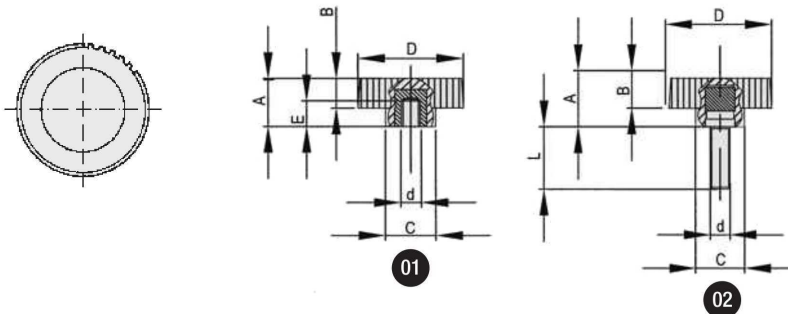


**MACHINE
ACCESSORIES**

AV Series Knob in composite plastic

Knob in high resistance polyamide reinforced with glass fibres, black matt, with female insert in brass and stud in zinc plated steel or stainless steel AISI 303.



01 with female insert

D	d	A	B	C	E	REFERENCE
22	M6	12	8,5	12	7	AV06-22-00
28	M6	15	10	13	9	AV06-28-00
28	M8	15	10	13	9	AV08-28-00

02 with stud

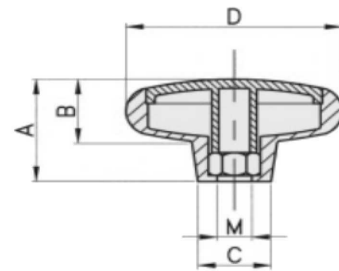
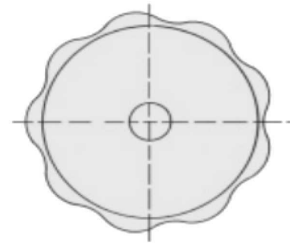
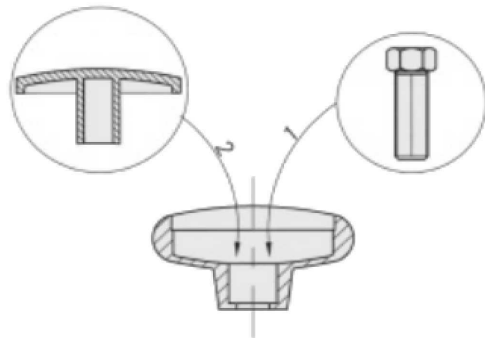
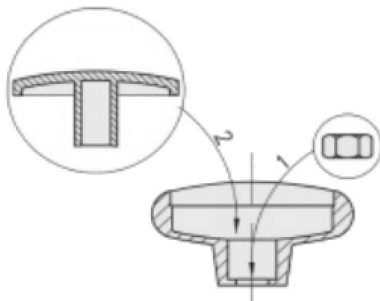
- Length of steel stud
- Length of stainless stud

D	d	A	B	C	06	10	15	20	REFERENCE steel	REFERENCE stainless
10	M3	4,5	4	8	●				AV03-10-06	-
14	M3	9	3,5	8		●			AV03-14-10	-
14	M4	9	3,5	8		●	●		AV04-14-10	-
14	M5	9	3,5	8				●	AV05-14-15	-
22	M4	12	8,5	12				●	AV04-22-15	-
22	M5	12	8,5	12				●	AV05-22-15	AV05-22-15SS
22	M6	12	8,5	12				●	AV06-22-20	AV06-22-20SS
28	M6	15	10	13				●	AV06-28-20	AV06-28-20SS
28	M8	15	10	13				●	AV08-28-20	AV08-28-20SS

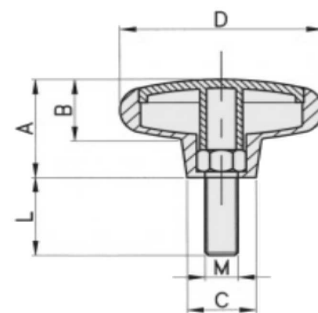
Minimum Order Quantity : 1000

AE Series Knob in composite plastic

Knob in high resistance polyamide reinforced with glass fibres. This knob is designed for studs and nuts with hexagon heads. This ultra light knob is fully recyclable and reusable.



01



02

01 02

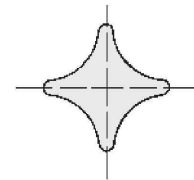
D	A	B	C	fitting stud or nut	REFERENCE
32	18	8	18	M6	AE06-32
32	18	8	18	M8	AE08-32
42	28	18	21	M6	AE06-42
42	28	18	21	M8	AE08-42
62	34	22	21	M8	AE08-62
62	34	22	21	M10	AE10-62

Customer to use own fitting nut/bolt

Minimum Order Quantity : 1000

PC Series Knob in composite plastic

Knob in high resistance polyamide reinforced with glass fibres, black matt, with female insert in brass and stud in zinc plated steel.

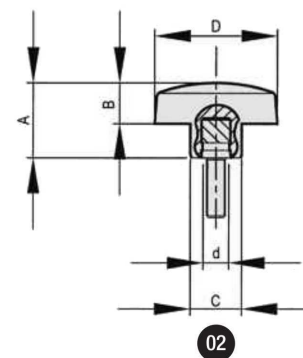
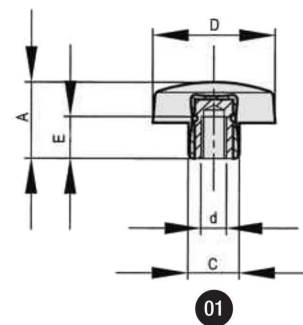


01 with female insert

D	d	A	B	C	E	REFERENCE
25	M4	15	8	10	6	PC04-25
25	M5	15	8	10	7,5	PC05-25

02 with stud
● Length of steel stud

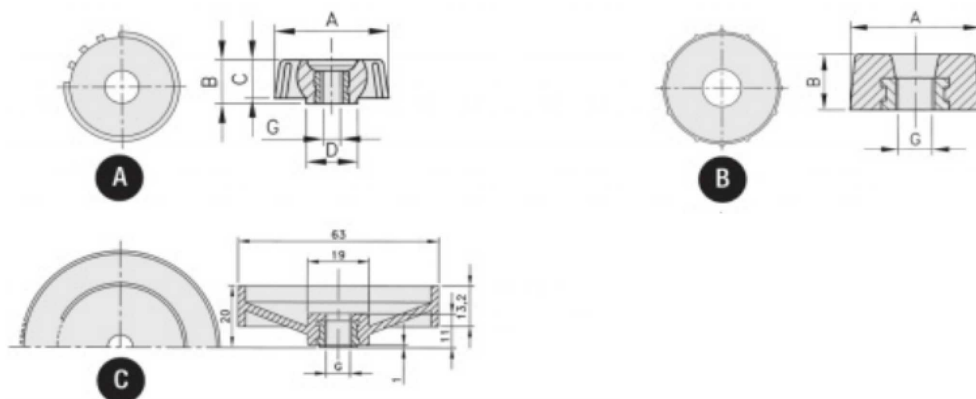
D	d	10	15	20	REFERENCE
25	M4	●			PC04-25-10
25	M5		●		PC05-25-15
25	M6			●	PC06-25-20



Minimum Order Quantity : 1000

SN Series Knob in composite plastic

Knob in high resistance polyamide reinforced with glass fibres, black matt, with insert in zinc plated steel.



A B C with through insert

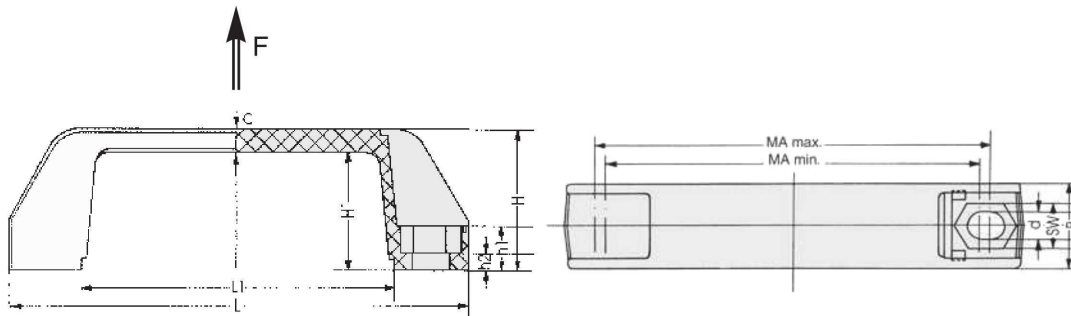
Version	A	G	B	C	D	REFERENCE
A	15	M3	6	5	7	SN03-15A
A	15	M4	6	5	7	SN04-15A
A	20	M5	8	7	9	SN05-20A
B	25	M6	10			SN06-25B
B	42	M8	12			SN08-42B

Minimum Order Quantity : 1000



NR Series Handle in composite plastic

Handle made of glass fibre reinforced polyamide, color black matt, supplied with or without caps.



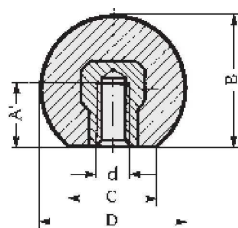
MA min/max	Ø fitting screws	L	L1	H	H1	B	h1	h2	d	C	SW	Fmax (N)	handle with 2 caps		handle without caps	
													NR06-110-20	NR06-110	NR08-137-21	NR08-137
90/94	M6	110	72,5	36	30	21	12	5	6,5	6	10/10	900	NR06-110-20	NR06-110	NR08-137-21	NR08-137
112/118	M8	137	92,5	42	35	26	13,5	5	8,5	7	13/13	900	NR08-151-21	NR08-151	NR08-171-21	NR08-171
126/132	M8	151	106,5	42	35	26	13,5	5	8,5	7	13/13	900	NR08-201-21	NR08-201		
146/152	M8	171	126,5	42	35	26	13,5	5	8,5	7	13/13	900				
176/182	M8	201	156,5	42	33	28	13,5	5	8,5	9	13/13	900				

Minimum Order Quantity : 1000



BK Series Ball Knob in composite plastic

Knob made of high-duty, heat resistant duroplast, black, high gloss surface. Insert in zinc plated steel.



02

02 with steel insert

D	d	B	C	A'	REFERENCE
20	M5	18	12	10	BK05-20
20	M6	18	12	10	BK06-20
25	M6	23,2	13	12	BK06-25
25	M8	23,2	13	11	BK08-25
32	M6	29	18	13	BK06-32
32	M8	29	18	16	BK08-32
35	M10	32,8	17	14	BK10-35
40	M8	37,3	20	14	BK08-40
40	M10	37,3	20	22	BK10-40
40	M12	37,3	20	21	BK12-40
45	M10	42,6	20	22	BK10-45
50	M10	47,5	22	22	BK10-50
50	M12	47,5	22	21	BK12-50

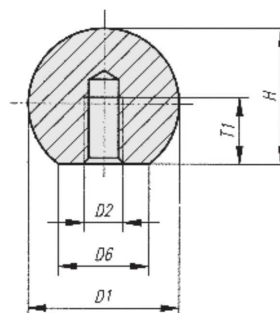
* with brass insert

BK Series Ball Knob Soft Touch

Knob made of high-duty, heat resistant duroplast, black, with extremely thin soft touch painting.



