

norelem positions

Flexible standard component system

04000

Clamp straps Clamping devices



04010
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Clamp straps
slotted heel

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Clamp straps
swivel-heel

04050
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Clamp straps
tapped-heel

04070
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Clamp straps
stepped-heel, steel or aluminium

04080
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Clamp straps
DIN 6314 straight, steel or aluminium

04081
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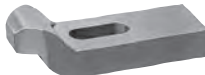
Clamp straps
with flattened ball

04088
Page 427



Clamp straps gooseneck
narrow, steel

04090
Page 428



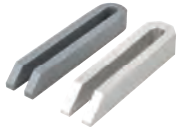
Clamp straps gooseneck
DIN 6316 wide, steel or aluminium

04100
Page 429



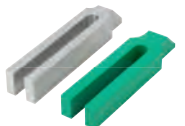
Clamp straps
assorted, long slot

04110
Page 430



Clamp straps open U
DIN 6315, steel or aluminium

04130
Page 431



Clamp straps open U
flat pin, steel or aluminium

04131
Page 432



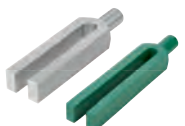
Clamp straps open-U
with pin and protective insert

04140
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Clamp straps pivot
strap only or assembly

04150
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Clamp straps open U
DIN 6315 C, round pin, steel or aluminium

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Clamp straps
hinge heel

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Clamp straps mini
double sided

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Clamp straps
double sided

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Clamp straps
double-sided, 90° swivelling

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Clamp strap assemblies

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Clamp strap assemblies
goose-neck

04195
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Clamp springs

04200
Page 440



Clamp strap modules
compact

04203
Page 443



Clamp strap assemblies

04204
Page 444



Adjustable heel supports
for clamp strap assembly

04205
Page 445



Clamp straps pivot
steel

04210
Page 445



Clamp straps hinge heel
with bolt slot

04211
Page 446



Chain clamp sets, steel

04211-03
Page 447



Roller chains, steel,
for chain clamp sets

04211-06
Page 448



Turnbuckles, steel,
for chain clamp sets

04211-09
Page 449



Prisms, steel, for chain clamp sets

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Cam levers
internal and external thread, steel or
stainless steel

04232
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Cam levers steel
with internal and external thread

+ New/Expanded Items

norelem positions

Flexible standard component system

04000

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Cam levers
internal and external thread, stainless steel

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Cam levers
internal or external thread, stainless steel,
thrust washer stainless steel

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Cam levers with plastic handle
internal and external thread, steel or
stainless steel

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Cam levers adjustable
external thread, steel or stainless steel

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Cam levers adjustable
steel, with external thread

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Cam levers adjustable
external thread, stainless steel

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Cam levers adjustable
external thread, stainless steel, thrust
washer stainless steel

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Cam levers adjustable with plastic handle
external thread, steel or stainless steel

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Hinge pins

04270
Page 465



Spacer bolts

04290
Page 466



Cam levers single

04310
Page 466



Cam levers double

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Cam clamps
with end lock

04350
Page 467



Cam clamps
with middle lock

04360
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Spiral cams

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Page 468



Door latch

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Swing clamps mini,
with cam lever

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Swing clamps mini

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Swing clamp
pneumatic

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Swing clamps

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Hook clamps

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Hook clamp
with long clamp strap

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Hook clamps
with protective insert

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Hook clamps
with collar

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Hook clamps
with collar and cam lever

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Hook clamps
with collar and cam lever

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Hook clamps

04373
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Hook clamps
with collar

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Hook clamps
with mounting bracket

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Hook clamp holders

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Riser bars

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Page 488



Hook clamp holders

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Hook clamps precision

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Swing clamps

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Clamping bolts

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Clamping pins

+ New/Expanded Items

norelem positions

Flexible standard component system

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Clamping pins (high force)

04400
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Clamping screws

04400
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Clamping screws (high force)

04400
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Pull clamps

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Pull clamps (high force)

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Page 496



Pull clamps
pneumatic

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Draw bolts
for pneumatic pull clamps

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Page 501



Clamping element "actima"

04420
Page 502



Floating clamp



04421
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Floating clamp
with separate workpiece clamp and
interlock



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Clamping jaws
for floating clamps



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Clamping element "arness"

04430-10
Page 510



Clamp cam brass

04431
Page 511



Fixture clamps machinable

04431-05
Page 512



Clamping cams



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Fixture clamps unequal hexagon

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Page 514



Spiral cam screws

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Cam screws
with knife edge washer

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Page 515



Cam screws
with hexagon washer

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Cam screws
with hexagon washer, for T-slots

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Cam clamps
with riser

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Toe clamps for T-slots

04440
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Talon grips

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Page 519



Talon grips round

04441
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Chock clamps

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Cam clamps adjustable
with riser

04445
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Riser stops

04450
Page 523



Low-profile clamps

04460
Page 524



Side clamps

04461
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Side clamps
with support

04462
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T-slot clamps

04469
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T-slot clamp

04470
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T-slot clamps

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T-slot clamp
with cam

04480
Page 530



Side clamps

04485
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Side clamps
with rest pad



New/Expanded Items

norelem positions

Flexible standard component system

04000

04500

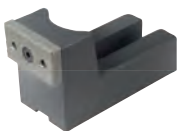
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Side clamps robust

04500-01

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Fixed jaws for robust side clamps

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Side clamps

04512

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Seating blocks adjustable

04515

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Side clamp
with cam



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Side clamps

04518

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Side clamps

04520

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Side clamps

04521

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Toe clamps compact

04522

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Wedge clamps

04523

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Wedge clamps
machinable

04524

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Wedge clamps
jaw face smooth or serrated

04524

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Wedge clamps
machinable

04525

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Wedge clamps
jaw faces serrated

04526

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Wedge clamps
machinable

04527

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Wedge clamps double
jaw faces serrated

04530

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Side clamps

04540

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Side stops

04562

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Side clamps

04567

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Wedge clamps

04570

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Toe clamps

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Flat clamps

04571-10

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Flat clamp, steel
for T-slot



04575

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Side clamps

04578

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Side clamps

04579

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Side Clamp



04610

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Swivel hold-down clamps
mini, with cam lever

04620

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Down-thrust clamps

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Hold-down clamps
pneumatic

04625

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Compact clamps

04626

Page 565



Riser blocks
with draw bolt

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Power clamp



04629-10

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Power clamp 3 stage



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Risers
for power clamp



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Thrust pads
for power clamp



04750

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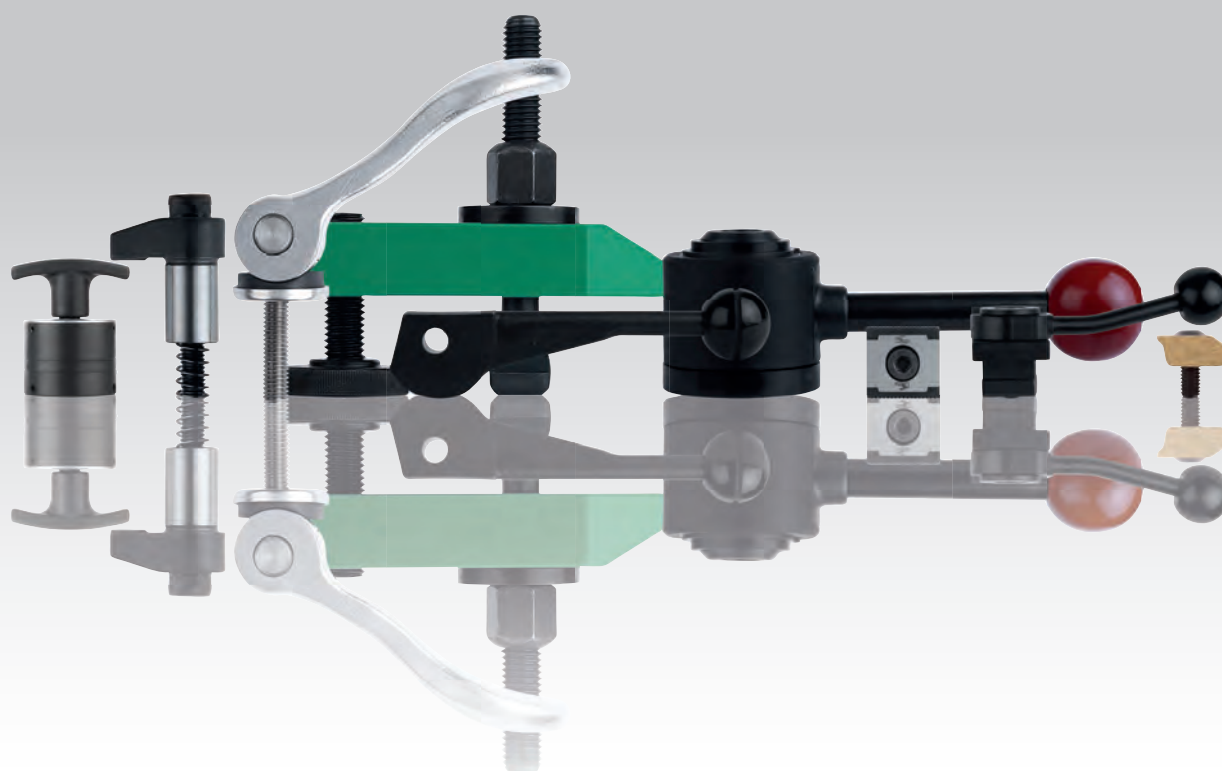


Clamp nuts

New/Expanded Items

04000

Clamp straps Clamping devices



Clamp straps

slotted heel


Material:

Carbon steel 1.1191

Version:

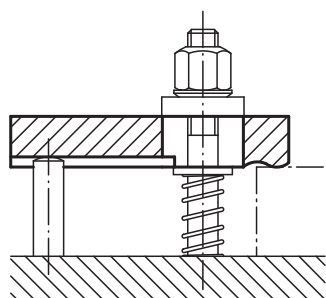
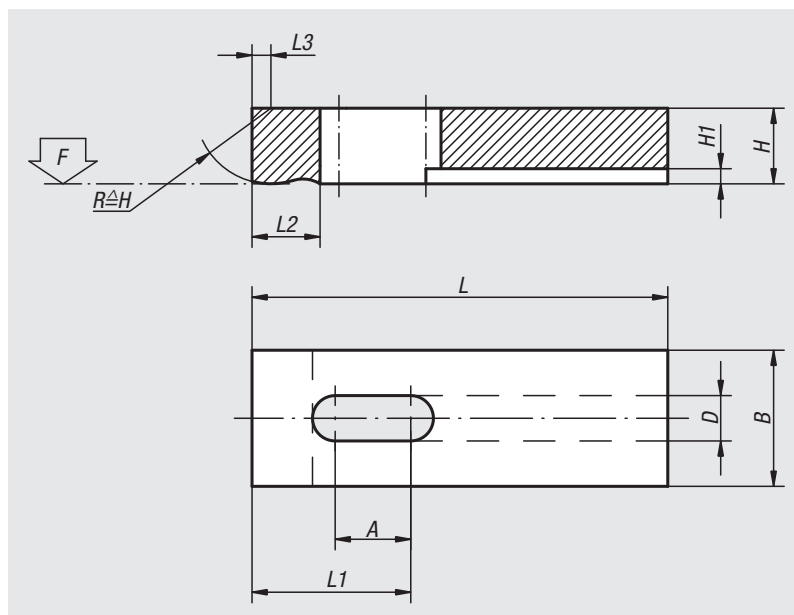
Black oxidised.

Sample order:

n1m 04010-101

Note:

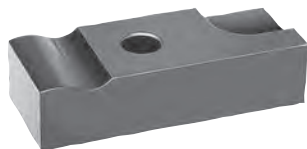
For suitable supports and adjustable rest pads, see 02130 and 02150.



Order No.	A	B	D	H	H1	L	L1	L2	L3	F kN
04010-05	8	12	5,5	8	3	32	14	8	1,2	3,42
04010-051	13	12	5,5	8	3	50	23	8	1,2	3,42
04010-06	10	16	7	10	3	40	17	10	1,6	4,82
04010-061	17	16	7	10	3	63	29	10	1,6	4,82
04010-08	12	20	9	12	4	50	22	12	2	8,77
04010-081	21	20	9	12	4	80	37	12	2	8,77
04010-10	16	25	11	16	4,5	63	28	16	2,5	13,9
04010-101	26	25	11	16	4,5	100	46	16	2,5	13,9
04010-12	20	32	14	20	5	80	35	20	3	20,2
04010-121	33	32	14	20	5	125	58	20	3	20,2
04010-14	25	40	16	25	6	100	44	25	4	27,6
04010-141	42	40	16	30	6	160	74	25	4	27,6
04010-16	42	50	18	30	6	160	73	32	5	37,8
04010-20	52	60	22	30	8	200	92	40	6	58,8

Clamp straps

swivel-heel



Material:

Carbon steel 1.1191

Version:

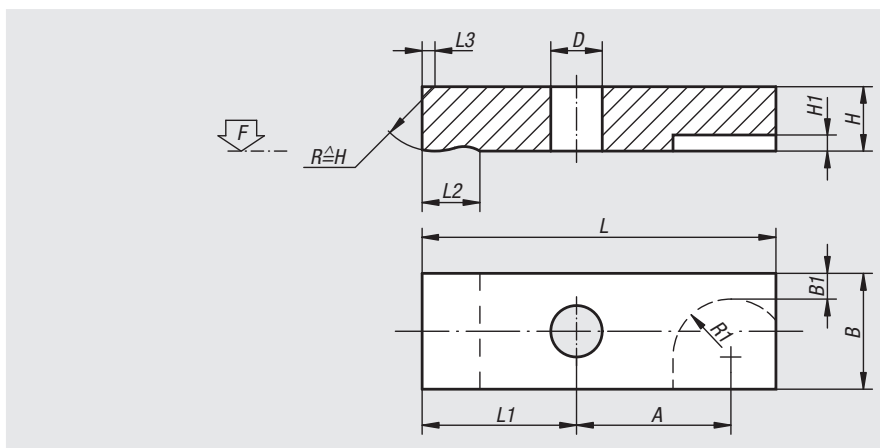
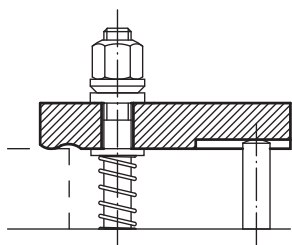
Black oxidised.

Sample order:

nIm 04030-10

Note:

Recommended clamp supports: 02130 and 02150.



Order No.	L	L1	L2	L3	B	B1	H	H1	D	A	R1	F kN
04030-05	32	14	8	1,2	12	2,5	8	3	5,5	14	7	3,42
04030-06	40	17	10	1,6	16	4	10	3	7	18	8	4,82
04030-08	50	22	12	2	20	5	12	4	9	22	10	8,77
04030-10	63	28	16	2,5	25	6,5	16	4	11	27	12	13,9
04030-12	80	35	20	3	32	9	20	5	14	35	14	20,2
04030-14	100	44	25	4	40	12	25	6	16	44	16	27,6
04030-16	125	55	32	5	50	16	30	6	18	54	18	37,8
04030-20	160	75	40	6	60	20,5	30	8	22	65	22	58,8

04050

Clamp straps

tapped-heel



Material:

Carbon steel 1.1191

Version:

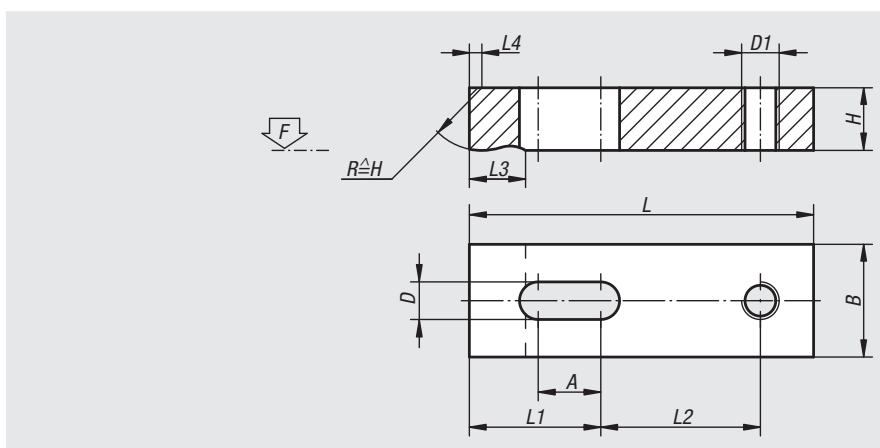
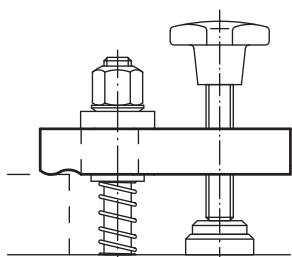
Black oxidised.

Sample order:

nIm 04050-08

Note:

When using spherical washers use the wide series 07420 Form G.



Order No.	L	L1	L2	L3	L4	B	H	D	D1	A	F kN
04050-05	40	18	18	8	1,2	12	8	5,5	M6	10	3,42
04050-06	50	22	23	10	1,6	16	10	7	M6	12	4,82
04050-08	63	28	29	12	2	20	12	9	M8	16	8,77
04050-10	80	36	36	16	2,5	25	16	11	M10	20	13,9
04050-12	100	45	45	20	3	32	20	14	M12	25	20,2
04050-14	125	57	56	25	4	40	25	16	M14	32	27,6
04050-16	160	72	72	32	5	50	30	18	M16	40	37,8
04050-20	200	90	90	40	6	60	30	22	M20	50	58,8

Clamp straps

stepped-heel, steel or aluminium


Material:

Carbon steel or EN AW-7022.

Version:

Steel painted.

Aluminium bright.

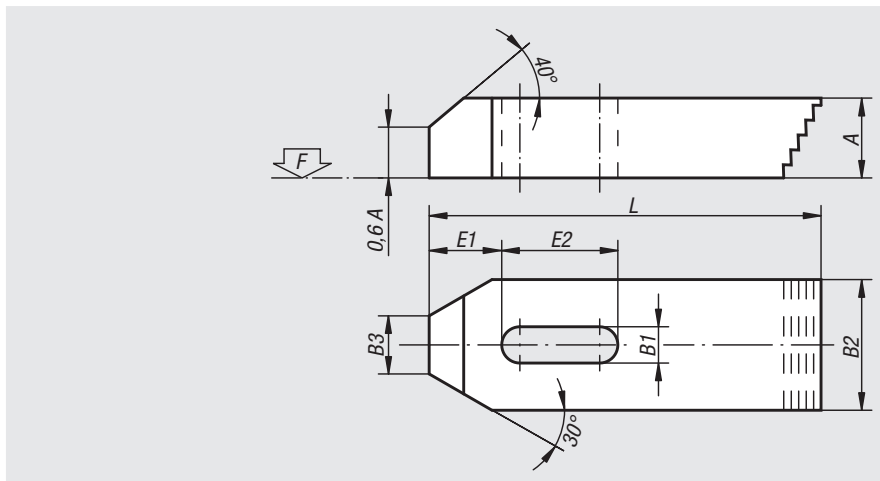
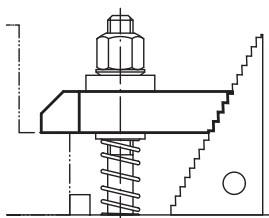
Sample order:

nlm 04070-12

Note:

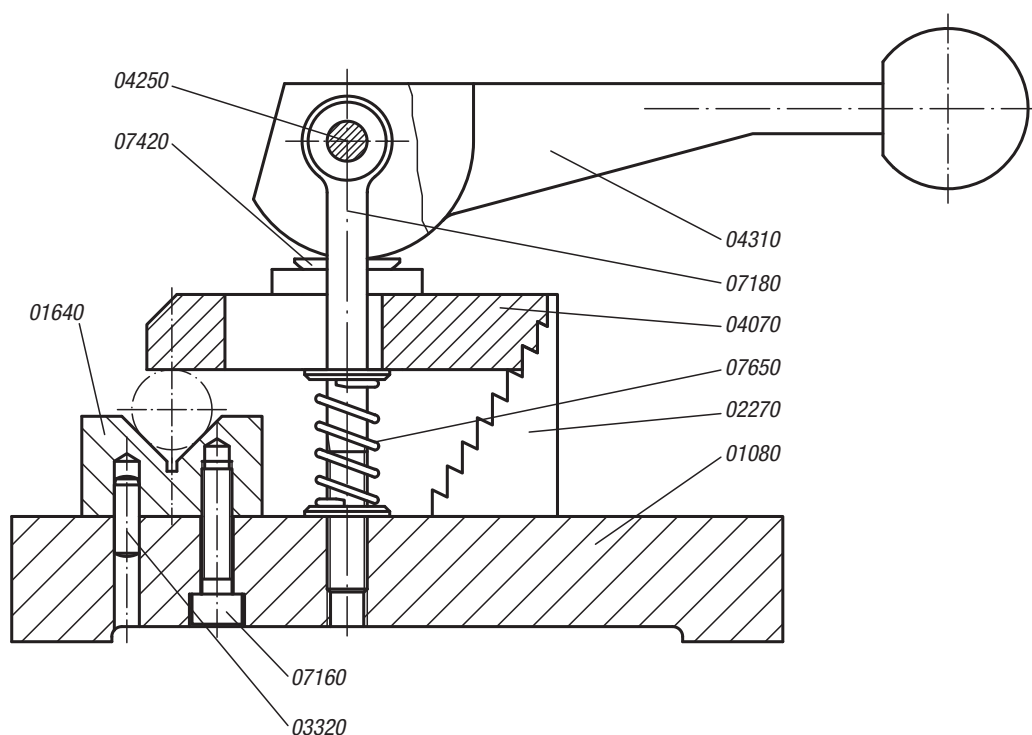
Use only with step blocks 02270.

When using spherical washers 07420 use Form G.



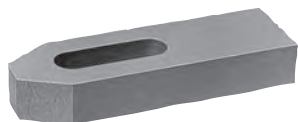
Order No. high carbon steel	Order No. aluminium	L	A	B1	B2	B3	E1	E2	F kN	for screw
04070-06	04070-206	50	10	7	20	8	10	20	4,82	M6
04070-08	04070-208	60	12	9	25	10	13	22	8,77	M8
04070-10	04070-210	80	15	11	30	12	15	30	13,9	M10
04070-12	04070-212	100	20	14	40	14	21	40	20,2	M12/M14
04070-16	04070-216	125	25	18	50	18	26	45	37,8	M16/M18
04070-20	04070-220	160	30	22	60	22	30	60	58,8	M20/M22
04070-24	04070-224	200	30	26	70	26	35	80	84,7	M24

Example of a fixture using almost exclusively norelem parts:



Clamp straps

DIN 6314 straight, steel or aluminium



Material:

Carbon steel or EN AW-7022.

Version:

Steel painted.

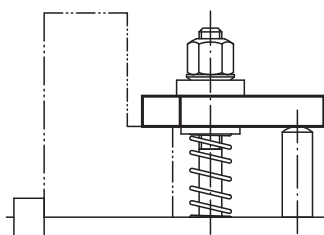
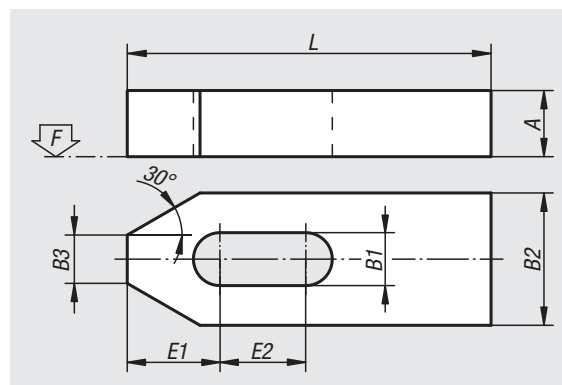
Aluminium bright.

Sample order:

nln 04080-16

Note:

When using spherical washers use the wide series 07420 Form G.



Order No. high carbon steel	Order No. aluminium	L	A	B1	B2	B3	E1	E2	F kN	for screw
04080-06	04080-206	50	10	7	20	8	13,5	13	4,82	M6
04080-08	04080-208	60	12	9	25	10	14,5	13	8,77	M8
04080-10	04080-210	80	15	11	30	12	20,5	19	13,9	M10
04080-12	04080-212	100	20	14	40	14	28	26	20,2	M12/M14
04080-14	04080-214	125	20	14	40	14	28	36	20,2	M12/M14
04080-16	04080-216	125	25	18	50	18	35	27	37,8	M16/M18
04080-18	04080-218	160	25	18	50	18	35	47	37,8	M16/M18
04080-20	04080-220	160	30	22	60	22	41	38	58,8	M20/M22
04080-201	04080-2201	200	30	22	60	22	41	58	58,8	M20/M22
04080-24	04080-224	200	30	26	70	26	48	54	84,7	M24
04080-241	04080-2241	250	35	26	70	26	48	79	84,7	M24
04080-30	04080-230	250	40	34	80	34	62	66	135	M30/M32
04080-301	04080-2301	315	50	34	80	34	62	96	135	M30/M32

Clamp straps

with flattened ball



Material:

Straps carbon steel.

Balls roller bearing steel.

Version:

Strap black oxidised.

Ball hardened, bright.

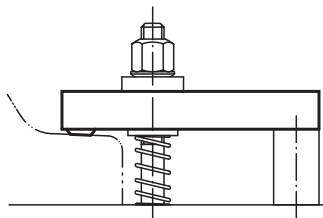
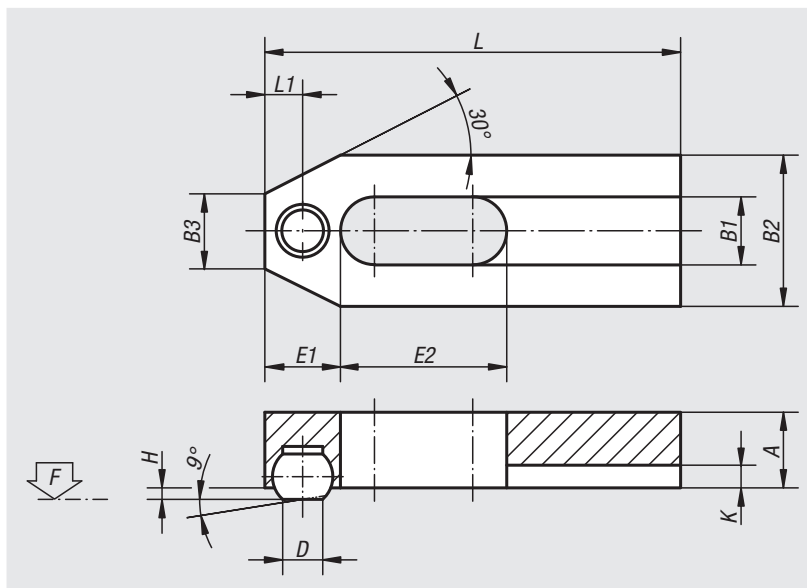
Sample order:

nlm 04081-08

Note:

When using spherical washers 07420 use Form G.

Ball secured against rotation.



Order No.	L	L1	A	B1	B2	B3	D	H	K	Ball Ø	E1	E2	F kN	for screw
04081-06	50	5	10	7	20	8	5,5	1,6	2,5	8,5	10	20	4,82	M6
04081-08	60	6,5	12	9	25	10	7,2	2	3	10	13	22	8,77	M8
04081-10	80	7,5	15	11	30	12	8,6	2,7	3,5	12	15	30	13,9	M10
04081-12	125	10,5	20	13	40	14	10,5	3,5	4	16	21	50	20,2	M12

Clamp straps gooseneck

narrow, steel



Material:

Carbon steel.

Version:

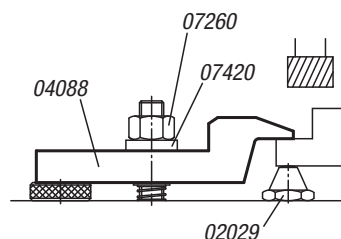
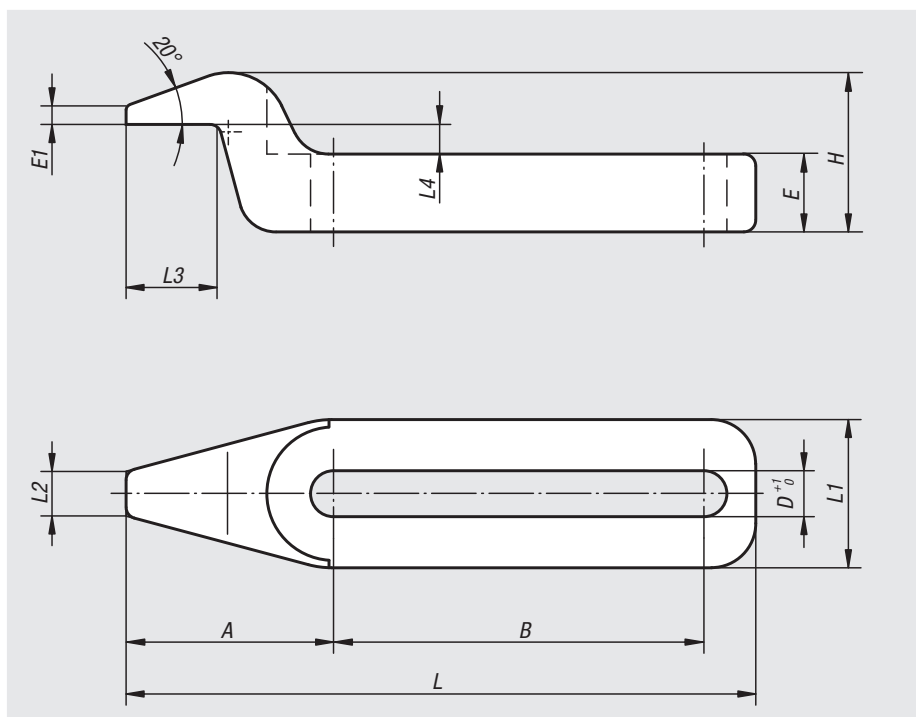
Tempered and black oxidised.

Sample order:

nlm 04088-06010

Note:

The flat gooseneck allows lower steps on the workpiece to be machined or clamped. When using spherical washers 07420 use Form G.



Order No.	A	B	D	E	E1	H	L	L1	L2	L3	L4	Clamping force kN
04088-06005	28	32	6,2	7,5	2,5	18,5	67	20	6	12,5	4	4,82
04088-06010	28	50	6,2	10,5	2,5	21,5	85	20	6	12,5	4	4,82
04088-08005	28	32	8,2	7,5	2,5	18,5	67	20	6	12,5	4	8,77
04088-08010	28	50	8,2	10,5	2,5	21,5	85	20	6	12,5	4	8,77
04088-10005	45	50	10,2	12	4	30	105	30	10	20	6	13,9
04088-10010	45	80	10,2	17	4	35	135	30	10	20	6	13,9
04088-12005	45	50	12,2	12	4	30	105	30	10	20	6	20,2
04088-12010	45	80	12,2	17	4	35	135	30	10	20	6	20,2
04088-16005	72	80	16,2	19	7	48	168	48	16	32	9,5	37,8
04088-16010	72	128	16,2	27	7	56	216	48	16	32	9,5	37,8
04088-20005	72	80	20,2	19	7	48	168	48	16	32	9,5	58,8
04088-20010	72	128	20,2	27	7	56	216	48	16	32	9,5	58,8

Clamp straps gooseneck

DIN 6316 wide, steel or aluminium



Material:

Carbon steel or EN AW-7022.

Version:

Steel painted.

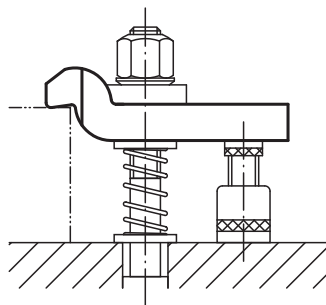
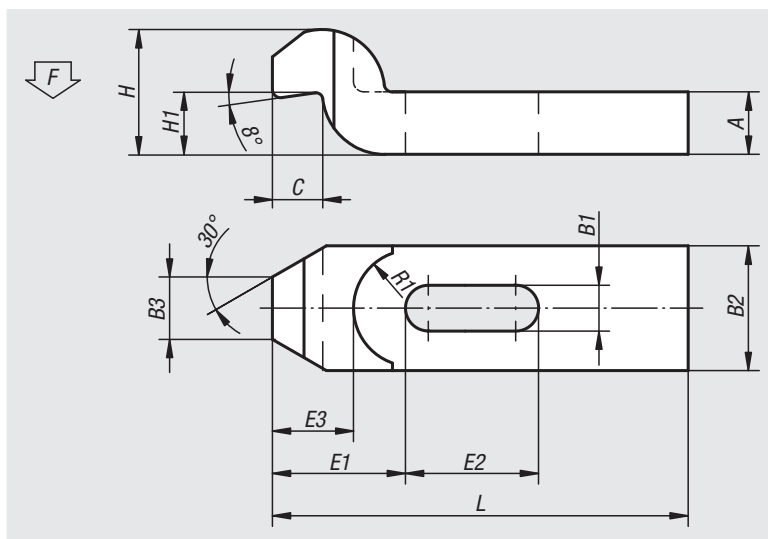
Aluminium bright.

Sample order:

nlm 04090-10

Note:

When using spherical washers use the wide series 07420 Form G.



Order No. high carbon steel	Order No. aluminium	L	B1	B2	B3	H max.	H1	A	C	E1	E2	E3	R1	F kN	for screw
04090-06	04090-206	60	7	20	10	20	9	10	8	20	20	14	11	4,82	M6
04090-08	04090-208	80	9	25	12	24	11	12	9	25	25	17	14	8,77	M8
04090-10	04090-210	100	11	30	15	30	14	15	12	32	32	22	18	13,9	M10
04090-12	04090-212	125	14	40	20	40	18	20	16	40	40	28	20	20,2	M12/M14
04090-16	04090-216	125	18	50	25	46	23	25	20	49	40	38	25	37,8	M16/M18
04090-161	04090-2161	160	18	50	25	46	23	25	20	49	50	38	25	37,8	M16/M18
04090-20	04090-220	160	22	60	30	60	28	30	24	55	55	40	28	58,8	M20/M22
04090-201	04090-2201	200	22	60	30	60	28	30	24	55	70	40	28	58,8	M20/M22
04090-24	04090-224	200	26	70	35	70	32	35	28	72	60	54	34	84,7	M24
04090-241	04090-2241	250	26	70	35	70	32	35	28	72	80	54	34	84,7	M24
04090-30	04090-230	250	34	80	40	80	37	40	40	91	80	72	40	135	M30/M32
04090-301	04090-2301	315	34	80	40	100	56	50	40	91	100	72	40	135	M30/M32

Clamp straps

assorted, long slot



Material:

Carbon steel 1.7225

Version:

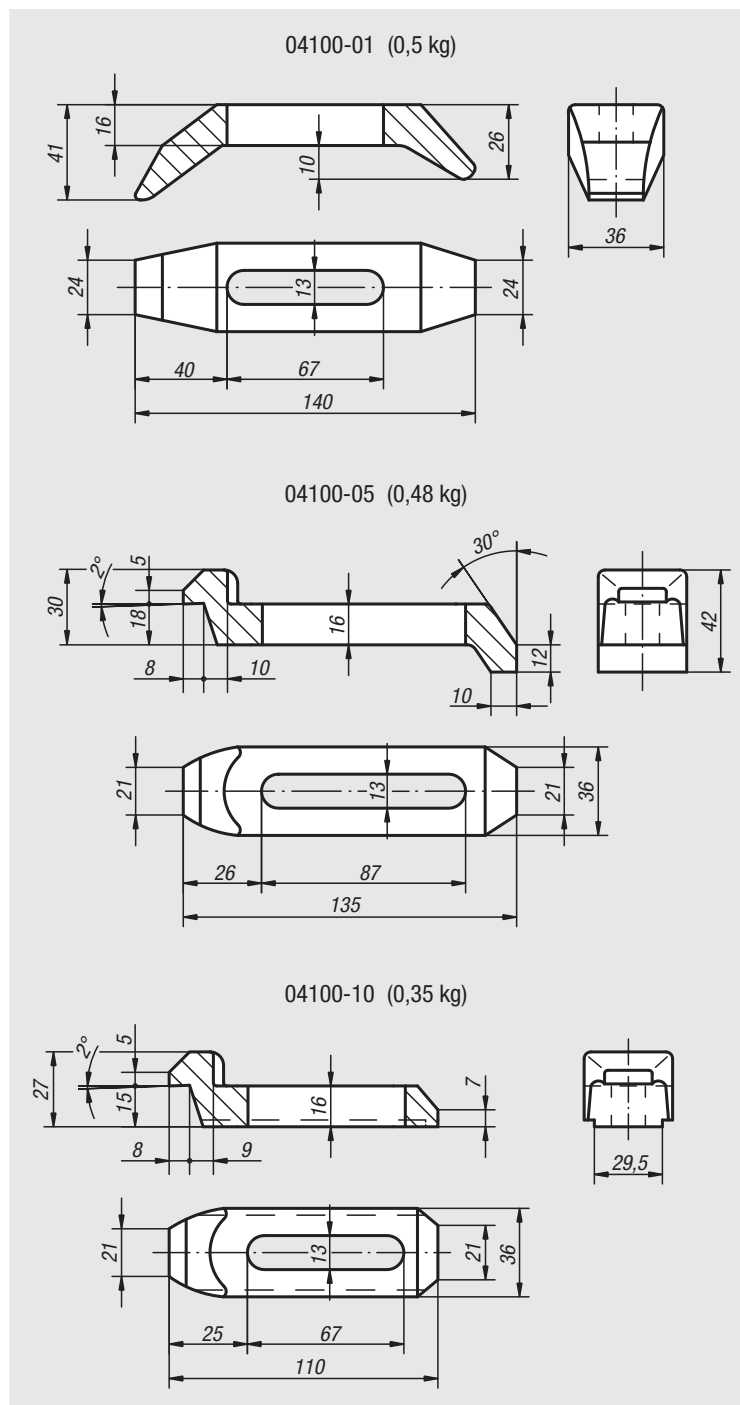
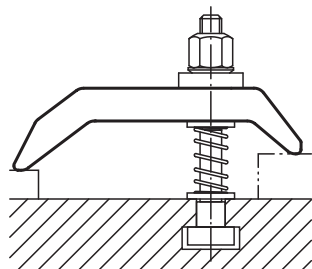
Tempered to 1000 N/mm², black oxidised.

Sample order:

nIm 04100-10

Note:

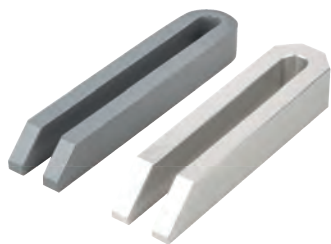
These clamp straps with long slot are also used with the compact clamp strap module 04200.



Order No.	Item
04100-01	Clamp Strap
04100-05	Clamp Strap
04100-10	Clamp Strap

Clamp straps open U

DIN 6315, steel or aluminium



Material:

Carbon steel or EN AW-7022.

Version:

Steel painted.

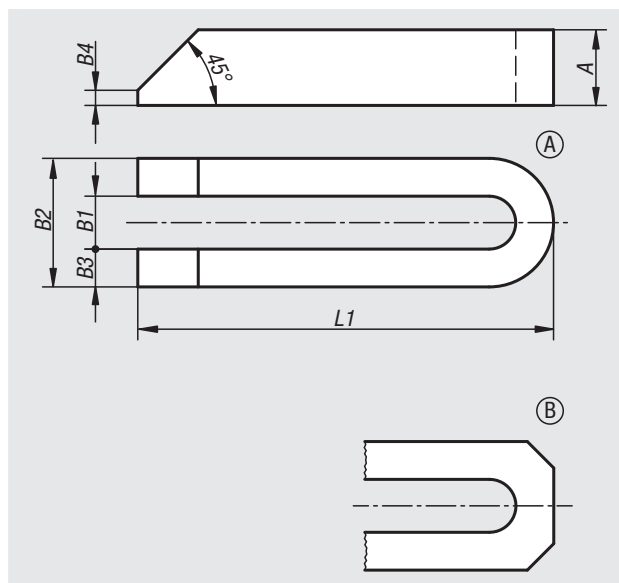
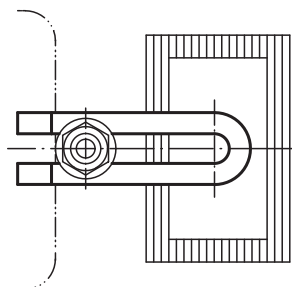
Aluminium bright.

Sample order:

nIm 04110-06

Note:

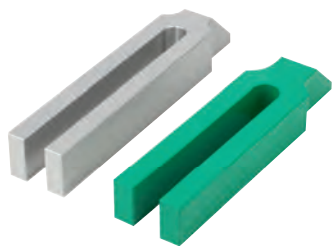
When using spherical washers use the wide series 07420 Form G.



Order No.	Main material	Form	L1	A	B1	B2	B3	B4	for screw
04110-06	high carbon steel	A	60	12	6,6	18	6	3	M6
04110-08	high carbon steel	A	80	15	9	25	8	4	M8
04110-10	high carbon steel	A	100	20	11	31	10	5	M10
04110-12	high carbon steel	A	125	25	14	38	12	6	M12/M14
04110-121	high carbon steel	A	160	25	14	38	12	6	M12/M14
04110-122	high carbon steel	A	200	25	14	38	12	6	M12/M14
04110-16	high carbon steel	A	160	30	18	48	15	8	M16/M18
04110-161	high carbon steel	A	200	30	18	48	15	8	M16/M18
04110-162	high carbon steel	A	250	40	18	48	15	10	M16/M18
04110-20	high carbon steel	A	200	40	22	52	15	10	M20/M22
04110-201	high carbon steel	A	250	40	22	62	20	10	M20/M22
04110-202	high carbon steel	A	315	40	22	62	20	10	M20/M22
04110-24	high carbon steel	A	200	40	26	66	20	10	M24
04110-241	high carbon steel	A	250	40	26	66	20	10	M24
04110-242	high carbon steel	A	315	40	26	66	20	10	M24
04110-301	high carbon steel	A	250	50	33	73	20	12	M30/M32
04110-30	high carbon steel	A	315	50	33	73	20	12	M30/M32
04110-302	high carbon steel	A	400	50	33	73	20	12	M30/M32
04110-40	high carbon steel	A	400	60	40	100	30	12	M36
04110-401	high carbon steel	A	600	60	40	100	30	12	M36
04110-206	aluminium	B	60	12	7	19	6	3	M6
04110-208	aluminium	B	80	15	9	25	8	4	M8
04110-210	aluminium	B	100	20	11	31	10	5	M10
04110-212	aluminium	B	125	25	14	38	12	6	M12/M14
04110-2121	aluminium	B	160	28	14	38	12	6	M12/M14
04110-216	aluminium	B	160	30	18	48	15	8	M16/M18
04110-2161	aluminium	B	200	36	18	48	15	8	M16/M18
04110-220	aluminium	B	200	40	22	52	15	10	M20/M22
04110-2201	aluminium	B	250	40	22	62	20	10	M20/M22
04110-224	aluminium	B	200	40	26	66	20	10	M24
04110-2241	aluminium	B	250	40	26	66	20	10	M24
04110-230	aluminium	B	315	50	34	74	20	12	M30/M32

Clamp straps open U

flat pin, steel or aluminium



Material:

Carbon steel or EN AW-7022.

Version:

Steel painted.

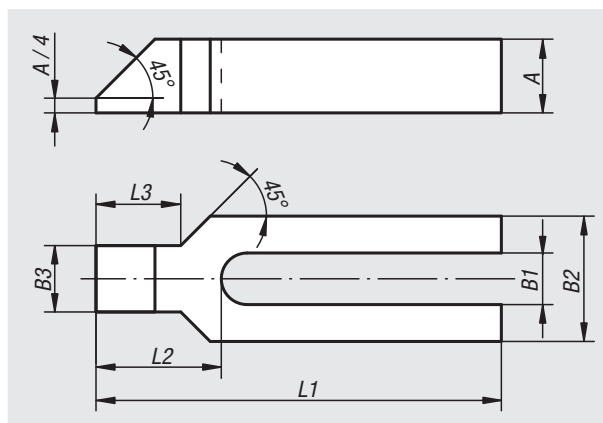
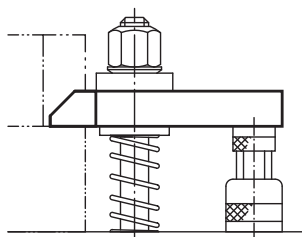
Aluminium bright.

Sample order:

nlm 04130-12

Note:

When using spherical washers use the wide series 07420 Form G.



Order No.	Main material	L1	A	B1	B2	B3	L2	L3	for screw
04130-08	high carbon steel	100	15	9	30	16	32	18	M8
04130-10	high carbon steel	125	20	11	30	20	38	24	M10
04130-12	high carbon steel	160	25	14	40	24	47	30	M12/M14
04130-121	high carbon steel	200	25	14	40	24	47	30	M12/M14
04130-16	high carbon steel	200	30	18	50	28	57	36	M16/M18
04130-161	high carbon steel	250	30	18	50	28	57	36	M16/M18
04130-20	high carbon steel	250	40	22	60	35	68	45	M20/M22
04130-201	high carbon steel	315	40	22	60	35	68	45	M20/M22
04130-24	high carbon steel	250	40	26	70	43	83	56	M24
04130-241	high carbon steel	315	40	26	70	43	83	56	M24
04130-30	high carbon steel	315	60	34	80	50	88	56	M30/M32
04130-301	high carbon steel	400	60	34	80	50	88	56	M30/M32
04130-208	aluminium	100	15	9	30	16	32	18	M8
04130-210	aluminium	125	20	11	30	20	38	24	M10
04130-212	aluminium	160	28	14	40	24	47	30	M12/M14
04130-2121	aluminium	200	36	14	40	24	47	30	M12/M14
04130-216	aluminium	200	36	18	50	28	57	36	M16/M18
04130-2161	aluminium	250	40	18	50	28	57	36	M16/M18
04130-220	aluminium	250	40	22	60	35	68	45	M20/M22
04130-2201	aluminium	315	48	22	60	35	68	45	M20/M22
04130-224	aluminium	250	40	26	70	43	83	56	M24
04130-2241	aluminium	315	48	26	70	43	83	56	M24
04130-230	aluminium	315	60	34	80	50	88	56	M30/M32
04130-2301	aluminium	400	60	34	80	50	88	56	M30/M32

Clamp straps open-U

with pin and protective insert


Material:

Carbon steel.

Soft pad POM or polyurethane 99 Shore A.

Version:

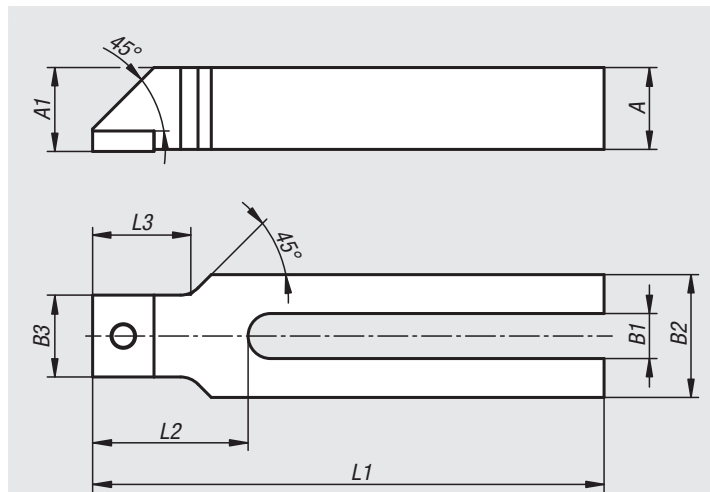
Black oxidised.

Sample order:

nln 04131-110008

Note:

The pressed in plastic inserts offer optimal damage protection for sensitive workpiece faces.



Order No.	Component material	L1	A	A1	B1	B2	B3	L2	L3	for screws
04131-110008	polyacetal	100	15	15,5	9	30	16	32	18	M8
04131-112510	polyacetal	125	20	20,5	11	30	20	38	24	M10
04131-116012	polyacetal	160	25	25,5	14	40	24	47	30	M12
04131-210008	polyurethane	100	15	15,5	9	30	16	32	18	M8
04131-212510	polyurethane	125	20	20,5	11	30	20	38	24	M10
04131-216012	polyurethane	160	25	25,5	14	40	24	47	30	M12

Clamp straps pivot

strap only or assembly

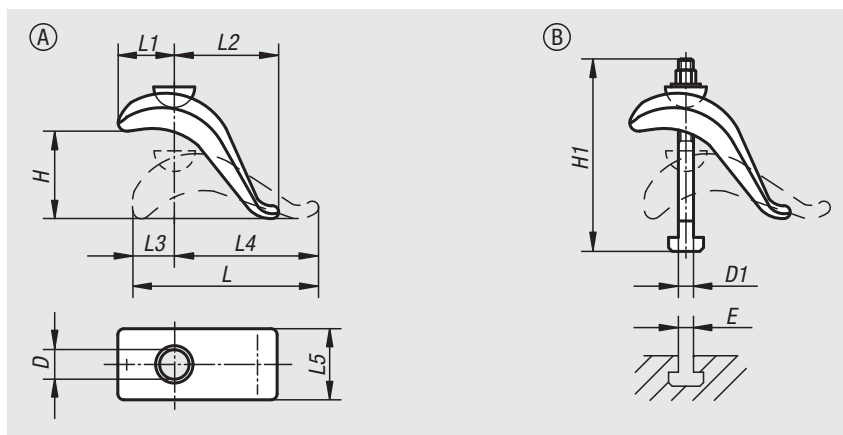


Material:
Steel.

Version:
Forged, tempered and painted.
Bolts, nuts, washers grade 8.8

Sample order:
nlm 04140-010

Note:
The strap provides instant height adjustment without blocks or shims and requires little space on the machine table. Designed for rugged use and highly suitable for clamping blanking and punching dies.



Form A strap only

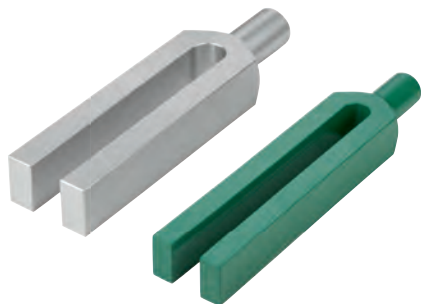
Order No.	Form	D	H	L	L1	L2	L3	L4	L5	Clamping force kN
04140-010	A	17	75	140	55	60	30	110	50	20,2
04140-020	A	21	85	175	70	80	40	135	60	37,8

Form B with T-slot bolt, nut and washer

Order No.	Form	D	D1	E	H	H1	L	L1	L2	L3	L4	L5	Clamping force kN
04140-030	B	17	M12	12	50	125	140	55	60	30	110	50	20,2
04140-040	B	17	M12	14	50	125	140	55	60	30	110	50	20,2
04140-050	B	17	M16	16	75	160	140	55	60	30	110	50	37,8
04140-060	B	17	M16	18	75	160	140	55	60	30	110	50	37,8
04140-080	B	21	M16	16	65	160	175	70	80	40	135	60	37,8
04140-100	B	21	M16	18	65	160	175	70	80	40	135	60	37,8
04140-120	B	21	M20	22	85	200	175	70	80	40	135	60	58,8

Clamp straps open U

DIN 6315 C, round pin, steel or aluminium


Material:

Carbon steel or EN AW-7022.

Version:

Steel painted.

Aluminium bright.

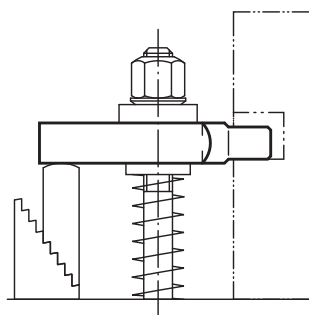
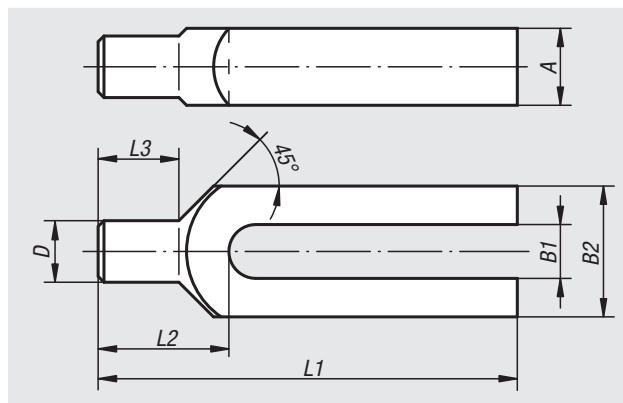
Sample order:

nlm 04150-161

Note:

When using spherical washers 07420 use Form G.

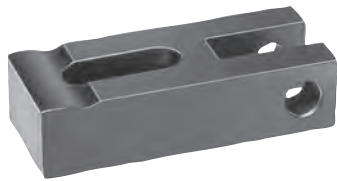
The stated clamping forces are only valid for steel straps.



Order No.	Main material	L1	A	B1	B2	D	L2	L3	for screw	Clamping force kN
04150-08	high carbon steel	100	15	9	30	12	30	18	M8	8,77
04150-10	high carbon steel	125	20	11	30	16	36	24	M10	13,9
04150-12	high carbon steel	160	25	14	40	20	45	30	M12/M14	20,2
04150-121	high carbon steel	200	25	14	40	20	45	30	M12/M14	20,2
04150-16	high carbon steel	200	30	18	50	24	55	36	M16/M18	37,8
04150-161	high carbon steel	250	30	18	50	24	55	36	M16/M18	37,8
04150-20	high carbon steel	250	40	22	60	30	65	45	M20/M22	58,8
04150-201	high carbon steel	315	40	22	60	30	65	45	M20/M22	58,8
04150-208	aluminium	100	15	9	30	12	30	18	M8	-
04150-210	aluminium	125	20	11	30	16	36	24	M10	-
04150-212	aluminium	160	28	14	40	20	45	30	M12/M14	-
04150-216	aluminium	200	30	18	50	24	55	36	M16/M18	-
04150-2161	aluminium	250	30	18	50	24	55	36	M16/M18	-
04150-220	aluminium	250	40	22	60	30	65	45	M20/M22	-

Clamp straps

hinge heel


Material:

Carbon steel 1.1191

Version:

Tempered and black oxidised.

Sample order:

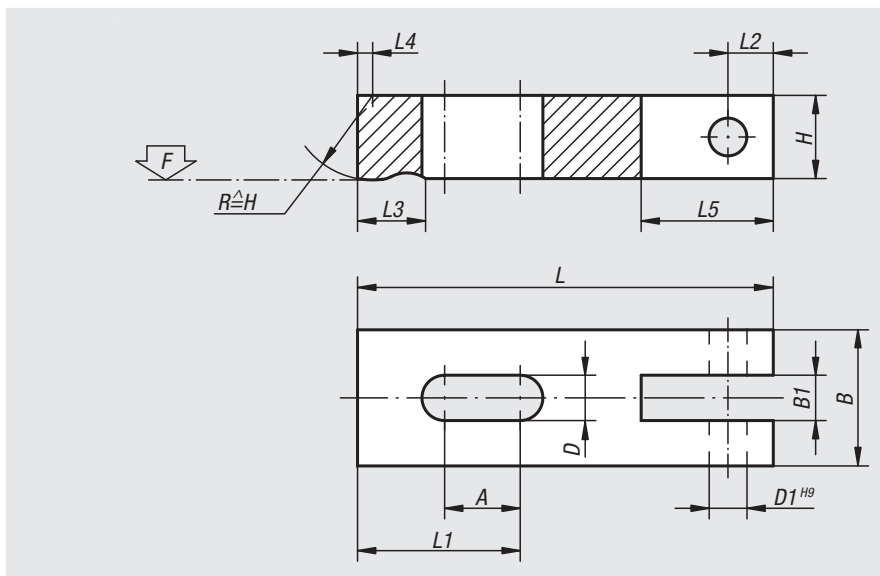
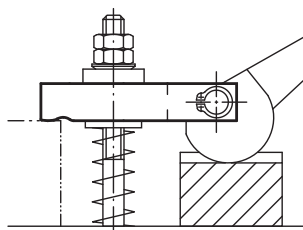
nlm 04170-12

Note:

Suitable hinge pins 04250.

Cam levers 04290.

When using spherical washers 07420 use Form G.



Order No.	L	L1	L2	L3	L4	L5	B	B1	H	D	D1	A	F max. kN
04170-08	63	28	8	12	2	24	25	9,5	16	9	8	16	8,77
04170-10	80	36	10	16	2,5	29	32	12,5	20	11	10	20	13,9
04170-12	100	45	12	22	3	36	40	14,5	25	14	12	25	20,2

Clamp straps mini

double sided


Material:

Steel.

Version:

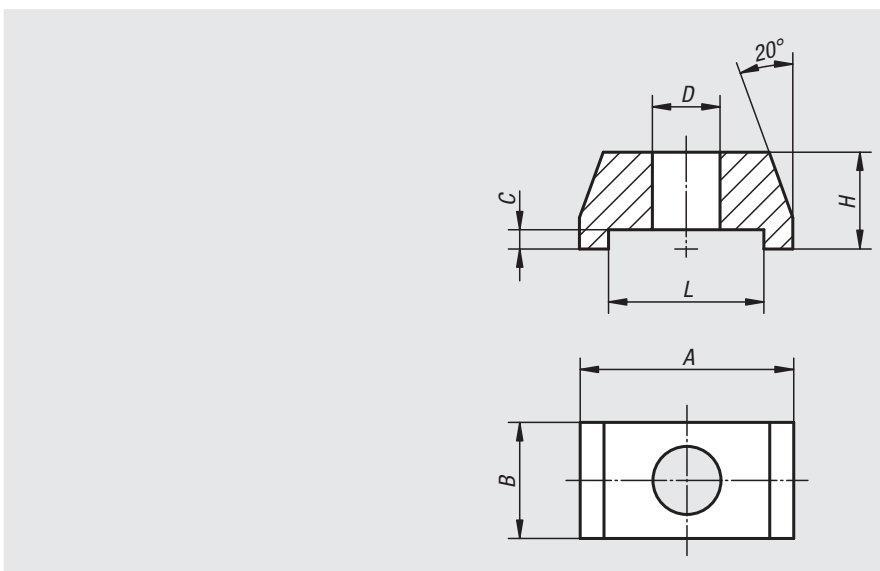
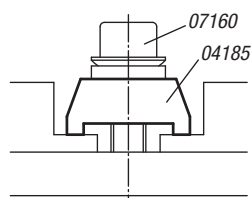
Black oxidised.

Sample order:

nlm 04185-012

Note:

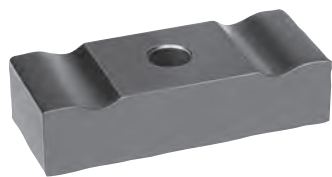
Two workpieces can be clamped simultaneously from one clamping point using the mini clamp strap.



Order No.	A	B	C	D	H	L	Clamping force kN
04185-006	22	12	2	7	10	16	4,82
04185-008	22	12	2	9	10	16	8,77
04185-010	35	19	3	11	15	24	13,9
04185-012	35	19	3	13	15	24	20,2
04185-016	50	29	5	17	25	36	37,8

Clamp straps

double sided


Material:

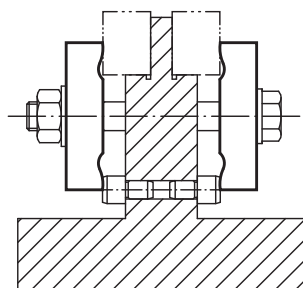
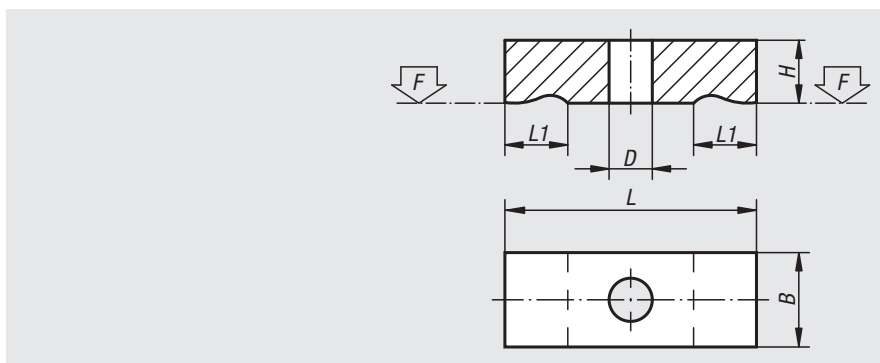
Carbon steel 1.1191

Version:

Black oxidised.

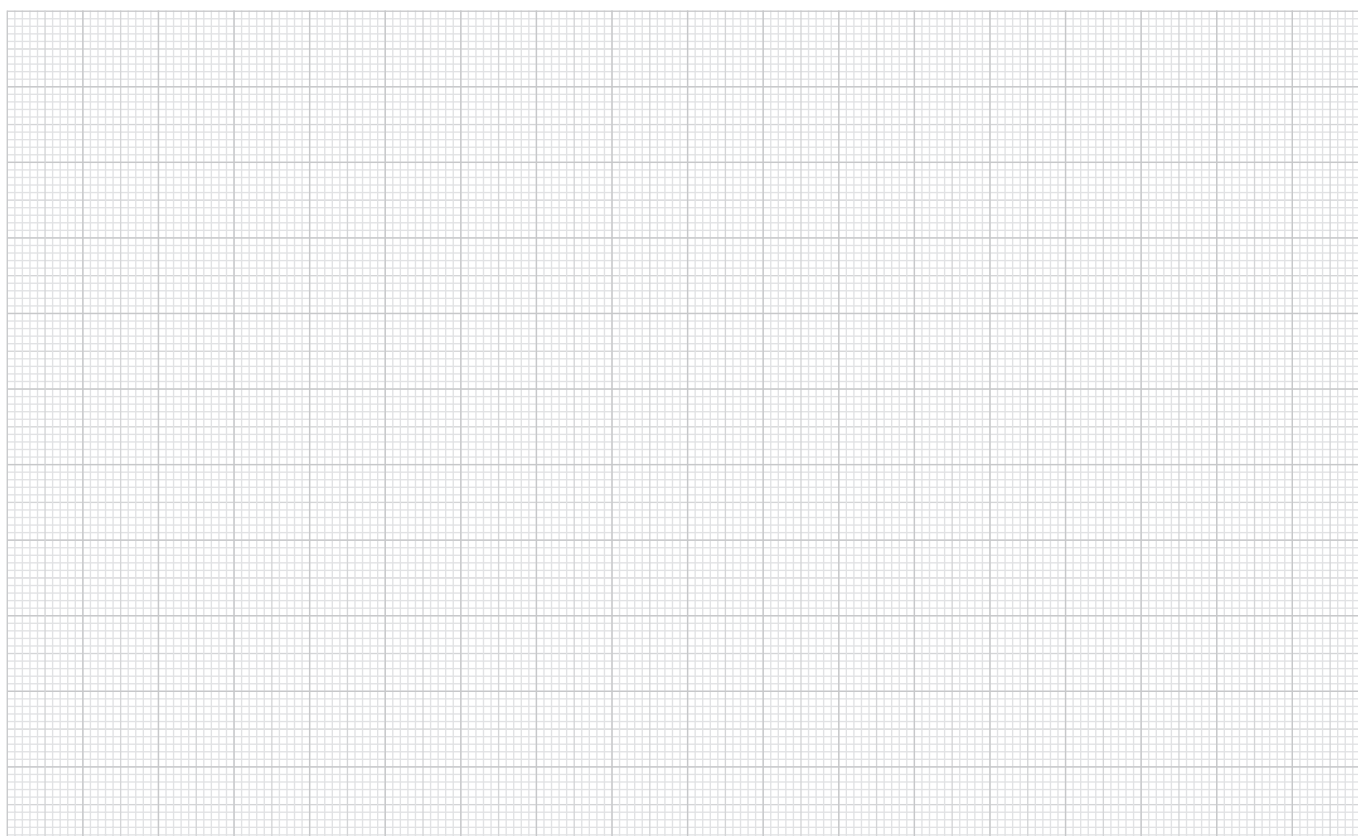
Sample order:

nIm 04190-12



Order No.	L	L1	B	H	D	F kN
04190-05	32	8	12	8	5,5	3,42
04190-06	40	10	16	10	7	4,82
04190-08	50	12	20	12	9	8,77
04190-10	63	16	25	16	11	13,9
04190-12	80	20	32	20	14	20,2
04190-14	100	25	40	25	16	27,6
04190-16	125	32	50	30	18	37,8
04190-20	160	40	60	30	22	58,8

Notes



Clamp straps

double-sided, 90° swivelling



Material:

Carbon steel.

Version:

Tempered and black oxidised.

Sample order:

nlm 04191-1640

Note:

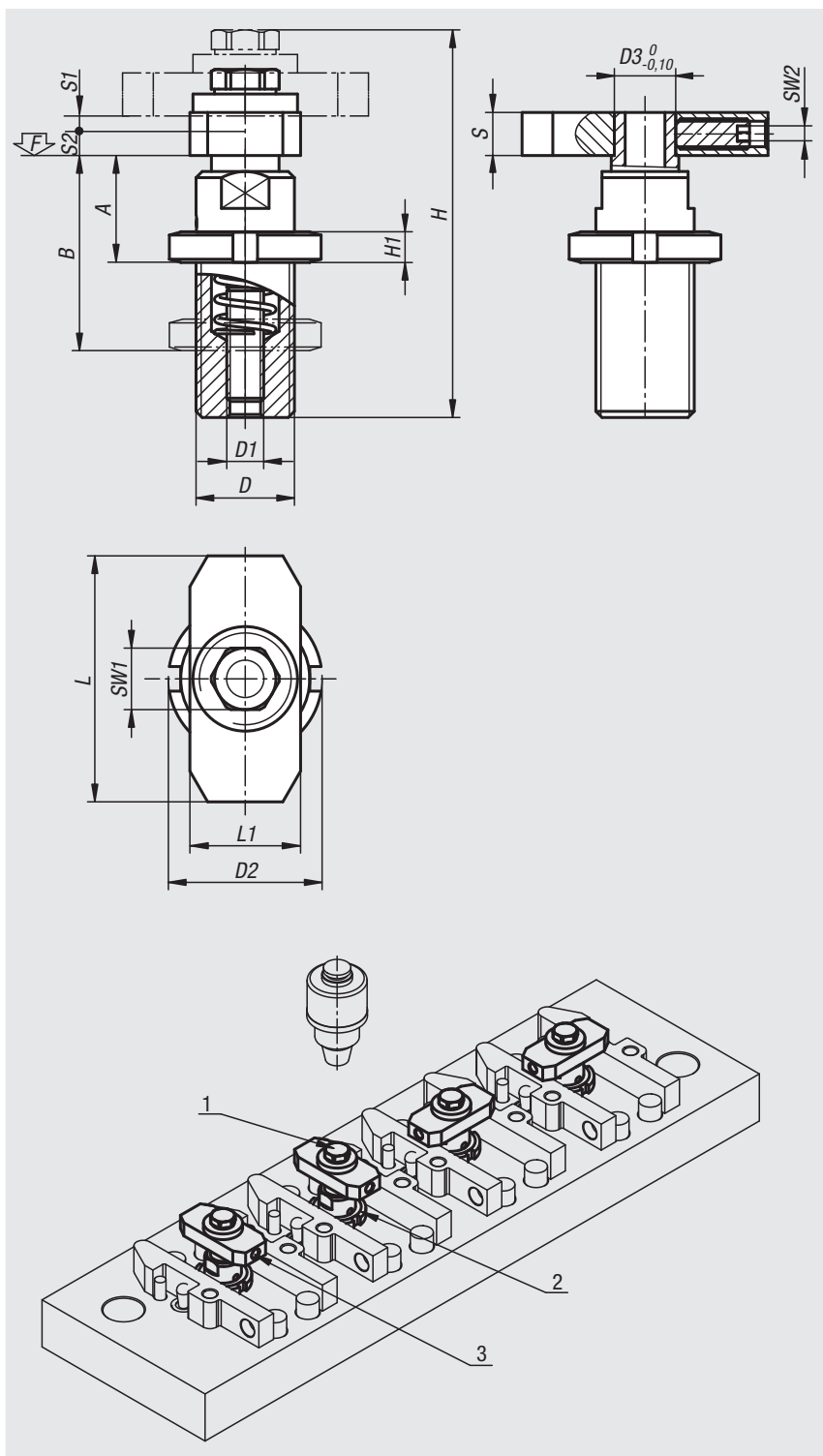
The double-sided clamp straps are ideal for series clamping.
For special applications, the clamping flange can be replaced with another clamping flange by loosening the clamping screw. The clamping flange must always have a contact point on both sides.

Functional principle:

1. Use a hand-held or electric tool to tighten the hexagon head bolt (make sure that the maximum tightening torque is not exceeded). When clamping, the clamping flange automatically turns by quarter of a rotation and starts the clamping stroke.
2. Use reverse procedure to loosen the hexagon head bolt. The clamping flange automatically returns to its starting position (the set screw can be used to change the position of the clamping flange).

Drawing reference:

- 1) Hexagon head bolt
- 2) Slotted round nut
- 3) Set screw



Order No.	D	D1	D2	D3	A	B	H	H1	L	L1	S	S1	S2	SW1	SW2	Tightening torque max. Nm	F max. kN
04191-1640	M16x1	M6	25	10	15	25	61	5	40	18	7	4,5	2,5	10	2,5	10,4	8,97
04191-2460	M24x2	M8	36	14	22	35	87	7	60	28	9	6	4	13	3	25,3	16,5

Clamp strap assemblies


Material:

Carbon steel.

