12450	-	M24	54,7	18	12	120	130,0
K0383.12480	-	M24	84,7	18	12	120	235,0

Material, surface finish:

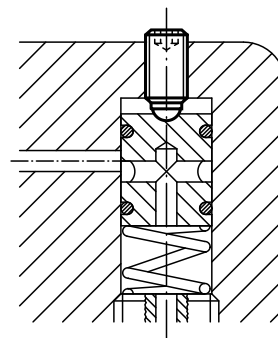
Screw in tempered steel, quality class 10.9, black; ball in ball-bearing steel, hardened with natural finish or delrin

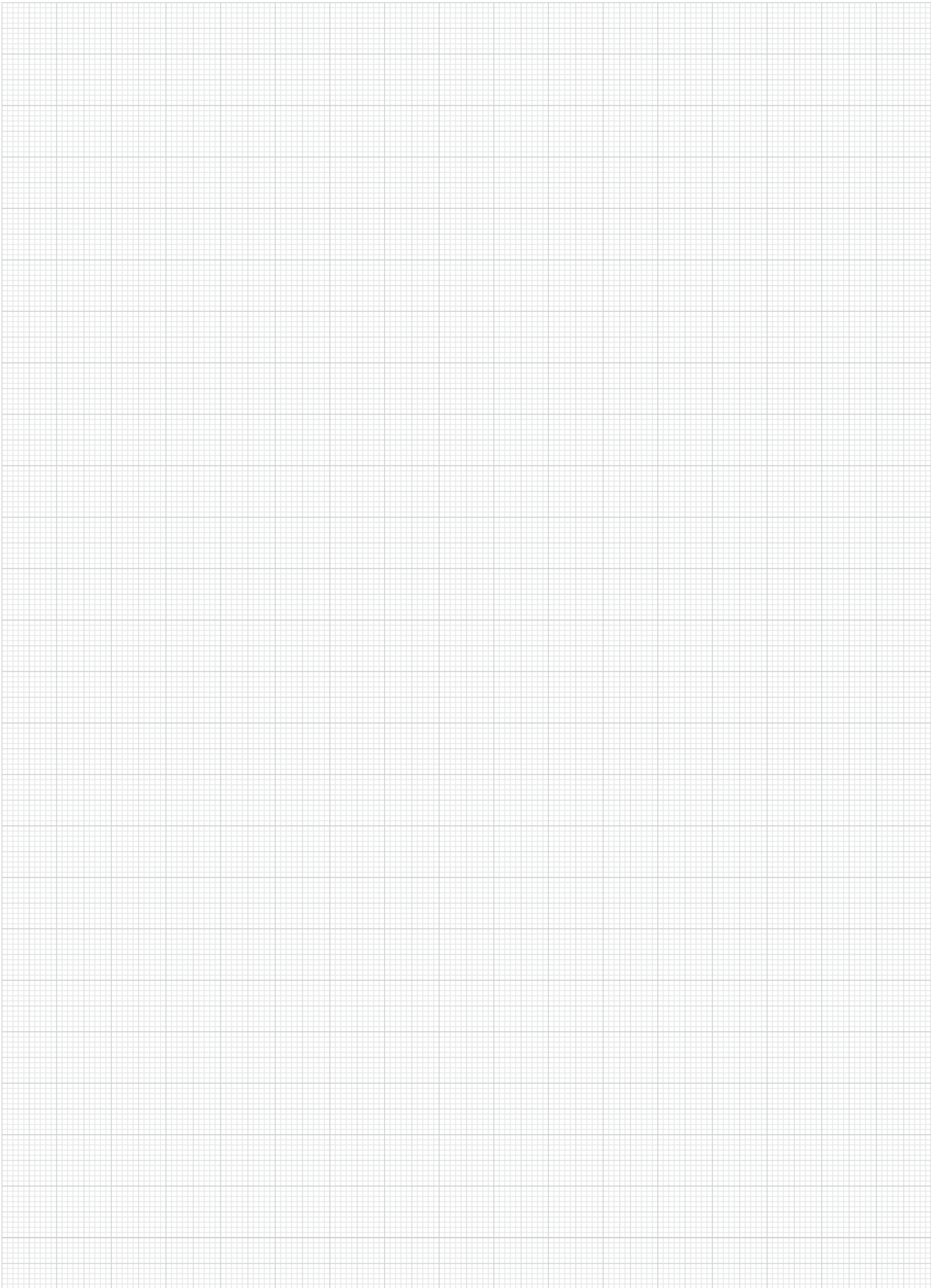
Sample order:

K0383.10810

Note:

Ball Pressure Screws without head with full ball are used when a clean, polished pressure surface is required. Further lengths have been designed especially so that Ball Pressure Screws can be glued up. They allow mechanical connecting elements with external thread to be made cost-effectively for small and medium-sized series.

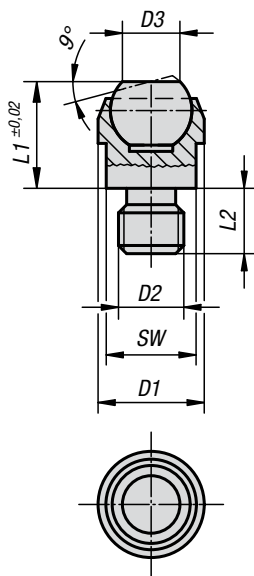




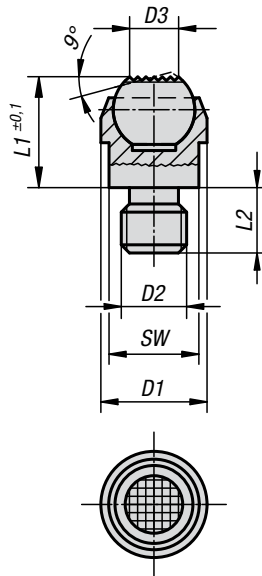
Toggle Locators



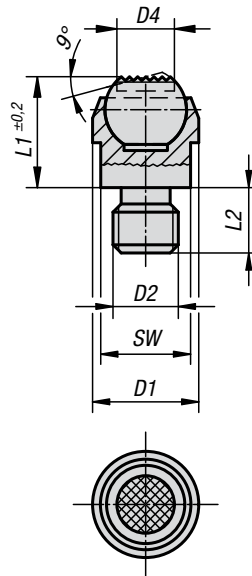
Form C
with external thread,
plain, flattened ball



Form F
with external thread,
serrated, flattened ball



Form M
with external thread,
flattened ball,
serration in hard metal



Material:

Body in tempered steel,
ball in ball-bearing steel 1.2067;
Form M: ball in tempered steel, insert with
serration in hard metal

Surface finish:

Body heat-treated and phosphated, ball hardened;
Form M ball heat-treated

Sample order:

K0282.120

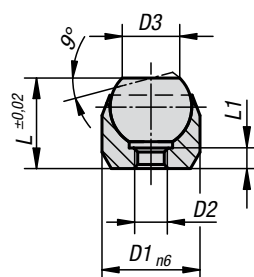
Note:

The Toggle Locators serve as stops, supports and
thrust pads in fixture constructions.
The serrated hard metal tips are soldered in.

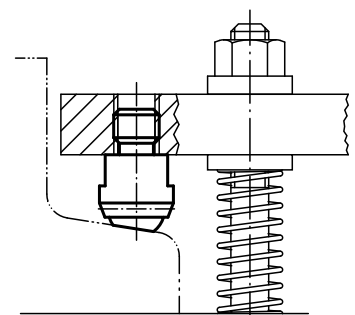
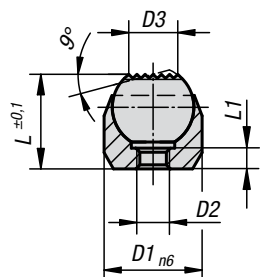
Ball is protected against torsion.

* Only valid if the minimum borehole depth is
observed.

Form G
with fitted support,
plain, flattened ball



Form J
with fitted support,
serrated, flattened ball



Toggle Locators

Order No.	Form	D1	D2	D3	L1	L2	Ball-Ø	SW	Load capacity max. kN (static load only)	Approx. weight kg
K0282.108	C	13	M8	7,2	13	8	10	11	10	0,013
K0282.110	C	20	M10	10,5	18	10	16	17	25	0,040
K0282.112	C	20	M12	10,5	18	12	16	17	25	0,040
K0282.116	C	30	M16	20	27	16	25	27	90	0,100
K0282.120	C	50	M20	34,5	35	20	40	41	165	0,520

Order No.	Form	D1	D2	D3	L1	L2	Ball-Ø	SW	Load capacity max. kN (static load only)	Approx. weight kg
K0282.308	F	13	M8	7,2	13	8	10	11	10	0,013
K0282.310	F	20	M10	10,5	18	10	16	17	25	0,040
K0282.312	F	20	M12	10,5	18	12	16	17	25	0,040
K0282.316	F	30	M16	20	27	16	25	27	90	0,100
K0282.320	F	50	M20	34,5	35	20	40	41	165	0,520

Order No.	Form	D1	D2	D4	L1	L2	Ball-Ø	SW	Load capacity max. kN (static load only)	Approx. weight kg
K0282.908	M	13	M8	7,7	13,3	8	10	11	10	0,013
K0282.910	M	20	M10	12	18	10	16	17	25	0,040
K0282.912	M	20	M12	12	18	12	16	17	25	0,040

Order No.	Form	D1	D2	D3	L	L1	Ball-Ø	Receiving hole	Load capacity max. kN (static load only)	Approx. weight kg
K0282.403	G	12	M3	7,2	11	3,5	10	ø 12 H7 x 6 min.	10*	0,010
K0282.404	G	18	M4	10,5	17	4,4	16	ø 18 H7 x 8 min.	25*	0,030
K0282.405	G	28	M5	20	25	6,3	25	ø 28 H7 x 13 min.	90*	0,080

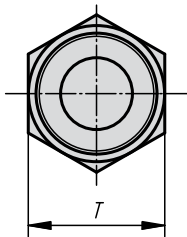
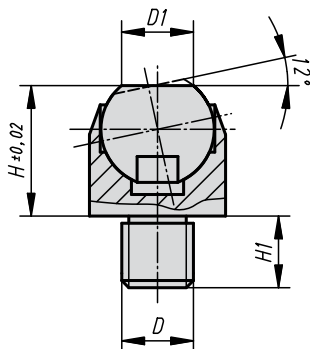
Order No.	Form	D1	D2	D3	L	L1	Ball-Ø	Receiving hole	Load capacity max. kN (static load only)	Approx. weight kg
K0282.603	J	12	M3	7,2	11	3,5	10	ø 12 H7 x 6 min.	10*	0,010
K0282.604	J	18	M4	10,5	17	4,4	16	ø 18 H7 x 8 min.	25*	0,030
K0282.605	J	28	M5	20	25	6,3	25	ø 28 H7 x 13 min.	90*	0,080

Toggle Locators

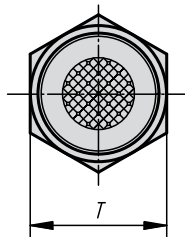
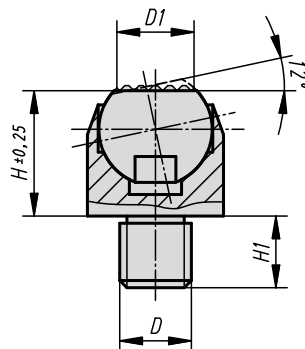
swivel 12°



Form C
with external thread
plain, flattened ball



Form F
with external thread
serrated, flattened ball



Material:

Body in tempered steel,
ball in ball-bearing steel 1.3505

Surface finish:

Body heat-treated, ball hardened (50 - 55 HRC)

Sample order:

K0302.106

Note:

The toggle locators serve as stops, supports and pressure pads in the fixture construction.

Ball is protected against torsion.

Toggle Locators swivel 12°

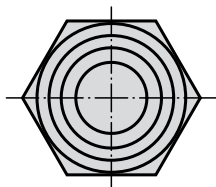
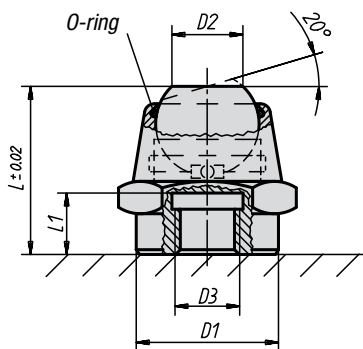
Order No. Form C	Order No. Form F	D	D1	H	H1	Ball-Ø	T	Load capacity max. kN (static load only)	Approx. weight kg
K0302.106	K0302.306	M6	6,7	13	7	10	13	10	0,015
K0302.108	K0302.308	M8	6,7	13	8	10	13	10	0,020
K0302.110	K0302.310	M10	10	18	10	16	19	25	0,035
K0302.112	K0302.312	M12	10	18	12	16	19	25	0,045
K0302.116	K0302.316	M16	20	27	16	24	30	90	0,160
K0302.120	K0302.320	M20	20	27	20	24	30	90	0,180

Toggle Locators with

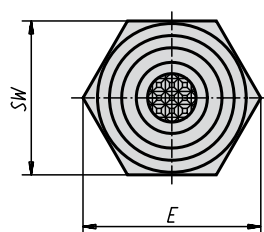
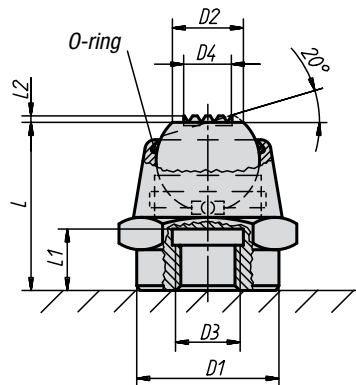
swivel angle 20°



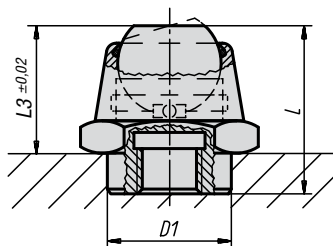
Form C
plain, flattened ball



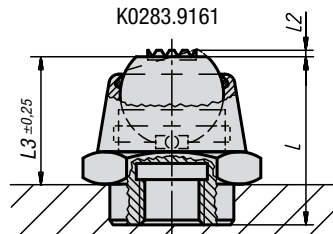
Form M
flattened ball,
serration in hard metal



Version:
K0283.1061
K0283.1101
K0283.1161



Version:
K0283.9061
K0283.9101
K0283.9161



Material:

Body in steel, ball in rust and acid resistant steel,
Form M with hard metal insert

Surface finish:

Body black oxide finish, ball natural finish

Sample order:

K0283.108

Note:

Toggle Locators are used to support and clamp unmachined and machined workpieces. In addition, they serve as stops, supports and thrust pads in fixture and tool shops.

Patent applied for.

Grub screws or threaded studs can be screwed and glued into thread D3. This is an easy way of obtaining a toggle locator with external thread.

Ball is protected against torsion.

Advantages:

- The Toggle Locator can be swivelled by 20°.
- High load forces can be absorbed.
- The built-in O-ring keeps dirt and foreign particles out, which in turn guarantees reliable operation.

Toggle Locators with swivel angle 20°

Order No. Form C	Order No. Form M	D1	D2	D3	D4	L	L1	L2	L3	E	SW	Ball-Ø	Load capacity max. kN (static load only)
K0283.1061	K0283.9061	12	7	M6	5	17,5	6	0,4	12,5	19,6	17	10	14
K0283.106	K0283.906	16	7	M6	5	17,5	6	0,4	-	19,6	17	10	14
K0283.108	K0283.908	22	11	M8	7,5	26	9	0,8	-	27,7	24	16	34
K0283.1101	K0283.9101	18	11	M10	7,5	26	9	0,8	20	27,7	24	16	34
K0283.110	K0283.910	22	11	M10	7,5	26	9	0,8	-	27,7	24	16	34
K0283.112	K0283.912	22	11	M12	7,5	26	9	0,8	-	27,7	24	16	34
K0283.1161	K0283.9161	26	18	M16	13	40	15	0,6	30	41,6	36	25	90
K0283.116	K0283.916	34	18	M16	13	40	15	0,6	-	41,6	36	25	90
K0283.120	K0283.920	34	18	M20	13	40	15	0,6	-	41,6	36	25	90

Toggle Locators

with O-ring



Form C
plain, flattened steel ball

Form K
plain, flattened delrin ball

Form F
serrated, flattened steel ball

Material:

Body in tempered steel,
ball in tool steel, Form K in delrin

Surface finish:

Body heat-treated, ball hardened, black oxide finish,
delrin ball in white

Sample order:

K0284.704X012

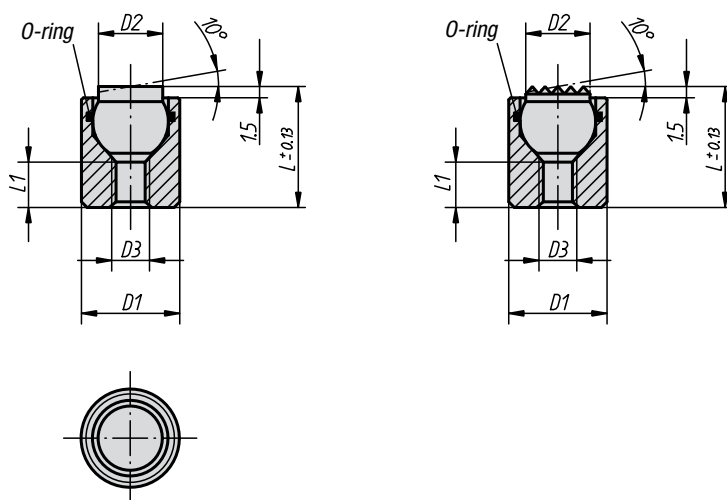
Note:

Toggle Locators are used to support and clamp unmachined and machined workpieces. In addition, they serve as stops, supports and thrust pads in fixture and tool shops.

Ball is protected against torsion.

Advantages:

- The built-in O-ring keeps the ball in its place and prevents dirt and foreign particles from entering.
- This assures smooth and steady movements.



Toggle Locators with O-ring

Order No.	Form	D1	D2	D3	L	L1	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg
K0284.104X012	C	10	6	M4	12	4,5	7	12	0,006
K0284.104X025	C	10	6	M4	25	12	7	12	0,013
K0284.105X016	C	13	8,5	M5	16	5	10	20	0,015
K0284.105X025	C	13	8,5	M5	25	12	10	20	0,023

Order No.	Form	D1	D2	D3	L	L1	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg
K0284.304X012	F	10	6	M4	12	4,5	7	12	0,006
K0284.304X025	F	10	6	M4	25	12	7	12	0,013
K0284.305X016	F	13	8,5	M5	16	5	10	20	0,014
K0284.305X025	F	13	8,5	M5	25	12	10	20	0,022

Order No.	Form	D1	D2	D3	L	L1	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg
K0284.704X012	K	10	6	M4	12	4,5	7	2	0,005
K0284.704X025	K	10	6	M4	25	12	7	2	0,012
K0284.705X016	K	13	8,5	M5	16	5	10	4	0,011
K0284.705X025	K	13	8,5	M5	25	12	10	4	0,019



A large rectangular area filled with a light gray grid pattern, intended for taking notes.

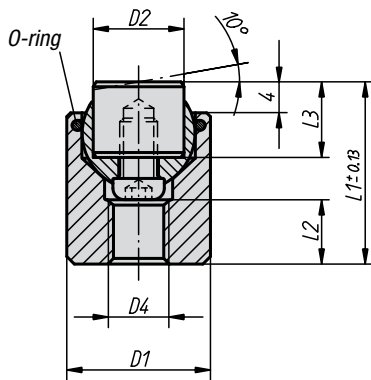
Toggle Locators

with O-ring and exchangeable inserts

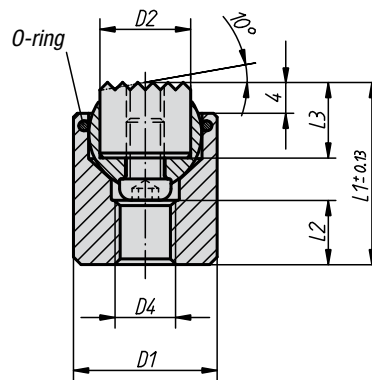


Form C
plain, flattened steel insert

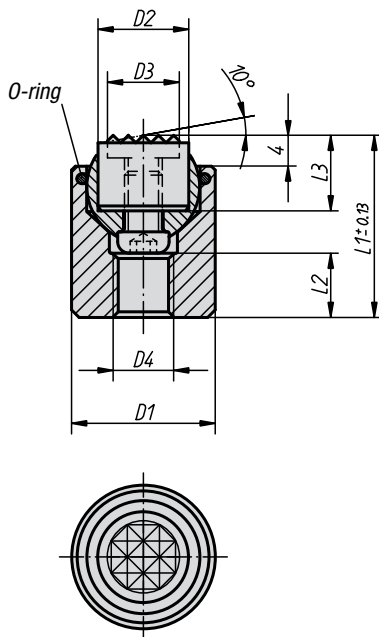
Form K
plain, flattened delrin insert



Form F
serrated, flattened gripper



Form M
gripper flattened,
serration in hard metal



Material, surface finish:

Body in tempered steel, heat-treated and black oxide finish; ball in rust and acid resistant steel, hardened and natural finish

Insert:

Form C in tool steel, hardened and black oxide finish

Form F in tool steel, hardened and black oxide finish

Form M in tool steel with hard metal serration, black oxide finish

Form K in white delrin

Sample order:

K0285.736X036

Note:

Toggle Locators are used to support and clamp unmachined and machined workpieces. In addition, they serve as stops, supports and thrust pads in fixture and tool shops. The ball can be removed from the housing by applying light pressure to the socket head screw.

Ball is protected against torsion.

See K0385 for table with Grippers and Inserts

Advantages:

- Highly cost-effective as inserts can be exchanged.
- The built-in O-ring keeps the ball in its place and prevents dirt and foreign particles from entering.
- This assures smooth and steady movements.

Toggle Locators

with O-ring and exchangeable inserts



Toggle Locators with O-ring and exchangeable inserts

Order No.	Form	D1	D2	D4	L1	L2	L3	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg	Order No. steel insert
K0285.117X022	C	17	10	M6	22	7	10	13	28	0,031	K0385.10108
K0285.119X024	C	19	12	M8	24	8	10	15	39	0,043	K0385.12108
K0285.124X028	C	24	16	M10	28	8	10	20	58	0,081	K0385.16108
K0285.130X030	C	30	20	M12	30	9	10	23	95	0,139	K0385.20108
K0285.136X036	C	36	25	M12	36	11	10	28	136	0,251	K0385.25108

Order No.	Form	D1	D2	D4	L1	L2	L3	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg	Order No. gripper
K0285.317X022	F	17	10	M6	22	7	10	13	28	0,031	K0385.1010
K0285.319X024	F	19	12	M8	24	8	10	15	39	0,045	K0385.1210
K0285.324X028	F	24	16	M10	28	8	10	20	58	0,082	K0385.1610
K0285.330X030	F	30	20	M12	30	9	10	23	95	0,141	K0385.2010
K0285.336X036	F	36	25	M12	36	11	10	28	136	0,249	K0385.2510

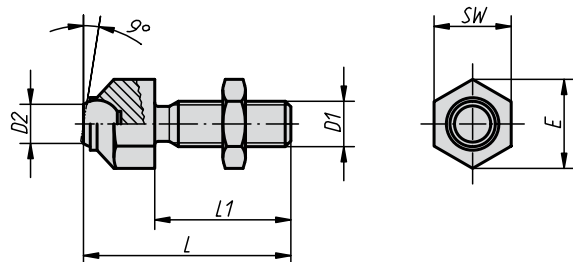
Order No.	Form	D1	D2	D4	L1	L2	L3	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg	Order No. delrin insert
K0285.717X022	K	17	10	M6	22	7	10	13	4	0,027	K0385.10109
K0285.719X024	K	19	12	M8	24	8	10	15	7	0,036	K0385.12109
K0285.724X028	K	24	16	M10	28	8	10	20	14	0,069	K0385.16109
K0285.730X030	K	30	20	M12	30	9	10	23	27	0,121	K0385.20109
K0285.736X036	K	36	25	M12	36	11	10	28	47	0,221	K0385.25109

Order No.	Form	D1	D2	D3	D4	L1	L2	L3	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg	Order No. gripper
K0285.917X022	M	17	10	7,9	M6	22	7	10	13	28	0,031	K0385.10107
K0285.919X024	M	19	12	9,5	M8	24	8	10	15	39	0,045	K0385.12107
K0285.924X028	M	24	16	12,7	M10	28	8	10	20	58	0,082	K0385.16107
K0285.930X030	M	30	20	15,9	M12	30	9	10	23	95	0,141	K0385.20107
K0285.936X036	M	36	25	19	M12	36	11	10	28	136	0,249	K0385.25107

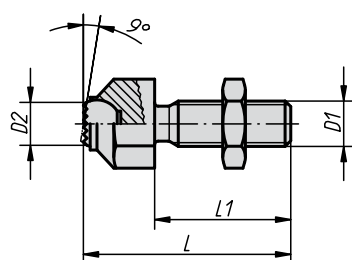
Adjustable Toggle Locators



Form C
plain, flattened ball



Form F
serrated, flattened ball



Material:
Steel

Surface finish:
Housing heat-treated and manganese phosphate treated;
ball hardened, natural finish;
nut with black oxide finish

Sample order:
K0287.316

Note:
Ball is protected against torsion.

Adjustable Toggle Locators

Order No.	Form	D1	D2	L	L1	E	SW	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg
K0287.108	C	M8	5,8	36,6	25	14,5	13	8,5	8	0,025
K0287.110	C	M10	8,6	45,7	30	19	17	12	8	0,055
K0287.112	C	M12	8,6	50,7	35	19	17	12	15	0,055
K0287.116	C	M16	10,5	60,7	40	27	24	16	25	0,115
K0287.120	C	M20	20	77,3	50	33	30	25	90	0,230
K0287.308	F	M8	5,8	36,6	25	14,5	13	8,5	8	0,025
K0287.310	F	M10	8,6	45,7	30	19	17	12	8	0,055
K0287.312	F	M12	8,6	50,7	35	19	17	12	15	0,055
K0287.316	F	M16	10,5	60,7	40	27	24	16	25	0,115
K0287.320	F	M20	20	77,3	50	33	30	25	90	0,230

Adjustable Toggle Locators

with O-ring



Form C
plain, flattened steel ball

Form F
serrated, flattened steel ball

Form K
plain, flattened delrin ball

Material:

Body in tempered steel,
ball in tool steel, Form K in delrin

Surface finish:

Body heat-treated, ball hardened, black oxide finish,
delrin ball in white

Sample order:

K0288.106X040

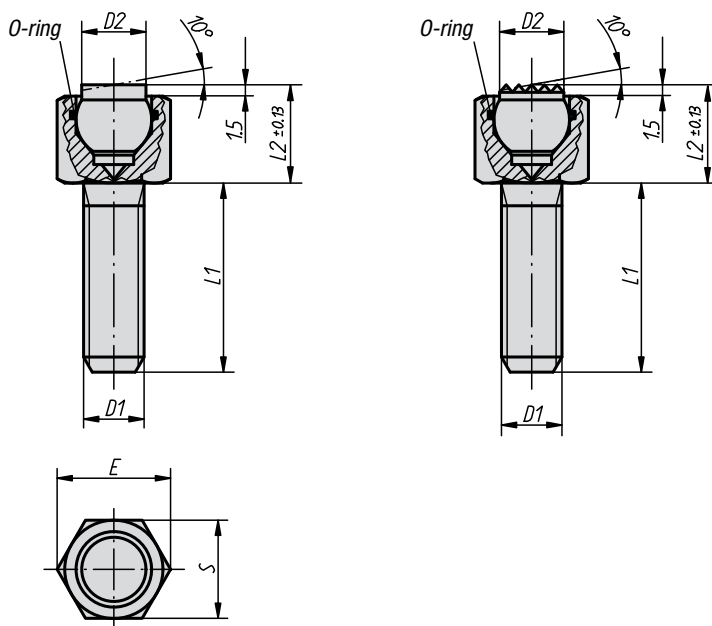
Note:

Toggle Locators are used to support and clamp unmachined and machined workpieces. In addition, they serve as stops, supports and thrust pads in fixture and tool shops.

Ball is protected against torsion.

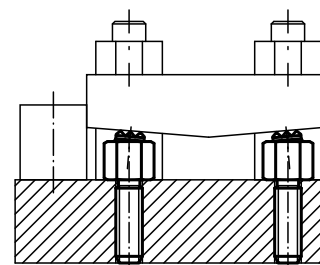
Advantages:

- The built-in O-ring keeps the ball in its place and prevents dirt and foreign particles from entering.
- This assures smooth and steady movements.



Adjustable Toggle Locators with O-ring

Order No.	Form	D1	D2	L1	L2	E	S	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg
K0288.106X012	C	M6	6	12	9,5	11,5	10	7	9	0,007
K0288.106X025	C	M6	6	25	9,5	11,5	10	7	9	0,010
K0288.106X040	C	M6	6	40	9,5	11,5	10	7	9	0,012
K0288.108X012	C	M8	8,5	12	13	15	13	10	15	0,016
K0288.108X025	C	M8	8,5	25	13	15	13	10	15	0,021
K0288.108X040	C	M8	8,5	40	13	15	13	10	15	0,026
K0288.306X012	F	M6	6	12	9,5	11,5	10	7	9	0,007
K0288.306X025	F	M6	6	25	9,5	11,5	10	7	9	0,010
K0288.306X040	F	M6	6	40	9,5	11,5	10	7	9	0,012
K0288.308X012	F	M8	8,5	12	13	15	13	10	15	0,016
K0288.308X025	F	M8	8,5	25	13	15	13	10	15	0,021
K0288.308X040	F	M8	8,5	40	13	15	13	10	15	0,025
K0288.706X012	K	M6	6	12	9,5	11,5	10	7	2	0,006
K0288.706X025	K	M6	6	25	9,5	11,5	10	7	2	0,009
K0288.706X040	K	M6	6	40	9,5	11,5	10	7	2	0,011
K0288.708X012	K	M8	8,5	12	13	15	13	10	4	0,012
K0288.708X025	K	M8	8,5	25	13	15	13	10	4	0,017
K0288.708X040	K	M8	8,5	40	13	15	13	10	4	0,022



Adjustable Toggle Locators

with O-ring and exchangeable inserts

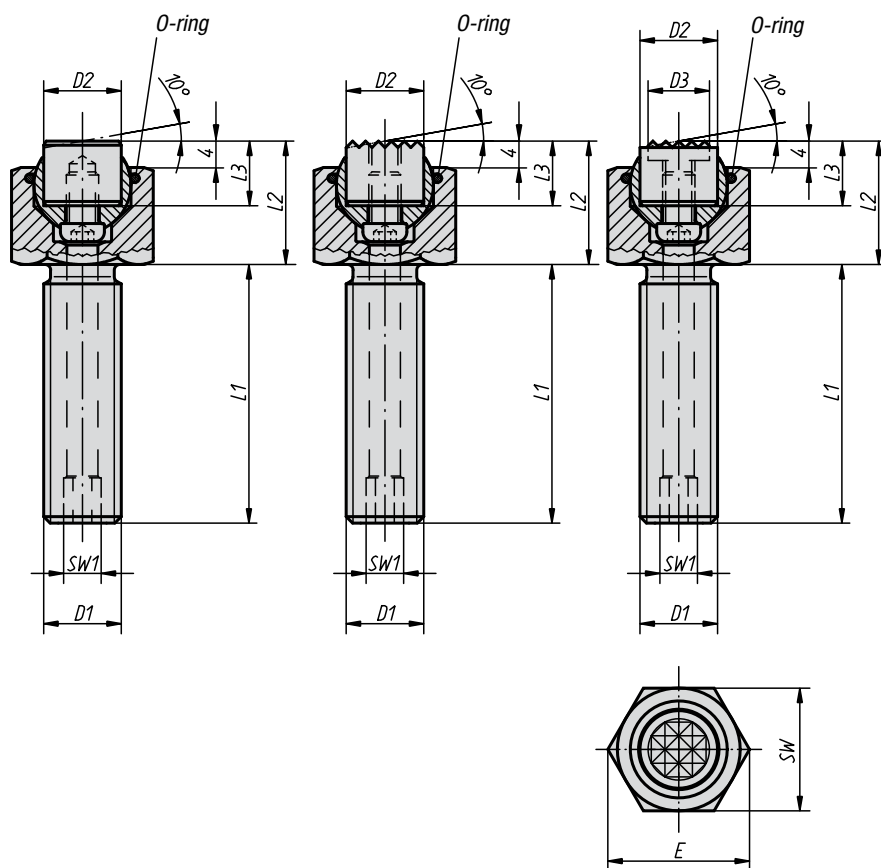


Form C
plain, flattened steel insert

Form F
serrated, flattened gripper

Form M
gripper flattened,
serration in hard metal

Form K
plain, flattened delrin insert



Material, surface finish:

Body in tempered steel, heat-treated and black oxide finish; ball in rust and acid resistant steel, hardened and natural finish

Insert:

Form C in tool steel, hardened and black oxide finish

Form F in tool steel, hardened and black oxide finish

Form M in tool steel with hard metal serration, black oxide finish

Form K in white delrin

Sample order:

K0289.124X100

Note:

Toggle Locators are used to support and clamp unmachined and machined workpieces.

In addition, they serve as stops, supports and thrust pads in fixture and tool shops.

The ball can be removed from the housing by applying light pressure to the socket head screw.

Ball is protected against torsion.

See K0385 for table with Grippers and Inserts.

Advantages:

- Highly cost-effective as inserts can be exchanged.
- The built-in O-ring keeps the ball in its place and prevents dirt and foreign particles from entering.
- This assures smooth and steady movements.

Adjustable Toggle Locators with O-ring and exchangeable inserts

Order No.	Form	D1	D2	L1	L2	L3	E	SW	SW1	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg	Order No. steel insert
K0289.110X015	C	M10	10	15	17	10	19,6	17	3	13	19	0,032	K0385.10108
K0289.110X030	C	M10	10	30	17	10	19,6	17	3	13	19	0,039	K0385.10108
K0289.110X050	C	M10	10	50	17	10	19,6	17	3	13	19	0,047	K0385.10108
K0289.112X020	C	M12	12	20	19	10	21,9	19	5	15	30	0,048	K0385.12108
K0289.112X040	C	M12	12	40	19	10	21,9	19	5	15	30	0,059	K0385.12108
K0289.112X060	C	M12	12	60	19	10	21,9	19	5	15	30	0,071	K0385.12108
K0289.116X025	C	M16	16	25	23	10	27,7	24	6	20	50	0,100	K0385.16108
K0289.116X050	C	M16	16	50	23	10	27,7	24	6	20	50	0,127	K0385.16108
K0289.116X080	C	M16	16	80	23	10	27,7	24	6	20	50	0,159	K0385.16108
K0289.120X030	C	M20	20	30	24	10	34,6	30	8	23	85	0,171	K0385.20108
K0289.120X060	C	M20	20	60	24	10	34,6	30	8	23	85	0,220	K0385.20108
K0289.120X100	C	M20	20	100	24	10	34,6	30	8	23	85	0,289	K0385.20108
K0289.124X040	C	M24	25	40	30	10	41,6	36	10	28	121	0,321	K0385.25108
K0289.124X100	C	M24	25	100	30	10	41,6	36	10	28	121	0,468	K0385.25108

Adjustable Toggle Locators with O-ring and exchangeable inserts

Order No.	Form	D1	D2	L1	L2	L3	E	SW	SW1	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg	Order No. gripper
K0289.310X015	F	M10	10	15	17	10	19,6	17	3	13	19	0,031	K0385.1010
K0289.310X030	F	M10	10	30	17	10	19,6	17	3	13	19	0,038	K0385.1010
K0289.310X050	F	M10	10	50	17	10	19,6	17	3	13	19	0,047	K0385.1010
K0289.312X020	F	M12	12	20	19	10	21,9	19	5	15	30	0,050	K0385.1210
K0289.312X040	F	M12	12	40	19	10	21,9	19	5	15	30	0,061	K0385.1210
K0289.312X060	F	M12	12	60	19	10	21,9	19	5	15	30	0,073	K0385.1210
K0289.316X025	F	M16	16	25	23	10	27,7	24	6	20	50	0,100	K0385.1610
K0289.316X050	F	M16	16	50	23	10	27,7	24	6	20	50	0,127	K0385.1610
K0289.316X080	F	M16	16	80	23	10	27,7	24	6	20	50	0,159	K0385.1610
K0289.320X030	F	M20	20	30	24	10	34,6	30	8	23	85	0,173	K0385.2010
K0289.320X060	F	M20	20	60	24	10	34,6	30	8	23	85	0,222	K0385.2010
K0289.320X100	F	M20	20	100	24	10	34,6	30	8	23	85	0,290	K0385.2010
K0289.324X040	F	M24	25	40	30	10	41,6	36	10	28	121	0,319	K0385.2510
K0289.324X100	F	M24	25	100	30	10	41,6	36	10	28	121	0,466	K0385.2510

Order No.	Form	D1	D2	L1	L2	L3	E	SW	SW1	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg	Order No. delrin insert
K0289.710X015	K	M10	10	15	17	10	19,6	17	3	13	4	0,027	K0385.10109
K0289.710X030	K	M10	10	30	17	10	19,6	17	3	13	4	0,034	K0385.10109
K0289.710X050	K	M10	10	50	17	10	19,6	17	3	13	4	0,043	K0385.10109
K0289.712X020	K	M12	12	20	19	10	21,9	19	5	15	7	0,041	K0385.12109
K0289.712X040	K	M12	12	40	19	10	21,9	19	5	15	7	0,052	K0385.12109
K0289.712X060	K	M12	12	60	19	10	21,9	19	5	15	7	0,064	K0385.12109
K0289.716X025	K	M16	16	25	23	10	27,7	24	6	20	14	0,088	K0385.16109
K0289.716X050	K	M16	16	50	23	10	27,7	24	6	20	14	0,115	K0385.16109
K0289.716X080	K	M16	16	80	23	10	27,7	24	6	20	14	0,147	K0385.16109
K0289.720X030	K	M20	20	30	24	10	34,6	30	8	23	27	0,152	K0385.20109
K0289.720X060	K	M20	20	60	24	10	34,6	30	8	23	27	0,202	K0385.20109
K0289.720X100	K	M20	20	100	24	10	34,6	30	8	23	27	0,270	K0385.20109
K0289.724X040	K	M24	25	40	30	10	41,6	36	10	28	47	0,291	K0385.25109
K0289.724X100	K	M24	25	100	30	10	41,6	36	10	28	47	0,438	K0385.25109

Order No.	Form	D1	D2	D3	L1	L2	L3	E	SW	SW1	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg	Order No. gripper
K0289.910X015	M	M10	10	7,9	15	17	10	19,6	17	3	13	19	0,031	K0385.10107
K0289.910X030	M	M10	10	7,9	30	17	10	19,6	17	3	13	19	0,038	K0385.10107
K0289.910X050	M	M10	10	7,9	50	17	10	19,6	17	3	13	19	0,047	K0385.10107
K0289.912X020	M	M12	12	9,5	20	19	10	21,9	19	5	15	30	0,050	K0385.12107
K0289.912X040	M	M12	12	9,5	40	19	10	21,9	19	5	15	30	0,061	K0385.12107
K0289.912X060	M	M12	12	9,5	60	19	10	21,9	19	5	15	30	0,073	K0385.12107
K0289.916X025	M	M16	16	12,7	25	23	10	27,7	24	6	20	50	0,100	K0385.16107
K0289.916X050	M	M16	16	12,7	50	23	10	27,7	24	6	20	50	0,127	K0385.16107
K0289.916X080	M	M16	16	12,7	80	23	10	27,7	24	6	20	50	0,159	K0385.16107
K0289.920X030	M	M20	20	15,9	30	24	10	34,6	30	8	23	85	0,173	K0385.20107
K0289.920X060	M	M20	20	15,9	60	24	10	34,6	30	8	23	85	0,222	K0385.20107
K0289.920X100	M	M20	20	15,9	100	24	10	34,6	30	8	23	85	0,290	K0385.20107
K0289.924X040	M	M24	25	19	40	30	10	41,6	36	10	28	121	0,319	K0385.25107
K0289.924X100	M	M24	25	19	100	30	10	41,6	36	10	28	121	0,466	K0385.25107

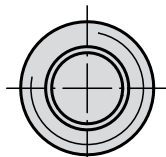
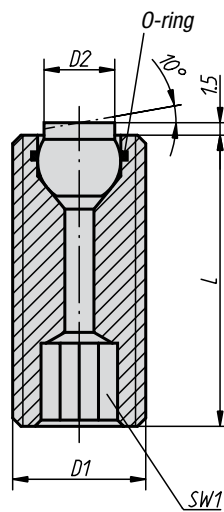
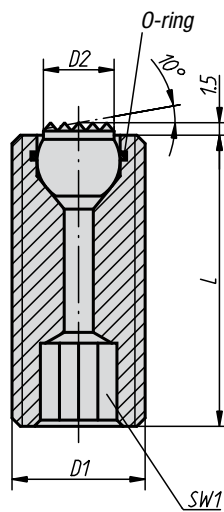
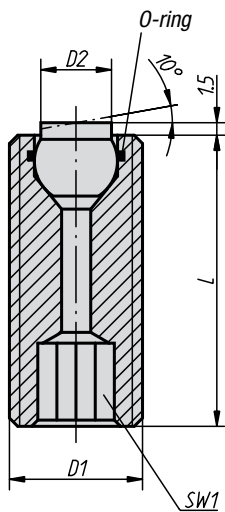
Adjustable Toggle Locators

with O-ring and hexagon socket

Form C
plain, flattened steel ball

Form F
serrated, flattened steel ball

Form K
plain, flattened delrin ball



Material:

Body in tempered steel,
ball in tool steel, Form K in delrin

Surface finish:

Body heat-treated, ball hardened, black oxide finish,
delrin ball in white

Sample order:

K0290.112X050

Note:

Toggle Locators are used to support and clamp unmachined and machined workpieces. In addition, they serve as stops, supports and thrust pads in fixture and tool shops.

Ball is protected against torsion.

Advantages:

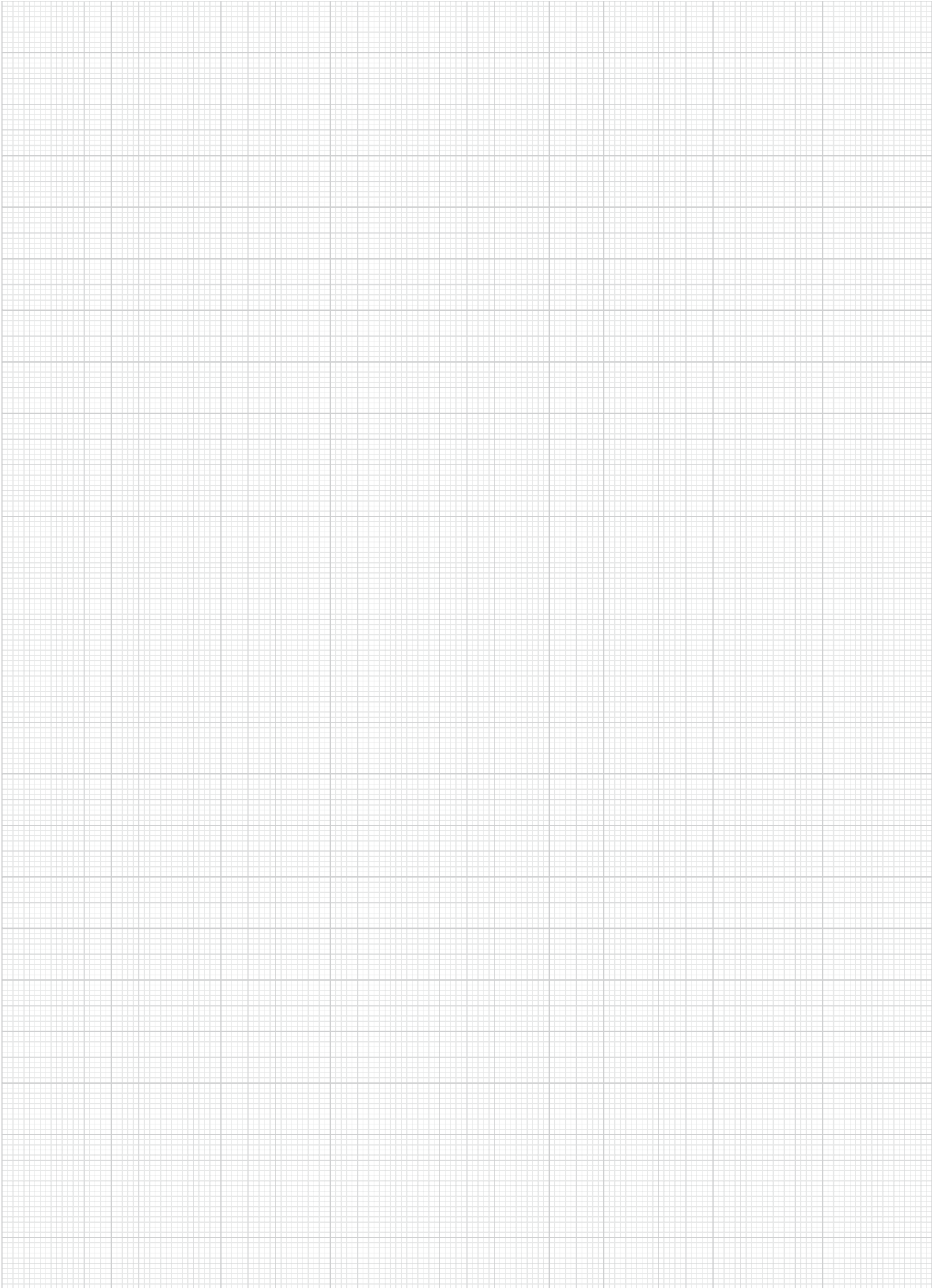
- The built-in O-ring keeps the ball in its place and prevents dirt and foreign particles from entering.
- This assures smooth and steady movements.
- The hexagon socket allows easy locating and positioning in through holes.

Adjustable Toggle Locators with O-ring and hexagon socket

Order No.	Form	D1	D2	L	SW1	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg
K0290.112X025	C	M12	6	25	6	7	15	0,015
K0290.112X035	C	M12	6	35	6	7	15	0,022
K0290.112X050	C	M12	6	50	6	7	15	0,032
K0290.116X025	C	M16	8,5	25	8	10	23	0,028
K0290.116X035	C	M16	8,5	35	8	10	23	0,039
K0290.116X050	C	M16	8,5	50	8	10	23	0,058

Order No.	Form	D1	D2	L	SW1	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg
K0290.312X025	F	M12	6	25	6	7	15	0,015
K0290.312X035	F	M12	6	35	6	7	15	0,022
K0290.312X050	F	M12	6	50	6	7	15	0,032
K0290.316X025	F	M16	8,5	25	8	10	23	0,027
K0290.316X035	F	M16	8,5	35	8	10	23	0,039
K0290.316X050	F	M16	8,5	50	8	10	23	0,057

Order No.	Form	D1	D2	L	SW1	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg
K0290.712X025	K	M12	6	25	6	7	2	0,013
K0290.712X035	K	M12	6	35	6	7	2	0,021
K0290.712X050	K	M12	6	50	6	7	2	0,031
K0290.716X025	K	M16	8,5	25	8	10	4	0,024
K0290.716X035	K	M16	8,5	35	8	10	4	0,035
K0290.716X050	K	M16	8,5	50	8	10	4	0,054



Adjustable Toggle Locators

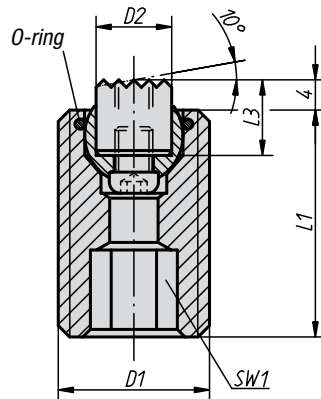
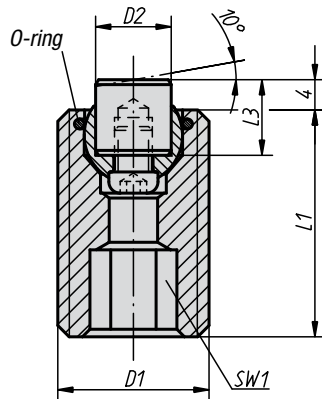
with O-ring, exchangeable inserts and hexagon socket



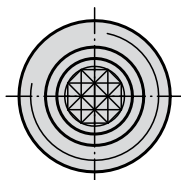
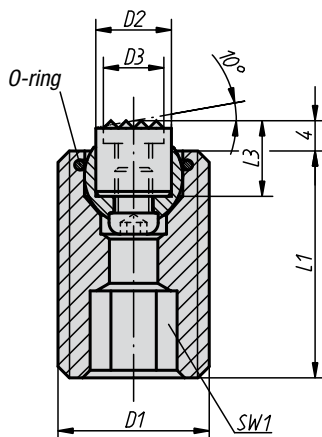
Form C
plain, flattened steel insert

Form F
serrated, flattened gripper

Form K
plain, flattened delrin insert



Form M
gripper flattened,
serration in hard metal



Material, surface finish:

Body in tempered steel, heat-treated and black oxide finish; ball in rust and acid resistant steel, hardened and natural finish

Insert:

Form C in tool steel, hardened and black oxide finish

Form F in tool steel, hardened and black oxide finish

Form M in tool steel with hard metal serration, black oxide finish

Form K in white delrin

Sample order:

K0291.720X070

Note:

Toggle Locators are used to support and clamp unmachined and machined workpieces.

In addition, they serve as stops, supports and thrust pads in fixture and tool shops.

The ball can be removed from the housing by applying light pressure to the socket head screw.

Ball is protected against torsion.

See K0385 for table with Grippers and Inserts.

Advantages:

- Highly cost-effective as inserts can be exchanged.
- The built-in O-ring keeps the ball in its place and prevents dirt and foreign particles from entering.
- This assures smooth and steady movements.

Adjustable Toggle Locators

with O-ring, exchangeable inserts and hexagon socket



Adjustable Toggle Locators with O-ring, exchangeable inserts and hexagon socket

Order No.	Form	D1	D2	L1	L3	SW1	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg	Order No. steel insert
K0291.120X030	C	M20	10	30	10	8	13	37	0,049	K0385.10108
K0291.120X050	C	M20	10	50	10	8	13	37	0,084	K0385.10108
K0291.120X070	C	M20	10	70	10	8	13	37	0,122	K0385.10108
K0291.124X040	C	M24	12	40	10	10	15	55	0,101	K0385.12108
K0291.124X080	C	M24	12	80	10	10	15	55	0,200	K0385.12108

Order No.	Form	D1	D2	L1	L3	SW1	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg	Order No. gripper
K0291.320X030	F	M20	10	30	10	8	13	37	0,049	K0385.1010
K0291.320X050	F	M20	10	50	10	8	13	37	0,084	K0385.1010
K0291.320X070	F	M20	10	70	10	8	13	37	0,121	K0385.1010
K0291.324X040	F	M24	12	40	10	10	15	55	0,103	K0385.1210
K0291.324X080	F	M24	12	80	10	10	15	55	0,201	K0385.1210

Order No.	Form	D1	D2	L1	L3	SW1	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg	Order No. delrin insert
K0291.720X030	K	M20	10	30	10	8	13	4	0,045	K0385.10109
K0291.720X050	K	M20	10	50	10	8	13	4	0,080	K0385.10109
K0291.720X070	K	M20	10	70	10	8	13	4	0,117	K0385.10109
K0291.724X040	K	M24	12	40	10	10	15	7	0,094	K0385.12109
K0291.724X080	K	M24	12	80	10	10	15	7	0,193	K0385.12109

Order No.	Form	D1	D2	D3	L1	L3	SW1	Ball-Ø	Load capacity max. kN (static load only)	Approx. weight kg	Order No. gripper
K0291.920X030	M	M20	10	7,9	30	10	8	13	37	0,049	K0385.10107
K0291.920X050	M	M20	10	7,9	50	10	8	13	37	0,084	K0385.10107
K0291.920X070	M	M20	10	7,9	70	10	8	13	37	0,121	K0385.10107
K0291.924X040	M	M24	12	9,5	40	10	10	15	55	0,103	K0385.12107
K0291.924X080	M	M24	12	9,5	80	10	10	15	55	0,201	K0385.12107

Round Grippers and Inserts

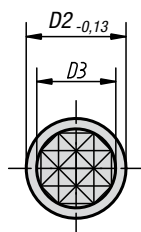
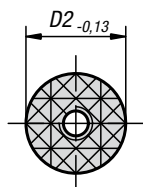
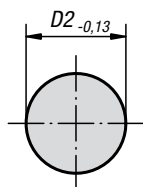
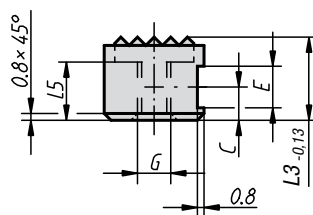
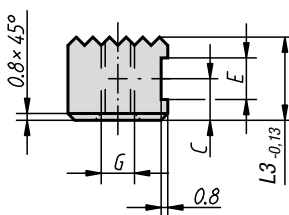
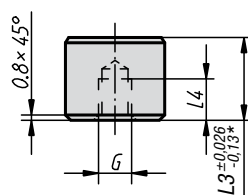


Form C
plain, flattened steel insert

Form K
plain, flattened delrin insert

Form F
serrated, flattened gripper

Form M
gripper flattened,
serration in hard metal



* Applies for form K

Material, surface finish:

Form C in tool steel, hardened and black oxide finish

Form F in tool steel, hardened and black oxide finish

Form M in tool steel with hard metal serration,
black oxide finish

Form K in white delrin

Sample order:

K0385.2510

Note:

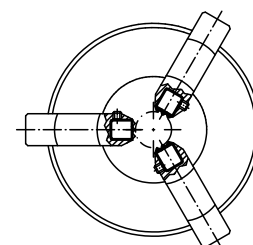
Grippers and Inserts are ideal for use in clamping arms, gripping systems, clamping fixtures, clamping jaws and toggle locators. Grippers transfer very high torque values and above average holding forces. This is also true when they are applied to hard materials and surface irregularities.

Grippers and Inserts can be fitted in the following
Toggle Locators:

Order No. K0285.117X022 up to K0285.936X036

Order No. K0289.110X015 up to K0289.924X100

Order No. K0291.120X030 up to K0291.924X080



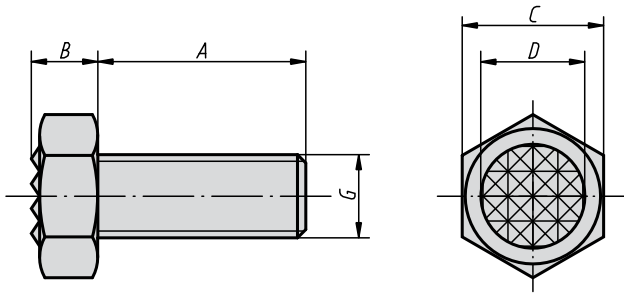
Round Inserts

Order No. Form C	Order No. Form K	D2	L3	L4	G
K0385.10108	K0385.10109	10	10	5	M5
K0385.12108	K0385.12109	12	10	5	M5
K0385.16108	K0385.16109	16	10	5	M6
K0385.20108	K0385.20109	20	10	5	M6
K0385.25108	K0385.25109	25	10	5	M6

Round Grippers

Order No. Form F	Order No. Form M	D2	D3	L3	L5	C	E	G
K0385.1010	K0385.10107	10	-7,9	10	-6	4,5	4,75	M5
K0385.1210	K0385.12107	12	-9,5	10	-6	4,5	4,75	M5
K0385.1212	K0385.12127	12	-9,5	12	-7	6	4,75	M5
K0385.1610	K0385.16107	16	-12,7	10	-6	4,5	4,75	M6
K0385.2010	K0385.20107	20	-15,9	10	-6	4,5	4,75	M6
K0385.2510	K0385.25107	25	-19	10	-6	4,5	4,75	M6

Hexagonal Grippers



Material:

Hardened tool steel resp. hard metal

Surface finish:

Black oxide finish

Sample order:

K0386.1710

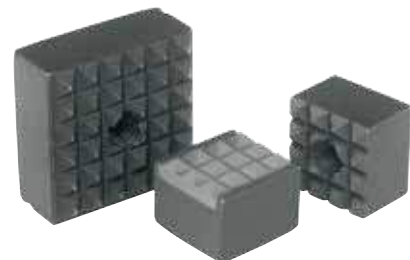
Note:

The serrated hard metal tips are soldered in.

Hexagonal Grippers

Order No.	A	B	C	D	G	Serration	Approx. weight kg
K0386.1006	25	5	10	7,9	M6	superfine	0,005
K0386.1308	25	6,4	13	9,5	M8	fine	0,015
K0386.1710	25	8,3	17	12,7	M10	fine	0,025
K0386.17102	40	8,3	17	12,7	M10	fine	0,035
K0386.1912	25	8,7	19	15,9	M12	fine	0,040
K0386.19122	40	8,7	19	15,9	M12	fine	0,050
K0386.2416	35	11	24	19	M16	fine	0,085
K0386.24162	50	11	24	19	M16	fine	0,105
K0386.3020	40	13,7	30	25,4	M20	superfine	0,165
K0386.30202	60	13,7	30	25,4	M20	superfine	0,205

Square Grippers



Material:

Hardened tool steel resp. hard metal

Surface finish:

Black oxide finish

Sample order:

K0387.2506

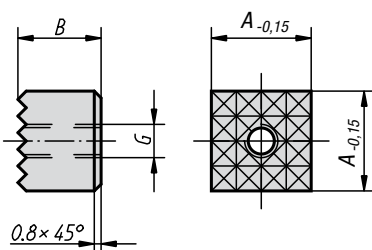
Note:

Grippers and Inserts are ideal for use in clamping arms, gripping systems, clamping fixtures, clamping jaws and toggle locators.

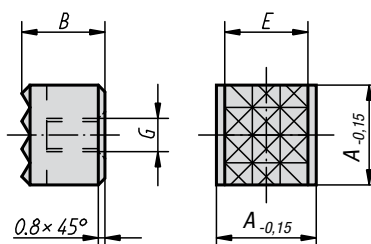
Grippers transfer very high torque values. This is also true when they are applied to hard materials and surface irregularities. Grippers guarantee above average holding forces at high cutting forces.

The serrated hard metal tips are soldered in.

Form A
tool steel



Form B
tool steel
serration in hard metal



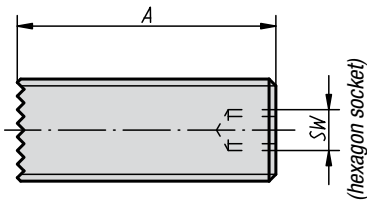
Square Grippers

Order No.	Form	A	B	E	G	Serration	Approx. weight kg
K0387.1005	A	10	10	-	M5	superfine	0,005
K0387.1205	A	12	10	-	M5	fine	0,010
K0387.2005	A	20	10	-	M5	fine	0,025
K0387.2506	A	25	10	-	M6	fine	0,045
K0387.12057	B	12	10	10,3	M5	fine	0,010

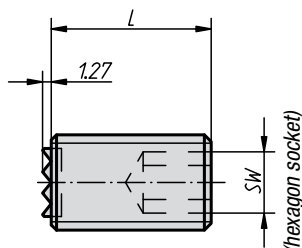
Adjustable Grippers



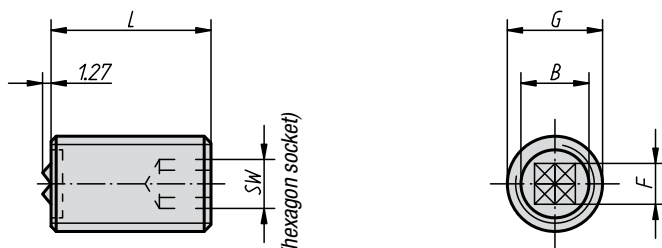
Form A
tool steel



Form B
serration in hard metal



Form C
4-point-serration in hard metal



Material:
Hardened tool steel or hard metal

Surface finish:
Black oxide finish

Order information:
K0388.5012

Note:
The continuous external thread of the Adjustable Grippers allows exact adjusting to the clamping job. The hard metal tips are soldered in.



Adjustable Grippers

Order No.	Form	A	L	B	G	F	SW
K0388.4010	A	40	-	-	M10	-	3
K0388.4012	A	40	-	-	M12	-	5
K0388.4016	A	40	-	-	M16	-	6
K0388.4020	A	40	-	-	M20	-	8
K0388.2510	B	-	25	6,4	M10	-	5
K0388.5010	B	-	50	6,4	M10	-	5
K0388.2512	B	-	25	7,9	M12	-	6
K0388.5012	B	-	50	7,9	M12	-	6
K0388.2516	B	-	25	11,2	M16	-	8
K0388.5016	B	-	50	11,2	M16	-	8
K0388.2520	B	-	25	12,7	M20	-	10
K0388.5020	B	-	50	12,7	M20	-	10
K0388.25124	C	-	25	7,9	M12	6,5	6
K0388.50124	C	-	50	7,9	M12	6,5	6
K0388.25164	C	-	25	11,2	M16	8	8
K0388.50164	C	-	50	11,2	M16	8	8
K0388.25204	C	-	25	12,7	M20	8	10
K0388.50204	C	-	50	12,7	M20	8	10

Thrust Bolts

**Material, surface finish:**

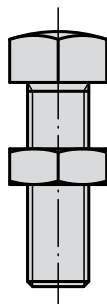
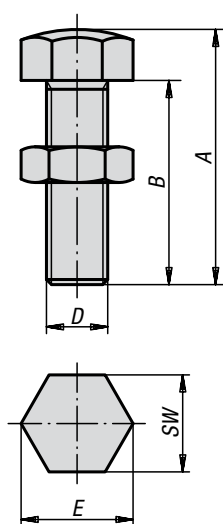
Tempered steel, heat-treated with black oxide finish

Sample order:

K0307.16055

Note:

The models K0307.12148 and K0307.16155 are made of brass.



Thrust Bolts

Order No.	A	B	D	E	SW	Approx. weight kg
K0307.06030	30	25	M6	11,5	10	0,007
K0307.06040	40	35	M6	11,5	10	0,009
K0307.06050	50	45	M6	11,5	10	0,011
K0307.08036	36	30	M8	15	13	0,020
K0307.08046	46	40	M8	15	13	0,019
K0307.08056	56	50	M8	15	13	0,022
K0307.10042	42	35	M10	19,6	17	0,035
K0307.10048	48	40	M10	19,6	17	0,033
K0307.10058	58	50	M10	19,6	17	0,038
K0307.10068	68	60	M10	19,6	17	0,042
K0307.12048	50	42	M12	21,9	19	0,055
K0307.12070	70	60	M12	21,9	19	0,065
K0307.12080	80	70	M12	21,9	19	0,070
K0307.16055	55	45	M16	27,7	24	0,114
K0307.16075	75	65	M16	27,7	24	0,125
K0307.16085	85	75	M16	27,7	24	0,135
K0307.12148	50	42	M12	21,9	19	0,061
K0307.16155	55	45	M16	27,7	24	0,127

Tie-Rod Bolts

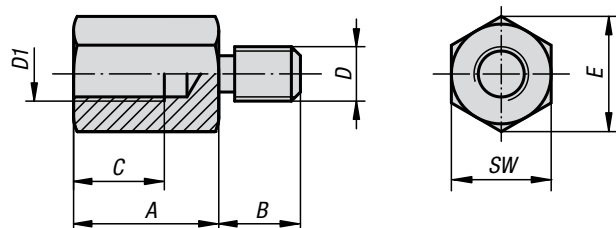


Material:
Tempered steel

Surface finish:
Black oxide finish

Sample order:
K0821.120750

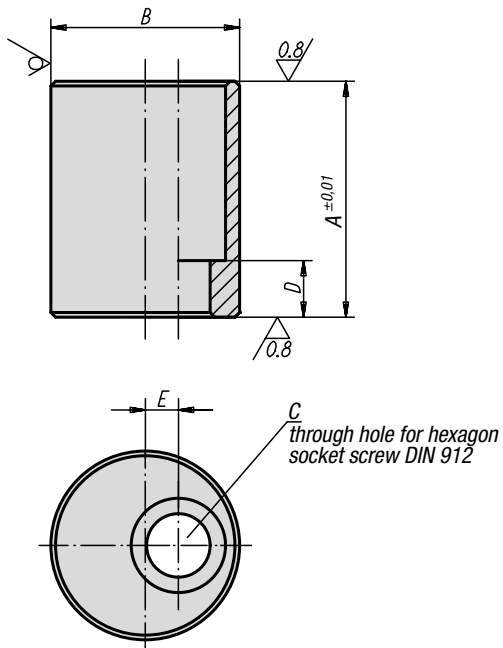
Note:
Extension pieces are used to lengthen toggle locators, spring-mounted press-on studs, positioning feet support bolts and similar fixings.



Tie-Rod Bolts

Order No.	A	B	C	D	D1	E	SW	Approx. weight kg
K0821.08025	25	13	15	M8	M8	15	13	0,035
K0821.08032	32	13	15	M8	M8	15	13	0,043
K0821.08040	40	13	15	M8	M8	15	13	0,051
K0821.10025	25	15	17	M10	M10	19,6	17	0,056
K0821.10032	32	15	17	M10	M10	19,6	17	0,065
K0821.10040	40	15	17	M10	M10	19,6	17	0,085
K0821.10050	50	16	20	M10	M10	19,6	17	0,095
K0821.10075	75	16	20	M10	M10	19,6	17	0,145
K0821.120320	32	18	20	M12	M12	25,4	22	0,095
K0821.120500	50	18	20	M12	M12	25,4	22	0,165
K0821.120750	75	18	20	M12	M12	25,4	22	0,250
K0821.160320	32	25	20	M16	M16	31,2	27	0,150
K0821.160500	50	25	30	M16	M16	31,2	27	0,250
K0821.160750	75	25	30	M16	M16	31,2	27	0,370
K0821.108025	25	19	15	M8	M8	15	13	0,028
K0821.108032	32	19	15	M8	M8	15	13	0,036
K0821.108040	40	19	15	M8	M8	15	13	0,045
K0821.112032	32	30	20	M12	M12	25,4	22	0,105
K0821.112050	50	30	20	M12	M12	25,4	22	0,164
K0821.112075	75	30	20	M12	M12	25,4	22	0,245
K0821.116032	32	30	20	M16	M16	31,2	27	0,159
K0821.116050	50	30	30	M16	M16	31,2	27	0,233
K0821.116075	75	30	30	M16	M16	31,2	27	0,355

Eccentric Supports



Material:
Special machining steel

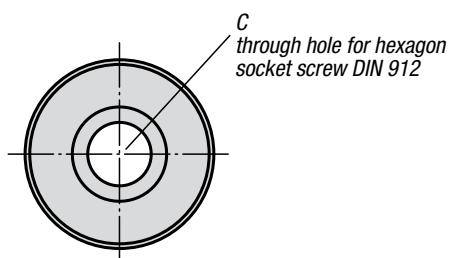
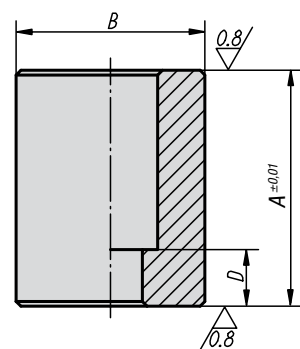
Surface finish:
Tempered and black-oxide finish;
support surfaces ground

Sample order:
K0822.10040

Eccentric Supports

Order No.	A	B	C Through hole for	D	E	Approx. weight kg
K0822.08016	16	25	M8	7	3,5	0,050
K0822.08020	20	25	M8	7	3,5	0,055
K0822.08025	25	25	M8	7	3,5	0,070
K0822.08032	32	25	M8	7	3,5	0,085
K0822.08040	40	25	M8	7	3,5	0,105
K0822.08050	50	25	M8	7	3,5	0,130
K0822.10020	20	32	M10	9	5	0,100
K0822.10025	25	32	M10	9	5	0,120
K0822.10032	32	32	M10	9	5	0,155
K0822.10040	40	32	M10	9	5	0,190
K0822.10050	50	32	M10	9	5	0,235
K0822.10063	63	32	M10	9	5	0,280
K0822.12020	20	40	M12	7	7	0,155
K0822.12025	25	40	M12	12	7	0,205
K0822.12032	32	40	M12	12	7	0,255
K0822.12040	40	40	M12	12	7	0,315
K0822.12050	50	40	M12	12	7	0,390
K0822.12063	63	40	M12	12	7	0,475
K0822.12080	80	40	M12	22	7	0,610
K0822.12100	100	40	M12	22	7	0,760
K0822.12125	125	40	M12	22	7	0,935
K0822.16025	25	50	M16	8	10	0,300
K0822.16032	32	50	M16	15	10	0,400
K0822.16040	40	50	M16	15	10	0,485
K0822.16050	50	50	M16	15	10	0,595
K0822.16063	63	50	M16	15	10	0,735
K0822.16080	80	50	M16	35	10	0,925
K0822.16100	100	50	M16	35	10	1,195
K0822.16125	125	50	M16	35	10	1,470

Round Supports



Material:
Tempered steel.

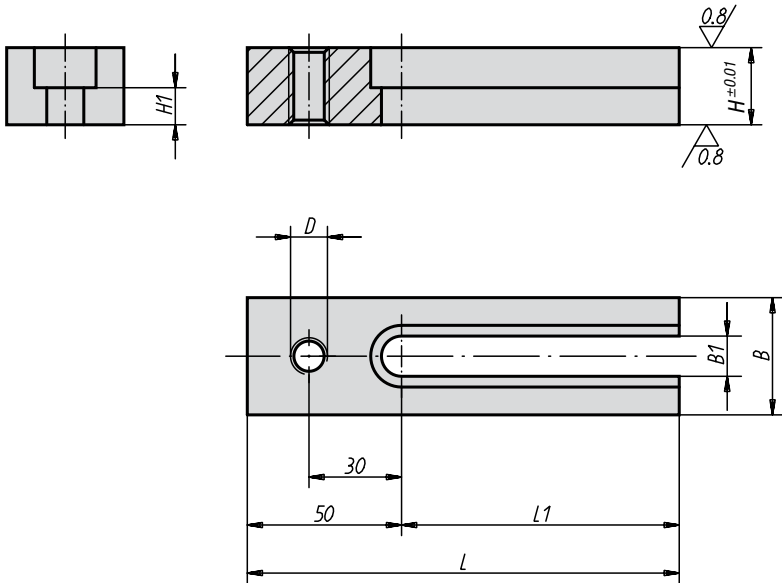
Surface finish:
heat-treated and black oxide finish.
Support surfaces ground.

Sample order:
K0823.08016

Round Supports

Order No.	A	B	C Through hole for	D	Approx. weight kg
K0823.08016	16	25	M8	7	0,043
K0823.08020	20	25	M8	7	0,05
K0823.08025	25	25	M8	7	0,07
K0823.08032	32	25	M8	7	0,085
K0823.08040	40	25	M8	7	0,105
K0823.08050	50	25	M8	7	0,135
K0823.10020	20	32	M10	9	0,092
K0823.10025	25	32	M10	9	0,115
K0823.10032	32	32	M10	9	0,15
K0823.10040	40	32	M10	9	0,185
K0823.10050	50	32	M10	9	0,23
K0823.10063	63	32	M10	9	0,285
K0823.12020	20	40	M12	7	0,155
K0823.12025	25	40	M12	12	0,2
K0823.12032	32	40	M12	12	0,255
K0823.12040	40	40	M12	12	0,315
K0823.12050	50	40	M12	12	0,39
K0823.12063	63	40	M12	12	0,49
K0823.12080	80	40	M12	22	0,62
K0823.12100	100	40	M12	22	0,765
K0823.16025	25	50	M16	8	0,3
K0823.16032	32	50	M16	15	0,395
K0823.16040	40	50	M16	15	0,485
K0823.16050	50	50	M16	15	0,57
K0823.16063	63	50	M16	15	0,735
K0823.16080	80	50	M16	35	0,97
K0823.16100	100	50	M16	35	1,195
K0823.16125	125	50	M16	35	1,43

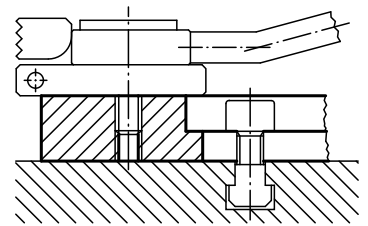
Adjustable Supports

**Material:**

Tempered steel

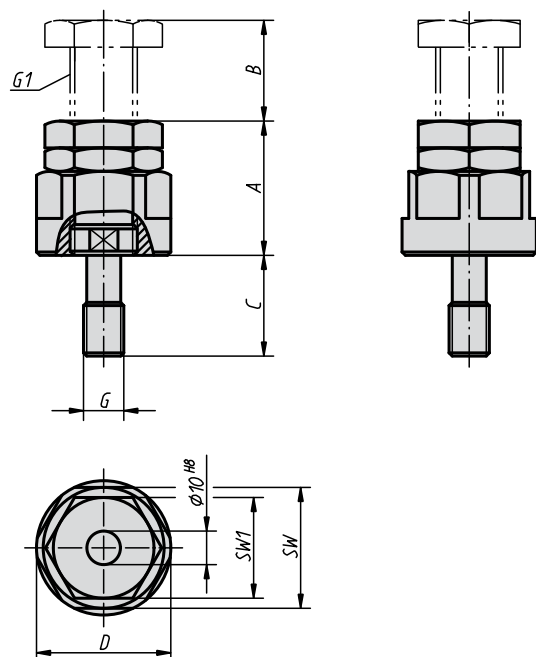
Surface finish:tempered and black oxide finish;
support surfaces ground**Sample order:**

K0824.12125

Note:The threaded hole is used to affix jig components.
Adjustable by using the supports, can be set in any position.

Adjustable Supports

Order No.	D	L	L1	B	B1	H	H1	Approx. weight kg
K0824.12025	M12	90	40	38	13	25	12	0,492
K0824.12032	M12	90	40	38	13	32	19	0,645
K0824.12040	M12	90	40	38	13	40	27	0,813
K0824.12050	M12	90	40	38	13	50	37	1,027
K0824.12125	M12	140	90	38	13	25	12	0,700
K0824.12132	M12	140	90	38	13	32	19	0,924
K0824.12140	M12	140	90	38	13	40	27	1,175
K0824.12150	M12	140	90	38	13	50	37	1,487
K0824.16032	M16	90	40	50	17	32	15	0,800
K0824.16040	M16	90	40	50	17	40	23	1,014
K0824.16050	M16	90	40	50	17	50	33	1,300
K0824.16132	M16	140	90	50	17	32	15	1,153
K0824.16140	M16	140	90	50	17	40	23	1,480
K0824.16150	M16	140	90	50	17	50	33	1,880

**Material:**

Tempered steel

Surface finish:

Black oxide finish; adjustment spindle tempered

Sample order:

K0825.16100

Note:

The contact surface can be altered to the conditions using inserts, see K0826.

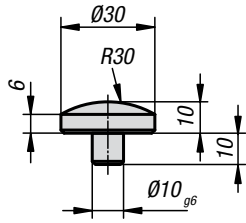
Jack Screws

Order No.	A min.	B max.	C	D	SW	SW1	G	G1	Approx. weight kg
K0825.12040	40	10	30	40	36	30	M12	M20x1,5	0,350
K0825.12050	50	20	30	40	36	30	M12	M20x1,5	0,420
K0825.12070	70	40	30	40	36	30	M12	M20x1,5	0,570
K0825.12100	100	50	30	50	46	36	M12	M24x2	1,350
K0825.12150	150	100	30	50	46	36	M12	M24x2	2,100
K0825.16040	40	10	30	40	36	30	M16	M20x1,5	0,360
K0825.16050	50	20	30	40	36	30	M16	M20x1,5	0,430
K0825.16070	70	40	30	40	36	30	M16	M20x1,5	0,580
K0825.16100	100	50	30	50	46	36	M16	M24x2	1,360
K0825.16150	150	100	30	50	46	36	M16	M24x2	2,110

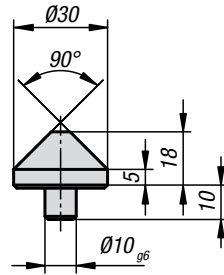
Inserts



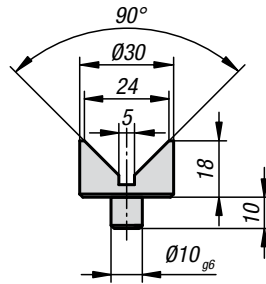
convex insert



taper insert



vee-block insert

**Material:**

Tempered steel

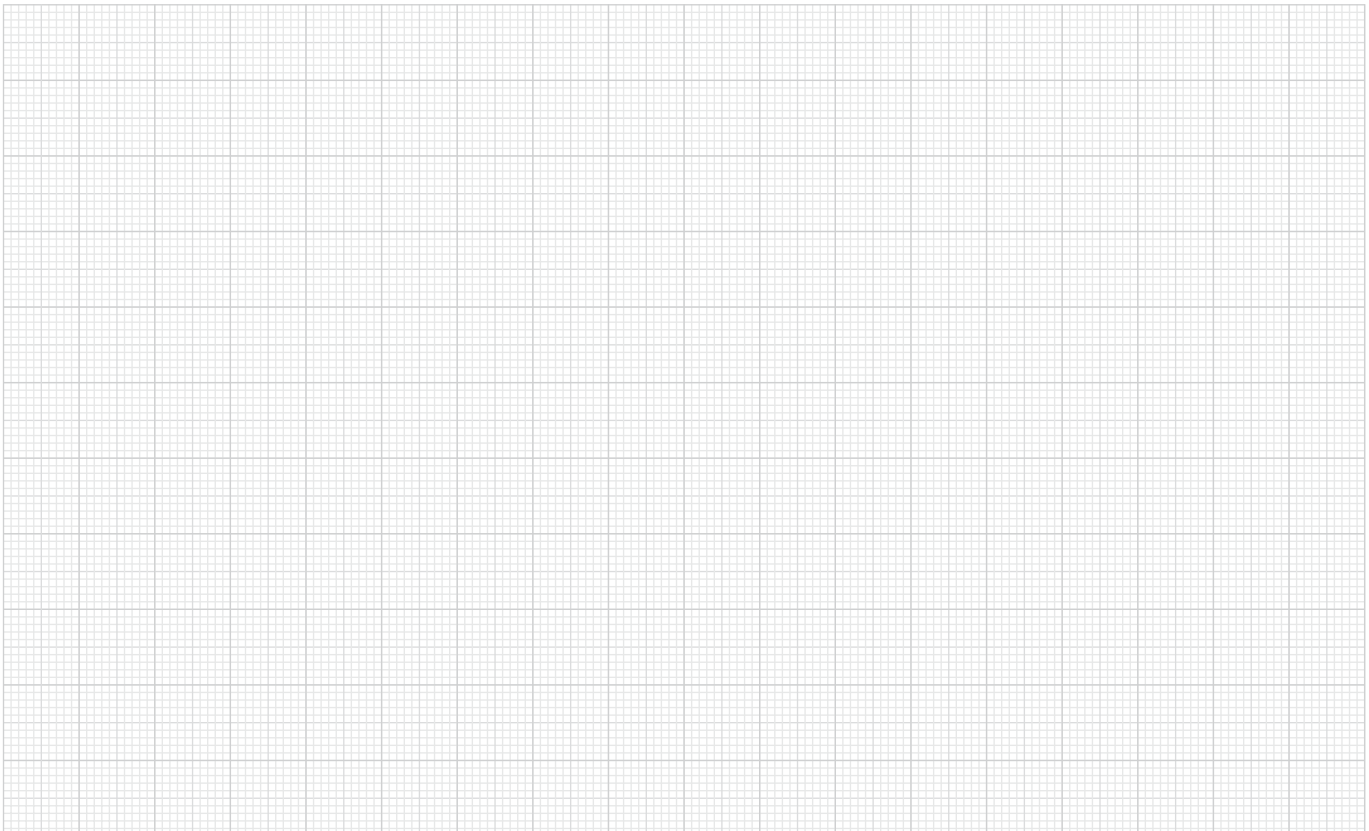
Surface finish:Heat-treated at 1100-1200 N/mm² and black oxide finish**Sample order:**

K0826.02

Inserts

Order No.	Surface finish	Approx. weight kg
K0826.01	ball insert	0,050
K0826.02	conical insert	0,060
K0826.03	vee-block insert	0,070

Notes



Block Supports

**Material:**

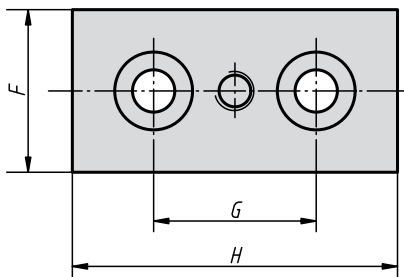
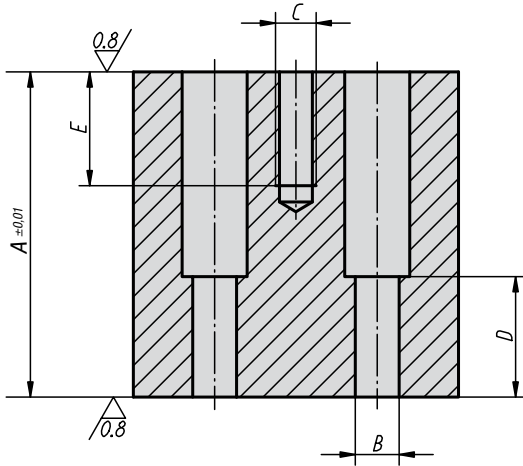
Tempered steel

Surface finish:heat-treated and black oxide finish
Support surfaces ground**Sample order:**

K0827.36012020

Note:

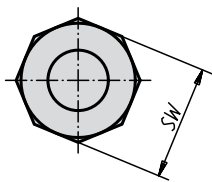
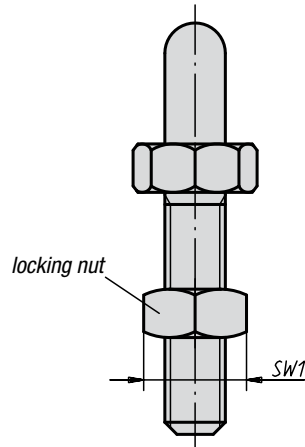
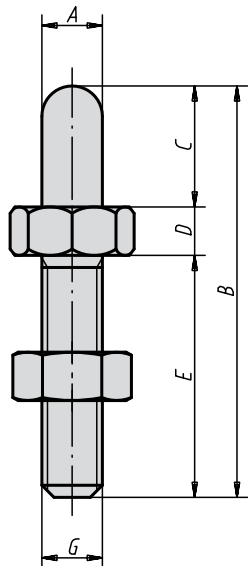
Block Supports prevent the workpieces from sagging during machining or clamping. The tapped hole is used for mounting fixture elements between the M.T.P. holes.



Block Supports

Order No.	A	B Hole for	C	D	E	F	G	H	Approx. weight kg
K0827.36012020	20	M12	M12	7	20	50	50	100	0,67
K0827.36012025	25	M12	M12	12	25	50	50	100	0,849
K0827.36012032	32	M12	M12	19	32	50	50	100	1,124
K0827.36012040	40	M12	M12	27	40	50	50	100	1,38
K0827.36012050	50	M12	M12	37	35	50	50	100	1,727
K0827.36012063	63	M12	M12	37	35	50	50	100	2,205
K0827.36012080	80	M12	M12	37	35	50	50	100	2,715
K0827.36012100	100	M12	M12	37	35	50	50	100	3,361
K0827.36012125	125	M12	M12	37	35	50	50	100	4,207
K0827.36016025	25	M16	M16	8	25	50	50	100	0,748
K0827.36016032	32	M16	M16	15	32	50	50	100	1
K0827.36016040	40	M16	M16	23	40	50	50	100	1,248
K0827.36016050	50	M16	M16	33	35	50	50	100	1,584
K0827.36016063	63	M16	M16	46	35	50	50	100	2,035
K0827.36016080	80	M16	M16	46	35	50	50	100	2,525
K0827.36016100	100	M16	M16	46	35	50	50	100	3,16
K0827.36016125	125	M16	M16	46	35	50	50	100	3,992

Support Bolts

**Material:**

Tempered steel, heat-treated

Surface finish:

Black oxide finish

Sample order:

K0297.16016

Note:

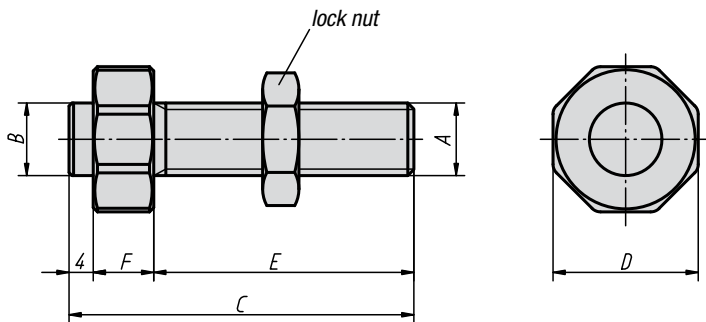
The rounded nose allows Support Bolts to be used as positioning elements for workpieces with holes too.

The model K0297.08016 has a hexagonal.

Support Bolts

Order No.	A	B	C	D	E	G	SW	SW1	Approx. weight kg
K0297.06006	6	37	6	6	25	M6	13	10	0,011
K0297.06012	6	43	12	6	25	M6	13	10	0,013
K0297.08008	8	45	8	7	30	M8	13	13	0,040
K0297.08016	8	53	16	7	30	M8	13	13	0,045
K0297.10010	10	58	10	8	40	M10	17	17	0,060
K0297.10020	10	68	20	8	40	M10	17	17	0,065
K0297.12012	12	72	12	10	50	M12	19	19	0,110
K0297.12024	12	84	24	10	50	M12	19	19	0,120
K0297.16016	16	89	16	13	60	M16	24	24	0,240
K0297.16032	16	105	32	13	60	M16	24	24	0,265
K0297.20020	20	115	20	15	80	M20	36	30	0,350
K0297.20040	20	135	40	15	80	M20	36	30	0,400

Clamp Rests



Material:
Tempered steel

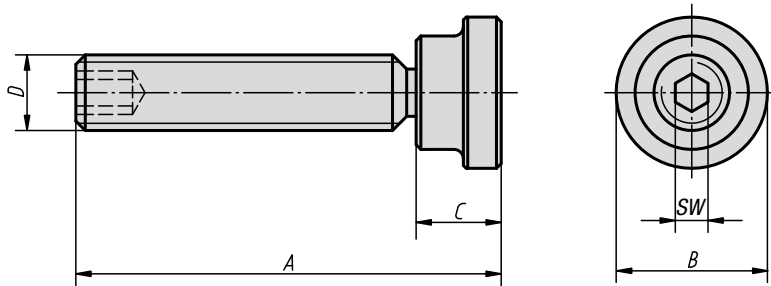
Surface finish:
heat-treated and black oxide finish

Sample order:
K0828.08041

Clamp Rests

Order No.	A	B	C	D	E	F	Approx. weight kg
K0828.08041	M8	8	41	17	30	7	0,027
K0828.08051	M8	8	51	17	40	7	0,029
K0828.12057	M12	12	57	24	43	10	0,08
K0828.12072	M12	12	72	24	58	10	0,091
K0828.16057	M16	16	57	30	43	10	0,142
K0828.16072	M16	16	72	30	58	10	0,16

Thrust Pad Bolts



Thrust Pad Bolts

Order No.	A	B	C	D	SW	Approx. weight kg
K0829.08X43	43	16	9	M8	4	0,022
K0829.08X63	63	16	9	M8	4	0,028
K0829.10X64	64	20	11	M10	5	0,045
K0829.10X84	84	20	11	M10	5	0,055
K0829.12X65	65	25	13	M12	6	0,07
K0829.12X85	85	25	13	M12	6	0,09
K0829.12X105	105	25	13	M12	6	0,1
K0829.16X85	85	32	15	M16	8	0,154
K0829.16X105	105	32	15	M16	8	0,18
K0829.16X130	130	32	15	M16	8	0,215
K0829.20X105	105	40	16	M20	10	0,295
K0829.20X130	130	40	16	M20	10	0,342
K0829.20X155	155	40	16	M20	10	0,395

Material, surface finish:
Pad: tempered steel, heat-treated and black oxide finish
bolt: tempered steel, heat-treated

Sample order:
K0829.08X43

Side Clamps



K0830.212
Side clamp

K0830.112
Side clamp

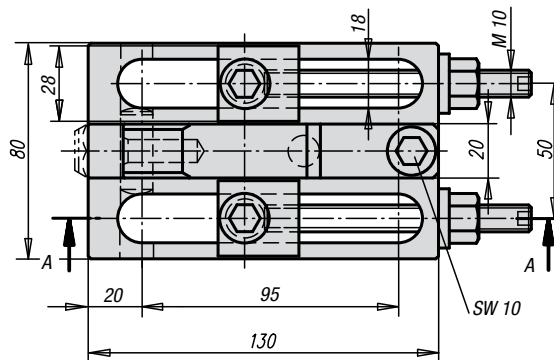
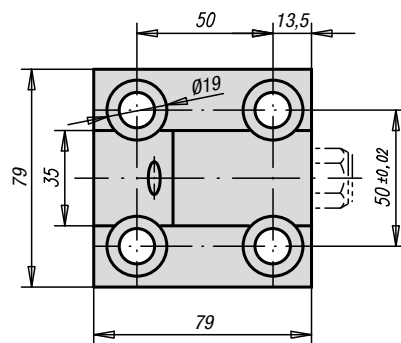
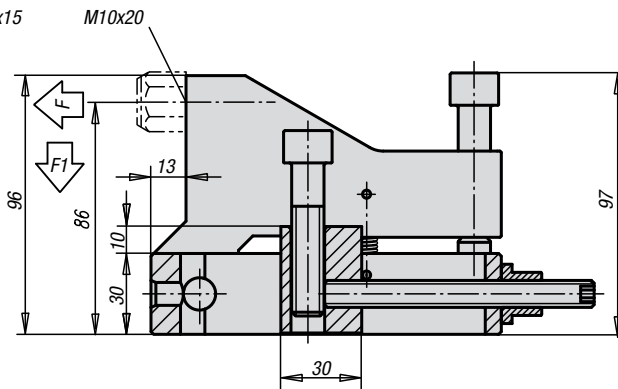
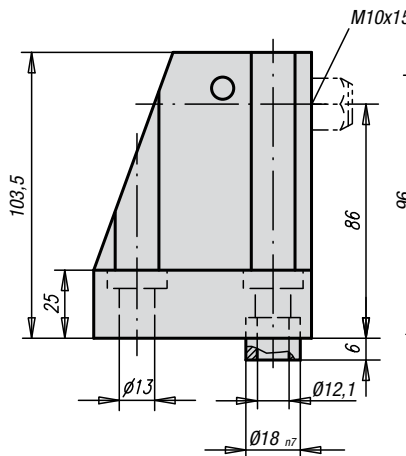
Section A-A

Material:
Body: steel 1.1191

Surface finish:
Black oxide finish;
centring sleeve hardened

Sample order:
K0830.112
(toggle locator not supplied)

Note:
This assembly, comprising the adjustable side clamp and brace, is used to clamp and hold down in a single working stage. The brace converts the clamping force into downward force and therefore guarantees that the part for machining is efficiently held down. The side clamp is fitted with 2 DIN 913 threaded pins, which prevent backward slippage during the clamping process.
Two centring sleeves for the perfect positioning of the side clamp and the brace are supplied as standard.
For suitable seats see:
K0282, K0289, K0299, K0302.