D1	D2	D6	H	T1	REFERENCE
32	M8	18	29	15	BK08-32-ST
32	M10	18	29	20	BK10-32-ST
40	M8	20	37	20	BK08-40-ST
40	M10	20	37	20	BK10-40-ST
40	M12	20	37	20	BK12-40-ST
50	M10	27	46	30	BK10-50-ST
50	M12	27	46	30	BK12-50-ST



Minimum Order Quantity : 1000

Clamp Levers with internal thread



Material:

Handle in die cast zinc to DIN 1743, steel parts quality class 5.8

Surface finish:

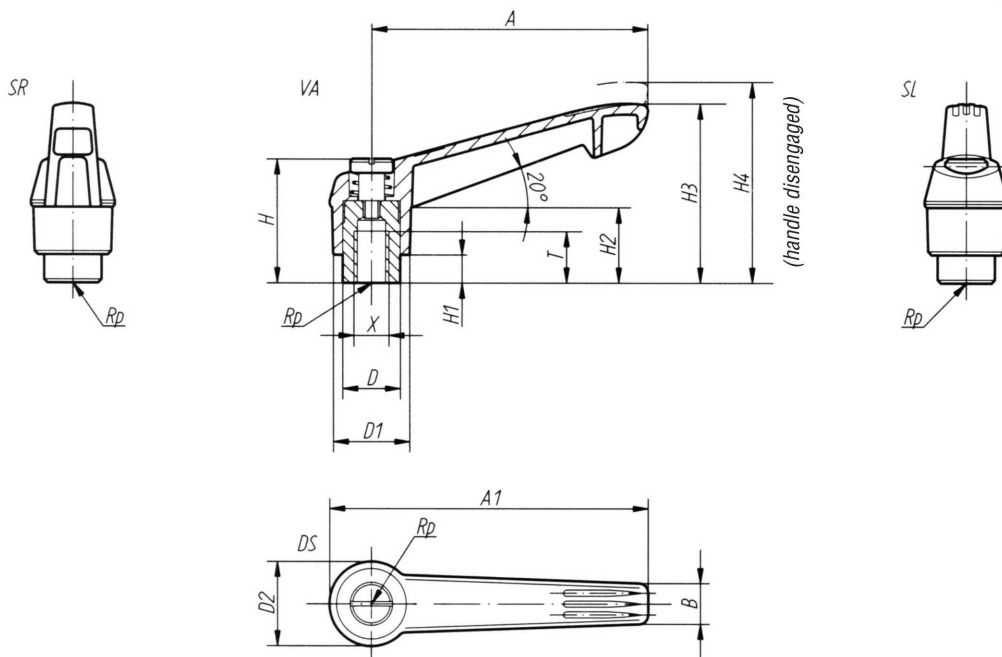
Handle plastic-coated, steel parts black oxide finish

Note:

Standard colours are:
black satin finish, orange RAL 2004

Other colours available on request.

Other materials, surface finishes, special versions, etc. are available.



Clamp Levers with internal thread

Order No. black satin finish	Order No. orange	Size	Internal thread X*	T	D	D1	D2	H	H1**	H2	H3	H4	A	A1	B	No. of teeth	Approx. weight kg
50 104000 01	50 104000 02	1	M 4	9	10	13	14,5	24	4	15	29,5	33,5	40	47	7,5	16	0,030
50 105000 01	50 105000 02	1	M 5	9	10	13	14,5	24	4	15	29,5	33,5	40	47	7,5	16	0,030
50 106000 01	50 106000 02	1	M 6	9	10	13	14,5	24	4	15	29,5	33,5	40	47	7,5	16	0,030
50 206000 01	50 206000 02	2	M 6	12	13,5	18	19,5	29	6,5	17,5	41	45	65	75	9,5	20	0,070
50 208000 01	50 208000 02	2	M 8	12	13,5	18	19,5	29	6,5	17,5	41	45	65	75	9,5	20	0,070
50 308000 01	50 308000 02	3	M 8	14	16	21,5	23	37,5	10	24	53	57	80	91,5	11	22	0,110
50 310000 01	50 310000 02	3	M 10	14	16	21,5	23	37,5	10	24	53	57	80	91,5	11	22	0,110
50 410000 01	50 410000 02	4	M 10	17	19	25,5	27,5	42,5	10	27	61	65	95	109	13	24	0,190
50 412000 01	50 412000 02	4	M 12	17	19	25,5	27,5	42,5	10	27	61	65	95	109	13	24	0,190
50 512000 01	50 512000 02	5	M 12	23	23	30	32,5	51	12	33	72,5	77,5	110	126,5	15,5	26	0,300
50 516000 01	50 516000 02	5	M 16	23	23	30	32,5	51	12	33	72,5	77,5	110	126,5	15,5	26	0,300

Sample order: Clamp Lever 5031000001

*Other internal threads available on request **Dimension "H1" available in other lengths at extra charge

Clamp Levers with external thread



Material:

Handle in die cast zinc to DIN 1743, steel parts quality class 5.8

Surface finish:

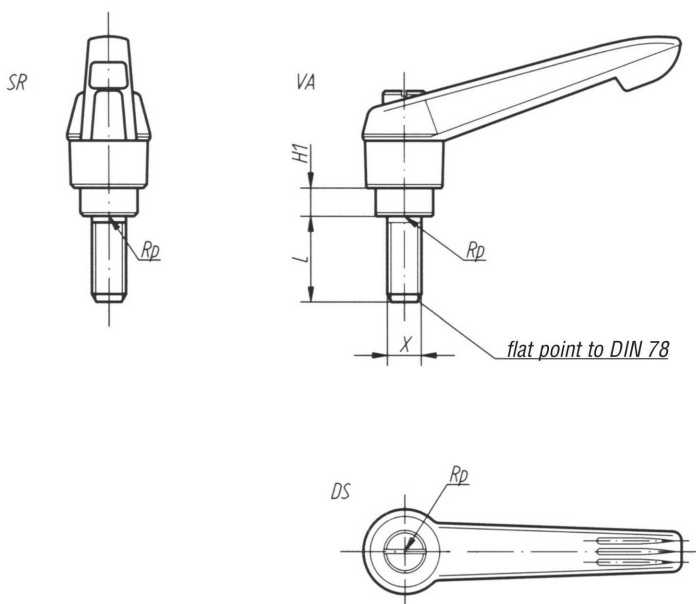
Handle plastic-coated, steel parts black oxide finish

Note:

Standard colours are:
black satin finish, orange RAL 2004

Other colours available on request.

Other materials, surface finishes, special versions, etc. are available.



Clamp Levers with external thread

Order No. black satin finish	Order No. orange	Size	External thread X**	H1*	L = Screw length **													
50 105*** 01	50 105*** 02	1	M 5	4	10	15	20	25	30	35	40	45	50	-	-	-	-	-
50 106*** 01	50 106*** 02	1	M 6	4	10	15	20	25	30	35	40	45	50	-	-	-	-	-
50 206*** 01	50 206*** 02	2	M 6	6,5	-	15	20	25	30	35	40	45	50	55	60	-	-	-
50 208*** 01	50 208*** 02	2	M 8	6,5	-	15	20	25	30	35	40	45	50	55	60	-	-	-
50 210*** 01	50 210*** 02	2	M 10	6,5	-	15	20	25	30	35	40	45	50	55	60	-	-	-
50 310*** 01	50 310*** 02	3	M 10	10	-	15	20	25	30	35	40	45	50	55	60	-	-	-
50 410*** 01	50 410*** 02	4	M 10	10	-	-	20	25	30	35	40	45	50	55	60	70	80	90
50 412*** 01	50 412*** 02	4	M 12	10	-	-	20	25	30	35	40	45	50	55	60	70	80	90
50 512*** 01	50 512*** 02	5	M 12	12	-	-	-	25	30	35	40	45	50	55	60	70	80	90
50 516*** 01	50 516*** 02	5	M 16	12	-	-	-	25	30	35	40	45	50	55	60	70	80	90

Sample order: Clamp Lever 5031005002
(Length L)

*Dimension "H1" available in other lengths at extra charge **Other external threads and screw lengths available on request
***Add the desired screw length here, e.g. 050 for L = 50 mm

Clamp Levers with internal thread, steel parts in stainless steel



Material:

Handle in die cast zinc to DIN 1743, steel parts in stainless steel, X 10 CrNiS 18 9 = 1.4305

Surface finish:

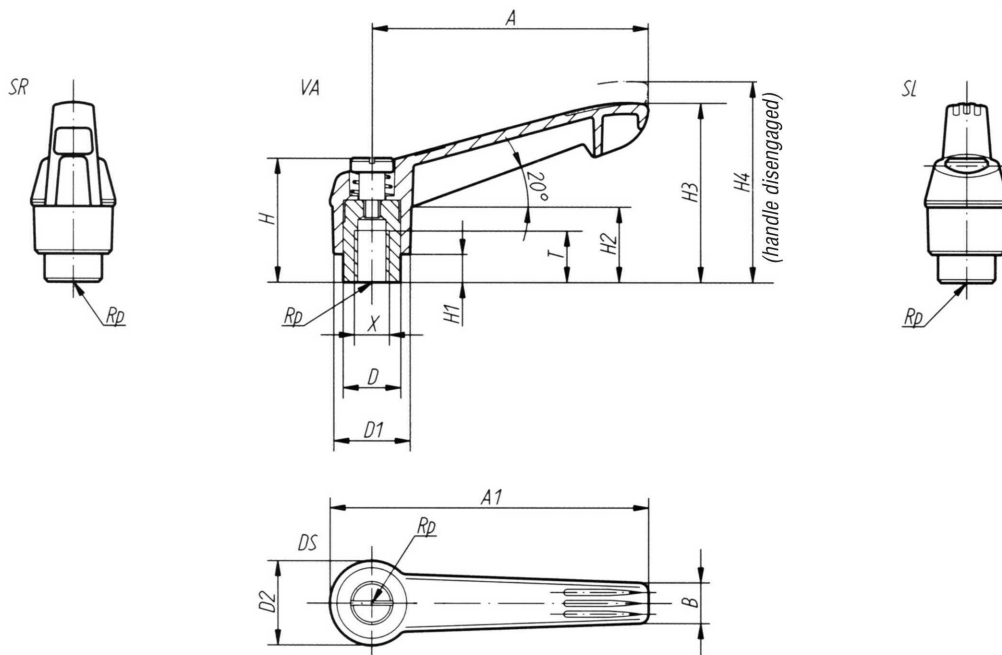
Handle plastic-coated, steel parts natural finish

Note:

Standard colours are:
black satin finish, orange RAL 2004

Other **colours** available on request.

Other materials, surface finishes, special versions, etc. are available.



Clamp Levers with internal thread, steel parts in stainless steel

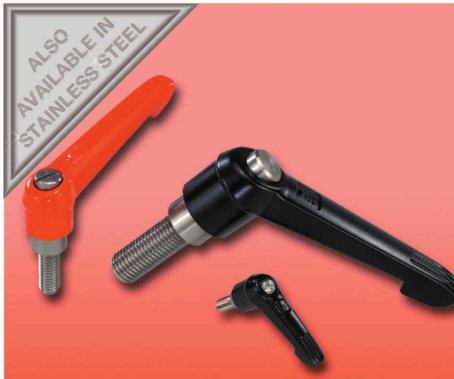
Order No. black satin finish	Order No. orange	Size	Internal thread X*	T	D	D1	D2	H	H1**	H2	H3	H4	A	A1	B	No. of teeth	Approx. weight kg
50 105000 01 OS0	50 105000 02 OS0	1	M 5	9	10	13	14,5	24	4	15	29,5	33,5	40	47	7,5	16	0,030
50 106000 01 OS0	50 106000 02 OS0	1	M 6	9	10	13	14,5	24	4	15	29,5	33,5	40	47	7,5	16	0,030
50 206000 01 OS0	50 206000 02 OS0	2	M 6	12	13,5	18	19,5	29	6,5	17,5	41	45	65	75	9,5	20	0,070
50 208000 01 OS0	50 208000 02 OS0	2	M 8	12	13,5	18	19,5	29	6,5	17,5	41	45	65	75	9,5	20	0,070
50 308000 01 OS0	50 308000 02 OS0	3	M 8	14	16	21,5	23	37,5	10	24	53	57	80	91,5	11	22	0,110
50 310000 01 OS0	50 310000 02 OS0	3	M 10	14	16	21,5	23	37,5	10	24	53	57	80	91,5	11	22	0,110
50 410000 01 OS0	50 410000 02 OS0	4	M 10	17	19	25,5	27,5	42,5	10	27	61	65	95	109	13	24	0,190
50 412000 01 OS0	50 412000 02 OS0	4	M 12	17	19	25,5	27,5	42,5	10	27	61	65	95	109	13	24	0,190
50 512000 01 OS0	50 512000 02 OS0	5	M 12	23	23	30	32,5	51	12	33	72,5	77,5	110	126,5	15,5	26	0,300
50 516000 01 OS0	50 516000 02 OS0	5	M 16	23	23	30	32,5	51	12	33	72,5	77,5	110	126,5	15,5	26	0,300

Sample order: Clamp Lever 50310000010S0

*Other internal threads available on request

**Dimension "H1" available in other lengths at extra charge

Clamp Levers with external thread, steel parts in stainless steel



Material:

Handle in die cast zinc to DIN 1743, steel parts in stainless steel, X 10 CrNiS 18 9 = 1.4305

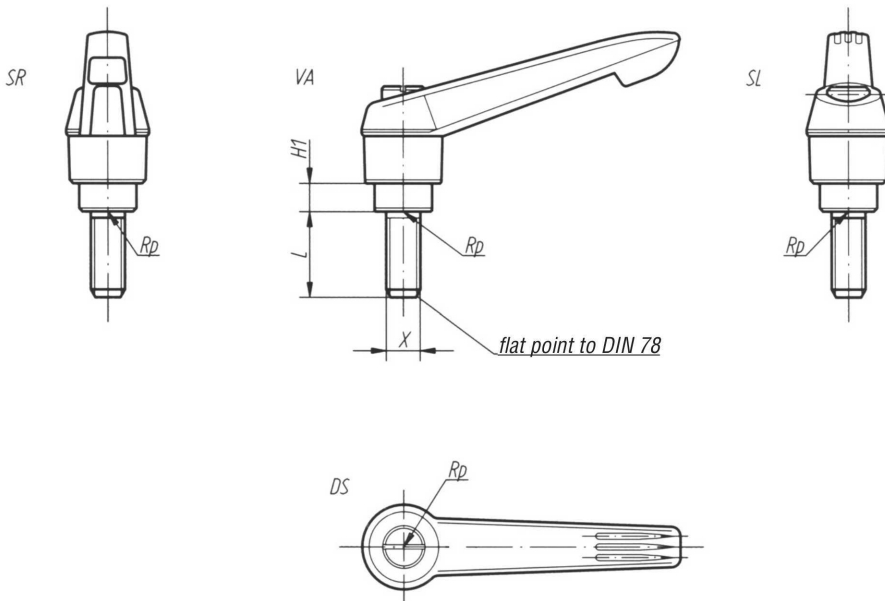
Surface finish:

Handle plastic-coated, steel parts natural finish

Note:

Standard colours are:
black satin finish, orange RAL 2004

Other colours available on request.
Other materials, surface finishes, special versions, etc. are available.