Screws tempered to 8.8.

Version:

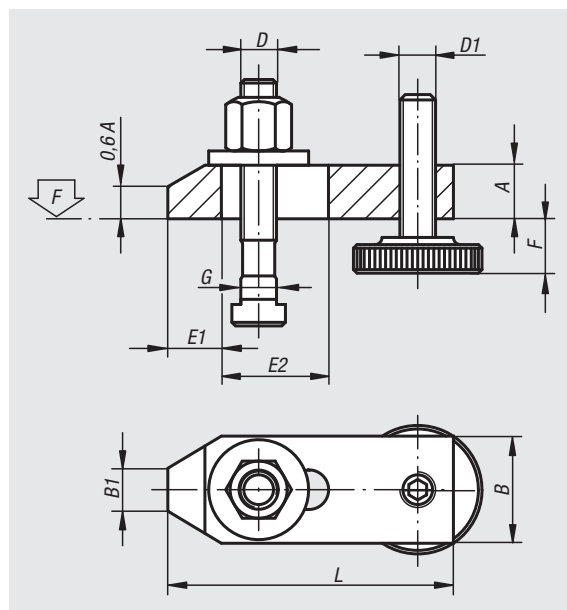
Clamp painted. Screws black oxidised.

Sample order:

nlm 04192-1616

Note:

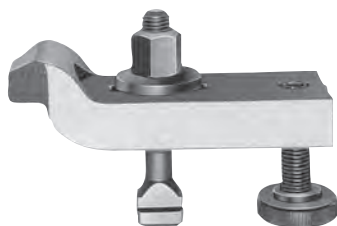
"F" is dependent on the depth of the DIN 650 slot.



Order No.	L	A	B	B1	E1	E2	F	G for T-slot	D	D1	F kN
04192-1010	80	15	30	12	15	30	8-32	10	M10x80	M10	13,9
04192-1212	100	20	40	14	21	40	10-40	12	M12x100	M12	20,2
04192-1214	100	20	40	14	21	40	10-38	14	M12x100	M12	20,2
04192-1616	125	25	50	18	26	45	13-49	16	M16x125	M16	37,8
04192-1618	125	25	50	18	26	45	13-46	18	M16x125	M16	37,8
04192-2020	160	30	60	22	30	60	16-65	20	M20x160	M20	58,8
04192-2022	160	30	60	22	30	60	16-65	22	M20x160	M20	58,8

Clamp strap assemblies

goose-neck



Material:

Carbon steel.

Screws tempered to 8.8.

Version:

Straps painted.

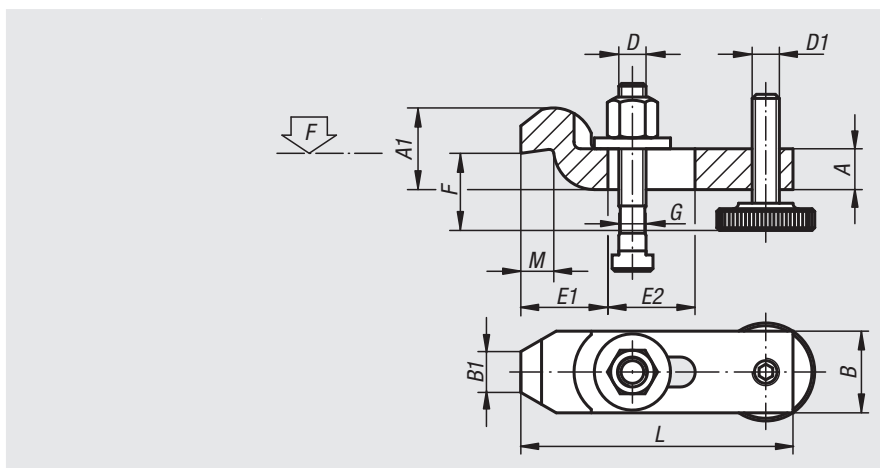
Screws black oxidised.

Sample order:

nln 04193-1616

Note:

"F" is dependent on the depth of the DIN 650 slot.



Order No.	L	A	A1	B	B1	E1	E2	F	G for T-slot	D	D1	M	F kN
04193-1010	100	15	30	30	15	32	32	22-46	10	M10x80	M10	12	13,9
04193-1212	125	20	40	40	20	40	40	28-58	12	M12x100	M12	16	20,2
04193-1214	125	20	40	40	20	40	40	28-56	14	M12x100	M12	16	20,2
04193-1616	160	25	50	50	25	49	50	36-72	16	M16x125	M16	20	37,8
04193-1618	160	25	50	50	25	49	50	36-69	18	M16x125	M16	20	37,8
04193-2020	200	30	60	60	30	55	70	43-92	20	M20x160	M20	24	58,8
04193-2022	200	30	60	60	30	55	70	43-92	22	M20x160	M20	24	58,8

04195

Clamp springs



Material:

Thrust and retaining ring carbon steel.

Spring, spring steel.

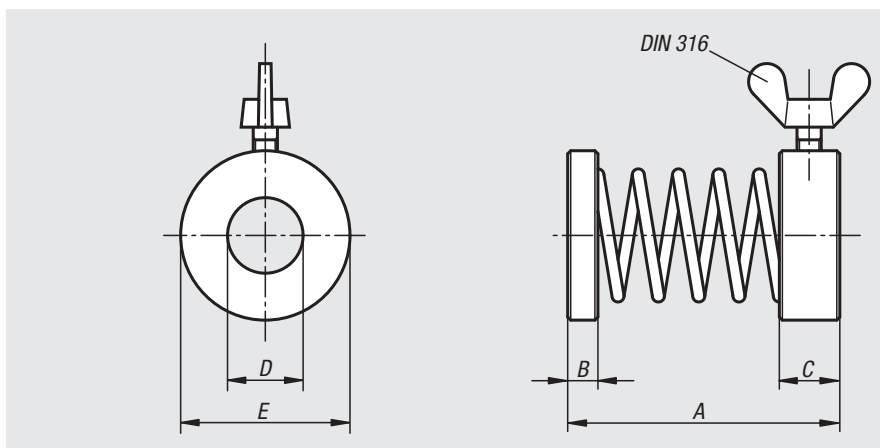
Version:

Thrust and retaining ring black oxidised.

Spring bright.

Sample order:

nln 04195-12046



Order No.	A	B	C	D	E	Wing nuts to DIN 316
04195-08029	29	2	6	8,5	16	M4x6
04195-12046	46	3	8	13	25	M4x10
04195-16050	50	4	8	16,5	28	M5x10

Clamp strap modules

compact


Material:

Base, ductile iron.

Clamp strap and clamping screw carbon steel.

Version:

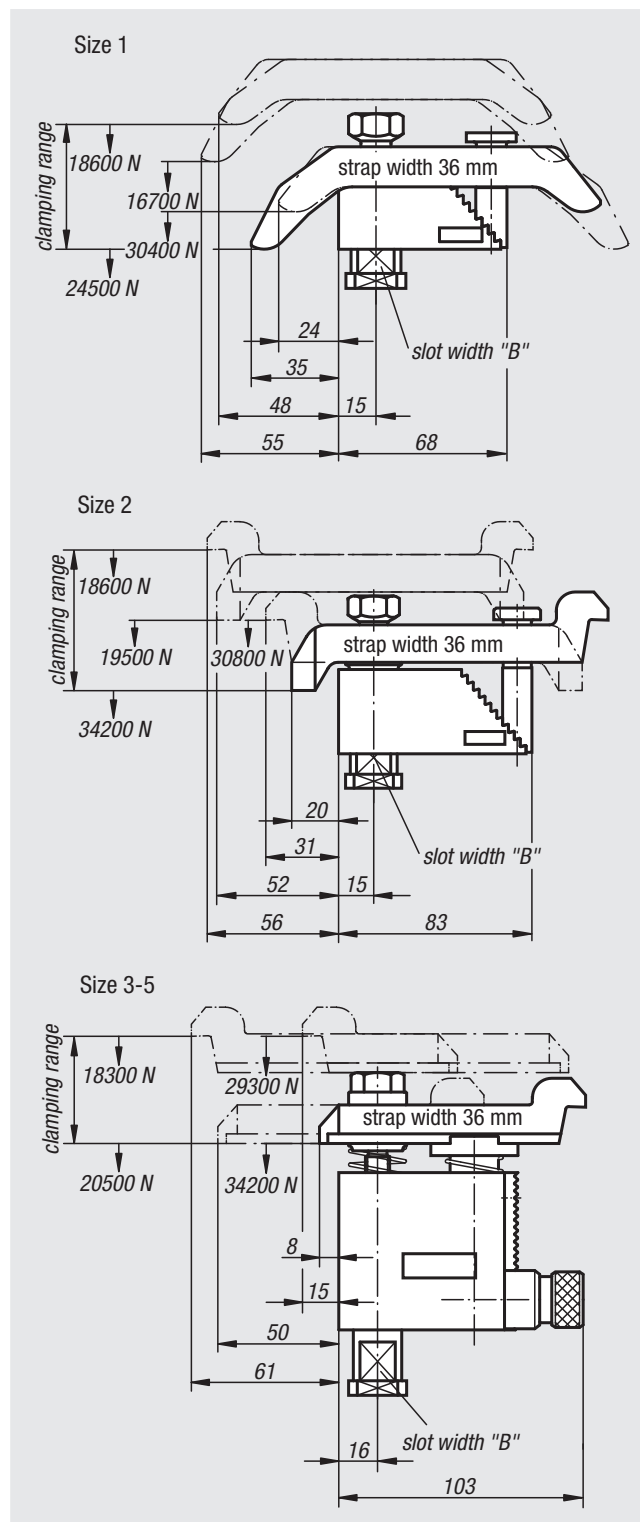
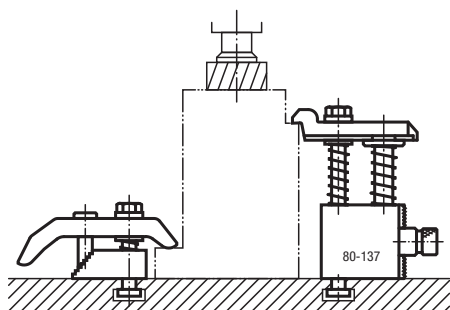
Black oxidised.

Sample order:

nlm 04200-40X16 (include dimension B)

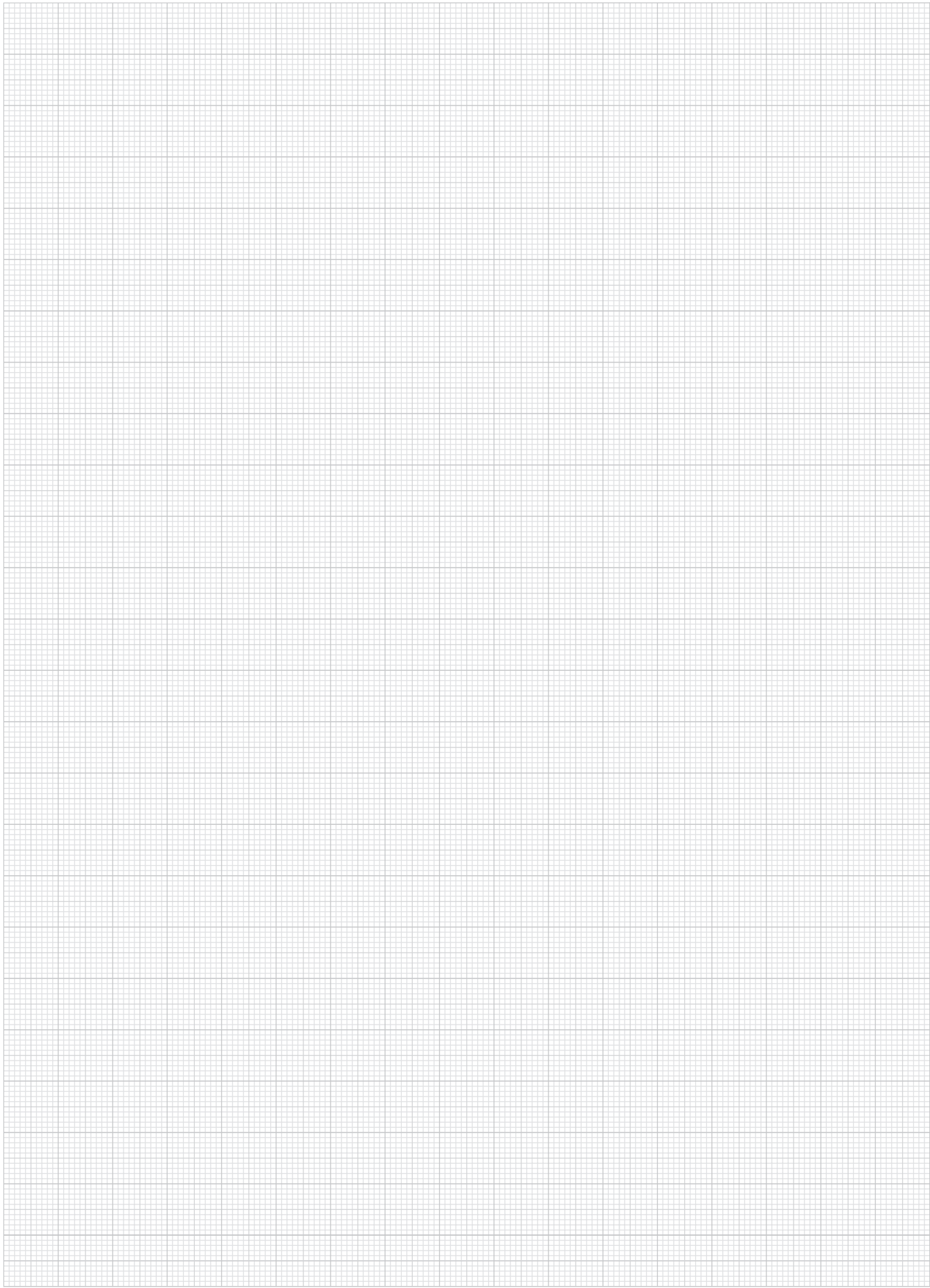
Note:

These clamp strap modules are universal, flexible clamps constructed from individual components building a compact unit. There are no loose parts which first have to be altered for a clamping operation. The compact design allows these clamps to be placed close to the workpiece enabling the full area of the machine table to be used.



Order No.	Size	Clamp range	Slot width B DIN 650
04200-10X	1	0-35	12/14/16/18
04200-20X	2	25-85	12/14/16/18
04200-30X	3	80-137	12/14/16/18
04200-40X	4	125-224	12/14/16/18
04200-50X	5	160-300	12/14/16/18

Notes



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Clamp strap assemblies


Material:

Steel.

Version:

Form A: Tempered and electro zinc-plated.

Form B: Tempered and electro zinc-plated.
Complete with DIN 787 screw for T-slots, DIN 6340 washer and DIN 6330B nut.

Form C: Tempered and electro zinc-plated.
Complete with DIN 6379 stud, DIN 6340 washer and DIN 6330B nut.

Sample order:

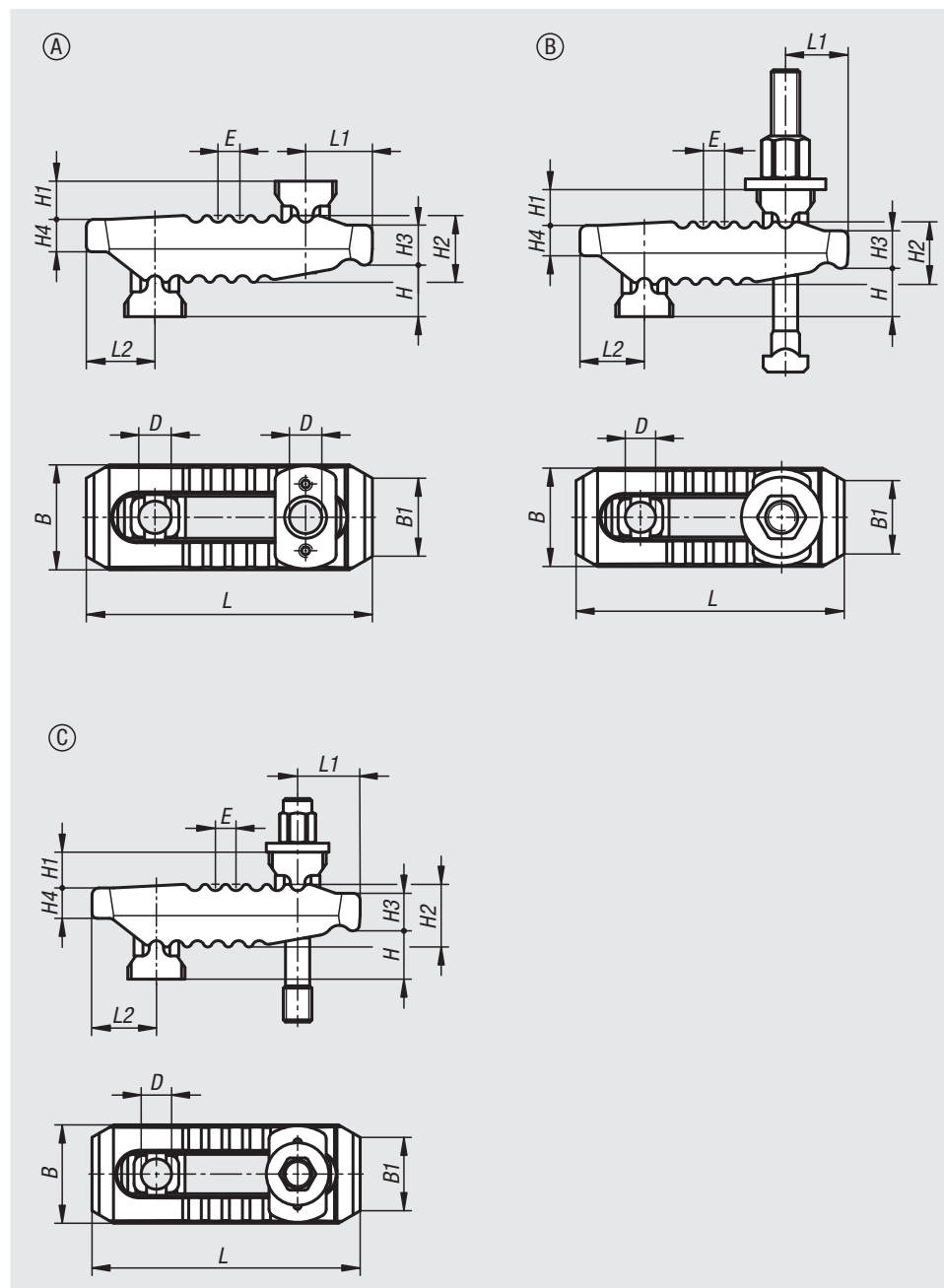
nlm 04203-113115

Note:

These clamp strap assemblies can be quickly and infinitely adapted to the clamping situation. The clamp straps have different heel types both sides enabling the best end to be selected depending on the specific application. These extremely versatile clamp straps are suitable for use by metal cutting or non-cutting machining and also for press and injection-moulding applications.

Accessories:

04204 adjustable heel supports



Clamp strap assemblies

Order No.	Form	B	B1	D	E	H clamping range	H1	H2	H3	H4	L	L1	L2	Slot width	Clamping force kN
04203-113115	A	44	30	13	11	0-55	18	27	17	12	115	25	30	10-12-14	30
04203-117150	A	55	41	17	12	0-70	20	36	21	17	150	35	36	12-14-16-18	40
04203-121187	A	62	30	21	14	0-80	30	42	27	20	187	44	44	16-18-20-22	60
04203-125235	A	70	30	25	17	0-100	31	51	34	24	235	60	47	20-22-24-28	75
04203-125285	A	73	30	25	17	0-100	35	56	35	24	285	62	51	20-22-24-28	75

Order No. with t-slot nut	Form	B	B1	D	E	H clamping range	H1	H2	H3	H4	L	L1	L2	Slot width	Fastening screw(s)	Clamping force kN
04203-210115100	B	44	30	13	11	0-40	18	27	17	12	115	25	30	10	M10X100	25
04203-212115125	B	44	30	13	11	0-55	18	27	17	12	115	25	30	12	M12X125	30
04203-214115125	B	44	30	13	11	0-55	18	27	17	12	115	25	30	14	M12X125	30
04203-212150160	B	55	41	17	12	0-70	20	36	21	17	150	35	36	12	M12X160	35
04203-214150160	B	55	41	17	12	0-70	20	36	21	17	150	35	36	14	M12X160	35
04203-216150160	B	55	41	17	12	0-70	20	36	21	17	150	35	36	16	M16X160	40
04203-218150160	B	55	41	17	12	0-70	20	36	21	17	150	35	36	18	M16X160	40
04203-216187200	B	62	30	21	14	0-80	30	42	27	20	187	44	44	16	M16X200	55
04203-218187200	B	62	30	21	14	0-80	30	42	27	20	187	44	44	18	M16X200	55
04203-220187200	B	62	30	21	14	0-80	30	42	27	20	187	44	44	20	M20X200	60
04203-222187200	B	62	30	21	14	0-80	30	42	27	20	187	44	44	22	M20X200	60
04203-220235250	B	70	30	25	17	0-100	31	51	34	24	235	60	47	20	M20X250	70
04203-222235250	B	70	30	25	17	0-100	31	51	34	24	235	60	47	22	M20X250	70
04203-224235250	B	70	30	25	17	0-100	31	51	34	24	235	60	47	24	M24X250	75
04203-228235250	B	70	30	25	17	0-100	31	51	34	24	235	60	47	28	M24X250	75

Order No. with stud	Form	B	B1	D	E	H clamping range	H1	H2	H3	H4	L	L1	L2	Fastening screw(s)	Clamping force kN
04203-312115100	C	44	30	13	11	0-30	18	27	17	12	115	25	30	M12X100	30
04203-312115125	C	44	30	13	11	0-55	18	27	17	12	115	25	30	M12X125	30
04203-312150125	C	55	41	17	12	0-50	20	36	21	17	150	35	36	M12X125	40
04203-312150160	C	55	41	17	12	0-70	20	36	21	17	150	35	36	M12X160	40
04203-316150125	C	55	41	17	12	0-40	20	36	21	17	150	35	36	M16X125	40
04203-316150160	C	55	41	17	12	0-70	20	36	21	17	150	35	36	M16X160	40
04203-320187160	C	62	30	21	14	0-40	30	42	27	20	187	44	44	M20X160	60
04203-320187200	C	62	30	21	14	0-80	30	42	27	20	187	44	44	M20X200	60
04203-320235200	C	70	30	25	17	0-70	31	51	34	24	235	60	47	M20X200	75
04203-320235250	C	70	30	25	17	0-100	31	51	34	24	235	60	47	M20X250	75
04203-324235200	C	70	30	25	17	0-50	31	51	34	24	235	60	47	M24X200	75
04203-324235250	C	70	30	25	17	0-100	31	51	34	24	235	60	47	M24X250	75

Adjustable heel supports

for clamp strap assembly


Material:

Carbon steel.

Version:

Body tempered and electro zinc-plated.
Support bolt tempered, grade 8.8.

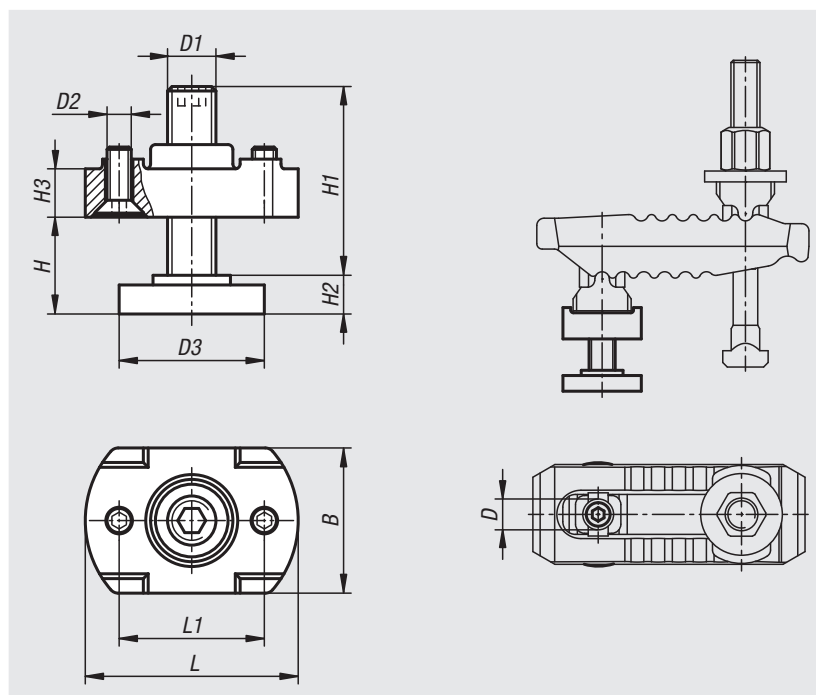
Sample order:

nIm 04204-1039

Note:

These adjustable heel supports consist of support plate, support bolt and fastening screws for the strap heel support.

Adjustable heel supports are used to increase the clamping height of the clamp strap assemblies.



Order No.	B	D	D1	D2	D3	H clamping range	H1	H2	H3	L	L1
04204-1039	30	13	M10	M5	30	8-30	39	8	10	44	30
04204-1249	42	17	M12	M5	36	10-37	49	10	16	54	35
04204-1294	42	17	M12	M5	36	10-80	94	10	16	54	35
04204-1655	50	21	M16	M5	42	13-41	55	13	20	60	40
04204-1690	50	21	M16	M5	42	13-73	90	13	20	60	40
04204-2069	50	25	M20	M6	50	16-52	69	16	25	70	50
04204-20109	50	25	M20	M6	50	16-91	109	16	25	70	50

Clamp straps pivot

steel



Material:

Carbon steel.

Version:

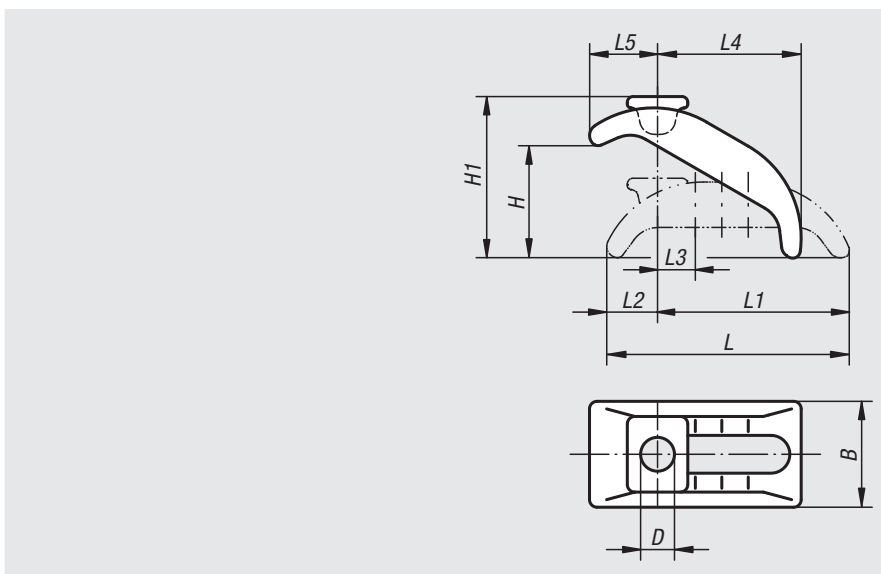
Blue electro zinc-plated.

Sample order:

nln 04205-20

Note:

The strap provides instant height adjustment without blocks or shims and requires little space on the machine table. Designed for rugged use and highly suitable for clamping blanking and punching dies. Suitable mounting bolts for these clamps see 07040.



Order No.	suitable for slot width	suitable fastening screw	D	L	L1	L2	L3	L4	L5	B	H	H1
04205-12	12, 14	M12	13	88	68	23	14	48	28	38	0-40	57
04205-16	16, 18	M16	18	130	101	29	18	74	38	56	0-65	90
04205-20	20, 22	M20	22	144	112	32	20	80	46	66	0-70	103
04205-24	24, 28	M24	25	174	135	39	24	100	52	76	0-85	120

04210

Clamp straps hinge heel

with bolt slot



Material:

Carbon steel 1.1191

Version:

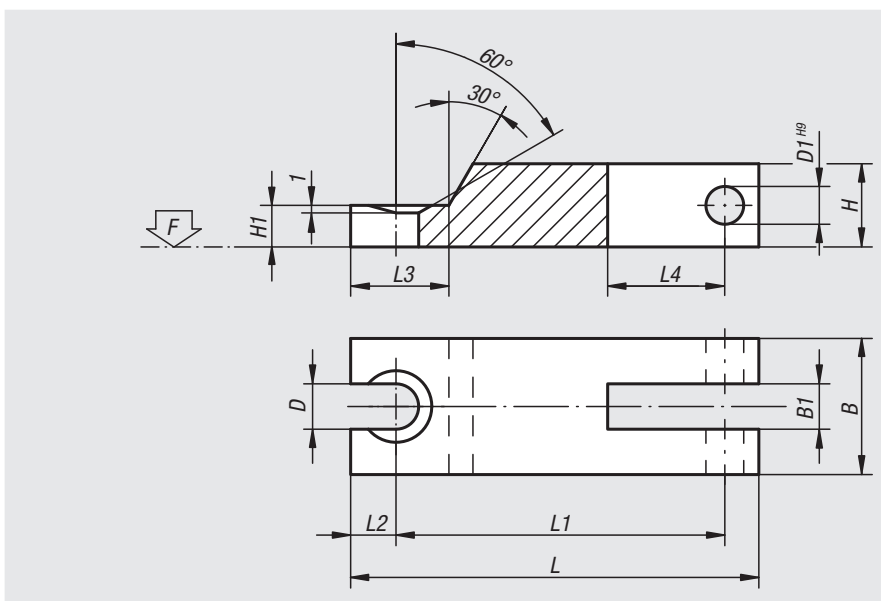
Black oxidised.

Sample order:

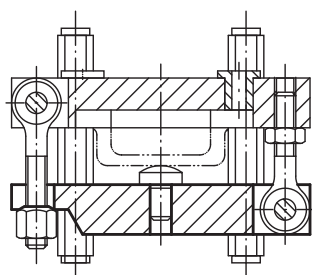
nln 04210-10

Note:

Suitable hinge pins see 04520.
Use hexagon nut 07260 to clamp.



Order No.	L	L1	L2	L3	L4	B	B1	H	H1	D	D1	F kN
04210-08	100	85	7	17	11	25	9,5	16	8	9	8	17,54
04210-10	125	105	10	24	12	32	12,5	20	10	11	10	27,8
04210-12	160	138	10	25	15	40	14,5	25	12,5	14	12	40,4



Chain clamp sets, steel


Material:

Clamping hook, steel.
Clamping bracket, steel.
Roller chain, steel.

Version:

Steel parts, tempered.

Sample order:

nlm 04211-15

Note:

Chain clamps are used mainly in machine and plant construction.
Chain clamps enable cylindrical, complicated and large to very large workpieces to be clamped securely and effectively in the quickest and easiest way.

Suitable for cylindrical workpieces, valve bodies, pistons etc.

The workpiece surface can be protected by attaching the plastic elements.

Application:

The knurled nut on the clamping bracket can be used to preset the chain length and the clamping force. The required torque is set on the clamping hook.

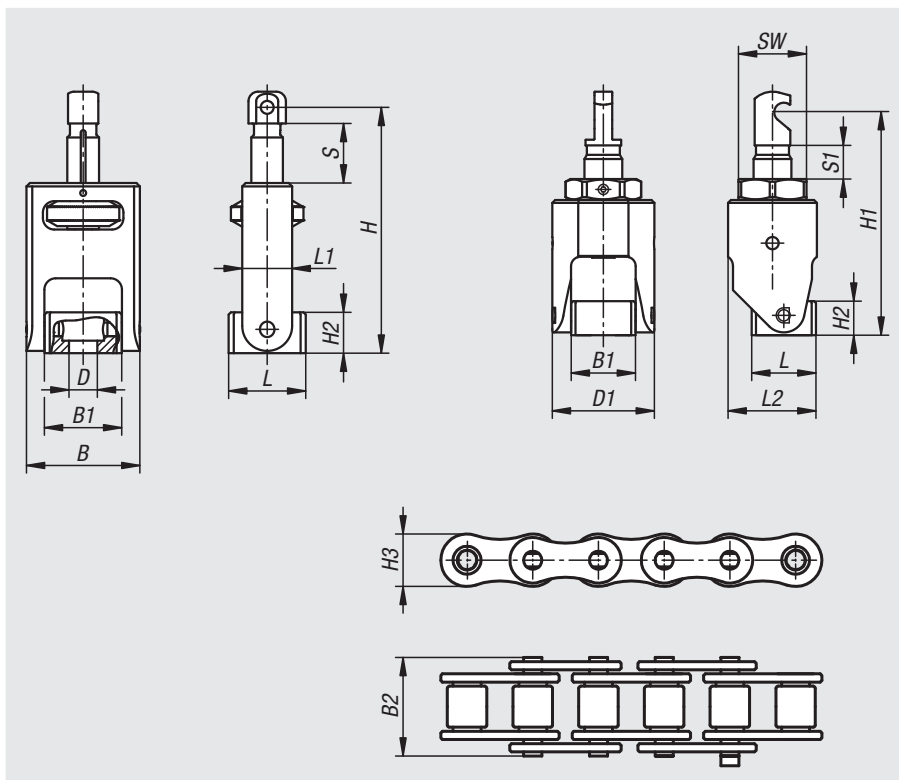
Supplied with:

Chain clamp set 04211-15:

- Clamping hook.
- Clamping bracket.
- 4x roller chains (2x 492 mm, 1x 238 mm, 1x 15.9 mm).
- 4x connecting links with cotter pins to connect.
- 6x snap-on plastic elements.
- Securing set for clamping chains.

Chain clamp set 04211-40:

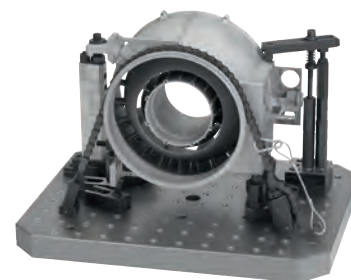
- Clamping hook.
- Clamping bracket.
- 4x roller chains (1x 991 mm, 1x 483 mm, 1x 229 mm, 1x 25.4 mm).
- 4x connecting links with cotter pins to connect.
- 6x snap-on plastic elements.
- Securing set for clamping chains.


Accessories:

Steel roller chains for chain clamp sets 04211-03.
Steel turnbuckles for chain clamp sets 04211-06.
Steel prisms for chain clamp sets 04211-09.
Nuts for T-slots DIN 508 enhanced, 07060.
Cap screws DIN EN ISO 4762, 07160.

Attention:

- The opening angle of the chain should not exceed 30°.
- Do not exceed max. permitted tightening torques.



Order No.	B	B1	B2	D	D1	H max.	H min.	H1 max.	H1 min.	H2	H3	Travel S	L	L1	L2	S1	SW	Max. torque Nm	Clamping force max. kN
04211-15	50	34	20	M12	54	108	83	118	100	18	15	25	34	21	46,5	18	36	45	15
04211-40	64	44	33	M16	70	146	110	153	122	25	21	36	37	29	61,5	31	46	90	40

Roller chains, steel, for chain clamp sets


Material:

Steel.

Sample order:

nlm 04211-03-150125

Note:

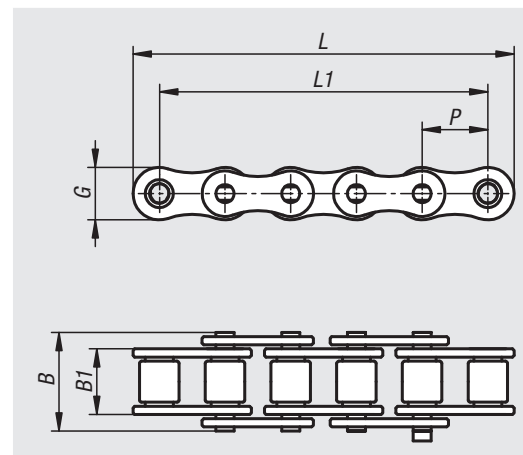
Roller chains for chain clamp sets can be used with chain clamp sets (04211) for clamping round, irregular, and large to very large workpieces. Roller chains can be shortened and joined together with other roller chains as desired.

Supplied with:

1x roller chain

Accessories:

Steel turnbuckles for chain clamp sets 04211-06.



Order No.	B	B1	G	L	L1	P	Clamping force max. kN
04211-03-150125	20	13	15	126	111	15,875	15
04211-03-150250	20	13	15	253	238	15,875	15
04211-03-150500	20	13	15	507	492	15,875	15
04211-03-151000	20	13	15	1015	1000	15,875	15
04211-03-400125	33	25	21	148	127	25,4	40
04211-03-400250	33	25	21	250	229	25,4	40
04211-03-400500	33	25	21	504	483	25,4	40
04211-03-401000	33	25	21	1012	991	25,4	40

Turnbuckles, steel, for chain clamp sets


Material:

Steel.

Sample order:

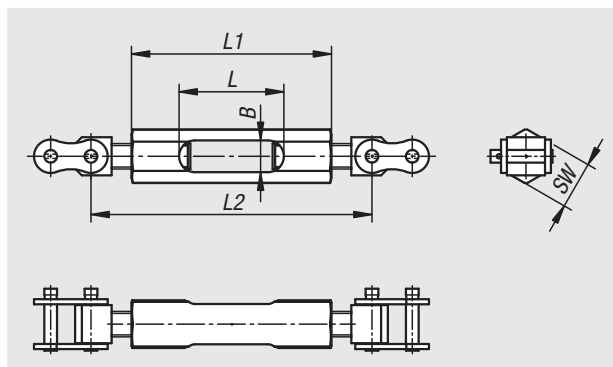
nIm 04211-06-15052

Note:

Steel turnbuckles for chain clamp sets are mounted between the chains. The turnbuckles are used to pre-tension the chain and remove any play, which is always greater with longer chains.

Accessories:

Steel roller chains for chain clamp sets 04211-03.



Order No.	B	L	L1	L2	SW	Clamping force max. kN
04211-06-15052	14	52	97	111-147	24	15
04211-06-40066	20	66	126	151-203	30	40

Prisms, steel, for chain clamp sets

**Material:**

Carbon steel.

Version:

Black oxidised.

Sample order:

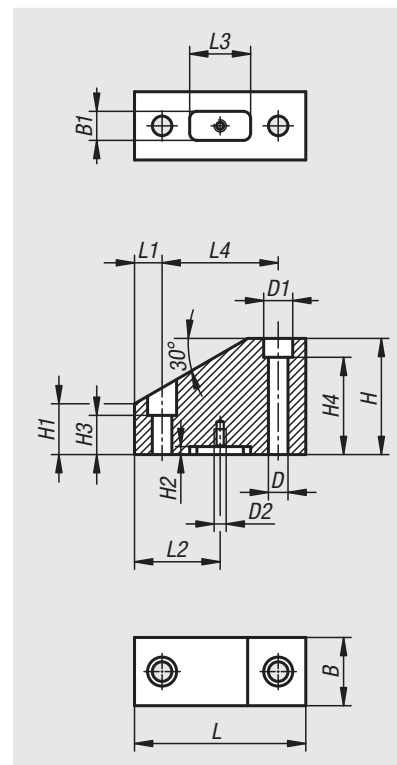
nlm 04211-09-11847080

Note:

Prisms for chain clamp sets enable flexible positioning of the workpiece. The prisms can be fastened to the machine table using T-slot nuts.

Accessories:

Nuts for T-slots DIN 508 enhanced, 07060.



Order No.	B	B1	D	D1	D2	H	H1	H2	H3	H4	L	L1	L2	L3	L4
04211-09-11847080	47	20	13,5	20	M6	80	35	5,5	27	67	118	19	59	42	80
04211-09-14847100	47	20	17,5	26	M6	100	44	5,5	33	33	148	24	74	44	100

Cam levers

internal and external thread, steel or stainless steel



Material:

Handles cast aluminum EN AC-46200.

Thrust washer plastic PA 66 GF 35-X fibreglass reinforced.

Hinge pin stainless steel 1.4305.

Studs and washer steel grade 5.8 or stainless steel 1.4305.

Version:

Handles fine structured powder-coated, black or red RAL 3003.

Thrust washer black.

Hinge pin bright.

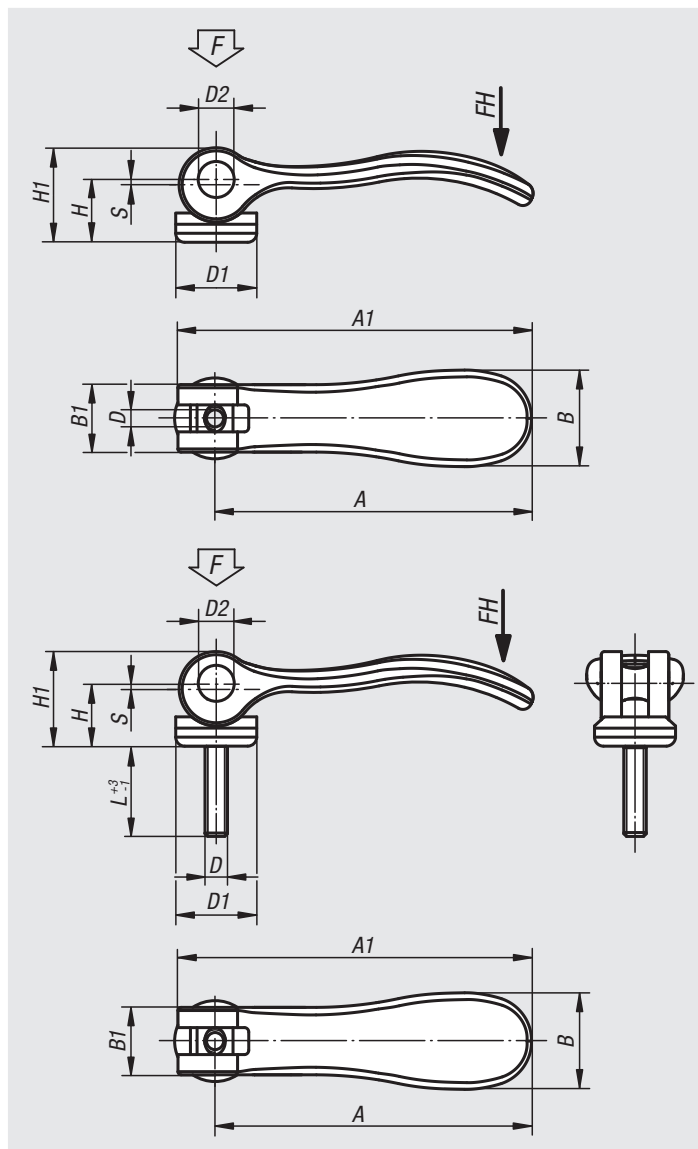
Studs and washer blue passivated steel or bright stainless steel.

Sample order:

nIm 04232-1501105X20 (include length L)

Note:

Plastics are subject to creeping under load (retardation).



Cam levers

internal and external thread, steel or stainless steel

Cam levers with internal thread, grip black

Order No. steel	Order No. stainless steel	D	D1	D2	B	B1	H	H1	A	A1	Travel S	Clamping force F (kN)	Hand force FH N
04232-9501103	04232-9511103	M3	12	6	14,4	11,5	9	13	36,2	41,7	1	1,5	90
04232-9501104	04232-9511104	M4	12	6	14,4	11,5	9	13	36,2	41,7	1	1,5	90
04232-0501104	04232-0511104	M4	15,4	8	18	13	11,2	17	52,3	59,1	1	2,5	100
04232-0501105	04232-0511105	M5	15,4	8	18	13	11,2	17	52,3	59,1	1	2,5	100
04232-1501105	04232-1511105	M5	18,1	9	21,5	15	14,5	22	70,4	79,2	1,2	4	120
04232-1501106	04232-1511106	M6	18,1	9	21,5	15	14,5	22	70,4	79,2	1,2	4	120
04232-2501108	04232-2511108	M8	27,1	11	33,3	24	18	28,5	96	108	1,5	8	350

Cam levers with internal thread, grip red

Order No. steel	Order No. stainless steel	D	D1	D2	B	B1	H	H1	A	A1	Travel S	Clamping force F (kN)	Hand force FH N
04232-9501403	04232-9511403	M3	12	6	14,4	11,5	9	13	36,2	41,7	1	1,5	90
04232-9501404	04232-9511404	M4	12	6	14,4	11,5	9	13	36,2	41,7	1	1,5	90
04232-0501404	04232-0511404	M4	15,4	8	18	13	11,2	17	52,3	59,1	1	2,5	100
04232-0501405	04232-0511405	M5	15,4	8	18	13	11,2	17	52,3	59,1	1	2,5	100
04232-1501405	04232-1511405	M5	18,1	9	21,5	15	14,5	22	70,4	79,2	1,2	4	120
04232-1501406	04232-1511406	M6	18,1	9	21,5	15	14,5	22	70,4	79,2	1,2	4	120
04232-2501408	04232-2511408	M8	27,1	11	33,3	24	18	28,5	96	108	1,5	8	350

Cam levers with external thread, grip black

Order No. steel	Order No. stainless steel	D	D1	D2	B	B1	H	H1	A	A1	L	Travel S	Clamping force F (kN)	Hand force FH N
04232-9501103X	04232-9511103X	M3	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04232-9501104X	04232-9511104X	M4	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04232-0501104X	04232-0511104X	M4	15,4	8	18	13	11,2	17	52,3	59,1	15/20/30	1	2,5	100
04232-0501105X	04232-0511105X	M5	15,4	8	18	13	11,2	17	52,3	59,1	20/30/40/50	1	2,5	100
04232-1501105X	04232-1511105X	M5	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04232-1501106X	04232-1511106X	M6	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04232-2501108X	04232-2511108X	M8	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350
04232-2501110X	04232-2511110X	M10	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350

Cam levers with external thread, grip red

Order No. steel	Order No. stainless steel	D	D1	D2	B	B1	H	H1	A	A1	L	Travel S	Clamping force F (kN)	Hand force FH N
04232-9501403X	04232-9511403X	M3	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04232-9501404X	04232-9511404X	M4	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04232-0501404X	04232-0511404X	M4	15,4	8	18	13	11,2	17	52,3	59,1	15/20/30	1	2,5	100
04232-0501405X	04232-0511405X	M5	15,4	8	18	13	11,2	17	52,3	59,1	20/30/40/50	1	2,5	100
04232-1501405X	04232-1511405X	M5	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04232-1501406X	04232-1511406X	M6	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04232-2501408X	04232-2511408X	M8	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350
04232-2501410X	04232-2511410X	M10	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350

Cam levers steel

with internal and external thread



Material:

Handle steel 1.0401.

Thrust washer plastic PA 66 GF 35-X fibreglass reinforced.

Hinge pin stainless steel 1.4305.

Stud and washer steel, grade 5.8.

Version:

Handle, stud and washer trivalent blue passivated.

Thrust washer black.

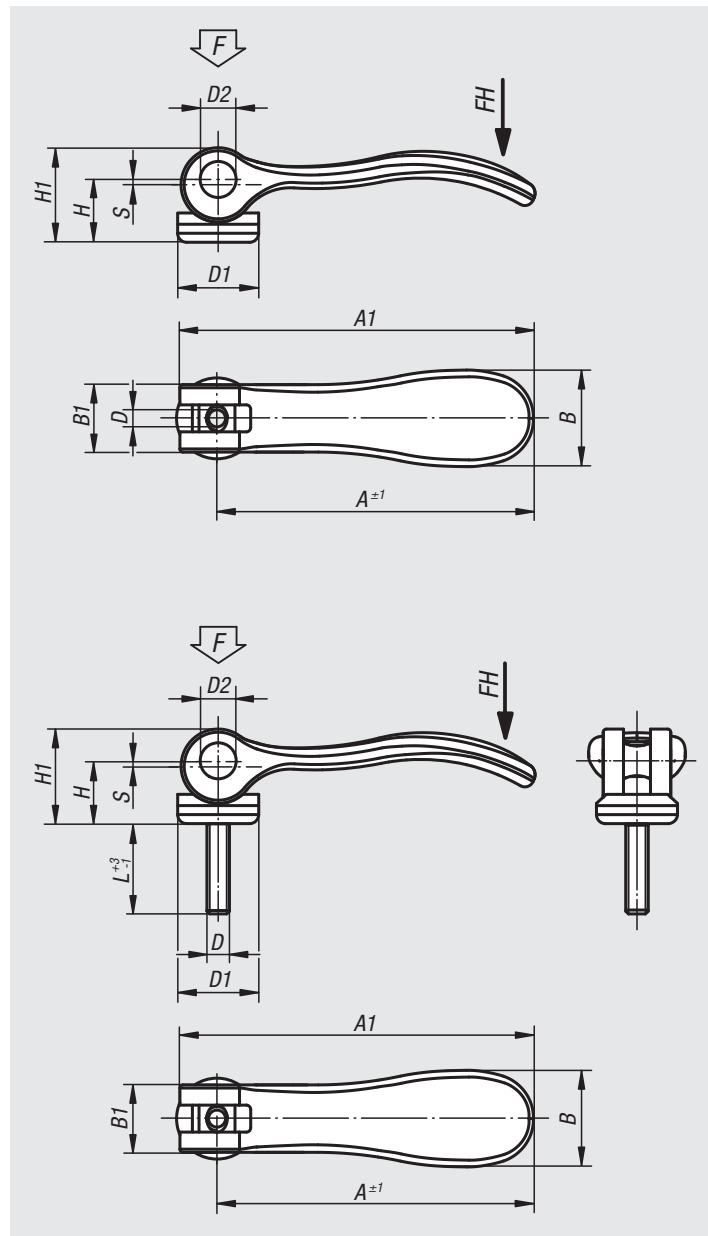
Hinge pin bright.

Sample order:

nIm 04232-1502205

Note:

Plastics are subject to creeping under load (retardation).



Cam levers with internal thread, steel

Order No.	D	D1	D2	B	B1	H	H1	A	A1	Travel S	Clamping force F (kN)	Hand force FH N
04232-1502205	M5	18,1	9	21,5	15	14,5	22	70,4	79,2	1,2	4	120
04232-1502206	M6	18,1	9	21,5	15	14,5	22	70,4	79,2	1,2	4	120
04232-2502208	M8	27,1	11	33,2	24	18	28,5	96	108	1,5	8	350

Cam levers with external thread, steel

Order No.	D	D1	D2	B	B1	H	H1	A	A1	L	Travel S	Clamping force F (kN)	Hand force FH N
04232-1502205X	M5	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04232-1502206X	M6	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04232-2502208X	M8	27,1	11	33,2	24	18	28,5	96	108	25/30/40/50	1,5	8	350
04232-2502210X	M10	27,1	11	33,2	24	18	28,5	96	108	25/30/40/50	1,5	8	350

Notes

A large grid of graph paper for taking notes. The grid consists of 20 columns and 30 rows of small squares. The grid is intended for technical drawing or note-taking.

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12000

Cam levers

internal and external thread, stainless steel



Material:

Handles 1.4308 stainless steel.

Thrust washer plastic PA 66 GF 35-X, fibreglass reinforced.

Hinge pin, washer and screw 1.4305 stainless steel.

Version:

Handle electropolished or blasted.

Thrust washer black.

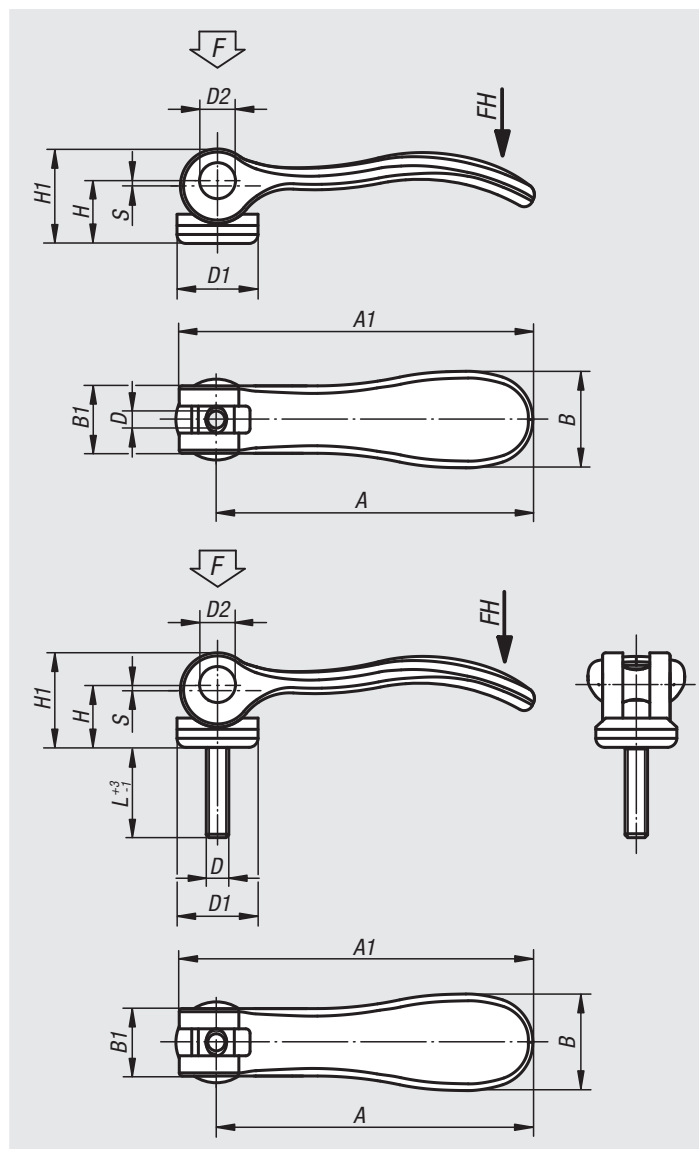
Hinge pin, washer and screw bright.

Sample order:

nIm 04232.1512005X20 (include length L)

Note:

Plastics are subject to creeping under load (retardation).



Cam levers

internal and external thread, stainless steel

Cam levers with internal thread, stainless steel

Order No.	Surface finish body	D	D1	D2	B	B1	H	H1	A	A1	Travel S	Clamping force F (kN)	Hand force FH N
04232-9512003	electropolished	M3	12	6	14,4	11,5	9	13	36,2	41,7	1	1,5	90
04232-9512004	electropolished	M4	12	6	14,4	11,5	9	13	36,2	41,7	1	1,5	90
04232-0512004	electropolished	M4	15,4	8	18	13	11,2	17	52,3	59,1	1	2,5	100
04232-0512005	electropolished	M5	15,4	8	18	13	11,2	17	52,3	59,1	1	2,5	100
04232-1512005	electropolished	M5	18,1	9	21,5	15	14,5	22	70,4	79,2	1,2	4	120
04232-1512006	electropolished	M6	18,1	9	21,5	15	14,5	22	70,4	79,2	1,2	4	120
04232-2512008	electropolished	M8	27,1	11	33,3	24	18	28,5	96	108	1,5	8	350
04232-9512303	blasted	M3	12	6	14,4	11,5	9	13	36,2	41,7	1	1,5	90
04232-9512304	blasted	M4	12	6	14,4	11,5	9	13	36,2	41,7	1	1,5	90
04232-0512304	blasted	M4	15,4	8	18	13	11,2	17	52,3	59,1	1	2,5	100
04232-0512305	blasted	M5	15,4	8	18	13	11,2	17	52,3	59,1	1	2,5	100
04232-1512305	blasted	M5	18,1	9	21,5	15	14,5	22	70,4	79,2	1,2	4	120
04232-1512306	blasted	M6	18,1	9	21,5	15	14,5	22	70,4	79,2	1,2	4	120
04232-2512308	blasted	M8	27,1	11	33,3	24	18	28,5	96	108	1,5	8	350

Cam levers with external thread, stainless steel

Order No.	Surface finish body	D	D1	D2	B	B1	H	H1	A	A1	L	Travel S	Clamping force F (kN)	Hand force FH N
04232-9512003X	electropolished	M3	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04232-9512004X	electropolished	M4	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04232-0512004X	electropolished	M4	15,4	8	18	13	11,2	17	52,3	59,1	15/20/30	1	2,5	100
04232-0512005X	electropolished	M5	15,4	8	18	13	11,2	17	52,3	59,1	20/30/40/50	1	2,5	100
04232-1512005X	electropolished	M5	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04232-1512006X	electropolished	M6	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04232-2512008X	electropolished	M8	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350
04232-2512010X	electropolished	M10	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350
04232-9512303X	blasted	M3	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04232-9512304X	blasted	M4	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04232-0512304X	blasted	M4	15,4	8	18	13	11,2	17	52,3	59,1	15/20/30	1	2,5	100
04232-0512305X	blasted	M5	15,4	8	18	13	11,2	17	52,3	59,1	20/30/40/50	1	2,5	100
04232-1512305X	blasted	M5	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04232-1512306X	blasted	M6	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04232-2512308X	blasted	M8	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350
04232-2512310X	blasted	M10	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350

Cam levers

internal or external thread, stainless steel, thrust washer stainless steel



Material:

Handle 1.4308 stainless steel.

Thrust washer 1.4034 stainless steel, hardened.

Hinge pin and stud 1.4305 stainless steel.

Version:

Handle electropolished or blasted.

Thrust washer, hinge pin and screw bright.

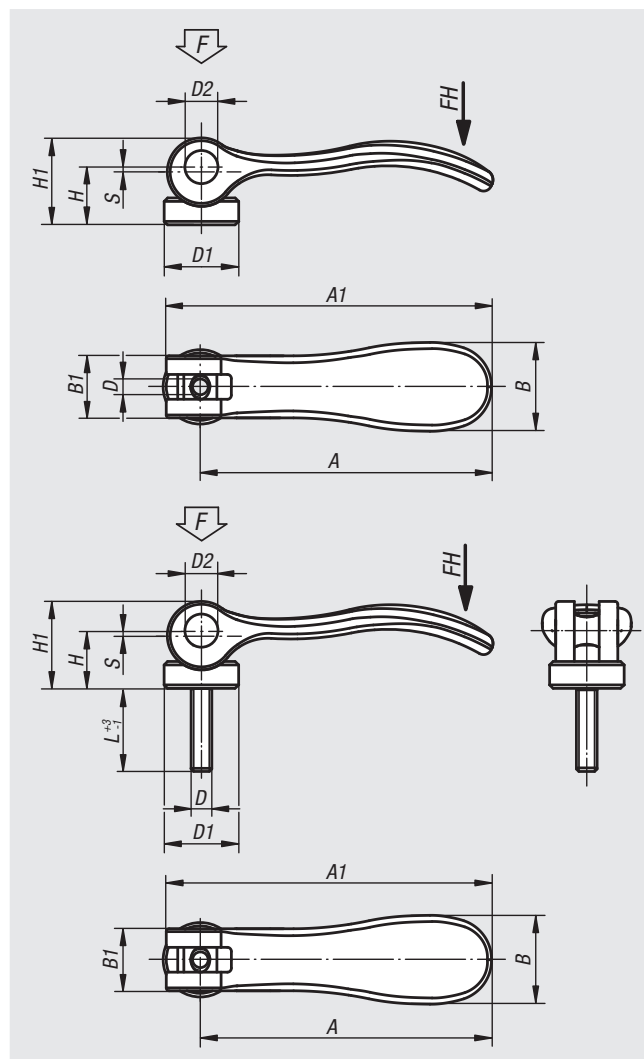
Sample order:

nIm 04232-0541005X20 (include length L)

Note:

The thrust washer face is lightly greased before delivery.

The grease is FDA conform and is suitable for use in the foodstuff and pharmaceutical industries.



Cam levers, stainless steel, with internal thread, thrust washer stainless steel

Order No. electropolished	Order No. blasted	D	D1	D2	B	B1	H	H1	A	A1	Travel S	Clamping force F (kN)	Hand force FH N
04232-9541003	04232-9541303	M3	12	6	14,4	11,5	9	13,5	36,2	41,7	1	1,5	90
04232-9541004	04232-9541304	M4	12	6	14,4	11,5	9	13,5	36,2	41,7	1	1,5	90
04232-0541004	04232-0541304	M4	15,4	8	18	13	11,4	17,2	52,3	59,1	1	2,5	100
04232-0541005	04232-0541305	M5	15,4	8	18	13	11,4	17,2	52,3	59,1	1	2,5	100
04232-1541005	04232-1541305	M5	18	9	21,5	15	14,7	22	70,4	79,2	1,2	4	120
04232-1541006	04232-1541306	M6	18	9	21,5	15	14,7	22	70,4	79,2	1,2	4	120
04232-2541008	04232-2541308	M8	27	11	33,3	24	18,3	28,8	96	108	1,5	8	350

Cam levers, stainless steel, with external thread, thrust washer stainless steel

Order No. electropolished	Order No. blasted	D	D1	D2	B	B1	H	H1	A	A1	L	Travel S	Clamping force F (kN)	Hand force FH N
04232-9541003X	04232-9541303X	M3	12	6	14,4	11,5	9	13,5	36,2	41,7	10/15/30	1	1,5	90
04232-9541004X	04232-9541304X	M4	12	6	14,4	11,5	9	13,5	36,2	41,7	10/15/30	1	1,5	90
04232-0541004X	04232-0541304X	M4	15,4	8	18	13	11,4	17,2	52,3	59,1	15/20/30	1	2,5	100
04232-0541005X	04232-0541305X	M5	15,4	8	18	13	11,4	17,2	52,3	59,1	20/30/40/50	1	2,5	100
04232-1541005X	04232-1541305X	M5	18	9	21,5	15	14,7	22	70,4	79,2	20/30/40/50	1,2	4	120
04232-1541006X	04232-1541306X	M6	18	9	21,5	15	14,7	22	70,4	79,2	20/30/40/50	1,2	4	120
04232-2541008X	04232-2541308X	M8	27	11	33,3	24	18,3	28,8	96	108	25/30/40/50	1,5	8	350
04232-2541010X	04232-2541310X	M10	27	11	33,3	24	18,3	28,8	96	108	25/30/40/50	1,5	8	350

Notes

A large grid of graph paper for taking notes. The grid consists of 20 columns and 30 rows of small squares. The grid is intended for technical drawing or note-taking.

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Cam levers with plastic handle

internal and external thread, steel or stainless steel



Material:

Grip and thrust washer plastic PA 66 fibreglass reinforced.

Hinge pins stainless steel 1.4305.

Studs and washer steel grade 5.8 or stainless steel 1.4305.

Version:

Grip black or traffic red RAL3020.

Thrust washer black.

Hinge pin bright.

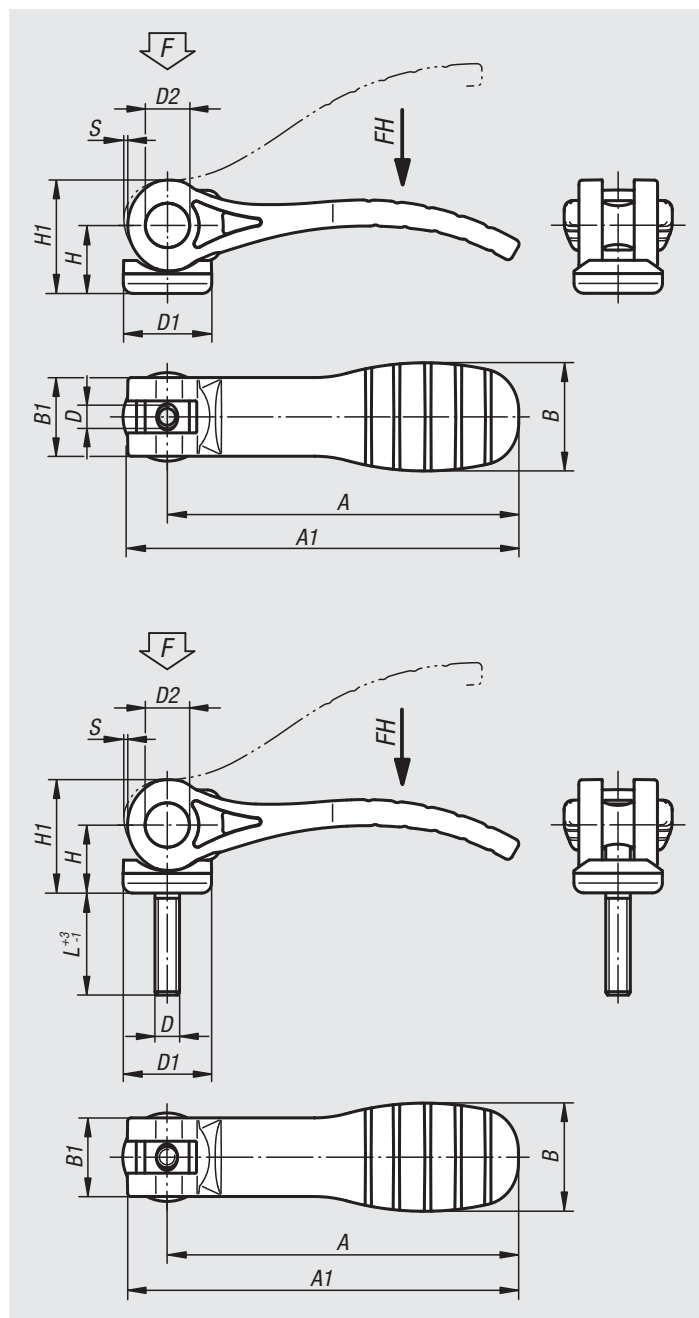
Stud and washer trivalent blue passivated or bright stainless steel.

Sample order:

nIm 04232-1521105X20 (include length L)

Note:

Plastics are subject to creeping under load (retardation), this can cause reduced clamping force.



Cam levers with black plastic grip and internal thread

Order No. steel	Order No. stainless steel	D	D1	D2	B	B1	H	H1	A	A1	Travel S	Clamping force F (kN)	Hand force FH N
04232-1521105	04232-1531105	M5	18,1	9	22	16	14	23,4	71,5	79,6	1,15	2,5	125
04232-1521106	04232-1531106	M6	18,1	9	22	16	14	23,4	71,5	79,6	1,15	2,5	125
04232-2521108	04232-2531108	M8	27,1	11	33	24,2	16,2	27,7	100	110	1,5	5	170

Cam levers with red plastic grip and internal thread

Order No. steel	Order No. stainless steel	D	D1	D2	B	B1	H	H1	A	A1	Travel S	Clamping force F (kN)	Hand force FH N
04232-152118405	04232-153118405	M5	18,1	9	22	16	14	23,4	71,5	79,6	1,15	2,5	125
04232-152118406	04232-153118406	M6	18,1	9	22	16	14	23,4	71,5	79,6	1,15	2,5	125
04232-252118408	04232-253118408	M8	27,1	11	33	24,2	16,2	27,7	100	110	1,5	5	170

Cam levers with plastic handle

internal and external thread, steel or stainless steel

Cam levers with black plastic grip and external thread

Order No. steel	Order No. stainless steel	D	D1	D2	B	B1	H	H1	A	A1	L	Travel S	Clamping force F (kN)	Hand force FH N
04232-1521105X	04232-1531105X	M5	18,1	9	22	16	14	23,4	71,5	79,6	20/30/40/50	1,15	2,5	125
04232-1521106X	04232-1531106X	M6	18,1	9	22	16	14	23,4	71,5	79,6	20/30/40/50	1,15	2,5	125
04232-2521108X	04232-2531108X	M8	27,1	11	33	24,2	16,2	27,7	100	110	25/30/40/50	1,5	5	170
04232-2521110X	04232-2531110X	M10	27,1	11	33	24,2	16,2	27,7	100	110	25/30/40/50	1,5	5	170

Cam levers with red plastic grip and external thread

Order No. steel	Order No. stainless steel	D	D1	D2	B	B1	H	H1	A	A1	L	Travel S	Clamping force F (kN)	Hand force FH N
04232-152118405X	04232-153118405X	M5	18,1	9	22	16	14	23,4	71,5	79,6	20/30/40/50	1,15	2,5	125
04232-152118406X	04232-153118406X	M6	18,1	9	22	16	14	23,4	71,5	79,6	20/30/40/50	1,15	2,5	125
04232-252118408X	04232-253118408X	M8	27,1	11	33	24,2	16,2	27,7	100	110	25/30/40/50	1,5	5	170
04232-252118410X	04232-253118410X	M10	27,1	11	33	24,2	16,2	27,7	100	110	25/30/40/50	1,5	5	170

Cam levers adjustable

external thread, steel or stainless steel



Material:

Handles cast aluminium EN AC-46200.

Thrust washer fibreglass reinforced plastic PA 66 GF 35-X.

Hinge pins 1.4305 stainless steel.

Screw and washer steel grade 5.8 or 1.4305 stainless steel.

Version:

Handles fine structured powder-coated, black or red RAL 3003.

Thrust washer black.

Hinge pin bright.

Studs and washer blue passivated steel or bright stainless steel.

Sample order:

nIm 04233-1501105X20 (include length L)

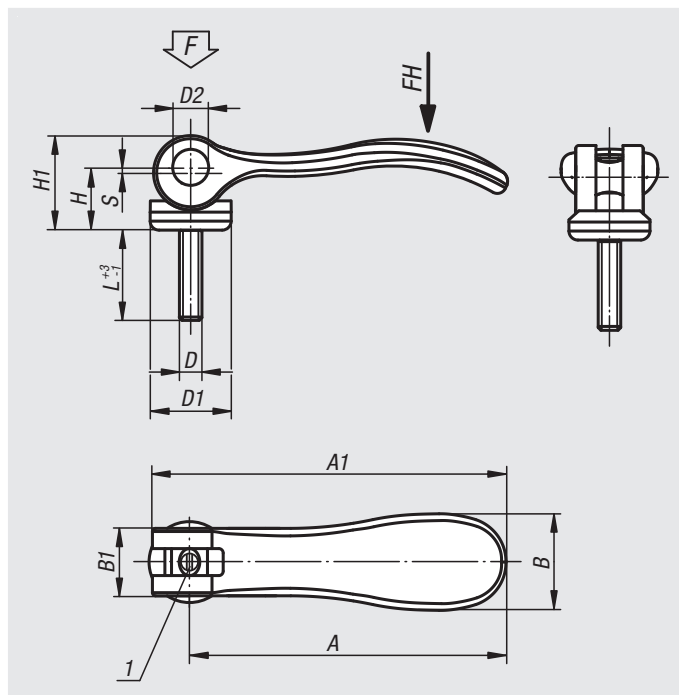
Note:

Adjustable cam levers are used if the position of the lever relative to the axis of tension only permits one specific position (interference circle). The exact position of the lever is adjusted using a screwdriver on the fine thread setscrew.