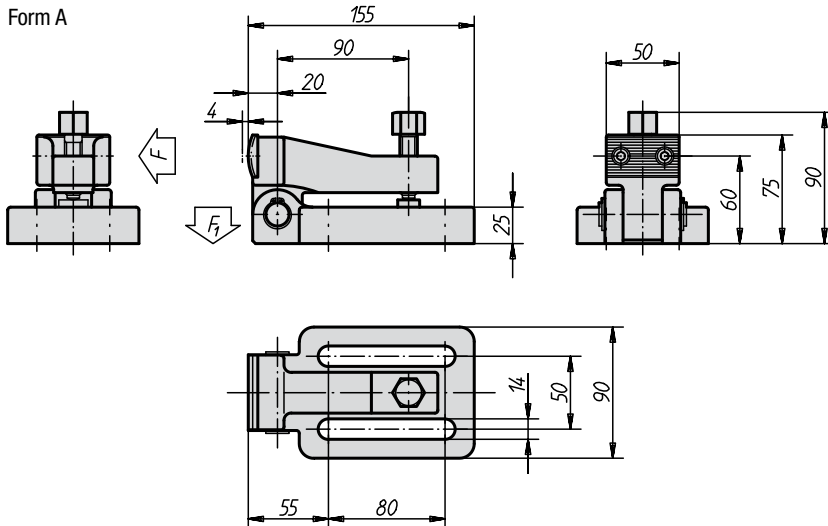
Side Clamps

Order No.	F kN	F1 kN	Approx. weight kg
K0830.112	25	5	2,500
K0830.212	22,5	4,5	2,000

Side Clamps



Form A

**Material:**

Body: nodular graphite cast iron (GJS);
jaw: hardened tempered steel

Surface finish:

Painted black;
jaw: polished

Sample order:

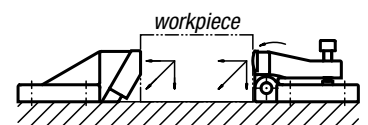
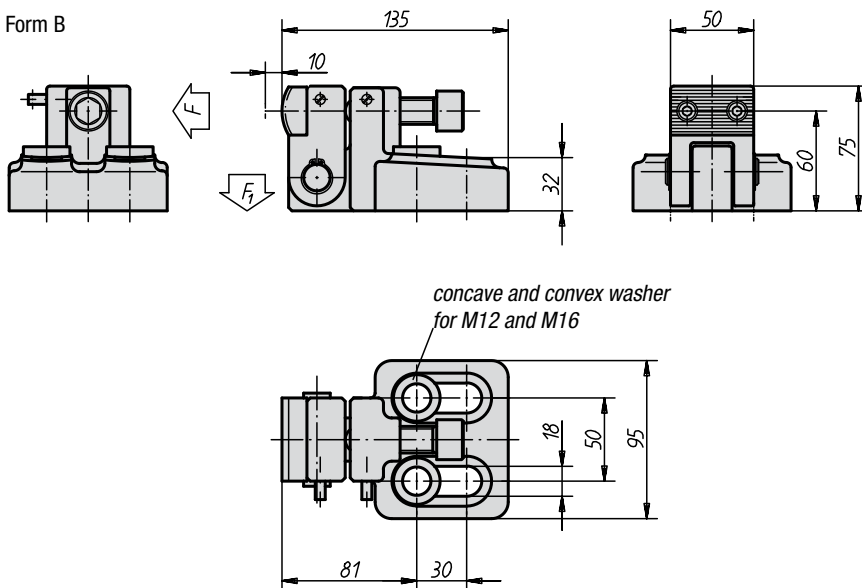
K0831.03

Note:

The narrow edge clamp presses the part for machining against the narrow edge brace, at the same time the part is prevented from lifting up.

The narrow edge clamp and brace are tightened with DIN 912 cylinder bolts. Secure clamping is guaranteed where the narrow edge clamps and braces are used in pairs.

Form B



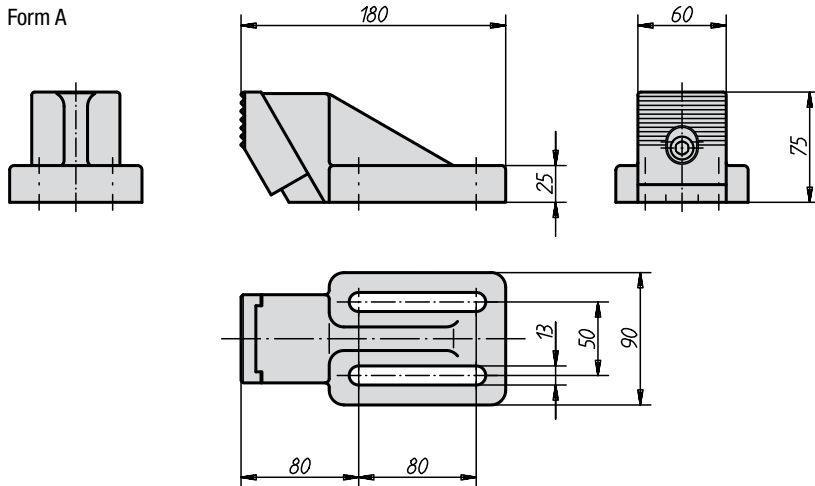
Side Clamps

Order No.	Form	F kN	F1 kN	Approx. weight kg
K0831.01	A	34,9	1,3	2,400
K0831.03	B	39	2,4	2,900

Side Stops



Form A

**Material:**

Body: nodular graphite cast iron (GJS);
jaw: hardened tempered steel

Surface finish:

Painted black;
jaw: polished

Sample order:

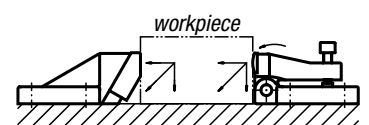
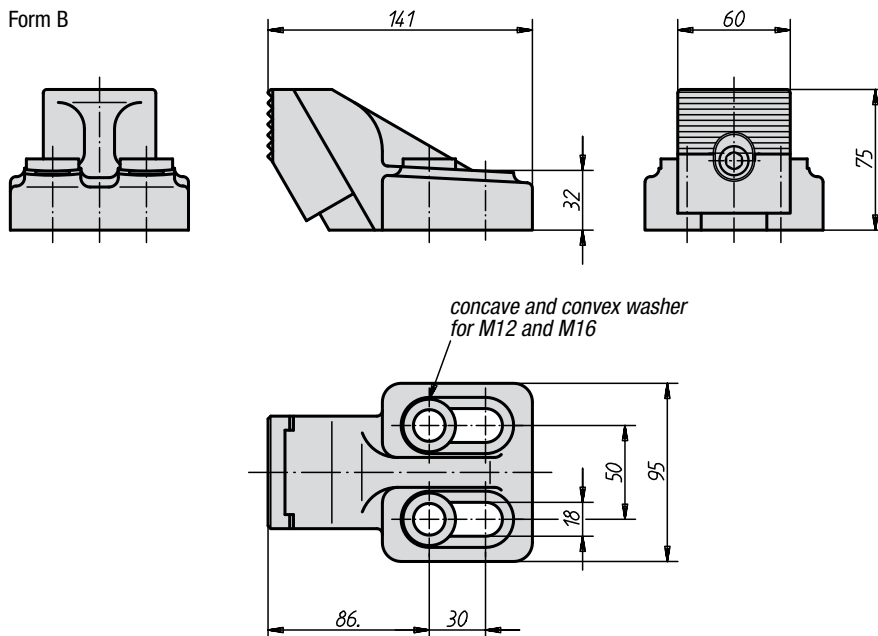
K0832.01

Note:

The narrow edge clamp presses the part for machining against the narrow edge brace, at the same time the part is prevented from lifting up.

The narrow edge clamp and brace are tightened with DIN 912 cylinder bolts. Secure clamping is guaranteed where the narrow edge clamps and braces are used in pairs.

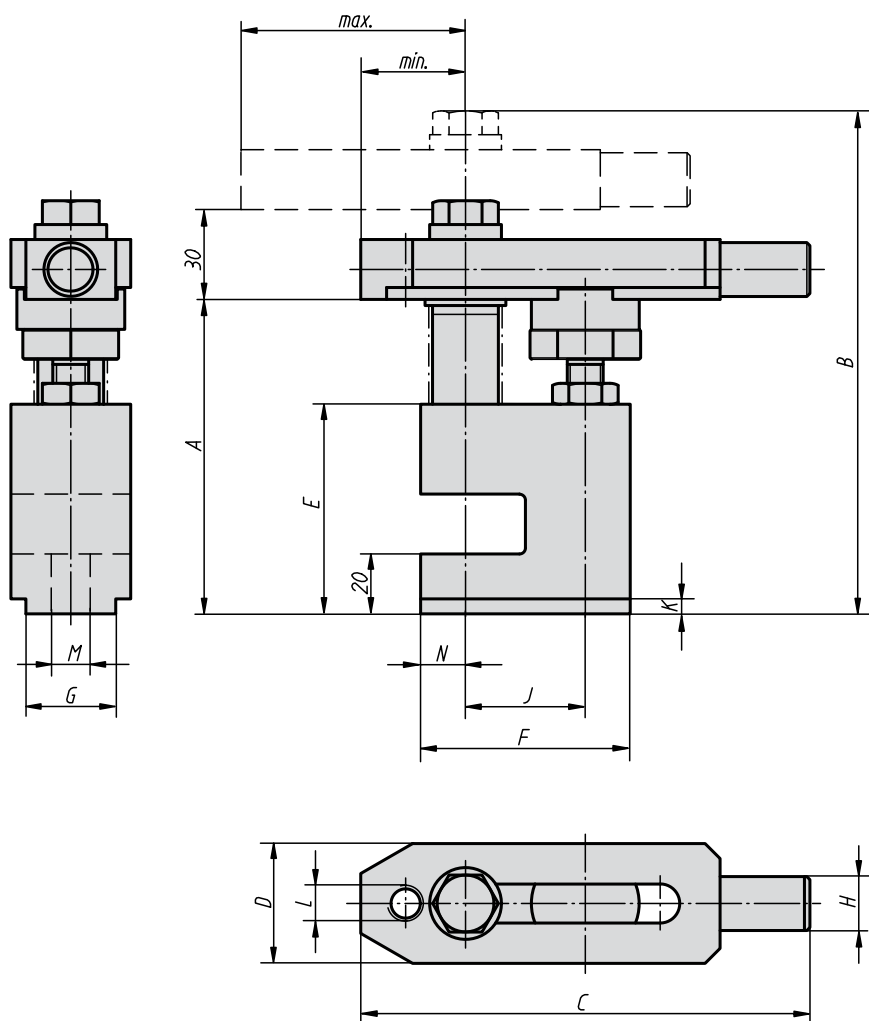
Form B



Side Stops

Order No.	Form	Approx. weight kg
K0832.01	A	2,900
K0832.02	B	2,400

Pin-End Clamps



Material, surface finish:

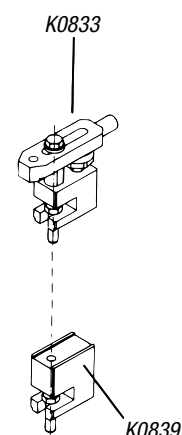
Body: tempered steel, black oxide finish;
strap: tempered steel, heat-treated and black oxide finish;
clamping screw: tempered steel, heat-treated and black oxide finish

Sample order:

K0833.12105

Note:

Both sides of the strap can be used for clamping workpieces. The Pin-End Clamps can be combined with other fixturing elements, such as K0839, K0821, K0307.



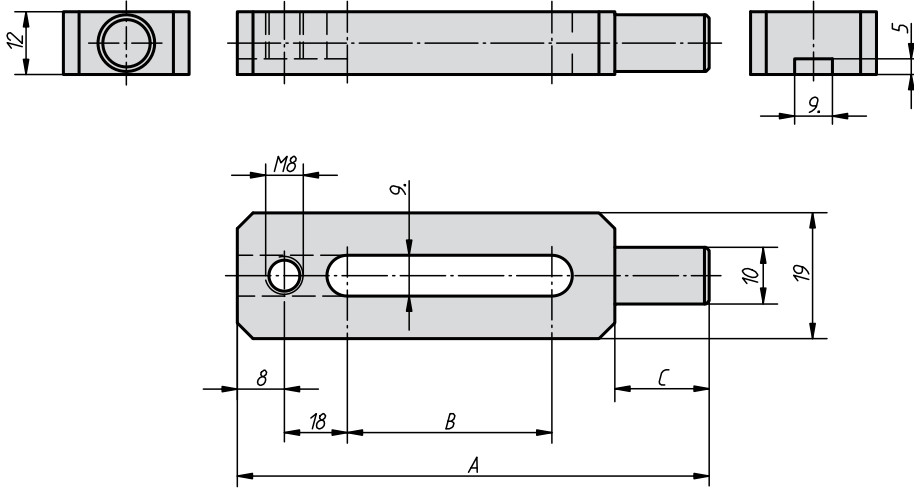
Pin-End Clamps

Order No.	A	B	C	D	E	F	G	H	J	K	L	M	N	min.	max.	Approx. weight kg
K0833.12105	105	168	150	40	70	70	30	18	40	5	M12	13	15	35	75	2,1
K0833.16110	110	188	190	50	75	90	40	24	50	5	M16	17	20	45	95	3,975

Pin-End Straps



K0834.08063
K0834.08075



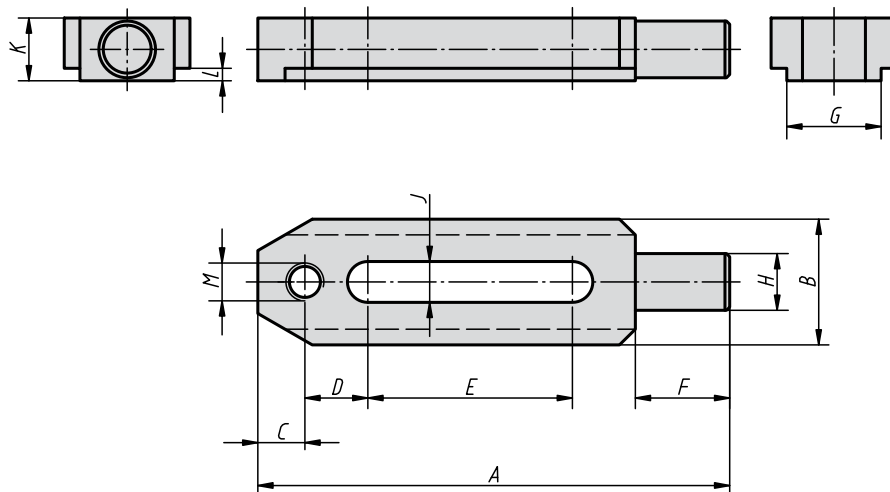
Material:
Tempered steel

Surface finish:
heat-treated and black oxide finish

Sample order:
K0834.08063

Note:
Pin-End Straps can be used in conjunction with other
fixturing elements, such as K0839, K0821, K0307.

K0834.12150
K0834.16190



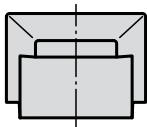
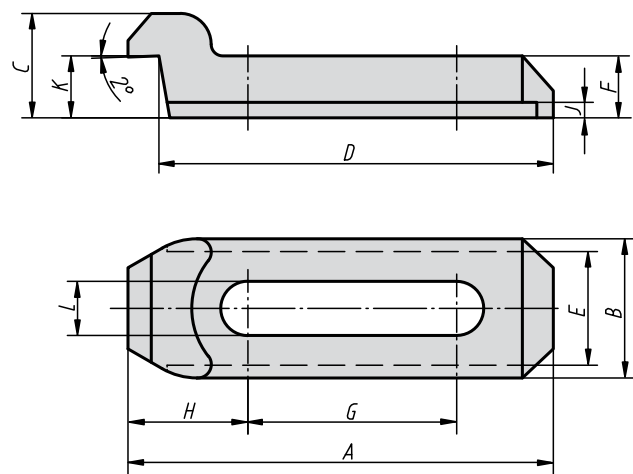
Pin-End Straps

Order No.	A	B	C	Approx. weight kg
K0834.08063	63	15	14	0,065
K0834.08075	75	20	20	0,075

Pin-End Straps

Order No.	A	B	C	D	E	F	G	H	J	K	L	M	Approx. weight kg
K0834.12150	150	40	15	20	65	30	30	18	13	20	4	M12	0,57
K0834.16190	190	50	20	25	80	36	40	24	18	28	5	M16	1,268

Goose-Neck Straps



Material:
Tempered steel 1.7225

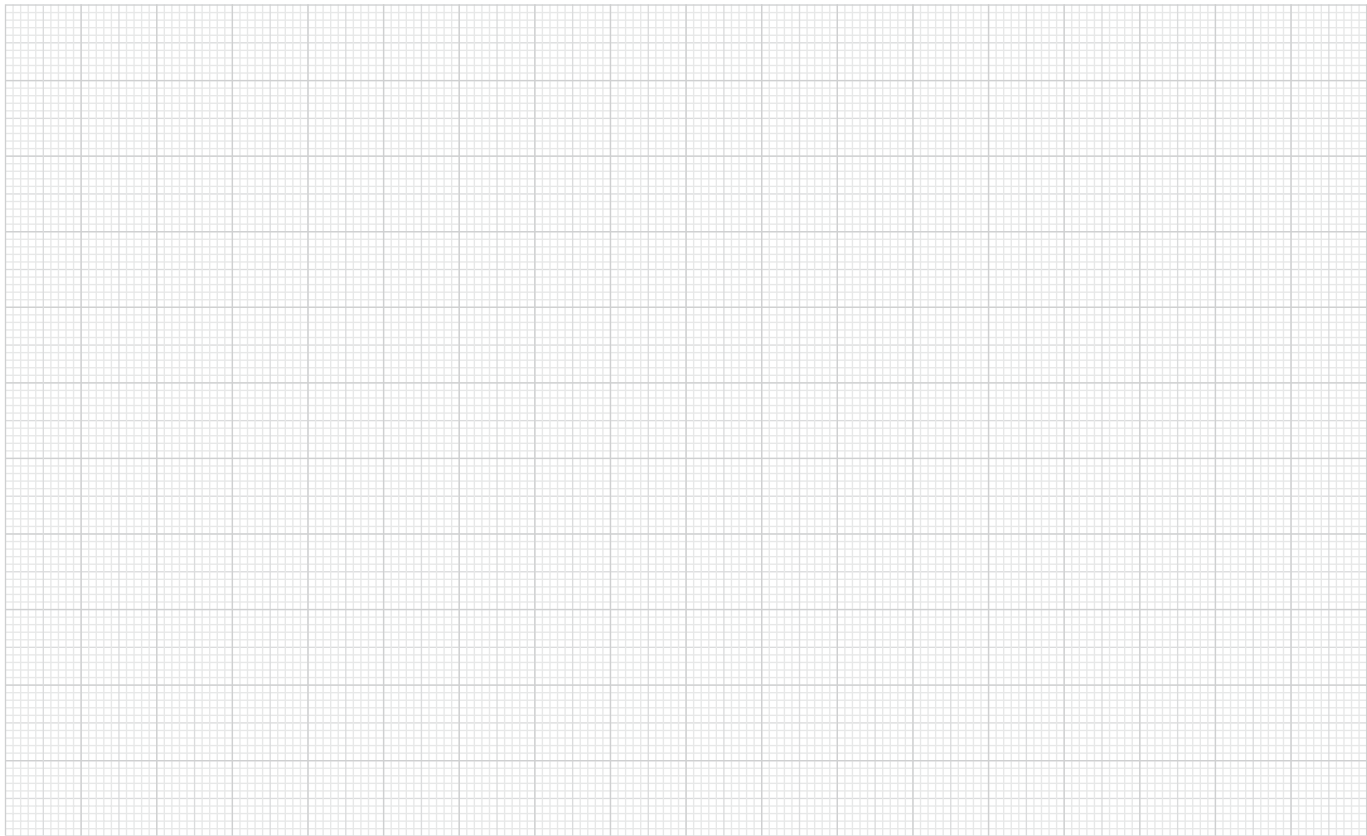
Surface finish:
heat-treated 1000 N/mm2 and black oxide finish

Sample order:
K0002.10

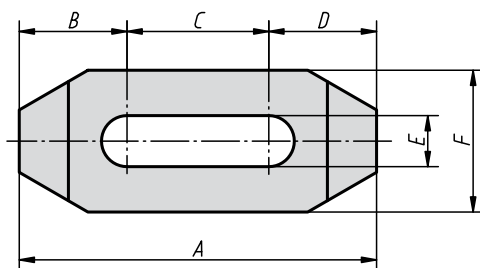
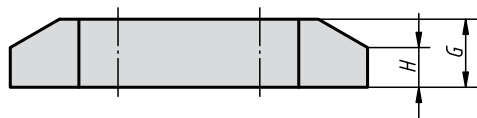
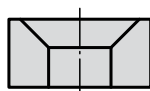
Goose-Neck Straps

Order No.	A	B	C	D	E	F	G	H	J	K	L	Approx. weight kg
K0002.10	110	36	27	102	29	16	54	31	4	15	13	0,355
K0002.16	165	50	50	145	40	25	70	60	5	24,5	18	1,22

Notes



Straps



Material:

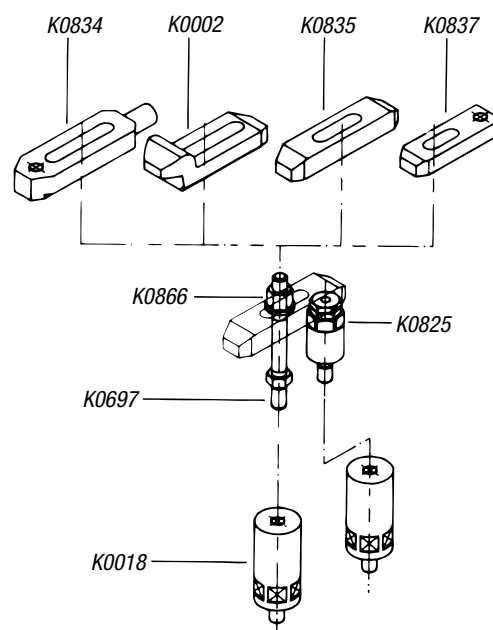
Tempered steel

Surface finish:

heat-treated and black oxide finish

Sample order:

K0835.08063



Straps

Order No.	A	B	C	D	E	F	G	H	Approx. weight kg
K0835.08063	63	19	25	19	9	25	12	7	0,1
K0835.08080	80	24	32	24	9	25	12	7	0,135
K0835.08100	100	30	40	30	9	25	16	10	0,23
K0835.10063	63	19	25	19	11	25	12	7	0,095
K0835.10080	80	24	32	24	11	25	16	10	0,17
K0835.10100	100	30	40	30	11	25	16	10	0,22
K0835.10125	125	40	45	40	11	32	19	13	0,475
K0835.10160	160	55	50	55	11	32	19	13	0,63
K0835.12063	63	19	25	19	13	32	16	10	0,165
K0835.12080	80	24	32	24	13	32	16	10	0,22
K0835.12100	100	30	40	30	13	32	19	13	0,345
K0835.12125	125	40	45	40	13	32	19	13	0,45
K0835.12160	160	55	50	55	13	32	25	15	0,78
K0835.16080	80	27,5	25	27,5	17	32	16	10	0,21
K0835.16100	100	34	32	34	17	38	19	13	0,41
K0835.16125	125	42,5	40	42,5	17	38	19	13	0,535
K0835.16160	160	55	50	55	17	38	25	15	0,905
K0835.20100	100	34	32	34	21	38	19	13	0,375
K0835.20125	125	42,5	40	42,5	21	38	25	15	0,62
K0835.20160	160	55	50	55	21	38	25	15	0,84
K0835.20200	200	68,5	63	68,5	21	50	25	15	1,515

Adjustable Goose-Neck Straps

double-ended

**Material:**

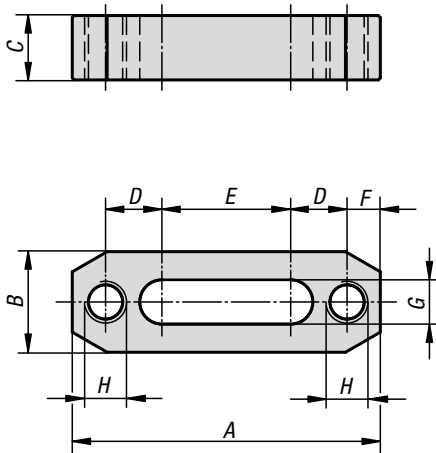
Tempered steel 1.0503

Surface finish:

heat-treated and black oxide finish

Sample order:

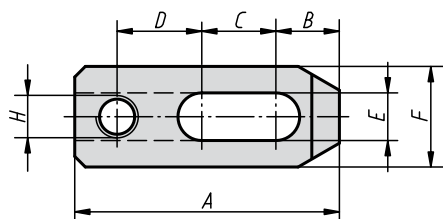
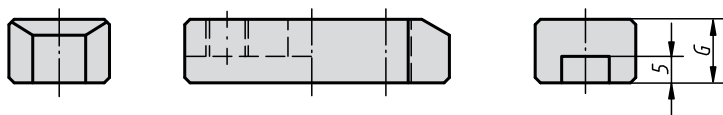
K0836.08063



Adjustable Goose-Neck Straps double-ended

Order No.	A	B	C	D	E	F	G	H	Clamping Force N	Tightening torque max. Nm	Approx. weight kg
K0836.08063	63	25	12	12	25	7	9	M8	6900	22	0,095
K0836.08080	80	25	12	17	32	7	9	M8	6900	22	0,13
K0836.10080	80	25	16	14	32	10	11	M10	11300	45	0,15
K0836.10100	100	25	16	20	40	10	11	M10	11300	45	0,2
K0836.10125	125	25	16	30	45	10	11	M10	11300	45	0,275
K0836.12100	100	32	19	20	40	10	13	M12	16700	80	0,32
K0836.12125	125	32	19	30	45	10	13	M12	16700	80	0,425
K0836.12160	160	32	22	45	50	10	13	M12	16700	80	0,675
K0836.16125	125	38	19	30,5	40	12	17	M16	18000	115	0,48
K0836.16160	160	38	22	43	50	12	17	M16	18000	115	0,76
K0836.16200	200	38	25	58	60	12	17	M16	20200	129	1,125
K0836.20125	125	38	22	27,5	40	15	21	M20	19700	157	0,47
K0836.20160	160	38	22	40	50	15	21	M20	19700	157	0,665
K0836.20200	200	50	25	55	60	15	21	M20	22900	183	1,445

Adjustable Straps

**Material:**

Tempered steel

Surface finish:

heat-treated and black oxide finish

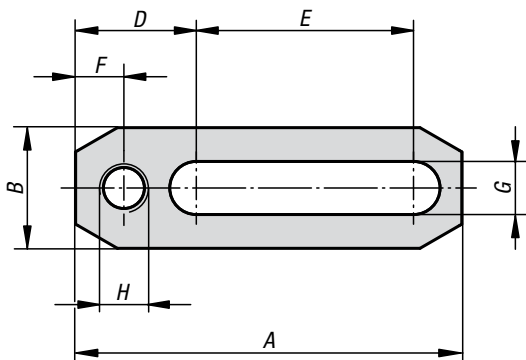
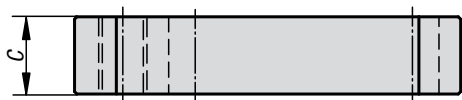
Sample order:

K0837.08040

Adjustable Straps

Order No.	A	B	C	D	E	F	G	H	Approx. weight kg
K0837.08040	40	10	6	16	9	19	12	M8	0,045
K0837.08050	50	12	14	16	9	19	12	M8	0,055
K0837.08063	63	12	27	16	9	19	12	M8	0,07
K0837.10050	50	12	8	20	11	25	12	M10	0,08
K0837.10063	63	15	18	20	11	25	12	M10	0,1
K0837.10080	80	15	32	23	11	25	16	M10	0,17
K0837.10100	100	15	40	35	11	25	16	M10	0,24
K0837.10125	125	15	50	50	11	25	16	M10	0,27
K0837.12063	63	14	14	24	13	32	16	M12	0,18
K0837.12080	80	20	25	24	13	32	16	M12	0,225
K0837.12100	100	20	40	29	13	32	19	M12	0,365
K0837.12125	125	20	50	44	13	32	19	M12	0,43
K0837.12160	160	20	60	69	13	32	19	M12	0,555
K0837.16080	80	18	17	30	17	38	19	M16	0,31
K0837.16100	100	25	30	30	17	38	25	M16	0,525
K0837.16125	125	25	45	40	17	38	25	M16	0,65
K0837.16160	160	25	65	55	17	38	25	M16	0,84
K0837.20160	160	32	60	52	21	50	25	M20	1,13
K0837.20200	200	32	80	72	21	50	25	M20	1,425

Adjustable Straps



Material:

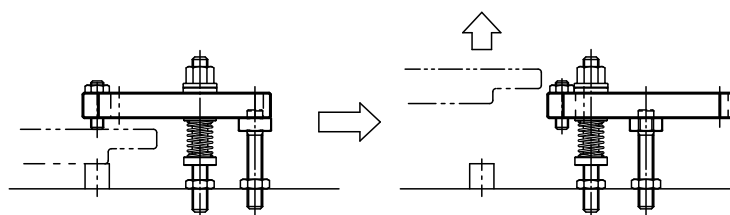
Tempered steel 1.0503

Surface finish:

heat-treated and black oxide finish

Sample order:

K0838.08063



Adjustable Straps

Order No.	A	B	C	D	E	F	G	H	Clamping Force N	Tightening torque max. Nm	Approx. weight kg
K0838.08063	63	19	12	19	36	7	9	M8	3200-8000	17	0,065
K0838.08080	80	19	12	19	53	7	9	M8	3500-8600	17	0,080
K0838.10080	80	25	16	25	45	10	11	M10	6800-16900	45	0,160
K0838.10100	100	25	16	25	65	10	11	M10	7300-18300	45	0,190
K0838.10125	125	25	16	25	90	10	11	M10	7700-19300	45	0,235
K0838.12100	100	32	19	28	60	10	13	M12	10200-25600	80	0,300
K0838.12125	125	32	19	28	85	10	13	M12	11000-27500	80	0,370
K0838.12160	160	32	19	28	120	10	13	M12	11600-29000	80	0,470
K0838.16125	125	38	25	36	73	12	17	M16	12100-30300	129	0,580
K0838.16160	160	38	25	36	108	12	17	M16	13200-33000	129	0,720
K0838.16200	200	38	25	36	148	12	17	M16	13900-34700	129	0,890
K0838.20160	160	50	25	45	90	15	21	M20	15000-36000	183	1,020
K0838.20200	200	50	32	45	130	15	21	M20	16000-37000	183	1,600
K0838.20250	250	50	32	45	180	15	21	M20	17000-38000	183	1,960

Extensions

Form P

**Material:**

Tempered steel.

Surface finish:

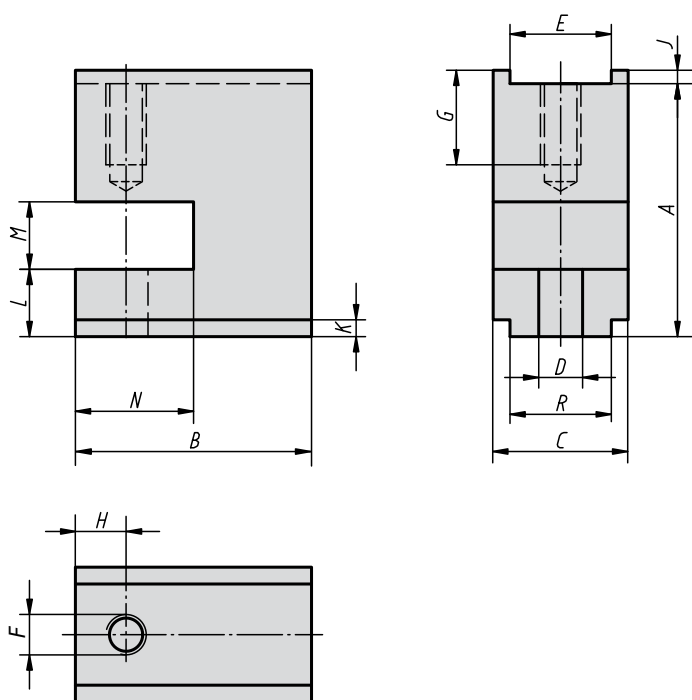
black oxide finish

Sample order:

K0839.08035

Note:

Extensions Form P are only used in conjunction with Pin-End or Goose-Neck Clamps for clamping tall workpieces.



Extensions Form P

Order No.	A	B	C	D	E	F	G	H	J	K	L	M	N	R	Approx. weight kg
K0839.08035	35,5	38	19	9	15	M8	15,5	8	1,5	2	8	12	20	15	0,15
K0839.08065	63,5	38	19	9	15	M8	20	8	1,5	2	8	12	20	15	0,315
K0839.12075	75	70	40	13	30	M12	24	15	4	5	20	20	35	30	1,355
K0839.12100	100	70	40	13	30	M12	24	15	3	5	20	20	35	30	1,89
K0839.16075	75	90	50	17	40	M16	30	20	4	5	20	20	45	40	2,1
K0839.16100	100	90	50	17	40	M16	30	20	3	5	20	20	45	40	2,935

Compact Clamping System



Material:

Base body: tempered steel

Tension levers: tempered, heat-treated steel

Surface finish:

Base body: coated black

Tension levers: coated silver

Sample order:

K0840.012

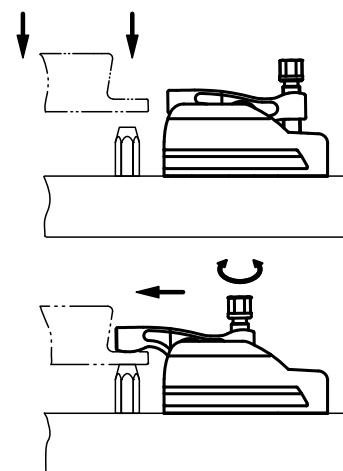
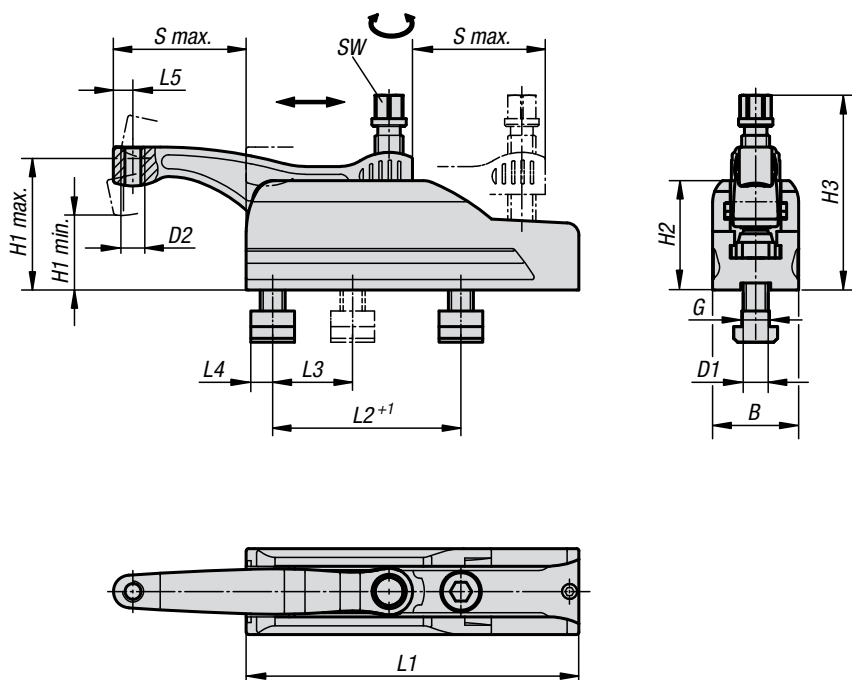
Note:

The compact clamping system is suitable for universal applications on machined and unmachined parts. Thanks to the self-locking tension lever, the application situation can occur independently.

- tension lever for unimpeded parts replacement fully retractable in the housing.
- tension lever with receiving thread for various clamping devices, e.g. ball pressure screws, toggle locators.
- insensitive to dirt and swarf.

Accessories:

- continuous expansion of the clamping range via vertical stands K0840.112 and K0840.116



Compact Clamping System

Order No.	B	D1	D2	H1 min.	H1 max.	H2	H3	L1	L2	L3	L4	L5	S max.	SW	Tightening torque max. Nm	Clamping force max. kN	Approx. weight kg
K0840.012	45	M12x30 M8	14	40	60	59	95	134	70	50	13	10	43	16	45	15	1,813
K0840.016	55	M16x35 M12	18	47	85	70	126	213	120	50	17	12,5	85	18	75	25	4,274

Vertical Stands

for compact clamping system



Material:

Tempered steel

Surface finish:

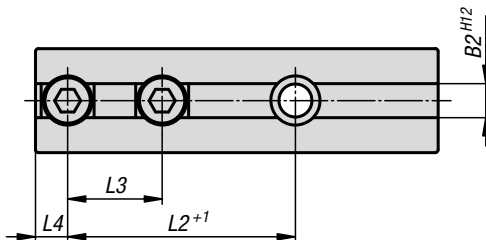
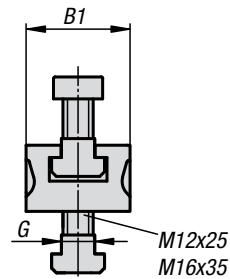
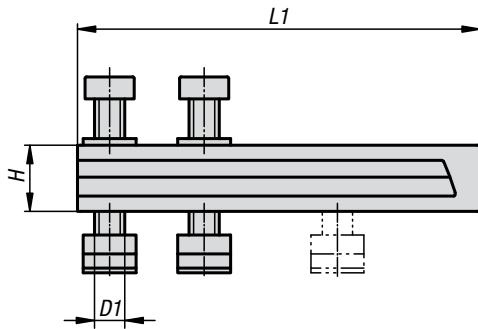
coated black

Sample order:

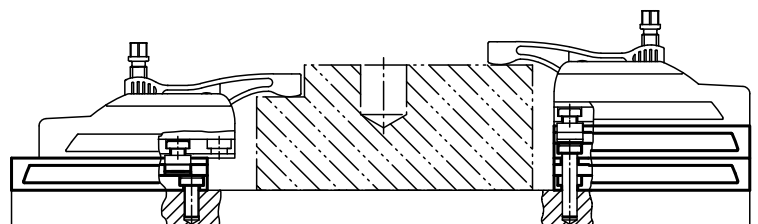
K0840.112

Note:

- continuous expansion of the clamping range
- T-slot in the height adapter enables precise positioning by moving the compact clamp with preset grid spacing
- can be expanded to any height



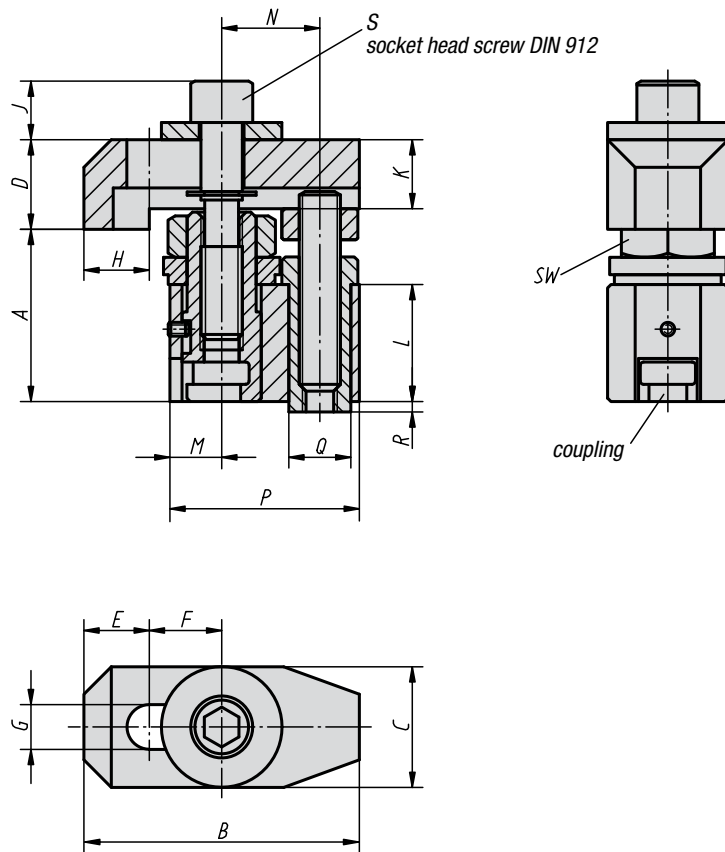
When setting up multiple height adapter fix the fastening screws by ISO 10 642 or DIN 7984 to the dimension of H extended screws to replace.



Vertical Stands for compact clamping system

Order No.	B1	B2	D1	G for T-slot	H	L1	L2	L3	L4	Approx. weight g
K0840.112	45	14	M12x20	14	20	134	70	50	13	874
K0840.116	55	18	M16x25	18	35	213	120	50	17	2534

Clamping Units

**Material:**

Height Spacer and Universal Clamp in high-strength aluminium
Accessories tempered steel

Surface finish:

Height Spacer and Universal Clamp anodized
Accessories black oxide finish

Sample order:

K0841.12050055

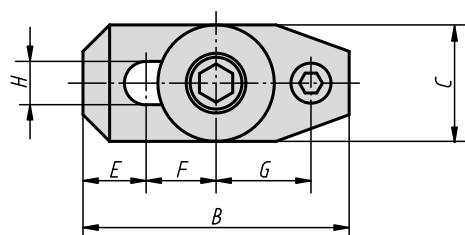
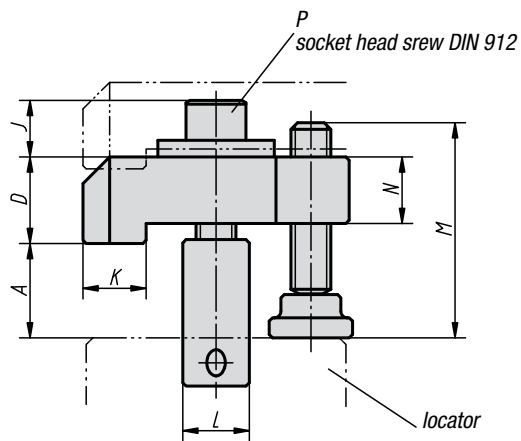
Note:

Clamping Units are combined with Height Spacers and Locators to form a fixture assembly. The use of Height Spacers allows the Clamping Unit to be extended almost indefinitely.

Clamping Units

Order No.	Surface finish	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	SW	Approx. weight kg
K0841.12050055	short	50-75	80	35	26	19	21	13	19	17	20	34	15	28,5	55	18	3	M12x63	27	0,55
K0841.16055068	short	55-80	100	45	34	24	26	17	24	22	27	36,5	18	35	68	22	4	M16x75	32	0,67
K0841.12050075	long	50-75	120	35	26	19	41	13	19	17	20	34	15	48,5	75	18	3	M12x63	27	1,04
K0841.16055093	long	55-80	150	45	34	24	51	17	24	22	27	36,5	18	60	93	22	4	M16x75	32	1,26

Universal Clamps



Material:

Universal Clamp high-strength aluminium
Accessories tempered steel

Surface finish:

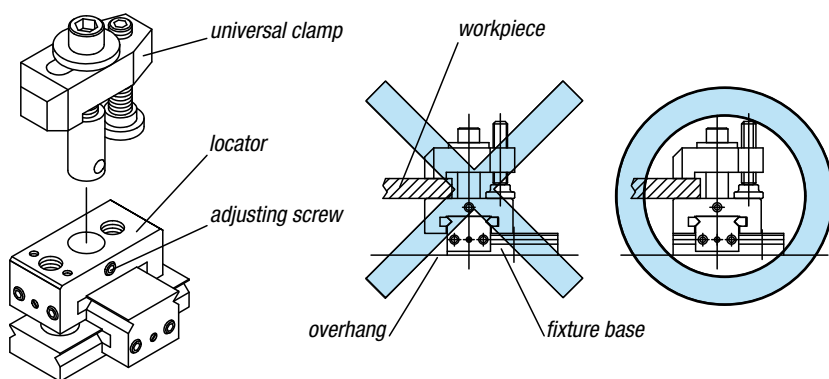
Universal clamp anodized.
Accessories black oxide finish

Sample order:

K0842.30012023

Note:

The Universal Clamp is fixed directly on a Locator.
The height of the Universal Clamp can be adjusted individually with a Socket Head Screw (Height adjustable from 23-55 mm). For clamping heights from 0-23 mm a Connecting Sleeve (K0850.700) must be used.



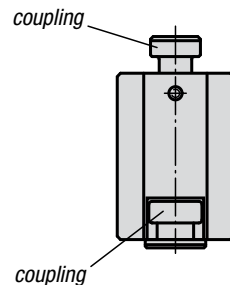
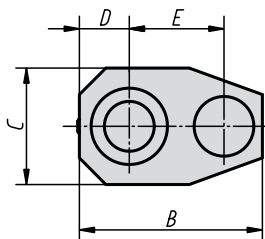
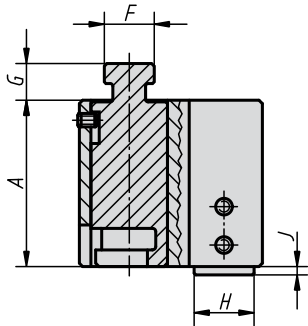
To secure the Universal Clamp tighten the adjusting screw, supplied with the clamp, on the broad side of the upper guide.

The upper part of the Locator may not project over the edge of the fixture base if this is used to support a workpiece.

Universal Clamps

Order No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Approx. weight kg
K0842.30012023	23-50	80	35	26	19	21	28,5	13	17	19	20	65	20	M12x63	0,35
K0842.30016025	25-55	100	45	34	24	26	35	17	22	24	25	85	27	M16x75	0,74

Height Spacers

**Material:**

Height Spacers in high-strength aluminium
Connecting Bolt and locating screw tempered steel

Surface finish:

Height Spacers anodized
Connecting Bolt and locating screw black oxide finish

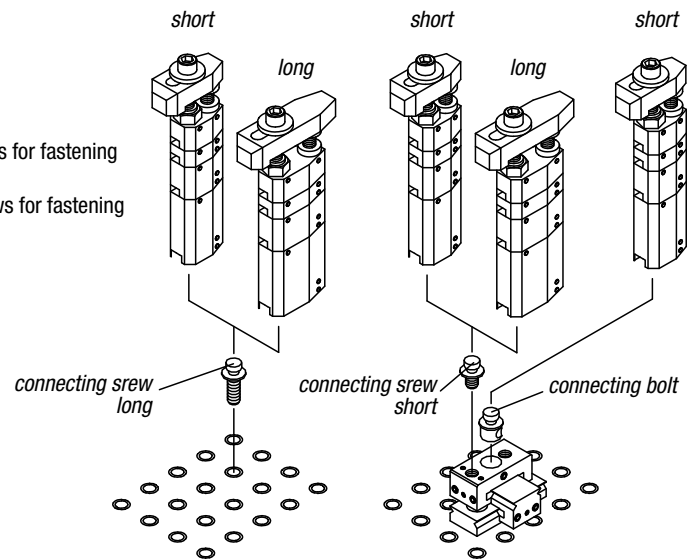
Sample order:

K0843.12025055

Note:

The use of Height Spacers allows the clamping height of the Clamping Unit to be extended almost indefinitely.

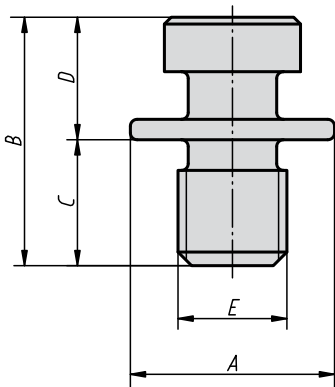
Use long Connecting screws for fastening directly on the Grid Plate.
Use short Connecting screws for fastening on a Locator.



Height Spacers

Order No.	Surface finish	A	B	C	D	E	F	G	H	J	Matching Clamping Units	Approx. weight kg
K0843.12025055	short	25	55	35	15	28,5	20	8	18	3	K0841.12050055	0,17
K0843.12050055	short	50	55	35	15	28,5	20	8	18	3	K0841.12050055	0,31
K0843.12100055	short	100	55	35	15	28,5	20	8	18	3	K0841.12050055	0,59
K0843.16025068	short	25	68	45	18	35	25	9	22	4	K0841.16055068	0,21
K0843.16050068	short	50	68	45	18	35	25	9	22	4	K0841.16055068	0,4
K0843.16100068	short	100	68	45	18	35	25	9	22	4	K0841.16055068	0,76
K0843.12025075	long	25	75	35	15	48,5	20	8	18	3	K0841.12050075	0,27
K0843.12050075	long	50	75	35	15	48,5	20	8	18	3	K0841.12050075	0,49
K0843.12100075	long	100	75	35	15	48,5	20	8	18	3	K0841.12050075	0,94
K0843.16025093	long	25	93	45	18	60	25	9	22	4	K0841.16055093	0,34
K0843.16050093	long	50	93	45	18	60	25	9	22	4	K0841.16055093	0,63
K0843.16100093	long	100	93	45	18	60	25	9	22	4	K0841.16055093	1,22

Connecting Screws short



Material:
Tempered steel

Surface finish:
black oxide finish

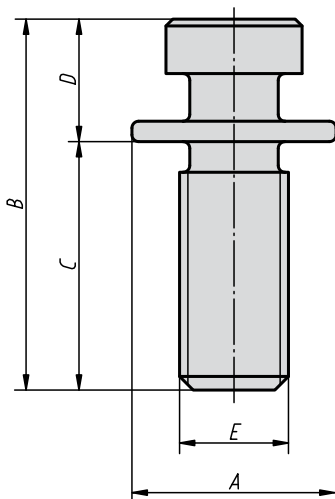
Sample order:
K0844.12020

Note:
The Connecting Screws, short, are used for fast locating and clamping of the Clamping Units on the Locators.
See application example K0843.

Connecting Screws short

Order No.	A	B	C	D	E	Approx. weight kg
K0844.12020	23	27,5	14	13,5	M12	0,03
K0844.16025	28	35	19	16	M16	0,06

Connecting Screws long



Material:
Tempered steel

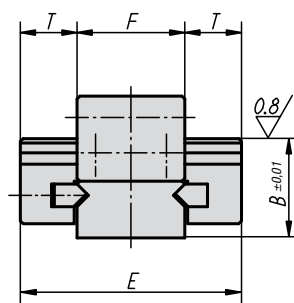
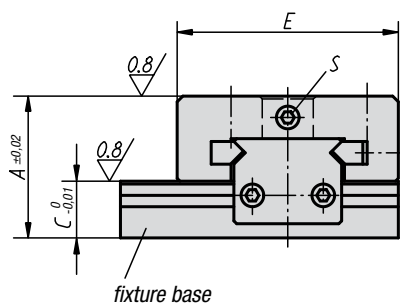
Surface finish:
black oxide finish

Sample order:
K0845.42212020

Note:
The Connecting Screws, long, are used for fast locating and clamping of the Clamping Units directly on the Removable MC Plate.
See application example K0843.

Connecting Screws long

Order No.	A	B	C	D	E	Approx. weight kg
K0845.42212020	23	43,5	30	13,5	M12	0,05
K0845.42216025	28	51	35	16	M16	0,08

**Material:**

Tempered steel

Surface finish:

black oxide finish and ground

Sample order:

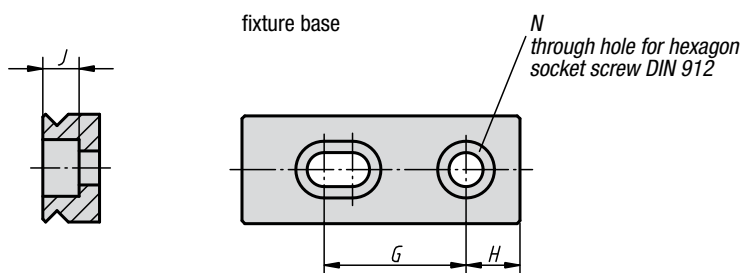
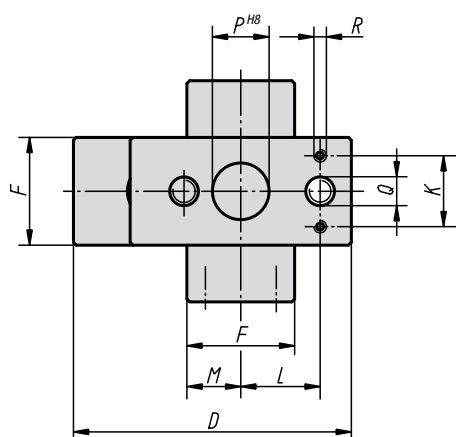
K0846.20012050

Note:

The Locator allows workpieces and fixturing units to be located at any desired point on the Removable MC Plate (travel 40-50 mm).

Graduation marks on the relevant sliding carriage not only allow the position to be read off, but also permit documentation of the mounted fixture.

The Locators are modules which can be combined with Taper Clamping Units, Stops and Clamping Units to build up flexible fixtures.



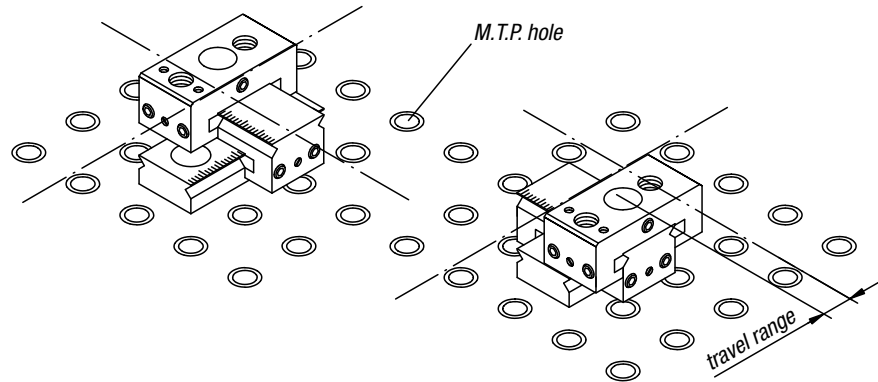
Locators

Order No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	Approx. weight kg
K0846.20012050	50	35	20	98	78	38	40-50	19	13	25	28	20	M12	20	M12x14	M5x10	M8	20	1,42
K0846.20016063	63	43	23	123	98	48	50	24	17	32	34	25	M16	25	M16x19	M6x12	M10	25	2,85

Technical Note on Locator



The Locator allows parts to be located at any desired position on the Grid Plate.

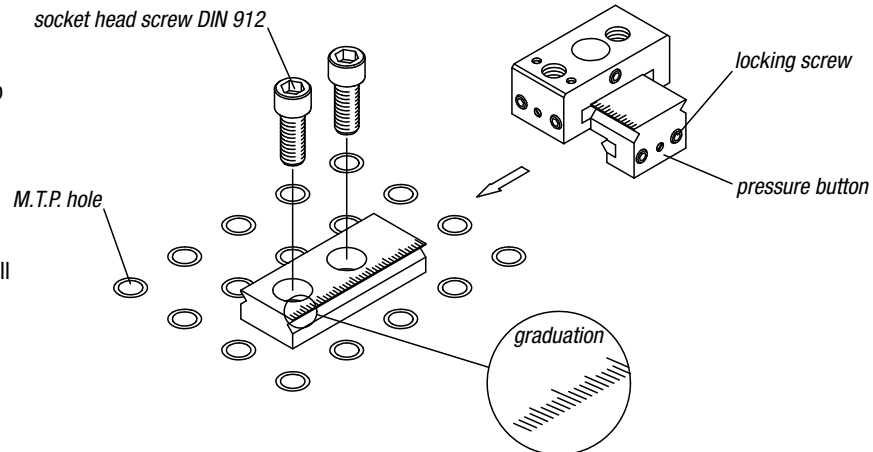


Note:

Use Socket Head Screws to secure the fixture base.

Tighten locking screw in order to clamp base unit after locating.

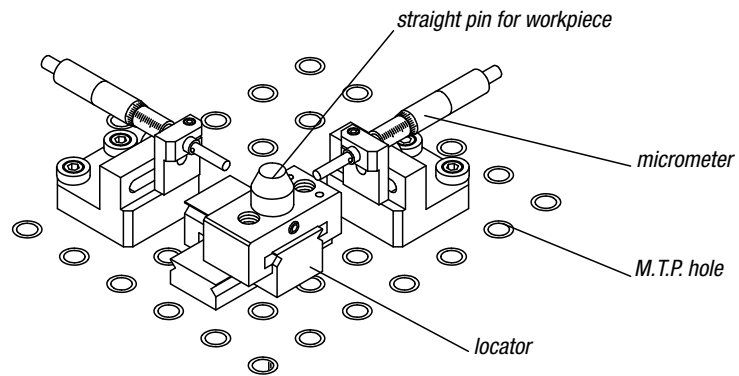
The pressure button supplied with the Locator allows you to adjust the sliding force. The graduations on the base unit allow you to read off the position as well as to document the adjustment path.



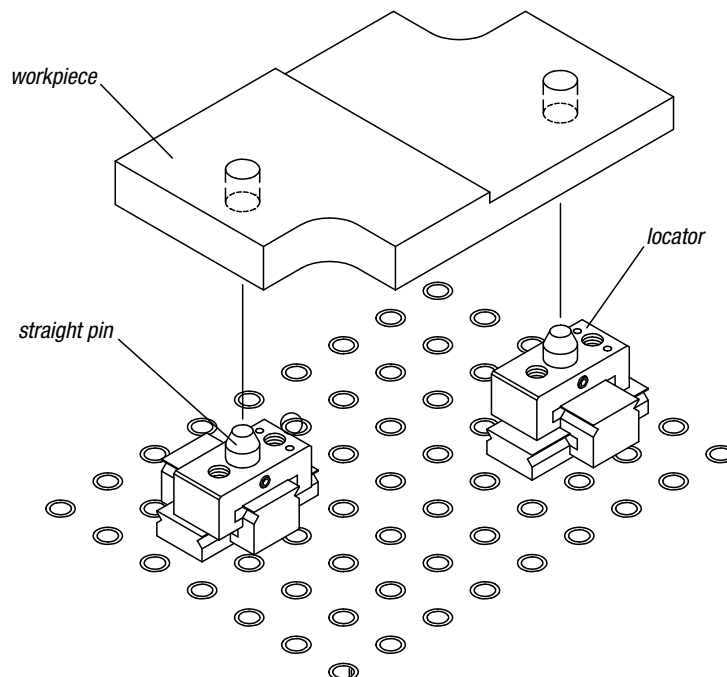
Example of Locator Unit



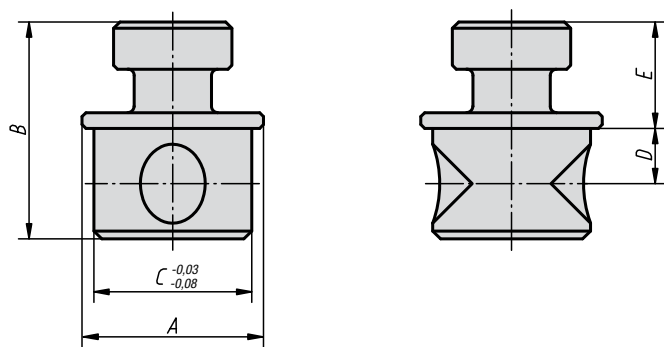
The micrometer facilitates precise locating of the straight pin on the base unit at the desired distance from an M.T.P. hole on the Grid Plate.



One application is the locating of workpieces with pre-drilled holes.



Connecting Bolts

**Material:**

Tempered steel

Surface finish:

black oxide finish

Sample order:

K0847.42012020

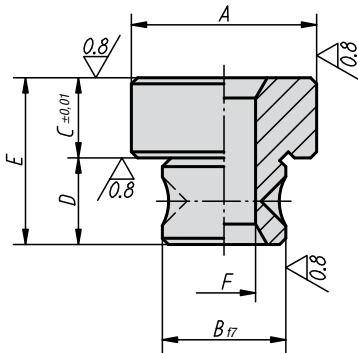
Note:

The Connecting Bolts are used for fast locating and clamping of the Clamping Units (K0841.16055068, K0841.12050055) on the Locators. See application example K0843.

Connecting Bolts

Order No.	A	B	C	D	E	Approx. weight kg
K0847.42012020	23	27,5	20	7	13,5	0,05
K0847.42016025	28	35	25	9,5	16	0,105

Thrust Bolts



Material:
Tempered steel

Surface finish:
case-hardened and ground

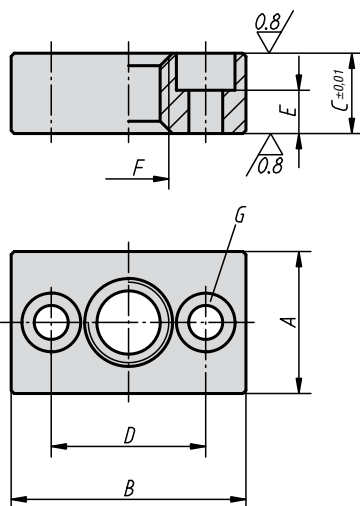
Sample order:
K0848.55012030

Note:
Thrust Bolts are used to support workpieces on Locators.

Thrust Bolts

Order No.	A	B	C	D	E	F	Approx. weight kg
K0848.55012030	30	20	13	14	27	M12	0,08
K0848.55016040	40	25	17	19	36	M16	0,19

Block Supports



Material:
Tempered steel

Surface finish:
case-hardened, ground and black oxide finish

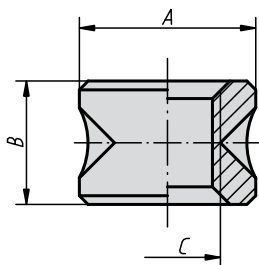
Sample order:
K0849.60012013

Note:
Block Supports are used to support workpieces on Locators.

Block Supports

Order No.	A	B	C	D	E	F	G for Socket Head Screw	Approx. weight kg
K0849.60012013	23	38	13	25	7	M12	M5	0,07
K0849.60016017	30	48	17	32	10	M16	M6	0,15

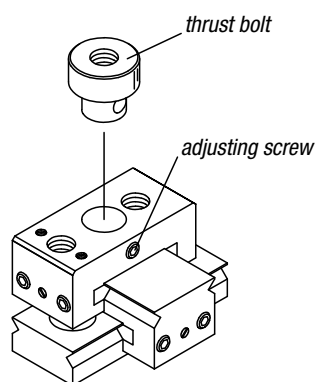
Connecting Bushes



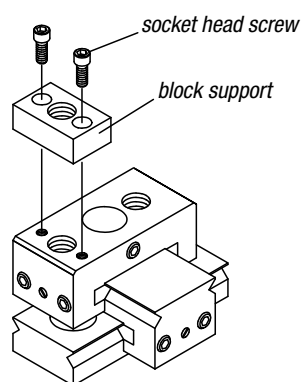
Material:
Tempered steel

Surface finish:
case-hardened and black oxide finish

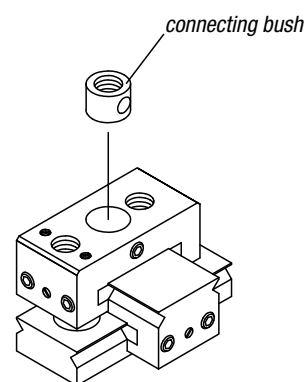
Sample order:
K0850.70012020



To fasten, tighten the adjusting screw supplied with the bush.



Secure support block on base unit with socket head screw.



To fasten, tighten the adjusting screw supplied with the bush.

Connecting Bushes

Order No.	A	B	C	Approx. weight kg
K0850.70012020	20	14	M12	0,02
K0850.70016025	25	18	M16	0,04

Hook Clamps



Form A

Form B

Material:

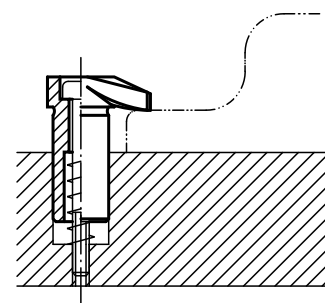
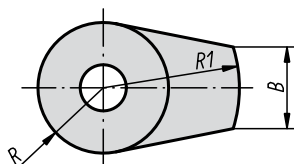
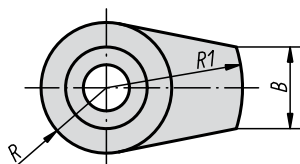
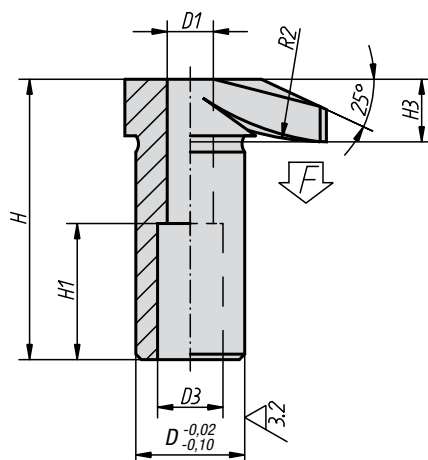
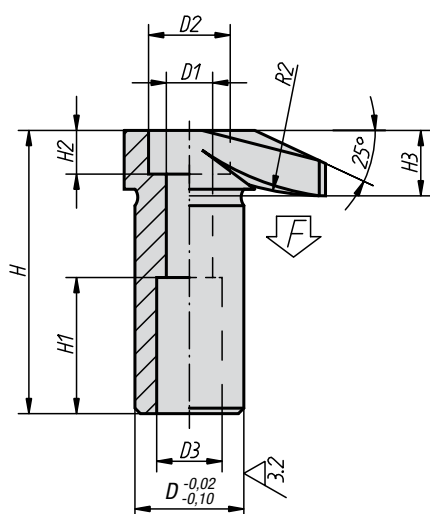
Tempered steel, heat-treated

Surface finish:

Black oxide finish

Sample order:

K0012.10



Hook Clamps

Order No.	Form	D	D1	D2	D3	H	H1	H2	H3	B	R	R1	R2	F max. kN	Approx. weight kg
K0012.06	A	16	6,5	11	10	42	20	6	10	11	9	20	30	4,8	0,052
K0012.08	A	20	8,5	15	12	52	25	8	12	15	12	25	50	8,8	0,111
K0012.10	A	25	10,5	18	14	66	32	10	16	17	14	32	60	13,9	0,230
K0012.12	A	32	12,5	20	17	83	40	12	20	20	18	40	80	20,2	0,472

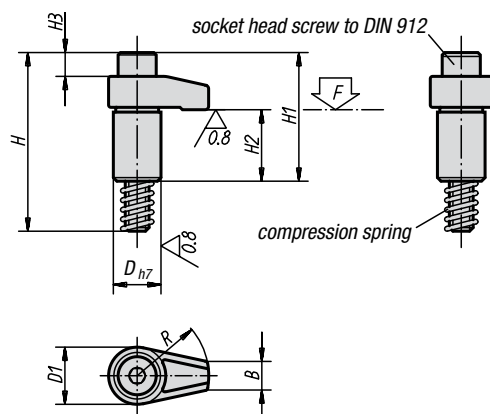
Order No.	Form	D	D1	D3	H	H1	H3	B	R	R1	R2	F max. kN	Approx. weight kg
K0012.106	B	16	6,5	10	41,5	20	9,5	11	9	20	30	4,8	0,060
K0012.108	B	20	8,5	12	51,5	25	11,5	15	12	25	50	8,8	0,119
K0012.110	B	25	10,5	14	65,5	32	15,5	17	14	32	60	13,9	0,238
K0012.112	B	32	12,5	17	82,5	40	19,5	20	18	40	80	20,2	0,492

Ground Hook Clamps

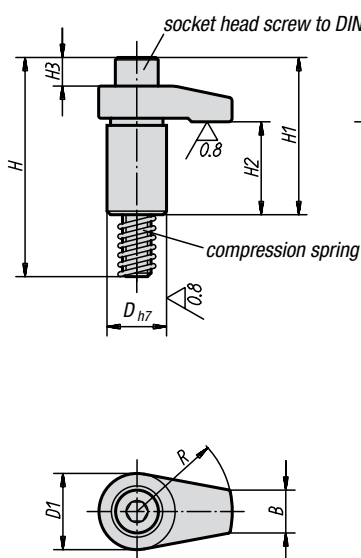
Form A/B/C



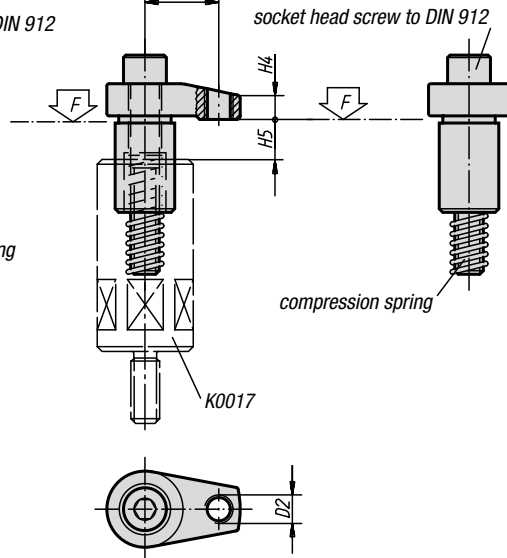
Form A



Form B



Form C

**Material:**

Tempered, heat-treated steel

Surface finish:

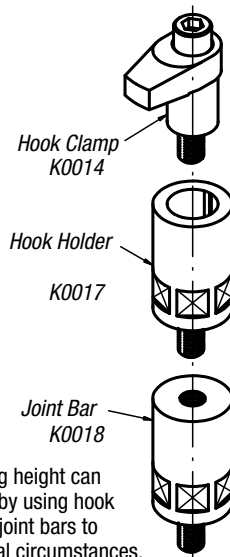
Black oxide finish, shaft diameter ground

Sample order:

K0014.216040

Note:

The stated clamping forces and tightening torques are valid within the stated clamping range (H5).

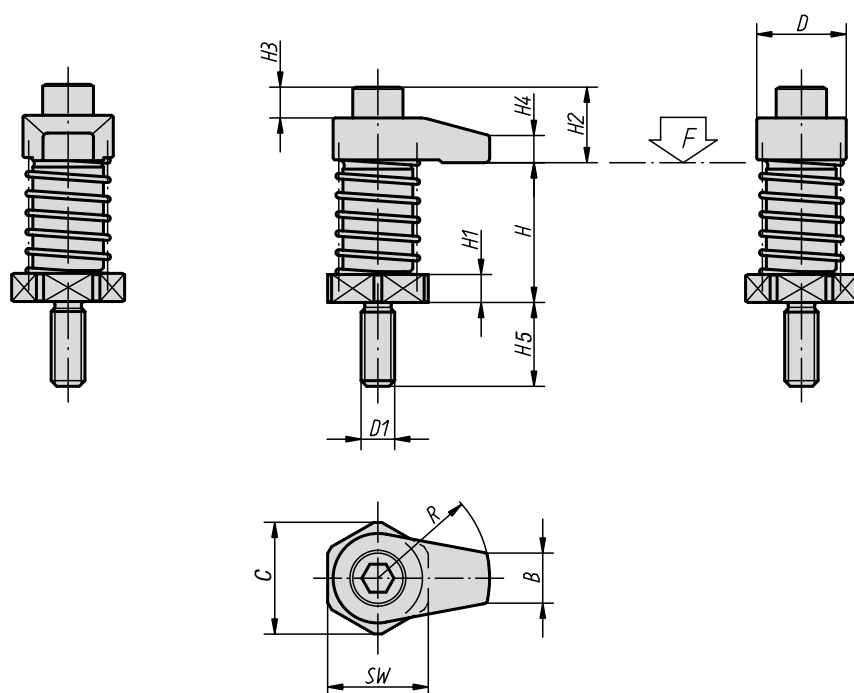


Ground Hook Clamps Form A/B/C

Order No.	Form	D	D1	D2	H	H1	H2	H3	H4	H5 max. clamping range	B	L	R	Socket Head Screw DIN 912	Tightening torque max. Nm	F max. kN	Approx. weight kg
K0014.208020	B	18	22	-	58	37	23	2	7	10	10	-	20	M8x50	37,2	13,6	0,090
K0014.208025	B	18	22	-	58	37	23	2	7	10	10	-	25	M8x50	32,3	10,9	0,095
K0014.208030	B	18	22	-	58	37	23	2	7	10	10	-	30	M8x50	29,4	9	0,105
K0014.110030	A	20	24	-	75	54	30	9	10	12	12	-	30	M10x65	37,2	13	0,162
K0014.110040	A	20	24	-	75	54	30	9	10	12	12	-	40	M10x65	31,4	9,8	0,173
K0014.212040	B	25	32	-	92	66	39	11	12	15	18	-	40	M12x80	58,8	17,5	0,300
K0014.212050	B	25	32	-	92	68	39	11	12	15	18	-	50	M12x80	49	14	0,365
K0014.212060	B	25	32	-	92	68	39	11	12	15	18	-	60	M12x80	45,1	11,6	0,395
K0014.216040	B	32	36	-	101	75	39	15	15	15	22	-	40	M16x85	166,6	37,9	0,505
K0014.216050	B	32	36	-	101	75	39	15	15	15	22	-	50	M16x85	147	30,4	0,575
K0014.216060	B	32	36	-	101	75	39	15	15	15	22	-	60	M16x85	127,4	25,2	0,619
K0014.312140	C	25	32	M12	92	66	39	11	10	15	18	31	40	M12x80	58,8	22,6	0,295
K0014.312150	C	25	32	M12	92	68	39	11	13	15	18	38	50	M12x80	49	18,5	0,353
K0014.312160	C	25	32	M12	92	68	39	11	13	15	18	46	60	M12x80	45,1	15,2	0,390
K0014.316150	C	32	36	M12	101	75	39	15	16	15	22	38	50	M16x85	147	38	0,558
K0014.316160	C	32	36	M12	101	75	39	15	16	15	22	46	60	M16x85	127,4	33	0,600

Hook Clamps

with collar



Material:

Hook clamps and hook joints in tempered, heat-treated steel

Surface finish:

Black oxide finish

Sample order:

K0015.12060

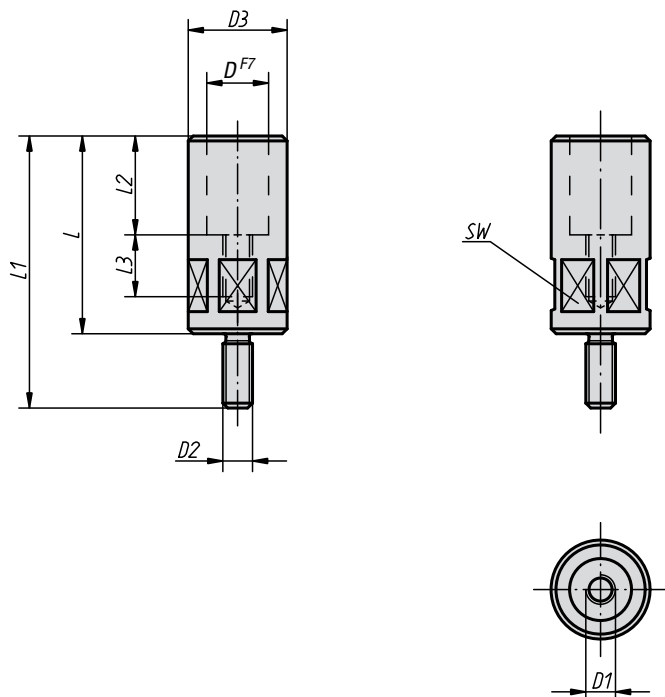
Note:

Hook Clamps with collar can be screwed directly into an M.T.P. hole or similar, even without counterbore. For suitable height adjustment elements, see Joint Bars K0018.

Hook Clamps with collar

Order No.	D	D1	H Clamping range	H1	H2	H3	H4	H5	B	C	R	SW	Tightening torque max. Nm	F max. kN	Approx. weight kg
K0015.08020	22	M8	35 - 45	6	14	2	7	19	10	25	20	22	20	7,9	0,130
K0015.08025	22	M8	35 - 45	6	14	2	7	19	10	25	25	22	20	7,3	0,135
K0015.08030	22	M8	35 - 45	6	14	2	7	19	10	25	30	22	20	6,7	0,145
K0015.08120	22	M8	45 - 55	16	14	2	7	19	10	25	20	22	20	7,9	0,160
K0015.08125	22	M8	45 - 55	16	14	2	7	19	10	25	25	22	20	7,3	0,165
K0015.08130	22	M8	45 - 55	16	14	2	7	19	10	25	30	22	20	6,7	0,175
K0015.12040	32	M12	50 - 65	10	27	11	10	30	18	40	40	36	45	13,5	0,430
K0015.12050	32	M12	50 - 65	10	29	11	12	30	18	40	50	36	45	12,6	0,495
K0015.12060	32	M12	50 - 65	10	29	11	12	30	18	40	60	36	45	11,7	0,535
K0015.12140	32	M12	65 - 80	25	27	11	10	30	18	40	40	36	45	13,5	0,560
K0015.12150	32	M12	65 - 80	25	29	11	12	30	18	40	50	36	45	12,6	0,620
K0015.12160	32	M12	65 - 80	25	29	11	12	30	18	40	60	36	45	11,7	0,660
K0015.16040	36	M16	50 - 65	10	36	15	15	30	22	40	40	36	60	13,4	0,635
K0015.16050	36	M16	50 - 65	10	36	15	15	30	22	40	50	36	60	12,4	0,695
K0015.16060	36	M16	50 - 65	10	36	15	15	30	22	40	60	36	60	12	0,735
K0015.16140	36	M16	65 - 80	25	36	15	15	30	22	40	40	36	60	13,4	0,765
K0015.16150	36	M16	65 - 80	25	36	15	15	30	22	40	50	36	60	12,4	0,825
K0015.16160	36	M16	65 - 80	25	36	15	15	30	22	40	60	36	60	12	0,865

Hook Holders



Material:
Tempered steel

Surface finish:
Black oxide finish

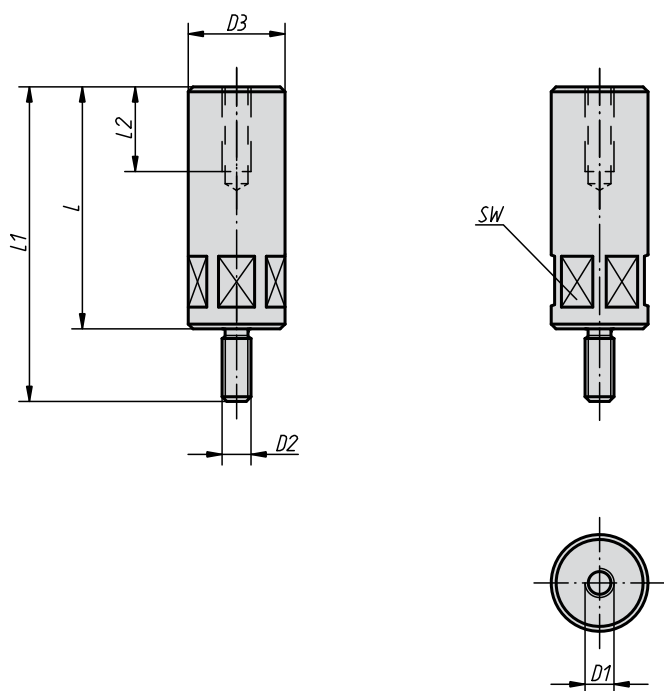
Sample order:
K0017.12080

Note:
Hook Holders serve to guide and raise Hook Clamps.

Hook Holders

Order No.	D	D1	D2	D3	L	L1	L2	L3	SW	Tightening torque max. Nm	Approx. weight kg
K0017.08055	18	M8	M8	24	55	74	25	20	22	29,4	0,135
K0017.10063	20	M10	M12	32	63	93	30	21	30	39,2	0,400
K0017.10080	20	M10	M12	32	80	110	30	23	30	39,2	0,500
K0017.12080	25	M12	M12	40	80	110	40	25	36	49	1,080
K0017.12100	25	M12	M12	40	100	130	40	28	36	49	1,280
K0017.16080	32	M16	M16	50	80	110	40	25	46	78,4	1,690
K0017.16100	32	M16	M16	50	100	130	40	28	46	78,4	2,000

Joint Bars



Material:
Tempered steel

Surface finish:
Black oxide finish

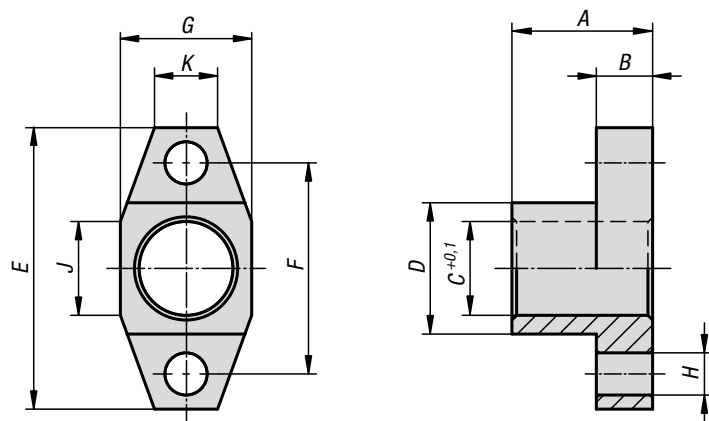
Sample order:
K0018.16050

Note:
The height of the Hook Holders and Hook Clamps can be raised with Joint Bars.

Joint Bars

Order No.	D1	D2	D3	L	L1	L2	SW	Tightening torque max. Nm	Approx. weight kg
K0018.08032	M8	M8	24	32	51	20	22	29,4	0,105
K0018.08040	M8	M8	24	40	59	20	22	29,4	0,135
K0018.08050	M8	M8	24	50	69	20	22	29,4	0,170
K0018.08065	M8	M8	24	65	84	20	22	29,4	0,225
K0018.12050	M12	M12	40	50	80	35	36	49	0,455
K0018.12065	M12	M12	40	65	95	35	36	49	0,585
K0018.12080	M12	M12	40	80	110	35	36	49	0,725
K0018.12100	M12	M12	40	100	130	35	36	49	0,950
K0018.12125	M12	M12	40	125	155	35	36	49	1,190
K0018.12160	M12	M12	40	160	190	35	36	49	1,530
K0018.12200	M12	M12	40	200	230	35	36	49	1,924
K0018.16050	M16	M16	50	50	80	35	46	78,4	0,710
K0018.16065	M16	M16	50	65	95	35	46	78,4	0,918
K0018.16080	M16	M16	50	80	110	35	46	78,4	1,140
K0018.16100	M16	M16	50	100	130	35	46	78,4	1,470
K0018.16125	M16	M16	50	125	155	35	46	78,4	1,845
K0018.16160	M16	M16	60	160	190	35	55	78,4	3,470
K0018.16200	M16	M16	60	200	230	35	55	78,4	4,345

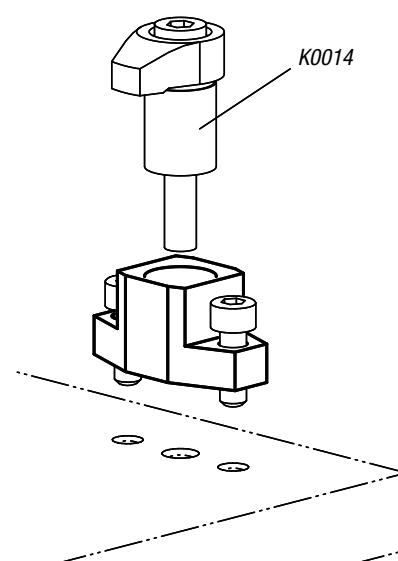
Hook Holders



Material:
Tempered steel 1.0503

Surface finish:
black oxide finish

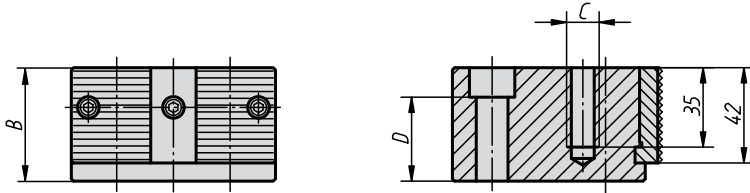
Sample order:
K0851.08025



Hook Holders

Order No.	A	B	C	D	E	F	G	H	J	K	Approx. weight g
K0851.08025	25	10	18	24	50	38	24	6,6	15	11,3	85
K0851.10030	30	12	20	28	60	45	28	9	20	13,4	150
K0851.12040	40	14	25	35	75	55	35	11	20	15	290
K0851.16040	40	16	32	42	85	65	42	13,5	25	20,2	400

Stop Blocks


Material, surface finish:

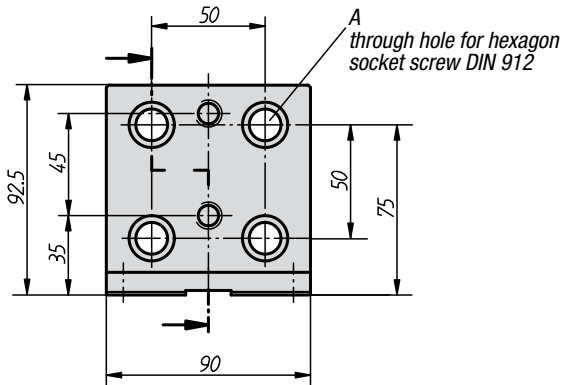
Tempered steel, black oxide finish
stop face or jaw heat-treated and black oxide finish

Sample order:

K0852.12050

Note:

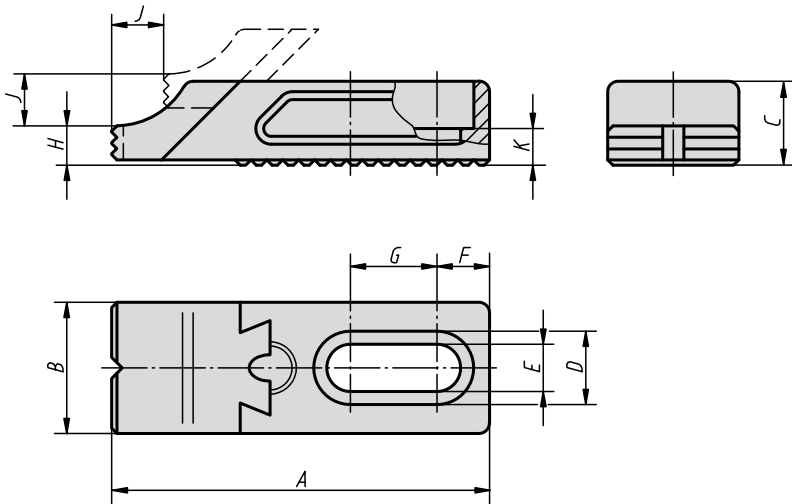
The Stop Block is generally used as a stop element for unmachined parts.



Stop Blocks

Order No.	A Hole for	B	C	D	Approx. weight kg
K0852.12050	M12	50	M12	37	2,73
K0852.12063	M12	63	M12	37	3,352
K0852.12080	M12	80	M12	37	4,168
K0852.12100	M12	100	M12	37	5,15
K0852.16050	M16	50	M16	33	2,445
K0852.16063	M16	63	M16	46	3,075
K0852.16080	M16	80	M16	46	3,816
K0852.16100	M16	100	M16	46	5,16

Adjustable Toe Clamps



Material, surface finish:

Body tempered steel, black oxide finish
Jaw tempered steel, heat-treated and black oxide finish

Sample order:

K0853.92008016

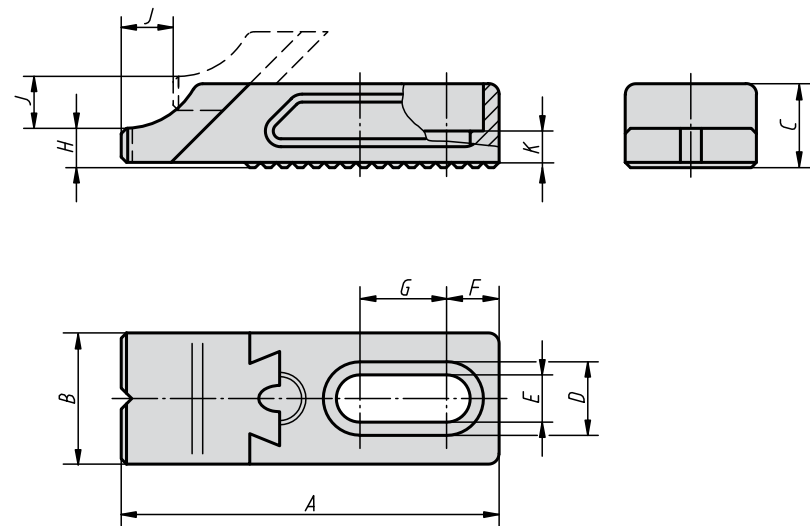
Note:

The Adjustable Toe Clamp is used in conjunction with the Rack Plate CL.

Adjustable Toe Clamps

Order No.	A	B	C	D	E	F	G	H	J	K	Approx. weight kg
K0853.92008016	72	25	16	14	8,5	10	16,5	7,5	7	7	0,14
K0853.92012022	105	35	22	20	13	13,5	26,5	10	12	9	0,383
K0853.92016030	137	40	30	26	17	17,5	30	14	14	13	0,797

Adjustable Toe Clamps



Material, surface finish:

Body tempered steel, black oxide finish
Jaw tempered steel, heat-treated
The clamping surface of the clamping jaw is ground

Sample order:

K0853.92108016

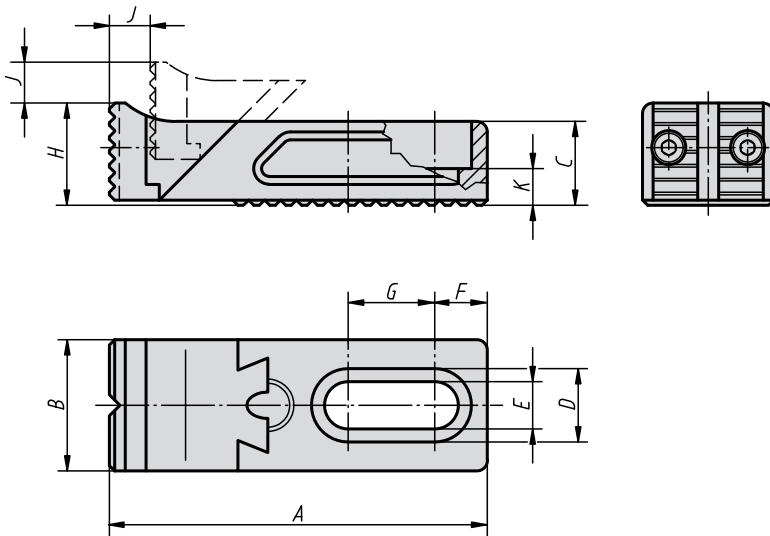
Note:

The Adjustable Toe Clamp is used in conjunction with the Rack Plate CL.