Clamp Levers with external thread, steel parts in stainless steel

Order No. black satin finish	Order No. orange	Size	External thread X**	H1*	L = Screw length **								
50 105***	01 OS0 50 105***	02 OS0	1	M 5	4	-	15	20	25	-	-	-	-
50 106***	01 OS0 50 106***	02 OS0	1	M 6	4	10	15	20	25	30	40	50	-
50 206***	01 OS0 50 206***	02 OS0	2	M 6	6,5	-	15	20	25	30	40	50	60
50 208***	01 OS0 50 208***	02 OS0	2	M 8	6,5	-	15	20	25	30	40	50	60
50 210***	01 OS0 50 210***	02 OS0	2	M 10	6,5	-	-	20	25	30	40	50	60
50 310***	01 OS0 50 310***	02 OS0	3	M 10	10	-	-	20	25	30	40	50	60
50 412***	01 OS0 50 412***	02 OS0	4	M 12	10	-	-	-	25	30	40	50	60
50 516***	01 OS0 50 516***	02 OS0	5	M 16	12	-	-	-	-	30	40	50	60

Sample order: Clamp Lever 50310050020S0
(Length L)

* Dimension "H1" available in other lengths at extra charge **Other external threads and screw lengths available on request
*** Add the desired screw length here, e.g. 050 for L = 50 mm

Clamp Levers with internal thread and plastic handle



Material:

Handle in glass-fibre reinforced plastic with toothed wheel in die cast zinc, steel parts quality class 5.8

Surface finish:

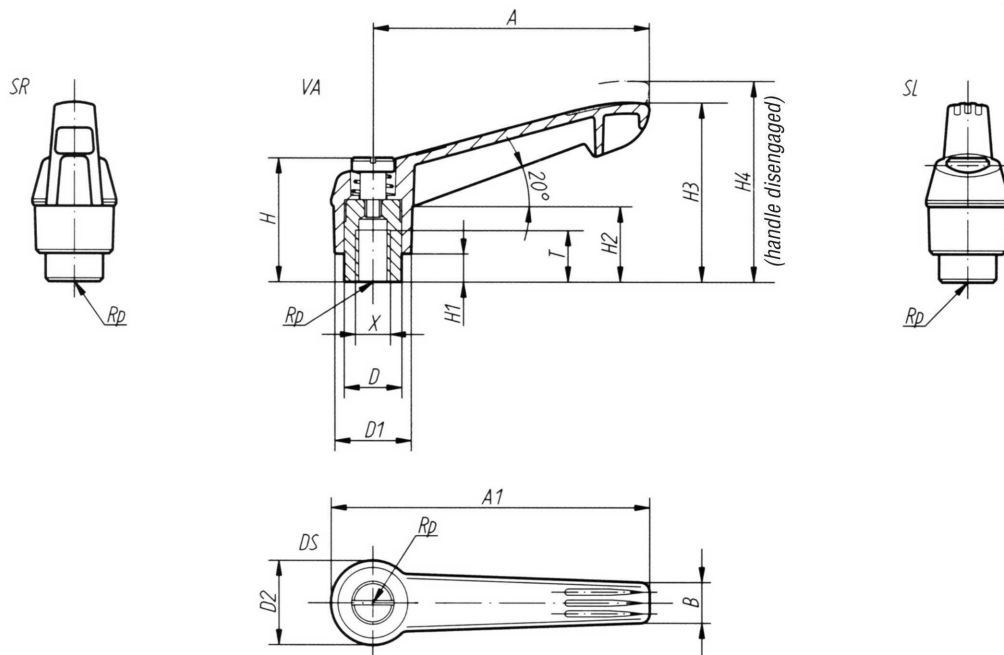
Steel parts black oxide finish

Note:

Standard colours are: anthracite grey RAL 7021, orange RAL 2004

Other colours available on request.

Other materials, surface finishes, special versions, etc. are available.



Clamp Levers with internal thread and plastic handle

Order No. anthracite grey	Order No. orange	Size	Internal thread X*	T	D	D1	D2	H	H1**	H2	H3	H4	A	A1	B	No. of teeth	Approx. weight kg
51 104000 90	51 104000 02	1	M 4	9	10	13	14,5	24	4	15	29,5	33,5	40	47	7,5	16	0,013
51 105000 90	51 105000 02	1	M 5	9	10	13	14,5	24	4	15	29,5	33,5	40	47	7,5	16	0,013
51 106000 90	51 106000 02	1	M 6	9	10	13	14,5	24	4	15	29,5	33,5	40	47	7,5	16	0,013
51 206000 90	51 206000 02	2	M 6	12	13,5	18	19,5	29	6,5	17,5	41	45	65	75	9,5	20	0,029
51 208000 90	51 208000 02	2	M 8	12	13,5	18	19,5	29	6,5	17,5	41	45	65	75	9,5	20	0,029
51 308000 90	51 308000 02	3	M 8	14	16	21,5	23	37,5	10	24	53	57	80	91,5	11	22	0,050
51 310000 90	51 310000 02	3	M 10	14	16	21,5	23	37,5	10	24	53	57	80	91,5	11	22	0,050
51 410000 90	51 410000 02	4	M 10	17	19	25,5	27,5	42,5	10	27	61	65	95	109	13	24	0,078
51 412000 90	51 412000 02	4	M 12	17	19	25,5	27,5	42,5	10	27	61	65	95	109	13	24	0,078
51 512000 90	51 512000 02	5	M 12	23	23	30	32,5	51	12	33	72,5	77,5	110	126,5	15,5	26	0,130
51 516000 90	51 516000 02	5	M 16	23	23	30	32,5	51	12	33	72,5	77,5	110	126,5	15,5	26	0,130

Sample order: Clamp Lever 5120800090

*Other internal threads available on request

**Dimension "H1" available in other lengths at extra charge

Clamp Levers with external thread and plastic handle



Material:

Handle in glass-fibre reinforced plastic with toothed wheel in die cast zinc, steel parts quality class 5.8

Surface finish:

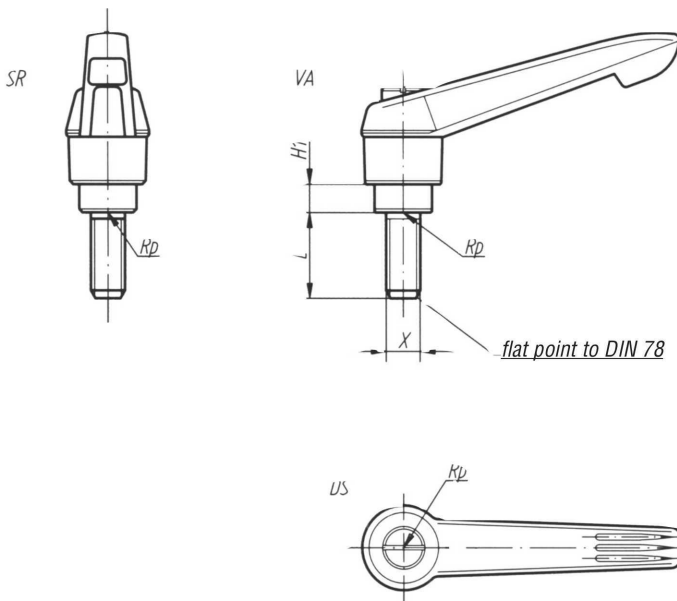
Steel parts black oxide finish

Note:

Standard colours are: anthracite grey RAL 7021, orange RAL 2004

Other colours available on request.

Other materials, surface finishes, special versions, etc. are available.



MACHINE ACCESSORIES

Clamp Levers with external thread and plastic handle

Order No. anthracite grey	Order No. orange	Size	External thread X**	H1*	L = Screw length **															
51 105*** 90	51 105*** 02	1	M 5	4	10	15	20	25	30	35	40	45	50	-	-	-	-	-		
51 106*** 90	51 106*** 02	1	M 6	4	10	15	20	25	30	35	40	45	50	-	-	-	-	-		
51 206*** 90	51 206*** 02	2	M 6	6,5	-	15	20	25	30	35	40	45	50	55	60	-	-	-		
51 208*** 90	51 208*** 02	2	M 8	6,5	-	15	20	25	30	35	40	45	50	55	60	-	-	-		
51 210*** 90	51 210*** 02	2	M 10	6,5	-	15	20	25	30	35	40	45	50	55	60	-	-	-		
51 310*** 90	51 310*** 02	3	M 10	10	-	15	20	25	30	35	40	45	50	55	60	-	-	-		
51 410*** 90	51 410*** 02	4	M 10	10	-	20	25	30	35	40	45	50	55	60	70	80	90	-		
51 412*** 90	51 412*** 02	4	M 12	10	-	20	25	30	35	40	45	50	55	60	70	80	90	-		
51 512*** 90	51 512*** 02	5	M 12	12	-	25	30	35	40	45	50	55	60	70	80	90	-	-		
51 516*** 90	51 516*** 02	5	M 16	12	-	25	30	35	40	45	50	55	60	70	80	90	-	-		

Sample order: Clamp Lever 5141205002
(Length L)

*Dimension "H1" available in other lengths at extra charge **Other external threads and screw lengths available on request
***Add the desired screw length here, e.g. 050 for L = 50 mm

Clamp Levers with internal thread and plastic handle, steel parts in stainless steel



Material:

Handle in glass-fibre reinforced plastic with toothed wheel in die cast zinc; steel parts in stainless steel, X 10 CrNiS 18 9 = 1.4305

Surface finish:

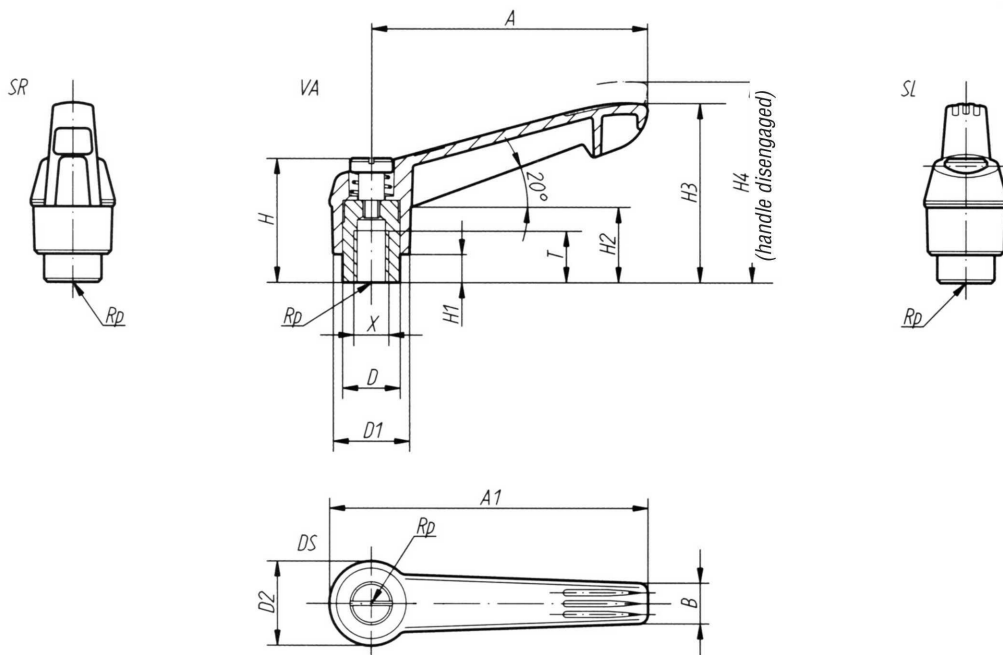
Steel parts natural finish

Note:

Standard colours are: anthracite grey RAL 7021, orange RAL 2004

Other colours available on request.