Plastics are subject to creeping under load (retardation).

Drawing reference:

1) setscrew for fine adjustment of lever



Adjustable cam levers with external thread, grip black

Order No. steel	Order No. stainless steel	D	D1	D2	B	B1	H	H1	A	A1	L	Travel S	Clamping force F (kN)	Hand force FH N
04233-9501103X	04233-9511103X	M3	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04233-9501104X	04233-9511104X	M4	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04233-0501104X	04233-0511104X	M4	15,4	8	18	13	11,2	17	52,3	59,1	15/20/30	1	2,5	100
04233-0501105X	04233-0511105X	M5	15,4	8	18	13	11,2	17	52,3	59,1	20/30/40/50	1	2,5	100
04233-1501105X	04233-1511105X	M5	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04233-1501106X	04233-1511106X	M6	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04233-2501108X	04233-2511108X	M8	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350
04233-2501110X	04233-2511110X	M10	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350

Adjustable cam levers with external thread, grip red

Order No. steel	Order No. stainless steel	D	D1	D2	B	B1	H	H1	A	A1	L	Travel S	Clamping force F (kN)	Hand force FH N
04233-9501403X	04233-9511403X	M3	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04233-9501404X	04233-9511404X	M4	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04233-0501404X	04233-0511404X	M4	15,4	8	18	13	11,2	17	52,3	59,1	15/20/30	1	2,5	100
04233-0501405X	04233-0511405X	M5	15,4	8	18	13	11,2	17	52,3	59,1	20/30/40/50	1	2,5	100
04233-1501405X	04233-1511405X	M5	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04233-1501406X	04233-1511406X	M6	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04233-2501408X	04233-2511408X	M8	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350
04233-2501410X	04233-2511410X	M10	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350

Cam levers adjustable

steel, with external thread



Material:

Handle steel 1.0401.

Thrust washer plastic PA 66 GF 35-X fibreglass reinforced.

Hinge pin stainless steel 1.4305.

Stud and washer steel, grade 5.8.

Version:

Handle, stud and washer trivalent blue passivated.

Thrust washer black.

Hinge pin bright.

Sample order:

nIm 04233-1502205X20

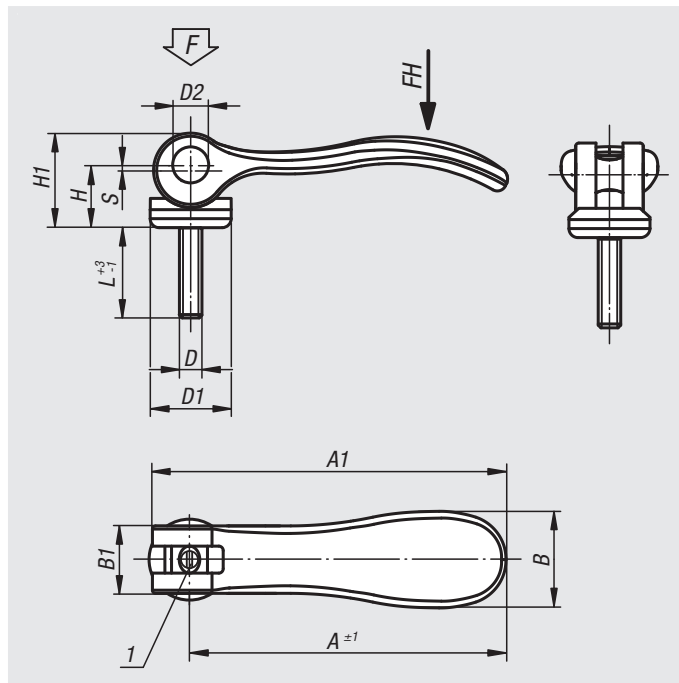
Note:

Adjustable cam levers are used if the position of the lever relative to the axis of tension only permits one specific position (interference circle). The exact position of the lever is adjusted using a screwdriver on the fine thread setscrew.

Plastics are subject to creeping under load (retardation).

Drawing reference:

1) setscrew for fine adjustment of lever



Order No.	D	D1	D2	B	B1	H	H1	A	A1	L	Travel S	Clamping force F (kN)	Hand force FH N
04233-1502205X	M5	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04233-1502206X	M6	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04233-2502208X	M8	27,1	11	33,2	24	18	28,5	96	108	25/30/40/50	1,5	8	350
04233-2502210X	M10	27,1	11	33,2	24	18	28,5	96	108	25/30/40/50	1,5	8	350

Cam levers adjustable

external thread, stainless steel



Material:

Handles 1.4308 stainless steel.

Thrust washer plastic PA 66 GF 35-X, fibreglass reinforced.

Hinge pin, washer and screw 1.4305 stainless steel.

Version:

Handle electropolished or blasted.

Thrust washer black.

Hinge pin, washer and screw bright.

Sample order:

nIm 04233-1512005X20 (include length L)

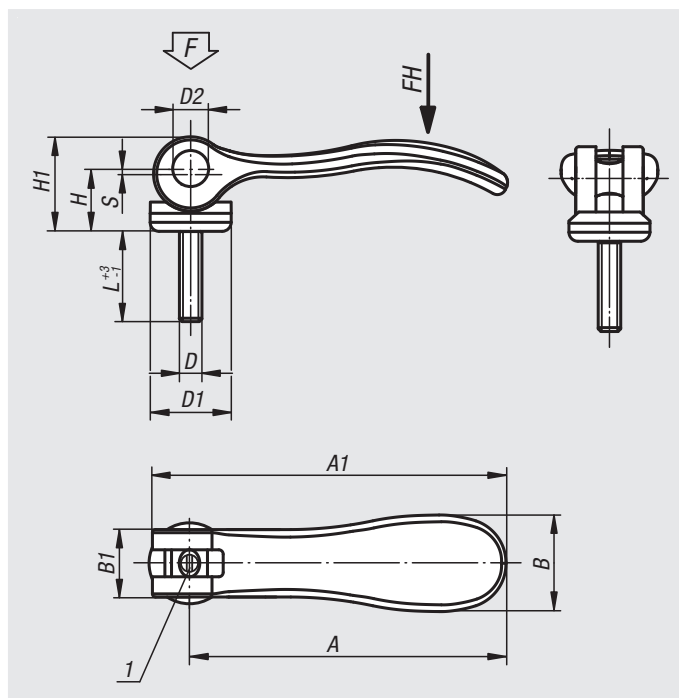
Note:

Adjustable cam levers are used if the position of the lever relative to the axis of tension only permits one specific position (interference circle). The exact position of the lever is adjusted using a screwdriver on the fine thread setscrew.

Plastics are subject to creeping under load (retardation).

Drawing reference:

1) setscrew for fine adjustment of lever



Order No.	Main colour	D	D1	D2	B	B1	H	H1	A	A1	L	Travel S	Clamping force F (kN)	Hand force FH N
04233-9512003X	electropolished	M3	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04233-9512004X	electropolished	M4	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04233-0512004X	electropolished	M4	15,4	8	18	13	11,2	17	52,3	59,1	15/20/30	1	2,5	100
04233-0512005X	electropolished	M5	15,4	8	18	13	11,2	17	52,3	59,1	20/30/40/50	1	2,5	100
04233-1512005X	electropolished	M5	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04233-1512006X	electropolished	M6	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04233-2512008X	electropolished	M8	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350
04233-2512010X	electropolished	M10	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350
04233-9512303X	blasted	M3	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04233-9512304X	blasted	M4	12	6	14,4	11,5	9	13	36,2	41,7	10/15/30	1	1,5	90
04233-0512304X	blasted	M4	15,4	8	18	13	11,2	17	52,3	59,1	15/20/30	1	2,5	100
04233-0512305X	blasted	M5	15,4	8	18	13	11,2	17	52,3	59,1	20/30/40/50	1	2,5	100
04233-1512305X	blasted	M5	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04233-1512306X	blasted	M6	18,1	9	21,5	15	14,5	22	70,4	79,2	20/30/40/50	1,2	4	120
04233-2512308X	blasted	M8	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350
04233-2512310X	blasted	M10	27,1	11	33,3	24	18	28,5	96	108	25/30/40/50	1,5	8	350

Cam levers adjustable

external thread, stainless steel, thrust washer stainless steel



Material:

Handle 1.4308 stainless steel.

Thrust washer 1.4034 stainless steel, hardened.

Hinge pin and stud 1.4305 stainless steel.

Version:

Handle electropolished or blasted.

Thrust washer, hinge pin and screw bright.

Sample order:

nIm 04233-0541305X20 (include length L)

Note:

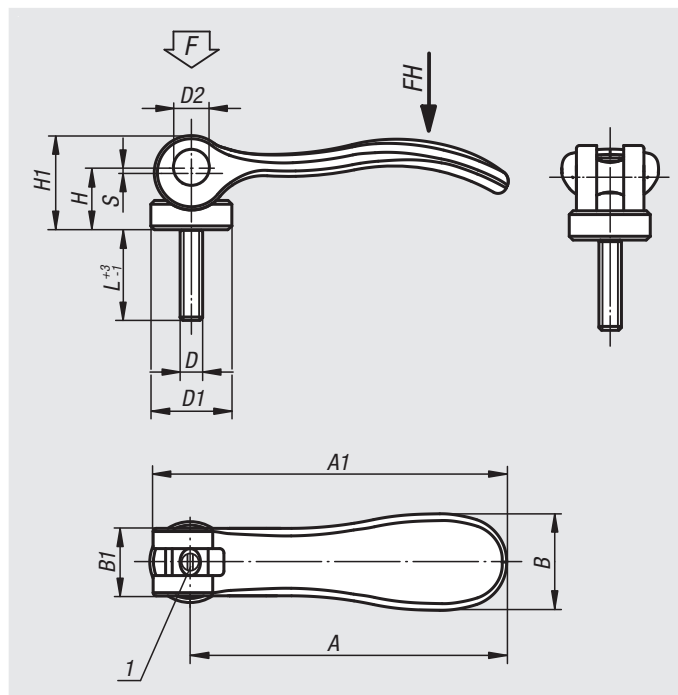
Adjustable cam levers are used when the position of the clamping lever relative to the clamping axis permits only one specific position (swing circle interference). The exact position of the clamping lever is adjusted with a screwdriver via the fine thread on the stud.

The thrust washer face is lightly greased before delivery.

The grease is FDA conform and is suitable for use in the foodstuff and pharmaceutical industries.

Drawing reference:

1) setscrew for fine adjustment of lever



Order No. electropolished	Order No. blasted	D	D1	D2	B	B1	H	H1	A	A1	L	Travel S	Clamping force F (kN)	Hand force FH N
04233-9541003X	04233-9541303X	M3	12	6	14,4	11,5	9	13,5	36,2	41,7	10/15/30	1	1,5	90
04233-9541004X	04233-9541304X	M4	12	6	14,4	11,5	9	13,5	36,2	41,7	10/15/30	1	1,5	90
04233-0541004X	04233-0541304X	M4	15,4	8	18	13	11,4	17,2	52,3	59,1	15/20/30	1	2,5	100
04233-0541005X	04233-0541305X	M5	15,4	8	18	13	11,4	17,2	52,3	59,1	20/30/40/50	1	2,5	100
04233-1541005X	04233-1541305X	M5	18	9	21,5	15	14,7	22	70,4	79,2	20/30/40/50	1,2	4	120
04233-1541006X	04233-1541306X	M6	18	9	21,5	15	14,7	22	70,4	79,2	20/30/40/50	1,2	4	120
04233-2541008X	04233-2541308X	M8	27	11	33,3	24	18,3	28,8	96	108	25/30/40/50	1,5	8	350
04233-2541010X	04233-2541310X	M10	27	11	33,3	24	18,3	28,8	96	108	25/30/40/50	1,5	8	350

Cam levers adjustable with plastic handle

external thread, steel or stainless steel



Material:

Handles and thrust washer fiberglass reinforced plastic PA 66.

Hinge pins 1.4305 stainless steel.

Screw and washer steel quality class 5.8 or 1.4305 stainless steel.

Version:

Grip black or traffic red RAL3020.

Thrust washer black.

Hinge pin bright.

Stud and washer trivalent blue passivated or bright stainless steel.

Sample order:

nIm 04233-1521105X20 (include length L)

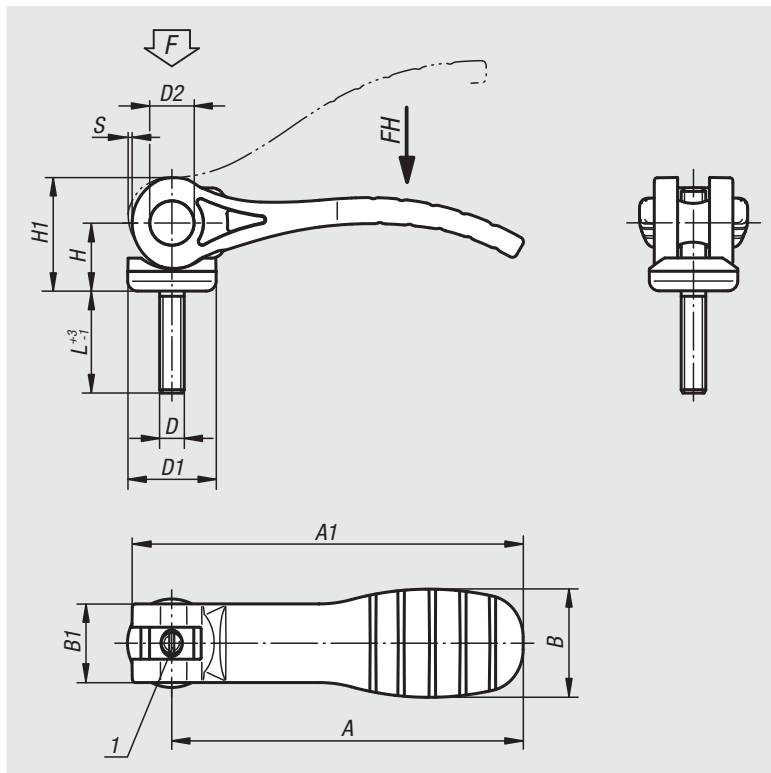
Note:

Adjustable cam levers are used if the position of the lever relative to the axis of tension only permits one specific position (interference circle). The exact position of the lever is adjusted using a screwdriver on the fine thread setscrew.

Plastics are subject to creeping under load (retardation), this can cause reduced clamping force.

Drawing reference:

1) setscrew for fine adjustment of lever



Cam levers, adjustable with black plastic grip and external thread

Order No. steel	Order No. stainless steel	D	D1	D2	B	B1	H	H1	A	A1	L	Travel S	Clamping force F (kN)	Hand force FH N
04233-1521105X	04233-1531105X	M5	18,1	9	22	16	14	23,4	71,5	79,6	20/30/40/50	1,15	2,5	125
04233-1521106X	04233-1531106X	M6	18,1	9	22	16	14	23,4	71,5	79,6	20/30/40/50	1,15	2,5	125
04233-2521108X	04233-2531108X	M8	27,1	11	33	24	16,2	27,7	100	110	25/30/40/50	1,5	5	170
04233-2521110X	04233-2531110X	M10	27,1	11	33	24	16,2	27,7	100	110	25/30/40/50	1,5	5	170

Cam levers, adjustable with red plastic grip and external thread

Order No. steel	Order No. stainless steel	D	D1	D2	B	B1	H	H1	A	A1	L	Travel S	Clamping force F (kN)	Hand force FH N
04233-152118405X	04233-153118405X	M5	18,1	9	22	16	14	23,4	71,5	79,6	20/30/40/50	1,15	2,5	125
04233-152118406X	04233-153118406X	M6	18,1	9	22	16	14	23,4	71,5	79,6	20/30/40/50	1,15	2,5	125
04233-252118408X	04233-253118408X	M8	27,1	11	33	24	16,2	27,7	100	110	25/30/40/50	1,5	5	170
04233-252118410X	04233-253118410X	M10	27,1	11	33	24	16,2	27,7	100	110	25/30/40/50	1,5	5	170

Hinge pins

**Material:**

Carbon steel 1.0503.07

Version:

Tempered and ground, bright.

Sample order:

nlm 04250-08

Note:

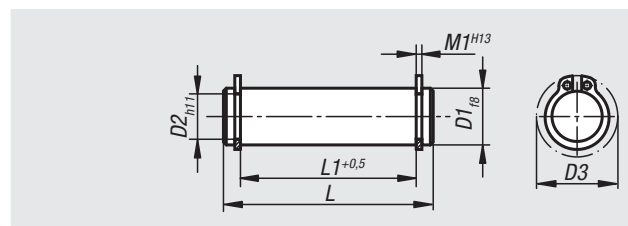
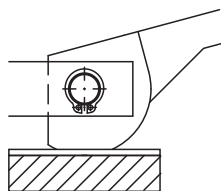
For use with:

Single cam levers 04290 and 04310.

Eye bolts 07180.

Clevis 07620.

Circlips supplied.



Order No.	D1	L	L1	M1	D2	D3
04250-05	5	18	13	0,7	4,8	10,7
04250-06	6	22	17	0,8	5,7	12,2
04250-08	8	30	25	0,9	7,6	15,2
04250-081	8	20	16	0,9	7,6	15,2
04250-082	8	27	21	0,9	7,6	15,2
04250-10	10	37	32	1,1	9,6	17,6
04250-101	10	25	20	1,1	9,6	17,6
04250-102	10	35	29	1,1	9,6	17,6
04250-12	12	46	40	1,1	11,5	19,6
04250-121	12	31	25	1,1	11,5	19,6
04250-122	12	37	31	1,1	11,5	19,6
04250-14	14	44	37	1,1	13,4	22
04250-16	16	48	41	1,1	15,2	24,4
04250-18	18	58	51	1,3	17	26,8

04270

Spacer bolts

**Material:**

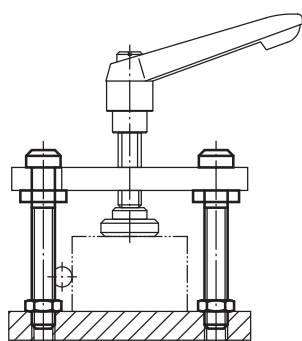
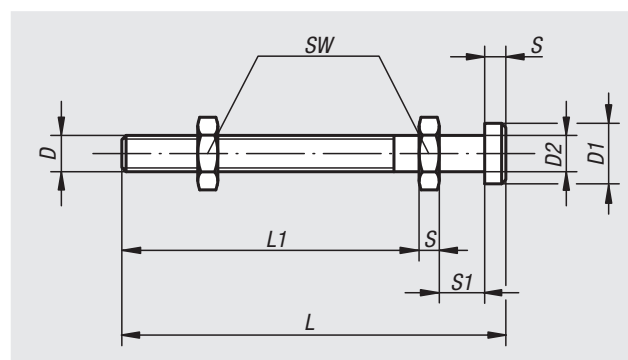
Carbon steel 1.1181.

Version:

Tempered and black oxidised.

Sample order:

nlm 04270-08



Order No.	D	D1	D2	L	L1	S	S1	SW
04270-08	M8	13	8	80	60	4	11	13
04270-10	M10	17	10	100	77	5	13	17
04270-12	M12	19	12	125	97	6	15	19
04270-14	M14	22	14	160	129	7	17	22

Cam levers single


Material:

Carbon steel 1.7220.
Ball grip plastic.

Version:

Tempered and black oxidised.

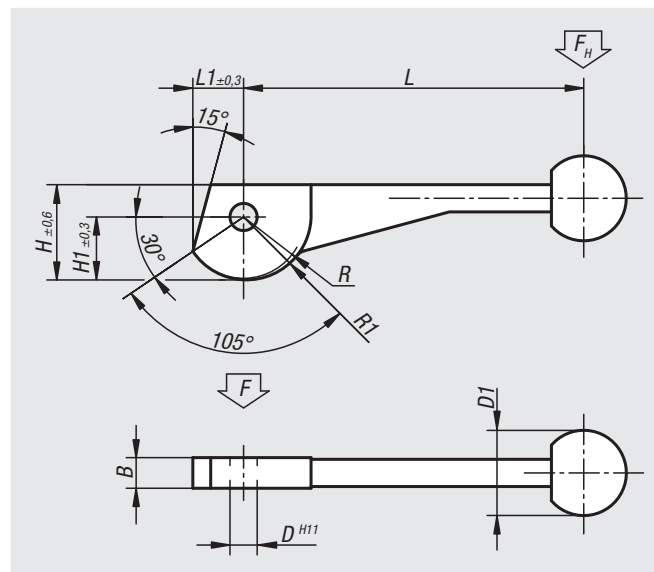
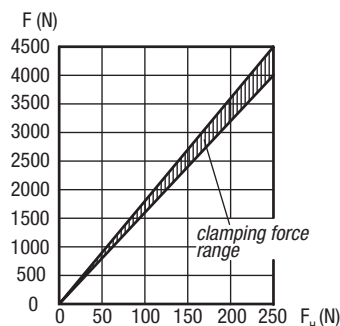
Sample order:

nlm 04290-10

Note:

Suitable hinge pin see 04250.
The cam lever is an eccentric lever that moves along a logarithmic spiral. Its clamping properties are even over the entire contact surface of the cam.

Force diagram



Order No.	L	L1	B	H	H1	D	D1	R	R1
04290-08	104±2	14,9	9	28,2	18,7	8	25	17,2	19,2
04290-10	123±2	18,6	12	34,8	23,3	10	30	21,5	24
04290-12	146±3	24,3	14	43,8	30,3	12	30	28	31,2

04310

Cam levers double


Material:

Carbon steel 1.7220.
Ball grip plastic.

Version:

Tempered and black oxidised.

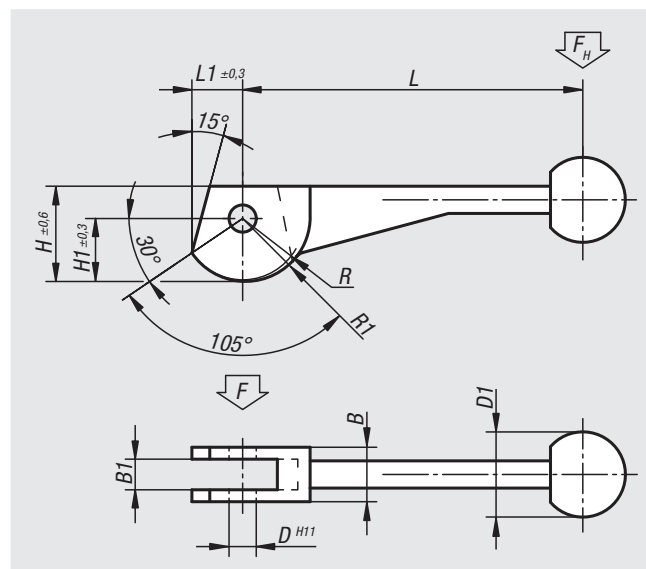
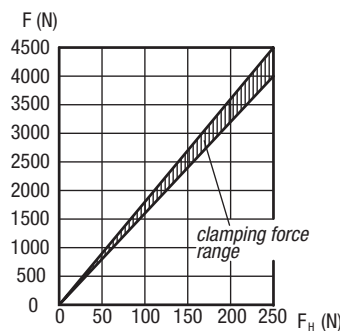
Sample order:

nlm 04310-12

Note:

Suitable hinge pin see 04250.
The cam lever is an eccentric lever that moves along a logarithmic spiral. Its clamping properties are even over the entire contact surface of the cam.

Force diagram



Order No.	L	L1	B	B1	H	H1	D	D1	R	R1
04310-08	104±2	14,9	16	9	28,2	18,7	8	25	17,2	19,2
04310-10	123±2	18,6	20	12	34,8	23,3	10	30	21,5	24
04310-12	146±3	24,3	25	14	43,8	30,3	12	30	28	31,2

Cam clamps

with end lock



Material:

Cam lever carbon steel 1.7220.
Strap carbon steel 1.1191.

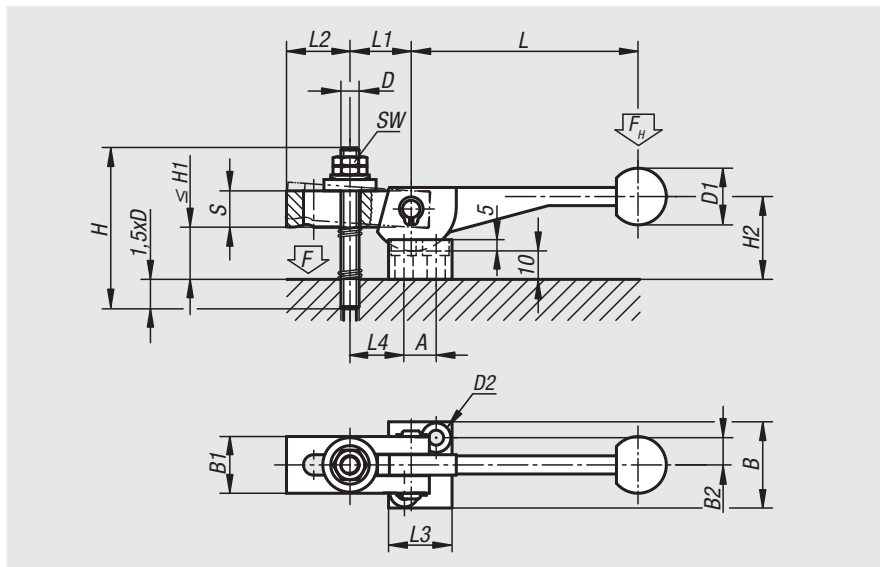
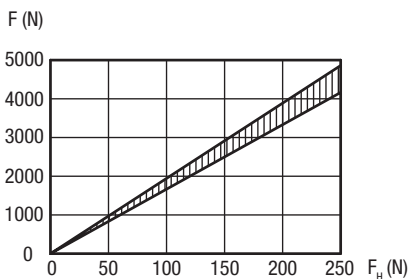
Version:

Black oxidised.

Sample order:

nlm 04330-10

Force diagram



Order No.	L	L1	L2	L3	L4	B	B1	B2	S	H	H1 max.	H2	D	D1	D2	A	SW
04330-08	104±2	27	28	28	27	38	25	12	16	70	25	34	M8	25	7	14	13
04330-10	123±2	34	36	32	35	41	32	13,5	20	80	24	40	M10	30	7	16	17
04330-12	146±3	43	45	37	45	43	40	14,5	25	100	31	48	M12	30	7	19	19

04350

Cam clamps

with middle lock



Material:

Cam lever carbon steel 1.7220.
Strap carbon steel 1.1191

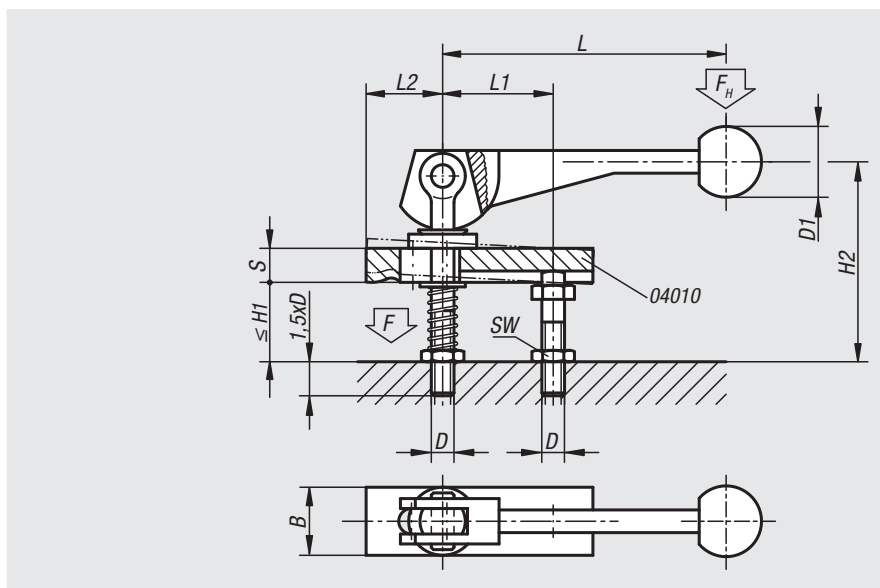
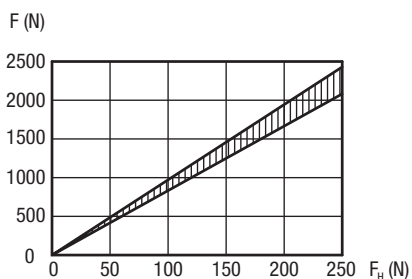
Version:

Black oxidised.

Sample order:

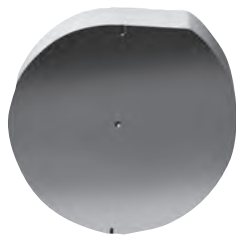
nlm 04350-12

Force diagram



Order No.	L	L1	L2	B	S	H1 max.	H2	D	D1	SW
04350-08	104±2	39	37	20	12	28	74	M8	25	13
04350-10	123±2	49	46	25	16	39	92	M10	30	17
04350-12	146±3	61	58	32	20	49	120	M12	30	19

Spiral cams


Material:

Profile steel 1.7131.

Version:

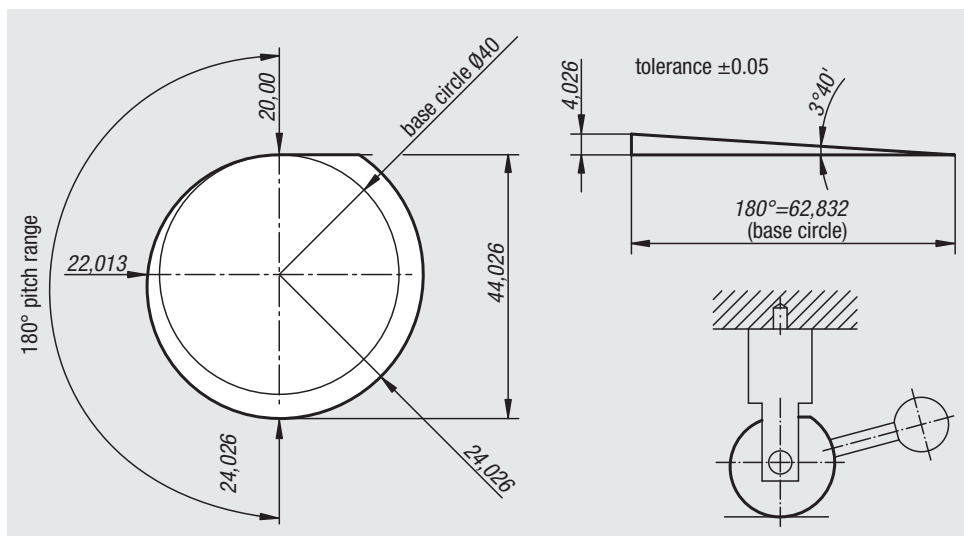
Saw cut and deburred.
Centre is centre-punched.
Start and end of spiral is marked.

Sample order:

nlm 04360-14

Note:

Spiral cams are used where something must be self-locking clamped or secured.
The cam is operated mechanically, pneumatically or hydraulically using a shaft through the centre or a lever fastened to the side. By pressure failure the self-locking effect is still operative leading to much higher operating safety by pneumatic and hydraulic clamping.



Order No.	base circle Ø	disc thickness
04360-14	40	14
04360-20	40	20

04362

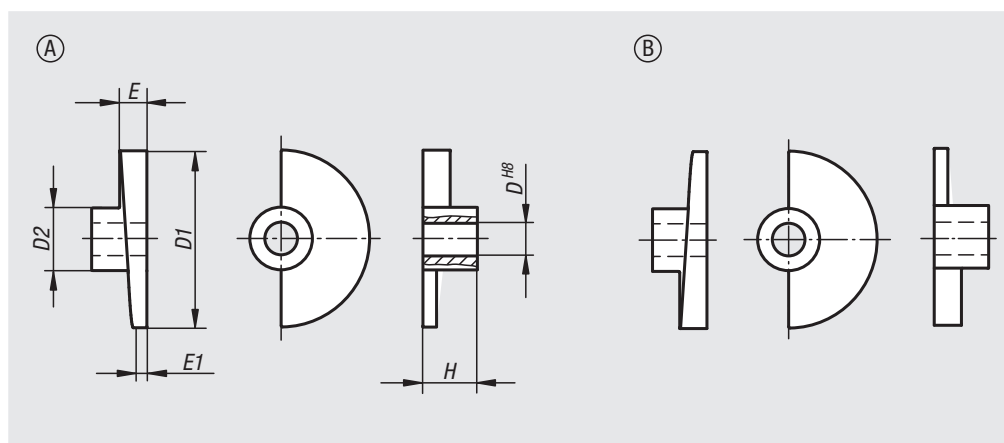
Door latch


Material:

Sintered steel

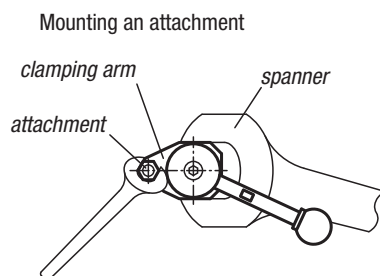
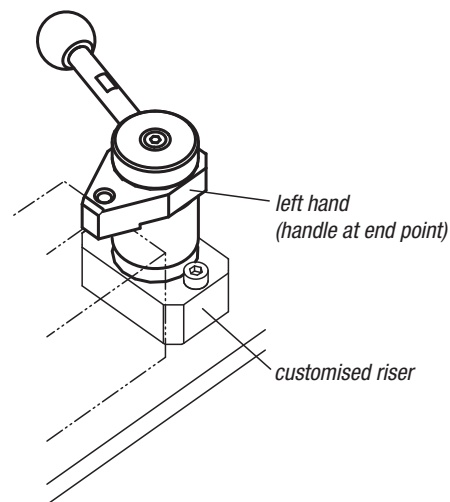
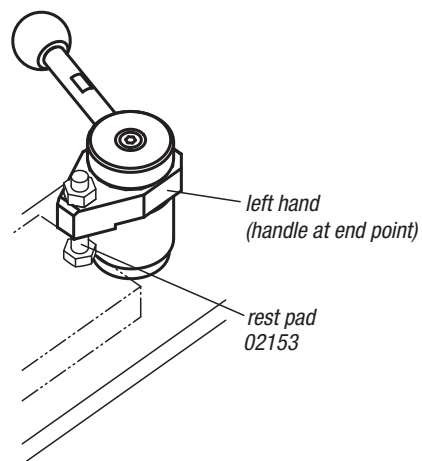
Sample order:

nlm 04362-108



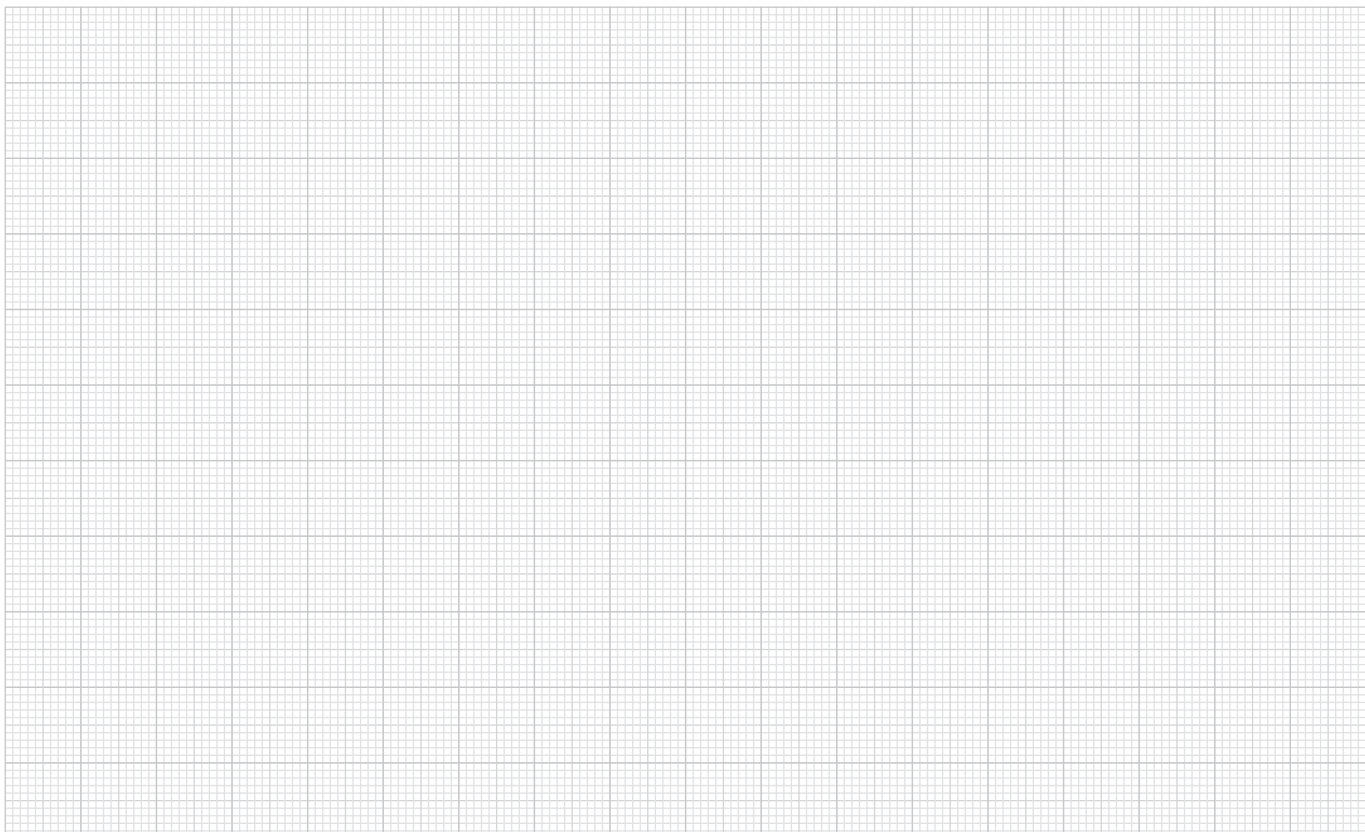
Order No. Form A right	Order No. Form B left	D	D1	D2	E	E1	H
04362-108	04362-208	8	35	18	7	3	15
04362-110	04362-210	10	35	18	7	3	15
04362-112	04362-212	12	65	23	7	5	20
04362-116	04362-216	16	80	27	9	6	24

Technical information for swing clamps



When mounting an attachment on the clamping arm, use a spanner to lock the arm and prevent it from turning.

Notes



Swing clamps mini,

with cam lever



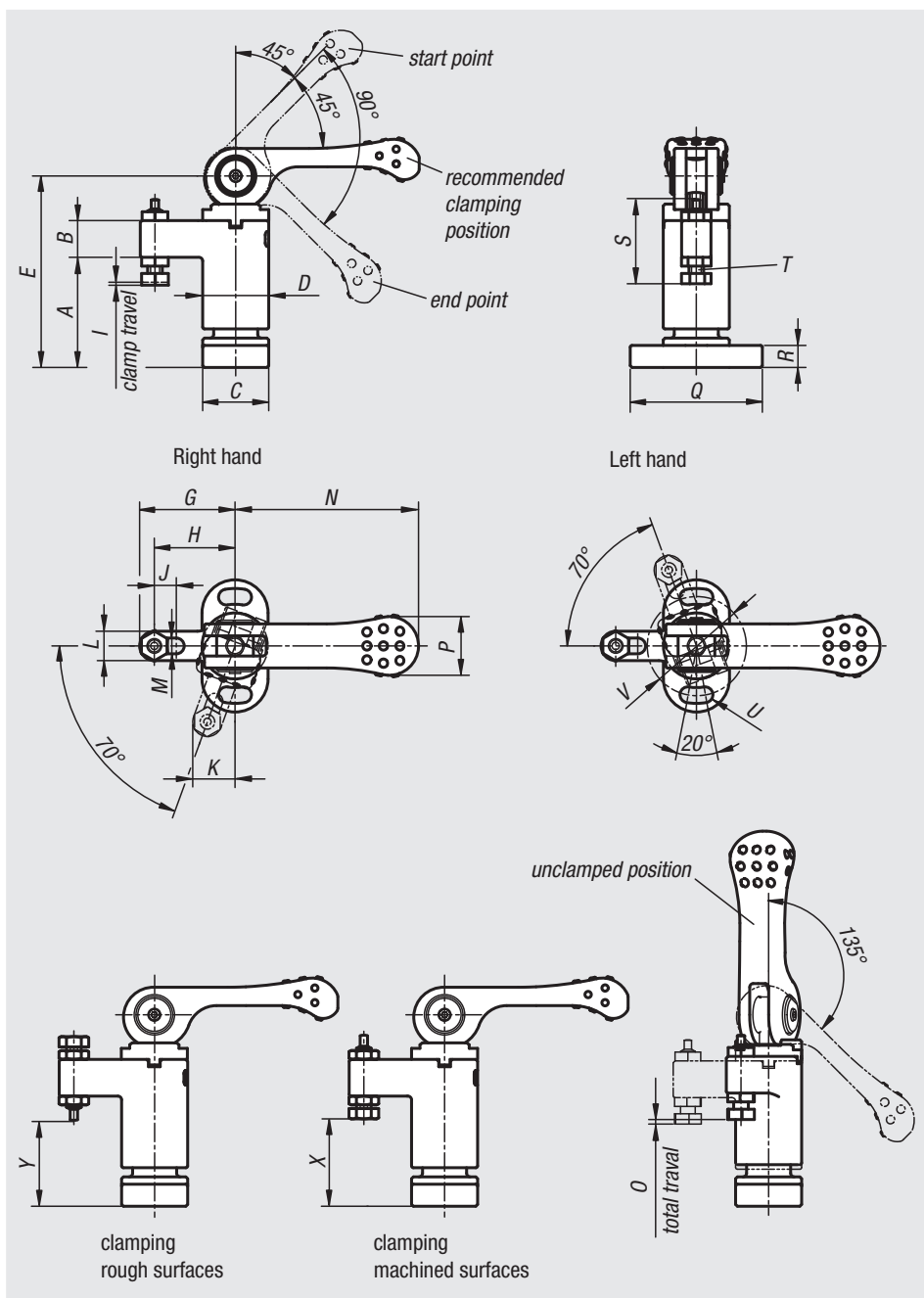
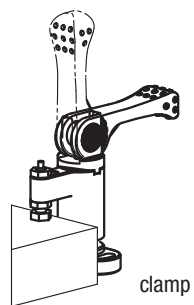
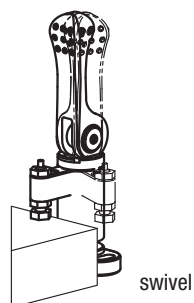
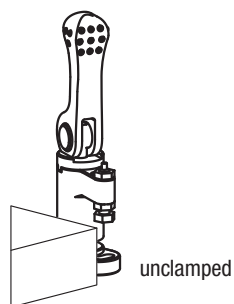
Material:
Carbon steel.

Version:
Tempered and black oxidised.

Sample order:
nlm 04363-0100

Note:
Swing clamps are used where the clamping points must be free when the workpiece is loaded or removed.

* Admissible hand force for the handle.



Order No. left	Order No. right	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.	F=retaining force N	Hand force FH N
04363-0100	04363-1100	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*
04363-0150	04363-1150	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*
04363-0200	04363-1200	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*
04363-0300	04363-1300	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*

Swing clamps mini



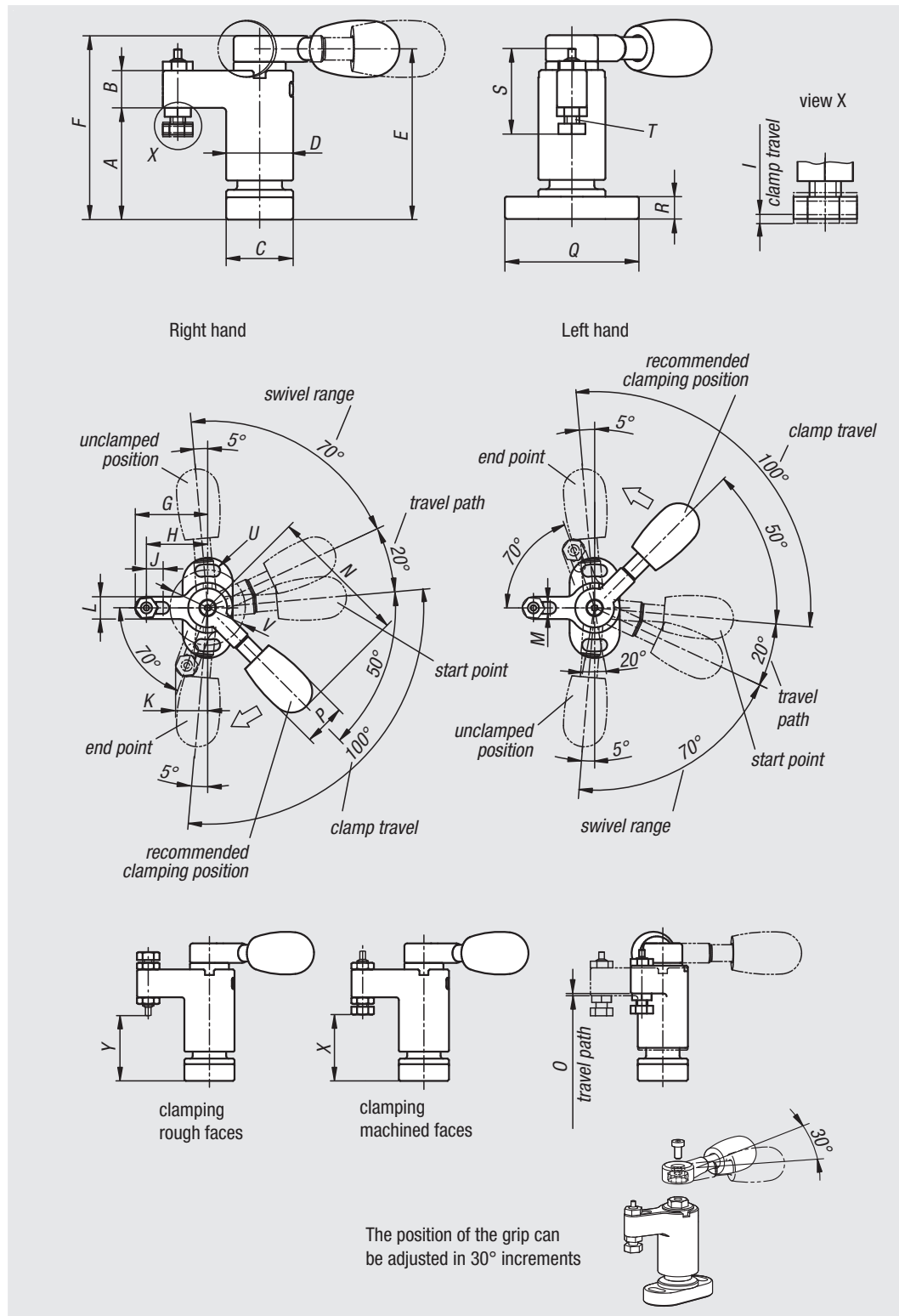
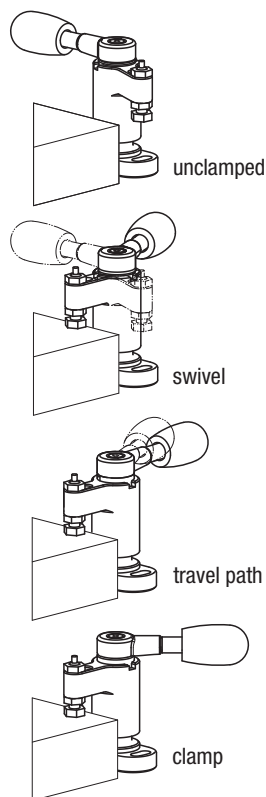
Material:
Carbon steel.
Grip plastic.

Version:
Tempered, black oxidised.
Grip black.

Sample order:
nlm 04364-0100

Note:
Swing clamps are used where the clamping points must be free when the workpiece is loaded or removed.

* Admissible hand force for the handle.



Order No. left	Order No. right	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	X	X	Y	Y	F=retaining force N	Hand force FH N
04364-0100	04364-1100	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*
04364-0150	04364-1150	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*
04364-0200	04364-1200	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*
04364-0300	04364-1300	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*

Swing clamp

pneumatic

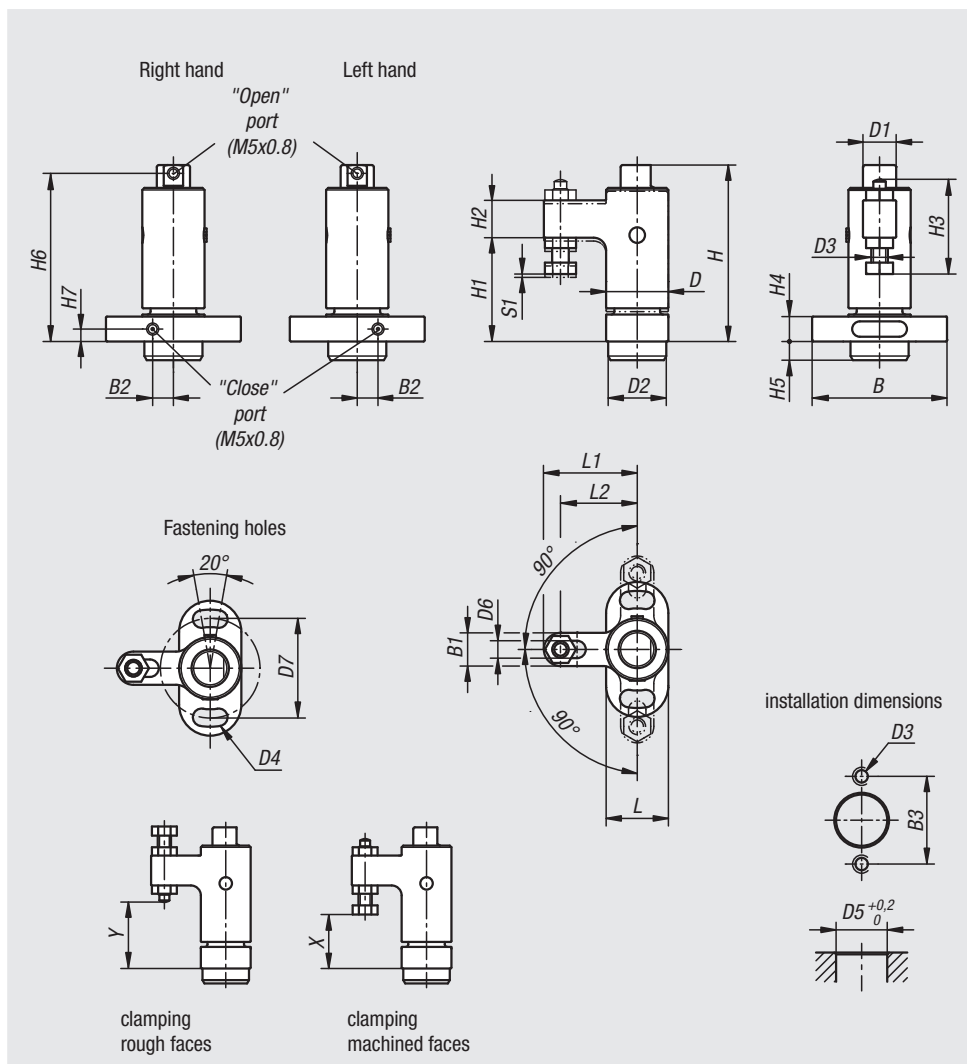


Material:
Carbon steel.

Version:
Clamping element nickel-plated.
Clamping bolt tempered and nickel-plated.

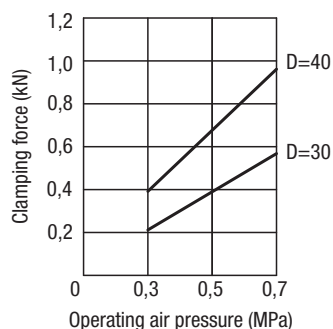
Sample order:
nlm 04365-13945

Note:
The pneumatic swing clamp is suitable for clamping workpieces from above. The swivel and clamping function occurs pneumatically. The swivel function enables unobstructed insertion and removal of the workpiece. Optimum accessibility to the workpiece is guaranteed. The foot of the housing offers universal fastening possibilities, enabling the swing clamp to be optimally aligned with the workpiece being clamped. The swing clamps are available in left or right swivelling versions. Pneumatic swing clamps can also be placed in multiple positions on the workpiece and operated in a particular order. They can be controlled manually or automatically.



The clamping force and retaining force indicated are based on 0.5 MPa.

Performance curve



Swing clamp

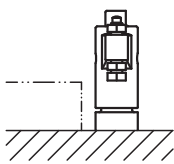
pneumatic

Setting the distance between the workpiece and thrust screw:

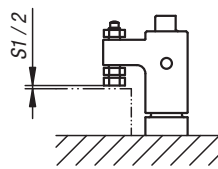
The distance between thrust screw and workpiece should be ca. half of the clamping travel (S1).

The clamping arm swivels in horizontally.

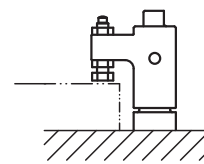
Carry out the following steps to set the thrust screw correctly.



1. Open the clamp by applying compressed air to the "open" port.



2. Manually swivel the arm to the clamping position. Set the distance between the thrust screw and the workpiece top face to half the clamping travel (S1).



3. Secure the thrust screw in place using locknuts.

Order No.	Version 1	B	B1	B2	B3	D	D1	D2	D3	D4	D5	D6	D7	H	H1	H2
04365-13945	right	65	16	10	48	30	16	28	M8	8,4	28	8,4	48	85	50	18
04365-03945	left	65	16	10	48	30	16	28	M8	8,4	28	8,4	48	85	50	18
04365-15155	right	85	20	13	64	40	22	35	M10	10,5	35	10,4	64	106	65	22
04365-05155	left	85	20	13	64	40	22	35	M10	10,5	35	10,4	64	106	65	22

Order No.	H3	H4	H5	H6	H7	L	L1	L2	S1 (travel)	F=retaining force N	Holding force F kN	Operating pressure MPa	X min.	X max.	Y min.	Y max.
04365-13945	45,5	12	9	81	6	30	45	37	1,2	400	0,8	0,3 - 0,7	32,5	39	33,5	40
04365-03945	45,5	12	9	81	6	30	45	37	1,2	400	0,8	0,3 - 0,7	32,5	39	33,5	40
04365-15155	57	15	11	101	8	40	55	45	1,6	650	1,3	0,3 - 0,7	41,5	51	44	53,5
04365-05155	57	15	11	101	8	40	55	45	1,6	650	1,3	0,3 - 0,7	41,5	51	44	53,5

Swing clamps


Material:

Carbon steel.
Ball knob plastic.

Version:

Tempered and black oxidised.
Ball knob thermoset PF 31, black.

Sample order:

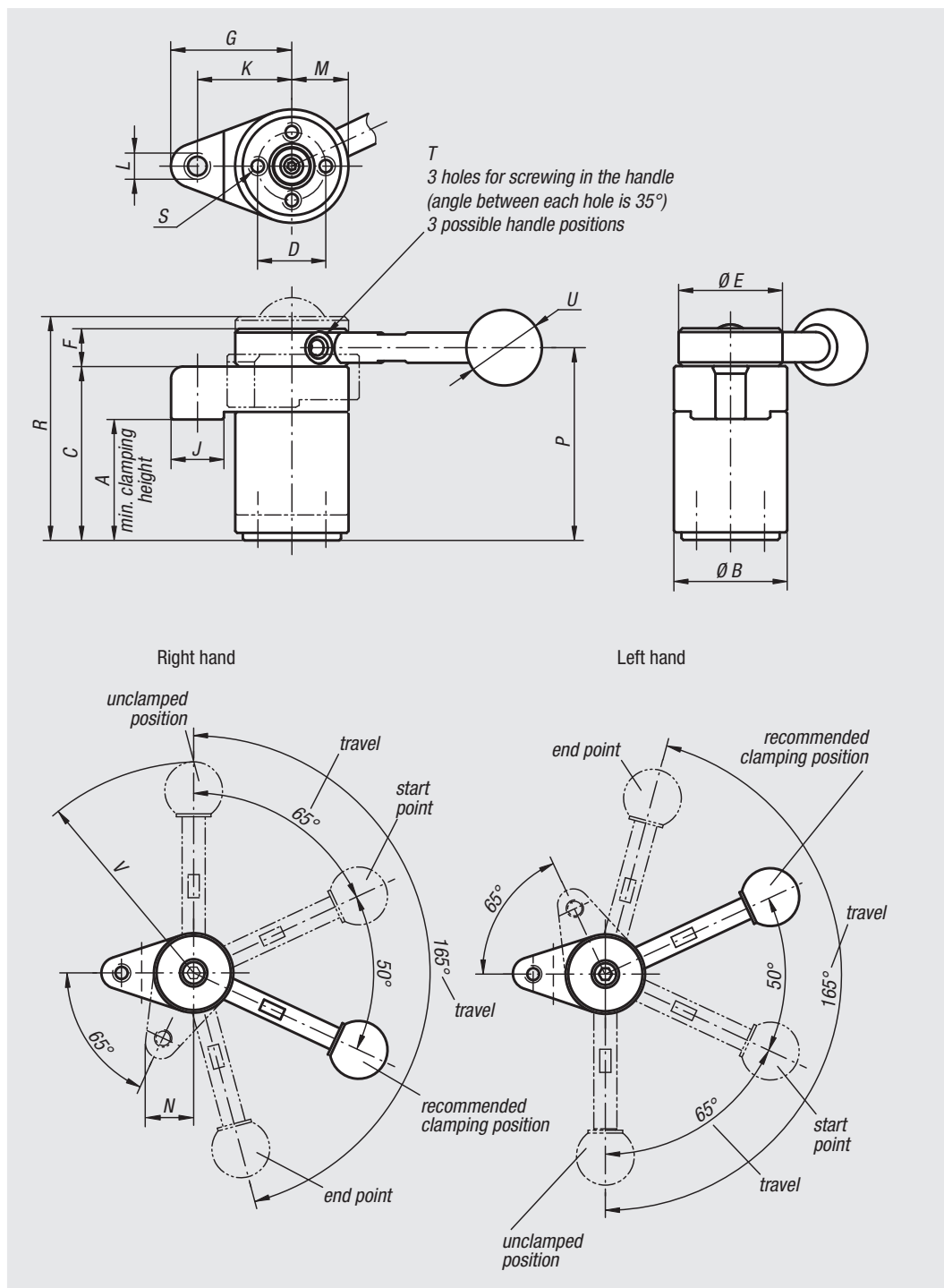
nlm 04366-013232

Note:

* Admissible hand force to operate the handle.

Accessories:

Standard handles 06355.
Screw-in handles with adjustable torque 06357.



Order No. left	Order No. right	Grip	A min.	A max.	B	C	D	E	F	G	J	K	L	M	N	P	R	S	T	U	V	F=retaining force N	Hand force FH N
04366-003232	04366-103232	without	31,4	32,6	30	46	18	30	10	32	14	25	M6	15	17	51	57,5	M4x8	M5	-	-	800	150*
04366-004540	04366-104540	without	44,1	45,9	40	63	25	38	13	40	16	32	M8	20	22,5	69,5	78,1	M6x12	M6	-	-	1200	200*
04366-013232	04366-113232	with handle	31,4	32,6	30	46	18	30	10	32	14	25	M6	15	17	51	57,5	M4x8	M5	20	73	800	150*
04366-014540	04366-114540	with handle	44,1	45,9	40	63	25	38	13	40	16	32	M8	20	22,5	69,5	78,1	M6x12	M6	25	107	1200	200*

Hook clamps

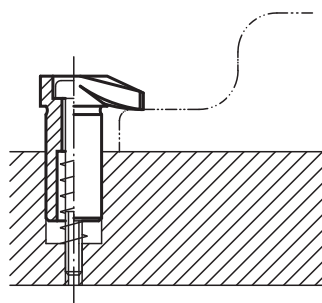
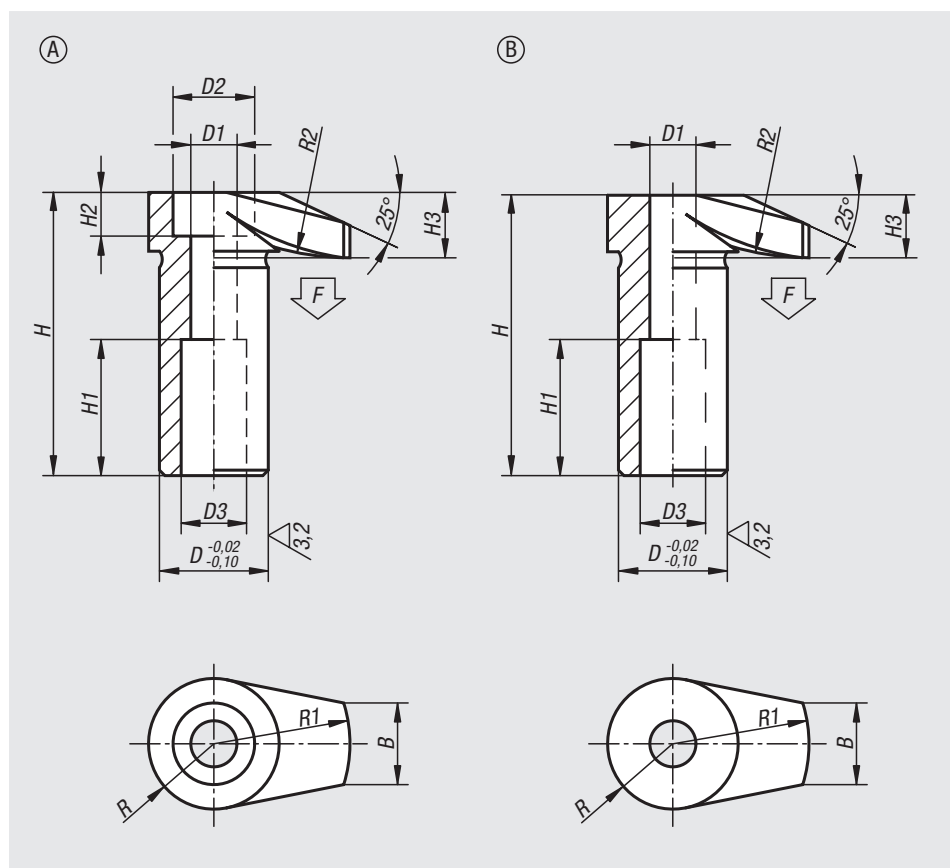


Material:
Carbon steel, tempered.

Version:
Black oxidised.

Sample order:
nlm 04370-10

Accessories:
Springs 07650 and socket head screws 07160.



Order No.	Form	D	D1	D2	D3	H	H1	H2	H3	B	R	R1	R2	F max. kN
04370-06	A	16	6,5	11	10	42	20	6	10	11	9	20	30	4,8
04370-08	A	20	8,5	15	12	52	25	8	12	15	12	25	50	8,8
04370-10	A	25	10,5	18	14	66	32	10	16	17	14	32	60	13,9
04370-12	A	32	12,5	20	17	83	40	12	20	20	18	40	80	20,2

Order No.	Form	D	D1	D3	H	H1	H3	B	R	R1	R2	F max. kN
04370-106	B	16	6,5	10	41,5	20	9,5	11	9	20	30	4,8
04370-108	B	20	8,5	12	51,5	25	11,5	15	12	25	50	8,8
04370-110	B	25	10,5	14	65,5	32	15,5	17	14	32	60	13,9
04370-112	B	32	12,5	17	82,5	40	19,5	20	18	40	80	20,2

Hook clamp

with long clamp strap


Material:

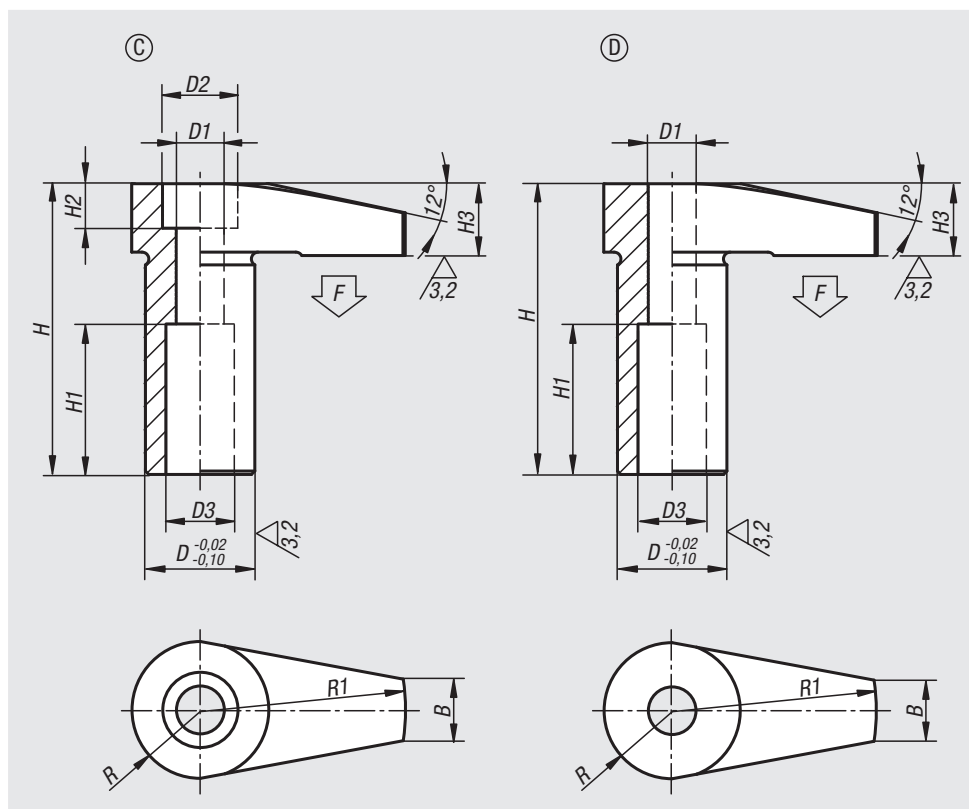
Carbon steel, tempered.

Version:

Black oxidised.

Sample order:

nlm 04370-406



Order No.	Form	B	D	D1	D2	D3	H	H1	H2	H3	R	R1	F max. kN
04370-406	C	9	16	7	11	10	42,5	22	6	10,5	10	30	4,5
04370-408	C	12	20	8,6	15	12	52,5	25	8	12,5	12,5	40	6,5
04370-410	C	18	25	10,6	18	14	66,5	32	10	16,5	16	50	11,8

Order No.	Form	B	D	D1	D3	H	H1	H3	R	R1	F max. kN
04370-506	D	9	16	7	10	42,5	22	10,5	10	30	4,5
04370-508	D	12	20	8,6	12	52,5	25	12,5	12,5	40	6,5
04370-510	D	18	25	10,6	14	66,5	32	16,5	16	50	11,8

Hook clamps

with protective insert



Material:

Carbon steel.

Soft pad POM or polyurethane 99 Shore A.

Version:

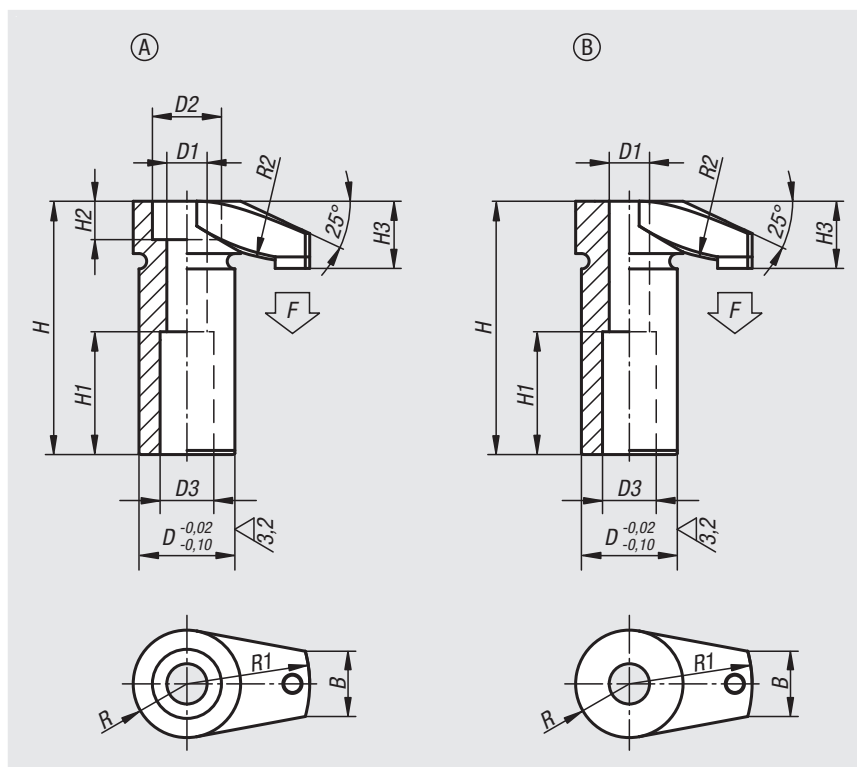
Tempered and black oxidised.