Adjustable Toe Clamps

Order No.	A	B	C	D	E	F	G	H	J	K	Approx. weight kg
K0853.92108016	72	25	16	14	8,5	10	16,5	7,5	7	7	0,14
K0853.92112022	105	35	22	20	13	13,5	26,5	10	12	9	0,383
K0853.92116030	137	40	30	26	17	17,5	30	14	14	13	0,818

Adjustable Side Clamps



Material, surface finish:

Body tempered steel, black oxide finish
Jaw tempered steel, heat-treated and black oxide finish

Sample order:

K0853.93008016

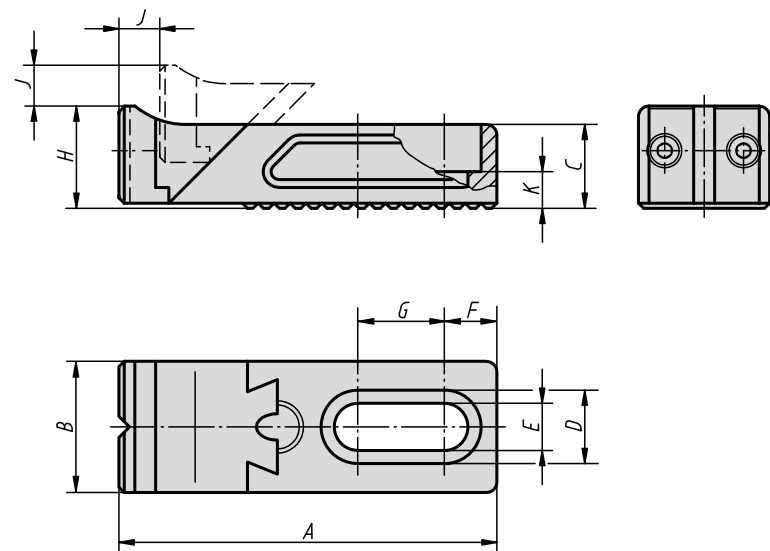
Note:

The Adjustable Side Clamp is used in conjunction with the Rack Plate CL.

Adjustable Side Clamps

Order No.	A	B	C	D	E	F	G	H	J	K	Approx. weight kg
K0853.93008016	72	25	16	14	8,5	10	16,5	19,5	7	7	0,16
K0853.93012022	105	35	22	20	13	13,5	26,5	29	12	9	0,44
K0853.93016030	137	40	30	26	17	17,5	30	39	14	13	0,92

Adjustable Side Clamps



Material, surface finish:

Body tempered steel, black oxide finish
Jaw tempered steel, heat-treated and black oxide finish
The clamping surface of the clamping jaw is ground

Sample order:

K0853.93108016

Note:

The Adjustable Side Clamp is used in conjunction with the Rack Plate CL.

Adjustable Side Clamps

Order No.	A	B	C	D	E	F	G	H	J	K	Approx. weight kg
K0853.93108016	72	25	16	14	8,5	10	16,5	19,5	7	7	0,16
K0853.93112022	105	35	22	20	13	13,5	26,5	29	12	9	0,44
K0853.93116030	137	40	30	26	17	17,5	30	39	14	13	0,92

Rack Plates CL

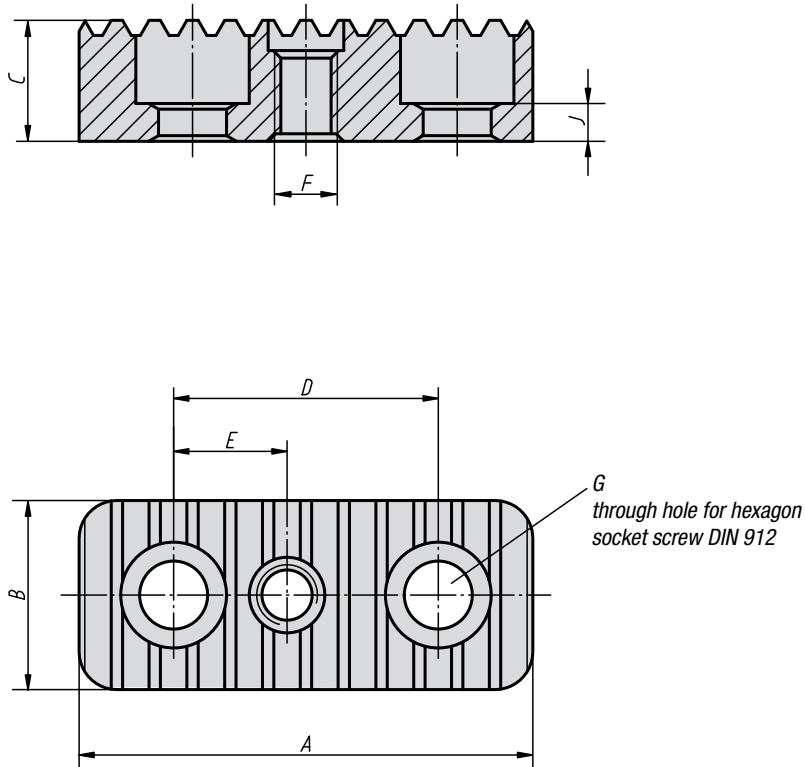


Material:
Tempered steel

Surface finish:
black oxide finish

Sample order:
K0853.94008116

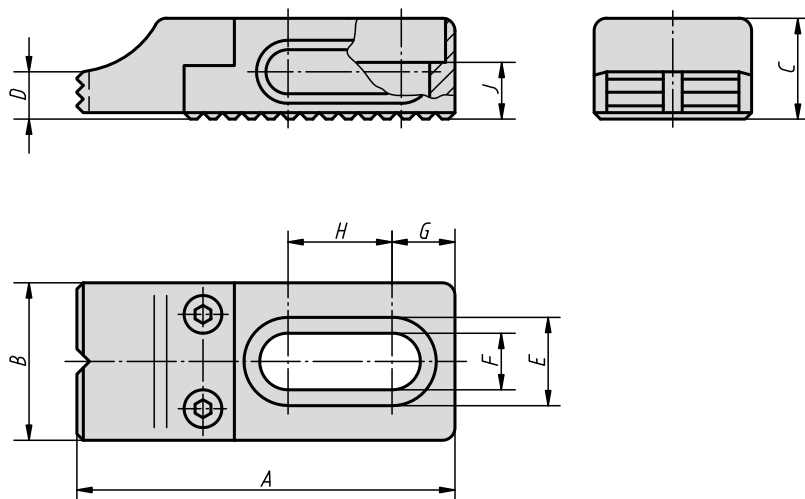
Note:
Rack Plates CL are used to position Adjustable Toe Clamps and Adjustable Side Clamps.
The hole (G) for Socket Head Screws DIN 912 is used to fasten the Rack Plate CL to suitable base elements.
The tapped holes (F) are used to mount the Adjustable Clamps.



Rack Plates CL

Order No.	A	B	C	D	E	F	G Hole for	J	Approx. weight kg
K0853.94008116	50	25	16	25	12,5	M8	M8	7	0,115
K0853.94008120	50	25	20	25	12,5	M8	M8	9	0,14
K0853.94008125	50	25	25	25	12,5	M8	M8	13	0,18
K0853.94008132	50	25	32	25	12,5	M8	M8	20	0,24
K0853.94008140	50	25	40	25	12,5	M8	M8	28	0,305
K0853.94008150	50	25	50	25	12,5	M8	M8	38	0,385
K0853.94012020	85	35	20	50	20	M12	M12	5	0,33
K0853.94012025	85	35	25	50	20	M12	M12	12	0,505
K0853.94012032	85	35	32	50	20	M12	M12	12	0,643
K0853.94012040	85	35	40	50	20	M12	M12	12	0,703
K0853.94012050	85	35	50	50	20	M12	M12	12	0,88
K0853.94016025	90	40	25	50	25	M16	M16	6	0,45
K0853.94016032	90	40	32	50	25	M16	M16	13	0,715
K0853.94016040	90	40	40	50	25	M16	M16	15	0,88
K0853.94016050	90	40	50	50	25	M16	M16	15	0,96
K0853.94016063	90	40	63	50	25	M16	M16	15	1,21

Adjustable Toe Stops

**Material, surface finish:**

Body tempered steel, black oxide finish;
jaw tempered steel, heat-treated and
black oxide finish

Sample order:

K0853.96008016

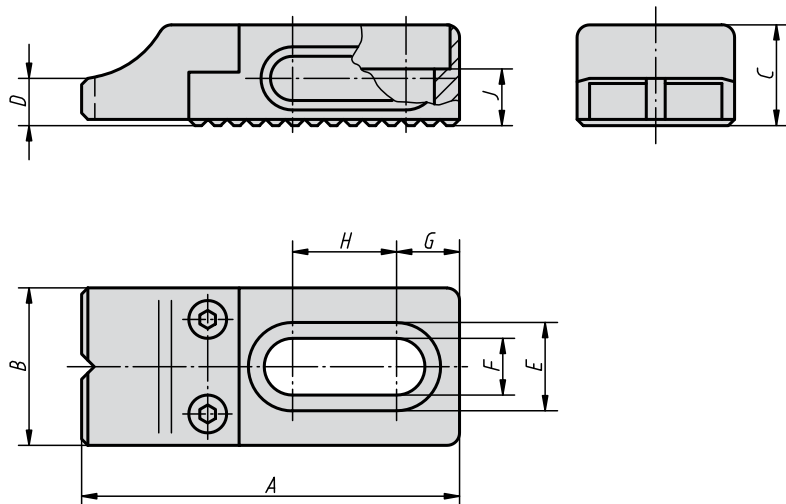
Note:

The Adjustable Toe Stop is used in conjunction
with the Rack Plate CL.

Adjustable Toe Stops

Order No.	A	B	C	D	E	F	G	H	J	Approx. weight kg
K0853.96008016	60	25	16	7,5	14	8,5	10	16,5	7	0,12
K0853.96012022	90	35	22	10	20	13	13,5	26,5	10	0,33
K0853.96016030	115	40	30	14	26	17	17,5	30	13	0,66

Adjustable Toe Stops

**Material, surface finish:**

Body tempered steel, black oxide finish

Jaw tempered steel, heat-treated and black oxide finish

The clamping surface of the clamping jaw is ground

Sample order:

K0853.96108016

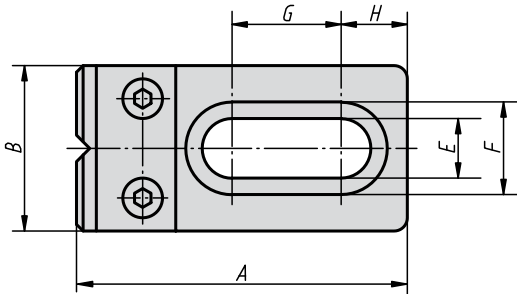
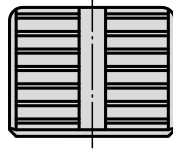
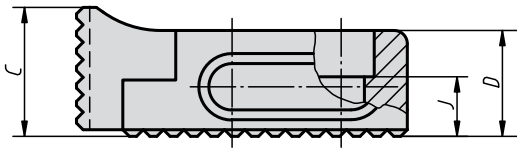
Note:

The Adjustable Toe Stop is used in conjunction with the Rack Plate CL.

Adjustable Toe Stops

Order No.	A	B	C	D	E	F	G	H	J	Approx. weight kg
K0853.96108016	60	25	16	7,5	14	8,5	10	16,5	7	0,12
K0853.96112022	90	35	22	10	20	13	13,5	26,5	10	0,33
K0853.96116030	115	40	30	14	26	17	17,5	30	13	0,66

Adjustable Side Stops



Material, surface finish:

Body tempered steel, black oxide finish
Jaw tempered steel, heat-treated and black oxide finish

Sample order:

K0853.97008016

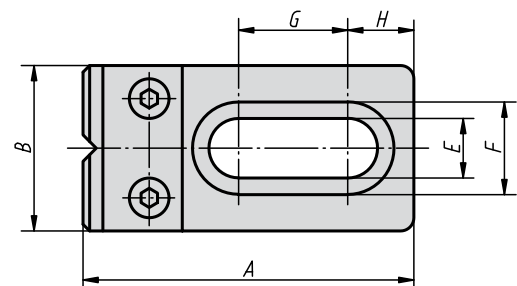
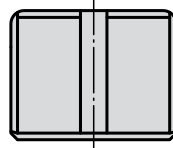
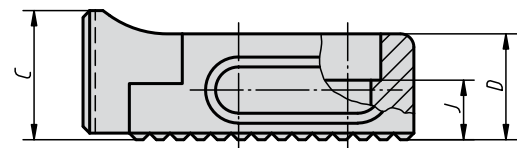
Note:

The Adjustable Side Stop is used in conjunction with the Rack Plate CL.

Adjustable Side Stops

Order No.	A	B	C	D	E	F	G	H	J	Approx. weight kg
K0853.97008016	50	25	19,5	16	8,5	14	16,5	10	7	0,110
K0853.97012022	75	35	29	22	13	20	26,5	13,5	10	0,300
K0853.97016030	95	40	39	30	17	26	30	17,5	13	0,595

Adjustable Side Stops



Material, surface finish:

Body tempered steel, black oxide finish
Jaw: tempered steel, heat-treated and black oxide finish

The clamping surface of the clamping jaw is ground

Sample order:

K0853.97108016

Note:

The Adjustable Side Stop is used in conjunction with the Rack Plate CL.

Adjustable Side Stops

Order No.	A	B	C	D	E	F	G	H	J	Approx. weight kg
K0853.97108016	50	25	19,5	16	8,5	14	16,5	10	7	0,110
K0853.97112022	75	35	29	22	13	20	26,5	13,5	10	0,330
K0853.97116030	95	40	39	30	17	26	30	17,5	13	0,615

Sliding Edge Clamps

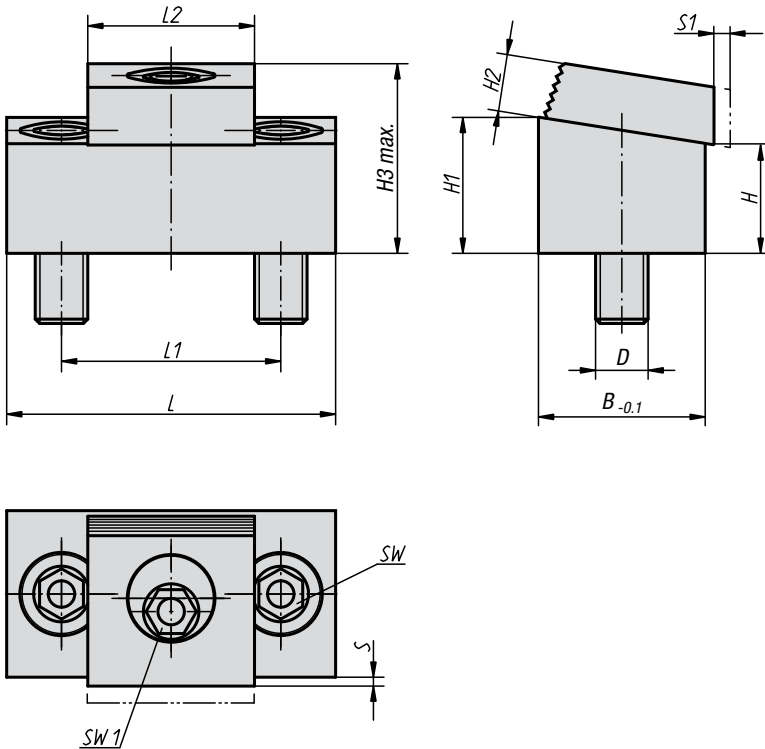


Material:
Steel

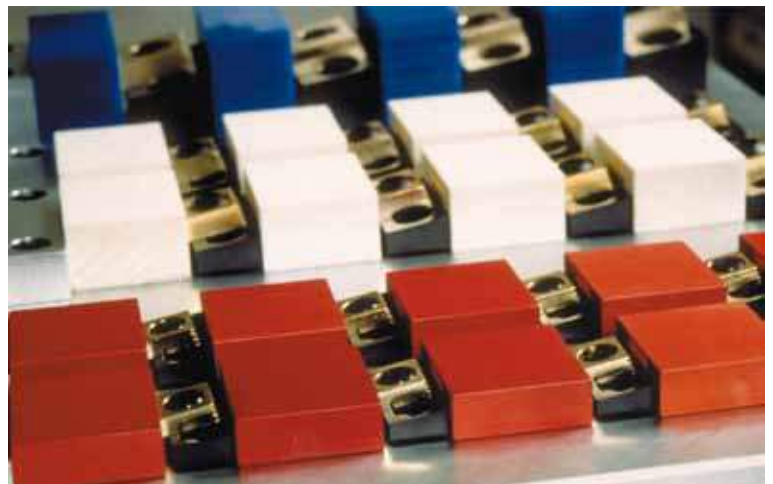
Surface finish:
Body heat-treated and black oxide finish,
clamping disc case-hardened and brass-coated

Sample order:
K0036.10

Note:
Sliding Edge Clamps allow for space-saving and economical clamping of multiple workpieces. When clamping multiple workpieces the rear side of the body can be used as a stop. Mounting preferably in slots with $B + 0.05 \text{ mm}$. The contact height of the clamping disc can be varied with the depth of the slot.



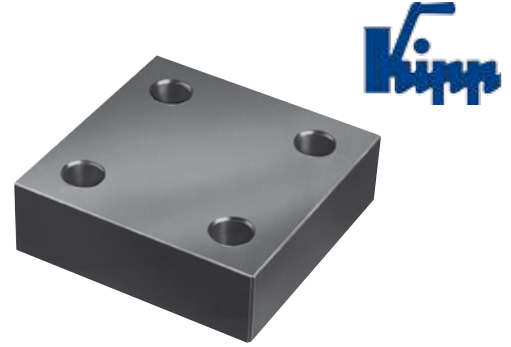
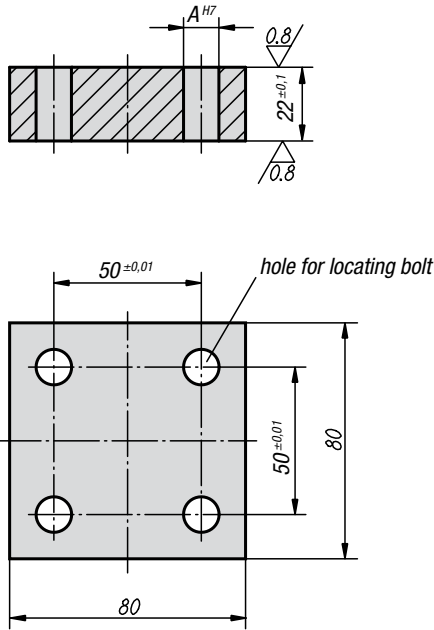
Example for multiple clampings with sliding edge clamps



Sliding Edge Clamps

Order No.	L	L1	L2	B	H	H1	H2	H3 max.	S	D	S1 (Clamp travel)	SW	SW1	Clamping force kN	Tightening torque max. Nm	Approx. weight kg
K0036.08	43,2	25,4	19	19	12,7	15,7	6,4	21,4	1,5	M8	1,6	5	7	8,9	28	0,100
K0036.10	54	33,5	25,4	25,4	11,4	15,4	9,7	24,5	1,8	M10	2	7	8	17,8	88	0,178
K0036.12	75	50,8	38	38,1	25,5	31,5	13	43	2,05	M12	2,5	10	12	26,7	135	0,720

Joint Blocks



Material:
Tempered steel

Surface finish:
black oxide finish
Support surfaces ground

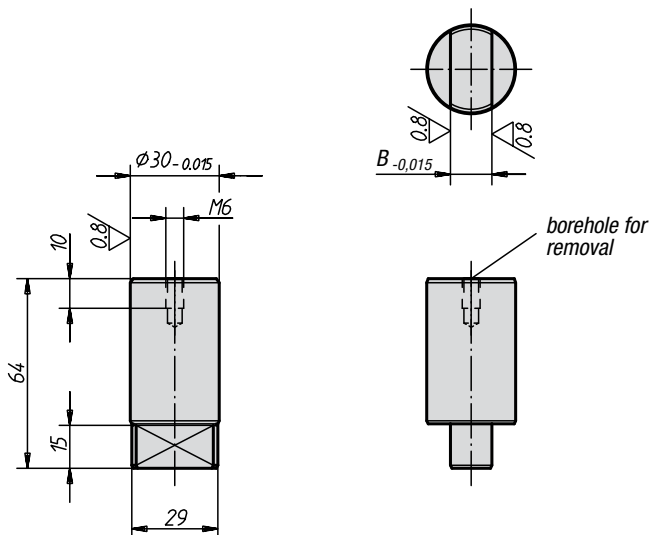
Sample order:
K0854.40012050

Note:
When several Grid Plates K0800 are used, Joint Blocks are needed to maintain the correct pitch of the M.T.P. holes from one Grid Plate to the next. They are fastened using 4 Locating Bolts K0815.1...

Joint Blocks

Order No.	A	Suitable Locating Bolt	Approx. weight kg
K0854.40012050	12	K0815.112055	1,020
K0854.40016050	16	K0815.116065	1,205

Locating Keys



Material:
Tempered steel

Surface finish:
heat-treated and black oxide finish
Fitting diameter and guide surfaces are ground

Sample order:
K0855.12030

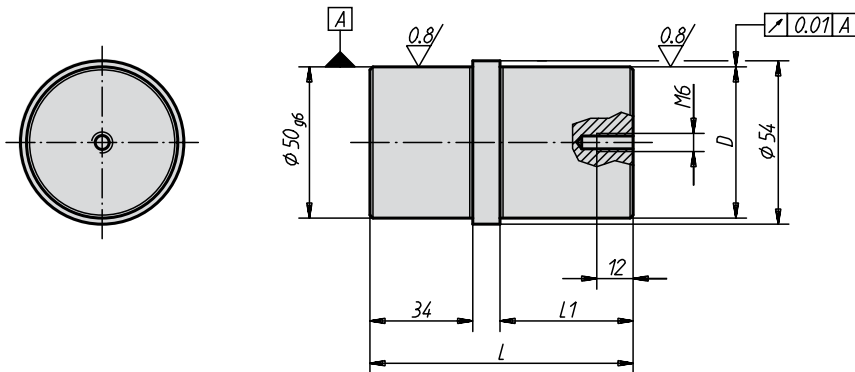
Note:
Locating Keys are used for positioning Grid Plates K0800 on machine tables.

Locating Keys

Order No.	B	Approx. weight kg
K0855.12030	12	0,307
K0855.14030	14	0,313
K0855.18030	18	0,325
K0855.20030	20	0,330
K0855.22030	22	0,335

Centering Pins

for central hole



Material:
Steel

Surface finish:
Case-hardened;
fitting diameter ground

Sample order:
K0856.5025

Note:
Centring pins for central holes are suitable for basic elements K0806, K0802, K0803, K0804 and K0805.

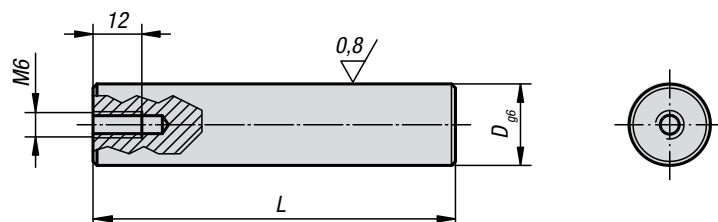
Centering Pins for central hole

Order No.	D	L	L1	Approx. weight kg
K0856.5025	25 g6	77	34	0,810
K0856.5030	30 h6	87	44	0,920
K0856.5050	50 g6	87	44	1,355

K0857

Centering Pins

for aligning hole



Material:
Steel

Surface finish:
Case-hardened;
fitting diameter ground

Sample order:
K0857.25125

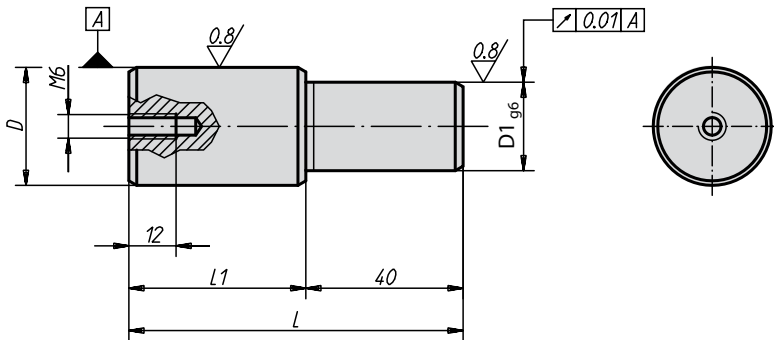
Note:
Centring pins for aligning holes are suitable for basic elements K0802, K0803 and K0805.

Centering Pins for aligning hole

Order No.	D	L	Approx. weight kg
K0857.20075	20	75	0,180
K0857.20089	20	89	0,215
K0857.25125	25	125	0,477

Centering Pins

for aligning hole



Material:
Steel

Surface finish:
Case-hardened;
fitting diameter ground

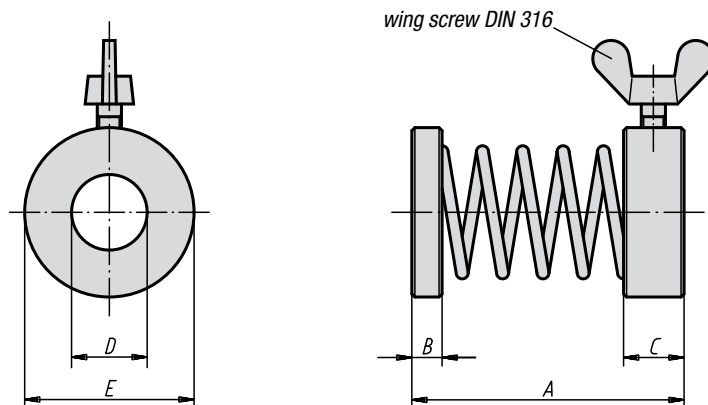
Sample order:
K0858.2520

Note:
Centring pins for aligning holes are suitable
for palettes K0806.

Centering Pins for aligning hole

Order No.	D	D1	L	L1	Approx. weight kg
K0858.2520	25 g6	20	75	35	0,230
K0858.3020	30 h6	20	85	45	0,340
K0858.3025	30 h6	25	85	45	0,400

Clamp Supports



Material:
Pressure and retaining ring: tempered steel; spring:
spring steel

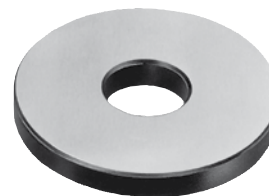
Surface finish:
Pressure and retaining ring: black oxide finish; spring:
polished

Sample order:
K0859.12046

Clamp Supports

Order No.	A	B	C	D	E	Wing screw DIN 316	Approx. weight kg
K0859.08029	29	2	6	8,5	16	M4x6	0,017
K0859.12046	46	3	8	13	25	M4x10	0,048
K0859.16050	50	4	8	16,5	28	M5x10	0,047

Spacing Washers

**Material:**

Tempered steel

Surface finish:

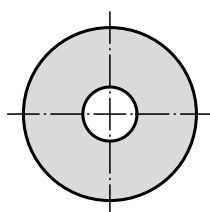
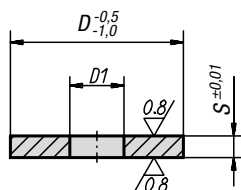
Heat-treated and black oxide finish; support surfaces, ground

Sample order:

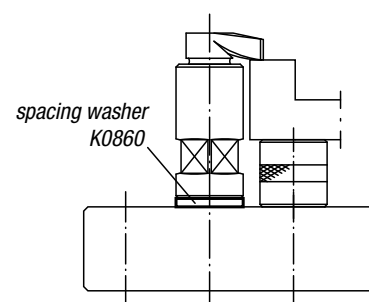
K0860.16005

Note:

The Spacing Washer is used to alter the clamping capacity of HookClamp and Hook Holder. If the Spacing Washer is inserted between the body and the Hook Holder or Joint Bar, it prevents damage to the support surface.



application example:

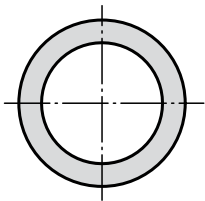
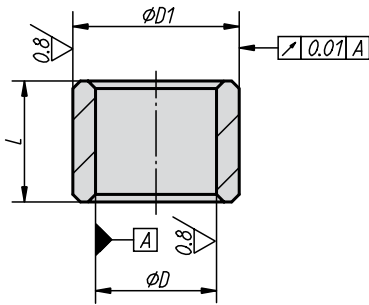


Spacing Washers

Order No.	D	D1	S	Approx. weight kg
K0860.08003	24	9	3	0,009
K0860.08005	24	9	5	0,015
K0860.08008	24	9	8	0,024
K0860.12001	40	12,5	1	0,009
K0860.12003	40	12,5	3	0,027
K0860.12005	40	12,5	5	0,045
K0860.16001	50	16,5	1	0,014
K0860.16003	50	16,5	3	0,042
K0860.16005	50	16,5	5	0,068
K0860.16105	60	16,5	5	0,100

Locating Bushings

for grid systems



Material:

Special case-hardened steel

Surface finish:

hardened and ground

Sample order:

K0861.01508305002

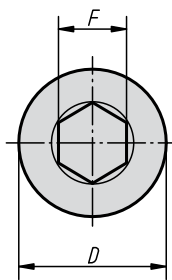
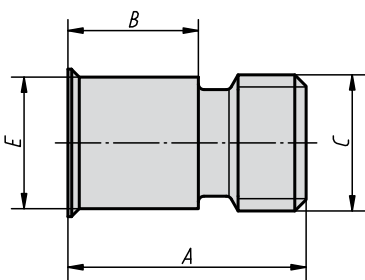
Note:

See next page for assembly instructions for changing Locating Bushings.

Locating Bushings for grid systems

Order No.	D	D1	L	Approx. weight kg
K0861.01508305002	12 H6	16 g5	8	0,005
K0861.01012304002	12 F7	18 g6	12	0,013
K0861.01016405002	16 F7	22 g6	16	0,022

Aluminium Protection Plugs



Material, surface finish:

Aluminium, natural finish

Sample order:

K0862.60108015

Note:

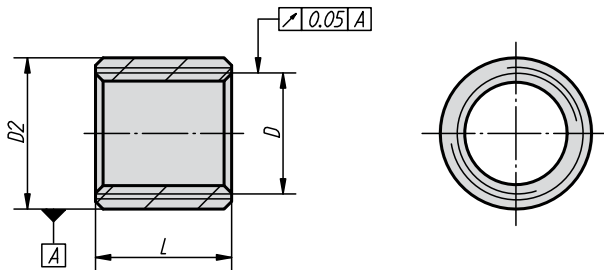
To protect M.T.P. holes from chips and dirt, they must be closed off with Protection Plugs. Leave the Protection Plugs in holes not in use! Aluminium Protection Plugs are needed when aggressive cooling emulsions are used or when cutting is without coolant.

Aluminium Protection Plugs

Order No.	A	B	C	D	E	F	Approx. weight kg
K0862.60108015	15	7,5	M8	12,6	11,8	5	0,003
K0862.60112021	21	11,5	M12	13	11,6	6	0,005
K0862.60116026	26	15	M16	17	15,6	8	0,011

Threaded Bushings

for grid systems


Material:

Tempered steel

Surface finish:

Heat-treated, tensile strength approx
1100-1300 N/mm²

Sample order:

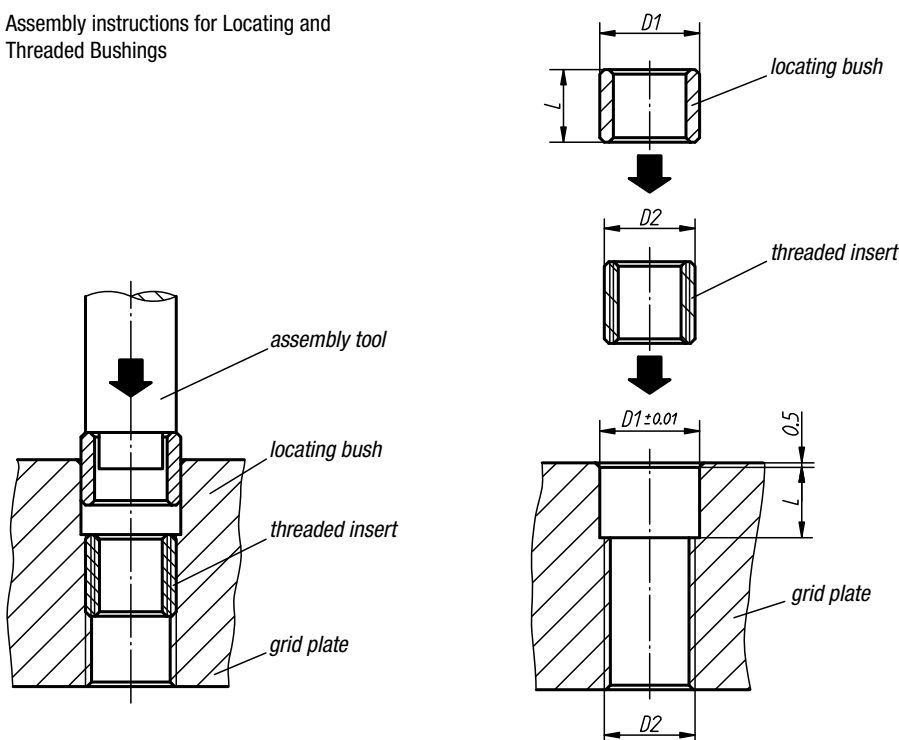
K0863.01508305003

Note:

Assembly instructions for changing Threaded Bushing.

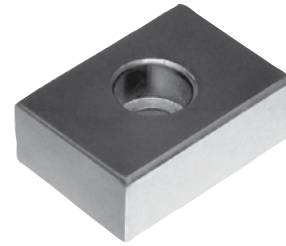
Inserting the Locating and Threaded Bushing

1. Remove grease from the Locating and Threaded Bushing.
2. Apply adhesive (Loctite 638) in the hole.
3. Apply adhesive (Loctite 638) on the Threaded Bushing and screw in.
4. Apply adhesive (Loctite 638) to the Locating Bushing and insert it. If the Locating Bushing cannot be inserted by hand, please use an assembly tool as shown in Fig. 1.
5. Remove any adhesive pressed out by insertion of the Locating and Threaded Bushing before it hardens.

Assembly instructions for Locating and Threaded Bushings

Threaded Bushings for grid systems

Order No.	D	D2	L	Approx. weight kg
K0863.01508305003	M8	M12x1,75	12	0,004
K0863.01012304003	M12	M16x1,5	15	0,008
K0863.01016405003	M16	M20x1,5	18	0,013

T-Slot Nuts

**Material:**

Hardened steel

Surface finish:

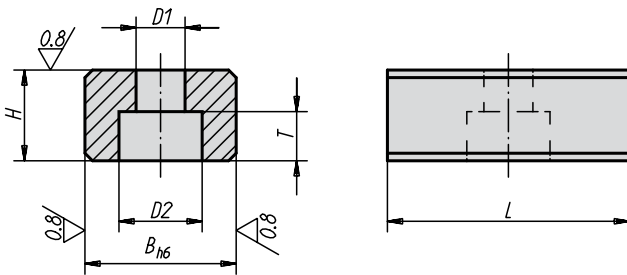
Case-hardened; black oxide finish and ground

Sample order:

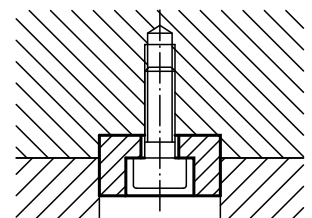
K0864.16

Note:

T-slot nuts are used to align devices and chucks on machine-tool tables that have T-slots pursuant to DIN 650. They are screwed into the alignment slots of the devices. T-slot nuts are suitable if the devices are fitted to machines with the same width of slot.



application example:

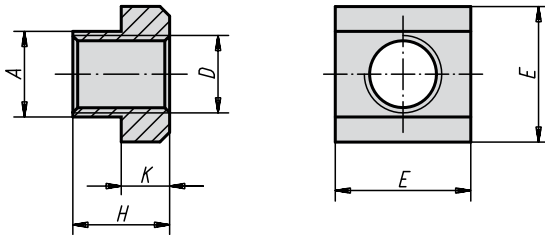


T-Slot Nuts

Order No.	B	H	L	D1	D2	T	For DIN 84 or DIN912 screws	Approx. weight g
K0864.10	10	8	20	4,5	8	4,3	M4x10	10
K0864.12	12	8	20	5,5	10	5,3	M5x12	12
K0864.14	14	10	22	6,6	11	6,3	M6x16	18
K0864.16	16	10	22	6,6	11	6,3	M6x16	22
K0864.18	18	10	22	6,6	11	6,3	M6x16	25
K0864.20	20	10	22	6,6	11	6,3	M6x16	28
K0864.22	22	12	32	6,6	11	6,3	M6x16	55

Nuts for T-Slots to

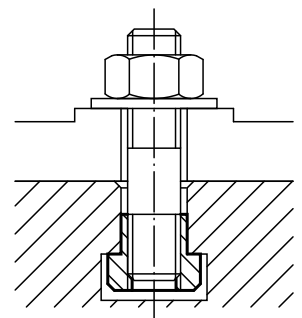
DIN 508 extended



Material:
Tempered steel quality class 10

Surface finish:
Steel black

Sample order:
K0377.20

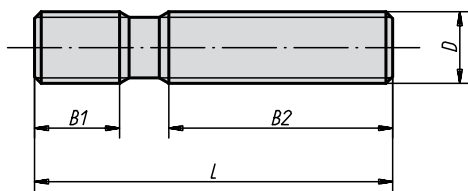


Nuts for T-Slots to DIN 508 extended

Order No. Material steel	Nominal size of slot	D	A	E	H	K
K0377.06	8	M6	7,6	13	10	6
K0377.08	10	M8	9,6	15	12	6
K0377.10	12	M10	11,5	18	14	7
K0377.12	14	M12	13,5	22	16	8
K0377.16	18	M16	17,5	28	20	10
K0377.18	20	M18	19,6	32	24	12
K0377.20	22	M20	21,6	35	28	14
K0377.22	24	M22	23,6	40	32	16

Pin bolts

DIN 6379



Order No.	D	L	B1	B2	Approx. weight g
K0697.0632	M6	32	9	16	8
K0697.0640	M6	40	9	20	9
K0697.0650	M6	50	9	30	11
K0697.0663	M6	63	9	40	14
K0697.0680	M6	80	9	50	18
K0697.06100	M6	100	9	63	20
K0697.0840	M8	40	11	20	10
K0697.0863	M8	63	11	40	20
K0697.0880	M8	80	11	50	27
K0697.08100	M8	100	11	63	30
K0697.08125	M8	125	11	75	40
K0697.08160	M8	160	11	100	45
K0697.1050	M10	50	13	25	25
K0697.1080	M10	80	13	50	40
K0697.10100	M10	100	13	75	50
K0697.10125	M10	125	13	75	62
K0697.10160	M10	160	13	100	80
K0697.10200	M10	200	13	125	100
K0697.1250	M12	50	15	25	35
K0697.1263	M12	63	15	32	45
K0697.1280	M12	80	15	50	55
K0697.12100	M12	100	15	63	70
K0697.12125	M12	125	15	75	90
K0697.12160	M12	160	15	100	113
K0697.12200	M12	200	15	125	140
K0697.1463	M14	63	17	32	80
K0697.1480	M14	80	17	50	85
K0697.14100	M14	100	17	63	95
K0697.14125	M14	125	17	75	120
K0697.14160	M14	160	17	100	150
K0697.14200	M14	200	17	125	195
K0697.14250	M14	250	17	160	240
K0697.1663	M16	63	19	32	85
K0697.1680	M16	80	19	50	105
K0697.16100	M16	100	19	63	130
K0697.16125	M16	125	19	75	160
K0697.16160	M16	160	19	100	210
K0697.16200	M16	200	19	125	280
K0697.16250	M16	250	19	160	325
K0697.16315	M16	315	19	180	425
K0697.16350	M16	350	19	200	460
K0697.16500	M16	500	20	315	650
K0697.1880	M18	80	23	50	130
K0697.18125	M18	125	23	75	200
K0697.18160	M18	160	23	100	255

Order No.	D	L	B1	B2	Approx. weight g
K0697.18200	M18	200	23	125	320
K0697.18250	M18	250	23	150	400
K0697.18315	M18	315	23	180	500
K0697.2080	M20	80	27	32	185
K0697.20125	M20	125	27	70	255
K0697.20160	M20	160	27	100	330
K0697.20200	M20	200	27	125	410
K0697.20250	M20	250	27	160	510
K0697.20315	M20	315	27	200	640
K0697.20400	M20	400	27	250	815
K0697.20500	M20	500	27	315	1020
K0697.22100	M22	100	31	45	270
K0697.22160	M22	160	31	100	430
K0697.22200	M22	200	31	125	500
K0697.22250	M22	250	31	160	670
K0697.22315	M22	315	31	180	790
K0697.22400	M22	400	31	250	1070
K0697.24100	M24	100	35	45	290
K0697.24125	M24	125	35	63	380
K0697.24160	M24	160	35	100	470
K0697.24200	M24	200	35	125	580
K0697.24250	M24	250	35	160	730
K0697.24315	M24	315	35	200	920
K0697.24400	M24	400	35	250	1160
K0697.24500	M24	500	35	315	1460
K0697.24630	M24	630	35	315	1850
K0697.27125	M27	125	39	56	485
K0697.27200	M27	200	39	125	770
K0697.27315	M27	315	39	200	1110
K0697.27400	M27	400	39	250	1535
K0697.27500	M27	500	39	315	1930
K0697.30125	M30	125	43	56	590
K0697.30200	M30	200	43	125	950
K0697.30315	M30	315	43	200	1490
K0697.30500	M30	500	43	315	2360
K0697.30700	M30	700	43	400	3300
K0697.301000	M30	1000	44	400	4700
K0697.36160	M36	160	51	80	1100
K0697.36200	M36	200	51	125	1380
K0697.36250	M36	250	51	160	1710
K0697.36315	M36	315	51	200	2150
K0697.36400	M36	400	51	250	2740
K0697.36500	M36	500	51	315	3540
K0697.36700	M36	700	51	400	4780

Material:

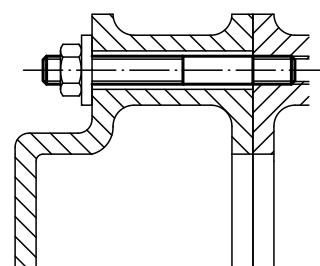
Tempered steel

Surface finish:

Thread rolled;
class 10.9 heat-treated for M6-M12, black;
class 8.8 heat-treated for M14-M36, black

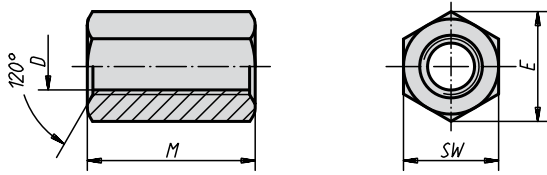
Sample order:

K0697.12125



Extension Nuts

height 3D



Material:

Tempered steel

Surface finish:

Heat-treated class 10, black

Sample order:

K0865.16

Note:

For both functional and safety reasons, bolts from both sides should be screwed in to a maximum of half the height of the nut. Minimum penetration depth: 1x diameter.

On request:

Wrench sizes to DIN ISO 272.

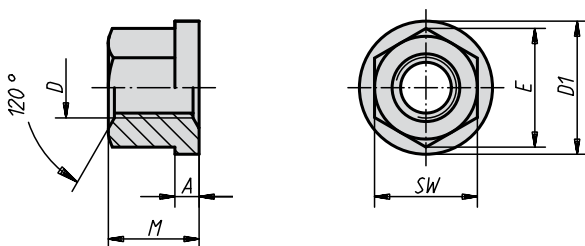
Extension Nuts height 3D

Order No.	D	M = 3 x D	SW	E	Approx. weight g
K0865.06	M6	18	10	11,5	8
K0865.08	M8	24	13	15	19
K0865.10	M10	30	17	19,6	42
K0865.12	M12	36	19	21,9	64
K0865.16	M16	48	24	27,7	120
K0865.20	M20	60	30	34,6	240

K0701

Hexagon Nuts with collars

height 1.5D, to DIN 6331



Material:

Tempered steel

Surface finish:

Steel class 10, black

Sample order:

K0701.16

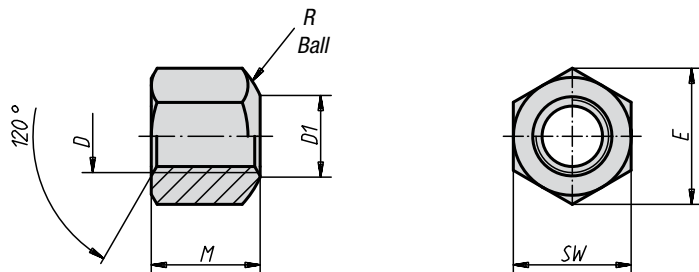
Hexagon Nuts with collars height 1.5D, to DIN 6331

Order No.	Material	D	M = 1,5 x D	A	D1	SW	E	Approx. weight g
K0701.06	steel	M6	9	3	14	10	11,5	6
K0701.08	steel	M8	12	3,5	18	13	15	12
K0701.10	steel	M10	15	4	22	16	18,5	22
K0701.12	steel	M12	18	4	25	18	20,8	31
K0701.16	steel	M16	24	5	31	24	27,7	70
K0701.20	steel	M20	30	6	37	30	34,6	130

Hexagon Nuts

height 1.5D to DIN 6330 extended

Form B
with rounded baseplate on one side



Material:
Tempered steel.

Surface finish:
Heat-treated class 10, black.

Sample order:
K0702.12

Note:
Hexagon Nuts can be used with Concave Washers K0729, form D and G.

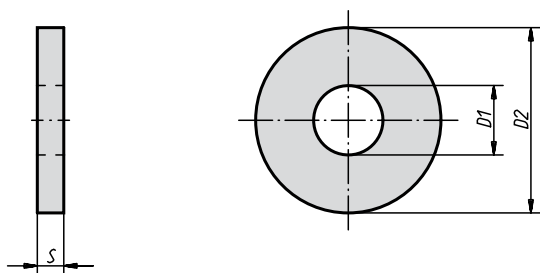
Hexagon Nuts height 1.5D to DIN 6330 extended

Order No.	D	M = 1,5 x D	D1	SW	E	R	Approx. weight g
K0702.06	M6	9	7	10	11,5	9	4,5
K0702.08	M8	12	9	13	15	11	9,0
K0702.10	M10	15	11,5	16	18,4	15	14,0
K0702.12	M12	18	14	18	20,7	17	20,0
K0702.16	M16	24	18	24	27,7	22	58,0
K0702.20	M20	30	22	30	34,6	27	110,0

K0867

Heavy-Duty Washers

DIN 6340



Material:
Steel.

Surface finish:
Stamped steel, pressed flat and hardened to 1200-1400 N/mm² Quality, black.

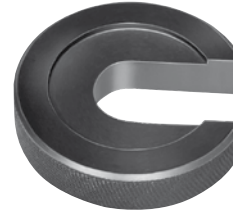
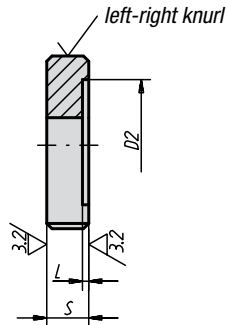
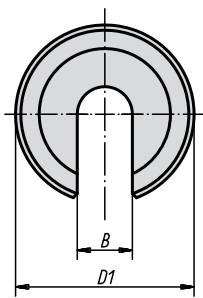
Sample order:
K0867.16

Heavy-Duty Washers DIN 6340

Order No. steel	D1	D2	S	for bolt
K0867.06	6,4	17	3	M6
K0867.08	8,4	23	4	M8
K0867.10	10,5	28	4	M10
K0867.12	13	35	5	M12
K0867.16	17	45	6	M16
K0867.20	21	50	6	M20

Projecting Washers for devices

to DIN 6372 extended



Material:
Tempered steel

Surface finish:
Heat-treated and black oxide finish

Sample order:
K0730.12

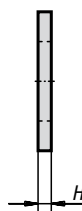
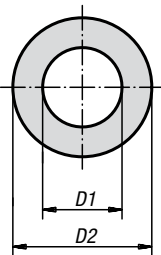
Projecting Washers for devices to DIN 6372 extended

Order No.	B	D1	D2	L	S	Approx. weight kg
K0730.05	5,25	17	12	0,75	5	0,011
K0730.06	6,4	22	16	0,8	6	0,012
K0730.08	8,4	28	21	1	7	0,022
K0730.10	10,5	34	25	1,2	8	0,040
K0730.12	13	40	30	1,8	9	0,058
K0730.14	14,5	48	33	1,8	12	0,110
K0730.16	17	56	37	1,8	12	0,165
K0730.20	21	64	45	2	14	0,230
K0730.24	25	75	52	2	16	0,320
K0730.30	31	90	65	2	18	0,720
K0730.36	37	100	75	2,5	20	0,870

K0868

Medium Washers

DIN 125 Form A



Material:
Steel 140 HV or stainless steel (A 2-70)

Surface finish:
Natural finish

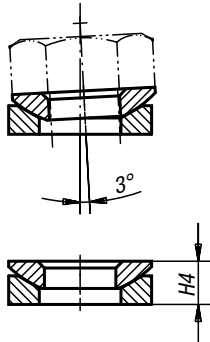
Sample order:
K0868.10

Medium Washers DIN 125 Form A

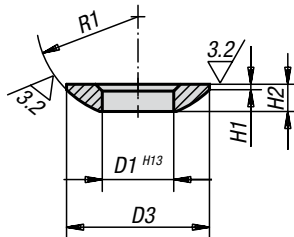
Order No. Material steel	Order No. Material stainless steel	for bolt	D1	D2	H
K0868.03	K0868.103	M3	3,2	7	0,5
K0868.04	K0868.104	M4	4,3	9	0,8
K0868.05	K0868.105	M5	5,3	10	1
K0868.06	K0868.106	M6	6,4	12	1,6
K0868.08	K0868.108	M8	8,4	16	1,6
K0868.10	K0868.110	M10	10,5	20	2
K0868.12	K0868.112	M12	13	24	2,5
K0868.14	K0868.114	M14	15	28	2,5
K0868.16	K0868.116	M16	17	30	3
K0868.20	K0868.120	M20	21	37	3
K0868.24	K0868.124	M24	25	44	4
K0868.30	K0868.130	M30	31	56	4
K0868.36	K0868.136	M36	37	66	5

Concave and Convex Washers

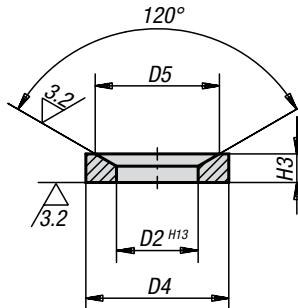
DIN 6319, 10/01



Form C
convex washer



Form D concave washer $D4 = D3$
Form G concave washer $D4 > D3$

**Material:**

Hardened steel or stainless steel;
Form G in tempered, heat-treated steel at
HV 390 ± 40

Surface finish:

Case-hardened; stainless steel not hardened,
natural finish

Sample order:

K0729.216

Note:

Use form G for rough surfaces, along holes or
notches.

Statements on load capacity are not valid for stainless
steel versions.

Concave Form C DIN 6319

Order No. Material steel	Order No. Material stainless steel	Form	D1	D3	H1	H2	R1	for screw Ø	Load capacity max. kN (static load only)
K0729.105	-	C	5,25	10,5	0,4	2	7,5	5	-
K0729.106	K0729.0106	C	6,4	12	0,7	2,3	9	6	9/-
K0729.108	K0729.0108	C	8,4	17	0,6	3,2	12	8	17/-
K0729.110	K0729.0110	C	10,5	21	0,8	4	15	10	26/-
K0729.112	K0729.0112	C	13	24	1,1	4,6	17	12	38/-
K0729.114	-	C	15	28	1,2	5	22	14	53
K0729.116	K0729.0116	C	17	30	1,3	5,3	22	16	73/-
K0729.120	K0729.0120	C	21	36	2	6,3	27	20	117/-
K0729.124	K0729.0124	C	25	44	2,4	8,2	32	24	168/-
K0729.130	K0729.0130	C	31	56	3,6	11,2	41	30	269/-
K0729.136	K0729.0136	C	37	68	4,6	14	50	36	394/-
K0729.142	K0729.0142	C	43	78	6,5	17	58	42	542/-
K0729.148	K0729.0148	C	50	92	8	21	67	48	714/-
K0729.156	-	C	58	103	9,5	23	79	56	-
K0729.164	-	C	66	120	12	27	93	64	-

Concave and Convex Washers

DIN 6319, 10/01

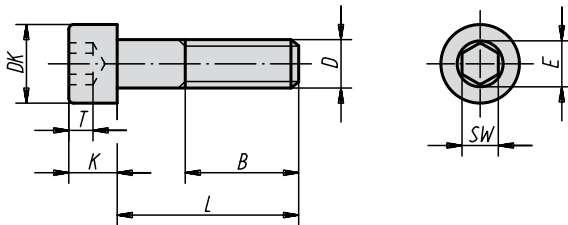


Convex Washers Form CD and G DIN 6319, 10/01

Order No. Material steel	Order No. Material stainless steel	Form	D2	D4	D5	H3	H4 with concave washer	for screw Ø	Load capacity max. kN (static load only)
K0729.205	-	D	6	10,5	9,25	2,1	3,1	5	-
K0729.206	K0729.0206	D	7,1	12	11	2,8	4	6	9/-
K0729.208	K0729.0208	D	9,6	17	14,5	3,5	5,3	8	17/-
K0729.210	K0729.0210	D	12	21	18,5	4,2	6,3	10	26/-
K0729.212	K0729.0212	D	14,2	24	20	5	8	12	38/-
K0729.214	-	D	16,5	28	24,8	5,6	8,2	14	53
K0729.216	K0729.0216	D	19	30	26	6,2	9,3	16	73/-
K0729.220	K0729.0220	D	23,2	36	31	7,5	11,6	20	117/-
K0729.224	K0729.0224	D	28	44	37	9,5	15	24	168/-
K0729.230	K0729.0230	D	35	56	49	12	18,9	30	269/-
K0729.236	K0729.0236	D	42	68	60	15	23,3	36	394/-
K0729.242	K0729.0242	D	49	78	70	18	28,3	42	542/-
K0729.248	K0729.0248	D	56	92	82	22	35,2	48	714/-
K0729.256	-	D	65	103	92	25	39,7	56	-
K0729.264	-	D	75	120	110	30	46,5	64	-
K0729.305	-	G	6	15	9,25	2,5	3,5	5	-
K0729.306	K0729.0306	G	7,1	17	11	4	5,2	6	9/-
K0729.308	K0729.0308	G	9,6	24	14,5	5	6,8	8	17/-
K0729.310	K0729.0310	G	12	30	18,5	5	7,1	10	26/-
K0729.312	K0729.0312	G	14,2	36	20	6	9	12	38/-
K0729.314	-	G	16,5	40	24,8	6	8,6	14	53
K0729.316	K0729.0316	G	19	44	26	7	10,1	16	73/-
K0729.320	K0729.0320	G	23,2	50	31	8	12	20	117/-
K0729.324	K0729.0324	G	28	60	37	10	15,5	24	168/-
K0729.330	K0729.0330	G	35	68	49	12	18,7	30	269/-
K0729.336	-	G	42	80	60	12	20,3	36	394/-

Socket Head Screws

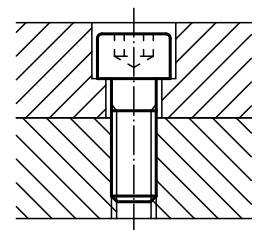
DIN 912 / DIN EN ISO 4762

**Material:**

Steel or stainless steel (A 2)

Surface finish:Steel class 8.8, black;
stainless steel A 2-70, natural finish**Sample order:**

K0869.04X10 (Please also indicate dimension L)

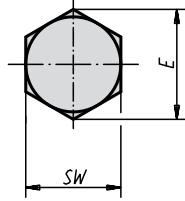
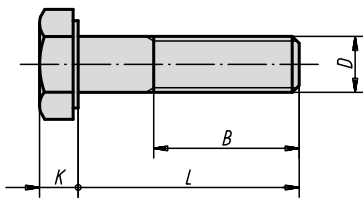
Note:The screw length 18 as well as the versions
K0869.105X40 and K0869.106X55 are not available in
stainless steel.

Socket Head Screws DIN 912 / DIN EN ISO 4762

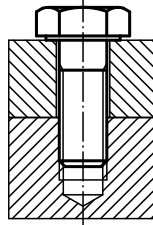
Order No. Material steel	Order No. Material stainless steel	D	L	B	DK	K	E	SW	T
K0869.04X	K0869.104X	M4	10/12/16/18/20/25	20	7	4	3,44	3	2
K0869.05X	K0869.105X	M5	10/12/16/18/20/25/30/40	22	8,5	5	4,58	4	2,5
K0869.06X	K0869.106X	M6	10/12/16/18/20/25/30/35/40/45/50/55/60	24	10	6	5,72	5	3
K0869.08X	K0869.108X	M8	16/18/20/25/30/35/40/45/50/60/70/80	28	13	8	6,86	6	4
K0869.10X	K0869.110X	M10	16/18/20/25/30/35/40/45/50/60/70/80/90/100	32	16	10	9,15	8	5
K0869.12X	K0869.112X	M12	20/25/30/40/50/60/70/80/90/100/110/120/35/45	36	18	12	11,43	10	6
K0869.14X	-	M14	50/80/120	40	21	14	13,9	12	7
K0869.16X	-	M16	30/35/40/45/50/60/70/80/90/100/110/120	44	24	16	16	14	8
K0869.20X	-	M20	40/45/50/60/70/80/90/100/110/120	52	30	20	19,44	17	10

Hexagon Head Bolts with shank

DIN EN ISO 4014 / DIN EN ISO 24014



application example:



Material:

Steel or stainless steel (A 2)

Surface finish:

Steel class 8.8, black;
stainless steel A 2-70, natural finish

Sample order:

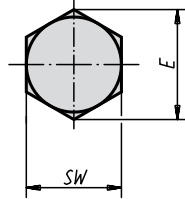
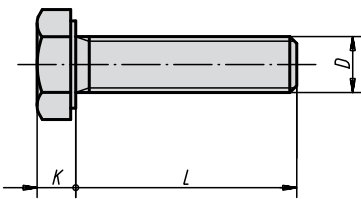
K0870.110X50 (Please also indicate dimension L)

Hexagon Head Bolts with shank DIN 931

Order No. Material steel	Order No. Material stainless steel	D	L	B	SW	E	K
K0870.04X	-	M4	25/30/35/40/45/50	14	7	7,66	2,8
K0870.05X	K0870.105X	M5	25/30/35/40/45/50/60	16	8	8,79	3,5
K0870.06X	K0870.106X	M6	30/35/40/45/50/60/70	18	10	11,05	4
K0870.08X	K0870.108X	M8	40/45/50/60/70/80/35	22	13	14,38	5,3
K0870.10X	K0870.110X	M10	40/45/50/60/70/80/90/100	26	17	18,9	6,4
K0870.12X	K0870.112X	M12	45/50/60/70/80/90/100/110/120	30	19	21,1	7,5
K0870.16X	K0870.116X	M16	60/70/80/90/100/110/120	38	24	26,75	10
K0870.20X	-	M20	70/80/90/100/110/120	46	30	33,53	12,5

Hexagon Head Bolts

DIN 933



Material:

Steel

Surface finish:

Quality class 8.8, black

Sample order:

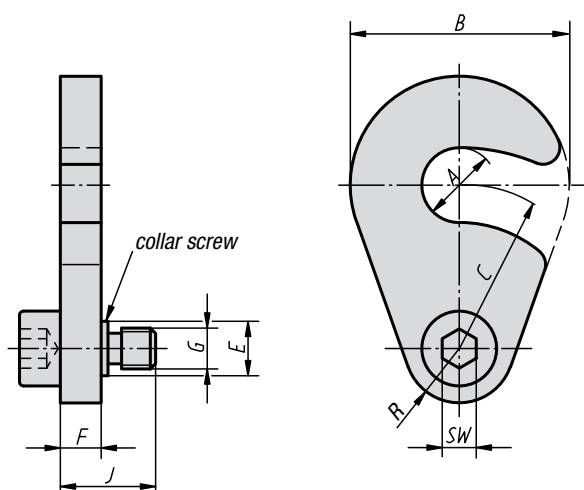
K0871.06X20 (Please also indicate dimension L)

Hexagon Head Screws DIN 933

Order No.	D	L	K	SW	E
K0871.06X	M6	20/25/30/40/50/60	4	10	11,05
K0871.08X	M8	16/20/25/30/35/40	5,3	13	14,38
K0871.10X	M10	30/40/50/60/80/100	6,4	17	18,9
K0871.12X	M12	30/40	7,5	19	21,1
K0871.16X	M16	40/50	10	24	26,75

Swing C-Washers

with Collar Screw



Material, surface finish:

Swing C-Washer hardened steel, case-hardened and black oxide finish

Collar Screw tempered steel, heat-treated and black oxide finish

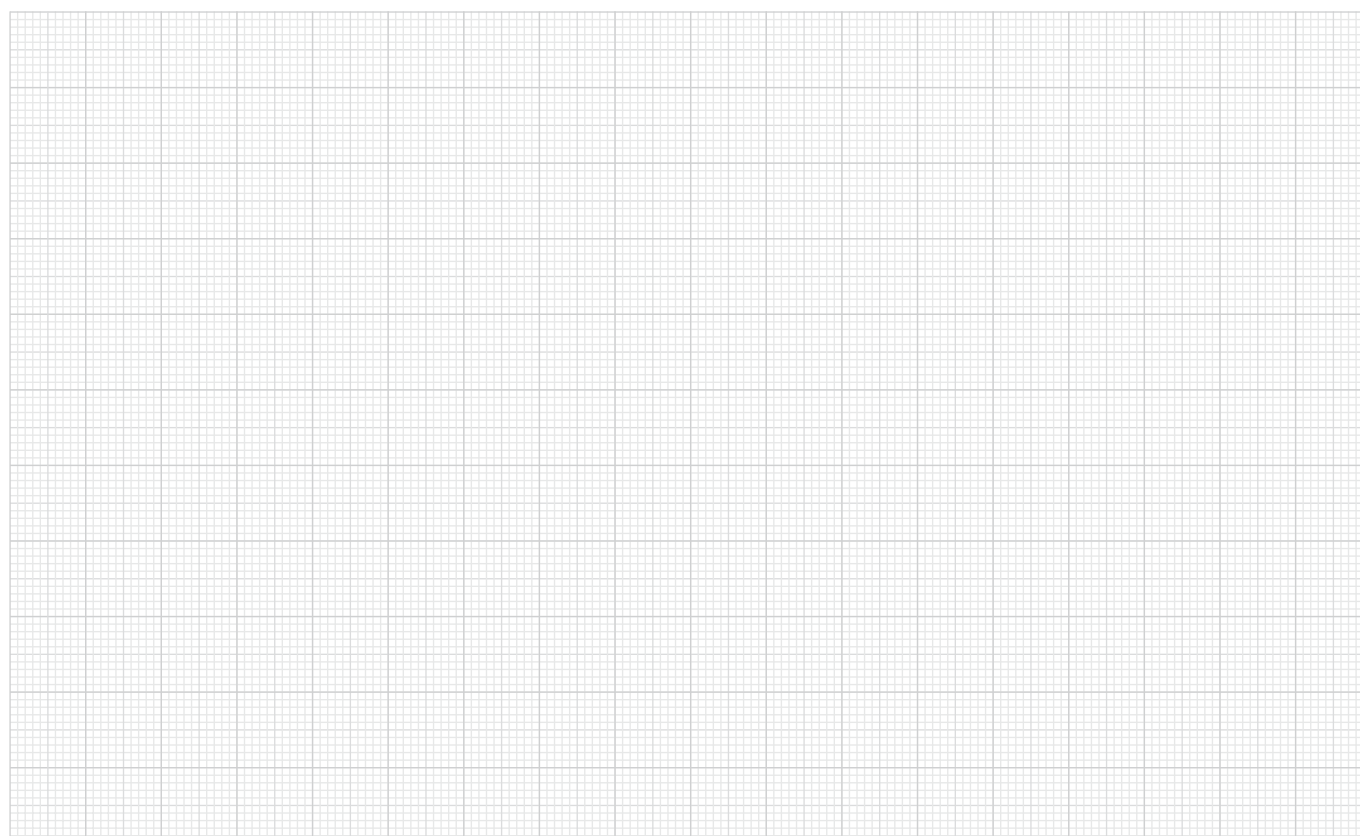
Sample order:

K0872.90010

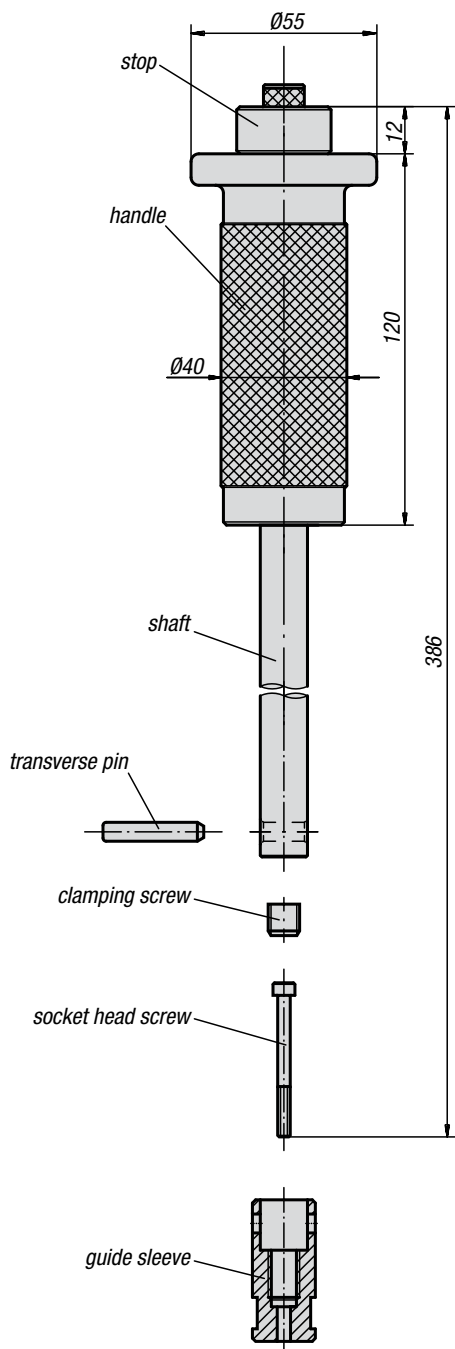
Swing C-Washers with Collar Screw

Order No.	A	B	C	D	E	F	G	SW	J	Approx. weight kg
K0872.90010	11	32	24	8	8	6	M6	5	14	0,047
K0872.90012	13,5	40	27	10	10	8	M8	6	19	0,09
K0872.90016	18	50	33	10	10	8	M8	6	19	0,125

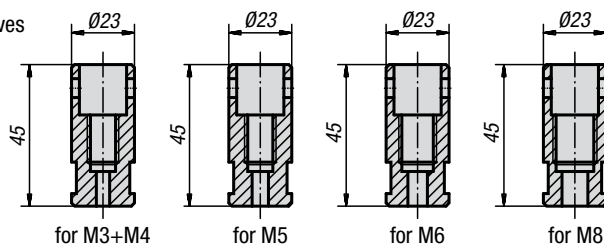
Notes



Extractor



1 set of
guide sleeves

**Material, surface finish:**

Hammer head tempered steel, heat-treated and chromium-plated;
shaft, stop and guide sleeve tool steel, hardened and chromiumplated

Sample order:

K0873.40

Note:

These Extractors are used to remove Locating Pins and Centring Pins (K0817, K0818, K0350, K0351) with M3 - M8 taps.

Accessories:

Storage box for guide sleeves.

Extractor

Order No.	Approx. weight kg
K0873.40	1,700

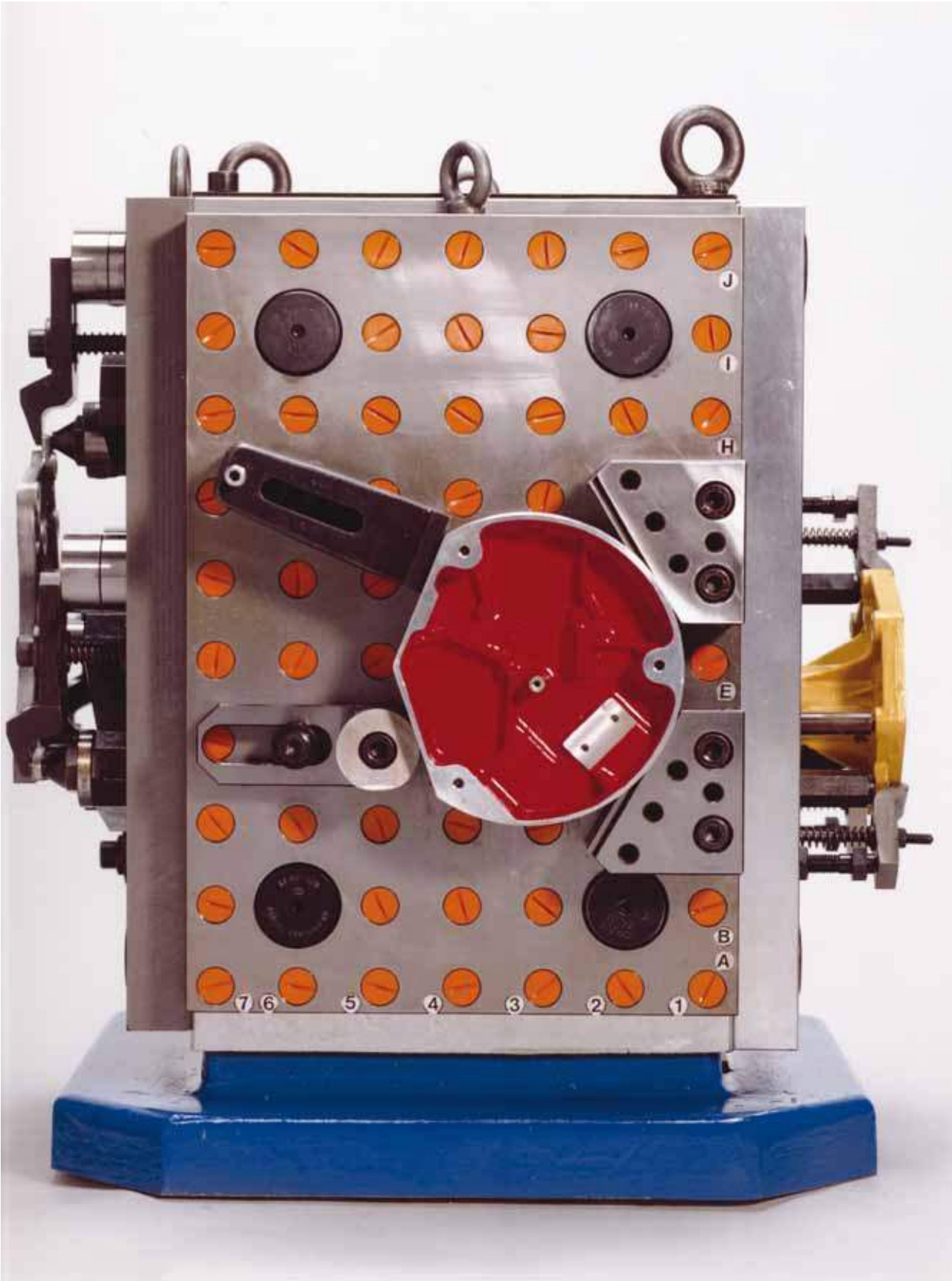


A large rectangular area filled with a light gray grid pattern, intended for taking notes.

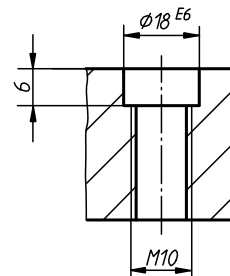
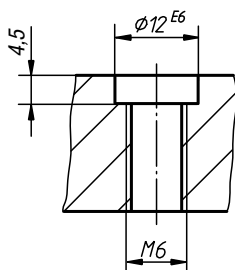
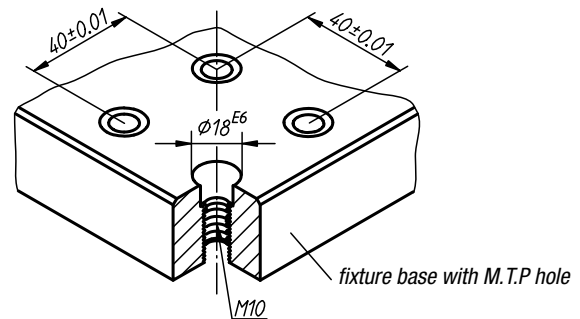
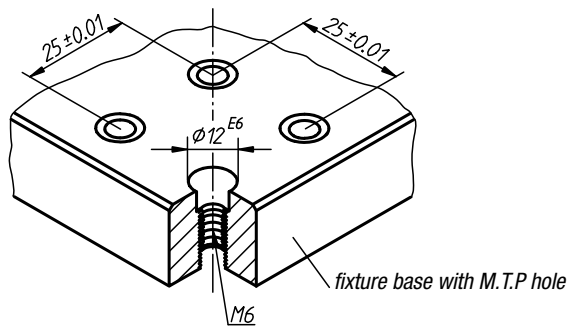
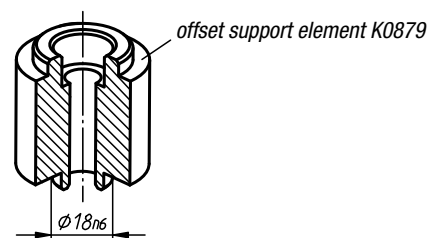
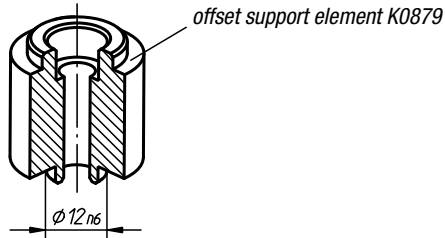
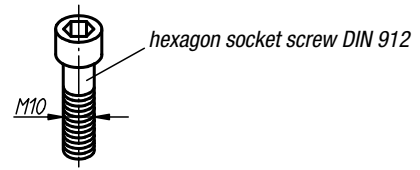
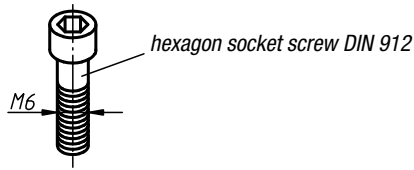
Modular Clamping System



**Fixture Bases
Building Block
Elements
Locators
Supports
Clamps and
Adjustable Elements
Accessories**

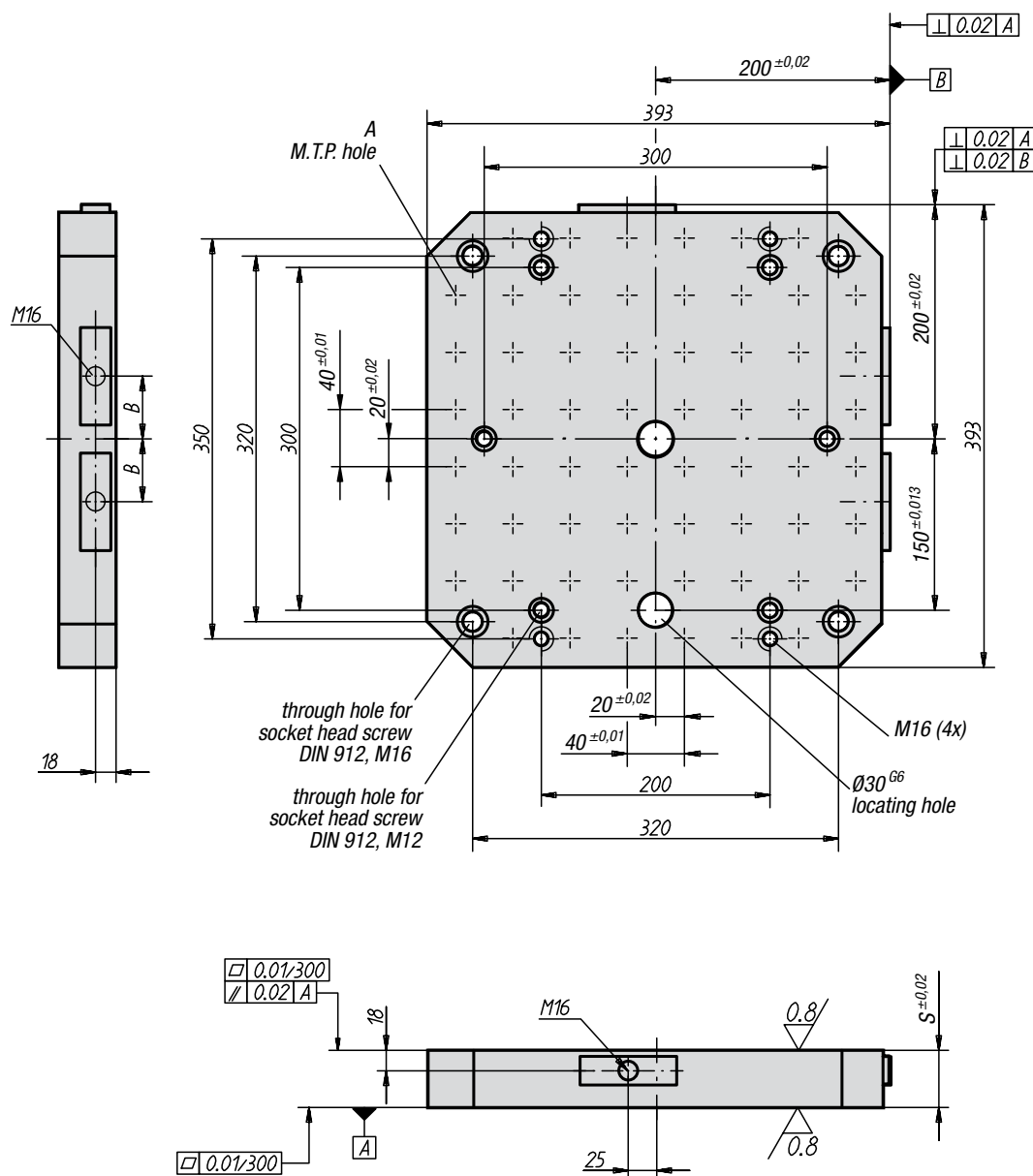


M.T.P Holes and Pitches



M.T.P. hole:

The characteristic feature of the M.T.P. hole is its dual function: the coaxial arrangement of the locating and the threaded parts allows positioning and fastening at the same time with one M.T.P. hole (see illustrations). As a result, the size of the fixture elements can be reduced to a minimum and their flexibility increased accordingly. The system allows the use of screws with the DIN standard. Fine-tolerance screws are not needed. Position precision is always $\pm 0,01$ irrespective of what matrix drill holes are used.



Material:
Grey cast iron GJL 250

Surface finish:
Mounting surfaces ground

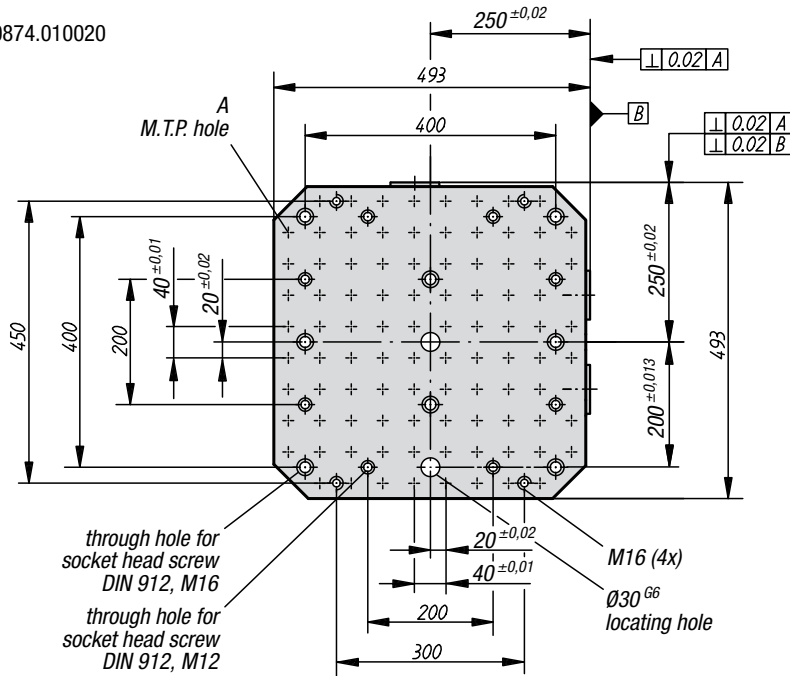
Sample order:
K0874.010015

Note:
Pitch of M.T.P. holes is $40 \pm 0,01$ mm.
The MC Plates are matched to MC Plates for machine tools according to DIN 55201 and to MC Plates for machine tools according to JIS 6337-1980.
The MC Plates are also available without M.T.P. holes.

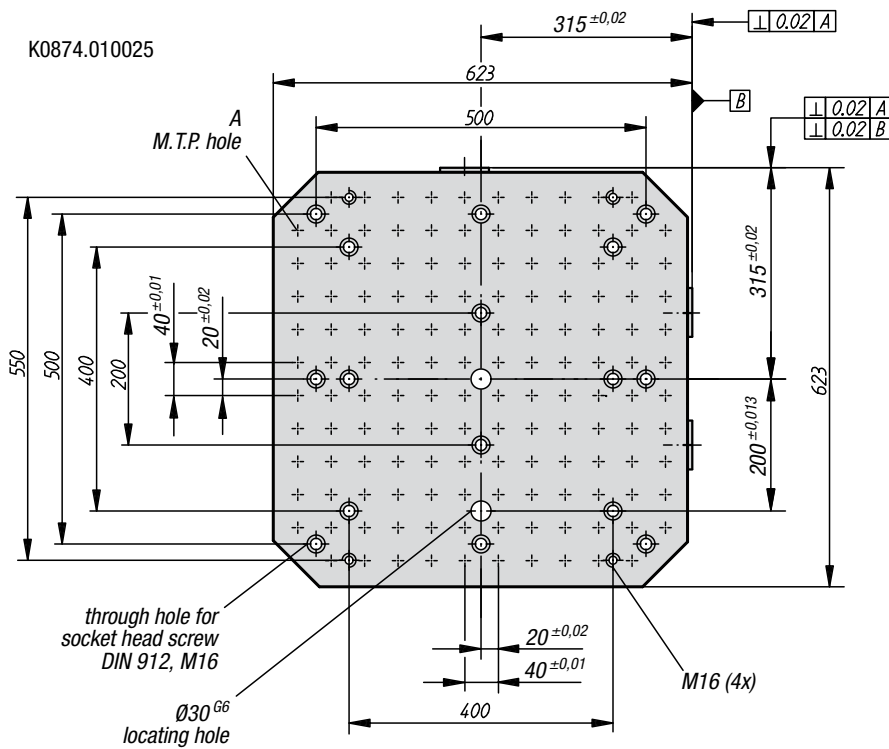
MC Plates

Order No. with M.T.P. holes	Order No. without M.T.P. holes	A Locating hole	A Thread	B	S	Number of M.T.P. hole
K0874.010015	K0806.004040	18 E6/-	M10/-	55	50	74/-
K0874.010020	K0806.005050	18 E6/-	M10/-	75	50	129/-
K0874.010025	K0806.006363	18 E6/-	M10/-	100	50	180/-

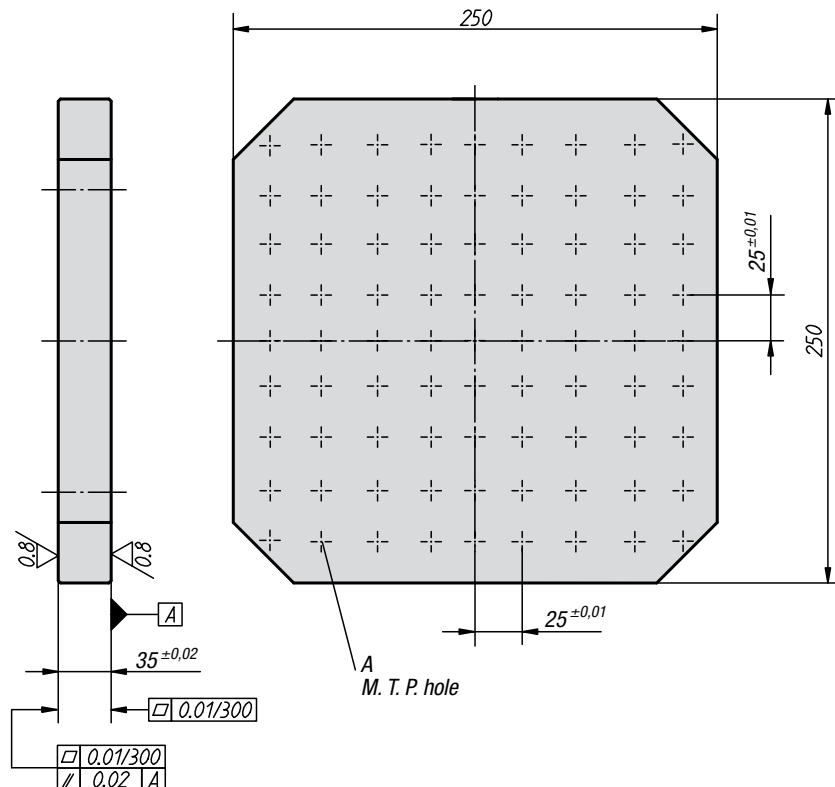
K0874.010020



K0874.010025



MC Plates

**Material:**

Grey cast iron GJL 250

Surface finish:

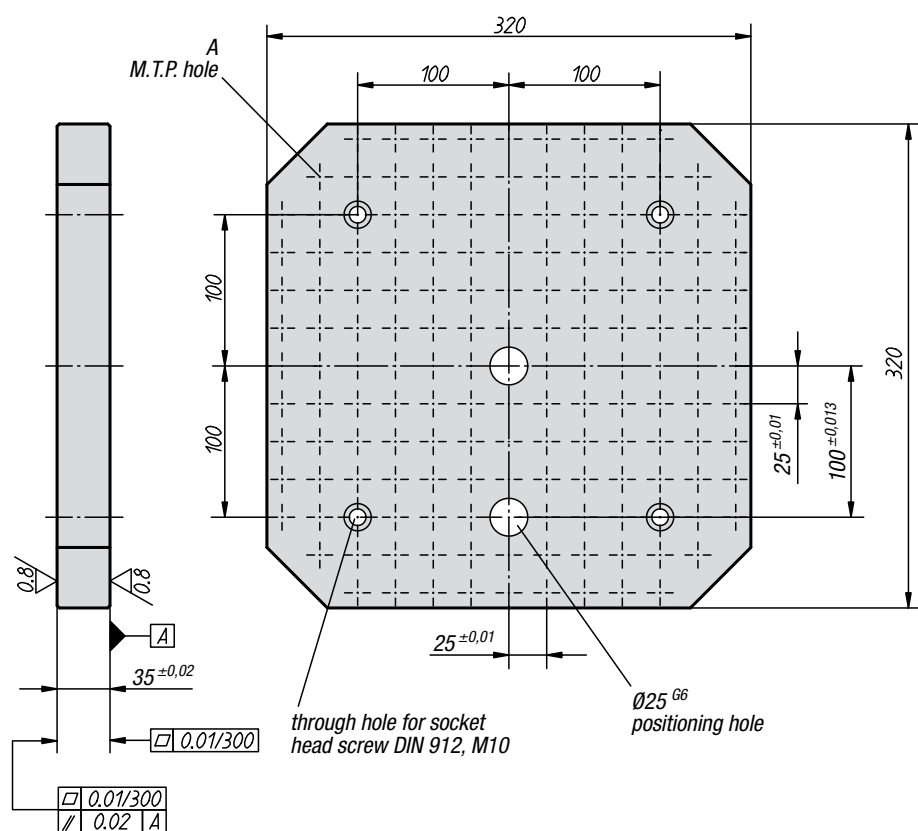
Mounting surfaces ground

Sample order:

K0874.006005

Note:Pitch of M.T.P. holes is 25 ± 0.01 mm.

The MC Plates are matched to MC Plates for machine tools according to DIN 55201. Size 250 mm x 250 mm without locating- and fastening holes.

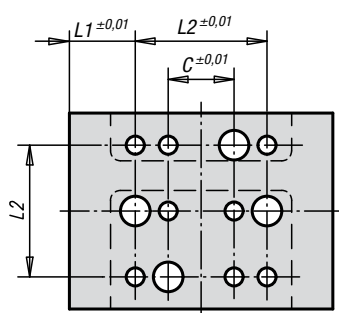
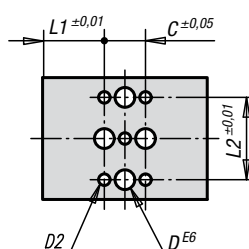


MC Plates

Order No.	A Locating hole	A Thread	Number of M.T.P. hole	Approx. weight kg
K0874.006005	12 E6	M6	81	15
K0874.006012	12 E6	M6	151	27



K0875.010006

drill hole diagram
K0875.006005**Material:**

Grey cast iron GJL 250

Surface finish:

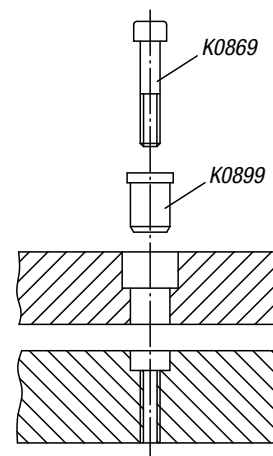
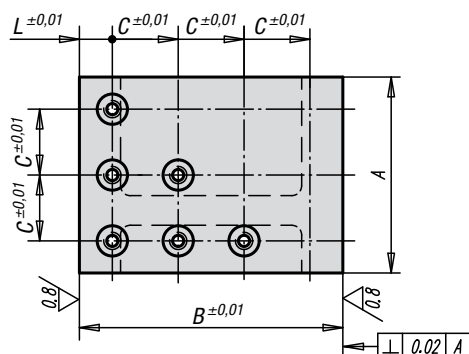
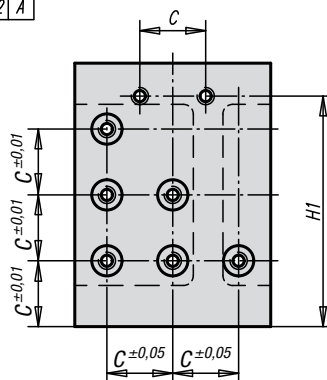
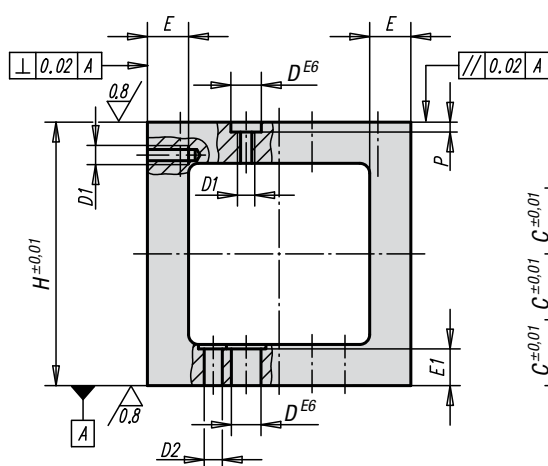
Support and mounting surfaces ground.