Other materials, surface finishes, special versions, etc. are available.



Clamp Levers with internal thread and plastic handle, steel parts in stainless steel

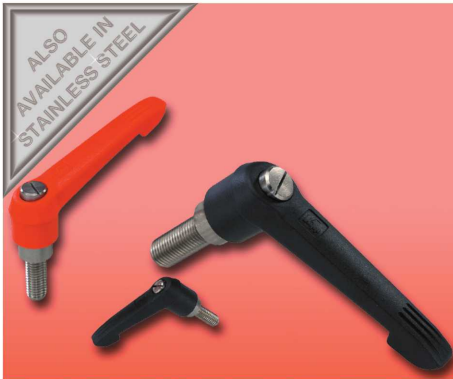
Order No. anthracite grey	Order No. orange	Size	Internal thread X*	T	D	D1	D2	H	H1**	H2	H3	H4	A	A1	B	No. of teeth	Approx. weight kg
51 105000 90 0S0	51 105000 02 0S0	1	M 5	9	10	13	14,5	24	4	15	29,5	33,5	40	47	7,5	16	0,013
51 106000 90 0S0	51 106000 02 0S0	1	M 6	9	10	13	14,5	24	4	15	29,5	33,5	40	47	7,5	16	0,013
51 206000 90 0S0	51 206000 02 0S0	2	M 6	12	13,5	18	19,5	29	6,5	17,5	41	45	65	75	9,5	20	0,029
51 208000 90 0S0	51 208000 02 0S0	2	M 8	12	13,5	18	19,5	29	6,5	17,5	41	45	65	75	9,5	20	0,029
51 308000 90 0S0	51 308000 02 0S0	3	M 8	14	16	21,5	23	37,5	10	24	53	57	80	91,5	11	22	0,050
51 310000 90 0S0	51 310000 02 0S0	3	M 10	14	16	21,5	23	37,5	10	24	53	57	80	91,5	11	22	0,050
51 410000 90 0S0	51 410000 02 0S0	4	M 10	17	19	25,5	27,5	42,5	10	27	61	65	95	109	13	24	0,078
51 412000 90 0S0	51 412000 02 0S0	4	M 12	17	19	25,5	27,5	42,5	10	27	61	65	95	109	13	24	0,078
51 512000 90 0S0	51 512000 02 0S0	5	M 12	23	23	30	32,5	51	12	33	72,5	77,5	110	126,5	15,5	26	0,130
51 516000 90 0S0	51 516000 02 0S0	5	M 16	23	23	30	32,5	51	12	33	72,5	77,5	110	126,5	15,5	26	0,130

Sample order: Clamp Lever 51310000020S0

*Other internal threads available on request

**Dimension "H1" available in other lengths at extra charge

Clamp Levers with external thread and plastic handle, steel parts in stainless steel



Material:

Handle in glass-fibre reinforced plastic with toothed wheel in die cast zinc; steel parts in stainless steel, X 10 CrNiS 18 9 = 1.4305

Surface finish:

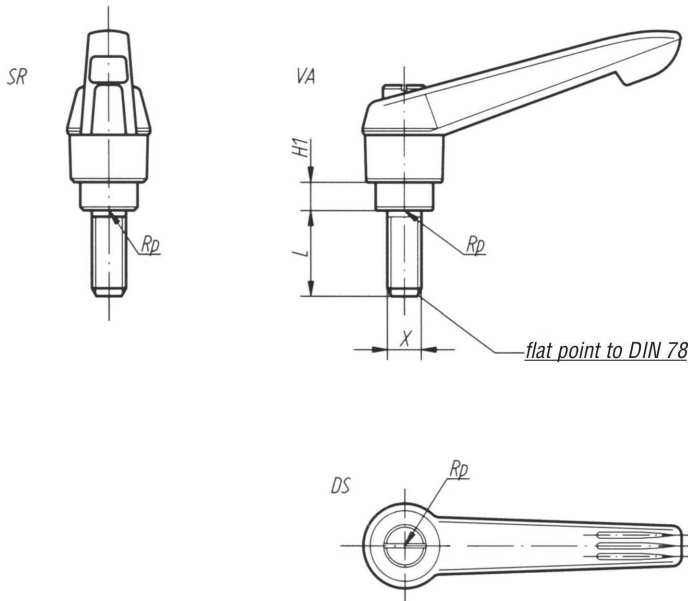
Steel parts natural finish

Note:

Standard colours are: anthracite grey RAL 7021, orange RAL 2004

Other colours available on request.

Other materials, surface finishes, special versions, etc. are available.



disengage by lifting

MACHINE ACCESSORIES

Clamp Levers with external thread and plastic handle, steel parts in stainless steel

Order No. anthracite grey	Order No. orange	Size	External thread X**	H1*	L = Screw length **								
51 105***	90 0S0 51 105***	02 OS0	1	M 5	4	-	15	20	25	-	-	-	-
51 106***	90 0S0 51 106***	02 OS0	1	M 6	4	10	15	20	25	30	40	50	-
51 206***	90 0S0 51 206***	02 OS0	2	M 6	6,5	-	15	20	25	30	40	50	60
51 208***	90 0S0 51 208***	02 OS0	2	M 8	6,5	-	15	20	25	30	40	50	60
51 210***	90 0S0 51 210***	02 OS0	2	M 10	6,5	-	-	20	25	30	40	50	60
51 310***	90 0S0 51 310***	02 OS0	3	M 10	10	-	-	20	25	30	40	50	60
51 412***	90 0S0 51 412***	02 OS0	4	M 12	10	-	-	-	25	30	40	50	60
51 516***	90 0S0 51 516***	02 OS0	5	M 16	12	-	-	-	-	30	40	50	60

Sample order: Clamp Lever 50310050020S0
(Length L)

* Dimension "H1" available in other lengths at extra charge
*** Add the desired screw length here, e.g. 050 for L = 50 mm

**Other external threads and screw lengths available on request

Tension Levers with external thread



Material:

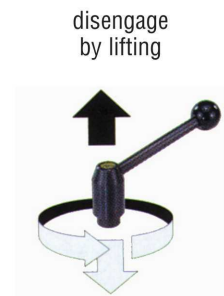
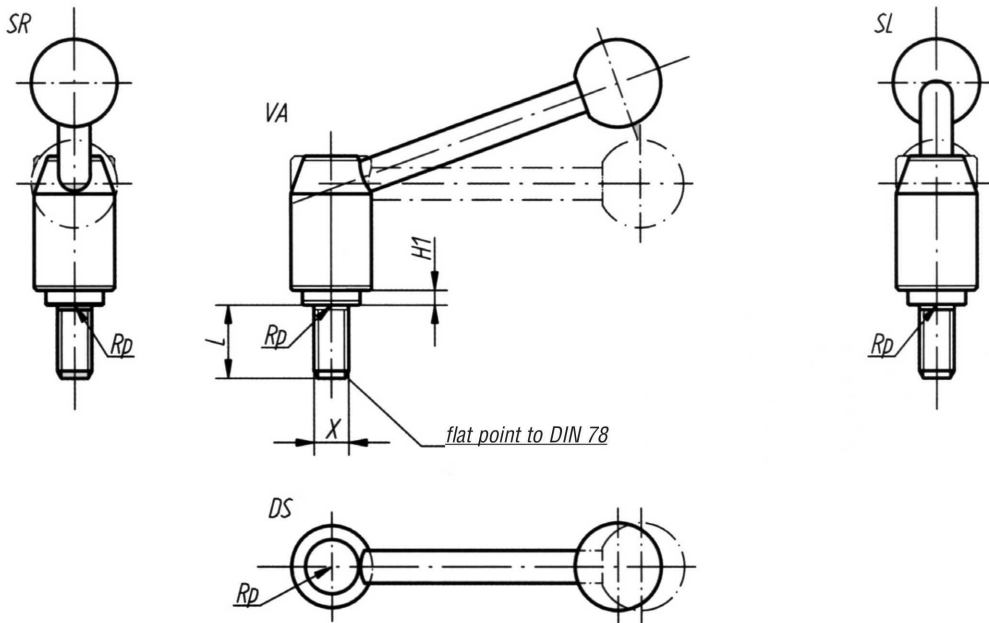
Steel parts quality class 5.8, black plastic ball knob

Surface finish:

Black oxide finish

Note:

Other materials, surface finishes, special versions, etc. are available.



disengage by lifting

Clamp Levers with external thread and plastic handle, steel parts in stainless steel

Order No. black oxide finish 0 degrees	Order No. black oxide finish 20 degrees	Size	External thread X**	H1*	L = Screw length **									
05 108*** 00	05 108*** 20	1	M 8	4	15	20	25	30	40	50	60	-	-	-
05 110*** 00	05 110*** 20	1	M 10	4	15	20	25	30	40	50	60	-	-	-
05 112*** 00	05 112*** 20	1	M 12	4	15	20	25	30	40	50	60	-	-	-
05 212*** 00	05 212*** 20	2	M 12	5	-	20	25	30	40	50	60	-	-	-
05 312*** 00	05 312*** 20	3	M 12	5	-	20	25	30	40	50	60	70	80	90
05 316*** 00	05 316*** 20	3	M 16	5	-	20	25	30	40	50	60	70	80	90
05 416*** 00	05 416*** 20	4	M 16	6	-	-	-	30	40	50	60	70	80	90
05 420*** 00	05 420*** 20	4	M 20	6	-	-	-	30	40	50	60	70	80	90
05 424*** 00	05 424*** 20	4	M 24	6	-	-	-	30	40	50	60	70	80	90

Sample order: Tension Lever 0541605000
(Length L)

* Dimension "H1" available in other lengths at extra charge
*** Add the desired screw length here, e.g. 050 for L = 50 mm

**Other external threads and screw lengths available on request

Tension Levers with internal thread



Material:

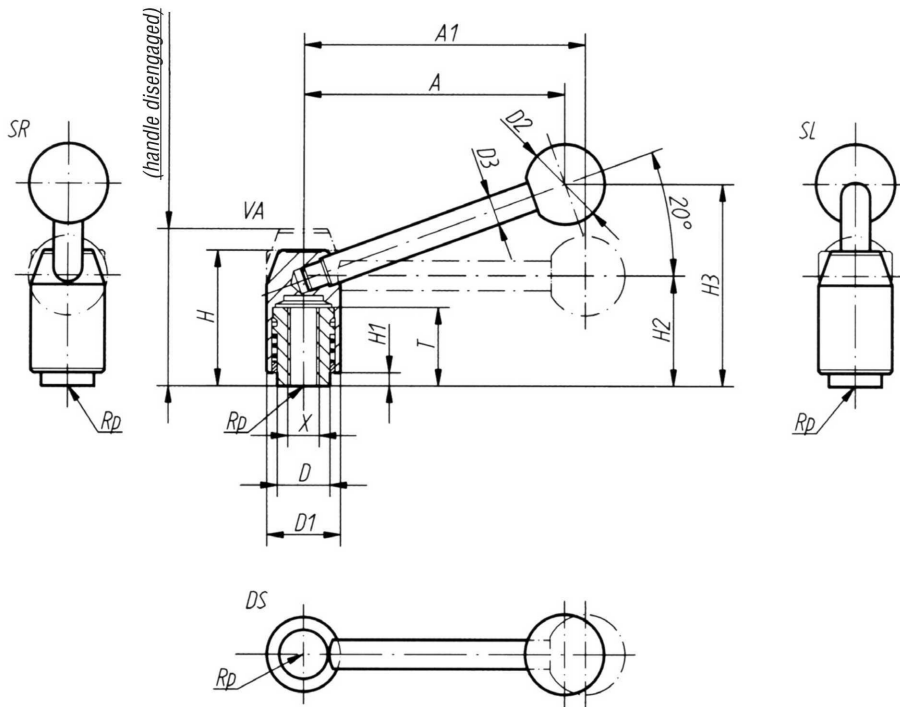
Steel parts quality class 5.8, black plastic ball knob

Surface finish:

Black oxide finish

Note:

Other materials, surface finishes, special versions, etc. are available.