Sample order:

nIm 04370-206

Note:

The pressed in plastic inserts offer optimal damage protection for sensitive workpiece faces.



Order No.	Form	Component material	D	D1	D2	D3	H	H1	H2	H3	B	R	R1	R2	F max. kN
04370-206	A	polyacetal	16	6,5	11	10	42	20	6	10,5	11	9	20	30	4,8
04370-208	A	polyacetal	20	8,5	15	12	52	25	8	13,5	15	12	25	50	8,8
04370-210	A	polyacetal	25	10,5	18	14	66	32	10	17,5	17	14	32	60	11,6
04370-212	A	polyacetal	32	12,5	20	17	83	40	12	21	20	18	40	80	18,8
04370-2106	B	polyacetal	16	6,5	-	10	41,5	20	-	10	11	9	20	30	4,8
04370-2108	B	polyacetal	20	8,5	-	12	51,5	25	-	13	15	12	25	50	8,8
04370-2110	B	polyacetal	25	10,5	-	14	65,5	32	-	17	17	14	32	60	11,6
04370-2112	B	polyacetal	32	12,5	-	17	82,5	40	-	21	20	18	40	80	18,8
04370-306	A	polyurethane	16	6,5	11	10	42	20	6	10,5	11	9	20	30	4,8
04370-308	A	polyurethane	20	8,5	15	12	52	25	8	13,5	15	12	25	50	8,8
04370-310	A	polyurethane	25	10,5	18	14	66	32	10	17,5	17	14	32	60	11,6
04370-312	A	polyurethane	32	12,5	20	17	83	40	12	21	20	18	40	80	18,8
04370-3106	B	polyurethane	16	6,5	-	10	41,5	20	-	10	11	9	20	30	4,8
04370-3108	B	polyurethane	20	8,5	-	12	51,5	25	-	13	15	12	25	50	8,8
04370-3110	B	polyurethane	25	10,5	-	14	65,5	32	-	17	17	14	32	60	11,6
04370-3112	B	polyurethane	32	12,5	-	17	82,5	40	-	21	20	18	40	80	18,8

Hook clamps

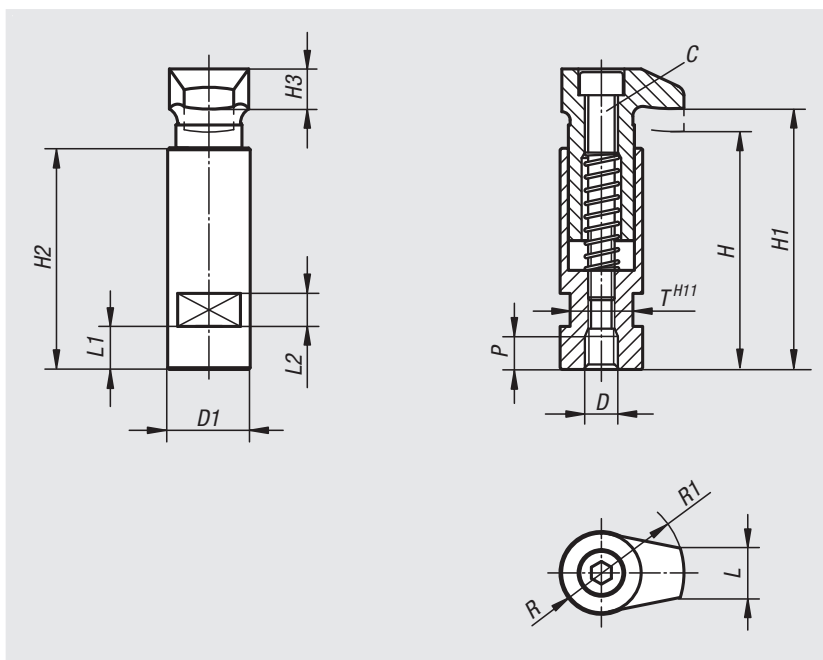
with collar



Material:
Carbon steel.

Version:
Tempered and black oxidised.

Sample order:
nlm 04371-06



Order No.	C	D	D1	H	H1	H2	H3	L	L1	L2	P	R	R1	T	Clamping force kN
04371-06	M6	M6	20	56	60	53	10	11	9	8	8	9	20	17	4,82
04371-08	M6	M8	20	56	60	53	10	11	9	8	8	9	20	17	8,77
04371-10	M8	M10	25	72	79	67	12	15	13	10	10	12	25	19	13,9
04371-12	M10	M12	32	88	96	82	16	17	18	12	12	14	32	27	20,2
04371-16	M12	M16	40	109	118	102	20	20	22	12	16	18	40	32	37,8

Hook clamps

with collar and cam lever



Material:

Body and hook, high-carbon steel.

Handles, cast aluminium EN AC-46200.

Thrust washer, fibreglass reinforced plastic PA 66 GF 35-X.

Hinge pin, stud and washer stainless steel 1.4305.

Version:

Body and hook tempered and black oxidised.

Handles, black powder-coated.

Thrust washer black.

Hinge pin, stud and washer bright.

Sample order:

nlm 04371-106

Note:

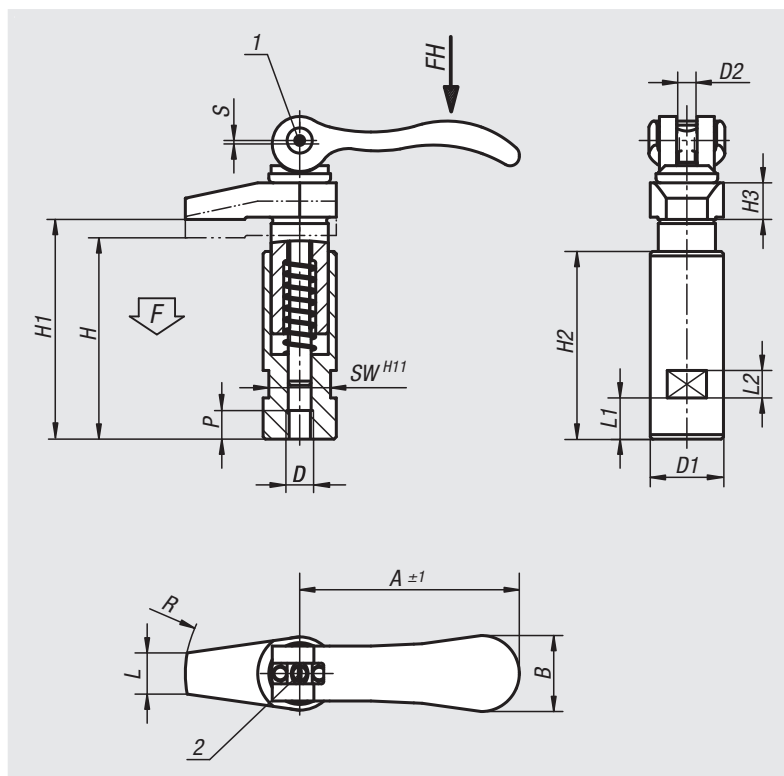
Ideal for clamping where the parts are to be inserted from above as the hook can be swivelled out of the way.

The exact clamping height is set by the fine thread on the stud using a screwdriver. This setting can be secured with the locking screw. The length S corresponds to the cam travel.

Drawing reference:

1) Locking screw for pin

2) Screw for fine adjustment of lever



Order No.	D	D1	D2	H	H1	H2	H3	L	L1	L2	A	B	P	R	SW	Travel S	F kN	Hand force FH N
04371-106	M6	20	M6x0,5	56	60	53	10	9	9	8	70,4	21,5	8	30	17	1,2	4	120
04371-108	M8	20	M6x0,5	56	60	53	10	9	9	8	70,4	21,5	8	30	17	1,2	4	120
04371-110	M10	25	M8x0,75	72	79	67	12	12	13	10	96	33,3	10	40	19	1,5	8	350
04371-112	M12	32	M8x0,75	88	96	82	15	18	18	12	96	33,3	12	50	27	1,5	8	350

Hook clamps

with collar and cam lever



Material:

Body and hook, high-carbon steel.

Handles, cast aluminium EN AC-46200.

Thrust washer, fibreglass reinforced plastic PA 66 GF 35-X.

Hinge pin, stud and washer stainless steel 1.4305.

Version:

Body and hook tempered and black oxidised.

Handles, black powder-coated.

Thrust washer black.

Hinge pin, stud and washer bright.

Sample order:

nln 04371-208

Note:

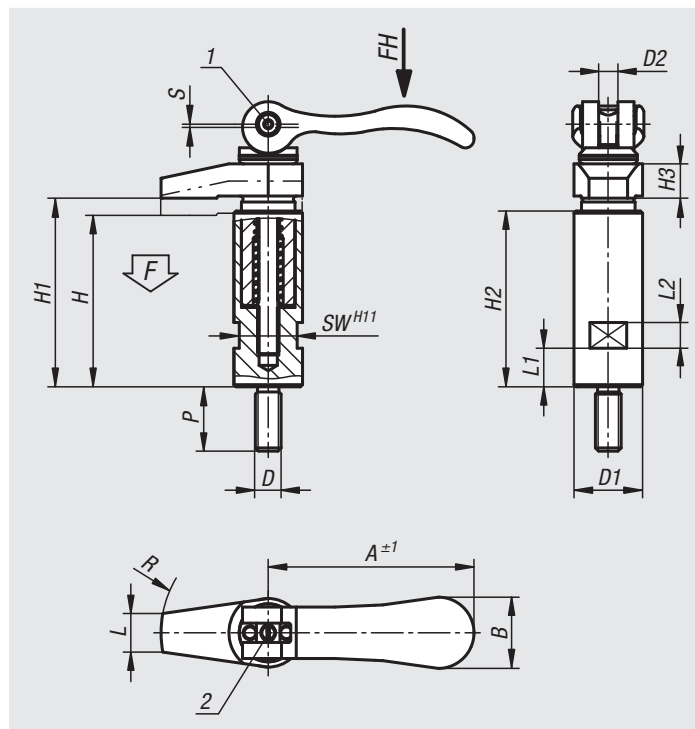
Ideal for clamping where the parts are to be inserted from above as the hook can be swivelled out of the way.

The exact clamping height is set by the fine thread on the stud using a screwdriver. This setting can be secured with the locking screw. The length S corresponds to the cam travel.

Drawing reference:

1) Locking screw for pin

2) Screw for fine adjustment of lever



Order No.	D	D1	D2	H	H1	H2	H3	L	L1	L2	A	B	P	R	SW	Travel S	F kN	Hand force FH N
04371-206	M6	20	M6x0,5	56	60	53	10	9	9	8	70,4	21,5	20	30	17	1,2	4	120
04371-208	M8	20	M6x0,5	56	60	53	10	9	9	8	70,4	21,5	20	30	17	1,2	4	120
04371-210	M10	25	M8x0,75	72	79	67	12	12	13	10	96	33,3	25	40	19	1,5	8	350
04371-212	M12	32	M8x0,75	88	96	82	18	18	18	12	96	33,3	30	50	27	1,5	8	350

Notes

A large grid of graph paper for taking notes. The grid is composed of small squares, with larger squares forming a 10x10 pattern. The grid is intended for technical drawing or note-taking.

01000
02000
03000
04000
05000
06000
07000
08000
09000
10000
12000

Hook clamps


Material:

Carbon steel, tempered.

Version:

Form A-C: black oxidised. Shaft diameter ground.

Form D: black oxidised.

Sample order:

nln 04372-216040

Note:

The stated clamping forces ($F_{max.}$) and tightening torques are valid within the stated clamping ranges ($H5$).

Advantages:

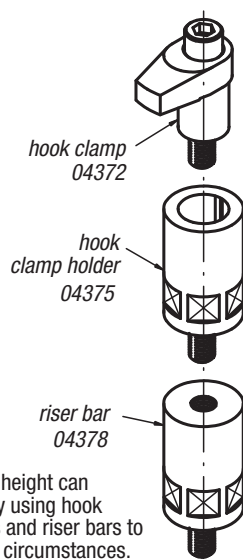
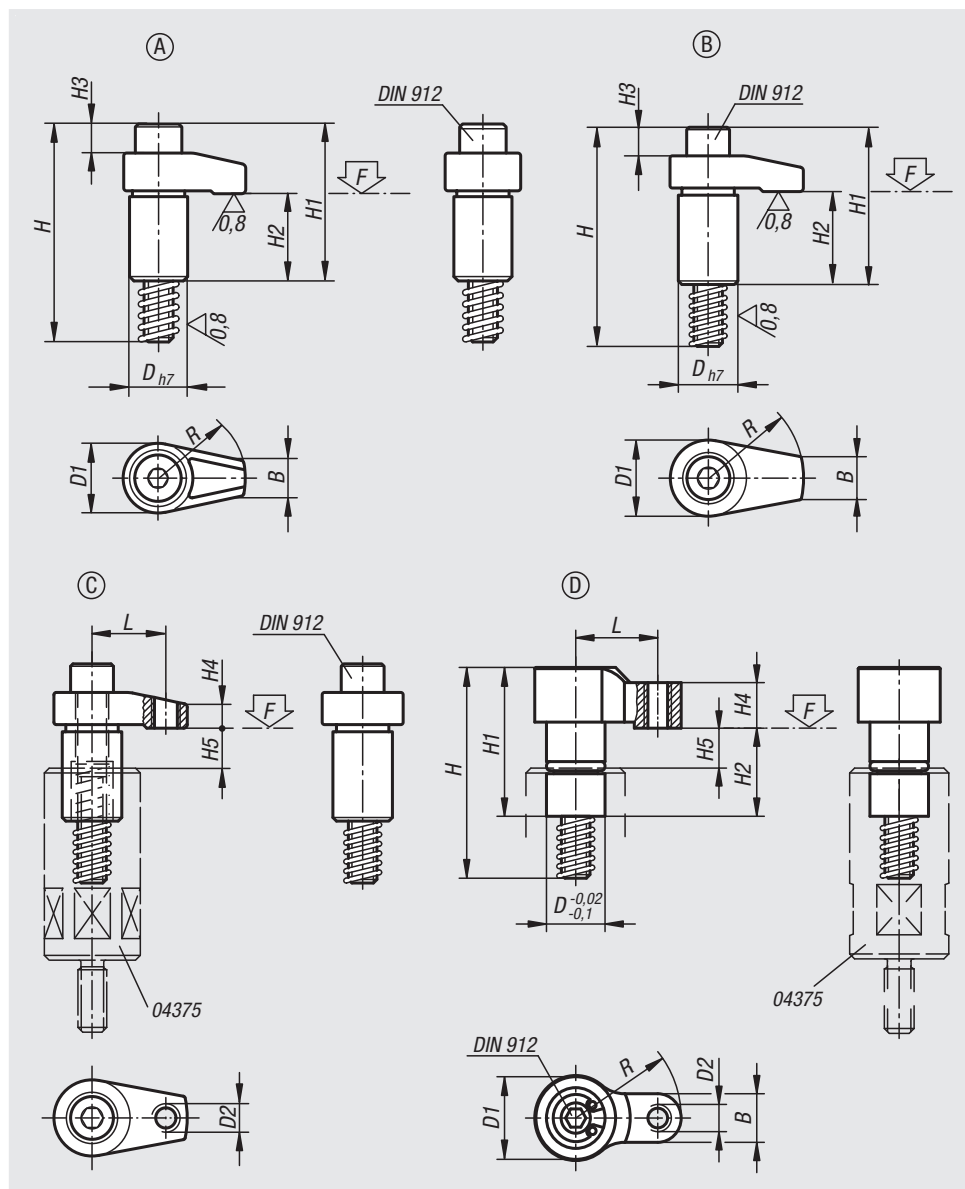
Compact design for use in the tightest of spaces
Diverse versions and sizes

Accessories:

Hook clamp holders 04375.

Hook clamp holders 04379.

Extensions for jack screws 04378.



The clamping height can be adjusted by using hook clamp holders and riser bars to suit individual circumstances.

Hook clamps



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
04372-110030	A	20	25	-	75	54	30	9	10	12	12	-	30	M10x65	37,2	13
04372-110040	A	20	25	-	75	54	30	9	10	12	12	-	40	M10x65	31,4	9,8
04372-208020	B	18	22	-	58	37	23	2	7	10	10	-	20	M8x50	37,2	13,6
04372-208025	B	18	22	-	58	37	23	2	7	10	10	-	25	M8x50	32,3	10,9
04372-208030	B	18	22	-	58	37	23	2	7	10	10	-	30	M8x50	29,4	9
04372-212040	B	25	32	-	92	66	39	11	12	15	18	-	40	M12x80	58,8	17,5
04372-212050	B	25	32	-	92	68	39	11	12	15	18	-	50	M12x80	49	14
04372-212060	B	25	32	-	92	68	39	11	12	15	18	-	60	M12x80	45,1	11,6
04372-216040	B	32	36	-	101	75	39	15	15	15	22	-	40	M16x85	166,6	37,9
04372-216050	B	32	36	-	101	75	39	15	15	15	22	-	50	M16x85	147	30,4
04372-216060	B	32	36	-	101	75	39	15	15	15	22	-	60	M16x85	127,4	25,2
04372-312140	C	25	32	M12	92	66	39	11	10	15	18	31	40	M12x80	58,8	22,6
04372-312150	C	25	32	M12	92	68	39	11	13	15	18	38	50	M12x80	49	18,5
04372-312160	C	25	32	M12	92	68	39	11	13	15	18	46	60	M12x80	45,1	15,2
04372-316150	C	32	36	M12	101	75	39	15	16	15	22	38	50	M16x85	147	38
04372-316160	C	32	36	M12	101	75	39	15	16	15	22	46	60	M16x85	127,4	33
04372-404118	D	10	14	M4	37	24,5	14,5	-	7,5	3	8	14	18	M4x30	2,7	2
04372-406122	D	12	16	M5	44	30,5	17,5	-	9,5	4	10	17	22	M6x35	7	3,5

Hook clamps

with collar


Material:

Hook clamps and hook clamp holders carbon steel, tempered.

Version:

Black oxidised.

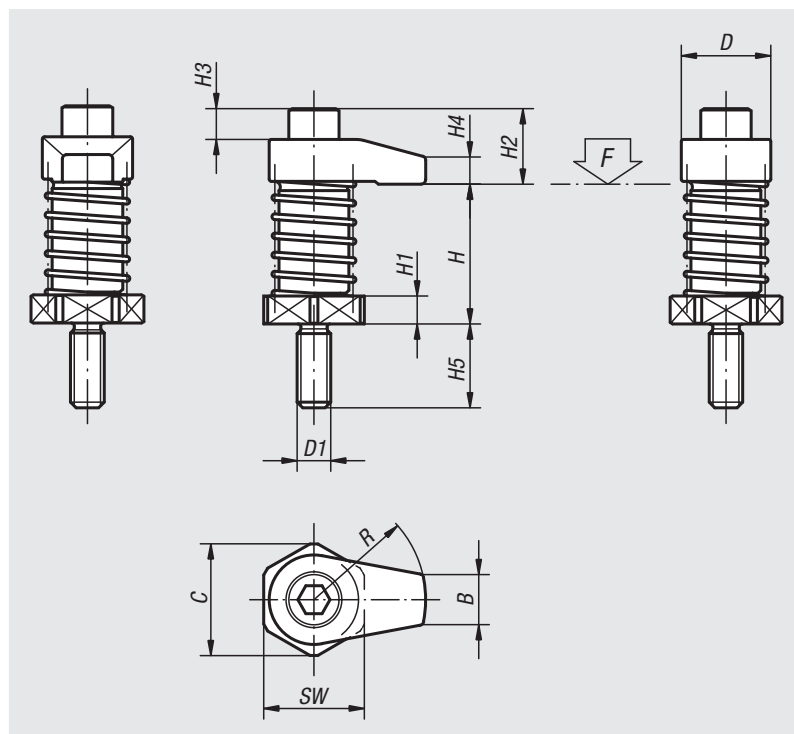
Sample order:

nIm 04373-12060

Note:

Hook clamps with collars can be screwed directly into grid holes etc. with or without counterbore.

For suitable height adjustment elements see risers 04378.



Order No.	D	D1	H clamping range	H1	H2	H3	H4	H5	B	C	R	SW	Tightening torque max. Nm	F max. kN
04373-08020	22	M8	35 - 45	6	14	2	7	19	10	25	20	22	20	7,9
04373-08025	22	M8	35 - 45	6	14	2	7	19	10	25	25	22	20	7,3
04373-08030	22	M8	35 - 45	6	14	2	7	19	10	25	30	22	20	6,7
04373-08120	22	M8	45 - 55	16	14	2	7	19	10	25	20	22	20	7,9
04373-08125	22	M8	45 - 55	16	14	2	7	19	10	25	25	22	20	7,3
04373-08130	22	M8	45 - 55	16	14	2	7	19	10	25	30	22	20	6,7
04373-12040	32	M12	50 - 65	10	27	11	10	30	18	40	40	36	45	13,5
04373-12050	32	M12	50 - 65	10	29	11	12	30	18	40	50	36	45	12,6
04373-12060	32	M12	50 - 65	10	29	11	12	30	18	40	60	36	45	11,7
04373-12140	32	M12	65 - 80	25	27	11	10	30	18	40	40	36	45	13,5
04373-12150	32	M12	65 - 80	25	29	11	12	30	18	40	50	36	45	12,6
04373-12160	32	M12	65 - 80	25	29	11	12	30	18	40	60	36	45	11,7
04373-16040	36	M16	50 - 65	10	36	15	15	30	22	40	40	36	60	13,4
04373-16050	36	M16	50 - 65	10	36	15	15	30	22	40	50	36	60	12,4
04373-16060	36	M16	50 - 65	10	36	15	15	30	22	40	60	36	60	12
04373-16140	36	M16	65 - 80	25	36	15	15	30	22	40	40	36	60	13,4
04373-16150	36	M16	65 - 80	25	36	15	15	30	22	40	50	36	60	12,4
04373-16160	36	M16	65 - 80	25	36	15	15	30	22	40	60	36	60	12

Hook clamps

with mounting bracket



Material:

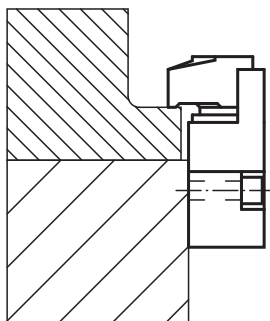
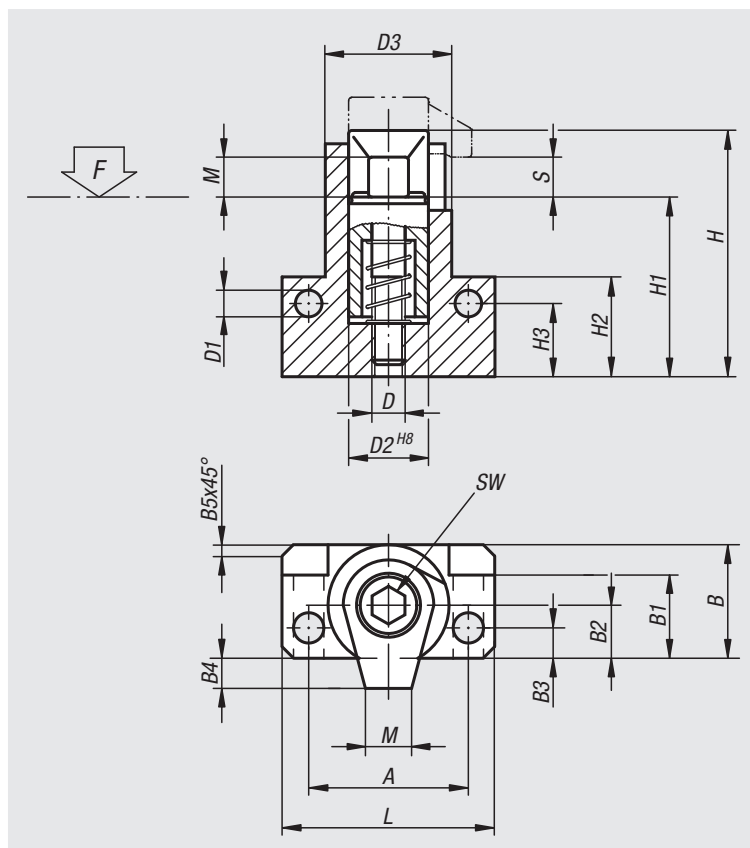
Hook clamps and clamping screw carbon steel, tempered.

Version:

Black oxidised.

Sample order:

nlm 04374-12



Order No.	D	D1	D2	D3	A	B	B1	B2	B3	B4	B5	H	H1	H2	H3	L	M	S	SW	Tightening torque max. Nm	F max. kN
04374-08	M8	6,4	20	28	38	26	19,5	12	6	6	2,5	62	47,5	25	18	50	10	4	6	30	17
04374-10	M10	8,4	24	34	48	31	22,5	14	7,5	9	3	74	57,5	30	21	64	12	5	8	50	18
04374-12	M12	10,5	28	40	55	36,5	26	16,5	9	10,5	3,5	87	67	35	24	75	15	5	10	60	20
04374-16	M16	12,8	34	48	65	43,5	31	19,5	10	16,5	4	112	87	45	32	88	20	5	14	120	24

Hook clamp holders

**Material:**

Carbon steel.

Version:

Black oxidised.

Sample order:

nlm 04375-12080

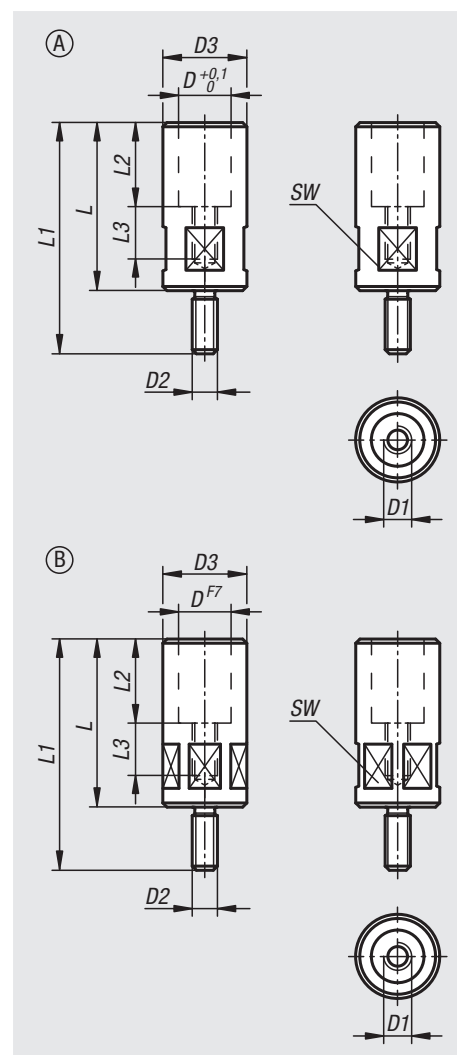
Note:

Hook clamp holders are for holding and raising hook clamps.

Accessories:

Hook clamps 04372.

Extensions for jack screws 04378.



Order No.	Form	Form-Type	D	D1	D2	D3	L	L1	L2	L3	SW	Tightening torque max. Nm
04375-04035	A	with square	10	M4	M6	14	35	46	16	13	12	2,7
04375-06040	A	with square	12	M6	M8	16	40	54	19	14	13	7
04375-08055	B	with hexagon	18	M8	M8	24	55	74	25	20	22	29,4
04375-10063	B	with hexagon	20	M10	M12	32	63	93	30	21	30	39,2
04375-10080	B	with hexagon	20	M10	M12	32	80	110	30	23	30	39,2
04375-12080	B	with hexagon	25	M12	M12	40	80	110	40	25	36	49
04375-12100	B	with hexagon	25	M12	M12	40	100	130	40	28	36	49
04375-16080	B	with hexagon	32	M16	M16	50	80	110	40	25	46	78,4
04375-16100	B	with hexagon	32	M16	M16	50	100	130	40	28	46	78,4

Riser bars

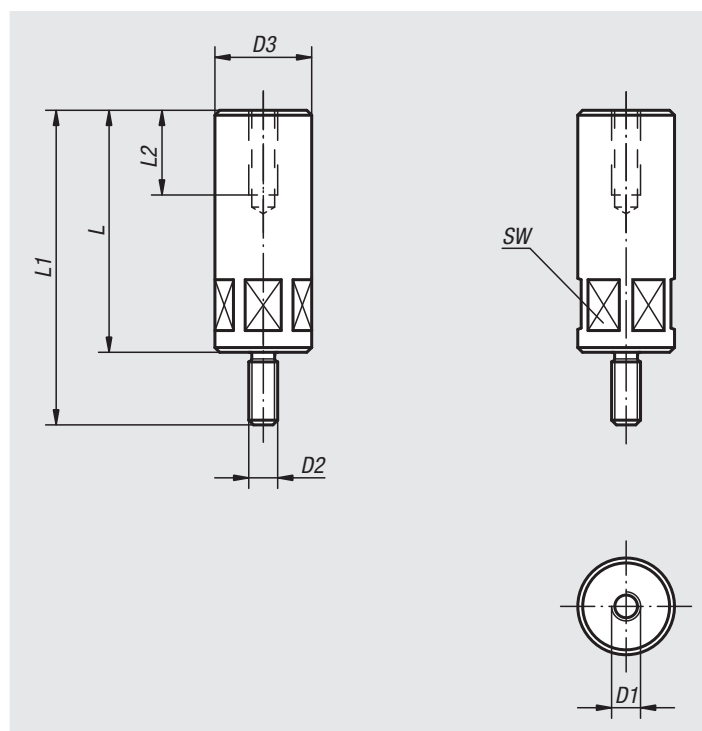


Material:
Carbon steel.

Version:
Black oxidised.

Sample order:
nlm 04378-16050

Note:
The height of the hook clamps and hook clamp holders can be raised using these riser bars.



Order No.	D1	D2	D3	L	L1	L2	SW	Tightening torque max. Nm
04378-08032	M8	M8	24	32	51	20	22	29,4
04378-08040	M8	M8	24	40	59	20	22	29,4
04378-08050	M8	M8	24	50	69	20	22	29,4
04378-08065	M8	M8	24	65	84	20	22	29,4
04378-12050	M12	M12	40	50	80	35	36	49
04378-12065	M12	M12	40	65	95	35	36	49
04378-12080	M12	M12	40	80	110	35	36	49
04378-12100	M12	M12	40	100	130	35	36	49
04378-12125	M12	M12	40	125	155	35	36	49
04378-12160	M12	M12	40	160	190	35	36	49
04378-12200	M12	M12	40	200	230	35	36	49
04378-16050	M16	M16	50	50	80	35	46	78,4
04378-16065	M16	M16	50	65	95	35	46	78,4
04378-16080	M16	M16	50	80	110	35	46	78,4
04378-16100	M16	M16	50	100	130	35	46	78,4
04378-16125	M16	M16	50	125	155	35	46	78,4
04378-16160	M16	M16	60	160	190	35	55	78,4
04378-16200	M16	M16	60	200	230	35	55	78,4

Hook clamp holders

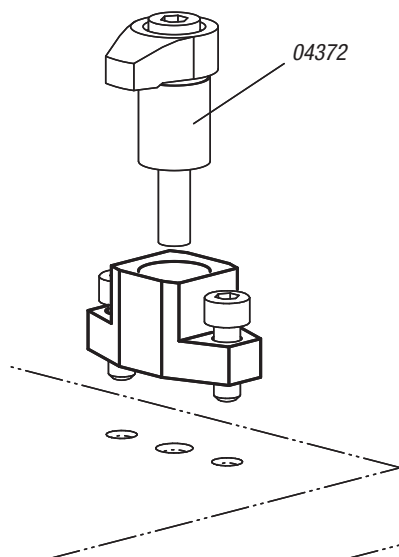
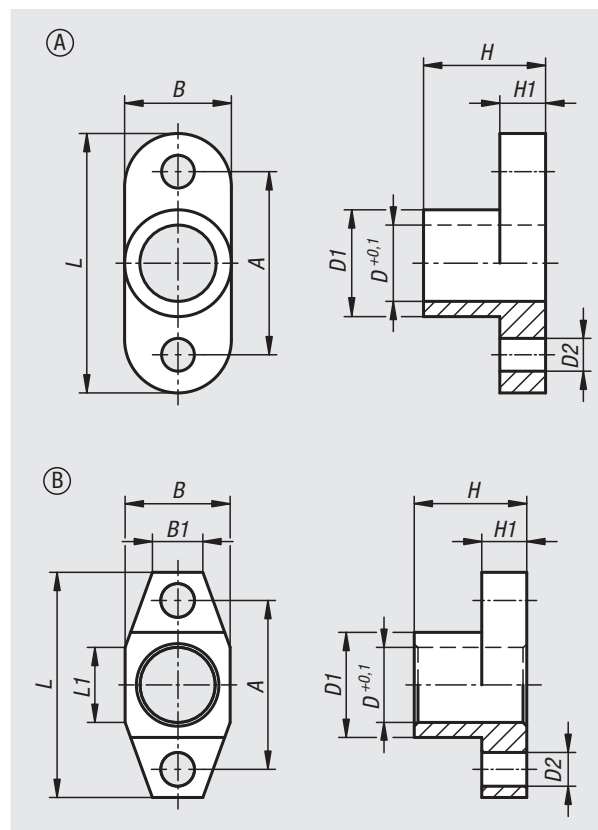


Material:
Carbon steel.

Version:
Black oxidised.

Sample order:
nlm 04379-08025

Accessories:
Hook clamps 04372.



Order No.	Form	Form-Type	A	B	B1	D	D1	D2	H	H1	L	L1
04379-04016	A	rounded	24	14	-	10	14	4,3	16	6	34	-
04379-06019	A	rounded	28	16	-	12	16	5,3	19	8	40	-
04379-08025	B	square	38	24	11,3	18	24	6,6	25	10	50	15
04379-10030	B	square	45	28	13,4	20	28	9	30	12	60	20
04379-12040	B	square	55	35	15	25	35	11	40	14	75	20
04379-16040	B	square	65	42	20,2	32	42	13,5	40	16	85	25

Hook clamps precision

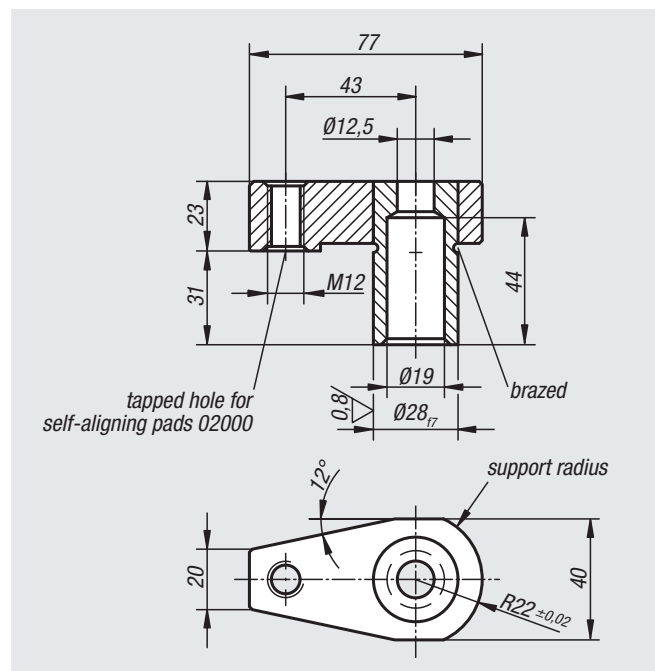
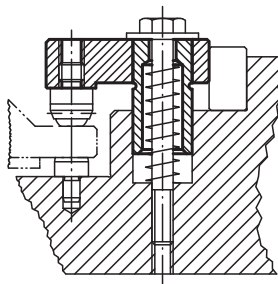


Material:
Steel.

Version:
Case-hardened, black oxidised and ground.

Sample order:
nlm 04380-00

Note:
Precision hook clamps are used as conventional clamping elements in fixtures. A reamed hole is drilled into the fixture base. The hole depth depends on the required clamping height. A support is placed under the rear rounded hook part (radius 22) to take the counterforce, this can be flat, semicircular or prismatic. A DIN 933 hex. head screw tightens the clamp.



Order No.	Dimensions
04380-00	see drawing

04390

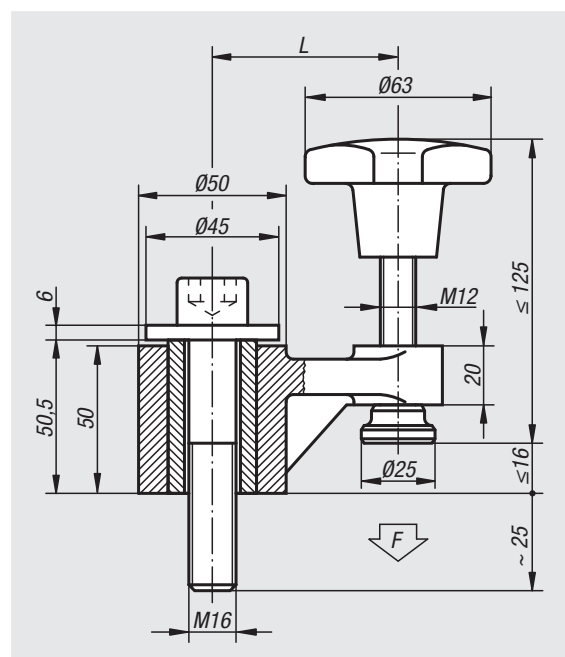
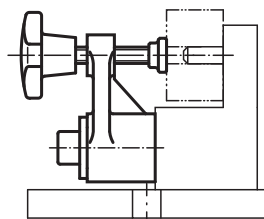
Swing clamps



Material:
Body malleable iron.
Sleeve carbon steel 1.1191.
Screw carbon steel 1.1181.
Thrust pad mild steel 1.0301.

Version:
Painted.
Thrust pads case-hardened.

Sample order:
nlm 04390-01



Order No.	L	Clamping force N
04390-01	63	5000
04390-02	100	3000

Clamping bolts


Material:

Clamping bolt, steel.

Clamping screw, carbon steel.

Clamping ring brass.

Version:

Clamping bolt hardened and black oxidised.

Clamping screw black oxidised.

Clamping ring bright.

Sample order:

nlm 04395-050

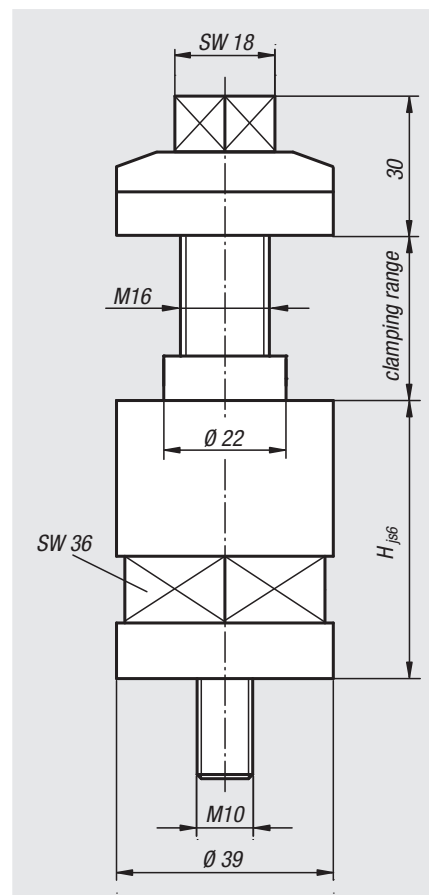
Note:

The clamping bolts can be fixed to the machine table directly with T-slot nuts. Clamping parallel to the table is guaranteed by low tolerance classes (js6) for the height.

The clamping range is 8 – 40 mm. Clamping screws for the ranges 40 – 67 and 65 – 87 mm are also available.

The intermediate plate prevents damage to the machine table, as well as shifting during tightening.

The brass clamping ring prevents impressions on the workpiece.



Clamping bolts

Order No.	H	Clamp range
04395-050	50	8-40
04395-100	100	8-40

Clamping screws

Order No.	Clamp range
04395-4067	40-67
04395-6587	65-87

Clamping pins

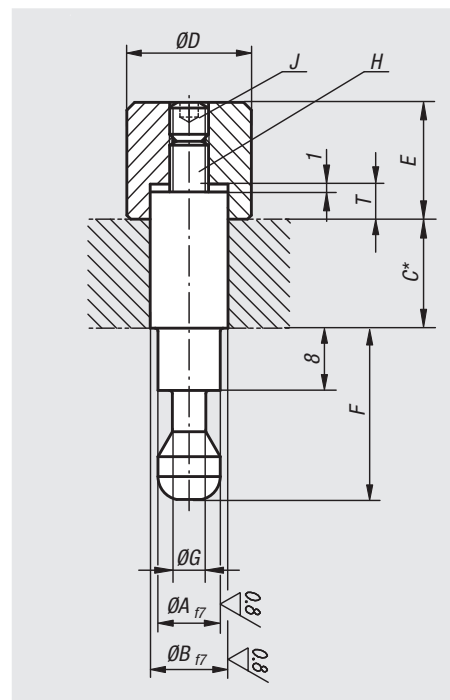
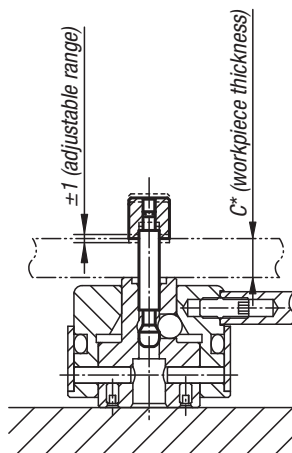


Material:
Carbon steel.

Version:
Pins tempered and ground.
Knurled knob tempered, black oxidised.

Sample order:
nlm 04400-005050

Note:
* The clamping pin can be altered to suit the workpiece thickness.



Order No.	A	B	C	D	E	F	G	H	J	T
04400-005050	5	5	50	10	10	17	3	M3	M3x4	3
04400-006050	5	6	50	10	10	17	3	M3	M3x4	3
04400-008080	8	8	80	16	15	22	4,3	M5	M5x5	4,5
04400-010080	8	10	80	16	15	22	4,3	M5	M5x5	4,5

04400

Clamping pins (high force)

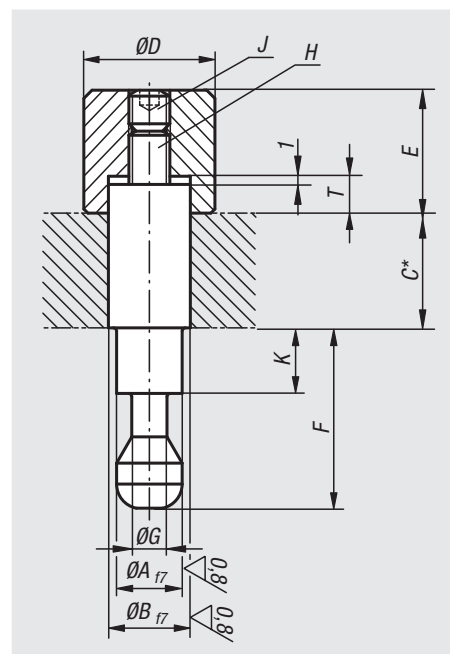
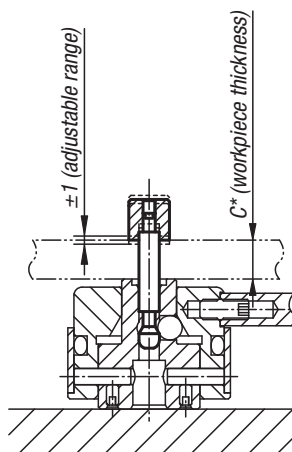


Material:
Carbon steel.

Version:
Pins tempered and ground.
Knurled knob tempered, black oxidised.

Sample order:
nlm 04400-412100

Note:
* The clamping pin can be altered to suit the workpiece thickness.



Order No.	A	B	C	D	E	F	G	H	J	K	T	Suitable for
04400-412100	12	12	100	18	23	38	6,5	M8	M8x8	21,5	7	04400-506501
04400-416100	12	16	100	24	23	38	6,5	M8	M8x8	21,5	7	04400-506501
04400-516120	16	16	120	24	29	48	9,5	M10	M10x10	28	9	04400-638001
04400-520120	16	20	120	30	29	48	9,5	M10	M10x10	28	9	04400-638001

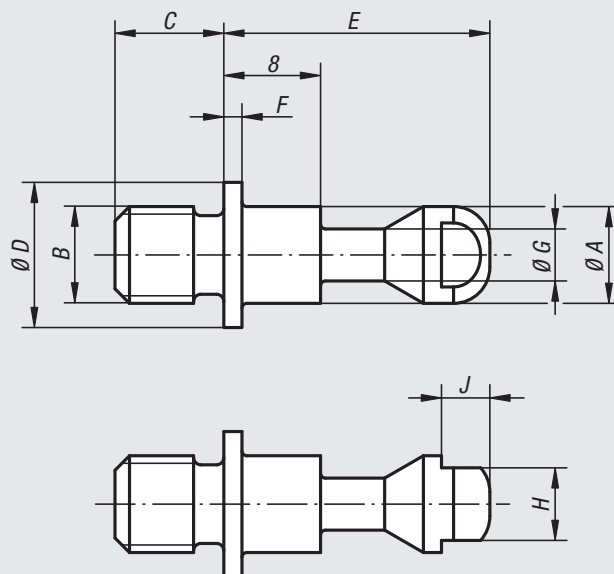
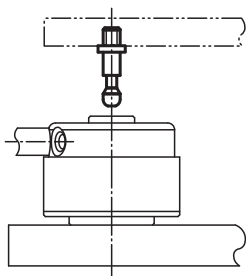
Clamping screws



Material:
Carbon steel.

Version:
Tempered and black oxidised.

Sample order:
nlm 04400-105060



Order No.	A	B	C	D	E	F	G	H	J
04400-105060	5	M5	6	8	17	1,2	3	4	2,5
04400-106070	5	M6	7	8	17	1,2	3	4	2,5
04400-108090	8	M8	9	12	22	1,5	4,3	6	4
04400-110110	8	M10	11	12	22	1,5	4,3	6	4

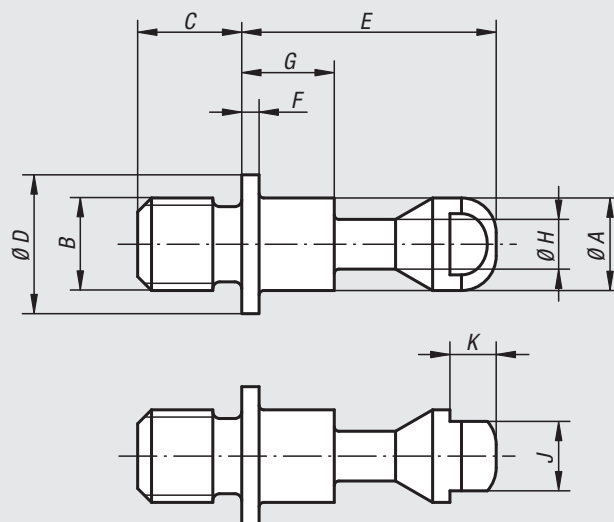
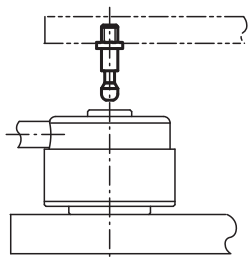
Clamping screws (high force)



Material:
Carbon steel.

Version:
Tempered and black oxidised.

Sample order:
nlm 04400-1412013

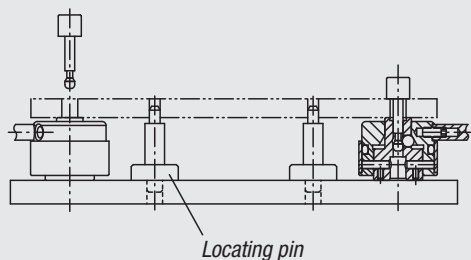


Order No.	A	B	C	D	E	F	G	H	J	K	Suitable for
04400-1412013	12	M12	13	20	38	2	21,5	6,5	10	4	04400-506501
04400-1416017	12	M16	17	20	38	2	21,5	6,5	10	4	04400-506501
04400-1516017	16	M16	17	25	48	2,5	28	9,5	13	5	04400-638001
04400-1520021	16	M20	21	25	48	2,5	28	9,5	13	5	04400-638001

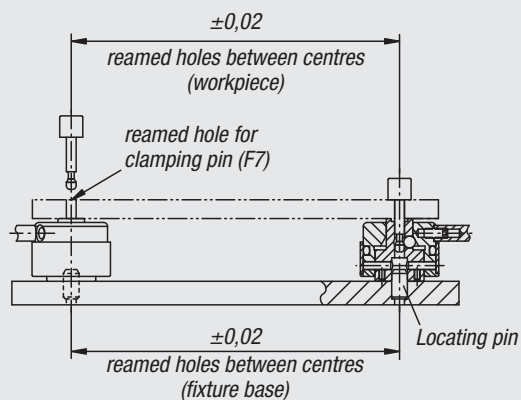
Technical information for pull clamps

Workpiece positioning

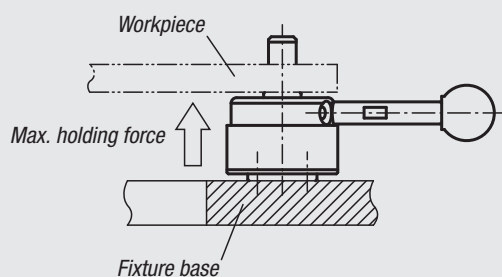
Clamping using a pull clamp and clamping pin



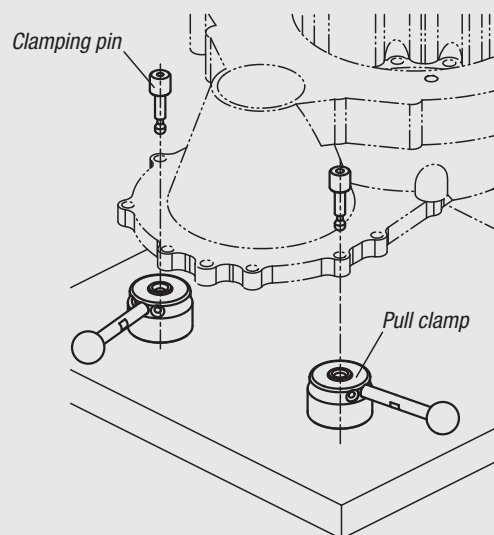
Simultaneous clamping and positioning of a workpiece



Holding forces for workpiece processing



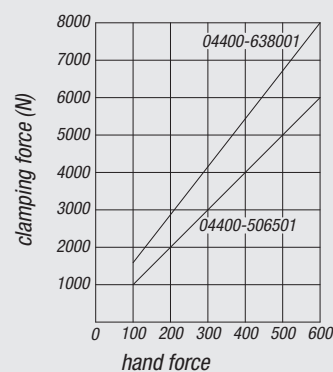
Make sure that no force on the underside of the workpiece exceeds the values given in the table.



Example using pull clamps



Performance curve



Pull clamps



Material:

Housing and cam tool steel.
Grip carbon steel.
Ball knob thermoset PF 31.

Version:

Housing and cam hardened and black oxidised.
Grip black oxidised.
Ball knob black.

Sample order:

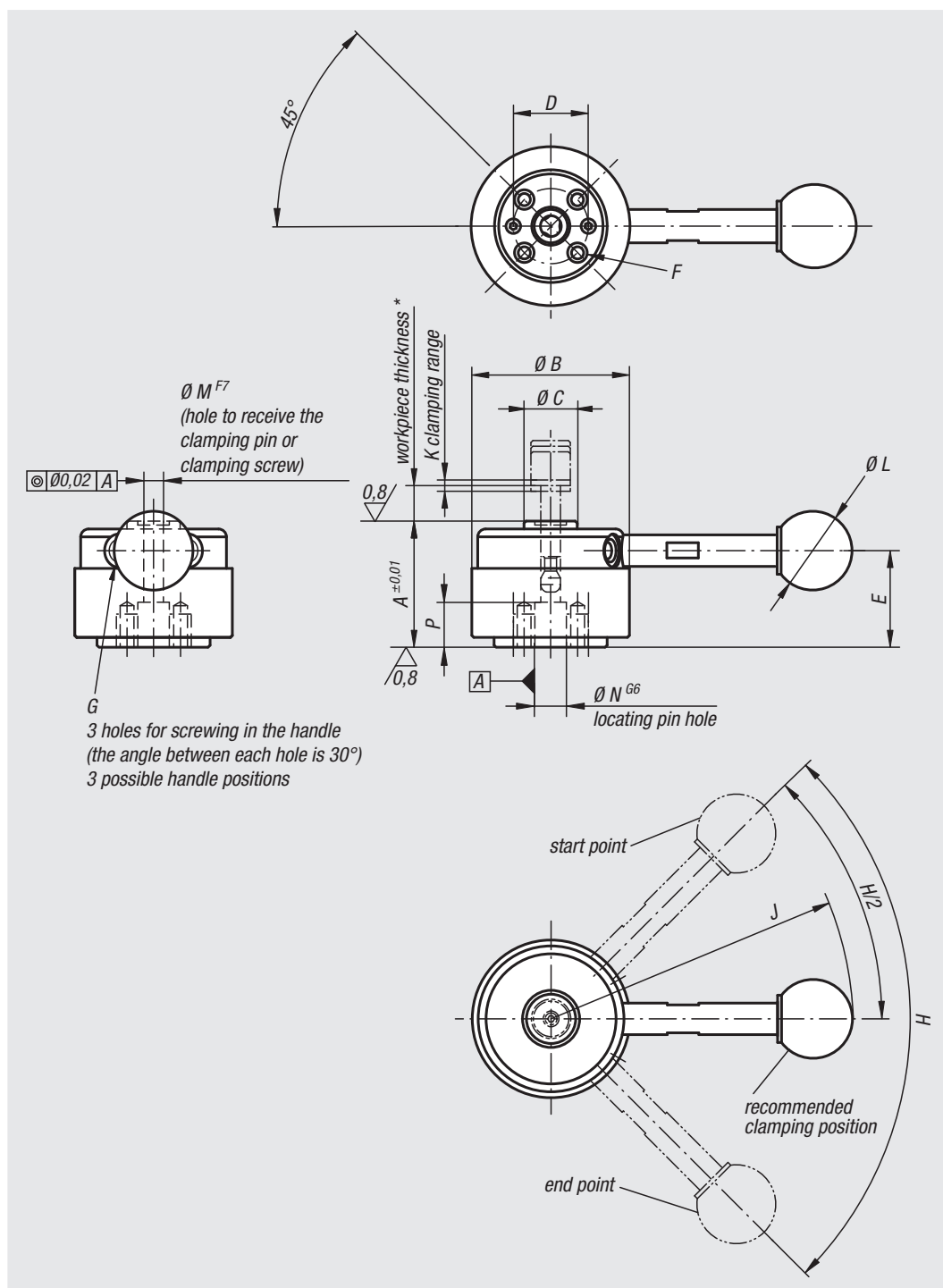
nIm 04400-324001

Note:

* Max. workpiece thickness see clamping pin 04400 (dimension C).
** Admissible hand force for the handle.

Accessories:

Standard handles 06355.
Screw-in handles with adjustable torque 06357.



Order No.	Version 1	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Clamping force N	Recommended workpiece thickness tolerance	Hand force FH N	Holding force N
04400-324000	without grip	32	40	13,5	18	24,5	M4x8	M5	90°	-	1,5	-	5	8	10	900	±0,3*	150**	2000
04400-324001	with grip	32	40	13,5	18	24,5	M4x8	M5	90°	76,5	1,5	20	5	8	10	900	±0,3*	150**	2000
04400-405000	without grip	40	50	18	25	30,7	M6x9	M6	110°	-	2	-	8	12	13	2500	±0,5*	200**	5500
04400-405001	with grip	40	50	18	25	30,7	M6x9	M6	110°	111,5	2	25	8	12	13	2500	±0,5*	200**	5500

Pull clamps (high force)



Material:

Housing, clamping ring and handles,
carbon steel.

Grip thermoset PF 31.

Version:

Housing and clamping ring hardened and
black oxidised.

Handles black oxidised.

Grip black.

Sample order:

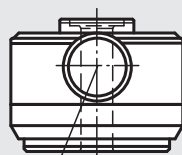
nIm 04400-506501

Note:

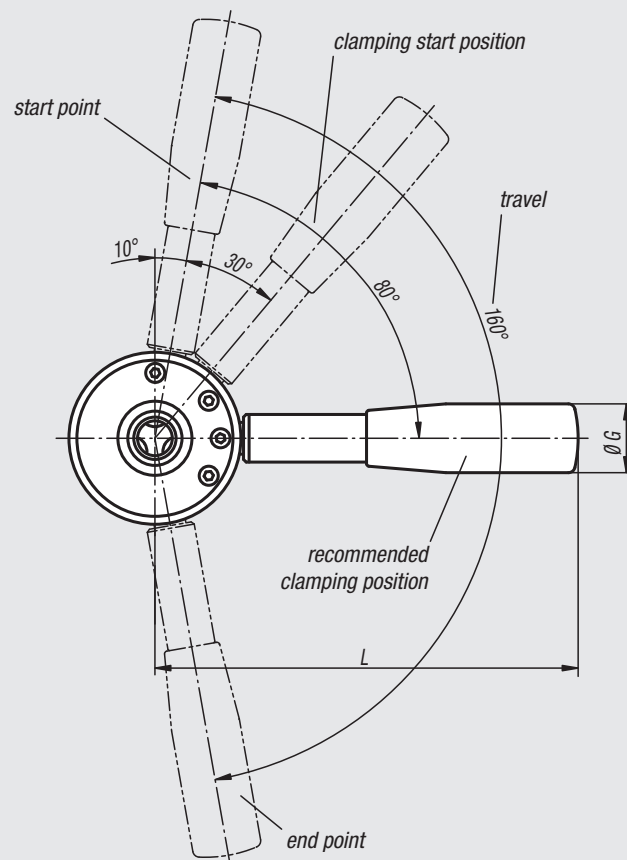
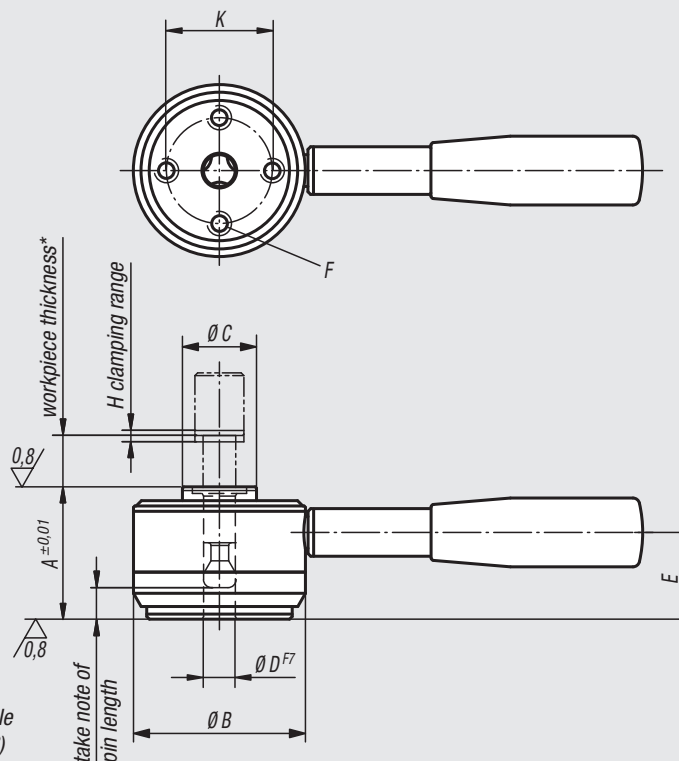
When clamping with a high force
clamping pin the recommended
workpiece tolerances must be
maintained. The grip lever must be lay
between the recommended clamping
position and end point for safe clamping.

* Max. workpiece thickness see
clamping pin 04400 (dimension C).

** Permitted manual force for handle.



3 holes for screwing in the handle
(angle between each hole is 35°)
3 possible handle positions



Order No.	A	B	C	D	E	F	G	H	J	K	L	Clamping force N	Recommended workpiece thickness tolerance	Hand force FH N	Holding force N
04400-506501	50	65	28	12	36	M8x14	26	2	10	40	160	6000	±0,5*	600**	8000
04400-638001	63	80	34	16	45	M10x18	28	2,5	12	50	180	8000	±0,8*	600**	14000

Pull clamps

pneumatic



Material:

Carbon steel.

Version:

Clamping element hardened, ground and black oxidised.

Sample order:

nln 04403-40075

Note:

Pneumatic pull clamps are used to clamp workpieces and fixtures.

The draw bolts are screwed onto the workpiece or fixture.

Clamping procedure:

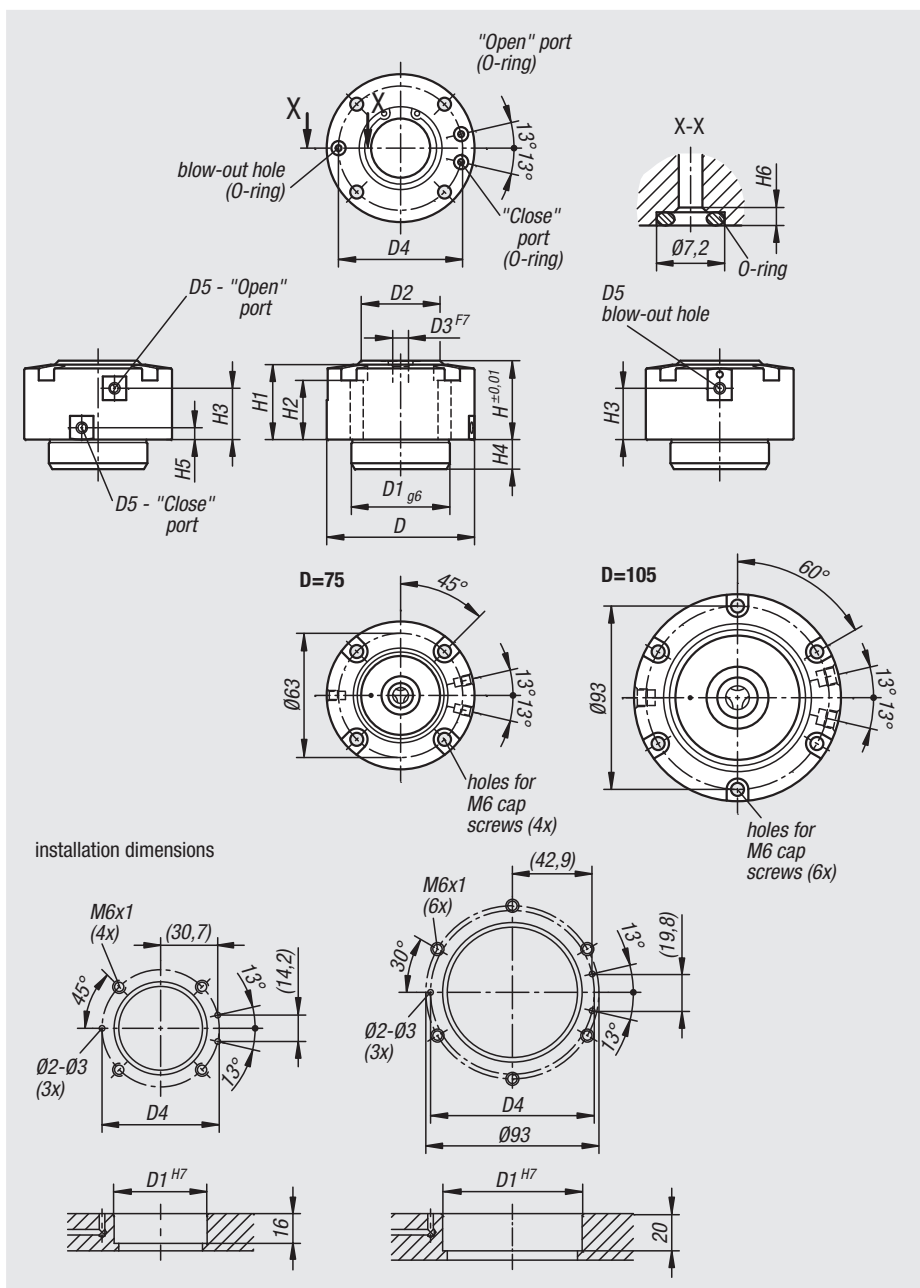
Open the clamping element by applying compressed air to the „open“ connection.

Close clamping element (for clamping) by applying compressed air to the „close“ connection.

The third connection (D5) is used to blow out and clean the seating face. It can also be used to ensure the workpiece is correctly seated, or to ease lifting the workpiece off after the opening procedure.

The system can also be used as a zero-point clamping system.

The clamping forces indicated are based on 0.5 MPa.



Order No.	D	D1	D2	D3	D4	D5	H	H1	H2	H3	H4	H5	H6	Clamping force kN	Operating pressure MPa
04403-40075	75	50	40	8	63	M5	40	38	30	26	15	6	1,9	1	0,3 - 1,0
04403-50105	105	75	63	12	88	G 1/8	50	47	35	31	19	10	1,9	2,5	0,3 - 1,0

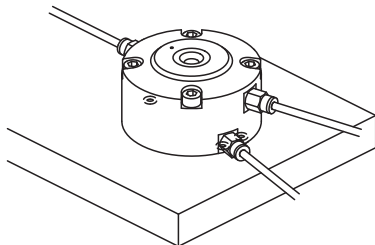
Pull clamps

pneumatic

Mounting instructions:

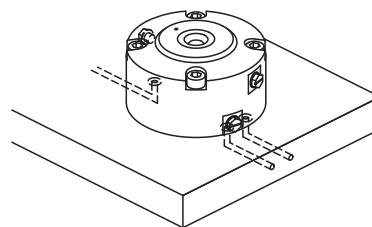
Using the side ports:

- Seal the lower ports with the O-rings provided.
- Check that no air coming is escaping from here.



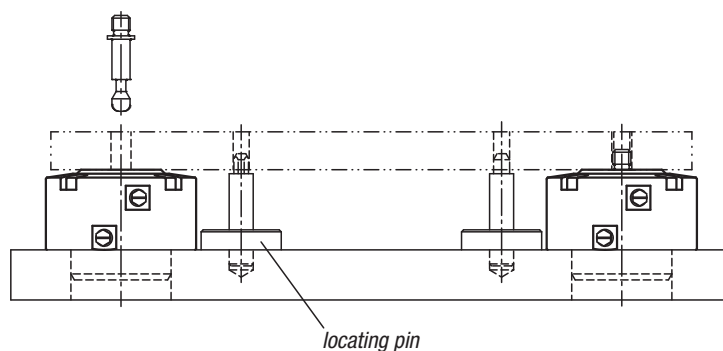
Using the lower ports:

- Fit the O-rings provided into the lower port.
- The side ports must be closed.

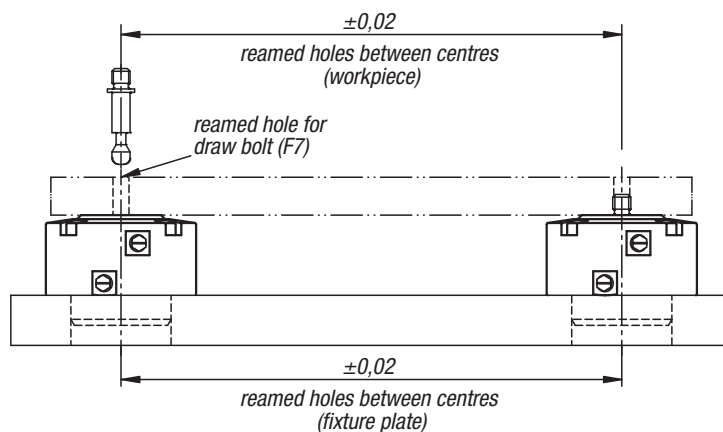


Positioning the workpiece

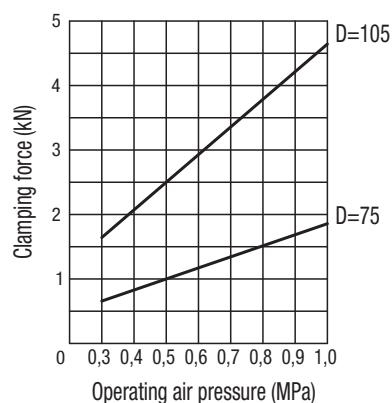
Clamping with pull clamp and draw bolt



Simultaneous clamping and positioning of a workpiece



Performance curve



Draw bolts

for pneumatic pull clamps


Material:

Carbon steel.

Version:

Tempered and black oxidised.