Sample order:

K0875.006005

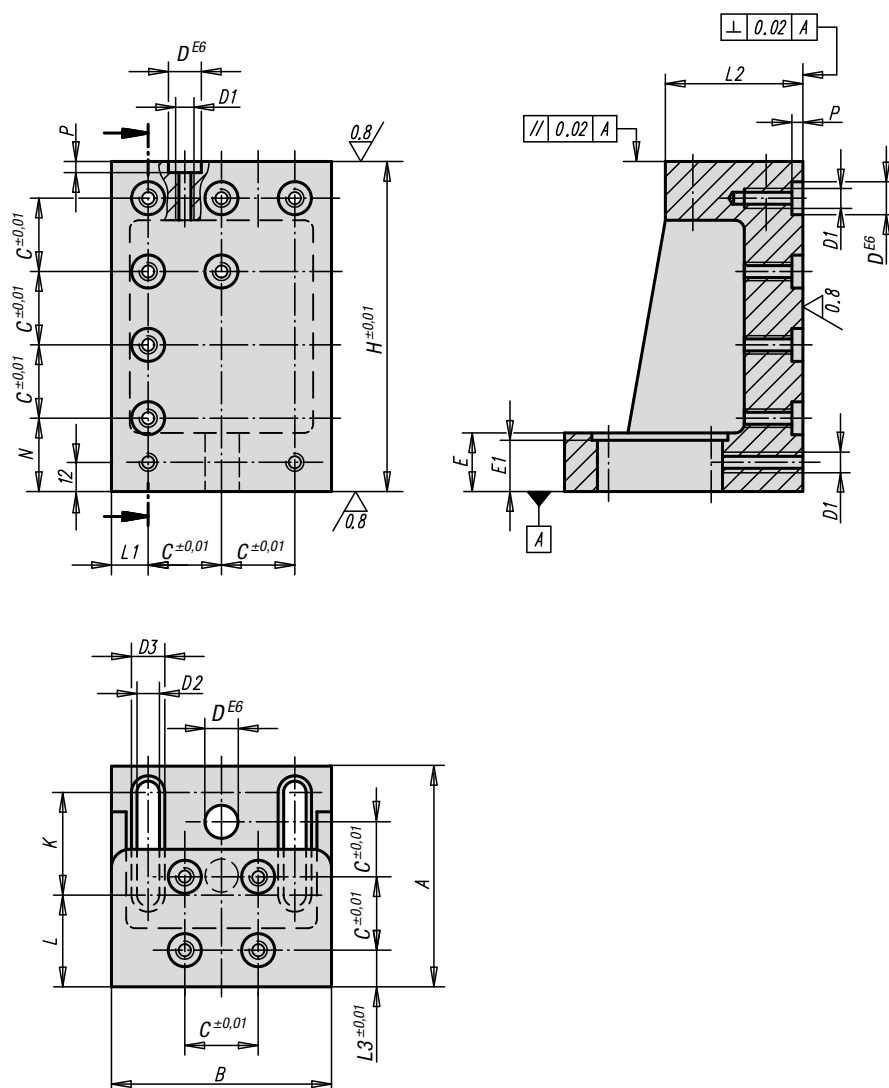
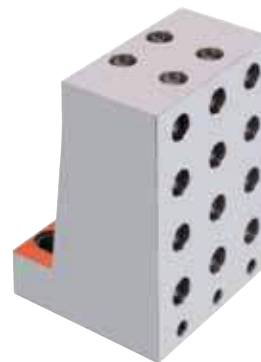
Note:

Matrix spacing 25 mm ± 0.01 mm or 40 mm ± 0.01 mm are fixed on to matrix elements. They can be used for the fixing of low workpieces or as base elements. The consoles are positioned with fixing bushes and fixed with socket head screws DIN 912. These consoles can be mounted in the matrix or between the matrix positions.

**Consoles**

Order No.	A	B	C	D	D1	D2	E	E1	H	H1	L	L1	L2	P	Suitable bush	Approx. weight kg
K0875.006005	74	100	25	12	M6	7	20	18	100	87,5	12,5	37,5	50	4,5	K0899.006022	2,9
K0875.010006	119	160	40	18	M10	11	25	24	160	140	20	40	80	7	K0899.010030	10,3

Adjustable Angle Plates

**Material:**

Grey cast iron GJL 250

Surface finish:

Cast iron, support and mounting surfaces ground

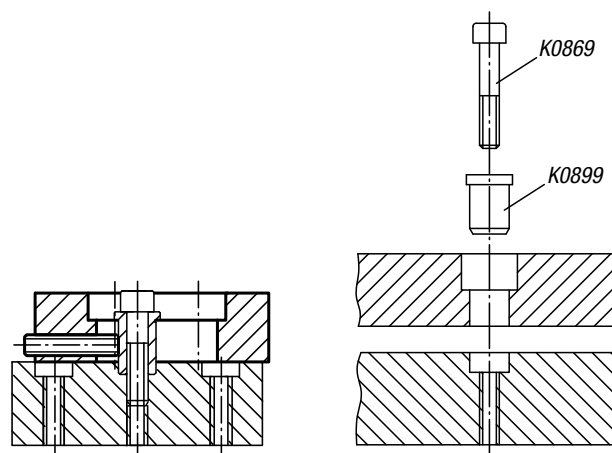
Sample order:

K0876.010012

Note:

With the adjustable angle plate, workpieces can be fixed vertically or horizontally. The K0876 angle has 2 positioning drillholes and two fixing grooves on the base surface. So this angle can be positioned either precisely in the matrix or be moved along the matrix by means of the fixing grooves.

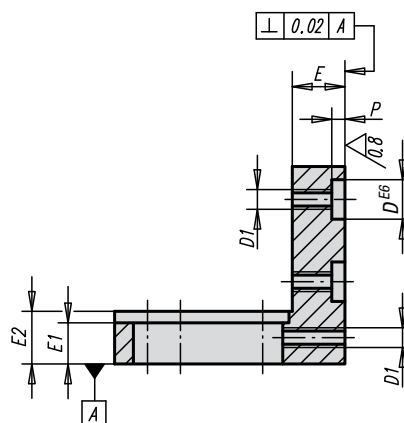
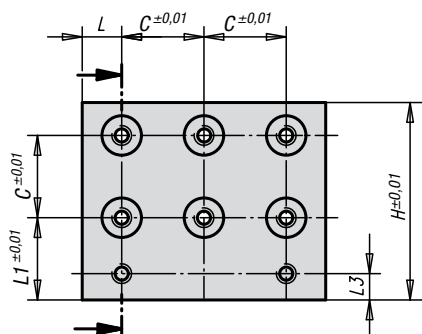
With the help of a grub screw, the adjustable angle plate are prevented from being displaced when in use.



Adjustable Angle Plates

Order No.	A	B	C	D	D1	D2	D3	E	E1	H	K	L	L1	L2	L3	N	P	Suitable bush	Approx. weight kg
K0876.010012	120	130	40	18	M10	18	24	34	32	180	56	50	25	75	20	40	7	K0899.010038	10,503
K0876.010016	120	130	40	18	M10	18	24	34	32	260	56	50	25	75	20	80	7	K0899.010038	14,100

Adjustable Angle Plates

**Material:**

Grey cast iron GJL 250

Surface finish:

Cast iron, support and mounting surfaces ground

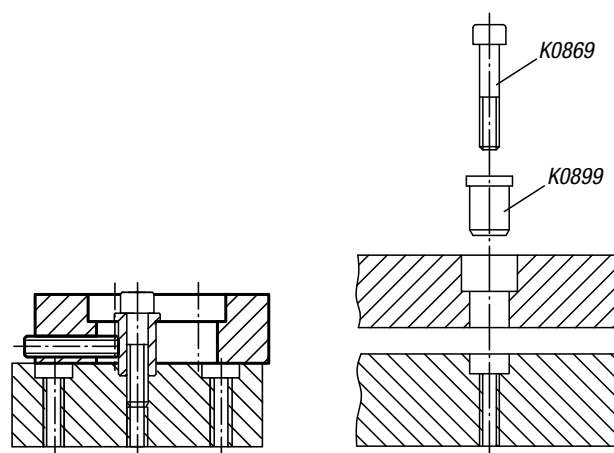
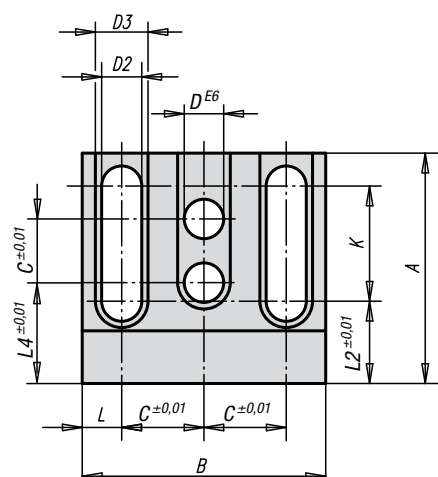
Sample order:

K0876.006005

Note:

With the adjustable angle plate, workpieces can be positioned and fixed vertically. The K0876.006005 has 2 positioning drillholes on the base surface.

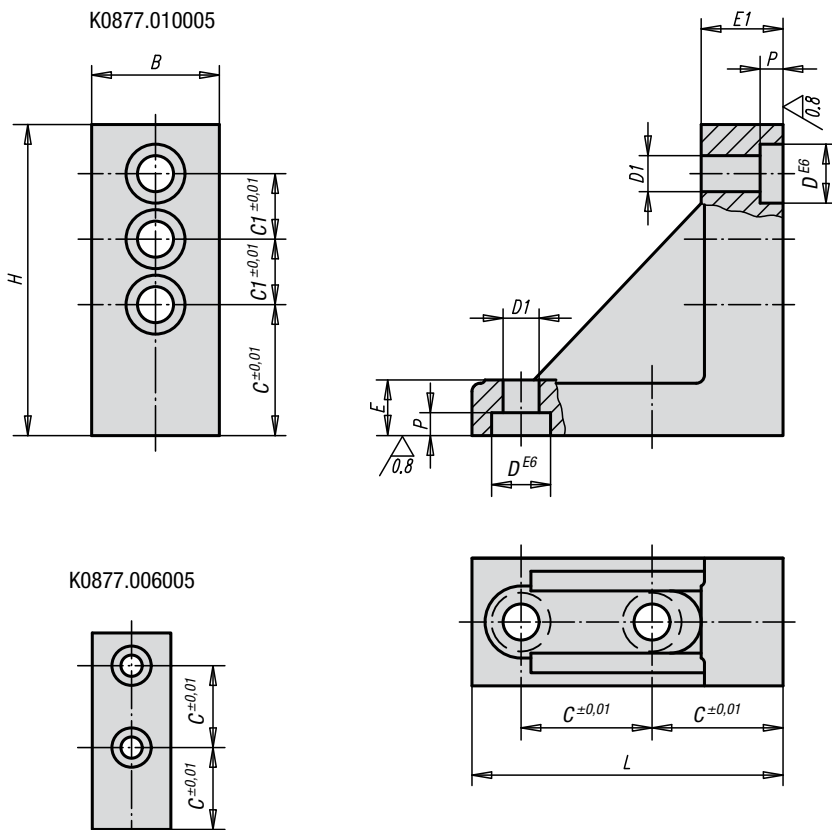
With the help of a grub screw, the adjustable angle plate are prevented from being displaced when in use.



Adjustable Angle Plates

Order No.	A	B	C	D	D1	D2	D3	E	E1	E2	H	K	L	L1	L2	L3	L4	P	Suitable bush	Approx. weight kg
K0876.006005	70	74	25	12	M6	12,2	16	16	12,5	16	60	35	12	25	25	8	25	5	K0899.006022	1,27
K0876.006010	80	74	25	12	M6	12,2	-	20	-	18	110	35	12	25	35	10	37,5	5	K0899.006022	1,8
K0876.006015	80	74	25	12	M6	12,2	-	25	-	25	160	35	12	50	35	10	37,5	5	K0899.006022	2,8
K0876.010006	112	119	40	18	M10	18,2	-	25	-	24	100	58	19,5	40	40	12	40	7	K0899.010030	3,9

Mini Angle Plates



Material:

Grey cast iron GJL 250

Surface finish:

Cast iron, support and mounting surfaces ground

Sample order:

K0877.006005

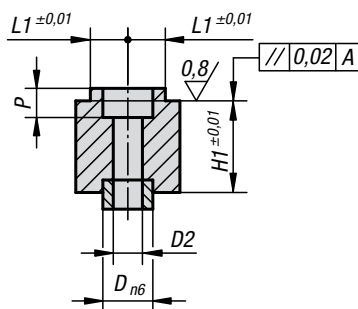
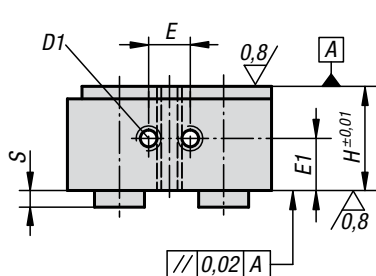
Note:

With the mini angle plate, workpieces can be positioned and fixed vertically.
The K0877.006005 angle has 2 positioning drillholes in the base surface.

Mini Angle Plates

Order No.	B	C	C1	D	D1	E	E1	H	L	P	Suitable bush	Approx. weight kg
K0877.006005	24	25	-	12	6,5	10,5	16	60	60	5	K0898.006008	0,250
K0877.010005	39	40	20	18	11	17	25	95	95	7	K0898.010012	1,000

Top and Side Attachment Blocks

**Material:**

Tempered steel

Surface finish:

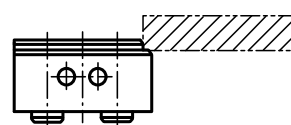
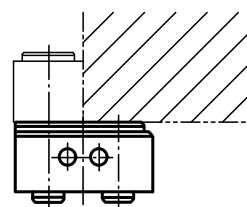
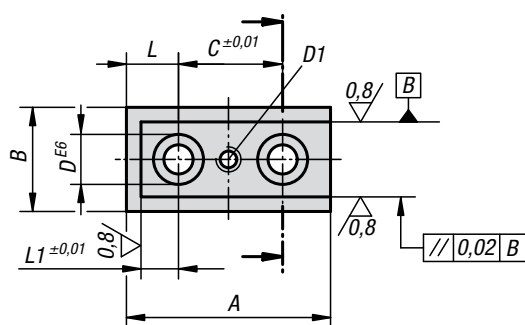
Steel heat-treated and black oxide finish; support surface ground

Sample order:

K0878.006005

Note:

The top and side attachment blocks are used to determine the first, second and third level. Workpieces with pre-worked surfaces can be attached with precision and fixed.



Top and Side Attachment Blocks

Order No.	A	B	C	D	D1	D2	E	E1	H	H1	L	L1	P	S	Approx. weight kg
K0878.006005	49	25	25	12	M6	7	10	12,5	25	22	12,5	9	7	4	0,200
K0878.010005	79	40	40	18	M10	11	18	20	40	35	20	15	11	6	0,835

Offset Support Elements

**Material:**

Tempered steel

Surface finish:

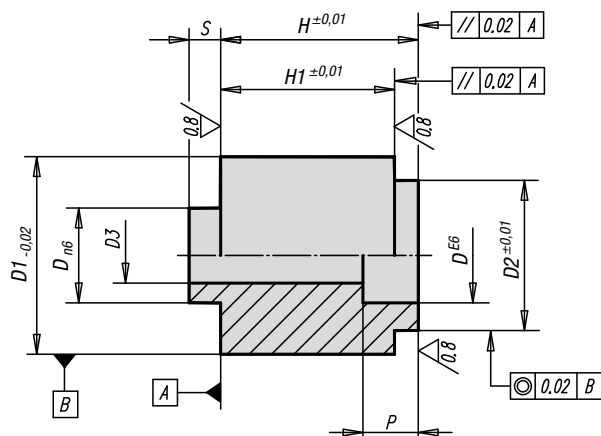
Steel heat-treated and black oxide finish; surfaces ground

Sample order:

K0879.006005

Note:

Offset support elements are used for fixing workpieces to the top and sides. They can be pegged directly to a base element or several offset support elements can be put on top of each other.



Offset Support Elements

Order No.	D	D1	D2	D3	H	H1	P	S	Approx. weight kg
K0879.006005	12	25	19	7	12,5	9,5	7	4	0,040
K0879.006010	12	25	19	7	25	22	7	4	0,080
K0879.010005	18	40	30	11	20	15	11	6	0,150
K0879.010010	18	40	30	11	40	35	11	6	0,320

Plug-in Support Elements

**Material:**

Tempered steel

Surface finish:

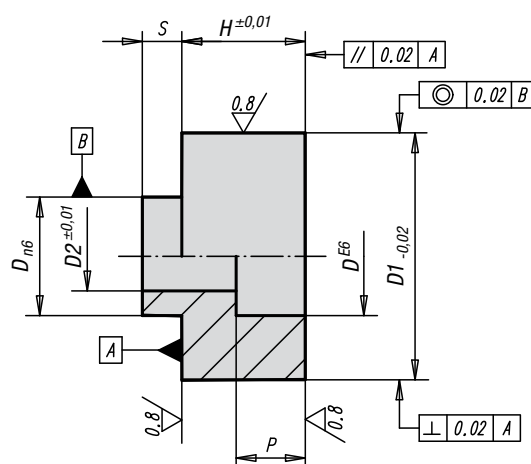
Steel heat-treated and black oxide finish; surfaces ground

Sample order:

K0880.006005

Note:

The plug-in support elements have a height which is a „multiple” of the matrix spacing. They can be stacked up to a height equal to three times the matrix spacing.



Plug-in Support Elements

Order No.	D	D1	D2	H	P	S	Approx. weight kg
K0880.006005	12	25	7	5,5	4,3	4	0,018
K0880.006010	12	25	7	9,5	7	4	0,033
K0880.006015	12	25	7	12,5	7	4	0,043
K0880.010006	18	40	11	8	6,5	6	0,078
K0880.010010	18	40	11	15	11	6	0,125
K0880.010015	18	40	11	20	11	6	0,170

Combinable Support Elements


Material:

Tempered steel

Surface finish:

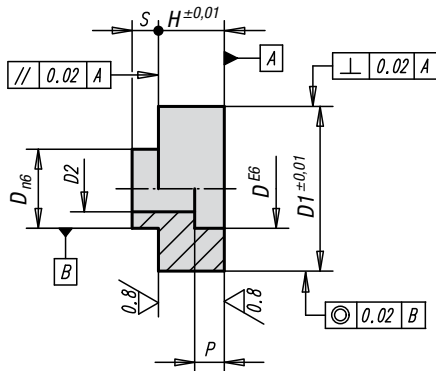
Steel heat-treated and black oxide finish; surfaces ground

Sample order:

K0881.00610505

Note:

The spacing covers can be attached in a vertical stack. With a combination of sizes you can construct any spacing to the nearest 1/10 mm between the matrix spacing and up to three times the matrix spacing.



Combinable Support Elements

Order No.	D	D1	D2	H	P	S	Approx. weight kg
K0881.00610505	12	25	7	6,2	4,5	4	0,021
K0881.00610510	12	25	7	6,4	4,5	4	0,022
K0881.00610515	12	25	7	6,5	4,5	4	0,022
K0881.00610520	12	25	7	6,6	4,5	4	0,022
K0881.00610525	12	25	7	6,7	4,5	4	0,023
K0881.00610530	12	25	7	6,9	4,5	4	0,024
K0881.00611505	12	25	7	6	4,5	4	0,020
K0881.00611510	12	25	7	8	4,5	4	0,027
K0881.00611515	12	25	7	9	4,5	4	0,030
K0881.00611520	12	25	7	10	4,5	4	0,033
K0881.00611525	12	25	7	11	4,5	4	0,038
K0881.00611530	12	25	7	13	4,5	4	0,045
K0881.00612505	12	25	7	7	7	4	0,024
K0881.00612510	12	25	7	12	7	4	0,041
K0881.00612515	12	25	7	23	7	4	0,078
K0881.00612520	12	25	7	34	7	4	0,116
K0881.01010505	18	40	11	9,9	7	6	0,087
K0881.01010510	18	40	11	10,1	7	6	0,089
K0881.01010515	18	40	11	10,2	7	6	0,090
K0881.01010520	18	40	11	10,3	7	6	0,090
K0881.01010525	18	40	11	10,4	7	6	0,091
K0881.01010530	18	40	11	10,6	7	6	0,093
K0881.01011505	18	40	11	9	6,5	6	0,079
K0881.01011510	18	40	11	11	7	6	0,097
K0881.01011515	18	40	11	12	7	6	0,105
K0881.01011520	18	40	11	13	7	6	0,110
K0881.01011525	18	40	11	14	7	6	0,119
K0881.01011530	18	40	11	16	7	6	0,137
K0881.01012505	18	40	11	10	7	6	0,088
K0881.01012510	18	40	11	30	11	6	0,262
K0881.01012515	18	40	11	40	11	6	0,351
K0881.01012520	18	40	11	50	11	6	0,440
K0881.01012525	18	40	11	60	11	6	0,530

Use of combined support and attachment elements



How a height adjustment is made

The workpiece to be secured is normally placed on supports.
The dimensions of these supports depend on the matrix spacing.

If they are used as stops/mountings, the offset must be deducted.

The height of the support must be measured first.

The procedure for a measurement of for example 73.4mm will be described below.

We recommend M10 as the system with matrix spacing of 40mm (No.K0881.010...).

The support elements can be determined from the table below.

The desired measurement is divided into elements of 1/10mm, 1mm and 10mm.

For a measurement of 73.4 mm, we first look in the table for a value that contains the 4/10mm.

In the left-hand column of the M10 system we find the value 20.4.

In this row we find on the extreme left the associated end numbers K0881.01010510 and K0881.01010520.

These numbers are also engraved on both support elements.

Thus we have: $73.4\text{mm} - 20.4\text{mm} = 53\text{mm}$.

This value of 53 mm is not to be found in the table.

On the other hand, in the column with the steps in whole mm's, we find the value „23“ that contains the „3“ step.

In this row we find once more on the extreme left the associated end numbers K0881.01011505 and K0881.01011525.

The value 23 occurs a second time in the table: end numbers K0881.01011510 and K0881.01011515.

Either combination is possible.

Thus we have: $53\text{mm} - 23\text{mm} = 30\text{mm}$.

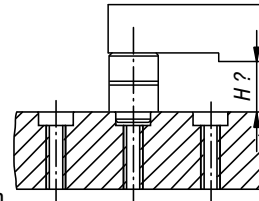
In the table we find the measurement of 30 once more in the column with the whole mm steps.

In this row we find once more on the extreme left the associated end numbers K0881.01011525 and K0881.01011530.

But there is also a support element with 30mm, end number K0881.01012510, in the „Additional End Measurements“ column that does not need to be assembled.

These end measurements are in 10 mm steps.

In this way the measurement of 73.4mm is obtained from the combination $20.4\text{mm} + 23\text{mm} + 30\text{mm}$.



Note:

the support and attachment elements No. K0879 and No. K0880 can also be used for this assembly.

System M6						System M10					
1/10 mm steps		1 mm steps		Additional support elements		1/10 mm steps		1 mm steps		Additional support elements	
Order No. K0881.006...	Balance height	Order No. K0881.006...	Balance height	Order No. K0881.006...	Balance height	Order No. K0881.010...	Balance height	Order No. K0881.010...	Balance height	Order No. K0881.010...	Balance height
...10505+...10510	12,6	...11505+...11510	14	...12505	7	...10505+...10510	20	...11505+...11510	20	...12505	10
...10505+...10515	12,7	...11505+...11515	15	...12510	12	...10505+...10515	20,1	...11505+...11515	21	...12510	30
...10505+...10520	12,8	...11505+...11520	16	...12515	23	...10505+...10520	20,2	...11505+...11520	22	...12515	40
...10505+...10525	12,9	...11505+...11525	17	...12520	34	...10505+...10525	20,3	...11505+...11525	23	...12520	50
...10505+...10530	13,1	...11505+...11530	19			...10505+...10530	20,5	...11505+...11530	25	...12525	60
...10510+...10515	12,9	...11510+...11515	17			...10510+...10515	20,3	...11510+...11515	23		
...10510+...10520	13	...11510+...11520	18			...10510+...10520	20,4	...11510+...11520	24		
...10510+...10525	13,1	...11510+...11525	19			...10510+...10525	20,5	...11510+...11525	25		
...10510+...10530	13,3	...11510+...11530	21			...10510+...10530	20,7	...11510+...11530	27		
...10515+...10520	13,1	...11515+...11520	19			...10515+...10520	20,5	...11515+...11520	25		
...10515+...10525	13,2	...11515+...11525	20			...10515+...10525	20,6	...11515+...11525	26		
...10515+...10530	13,4	...11515+...11530	22			...10515+...10530	20,8	...11515+...11530	28		
...10520+...10525	13,3	...11520+...11525	21			...10520+...10525	20,7	...11520+...11525	27		
...10520+...10530	13,5	...11520+...11530	23			...10520+...10530	20,9	...11520+...11530	29		
...10525+...10530	13,6	...11525+...11530	24			...10525+...10530	21	...11525+...11530	30		

Adjustable Supports

**Material:**

Tempered steel

Surface finish:

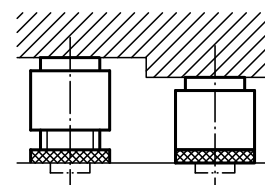
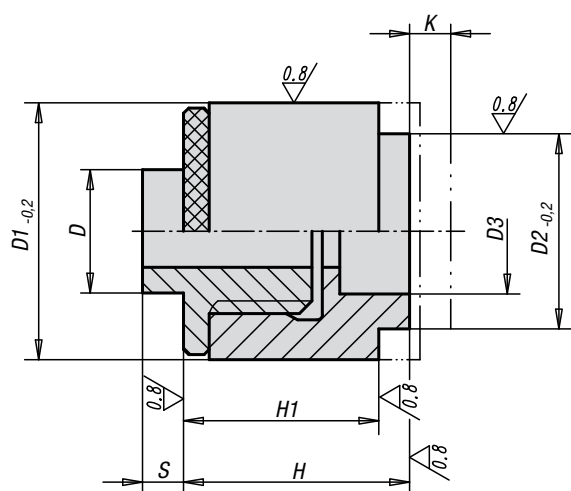
Steel heat-treated and black oxide finish; surfaces ground

Sample order:

K0882.006005

Note:

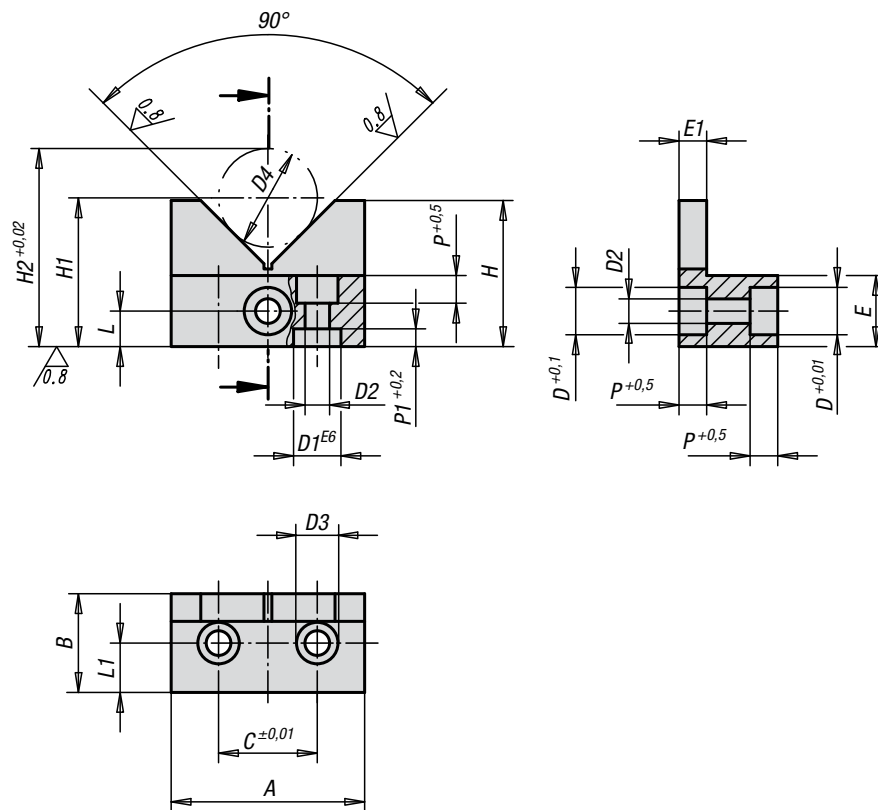
With adjustable supports you can achieve intermediate heights. It can also be used in combination with K0880.



Adjustable Supports

Order No.	D	D1	D2	D3	H	H1	K	S	Approx. weight kg
K0882.006005	12	25	19	12,2	22	19	5,5	4	0,070
K0882.010005	18	40	30	18,2	35	30	6,5	6	0,270

Vertical prism

**Material:**

Tempered steel

Surface finish:

Steel heat-treated and black oxide finish; support surface ground

Sample order:

K0883.006005

Note:

Prism and support surface ground. It can be used vertically.

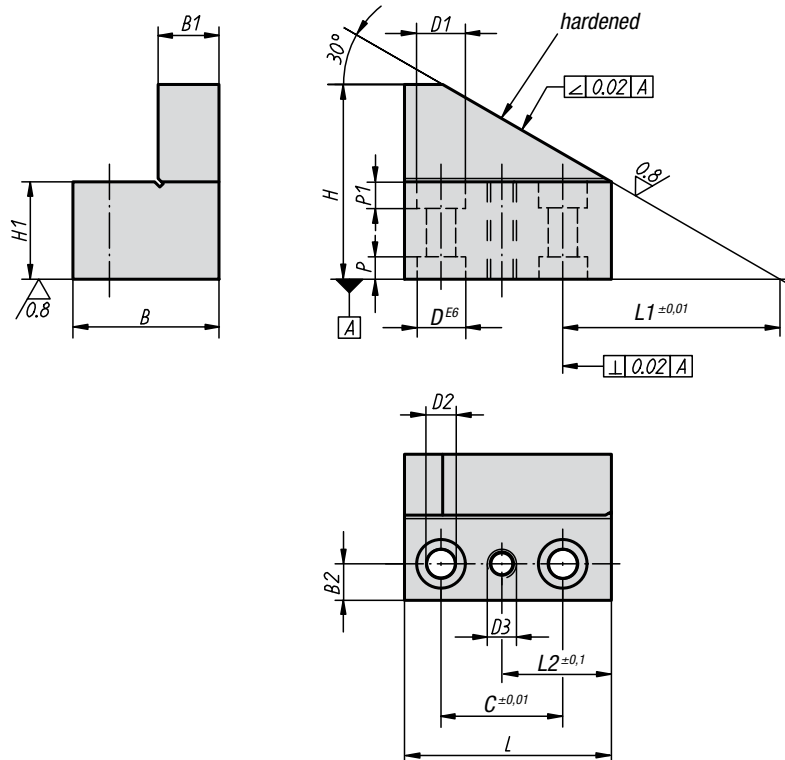
Vertical Prism

Order No.	A	B	C	D	D1	D2	D3	D4	E	E1	H	H1	H2	L	L1	P	P1	Suitable bush	Approx. weight kg
K0883.006005	49	25	25	12	12	7	10,5	30	18	7	37	41,07	56,07	9	12,5	7	4,5	K0898.006008	0,165
K0883.010005	75	37	40	18	18	10,5	18	40	40	10	60	71,49	91,49	15	17	10	6,5	K0898.010012	0,600

Split V-Blocks



Left-hand



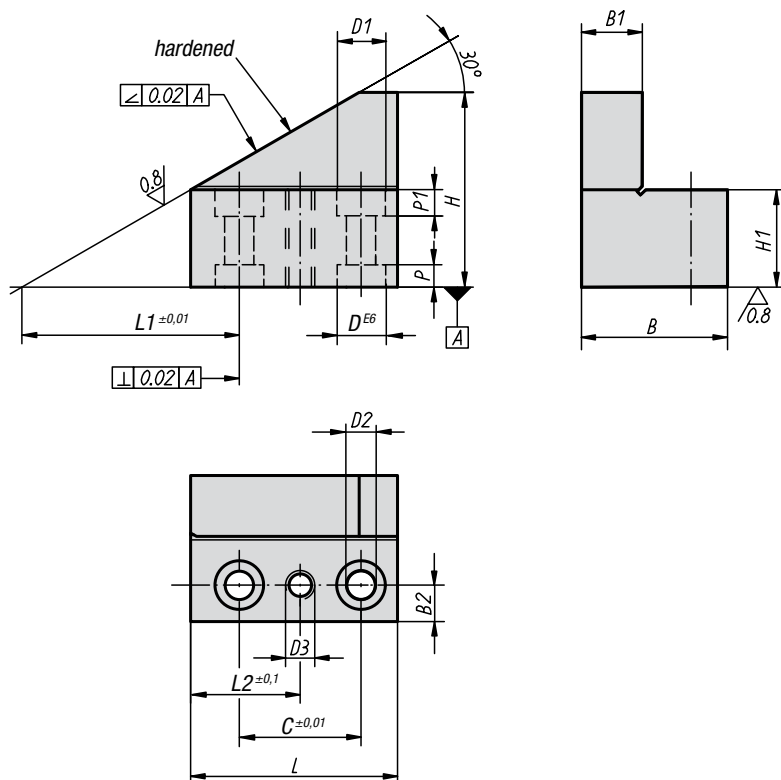
Material:
Tempered steel

Surface finish:
Black oxide finish, inclination (30°) and support
surfaces ground

Sample order:
K0884.6300630

Note:
Right-Hand and Left-Hand Split V-Blocks are used for positioning round parts. Split V-Blocks permit adjustment to the respective workpiece diameter.

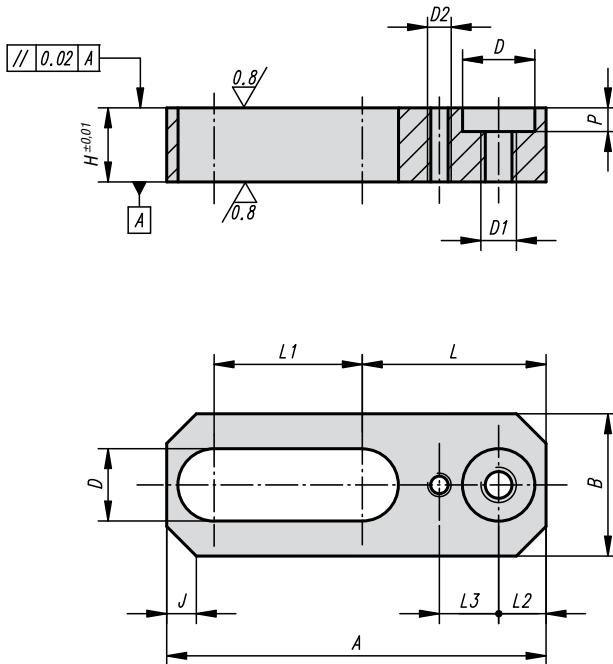
Right-hand



Split V-Blocks

Order No. Right-hand	Order No. Left-hand	B	B1	B2	C	D	D1	D2	D3	H	H1	L	L1	L2	P	P1	Suitable bush	Approx. weight kg
K0884.6300630	K0884.6310630	30	12,5	8,75	25	12	12	6,5	M6	49,5	25	45	53	22,5	5	7	K0898.006008	0,030
K0884.6301030	K0884.6311030	39,5	15	11,25	40	18	18	11	M10	79,5	40	79	96,5	39,5	7	11	K0898.010012	0,050

Universal Attachment Blocks

**Material:**

Tempered steel

Surface finish:

Steel heat-treated and black oxide finish; support surface ground

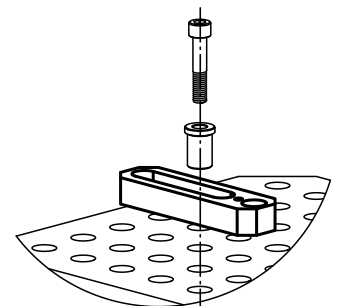
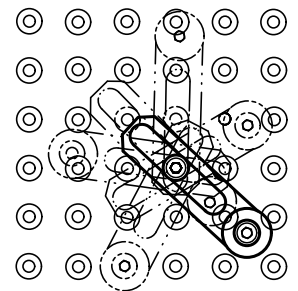
Sample order:

K0885.006003

Note:

With the attachment blocks free to slide, any desired intermediate position with in the matrix can be achieved.

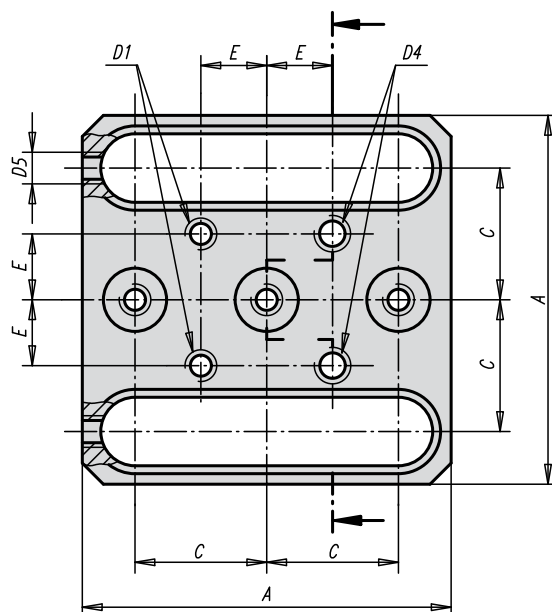
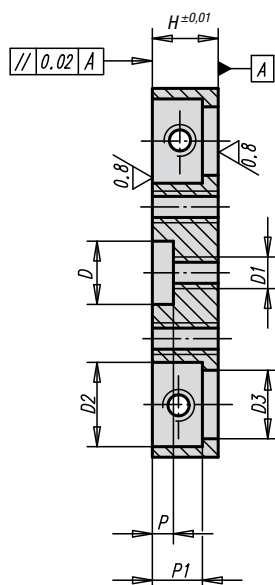
The threaded drillhole is used for fixing pieces of equipment.



Universal Attachment Blocks

Order No.	A	B	D	D1	D2	H	J	L	L1	L2	L3	P	Suitable bush	Approx. weight kg
K0885.006003	64	24	12,2	M6	M4	12,5	6	31	25	8	10	5	K0899.006016	0,104
K0885.006005	89	24	12,2	M6	M4	12,5	6	31	50	8	10	5	K0899.006016	0,208
K0885.010003	100	39	18,2	M10	M6	20	10	45	40	12	16	7	K0899.010026	0,440
K0885.010006	140	39	18,2	M10	M6	20	10	45	80	12	16	7	K0899.010026	0,500

Sliding Supports

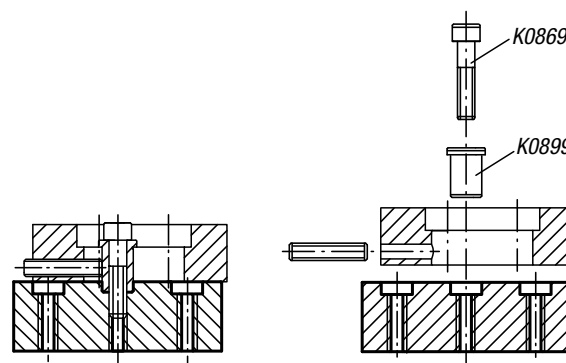


Material:
Tempered steel

Surface finish:
Steel heat-treated and black oxide finish; support surface ground

Sample order:
K0886.006005

Note:
With the sliding support, pieces of equipment can be positioned as desired within the matrix.
With the help of a grub screw, the slidings supports are prevented from being displaced when in use.



Sliding Supports

Order No.	A	C	D	D1	D2	D3	D4	D5	H	E	P	P1	Suitable bush	Approx. weight kg
K0886.006005	70	25	12,2	M6	16	12,2	M6	M5	12,5	12,5	5	9,5	K0899.006007	0,910
K0886.010006	110	40	18,2	M10	24	18,2	M12	M8	20	20	7	15	K0899.010011	1,230

Removable Top Attachment Blocks

for connecting bolts



Material:

Tempered steel

Surface finish:

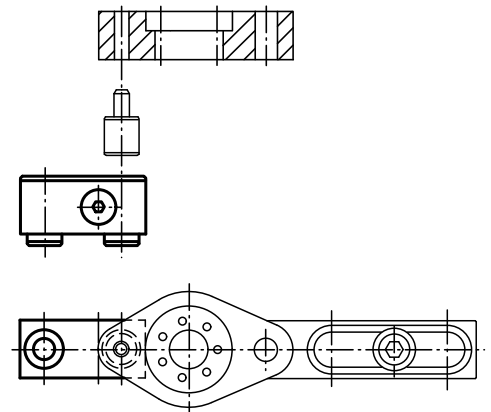
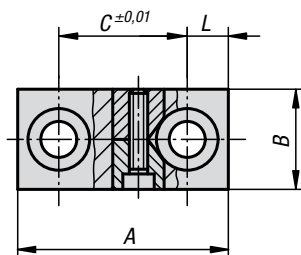
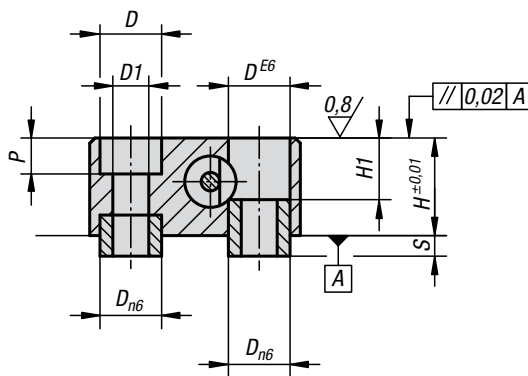
Steel heat-treated and black oxide finish; support surface ground

Sample order:

K0887.006006

Note:

With the removable top attachment block, workpieces can be positioned precisely on the modular matrix by means of a heavy-duty bolt. A specific heavy-duty bolt suitable for the workpiece can be used.

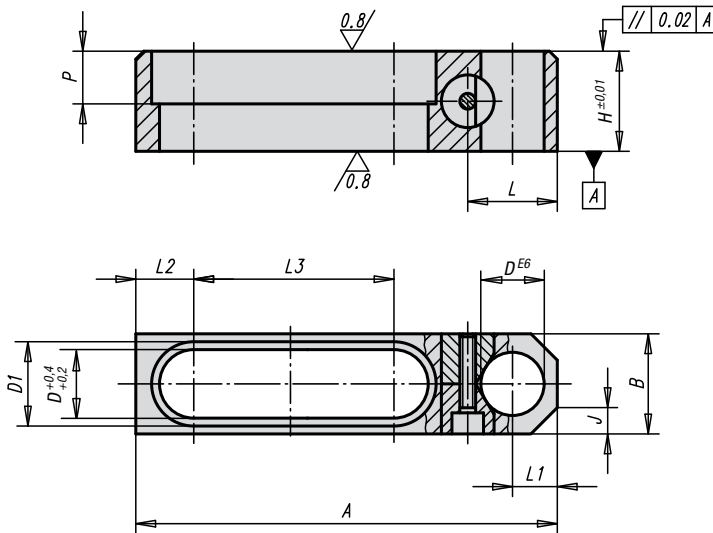


Removable Top Attachment Blocks for connecting bolts

Order No.	A	B	C	D	D1	H	H1	L	P	S	Approx. weight kg
K0887.006006	41	19	25	12	7	19	12	8	7	4	0,150
K0887.010006	65	30	40	18	11	30	23	12	11	6	0,540

Sliding Attachment Blocks

for fixing bolts


Material:

Tempered steel

Surface finish:

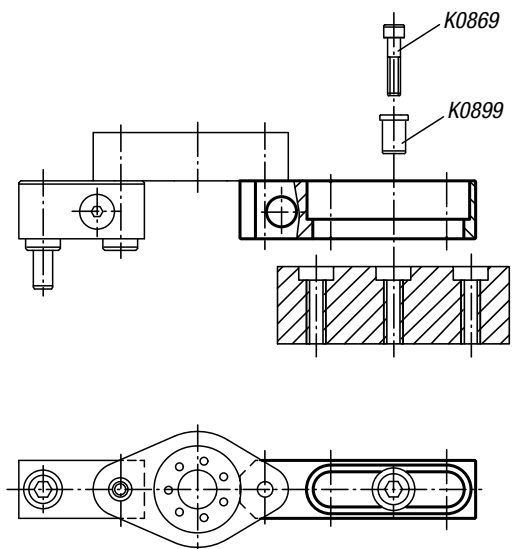
Steel heat-treated and black oxide finish; support surface ground

Sample order:

K0888.006006

Note:

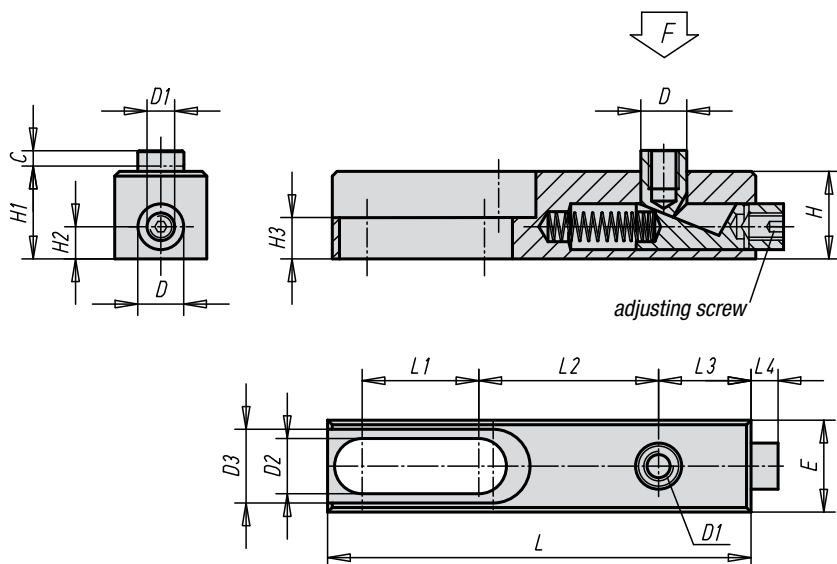
The sliding attachment for fixing bolts allows the workpiece to be positioned at any desired intermediate position within the matrix. A specific heavy-duty bolt suitable for the workpiece can be used.



Sliding Attachment Blocks for fixing bolts

Order No.	A	B	D	D1	H	J	L	L1	L2	L3	P	Suitable bush	Approx. weight kg
K0888.006006	80	19	12	16	19	5	17	8,5	11	38	10	K0899.006013	0,140
K0888.010006	122	30	18	24	30	8	25	13	15	60	20	K0899.010016	0,500

Spacing Elements

**Material:**

Steel

Surface finish:

Case-hardened, black oxide finish and ground

Sample order:

K0889.006

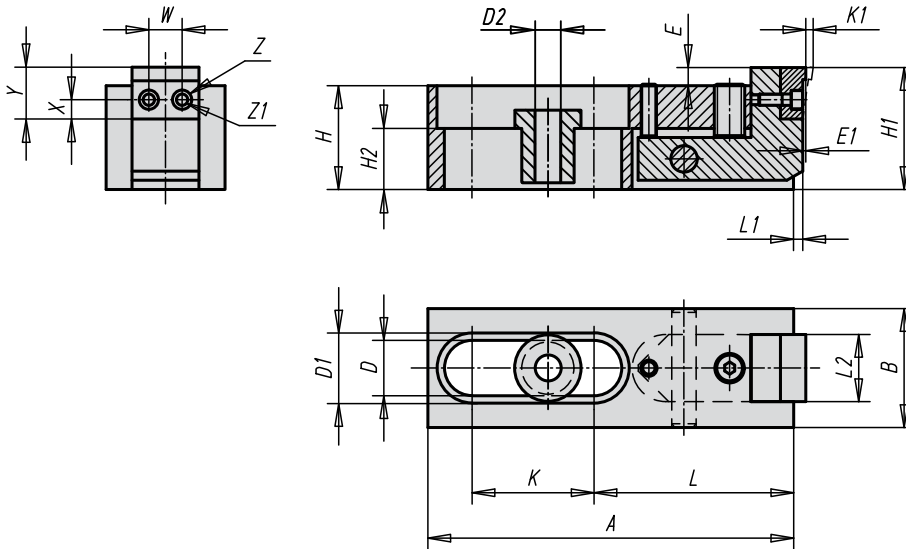
Note:

The support element is used for support in milling, drilling, planing and grinding work, in order to prevent the workpiece from sliding or moving away.

Spacing Elements

Order No.	C	D	D1	D2	D3	E	H	H1	H2	H3	L	L1	L2	L3	L4	F kN	Approx. weight kg
K0889.006	4	10	M6	8,2	16,2	20	19	19,5	7	9	92	25,5	39	20	6	3	0,2
K0889.010	6	16	M10	12,5	24,4	30	30	31	10	10	149	44	61	32	11	15	0,6

Narrow Edge Clamps



Material:

Base body in steel; clamping jaw in hardened steel; centring bush with collar in tempered steel

Surface finish:

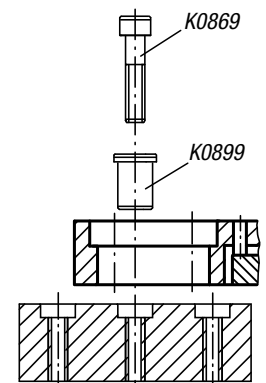
Black oxide finish;
clamping jaw case-hardened

Sample order:

K0890.006

Note:

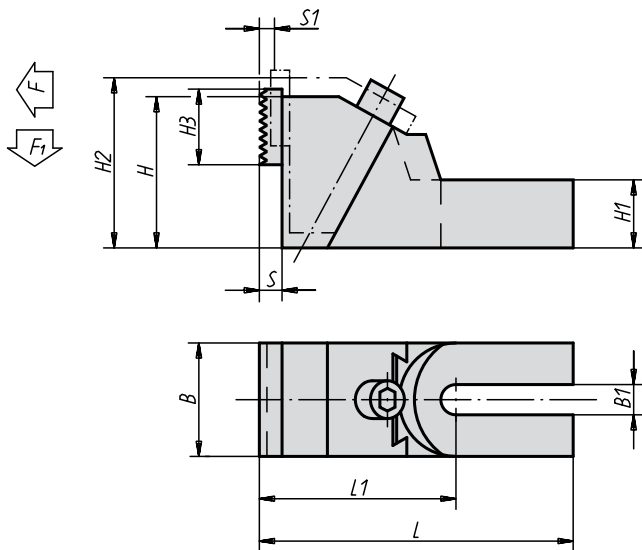
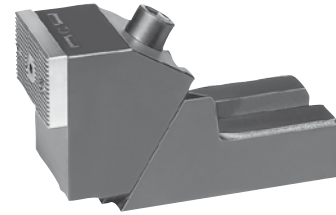
Due to their flat construction, these handy narrow edge clamps are suitable for machining low parts. These hardened jaws clamp forward and downward simultaneously due to the wedging effect.



Narrow Edge Clamps

Order No.	A	B	D	D1	D2	E	E1	H	H1	H2	K	K1	L	L1	L2	W	X	Y	Z	Z1	Clamping force kN	Approx. weight kg
K0890.006	80	24	12,2	16	6,5	2,5	0,6	21	25,5	9	25,5	2	44,5	2,5	13,5	7	4,5	11	5	3	3	0,230
K0890.010	120	39	18,2	24	10,5	4	1	34	40	20	40,5	2,5	65,5	4	21,5	10	6	15	8	4,5	16	0,950
K0890.016	186	60	26,2	35	17	7	1,5	51	59	22	60,5	4	105	6,5	35,5	16	9	24	14	9	31	3,250

Reversible Jaw Edge Clamps


Material:

Malleable, cast iron body;
clamping jaw in case-hardened steel

Surface finish:

Black oxide finish,
clamping jaw case-hardened

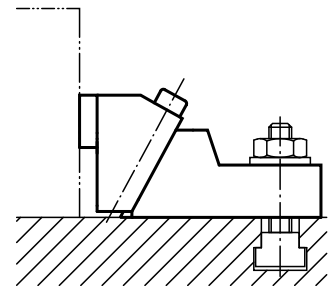
Sample order:

K0891.26

Note:

The jaws are rotatable: smooth side for machined parts, rippled side for rough clamping surfaces. We recommend that two clamping screws be used to clamp the stable jaw on the table of the machine tool!

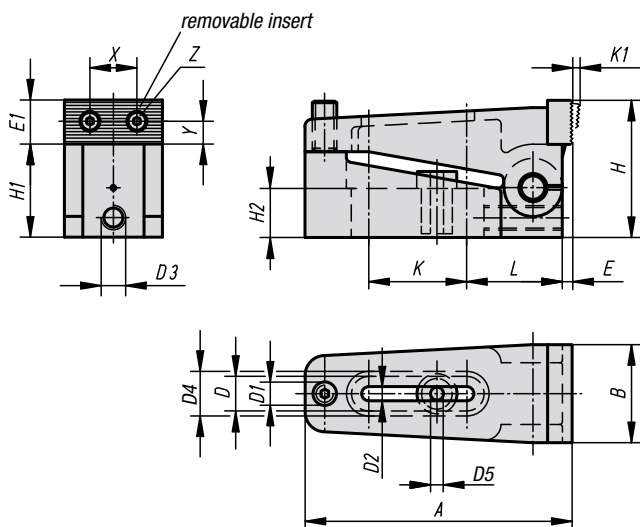
application example:



Reversible Jaw Edge Clamps

Order No.	suitable for slot width	L	L1	B	B1	H	H1	H2	H3	S	S1	F kN	F1 kN	Approx. weight kg
K0891.19	12, 14, 16, 18	177,5	112,5	65	19	85	37	99	40	12	8	18,8	2,26	4,400
K0891.26	20, 22, 24, 28, 30	226,5	136,5	75	26	100	45	118	40	12	11	23,05	2,77	6,800
K0891.38	32, 36, 42	262,5	157,5	90	38	120	55	145	40	12	15	29,4	3,33	11,300

Narrow Edge Clamps

**Material:**

Base body in steel; clamping jaw in hardened steel;
centring bush with collar in tempered steel

Surface finish:

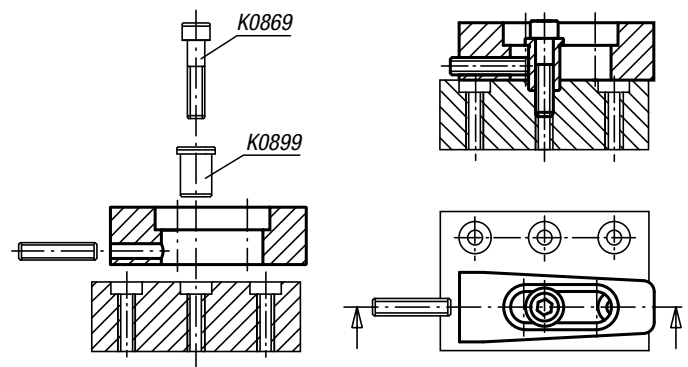
Black oxide finish;
clamping jaw case-hardened

Sample order:

K0033.006

Note:

Because of their low design, Narrow Edge Clamps are perfect for machining pieces with small heights. The hardened steel jaws exert forward and downward pressure on the workpiece at the same time.

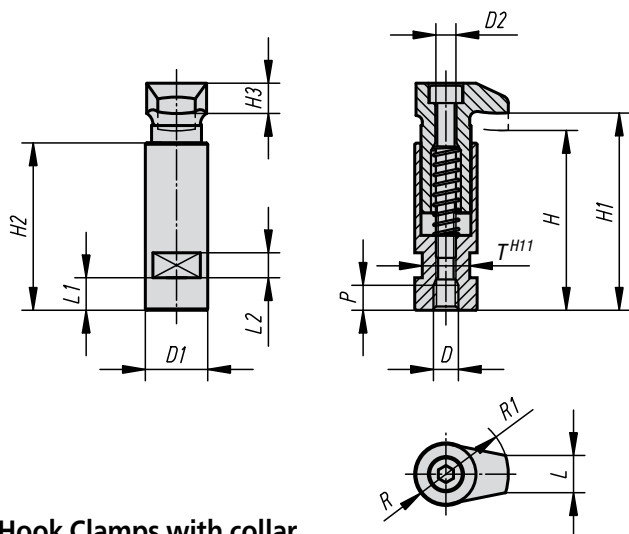


Narrow Edge Clamps

Order No.	A	B	D	D1	D2	D3	D4	D5	E	E1	H	H1	H2	K	K1	L	X	Y	Z	Clamping force kN	Approx. weight kg
K0033.006	73	25	12,2	M6	7	M6	16	6,5	2,5	11	35	24	12,4	25,5	2,5	27	12	4,5	M3	10	0,240
K0033.010	110	39	18,2	M10	11	M10	24	10,5	4	18	56	38	20	40,5	4	39	20,5	8	M5	40	0,970
K0033.016	170	58	26,2	M16	17	M10	35	17	7	27	85	60	30	60,5	7	61	32	13	M8	100	3,800

Hook Clamps

with collar



Material:
Tempered steel

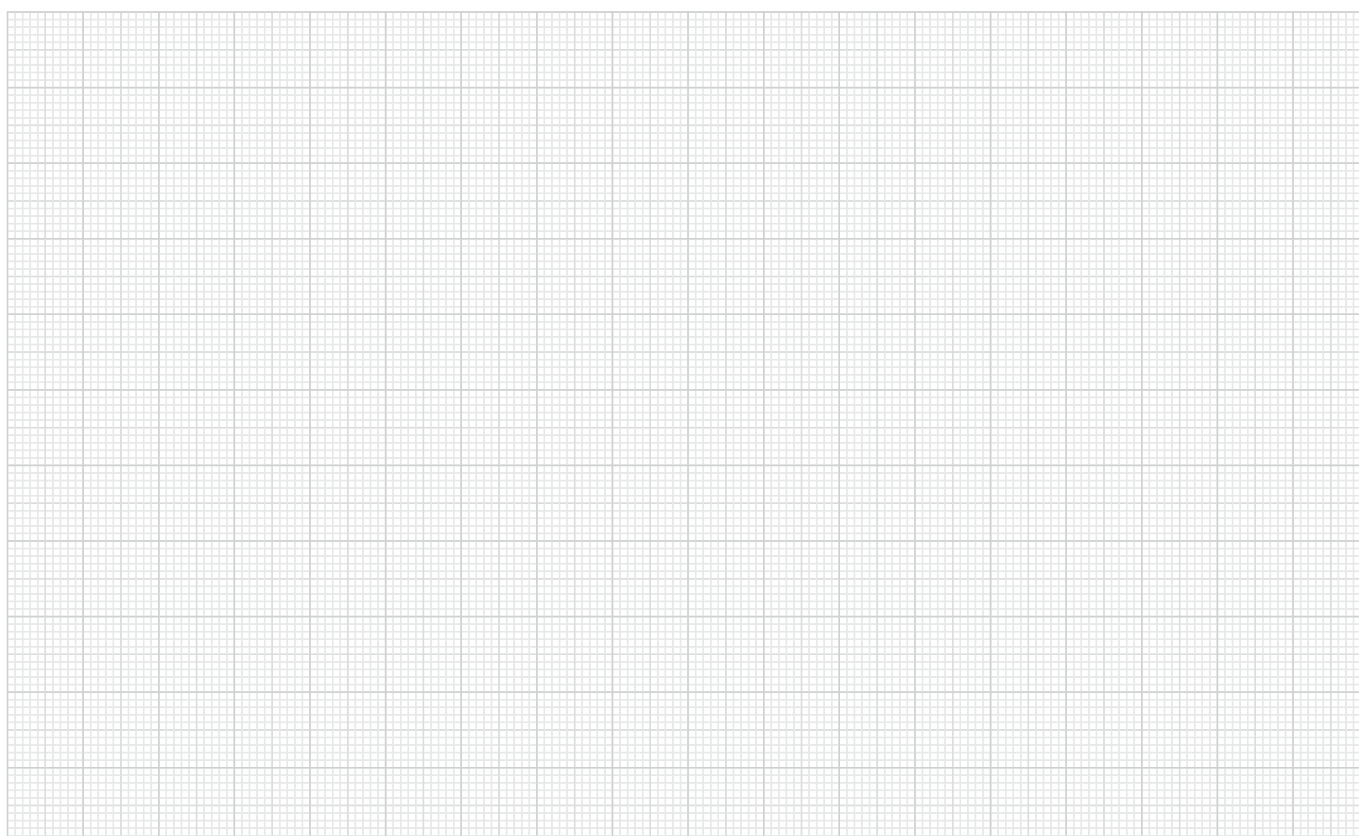
Surface finish:
Heat-treated and black oxide finish

Sample order:
K0013.06

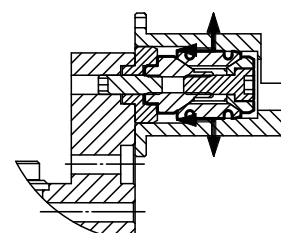
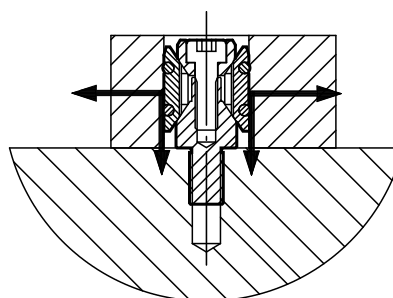
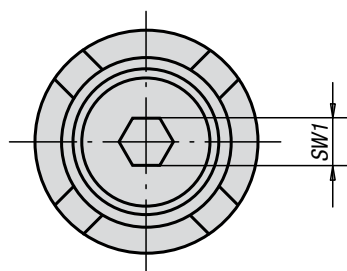
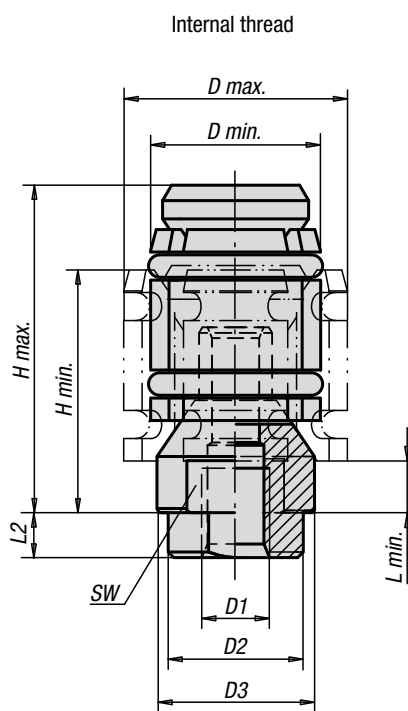
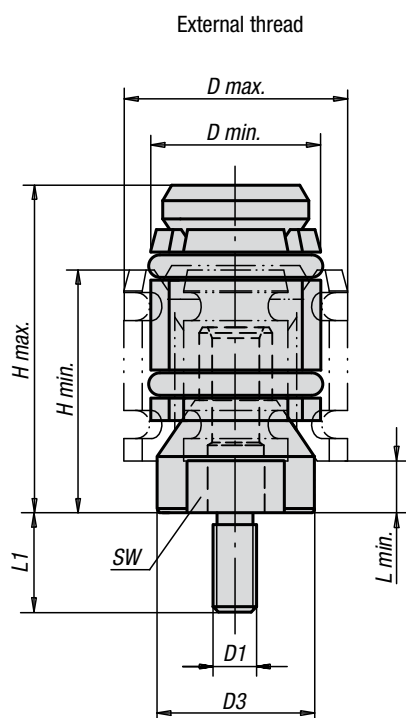
Hook Clamps with collar

Order No.	D	D1	D2	H	H1	H2	H3	L	L1	L2	P	R	R1	T	Clamping force kN
K0013.06	M6	20	6	56	60	53	10	11	9	8	8	9	20	17	4,82
K0013.08	M8	20	6	56	60	53	10	11	9	8	8	9	20	17	8,77
K0013.10	M10	25	8	72	79	67	12	15	13	10	10	12	25	19	13,9
K0013.12	M12	32	10	88	96	82	16	17	18	12	12	14	32	27	20,2
K0013.16	M16	40	12	109	118	102	20	20	22	12	16	18	40	32	37,8

Notes



Centring Clamps



Material:

Body in steel;
bushes in tempered steel

Surface finish:

Black oxide finish

Sample order:

K0893.0615

Note:

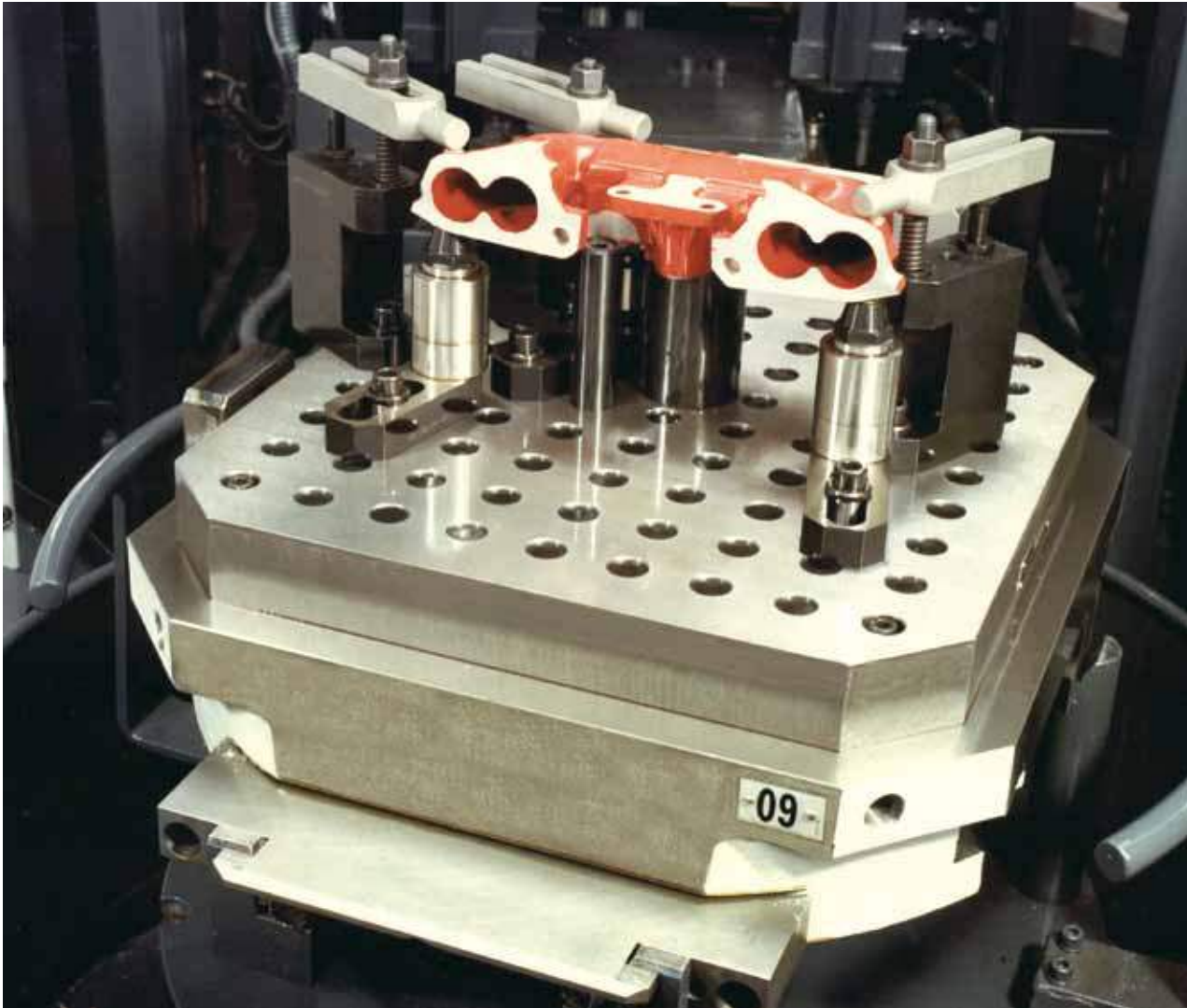
The centring clamp allows centring and clamping of a workpiece in the drillhole.

The centring clamp has a wide range of movement. The product range covers a clamping range of Ø12 up to Ø30 mm. In order to increase the precision of the centring, the centring clamp can be fixed in a drillhole with a centring pin (D2).

Centring clamps with internal thread are suitable for matrixsystem M6 (see application).

Centring Clamps

Order No.	Surface finish	D1	L1	L2	D min.	D max.	D2	D3	H min.	H max.	L min.	SW	SW1	Approx. weight kg
K0893.0615	Internal thread	M6	-	4	12	15	12	11,4	22	27,5	4,8	9	2,5	0,020
K0893.0619	Internal thread	M6	-	4	15	19	12	14	24,5	32	4,8	11	3	0,030
K0893.0624	Internal thread	M6	-	4	19	24	12	17,8	26	35	4,5	15	4	0,060
K0893.0630	Internal thread	M6	-	4	24	30	12	23,5	32	44,5	7	19	5	0,120
K0893.061215	External thread	M6	12	-	12	15	-	11,4	22	27,5	4,8	9	2,5	0,050
K0893.061219	External thread	M6	12	-	15	19	-	14	24,5	32	4,8	11	3	0,100
K0893.081624	External thread	M8	16	-	19	24	-	17,8	26	35	4,5	15	4	0,150
K0893.081630	External thread	M8	16	-	24	30	-	23,5	32	44,5	7	19	5	0,400



Height Spacers

**Material:**

Steel

Surface finish:

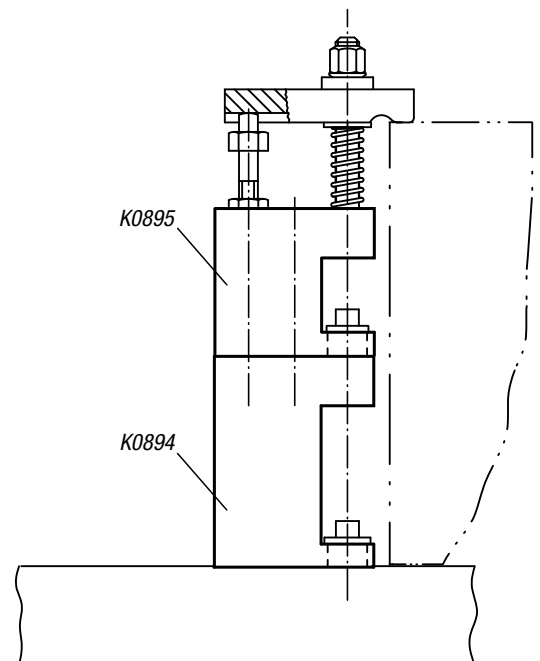
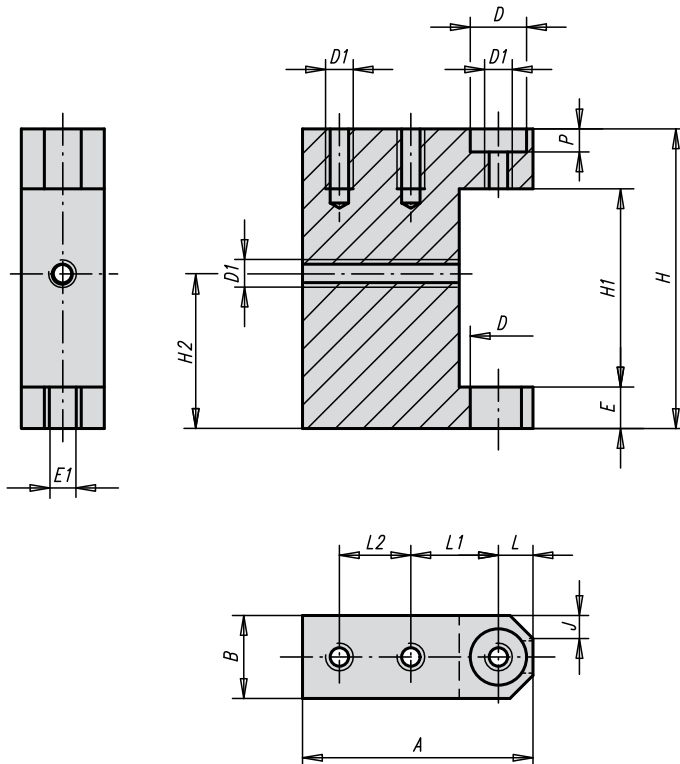
Black oxide finish

Sample order:

K0894.006005

Note:

Height spacers are mostly used in combination with brace K0895. They are used for clamping tall workpieces. Up to 3 height spacers can be stacked on top of each other. They are positioned with centring bushes and fixed with socket head screws. Height spacers can also be used directly as braces.



Height Spacers

Order No.	A	B	D	D1	E	E1	H	H1	H2	J	L	L1	L2	P	Suitable bush	Approx. weight kg
K0894.006005	50	18	12,2	M6	9	7	65	43	34	5	7,5	19	15,5	5	K0899.006013	0,250
K0894.010005	80	30	18,2	M10	20	11	105	60	55	5	12	30	20	7	K0899.010016	1,000

**Material:**

Steel

Surface finish:

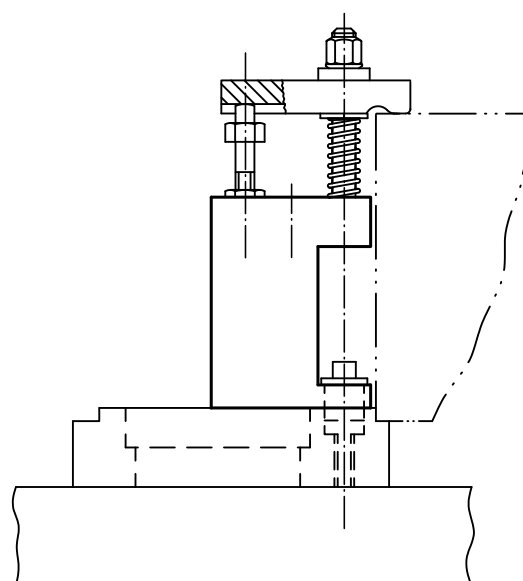
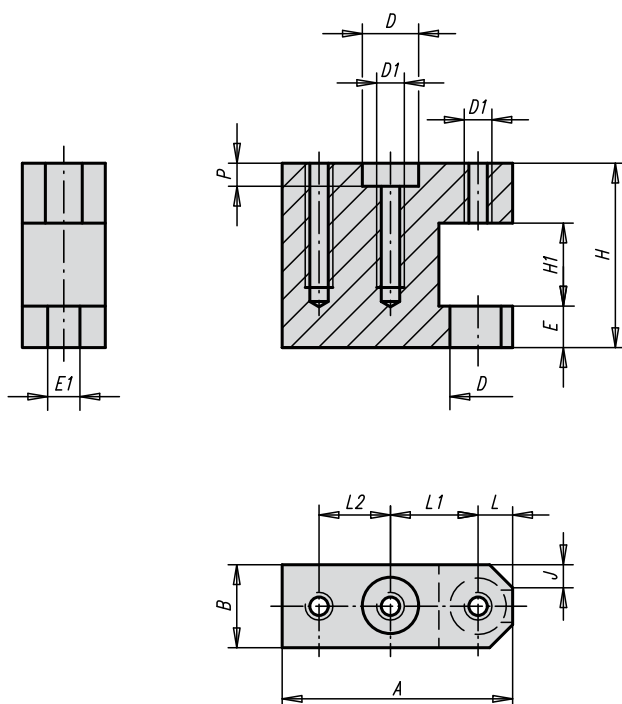
Black oxide finish

Sample order:

K0895.006005

Note:

Braces can either be fixed directly on to a base element or used in combination with height spacers. So long stud bolts are not required. The braces are positioned with centring bushes and fixed with socket head screws.

**Braces**

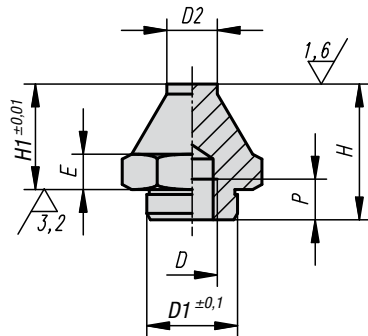
Order No.	A	B	D	D1	E	E1	H	H1	J	L	L1	L2	P	Suitable bush	Approx. weight kg
K0895.006005	50	18	12,2	M6	9	7	40	23	5	7,5	19	15,5	5	K0899.006013	0,500
K0895.010005	80	30	18,2	M10	10	11	55	31	5	12	30	20	7	K0899.010026	2,040

Thrust Bolts

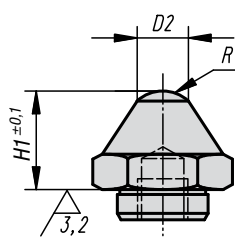
with positioning pin



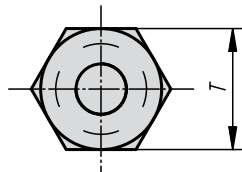
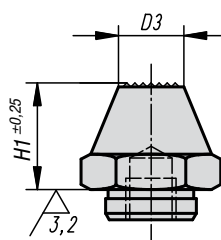
Form A
face surface



Form B
convex surface



Form C
serrated surface



Material:

Body in tempered steel

Surface finish:

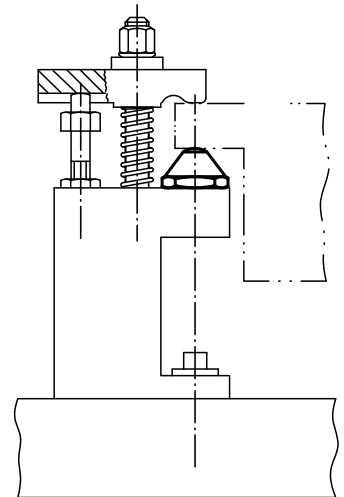
Body heat-treated with black oxide finish, support surfaces case-hardened

Sample order:

K0295.106012

Note:

The Thrust Bolts act as supports for rough and machined parts and as stops. They can also be integrated into standard clamping or support elements. To change these parts into male threaded feet, just screw and glue a grub screw or threaded stud in tap D.

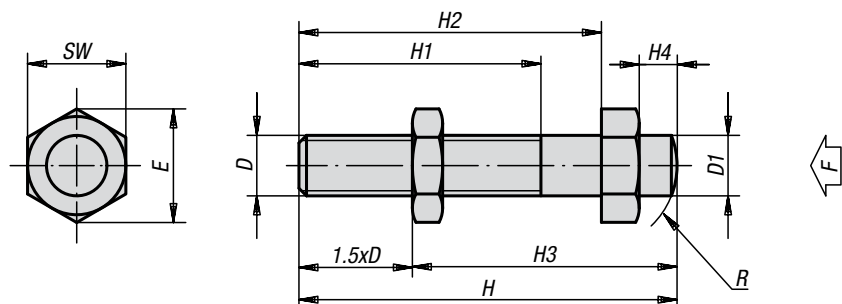


Thrust Bolts with positioning pin

Order No.	Form	D	D1	D2	D3	E	H	H1	P	R	T	Approx. weight kg
K0295.106012	A	M6	11,9	7	-	4	16,5	12,5	6	-	17	0,042
K0295.106025	A	M6	11,9	7	-	4	29	25	6	-	17	0,062
K0295.110020	A	M10	17,8	10	-	7	25	20	10	-	24	0,130
K0295.110040	A	M10	17,8	10	-	7	46	40	10	-	24	0,180
K0295.116030	A	M16	25,8	20	-	13	40	30	16	-	41	0,295
K0295.116060	A	M16	25,8	20	-	13	70	60	16	-	41	0,480
K0295.206012	B	M6	11,9	7	-	4	16,5	12,5	6	6	17	0,042
K0295.206025	B	M6	11,9	7	-	4	29	25	6	6	17	0,062
K0295.210020	B	M10	17,8	10	-	7	25	20	10	7,5	24	0,130
K0295.210040	B	M10	17,8	10	-	7	46	40	10	7,5	24	0,180
K0295.216030	B	M16	25,8	20	-	13	40	30	16	26	41	0,295
K0295.216060	B	M16	25,8	20	-	13	70	60	16	26	41	0,480
K0295.310020	C	M10	17,8	-	15	7	25	20	10	-	24	0,130
K0295.310040	C	M10	17,8	-	10	7	46	40	10	-	24	0,180
K0295.316030	C	M16	25,8	-	20	13	40	30	16	-	41	0,295
K0295.316060	C	M16	25,8	-	20	13	70	60	16	-	41	0,480

Adjustable Thrust Bolts

with counternut



Material:

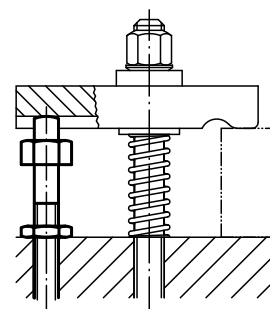
Tempered steel 1.1181

Surface finish:

Surface hardened and black oxide finish

Sample order:

K0306.05



Adjustable Thrust Bolts with counternut

Order No.	D	D1	H	H1	H2	H3 min.	H3 max.	H4	E	SW	R	F approx. N	Approx. weight kg
K0306.05	M5	5	50	32	40	20,5	42,5	5	11,5	10	7	1000	0,019
K0306.06	M6	6	50	32	40	21	41	5	11,5	10	8	1430	0,024
K0306.08	M8	8	50	32	40	22	38	5	15	13	11	2620	0,028
K0306.10	M10	10	52	32	40	25	37	5	19,6	17	14	4180	0,048
K0306.101	M10	10	70	32	56	42	55	6	19,6	17	14	4180	0,054
K0306.12	M12	12	70	40	56	36	52	6	21,9	19	16	6100	0,078
K0306.121	M12	12	95	50	80	51	77	6	21,9	19	16	6100	0,098
K0306.14	M14	14	100	63	80	44	79	8	25,4	22	20	8320	0,135
K0306.16	M16	16	100	63	80	45	76	8	27,7	24	25	11520	0,178
K0306.161	M16	16	120	63	100	65	96	8	27,7	24	25	11520	0,220
K0306.20	M20	20	110	70	88	50	90	10	34,6	30	28	18000	0,260

Adapter Plates

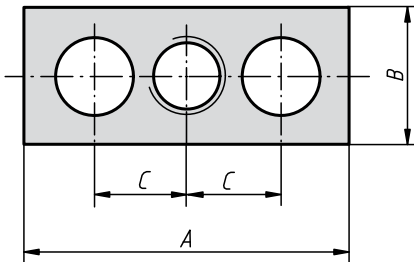
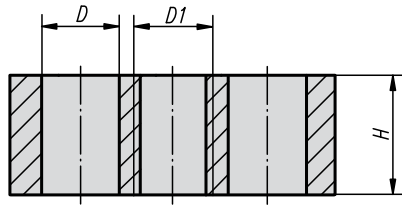


Material:
Steel

Surface finish:
Black oxide finish

Sample order:
K0896.006005

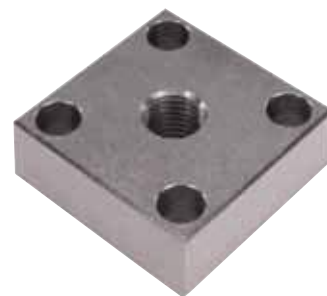
Note:
The adapter plate allows the use of larger screws. Clamping elements can be built up between the matrix positions.



Adapter Plates

Order No.	A	B	C	D	D1	H	Approx. weight kg
K0896.006005	35	12,5	12,5	7	M8	12,5	0,040
K0896.006010	60	12,5	25	7	M8	19	0,125
K0896.010005	60	20	20	11	M12	20	0,140
K0896.010010	100	20	40	11	M12	30	0,500

Adapter Plates

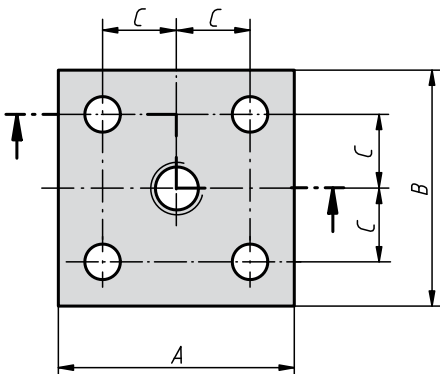
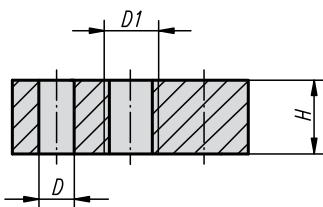


Material:
Steel

Surface finish:
Black oxide finish

Sample order:
K0897.006005

Note:
The adapter plate allows the use of larger screws. Clamping elements can be built up between the matrix positions.



Adapter Plates

Order No.	A	B	C	D	D1	H	Approx. weight kg
K0897.006005	35	35	12,5	7	M10	15	0,120
K0897.010005	56	56	20	11	M16	20	0,500

Centring Bushes

**Material:**

Tempered steel

Surface finish:

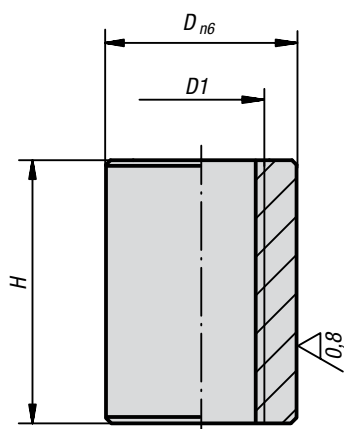
Black oxide finish

Sample order:

K0898.006008

Note:

Centring bushes are used for positioning components on the base elements. The thread is for removing the bush.

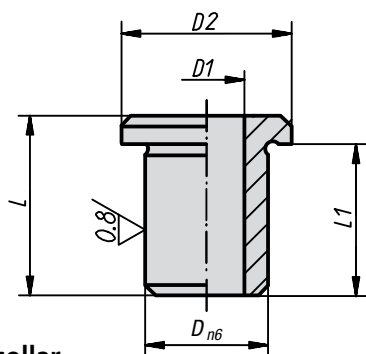


Centring Bushes

Order No.	D	D1	H	Approx. weight kg
K0898.006008	12	M8	8	0,005
K0898.006011	12	M8	11	0,007
K0898.010012	18	M12x1,5	12	0,013
K0898.010017	18	M12x1,5	17	0,019

Centring Bushes

with collar



Centring Bushes with collar

Order No.	D	D1	D2	L	L1	Approx. weight kg
K0899.006007	12	6,5	15	10	7	0,008
K0899.006013	12	6,5	15	16	13	0,011
K0899.006016	12	6,5	15	19,5	16,5	0,014
K0899.006022	12	6,5	15	25	22	0,017
K0899.006029	12	6,5	15	32	29	0,021
K0899.010011	18	10,5	22	15	11	0,023
K0899.010016	18	10,5	22	20	16	0,030
K0899.010026	18	10,5	22	30	26	0,043
K0899.010030	18	10,5	22	34	30	0,048
K0899.010038	18	10,5	22	42	38	0,059
K0899.016019	26	17	34	24	19	0,072
K0899.016024	26	17	34	29	24	0,083

**Material:**

Tempered steel

Surface finish:

Black oxide finish

Sample order:

K0899.006007

Note:

Centring bushes with collar are used for positioning and fixing of components on the base elements.

Protection Plugs

for M.T.P. holes

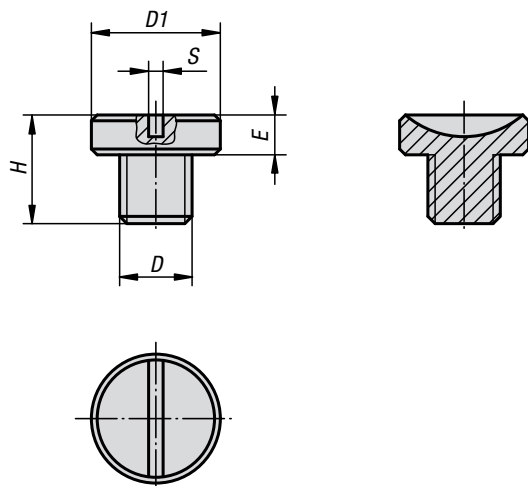


Material:
Thermoplastic

Surface finish:
Orange

Sample order:
K0900.006005

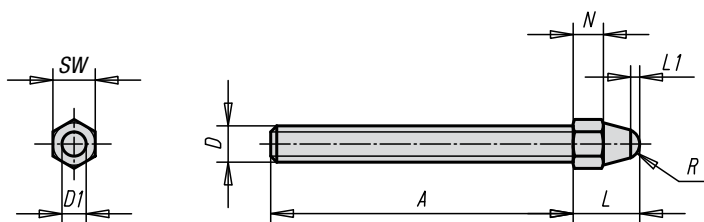
Note:
To protect M.T.P. holes from chips and dirt, they must be closed off with Protection Plugs. Leave the Protection Plugs in holes not in use!