MACHINE ACCESSORIES

Tension Levers with internal thread

Order No. black oxide finish 0 degrees	Order No. black oxide finish 20 degrees	Size	Internal thread X*	T	D	D1	D2	D3	H	H1**	H2	H3	H4	A**	A1**	No. of teeth	Approx. weight kg
05 108000 00	05 108000 20	1	M 8	23	17	24	25	10	44	4	36,5	64	49	81	87	28	0,170
05 110000 00	05 110000 20	1	M 10	23	17	24	25	10	44	4	36,5	64	49	81	87	28	0,170
05 210000 00	05 210000 20	2	M 10	26	20	28	30	11	51	5	41,5	76	49	98	106	30	0,260
05 212000 00	05 212000 20	2	M 12	26	20	28	30	11	51	5	41,5	76	57	98	106	30	0,260
05 312000 00	05 312000 20	3	M 12	30	24	33	32	12	57	5	46	87	64	118	128	35	0,400
05 316000 00	05 316000 20	3	M 16	30	24	33	32	12	57	5	46	87	64	118	128	35	0,400
05 416000 00	05 416000 20	4	M 16	35	30	41	37	14	67	6	55	100	75	136	147	38	0,670
05 420000 00	05 420000 20	4	M 20	35	30	41	37	14	67	6	55	100	75	136	147	38	0,670
05 424000 00	05 424000 20	4	M 24	35	30	41	37	14	67	6	55	100	75	136	147	38	1,000

Sample order: Tension Lever 0531200020

*Other internal threads available on request **Dimension "H1", "A" and "A1" available in other lengths at extra charge

Steel Clamp Levers with internal thread



Material:

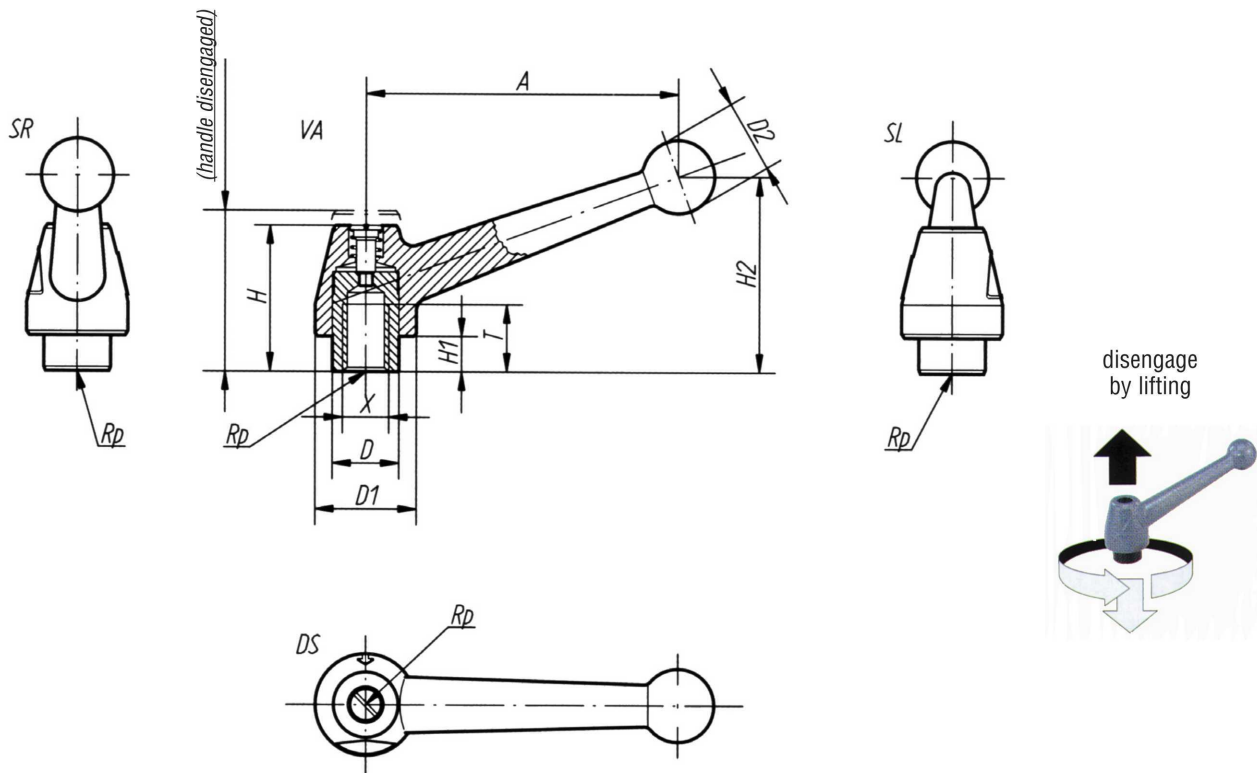
Steel handle in C 35 drop forged steel, all other steel parts quality class 5.8

Surface finish:

Handle painted silver-grey with hammertone finish, steel black oxide finish

Note:

Other materials, surface finishes, special versions, etc. are available.



Steel Clamp Levers with internal thread

Order No. silver-grey hammertone finish	Size	Internal thread X*	T	D	D1	D2	H	H1**	H2	H3	A	No. of teeth	Approx. weight kg
03 108000	1	M 8	17	19	28	20	44	12	54	49	83	24	0,230
03 110000	1	M 10	17	19	28	20	44	12	54	49	83	24	0,230
03 112000	1	M 12	17	19	28	20	44	12	54	49	83	24	0,230
03 212000	2	M 12	23	23	35	25	50	12	69	56	108	26	0,440
03 216000	2	M 16	23	23	35	25	50	12	69	56	108	26	0,440
03 316000	3	M 16	27	30	43	30	58,5	12	78	65	132	36	0,730
03 320000	3	M 20	27	30	43	30	58,5	12	78	65	132	36	0,730

Sample order: Steel Clamp Lever 03216000

*Other internal threads available on request

**Dimension "H1" available in other lengths at extra charge

Steel Clamp Levers with external thread



Material:

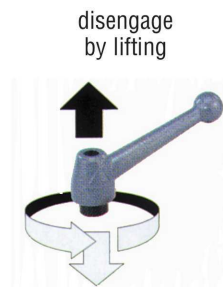
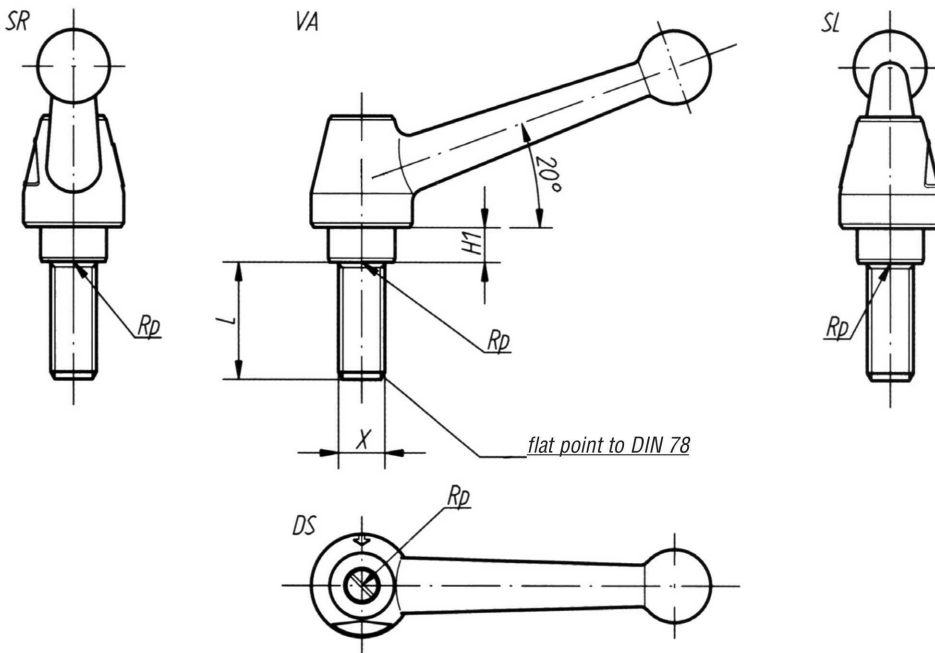
Steel handle in C 35 drop forged steel, all other steel parts quality class 5.8

Surface finish:

Handle painted silver-grey with hammertone finish, steel black oxide finish

Note:

Other materials, surface finishes, special versions, etc. are available.



MACHINE ACCESSORIES

Steel Clamp Levers with external thread

Order No. silver-grey hammertone finish	Size	External thread X**	H1*	L = Screw length **											
03 110***	1	M 10	12	20	25	30	35	40	45	50	55	60	70	80	90
03 112***	1	M 12	12	20	25	30	35	40	45	50	55	60	70	80	90
03 212***	2	M 12	12	-	25	30	35	40	45	50	55	60	70	80	90
03 216***	2	M 16	12	-	25	30	35	40	45	50	55	60	70	80	90
03 316***	3	M 16	12	-	-	30	-	40	-	50	-	60	70	80	90
03 320***	3	M 20	12	-	-	30	-	40	-	50	-	60	70	80	90

Sample order: Steel Clamp Lever 03216030
(Length L)

* Dimension "H1" available in other lengths at extra charge
*** Add the desired screw length here, e.g. 030 for L = 30 mm

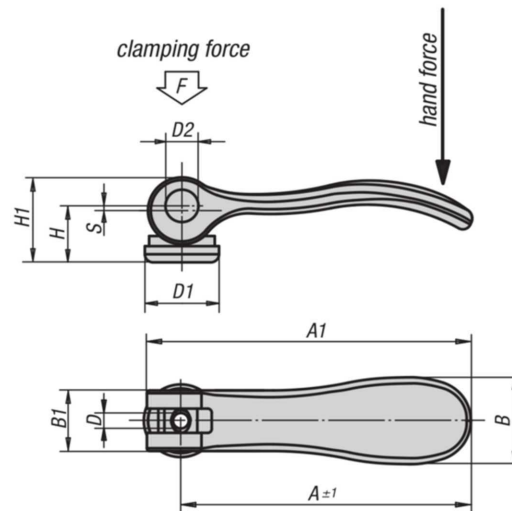
**Other external threads and screw lengths available on request

Cam levers

with internal thread and external thread, steel or stainless steel



Cam lever with internal thread



Material, surface finish:

Handle in cast aluminium EN AC-46200, black powder-coated;
 thrust washer in glass-fibre reinforced plastic PA 66 GF 35-X, black;
 hinge pin in stainless steel 1.4305, natural finish;
 threaded stud and washer in steel, quality class 5.8, blue chromated or stainless steel 1.4305, natural finish

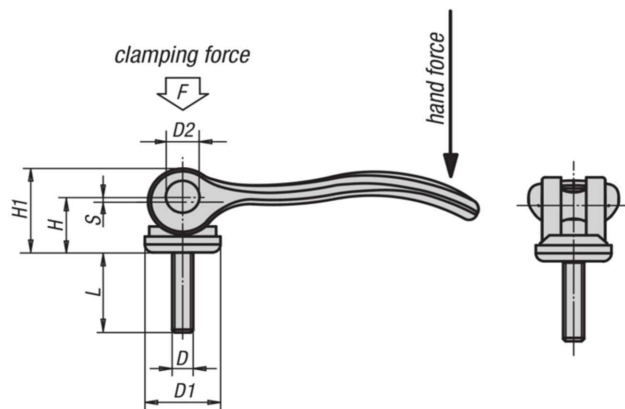
Sample order:

K0005.101105X20 (please also indicate dimension L)

Note:

Plastics are characterized by creeping under load (retardation).