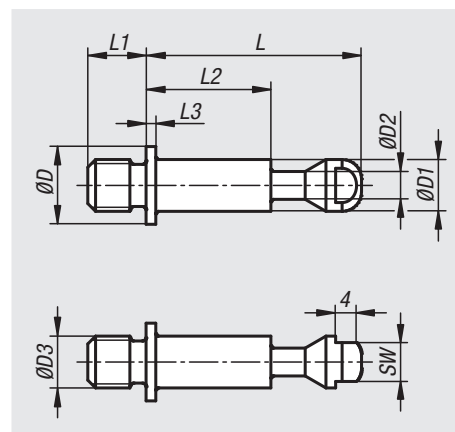
Sample order:

nlm 04403-01-108090

Note:

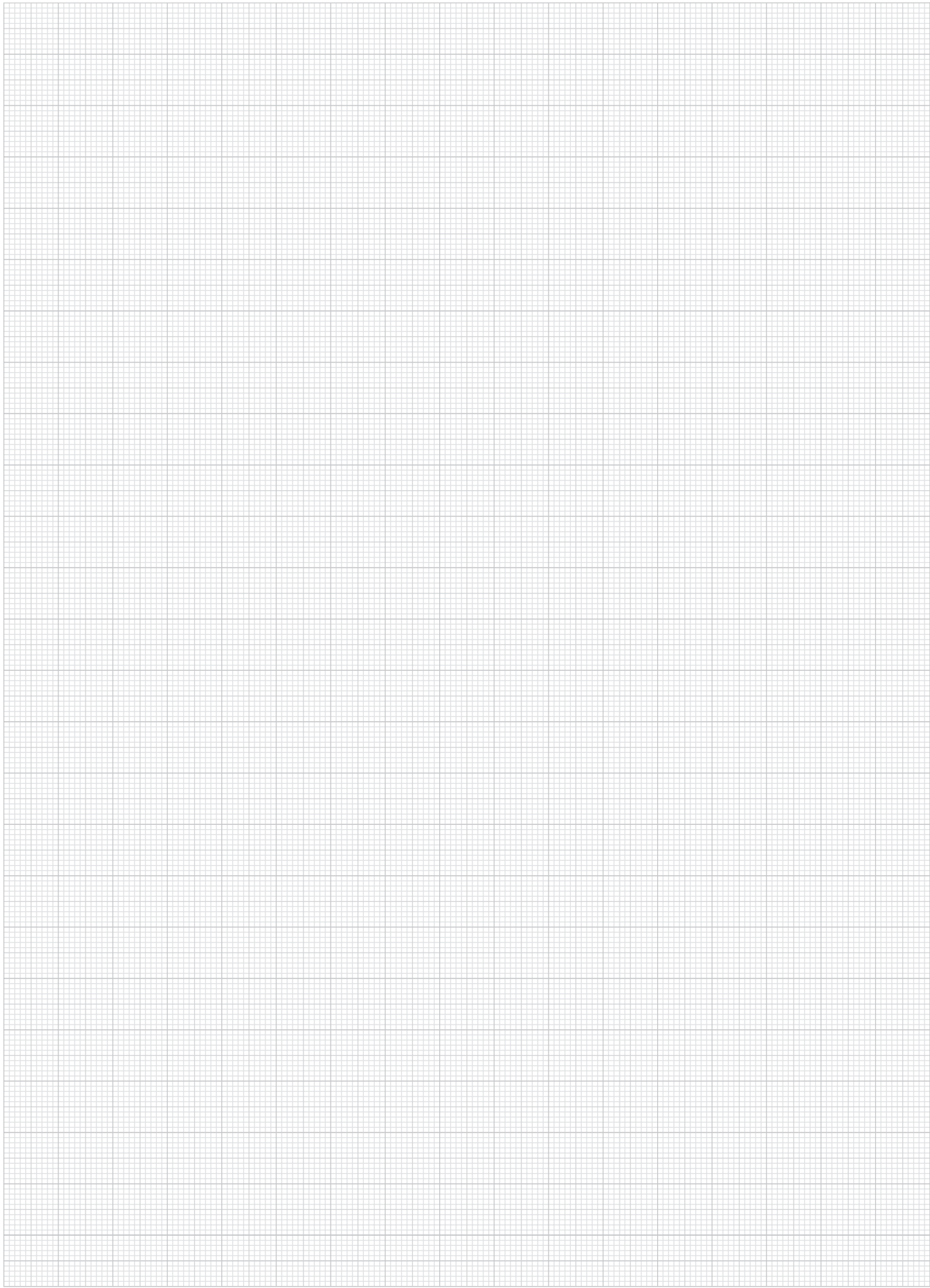
These draw bolts for the pneumatic pull clamp are screwed directly into the workpiece. This enables the workpiece to be quickly connected to and released from the pull clamp over a pneumatic valve.

The system can also be used as a zero-point clamping system.



Order No.	D	D1	D2	D3	L	L1	L2	L3	SW
04403-01-108090	12	8	4,3	M8	38	9	24	1,5	6
04403-01-110011	12	8	4,3	M10	38	11	24	1,5	6
04403-01-112013	20	12	6,5	M12	48	13	31,5	2	10
04403-01-116017	20	12	6,5	M16	48	17	31,5	2	10

Notes



01000
02000
03000
04000
05000
06000
07000
08000
09000
10000
12000

Clamping element "actima"



Material:

Steel.
Housing thermoplastic.
Ball knob thermoset PF 31.
Accessories steel.

Version:

Black oxidised.
Housing black.
Ball knob, red.
Accessories black oxidised.

Sample order:

nlm 04410-10

Note:

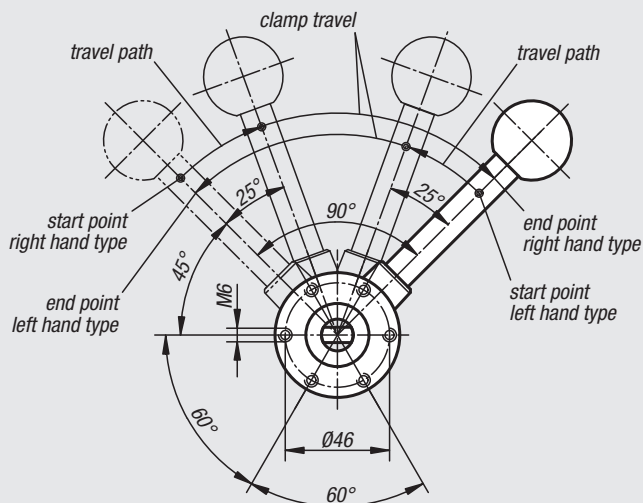
The travel path is 10 mm. Self-locking occurs in any position within only 2 mm of clamp travel, so workpieces with tolerances of up to 1.5 mm can be safely clamped. The Actima clamping device can be mounted in any horizontal or vertical position.

Standard parts enable further applications and are available as optional accessories.

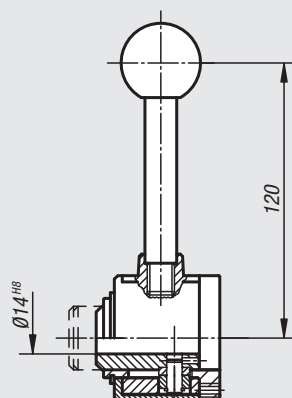
All parts of the cam system subject to heavy loads are case-hardened (thrust sleeve and accessories only if specified).

The maximum permissible clamping force is approximately 4905 N.

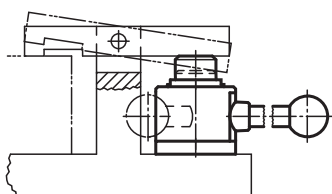
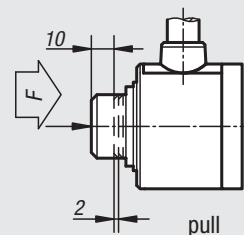
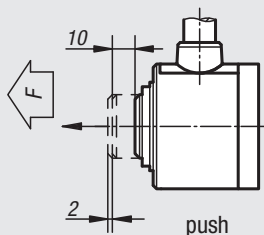
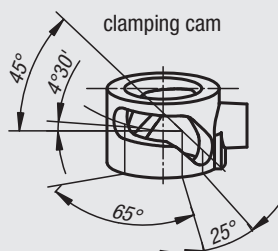
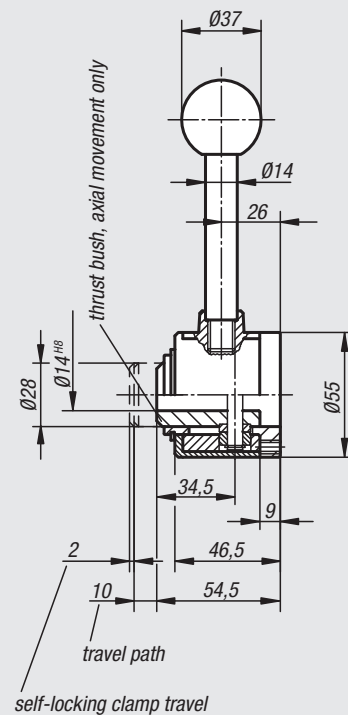
View from below



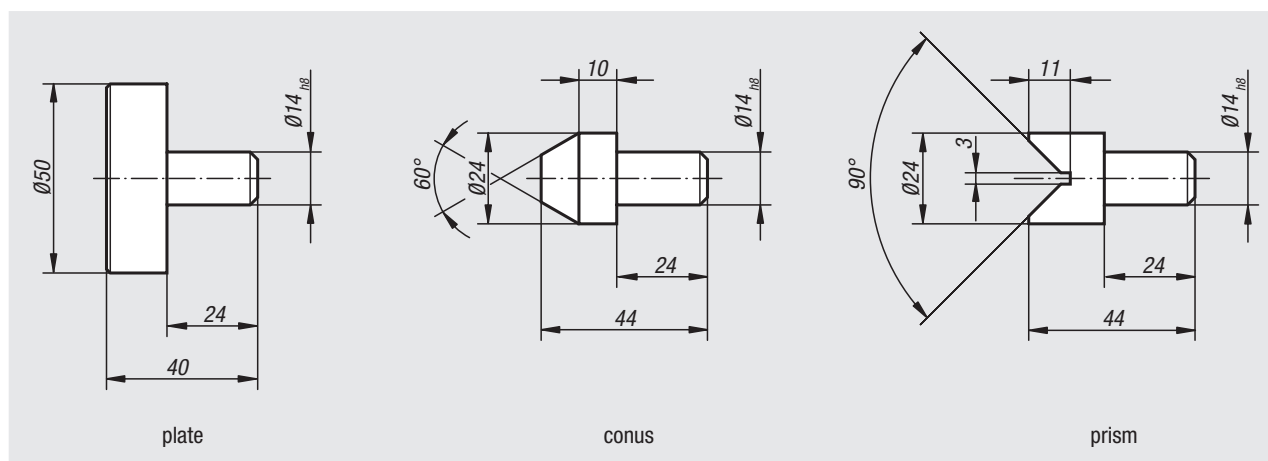
drilled through



with transverse axis in bore



Clamping element "actima"



"actima" clamping element with transverse axis in bore

Order No.	Version
04410-10	right-hand / thrust
04410-15	right-hand / pull
04410-20	left-hand / thrust
04410-25	left-hand / pull

"actima" clamping element with drilled through bore

Order No.	Version
04410-30	right-hand / thrust
04410-35	right-hand / pull
04410-40	left-hand / thrust
04410-45	left-hand / pull

"actima" accessories

Order No.	Item
04410-02	Plate
04410-03	Conus
04410-04	Prism

Floating clamp



Material:

Base body and jaws steel.
Housing aluminium.

Version:

Body nitrided, black oxidised and ground.
Jaws nitrided and black oxidised.
Housing red anodised.

Sample order:

nln 04420-100812

Note:

The floating clamp is used to clamp and support overhanging clamping points on components. It prevents vibrations and deflection during machining.

Method of operation:

1. Push the floating clamp down.
2. Pivot the jaws to the stop. The floating clamp contacts the bottom of the workpiece with a light spring force.
3. Tighten the floating clamp with the SW 18 hexagon nut (note the min. and max. torque). During clamping the workpiece is clamped and simultaneously supported.
4. Reverse the process to release.

Assembly:

Form A:

Fasten the floating clamp to the fixture with the M12 screw.

Adjust the height stop and swivel range using the red sleeve and lock with the 3x2.5 mm grub screws. When setting the height leave generous clearance above.

For safe operation the M12 tapped hole must always be closed.

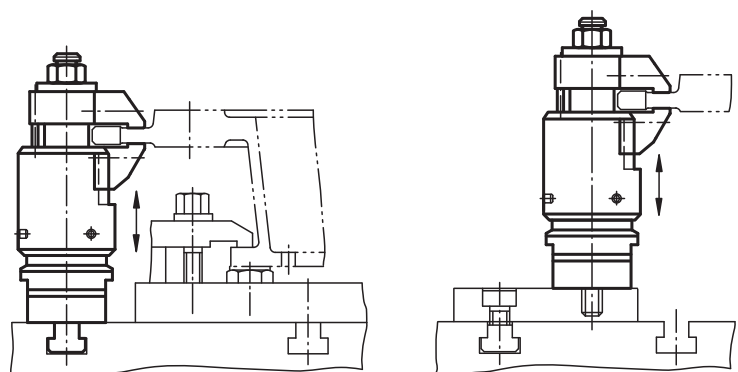
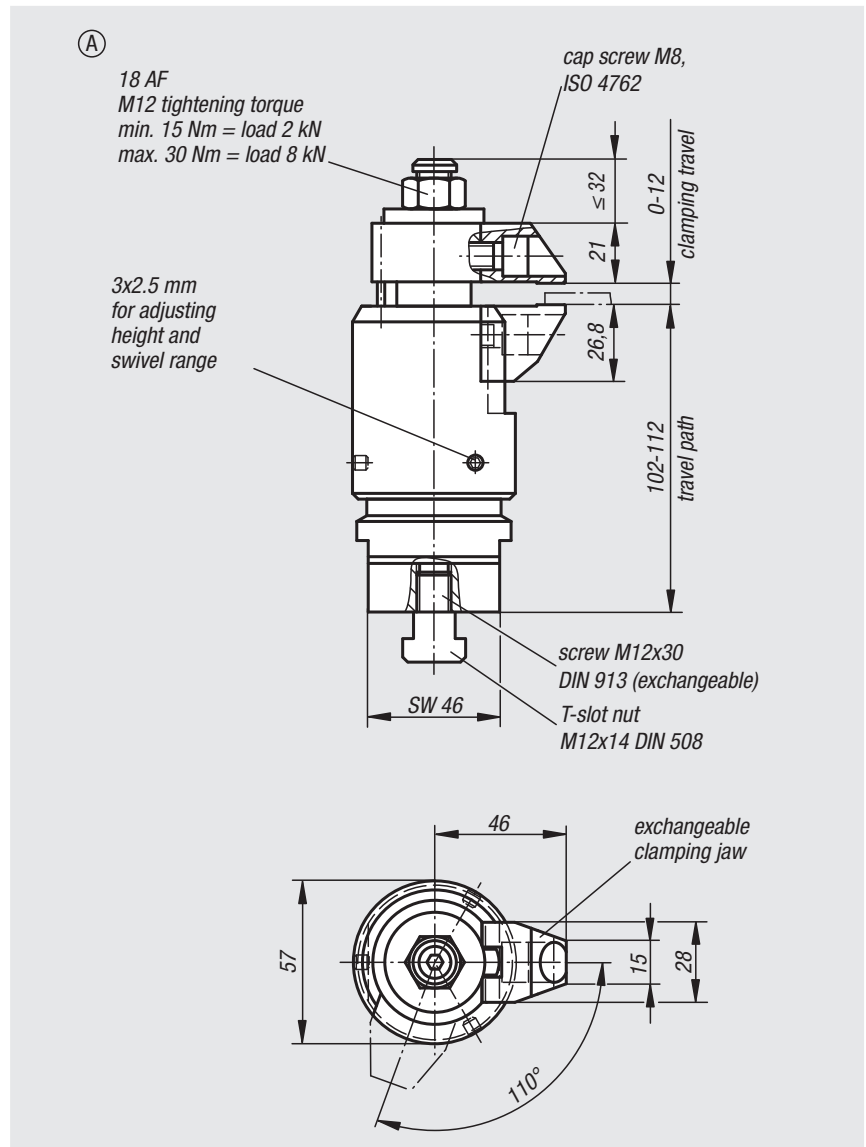
For specific clamping applications the standard jaws can be altered or replaced.

Form B:

Fasten floating clamp with M6 fastening hole to a fixture.

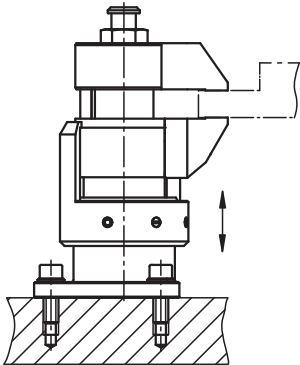
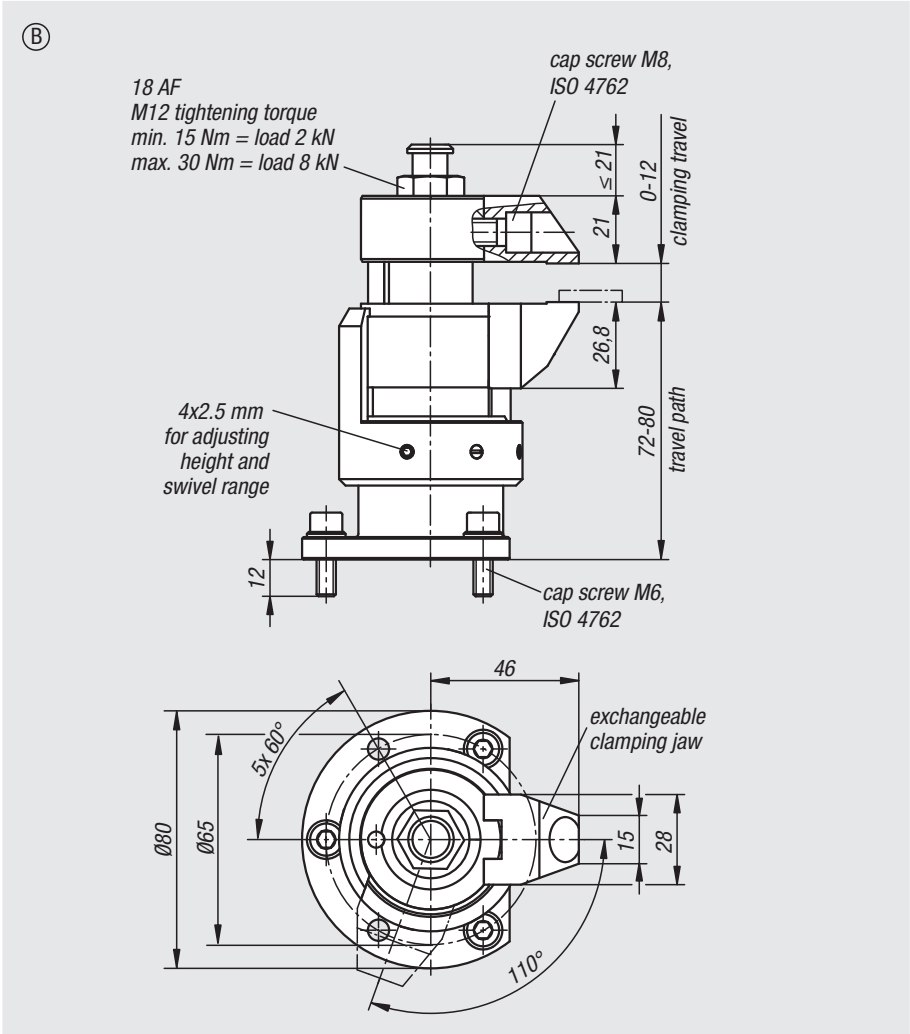
Adjust the height stop and pivot range with the red adjusting sleeve and clamp with grub screws (4x AF 2.5). When setting the height limit, allow ample play at the top.

For specific clamping situations, the standard jaw plates can be modified or replaced.



Order No.	Travel path	max. clamping travel	Load capacity N	Clamping force N
04420-100812	10	12	8000	8000

Floating clamp



Order No.	Travel path	max. clamping travel	Load capacity N	Clamping force N
04420-080812	8	12	8000	8000

Floating clamp

with separate workpiece clamp and interlock



Material:

Base body and jaws steel.
Housing aluminium.

Version:

Body nitrided, black oxidised and ground.
Jaws nitrided and black oxidised.
Housing blue anodised.

Sample order:

n1m 04421-100812

Note:

The floating clamp is used to clamp and support overhanging points on thin walled, sensitive and pliable components. It prevents vibrations and bending during machining.

Method of operation:

1. Push the floating clamp down.
2. Pivot the jaws in. The lower jaw contacts the workpiece with a light spring force.
3. Tighten the AF 18 hexagon nut with max. 15 Nm torque. The jaws clamp the workpiece, the clamp is still floating.
4. Tighten the AF 10 hexagon nut with max. 10 Nm torque. The clamping process is completed.
5. Reverse the process to release.

Assembly:

Form A:

Fasten the floating clamp to the fixture with the M12 screw.

Adjust the height stop and the swivel range using the blue sleeve and lock with the 3x2.5 mm grub screws. When setting the height leave generous clearance above.

For safe operation the M12 tapped hole must always be closed.

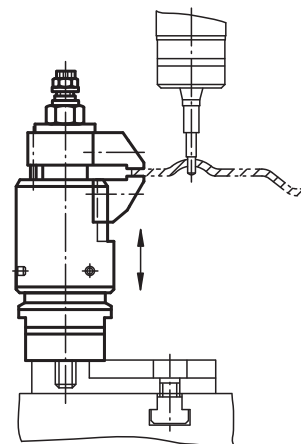
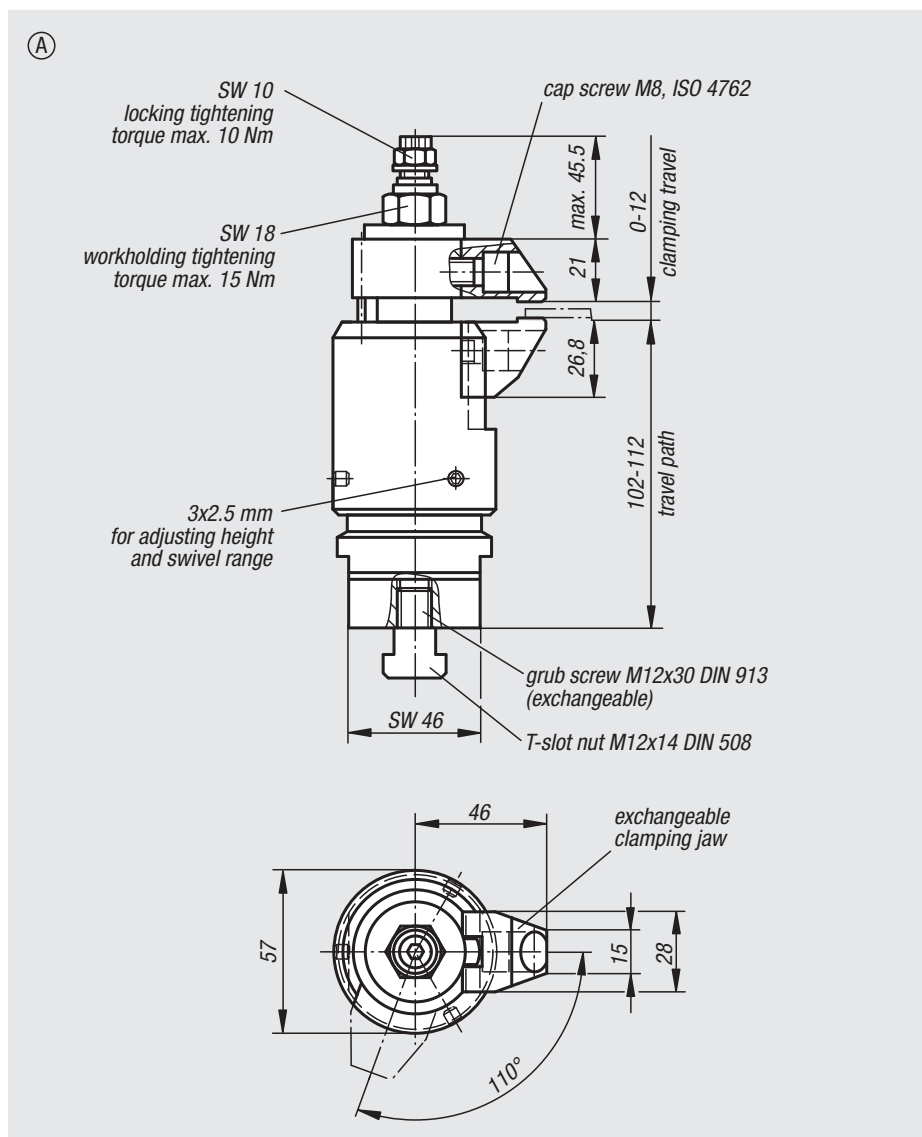
For specific clamping applications the standard jaws can be altered or replaced.

Form B:

Fasten the floating clamp with M6 fastening holes to a fixture.

Adjust the height stop and pivot range using the blue adjusting sleeve and clamp with grub screws (4x AF 2.5). When setting the height limit, allow ample play at the top.

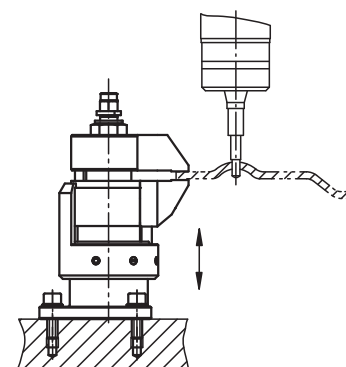
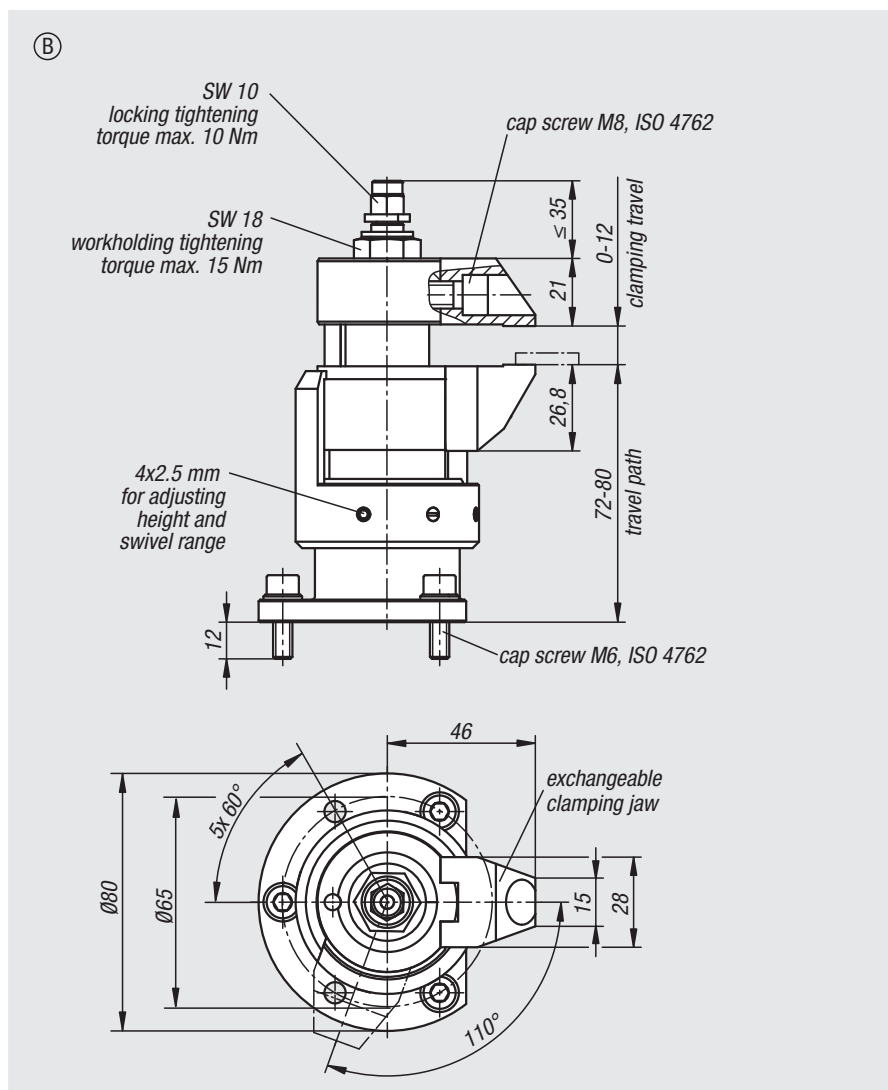
For specific clamping situations, the standard jaw plates can be modified or replaced.



Order No.	Form	Travel path	max. clamping travel	Load capacity N	Clamping force N
04421-100812	A	10	12	8000	8000

Floating clamp

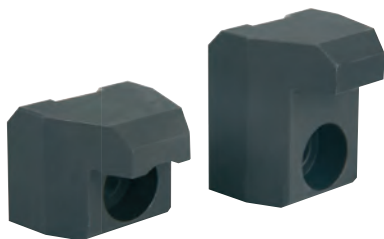
with separate workpiece clamp and interlock



Order No.	Form	Travel path	max. clamping travel	Load capacity N	Clamping force N
04421-080812	B	8	12	8000	8000

Clamping jaws

for floating clamps

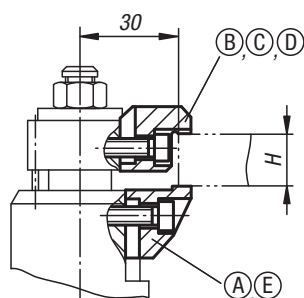
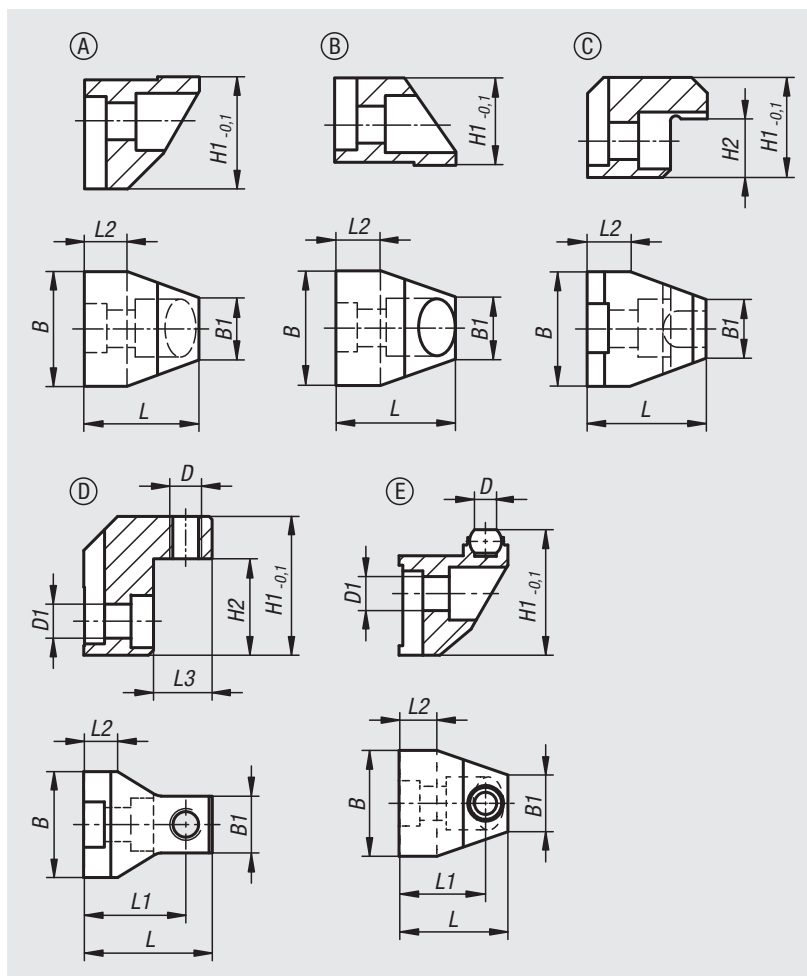


Material:
Steel.

Version:
Nitrided and black oxidised.

Sample order:
nlm 04422-90000

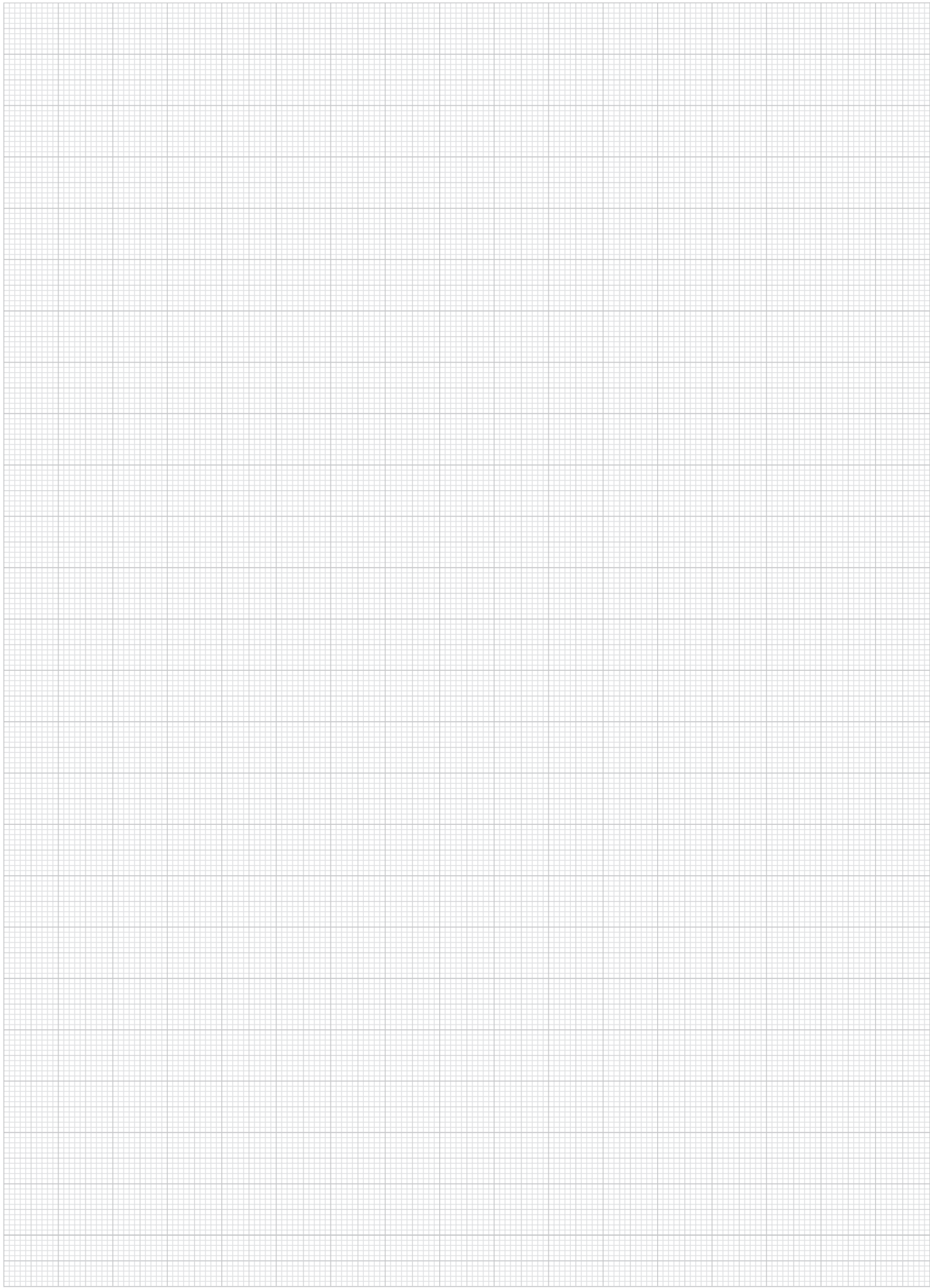
Note:
The clamping jaws can be used for floating clamps to increase the clamping range.



Order No.	H = clamping range max. in combination with 04422-90000 [mm]	H = clamping range max. in combination with 04422-910000 [mm]
04422-90416	4-16	-
04422-91527	15-27	-
04422-92638	26-38	-
04422-90029	29	23
04422-90040	40	34

Order No.	Form	Version 1	B	B1	D	D1	H clamping range	H1	H2	L	L1	L2	L3
04422-90000	A	standard lower jaw	28	15	-	-	-	26,8	-	28	-	10	-
04422-90012	B	standard upper jaw	28	15	-	-	0-12	21	-	29,5	-	11,5	-
04422-90416	C	exchange upper jaw	28	15	-	-	4-16	24,5	3,5	29,5	-	11,5	-
04422-91527	C	exchange upper jaw	28	15	-	-	15-27	24,5	14,5	29,5	-	11,5	-
04422-92638	C	exchange upper jaw	28	15	-	-	26-38	35,5	25,5	29,5	-	11,5	-
04422-90029	D	upper jaw	28	15	M8	4,5	-	29,5	16,5	31,5	24,5	8	16
04422-90040	D	upper jaw	28	15	M8	4,5	-	40,5	27,5	31,5	24,5	8	16
04422-910000	E	lower jaw	28	15	5,8	4,5	-	32,8	-	30	23	10	-

Notes



01000
02000
03000
04000
05000
06000
07000
08000
09000
10000
12000

Clamping element "arness"



Material:

Steel.

Ball knob thermoset PF 31

Version:

Housing painted silver-grey hammertone.

All other parts and accessories black oxidised.

Ball knob red.

Sample order:

nlm 04430-01

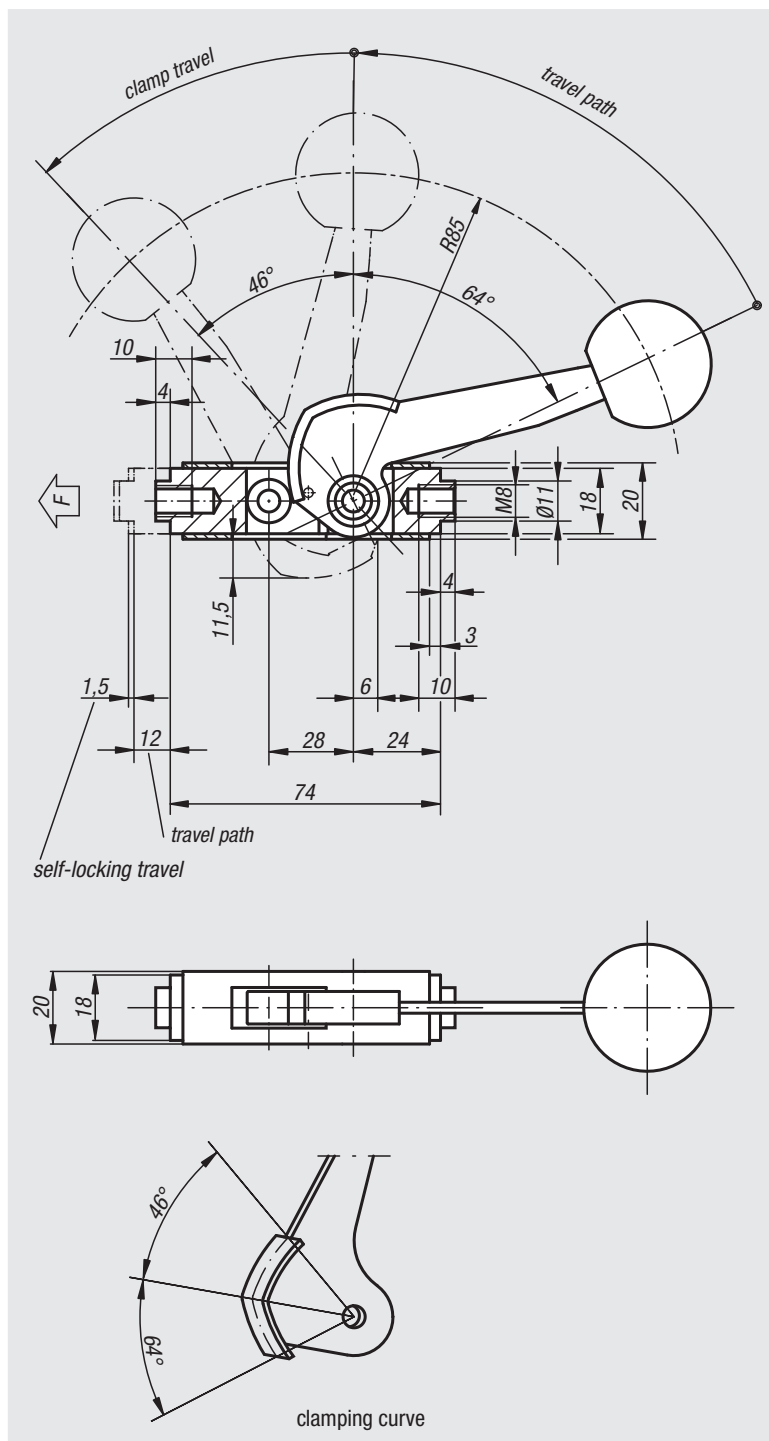
Note:

The travel path is 12 mm. Self-locking occurs in any position within only 1.5 mm of clamp travel, allowing workpieces with tolerances of up to 1 mm to be securely clamped. The arness clamping element can be fitted in any horizontal or vertical position.

Several standard parts have been developed to achieve individual adaptation for various circumstances and are available as optional accessories.

The thrust pad and all parts of the cam system subject to heavy loads are case-hardened.

The maximum permissible clamping force is approximately 4905 N.



Clamping element "arness"

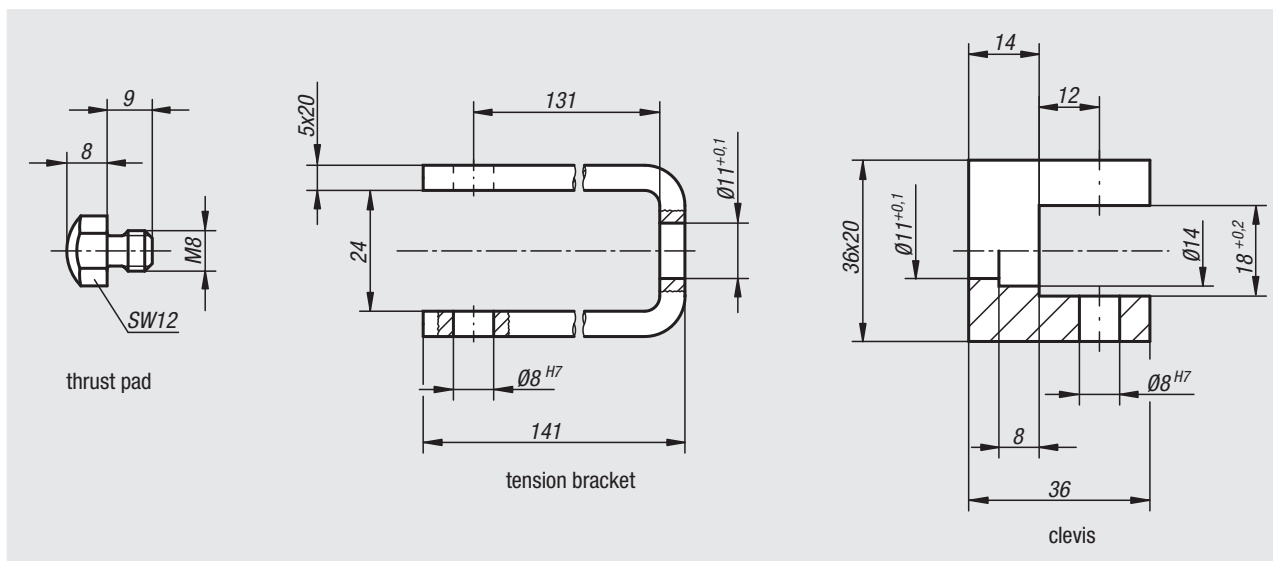
Order No.

Dimensions

04430-01

see drawing

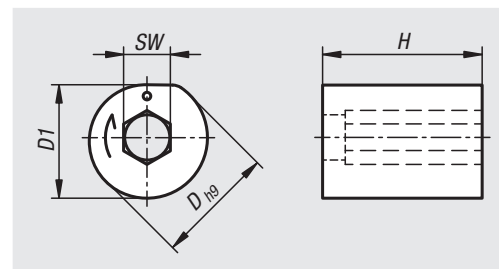
Clamping element "arness"



"arness" accessories

Order No.	Item
04430-02	Clevis
04430-03	Tension Bracket
04430-04	Thrust Pad

Clamp cam brass


Material:

Brass.

Sample order:

nlm 04430-10-0808

Application:

These clamping cams are used to fixate components in workpieces.

The clamped components can be easily and quickly released again.

Workpieces and components can be accurately positioned in an assembly.

Advantages:

Using the cam clamps often saves the need for complex cross holes for clamping screws.

The bore for the clamping cam can be produced cost-effectively in the same machine set-up as the bore or slot for the component to be clamped.

Functional principle:

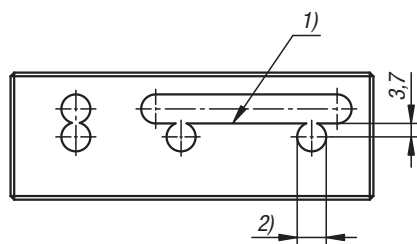
Insert the component to be clamped and the clamping cam into the workpiece. The indent mark on the clamp cam top face should be adjacent the part to be clamped.

The clamp cam is rotated with an hex key in the direction of the arrow.

The part can be released again by turning the cam in the opposite direction.

Drawing reference:

- 1) Clamping edge
- 2) 8 H9 min. depth 8



Order No.	D	D1	H	SW
04430-10-0808	8	7,5	8	3

Fixture clamps machinable


Material:

Cam screw alloyed steel.
Clamping disc steel.

Version:

Cam screw and clamping disc black oxidised.

Sample order:

nIm 04431-06

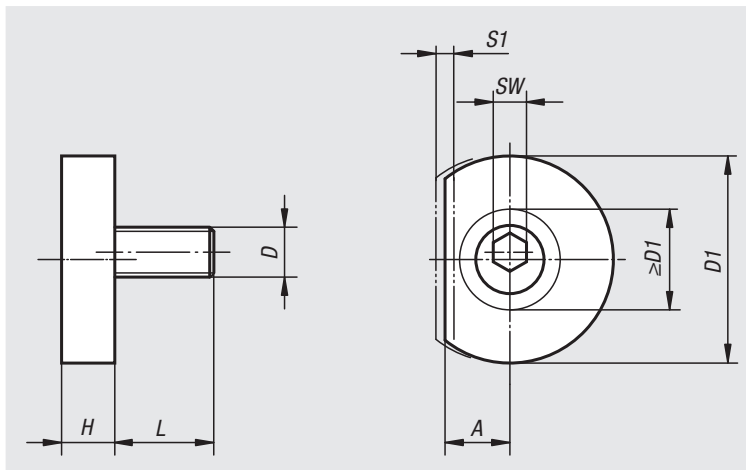
Note:

These fixture clamps have a round washer that can be machined to suit the contour of the workpiece being clamped. This allows positive clamping for round, contoured or fragile workpieces. The flat edge is the same distance from the screw centre as our hexagonal fixture clamps 04435 allowing an interchange between the two. "A" = distance from workpiece to screw centre (cam screw).

"D1 min." = maximum depth of contour.

On request:

Replacement cam screws.



Order No.	A	D	D1	D1 min.	H	L	SW	S1 (travel)	Clamping force kN
04431-06	7,8	M6	24,9	12,1	6,4	11,9	4	1,01	3,3
04431-10	10,2	M10	31,2	17,2	8,9	18	7	1,52	8,9
04431-12	12,7	M12	37,6	22,4	11,4	22,9	8	2,03	17,8
04431-16	15	M16	43,9	26,1	14	28,6	12	2,54	26,7

Clamping cams


Material:

Carbon steel.

Version:

Black oxidised.

Sample order:

nIm 04431-05-10

Assembly:

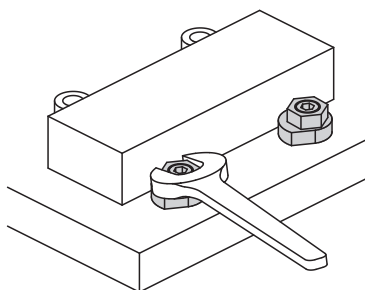
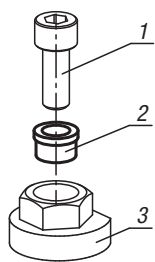
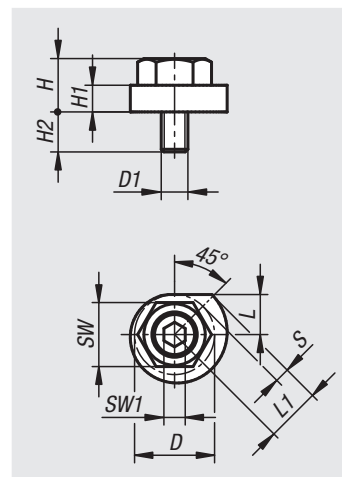
1. Screw the locking screw into the collar bush and fixture clamp and screw onto the baseplate.
2. The workpiece is clamped by tightening the fixture clamp with a spanner.

Advantages:

- Compact design
- Quick and easy clamping of components

Drawing reference:

- 1) Locking screw
- 2) Collar bush
- 3) Fixture clamp



Order No.	D	D1	H	H1	H2	L	L1	SW	SW1	Clamping force kN	Travel S	Tightening torque max. Nm
04431-05-08	24	M8	16	8	12	12	16,4	19	6	5,2	4,4	50
04431-05-10	30	M10	20	10	15	15	20,5	24	8	8	5,5	75
04431-05-12	34	M12	24	12	18	17	23,2	27	10	9,3	6,2	90

Fixture clamps unequal hexagon


Material:

Cam screw steel tempered to 10.9.
Hexagon washer mild steel.

Version:

Cam screw black oxidised.
Hexagon washer hardened and black oxidised.

Sample order:

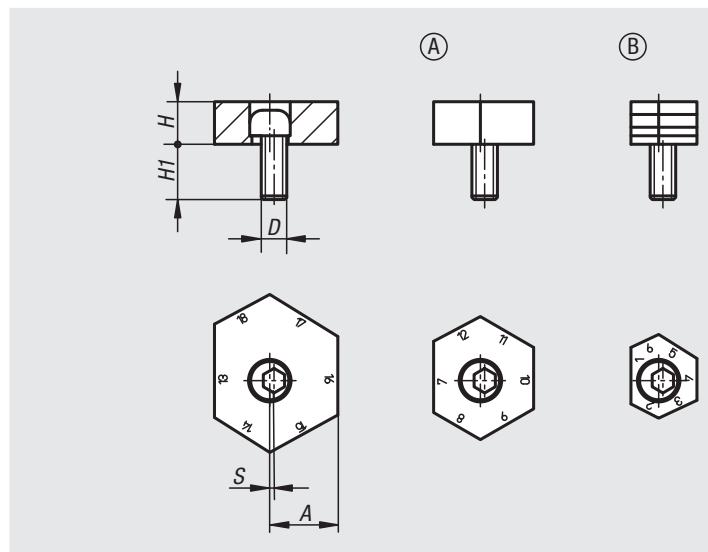
nIm 04432-13

Note:

These unequal hexagon fixture clamps can minimise the cost of clamping in fixtures. The clamping range can be altered up to 17 mm from the same tapped hole. Simply rotate the hexagon washer.

On request:

Replacement cam screws.



Order No. Form A smooth	Order No. Form B serrated	Distance A by face No.	D	H	H1	S (cam travel)	Clamping force kN
04432-09	04432-13	1/12, 2/13, 3/14, 4/15, 5/16, 6/17	M12	10	22	1	18
04432-10	04432-14	7/18, 8/19, 9/20, 10/21, 11/22, 12/23	M12	10	22	1	18
04432-11	04432-15	13/24, 14/25, 15/26, 16/27, 17/28, 18/29	M12	10	22	1	18

Spiral cam screws



Material:
Steel.

Version:
Case-hardened (56 ± 1 HRC) and blue electro zinc-plated.
Grade 8.8

Sample order:
nlm 04433-0408

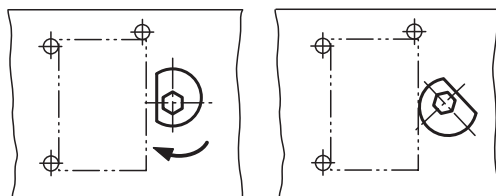
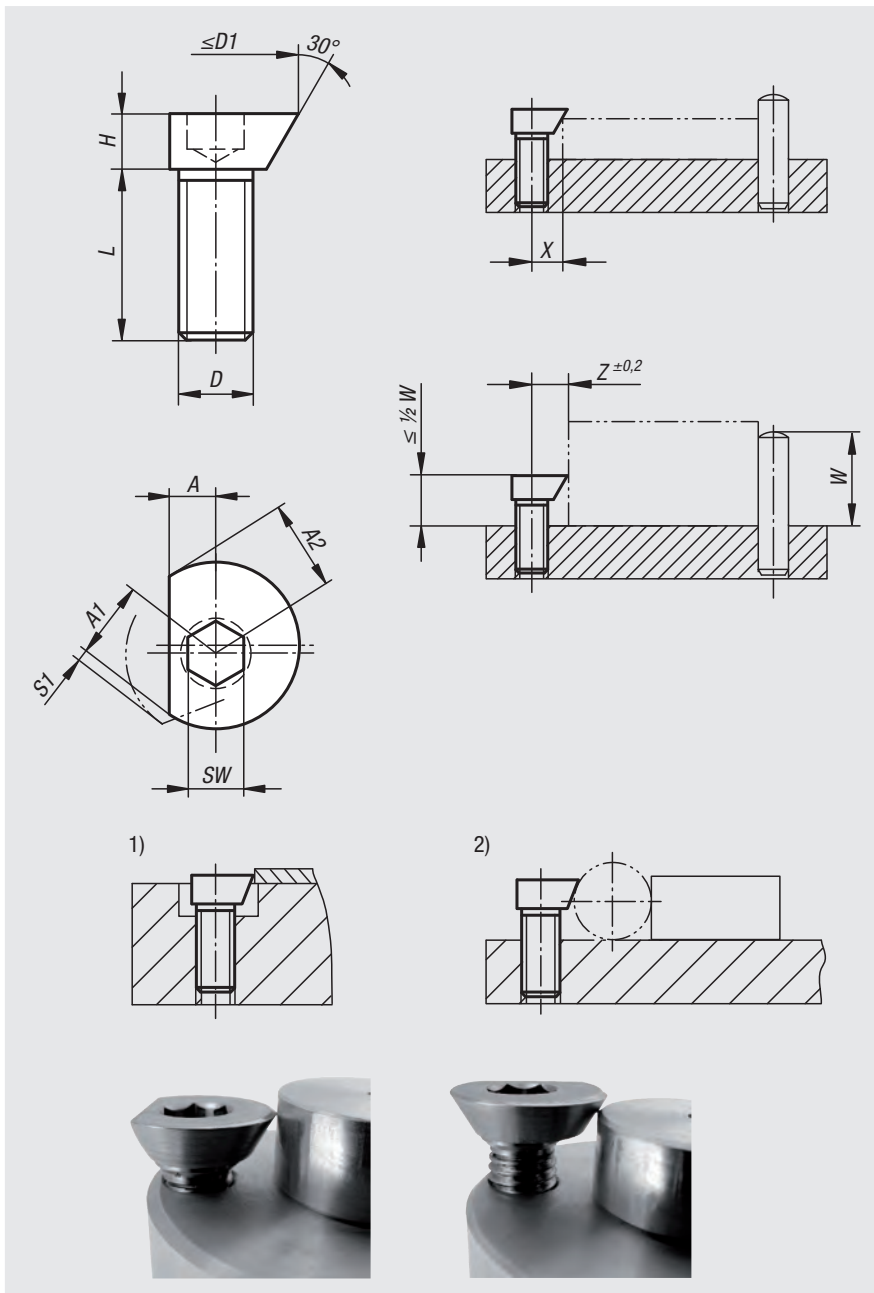
Note:
Robust, compact spiral cam clamping screws that exert a positive down force on diverse workpiece forms.

Assembly:
Drill and tap several holes at a distance X or Z (see diagram). Screw the cam screw into the required height and position with the flat side to the workpiece. Position the workpiece and tighten the cam screw with a hexagon key. Full clamping is achieved with approximately a 1/3 rotation. Lubricate the tapped hole regularly.

Place stops on the face towards which the screw turns to prevent the workpiece rotating away.

On request:
Spiral cam screws with LH thread.

Drawing reference:
1) clamping sheet metal
2) clamping round parts



Order No.	A	A1	A2	D	D1 max.	H	L	SW	S1 (travel)	X	Z	Clamping force kN	Tightening torque max. Nm
04433-0408	3	4,6	4	M4	9,2	3	8	2,5	0,6	3,5	4,2	0,09	1,5
04433-0510	3,5	5,7	5	M5	11,4	4	10	3	0,7	4,2	5,2	0,1	2
04433-0612	4,5	7,1	6,1	M6	14,2	5	12	4	1	5,4	6,4	0,3	4,5
04433-0816	5,5	8,9	7,7	M8	18	6	16	5	1,2	6,6	8	2,7	20
04433-1020	6,5	11,1	9,4	M10	22,2	7	20	6	1,7	8,3	9,8	4	30
04433-1224	8	13,5	11,6	M12	27	9	24	8	1,9	10,1	12	5,4	44

Cam screws

with knife edge washer



Material:

Knife edge washer.
Cam screw carbon steel.

Version:

Cam screw tempered to 10.9 and black oxidised.
Knife edge washer hardened and anodised.

Sample order:

nln 04434-16

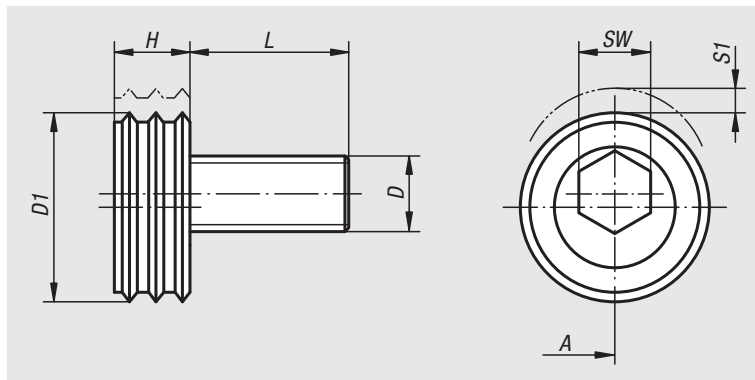
Note:

Also called knife edge clamps.
The hardened knife edge washer is suitable for clamping rough cut stock, castings, forgings etc.

"A" = distance from workpiece to screw centre (cam screw).

On request:

Replacement cam screws.



Order No.	A	D	D1	L	H	SW	S1 (travel)	Clamping force kN	Tightening torque max. Nm
04434-12	12,7	M12	25,4	22,5	9,6	8	2	18	88
04434-16	15	M16	30,1	26,8	12,7	12	2,5	27	135

Cam screws

with hexagon washer



Material:

Cam screw carbon steel.
Hex washer brass.

Version:

Cam screw tempered to 10.9 and black oxidised.

Sample order:

nln 04435-12

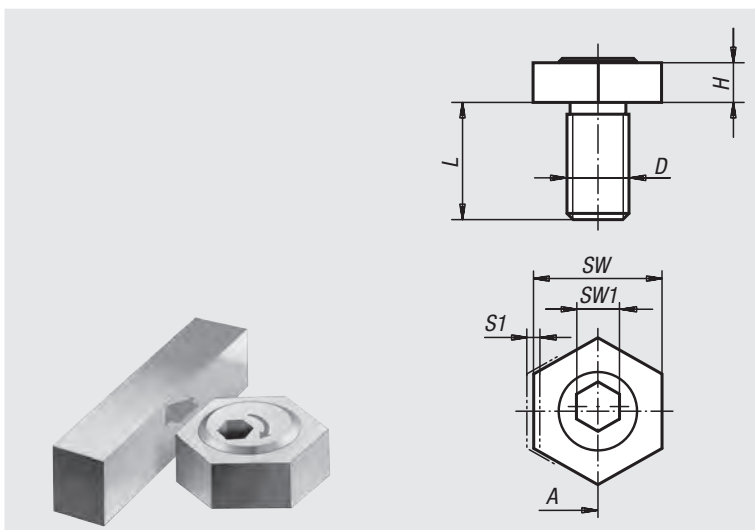
Note:

Also called fixture clamps.
The minimal height of this fixture clamp allows numerous clamping problems in fixture and equipment construction to be solved. The brass hex washer offers a gentle yet extremely stable and safe clamping of workpieces. By using several fixture clamps entire pallets can be set-up.

"A" = distance from workpiece to screw centre (cam screw).

On request:

Replacement cam screws.



Order No.	A	D	H	L	SW	SW1	S1 (travel)	Clamping force kN	Tightening torque max. Nm
04435-04	3,8	M4	2,8	10	8	3	0,8	0,9	2,2
04435-06	7,8	M6	4,8	12	16	4	1	3,4	8,5
04435-08	10,2	M8	4,8	15	20,6	5	1	3,6	11,3
04435-10	10,2	M10	6,4	20	20,6	7	1,6	9,0	28,06
04435-12	12,7	M12	9,5	25	25,4	8	2	18,0	88
04435-16	15	M16	12,7	30	30,2	12	2,5	27,0	135

Cam screws

with hexagon washer, for T-slots


Material:

Carbon steel.

Hex washer brass.

Version:

Tempered to 10.9 and black oxidised.

Sample order:

nln 04436-12

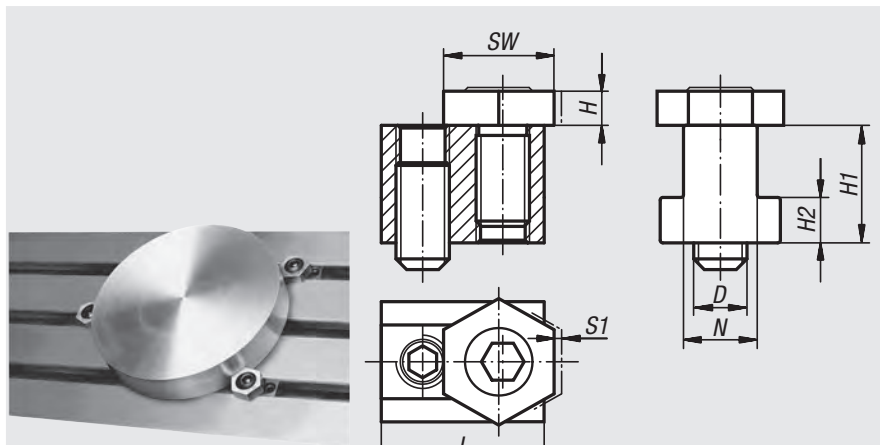
Note:

Also called fixture clamps for T-slots.

These fixture clamps can be used directly on machine tables or other tables with T-slots. The grub screw at the rear locks the T-nut in the slot. Thin shims are recommended to prevent marking the bottom of the T-slot.

On request:

Replacement cam screws.



Order No.	D	N	H	H1	H2	L	SW	S1 (travel)	Clamping force kN
04436-08	M6	8	4,8	9,6	4,5	23	16	1	3,4
04436-10	M6	10	4,8	14	4,5	23	16	1	3,4
04436-12	M8	12	4,8	15,5	6,5	28	21	1	3,6
04436-14	M10	14	6,4	22	8,5	30,5	21	1,6	9
04436-16	M12	16	9,5	22,5	9	30,5	25	2	18
04436-18	M12	18	9,5	28,5	10	34,5	25	2	18
04436-20	M16	20	12,7	32	12	39	30	2,5	27
04436-22	M16	22	12,7	38,2	14	44	30	2,5	27

Typical setup using fixture clamps



Cam clamps

with riser



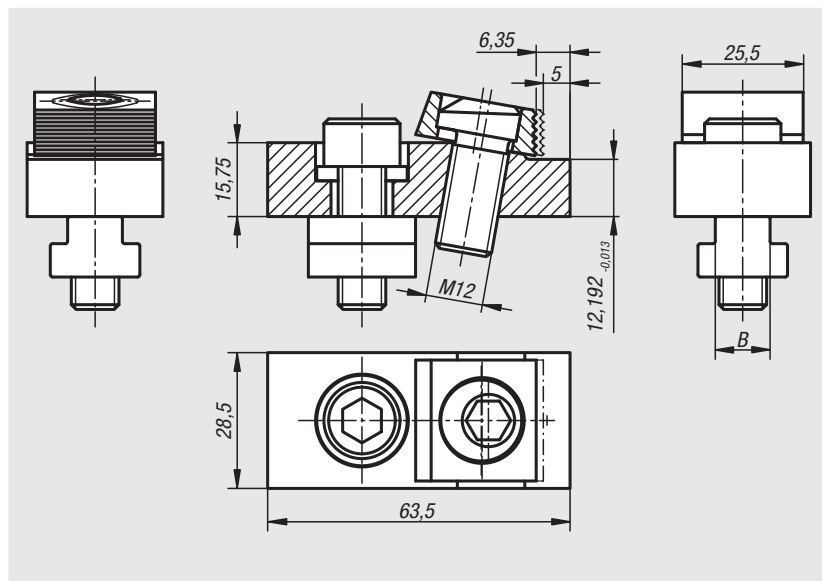
Material:
Steel.

Version:
Body tempered and black oxidised.
Square washer case hardened and brass-plated.

Sample order:
nlm 04437-16

Note:
Also called riser clamps.
These cam clamps with riser can be used directly on machine tables. A positive down force is exerted during clamping.

On request:
Replacement cam screws.



Order No.	B Slot width	Clamping force kN
04437-12	12	12
04437-14	14	12
04437-16	16	12
04437-18	18	12

04439

Toe clamps for T-slots



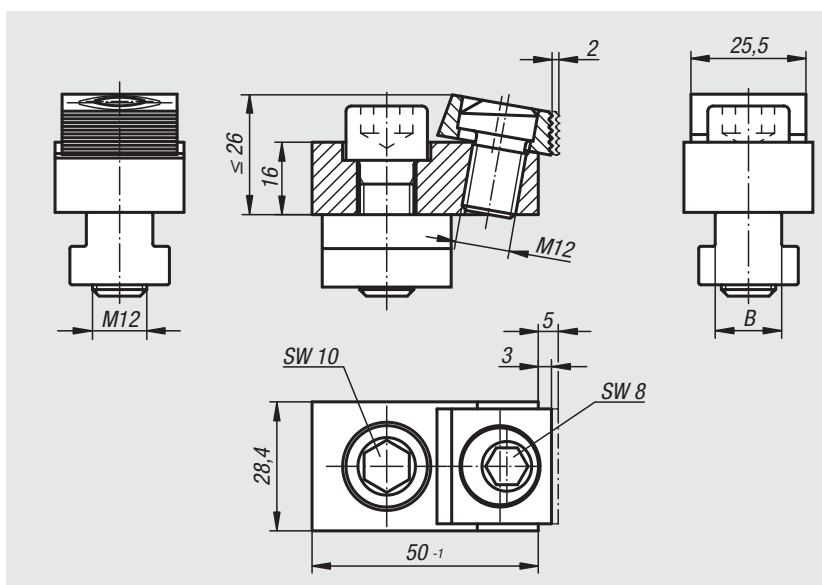
Material:
Steel.

Version:
Body tempered and black oxidised.
Square washer case hardened and brass-plated.

Sample order:
nlm 04439-14

Note:
These toe clamps can be used on machine tables or adapter plates. The positive down force holds the workpiece down on the supporting surface. The square washer can adapt slightly to an angular position i.e. the workpiece does not have to be exactly parallel. The clamping washer has a smooth side for machined surfaces and a serrated side for rough faces.

On request:
Replacement cam screws.



Order No.	B Slot width	Clamping force kN
04439-00	without slot key	18
04439-14	14	18
04439-16	16	18
04439-18	18	18

Talon grips



Material:
Steel.

Version:
Hardened (52+2 HRC) and black oxidised.

Sample order:
nlm 04440-1219

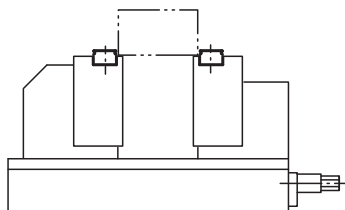
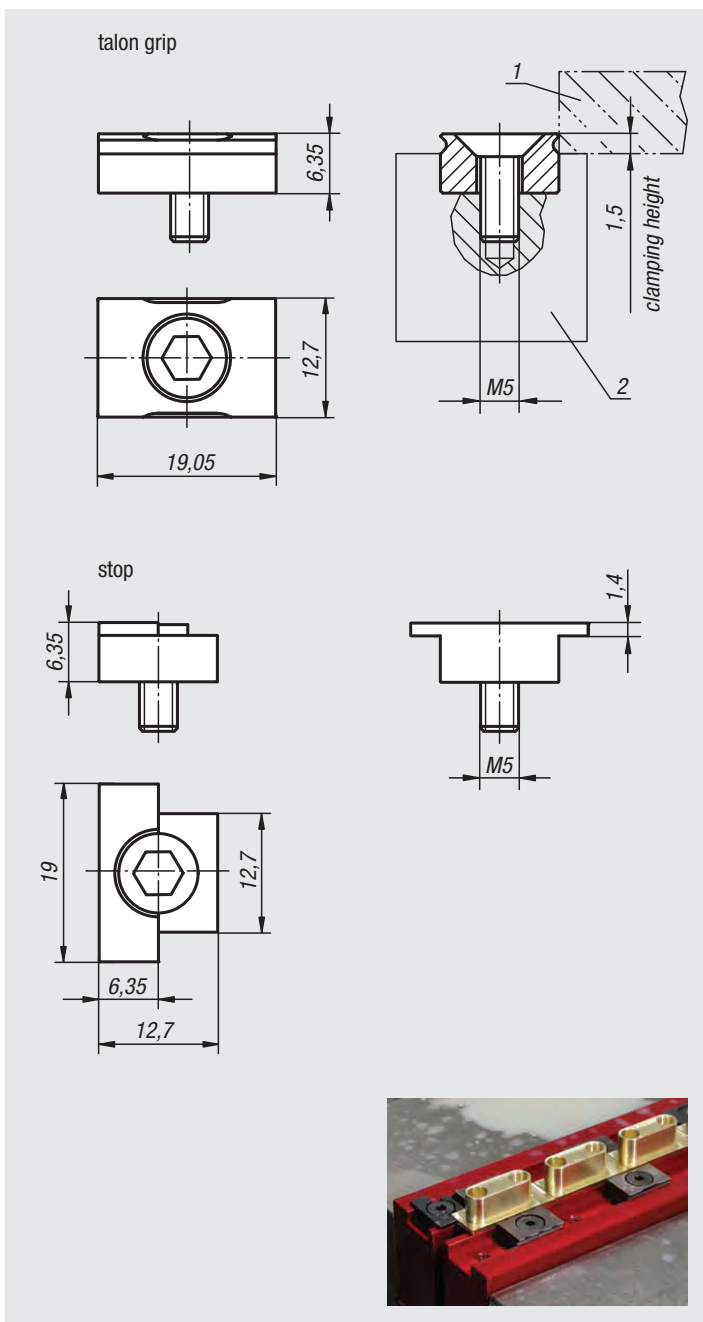
Note:
Talon grips are meant for installing into vice jaw plates. A slot with tapped hole is sufficient for mounting. The sharp edges on the talons bite into the workpiece and prevent lateral and horizontal movement.