Protection Plugs for M.T.P. holes

Order No.	D	D1	E	H	S	Approx. weight kg
K0900.006005	M6	11,8	3,5	10	2	0,600
K0900.010005	M10	17,8	5,5	15	2	2,300

Spherical Stops



Material:
Steel

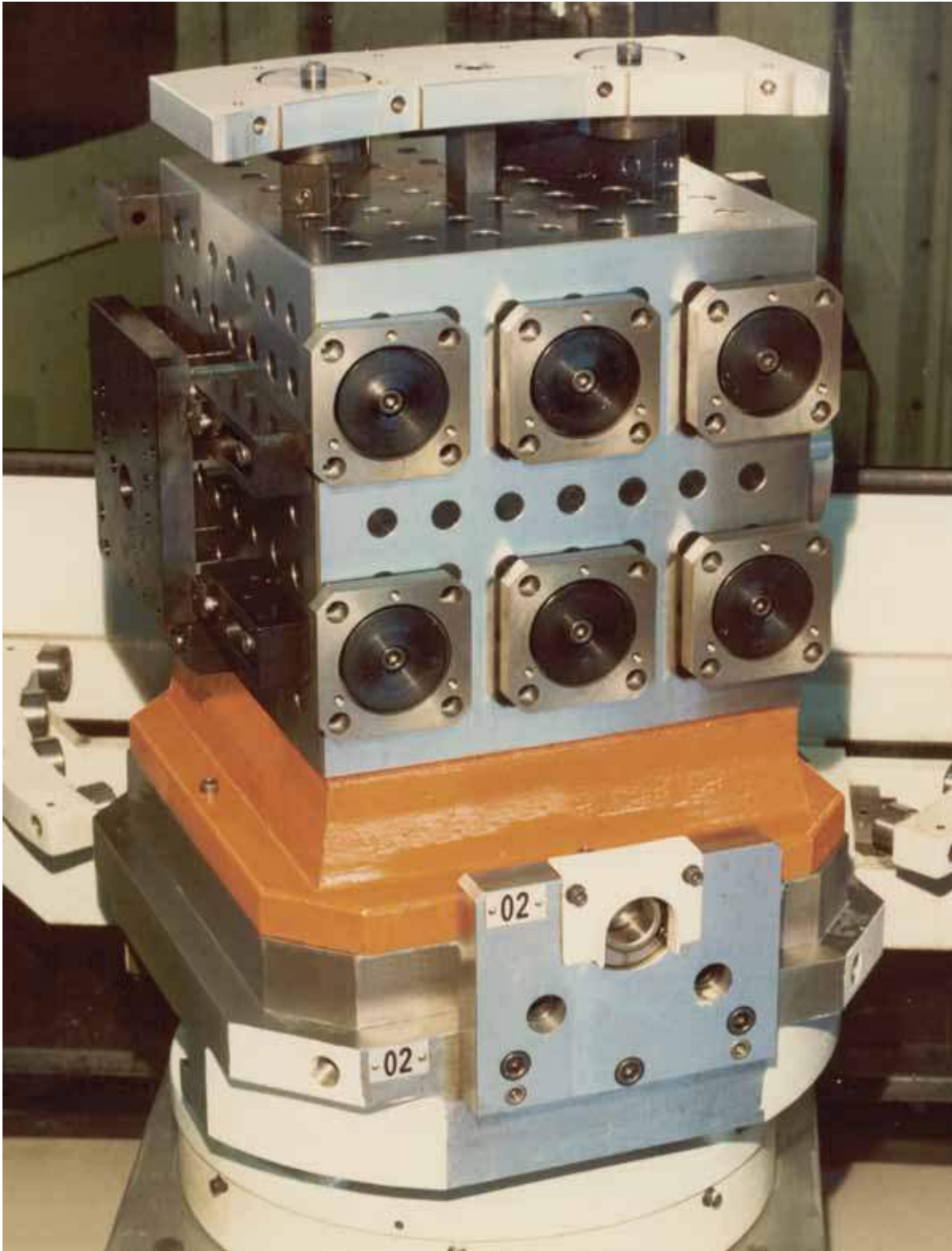
Surface finish:
Black oxide finish; domed head case-hardened

Sample order:
K0901.108

Spherical Stops

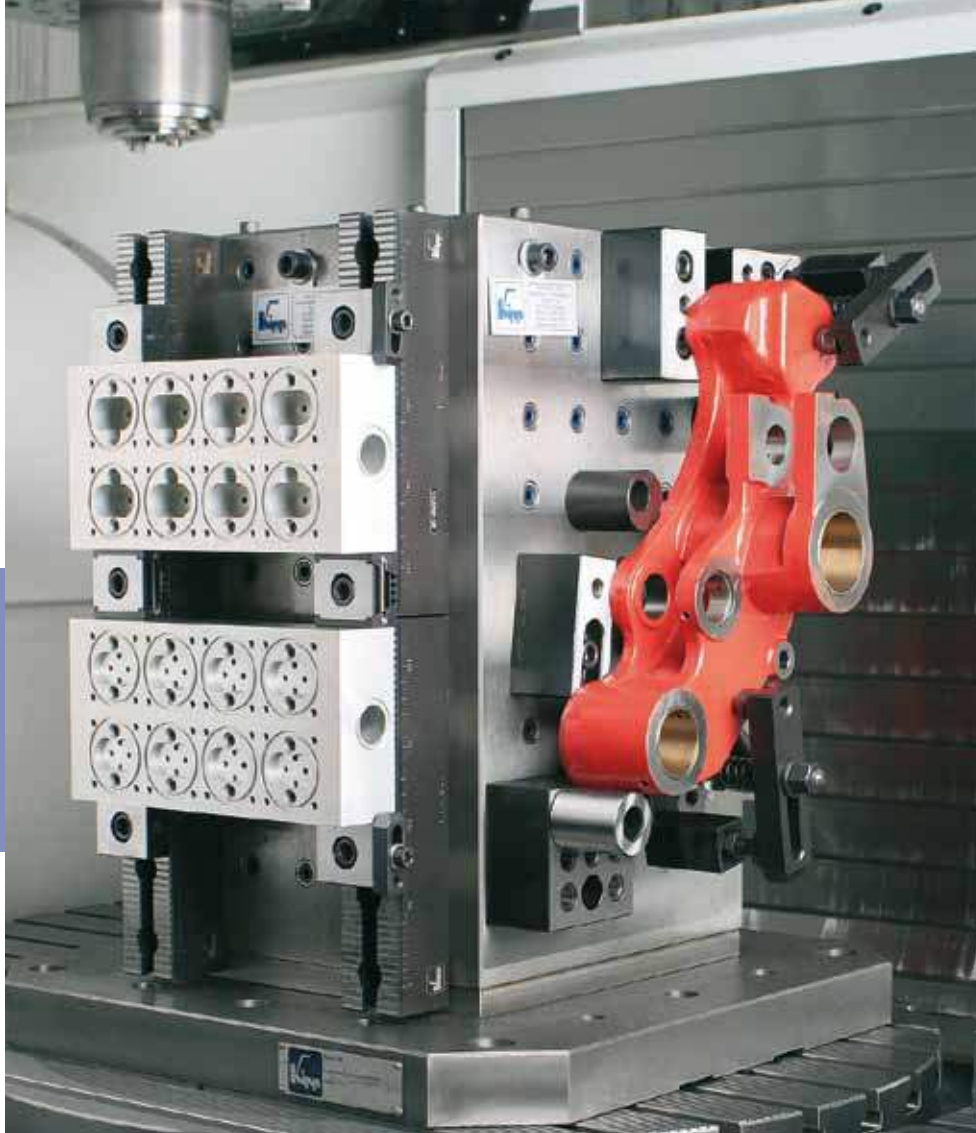
Order No.	A	D	D1	L	L1	N	R	SW	Approx. weight kg
K0901.106	50	M6	4	10	1,5	4	2,5	7	0,015
K0901.108	65	M8	6	14	1,5	6	3,75	10	0,040
K0901.110	85	M10	8	17	2	7	5	11	0,060
K0901.112	110	M12	10	20	2,5	8	6,25	13	0,110
K0901.116	130	M16	12	26	3	10	7,5	17	0,195

Four face angle plates for horizontal working of flanges



A large rectangular area filled with a fine grid of light gray lines, typical of graph paper, intended for taking notes or drawing.

Multi Clamping System



Multi Clamping System

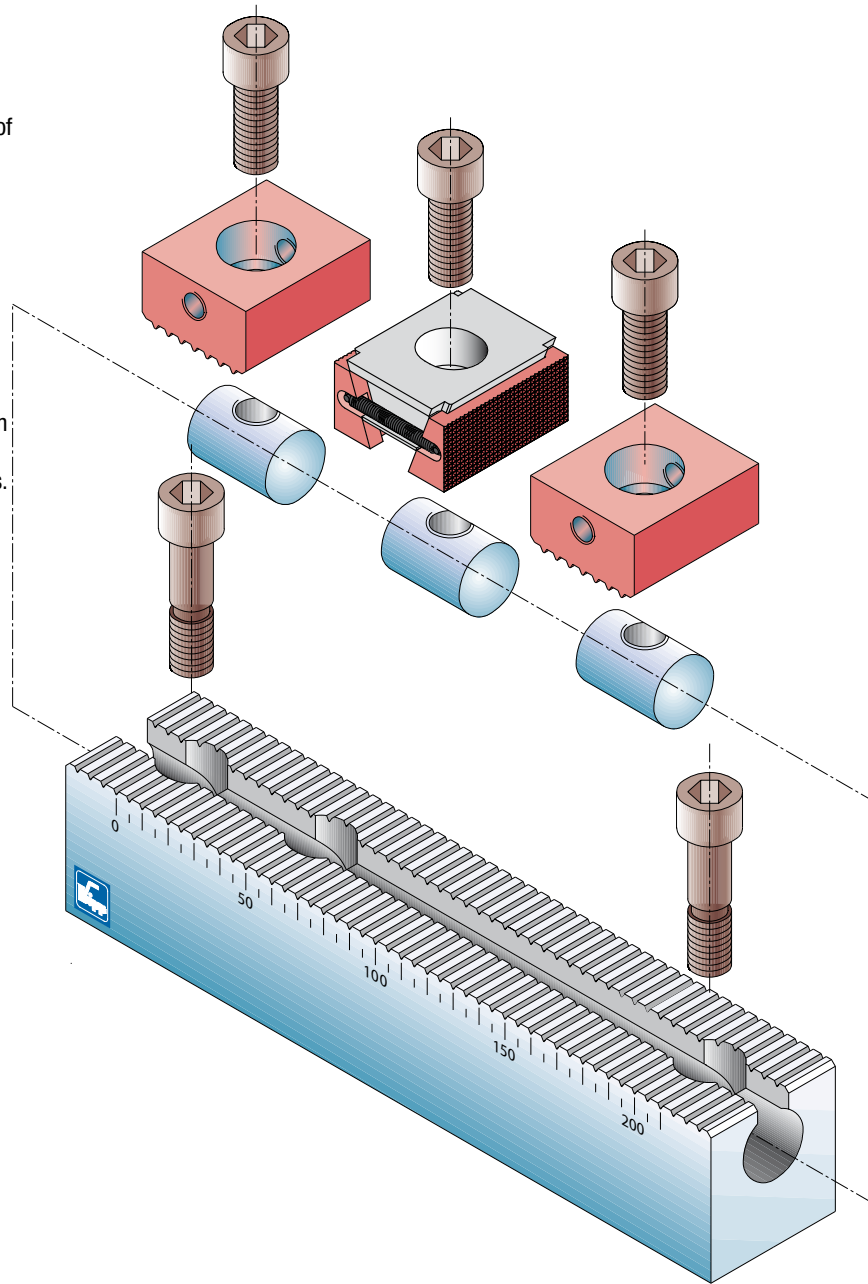


The KMSS is used to clamp different workpieces on a Base Plate or set directly on the machine table. Through the various elements of the Multi Clamping System (Base Strips, Stops and Taper Clamping Units) workpieces of differing sizes can be held without difficulty.

The serration on the Base Strip guarantee a secure and exact hold on the clamps.

By using a number of Base Strip in longitudinal and diagonal direction the work area of the machine can be used more efficiently. The Taper Clamping Unit allows two workpieces from one clamping position.

Through its horizontally positioned wedges it is effective in the vertical as well as in the horizontal plane. This guarantees a secure hold in all directions. By fastening the segments they expand and press the workpiece against the Stops.



Multi Clamping System

hard stops



Material:

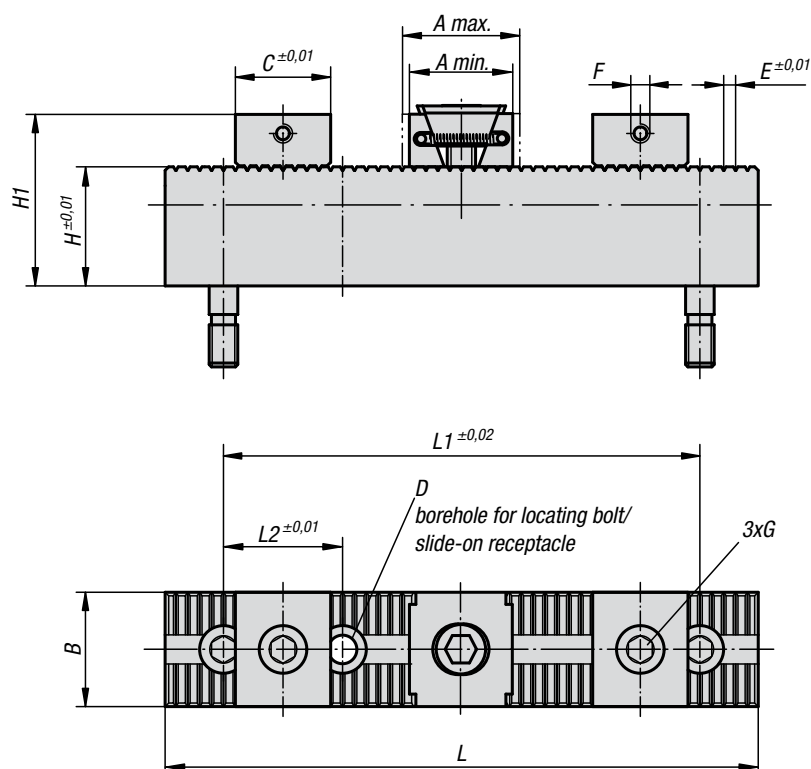
Base strip, stops and taper clamp in tempered steel

Surface finish:

Gear teeth: surface hardened and ground;
stops: heat-treated;
clamping segments hardened and black oxide finish

Sample order:

K0902.12



Multi Clamping System hard stops

Order No.	A min.	A max.	B	C	D	E	F	G Socket Head Screw DIN 912	H	H1	L	L1	L2	Clamping force approx. kN
K0902.08	30,5	33,5	24	25	12 H6	2,5	M5	M8x25	40	55	199	150	50	15
K0902.12	44	49,5	48	40	12 F7	5	M8	M12x30	50	72	249	200	50	30
K0902.16	55	62	48	40	16 F7	5	M8	M16x40	63	92	249	200	50	50

Multi Clamping System

soft stops



Material:

Base strip, stops and taper clamp in tempered steel

Surface finish:

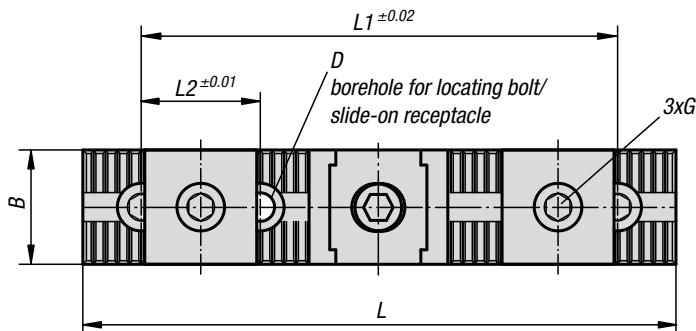
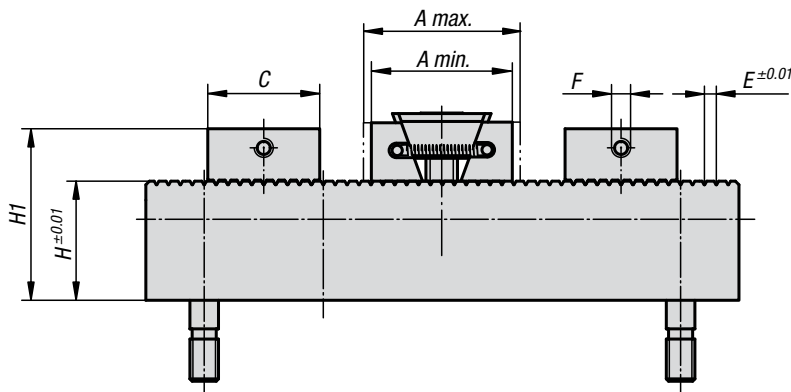
Gear teeth: surface hardened and ground;
clamping segments heat-treated and black oxide finish

Sample order:

K0903.12

Note:

Depending on their size the clamping segments have
3 mm (K0903.08) or 5 mm (K0903.12, K0903.16)
machining allowance per clamping jaw.



Multi Clamping System soft stops

Order No.	A min.	A max.	B	C	D	E	F	G Socket Head Screw DIN 912	H	H1	L	L1	L2	Clamping force approx. kN
K0903.08	36,5	39,5	24	31	12 H6	2,5	M5	M8x25	40	55	199	150	50	11
K0903.12	54	59,5	48	50	12 F7	5	M8	M12x30	50	72	249	200	50	23
K0903.16	65	72	48	50	16 F7	5	M8	M16x40	63	92	249	200	50	38

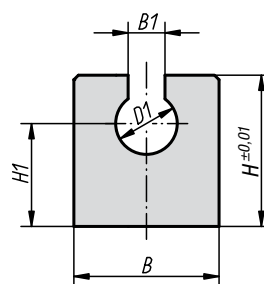
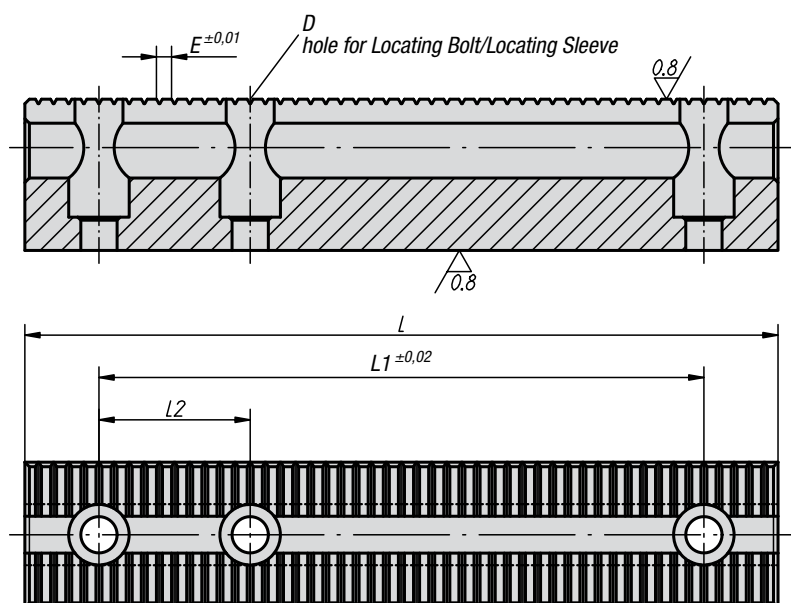
Base Strips



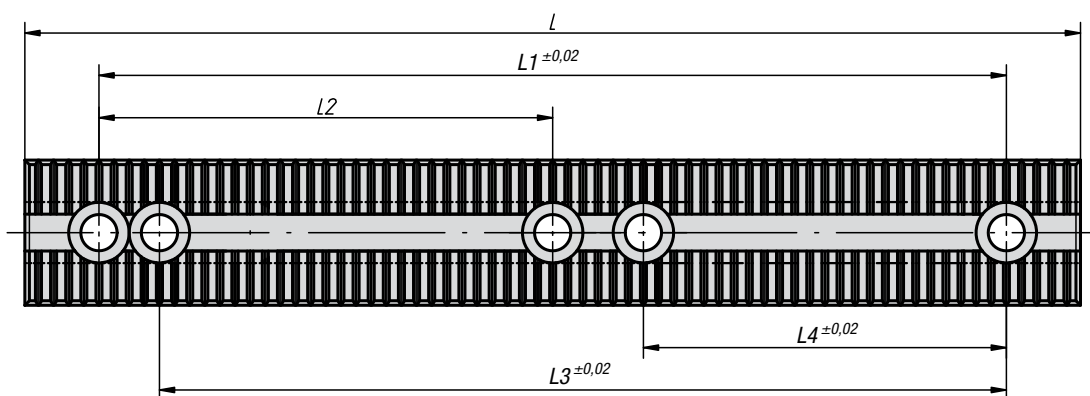
Material:
Base strip 1.0503

Surface finish:
Black oxide finish;
gear teeth: surface hardened and ground

Sample order:
K0904.5000801



K0904.5021201



Base Strips

Order No.	B	B1	D	D1	E	H	H1	L	L1	L2	L3	L4	Approx. weight kg
K0904.5000801	24	8,2	12 H6	14,2	2,5	40	25	199	150	50 ±0,01	-	-	1,040
K0904.5001201	48	12,2	12 F7	20,2	5	50	34	249	200	50 ±0,01	-	-	3,700
K0904.5021201	48	12,2	12 F7	20,2	5	50	34	349	300	150 ±0,02	280	120	5,200
K0904.5001601	48	16,2	16 F7	24,2	5	63	43	249	200	50 ±0,01	-	-	5,100

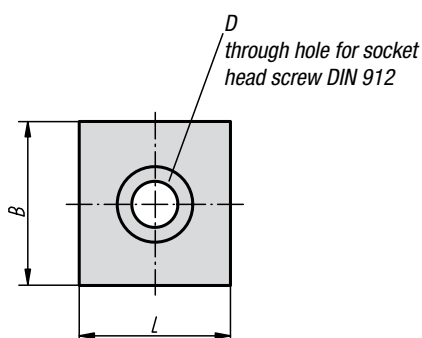
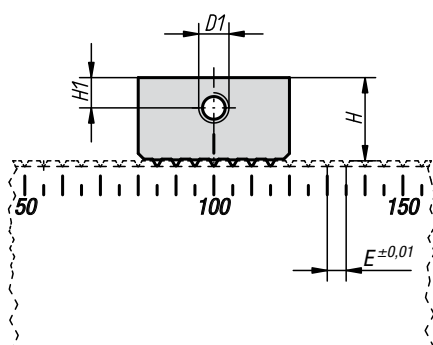


Material:
Stop 1.0503

Surface finish:
Stop hard:
stop heat-treated to 1200-1400 N/mm²,
black oxide finish; gear teeth and stop faces ground,
natural finish

Stop soft:
stop (HRC 30), black oxide finish;
gear teeth: surface hardened and ground, natural finish

Sample order:
K0905.5000802

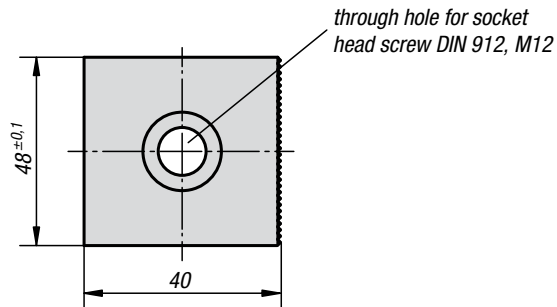
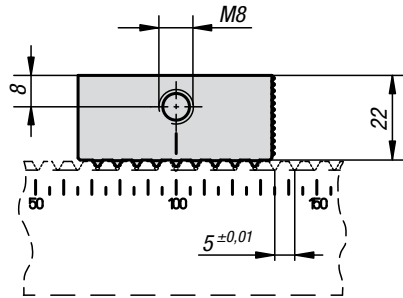


Stops

Order No.	Surface finish	B	D	D1	E	H	H1	L	Approx. weight kg
K0905.5000802	Stop hard	24	M8x25	M5	2,5	15	6	25 ±0,01	0,054
K0905.5001202	Stop hard	48	M12x30	M8	5	22	8	40 ±0,01	0,279
K0905.5001602	Stop hard	48	M16x40	M8	5	29	12,5	40 ±0,01	0,363
K0905.5100802	Stop soft	24	M8x25	M5	2,5	15	6	31 ±0,1	0,071
K0905.5101202	Stop soft	48	M12x30	M8	5	22	8	50 ±0,1	0,335
K0905.5101602	Stop soft	48	M16x40	M8	5	29	12,5	50 ±0,1	0,446

Carbide-Coated Stop

clamping surface serrated



Carbide-Coated Stop clamping surface serrated



Material:

Stop 90 Mn Cr V8.

Surface finish:

Stop hard.

Stop hardened 58 $\pm$ 2 HRC.

Toothing ground, natural finish.

Sample order:

K0905.5201202

Note:

Stop is serrated on one of its sides and carbide-coated on the other side.

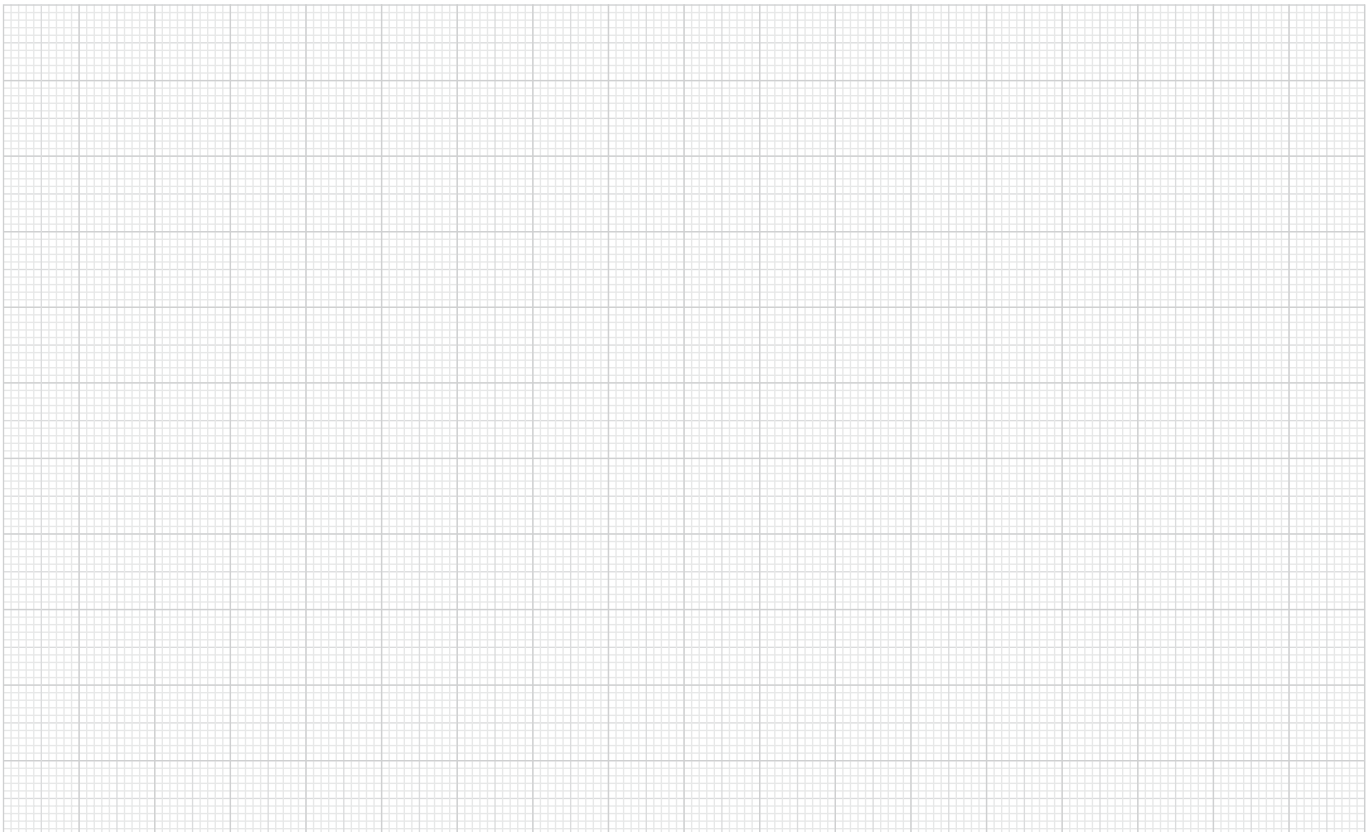
Order No.

Approx.
weight kg

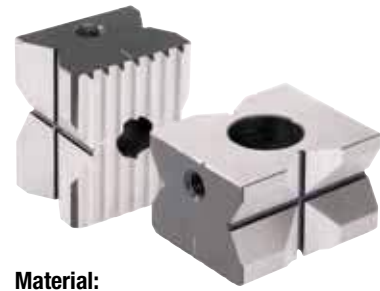
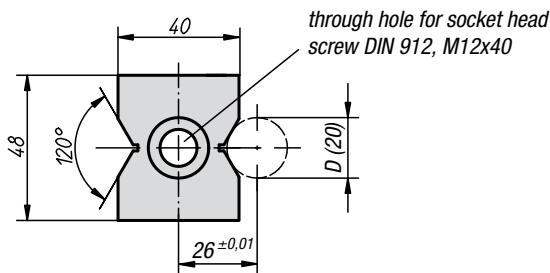
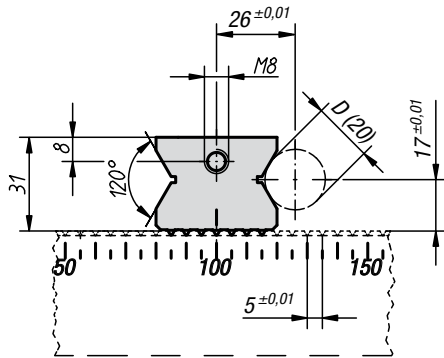
K0905.5201202

0,28

Notes



V-Block Stop



Material:
Stop 1.0503

Surface finish:
V-block stop heat-treated to 1200-1400 N/mm²,
black oxide finish;
gear teeth and V-blocks ground, natural finish

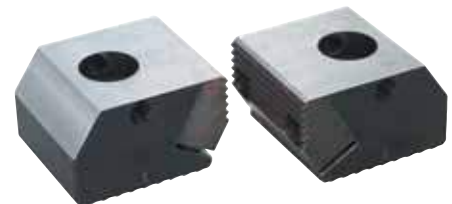
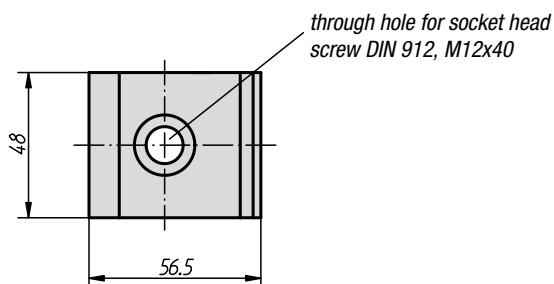
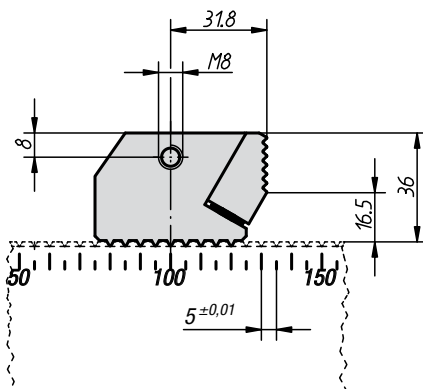
Sample order:
K0906.5001265

V-Block Stop

Order No.	D min. - max.	Approx. weight kg
K0906.5001265	5 - 33	0,358

K0907

Hold-down Stop



Material:
Stop and hold-down jaw 1.0503

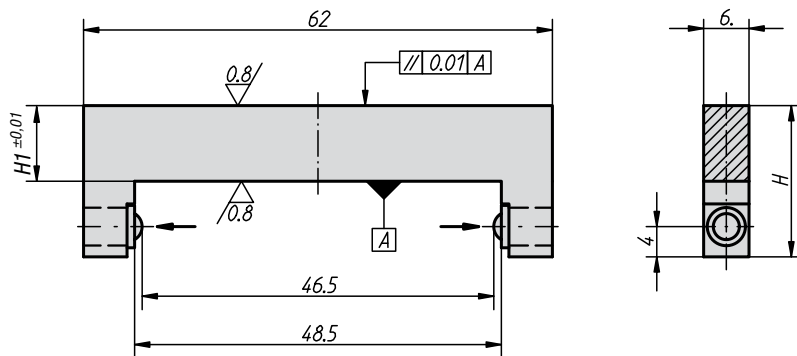
Surface finish:
Stop and hold-down jaw heat-treated to
1200-1400 N/mm², black oxide finish;
gear teeth ground, natural finish

Sample order:
K0907.5001273

Hold-down Stop

Order No.	Approx. weight kg
K0907.5001273	0,558

Adjustable Supports



Material:

Steel

Surface finish:

Adjustable support hardened, black oxide finish;
support surfaces ground, natural finish

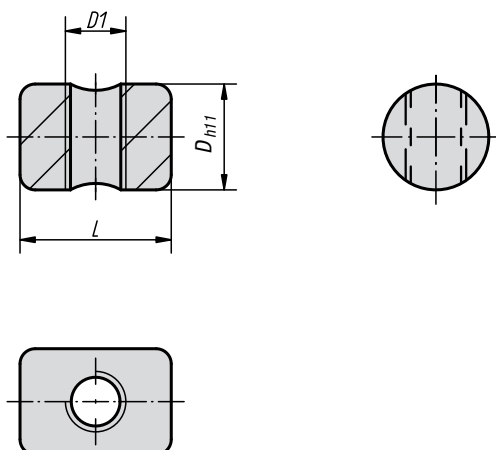
Sample order:

K0908.5001295

Adjustable Supports

Order No.	H	H1	Approx. weight kg
K0908.5001295	20	10	0,033
K0908.5001298	27	17	0,054

T-Blocks Round



Material:

Steel

Surface finish:

Black oxide finish

Sample order:

K0909.0802

T-Blocks Round

Order No.	D	D1	L	Approx. weight kg
K0909.0802	14	M8	20	0,019
K0909.1202	20	M12	30	0,057
K0909.1602	24	M16	35	0,090

Taper Clamps

clamping surfaces smooth or serrated



Material, surface finish:

Double edge and clamping segments tempered steel, hardened and black

Sample order:

K0039.2208

Note:

Their compact design make the Taper Clamps especially suitable for multiple clamping. The hardened and ground taper surfaces make high clamping forces possible.

The appropriate Taper Clamps can be mounted either in an M.T.P. hole or a T-slot. Inserting a socket head screw moves the two clamping segments outwards and presses the workpieces against the fixed stop of the machining device.

The Taper Clamp can be displaced or balancing tolerances with the incorporated longhole.

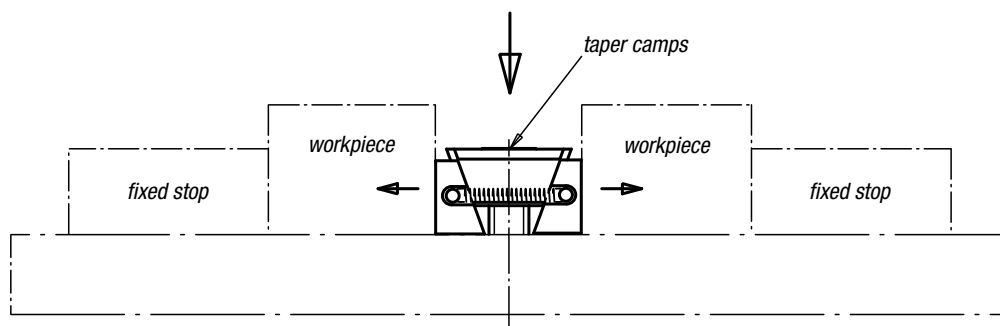
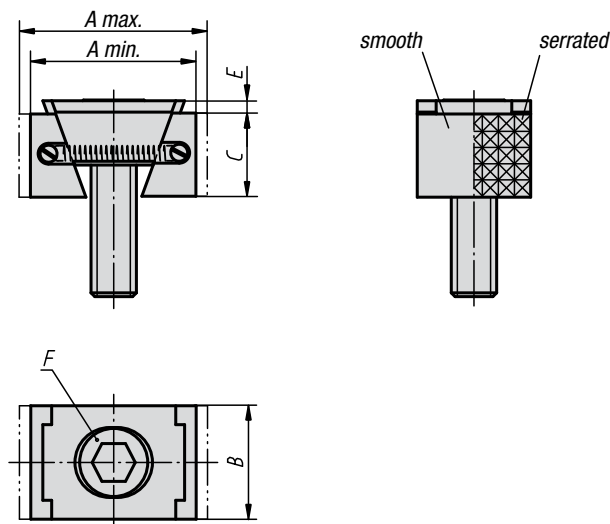
Travel path according:

M8 = ±0.5 mm

M10 = ±1.0 mm

M12 = ±1.0 mm

M16 = ±1.5 mm



Taper Clamps, strait model

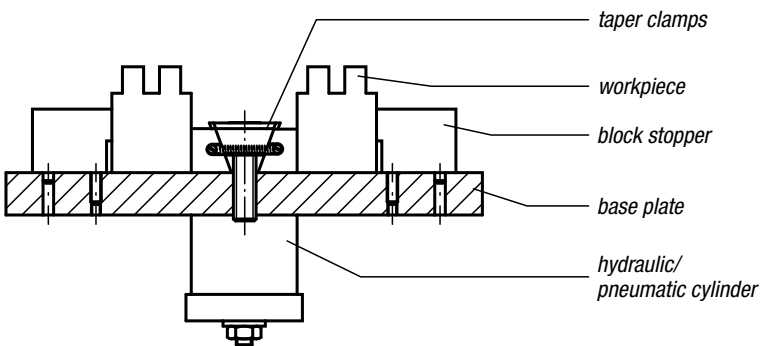
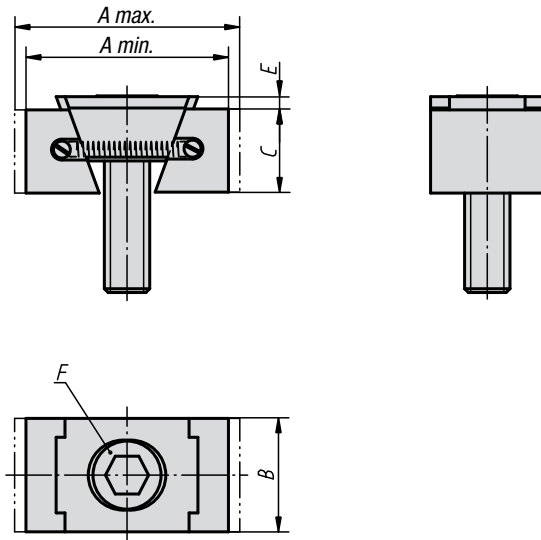
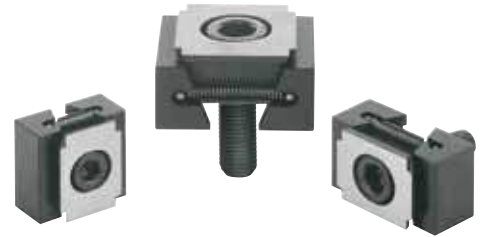
Order No. clamping surface smooth	Order No. clamping surface serrated	A min.	A max.	B	C	E	F Socket Head Screw DIN 912	Clamping force kN	Tightening torque Nm
K0039.1108	K0039.2108	30,5	33,5	24	15	2	M8x25	15	25
K0039.1110	K0039.2110	32	37	28	19	3,5	M10x25	20	49
K0039.1112	K0039.2112	44	49,5	30	22	3,5	M12x40	30	85
K0039.1116	K0039.2116	55	62	40	29	4	M16x60	50	210

Taper Clamps, broad model

Order No. clamping surface smooth	Order No. clamping surface serrated	A min.	A max.	B	C	E	F Socket Head Screw DIN 912	Clamping force kN	Tightening torque Nm
K0039.1208	K0039.2208	30,5	33,5	30	15	2	M8x25	15	25
K0039.1210	K0039.2210	32	37	38	19	3,5	M10x25	20	49
K0039.1212	K0039.2212	44	49,5	48	22	3,5	M12x40	30	85
K0039.1216	K0039.2216	55	62	48	29	4	M16x60	50	210

Taper Clamps

with machining allowance



Material, surface finish:

Double edge and clamping segments tempered steel, heat-treated and black

Sample order:

K0649.3110

Note:

The special feature of the Taper Clamps lies in the added length. This extra length allows for forms adjusted to the workpiece geometry to be incorporated. Their compact design make the Taper Clamps especially suitable for multiple clamping. The hardened and ground taper surfaces make high clamping forces possible.

The appropriate Taper Clamps can be mounted either in an M.T.P. hole or a T-slot. Inserting a socket head screw moves the two clamping segments outwards and presses the workpieces against the fixed stop of the machining device.

The Taper Clamp can be displaced or balancing tolerances with the incorporated longhole.

Travel path according:

M8 = ± 0.5 mm

M10 = ± 1.0 mm

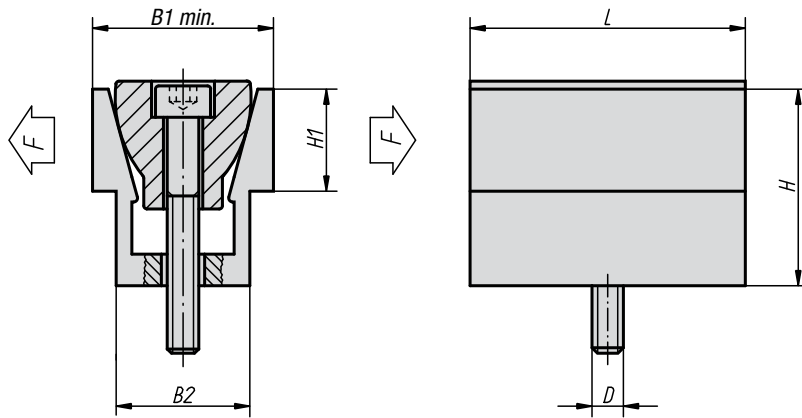
M12 = ± 1.0 mm

M16 = ± 1.5 mm

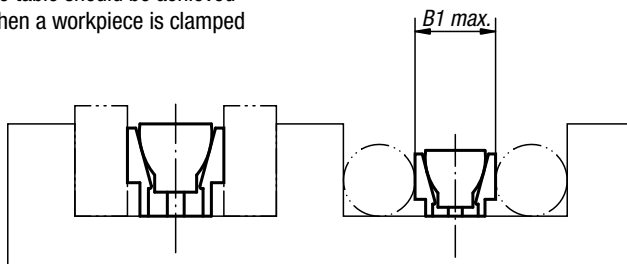
Taper Clamps with machining allowance

Order No.	Surface finish	A min.	A max.	B	C	E	F Socket Head Screw DIN 912	Clamping force kN	Tightening torque Nm
K0649.3108	strait	36,5	39,5	24	15	2	M8x25	11	19
K0649.3110	strait	42	47	28	19	3,5	M10x25	15	37
K0649.3112	strait	54	59,5	30	22	3,5	M12x40	23	65
K0649.3116	strait	65	72	40	29	4	M16x60	38	160
K0649.3208	broad	36,5	39,5	30	15	2	M8x25	11	19
K0649.3210	broad	42	47	38	19	3,5	M10x25	15	37
K0649.3212	broad	54	59,5	48	22	3,5	M12x40	23	65
K0649.3216	broad	65	72	48	29	4	M16x60	38	160

Double Edge Clamps



Dimension B1 max. given in the table should be achieved when a workpiece is clamped


Material:

Exterior part in aluminium profile,
taper in hardened steel

Surface finish:

Exterior part anodized, taper black oxide finish

Sample order:

K0037.08

Note:

A Double Edge Clamp clamps two workpieces simultaneously. It is perfectly suited to clamp both round and rectangular pieces. Due to its compact construction, space-saving multiple clamping is possible.

Double Edge Clamps

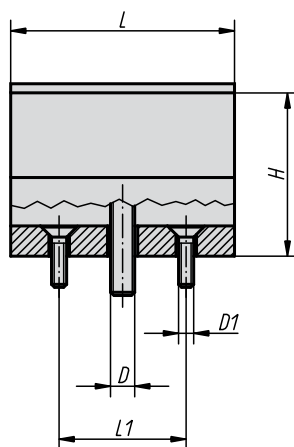
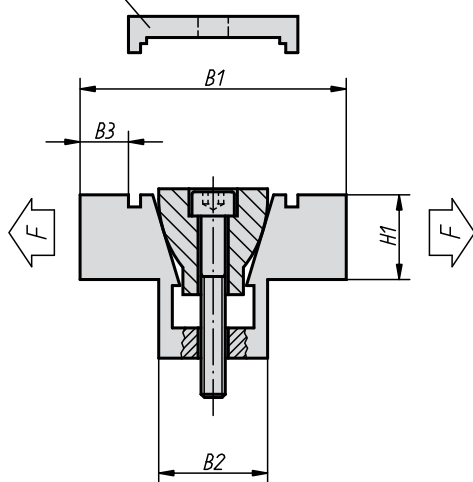
Order No.	D	L	B1 min. - max.	B2	H	H1	F kN	Tightening torque max. Nm	Approx. weight kg
K0037.04	M4	15,9	12,3 - 13,1	10,4	12,8	5,6	2,2	3,4	0,012
K0037.06	M6	23,5	18,6 - 19,9	15,8	19	9,5	6,7	14,3	0,040
K0037.08	M8	32	24,8 - 26,6	20,8	25,4	12,7	8,9	14,5	0,090
K0037.12	M12	47,6	37,3 - 39,7	31,1	38,2	19	15,6	38,4	0,300
K0037.16	M16	63,5	49,7 - 52,8	41,5	50,8	25,4	26,7	74,6	0,710

Double Edge Clamps

with machining allowance



The locking plate is only used for form cutting, not for workpiece clamping



Material:

Exterior part in aluminium profile,
taper in hardened steel

Surface finish:

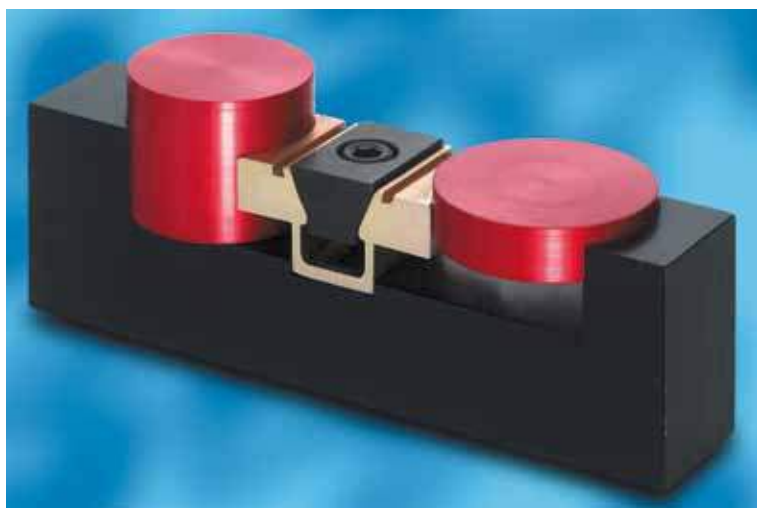
Exterior part anodized, taper black oxide finish

Sample order:

K0038.08

Note:

A Double Edge Clamp clamps two workpieces simultaneously. By means of appropriate countersinking workpieces can be clamped with form-fit and thus absolutely safely and free of torsion. Due to its compact construction, space-saving multiple clamping is possible.



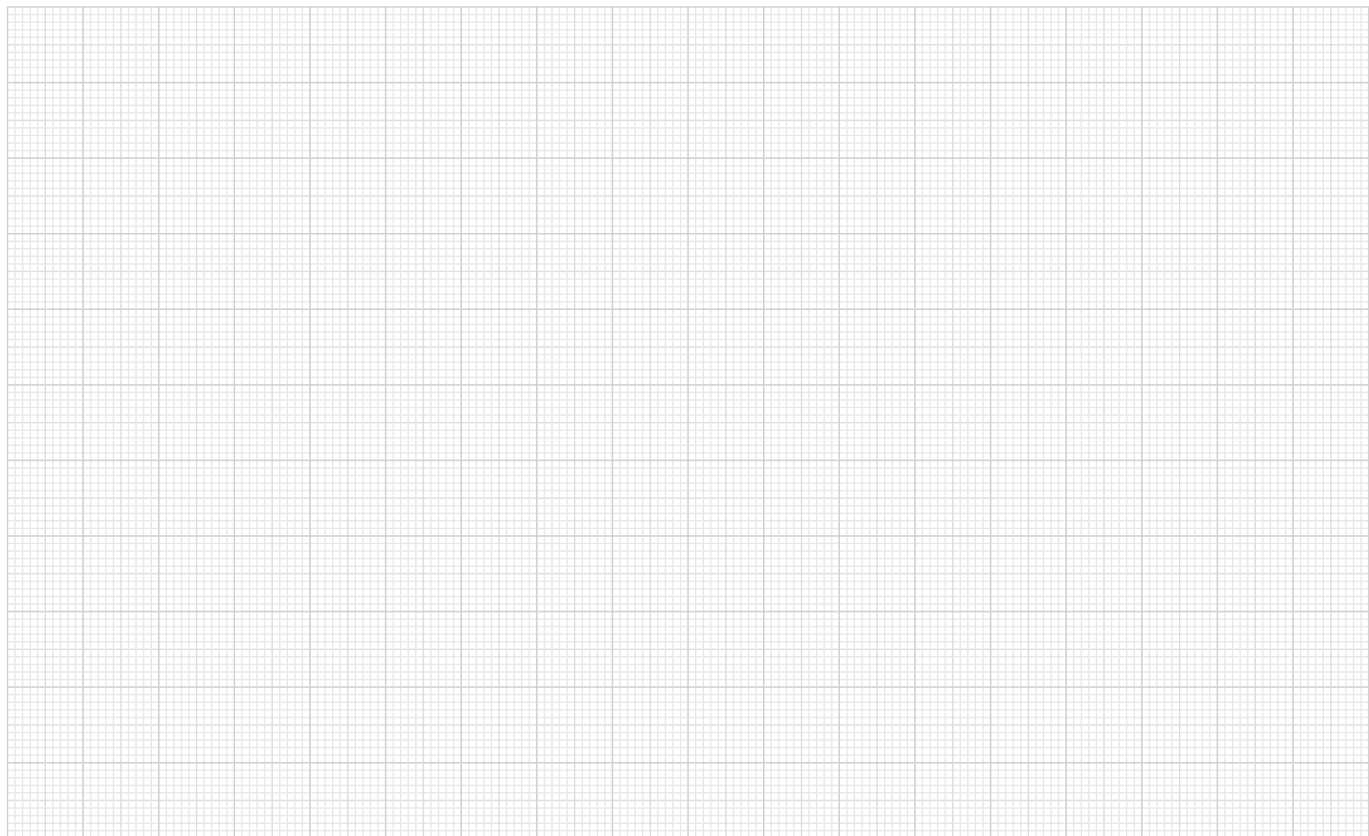
Double Edge Clamps with machining allowance

Order No.	D	D1	L	L1	B1 min. - max.	B2	B3	H	H1	F kN	Tightening torque max. Nm	Approx. weight kg
K0038.04	M4	M2	15,9	10,2	28,6 - 29,1	10,6	4,6	12,7	6,3	2,2	3,4	0,018
K0038.06	M6	M4	23,9	15,9	38,1 - 39	16,1	6,6	19	9,5	6,7	14,3	0,056
K0038.08	M8	M4	31,8	20,6	50,8 - 52	20,8	9,4	25,4	12,7	8,9	14,5	0,123
K0038.12	M12	M5	47,6	30,5	76,2 - 78	30,9	14,8	38,1	19	15,6	38,4	0,420
K0038.16	M16	M6	63,5	40	101,6 - 103,9	41,3	20,3	50,8	25,4	26,7	74,6	1,008

Example with Taper Clamping Unit



Notes

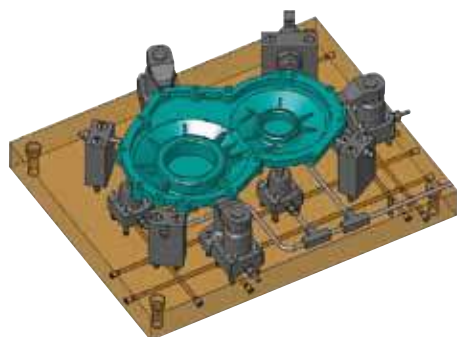


One Touch Clamping System



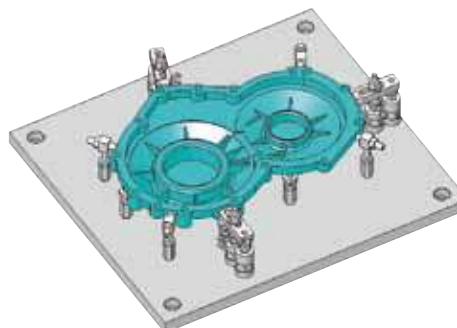
Locators
Supports
Clamps and
Adjustable Elements

Power Clamping

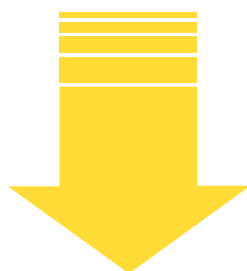


Costly Cumbersome in maintenance

Conventional Manual Clamping



Slow in setup
Inconsistent in clamping force



Workholding with One Touch Clamps

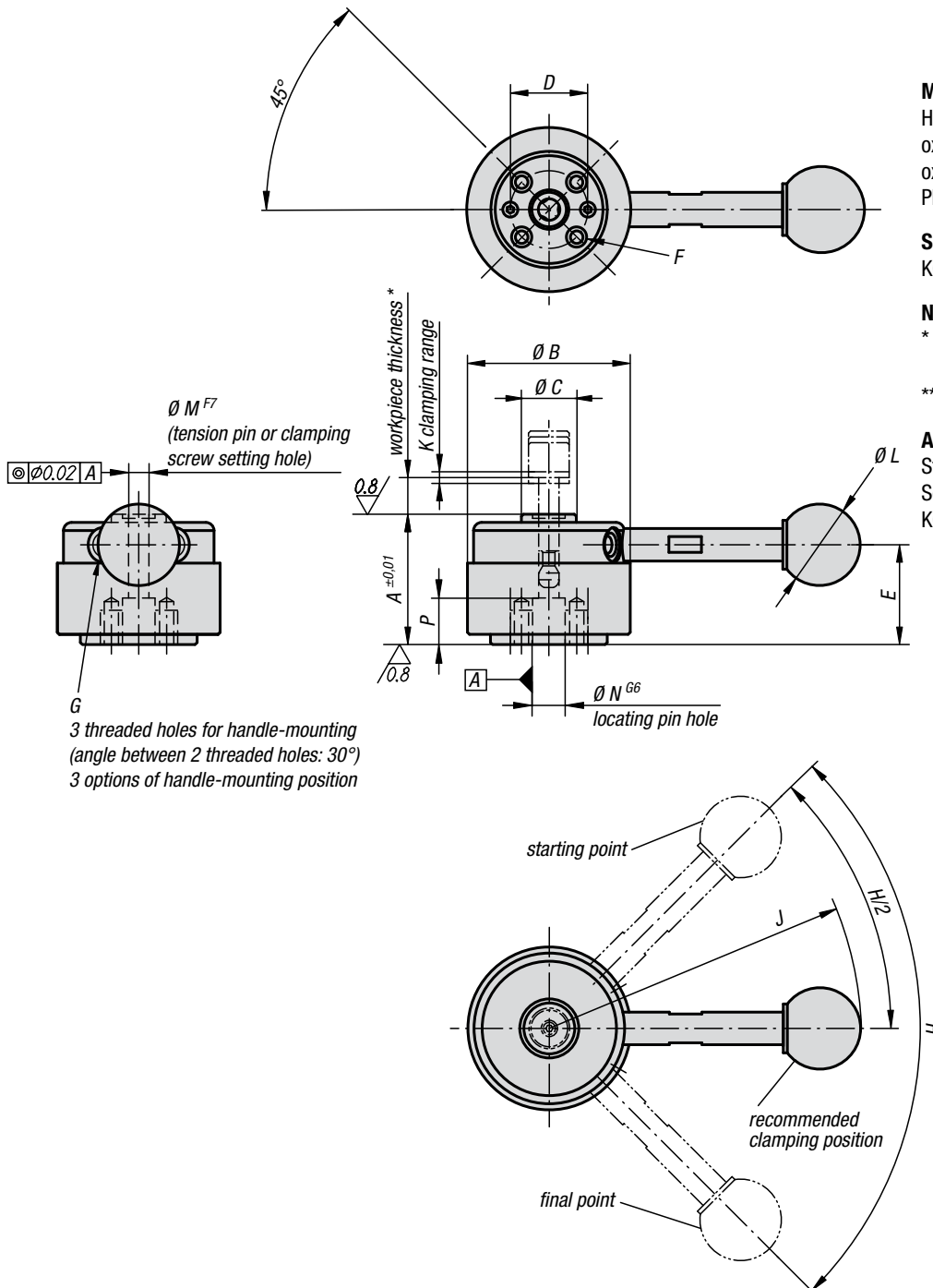


Perfect for Light Cutting Applications

One Touch Clamps for Light Machining



Pull Clamps



Material, surface finish:

Housing and cam in hardened tool steel, black oxide finish; handle in tempered steel, black oxide finish; ball knob in black duroplastic PF 31

Sample order:

K0910.324001

Note:

* Max. workpiece thickness, see clamping pin K0910 (dimension C).

** Admissible hand force to operate the handle.

Accessories:

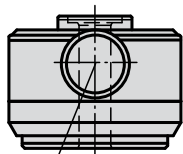
Standard handles K0915.

Screw-in handles with adjustable torque K0916.

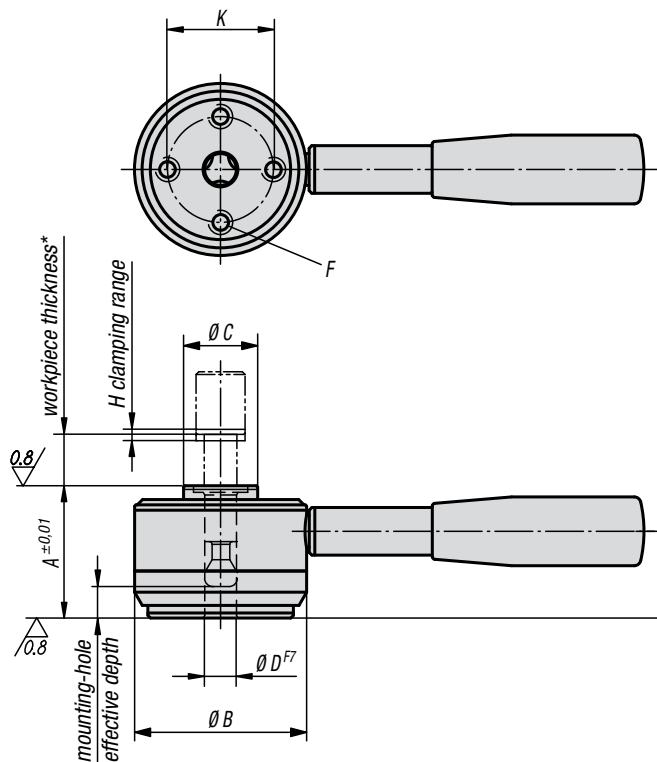
Pull Clamps

Order No.	Surface finish	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Clamping Force N	Recommended workpiece thickness tolerance	Hand force N	Holding Force N	Approx. weight kg
K0910.324000	without handle	32	40	13,5	18	24,5	M4x8	M5	90°	-	1,5	-	5	8	10	900	±0,3*	150**	2000	0,200
K0910.324001	with handle	32	40	13,5	18	24,5	M4x8	M5	90°	76,5	1,5	20	5	8	10	900	±0,3*	150**	2000	0,230
K0910.405000	without handle	40	50	18	25	30,7	M6x9	M6	110°	-	2	-	8	12	13	2500	±0,5*	200**	5500	0,420
K0910.405001	with handle	40	50	18	25	30,7	M6x9	M6	110°	111,5	2	25	8	12	13	2500	±0,5*	200**	5500	0,480

Pull Clamps (Heavy)



3 holes for handle-mounting
(angle between 2 holes: 35°)
3 options of handle-mounting
position

**Material, surface finish:**

Housing and clamping ring in tempered steel, hardened and black oxide finish;
rod in tempered steel, black oxide finish;
handle in black duroplastic PF 31

Sample order:

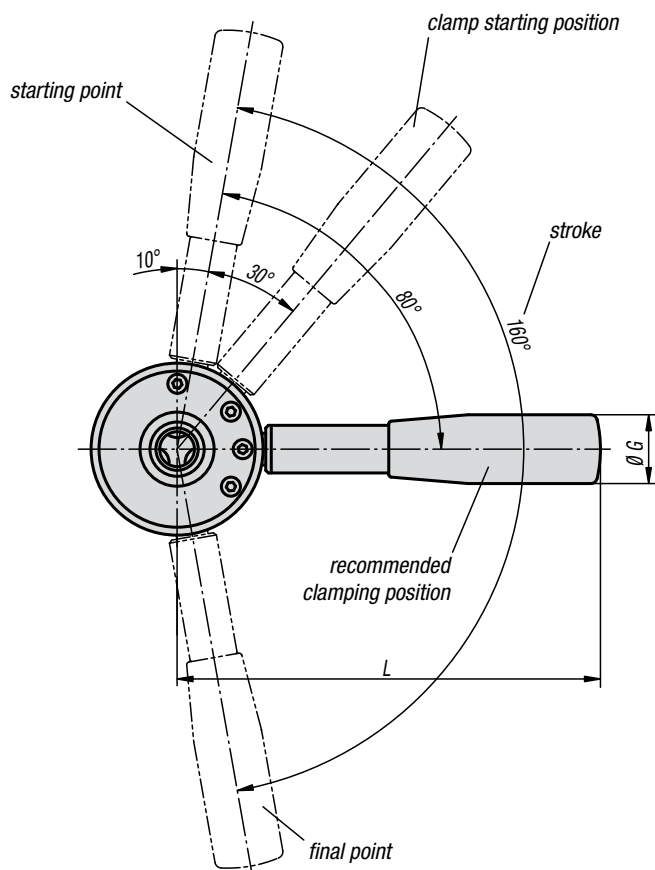
K0911.506501

Note:

Maintaining these recommended tolerances allows minimizing the variation of handle position in the clamping mode in clamping with the use of the clamping pin.

* Max. workpiece thickness, see clamping pin K0911 (dimension C).

** Admissible hand force to operate the handle.



Pull Clamps (Heavy)

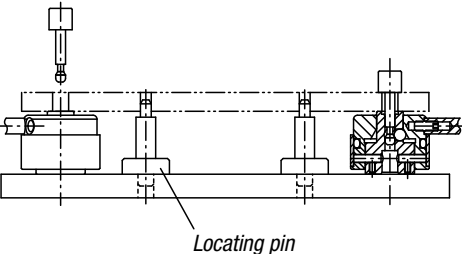
Order No.	A	B	C	D	E	F	G	H	J	K	L	Clamping Force N	Recommended workpiece thickness tolerance	Hand force N	Holding Force N	Approx. weight kg
K0911.506501	50	65	28	12	36	M8x14	26	2	10	40	160	6000	±0,5*	600**	8000	1,200
K0911.638001	63	80	34	16	45	M10x18	28	2,5	12	50	180	8000	±0,8*	600**	14000	2,200

How to locate workpiece

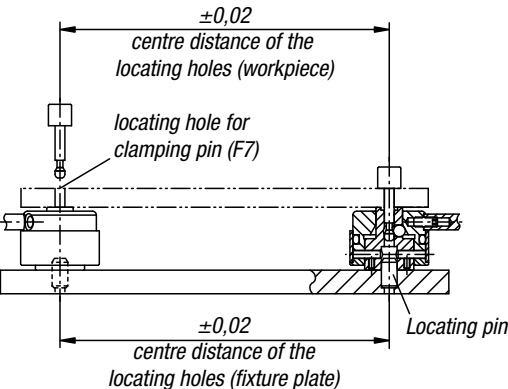


Workpiece positioning

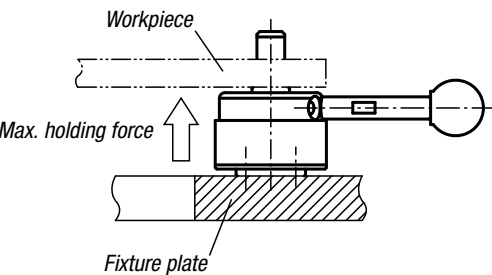
Clamping by means of pull clamp and clamping pin



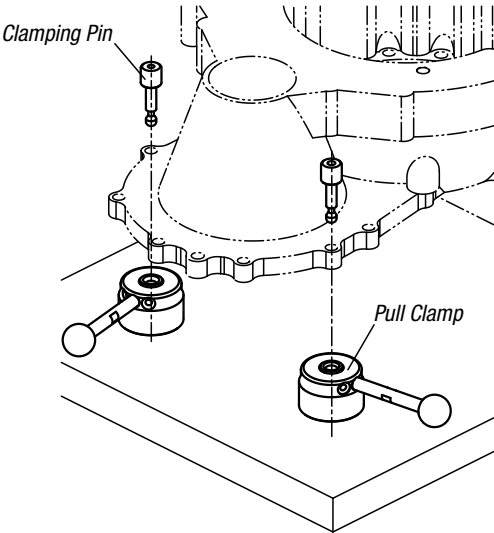
Simultaneous clamping and positioning of a workpiece



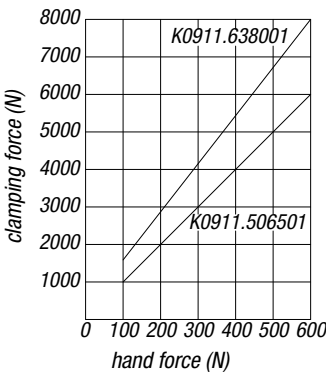
Holding forces for workpiece processing



Make sure that no force exceeding the values in the table is affecting the bottom of the workpiece.

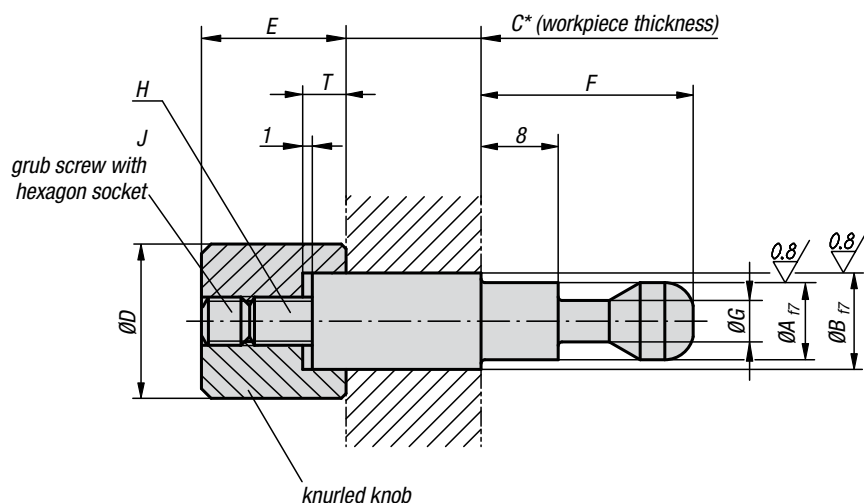


performance curve





Clamping Pins



Material, surface finish:

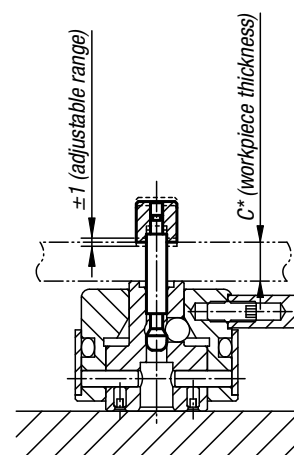
Bolt in tempered steel, heat-treated and ground;
knurled knob in tempered steel, heat-treated and
black oxide finish

Sample order:

K0910.005050

Note:

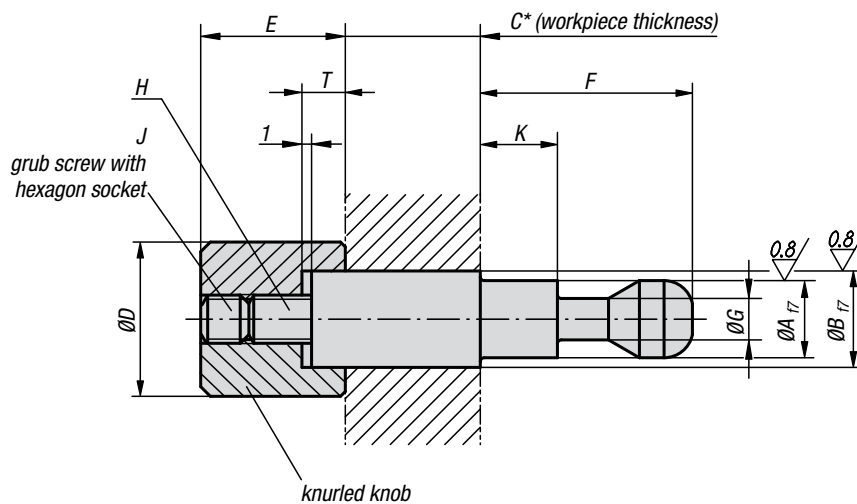
* Customer can adapt the clamping pin according to
the workpiece thickness.



Clamping Pins

Order No.	A	B	C	D	E	F	G	H	J	T	Suitable for	Approx. weight g
K0910.005050	5	5	50	10	10	17	3	M3	M3x4	3	K0910.3240...	16
K0910.006050	5	6	50	10	10	17	3	M3	M3x4	3	K0910.3240...	19
K0910.008080	8	8	80	16	15	22	4,3	M5	M5x5	4,5	K0910.4050...	60
K0910.010080	8	10	80	16	15	22	4,3	M5	M5x5	4,5	K0910.4050...	77

Clamping Pins (Heavy)

**Material, surface finish:**

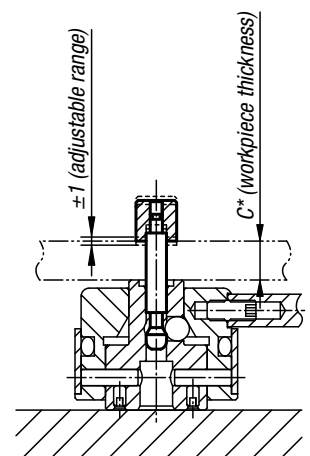
Bolt in tempered steel, heat-treated and ground;
knurled knob in tempered steel, heat-treated and
black oxide finish

Sample order:

K0911.412100

Note:

* Customer can adapt the clamping pin according to
the workpiece thickness.



Clamping Pins (Heavy)

Order No.	A	B	C	D	E	F	G	H	J	K	T	Suitable for	Approx. weight g
K0911.412100	12	12	100	18	23	38	6,5	M8	M8x8	21,5	7	K0911.506501	70-160
K0911.416100	12	16	100	24	23	38	6,5	M8	M8x8	21,5	7	K0911.506501	175-265
K0911.516120	16	16	120	24	29	48	9,5	M10	M10x10	28	9	K0911.638001	160-350
K0911.520120	16	20	120	30	29	48	9,5	M10	M10x10	28	9	K0911.638001	325-515

Clamping Screws

**Material:**

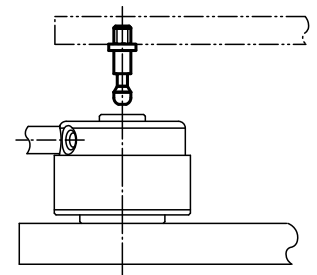
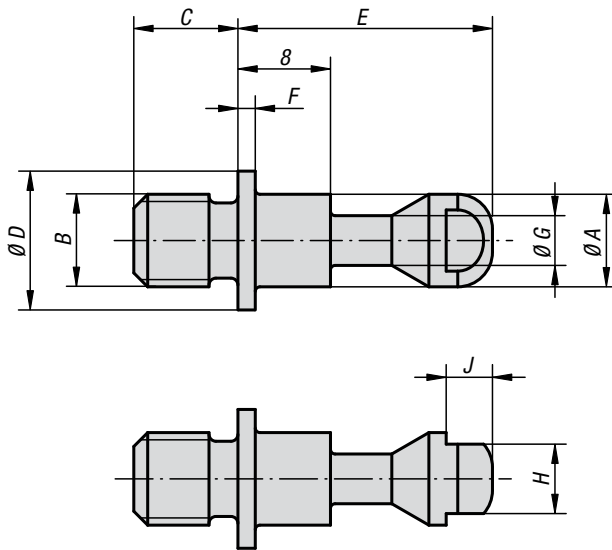
Tempered steel

Surface finish:

Heat-treated and black oxide finish

Sample order:

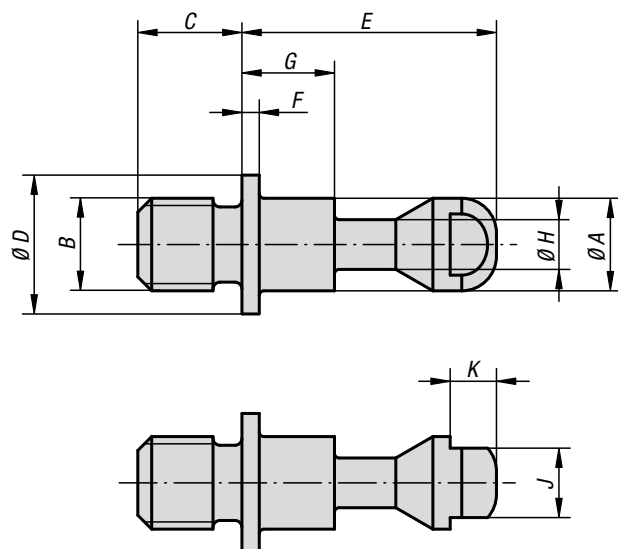
K0910.105060



Clamping Screws

Order No.	A	B	C	D	E	F	G	H	J	Suitable for	Approx. weight g
K0910.105060	5	M5	6	8	17	1,2	3	4	2,5	K0910.3240...	3
K0910.106070	5	M6	7	8	17	1,2	3	4	2,5	K0910.3240...	4
K0910.108090	8	M8	9	12	22	1,5	4,3	6	4	K0910.4050...	10
K0910.110110	8	M10	11	12	22	1,5	4,3	6	4	K0910.4050...	13

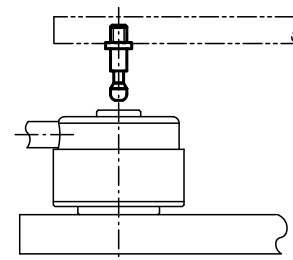
Clamping Screws (Heavy)



Material:
Tempered steel

Surface finish:
Heat-treated and black oxide finish

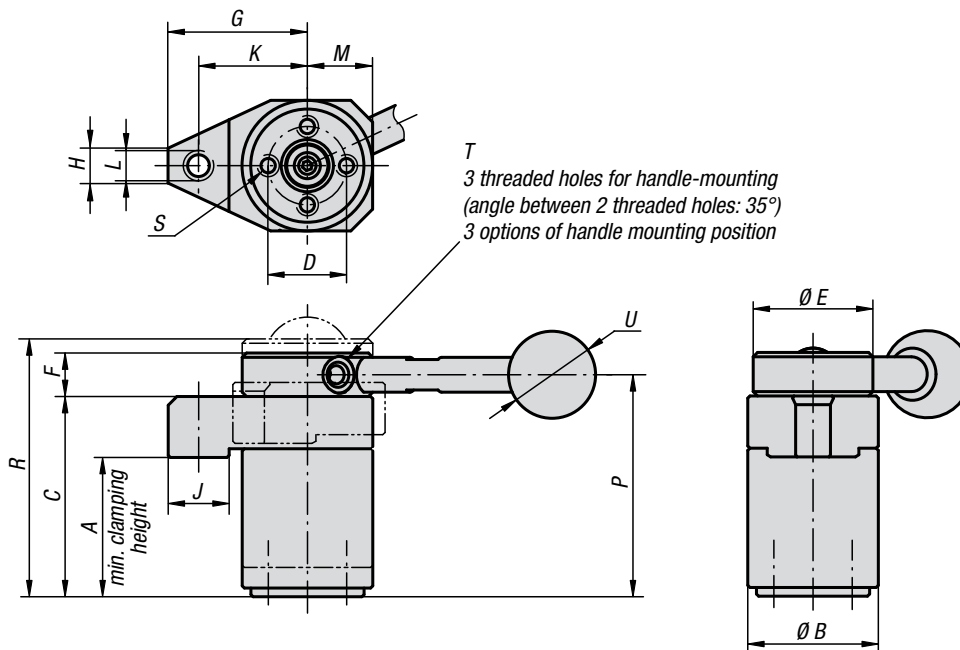
Sample order:
K0911.1412013



Clamping Screws (Heavy)

Order No.	A	B	C	D	E	F	G	H	J	K	Suitable for	Approx. weight g
K0911.1412013	12	M12	13	20	38	2	21,5	6,5	10	4	K0911.506501	40
K0911.1416017	12	M16	17	20	38	2	21,5	6,5	10	4	K0911.506501	55
K0911.1516017	16	M16	17	25	48	2,5	28	9,5	13	5	K0911.638001	90
K0911.1520021	16	M20	21	25	48	2,5	28	9,5	13	5	K0911.638001	110

Swing Clamps



Material:

Tempered steel;
ball knob in plastic

Surface finish:

Heat-treated and black oxide finish;
ball knob in black duroplastic PF 31

Sample order:

K0912.013232

Note:

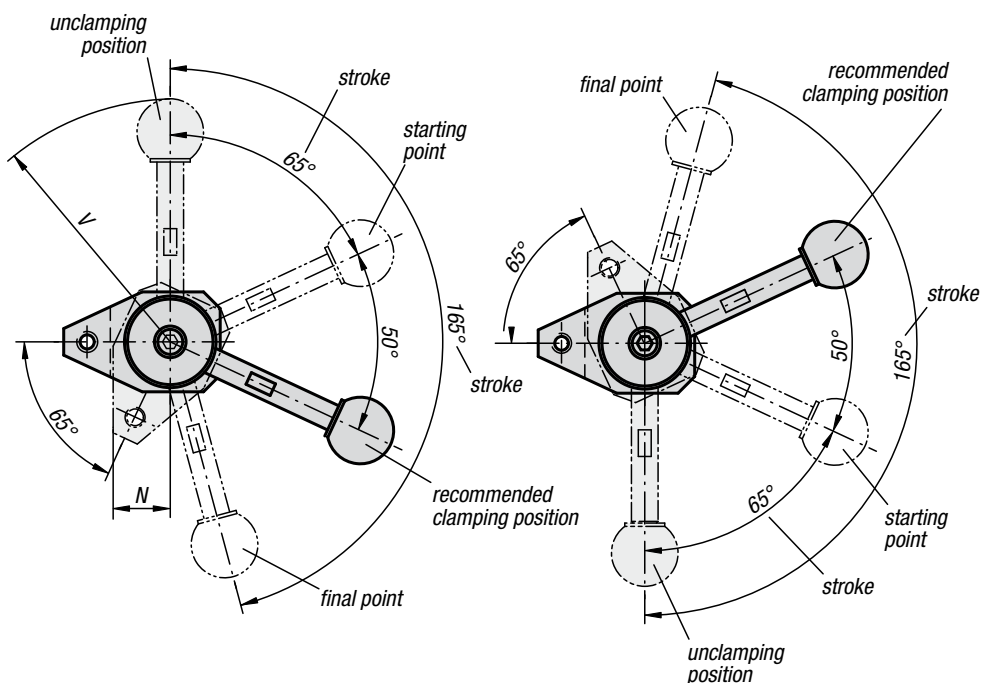
* Admissible hand force to operate the handle.

Accessories:

Standard handles K0915.
Screw-in handles with adjustable torque K0916.

Right-hand type

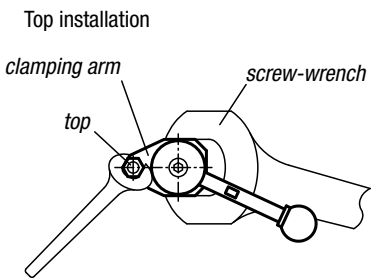
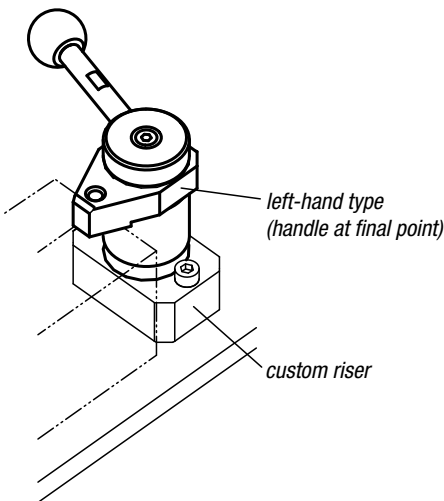
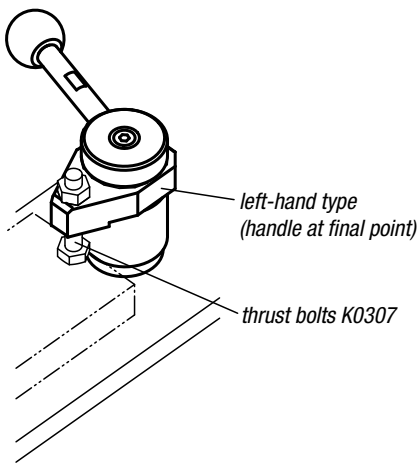
Left-hand type



Swing Clamps

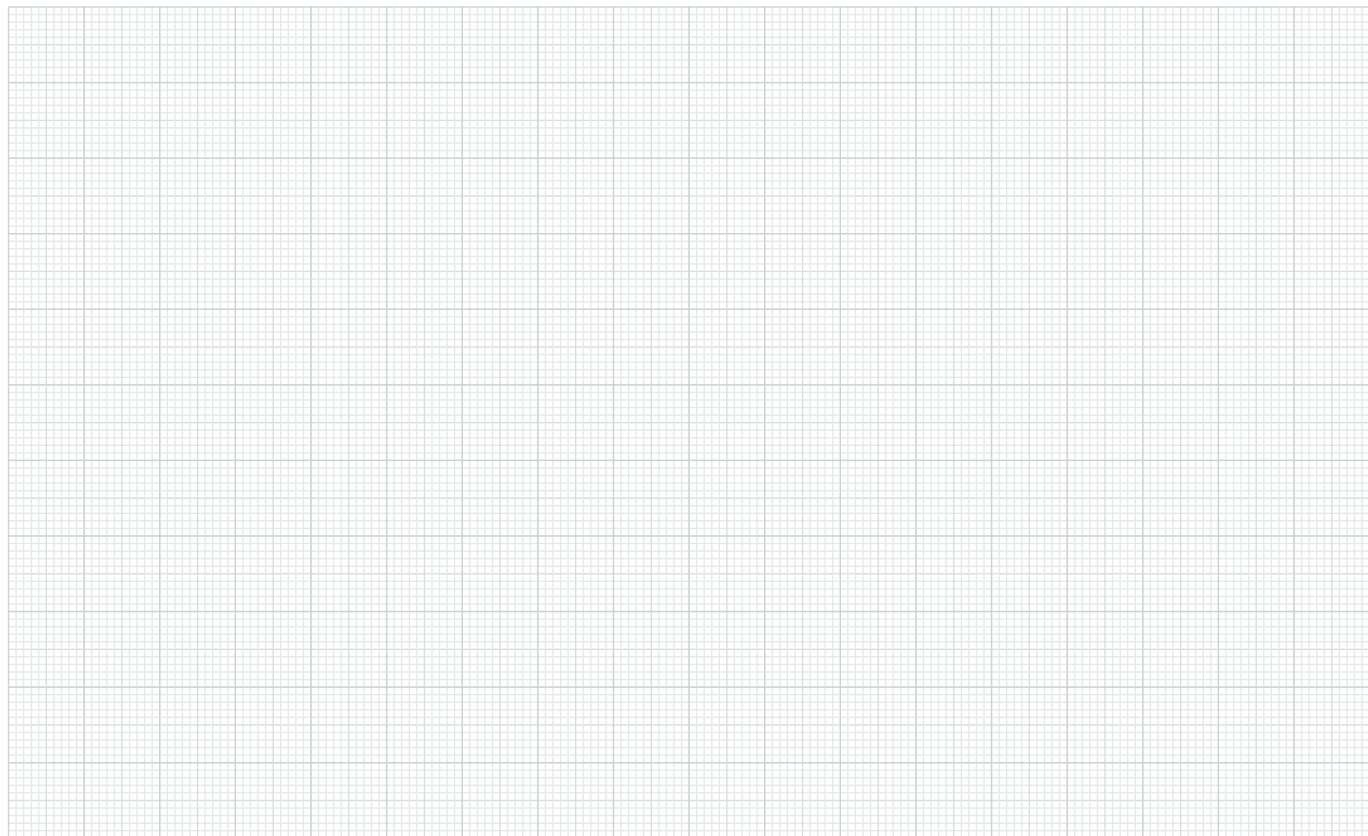
Order No. left-hand type	Order No. right-hand type	Surface finish	A min.	A max.	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	V	Clamping Force N	Hand force N	Approx. weight kg
K0912.003232	K0912.103232	without handle	31,4	32,6	30	46	18	30	10	32	8	14	25	M6	15	17	51	57,5	M4x8	M5	-	-	800	150*	0,270
K0912.004540	K0912.104540	without handle	44,1	45,9	40	63	25	38	13	40	12	16	32	M8	20	22,5	69,5	78,1	M6x12	M6	-	-	1200	200*	0,600
K0912.013232	K0912.113232	with handle	31,4	32,6	30	46	18	30	10	32	8	14	25	M6	15	17	51	57,5	M4x8	M5	20	73	800	150*	0,300
K0912.014540	K0912.114540	with handle	44,1	45,9	40	63	25	38	13	40	12	16	32	M8	20	22,5	69,5	78,1	M6x12	M6	25	107	1200	200*	0,660

Technical Informations for Swing Clamps

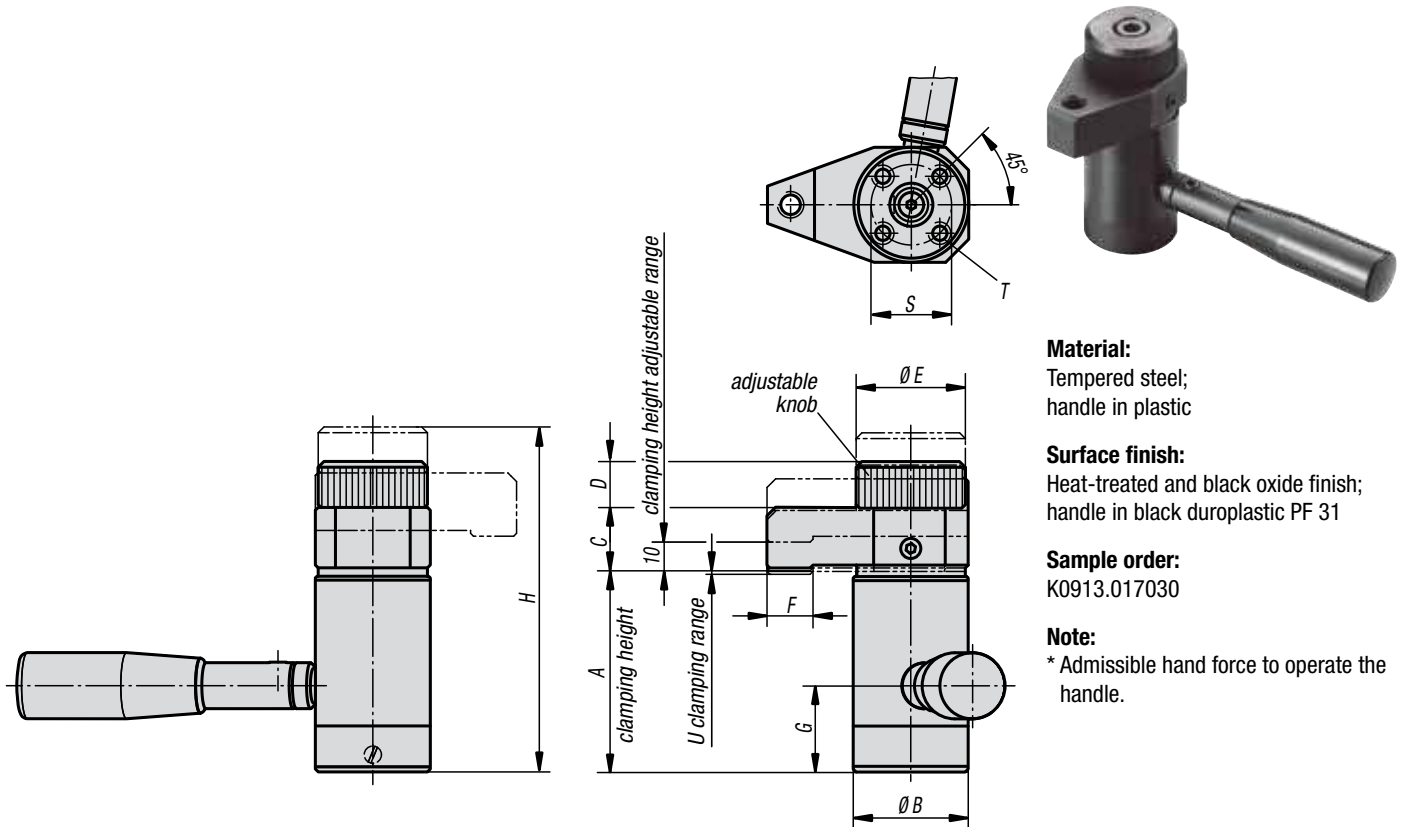


When installing a top on the clamping arm, lock the clamping arm using a screw-wrench to prevent it from receiving.

Notes



Swing Clamps (Heavy)



Material:

Tempered steel;
handle in plastic

Surface finish:

Heat-treated and black oxide finish;
handle in black duroplastic PF 31

Sample order:

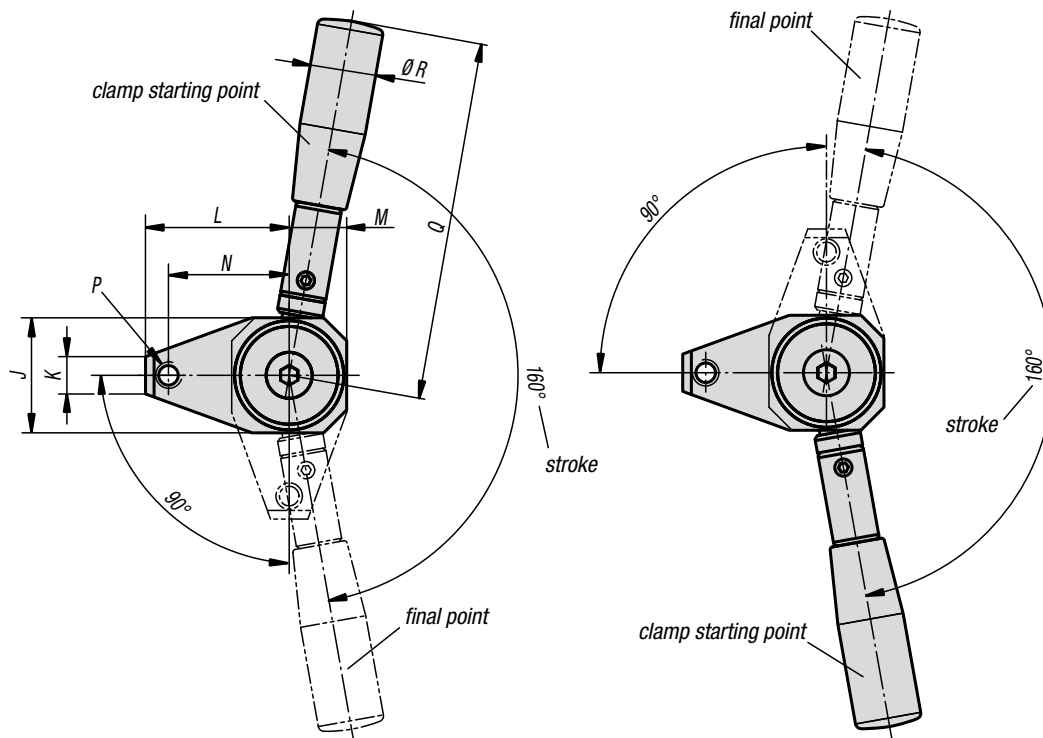
K0913.017030

Note:

* Admissible hand force to operate the handle.