Cam lever with external thread



KIPP Cam levers with internal thread

Order No. Steel	Order No. Stainless steel	Size	Internal thread D	D1	D2	B	B1	H	H1	A	A1	Clamping force F (kN)	Hand force N	Stroke S
K0005.9501103	K0005.9511103	9	M3	12	6	14,4	11,5	9	13	36,2	41,7	1,5	90	1
K0005.9501104	K0005.9511104	9	M4	12	6	14,4	11,5	9	13	36,2	41,7	1,5	90	1
K0005.0501104	K0005.0511104	0	M4	15,5	8	18	13	11,2	17	52,3	59	2,5	100	1
K0005.0501105	K0005.0511105	0	M5	15,5	8	18	13	11,2	17	52,3	59	2,5	100	1
K0005.101105	K0005.111105	1	M5	18	9	21,5	15	14,5	22	70,4	79,2	4	120	1,2
K0005.101106	K0005.111106	1	M6	18	9	21,5	15	14,5	22	70,4	79,2	4	120	1,2
K0005.201108	K0005.211108	2	M8	27	11	33,2	24	18	28,5	96	108	8	350	1,5

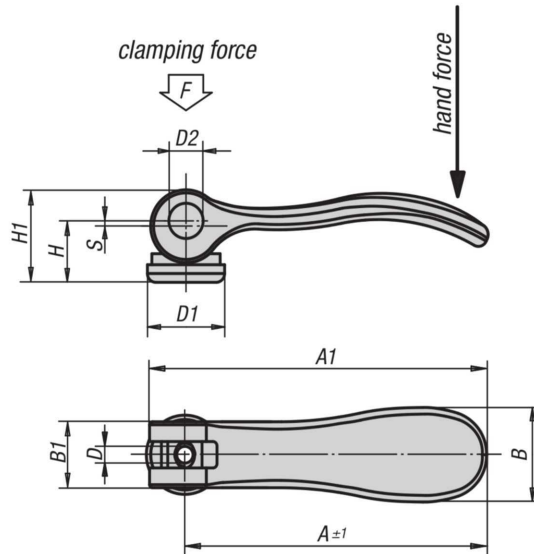
KIPP Cam levers with external thread

Order No. steel	Order No. stainless steel	Size	External thread D	Clamping force F (kN)	Hand force N	Stroke S	L = screw length
K0005.9501103X	K0005.9511103X	9	M3	1,5	90	1	10/15/30
K0005.9501104X	K0005.9511104X	9	M4	1,5	90	1	10/15/30
K0005.0501104X	K0005.0511104X	0	M4	2,5	100	1	15/20/30
K0005.0501105X	K0005.0511105X	0	M5	2,5	100	1	20/30/40/50
K0005.101105X	K0005.111105X	1	M5	4	120	1,2	20/30/40/50
K0005.101106X	K0005.111106X	1	M6	4	120	1,2	20/30/40/50
K0005.201108X	K0005.211108X	2	M8	8	350	1,5	25/30/40/50
K0005.201110X	K0005.211110X	2	M10	8	350	1,5	25/30/40/50

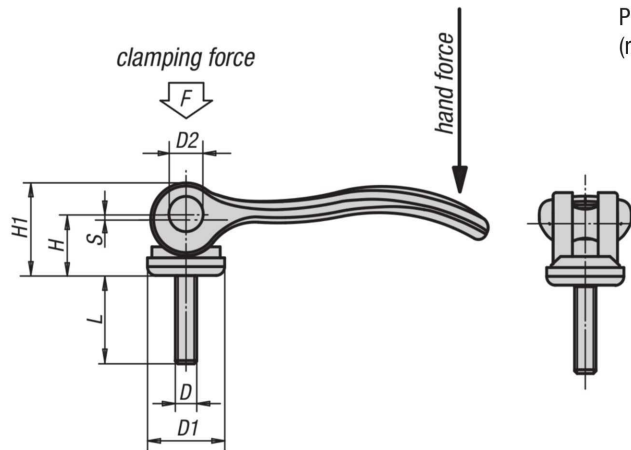
Cam levers in stainless steel

with internal thread and external thread

Cam lever with internal thread



Cam lever with external thread



Material, surface finish:

Handle 1.4308, electrolytic polished;
 thrust washer in glass-fibre reinforced plastic PA 66 GF 35-X, black;
 hinge pin, threaded stud and washer 1.4305, natural finish

Sample order:

K0645.112005X20 (please also indicate dimension L)

Note:

Plastics are characterized by creeping under load (retardation).

KIPP Cam levers in stainless steel with internal thread

Order No.	Size	Internal thread D	D1	D2	B	B1	H	H1	A	A1	Clamping force F (kN)	Hand force N	Stroke S
K0645.112005	1	M5	18	9	21,5	15	14,5	22	70,4	79,2	4	120	1,2
K0645.112006	1	M6	18	9	21,5	15	14,5	22	70,4	79,2	4	120	1,2
K0645.212008	2	M8	27	11	33,2	24	18	28,5	96	108	8	350	1,5

KIPP Cam levers in stainless steel with external thread

Order No.	Size	External thread D	Clamping force F (kN)	Hand force N	Stroke S	L = screw length
K0645.112005X	1	M5	4	120	1,2	20/30/40/50
K0645.112006X	1	M6	4	120	1,2	20/30/40/50
K0645.212008X	2	M8	8	350	1,5	25/30/40/50
K0645.212010X	2	M10	8	350	1,5	25/30/40/50



Spring Plungers with LONG-LOK thread lock

**LONG-LOK,
the most advanced
locking mechanism**

The following advantages are yours:

1. Vibration Resistant

The integrated LONG-LOK thread lock secures Spring Plungers rationally and economically. No loosening or falling out after impacts, knocks or vibrations.

2. Extremely High Loosening Torque

The resilient nylon insert is squeezed like a wedge between the thread of the Spring Plunger and the fastening component. By means of the nylon locking system, the thread backlash is shifted to one side, which in turn causes surface pressure at the thread flanks. The resulting loosening torque is higher than that achieved with most conventional, mechanical methods.

3. Secure in Every Position

The LONG-LOK thread lock neither requires initial tension nor any defined position. This is ideal for the positioning of Spring Plungers.

4. Save Assembly Time and Stocking Space

The LONG-LOK thread lock is integrated into Spring Plungers. There are no additional components. No circlips, no spring washers, no locking nuts. As a result, assembly and stocking costs are reduced considerably.

5. For Repeated Use

When using the LONG-LOK thread lock for the first time, it requires a slightly higher tightening torque. After third or fourth use, the value reached last remains nearly constant for about 20 times.

6. Problem Solver from M3 to M16

Light-weight or heavy-weight: name your requirements! We will supply you with the suitable Spring Plungers with integrated LONG-LOK thread lock.



Spring Plungers smooth surface plastic

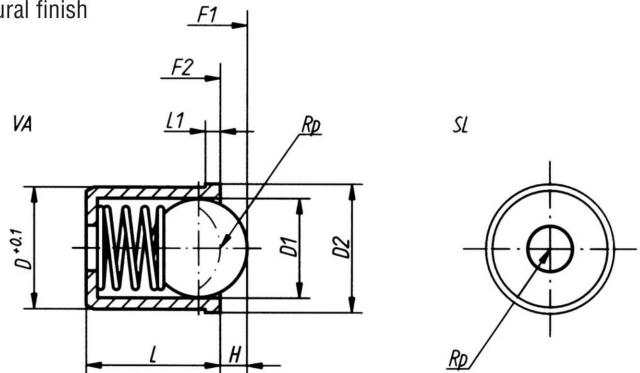


Material:

Sleeve in black thermoplastic, ball and spring in stainless steel

Surface finish:

Ball hardened, natural finish



Spring Plungers smooth surface plastic

Order No.	D ^{+0.1}	D1	D2	L	L1	H	Spring force initial press. F1 approx. N	Spring force final press. F2 approx. N	Approx. weight g
16 04010	4	3	4,6	5	1	0,7	3	7	0,17
16 05010	5	4	5,6	6	1	1	4	7	0,35
16 06010	6	5	6,5	7	1	1,5	6	12	0,66
16 08010	8	6,5	8,5	9	1	1,8	6	12	1,46

Sample order: Spring Plunger 16 05010

Spring Plungers smooth surface, steel parts in stainless steel

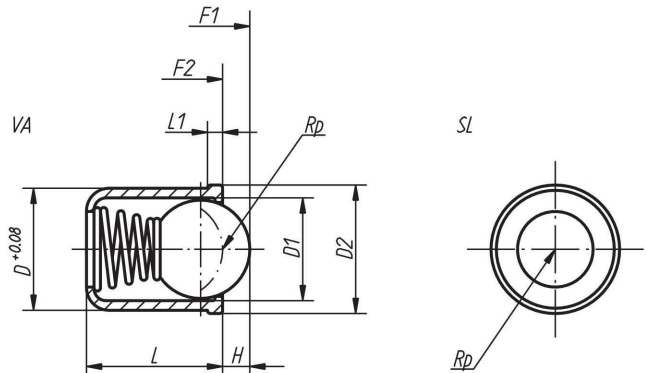


Material:

Stainless steel (also ball and spring)

Surface finish:

natural finish



Spring Plungers smooth surface, steel parts in stainless steel

Order No.	D ^{+0.08}	D1	D2	L	L1	H	Spring force initial press. F1 approx. N	Spring force final press. F2 approx. N	Approx. weight g
03070-04	4	3	4,6	5	1	0,8	3	7	0,3
03070-05	5	4	5,6	6	1	1	4	7	0,6
03070-06	6	5	6,5	7	1	1,5	6	12	1
03070-08	8	6,5	8,5	9	1	1,8	6	12	2

Sample order: Spring Plunger 03070-05

Spring Plungers with recess and pressure pin



Material:

Sleeve in steel quality class 5.8, pressure pin in steel, spring in spring steel Kl. D

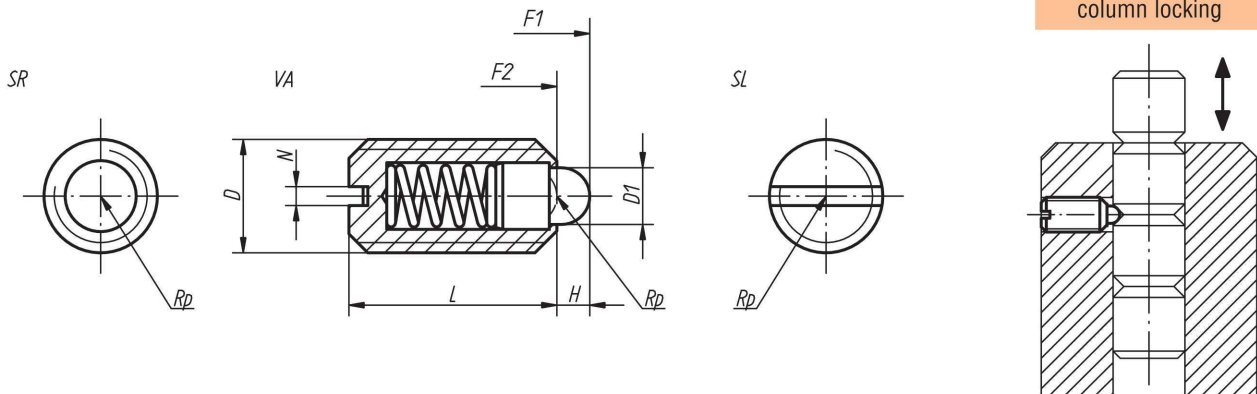
Surface finish:

Black oxide finish, pressure pin hardened

Note:

The following functional values of sizes M4 - M12 are tested optoelectronically:

- Spring force F1 and F2
- Spring travel H
- Thread D



Spring Plungers with recess and pressure pin

Order No.	D	D1	L	H	N	Spring force		Approx. weight g
						initial press. F1 approx. N	final press. F2 approx. N	
16 04005	M 4	1,8	9	1,5	0,6	6	20	0,39
16 05005	M 5	2,4	12	2	0,8	6	20	1
16 06005	M 6	2,7	14	2	1	7	20	1,7
16 08005	M 8	4	16	2	1,2	15	30	4
16 10005	M 10	4,5	19	2,5	1,6	20	35	7
16 12005	M 12	6	22	3,5	2	30	55	13
16 16005	M 16	8,5	24	4,5	2,5	45	100	24
16 20005	M 20	10	30	6,5	2,5	60	120	46,3

Sample order: Spring Plunger 16 10005

Spring Plungers with hexagon socket and pressure pin



Material:

Steel version:
sleeve in steel quality class 5.8, pressure pin in steel or plastic,
spring in spring steel Kl. D

Stainless steel version:
sleeve 1.4305, pressure pin 1.4034, spring 1.4310

Stainless steel version with strong spring force:
sleeve 1.4305, pressure pin 1.4034, spring 1.4568

Surface finish:

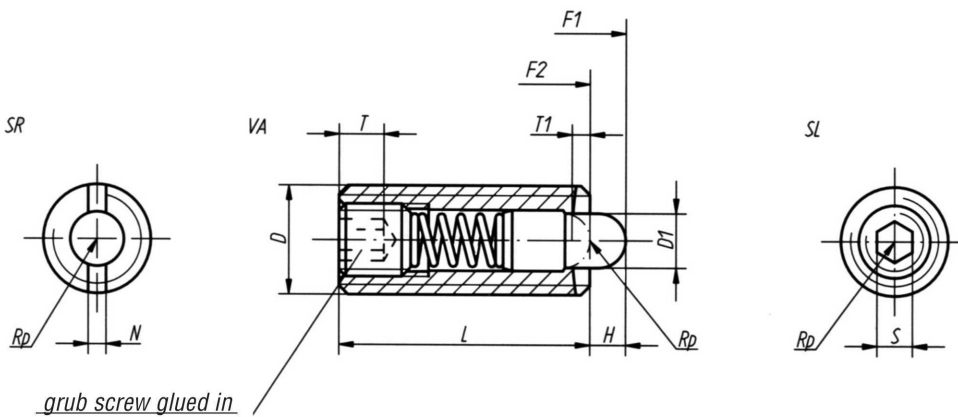
Black oxide finish, pressure pin in hardened steel or hardened stainless steel,
stainless steel natural finish



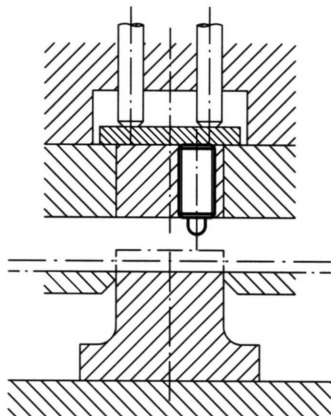
Note:

The following functional values of sizes M3 - M12 are tested optoelectronically:

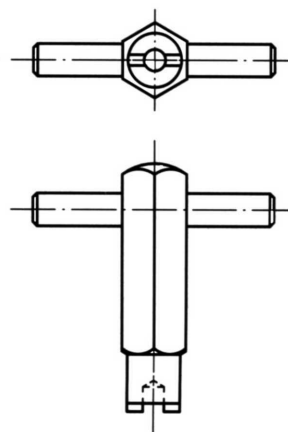
- Spring force F1 and F2
- Spring travel H
- Thread D



Spring Plunger cutaway view



assembly key



Spring Plungers with hexagon socket and pressure pin

Spring Plungers with hexagon socket and pressure pin

Order No.				D	D1	L	H	T	T1	N	S	Spring force version pressure pin in steel and plastic		Spring force version stainless steel		Approx. weight g	Assembly key	
pressure pin in hardened steel	pressure pin in plastic	stainless steel	stainless steel pressure pin in plastic									initial press. F1 approx. N	final press. F2 approx. N	initial press. F1 approx. N	final press. F2 approx. N		Order No.	Approx. weight g
16 03001	-	-	-	M 3	1	10	1,5	1,5	1	0,4	0,7	0,5	3	-	-	0,35	16 03000	11
16 04001	16 04002	16 04011	16 04012	M 4	1,5	15	1,5	2	0,6	0,6	1,3	5	16	5	16	0,8	16 04000	14
16 05001	16 05002	16 05011	16 05012	M 5	2,4	18	2,3	2	0,8	0,8	1,5	6	20	5	17	1,3	16 05000	14
16 06001	16 06002	16 06011	16 06012	M 6	2,7	20	2,5	2,5	1	1	2	7	20	6	17	2,5	16 06000	14
16 08001	16 08002	16 08011	16 08012	M 8	3,5	22	3	3	1,4	1,2	2,5	9	35	7	29	6	16 08000	33
16 10001	16 10002	16 10011	16 10012	M 10	4	22	3	3,5	1,4	1,6	3	9	35	8	31	9	16 10000	50
16 12001	16 12002	16 12011	16 12012	M 12	6	28	4	5	2	2	4	10	55	10	47	16	16 12000	70
16 16001	16 16002	16 16011	16 16012	M 16	7,5	32	5	6	2,5	2,5	5	45	100	45	100	35	16 16000	100
16 20001	-	-	-	M 20	10	40	7	8	3	2,5	6	60	120	-	-	66,3	-	-
16 24001	-	-	-	M 24	12	52	10	10	3	2,5	8	80	160	-	-	122,2	-	-

Spring Plungers with hexagon socket and pressure pin, light spring force

Order No.		D	D1	L	H	T	T1	N	S	Spring force		Approx. weight g	Assembly key	
pressure pin in hardened steel	pressure pin in plastic light spring force									initial press. F1 approx. N	final press. F2 approx. N		Order No.	Approx. weight g
16 04003	16 04004	M 4	1,5	15	1,5	2	0,6	0,6	1,3	2	7	0,8	16 04000	14
16 05003	16 05004	M 5	2,4	18	2,3	2	0,8	0,8	1,5	3	9	1,3	16 05000	14
16 06003	16 06004	M 6	2,7	20	2,5	2,5	1	1	2	3	9	2,5	16 06000	14
16 08003	16 08004	M 8	3,5	22	3	3	1,4	1,2	2,5	4	16	6	16 08000	33
16 10003	16 10004	M 10	4	22	3	3,5	1,4	1,6	3	4	16	9	16 10000	50
16 12003	16 12004	M 12	6	28	4	5	2	2	4	5	27	16	16 12000	70
16 16003	16 16004	M 16	7,5	32	5	6	2,5	2,5	5	20	45	35	16 16000	100

Spring Plungers with hexagon socket and pressure pin, strong spring force

Order No.	D	D1	L	H	T	T1	N	S	Spring force		Approx. weight g	Assembly key	
pressure pin in hardened steel strong spring force									initial press. F1 approx. N	final press. F2 approx. N		Order No.	Approx. weight g
16 05021	M 5	2,4	18	2,3	2	0,8	0,8	1,5	11	29	1,3	16 05000	14
16 06021	M 6	2,7	20	2,5	2,5	1	1	2	14	37	2,5	16 06000	14
16 08021	M 8	3,5	22	3	3	1,4	1,2	2,5	22	70	6	16 08000	33
16 10021	M 10	4	22	3	3,5	1,4	1,6	3	19	70	9	16 10000	50
16 12021	M 12	6	28	4	5	2	2	4	25	85	16	16 12000	70
16 16021	M 16	7,5	32	5	6	2,5	2,5	5	60	150	35	16 16000	100
16 20021	M 20	10	40	7	8	3	2,5	6	75	190	66,3	-	-
16 24021	M 24	12	52	10	10	3	2,5	8	95	240	122,2	-	-

Sample order: Spring Plunger 16 16002
Sample order: Assembly Key 16 12000

Spring Plungers with hexagon socket and pressure pin



LONG-LOK secured

Material:

Steel version:
sleeve in steel quality class 5.8, pressure pin in steel or plastic, spring in spring steel Kl. D

Stainless steel version:
sleeve 1.4305, pressure pin 1.4034, spring 1.4310

Stainless steel version with strong spring force:
sleeve 1.4305, pressure pin 1.4034, spring 1.4568

LONG-LOK thread lock in nylon

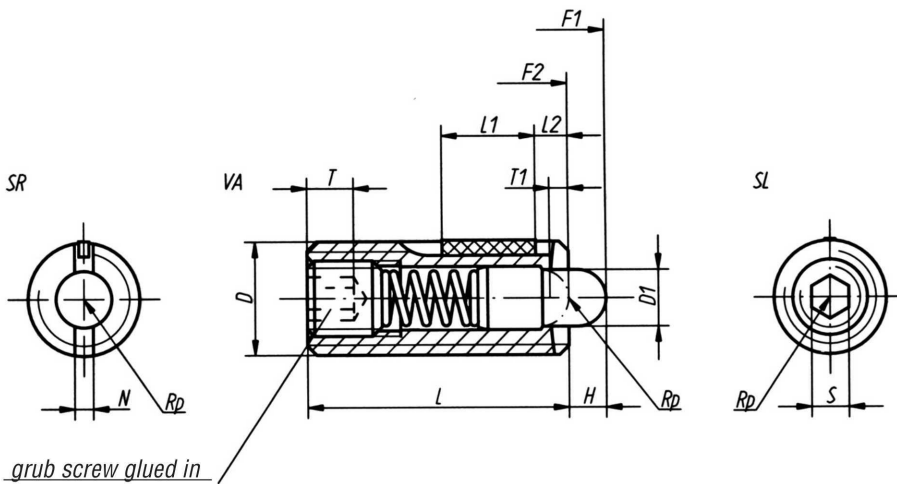
Surface finish:

Black oxide finish, pressure pin in hardened steel or hardened stainless steel, stainless steel version natural finish

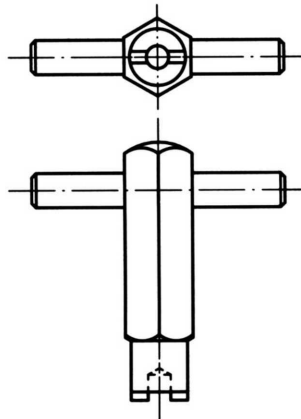
Note:

The following functional values of sizes M5 - M12 are tested optoelectronically:

- Spring force F1 and F2
- Spring travel H
- Thread D



assembly key



Spring Plungers with hexagon socket and pressure pin

Spring Plungers with hexagon socket and pressure pin, LONG-LOK secured

Order No.		D	D1	L	L1 ±0.5	L2	H	T	T1	N	S	Spring force version pressure pin in steel and plastic		Spring force version stainless steel		Tightening torque M _{torq} approx. Nm	Loosening torque M _{torq} approx. Nm	Approx. weight g	Assembly key Order No.	Approx. weight g	
pressure pin in hardened steel	pressure pin in stainless steel											initial press. F1 approx. N	final press. F2 approx. N	initial press. F1 approx. N	final press. F2 approx. N						
16 05051	16 05052	16 050061	16 05062	M 5	2,4	18	7	2,3	2	0,8	0,8	1,5	6	20	5	17	0,1	0,25	1,3	16 05000	14
16 06051	16 06052	16 060061	16 06062	M 6	2,7	20	7	2,5	2,5	1	1	2	7	20	6	17	0,25	0,45	2,5	16 06000	14
16 08051	16 08052	16 080061	16 08062	M 8	3,5	22	8	3	3	1,4	1,2	2,5	9	35	7	29	0,4	0,6	6	16 08000	33
16 10051	16 10052	16 100061	16 10062	M 10	4	22	9	3	3,5	1,4	1,6	3	9	35	8	31	0,7	0,8	9	16 10000	50
16 12051	16 12052	16 120061	16 12062	M 12	6	28	10	4	5	2	2	4	10	55	10	47	1	1,2	16	16 12000	70
16 16051	16 16052	16 160061	16 16062	M 16	7,5	32	14	5	6	2,5	2,5	5	45	100	45	100	4,2	4,3	35	16 16000	100

Spring Plungers with hexagon socket and pressure pin, light spring force, LONG-LOK secured

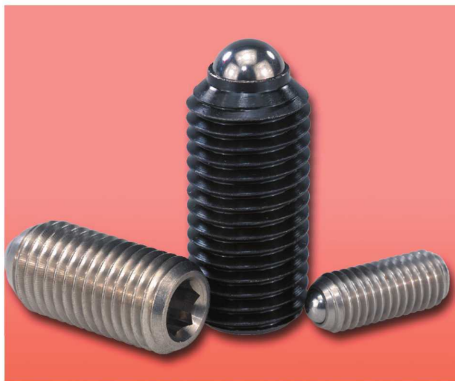
Order No.		D	D1	L	L1 ±0.5	L2	H	T	T1	N	S	Spring force		Tightening torque M _{torq} approx. Nm	Loosening torque M _{torq} approx. Nm	Approx. weight g	Assembly key Order No.	Approx. weight g
pressure pin in hardened steel	pressure pin in plastic											initial press. F1 approx. N	final press. F2 approx. N					
16 05053	16 05054	M 5	2,4	18	7	2,3	2	0,8	0,8	1,5	3	9	0,1	0,25	1,3	16 05000	14	
16 06053	16 06054	M 6	2,7	20	7	2,5	2,5	1	1	2	3	9	0,25	0,45	2,5	16 06000	14	
16 08053	16 08054	M 8	3,5	22	8	3	3	1,4	1,2	2,5	4	16	0,4	0,6	6	16 08000	33	
16 10053	16 10054	M 10	4	22	9	3	3,5	1,4	1,6	3	4	16	0,7	0,8	9	16 10000	50	
16 12053	16 12054	M 12	6	28	10	4	5	2	2	4	5	27	1	1,2	16	16 12000	70	
16 16053	16 16054	M 16	7,5	32	14	5	6	2,5	2,5	5	20	45	4,2	4,3	35	16 16000	100	

Spring Plungers with hexagon socket and pressure pin, strong spring force, LONG-LOK secured