- Positive clamping for high cutting speeds.
- Low clamping height of 1.5 mm (saves material costs).
- The contour of the talons produces a slight pull-down effect.

A matching stop is available as an accessory.

Drawing reference:

- 1) workpiece
- 2) clamping jaw



Order No.	Version
04440-1219	talon grip
04440-12	stop

Talon grips round


Material:

Steel.

Version:

Hardened (52+2 HRC) and black oxidised.

Sample order:

nln 04440-0919

Note:

Talon grips are meant for installing into vice jaw plates. A tapped hole with counterbore is sufficient for the mounting. The sharp edges on the talons bite into the workpiece and prevent lateral and horizontal movement.

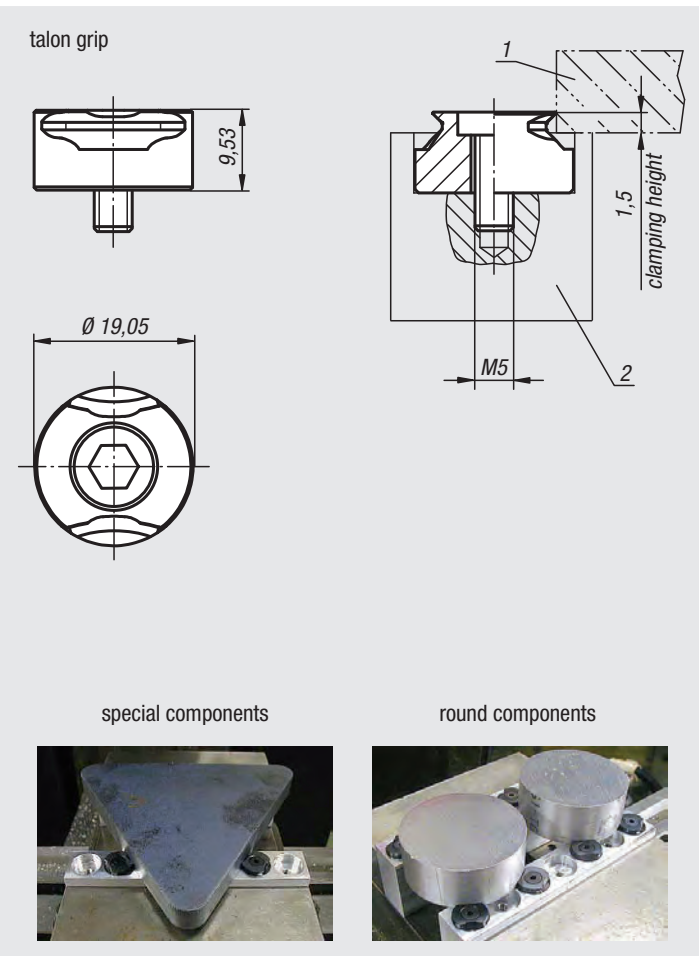
- Positive clamping for high cutting speeds.
- Low clamping height of 1.5 mm (saves material costs).
- The contour of the talons produces a slight pull-down effect.

Talon grips expand the application possibilities of your machine vice. Round, contoured and oversized workpieces can be quickly and securely clamped by using talon grips.

Drawing reference:

1) workpiece

2) clamping jaw



Order No.

04440-0919

Version

talon grip

Chock clamps


Material:

Clamping element steel or brass.

Version:

Steel hardened.

Sample order:

nlm 04441-113

Note:

Also known as pitbull clamps.

Extremely space-saving design.

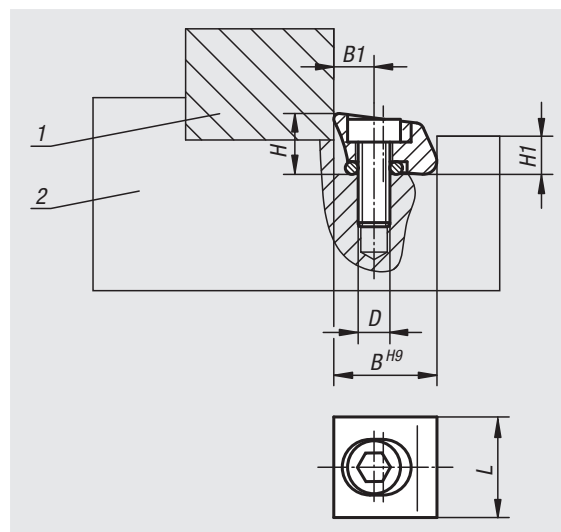
No protruding edges due to lateral clamping.

Positive down force.

Drawing reference:

1) workpiece

2) Fixture



Order No.	Version	Main material	D	B	B1	H	H1	L	Clamping travel	Clamping force kN	Tightening torque max. Nm
04441-110	with knife edge	steel	M2,5 x 8	9,5	3,8	6	3,6	9,5	0,15	2,8	1,8
04441-113	with knife edge	steel	M4 x 12	12,7	5,1	8	4,8	13	0,4	6,6	5,6
04441-119	with knife edge	steel	M6X16	19,05	7,6	11,5	7,2	19	0,6	16	22,5
04441-210	with blunt edge	steel	M2,5 x 8	9,5	3,8	6	3,6	9,5	0,15	2,8	1,8
04441-213	with blunt edge	steel	M4 x 12	12,7	5,1	8	4,8	13	0,4	6,6	5,6
04441-219	with blunt edge	steel	M6X16	19,05	7,6	11,5	7,2	19	0,6	16	22,5
04441-310	with blunt edge	brass	M2,5 x 8	9,5	3,8	6	3,6	9,5	0,15	0,9	0,56
04441-313	with blunt edge	brass	M4 x 12	12,7	5,1	8	4,8	13	0,4	1,8	2,8
04441-319	with blunt edge	brass	M6X16	19,05	7,6	11,5	7,2	19	0,6	4,2	5,6

Cam clamps adjustable

with riser



Material:

Steel.

Version:

Body tempered, black oxidised, riser faces ground.
Square washer case hardened and brass-plated.

Sample order:

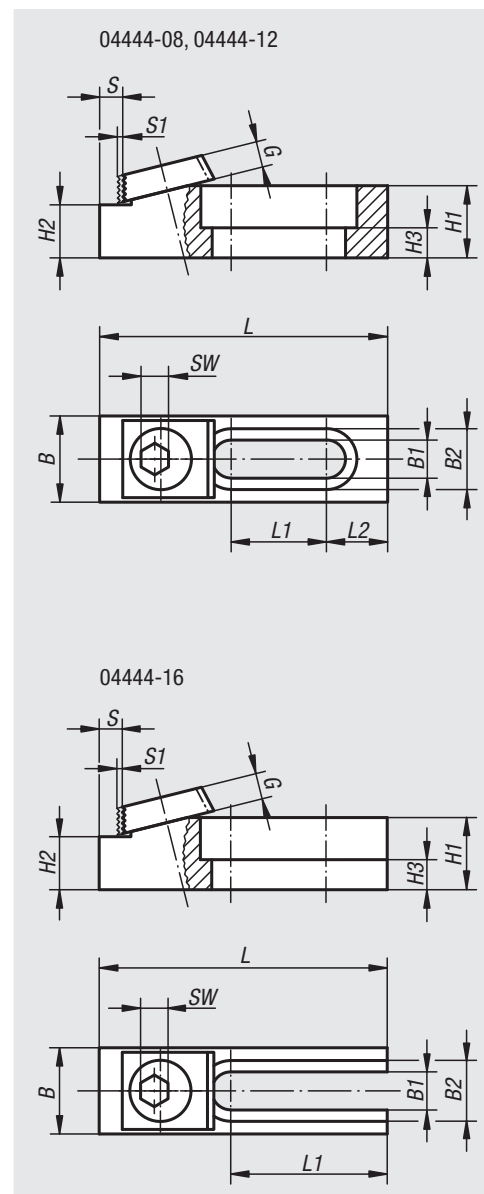
nlm 04444-12

Note:

Also called multi-fixture clamps and stops.
Cost-effective custom made clamping fixtures can be produced using the adjustable riser cam clamps together with the matching riser stops.

On request:

Replacement cam screws.



Order No.	suitable fastening screw	L	L1	L2	B	B1	B2	H1	H2	H3	S	S1	G	SW	Long hole	Clamping force kN	Tightening torque max. Nm
04444-08	M8	63,5	21	13,5	19	8,4	13,4	15,9	11,684 -0,013	6,6	6,3	1,2	5,3	7	closed	8,9	28
04444-12	M12	95,1	42,7	12,7	28,5	13	19,8	15,9	12,192 -0,013	6,9	7,1	2	9,5	8	closed	17,8	88
04444-16	M16	107	46,3	-	38	17	24,8	41	35,001 -0,013	21	8,3	2,5	12,7	12	open	26,7	135

Riser stops


Material:

Steel.

Version:

Tempered, black oxidised.

Riser faces ground.

Sample order:

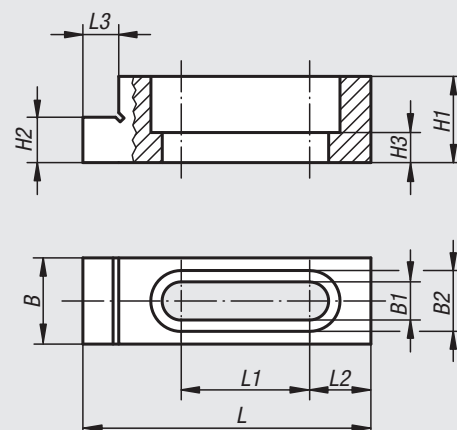
nIm 04445-12

Note:

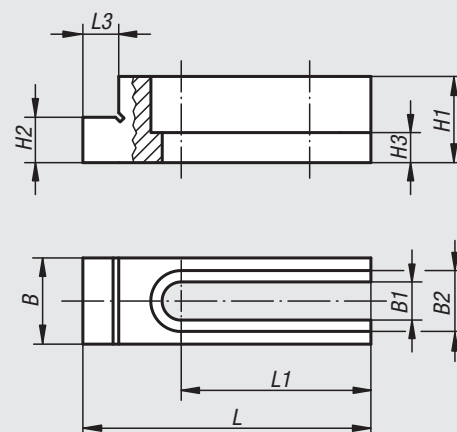
Also called multi-fixture clamps and stops.

Cost-effective custom made clamping fixtures can be produced using the adjustable riser cam clamps together with the matching riser stops.

04445-08, 04445-12

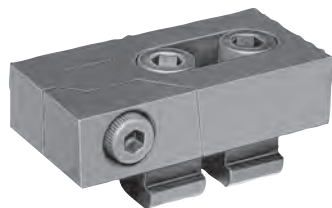


04445-16



Order No.	suitable fastening screw	L	L1	L2	L3	B	B1	B2	H1	H2	H3	Long hole
04445-08	M8	63,5	28,3	13,5	7,9	19	8,4	13,4	19	11,684 -0,013	6,6	closed
04445-12	M12	95,2	42,7	12,7	7,9	28,5	13,4	19,8	22	12,192 -0,013	6,9	closed
04445-16	M16	107	46,2	-	9,5	38	17	24,8	50,7	35,001 -0,013	21,3	open

Low-profile clamps


Material:

Steel.

Version:

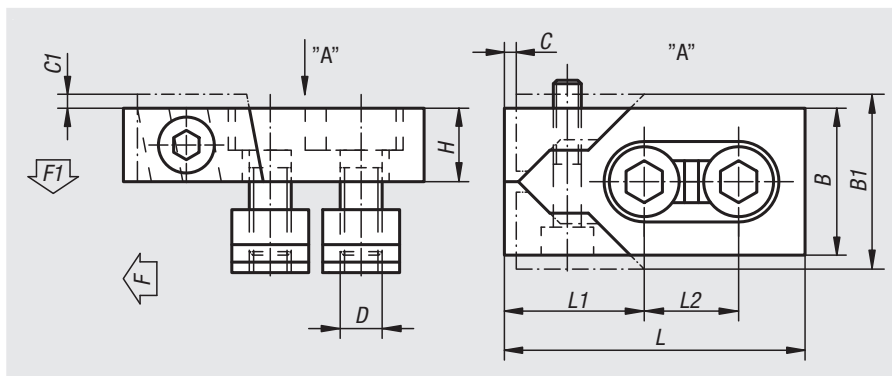
Hardened, black oxidised.

Sample order:

nIm 04450-16

Note:

These handy low-profile clamp jaws are ideal for machining most workpiece sizes. The hardened wedge operated jaws also provide positive down force.



Order No.	Slot width	L	L1	L2	B	B1	H	C	C1	D	F kN	F1 kN	Tightening torque max. Nm
04450-12	12	80	39	26	40	47	20	3	2,5	M10	16	0,6	15
04450-14	14	80	39	26	40	47	20	3	2,5	M12	22	0,9	18
04450-16	16	80	39	26	40	47	20	3	3	M12	22	0,9	18
04450-161	16	100	46	34	50	59	25	4	2,5	M14	32	1,2	25
04450-18	18	100	46	34	50	60	25	4	3	M16	36	1,4	35
04450-20	20	100	46	34	50	60	25	4	3	M16	36	1,4	35
04450-22	22	140	65	50	78	95	30	5	4	M20	36	1,4	45

Side clamps


Material:

Steel.

Version:

Case-hardened and black oxidised.

Sample order:

nIm 04460-110

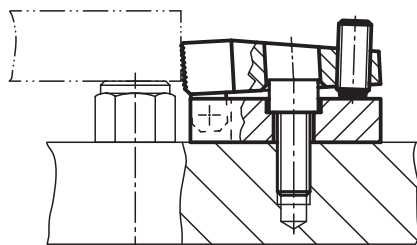
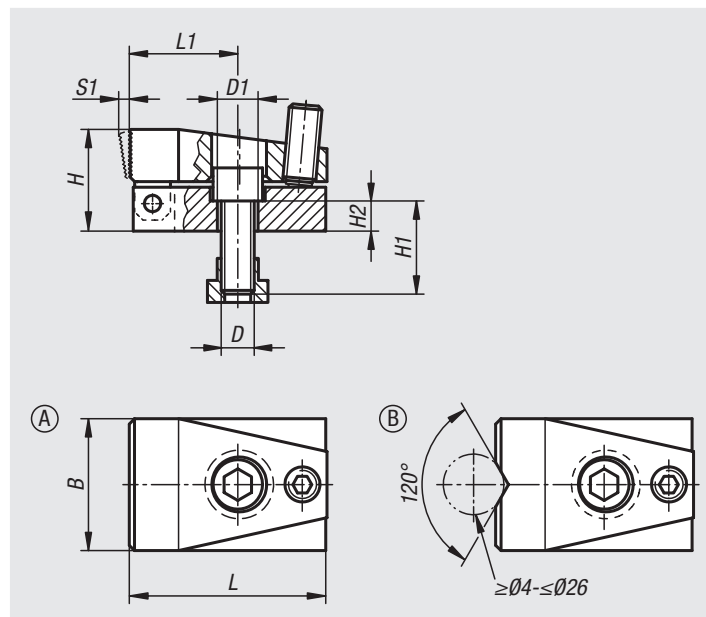
Note:

Tightening the ball-end thrust screw moves the jaw plates forwards. The workpiece is pushed against the fixed stop and simultaneously forced down onto the seating face. The seating face for the workpiece can be mounted directly on the machine table.

Drawing reference:

Form A: with flat jaw

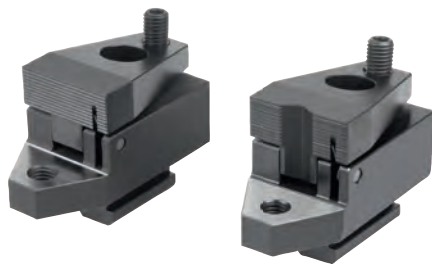
Form B: with prism jaw



Order No. Form A	Order No. Form B	Slot width	B	D	D1	H	H1	H2	L	L1	S1 (travel)	Clamping force N	Tightening torque max. Nm
04460-110	04460-210	10	32	M8	8,4	24	20	8	52	28	3	7000	3
04460-114	04460-214	14	48	M12	12,5	37	30	11	72	40	4	15000	9
04460-118	04460-218	18	68	M16	16,5	47	35	13	86	41	7	21500	20

Side clamps

with support



Material:

Steel.

Version:

Case-hardened and black oxidised.

Sample order:

nln 04461-110

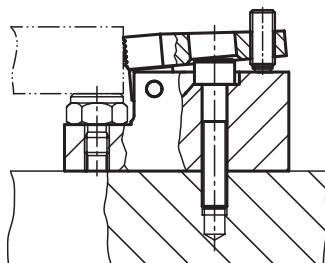
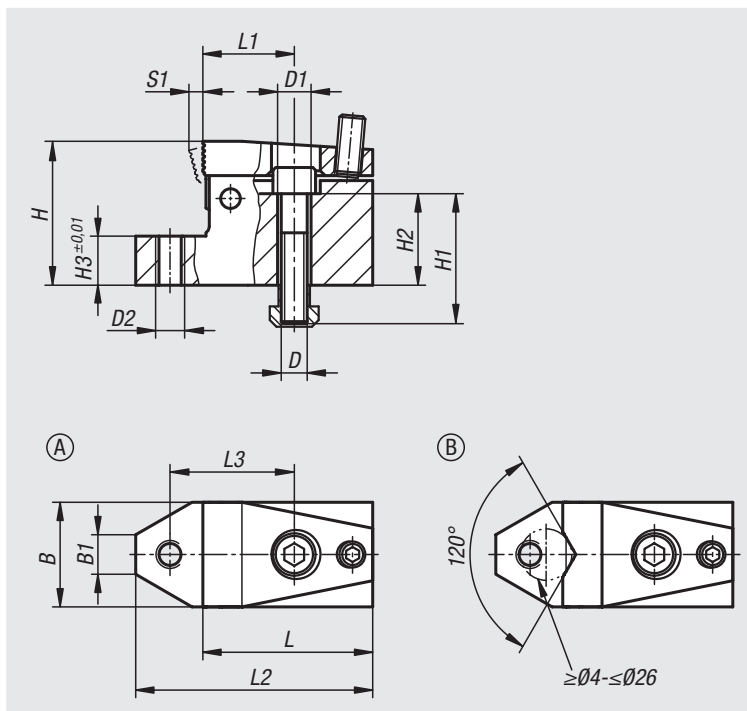
Note:

Tightening the ball-end thrust screw moves the jaw plates forwards. The workpiece is pushed against the fixed stop and simultaneously forced down onto the seating face. This side clamp has a ground seating face and tapped hole for adjustable support elements.

Drawing reference:

Form A: with flat jaw

Form B: with prism jaw



Order No. Form A	Order No. Form B	Slot width	B	B1	D	D1	D2	H	H1	H2	H3	L	L1	L2	L3	S1 (travel)	Clamping force N	Tightening torque max. Nm
04461-110	04461-210	10	32	12,1	M8	8,4	M8	44	40	28	15	52	28	72,5	38	3	7000	3
04461-114	04461-214	14	48	16	M12	13	M12	53	45	27	15	72	40	100	55	4	15000	9
04461-118	04461-218	18	68	18,8	M16	17	M16	72	60	38	20	86	41	126	63	7	21500	20

T-slot clamps


Material:

Clamping element (front) steel 1.7225.

Retaining element (rear) steel 1.0503.

Cap screws and slot keys grade 8.8 steel.

Version:

Body parts hardened and nickel-plated.

Fasteners black oxidised.

Sample order:

nIm 04462-1214

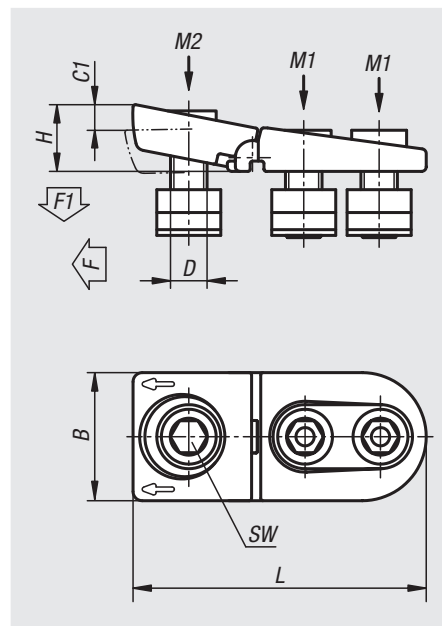
Note:

Particularly low workpieces can be clamped using the T-slot clamps.

The positive down force helps to hold the workpiece down on the machine table.

Application:

1. Slide the clamp in the machine table T-slot up to the workpiece.
2. Tighten the fastening screws with the appropriate torque.
3. Tighten the clamping screw to clamp the workpiece in place.



Order No.	Slot width	B	C1	D	H	L	SW	F kN	F1 kN	Tightening torque M1 Nm	Tightening torque M2 Nm
04462-1214	14	44	8	M12	25	112	10	15	7,5	65	52
04462-1618	18	56	10	M16	30	132	14	25	12,5	150	120
04462-2022	22	62	11	M20	35	155	17	36	18	300	240

T-slot clamp



Material:

Body steel 1.7225.

Screws steel grade 8.8.

Version:

Body hardened and nickel-plated.

Screws black oxidised.

Sample order:

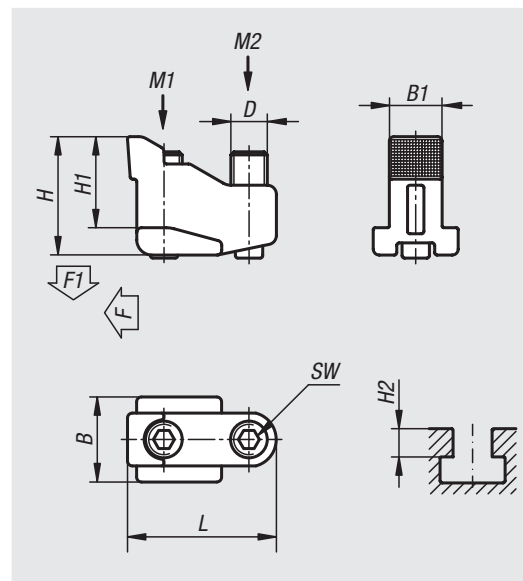
nIm 04469-1014

Note:

Particularly low workpieces can be clamped using the T-slot clamps.
The positive down force pushes the workpiece down on the machine table.

Application:

1. Slide the clamp in the machine table T-slot up to the workpiece.
2. Tighten the fastening screws with the appropriate torque.
3. Tighten the clamping screw to clamp the workpiece in place.



Order No.	Slot width	B	D	H	H1	H2	L	B1	SW	F kN	F1 kN	Tightening torque M1 Nm	Tightening torque M2 Nm
04469-1214	14	22	M10	31	24	14-19	40	13,6	5	7	3,5	18	9
04469-1618	18	28	M12	39	30	18-24	49	17,4	6	10	5	32	15
04469-2022	22	35	M16	50	37	22-30	63	21,5	8	-	8	75	35

T-slot clamps



Material:
Steel.

Version:
Hardened, black oxidised.

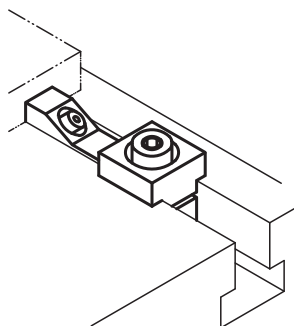
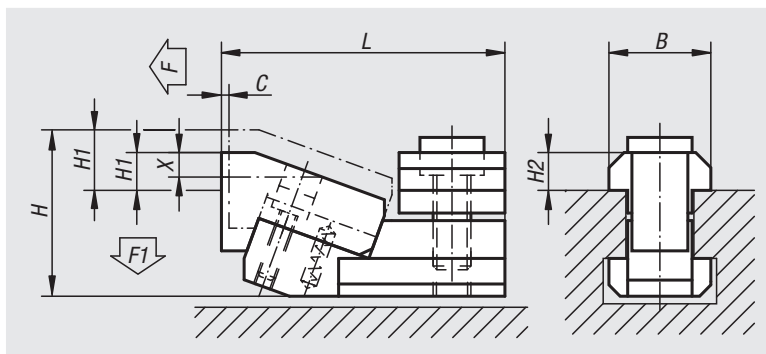
Sample order:
nlm 04470-12

Note:

These T-slot clamps are especially useful for clamping low profile workpieces. The wedge operated jaws also provide positive down force.

Dimensions "H1" and "X" depend on the max. T-slot depth acc. to DIN 650.

To achieve the minimal clamping height by the minimal slot depth, the jaw can be ground down by the dimension "X".



Order No.	Slot width	C	L	B	H	H1 min.	H1 max.	X	H2	F kN	F1 kN
04470-12	12	1,8	52	18	31	3,5	8,5	5	7	5	0,6
04470-14	14	1,8	55	22	34	2,5	7,5	5	8	5,5	0,7
04470-16	16	2,5	68	25	41	4	11	6	9	8	0,9
04470-18	18	2,5	71	28	43	2	9	6	10	9	1
04470-22	22	3	89	35	53	5	14	9	14	16	1,9

T-slot clamp

with cam



Material:

Carbon steel.

Version:

Black oxidised.

Sample order:

nln 04472-10400

Note:

Form A with locating pin.
Form B without locating pin.

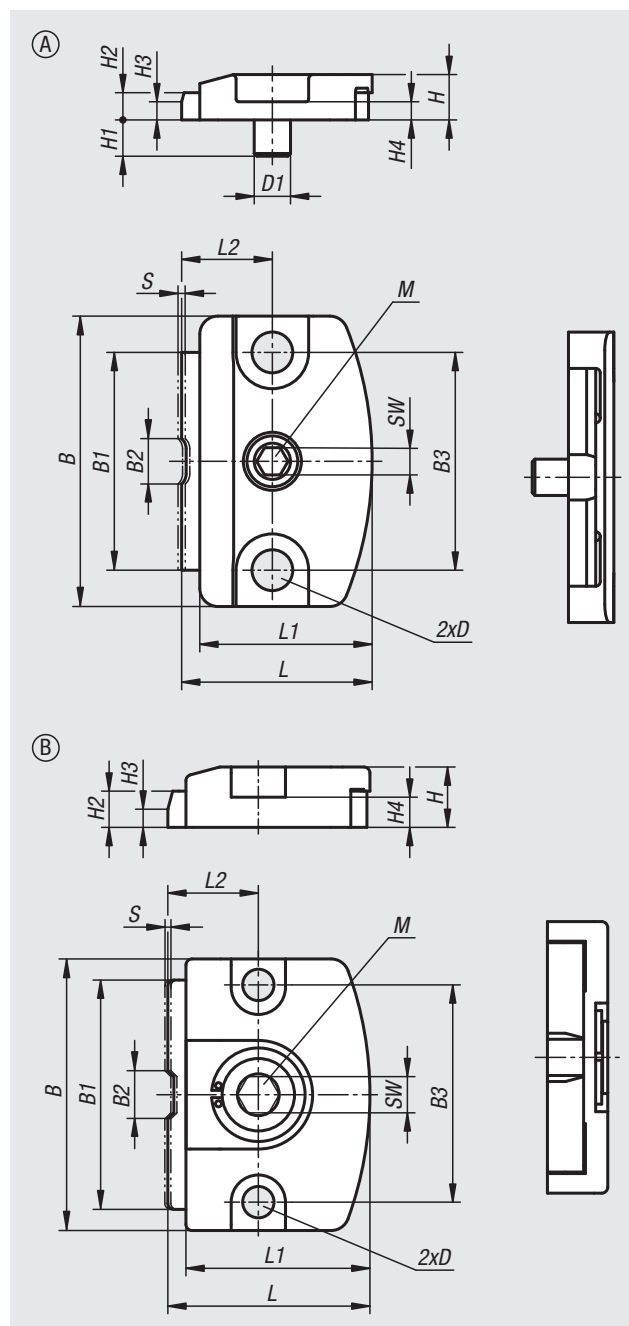
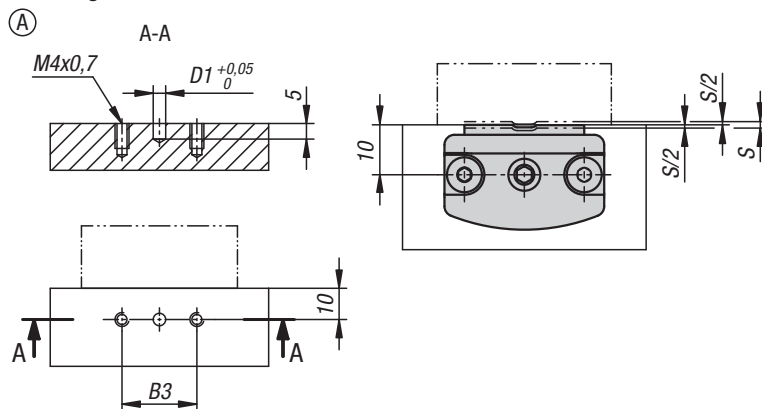
Assembly:

See drawing (Form A).

Advantages:

- Compact and flat design
- Quick and easy clamping of components

mounting instructions:



Order No.	Form	B	B1	B2	B3	D	D1	H	H1	H2	H3	H4	L	L1	L2	SW	Travel S	Clamping force kN	Tightening torque max. Nm
04472-00130	A	32	24	5	24	4,5	4	5	4	3	2	2	21	19	10	3	0,8	1,3	2,1
04472-10400	B	45	38	8	36	5,2	-	10	-	6	3	5	33,5	30,5	15	6	1	4	10
04472-10600	B	70	60	12	55	8,2	-	15	-	9	5	7	50	46	22	10	2	6	27

Side clamps


Material:

Body steel.

Jaw mild steel.

Centring bush with collar carbon steel.

Version:

Black oxidised.

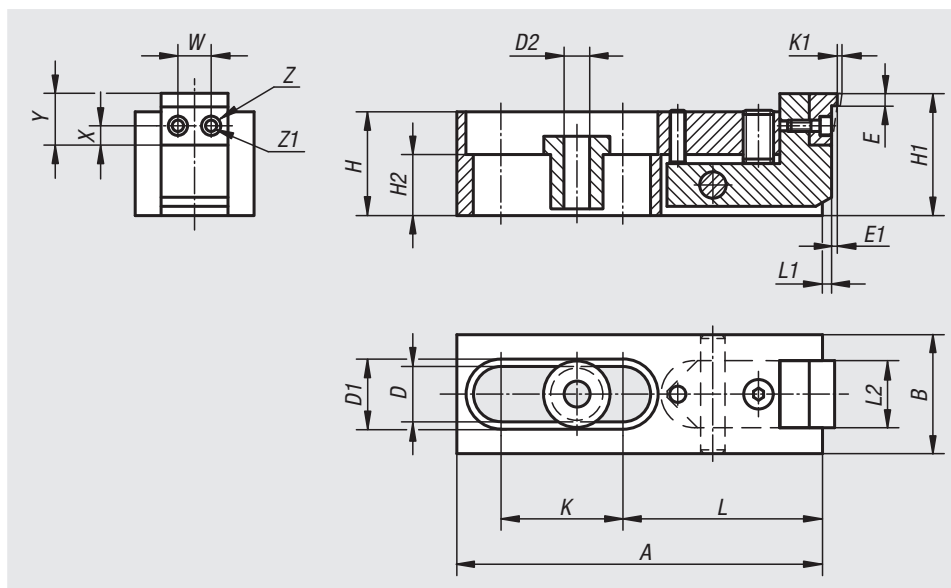
Jaw plates case-hardened.

Sample order:

nlm 04480-006

Note:

These flat design side clamps are ideal for machining low profile workpieces. The hardened jaws also provide positive down force.



Order No.	A	B	D	D1	D2	E	E1	H	H1	H2	K	K1	L	L1	L2	W	X	Y	Z	Z1	F=retaining force N
04480-006	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	3000
04480-010	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	16000
04480-016	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	31000

Side clamps

with rest pad



Material:

Housing and arm carbon steel.
Jaw tool steel.

Version:

Housing tempered and black oxidised.
Arm black oxidised.
Jaw tempered and black oxidised.

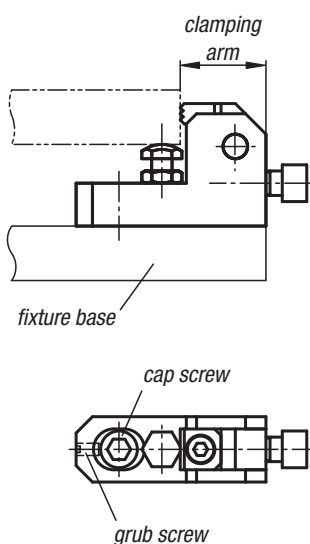
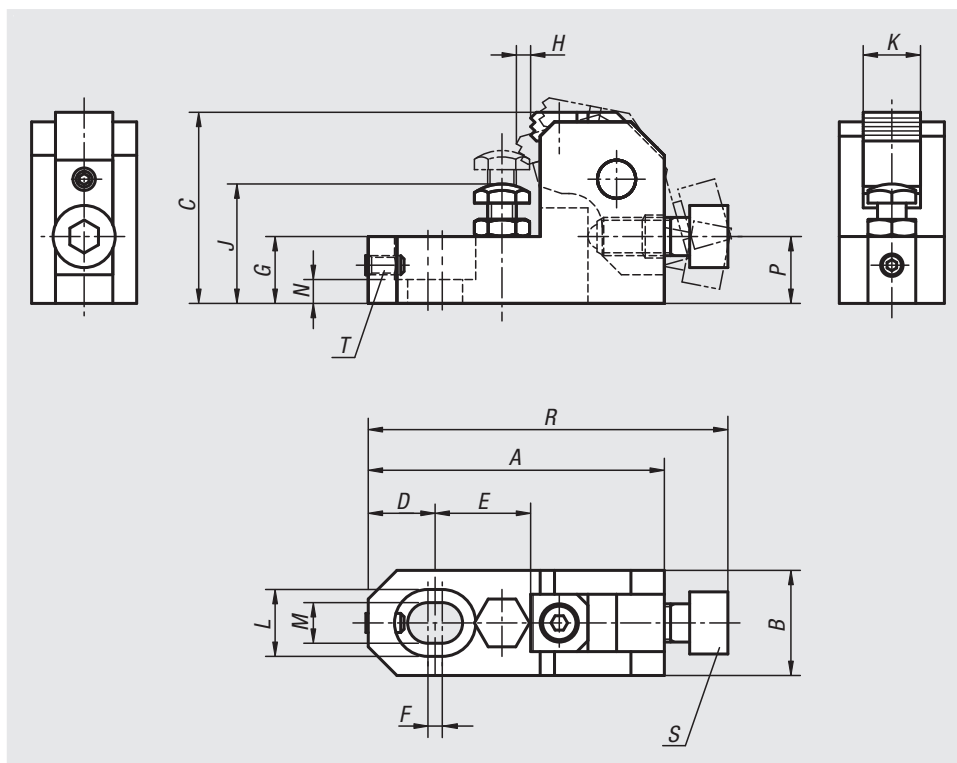
Sample order:

nIm 04485-02508

Drawing reference:

T) grub screw

S) ball pressure screw



Order No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	F=retaining force N	Tightening torque Nm
04485-02508	62	22	40	14	20	3	14	3	25-32	12	14	8,5	5	14	75,5	M8x20	M4x8	6000	15
04485-03210	78	25	50	18	25	4	18	3,7	32-40	16	17,5	11	7	17,5	95	M10x25	M5x10	10000	30
04485-04012	93	32	60	21	30	5	21	4,5	40-48	20	20	13	8	21	113	M12x30	M6x12	17000	65
04485-04816	124	38	80	28	40	6	27	6	48-63	25	26	17	10	28	151	M16x40	M8x16	25000	130

Side clamps robust


Material:

Body malleable iron.
Jaws mild steel.

Version:

Black oxidised.
Jaws case-hardened.

Sample order:

nIm 04500-26

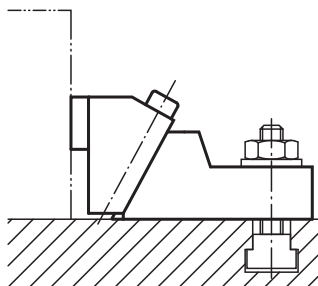
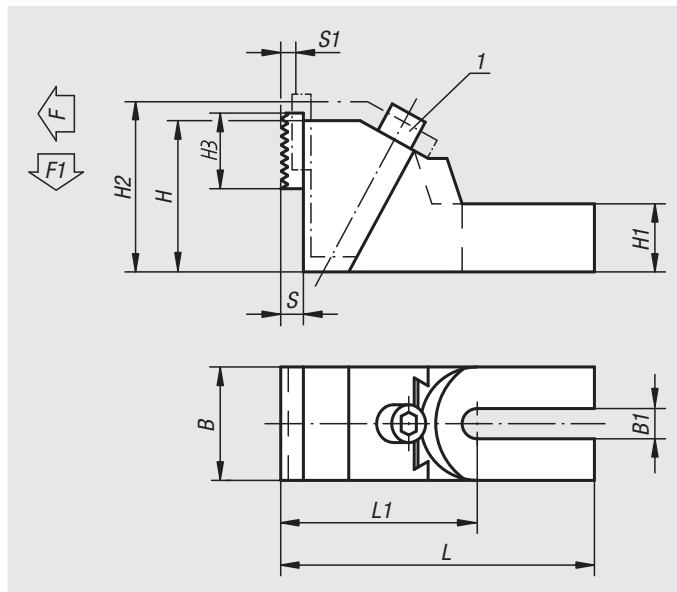
Note:

The jaws are reversible, smooth side for machined parts, serrated side for rough surfaces. We recommend using two bolts to mount the clamp to the machine table!

The T-slot bolts 07040 can be used for mounting (order separately).

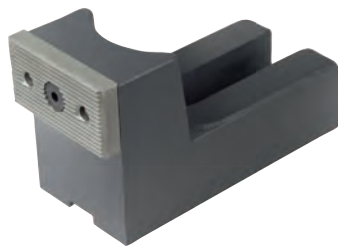
Drawing reference:

1) tightening torque max. 50 Nm



Order No.	suitable for slot width	L	L1	B	B1	H	H1	H2	H3	S	S1	F N	F1 N
04500-19	12,14,16,18	177,5	112,5	65	19	85	37	99	40	12	8	18800	2260
04500-26	20,22,24,28,30	226,5	136,5	75	26	100	45	118	40	12	11	23050	2770
04500-38	32,36,42	262,5	157,5	90	38	120	55	145	40	12	15	29400	3330

Fixed jaws for robust side clamps


Material:

Cast steel body
Low-carbon steel jaw plates.

Version:

Black oxidised.
Jaw plates case-hardened.

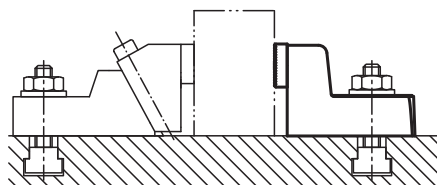
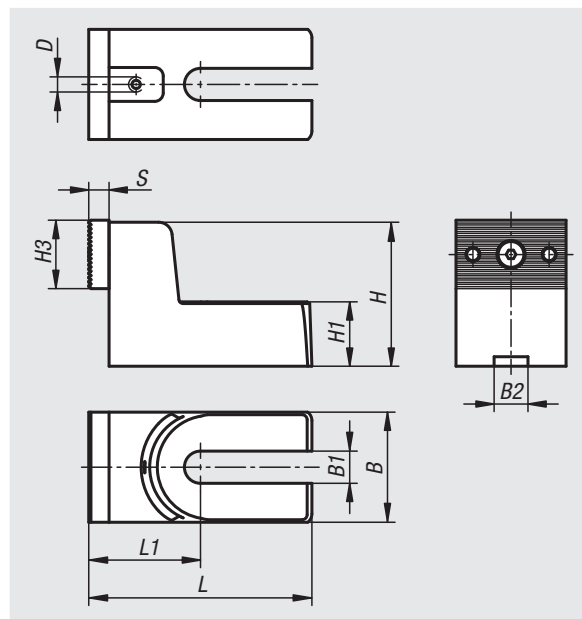
Sample order:

nIm 04500-01-19

Note:

Fixed jaws for workpieces or fixtures which are clamped or fastened on the machine table using a robust side clamp. The jaw plates are reversible, smooth side for machined faces, serrated side for rough faces.

A flat slot key can be used to position the jaw precisely in the machine table slot.



Order No.	suitable for slot width	B	B1	B2	D	H	H1	H3	L	L1	S
04500-01-19	12,14,16,18	65	19	20	M6	85	38	40	132	66	12
04500-01-26	20,22,24,28,30	75	26	20	M6	100	45	40	177	85,5	12
04500-01-38	32,36,42	90	38	20	M6	120	56	40	211	95	12

Side clamps


Material:

Body steel.

Jaw mild steel.

Centring bush carbon steel

Version:

Black oxidised.

Jaw plates case-hardened.

Sample order:

nIm 04509-006

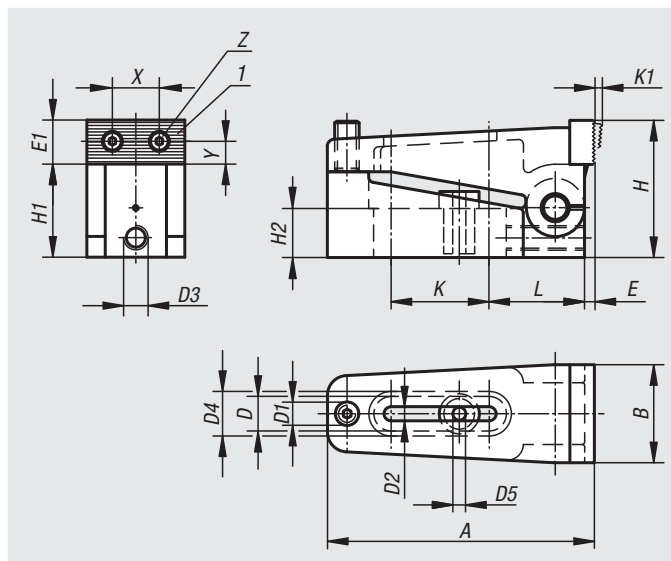
Note:

The jaws are reversible - smooth side for machined surfaces, serrated side for rough surfaces.

A positive down force is also exerted during clamping.

Drawing reference:

1) reversible jaw



Order No.	A	B	D	D1	D2	D3	D4	D5	E	E1	H	H1	H2	K	K1	L	X	Y	Z	F=retaining force N
04509-006	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	10000
04509-010	110	39	18,2	M10	11	M10	24	10,5	4	18	56	38	20	40,5	4	39	20,5	8	M5	40000
04509-016	170	58	26,2	M16	17	M10	35	17	7	27	85	60	30	60,5	7	61	32	13	M8	100000

Seating blocks adjustable

**Material:**

Carbon steel.

Version:

Tempered, black oxidised.

Contact faces ground.

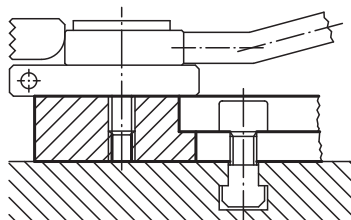
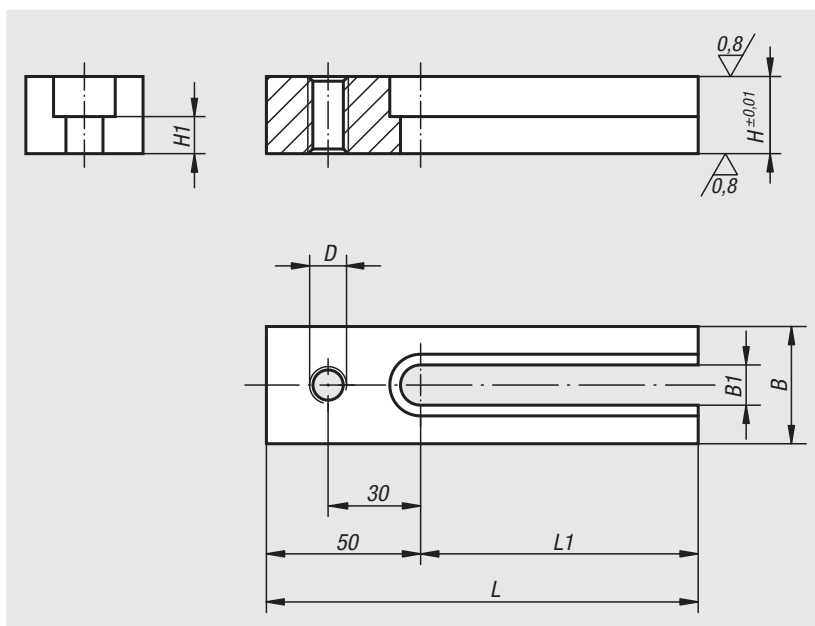
Sample order:

nlm 04512-12125

Note:

The tapped hole is for mounting fixture components.

The slot allows the riser to be set in any desired position.



Order No.	D	L	L1	B	B1	H	H1
04512-12025	M12	90	40	38	13	25	12
04512-12032	M12	90	40	38	13	32	19
04512-12040	M12	90	40	38	13	40	27
04512-12050	M12	90	40	38	13	50	37
04512-12125	M12	140	90	38	13	25	12
04512-12132	M12	140	90	38	13	32	19
04512-12140	M12	140	90	38	13	40	27
04512-12150	M12	140	90	38	13	50	37
04512-16032	M16	90	40	50	17	32	15
04512-16040	M16	90	40	50	17	40	23
04512-16050	M16	90	40	50	17	50	33
04512-16132	M16	140	90	50	17	32	15
04512-16140	M16	140	90	50	17	40	23
04512-16150	M16	140	90	50	17	50	33

Side clamp

with cam



Material:

Carbon steel.

Version:

Black oxidised.

Sample order:

nIm 04515-101

Assembly:

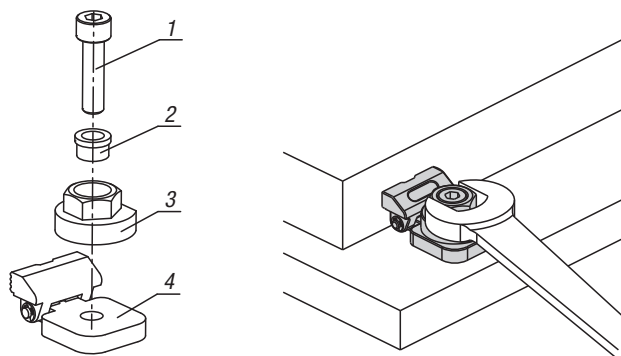
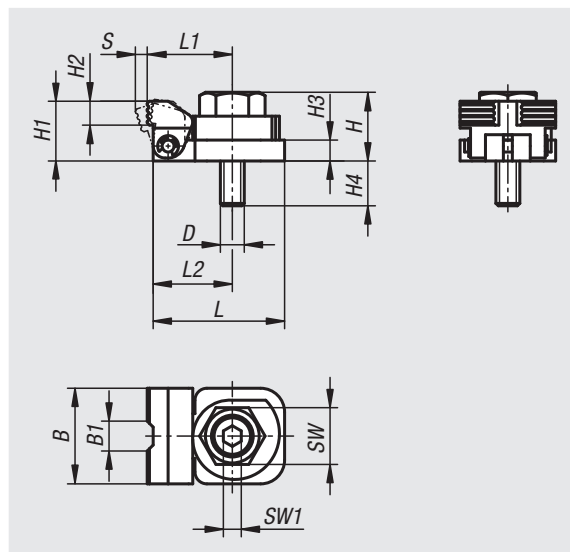
1. Screw the locking screw into the collar bush, fixture clamp and clamping unit and screw onto the baseplate.
2. The workpiece is clamped by tightening the fixture clamp with a spanner.

Advantages:

- Compact design
- Quick and easy clamping of components
- Pull-down effect

Drawing reference:

- 1) Locking screw
- 2) Collar bush
- 3) Fixture clamp
- 4) Clamping unit



Order No.	B	B1	D	H	H1	H2	H3	H4	L	L1	L2	SW	SW1	Travel S	Clamping force kN	Tightening torque max. Nm
04515-081	32	10	M8	23	20	8	7	15	44	28,5	26,5	19	6	4	3,5	45
04515-101	40	12	M10	29	25	10	9	16	54	35	33	24	8	5	5,5	55
04515-121	46	14	M12	35	30	12	11	17	62	39,5	37,5	27	10	5,5	7	70

Side clamps



Material:
Steel.

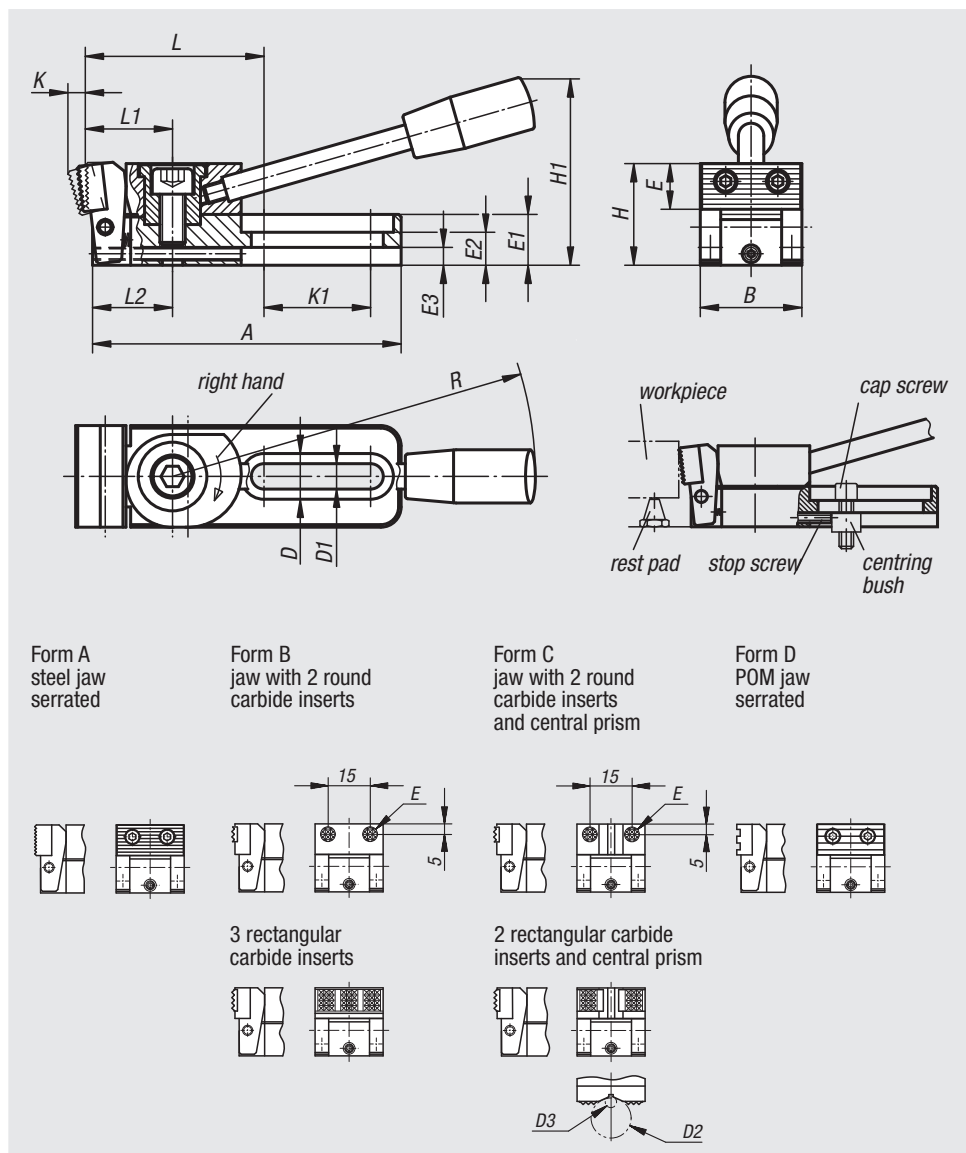
Version:
Case-hardened and black oxidised.

Sample order:
nlm 04516-006010

Note:
This is a quick-action side clamp where workpieces are clamped by rotating a cam wheel which exerts pressure on the swivel jaw, simultaneously producing a positive down force. Using the stop screw and centring bush (see diagram), the side clamp can be mounted and positioned on a modular grid system.

The versions 04516-006010, 04516-006015, 04516-006030 and 04516-006035 have 2 round carbide inserts.

Clamping force:
04516-006... = 3800 N
04516-010... = 7200 N



Order No.	Form	Version 1	A	B	D	D1	D2 max.	D3 min.	E	E1	E2	E3	H	H1	K	K1	L	L1	L2	R	F=retaining force N
04516-006005	A	right	78	25	12	6,2	-	-	11	12	8	4	25	45	4	26	46,5	22	20	110	3800
04516-010005	A	right	121,5	40	18	10,2	-	-	18	20	13	7	40	74	6	42	71	35	31,5	143	7200
04516-006025	A	left	78	25	12	6,2	-	-	11	12	8	4	25	45	4	26	46,5	22	20	110	3800
04516-010025	A	left	121,5	40	18	10,2	-	-	18	20	13	7	40	74	6	42	71	35	31,5	143	7200
04516-006010	B	right	78	25	12	6,2	-	-	ø8	12	8	4	24	45	3,5	26	46,5	22	20	110	3800
04516-010010	B	right	121,5	40	18	10,2	-	-	12,7	20	13	7	39	74	5,5	42	73	35	31,5	143	7200
04516-006030	B	left	78	25	12	6,2	-	-	ø8	12	8	4	24	45	3,5	26	46,5	22	20	110	3800
04516-010030	B	left	121,5	40	18	10,2	-	-	12,7	20	13	7	39	74	5,5	42	73	35	31,5	143	7200
04516-006015	C	right	78	25	12	6,2	9,5	2,5	ø8	12	8	4	24	45	3,5	26	46,5	22	20	110	3800
04516-010015	C	right	121,5	40	18	10,2	27	4,5	12,7	20	13	7	39	74	5,5	42	73	35	31,5	143	7200
04516-006035	C	left	78	25	12	6,2	9,5	2,5	ø8	12	8	4	24	45	3,5	26	46,5	22	20	110	3800
04516-010035	C	left	121,5	40	18	10,2	27	4,5	12,7	20	13	7	39	74	5,5	42	73	35	31,5	143	7200
04516-006020	D	right	78	25	12	6,2	-	-	11	12	8	4	25	45	4	26	46,5	22	20	110	3800
04516-010020	D	right	121,5	40	18	10,2	-	-	18	20	13	7	40	74	6	42	70,5	35	31,5	143	7200
04516-006040	D	left	78	25	12	6,2	-	-	11	12	8	4	25	45	4	26	46,5	22	20	110	3800
04516-010040	D	left	121,5	40	18	10,2	-	-	18	20	13	7	40	74	6	42	70,5	35	31,5	143	7200

Side clamps



Material:
Steel.

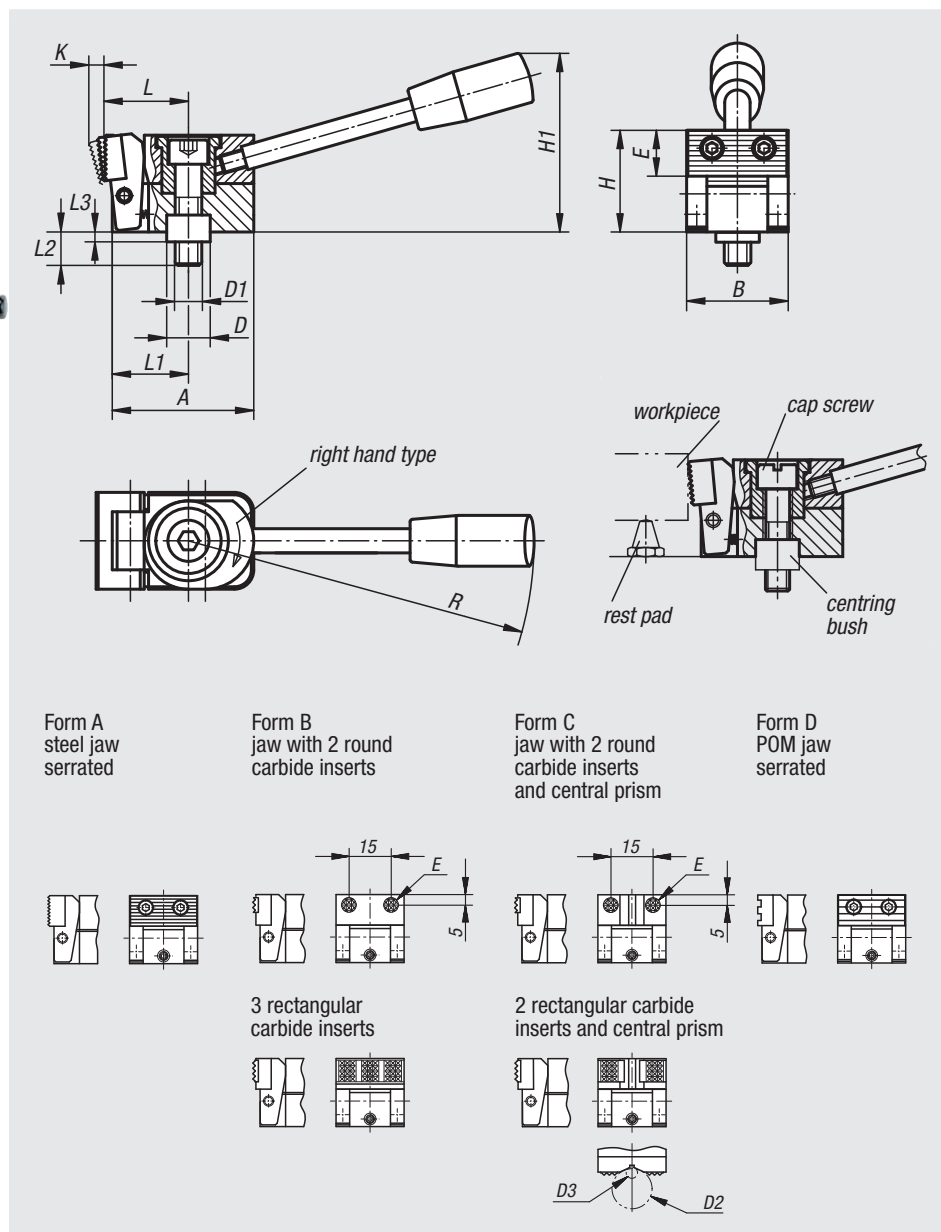
Version:
Case-hardened and black oxidised.

Sample order:
nlm 04518-006005

Note:
This is a quick-action side clamp where workpieces are clamped by rotating a cam wheel which exerts pressure on the swivel jaw, simultaneously producing a positive down force. Using the centring bush (see diagram), the side clamp can be mounted and positioned on a modular grid system.

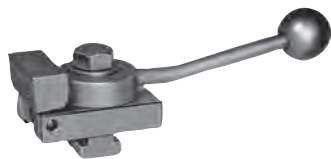
The versions 04518-006010, 04518-006015, 04518-006030 and 04518-006035 have 2 round carbide inserts.

Clamping force:
04518-006... = 3800 N
04518-010... = 7200 N



Order No.	Form	Version 1	A	B	D	D1	D2 max.	D3 min.	E	H	H1	K	L	L1	L2	L3	R	F=retaining force N
04518-006005	A	right	38,5	25	12	M6	-	-	11	25	45	4	22	20	17	4	110	3800
04518-010005	A	right	58,5	40	18	M10	-	-	18	40	74	6	35	31,5	27	6	143	7200
04518-006025	A	left	38,5	25	12	M6	-	-	11	25	45	4	22	20	17	4	110	3800
04518-010025	A	left	58,5	40	18	M10	-	-	18	40	74	6	35	31,5	27	6	143	7200
04518-006010	B	right	38,5	25	12	M6	-	-	ø8	24	45	3,5	22	20	17	4	110	3800
04518-010010	B	right	58,5	40	18	M10	-	-	12,7	39	74	5,5	37	31,5	27	6	143	7200
04518-006030	B	left	38,5	25	12	M6	-	-	ø8	24	45	3,5	22	20	17	4	110	3800
04518-010030	B	left	58,5	40	18	M10	-	-	12,7	39	74	5,5	37	31,5	27	6	143	7200
04518-006015	C	right	38,5	25	12	M6	9,5	2,5	ø8	24	45	3,5	22	20	17	4	110	3800
04518-010015	C	right	58,5	40	18	M10	27	4,5	12,7	39	74	5,5	37	31,5	27	6	143	7200
04518-006035	C	left	38,5	25	12	M6	9,5	2,5	ø8	24	45	3,5	22	20	17	4	110	3800
04518-010035	C	left	58,5	40	18	M10	27	4,5	12,7	39	74	5,5	37	31,5	27	6	143	7200
04518-006020	D	right	38,5	25	12	M6	-	-	11	25	45	4,5	22	20	17	4	110	3800
04518-010020	D	right	58,5	40	18	M10	-	-	18	40	74	7	34,5	31,5	27	6	143	7200
04518-006040	D	left	38,5	25	12	M6	-	-	11	25	45	4,5	22	20	17	4	110	3800
04518-010040	D	left	58,5	40	18	M10	-	-	18	40	74	7	34,5	31,5	27	6	143	7200

Side clamps


Material:

Steel.

Version:

Case-hardened and black oxidised.

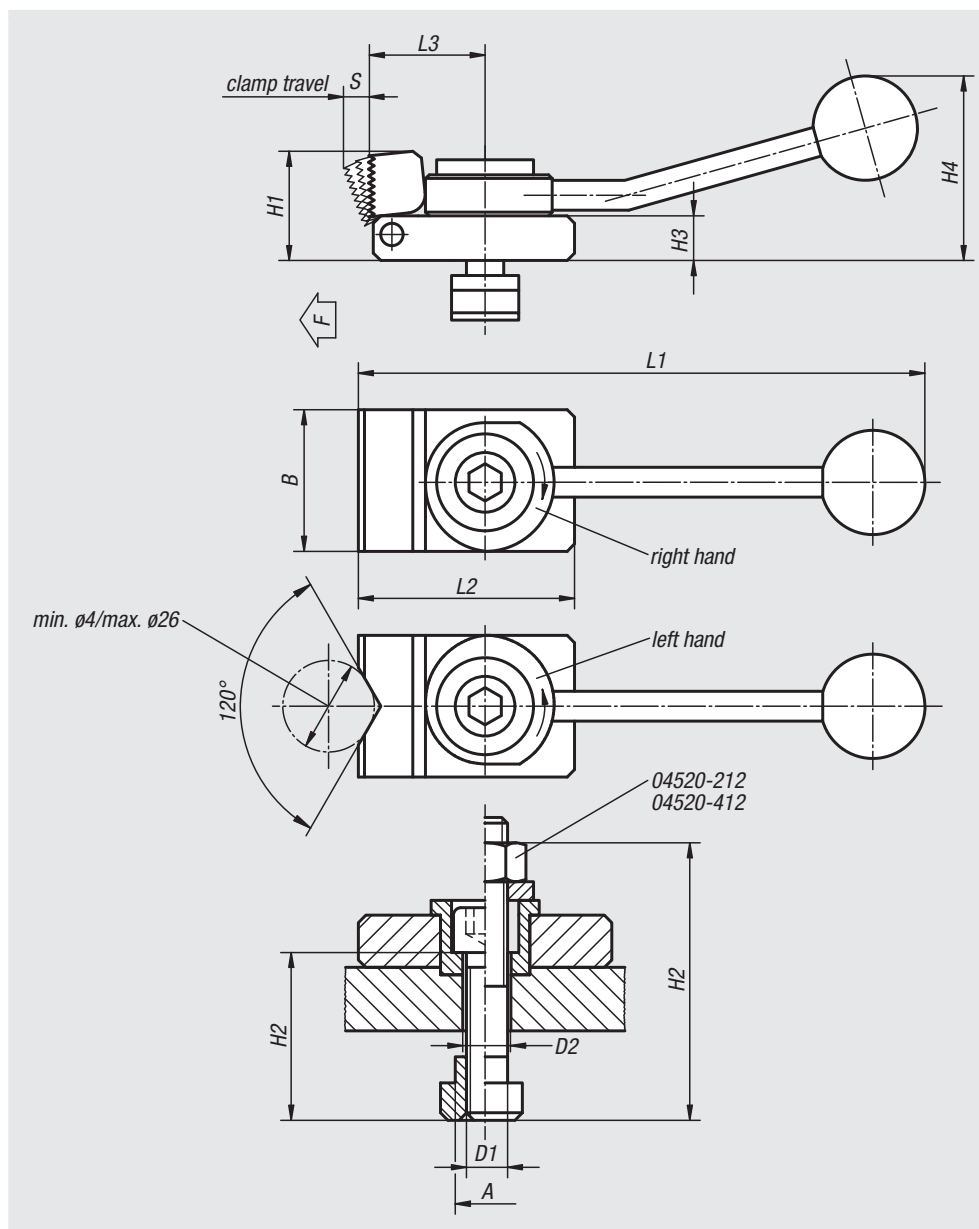
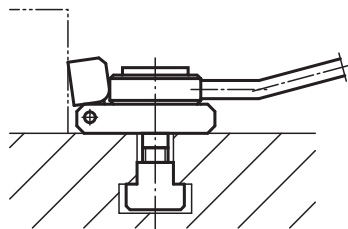
Sample order:

nlm 04520-114X2

Note:

This is a quick-action side clamp where workpieces are clamped by rotating a cam wheel which exerts pressure on the swivel jaw, simultaneously producing a positive down force. The low-profile design allows workpieces to be machined over the entire top surface without the need to move the the clamp. A spring withdraws the jaw when opened.

The clamp can be positioned parallel to the T-slot by mounting on the seating block 04512.



Order No. right	Order No. left	Version 2	slot dimension A	D1	D2	L1	L2	L3	B	H1	H2	H3	H4	S	F max. kN
04520-310X2	04520-110X2	jaw plate prism	10	M8	8,4	132	50	32	32	20	30	8	40	3	3,5
04520-310X1	04520-110X1	jaw plate level	10	M8	8,4	132	50	32	32	20	30	8	40	3	3,5
04520-312X2	04520-112X2	jaw plate prism	12	M8	8,4	132	50	32	32	20	30	8	40	3	3,5
04520-312X1	04520-112X1	jaw plate level	12	M8	8,4	132	50	32	32	20	30	8	40	3	3,5
04520-412X2	04520-212X2	jaw plate prism	12	M12	12,5	190	72	40	48	38	60	16	62	4	7
04520-412X1	04520-212X1	jaw plate level	12	M12	12,5	190	72	40	48	38	60	16	62	4	7
04520-314X2	04520-114X2	jaw plate prism	14	M8	8,4	132	50	32	32	20	30	8	40	3	3,5
04520-314X1	04520-114X1	jaw plate level	14	M8	8,4	132	50	32	32	20	30	8	40	3	3,5
04520-414X2	04520-214X2	jaw plate prism	14	M12	12,5	190	72	40	48	38	40	16	62	4	7
04520-414X1	04520-214X1	jaw plate level	14	M12	12,5	190	72	40	48	38	40	16	62	4	7
04520-416X2	04520-216X2	jaw plate prism	16	M12	12,5	190	72	40	48	38	40	16	62	4	7
04520-416X1	04520-216X1	jaw plate level	16	M12	12,5	190	72	40	48	38	40	16	62	4	7
04520-418X2	04520-218X2	jaw plate prism	18	M12	12,5	190	72	40	48	38	40	16	62	4	7
04520-418X1	04520-218X1	jaw plate level	18	M12	12,5	190	72	40	48	38	40	16	62	4	7

Toe clamps compact


Material:

Steel.

Version:

Body tempered and black oxidised.

Square washer case-hardened and brass-plated.