Right-hand type

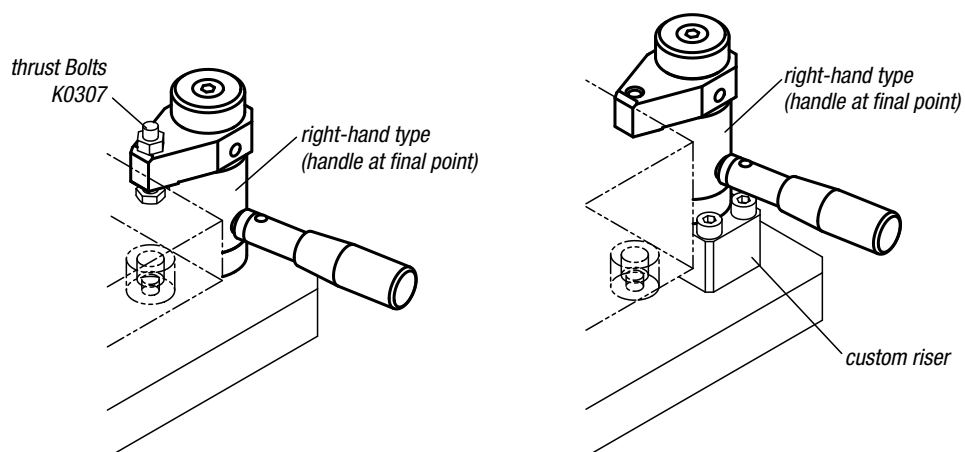
Left-hand type



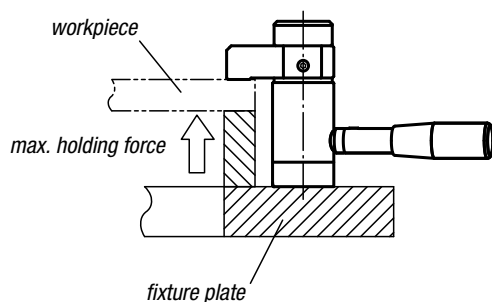
Swing Clamps (Heavy)

Order No. left-hand type	Order No. right-hand type	A min.	A max.	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	Clamping Force N	Hand force N	Holding Force N	Approx. weight kg
K0913.017030	K0913.117030	70	80	40	22	16	38	16	30	120	40	13	50	20	42	M8	125	23	28	M6x12	1,2	3500	600*	8000	1,100
K0913.018038	K0913.118038	80	90	50	25	20	48	24	38	137	50	18	60	25	48	M12	160	28	35	M8x16	1,6	6000	600*	14000	2,000

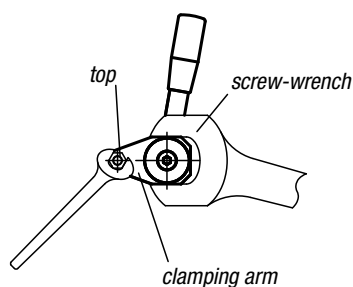
Technical Informations for Swing Clamps (Heavy)



Holding forces for workpiece processing

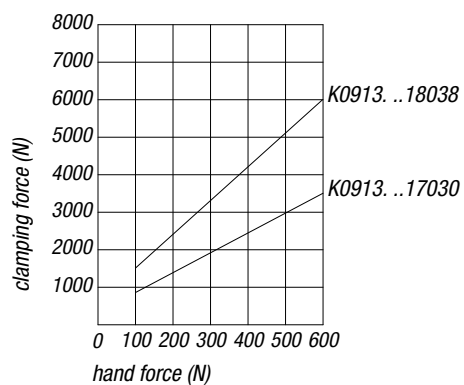


Top Installation



When installing a top on the clamping arm, lock the clamping arm using a screw-wrench to prevent it from receiving.

K0913. performance curve



Clamping Arms

for swing clamp



Material:

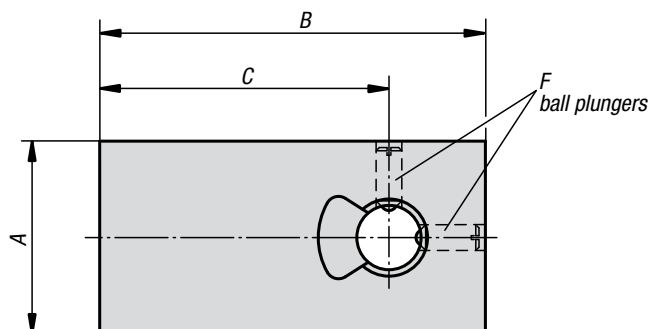
Tempered steel

Surface finish:

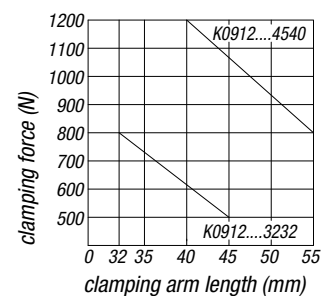
Black oxide finish

Sample order:

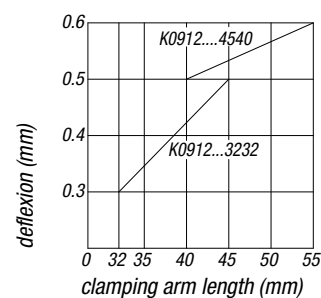
K0912.03006010



clamping arm length C vs. clamping force



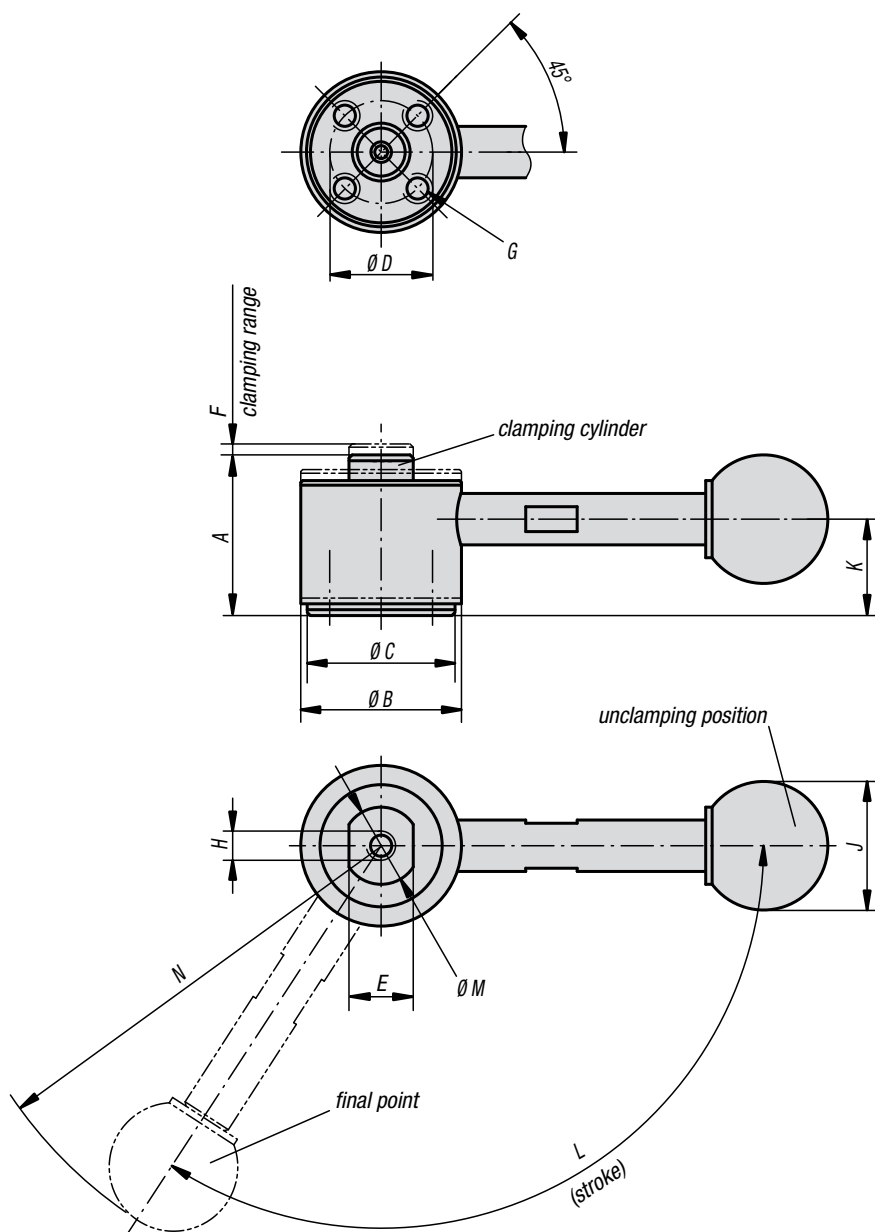
clamping arm length C vs. deflexion during clamping



Clamping arms for swing clamp

Order No.	A	B	C	D	E	F	Suitable for	Approx. weight kg
K0912.03006010	30	60	45	12	10	M4	K0912....3232	0,150
K0912.04007516	40	75	55	16	16	M5	K0912....4540	0,330

Push Clamps



Material, surface finish:

Cam hardened tool steel, hardened and black oxide finish;
shaft tempered steel, hardened and black oxide finish;
handle tempered steel, black oxide finish;
ball knob in black duroplastic PF 31

Sample order:

K0914.252501

Note:

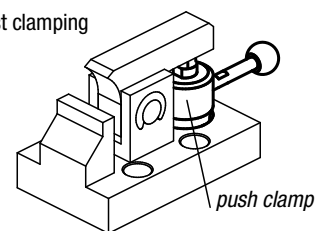
* Admissible hand force to operate the handle.

Accessories:

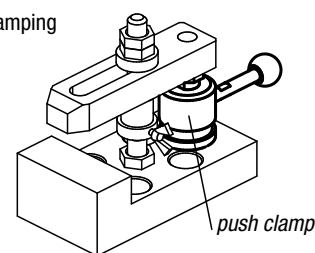
Standard handles K0915.

Screw-in handles with adjustable torque K0916.

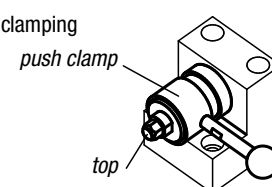
downthrust clamping



vertical clamping



horizontal clamping

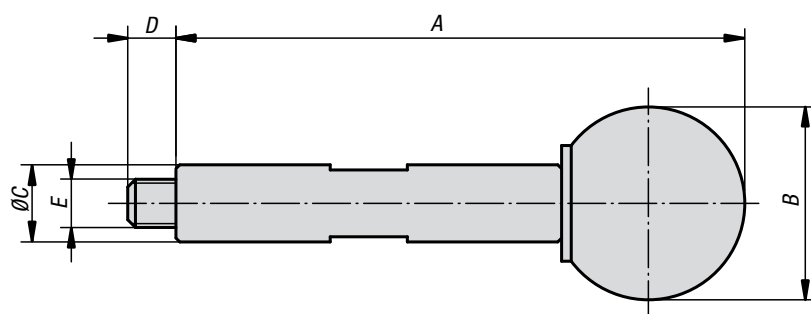


When installing a top on top of the clamping cylinder, lock the shaft using a screw wrench to prevent it from receiving any torque.

Push Clamps

Order No.	Surface finish	A min.	A max.	B	C	D	E	F	G	H	J	K	L	M	N	Clamping Force N	Hand force N	Approx. weight kg
K0914.252500	without handle	25	26,7	25	23	16	10	1,7	M4x6	M4x6	-	15	123°	12	-	3000	150*	0,150
K0914.252501	with handle	25	26,7	25	23	16	10	1,7	M4x6	M4x6	20	15	123°	12	69,5	3000	150*	0,180
K0914.323200	without handle	32	34,5	32	30	20	13	2,5	M6x9	M6x9	-	19,5	135°	15	-	4000	200*	0,310
K0914.323201	with handle	32	34,5	32	30	20	13	2,5	M6x9	M6x9	25	19,5	135°	15	103	4000	200*	0,370

Screw-in Handles

**Material, surface finish:**

Handle in tempered steel, black oxide finish;
ball knob in black duroplastic PF 31

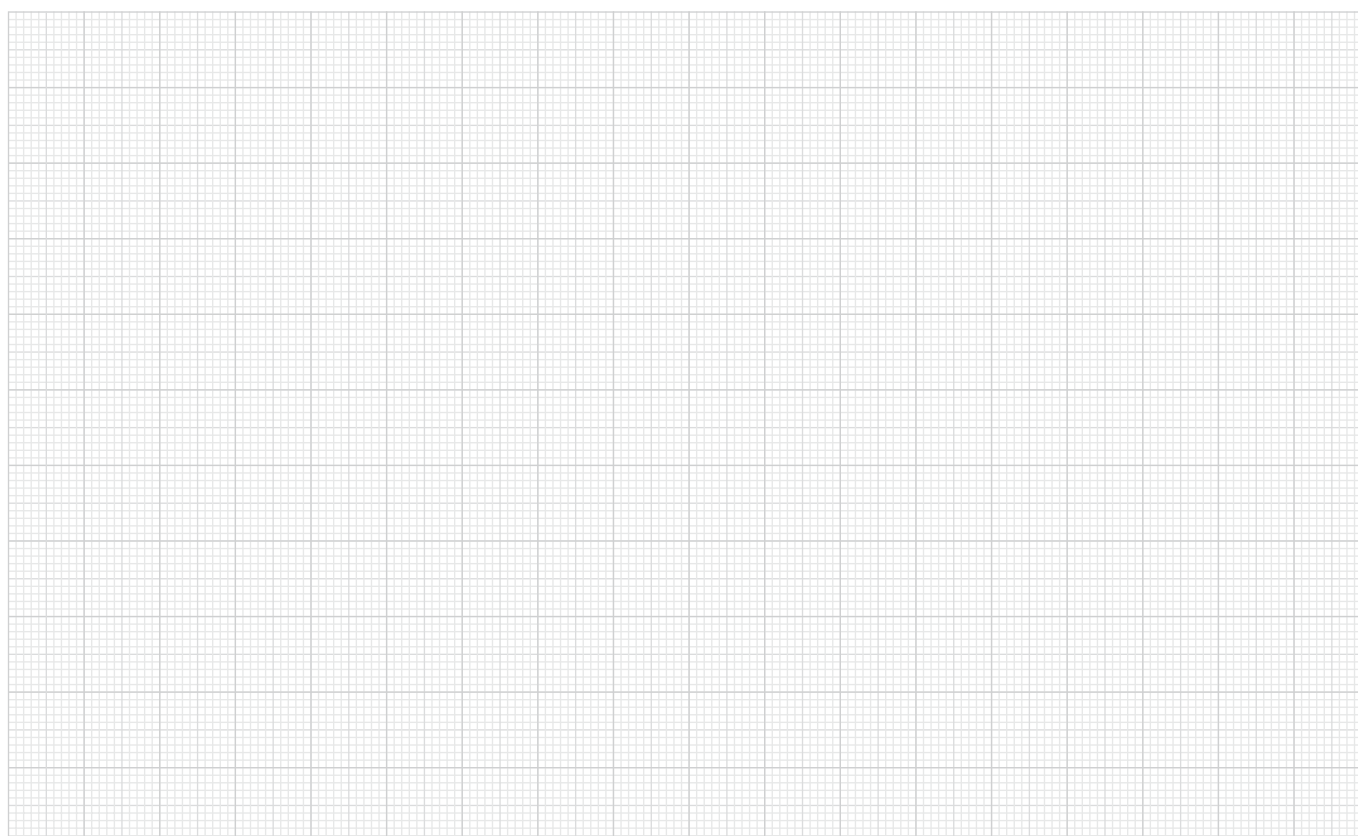
Sample order:

K0915.05059

Screw-in Handles

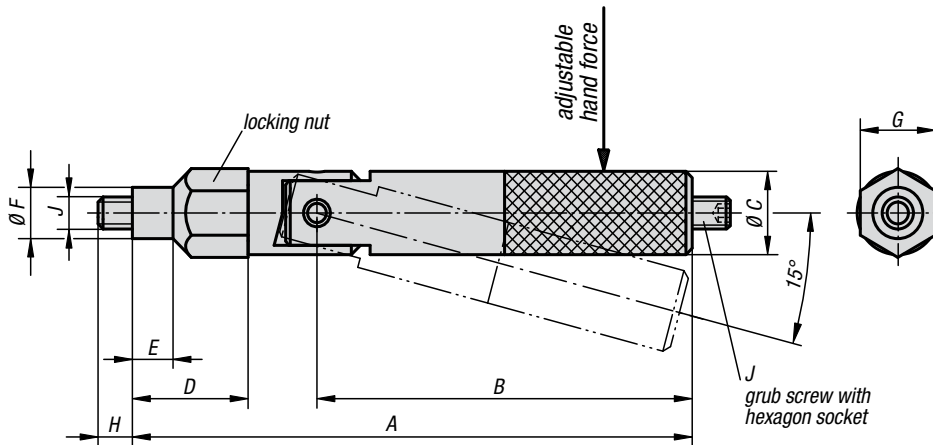
Order No.	A	B	C	D	E	Approx. weight kg
K0915.05059	59	20	8	5	M5	0,030
K0915.06089	89	25	10	6	M6	0,060

Notes



Screw-in Handles

with adjustable torque



Material:

Tempered steel

Surface finish:

Hardened and black oxide finish

Sample order:

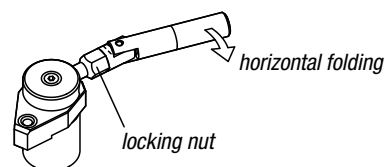
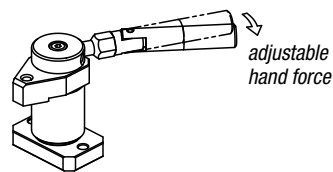
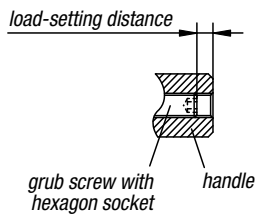
K0916.05090

Note:

Changing the position of the grub screw with hexagon socket allows adjusting the disengagement torque to set a desired clamping force. The clamping force is reached when the handle folds approximately 15°.

Remark:

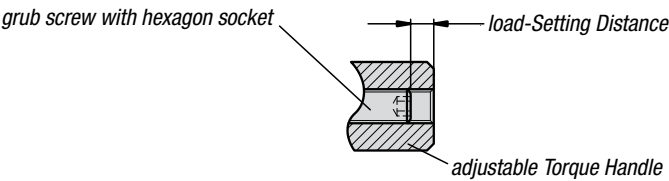
Ensure that the handle is set to fold horizontally.



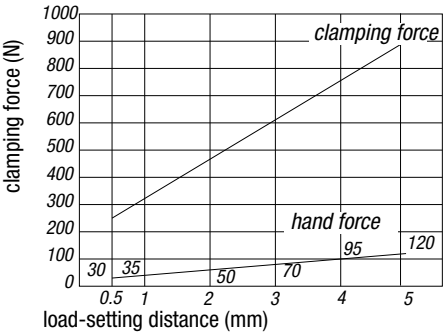
Screw-in Handles with adjustable torque

Order No.	A	B	C	D	E	F	G	H	J	K	Hand force N	Approx. weight kg
K0916.05090	89,5	60	13	18,5	6,5	8	12	5,5	M5	M5x16	0-150	0,090
K0916.06119	119	84	15	23	8	10	14	6,5	M6	M6x20	0-200	0,140

Performance Curves

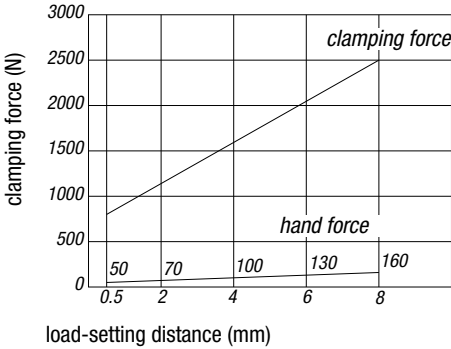


Pull Clamps K0910.3240...

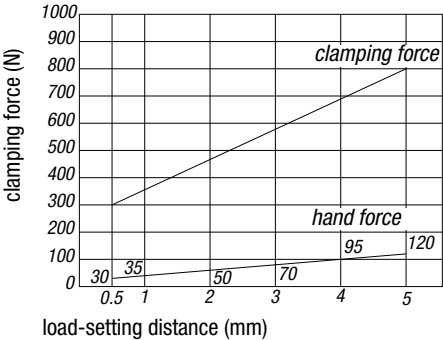


If clamping force is 900 N, Load-Setting Distance will be 5 mm. Hand force will be 120 N.

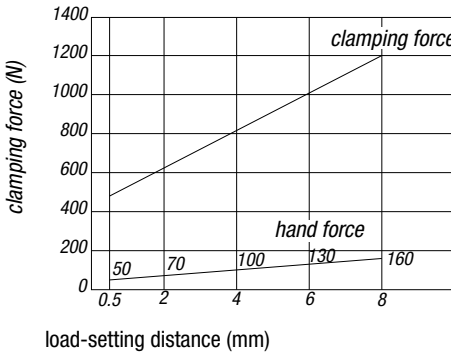
Pull Clamps K0910.4050...



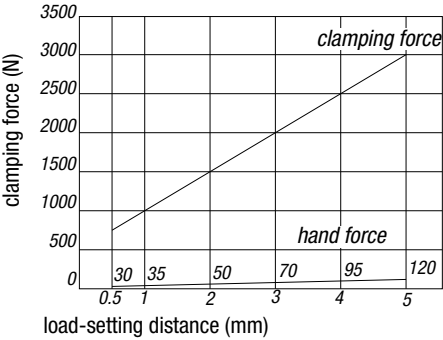
Swing Clamps K0912....3232



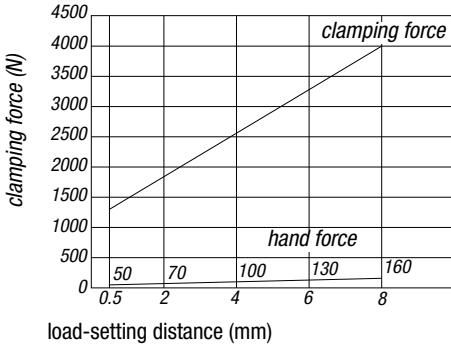
Swing Clamps K0912....4540



Side Clamps K0928.0500
Side Clamps K0928.0501



Side Clamps K0928.0800
Side Clamps K0928.0801

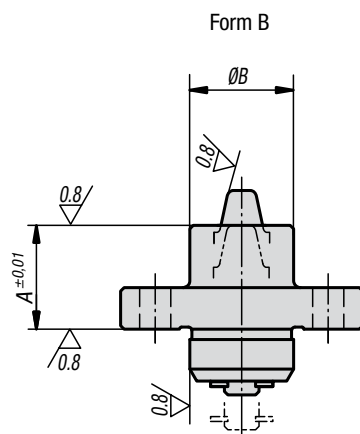
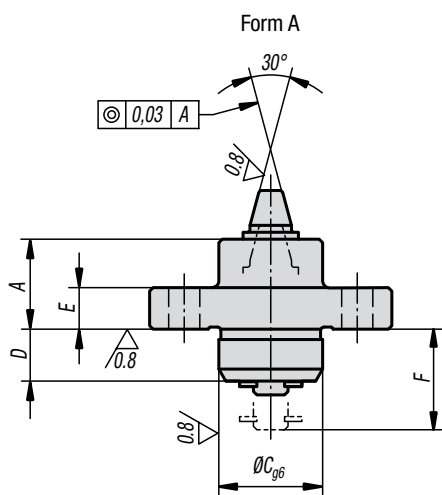


Note:
The above performance curves apply to degreased clamps



Notes

Spring-loaded Work Locators

**Material, surface finish:**

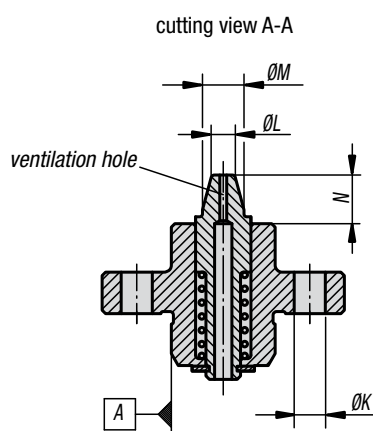
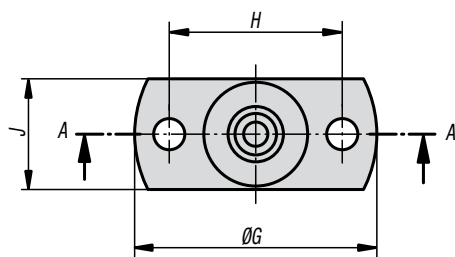
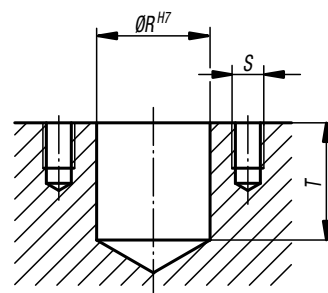
Body in tempered steel, hardened and black oxid finish;
locating pin in hardened tool steel

Sample order:

K0917.15060

Note:

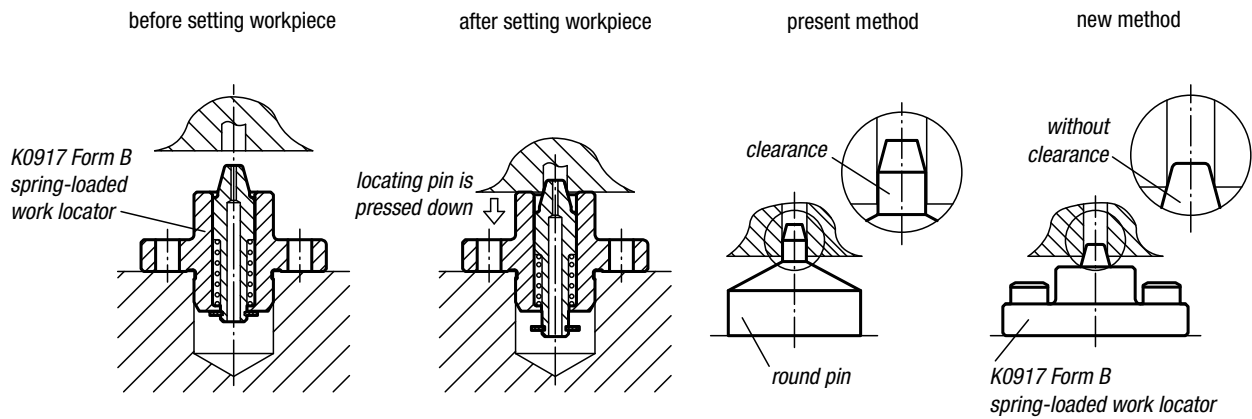
* Within these diameter limits, receiving holes can be positioned.

**Mounting hole dimensions**

Spring-loaded Work Locators

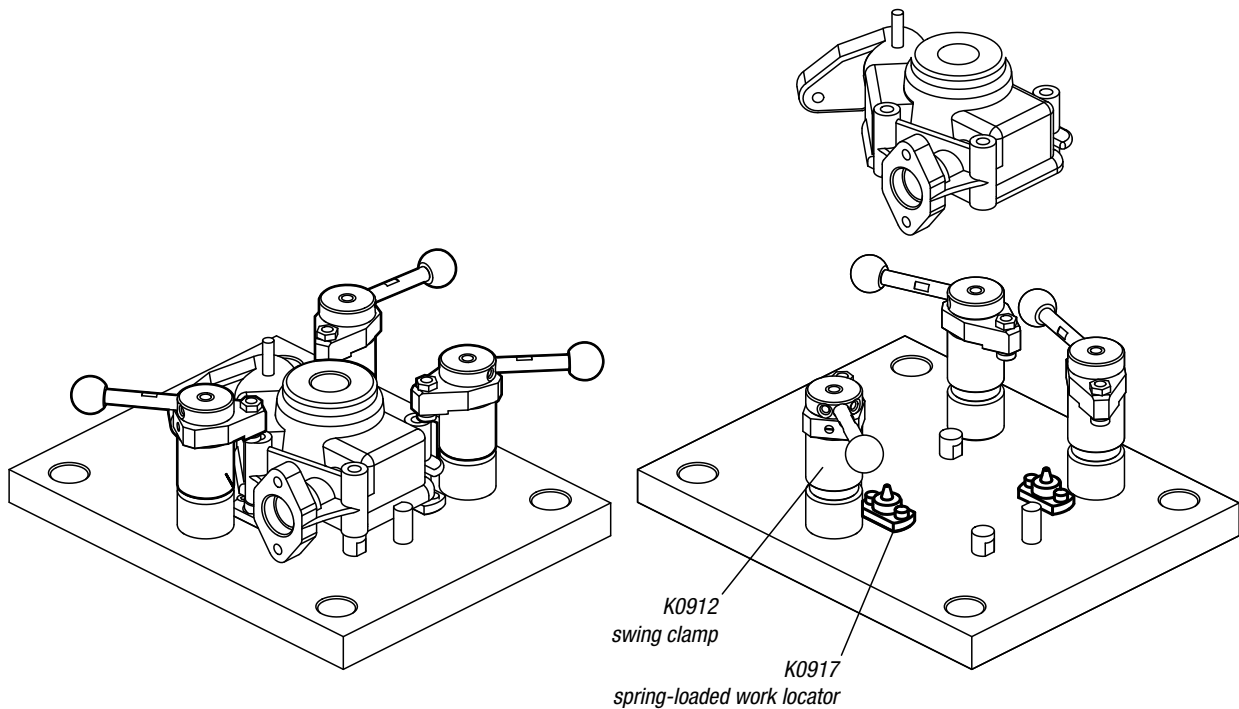
Order No. Form A	A	B	C	D	E	F	G	H	J	K	L	M	N	R	S	T	Receiving hole	Spring force cone N	Approx. weight kg
K0917.15060	13	15	15	7,5	6	15	35	25	16	4,5	3,5	6	7,4	15	M4	16	ø3,8 - ø5,2*	6,4 - 19,3	0,045
K0917.15070	13	15	15	7,5	6	15	35	25	16	4,5	4,5	7	7,4	15	M4	16	ø4,8 - ø6,2*	6,4 - 19,3	0,045
K0917.20090	18	20	20	10	8	20	40	30	22	4,5	5,5	9	9,3	20	M4	21	ø5,8 - ø8,2*	5,5 - 20,5	0,095
K0917.20110	18	20	20	10	8	20	40	30	22	4,5	7,5	11	9,3	20	M4	21	ø7,8 - ø10,2*	5,5 - 20,5	0,095

Order No. Form B	A	B	C	D	E	F	G	H	J	K	L	M	N	R	S	T	Receiving hole	Spring force cone N	Approx. weight kg
K0917.15061	15	15	15	7,5	6	15	35	25	16	4,5	3,5	6	5,4	15	M4	16	ø3,8 - ø5,2*	6,4 - 19,3	0,050
K0917.15071	15	15	15	7,5	6	15	35	25	16	4,5	4,5	7	5,4	15	M4	16	ø4,8 - ø6,2*	6,4 - 19,3	0,050
K0917.20091	20	20	20	10	8	20	40	30	22	4,5	5,5	9	7,3	20	M4	21	ø5,8 - ø8,2*	5,5 - 20,5	0,100
K0917.20111	20	20	20	10	8	20	40	30	22	4,5	7,5	11	7,3	20	M4	21	ø7,8 - ø10,2*	5,5 - 20,5	0,100



When the workpiece is set, the tapered pin is pressed down to locate it. The accurate style allows vertically as well as horizontally positioning the workpiece with accuracy.

Use of tapered pin provides secure locating with no clearance between the locating hole and the tapered pin.



Note:

In clamping, hold down the workpiece by hand to avoid lift that can be generated by spring force.

**Material, surface finish:**

Body and piston in tempered steel, heat-treated and black oxide finish;
handle in tempered steel, heat-treated;
ball knob in black duroplastic PF 31

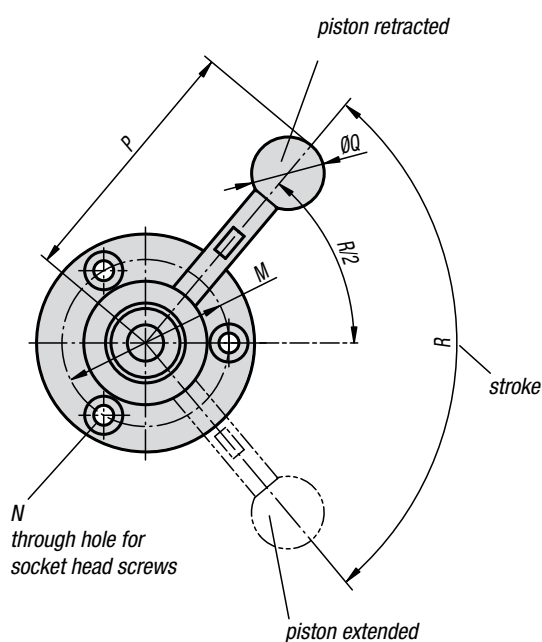
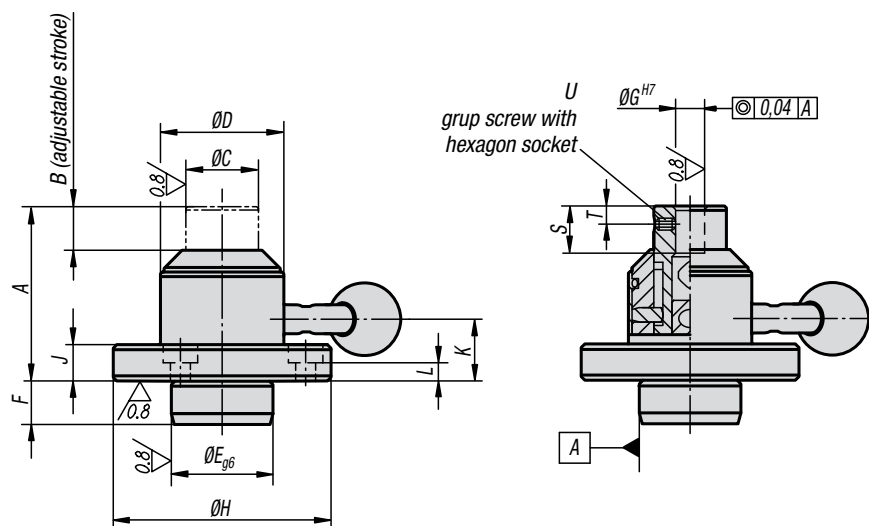
Sample order:

K0918.2808

Note:

* Admissible hand force to operate the handle.

** Max. weight that allows the locating pin to project and provide workpiece centering

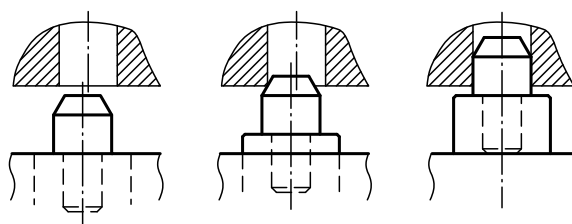


1. rough locating

2. piston projection

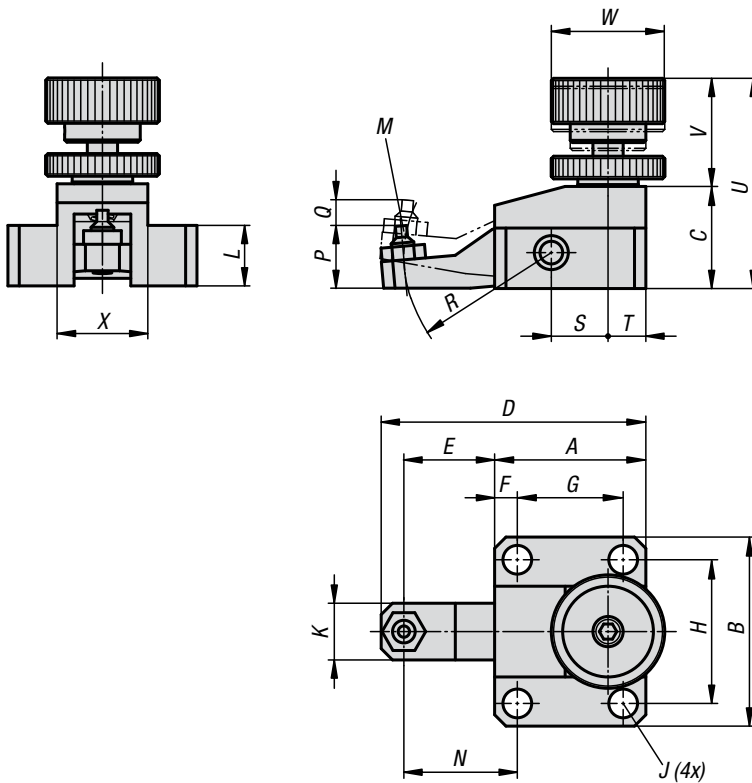
3. completed locating

← workpiece centering

**Work Locators**

Order No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	Hand force N	Max. workpiece weight kg	Approx. weight kg
K0918.2808	48	12	20	34	28	12	8	60	10	17	5	46	M5	71	20	100	13	5	M4x5	150*	250**	0,420
K0918.4212	61	15	30	48	42	14	12	80	13	23	7	63	M6	94	25	90	15	8	M6x8	200*	300**	1,040

Adjustable Supports



Material:

Tempered steel 1.0503.

Surface finish:

black oxide finish.

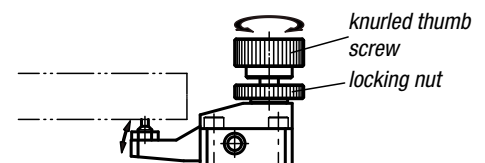
Sample order:

K0919.08020

Note:

The support element serves to support over-determined workpiece clamping points. It prevents vibrations and bending during processing. A clamping device should not give rise to exposure to strong forces.

The support element must not be used as a support beneath a clamping device.



- 1.) Turning the knurled screw moves the arm on the support element up or down.
- 2.) Once the support arm is in contact with the workpiece, the setscrew can be secured by means of the locknut.

Adjustable Supports

Order No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Clamping Force N	Tightening torque max. Nm	Approx. weight g
K0919.08020	40	50	27	70	24	6	28	38	6,6	15	16	M6x16	30	17	6	39	15	10	56	29	30	24	300	1,5	395
K0919.10027	55	65	34	95	31,5	8,5	38	48	9	18	20	M8x22	40	23	8	51,5	20	15	68	34	36	29	350	2	840

Adjustable Supports

**Material:**

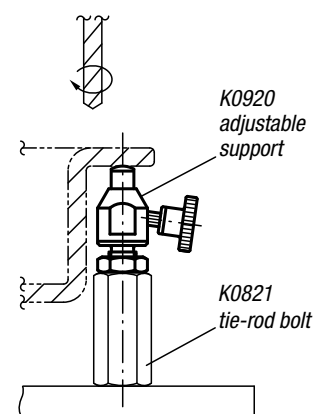
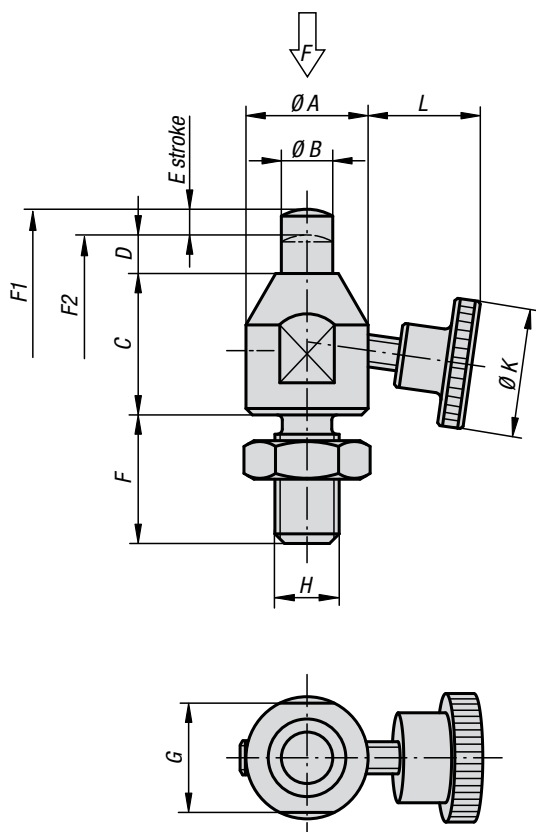
Tempered steel

Surface finish:

Base body black oxide finish; thrust bolt hardened and black oxide finish

Sample order:

K0920.08023



Adjustable Supports

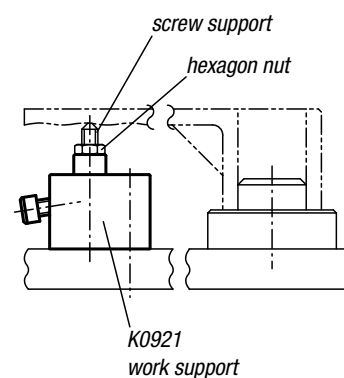
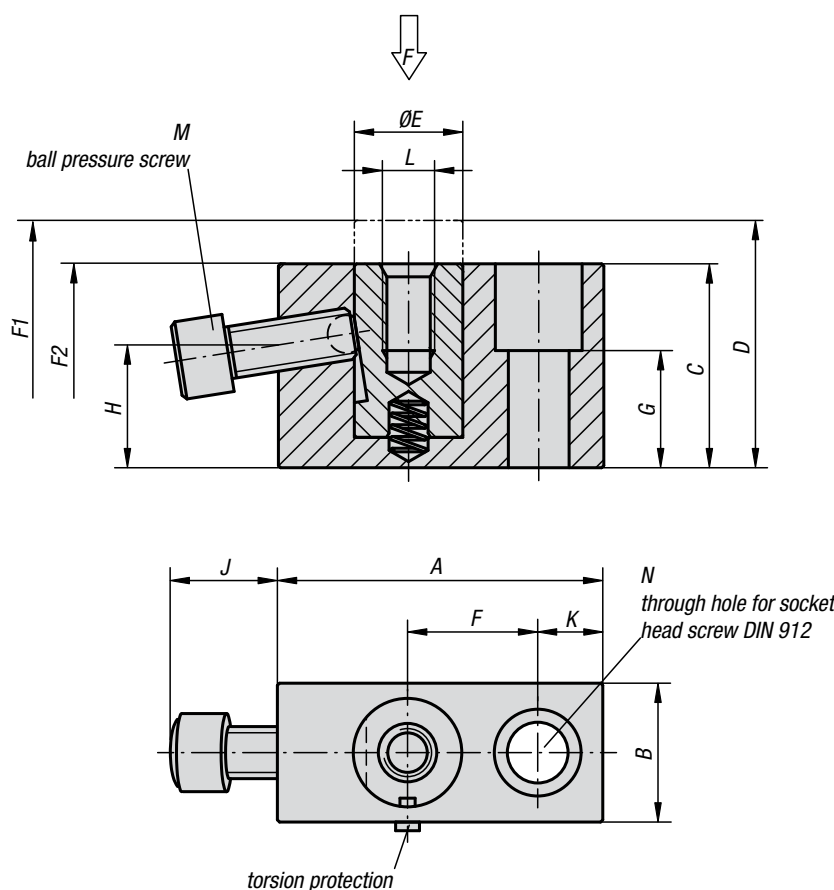
Order No.	A	B	C	D	E	F	G	H	K	L	F N	Spring force initial pressure F1 approx. N	Spring force final pressure F2 approx. N	Approx. weight kg
K0920.08023	15	6	18	5	3	16	13	M8	20	13,2	200	1,5	3	0,036
K0920.10028	19	8	22	6	4	20	17	M10	25	16,3	300	1,8	3	0,072
K0920.12031	22	10	25	6	4	24	19	M12	28	22,3	400	1,8	3	0,150



Material:
Tempered steel.

Surface finish:
Base body black oxide finish; piston heat-treated and black oxide finish

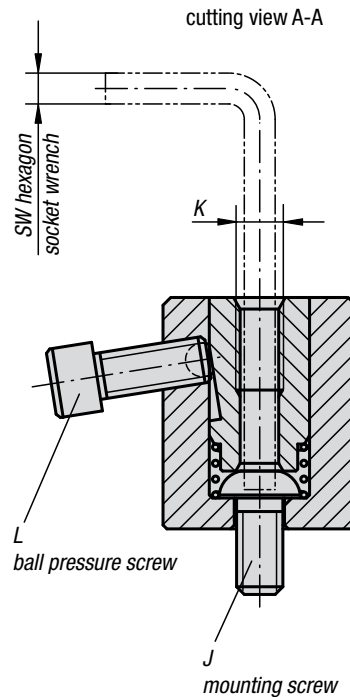
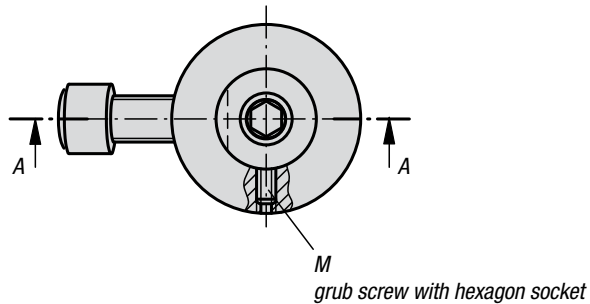
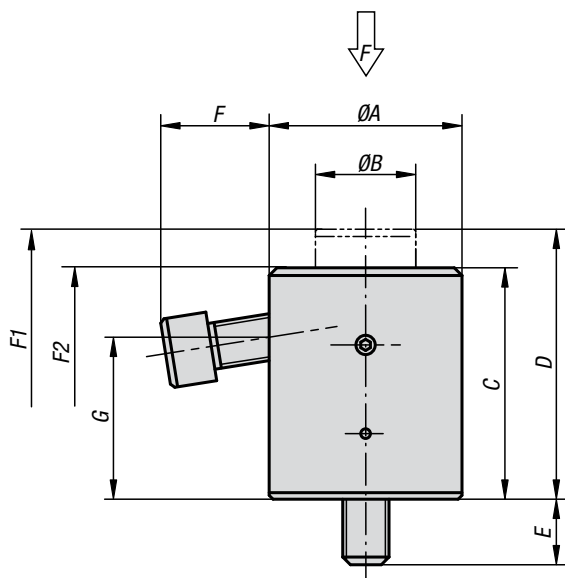
Sample order:
K0921.06029



Work Supports

Order No.	A	B	C	D	E	F	G	H	J	K	L	M	N	F N	Spring force initial pressure F1 approx. N	Spring force final pressure F2 approx. N	Approx. weight kg
K0921.06029	38	19	29	35	12	15	15	17,6	13	8	M6x10	M6x16	M6	4000	0	6	0,150
K0921.08037	50	22	37	47	16	20	20	21,1	16	10	M8x15	M8x20	M8	6000	0	7	0,285
K0921.12047	75	32	47	57	25	30	27	28,3	25	15	M12x20	M12x30	M12	9000	1	11	0,800

Work Support Cylinders



Material:

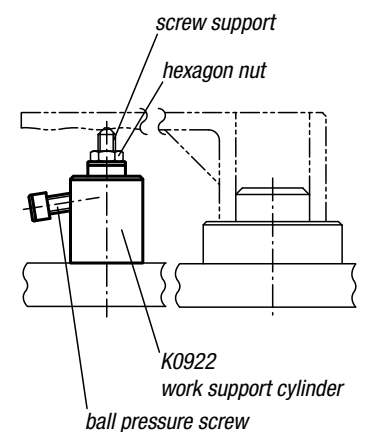
Tempered steel

Surface finish:

Base body black oxide finish;
piston hardened and black oxide finish

Sample order:

K0922.06039



Work Support Cylinders

Order No.	A	B	C	D	E	F	G	J	K	L	M	SW	F N	Spring force initial pressure F1 approx. N	Spring force final pressure F2 approx. N	Approx. weight kg
K0922.06039	28	14	33	39	10	13,1	22,2	M6	M6x12	M6x16	M4x8	4	4000	10	22	0,150
K0922.08052	35	19	42	52	14	17,2	27,5	M8	M8x16	M8x20	M4x8	5	6000	10	27	0,300
K0922.12070	50	26	60	70	16	28,1	42,1	M12	M12x24	M12x30	M5x12	8	9000	15	30	0,865
K0922.16080	60	33	70	80	22	26,6	47,4	M16	M16x32	M12x30	M5x15	10	9000	15	35	1,390

**Material:**

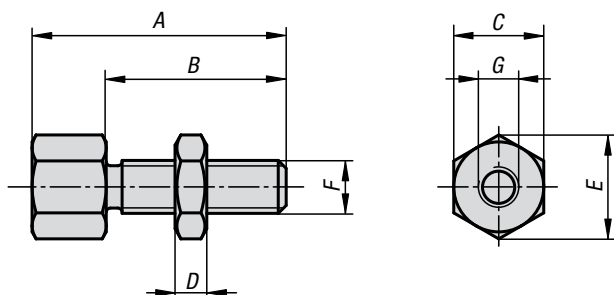
Tempered steel

Surface finish:

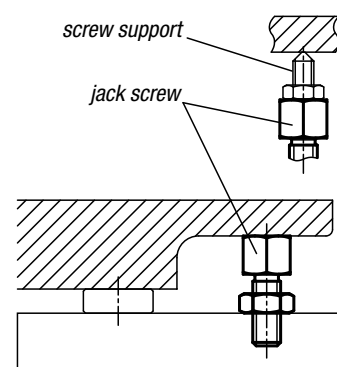
Black oxide finish

Sample order:

K0308.0803006



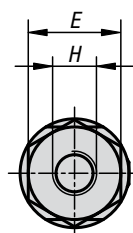
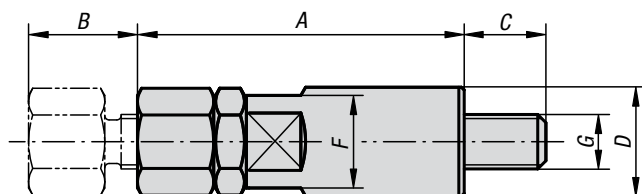
Adjustable support that accepts
different tops.



Jack Screws

Order No.	A	B	C	D	E	F	G	Approx. weight kg
K0308.0803006	30	20	13	5	14,4	M8	M6x6	0,020
K0308.0804006	40	30	13	5	14,4	M8	M6x6	0,025
K0308.1003808	38	24	17	6	18,9	M10	M8x8	0,045
K0308.1004808	48	34	17	6	18,9	M10	M8x8	0,050
K0308.1205110	51	33	22	7	24,5	M12	M10x10	0,095
K0308.1206610	66	48	22	7	24,5	M12	M10x10	0,110
K0308.1606212	62	40	27	10	30,1	M16	M12x12	0,185
K0308.1607712	77	55	27	10	30,1	M16	M12x12	0,210

Adjustable Jack Screws

**Material:**

Tempered steel

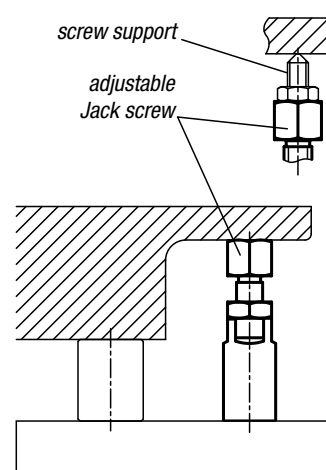
Surface finish:

Black oxide finish

Sample order:

K0923.08040

Adjustable support that accepts a top on top.



Adjustable Jack Screws

Order No.	A	B	C	D	E	F	G	H	Approx. weight kg
K0923.08040	40	10	12	16	13	13	M8	M6x6	0,055
K0923.08050	50	20	12	16	13	13	M8	M6x6	0,070
K0923.10050	50	10	14	20	17	17	M10	M8x8	0,110
K0923.10060	60	20	14	20	17	17	M10	M8x8	0,135
K0923.12065	65	15	19	24	22	22	M12	M10x10	0,220
K0923.12080	80	30	19	24	22	22	M12	M10x10	0,275
K0923.16080	80	15	24	32	27	27	M16	M12x12	0,460
K0923.16095	95	30	24	32	27	27	M16	M12x12	0,555

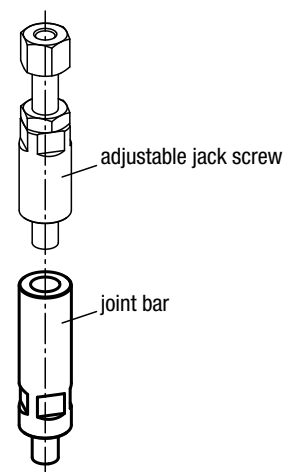
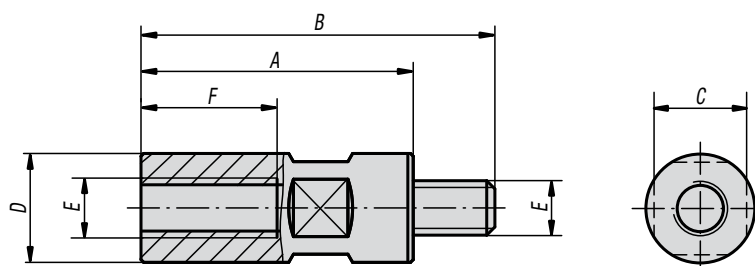
Joint Bars



Material:
Tempered steel

Surface finish:
Black oxide finish

Sample order:
K0924.08032



Joint Bars

Order No.	A	B	C	D	E	F	Approx. weight kg
K0924.08032	32	44	13	16	M8	20	0,045
K0924.08040	40	52	13	16	M8	20	0,055
K0924.08050	50	62	13	16	M8	20	0,070
K0924.08065	65	77	13	16	M8	20	0,090
K0924.08080	80	92	13	16	M8	20	0,115
K0924.08100	100	112	13	16	M8	20	0,145
K0924.10040	40	54	17	20	M10	25	0,085
K0924.10050	50	64	17	20	M10	25	0,105
K0924.10065	65	79	17	20	M10	25	0,145
K0924.10080	80	94	17	20	M10	25	0,180
K0924.10100	100	114	17	20	M10	25	0,230
K0924.10125	125	139	17	20	M10	25	0,290
K0924.12050	50	69	22	24	M12	30	0,160
K0924.12065	65	84	22	24	M12	30	0,200
K0924.12080	80	99	22	24	M12	30	0,255
K0924.12100	100	119	22	24	M12	30	0,325
K0924.12125	125	144	22	24	M12	30	0,415
K0924.12160	160	179	22	24	M12	30	0,540
K0924.16050	50	74	27	32	M16	32	0,280
K0924.16065	65	89	27	32	M16	40	0,350
K0924.16080	80	104	27	32	M16	40	0,430
K0924.16100	100	124	27	32	M16	40	0,560
K0924.16125	125	149	27	32	M16	40	0,715
K0924.16160	160	184	27	32	M16	40	0,935

Mini Swing Clamps

with cam lever



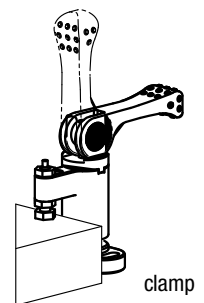
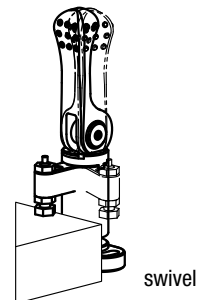
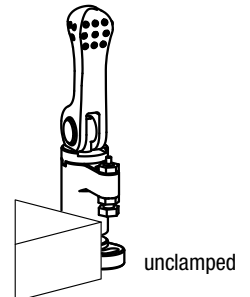
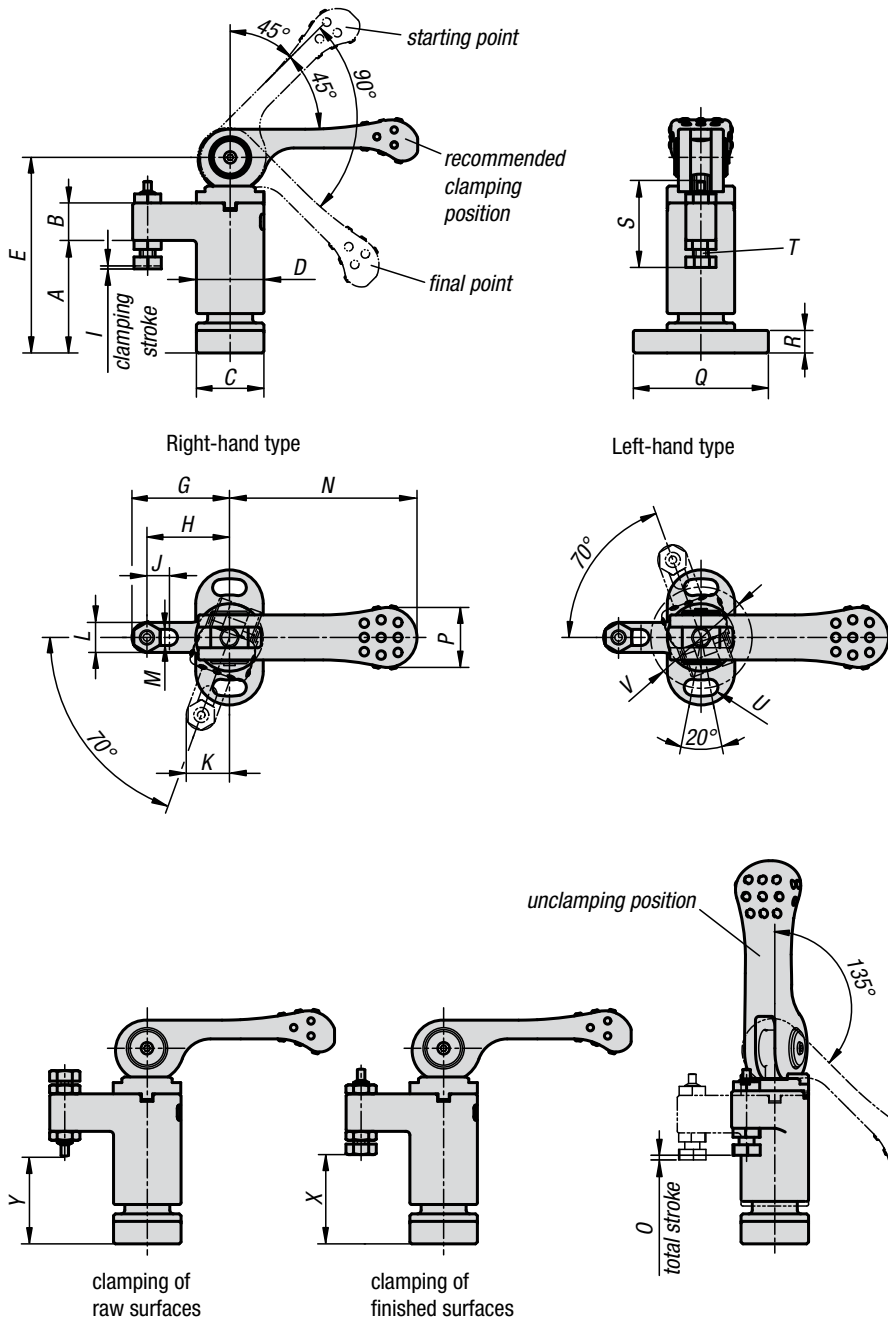
Material:
Tempered steel

Surface finish:
Heat-treated and black oxide finish

Sample order:
K0925.0100

Note:
Swing clamps are used if torsion points must be free in order to place and remove the workpiece.

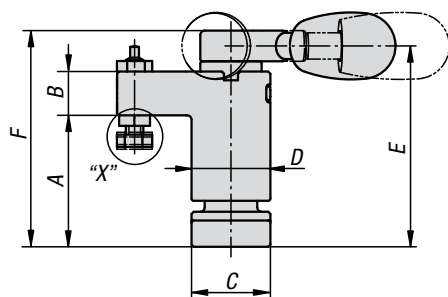
* Admissible hand force to operate the handle.



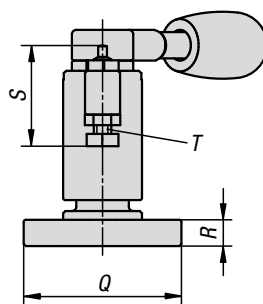
Mini Swing Clamps with cam lever

Order No. left-hand type	Order No. right-hand type	A	B	C	D	E	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	X min.	X max.	Y min.	Y max.	Clamping Force N	Hand force N	Approx. weight kg
K0925.0100	K0925.1100	30	10	18	18	52	26	22	0,8	6	11,5	8	4,3	50	1,2	16	36	6	22,8	M4	4,3	27	22,4	25,2	22	24,8	800	100*	0,134
K0925.0150	K0925.1150	40	14	23	23	68	35	30	1	8	15,3	10	5,3	63	1,5	19	45	8	28,5	M5	5,3	34	30,8	33,8	31,7	34,7	1500	150*	0,272
K0925.0200	K0925.1200	50	18	30	30	87	45	37	1,2	8	20,7	16	8,4	80	1,8	24	65	12	45,5	M8	8,4	48	31,9	39,6	32,9	40,6	2100	200*	0,625
K0925.0300	K0925.1300	60	22	40	40	107	55	45	1,5	8	25,4	20	10,4	100	2,3	30	85	15	57	M10	10,5	64	35,7	46,7	38,2	49,2	2800	300*	1,340

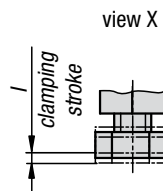
Mini Swing Clamps



Right-hand type



Left-hand type



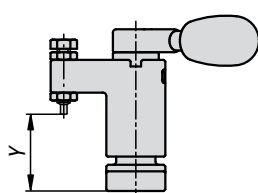
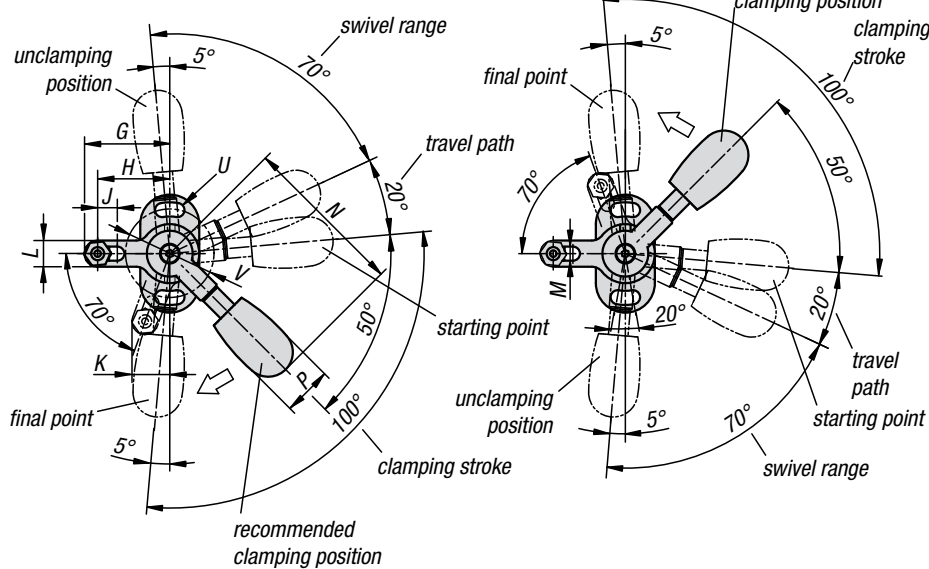
Material:
Tempered steel; handle in plastic

Surface finish:
Heat-treated and black oxide finish;
handle black

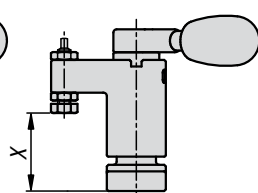
Sample order:
K0926.0100

Note:
Swing clamps are used if torsion points must be free in order to place and remove the workpiece.

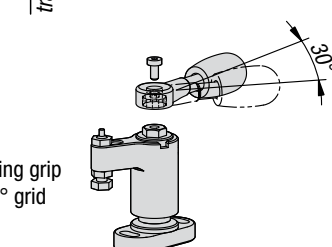
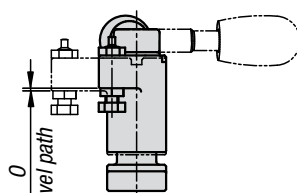
* Admissible hand force to operate the handle.



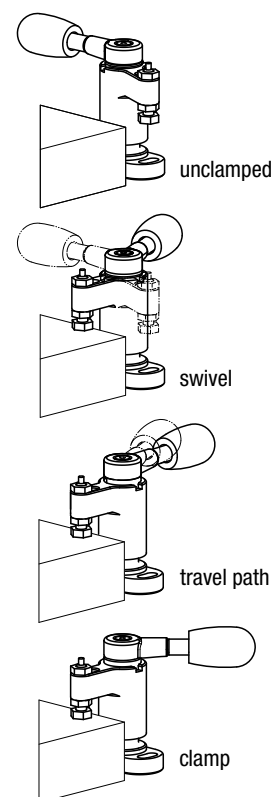
clamping of raw surfaces



clamping of finished surface



The position of the clamping grip can be adjusted in the 30° grid



Mini swing Clamps

Order No. left-hand type	Order No. right-hand type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	X min.	X max.	Y min.	Y max.	Clamping Force N	Hand force N	Approx. weight kg
K0926.0100	K0926.1100	30	10	18	18	45,8	49	26	22	1	6	11,5	8	4,3	50	0,8	15	36	6	22,8	M4	4,3	27	22,3	25,3	21,9	24,9	1100	100*	0,112
K0926.0150	K0926.1150	40	14	23	23	61,3	66	35	30	1,4	8	15,3	10	5,3	63	1,1	20	45	8	28,5	M5	5,3	34	30,6	34	31,5	34,9	1800	150*	0,250
K0926.0200	K0926.1200	50	18	30	30	76,5	82	45	37	1,5	8	20,7	16	8,4	80	1,4	26	65	12	45,5	M8	8,4	48	31,7	39,7	32,7	40,7	2200	200*	0,570
K0926.0300	K0926.1300	60	22	40	40	93	100	55	45	1,9	8	25,4	20	10,4	100	1,7	33	85	15	57	M10	10,5	64	35,5	46,9	38	49,4	3500	300*	1,200

Mini swivelling Retainer

with cam lever



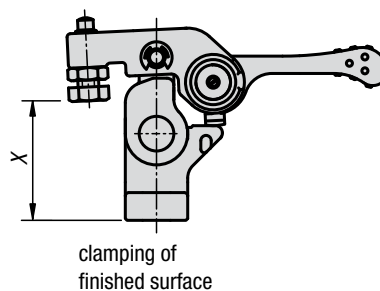
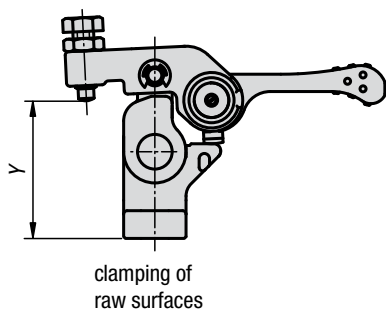
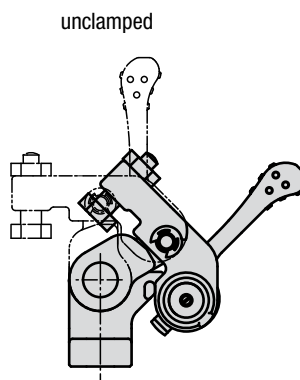
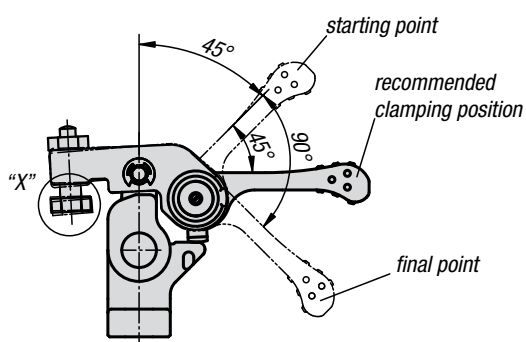
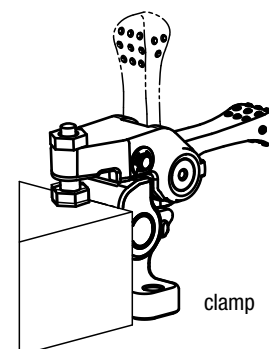
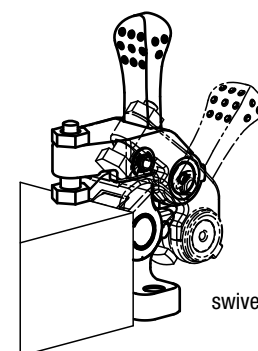
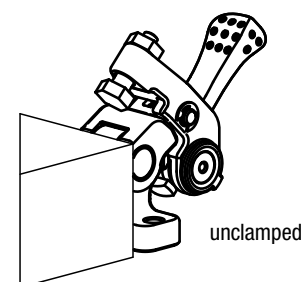
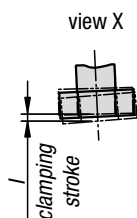
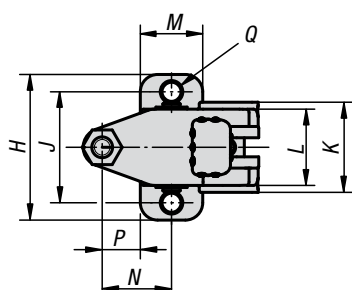
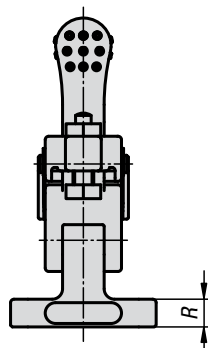
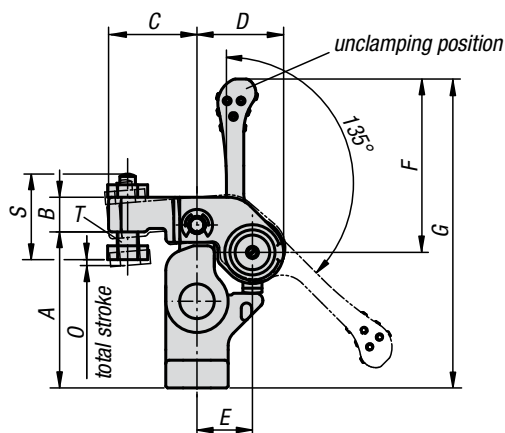
Material:
Tempered steel

Surface finish:
Heat-treated and black oxide finish

Sample order:
K0927.100

Note:
Swing clamps are used if torsion points must be free in order to place and remove the workpiece.

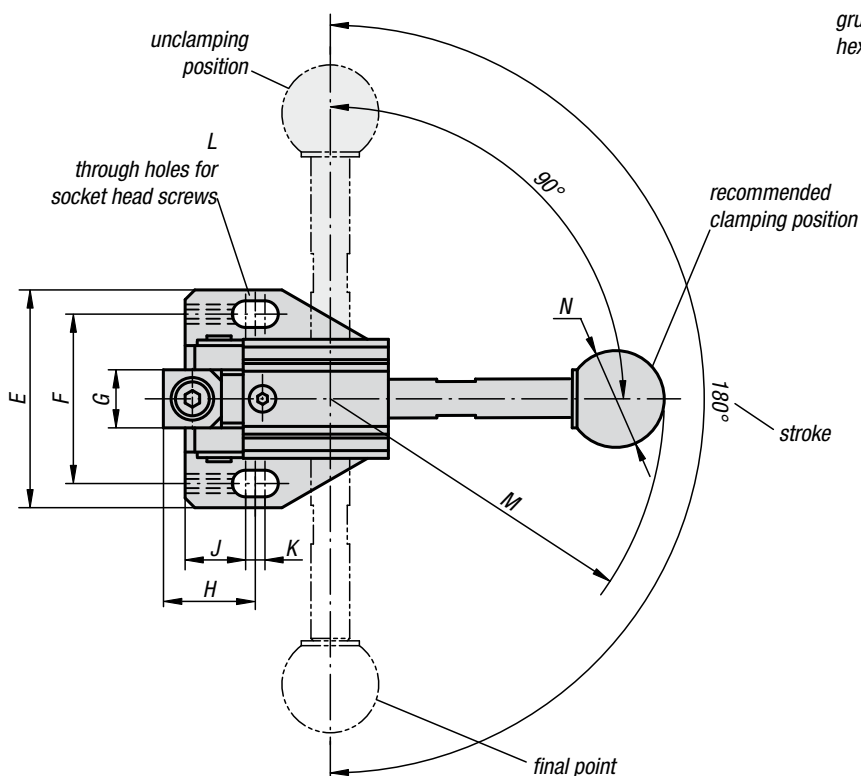
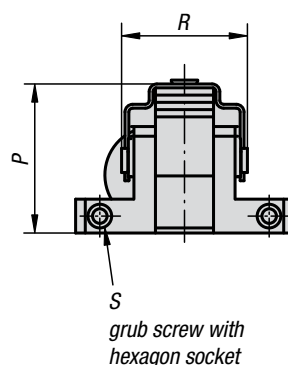
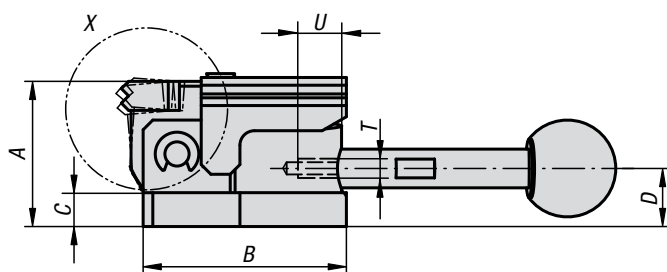
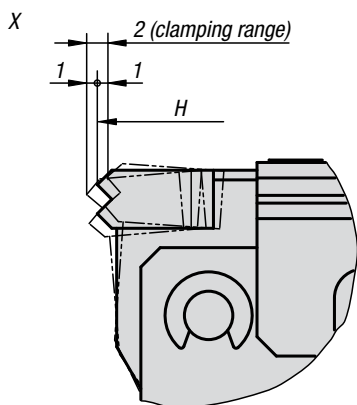
* Admissible hand force to operate the handle.



Mini Swivelling Retainer with cam lever

Order No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	X min.	X max.	Y min.	Y max.	Clamping Force N	Hand force N	Approx. weight kg
K0927.100	45	10	25,5	25	16	50	89	42	1	32	26	22	18	20	1,5	11	5,5	8	24	M6	31,5	40,5	34,5	43,5	700	100*	0,244
K0927.150	55	12	32	31	20	63	109	52	1,2	40	32	28	22	25	1,8	14	6,6	10	30,5	M8	36,4	48,6	41,4	53,6	1100	150*	0,468

Side Clamps



Material, surface finish:

Base body and handle in tempered steel, base body hardened and black oxide finish; handle black oxide finish; jaw and cam in hardened tool steel and black oxide finish; ball knob in black duroplastic PF 31

Sample order:

K0928.0501

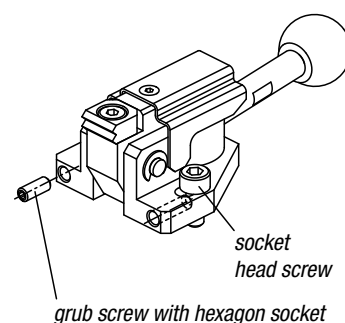
Note:

* Admissible hand force to operate the handle.

Accessories:

Standard handles K0915.
Screw-in handles with adjustable torque K0916.

Technical Information:



The oblong hole allow adjusting the clamping range. Tightening the grub screws in the base front allows preventing the side clamp from sliding back at the clamping mode.

Side Clamps

Order No.	Surface finish	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	Clamping Force N	Hand force N	Approx. weight kg
K0928.0500	without handle	30	42	7	12	45	35	12	19	12,5	4	M5	69	20	31	26	M4x10	M5	7	3000	150*	0,180
K0928.0501	with handle	30	42	7	12	45	35	12	19	12,5	4	M5	69	20	31	26	M4x10	M5	7	3000	150*	0,210
K0928.0800	without handle	40	62	10	16	65	50	16	28	18,5	5	M8	104	25	41	38	M4x15	M6	9,5	4000	200*	0,530
K0928.0801	with handle	40	62	10	16	65	50	16	28	18,5	5	M8	104	25	41	38	M4x15	M6	9,5	4000	200*	0,590

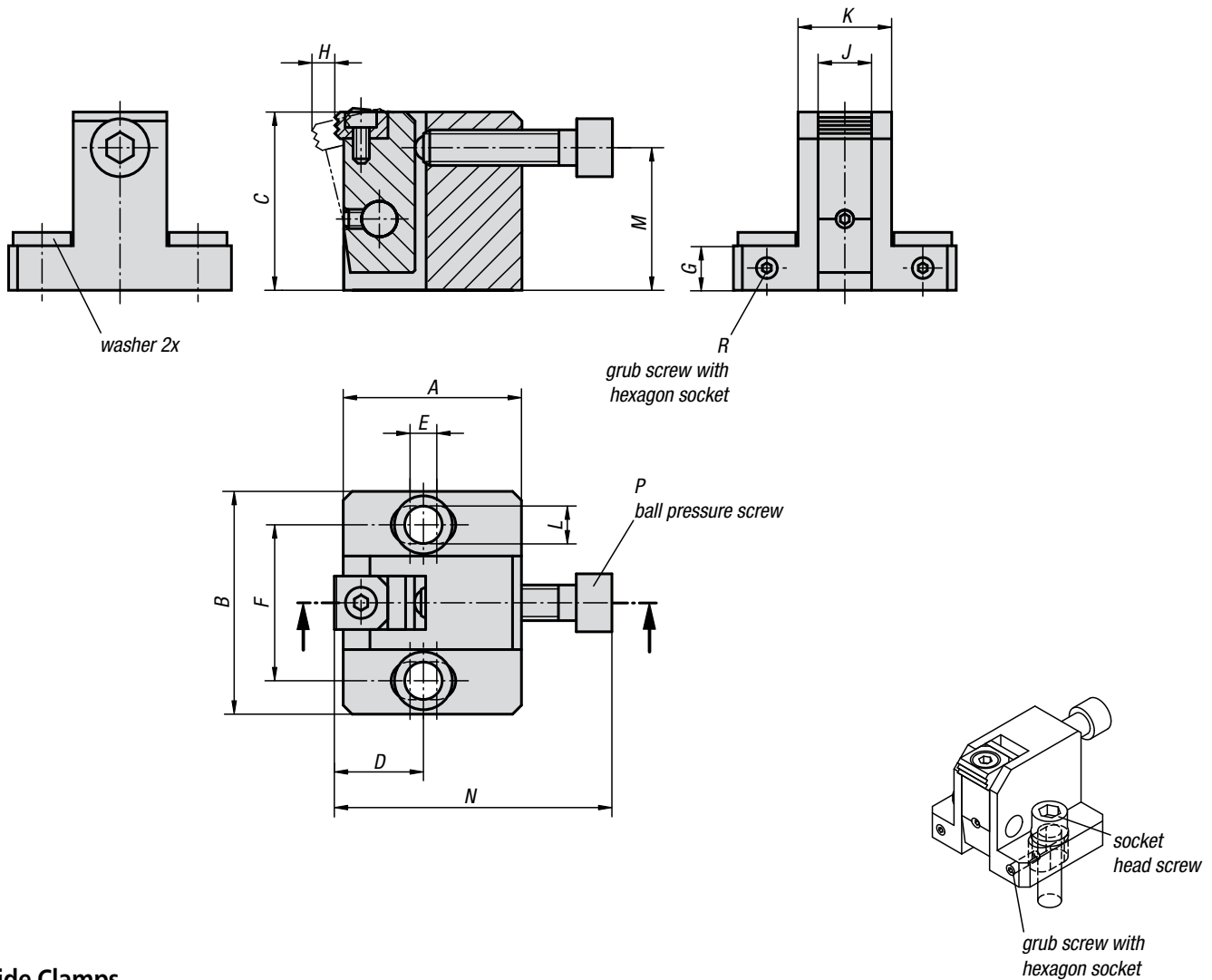
Side Clamps

**Material, surface finish:**

Housing in tempered steel, black oxide finish;
arm in tempered steel, heat-treated and
black oxide finish;
jaw in tool steel, heat-treated and black oxide finish

Sample order:

K0929.080400



Side Clamps

Order No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	Clamping Force N	Tightening torque max. Nm	Approx. weight kg
K0929.080400	40	50	40	20	6	35	10	5,3	12	21	8,5	32	62,5	M8x35	M4x10	11000	25	0,330
K0929.100500	50	65	50	25	8	45	12	7,1	16	27	11	40	74	M10x40	M4x12	18000	50	0,660
K0929.120600	60	70	60	30	10	50	15	8	20	31	13	48	91	M12x50	M5x15	25000	90	1,060
K0929.160800	80	90	80	40	15	65	20	10,2	25	39	17	64	115	M16x60	M6x20	46000	130	2,380

Side Clamps

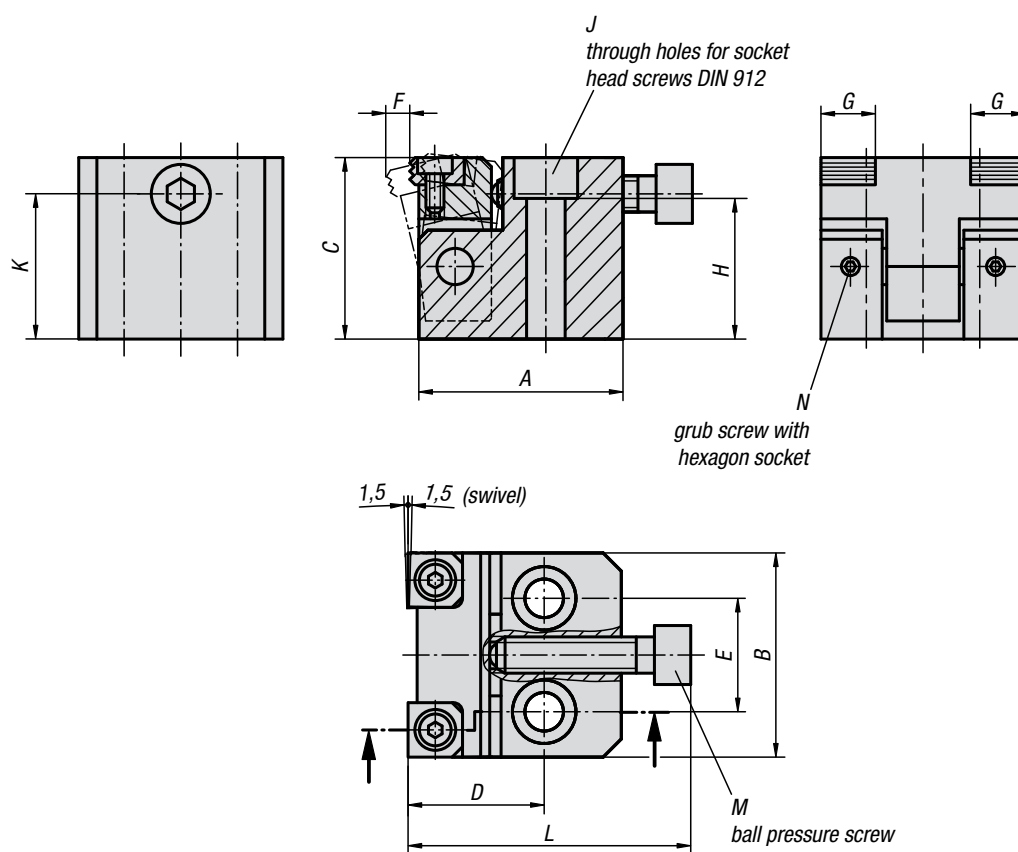


Material, surface finish:

Base body in tempered steel, black oxide finish;
arm in tempered steel, heat-treated and
black oxide finish;
jaw in tool steel, heat-treated and black oxide finish

Sample order:

K0930.080400



Side Clamps

Order No.	A	B	C	D	E	F	G	H	J	K	L	M	N	Clamping Force N	Tightening torque Nm	Approx. weight kg
K0930.080400	45	45	40	30	25	5,3	12	31	M8	32	62,5	M8x35	M4x4	11000	25	0,550
K0930.100500	55	55	50	40	30	7,1	16	39	M10	40	74	M10x40	M4x4	18000	50	1,000
K0930.120600	65	65	60	45	35	8	20	47	M12	48	91	M12x50	M5x5	25000	90	1,690

Side Clamps

with thrust bolts

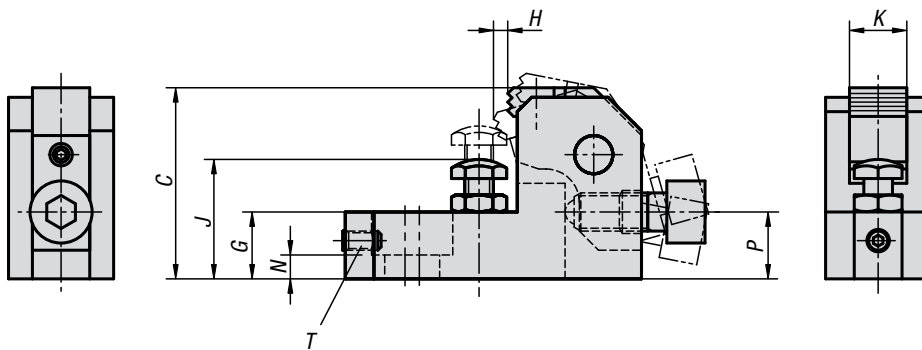


Material, surface finish:

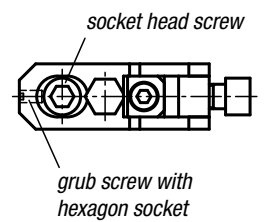
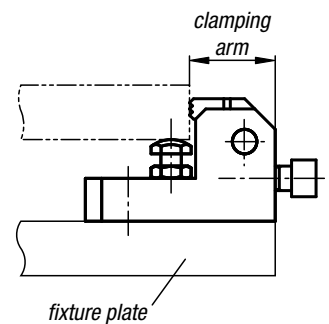
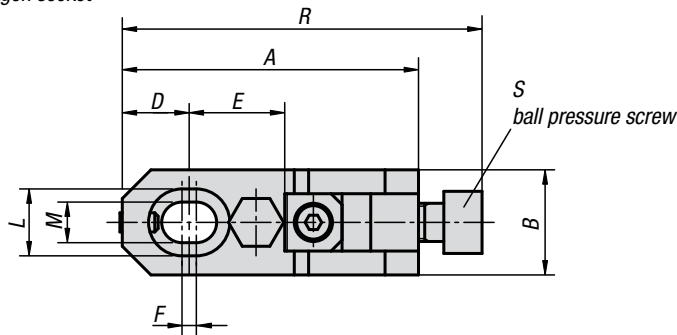
Housing in tempered steel, heat-treated and black oxide finish;
arm in tempered steel, black oxide finish;
jaw in tool steel, heat-treated and black oxide finish

Sample order:

K0931.02508



grub screw with hexagon socket



Side Clamps with thrust bolts

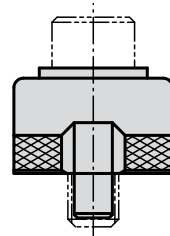
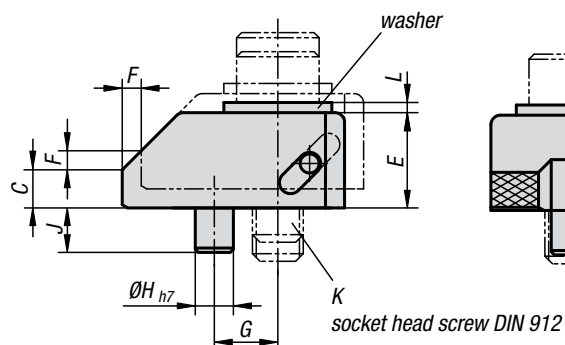
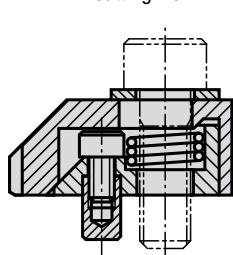
Order No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	Clamping Force N	Tightening torque Nm	Approx. weight kg
K0931.02508	62	22	40	14	20	3	14	3	25-32	12	14	8,5	5	14	75,5	M8x20	M4x8	6000	15	0,230
K0931.03210	78	25	50	18	25	4	18	3,7	32-40	16	17,5	11	7	17,5	95	M10x25	M5x10	10000	30	0,410
K0931.04012	93	32	60	21	30	5	21	4,5	40-48	20	20	13	8	21	113	M12x30	M6x12	17000	65	0,750
K0931.04816	124	38	80	28	40	6	27	6	48-63	25	26	17	10	28	151	M16x40	M8x16	25000	130	1,570



Toe Clamps



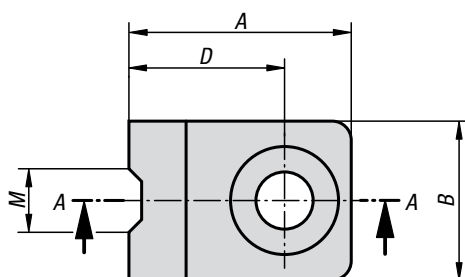
cutting view A-A



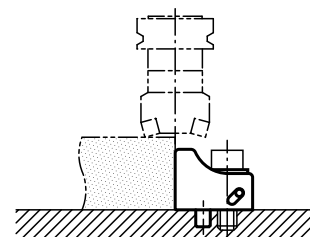
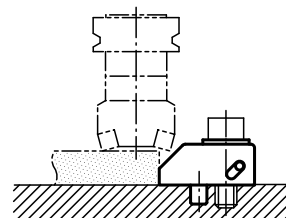
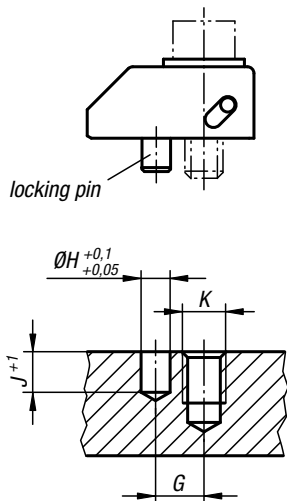
Material:
Tempered steel

Surface finish:
Heat-treated and black oxide finish

Sample order:
K0932.0806



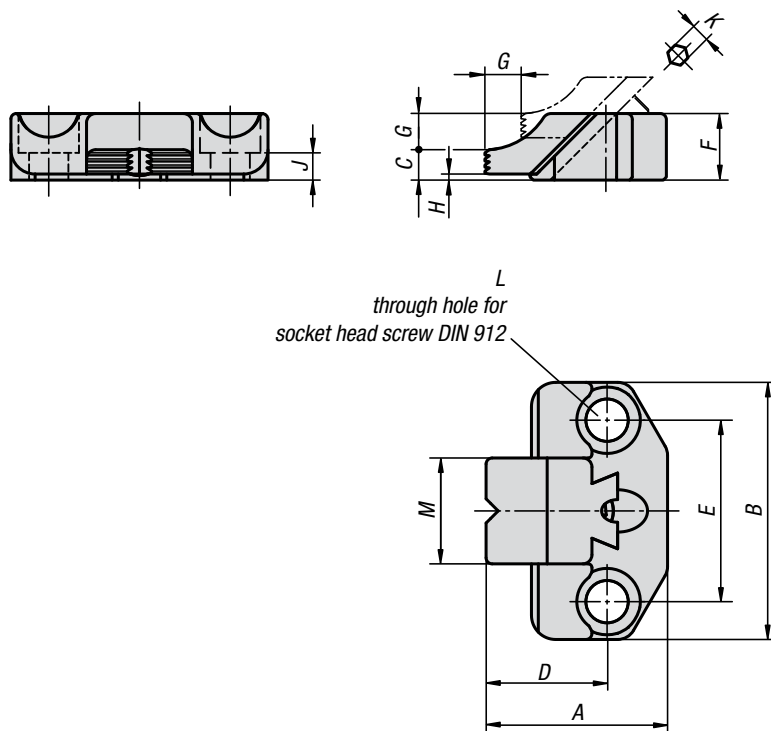
Installation instruction:



Toe Clamps

Order No.	A	B	C	D	E	F	G	H	J	K	L	M	Clamping Force N	Tightening torque Nm	Approx. weight kg
K0932.0806	35	25	6	24,5	15	3	10	6	7	M8	1,6	10	7000	25	0,100
K0932.0825	32	25	25	21,5	15	3	10	6	7	M8	1,6	10	7000	25	0,115
K0932.1008	43	30	8	29	19	4	12	6	7	M10	2	11	8500	50	0,185
K0932.1032	40	30	32	26	19	4	12	6	7	M10	2	11	8500	50	0,225
K0932.1209	54	35	9	37	23	5	16	8	10	M12	2,3	12	20000	90	0,320
K0932.1238	50	35	38	33	23	5	16	8	10	M12	2,3	12	20000	90	0,390
K0932.1610	65	40	10	45	25	6	20	10	10	M16	3,2	14	40000	200	0,520
K0932.1645	60	40	45	40	25	6	20	10	10	M16	3,2	14	40000	200	0,640

Toe Clamps


Material, surface finish:

Body in tempered steel, heat-treated and black oxide finish;
jaw in tempered steel, black oxide finish, heat-treated on edge

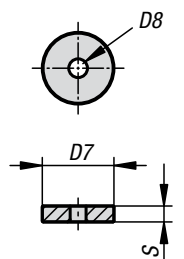
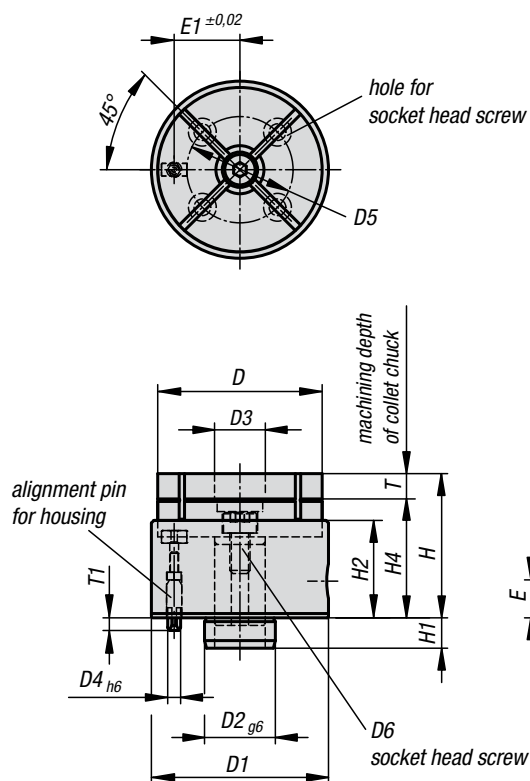
Sample order:

K0933.0808

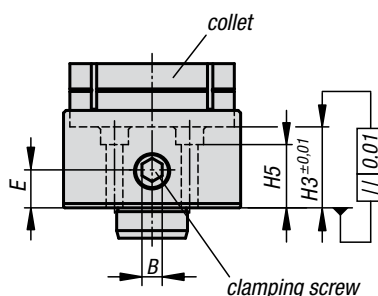
Toe Clamps

Order No.	A	B	C	D	E	F	G	H	J	K	L	M	Clamping Force N	Tightening torque Nm	Approx. weight kg
K0933.0808	39,5	65	7,5	25	45	16	7	1,5	7	4	M8	25	4000	8	0,160
K0933.0820	39,5	65	19,5	25	45	16	7	1,5	7	4	M8	25	4000	8	0,180
K0933.1210	60	85	10	40	60	22	12	2	9	6	M12	35	9000	26	0,450
K0933.1229	60	85	29	40	60	22	12	2	9	6	M12	35	9000	26	0,500
K0933.1614	77	100	14	50	70	30	14	2	13	8	M16	40	17000	60	0,900
K0933.1638	77	100	38	50	70	30	14	2	13	8	M16	40	17000	60	1,010

Positive Clamping System



clamping ring for machining, including

**Material:**

Housing and clamping ring tempered steel 1.0503.
Straight bolts tempered steel 1.7220.
Collet aluminium 3.4365.