Sample order:

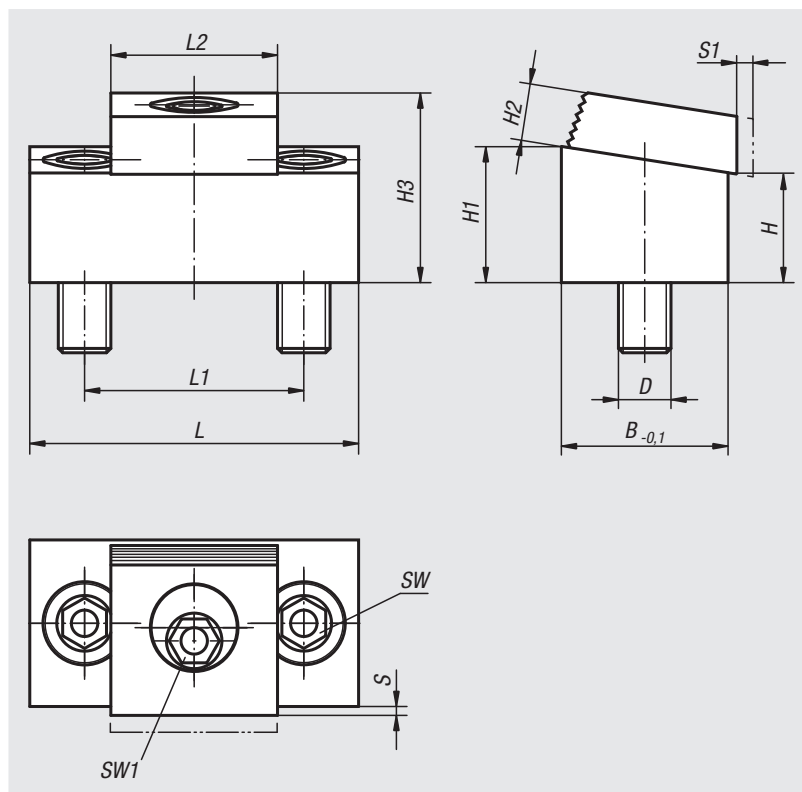
nlm 04521-10

Note:

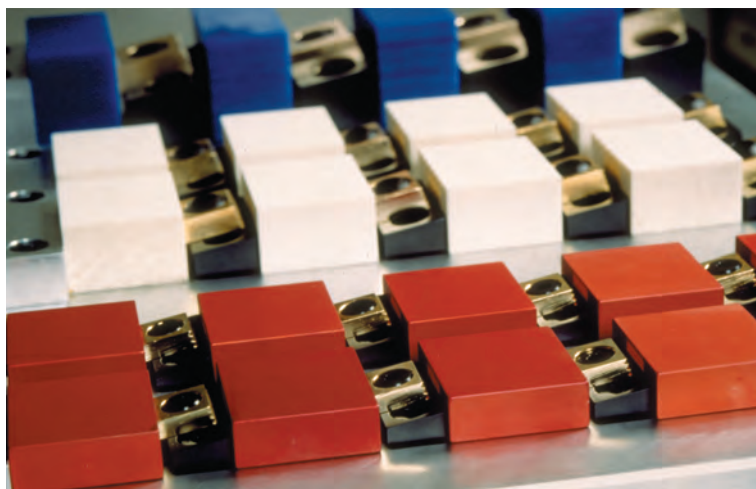
This cam action compact toe clamp requires very little space to produce multi-fixture clamping.

Workpieces can be clamped in series by using the back side of a clamp as a stop for the next row.

Mount preferably in slots with $B + 0.05$ mm. The height of the clamp can be adjusted by altering the slot depth.



Example of series clamping using compact toe clamps



Order No.	L	L1	L2	B	H	H1	H2	H3 max.	S	D	S1 (travel)	SW	SW1	Clamping force kN	Tightening torque max. Nm
04521-08	43,2	25,4	19	19	12,7	15,7	6,4	21,4	1,5	M8	1,6	5	7	8,9	28
04521-10	54	33,5	25,4	25,4	11,4	15,4	9,7	24,5	1,8	M10	2	7	8	17,8	88
04521-12	75	50,8	38	38,1	25,5	31,5	13	43	2,05	M12	2,5	10	12	26,7	135

Wedge clamps


Material:

Channel aluminium profile.
Wedge hardened steel.

Version:

Channel anodised.
Wedge black oxidised.

Sample order:

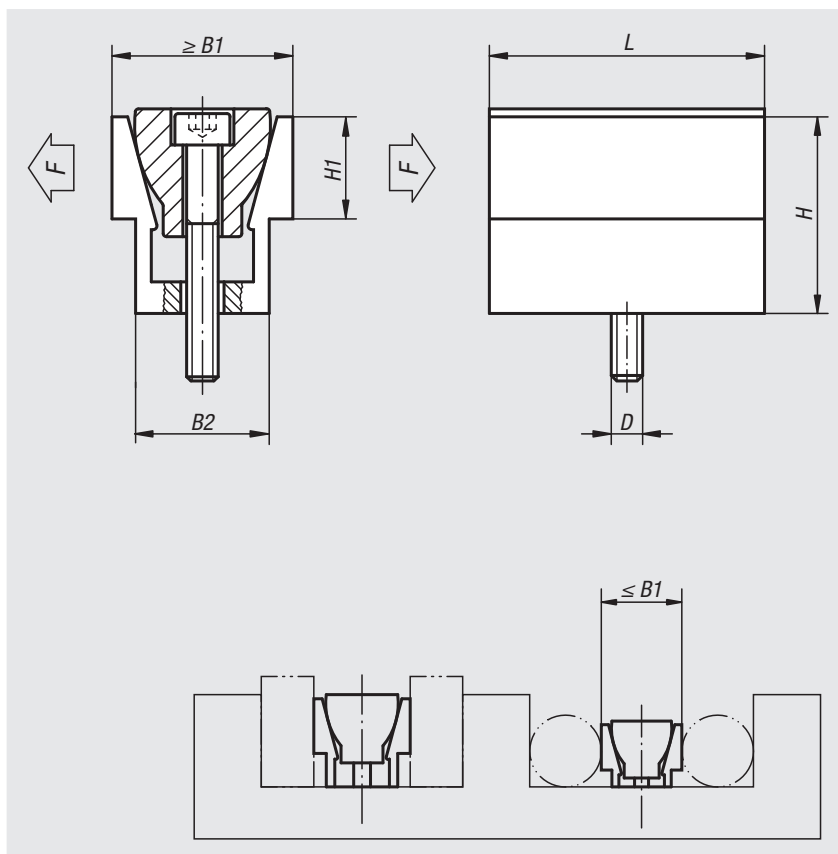
nIm 04522-08

Note:

Two workpieces can be held simultaneously with the wedge clamp. They are ideal for clamping round or rectangular pieces. The compact design allows space-saving series clamping.

Drawing reference:

In clamped position dimension B1 max. given in the table should be achieved.



Order No.	D	L	B1 min. - max.	B2	H	H1	Clamping force max. kN	Tightening torque max. Nm
04522-04	M4	15,9	12,3 - 13,1	10,4	12,7	5,6	2,2	3,4
04522-06	M6	23,8	18,6 - 19,9	16,1	19	9,5	6,7	14,3
04522-08	M8	31,7	24,8 - 26,6	20,8	25,4	12,7	8,9	14,5
04522-12	M12	47,6	37,3 - 39,7	30,8	38,1	19	15,6	38,4
04522-16	M16	63,5	49,7 - 52,8	41,2	50,8	25,4	26,7	74,6

Wedge clamps

machinable



Material:

Channel aluminium profile.
Wedge hardened steel.

Version:

Channel anodised.
Wedge black oxidised.

Sample order:

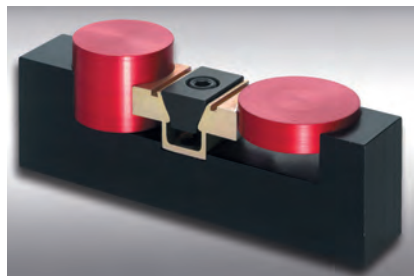
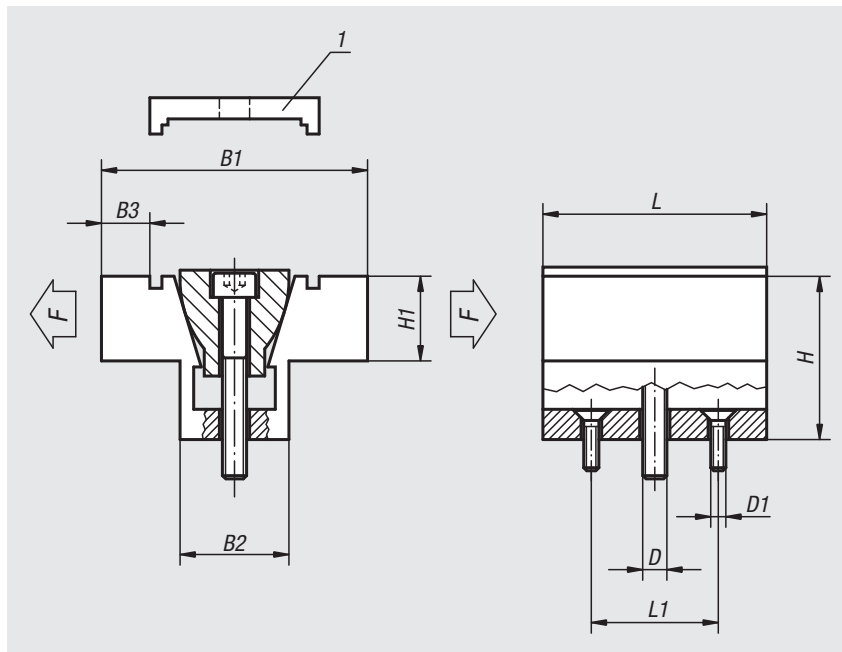
nIm 04523-08

Note:

Two workpieces can be held simultaneously with the wedge clamp. The jaws have extra material allowing them to be machined to conform to the shape of the workpiece. The compact design allows space-saving series clamping.

Drawing reference:

1) The locking plate is only used for machining the form, not for clamping the workpiece.



Order No.	D	D1	L	L1	B1 min. - max.	B2	B3	H	H1	Clamping force max. kN	Tightening torque max. Nm
04523-04	M4	M2	15,7	10,16	28,6 - 29,1	10,6	4,6	12,7	6,3	2,2	3,4
04523-06	M6	M4	23,9	15,9	38,1 - 39	16,1	6,6	19,1	9,4	6,7	14,3
04523-08	M8	M4	31,8	20,6	50,8 - 52	20,8	9,9	25,4	12,7	8,9	14,5
04523-12	M12	M5	47,5	30,5	76,2 - 78	30,9	15,7	38,1	19	15,6	38,4
04523-16	M16	M6	63,5	41,28	101,6 - 103,9	41,3	20,3	50,8	25,4	26,7	74,6

Wedge clamps

jaw face smooth or serrated



Material:

Wedge and jaw segments carbon steel.

Version:

Wedge and jaw segments hardened, black.

Sample order:

nlm 04524-2208

Note:

The functioning principle make the wedge clamps ideal for series clamping. The wedge form can exert high clamping forces. These wedge clamps can be mounted in grid holes or T-slots. Tightening the socket screw moves the wedge down and the jaws out pressing the workpieces against the fixtures fixed stops. The wedge has a slightly elongated hole allowing for movement to compensate for tolerances.

Spread width:

M8 = ± 0.5 mm

M10 = ± 1.0 mm

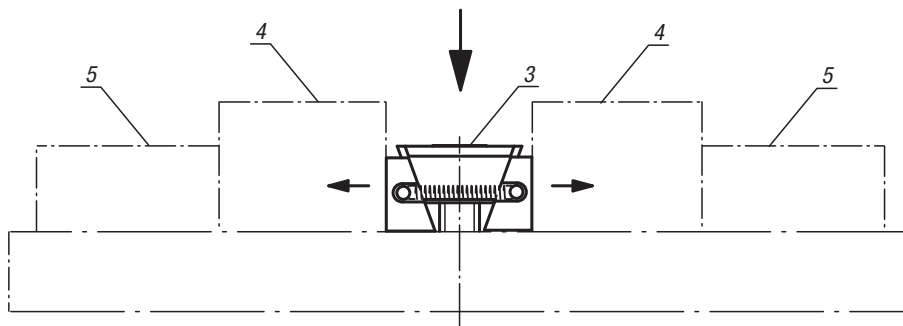
M12 = ± 1.0 mm

M16 = ± 1.5 mm

Drawing reference:

D) DIN 6912 cap screw

- 1) Jaw face smooth
- 2) Jaw face serrated
- 3) Wedge clamps
- 4) Workpiece
- 5) Fixed stop



Wedge clamps, narrow version

Order No. smooth	Order No. serrated	A min.	A max.	B	C	D	E	Clamping force max. kN	Tightening torque max. Nm
04524-1108	04524-2108	30,5	33,5	24	15	M8X25	2	15	25
04524-1110	04524-2110	32	37	28	19	M10X25	3,5	20	49
04524-1112	04524-2112	44	49,5	30	22	M12X40	3,5	30	85
04524-1116	04524-2116	55	62	40	29	M16X60	4	50	210

Wedge clamps, wide version

Order No. smooth	Order No. serrated	A min.	A max.	B	C	D	E	Clamping force max. kN	Tightening torque max. Nm
04524-1208	04524-2208	30,5	33,5	30	15	M8X25	2	15	25
04524-1210	04524-2210	32	37	38	19	M10X25	3,5	20	49
04524-1212	04524-2212	44	49,5	48	22	M12X40	3,5	30	85
04524-1216	04524-2216	55	62	48	29	M16X60	4	50	210

Wedge clamps

machinable



Material:

Wedge and jaw segments carbon steel.

Version:

Wedge and jaw segments tempered, black.

Sample order:

n1m 04524-3110

Note:

These wedge clamps have extra long jaws. This extra material allows the jaws to be machined to suit the form of the workpiece.

The functioning principle makes the wedge clamps ideal for series clamping. The wedge form can exert high clamping forces.

These wedge clamps can be mounted in grid holes or T-slots.

Tightening the socket screw moves the wedge down and the jaws out, pressing the workpieces against the fixtures' fixed stops.

The wedge has a slightly elongated hole allowing for movement to compensate for tolerances.

Spread width:

M8 = ± 0.5 mm

M10 = ± 1.0 mm

M12 = ± 1.0 mm

M16 = ± 1.5 mm

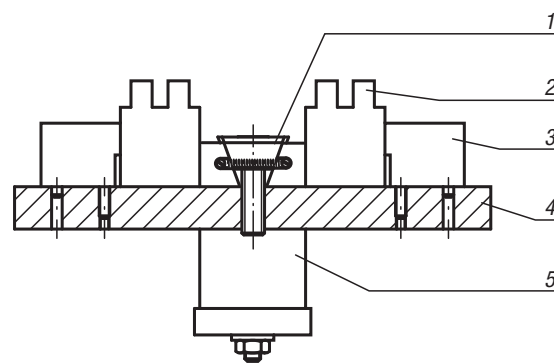
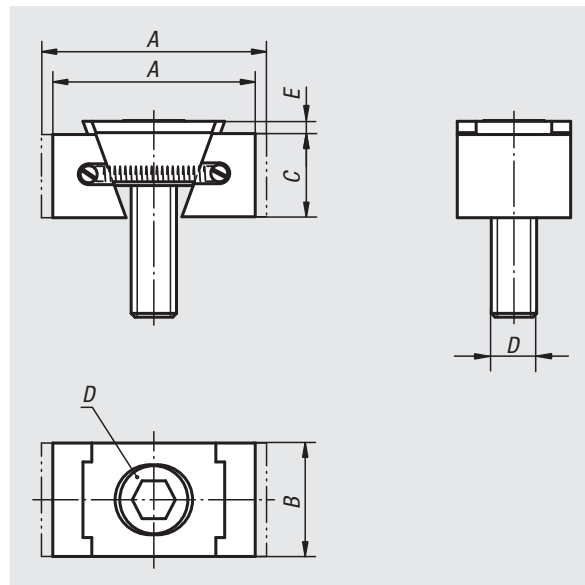
Attention:

These wedge clamps have a machining allowance per jaw of 3 mm for version M8 and 5 mm for versions M10, M12 and M16.

Drawing reference:

D) DIN 6912 cap screw

- 1) wedge clamps
- 2) workpiece
- 3) fixed stop
- 4) base plate
- 5) hydraulic/pneumatic cylinder



Order No.	Version	A min.	A max.	B	C	D	E	Clamping force max. kN	Tightening torque max. Nm
04524-3108	narrow	36,5	39,5	24	15	M8X25	2	11	19
04524-3110	narrow	42	47	28	19	M10X25	3,5	15	37
04524-3112	narrow	54	59,5	30	22	M12X40	3,5	23	65
04524-3116	narrow	65	72	40	29	M16X60	4	38	160
04524-3208	wide	36,5	39,5	30	15	M8X25	2	11	19
04524-3210	wide	42	47	38	19	M10X25	3,5	15	37
04524-3212	wide	54	59,5	48	22	M12X40	3,5	23	65
04524-3216	wide	65	72	48	29	M16X60	4	38	160

Wedge clamps

jaw faces serrated



Material:

Body and clamping segments tool steel.

Version:

Body hardened.

Jaw segments hardened (49-51 HRC) black oxidised.

Wedge faces ground.

Sample order:

nln 04525-1618

Note:

The compact design makes these wedge clamps ideal for horizontal and vertical series clamping. The hardened and ground wedge faces can exert high clamping forces. These wedge clamps can be mounted in grid holes or T-slots. Tightening the DIN 912 socket screw moves the wedge down and the jaws out pressing the workpieces against the fixtures fixed stops.

The jaws of version 04525-08 and 04525-0810 are not serrated.

The wedge has a slightly elongated hole allowing for movement.

Spread width:

04525-08 = ± 0.5 mm

04525-12 = ± 1.0 mm

04525-16 = ± 1.5 mm

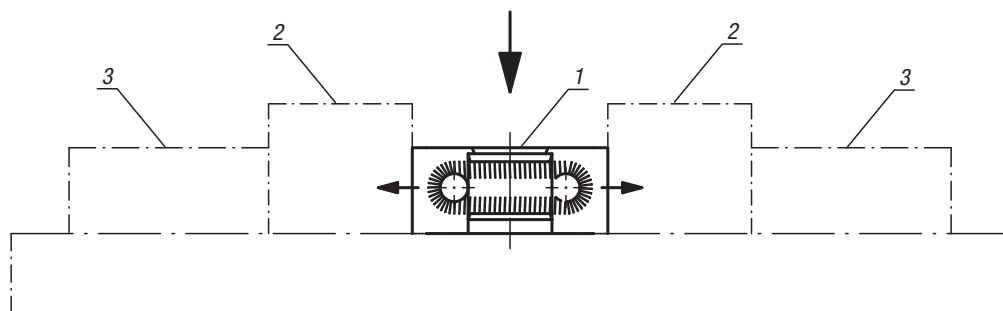
Drawing reference:

D) DIN 912 cap screw

1) Wedge clamps

2) Workpiece

3) Fixed stop



Order No.	Version 1	A min.	A max.	B	B1	C	D	E	Version 2	G	Clamping force max. kN	Tightening torque max. Nm
04525-08	smooth	27	31	29	21	15	M8X25	2,5	for tapped hole	M8	15	25
04525-0810	smooth	27	31	29	21	15	M8X25	2,5	for t-slot	10	15	25
04525-12	serrated	42	49	41	30	22	M12X40	4	for tapped hole	M12	30	85
04525-1214	serrated	42	49	41	30	22	M12X30	4	for t-slot	14	30	85
04525-16	serrated	57	66	56	42	29	M16X60	5	for tapped hole	M16	50	210
04525-1618	serrated	57	66	56	42	29	M16X50	5	for t-slot	18	50	210

Wedge clamps

machinable



Material:

Body tool steel.

Jaw segments tool steel (30 HRC).

Version:

Body hardened.

Jaw segments black oxidised.

Wedge faces ground.

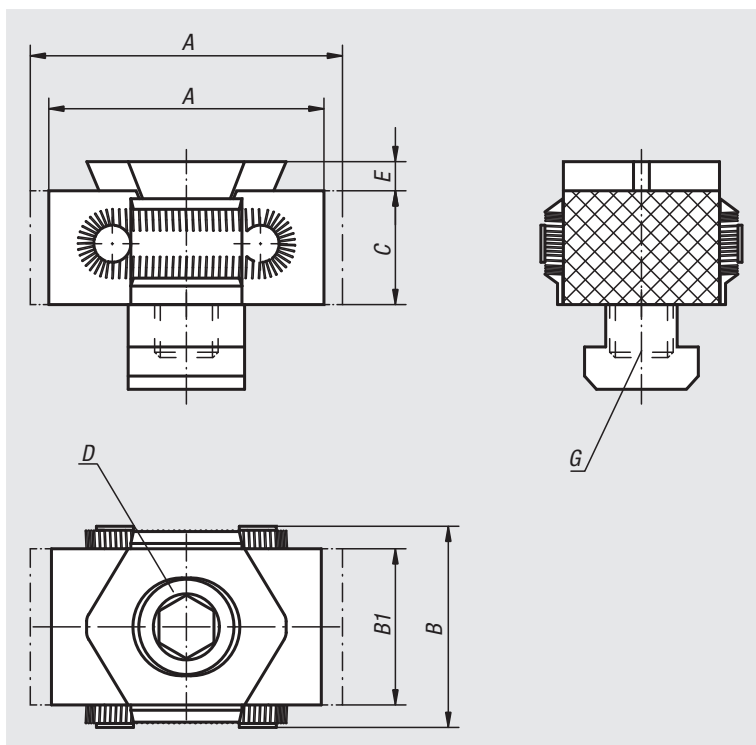
Sample order:

nIm 04526-12

Note:

The special feature of the wedge clamp lies in the machining allowance per vice jaw of 3 mm for version 04526-08 and 5 mm for versions 04526-12 and 04526-16.

This extra length allows for forms adjusted to the workpiece geometry to be incorporated (see illustration).



Vice jaws version 04526-08 and 04526-0810 are not serrated.

Travel acc. to order No.:

04526-08 = ± 0.5 mm

04526-12 = ± 1.0 mm

04526-16 = ± 1.5 mm

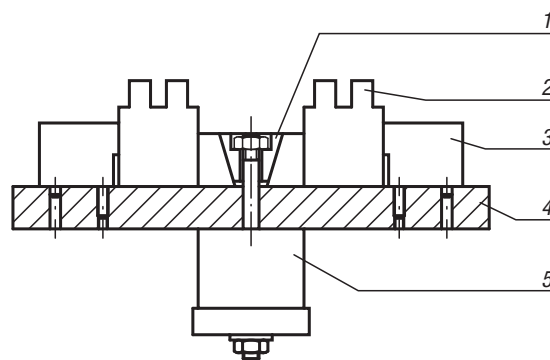
On request:

Pre-formed jaw segments or other hardness grades.

Drawing reference:

D) DIN 912 cap screw

- 1) wedge clamps
- 2) workpiece
- 3) fixed stop
- 4) base plate
- 5) hydraulic/pneumatic cylinder



Order No.	A min.	A max.	B	B1	C	D	E	Version 2	G	Clamping force max. kN	Tightening torque max. Nm
04526-08	33	37	29	21	15	M8X25	2,5	for tapped hole	M8	15	25
04526-0810	33	37	29	21	15	M8X25	2,5	for t-slot	10	15	25
04526-12	52	59	41	30	22	M12X40	4	for tapped hole	M12	30	85
04526-1214	52	59	41	30	22	M12X30	4	for t-slot	14	30	85
04526-16	67	76	56	42	29	M16X60	5	for tapped hole	M16	50	210
04526-1618	67	76	56	42	29	M16X50	5	for t-slot	18	50	210

Wedge clamps double

jaw faces serrated



Material:

Body and jaw segments tool steel.

Version:

Body hardened.

Jaw segments hardened (49-51 HRC) and black oxidised.

Wedge faces ground.

Sample order:

nIm 04527-1214

Note:

Because of their compact design, the double wedge clamps are especially suitable for horizontal and vertical multiple clamping. The hardened and ground wedge surfaces make high clamping forces possible.

Optionally, the appropriate wedge clamp can be mounted either in a grid hole or T-slot. Inserting a socket head screw DIN 912 moves the two clamping segments outwards and presses the workpieces against a fixed stop.

The so-called "draw-down effect" is caused by the double wedge of this version.

Travel acc. to order No.:

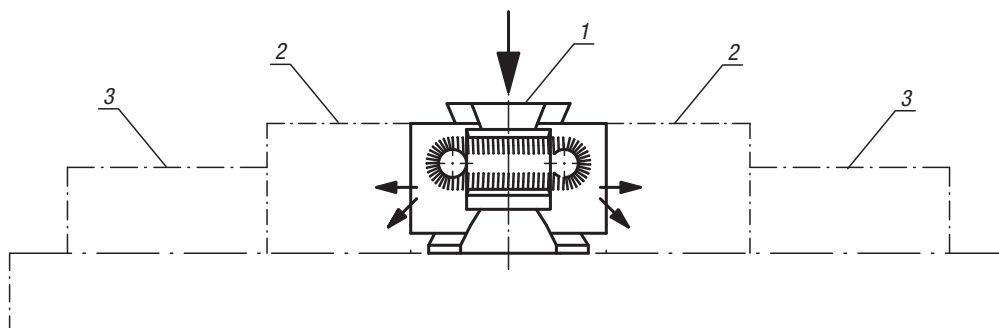
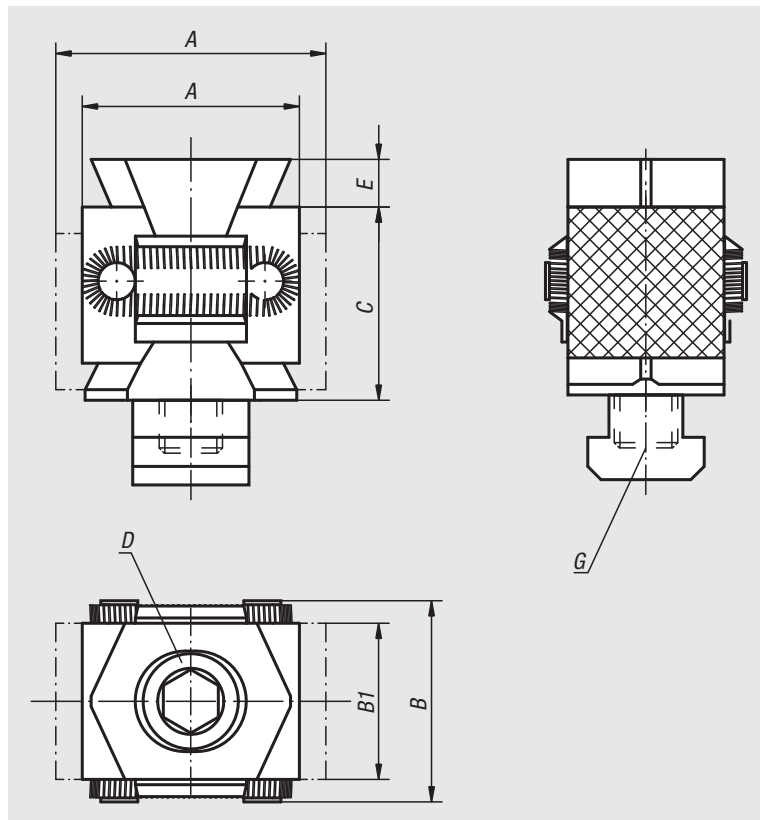
04527-12 = ± 1.0 mm

04527-16 = ± 1.5 mm

Drawing reference:

D) DIN 912 cap screw

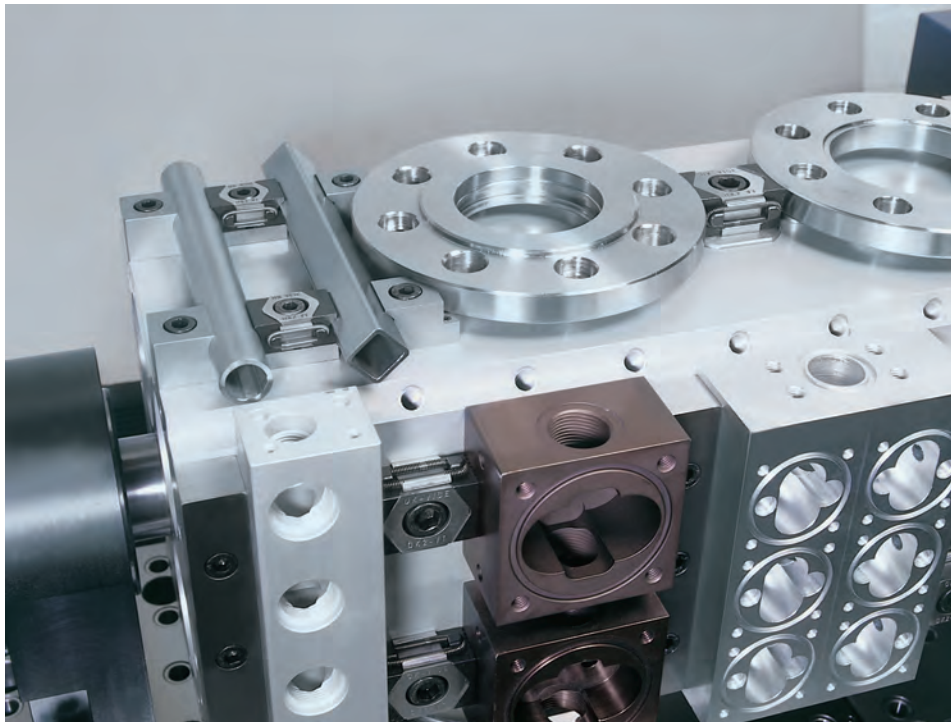
- 1) Wedge clamps
- 2) Workpiece
- 3) Fixed stop



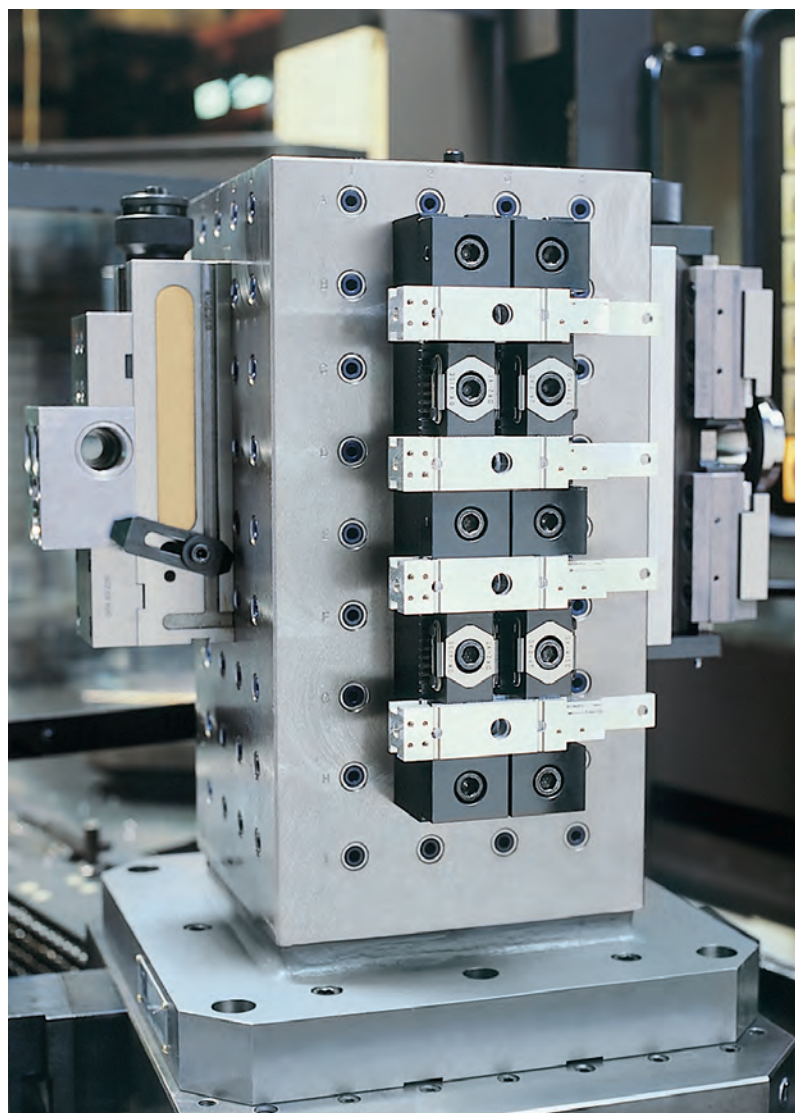
Order No.	A min.	A max.	B	B1	C	D	E	Version 2	G	Clamping force max. kN	Tightening torque max. Nm
04527-12	42	49	41	30	36	M12X60	5	for tapped hole	M12	40	85
04527-1214	42	49	41	30	36	M12X50	5	for t-slot	14	40	85
04527-16	57	67	56	42	50	M16X80	5	for tapped hole	M16	60	210
04527-1618	57	67	56	42	50	M16X70	5	for t-slot	18	60	210

Example of wedge clamps in use

Wedge clamps
04525



Double wedge clamps
04527



Side clamps


Material:

Body ductile iron (SG iron).
Jaw hardened carbon steel.

Version:

Painted black.
Jaw bright.

Sample order:

nln 04530-03

Note:

The workpiece is clamped between side clamps and the side stops, simultaneously producing a positive down force.

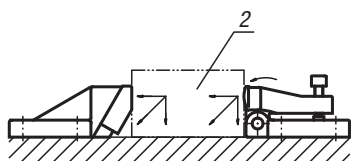
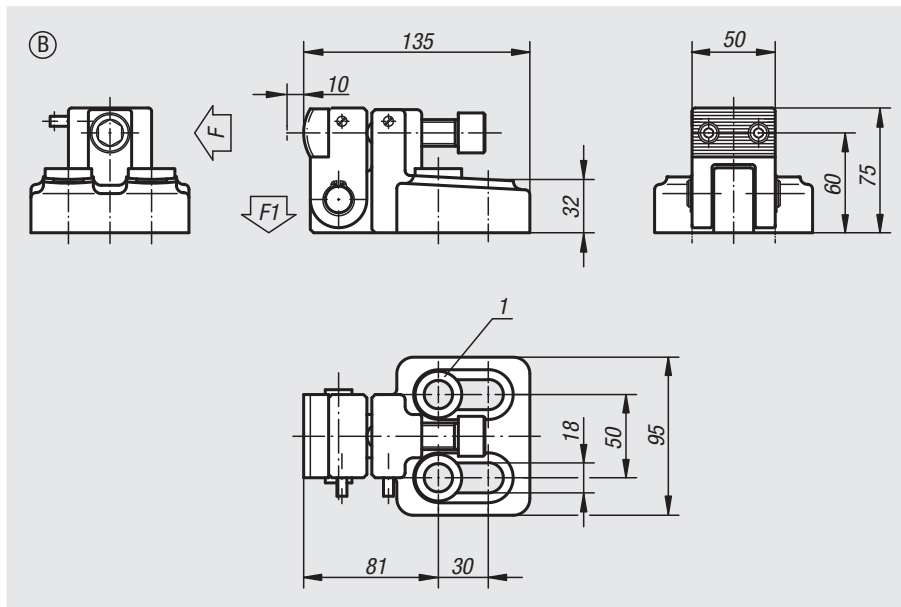
Side clamps and stops are secured with DIN 912 cylinder screws. A secure clamping is ensured when side clamps and side stops are used together.

Form B:

2 conical seats and 2 spherical washers for M12 and M16 are supplied.

Drawing reference:

- 1) spherical washer set for M12 and M16
- 2) workpiece



Order No.	Form	F kN	F1 kN	Tightening torque Nm
04530-03	B	58	2,4	150

Side stops


Material:

Body ductile iron (SG iron).
Jaw hardened carbon steel.

Version:

Painted black.
Jaw bright.

Sample order:

nIm 04540-01

Note:

The workpiece is clamped between side clamps and the side stops, simultaneously producing a positive down force.

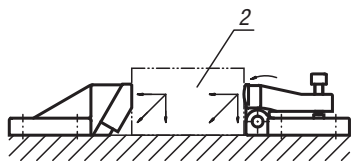
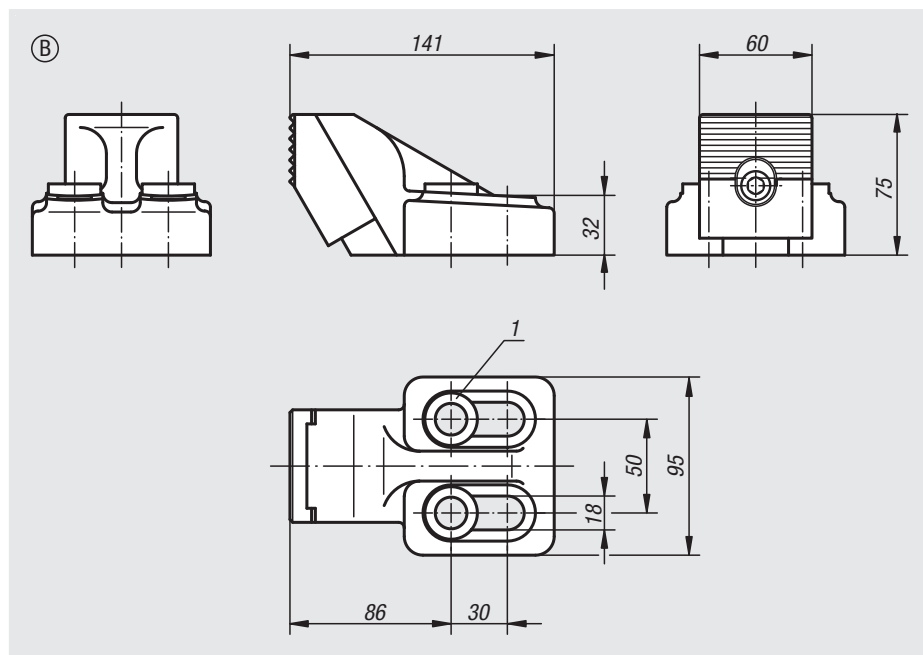
Side clamps and stops are secured with DIN 912 cylinder screws. A secure clamping is ensured when side clamps and side stops are used together.

Form B:

2 conical seats and 2 spherical washers for M12 and M16 are supplied.

Drawing reference:

- 1) spherical washer set for M12 and M16
- 2) workpiece



Order No.

04540-02

Form

B

Side clamps


Material:

Body steel 1.1191.

Version:

Black oxidised.

Centring bush hardened.

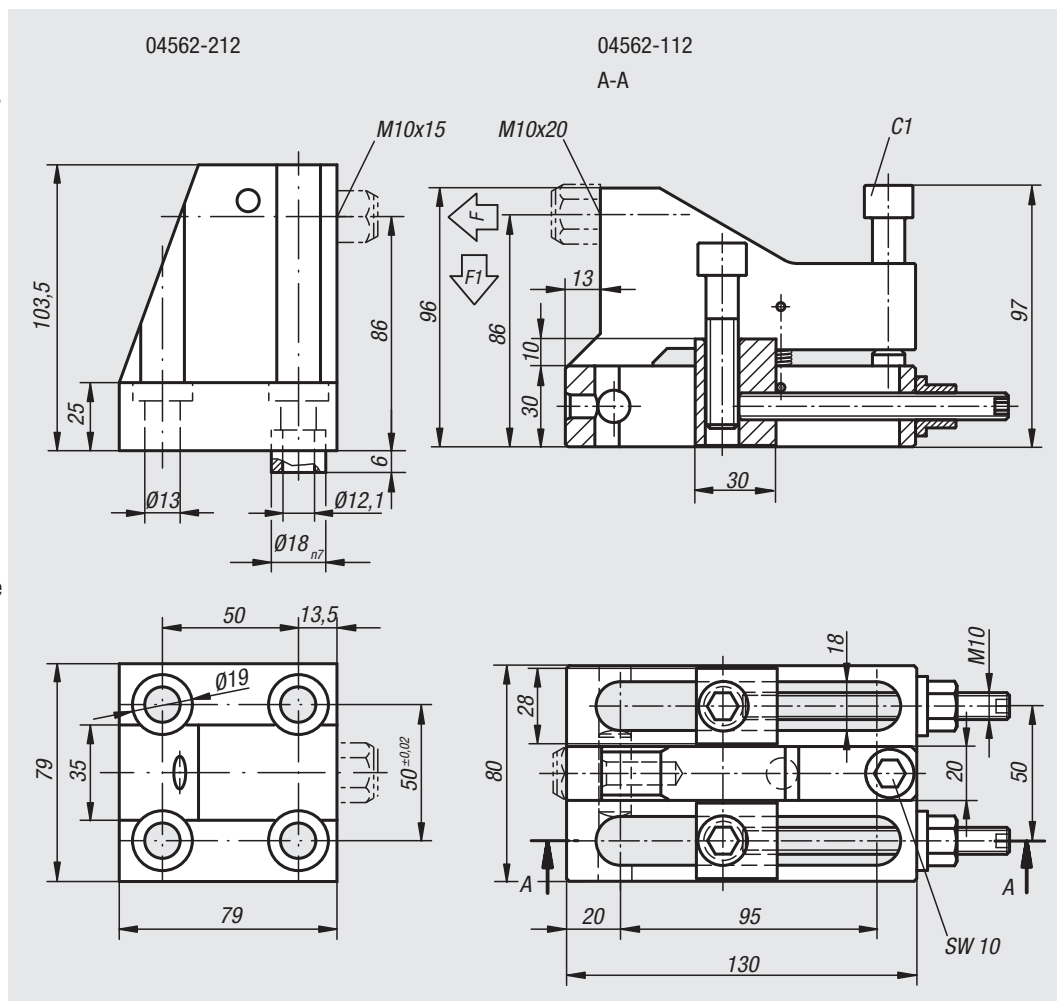
Sample order:

nIm 04562-112

(self-aligning pads not supplied)

Note:

The unit comprises of an adjustable side clamp and a side stop and are used to clamp workpieces with a simultaneous positive down force. The side clamp has two DIN 913 grub screws which can be set to prevent backward slippage during clamping.



Order No.	F N	F1 N	Tightening torque of screw C1 Nm
04562-112	25000	5000	30
04562-212	22500	4500	30

Notes

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

Wedge clamps



Material:
Carbon steel.

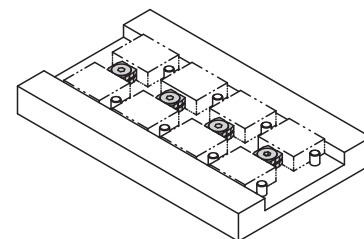
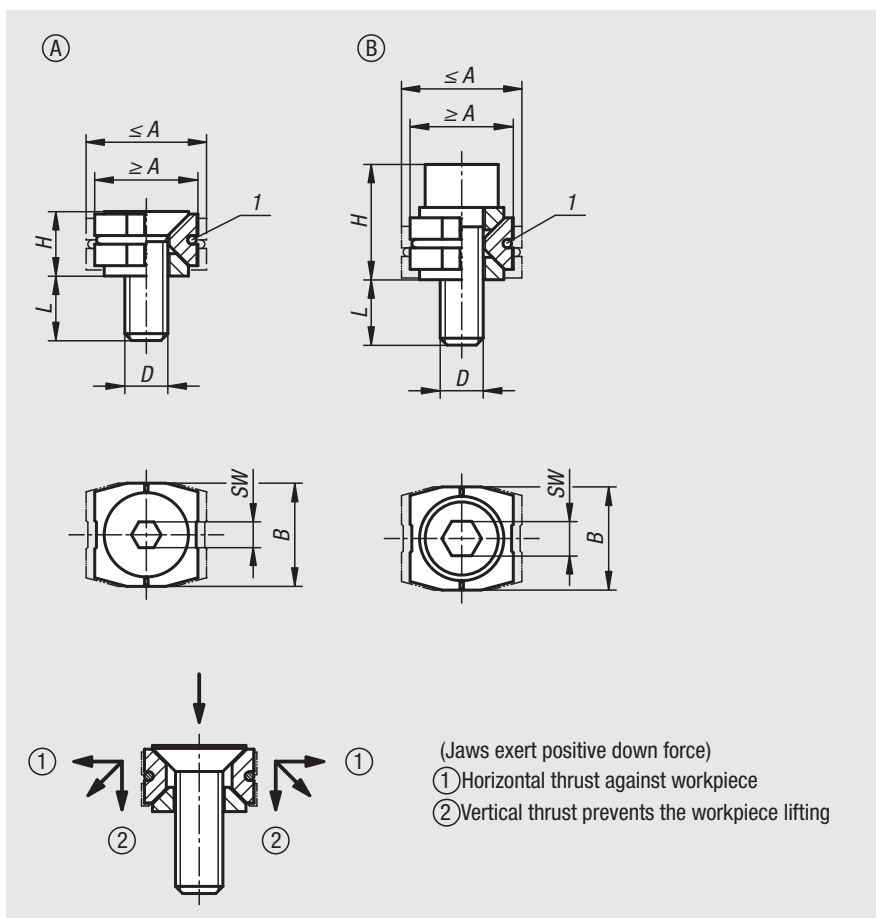
Version:
Jaw plate hardened (33–39 HRC) and black oxidised.

Sample order:
nlm 04567-11205

Note:
Due to the functioning principle, wedge clamps are suitable for clamping in series.
The wedges generate higher clamping forces.
The wedge clamps are available with cap screws or countersunk screws.
Wedge clamps with pull-down effect.

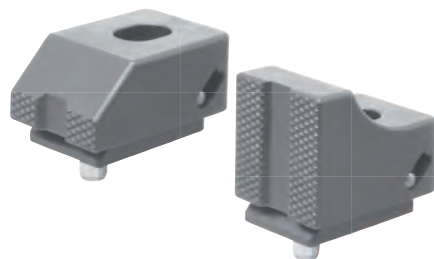
Drawing reference:
Dimension L refers to $\leq A$.
Dimension H refers to $\geq A$.

1) O-ring



Order No.	Form	Version 2	A min.	A max.	B	D	H	L	SW	Clamping force max. kN	Tightening torque max. Nm
04567-11205	A	with csk. screw	12	14	12	M5X15	7,5	9,5	3	2	4,3
04567-11506	A	with csk. screw	15	17	14,8	M6X16	8,7	9,3	4	3,5	7,3
04567-11808	A	with csk. screw	18,5	21,5	18,4	M8X20	11,8	11,3	5	5	18
04567-21205	B	with socket head screw	12	14	12	M5X16	13,4	9,6	4	3	5,4
04567-21506	B	with socket head screw	15	17	14,8	M6X18	15,8	10,2	5	4,5	9,1
04567-21808	B	with socket head screw	18,5	21,5	18,4	M8X25	21,2	14,9	6	9	22

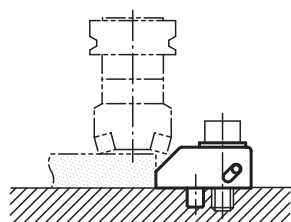
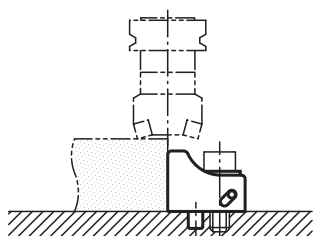
Toe clamps



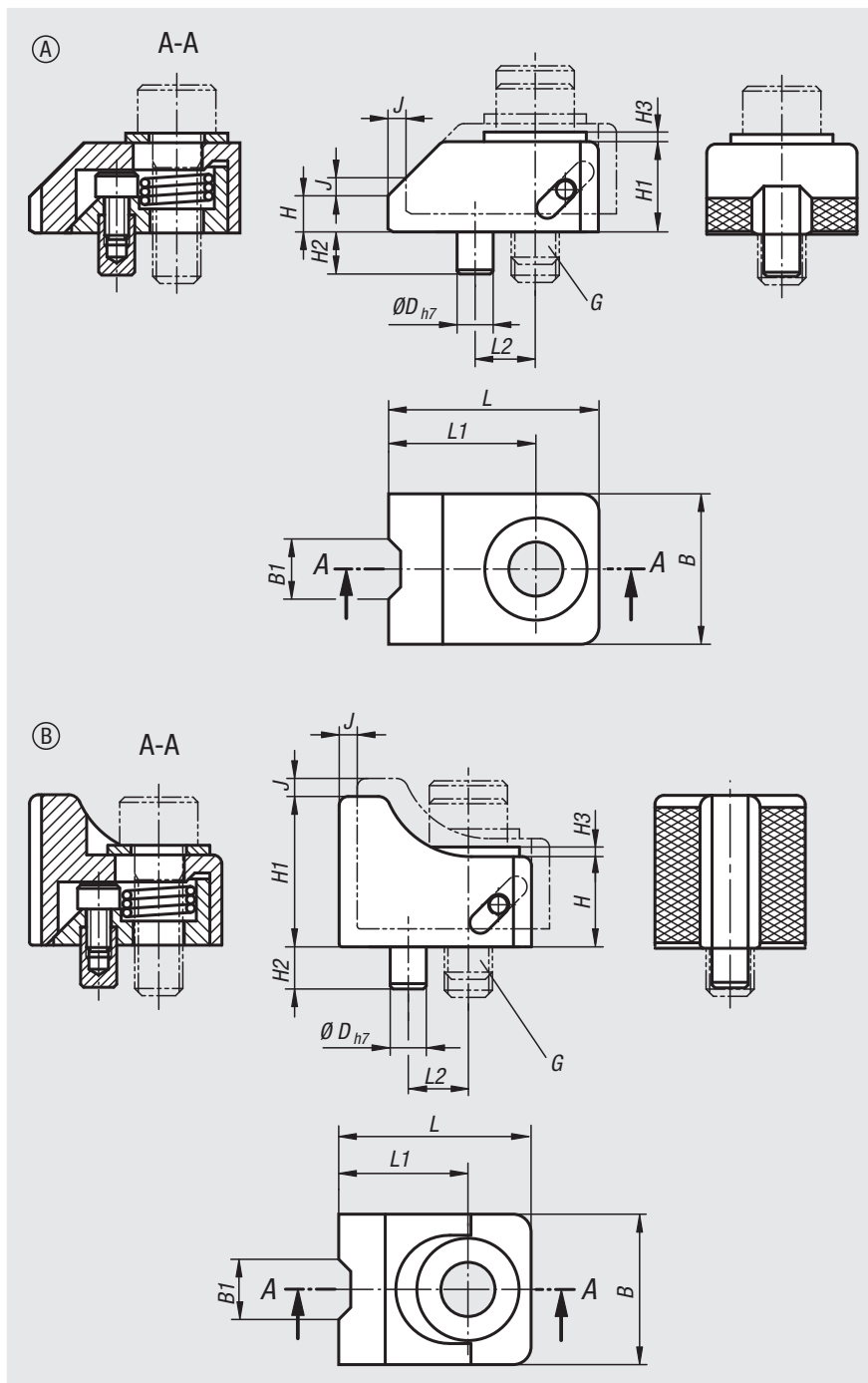
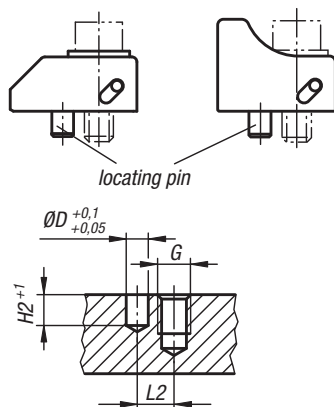
Material:
Carbon steel.

Version:
Tempered and black oxidised.

Sample order:
nlm 04570-0806



mounting instructions:



Order No.	Form	B	B1	D	G	H	H1	H2	H3	J	L	L1	L2	Clamping force N	Tightening torque Nm
04570-0806	A	25	10	6	M8	6	15	7	1,6	3	35	24,5	10	7000	25
04570-1008	A	30	11	6	M10	8	19	7	2	4	43	29	12	8500	50
04570-1209	A	35	12	8	M12	9	23	10	2,3	5	54	37	16	20000	90
04570-1610	A	40	14	10	M16	10	25	10	3,2	6	65	45	20	40000	200
04570-0825	B	25	10	6	M8	15	25	7	1,6	3	32	21,5	10	7000	25
04570-1032	B	30	11	6	M10	19	32	7	2	4	40	26	12	8500	50
04570-1238	B	35	12	8	M12	23	38	10	2,3	5	50	33	16	20000	90
04570-1645	B	40	14	10	M16	25	45	10	3,2	6	60	40	20	40000	200

Flat clamps



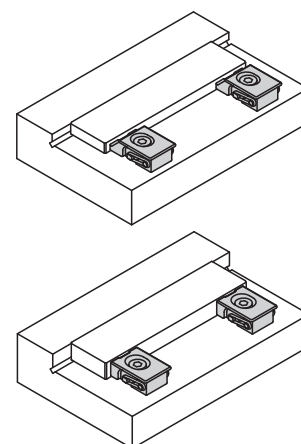
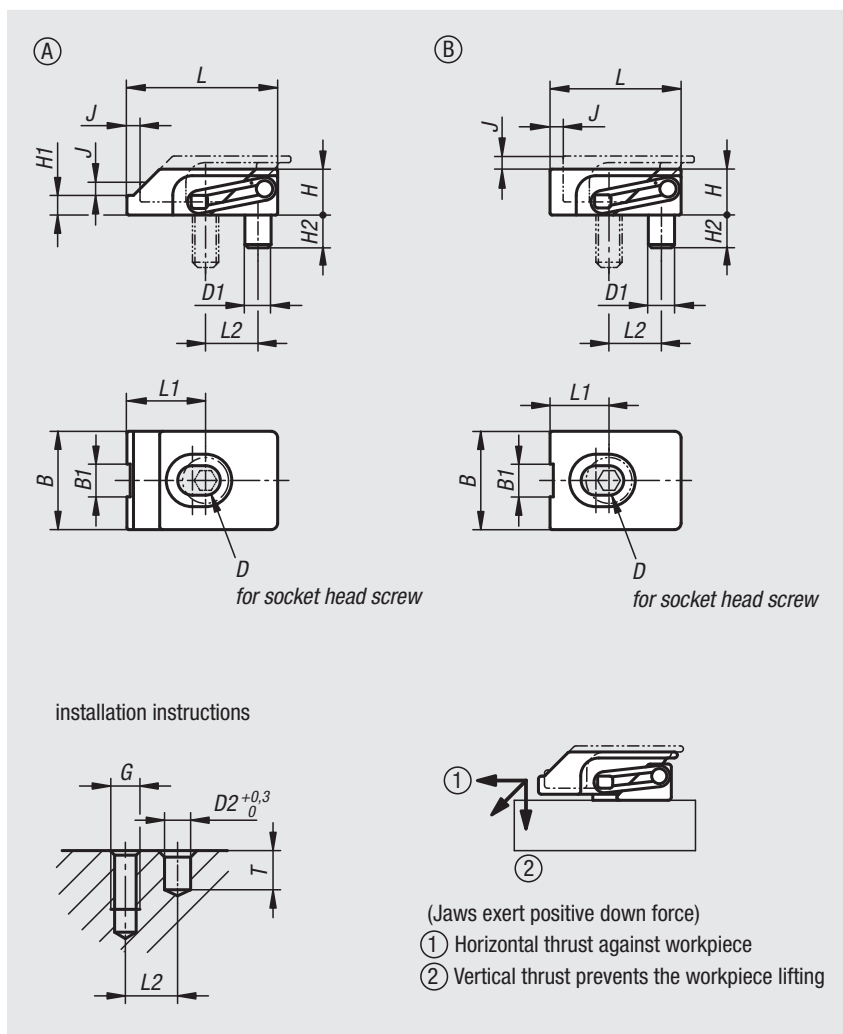
Material:
Carbon steel.

Version:
Hardened (33–39 HRC) and black oxidised.

Sample order:
nlm 04571-204

Note:
Particularly low workpieces can be clamped using these flat clamps.
Clamping element with pull-down effect.
Clamping element and fixed block in one compact unit.

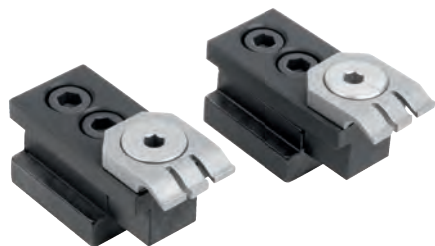
Drawing reference:
Dimension L1 refers to clamped state.



Order No.	Form	B	B1	D1	D2	G	H	H1	H2	J	L	L1	L2	T	Clamping force max. kN	Tightening torque max. Nm
04571-104	A	15	5	4	4	M4	7	3	5	2	23	12	8	6	2	2,7
04571-105	A	19	7	5	5	M5	9	4	6	2,5	28	14	10	7	3	5,4
04571-204	B	15	5	4	4	M4	7	-	5	2	20	9	8	6	2,5	2,7
04571-205	B	19	7	5	5	M5	9	-	6	2,5	25	11	10	7	3,5	5,4

Flat clamp, steel

for T-slot



Material:

Steel body.

Clamping element and stop made from spring steel.

Version:

Base element tempered.

Sample order:

nlm 04571-10-10

Note for ordering:

The order number includes one pair, made up of a clamping element and a stop.

Note:

By turning the cam screw on the clamping element the workpiece is forced downwards (positive down force). The clamping element also forces the workpiece against the stop, thereby providing a flat parallel seating.

The stop side provides a reference that makes precise replications possible.

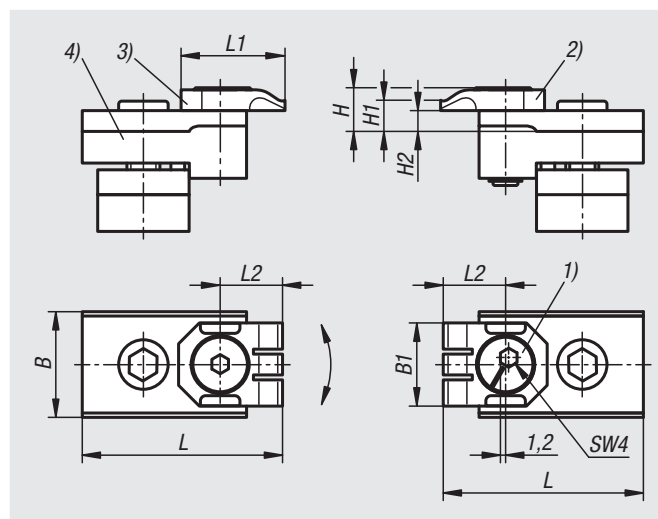
Cam hub: 1.2 mm.

Application:

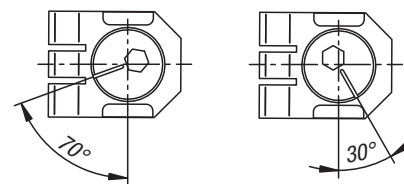
Suitable for clamping multiple and individual parts on fixtures and T-slot tables.

Drawing reference:

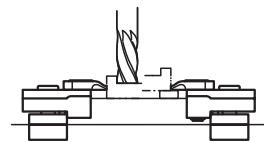
- 1) Cam screw
- 2) Clamping element
- 3) Stop
- 4) Body



Using the cam



Quick clamp 1/4 rotation



Workpiece clamped directly on the table top or supported on rests from below (e.g. for drilling though).

Order No.	B	B1	H	H1	H2	L	L1	L2	SW	Slot width	F kN	Tightening torque Nm
04571-10-10	18	20	10,5	7,5	5	46	25	15	4	10	4	9
04571-10-12	18	20	10,5	7,5	5	48	25	15	4	12	4	9
04571-10-14	22	20	10,5	7,5	5	52	25	15	4	14	4	9
04571-10-16	25	20	10,5	7,5	5	48	25	15	4	16	4	9
04571-10-18	25	20	10,5	7,5	5	48	25	15	4	18	4	9

Side clamps

**Material:**

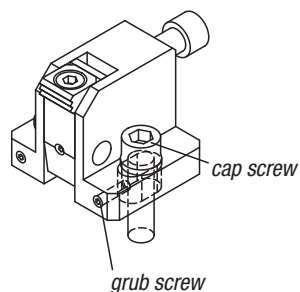
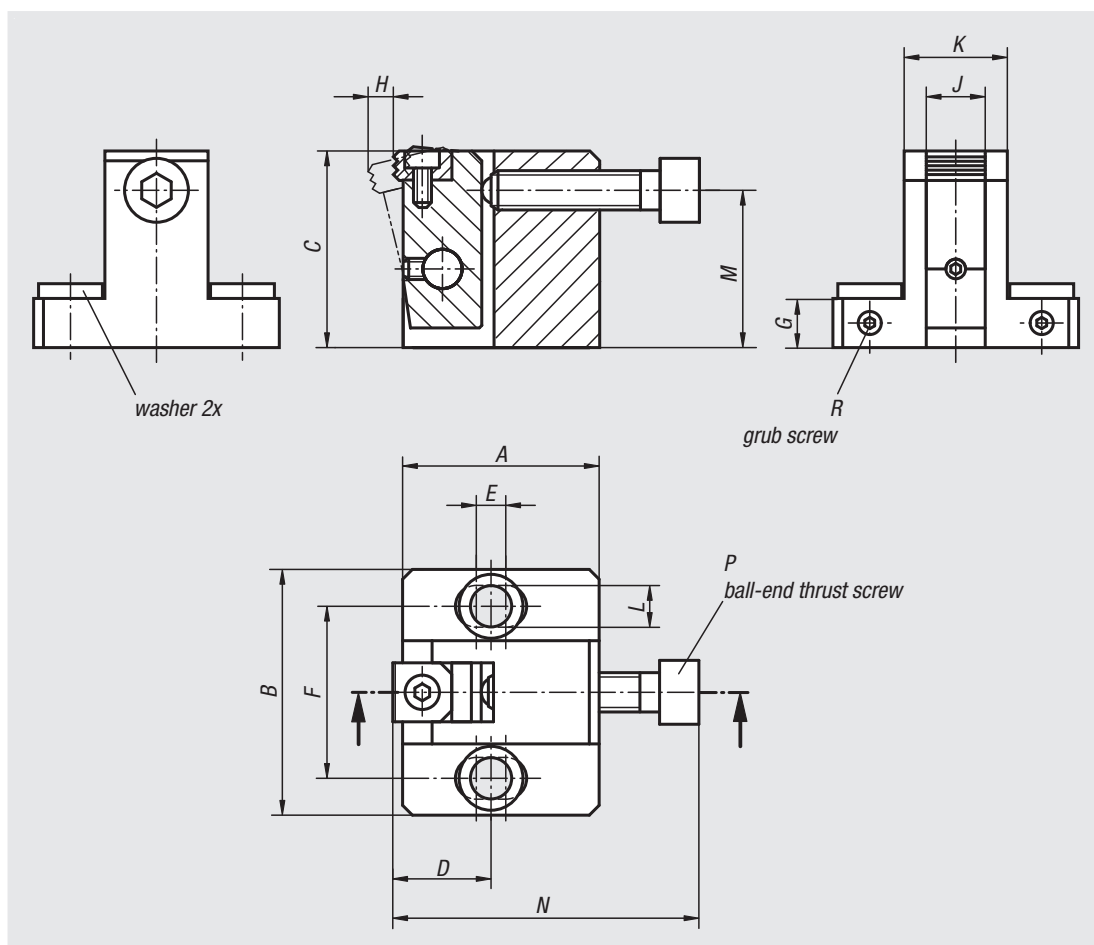
Housing and arm carbon steel.
Jaw tool steel.

Version:

Housing, black oxidised.
Arm and jaw tempered and black oxidised.

Sample order:

nlm 04575-080400



Order No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	F=Retaining force N	Tightening torque Nm
04575-080400	40	50	40	20	6	35	10	5,3	12	21	8,5	32	62,5	M8 x 35	M4x10	15000	25
04575-100500	50	65	50	25	8	45	12	7,1	16	27	11	40	74	M10 x 40	M4x12	27000	50
04575-120600	60	70	60	30	10	50	15	8	20	31	13	48	91	M12 x 50	M5x15	38000	90
04575-160800	80	90	80	40	15	65	20	10,2	25	39	17	64	115	M16 x 60	M6x20	46000	130

Side clamps


Material:

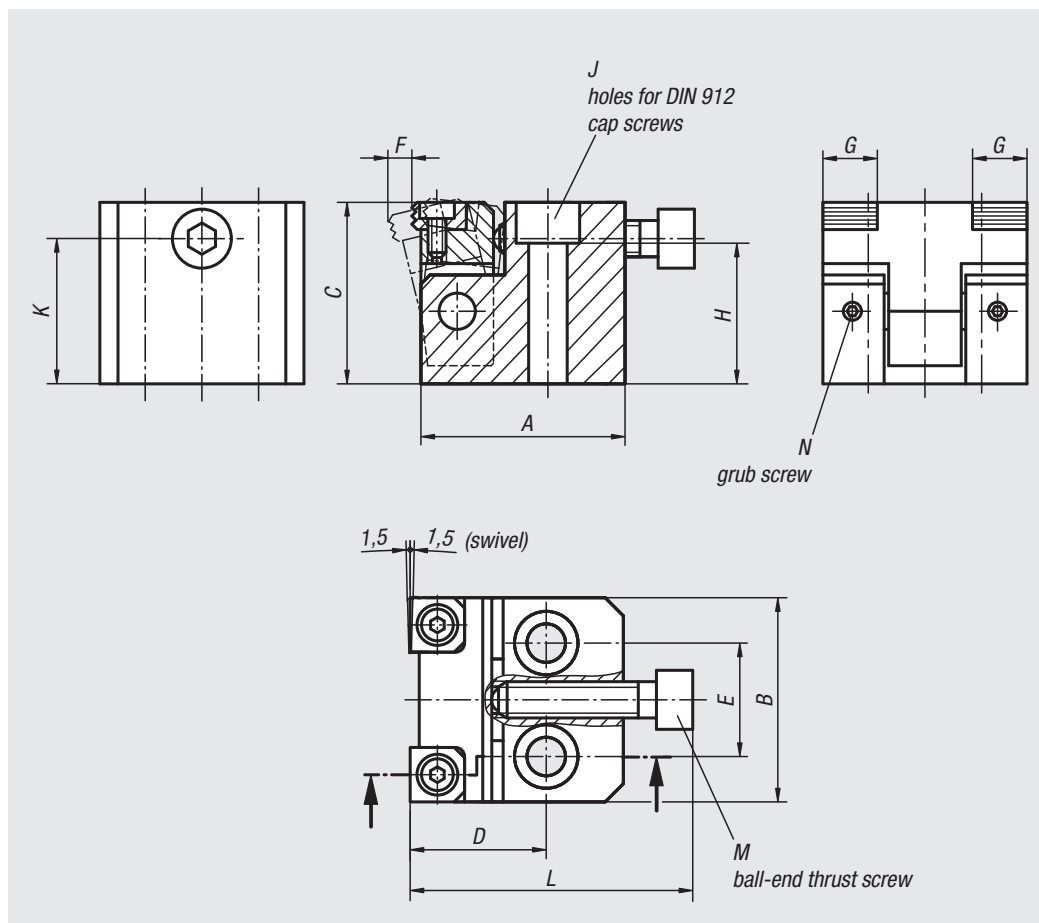
Body and arm carbon steel.
Jaw tool steel.

Version:

Body black oxidised.
Arm and jaw tempered and black oxidised.

Sample order:

nlm 04578-080400



Order No.	A	B	C	D	E	F	G	H	J	K	L	M	N	F=retaining force N	Tightening torque Nm
04578-080400	45	45	40	30	25	5,3	12	31	M8	32	62,5	M8x35	M4x4	15000	25
04578-100500	55	55	50	40	30	7,1	16	39	M10	40	74	M10x40	M4x4	27000	50
04578-120600	65	65	60	45	35	8	20	47	M12	48	91	M12x50	M5x5	38000	90

Side Clamp

**Material:**

Carbon steel.

Version:

Body black oxidised.

Clamping face ground.

Sample order:

nlm 04579-0900

Note:

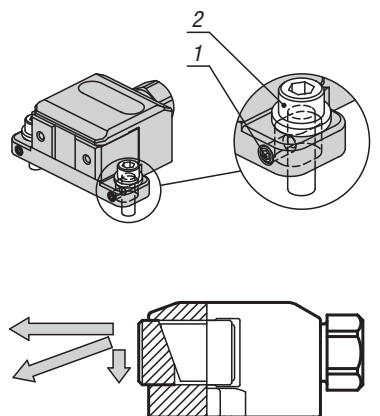
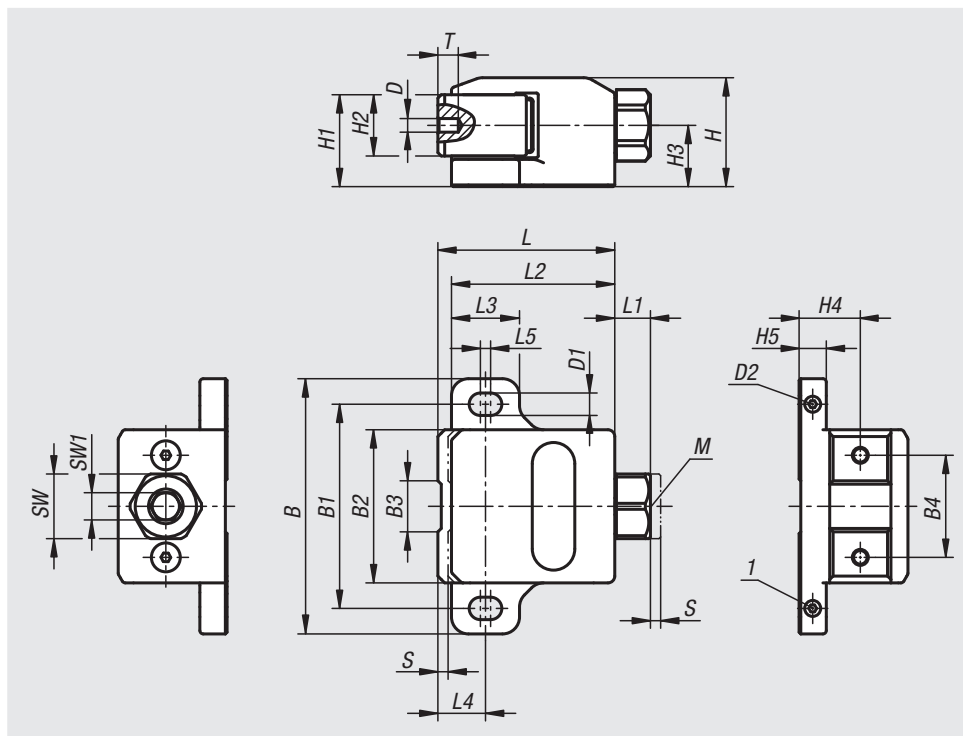
Tighten the setscrew to prevent the side clamp sliding back during the clamping process.