Surface finish:

Housing, straight bolts and clamping ring with black oxide finish.
Collet blue anodized.

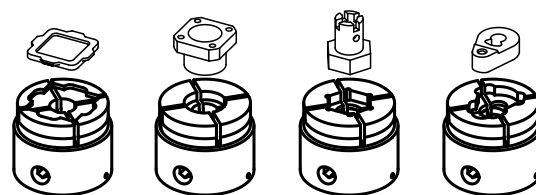
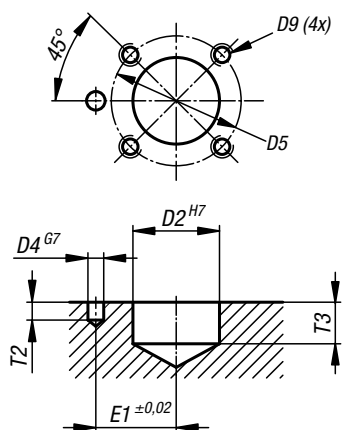
Sample order:

K0934.065057

Note:

Do not operate clamping screw without clamping ring or workpiece placed in.
The workpiece is clamped on the perimeter with the lateral clamping screw.
The collet can be adjusted by adapting to various contours of the workpieces.
Ideal clamping device for machining workpieces on machining centres, milling centres and 5-axis machines, etc.

Installation instruction



Positive Clamping System

Order No.	B	D	D1	D2	D3	D4	D5	D6	D7	D8	D9	E	E1	H	H1	H2	H3	H4	H5	T	T1	T2	T3	S	Clamping Force N	Tightening torque max. Nm	Order No. Collet	Approx. weight kg
K0934.065057	8	65	70	28	19	6	42	M8x15	18	M4	M6	15	26	59,5	12	39	34,5	47	25	10	5	6	13	4	4000	60	K0934.065025	1,1
K0934.090072	10	90	95	42	23	8	60	M10x20	22	M5	M8	17	36	72,5	14	46	38,5	57	28	15	7	8	15	6	6000	100	K0934.090034	2,6

Mounting Plates

for positive clamping system


Material:

Tempered steel 1.7262.

Surface finish:

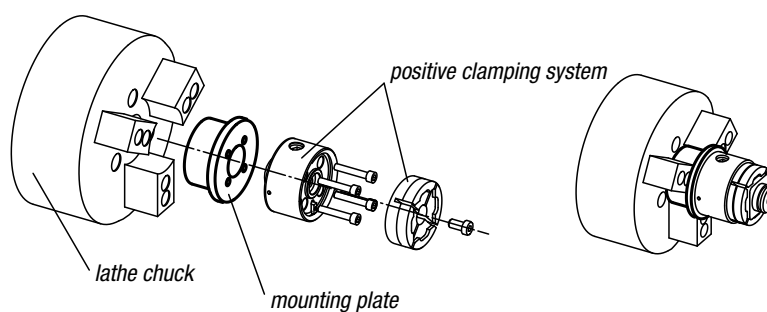
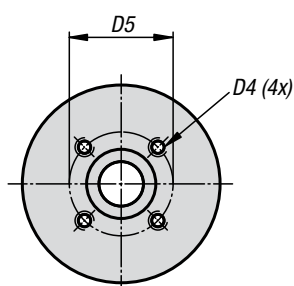
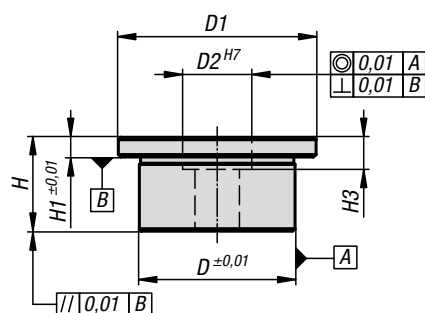
case-hardened with black oxide finish.

Sample order:

K0934.065038

Note:

Suitable for positive clamping system:
K0934.065057 and K0934.090072.



Mounting plate for installing the collect chuck on the lathe

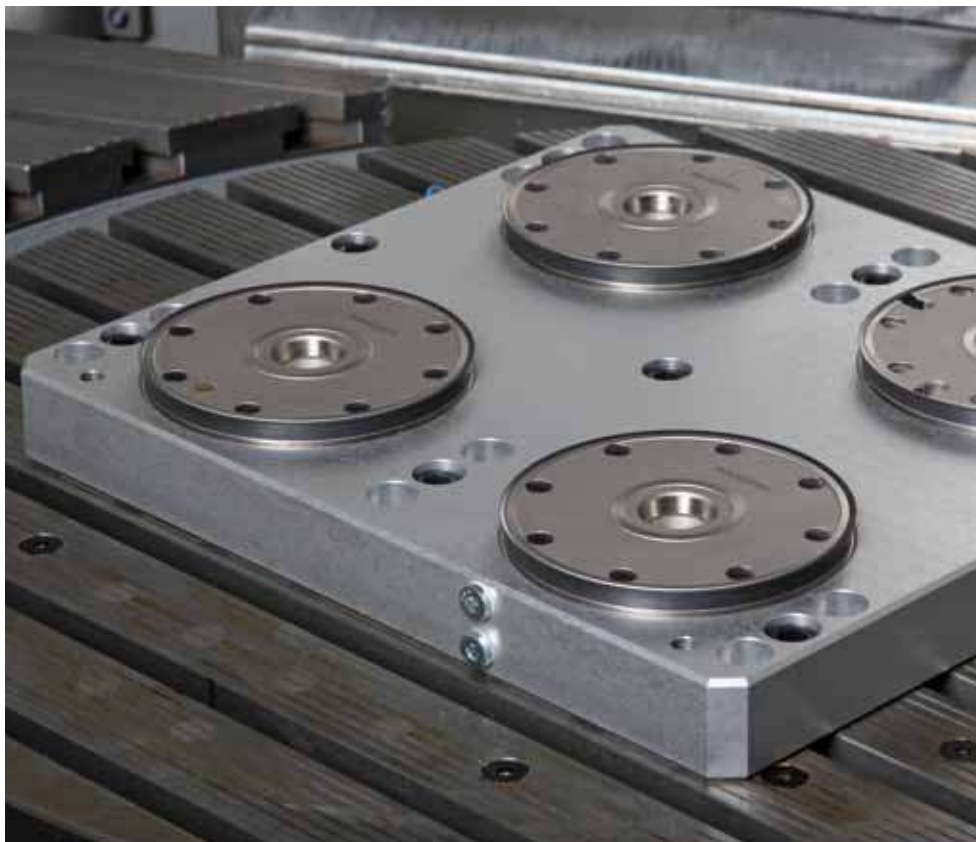
Mounting Plates for positive clamping system

Order No.	D	D1	D2	D4	D5	H	H1	H3	Approx. weight kg
K0934.065038	63	80	28	M6x12	42	38	8	13	0,910
K0934.090043	80	100	42	M8x16	60	43	8	15	1,600



A large rectangular area filled with a light gray grid pattern, intended for handwritten notes.

Zero Point Clamping System



ZERO lock
BALL lock

Technical information regarding ZERO lock Zero Point Clamping System



Application

The modularly designed, flexible ZERO lock Zero-Point Clamping System was specifically developed for the machining and non-machining field. This system enables a fast and accurate clamping and referencing of jigs/fixtures and workpieces on all cutting machine tools and machining centres, as well as on sinking EDM machines and measuring devices. Whether you are using a pallet, fixture, bench vice or workpiece, this system allows a change with a definite reference point of zero point within a matter of seconds and with a repeat accuracy below 0.005 mm.

Your benefit

Using the ZERO lock zero-point clamping system you increase your productive machine running time. With the ZERO lock Zero Point Clamping System Using the ZERO lock Zero-Point Clamping System you increase your productive machine running time. With the Zero-Point Clamping System you are able to perform the loading in parallel with the machining time. The clamping spigots may be bolted down optionally from the top and from the bottom. In most cases, clamping spigot holes can already be provided directly in the workpiece during the engineering phase. This enables an optimum access to the workpiece from 5 sides without disturbing edge clamps.

- compact design (installation and mounting version)
- mechanical locking, pneumatic or hydraulic release
- high clamping force up to 30.000 N
- functions reliably at any installation position
- very high repeat accuracy
- workpiece or fixture change in a matter of seconds
- torsion protection by means of fixing grooves in cases of individual clamping



Technical information regarding ZERO lock Zero Point Clamping System

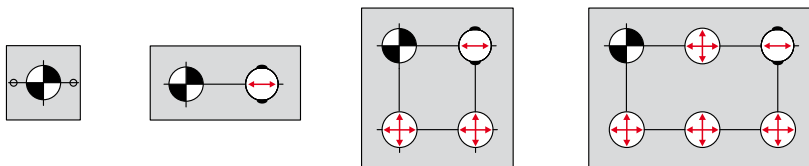


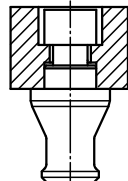
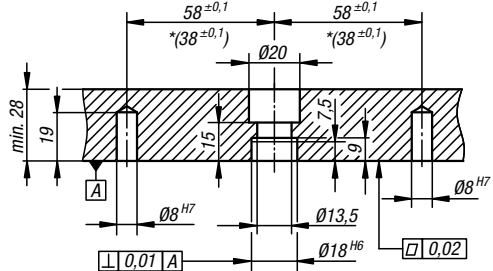
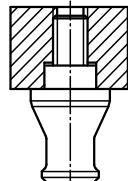
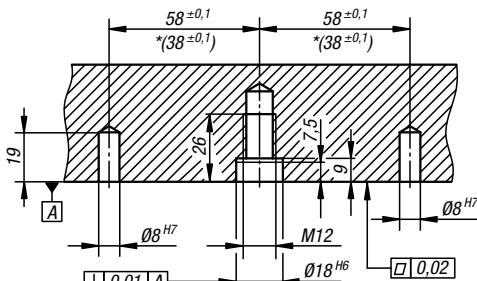
Spigot arrangement/set-up

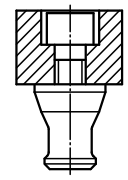
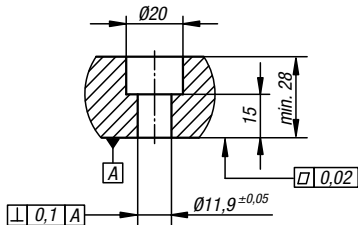
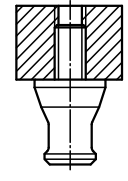
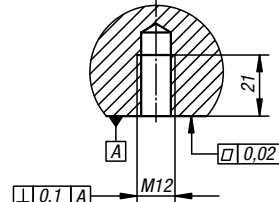
The modular arrangement of one or more clamps allows a very flexible use of the machine-tool.

The positioning and clamping of the workpieces, jigs or pallets takes place via spigots. There are three different spigot types.

-  Centring spigot fixed in x and y direction (reference point)
-  Balancing spigot fixes the free axis (studs)
-  Clamping spigot Spigot with undersize (no centring function only clamping function)
-  Cylindrical pin For individual clamping, positioning is done with centring spigot + 2 cylindrical pins



Production drawings for centring and balancing spigot 	
screw connection from top with socket head screw 	 * for compact clamps boreholes only for cylindrical pin Ø8 H7 required only for individual clamping
screw connection from bottom with stud 	 * for compact clamps boreholes only for cylindrical pin Ø8 H7 required only for individual clamping

Production drawings for clamping spigot 	
screw connection from top with socket head screw 	
screw connection from bottom with stud 	

ZERO lock clamping plates, twofold

with mounting clamp outer diameter 129 mm



Material:

Aluminium EN AW-7020.

Sample order:

K0509.2200180370

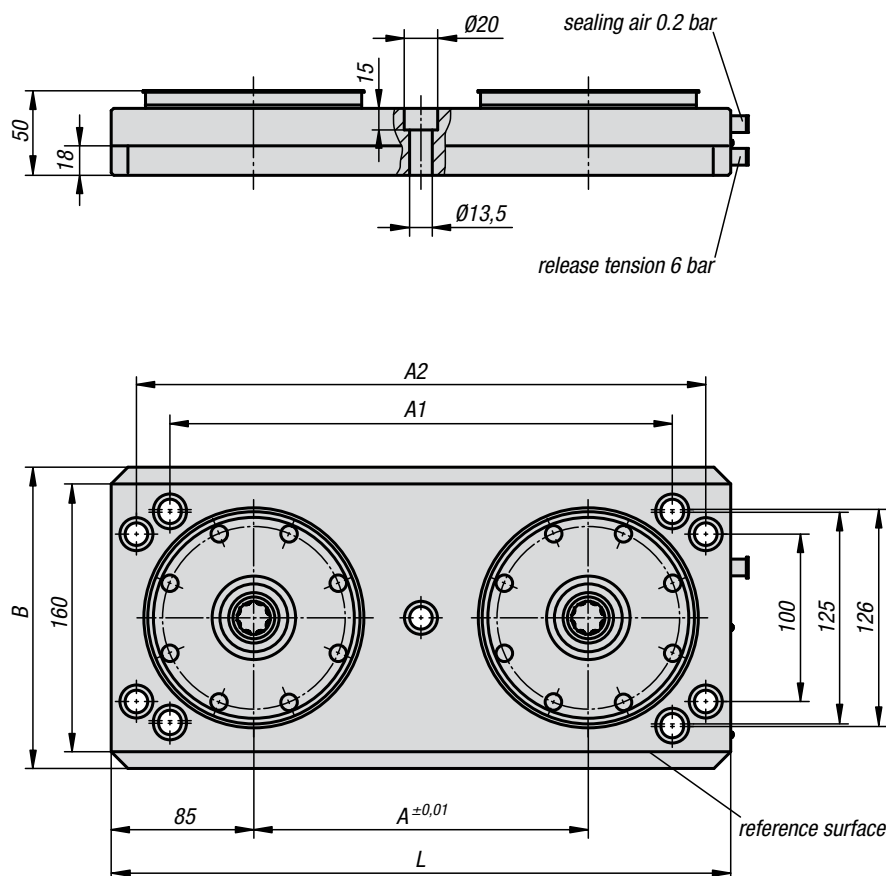
Note:

Completely mounted multi-clamping units with two integrated ZERO lock mounting clamps with $\varnothing$ 129 mm. The clamping plates are fastened on the machine table by means of edge clamps (clamping claws) or direct screw connection. The clamps are opened centrally above the pneumatic connection.

- Repeat accuracy ≤ 0.005 mm
- 10,000 N axial load per clamp
- Clamping via spring force, tension release pneumatic
- Integrated mounting boreholes for T-slot distances 63, 100 and 125 mm
- Pneumatic plug connector for 6 mm pneumatic hose
- Reference surfaces to align the clamping plate

On request:

Mounting clamp with fastening groove.

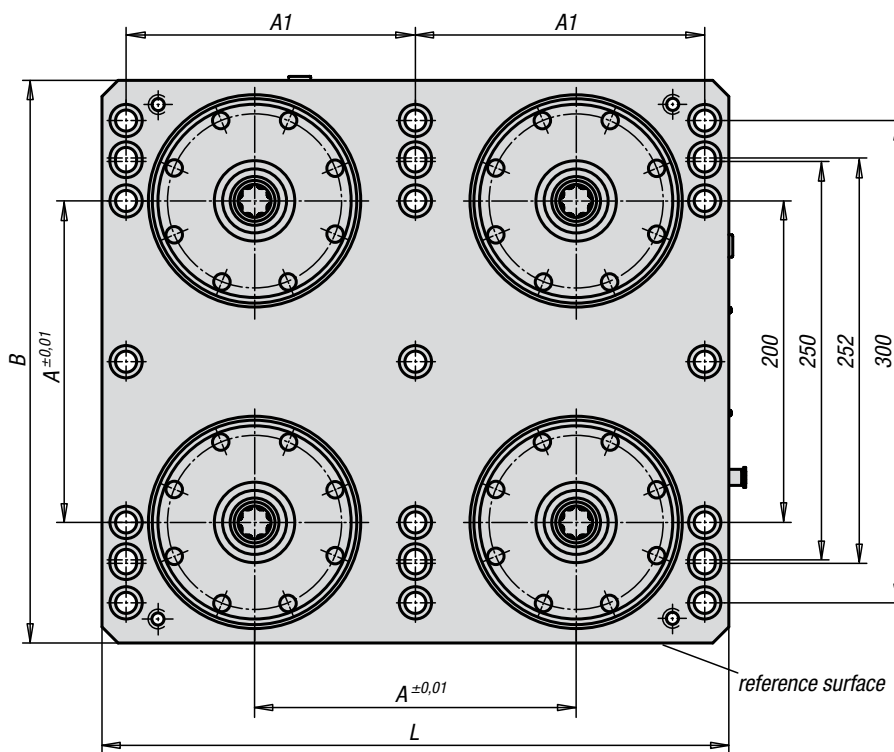
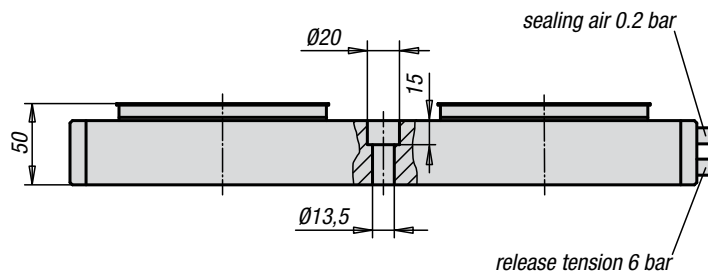


ZERO lock clamping plates, twofold with mounting clamp outer diameter 129 mm

Order No.	A	A1	A2	B	L	Clamping force (clamping by spring force) N	Axial load N	Opening pressure bar	Approx. weight kg
K0509.2200180370	200	300	340	180	370	25000 (2 x 12500)	20000 (2 x 10000)	6	9,5
K0509.2250180420	250	350	390	180	420	25000 (2 x 12500)	20000 (2 x 10000)	6	10,4

ZERO lock clamping plates, fourfold,

with mounting clamp, outer diameter 129 mm



Material:

Aluminium EN AW-7020.

Sample order:

K0509.4200350390

Note:

Completely mounted multi-clamping units with four integrated ZERO lock mounting clamps with Ø 129 mm. The clamping plates are fastened on the machine table by means of edge clamps/clamping jaws or direct screw connection. The clamps are opened centrally above the pneumatic connection.

- Repeat accuracy ≤ 0.005 mm
- 10,000 N axial load per clamp
- Clamping via spring force, tension release pneumatic
- Integrated mounting boreholes for T-slot distances 63, 100 and 125 mm
- Pneumatic plug connector for 6 mm pneumatic hose
- Reference surfaces to align the clamping plate

On request:

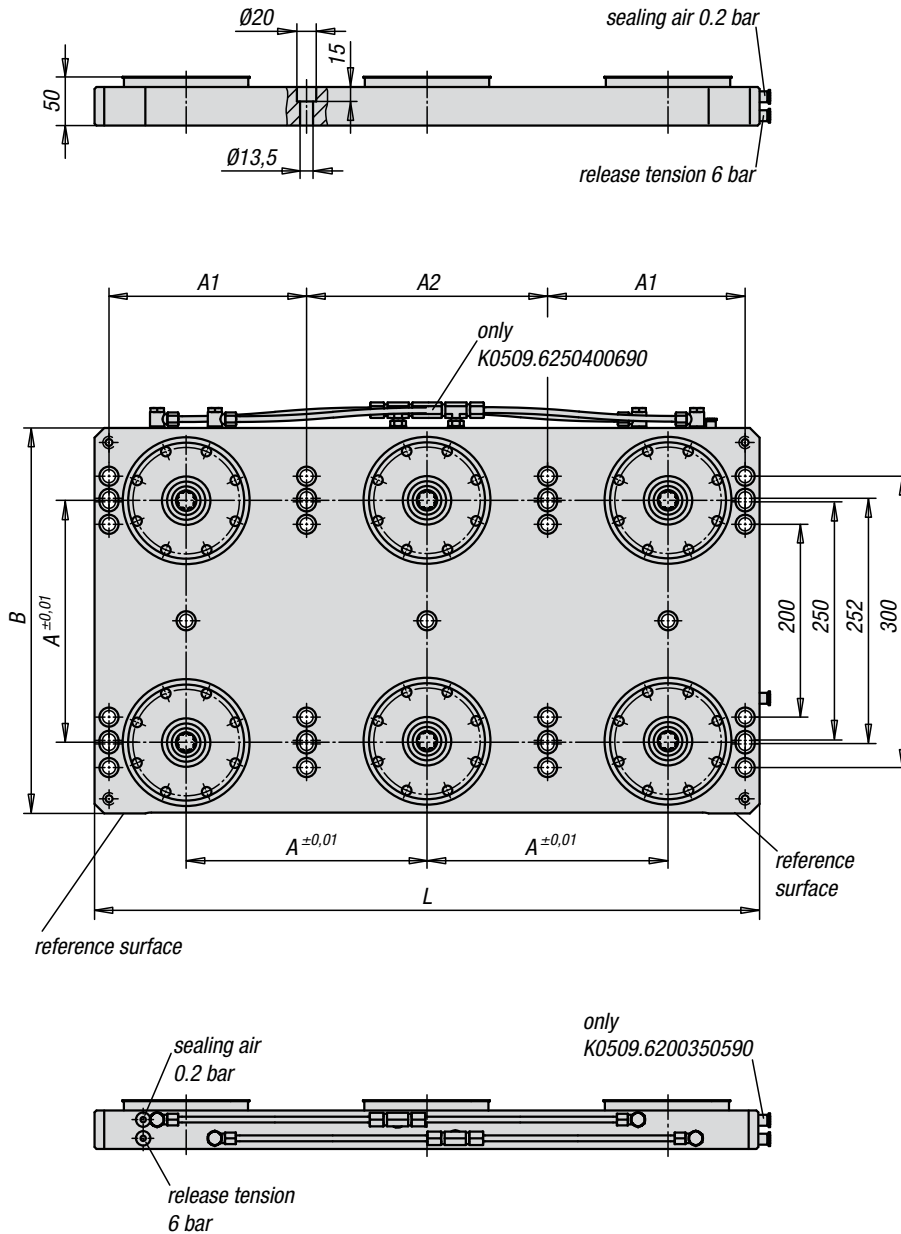
Mounting clamp with fastening groove.

ZERO lock clamping plates, fourfold with mounting clamp, outer diameter 129 mm

Order No.	A	A1	A2	B	L	Clamping force (clamping by spring force) N	Axial load N	Opening pressure bar	Approx. weight kg
K0509.4200350390	200	180	-	350	390	50000 (4 x 12500)	40000 (4 x 10000)	6	20,5
K0509.4250400440	250	205	-	400	440	50000 (4 x 12500)	40000 (4 x 10000)	6	25

ZERO lock clamping plates, sixfold

with mounting clamp, outer diameter 129 mm



Material:

Aluminium EN AW-7020.

Sample order:

K0509.6200350590

Note:

Completely mounted multi-clamping units with six integrated ZERO lock mounting clamps with Ø 129 mm. The clamping plates are fastened on the machine table by means of edge clamps/clamping jaws or direct screw connection. The clamps are opened centrally above the pneumatic connection.

- Repeat accuracy ≤ 0.005 mm
- 10,000 N axial load per clamp
- Clamping via spring force, tension release pneumatic
- Integrated mounting boreholes for T-slot distances 63, 100 and 125 mm
- Pneumatic plug connector for 6 mm pneumatic hose
- Reference surfaces to align the clamping plate

On request:

Mounting clamp with fastening groove.

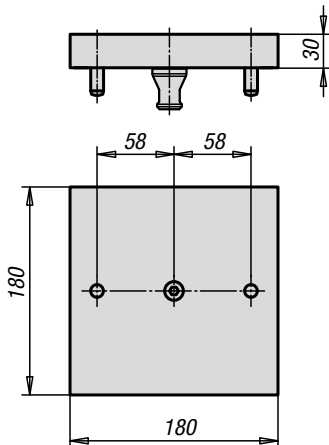
ZERO lock clamping plates, sixfold with mounting clamp, outer diameter 129 mm

Order No.	A	A1	A2	B	L	Clamping force (clamping by spring force) N	Axial load N	Opening pressure bar	Approx. weight kg
K0509.6200350590	200	180	200	350	590	75000 (6 x 12500)	60000 (6 x 10000)	6	31
K0509.6250400690	250	205	250	400	690	75000 (6 x 12500)	60000 (6 x 10000)	6	39

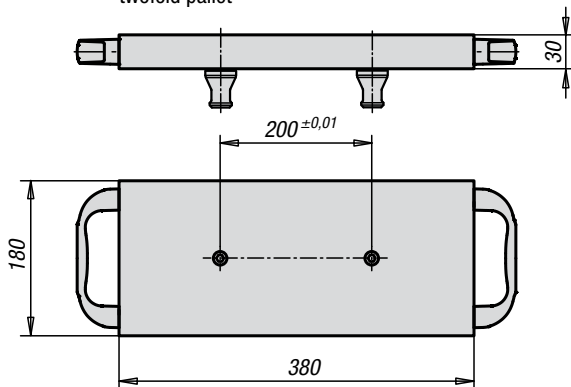
ZERO lock interchangeable pallets



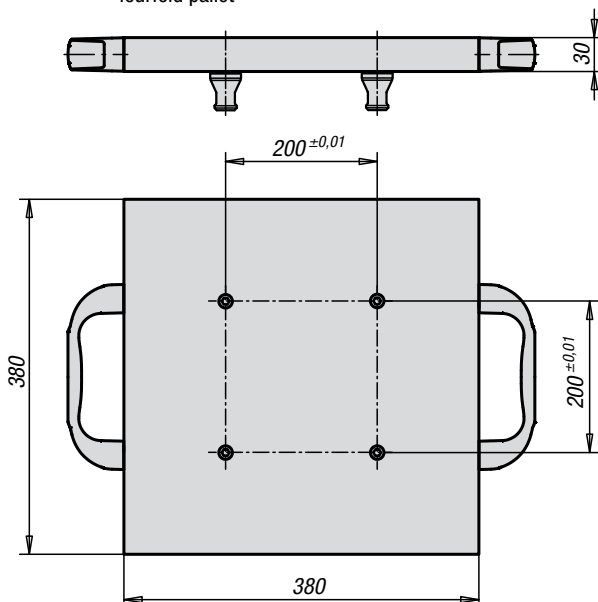
onefold pallet



twofold pallet



fourfold pallet



Material, surface finish:
Aluminium EN AW 5083.

Sample order:
K0510.1000180180

Note:
Completely mounted interchangeable pallets made of high-strength aluminium.

Single pallet: including centring spigot and two centring pins.

Twofold pallet: including centring and compensating spigot.

Fourfold pallet: including centring, compensating and two clamping spigots.

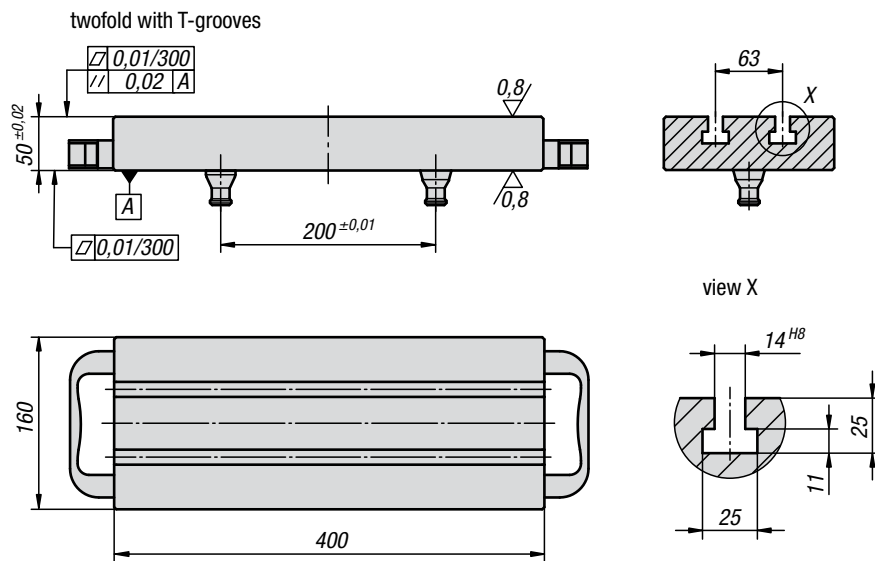
On request:
Other pallet sizes and designs.

ZERO lock interchangeable pallets

Order No.	Surface finish	Pin	Approx. weight kg
K0510.1000180180	single	Centring spigot, 2 centring pins	2,6
K0510.2200180380	twofold	Centring spigot, compensating spigots	5,7
K0510.4200380380	fourfold	Centring spigot, compensating spigot, 2 clamping spigots	11,2

ZERO lock interchangeable pallets

with T-grooves



Material, surface finish:

Aluminium EN AW-7022, blank hard- coated

Sample order:

K0511.22001604002

Note:

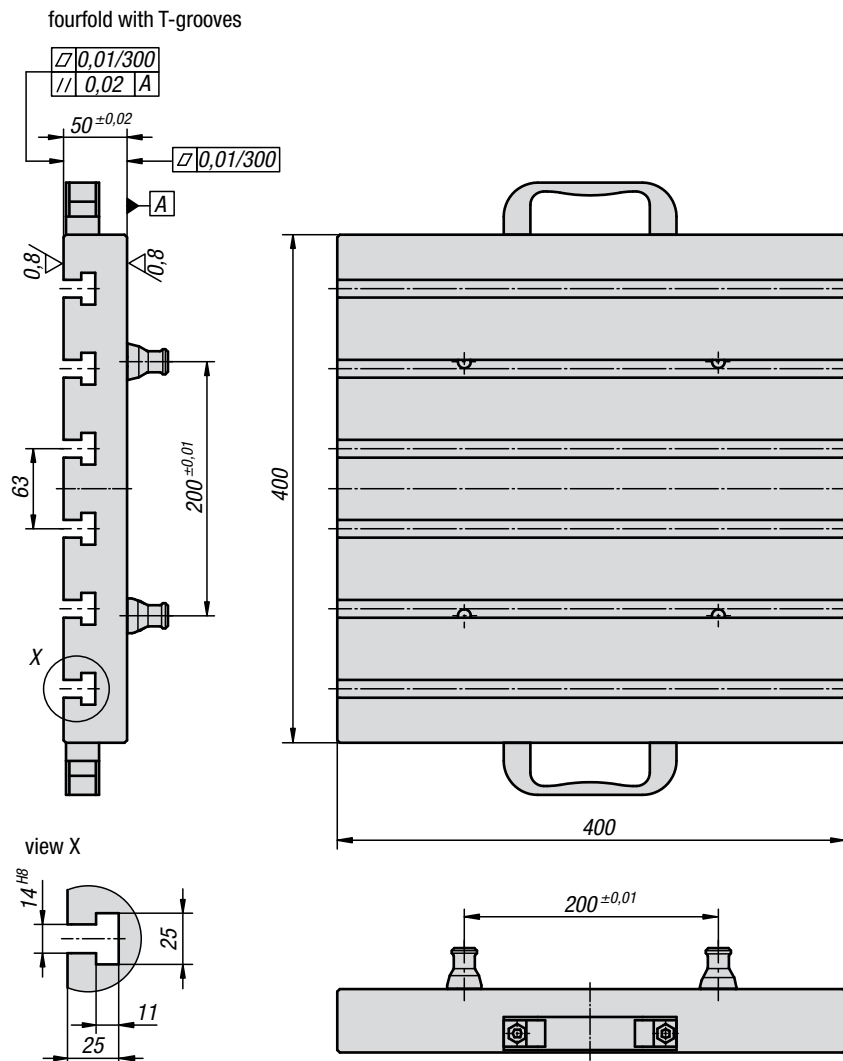
Completely mounted interchangeable pallets with T-grooves made of high-strength aluminium.

Twofold pallet: including centring and compensating spigot

Fourfold pallet: including centring and compensating spigot and two clamping spigots

On request:

Other pallet sizes and designs.

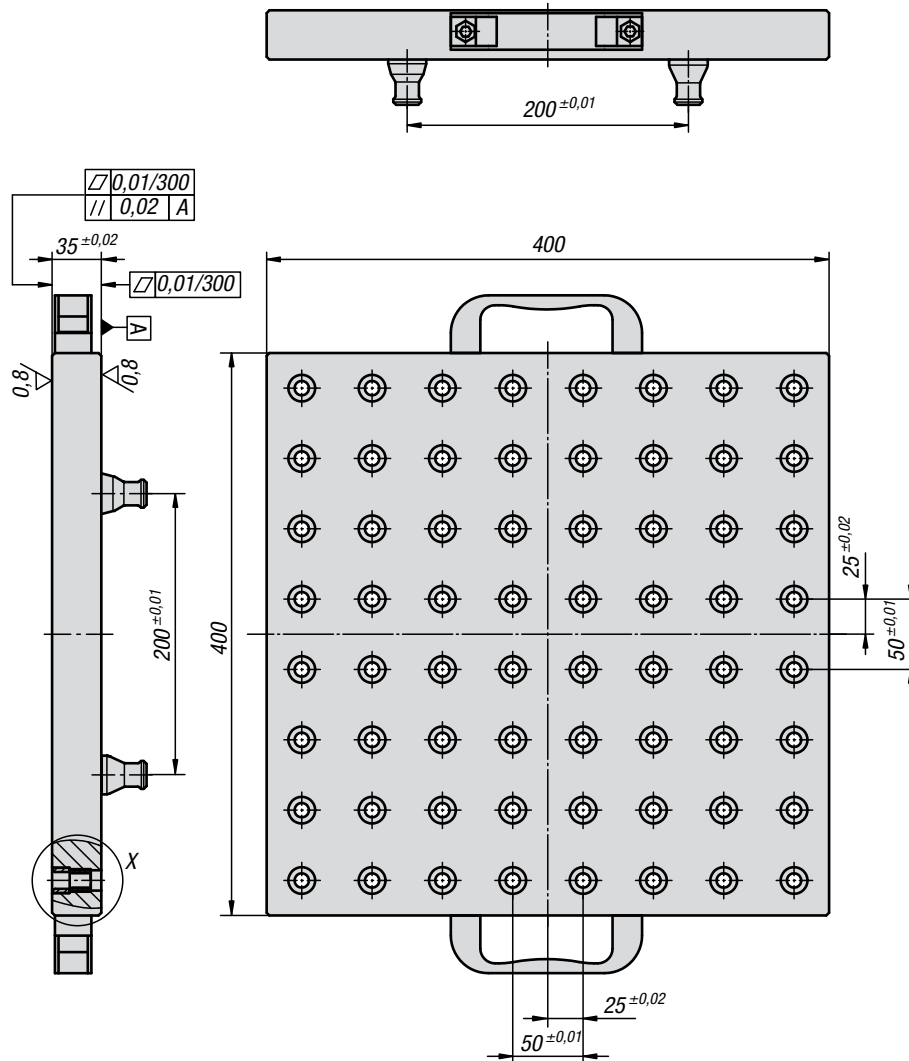
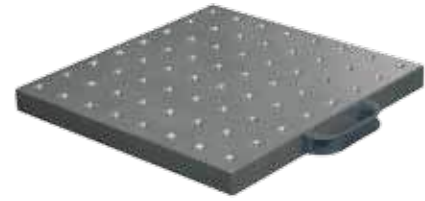


ZERO lock interchangeable pallets with T-grooves

Order No.	Surface finish	Pin	Approx. weight kg
K0511.22001604002	twofold with T-grooves	Centring spigot, compensating spigots	8
K0511.42004004002	fourfold with T-grooves	Centring spigot, compensating spigot, 2 x clamping spigots	19

ZERO lock interchangeable pallet

with gird 50



Material, surface finish:

Aluminium EN AW-7022, blank, hard-coated.

Sample order:

K0512.420040040050

Note:

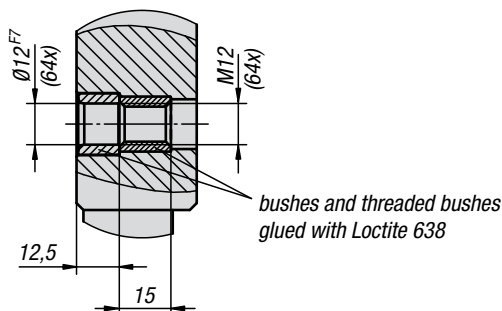
Completely mounted interchangeable pallets with grid 50 made of high-strength aluminium.

Fourfold pallet: including centring and compensating spigot and two clamping spigots

On request:

Other pallet sizes and designs.

view X



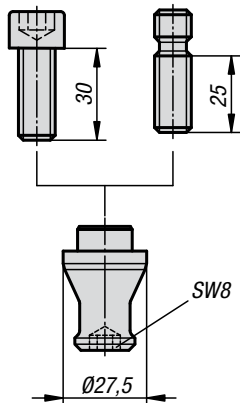
ZERO lock interchangeable pallet with gird 50

Order No.	Surface finish	Pin	Approx. weight kg
K0512.420040040050	twofold with grid 50	Centring spigot, compensating spigot, 2 x clamping spigots	16

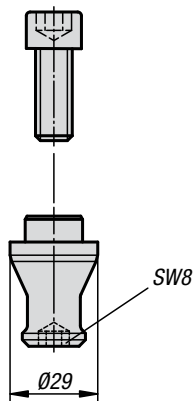
ZERO lock spigot



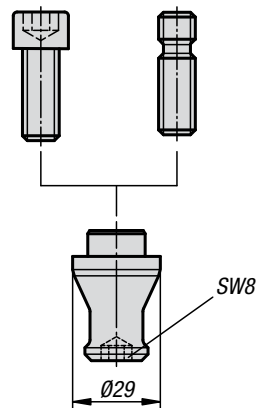
 centring spigot



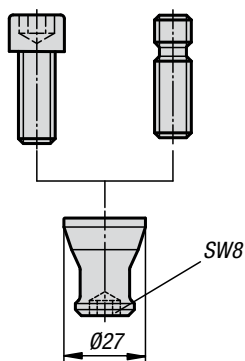
 compensating spigot
one-piece



two parts



 clamping spigot



Material, surface finish:

Steel, chemically nickel-plated.

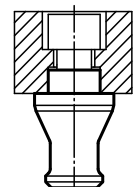
Screws, quality class 10.9

Sample order:

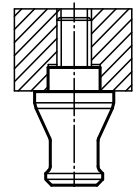
K0513.0

Note:

Depending on the number of clamping points (clamps), the pallets and jigs/fixtures must be equipped with a centring spigot, a compensating spigot and if required, with several clamping spigots (see technical information on spigot set-up). The centring, compensating and clamping spigots may be bolted down both from the top using socket head screws, and from the bottom using studs. The single piece compensating spigot can only be bolted down from the top.



screw connection from top
(with socket head screw)



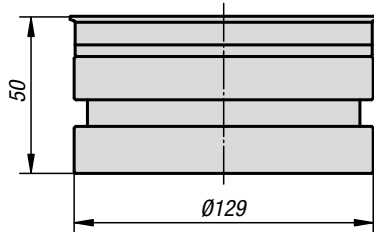
screw connection from below
(with studs)

ZERO lock spigot

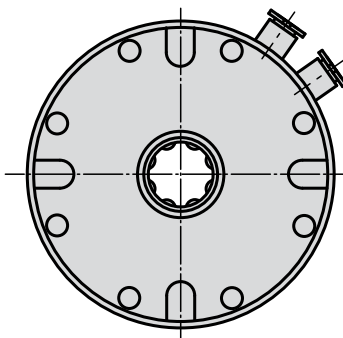
Order No.	Surface finish	Function	Threaded fitting	Approx. weight kg
K0513.0	Centring spigot	Centering function (x, y positioning)	from top and bottom	0,15
K0513.1	Compensating spigot (one-piece)	Compensating function (positioning in a direction)	from top	0,14
K0513.2	Compensating spigot (two-piece)	Compensating function (positioning in a direction)	from top and bottom	0,15
K0513.3	Clamping spigot	Clamping function (without centring and compensating function)	from top and bottom	0,14

ZERO lock mounting clamp

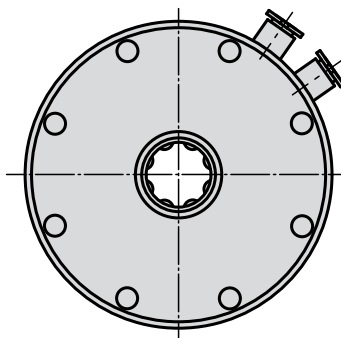
outer diameter 129 mm



Form A
with fixing grooves



Form B
without fixing grooves



Material, surface finish:

Housing made of steel, chemically nickel-plated.
NBR or Viton®.

Sample order:

K0503.2400

Note:

The ZERO lock mounting clamps can be installed directly on the machine table using edge clamps, or onto a jig (plates, cubes, towers) and at all positions. Clamping systems with Viton® seals are particularly designed for the use on sinking EDM machines. Due to the modular design, the number and distance of the clamps can be ideally adjusted to the clamping task. The clamps can be delivered with or without fastening groove. For clamping tasks requiring only one clamp, a clamp with fixing grooves is necessary. If only workpieces with two or several clamps are clamped, the lower-priced clamps without fixing grooves may be used, or only one clamping point equipped by one clamp with fixing grooves in order to perform a single clamping. The high clamping forces are created by the integrated spring package (the unit is clamped at zero pressure) The release process takes place pneumatically or hydraulically.

- Repeat accuracy 0,005 mm
- 10 000 N axial load per clamp
- Clamping by spring force
- Tension release pneumatically or hydraulically
- Circular seal and sealing air against pollution
- Defined zero point without alignment

Accessories:

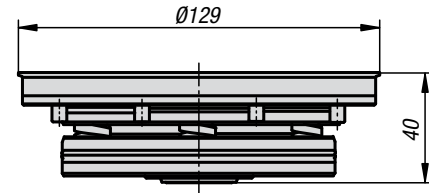
Edge clamp set

ZERO lock mounting clamp outer diameter 129 mm

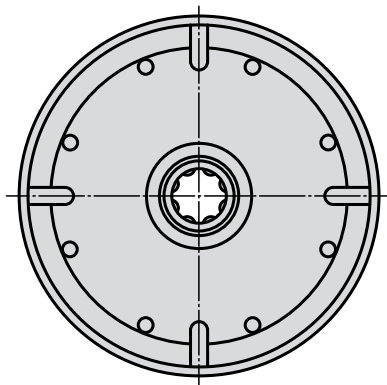
Order No.	Form	Surface finish	Seal	Clamping force (clamping by spring force) N	Axial load N	Opening pressure bar	Approx. weight kg
K0503.2400	A	Pneumatic clamp	NBR	12,500	10000	6	4,05
K0503.2410	A	Pneumatic clamp	Viton	12,500	10000	6	4,05
K0503.2411	A	Hydraulic clamp	Viton	30000	10000	min. 20 - max. 50	4,05
K0503.2000	B	Pneumatic clamp	NBR	12,500	10000	6	4,05
K0503.2010	B	Pneumatic clamp	Viton	12,500	10000	6	4,05
K0503.2011	B	Hydraulic clamp	Viton	30000	10000	min. 20 - max. 50	4,05

ZERO lock mounting clamp

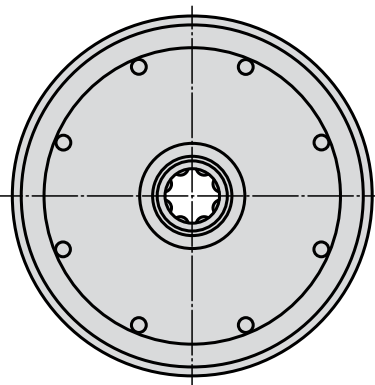
outer diameter 129 mm



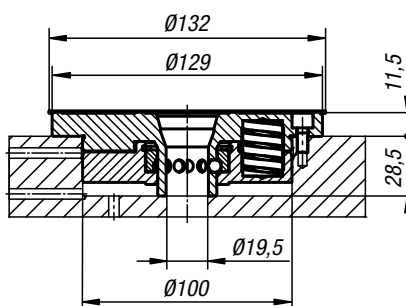
Form A
with fixing grooves



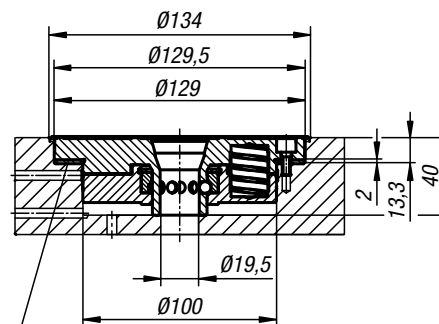
Form B
without fixing grooves



Installation with 11.5 mm overhang



Installation without overhang



*Tuning plate K0508.1282 for
height adjustment*

Material, surface finish:

Housing made of steel, chemically nickel-plated.
NBR or Viton®.

Sample order:

K0504.2400

Note:

The ZERO lock mounting clamps are mountable into the machine table or into a jig/fixture (plates, cubes, towers and so on) with or without projecting end at all positions. Clamping systems with Viton® seals are particularly designed for the use on sinking EDM machines. Due to the modular design, the number and distance of the clamps can be ideally adjusted to the clamping task. The clamps can be delivered with or without fastening groove. For clamping tasks requiring only one clamp, a clamp with fixing grooves is necessary. If only workpieces with two or several clamps are clamped, the lower-priced clamps without fixing grooves may be used, or only one clamping point equipped by one clamp with fixing grooves in order to perform a single clamping. The high clamping forces are created by the integrated spring package (the unit is clamped at zero pressure). The release process takes place pneumatically or hydraulically.

- Repeat accuracy 0,005 mm
- 10 000 N axial load per clamp
- Clamping by spring force
- Tension release pneumatically or hydraulically
- Circular seal and sealing air against pollution
- Defined zero point without alignment

Accessories:

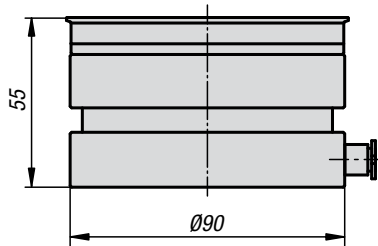
Shim washer

ZERO lock mounting clamp outer diameter 129 mm

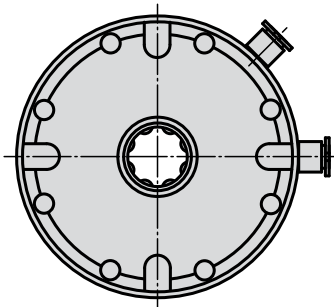
Order No.	Form	Surface finish	Seal	Clamping force (clamping by spring force) N	Axial load N	Opening pressure bar	Approx. weight kg
K0504.2400	A	Pneumatic clamp	NBR	12500	10000	6	2,1
K0504.2410	A	Pneumatic clamp	Viton	12500	10000	6	2,1
K0504.2411	A	Hydraulic clamp	Viton	30000	10000	min. 20 - max. 50	2,1
K0504.2000	B	Pneumatic clamp	NBR	12500	10000	6	2,1
K0504.2010	B	Pneumatic clamp	Viton	12500	10000	6	2,1
K0504.2011	B	Hydraulic clamp	Viton	30000	10000	min. 20 - max. 50	2,1

ZERO lock compact mounting clamp

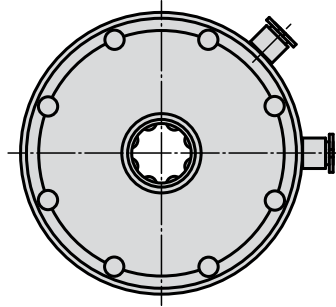
outer diameter 90 mm



Form A
with fixing grooves



Form B
without fixing grooves



Material, surface finish:

Housing made of steel, rust-resistant.
Seal NBR

Sample order:

K0505.14001

Note:

The ZERO lock compact mounting clamps can be installed directly on the machine table using edge clamps, or onto a jig (plates, cubes, towers) and at all positions. Due to the modular design, the number and distance of the clamps can be ideally adjusted to the clamping task. The clamps can be delivered with or without fastening groove. For clamping tasks requiring only one clamp, a clamp with fixing grooves is necessary. If only workpieces with two or several clamps are clamped, the lower-priced clamps without fixing grooves may be used, or only one clamping point equipped by one clamp with fixing grooves in order to perform a single clamping. The high clamping forces are created by the integrated spring package. Optionally, the clamping force can be increased to 10 kN by reclamping with compressed air. The release process takes place pneumatically.

- Repeat accuracy ≤ 0.005 mm
- 10 000 N axial load per clamp
- Tensioning with spring force, optionally with pneumatic reclamping
- Tension release pneumatically
- Circular seal air against pollution
- Defined zero point without alignment

On request:

Clamping systems by Viton® for the use on sinking EDM machines.

Accessories:

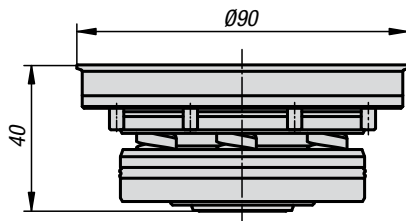
Edge clamp set

ZERO lock compact mounting clamp outer diameter 90 mm

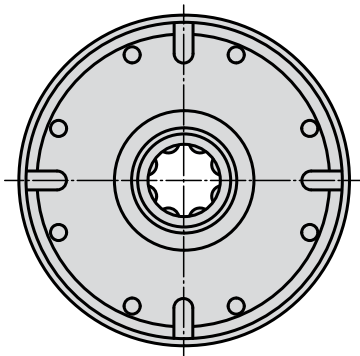
Order No.	Form	Surface finish	Seal	Clamping force (clamping by spring force) N	Clamping force with pneum. reclamping N	Axial load N	Opening pressure bar	Approx. weight kg
K0505.14001	A	Pneumatic clamp	NBR	4000	10000	10000	6	2,1
K0505.14000	A	Pneumatic clamp	NBR	8000	-	10000	10	2,1
K0505.10001	B	Pneumatic clamp	NBR	4000	10000	10000	6	2,1
K0505.10000	B	Pneumatic clamp	NBR	8000	-	10000	10	2,1

ZERO lock compact mounting clamp

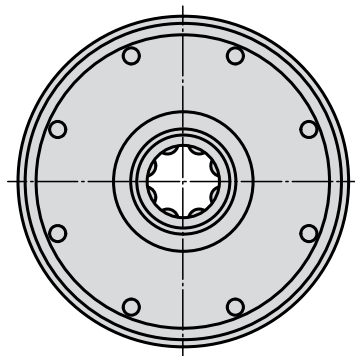
outer diameter 90 mm



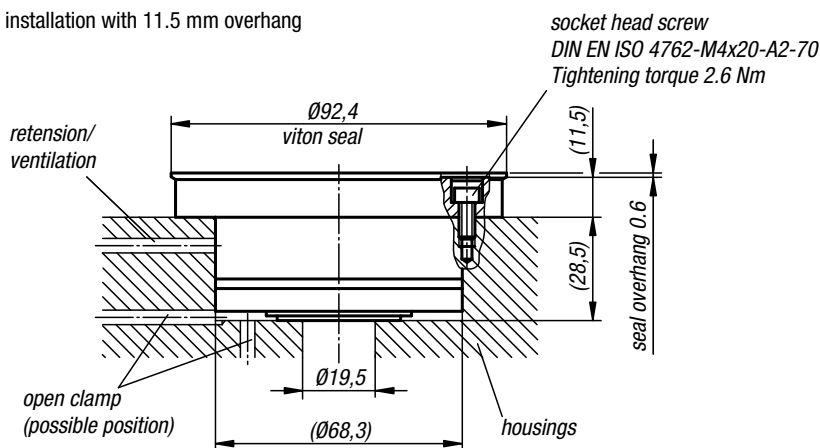
Form A
with fixing grooves



Form B
without fixing grooves



installation with 11.5 mm overhang



Material, surface finish:

Housing made of steel, natural finish Seal NBR

Sample order:

K0506.14001

Note:

The ZERO lock mounting clamps are mountable into the machine table or into a jig (plates, cubes, towers and so on) at all positions. Due to the modular design, the number and distance of the clamps can be ideally adjusted to the clamping task. The clamps can be delivered with or without fastening groove. For clamping tasks requiring only one clamp, a clamp with fixing grooves is necessary. If only workpieces with two or several clamps are clamped, the lower-priced clamps without fixing grooves may be used, or only one clamping point equipped by one clamp with fixing grooves in order to perform a single clamping. The high clamping forces are created by the integrated spring package. Optionally, the clamping force can be increased to 10 kN by reclamping with compressed air. The release process takes place pneumatically.

- Repeat accuracy ≤ 0.005 mm
- 10 000 N axial load per clamp
- Tensioning with spring force, optionally with pneumatic reclamping
- Tension release pneumatically
- Circular seal against pollution
- Defined zero point without alignment

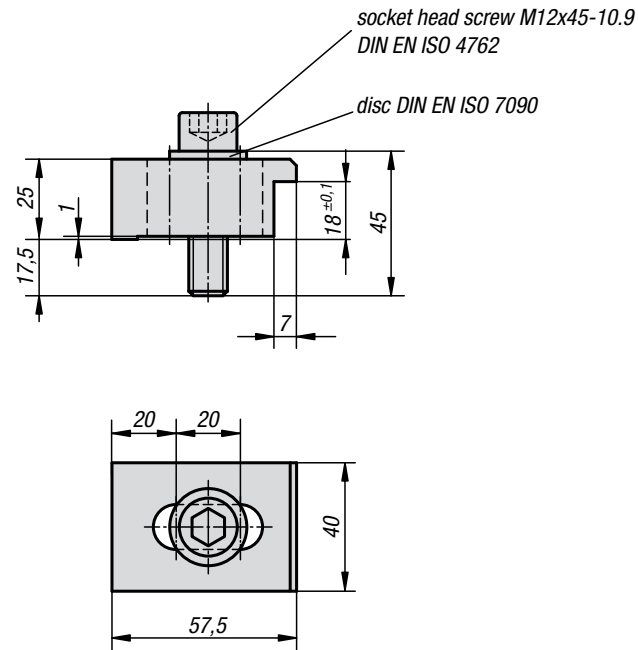
On request:

Clamping systems by Viton® for the use on sinking EDM machines.

ZERO lock compact mounting clamp outer diameter 90 mm

Order No.	Form	Surface finish	Seal	Clamping force (clamping by spring force) N	Clamping force with pneum. reclamping N	Axial load N	Opening pressure bar	Approx. weight kg
K0506.14001	A	Pneumatic clamp	NBR	4000	10000	10000	6	0,9
K0506.14000	A	Pneumatic clamp	NBR	8000	-	10000	10	0,9
K0506.10001	B	Pneumatic clamp	NBR	4000	10000	10000	6	0,9
K0506.10000	B	Pneumatic clamp	NBR	8000	-	10000	10	0,9

Set of ZERO lock clamps

**Material, surface finish:**

Steel, natural finishScrew, heat-treated to 10.9.

Sample order:

K0507.12

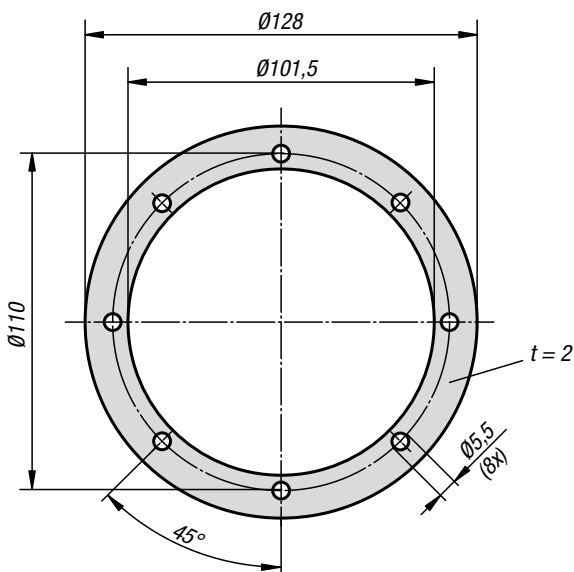
Note:

Edge clamps set (4 pieces), including screws for the attachment of the mounting clamps to the machine table

Set of ZERO lock clamps

Order No.	Approx. weight kg
K0507.12	1,5

ZERO lock shim washer

**Material, surface finish:**

Steel, natural finish

Sample order:

K0507.1282

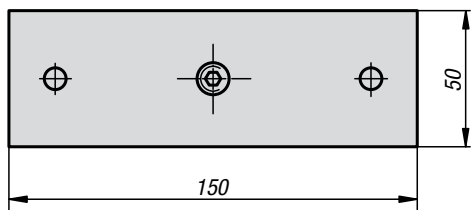
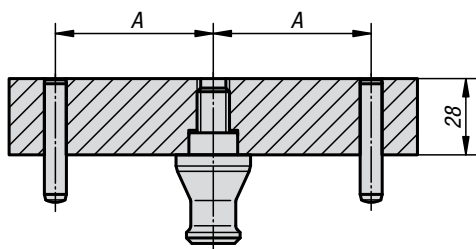
Note:

Shim washer for height adjustment of the ZERO lock mounting clamps with out diameter of 129 mm for flush installation.

ZERO lock shim washer

Order No.	Approx. weight kg
K0508.1282	0,08

ZERO lock alignment gauge



Material, surface finish:
Steel, rust-resistant.

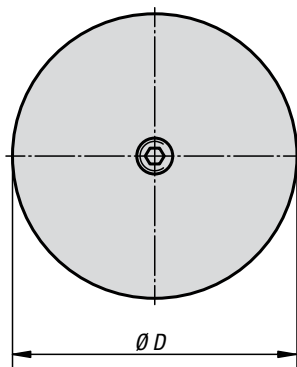
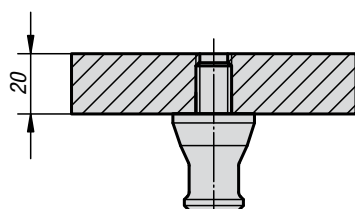
Sample order:
K0514.1

Note:
Alignment gauge for X and Y alignment of the single clamps with fastening grooves. Complete with centring spigots and 2 cylinder pins. Distance of 38 mm suitable for clamps with outer diameter of 90 mm. Distance of 58 mm suitable for clamps with outer diameter of 129 mm.

ZERO lock alignment gauge

Order No.	Size	A	Approx. weight kg
K0514.1	1	38	1,7
K0514.2	2	58	1,7

ZERO lock cover



Material, surface finish:
Aluminium, natural finish

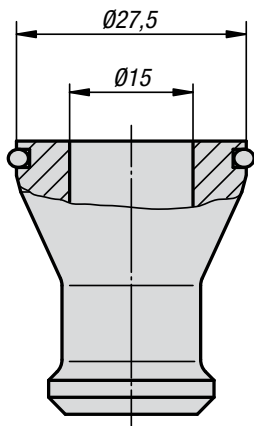
Sample order:
K0515.1

Note:
Cover disc, complete with clamping spigots. Protects the seal and the clamping area of the clamps when they are not in use. Distance of 95 mm suitable for clamps with outer diameter of 90 mm. Distance of 134 mm suitable for clamps with outer diameter of 129 mm.

ZERO lock cover

Order No.	Size	D	Approx. weight kg
K0515.1	1	95	0,5
K0515.2	2	134	0,9

ZERO lock locking spigot



Material, surface finish:
Steel, chemically nickel-plated.
O-ring NBR.

Sample order:
K0517.1

Note:
With centring bore hole: Ø15 and thread M6 to pull out from the clamp. Protects the clamping spigot area of the clamps from pollution when they are not in use.

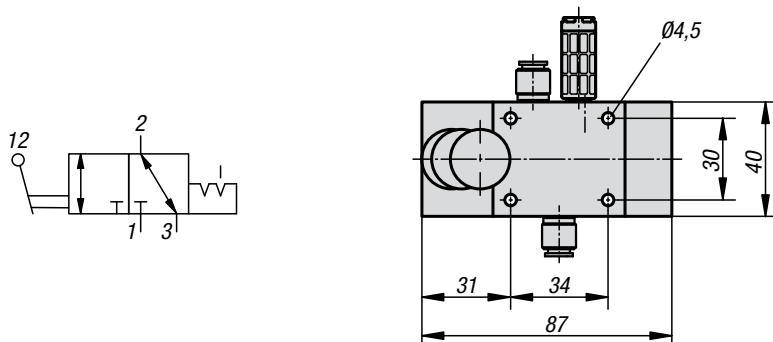
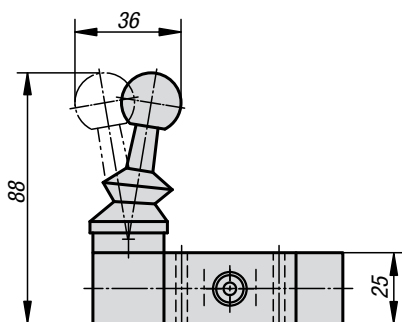
ZERO lock locking spigot

Order No.	Approx. weight kg
K0517.1	0,06

K0516

ZERO lock pneumatic controller,

hand lever valve with detent



Material, surface finish:
Housing, aluminium, anodised. Level, steel, stainless
Seals NBR and POM. Inner parts, aluminium and stainless steel.

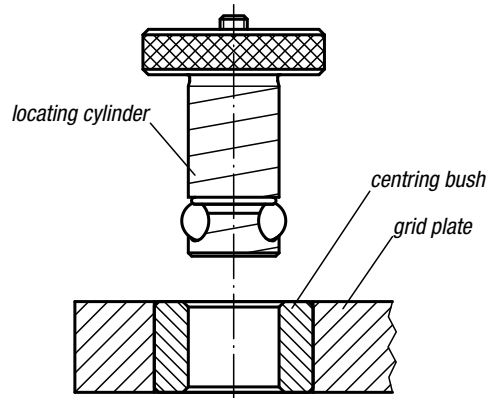
Sample order:
K0516.32

Note:
3/2-way piston valve with 2 stable positions. For the manual opening or closing of the pneumatic clamps.
With pneumatic plug connectors for 6 mm pneumatic hose and exhaust air silencer.

ZERO lock pneumatic controller, hand lever valve with detent

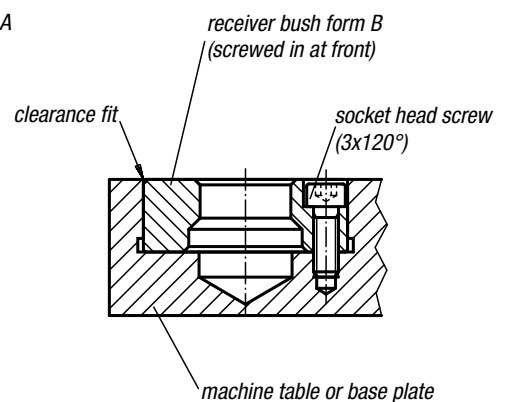
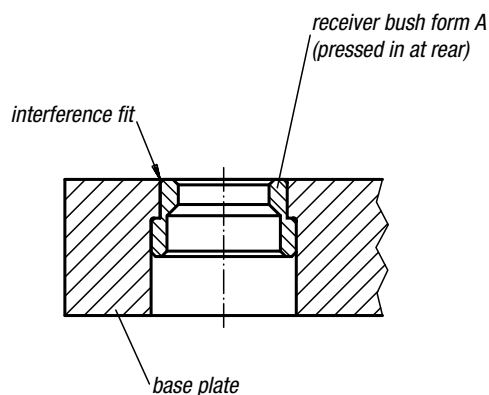
Order No.	Working pressure, bar	Flow rate NI/min	Switching force at 6 bar N	Temperature range °C	Approx. weight kg
K0516.32	0 - 12	750	16	-10 to +70	-

BALL lock, Locating and Clamping System



recommended installation

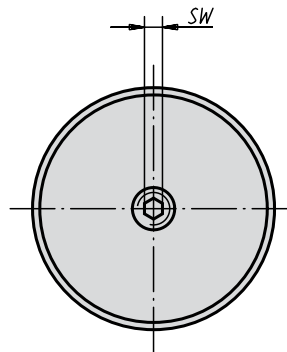
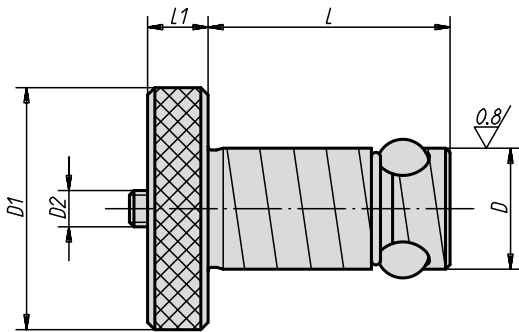
alternative installation



General information

1. The BALL lock Locating and Clamping System makes it possible to locate and lock grid plates and fixture bases precisely in seconds. The system consists of a Locating Cylinder, a Centering Bushing and a Receiver Bushing.
2. The Ball lock Locating and Clamping System is used in three easy steps:
Install two Receiver Bushings in the machine table or sub-plate and two Centering Bushings in the fixture plate.
Insert the Locating Cylinders through the Centering Bushings into the Receiver Bushings to achieve accurate location.
Turn the set screw in each Locating Cylinder approx. twice to achieve positive clamping force. Eighteen different Locating Cylinders, two Centering Bushing types and two Receiver Bushing forms are available.
3. Each grid plate should have one Centering Bushing grade I (bottom left) and one Centering Bushing grade II (top right) installed as far apart as possible. No advantage is gained by having more than two locating points. If more than two Locating Cylinders are needed for additional holding force (depending on the application), the holes in the grid plate should be drilled 0.4 to 0.8 mm larger than the selected Locating Cylinder diameter.
4. If the distance between centres of the two locating holes e.g. in the machine table and in the grid plate is observed with a tolerance of ± 0.005 mm and two Centering Bushings grade I are used, a repeating accuracy of ± 0.013 mm is achieved. For a somewhat lesser repeating accuracy of within ± 0.04 mm, use one Centering Bushing grade I and one Centering Bushing grade II with a distance-between-centre tolerance of ± 0.03 mm.
5. The difference between the Centering Bushing grade I and the Centering Bushing grade II consists in the fact that Centering Bushing grade II has a larger inner diameter corresponding to the higher distance-between-centre tolerance on the machine table or the fixture base.

Locating Cylinders


Material:

Locating cylinder tempered steel;
balls roller bearing steel

Surface finish:

Locating cylinder heat-treated, black oxide finish;
balls hardened, natural finish

Sample order:

K0935.16020

Note:

By tightening the moving screw (D2) the centre ball is pressed downwards and in turn forces the three locking balls outwards, where they are locked in the tapered Receiver Bushing.

With this easy-to-operate system machine set-up times are up to twelve times shorter than when conventional methods are used.

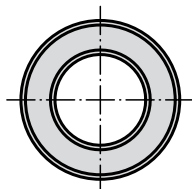
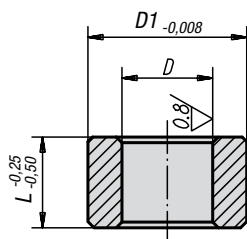
Repair Kit:



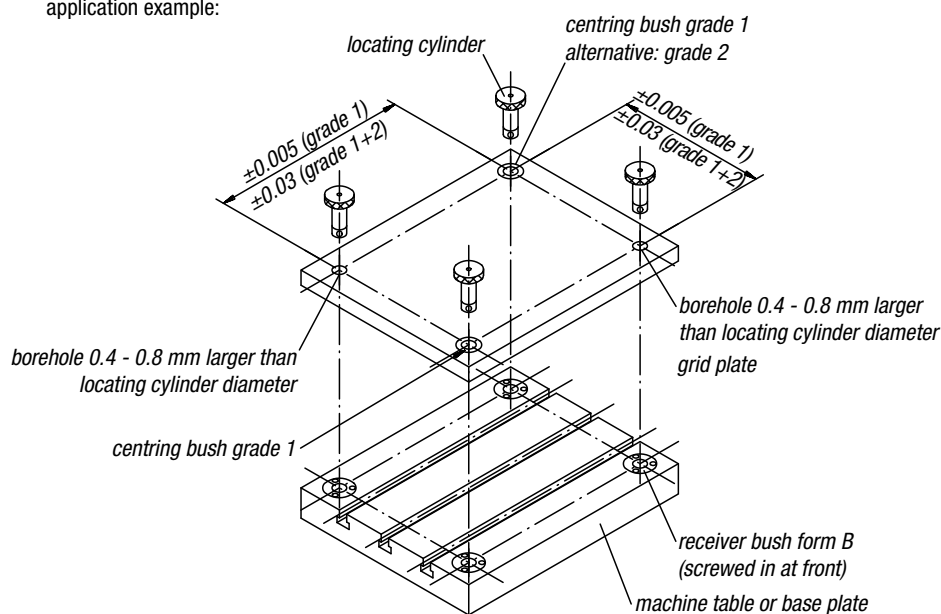
Locating Cylinders

Order No.	Grid plate thickness $\pm 0,05$	D	D1	D2	L	L1	SW	Holding force F kN	Tightening torque max. Nm	Approx. weight kg	Order No. Repair Kit
K0935.13013	13	13	22	M5	27,6	6	2,5	3,3	1	0,040	K0935.913013
K0935.13020	20	13	22	M5	34,6	6	2,5	3,3	1	0,050	K0935.913020
K0935.16020	20	16	32	M6	36,5	8	3	5,3	3	0,100	K0935.916020
K0935.16025	25	16	32	M6	41,5	8	3	5,3	3	0,110	K0935.916025
K0935.20020	20	20	40	M6	39,5	10	3	13,3	4	0,200	K0935.920020
K0935.20025	25	20	40	M6	44,5	10	3	13,3	4	0,230	K0935.920025
K0935.25020	20	25	45	M8	44	10	4	30	9	0,270	K0935.925020
K0935.25025	25	25	45	M8	49	10	4	30	9	0,300	K0935.925025
K0935.30020	20	30	50	M10	49	13	5	44	15	0,480	K0935.930020
K0935.30025	25	30	50	M10	54	13	5	44	15	0,520	K0935.930025
K0935.35020	20	35	60	M12	51	13	6	68	25	0,580	K0935.935020
K0935.35025	25	35	60	M12	56	13	6	68	25	0,640	K0935.935025
K0935.35040	40	35	60	M12	71	13	6	68	25	0,750	K0935.935040
K0935.35050	50	35	60	M12	81	13	6	68	25	0,810	K0935.935050
K0935.50020	20	50	75	M20	64	20	10	88	50	1,510	K0935.950020
K0935.50025	25	50	75	M20	69	20	10	88	50	1,590	K0935.950025
K0935.50040	40	50	75	M20	84	20	10	88	50	1,790	K0935.950040
K0935.50050	50	50	75	M20	94	20	10	88	50	1,990	K0935.950050

Centering Liner Bushings



application example:

**Material:**

Roller bearing steel

Surface finish:

Hardened, black oxide finish

Sample order:

K0936.113020

Note:

At a distance-between-centre tolerance of ± 0.005 mm and use of two Centring Liner Bushings grade I, a clamping repeating accuracy of within ± 0.013 mm is possible.

At a distance-between-centre tolerance of ± 0.03 mm and use of one Centring Liner Bushing grade I and one Centring Liner Bushing grade II, a clamping repeating accuracy of within ± 0.04 mm is possible.

The Centring Liner Bushings are pressed into the receiver holes in the grid plates with light pressure. For further details see „General information“.

* Tol. Centring Bushing grade 1 + 0.005 / + 0.018

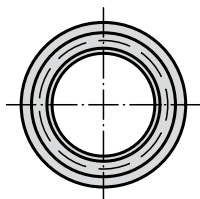
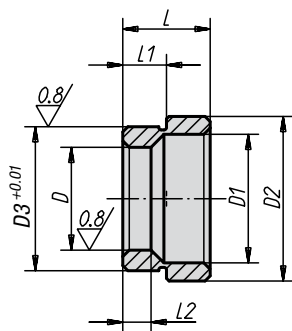
Tol. Centring Bushing grade 2 + 0.025 / + 0.050

Centering Liner Bushings

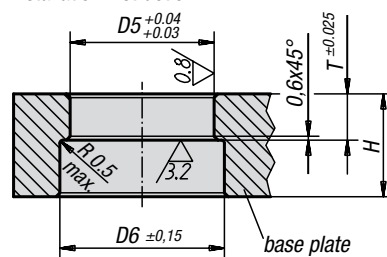
Order No. grade 1	Order No. grade 2	D	D1	L	Receiving hole for Centring Bushing $\varnothing +0,010$	Approx. weight kg
K0936.113013	K0936.213013	13*	19,040	13	19,016	0,015
K0936.113020	K0936.213020	13*	19,040	20	19,016	0,024
K0936.116020	K0936.216020	16*	25,042	20	25,016	0,045
K0936.116025	K0936.216025	16*	25,042	25	25,016	0,057
K0936.120020	K0936.220020	20*	35,042	20	35,018	0,120
K0936.120025	K0936.220025	20*	35,042	25	35,018	0,150
K0936.125020	K0936.225020	25*	35,042	20	35,018	0,074
K0936.125025	K0936.225025	25*	35,042	25	35,018	0,093
K0936.130020	K0936.230020	30*	45,042	20	45,018	0,139
K0936.130025	K0936.230025	30*	45,042	25	45,018	0,174
K0936.135020	K0936.235020	35*	45,042	20	45,018	0,099
K0936.135025	K0936.235025	35*	45,042	25	45,018	0,123
K0936.135040	K0936.235040	35*	45,042	40	45,018	0,198
K0936.135050	K0936.235050	35*	45,042	50	45,018	0,248
K0936.150020	K0936.250020	50*	63,546	20	63,521	0,190
K0936.150025	K0936.250025	50*	63,546	25	63,521	0,237
K0936.150040	K0936.250040	50*	63,546	40	63,521	0,379
K0936.150050	K0936.250050	50*	63,546	50	63,521	0,474

Receiver Bushings

Form A (pressed in at rear)



installation instruction



Material:
Tempered steel

Surface finish:
Heat-treated and black oxide finish

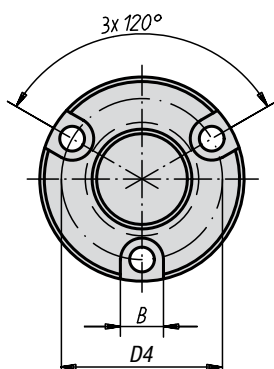
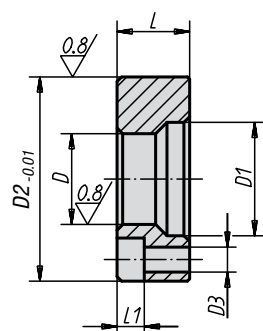
Sample order:
K0937.20

Receiver Bushings Form A (pressed in at rear)

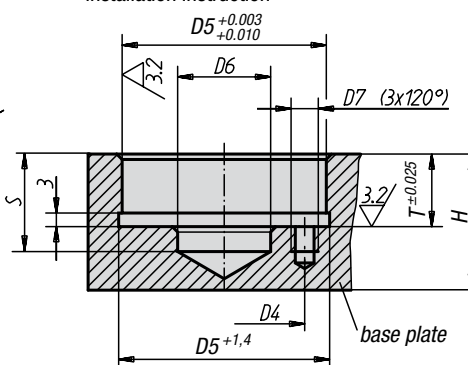
Order No.	D	D1	D2	D3	L	L1	L2	D5	D6	T	Min. grid plate thickness H	Approx. weight kg
K0937.13	13	17,3	25	20,03	12,1	6,6	5,58	20	26	6,92	20	0,020
K0937.16	16	20,7	28,6	22,03	12,1	6,9	6,6	22	29	7,24	20	0,020
K0937.20	20	24,8	32,2	28,03	17,1	8,42	8,13	28	33	8,74	25	0,050
K0937.25	25	30,4	40,2	35,03	21	10,22	10,16	35	41	10,54	25	0,080
K0937.30	30	36,2	48,2	42,03	21,8	10,63	11,18	42	49	10,95	30	0,140
K0937.35	35	41,3	54,2	48,03	25,1	12,18	14,78	48	55	12,5	32	0,180
K0937.50	50	58,4	75,2	67,03	31,1	15,43	18,67	67	76	15,75	45	0,410

Receiver Bushings

Form B (screwed in at front)



installation instruction



Material:
Tempered steel

Surface finish:
Heat-treated and black oxide finish

Sample order:
K0938.13

Note:
Assembly screws are included.

Receiver Bushings Form B (screwed in at front)

Order No.	D	D1	D2	D3	D4	L	L1	B	D5	D6	D7	T	S	Min. grid plate thickness H	Approx. weight kg
K0938.13	13	17,3	34,99	4,4	25	11,56	4,5	7,6	35	13,5	M4x7	11,91	20	20	0,060
K0938.16	16	20,7	36,99	4,4	29	11,56	4,5	7,6	37	21	M4x7	11,91	20	20	0,060
K0938.20	20	24,8	44,99	5,4	35	15,82	6,0	9,5	45	21	M5x9	16,21	25	25	0,140
K0938.25	25	30,4	54,99	6,4	42	19,94	7,0	11,0	55	25,5	M6x10	20,32	25	25	0,200
K0938.30	30	36,2	59,99	6,4	48	21,77	7,0	11,0	60	30,5	M6x11	22,15	30	30	0,270
K0938.35	35	41,3	69,99	8,4	56	22,61	9,0	14,0	70	40	M8x17	22,99	32	32	0,410
K0938.50	50	58,4	91,99	10,4	75	31,12	11,0	17,0	92	55	M10x18	31,5	45	45	0,910



A large rectangular area filled with a light gray grid pattern, intended for taking notes.

Vice Clamping System



Positive Clamping
System
5 Axis Clamping
System
Centric Clamp

Technical Information for Positive Clamping System



The Clamping System for prototypes, samples, as well as small and medium scale series production

The Positive Clamping System consists of a base element with a flange plate and an associated collet. Only the collet is exchanged to clamp a wide variety of workpieces; the base element with flange plate remains the same. Standardized collet blanks made of aluminium are used for clamping workpieces. The contour of the workpiece to be clamped is imparted to this collet blank.

Both external and internal contours can be clamped with the Positive Clamping System. Positive Clamping Systems with collets for internal and external clamping are available for this purpose.

The integrated spring package generates a clamping force of 5,8 kN. The clamping force can be raised to 43,5 kN by reclamping with compressed air.



Positive Clamping Systems for workpieces that cannot be clamped any other way

- whether geometrical or free-form surfaces: we've got a firm grip on the most difficult workpiece contours
- can be set up on perforated grid plates, T-slot plates and custom jigs
- clamping range of 25 - 140 mm and workpiece weights up to 25 kg
- clamps rough parts, machined parts, round and irregular-shaped parts
- low clamping depth of 1 mm can be achieved
- designed for external and internal clamping
- repeat accuracy of < 0.01 mm

Positive clamping system clamping- and retention forces

Release pressure for springs	Clamping force without retightening	Retention force without Retightening pressure	Retightening pressure	Tension clamping force with Retightening pressure	Retention force with Retightening pressure
6 bar	5,810 kN	2,80 kN	6 bar	13,390 kN	10,390 kN
6 bar	5,810 kN	2,80 kN	12 bar	20,930 kN	17,930 kN
6 bar	5,810 kN	2,80 kN	30 bar	43,550 kN	40,550 kN

Positive Clamping Systems - system structure

pos.	description		piece
1	collet	1	
2	flange plate	1	
3	piston	1	
4	spring package	8	
5	screw / tension cone	2	
6	base body	1	
P1	Loosen collet chuck with the air of the air pistol connection		
P2	Re-tighten with the aid of the air pistol connection		

Positive Clamping System

for self-installation



Material, surface finish:

Flange plate and piston, steel, rust-resistant, natural finish

Seals NBRscrews DIN EN ISO 4762, quality class 8.8, galvanized

Collet aluminium, anodized red or colourless.

Sample order:

K0500.116030

Note:

The Positive Clamping System is suitable for installation in customer jigs and clamping systems. The flange plate can accept collets for external clamping and collets for internal clamping. The contour of the workpiece to be clamped is imparted to the collet. Free-form surfaces and asymmetrical contours are possible.

The integrated spring package generates a clamping force of 5,8 kN. The clamping force can be raised to 43,5 kN by reclamping with compressed air. The clamp is released by introducing compressed air onto the lower piston surface. This pushes the piston upwards and thus releases the clamping process of the collet. Clamping range 0.2 mm. Repeat accuracy < 0.01 mm.

Fitting dimensions on request

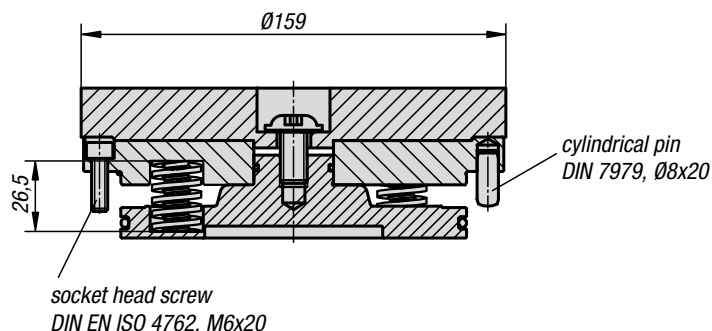
Accessories:

Collet for external or internal clamping K0502

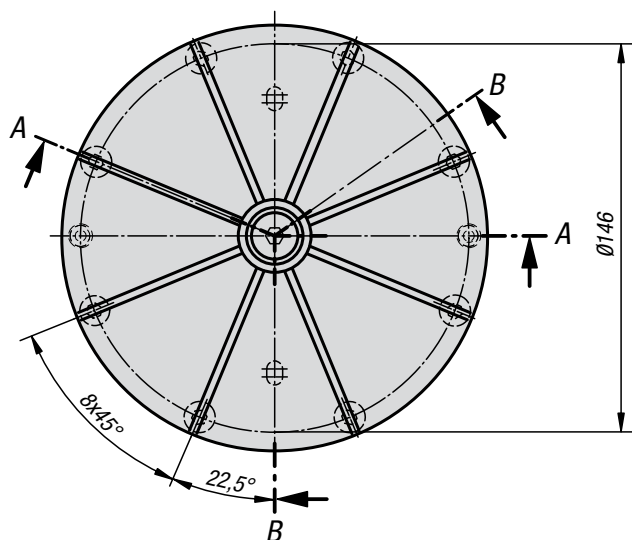
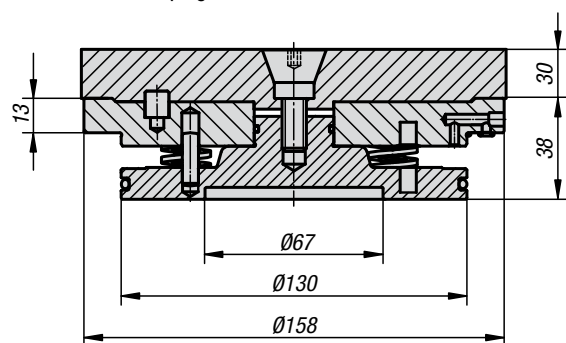


Illustration without collet with transport lock

cutting view A-A
Outer clamping



cutting view B-B
Inner clamping



Positive Clamping System for self-installation

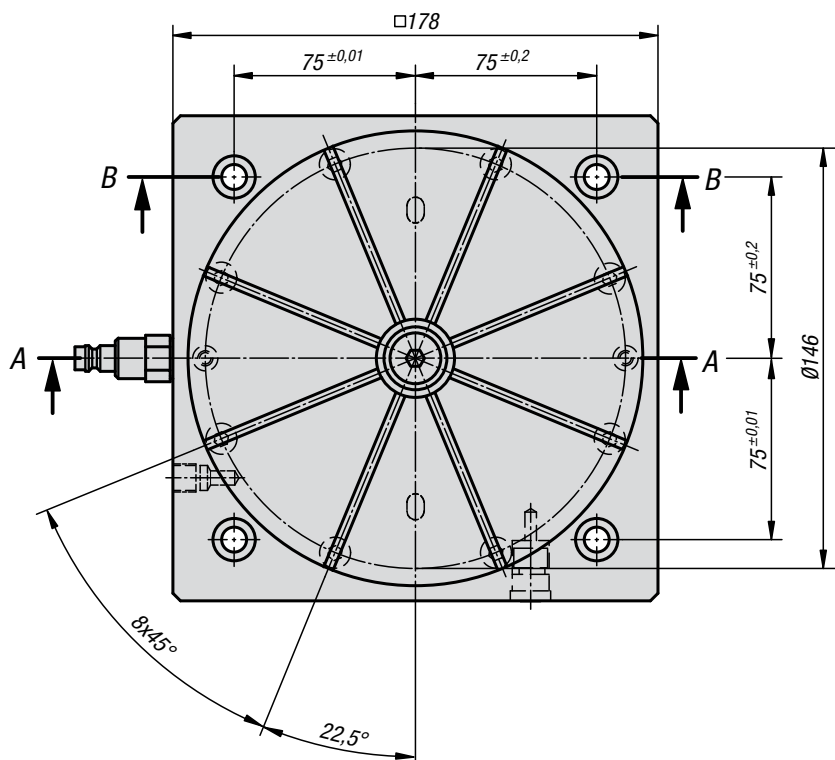
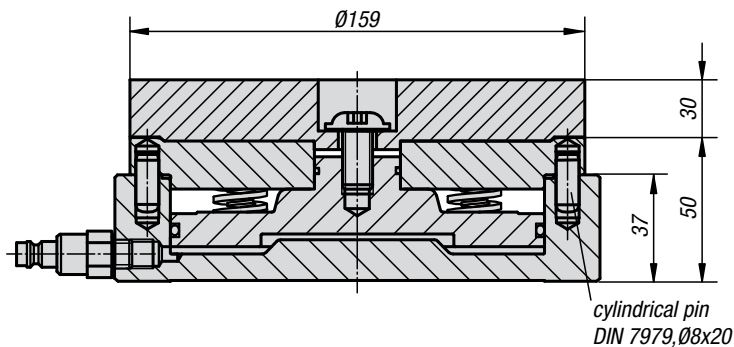
Order No.	Surface finish	Clamping range min. - max.	Milling depth min./max.	Workpiece weight max. (kg)
K0500.116030	Outer clamping	Ø 25 - Ø 140	1/20	25
K0500.216030	Inner clamping	Ø 25 - Ø 140	1/20	25

Positive Clamping System

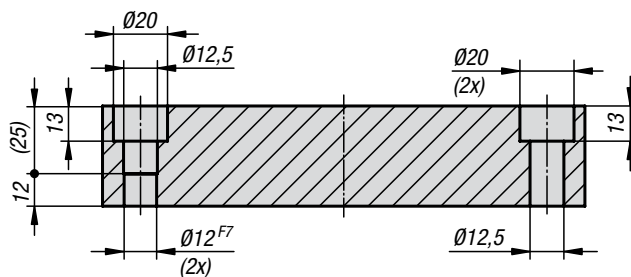
for grid plates



cutting view A-A



cutting view B-B
(only base body has been illustrated)



Material, surface finish:

Flange plate, piston and base made of steel, rust-resistant, natural finish
Seals NBR
Screws DIN EN ISO 4762, quality class 8.8, galvanized
Collet aluminium, anodized red or colourless.

Sample order:

K0501.11603050

Note:

Positive Clamping System with base plate for installation on perforated grid plates with a pitch of 50 mm. The flange plate can accept collets for external clamping and collets for internal clamping. The contour of the workpiece to be clamped is imparted to the collet. Free-form surfaces and asymmetrical contours are possible.

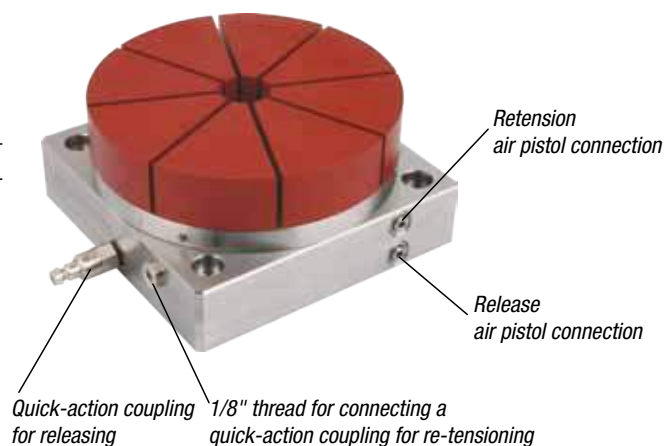
The integrated spring package generates a clamping force of 5,8 kN. The clamping force can be raised to 43,5 kN by reclamping with compressed air. The clamp is released by introducing compressed air onto the lower piston surface. This pushes the piston upwards and thus releases the clamping process of the collet.

Clamping range 0.2 mm.

Repeat accuracy <0.01 mm.

Accessories:

Collet for external or internal clamping K0502



Positive Clamping System for grid plates

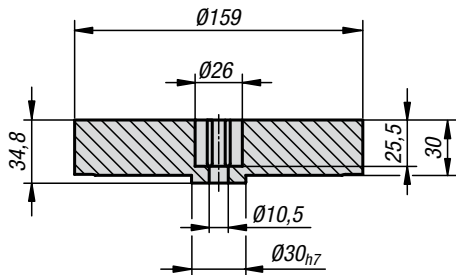
Order No.	Surface finish	Clamping range min. - max.	Milling depth min./max.	Workpiece weight max. (kg)	Suitable Locating Bolt
K0501.11603050	Outer clamping	Ø 25 - Ø 140	1 / 20	25	K0815.12055
K0501.21603050	Inner clamping	Ø 25 - Ø 140	1 / 20	25	K0815.12055

Collets

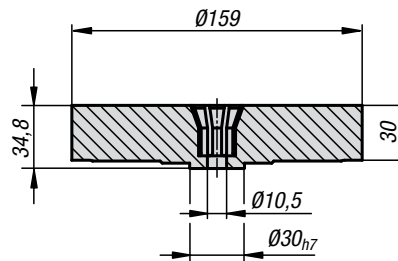
for external or internal clamping



outer clamping



inner clamping



Material, surface finish:

High-strength aluminium, red (external clamping) or colourless (internal clamping), anodized.

Sample order:

K0502.116030

Note:

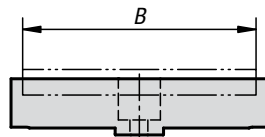
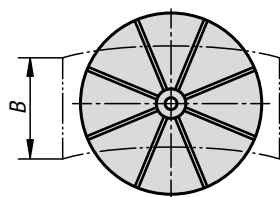
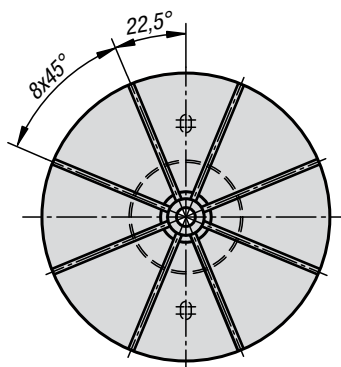
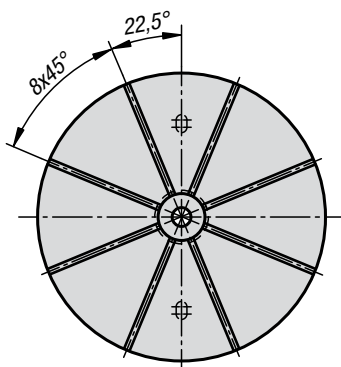
Collet for clamping external or internal contours. The contour of the workpiece to be clamped is imparted to the collet. Free-form surfaces and asymmetrical contours are possible.

Clamping range 0.2 mm.

Tension cone K0502.1024 is required for the collet version for internal clamping.

Accessories:

Tension cone K0502.1024



The workpiece width "B" should be maximum 90% of the collet diameter.

In special cases the workpiece may also project over the collet.



outer clamping



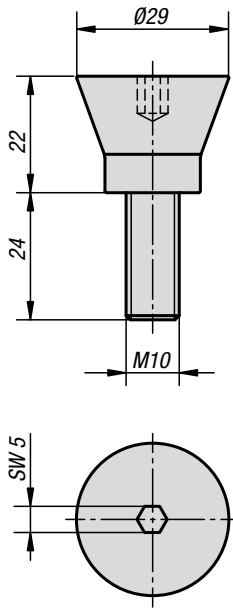
inner clamping

Collets for external or internal clamping

Order No.	Surface finish	Clamping range min. - max.	Milling depth min./max.	Workpiece weight max. (kg)
K0502.116030	Outer clamping	Ø 25 - Ø 140	1 / 20	25
K0502.216030	Inner clamping	Ø 25 - Ø 140	1 / 20	25

Tension cone

for internal clamping collet



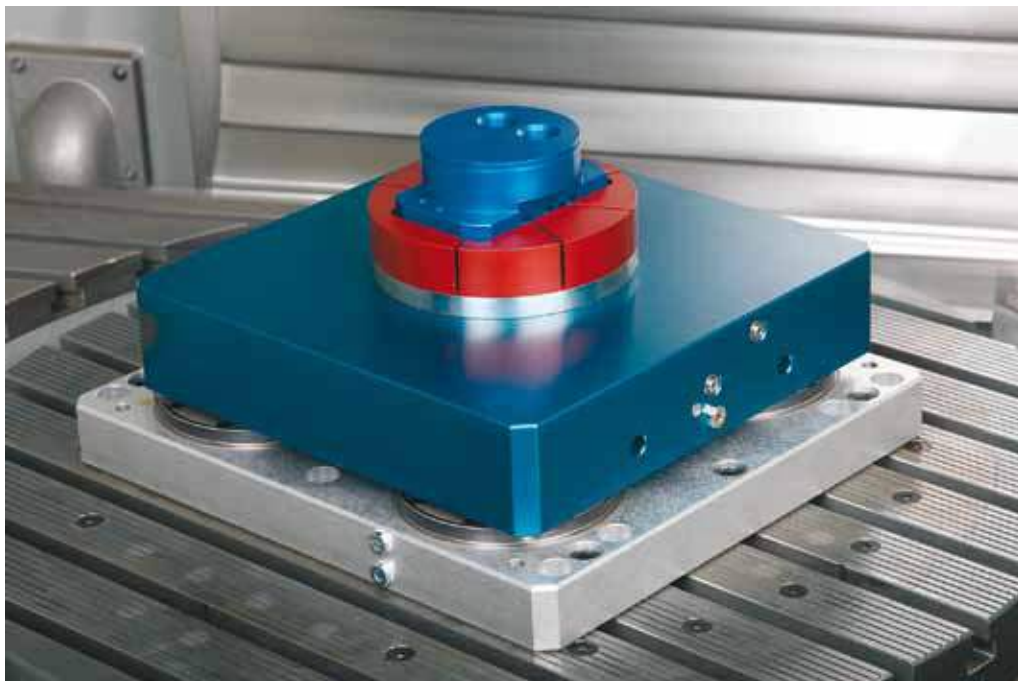
Material, surface finish:
Heat-treated steel, natural finish

Sample order:
K0502.1024

Accessories:
Collet for internal clamping K0502.216030

Tension cone for internal clamping collet

Order No.	Suitable for
K0502.1024	Internal clamping collet





A large rectangular area filled with a light gray grid pattern, intended for taking notes.

5 Axis Clamping System



Trend-setting clamping concept for 5-sided machining

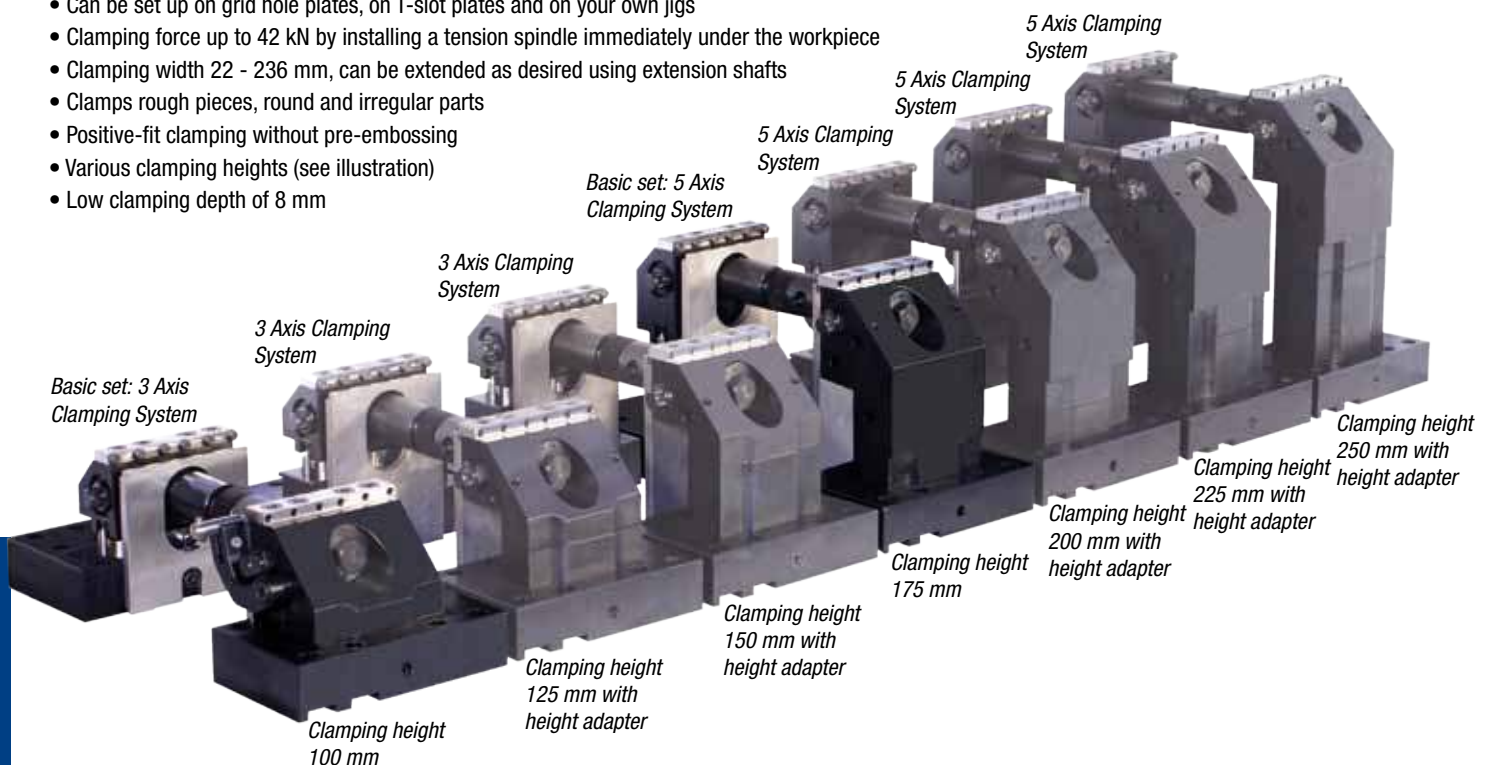
The 5-Axis Clamping System is an unbeatable overall concept to supplement state-of-the-art milling centres.

Many products are becoming more complicated than ever, and also have to be produced in an extremely short time and with high precision. In order to satisfy these criteria, complete machining of workpieces is becoming more and more common. For this reason, state-of-the-art manufacturing technologies at machine tool manufacturers have developed in the direction of 5 axis machining. Complete machining of workpieces on 5 axis centres transfers the entire high machine precision to the workpiece. Due to the greater freedom for designing workpieces in 5 axis machining, a high-performance clamping system is an essential precondition for the efficient use of these machines. Among other things, an optimised clamping system helps guarantee that the machine's complex travel can result in a high-precision workpiece. The 5 Axis Clamping Systems allow machining free of interfering edges and vibration, with extremely high cutting and feed forces. They enable the use of extremely short tools in order to guarantee the required tolerances and surfaces.



5 Axis Clamping System for trouble-free 5-sided machining in a single clamping

- Can be set up on grid hole plates, on T-slot plates and on your own jigs
- Clamping force up to 42 kN by installing a tension spindle immediately under the workpiece
- Clamping width 22 - 236 mm, can be extended as desired using extension shafts
- Clamps rough pieces, round and irregular parts
- Positive-fit clamping without pre-embossing
- Various clamping heights (see illustration)
- Low clamping depth of 8 mm



5 Axis Clamping System



Special technical features - clamping process



before clamping

The clamping process involves the penetration of hardened, exchangeable clamping pins in to the workpiece. This guarantees positive-fit clamping without pre-embossing. Optionally, flattened clamping pins are available for clamping workpieces with sensitive surfaces. Additional flexible applications are possible using accessories, including clamping jaws for specific clamping tasks and round clamping elements for clamping round parts.



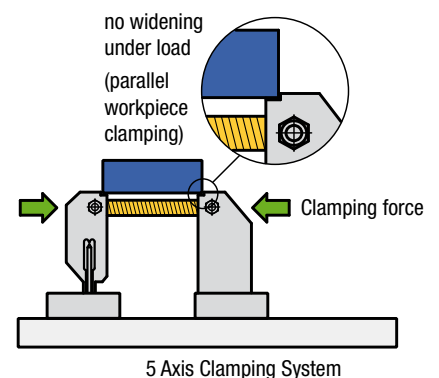
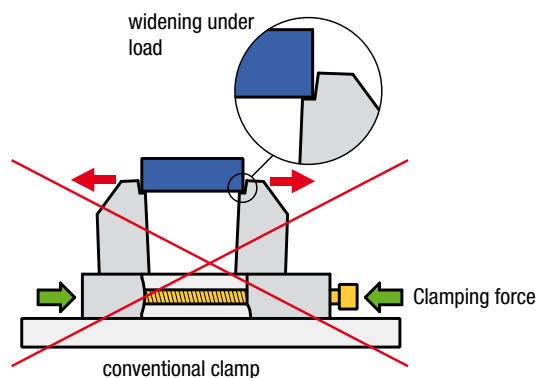
after clamping

The 5 axis clamping systems provides you with a universal clamping element that is able to clamp workpieces with a clamping width of 22 - 236 mm. The clamping width can be extended as desired through the use of extension shafts.

High clamping forces up to 42 kN that are not lost due to bending

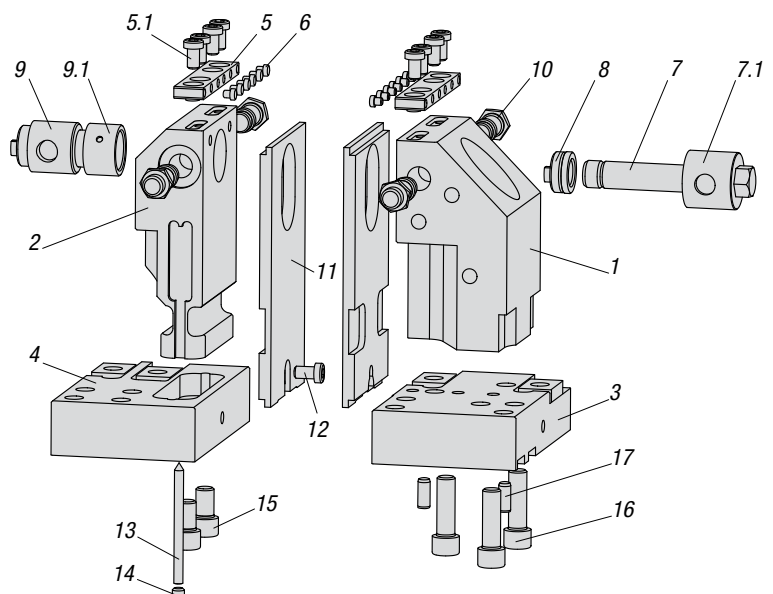
The clamping force is generated where it is needed. This is done by installing a tension spindle directly under the workpiece support.

- no widening of the clamping jaws under load
- no distortion of the machine table
- extreme stiffness allows very high cutting forces



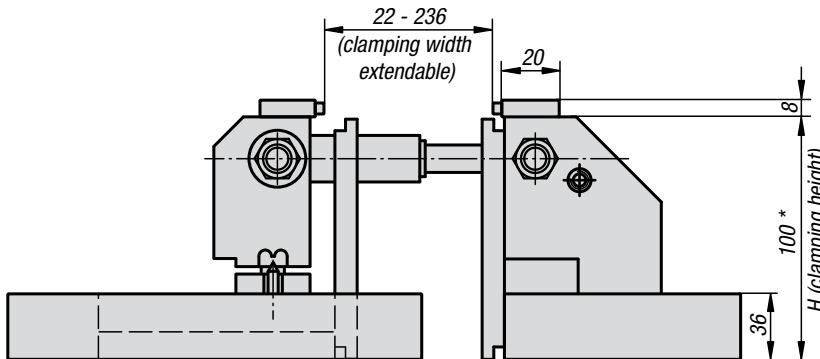
5 Axis Clamping System - system structure

Item	Description	Pcs.
1	Fixed jaws	1
2	Moveable jaws	1
3	Base plate for fixed jaws	1
4	Base plate for movable jaws	1
5	Clamping jaw, standard, with socket head screw (5.1)	2
6	Clamping pin	12
7	Threaded spindle (7) with tension housing (7.1)	1
8	Spindle nut	1
9	Extension shaft (9) with union nut (9.1)	1
10	Fastening screw	4
11	Support guide	2
12	Socket head screw DIN 6912M 8x14	2
13	Pointer	1
14	Grub screw DIN 913 M8x8	1
15	Socket head screw DIN 912 M12x20	2
16	Socket head screw DIN 912 M12x40	3
17	Cylindrical pin DIN 7979 8x20	2



3 Axis Clamping System

for grid plates



Material:

Base plates and jaws of case-hardened steel.
Support guides of steel.
Clamping jaws of special steel.
Clamping pin of tool steel.

Surface finish:

Base plates and jaws with black oxide finish.
Support guides hardened, natural finish, clamping jaws with natural finish.
Clamping pin hardened, natural finish.

Sample order:

K0939.4012100

Note:

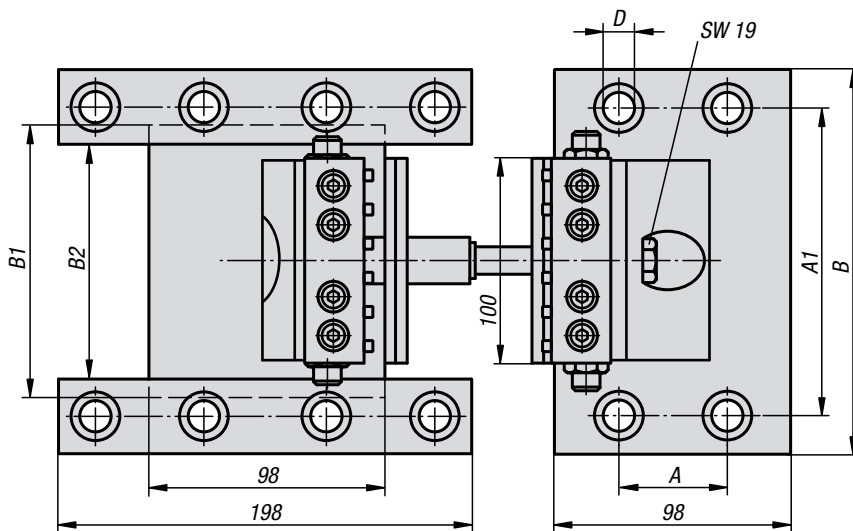
3 axis clamping system for mounting on grid plates.
The clamping system enables 3-sided machining free of interfering edges with a clamping depth of only 8 mm. With this clamping system, clamping widths of 22 - 236 mm are possible, and can be extended as desired using the optionally available K0947 extension shafts.

By installing a tension spindle immediately under the workpiece support, a force of up to 22 kN is applied to the workpiece; this is not lost due to bending. The use of clamping pins with a 4 mm cup point allows positive-fit clamping without pre-embossing. To fasten the clamping system on grid hole plates, K0815 locating bolts are recommended. The clamping set includes 1 each extension shaft with L = 60 mm and L = 120 mm.

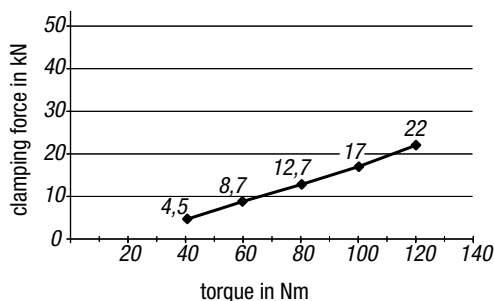
* The clamping height can be extended with the height adapters K0941 and support guides K0942.

Accessories:

Stop set K0948
Locating bolts K0815



clamping force 3 Axis clamping system

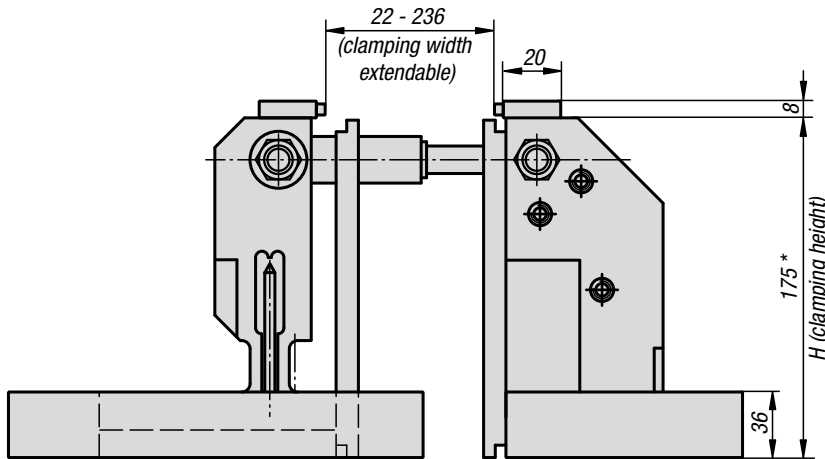


3 Axis Clamping System for grid plates

Order No.	Grid spacing	A	A1	B	B1	B2	D	H	Clamping force max. kN
K0939.4012100	40x40 (M12)	40	160	190	148	124	12	100 *	22
K0939.5012100	50x50 (M12)	50	150	190	138	114	12	100 *	22
K0939.5016100	50x50 (M16)	50	150	190	134	110	16	100 *	22

5 Axis Clamping System

for grid plates



Material:

Base plates and jaws of case-hardened steel.
Support guides of steel.
Clamping jaws of special steel.
Clamping pin of tool steel.

Surface finish:

Base plates and jaws with black oxide finish.
Support guides hardened, natural finish, clamping jaws with natural finish.
Clamping pin hardened, natural finish.

Sample order:

K0939.4012175

Note:

5 axis clamping system for mounting on grid plates. The clamping system enables 5-sided machining free of interfering edges with a clamping depth of only 8 mm. With this clamping system, clamping widths of 22 - 236 mm are possible, and can be extended as desired using the optionally available K0947 extension shafts.

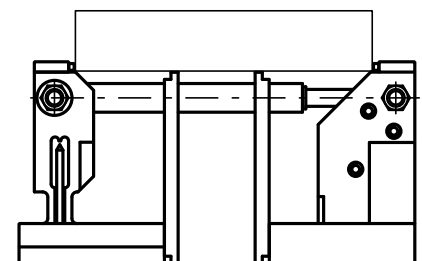
By installing a tension spindle immediately under the workpiece support, a force of up to 42 kN is applied to the workpiece; this is not lost due to bending. The use of clamping pins with a 4 mm cup point allows positive-fit clamping without pre-embossing. To fasten the clamping system on grid hole plates, K0815 locating bolts are recommended. The clamping set includes 1 each extension shaft with L = 60 mm and L = 120 mm.

* The clamping height can be extended with the height adapters K0941 and support guides K0942.

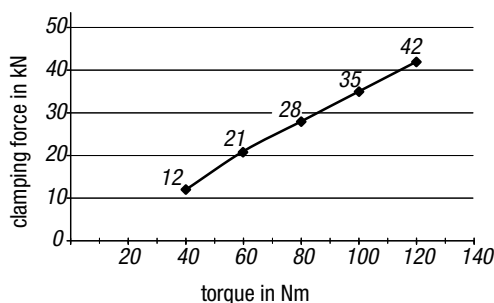
Accessories:

Stop set K0948

Locating bolts K0815



clamping force 5 Axis clamping system

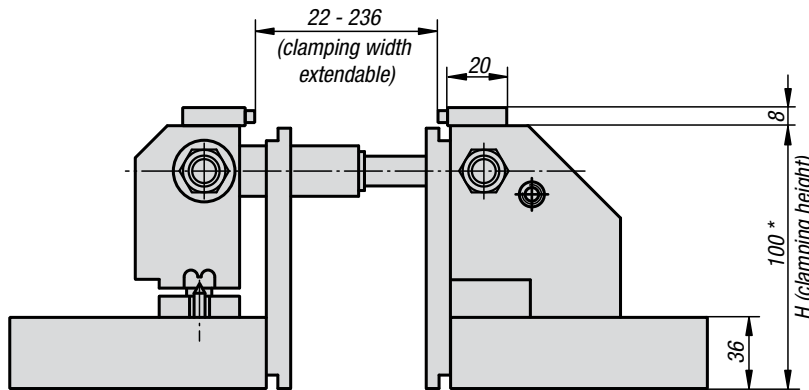


5 Axis Clamping System for grid plates

Order No.	Grid spacing	A	A1	B	B1	B2	D	H	Clamping force max. kN
K0939.4012175	40x40 (M12)	40	160	190	148	124	12	175 *	42
K0939.5012175	50x50 (M12)	50	150	190	138	114	12	175 *	42
K0939.5016175	50x50 (M16)	50	150	190	134	110	16	175 *	42

3 Axis Clamping System

for T-slots



Material:

Base plates and jaws of case-hardened steel.
Support guides of steel.
Clamping jaws of special steel.
Clamping pin of tool steel.

Surface finish:

Base plates and jaws with black oxide finish.
Support guides hardened, natural finish, clamping jaws with natural finish.
Clamping pin hardened, natural finish.

Sample order:

K0940.063100

Note:

3 axis clamping system of mounting on machine tables with T-slots. The clamping system enables 3-sided machining free of interfering edges with a clamping depth of only 8 mm. With this clamping system, clamping widths of 22 - 236 mm are possible, and can be extended as desired using the optionally available K0947 extension shafts. By installing a tension spindle immediately under the workpiece support, a force of up to 22 kN is applied to the workpiece; this is not lost due to bending.

The use of clamping pins with a 4 mm cup point allows positive-fit clamping without pre-embossing.

For fastening the clamping system on slotted tables, fixing set K0951 is recommended.

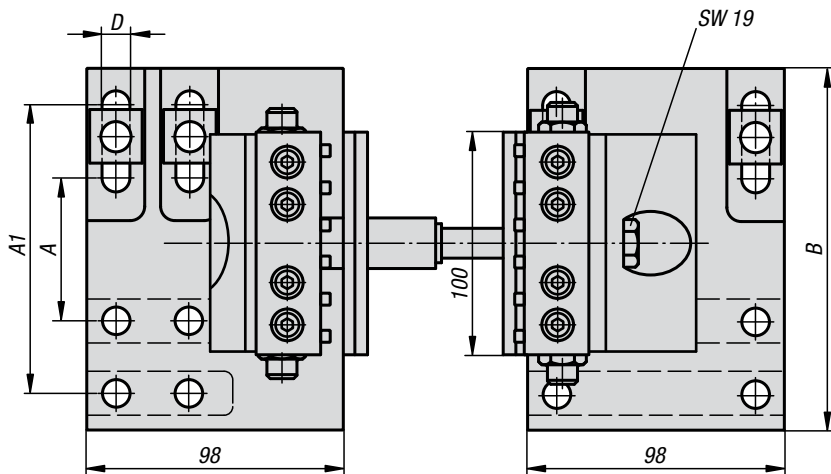
The clamping set includes 1 each extension shaft with L = 60 mm and L = 120 mm.

* The clamping height can be extended with the height adapters K0941 and support guides K0942.

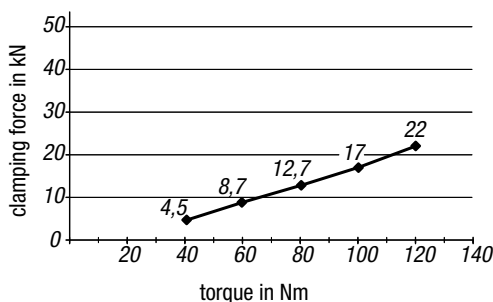
Accessories:

Stop set K0948

Fixing set K0951



clamping force 3 axis clamping system

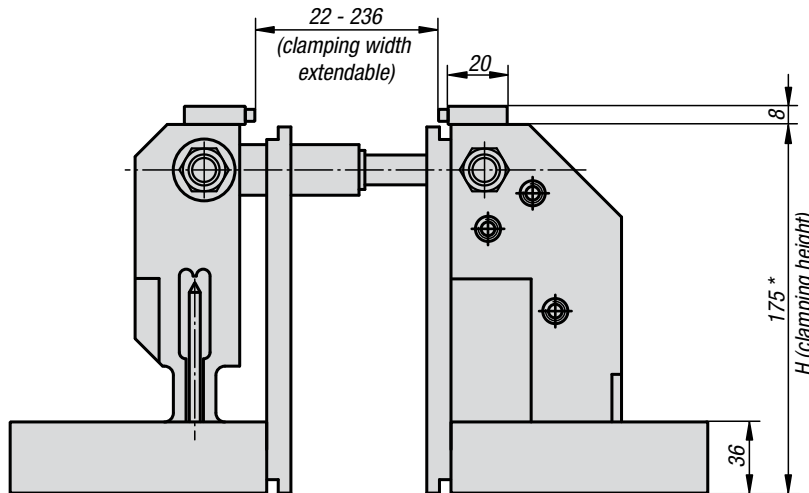


3 Axis Clamping System for T-slots

Order No.	Suitable for	A	A1	B	D	H	Clamping force max. kN
K0940.063100	Slot spacing 63 - 126	63	126	158	12,5	100 *	22

5 Axis Clamping System

for T-slots



Material:

Base plates and jaws of case-hardened steel.
Support guides of steel.
Clamping jaws of special steel.
Clamping pin of tool steel.

Surface finish:

Base plates and jaws with black oxide finish.
Support guides hardened, natural finish, clamping jaws with natural finish.
Clamping pin hardened, natural finish.

Sample order:

K0940.063175

Note:

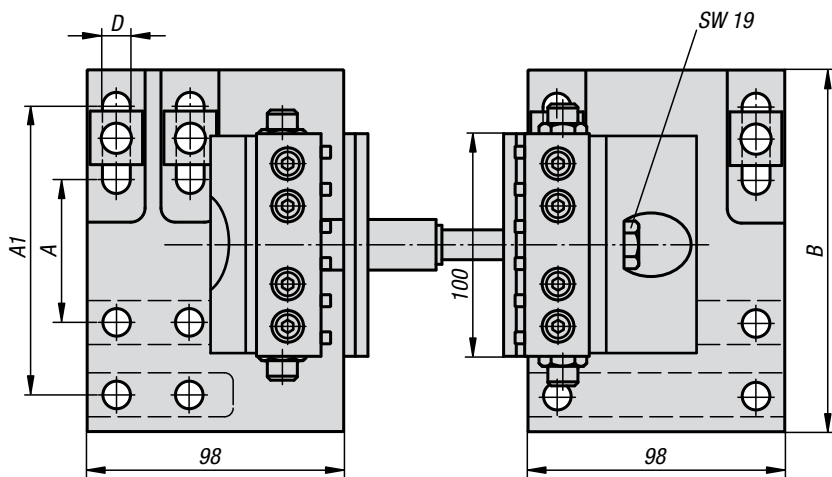
5 axis clamping system for mounting on machine tables with T-slots. The clamping system enables 5-sided machining free of interfering edges with a clamping depth of only 8 mm. With this clamping system, clamping widths of 22 - 236 mm are possible, and can be extended as desired using the optionally available K0947 extension shafts. By installing a tension spindle immediately under the workpiece support, a force of up to 42 kN is applied to the workpiece; this is not lost due to bending. The use of clamping pins with a 4 mm cup point allows positive-fit clamping without pre-embossing. For fastening the clamping system on slotted tables, fixing set K0951 is recommended. The clamping set includes 1 each extension shaft with L = 60 mm and L = 120 mm.

* The clamping height can be extended with the height adapters K0941 and support guides K0942.

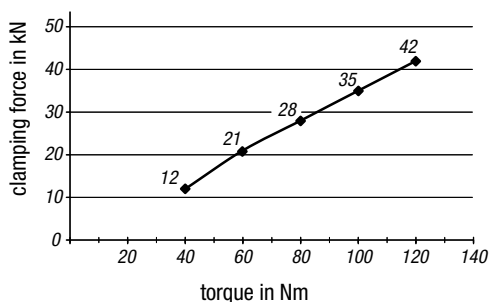
Accessories:

Stop set K0948

Fixing set K0951



clamping force 5 axis clamping system



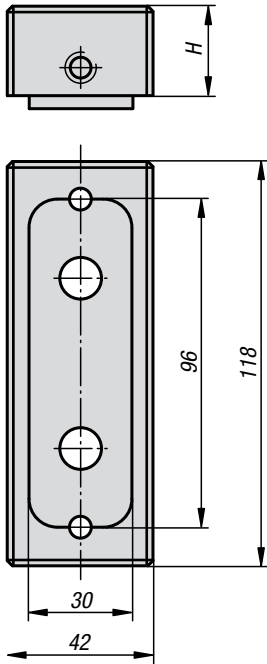
5 Axis Clamping System for T-slots

Order No.	Suitable for	A	A1	B	D	H	Clamping force max. kN
K0940.063175	Slot spacing 63 - 126	63	126	158	12,5	175 *	42

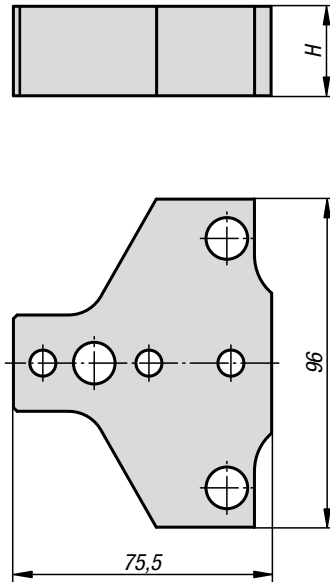
Height adapters



height adapters for moveable side



height adapters for fixed side

**Material, surface finish:**

Case-hardened steel, black oxide finish.

Sample order:

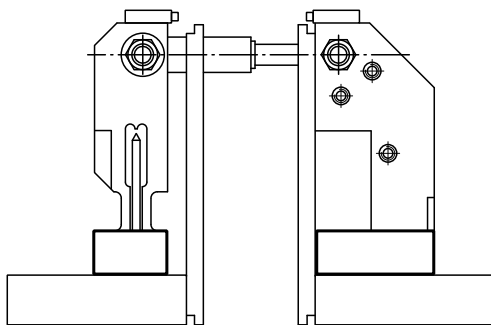
K0941.025

(supplied in pairs)

Note:

Assembly of the height adapters is performed between the base plate and the jaw. Thus the clamping height for the 3 axis clamping system can be increased to 125 or 150 mm. For the 5 axis clamping system the clamping height can be increased to 200, 225 or 250 mm. When the height adapters are being used, please also order the corresponding K0942 support guides.

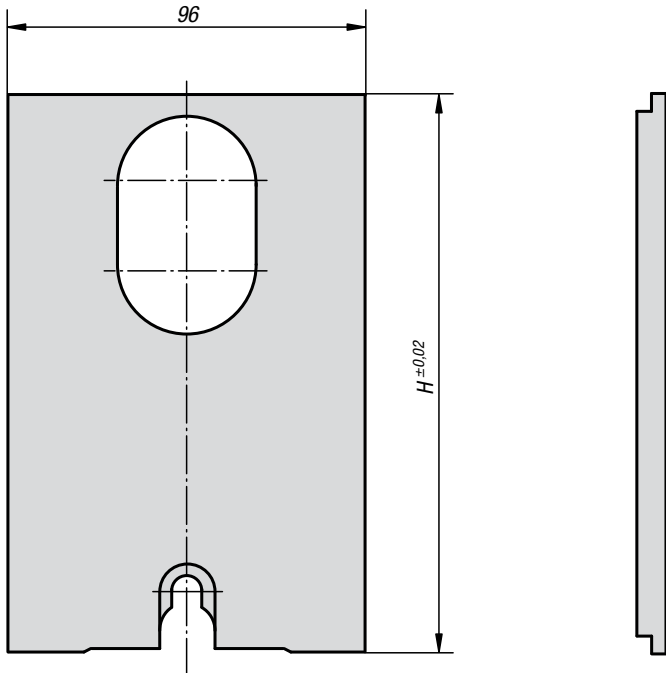
Supplied with fastening screws and cylindrical pins.



Height adapters

Order No.	H
K0941.025	25
K0941.050	50
K0941.075	75 (25 + 50)

Support Guides

**Material, surface finish:**

Steel, hardened, natural finish.

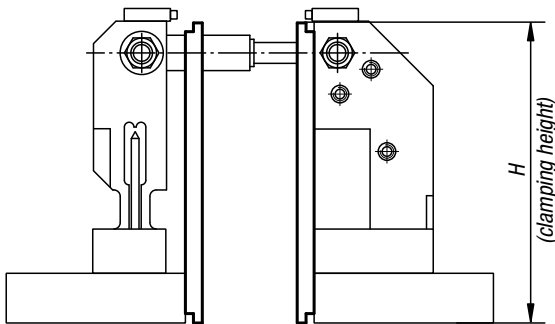
Sample order:

K0942.100
(supplied in pairs)

Note:

If the clamping height is extended with K0941 height adapters, the support guides must be exchanged in accordance with the height increase.

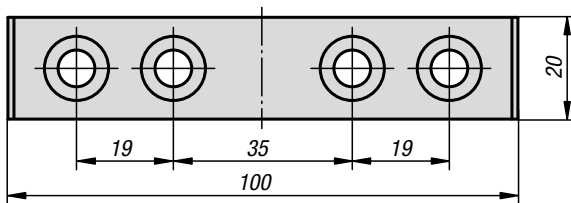
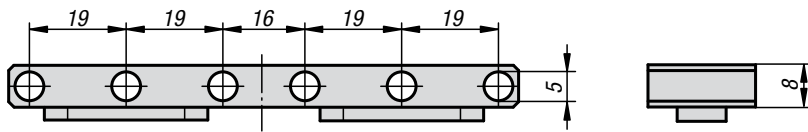
*Including 12 pieces K0946.05600 clamping pins.



Support Guides

Order No.	H	Suitable for
K0942.100	100	3 Axis Clamping System Basic Set
K0942.105*	105	3 Axis Clamping System Basic Set
K0942.125	125	3 axis clamping system with 25 mm height adapter
K0942.150	150	3 axis clamping system with 50 mm height adapter
K0942.175	175	5 Axis Clamping System Basic Set
K0942.180*	180	5 Axis Clamping System Basic Set
K0942.200	200	5 axis clamping system with 25 mm height adapter
K0942.225	225	5 axis clamping system with 50 mm height adapter
K0942.250	250	5 axis clamping system with 75 mm height adapter (25 + 50)

Clamping jaw, standard



Material, surface finish:
Special steel, natural.

Sample order:
K0943.110008

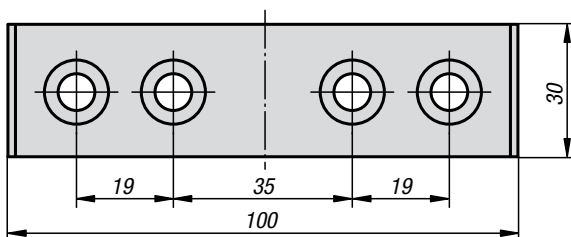
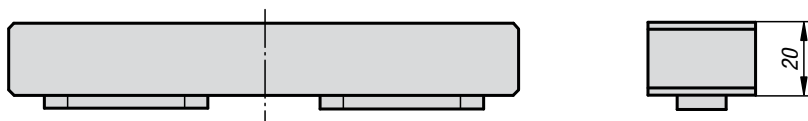
Note:
Clamping jaws with boreholes for pressing in the clamping pins. Suitable for all 3 axis and 5 axis clamping systems.

Accessories:
Clamp pins K0946

Clamping jaw, standard

Order No.	Suitable for
K0943.110008	all 3 axis and 5 axis clamping systems

Clamping jaw, natural finish



Material, surface finish:
Steel 1.0503, natural finish.

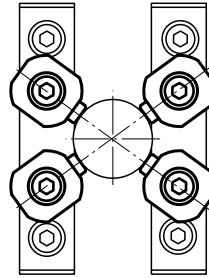
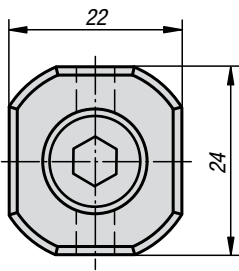
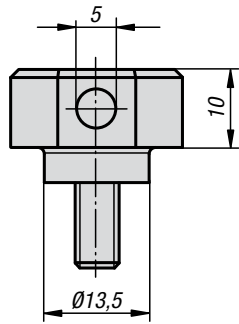
Sample order:
K0944.210020

Note:
Clamping jaws, natural finish for individual machining for specific clamping tasks. Suitable for all 3 axis and 5 axis clamping systems.

Clamping jaw, natural finish

Order No.	Suitable for
K0944.210020	all 3 axis and 5 axis clamping systems

Round clamping head


Material, surface finish:

Round clamping head, tempered steel,
black oxide finish.

Socket head screw, quality class 10.9.

Sample order:

K0945.135010
(supplied in set of 4)

Note:

For clamping round workpieces with a diameter
of 30 - 200 mm. Fastened directly to the standard
clamping jaws or natural finish clamping jaws.

Accessories:

Clamp pins K0946

Round clamping head

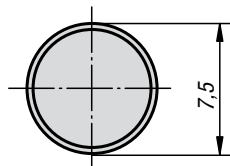
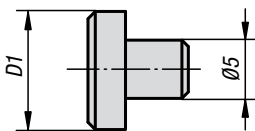
Order No.	Suitable for
K0945.135010	all 3 axis and 5 axis clamping systems



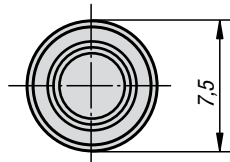
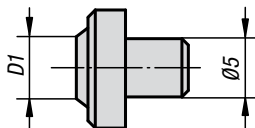
K0946

Clamping Pins

flattened



cup point


Material, surface finish:

Tool steel, hardened.

Sample order:

K0946.05000

Note:

Suitable for standard clamping jaw and round
clamping head.

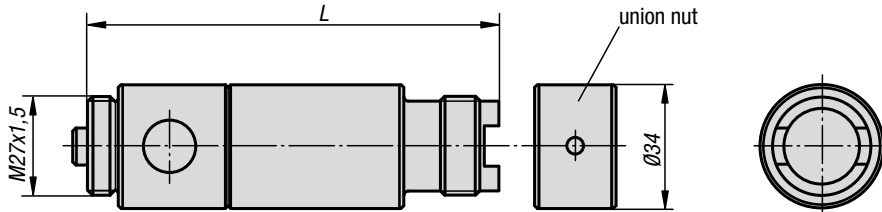
Assembly by means of pressing-in.

Clamping Pins

Order No.	Surface finish	D1	Application
K0946.05000	flattened	7,5	Material over 1000 N/mm ² tensile strength
K0946.05400	Cup point	4	Material up to approx. 1000 N/mm ² tensile strength
K0946.05600	Cup point	6	Material up to approx. 1000 N/mm ² tensile strength

Extension shafts

with union nut



Material, surface finish:
Tempered steel, black oxide finish.

Sample order:
K0947.060

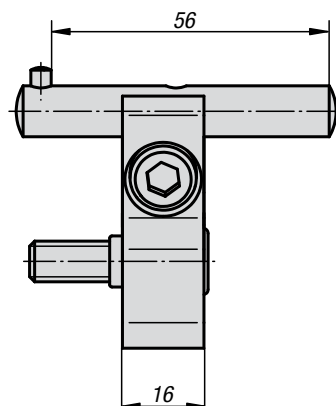
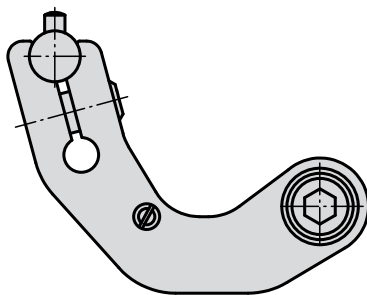
Note:
To extend the clamping width.
Supplied with union nut. The extension shafts can be combined as desired.

Extension shafts with union nut

Order No.	L	Clamping range
K0947.060	60	22 - 86
K0947.120	120	80 - 146
K0947.240	240	Extension by 240 mm

K0948

Stop set



Material, surface finish:
Swivel arm of case-hardened steel, black oxide finish.
Stop pin of case-hardened steel, natural finish.

Sample order:
K0948.100

Note:
Stop set for direct fastening to fixed jaws. The stop can be swivelled aside for machining of the workpiece without losing the stop dimension. Supplied complete with attaching parts.

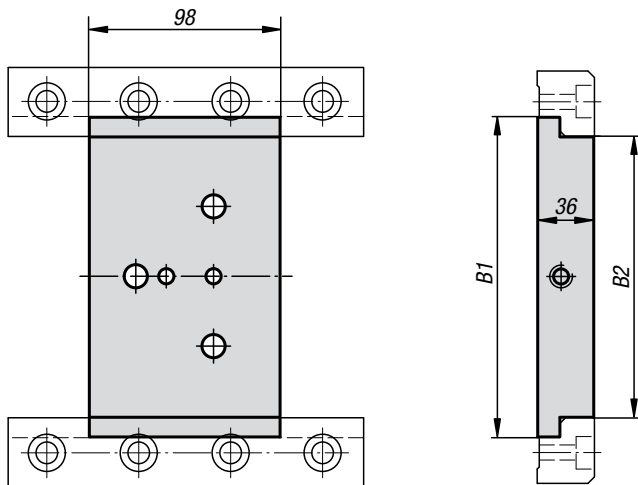
Stop set

Order No.	Suitable for
K0948.100	all 3 axis and 5 axis clamping systems



Base plates, movable

for grid plates



Material, surface finish:

Case-hardened steel, black oxide finish.

Sample order:

K0949.14012

Note:

Base plate for fixed jaws. This base plate can be used instead of the fixed pinnable base plate. This means that the fixed side of the jaw can also be moved.

Accessories:

Tension claws K0950

Base Plates, movable, for grid plates

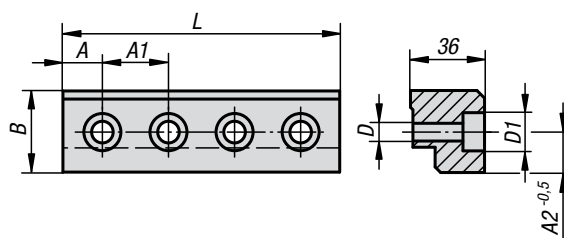
Order No.	Grid spacing	B1	B2
K0949.14012	40x40 (M12)	148	124
K0949.15012	50x50 (M12)	138	114
K0949.15016	50x50 (M16)	134	110

K0950

Edge Clamps

for grid plates

tension claw



Material, surface finish:

Case-hardened steel, black oxide finish.

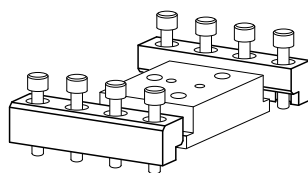
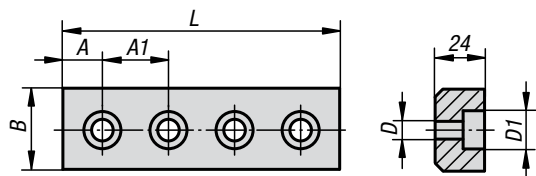
Sample order:

K0950.14012

Note:

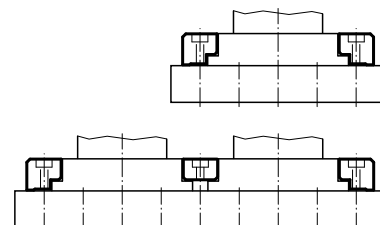
Tension claws for fastening the base plates to grid plates.

centre tension claw



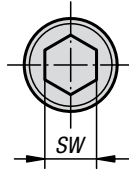
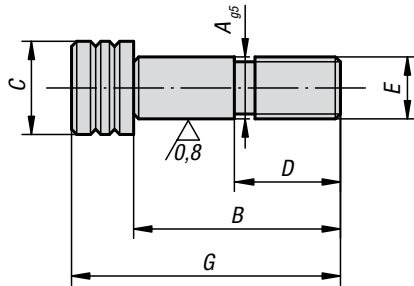
Edge Clamps for grid plates

Order No.	Surface finish	Grid spacing	A	A1	A2	B	D	D1	L
K0950.14012	Tension claw	40x40 (M12)	19	40	18	36	13	20	158
K0950.15012	Tension claw	50x50 (M12)	24	50	18	38	13	20	198
K0950.15016	Tension claw	50x50 (M16)	24	50	20	40	16,5	26	198
K0950.04012	Centre tension claw	40x40 (M12)	19	40	-	35	13	20	158



Locating Bolts

Form B



Material:
Tempered steel.

Surface finish:
Heat-treated and black oxide finish;
shank ground

Sample order:
K0815.12055

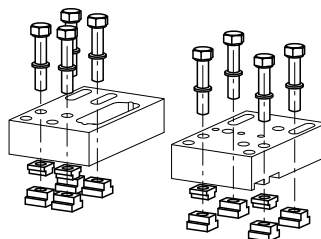
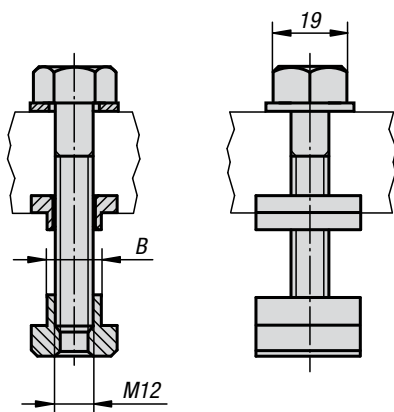
Note:
Locating Bolts Form B are distinguished from
Form A ones by two grooves on the screwhead.

Locating Bolts Form B

Order No.	A	B	C	D	E	G	SW
K0815.12055	12	55	18	22	M12	67	10
K0815.16055	16	55	24	25	M16	71	14

K0951

Fixing set for T-slots



Material, surface finish:
Tempered steel, black oxide finish.

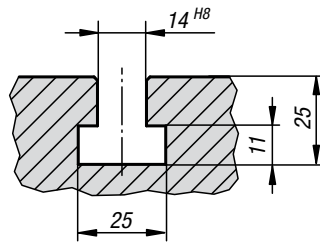
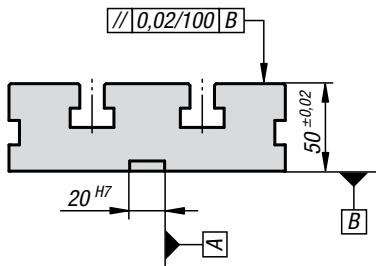
Sample order:
K0951.1412

Note:
Fixing set for aligning and fastening 3 and
5 axis clamping systems on tables with T-slots
of sizes 14 or 18.
Set consisting of:
8x hexagon screw ISO 4014 M 12x60 12.9
8x nut for T-slots DIN 508
8x washer
4x locating slot nuts

Fixing set for T-slots

Order No.	Surface finish	B
K0951.1412	Slot width 14	14
K0951.1812	Slot width 18	18

T-slot plate

**Material, surface finish:**

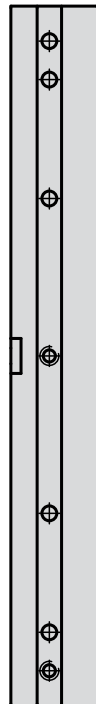
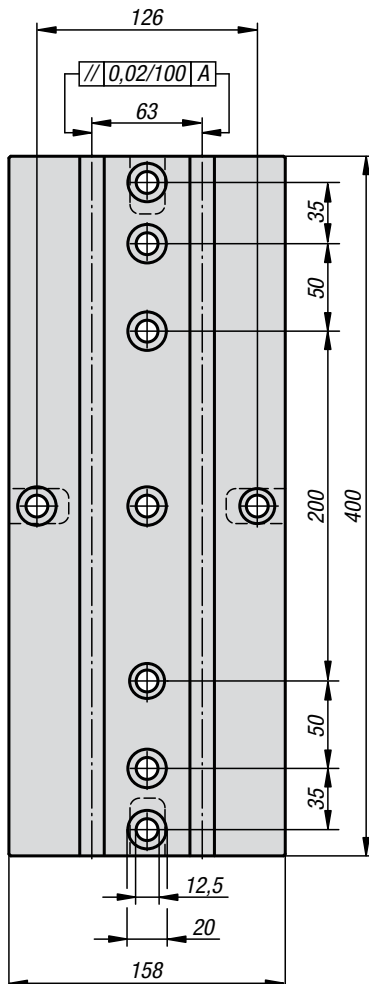
Tempered steel, black oxide finish.
Support surface ground.

Sample order:

K0952.14063400

Note:

T-slot plates with locating slots on the underside for easy alignment of the plate on the machine table.



T-slot plate

Order No.

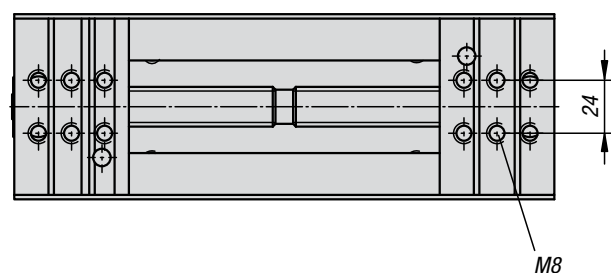
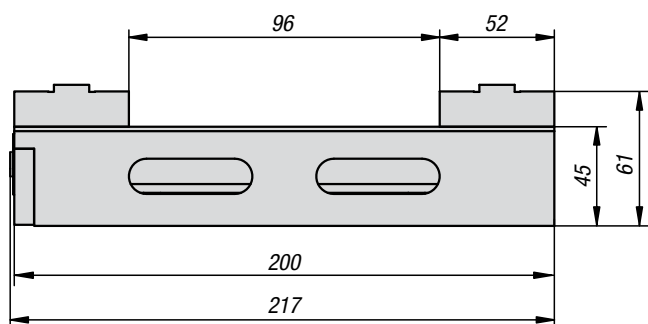
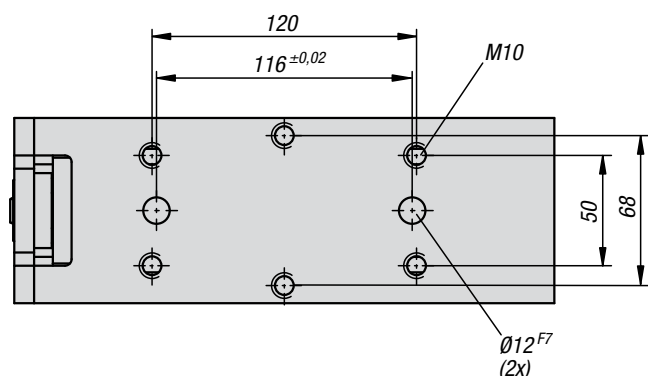
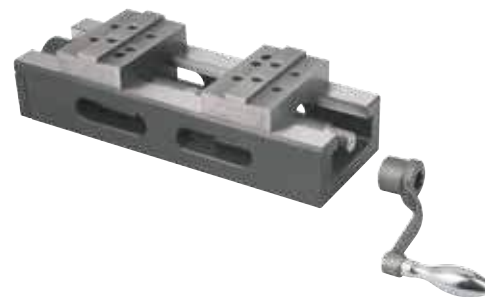
Surface finish

K0952.14063400

Slot width 14 / slot spacing 63

Centric Clamp,

jaw with 80 mm



Material, surface finish:

Base body and jaw intake: case-hardened steel, all-side hardened and ground. Spindle made of high-strength special steel.

Sample order:

K0586.080200

Note:

Mechanically operated centric clamp.

Centring accuracy:

± 0.015 mm at same clamping range

± 0.02 mm over the entire clamping range.

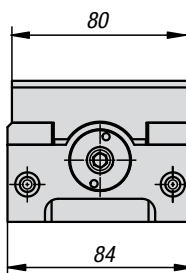
We recommend the use of a torque wrench to accomplish a controlled clamping force.

Delivery includes hexagonal handle.

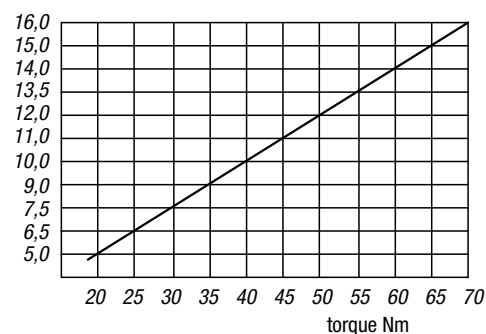
Please order jaws separately.

Characteristics:

- Clamping slide and spindle nut in one piece
- Grooves and fixing thread support of attachment jaws
- Reversible jaws (accessories) with lateral thread for workpiece stop enable a large clamping range
- Good discharge of chipping and coolant



clamping force kN

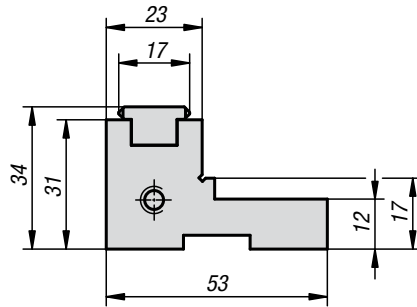
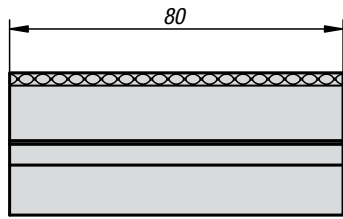


Centric Clamp, jaw with 80 mm

Order No.	Type	Approx. weight kg
K0586.080200	ZS 80-200	5,4

Attachment step jaw

with grip rail

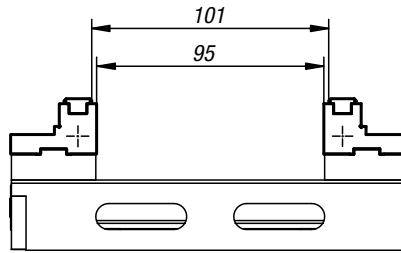
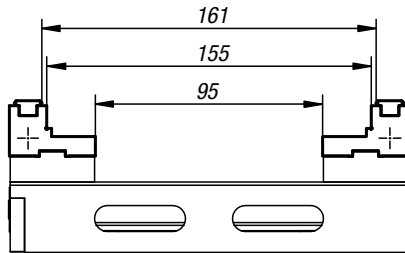


Material, surface finish:

Step jaw, steel, hardened, clamping surfaces ground
Grip rail made of steel, hardened

Sample order:

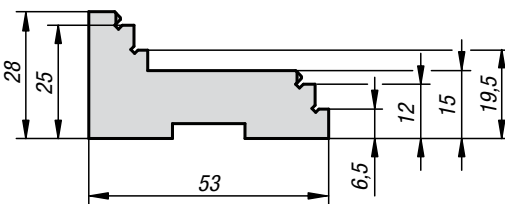
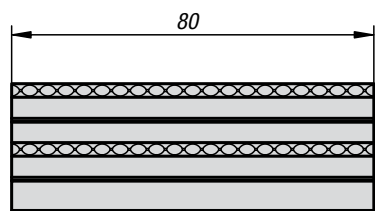
K0587.0801



Attachment step jaw with grip rail

Order No.	Suitable for	Approx. weight kg
K0587.0801	ZS 80-200	0,585

Attachment universal jaw

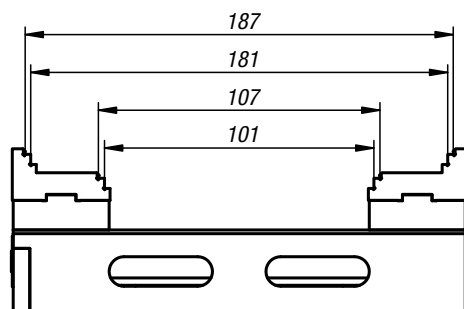


Material, surface finish:

Steel, hardened, clamping surfaces, ground

Sample order:

K0588.080

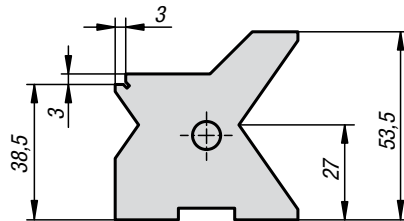
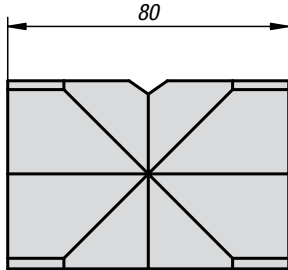


Attachment universal jaw

Order No.	Suitable for	Approx. weight kg
K0588.080	ZS 80-200	0,485

V-groove jaw

horizontal and vertical


Material, surface finish:

Steel, hardened, clamping surfaces, ground

Sample order:

K0589.080

Note:

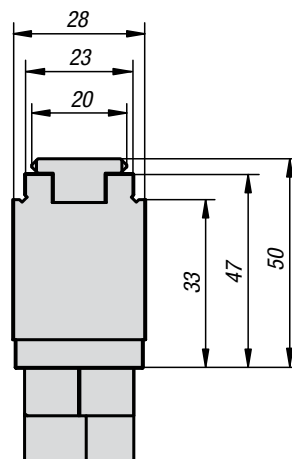
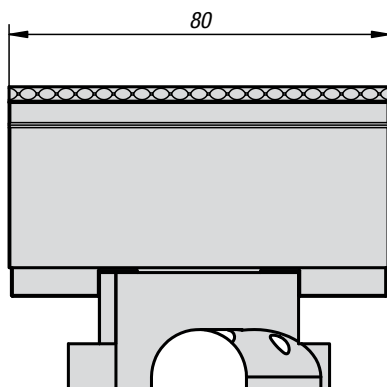
Clamping range $\varnothing$ 11 to 80 mm.

V-groove jaw horizontal and vertical

Order No.	Suitable for	Approx. weight kg
K0589.080	ZS 80-200	1,0

Shuttle valve, complete

with grip rail


Material, surface finish:

Shuttle valve, steel, hardened Grip rail made of steel, hardened.

Sample order:

K0590.080147

Note:

Shuttle valves enable the clamping of several workpieces. The installation takes place without tools.

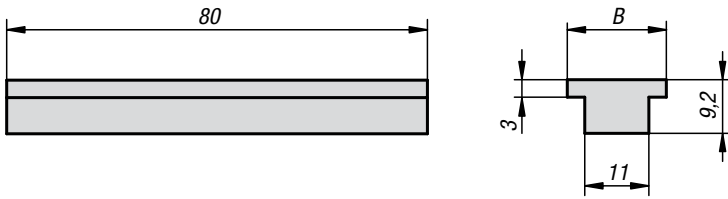
Shuttle valve, complete with grip rail

Order No.	Suitable for	Approx. weight kg
K0590.080147	ZS 80-200	0,875

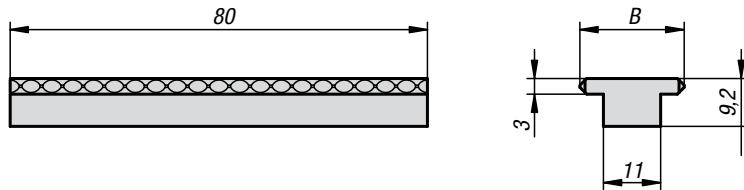
Inserts

for step jaw or shuttle valve

Form A



Form B



Material, surface finish:
Steel, hardened and ground.

Sample order:
K0591.080117

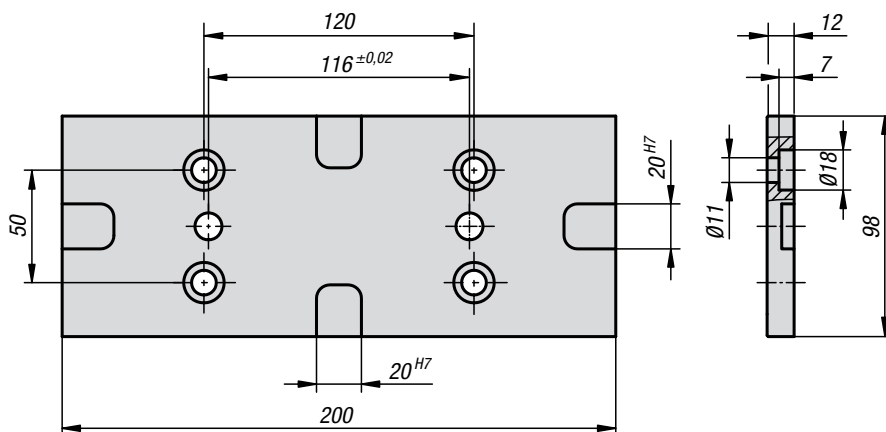
Note:
Inserts with smooth clamping surface, form A or grip clamping surface, form B for maximum holding forces.

Inserts for step jaw or shuttle valve

Order No.	Form	B	Suitable for	Approx. weight kg
K0591.080117	A	17	K0587.0801 Attachment step jaw	0,06
K0591.080120	A	20	K0590.080147 Shuttle valve, complete	0,06
K0591.080217	B	17	K0587.0801 Attachment step jaw	0,065
K0591.080220	B	20	K0590.080147 Shuttle valve, complete	0,065

K0592

Base plate



Material, surface finish:
Steel, hardened and ground.

Sample order:
K0592.080200

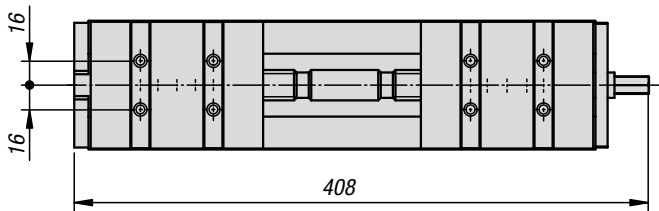
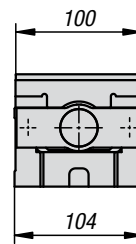
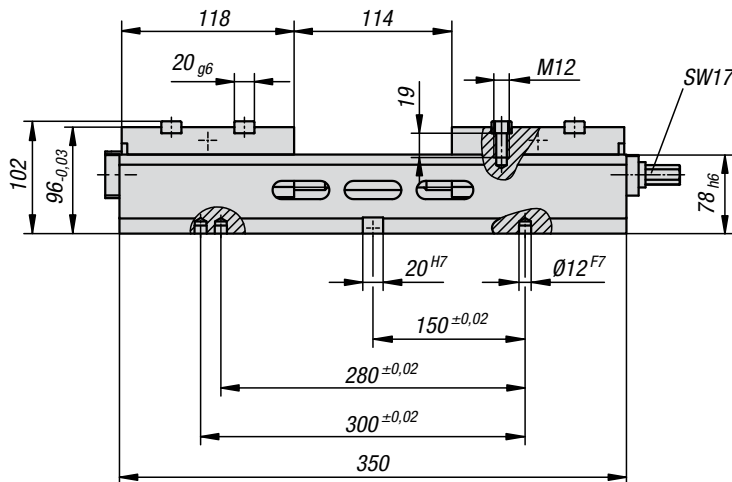
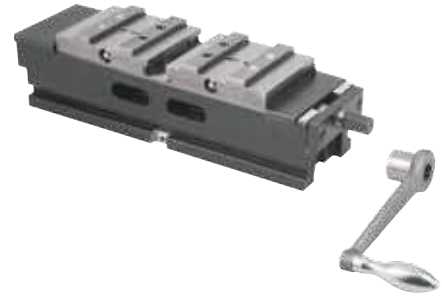
Note:
The base plate enables a clamping of the vice with goose-neck straps/clamps.

Base plate

Order No.	Suitable for	Approx. weight kg
K0592.080200	ZS 80-200	1,66

Centric clamp,

jaw with 100 mm



Material, surface finish:

Base body and jaw intake: case-hardened steel, all-side hardened and ground. Spindle made of high-strength special steel.

Sample order:

K0593.100350

Note:

Mechanically operated centric clamp.

Centring accuracy:

± 0.015 mm at same clamping range

± 0.02 mm over the entire clamping range.

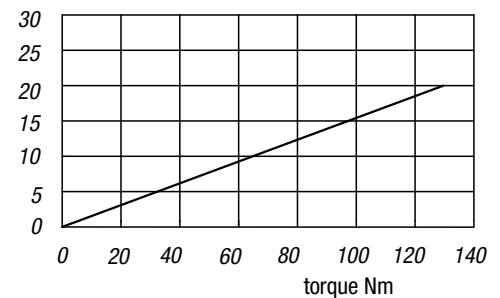
We recommend the use of a torque wrench to achieve a controlled clamping force.

Delivery includes hexagonal handle. Please order jaws separately.

Characteristics:

- Clamping slide and spindle nut in one piece
- Central lubrication for clamping slide and spindle
- Traverse slots for fast positioning
- Three positioning boreholes with $\text{Ø}12\text{F7}$ for grid 40 and 50 mm
- Slots, grooves and fixing threads for support of attachment jaws
- Reversible jaws (accessories) with lateral thread for workpiece-stop allow for a large clamping range
- Good discharge of chipping and coolant

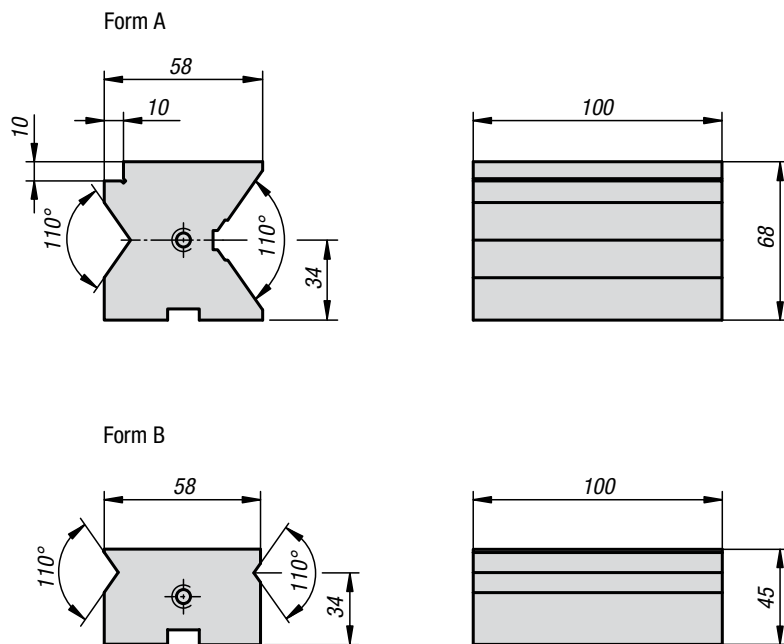
clamping force kN



Centric clamp, jaw with 100 mm

Order No.	Type	Approx. weight kg
K0593.100350	ZS 100-350	26,4

V-groove jaws

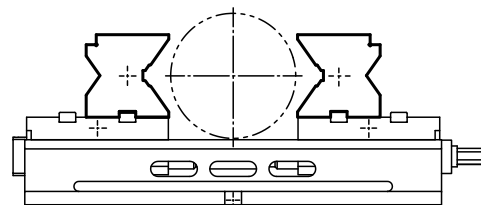


Material, surface finish:
Steel, hardened, clamping surfaces, ground

Sample order:
K0594.1001

V-groove jaws

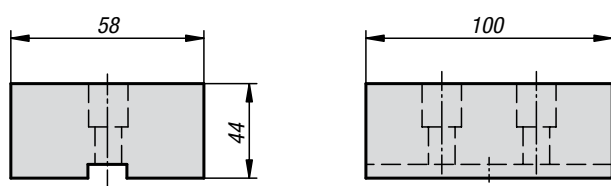
Order No.	Form	Suitable for	Clamping range	Approx. weight kg
K0594.1100	A	ZS 100-350	Ø 20-56 / Ø 35-100	2,08
K0594.2100	B	ZS 100-350	Ø 6-14 / Ø 12-32	1,73



K0595

Jaw blank

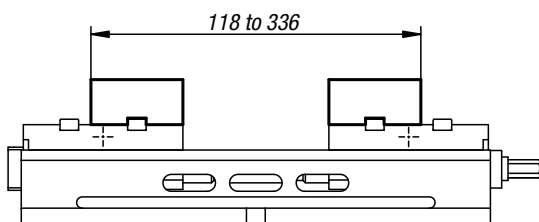
made of aluminium



Material, surface finish:
Aluminium, natural finish.

Sample order:
K0595.10044

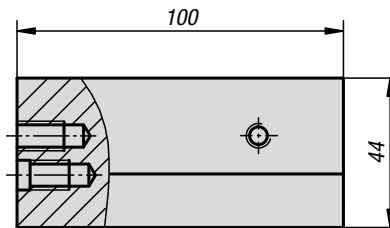
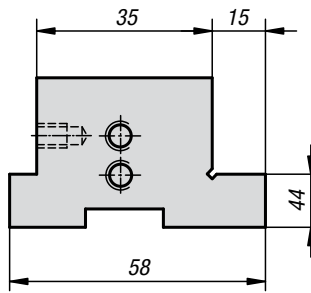
Note:
For adaptation to special workpiece contours.



Jaw blank made of aluminium

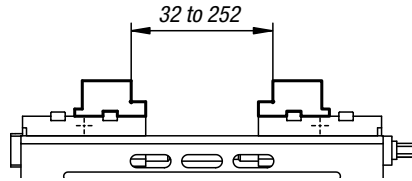
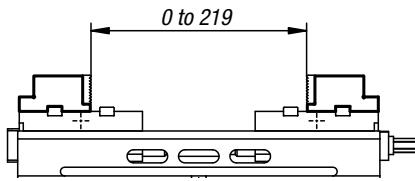
Order No.	Suitable for	Approx. weight kg
K0595.10044	ZS 100-350	0,68

Step jaw



Material, surface finish:
Steel, hardened, clamping surfaces, ground

Sample order:
K0596.10044

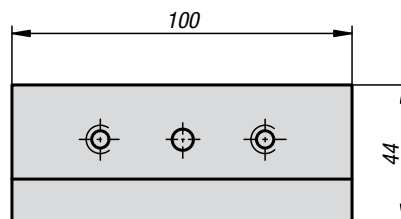
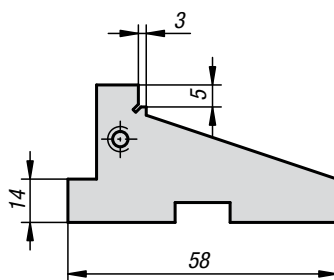


Step jaw

Order No.	Suitable for	Approx. weight kg
K0596.10044	ZS 100-350	1,18

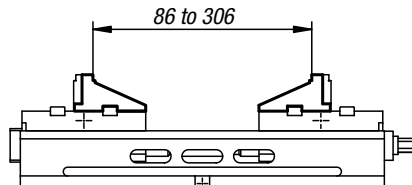
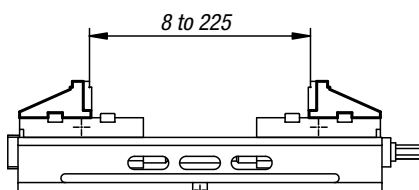
K0597

Attachment step jaw



Material, surface finish:
Steel, hardened, clamping surfaces, ground

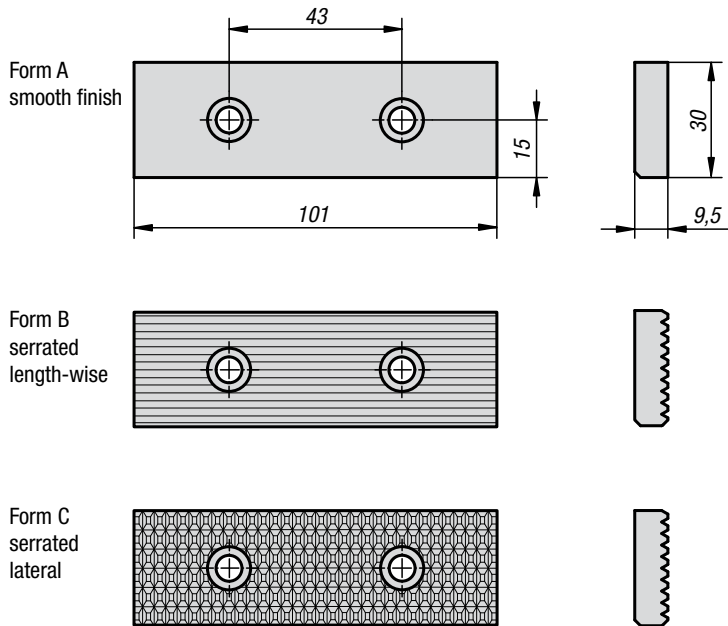
Sample order:
K0597.10044



Attachment step jaw

Order No.	Suitable for	Approx. weight kg
K0597.10044	ZS 100-350	1,01

Screw-in jaws



Material, surface finish:
Steel, hardened, clamping surfaces, ground

Sample order:
K0598.1001

Note:
Screw-in jaw, smooth, lengthwise corrugated or
lengthwise and crosswise corrugated

Screw-in jaws

Order No.	Form	Suitable for	Approx. weight kg
K0598.1100	A	ZS 100-350	0,204
K0598.2100	B	ZS 100-350	0,192
K0598.3100	C	ZS 100-350	0,187

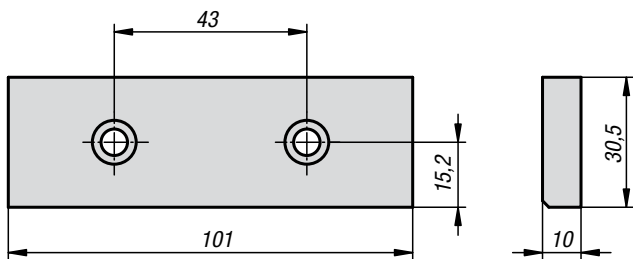
Soft jaw

with grinding allowance



Material, surface finish:
Steel, natural finish

Sample order:
K0599.100



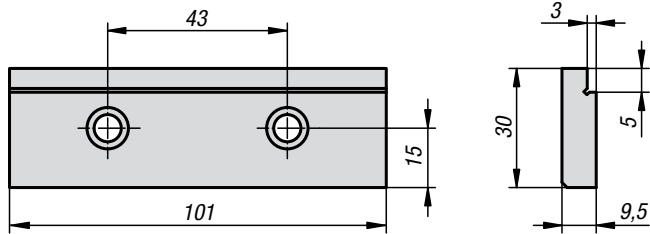
Soft jaw with grinding allowance

Order No.	Suitable for	Approx. weight kg
K0599.100	ZS 100-350	0,220

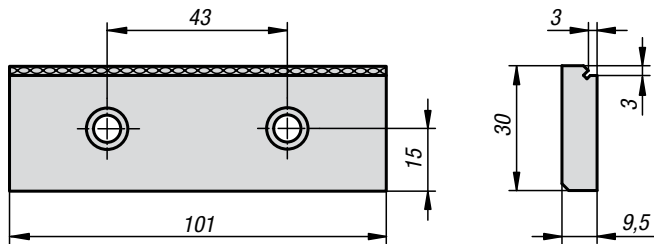
Step jaws



Form A



Form B



Material, surface finish:

Steel, hardened, clamping surfaces, ground

Sample order:

K0600.1001

Note:

Step jaw with smooth clamping surface or with grip clamping surface.

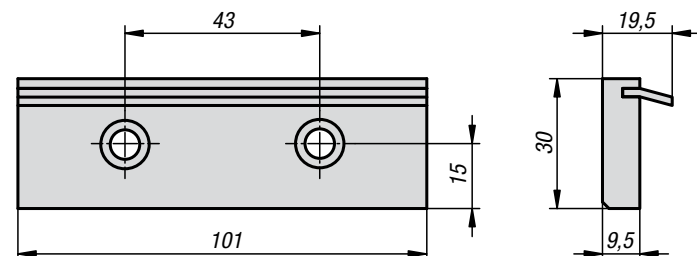
Step jaws

Order No.	Form	Suitable for	Approx. weight kg
K0600.1100	A	ZS 100-350	0,193
K0600.2100	B	ZS 100-350	0,193

K0601

Low tension jaw with spring leaf

for raw workpieces



Material, surface finish:

Hardened steel

Sample order:

K0601.100

Low tension jaw with spring leaf for raw work pieces

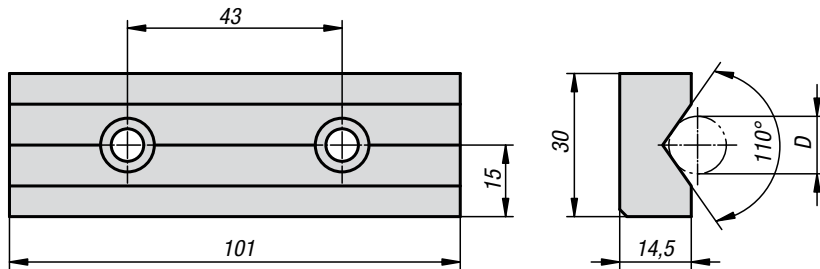
Order No.	Suitable for	Approx. weight kg
K0601.100	ZS 100-350	0,221

V-groove jaw



Material, surface finish:
Steel, hardened, clamping surfaces, ground

Sample order:
K0602.100



V-groove jaw

Order No.	D	Suitable for	Approx. weight kg
K0602.100	7-34	ZS 100-350	0,271

Shuttle valve

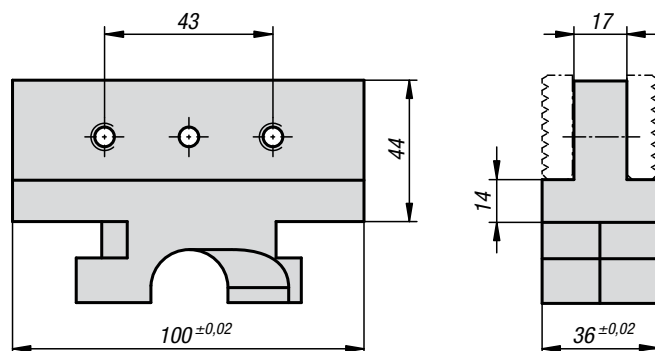


Material, surface finish:
Hardened steel

Sample order:
K0603.100

Note:
Shuttle valves enable the clamping of several workpieces. The installation takes place without tools.

Delivery with 4 pieces, fastening screws for jaw.



Shuttle valve

Order No.	Suitable for	Approx. weight kg
K0603.100	ZS 100-350	0,918

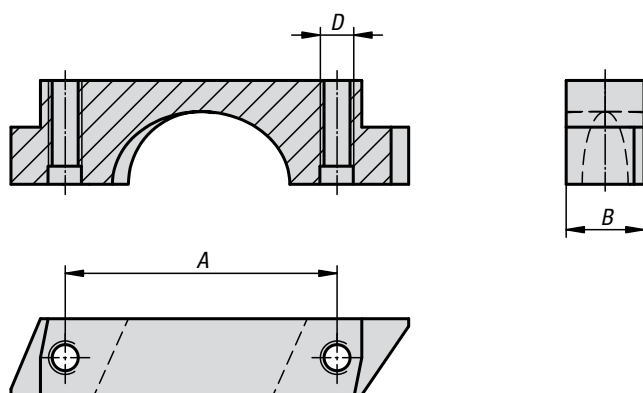
Rhombic T-Slot Nuts



Material, surface finish:
Steel, black oxide finish.

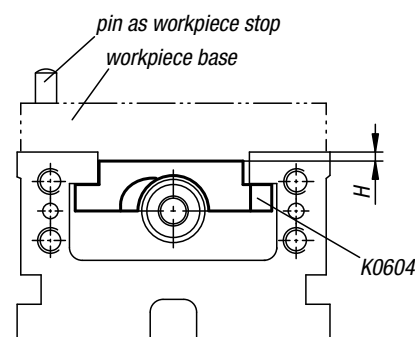
Sample order:
K0604.080

Note:
Rhombic T-slot nuts for secure fastening of workpiece supports.



Rhombic T-Slot Nuts

Order No.	A	B	D	H	Suitable for	Approx. weight kg
K0604.080	34	10	M5	4,5	ZS 80-200	0,037
K0604.100	37	12	M5	3,5	ZS 100-350	0,04



K0605

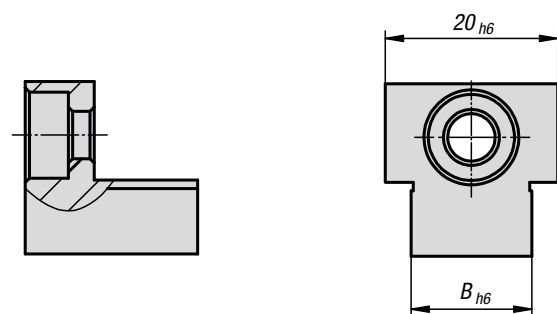
T-Slot Nuts



Material, surface finish:
Steel, black oxide finish.

Sample order:
K0605.14

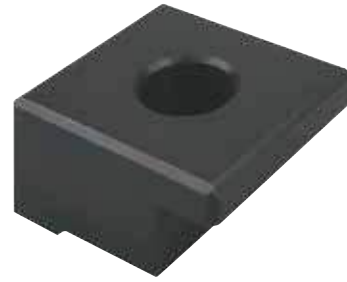
Note:
T-Slot nuts for a fast and accurate positioning of the clamps on the machine table.



T-Slot Nuts

Order No.	B	Approx. weight kg
K0605.14	14	0,027
K0605.18	18	0,031
K0605.20	20	0,034
K0605.22	22	0,037

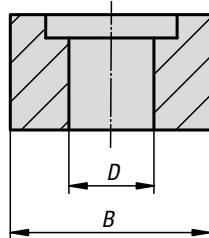
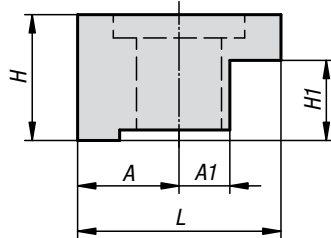
Stepped Clamps



Material, surface finish:
Steel, black oxide finish.

Sample order:
K0606.080

Note:
Goose neck straps/clamps for attachment of the clamps to the machine table.



Stepped Clamps

Order No.	A	A1	B	D	H	H1	L	Suitable for	Approx. weight kg
K0606.080	14	7	28	11	20	12	30	ZS 80-200	0,100
K0606.100	18	8	32	13	20	14	35	ZS 100-350	0,111

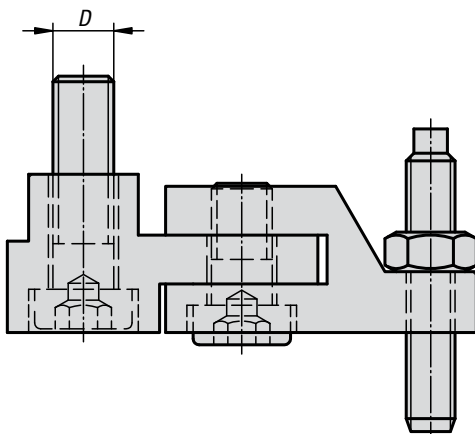
Hinge stops



Material, surface finish:
Steel, black oxide finish.

Sample order:
K0607.080

Note:
Hinge stop for direct fixing on the clamping slide or middle jaw.



Hinge stops

Order No.	D	Suitable for	Approx. weight kg
K0607.080	M6	ZS 80-200	0,102
K0607.100	M8	ZS 100-350	0,112

Modern clamping systems with flexible automation



„For us to be able to react to shrinking quantities in the face of falling margins, existing potentials must first be used.“

In other words, this means that the lifespan of machine tools, with regard to the spindle lifespan, must be extended.

In-process tool installation is surely the first step. This is already achieved using a zero-point clamping system on the machine table.

Machine feeding of workpieces is the logical development to minimise machine downtimes.



Kipp has expanded its current clamping system to meet the needs of automation. All the components can be combined flexibly.

Kipp pallets can be used in many different ways on automation systems, depending on the clamping tasks involved.

The number of workpiece slots is flexible and can be selected according to the workpiece size. Typical fittings are 6 pallets of size 400x400, 8 slots with pallets of size 320 mm x 320 mm or 26 pallets of size 200 mm x 200 mm.

This ensures that the automation systems are highly flexible. There is no need for tricky, long-winded retooling after product changes, nor for highly-complex operation sequences. In addition, the processing machine is always accessible for manual loading. This ensures fast, flexible reactions to customer requirements.





A large rectangular area filled with a light gray grid pattern, intended for taking notes.



Your way to KIPP



Route to Sulz-Holzhausen

By car.

A 81 Stuttgart-Singen, exit Sulz a.N.

Left on to L 409

Right on to K 5505 and K 5508 to Holzhausen

From Switzerland

Zürich A 1/A 4 direction Schaffhausen-Süd

Exit A 4/15 direction border crossing

A 81 direction Stuttgart exit Sulz a.N.

From France

Strasbourg border crossing Kehl

B 28 to Freudenstadt

B 294 to Lossburg

L 412 to Leinstetten

L 409 to Sulz

By plane.

Stuttgart Airport, Kloten Zurich, Euro-Airport

Basel, Baden Airport Rheinmünster-Söllingen

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