Advantages:

- High clamping force
- Ground clamping face
- Pull-down force prevents the workpiece lifting

Drawing reference:

- 1) Setscrew
- 2) Cap screw



Order No.	B	B1	B2	B3	B4	D	D1	D2	H	H1	H2	H3	H4	H5	L	L1	L2	L3	L4	L5	SW	SW1	T	Travel S	Clamping force kN	Tightening torque max. Nm
04579-0900	75	60	45	15	30	M4	6,6	M4x6	32	27	18	18	18	8	52	10	48	20	14	3	19	8	6	3	9	25
04579-1400	100	80	60	20	40	M5	8,6	M5x8	40	33	22	22	22	10	69	13	63	26	19	4	24	10	8	4	14	50

Swivel hold-down clamps

mini, with cam lever



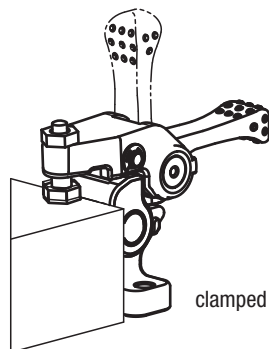
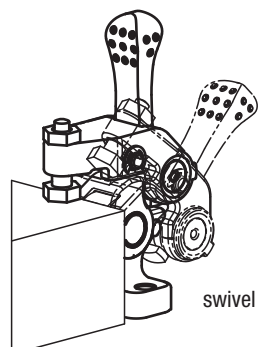
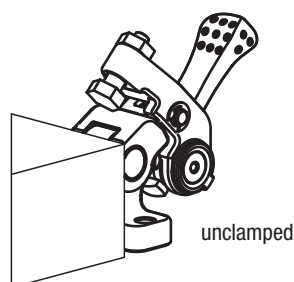
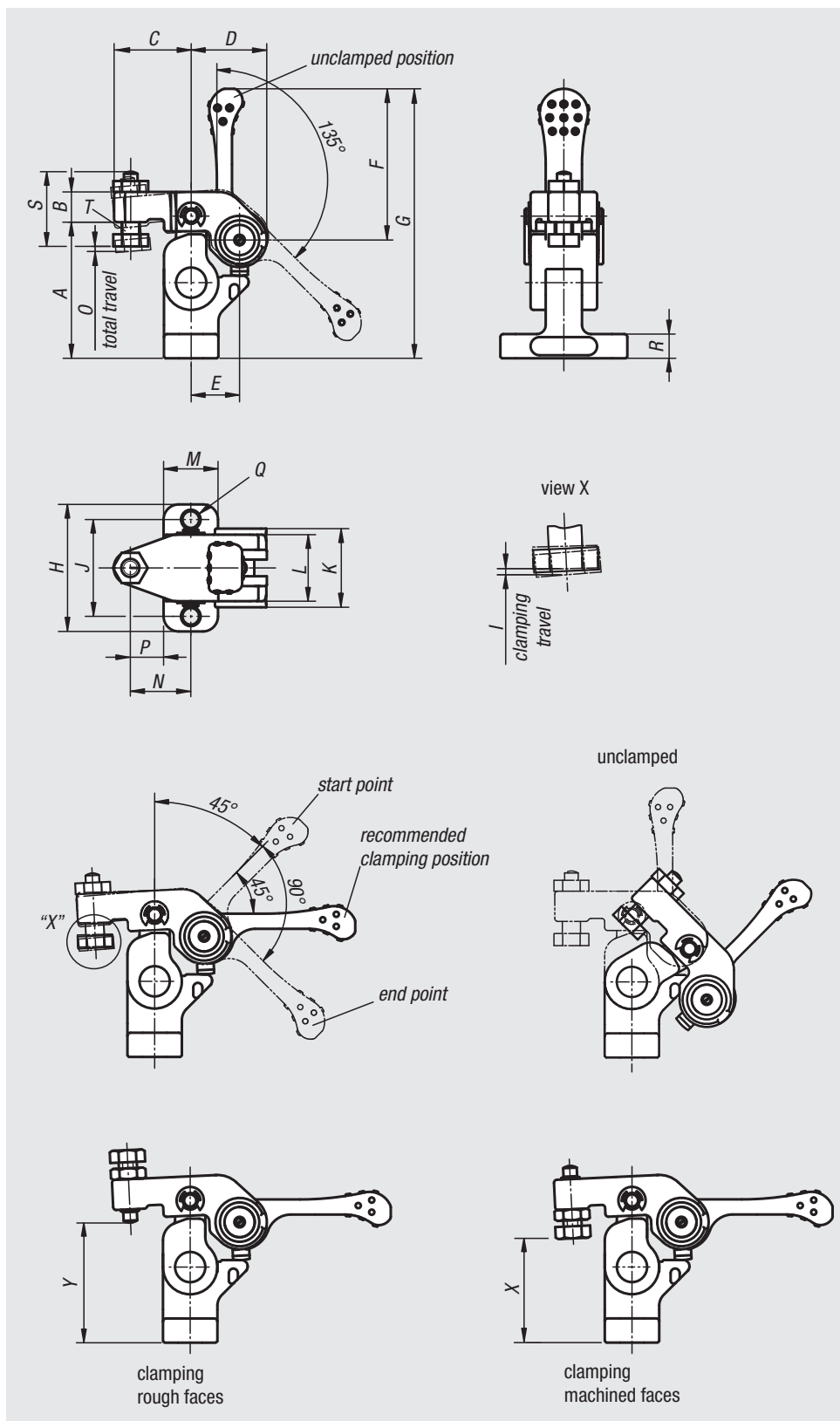
Material:
Carbon steel.

Version:
Tempered and black oxidised.

Sample order:
nlm 04610-100

Note:
Swing clamps are used where the clamping points must be free when the workpiece is loaded or removed.

* Admissible hand force for the handle.



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.	F=retaining force N	Hand force FH N
04610-100	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*
04610-150	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*

Down-thrust clamps



Material:
Steel.

Version:
Case-hardened, black oxidised and ground.

Sample order:
nlm 04620-23

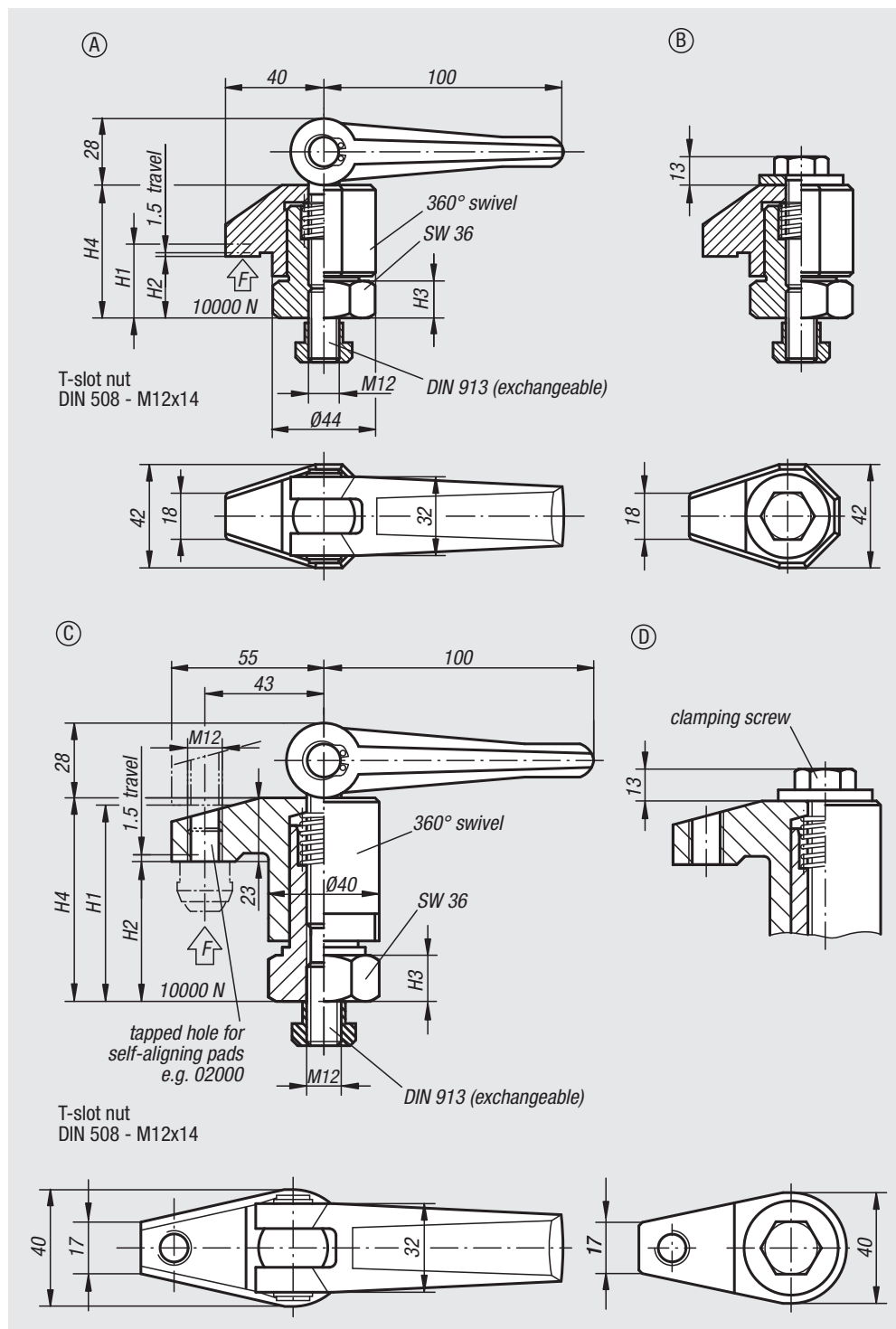
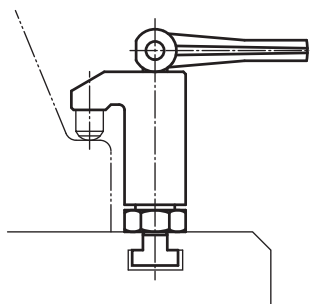
Note:
The clamping heights can be increased with riser bars 04378 and for 04620-12 to 04620-14 and 04620-22 to 04620-24 reduced by self-aligning pads 02000.

Advantages:

- Rapid clamping by hand via threaded spindle and spiral cam.
- Quick and easy workpiece exchange by pivoting the clamp arm.
- Compact design, small clamping space required.
- Simple adaptation to tall clamping heights using the riser cylinders.

The clamps can be mounted in two ways:

- 1) in a T-slot.
- 2) by the M12 screw directly in a fixture base.



Order No.	Form	Form-Type	Clamping height max. H1	Clamping height min. H2	H3	H4
04620-11	A	with cam lever	30	25	15	54-59
04620-12	C	with cam lever and thread	70	50	15	73-93
04620-13	C	with cam lever and thread	98	68	15	91-121
04620-14	C	with cam lever and thread	135	95	22	118-158
04620-21	B	with clamping screw	30	25	15	54-59
04620-22	D	with clamping screw and thread	70	50	15	73-93
04620-23	D	with clamping screw and thread	98	68	15	91-121
04620-24	D	with clamping screw and thread	135	95	22	118-158

Hold-down clamps

pneumatic



Material:

Housing aluminium.
Clamping arm steel.

Version:

Housing anodised.
Clamping arm black oxidised.

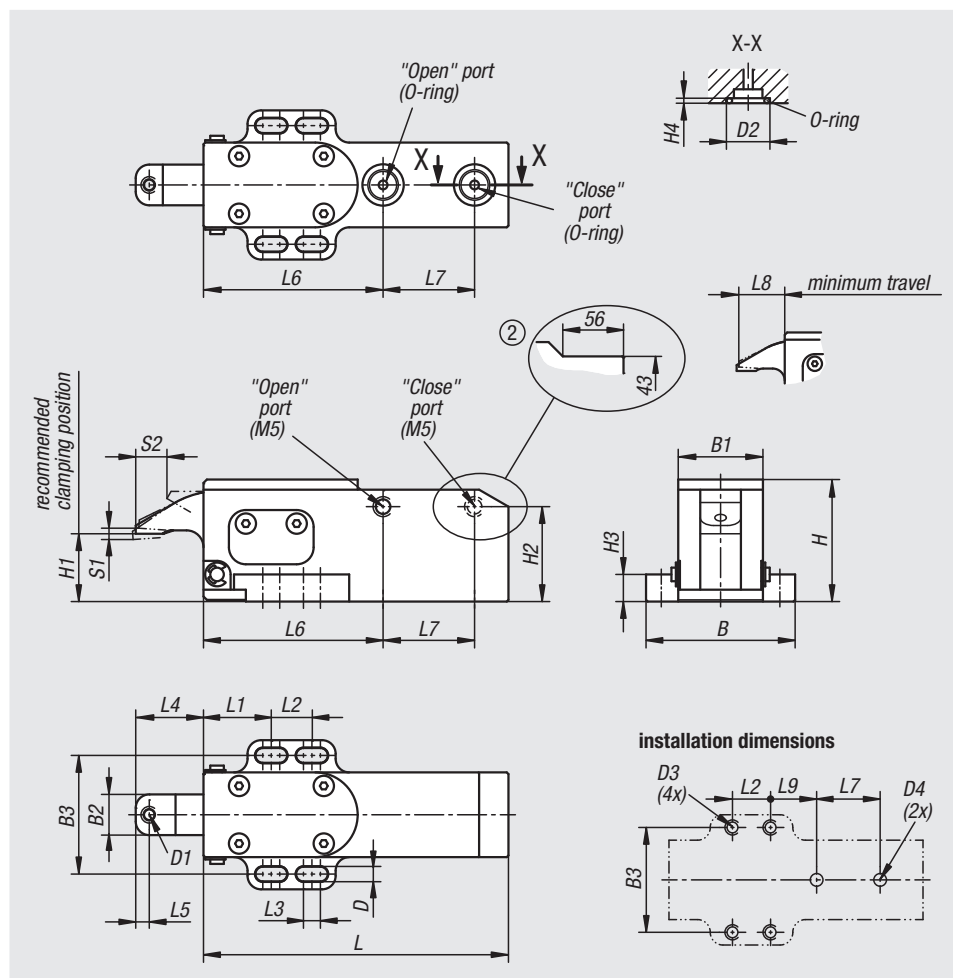
Sample order:

nIm 04624-090

Note:

The pneumatic hold-down clamp is suitable for clamping workpieces from above. This clamp is operated with standard pressure compressed air. The large swivel angle of the clamping arm makes it easy to insert and remove the workpieces without any obstructions, guaranteeing optimum accessibility to the workpiece. The block design of the housing offers universal fastening possibilities, which means that the clamp can be optimally adapted to the workpiece being clamped. Self-aligning pads with a smooth or serrated faces can be fitted in the clamping arm, enabling rough or machined workpieces to be clamped. These pneumatic clamps can be placed in multiple positions on the workpiece and operated in any particular order. They can be controlled manually or automatically. As these clamps are pneumatically actuated, they relieve the operator, particularly where frequent clamping processes are carried out.

The clamping forces indicated are based on 0.5 MPa.



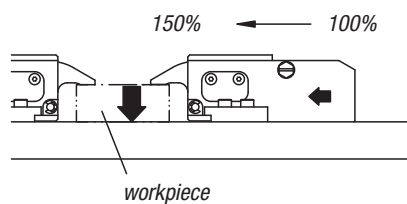
Order No.	Size	B	B1	B2	B3	D	D1	D2	D3	D4	H	H1	H2	H3	H4
04624-090	1	44	25	12	35	4,5	M4	12,2	M4	2-4	36	20	28	8	1,9
04624-135	2	65	40	18	53	6,5	M6	18	M6	2-6	54	30	33	12	2,4

Order No.	L	L1	L2	L3	L4	L5	L6	L7	L8	L9	S1 (travel)	S2	F=retaining force N	Operating pressure MPa
04624-090	90	20	12	5	20	4	53	27	19	21	2	9	140	0,3 - 1,0
04624-135	135	30	20	8	32	6	84	38	30,5	34	3	15	320	0,3 - 1,0

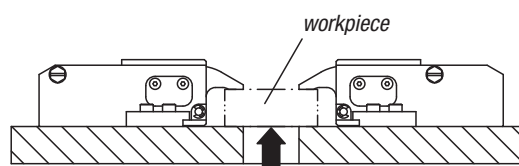
Hold-down clamps

pneumatic

The clamping mechanism increases the clamping force by 150% compared to a pneumatic cylinder of the same size.



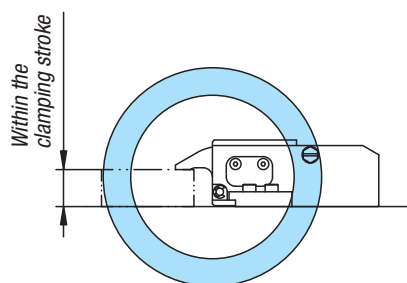
The clamping arm is operated via a wedge mechanism. If the air pressure drops due to an air leak, the wedge mechanism prevents the clamping force from dropping rapidly.



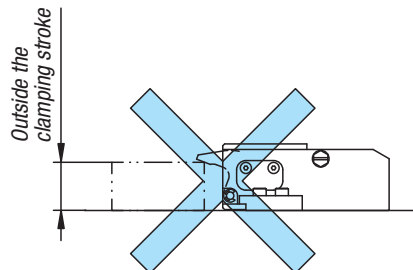
Permissible counterforce (per clamping element)

Size	Permissible clamping force (kN)
1	1
2	2,2

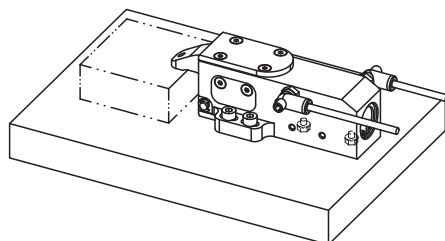
Use side clamp within the clamping travel.



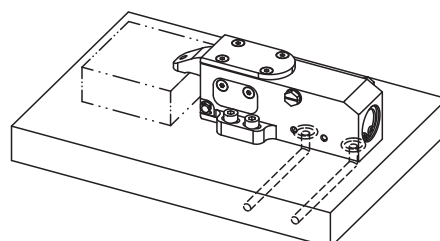
The wedge mechanism is used to clamp the workpiece securely in place.



The wedge mechanism will not function.

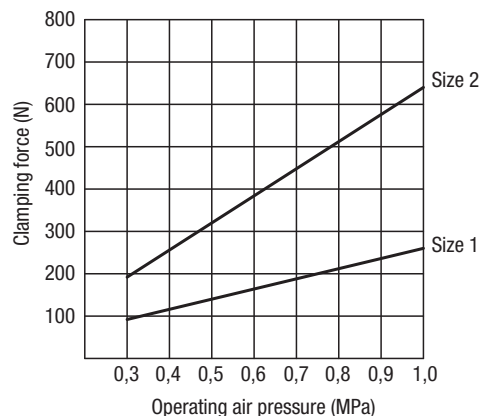


Side port as shown.
Lower ports must be sealed.



Connection from below.
The side ports must be sealed.

Performance curve



Compact clamps


Material:

Housing aluminium.

Clamping lever hardened steel.

Clamping screw grade 10.9.

Version:

Housing bright, clamping lever ground and black oxidised.

Sample order:

nlm 04625-108

Note:

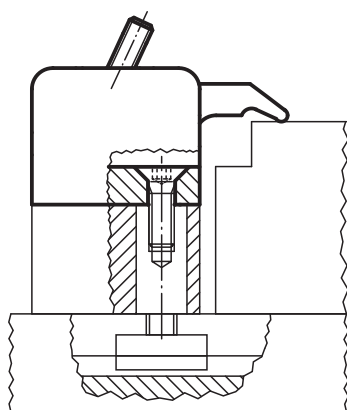
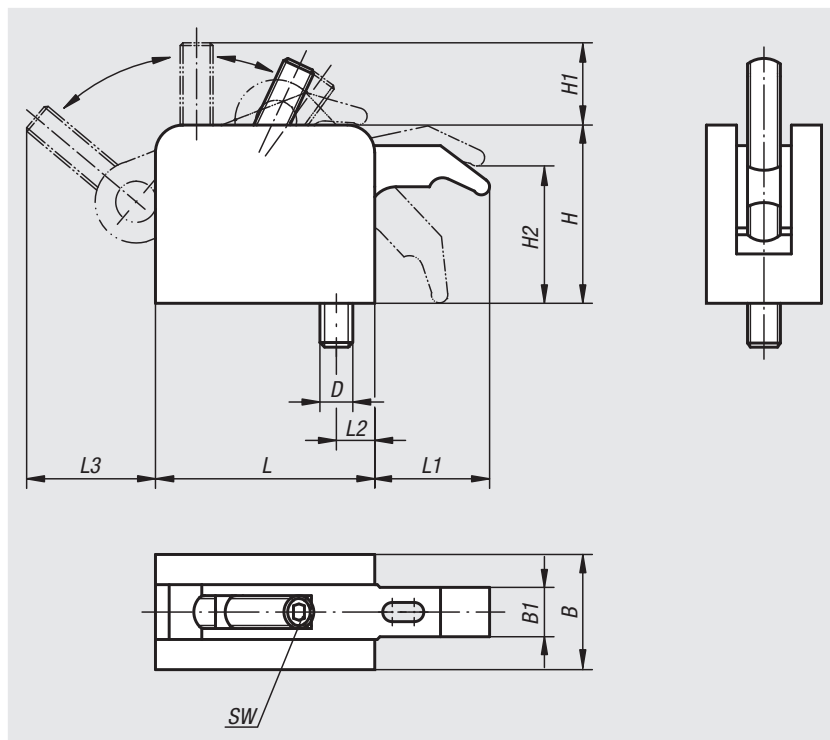
The clamping arm of this compact clamp is fully retractable.

Technical benefits:

- unhindered workpiece changes.
- infinitely variable adjustment.
- high self-locking clamping force.
- variable height assembly (riser blocks see 04626).
- high clamping force without great effort.
- clamp also suitable as stop.

On request:

Longer tightening arm (L1).



Order No.	Size	L	L1	L2	L3	B	B1	H	H1	H2	D	SW	Clamping force kN
04625-106	1	53	27	11	29	32	11	43	17	30	M6	4	5
04625-108	1	53	27	11	29	32	11	43	17	30	M8	4	5
04625-210	2	80	40	17	45	42	18	65	30	50	M10	6	10
04625-212	2	80	40	17	45	42	18	65	30	50	M12	6	10
04625-312	3	107	53	22	57	53	25	87	32	67	M12	8	15

Riser blocks

with draw bolt


Material:

Riser block aluminium.
Draw bolt steel.

Version:

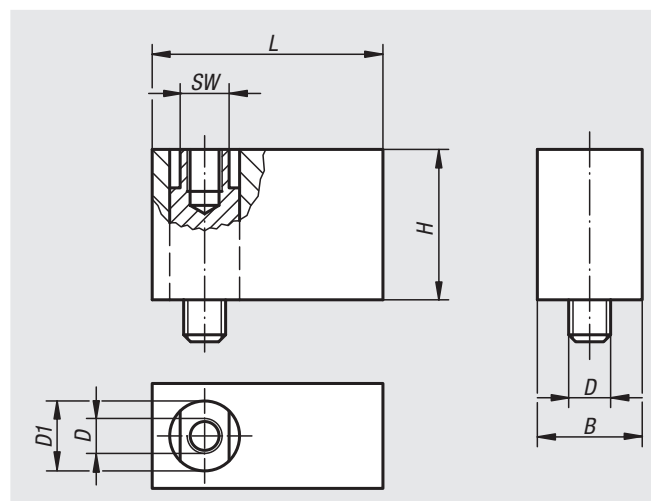
Riser block bright.
Draw bolt black oxidised.

Sample order:

nlm 04626-108

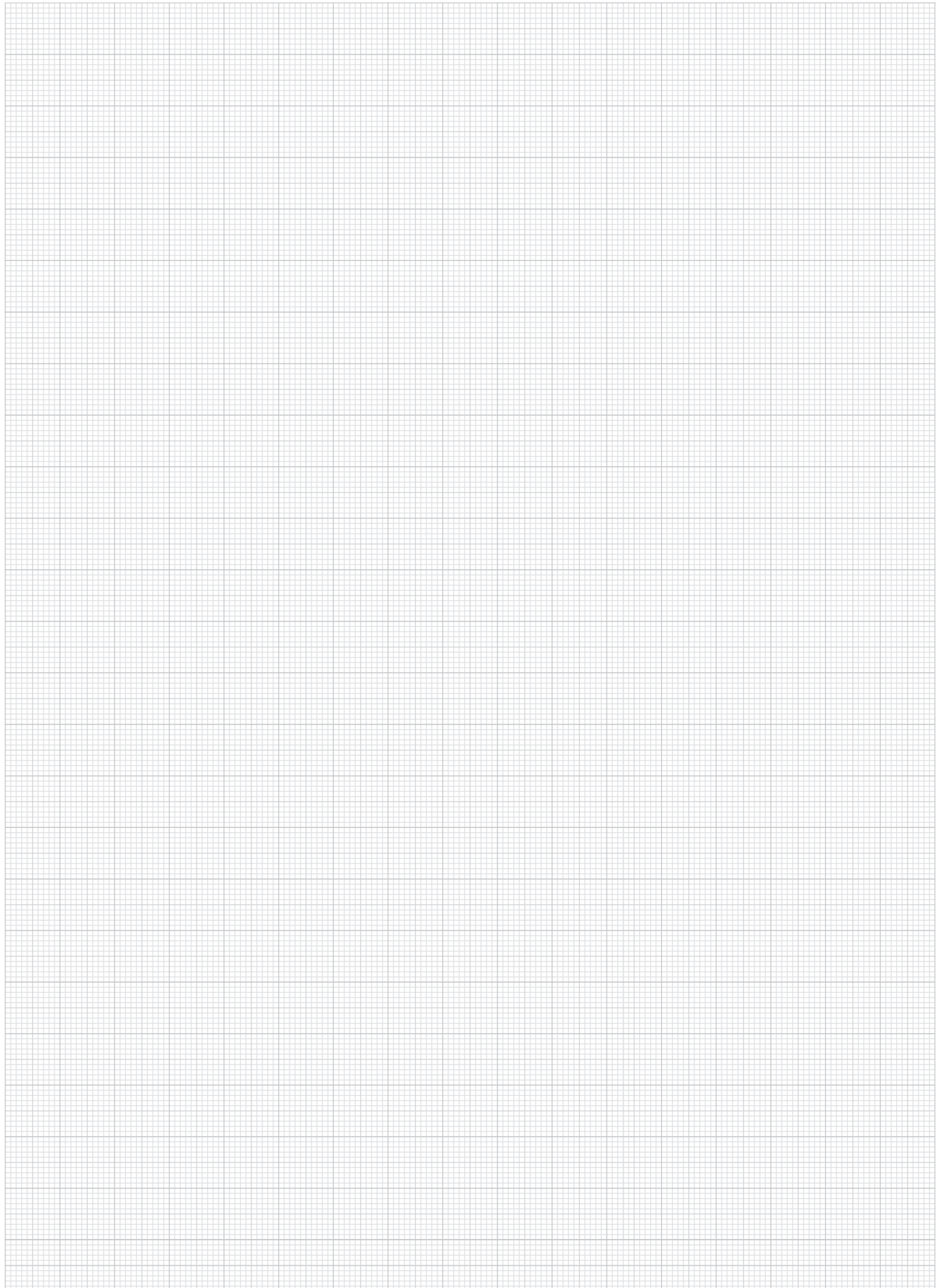
Note:

The riser blocks are the height adjustment elements for the compact clamps (04625).



Order No.	Size	L	B	H	D	D1	SW
04626-106	1	53	32	30	M6	15	13
04626-108	1	53	32	30	M8	15	13
04626-210	2	80	42	50	M10	25	19
04626-212	2	80	42	50	M12	25	19
04626-312	3	107	53	70	M12	30	24

Notes



Power clamp


Material:

Carbon steel.

Version:

Forged, black electro zinc-plated.

Sample order:

nln 04629-012135

Note:

We recommend using a lubricating paste to reduce wear to the adjustment screw.

Risers are available to increase the height of the power clamp.

Supplied with clamping element, support element, DIN 508 slot key and grade 12.9 bolt.

Application:

The height of the clamping arm can be infinitely adjusted using the adjustment screw and the workpiece can then be clamped.

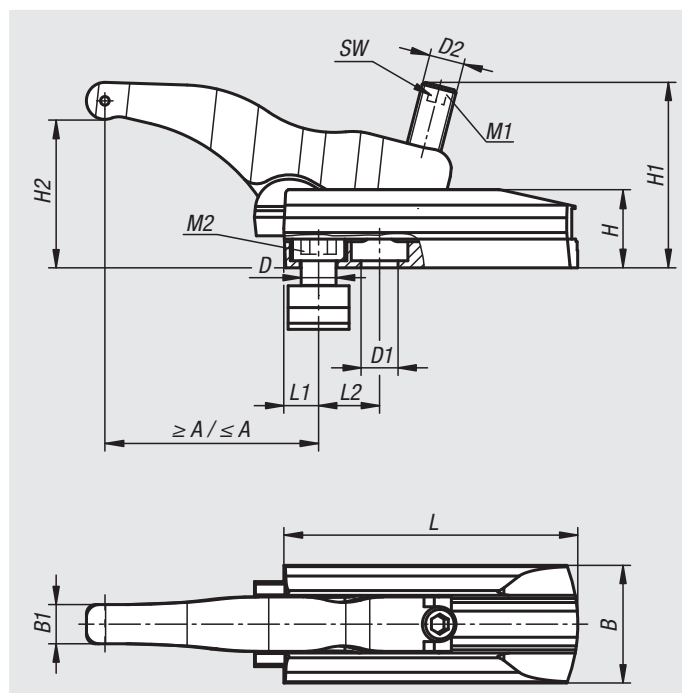
Advantages:

- Very high retaining forces of 22–49 kN.
- Low height.
- Simple element assembly.
- Enables very fast, simple clamping.
- Infinitely adjustable height and length.
- Use in 12-28 mm T-slots or M10, M12, M16, M20 grid systems.
- Thrust pad available in smooth and serrated versions.

Accessories:

Riser 04630

Thrust pads 04631



Order No.	Version 1	H2	A min.	A max.	B	B1	Slot width	D	D1	D2	H	H1	L	L1	L2	SW	Clamping force kN	Tightening torque M1 Nm	Tightening torque M2 Nm
04629-112135	long	6-68	13	110	54	18	14	M12	13	M16	36	85	135	13	25	8	30	100	70
04629-116135	long	6-68	16	114	54	18	18	M16	17	M16	36	85	135	16	28	8	30	100	150
04629-116155	long	5-80	16	134	60	20	18	M16	17	M20	42	105	155	16	32	10	43	220	150
04629-120175	long	7-88	19	165	75	25	22	M20	21	M24	52	125	175	19	36	12	49	220	200
04629-210065	short	5-38	15	50	45	13	12	M10	-	M12	30	58	65	11	-	6	22	50	35
04629-212065	short	5-38	15	50	45	13	14	M12	-	M12	30	58	65	11	-	6	22	50	40
04629-212095	short	6-50	12	82	54	18	14	M12	13	M16	36	78	95	12	20	8	32	120	70
04629-216110	short	6-50	15	95	60	20	18	M16	17	M20	42	92	110	15	26	10	40	150	150

Power clamp 3 stage


Material:

Carbon steel.

Version:

Forged, black electro zinc-plated.

Sample order:

nIm 04629-10-1121301

Application:

The height of the clamping arm can be infinitely adjusted using the adjustment screw and the workpiece can then be clamped.

Assembly:

1. Position the support element on the machine table and fasten using the recommended torque.
2. Bring the clamping arm into the required position.
3. Clamp the workpiece by tightening the set screw.

Advantages:

- Very high retaining forces of 22–49 kN.
- Simple element assembly.
- Enables very fast, simple clamping.
- Infinitely adjustable height and length.
- Use in 14-28 mm T-slots or M12, M16, M20 grid systems.
- Thrust pad available in smooth and serrated versions.

Supplied with:

Form A:

- Clamping unit
- 3 stage support element
- Fastening set

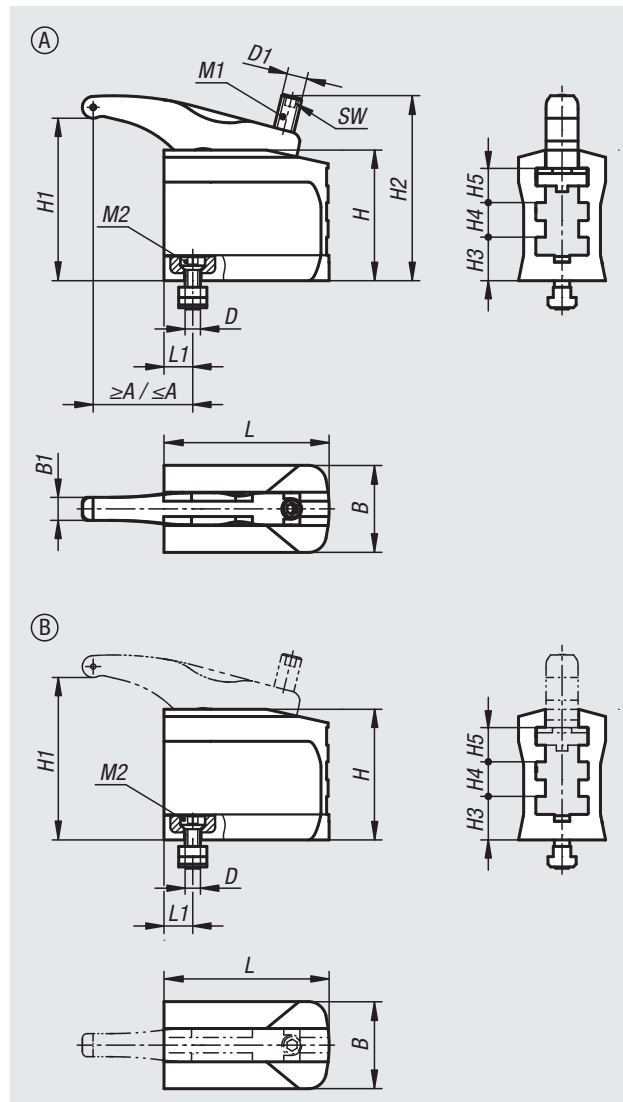
Form B:

- 3 stage support element
- Fastening set

Accessories:

Raiser 04630

Thrust pads 04631



Power clamp 3 stage



Order No.	Version 1	Form	Form-Type	H1	A min.	A max.	B	B1	Slot width	D	D1
04629-10-2120651	short	A	with clamping arm	9-74	30	58	52	13	14	M12	M12
04629-10-1121301	long	A	with clamping arm	13-129	37	106	68	18	14	M12	M16
04629-10-1161501	long	A	with clamping arm	16-147	48	144	75	20	18	M16	M20
04629-10-1201701	long	A	with clamping arm	16-169	68	172	85	25	22	M20	M24
04629-10-2120650	short	B	without clamping arm	9-74	-	-	52	-	14	M12	-
04629-10-1121300	long	B	without clamping arm	13-129	-	-	68	-	14	M12	-
04629-10-1161500	long	B	without clamping arm	16-147	-	-	75	-	18	M16	-
04629-10-1201700	long	B	without clamping arm	16-169	-	-	85	-	22	M20	-

Order No.	Form	H	H2	H3	H4	H5	L	L1	SW	Clamping force kN	Tightening torque M1 Nm	Tightening torque M2 Nm
04629-10-2120651	A	67	98	25	16	16	65	14,5	6	22	55	40
04629-10-1121301	A	101	146	34	27	27	130	22,5	8	30	100	70
04629-10-1161501	A	116	175	43	29	29	150	25	10	43	200	150
04629-10-1201701	A	140	207	52	34	34	170	29	12	49	220	200
04629-10-2120650	B	67	-	25	16	16	65	14,5	-	22	-	40
04629-10-1121300	B	101	-	34	27	27	130	22,5	-	30	-	70
04629-10-1161500	B	116	-	43	29	29	150	25	-	43	-	150
04629-10-1201700	B	140	-	52	34	34	170	29	-	49	-	200

Risers

for power clamp



Material:

Carbon steel.

Version:

Forged, black electro zinc-plated.

Sample order:

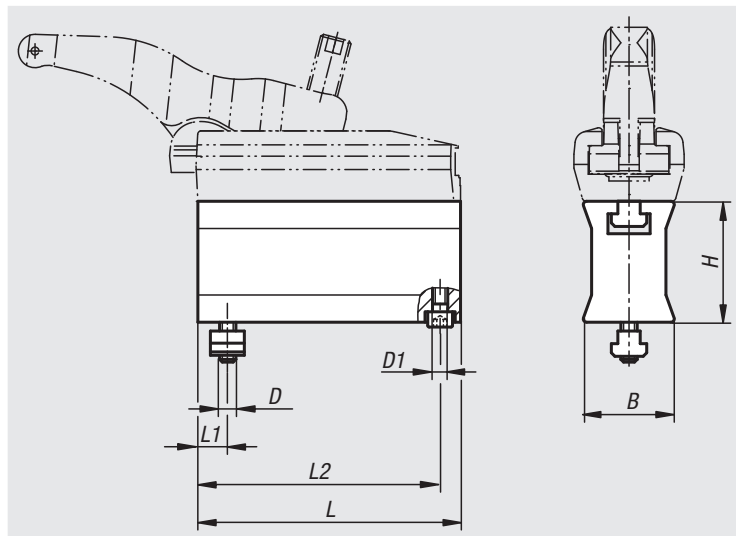
nIm 04630-012060

Application:

The raiser is positioned and fastened to the machine table, the power clamp is then screwed onto the raiser. By turning the adjustment screw on the power clamp, the height of the clamping arm can be infinitely adjusted and the workpiece clamped.

Advantages:

- Other clamping heights can be achieved by mounting multiple risers one on the other.
- Infinite transition between clamping heights.
- Simple element assembly.
- For use in 12-28 mm T-slots or M10, M12, M16, M20 grid systems.



Order No.	Version 2	Slot width	B	D	D1	H	L	L1	L2	Clamping force kN
04630-012060	long	14	45	M12	M8	60	135	12	127	30
04630-016070	long	18	48	M16	M8	70	155	16	145	43
04630-020080	long	22	58	M20	M10	80	175	19	165	49
04630-110035	short	12	36	M10	M6	35	65	12	58,5	22
04630-112035	short	14	36	M12	M6	35	65	12	58,5	22
04630-112060	short	14	44,5	M12	M8	60	95	12	88	32
04630-116070	short	18	47,5	M16	M8	70	110	16	100	40

Thrust pads

for power clamp



Material:

Stainless steel

Sample order:

nlm 04631-025

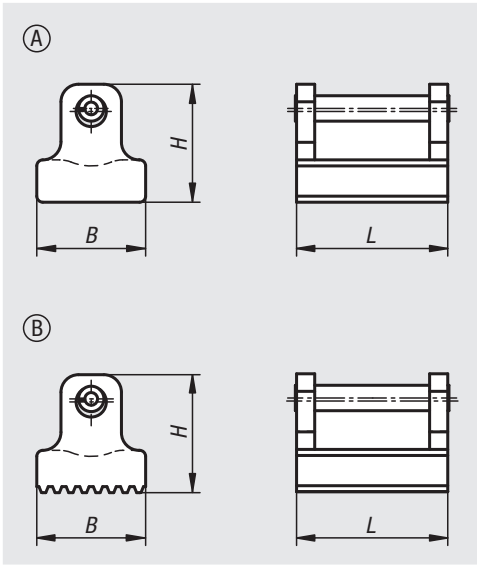
Note:

Power clamps can be fitted with serrated or smooth thrust pads.

Accessories:

Power clamp 04629

3-stage power clamp 04629-10



Order No. Form A smooth	Order No. Form B serrated	B	H	L
04631-019	04631-119	12	14	19
04631-025	04631-125	18	19,5	25
04631-030	04631-130	20	24	30
04631-036	04631-136	25	28	36

Clamp nuts


Material:

Housing carbon steel, cover aluminium.

Version:

Carbonitrided

Sample order:

nln 04750-6012

Note:

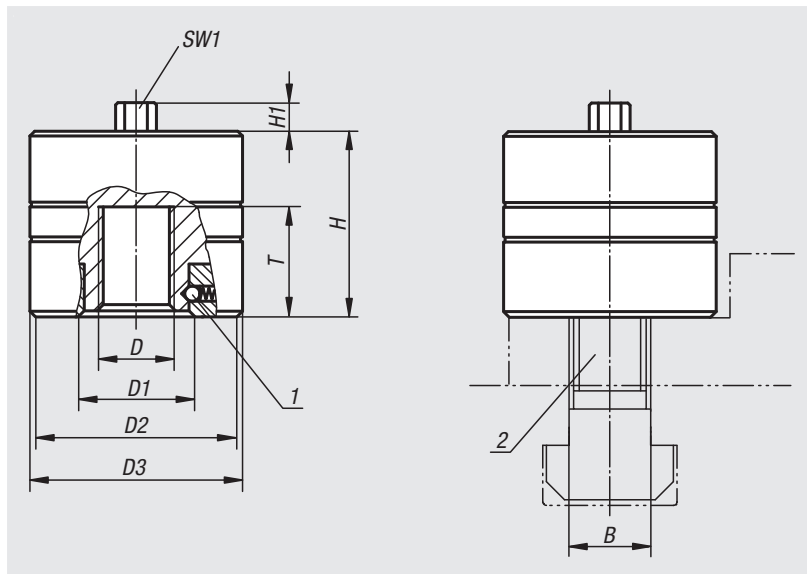
The main feature of the mechanical clamp nut is an integrated planetary gear to simplify the manual clamping torque. After manually adjusting the clamp nut up to the workpiece the drive pinion of the planetary gear is engaged by turning the hexagonal spigot "SW1" to the right. The clamp nut is self-locking in every position. The clamp nut can be used for many clamping tasks throughout the machining field, especially for clamping parts in presses and punches.

Suitable bolts for t-slots see 07040.

The clamp nuts are supplied without t-slot bolts.

Drawing reference:

- 1) ratchet
- 2) screws for T-slots up to M24, min. grade 10.9



Clamp nut clamping
sprockets during milling



Order No.	D	D1	D2	D3	H	H1	T min.	T max.	B	SW1	Clamping force max. kN	max. static load kN	Tightening torque max. Nm
04750-6012	M12	32	60	62	50	10	16	24	14	13	60	70	20
04750-6016	M16	32	60	62	50	10	16	24	18	13	60	120	25
04750-6020	M20	32	60	62	50	10	16	24	22	13	60	120	30
04750-10016	M16	42	71	73	70	10	25	35	18	15	100	130	35
04750-10020	M20	42	71	73	70	10	25	35	22	15	100	200	40
04750-10024	M24	42	71	73	70	10	25	35	28	15	100	200	45

Clamp nuts with star or T-grip


Material:

Housing high-carbon steel.
Cap aluminium.
Star grip and T-grip thermoplastic.

Version:

Carbonitrided; star and T-shaped grips: black

Sample order:

nlm 04751-4010

Note:

The clamp nut with star or T-grip are an improvement based on the tried and tested clamp nut 04750. A star or T-grip replaces the operating hexagon and an added indexing mechanism complements it. An integrated planetary gear serves as the force multiplier, the indexing mechanism triggers the automatic switch from the placing movement to the actual application of force. As a result, considerable clamping forces can be achieved with the simplest manual operation, with no additional ring or socket spanner. The robust construction and self-limiting function guarantee a high level of operating safety. Clamp nuts are used far beyond mechanical engineering for purposes in which high tension and clamping forces are required with the least possible expense. Clamp nuts are maintenance-free under normal operating conditions (max. 120 °C).

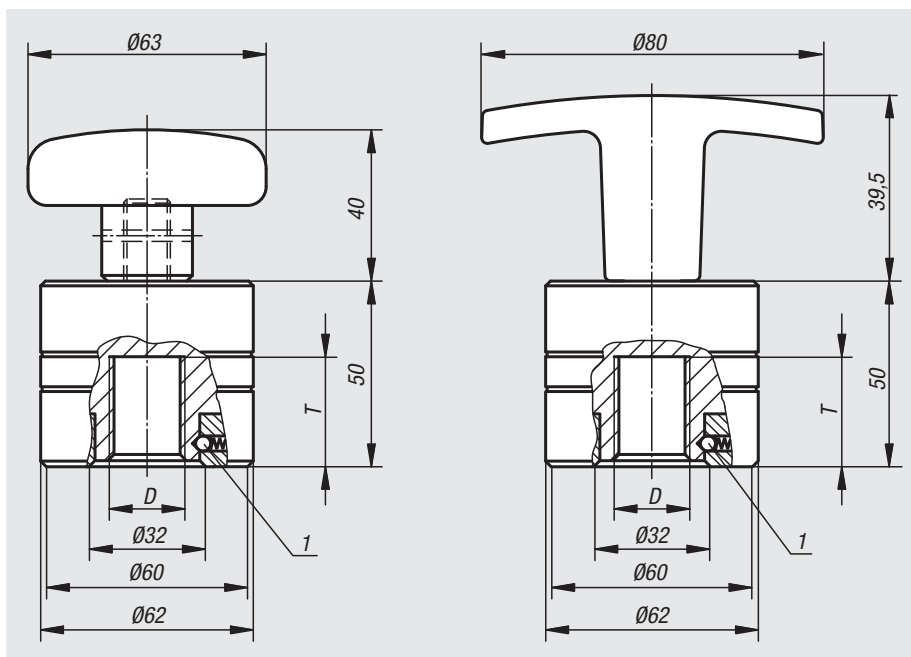
The threaded bolt must have a minimum grade 10.9.
With thread diameters less than M16, bolts grade 12.9 should be used or the maximum admissible static load must be reduced.

Advantages:

- simple, manual operation.
- high tension forces due to force reinforcement.
- rapid adjustment due to automatic conversion.
- high-level operating safety due to self-limitation.

Drawing reference:

1) ratchet



Order No.	Version 1	D	T min.	T max.	Clamping force max. kN	max. static load kN	Tightening torque max. Nm
04751-4010	with star grip	M10	16	24	40	50	15
04751-4012	with star grip	M12	16	24	40	70	15
04751-4016	with star grip	M16	16	24	40	120	15
04751-4020	with star grip	M20	16	24	40	120	15
04751-40102	with t-grip	M10	16	24	40	50	25
04751-40122	with t-grip	M12	16	24	40	70	25
04751-40162	with t-grip	M16	16	24	40	120	25
04751-40202	with t-grip	M20	16	24	40	120	25

Tightening screws


Material:

Carbon steel.

Version:

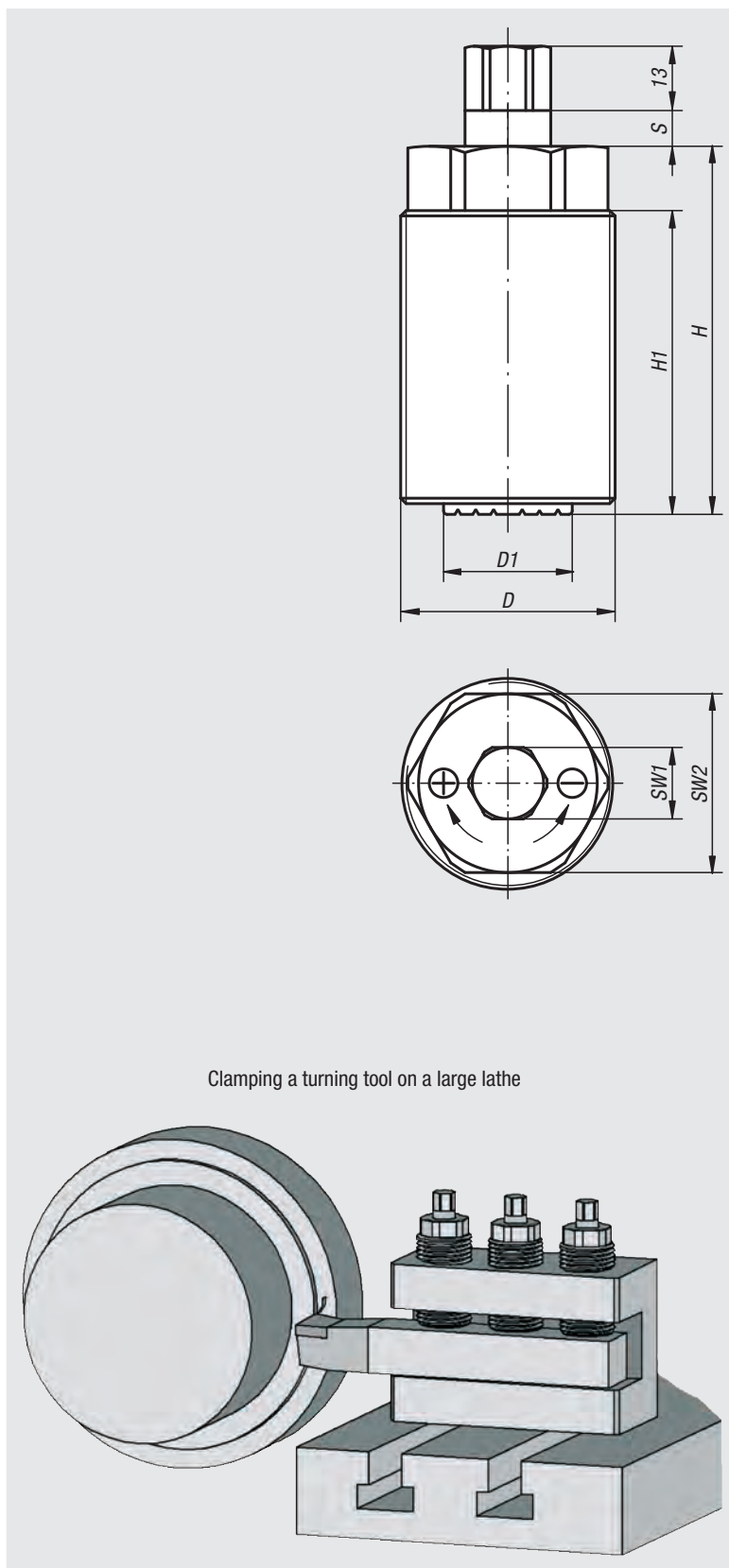
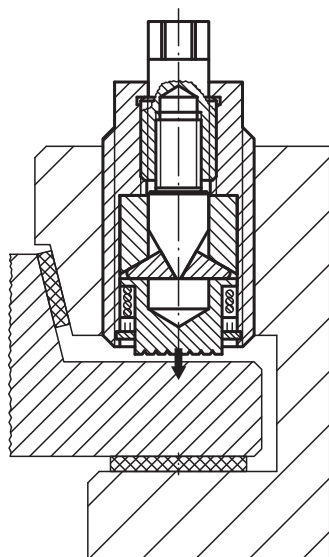
Black oxidised.

Sample order:

nIm 04752-48

Note:

These power clamping screws are fitted with a patented wedge mechanism. This system allows the greatest clamping forces to be achieved at low torques with a simple manual operation. The wedge mechanism is self-limiting in every clamping position. A longer path can be quickly traversed via the external thread of the screw before the wedge mechanism (travel up to 2.2 mm) is used for clamping. Tightening screws are used for many purposes, primarily in presses, punches, production machines, fixtures and equipment production.



Order No.	D	D1	H	H1	S	SW1	SW2	max. clamping travel	Nominal clamping force kN	max. static load kN	Max. tightening torque on SW1 Nm
04752-36	M36x3	19	73	62	5	13	30	1,5	40	80	45
04752-48	M48x3	28	90	75	7,5	17	41	2,2	80	160	90

Clamping pin, steel

**Material:**

Handle die-cast zinc acc. to DIN EN 12844.
Locating pin and wedges steel 1.0715.
Shaft collar steel 1.0718.

Version:

Handle black, plastic coated.
Centring pin and shaft collar phosphated.
Wedges black oxidised.
Lasered division marks.

Sample order:

nlm 04753-0016

Note:

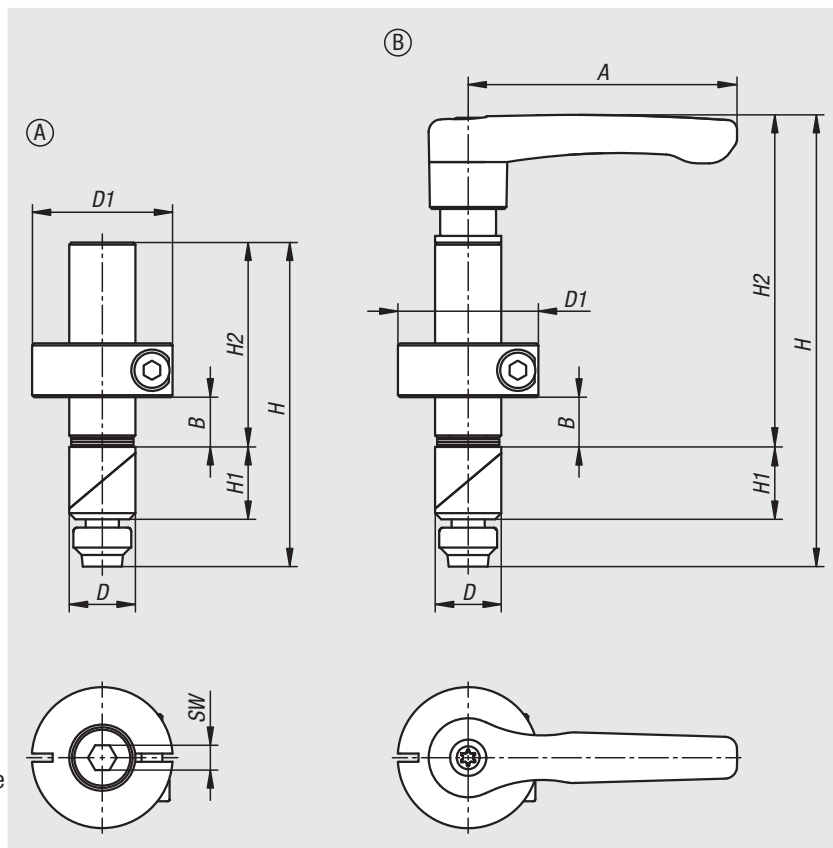
The screw is tightened or the clamping lever is turned to expand the two wedges in the hole. The infinitely adjustable shaft collar enables one or more stop elements with various thicknesses to be securely fixated.

Application:

These clamping pins are perfect for fixing standard stop elements with various thicknesses to hole grid boards / welding tables with hole Ø 16 mm or 28 mm.

Advantages:

Infinitely adjustable clamping range of 0-36 mm and 0-75 mm.
Not affected by the diameter or surface quality of the bore (up to H12).
Clamping range can be easily preset using the scale.
Gentle clamping in the bore.
Pull-down effect even with thin table material (≥8 mm or ≥4 mm).
Compatible with conventional stop elements.



Order No.	Form	A	D	D1	H	H1	H2	SW	B Clamp range
04753-0016	A	-	16	34	78	17,5	49	6	0-36
04753-0028	A	-	28	48	129	28	90	6	0-75
04753-0116	B	65	16	34	109	17,5	80	-	0-36
04753-0128	B	80	28	48	168	28	129	-	0-75

Clamping pin, steel or stainless steel

with washer



Material:

Washer steel 1.0715.

Wedges steel 1.0715 or stainless steel 1.4305.

Version:

Washer electro zinc-plated.

Wedges black oxidised or blank.

Sample order:

nIm 04754-016

Note:

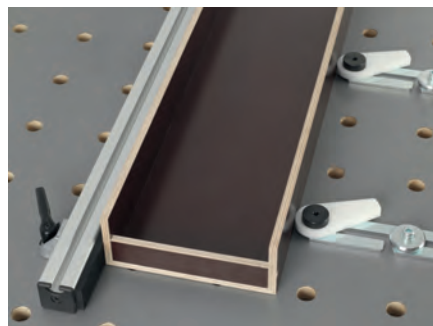
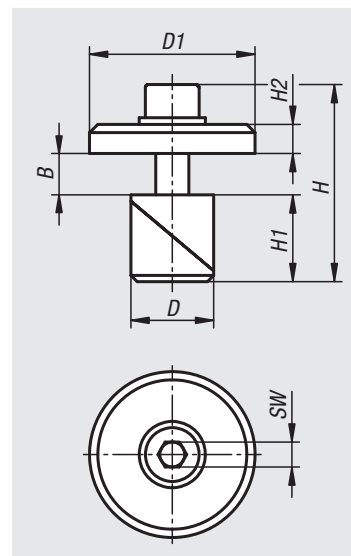
For fixating adapter plates, angles and plates open on grid hole tables or plates with Ø16 mm, Ø20 mm or Ø28 mm holes. Can also be used as a point end stop for positioning and fixating exchange clamping plates. By turning the cap screw, the lock wedges expand in the bore.

Advantages:

Functions also in thin table material (metal: ≥ 8 mm or ≥ 4 mm ; wood ≥ 18 mm).

Gentle clamping in the bore.

Low height.



Order No.	Main material	D	D1	H	H1	H2	SW	B Clamp range
04754-016	steel	16	40	48	17,5	7	6	0-14
04754-120	stainless steel	20	40	48	21	7	6	0-10
04754-028	steel	28	40	68	28	7	6	0-23

Clamping pin, steel or stainless steel

with clamping angle



Material:

Handle die-cast zinc acc. to DIN EN 12844.

Clamping angle die-cast zinc.

Wedges steel 1.0715 or stainless steel 1.4305.

Version:

Handle black, plastic coated.

Wedges black oxidised or blank.

Sample order:

nIm 04755-016

Note:

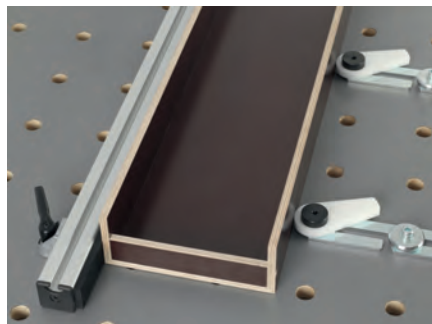
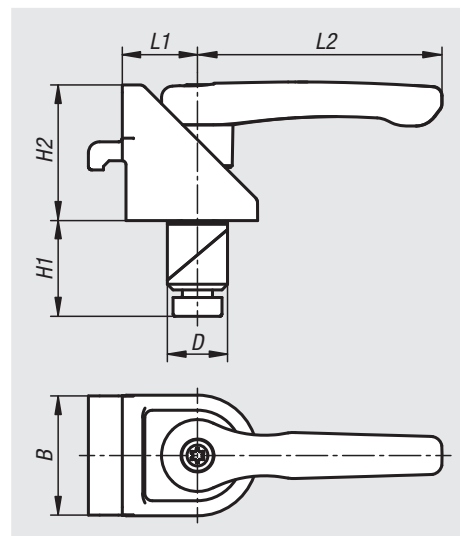
The clamping angles are suitable for fixating aluminium profiles on to grid hole tables or plates with Ø16 mm, Ø20 mm or Ø28 mm holes, e.g. an end stops. Loosen the clamping lever to detract the wedges and enable free rotation and movement. Clamping pins with clamping angles are mostly used in pairs.

Advantages:

Functions also in thin table material (metal: ≥ 8 mm or ≥ 4 mm ; wood ≥ 18 mm).

Gentle clamping in the bore.

Tool-less operation.



Order No.	Main material	B	D	H1	H2	L1	L2
04755-016	steel	32	16	25	36	20	65
04755-120	stainless steel	32	20	21	36	20	65
04755-028	steel	32	28	36	36	20	65

Clamping pin, steel or stainless steel

with adapter plate



Material:

Adapter plate steel.

Wedges steel 1.0715 or stainless steel 1.4305.

Version:

Adapter plate electro zinc-plated.

Wedges black oxidised or blank.

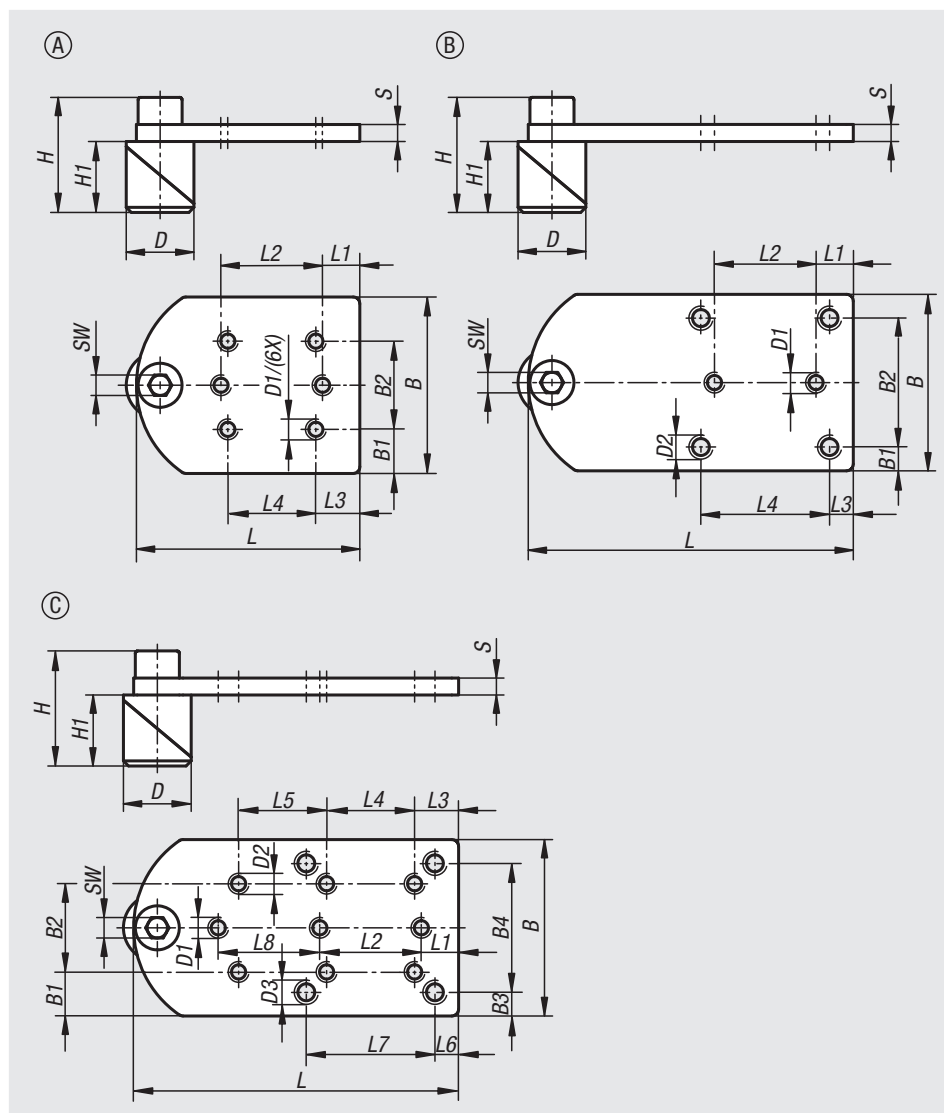
Sample order:

nlm 04756-0016

Note:

The adapter plates enable the toggle clamp to be compatible with hole pattern 3 or 4, for hole grid plates or plates with Ø16 mm, Ø20 mm or Ø28 mm holes.

The clamping pin parts lock in the hole when the cap screw is turned.



Order No.	Form	Main material	B	B1	B2	B3	B4	D	D1	D2	D3	H	H1	L	L1	L2	L3	L4	L5	L6	L7	L8	S	SW
04756-0016	A	steel	52	13	26	-	-	16	M5	-	-	30,5	17,5	66	11	30	13	26	-	-	-	-	5	6
04756-1020	A	stainless steel	52	13	26	-	-	20	M5	-	-	34	21	66	11	30	13	26	-	-	-	-	5	6
04756-0028	A	steel	52	13	26	-	-	28	M5	-	-	41	28	66	11	30	13	26	-	-	-	-	5	6
04756-0116	B	steel	52	7	38	-	-	16	M5	M6	-	30,5	17,5	96	11	30	7	38	-	-	-	-	5	6
04756-1120	B	stainless steel	52	7	38	-	-	20	M5	M6	-	34	21	96	11	30	7	38	-	-	-	-	5	6
04756-0128	B	steel	52	7	38	-	-	28	M5	M6	-	41	28	96	11	30	7	38	-	-	-	-	5	6
04756-0216	C	steel	52	13	26	7	38	16	M5	M5	M6	30,5	17,5	96	11	30	13	26	26	7	38	30	5	6
04756-1220	C	stainless steel	52	13	26	7	38	20	M5	M5	M6	34	21	96	11	30	13	26	26	7	38	30	5	6
04756-0228	C	steel	52	13	26	7	38	28	M5	M5	M6	41	28	96	11	30	13	26	26	7	38	30	5	6

Pivot bearing, steel

with external thread

**Material:**

Pivot bearing steel 1.0715.
Threaded pin steel.

Version:

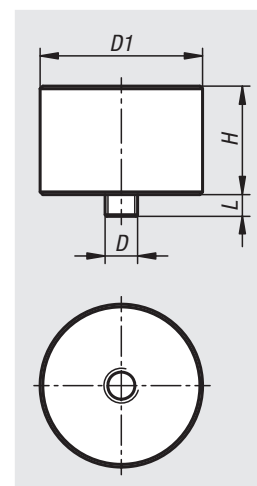
Pivot bearing black oxidised. Screw electro zinc-plated.

Sample order:

nIm 04757-3006X04

Note:

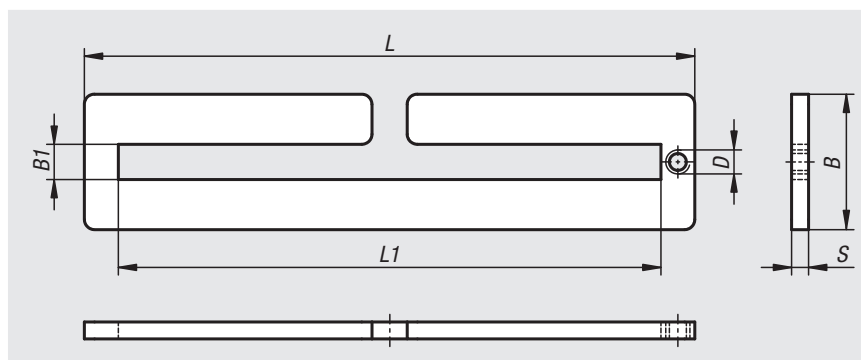
Pivot bearings are used in combination with plates and a cam clamp for indirect clamping.



Order No.	D	D1	H	L
04757-3006X04	M6	30	20	4

Plate, steel

open


Material:

Steel.

Version:

Electro zinc-plated and trivalent blue passivated.

Sample order:

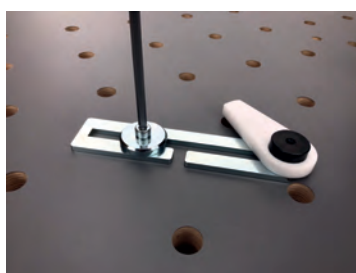
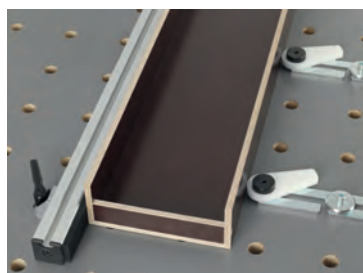
nlm 04758-0180X40

Note:

Plates can be used in combination with a pivot bearing and cam clamp for indirect clamping. The plates are fastened to grid hole tables using clamping pins and washers. They can also be clamped to machine slot tables by combining with eccentric clamp modules.

Advantages:

Flexible movement and positioning.
infinitely adjustable



Order No.	B	B1	D	L	L1	S
04758-0180X40	40	10,4	M6	180	160	5

Angle, steel

open


Material:

Steel.

Version:

Electro zinc-plated and trivalent blue passivated.

Sample order:

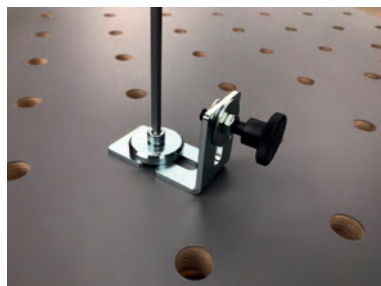
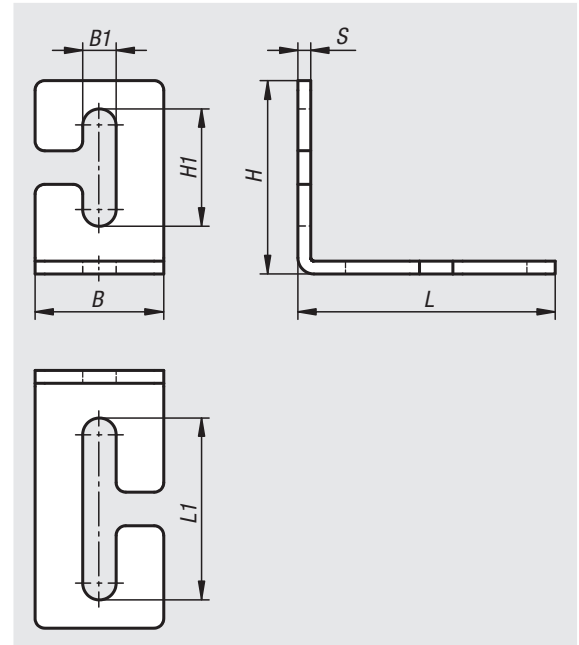
nlm 04759-0804060

Note:

The angle can also be used as an end stop on grid hole and slot tables. Fine adjustment is possible when used in combination with knurled screws. The angles are fastened to grid hole tables using clamping pins and washers. They can also be clamped to machine slot tables by combining with eccentric clamp modules.

Advantages:

Flexible movement and positioning.
The opening enables easy assembly.
Infinitely adjustable



Order No.	B	B1	H	H1	L	L1	S
04759-0804060	40	10,4	60	36	80	56	4

Notes