Order No.	D	D1	L	L1 ±0.5	L2	H	T	T1	N	S	Spring force		Tightening torque M _{torq} approx. Nm	Loosening torque M _{torq} approx. Nm	Approx. weight g	Assembly key Order No.	Approx. weight g
pressure pin in hardened steel											initial press. F1 approx. N	final press. F2 approx. N					
16 05071	M 5	2,4	18	7	2,3	2	0,8	0,8	1,5	11	29	0,1	0,25	1,3	16 05000	14	
16 06071	M 6	2,7	20	7	2,5	2,5	1	1	2	14	37	0,25	0,45	2,5	16 06000	14	
16 08071	M 8	3,5	22	8	3	3	1,4	1,2	2,5	22	70	0,4	0,6	6	16 08000	33	
16 10071	M 10	4	22	9	3	3,5	1,4	1,6	3	19	70	0,7	0,8	9	16 10000	50	
16 12071	M 12	6	28	10	4	5	2	2	4	25	85	1	1,2	16	16 12000	70	
16 16071	M 16	7,5	32	14	5	6	2,5	2,5	5	60	150	4,2	4,3	35	16 16000	100	

Sample order: Spring Plunger LONG-LOK secured 16 12051
 Sample order: Assembly Key 16 12000

Spring Plungers with hexagon socket and ball



Material:

Steel version:
sleeve in steel quality class 5.8, ball in steel,
spring in spring steel Kl. D

Stainless steel version: sleeve 1.4305, ball 1.4034,
spring 1.4310

Stainless steel version with strong spring force: sleeve
1.4305,
ball 1.4034, spring 1.4568

Surface finish:

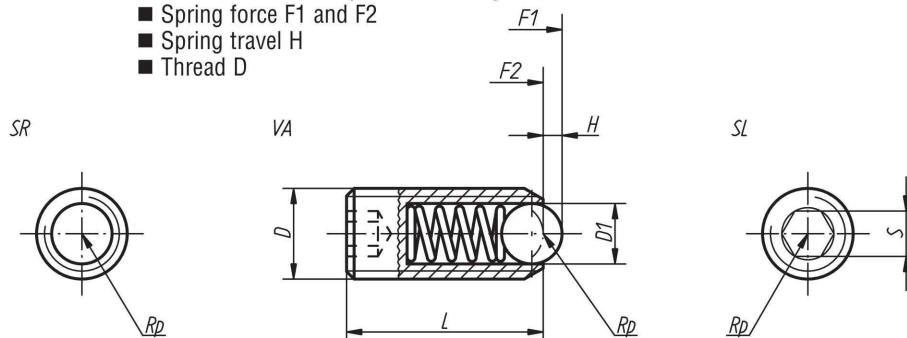
Black oxide finish, ball hardened natural finish, stainless steel version natural finish



Note:

The following functional values of sizes
M6 - M12 are tested optoelectronically:

- Spring force F1 and F2
- Spring travel H
- Thread D



Spring Plungers with hexagon socket and ball

Order No. steel	Order No. stainless steel	D	D1	L	H	S	Spring force initial press. F1 approx. N	Spring force final press. F2 approx. N	Approx. weight g
K5120 0106	K5120 0506	M 6	3,5	15	1	3	9	13	2
K5120 0108	K5120 0508	M 8	4,5	18	1,5	4	15	30	4
K5120 0110	K5120 0510	M 10	6	23	2	5	20	35	8
K5120 0112	K5120 0512	M 12	8	26	2,5	6	30	55	12
K5120 0116	K5120 0516	M 16	10	33	3,5	8	65	125	31
K5120 0120	K5120 0520	M 20	12	43	4,5	10	80	160	64
K5120 0124	K5120 0524	M 24	15	48	5,5	12	90	180	100

Spring Plungers with hexagon socket and ball, strong spring force

Order No. steel strong spring force	Order No. stainless steel strong spring force	D	D1	L	H	S	Spring force initial press. F1 approx. N	Spring force final press. F2 approx. N	Approx. weight g
K5120 2106	K5120 2506	M 6	3,5	15	1	3	28	40	2
K5120 2108	K5120 2508	M 8	4,5	18	1,5	4	47	73	4
K5120 2110	K5120 2510	M 10	6	23	2	5	66	100	8
K5120 2112	K5120 2512	M 12	8	26	2,5	6	66	120	12
K5120 2116	K5120 2516	M 16	10	33	3,5	8	90	180	31
K5120 2120	K5120 2520	M 20	12	43	4,5	10	115	240	64
K5120 2124	K5120 2524	M 24	15	48	5,5	12	130	270	100

Sample order: Spring Plunger K5120 2110

Spring Plungers with hexagon socket and ball



LONG-LOK secured

Material:

Steel version:
sleeve in steel quality class 5.8, ball in steel, spring in spring steel
Kl. D

Stainless steel version:
sleeve 1.4305, ball 1.4034, spring 1.4310,

Stainless steel version with strong spring force:
sleeve 1.4305, ball 1.4034, spring 1.4568

Surface finish:

Black oxide finish, ball hardened natural finish, stainless steel version natural finish

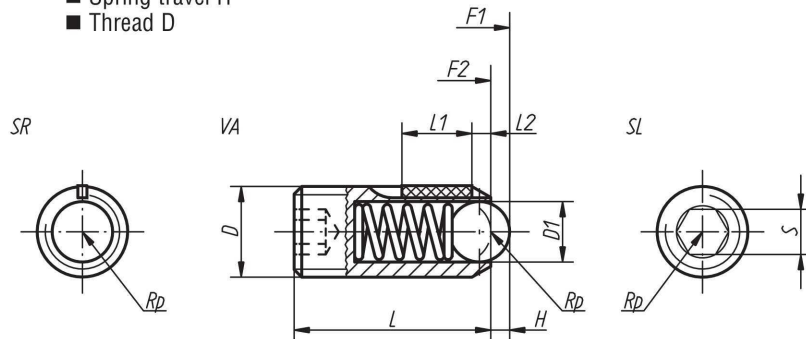


LONG-LOK thread lock in nylon

Note:

The following functional values of sizes M6 - M12 are tested optoelectronically:

- Spring force F1 and F2
- Spring travel H
- Thread D



Spring Plungers with hexagon socket and ball, LONG-LOK secured

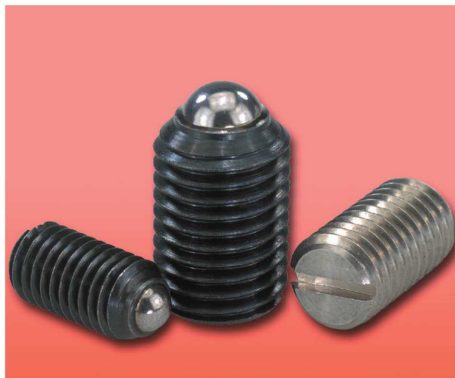
Order No. steel	Order No. stainless steel	D	D1	L	L1 ±0.5	L2	H	S	Spring force		Tightening torque M _s approx. Nm	Loosening torque M _s approx. Nm	Approx. weight g
									initial press. F1 approx. N	final press. F2 approx. N			
K5160 0106	K5160 0506	M 6	3,5	15	7	approx. two thread dials	1	3	9	13	0,25	0,45	2
K5160 0108	K5160 0508	M 8	4,5	18	8		1,5	4	15	30	0,4	0,6	4
K5160 0110	K5160 0510	M 10	6	23	9		2	5	20	35	0,7	0,8	8
K5160 0112	K5160 0512	M 12	8	26	10		2,5	6	30	55	1	1,2	12
K5160 0116	K5160 0516	M 16	10	33	14		3,5	8	65	125	4,2	4,3	31

Spring Plungers with hexagon socket and ball, strong spring force, LONG-LOK secured

Order No. steel strong spring force	Order No. stainless steel strong spring force	D	D1	L	L1 ±0.5	L2	H	S	Spring force		Tightening torque M _s approx. Nm	Loosening torque M _s approx. Nm	Approx. weight g
									initial press. F1 approx. N	final press. F2 approx. N			
K5160 2106	K5160 2506	M 6	3,5	15	7	approx. two thread dials	1	3	28	40	0,25	0,45	2
K5160 2108	K5160 2508	M 8	4,5	18	8		1,5	4	47	73	0,4	0,6	4
K5160 2110	K5160 2510	M 10	6	23	9		2	5	66	100	0,7	0,8	8
K5160 2112	K5160 2512	M 12	8	26	10		2,5	6	66	120	1	1,2	12
K5160 2116	K5160 2516	M 16	10	33	14		3,5	8	90	180	4,2	4,3	31

Sample order: Spring Plunger LONG-LOK secured K5160 0108

Spring Plungers with recess and ball



Material:

Steel version:
sleeve in steel quality class 5.8, ball in steel, spring in spring steel Kl. D

Stainless steel version:
sleeve 1.4305, ball 1.4034, spring 1.4310

Stainless steel version with strong spring force:
sleeve 1.4305, ball 1.4034, spring 1.4568



Surface finish:

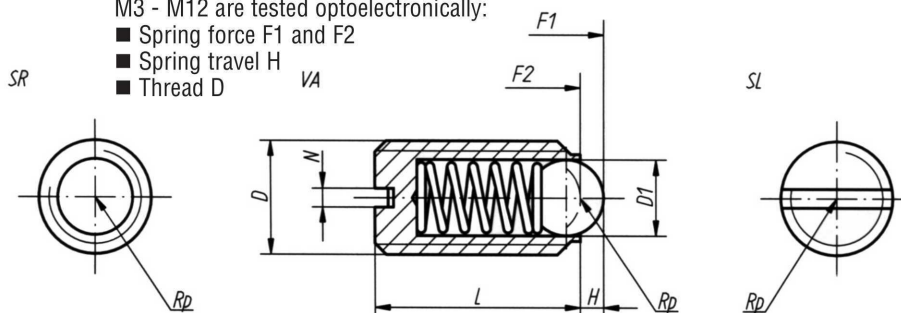
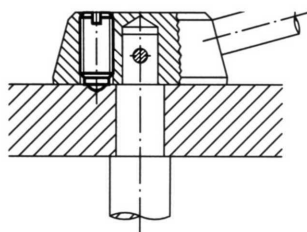
Black oxide finish, ball hardened natural finish, stainless steel version natural finish

Note:

The following functional values of sizes M3 - M12 are tested optoelectronically:

- Spring force F1 and F2
- Spring travel H
- Thread D

column locking



Spring Plungers with recess and ball

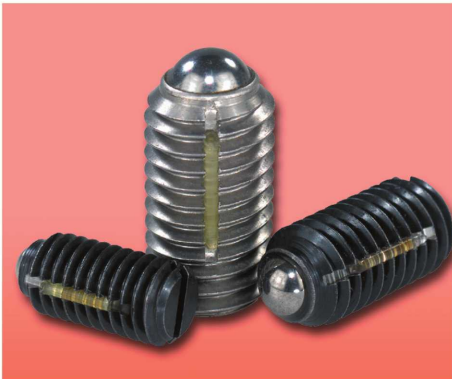
Order No. steel	Order No. stainless steel	D	D1	L	H	N	Spring force initial press. F1 approx. N	Spring force final press. F2 approx. N	Approx. weight g
16 03008	16 03009	M 3	1,5	7	0,5	0,4	1,5	3	0,2
16 04008	16 04009	M 4	2,5	9	0,8	0,6	4	10	0,6
16 05008	16 05009	M 5	3	12	0,9	0,8	6	11	0,9
16 06008	16 06009	M 6	3,5	14	1	1	9	13	1,5
16 08008	16 08009	M 8	5	16	1,5	1,2	15	30	3,5
16 10008	16 10009	M 10	6	19	2	1,6	20	35	7
16 12008	16 12009	M 12	8	22	2,5	2	30	55	10
16 16008	16 16009	M 16	10	24	3,5	2,5	65	125	24
16 20008	16 20009	M 20	12	30	4,5	2,5	80	160	44,3

Spring Plungers with recess and ball, strong spring force

Order No. steel strong spring force	Order No. stainless steel strong spring force	D	D1	L	H	N	Spring force initial press. F1 approx. N	Spring force final press. F2 approx. N	Approx. weight g
16 05028	16 05029	M 5	3	12	0,9	0,8	19	30	0,9
16 06028	16 06029	M 6	3,5	14	1	1	28	40	1,5
16 08028	16 08029	M 8	5	16	1,5	1,2	47	73	3,5
16 10028	16 10029	M 10	6	19	2	1,6	66	100	7
16 12028	16 12029	M 12	8	22	2,5	2	66	120	10
16 16028	16 16029	M 16	10	24	3,5	2,5	90	180	24
16 20028	16 20029	M 20	12	30	4,5	2,5	115	240	44,3

Sample order: Spring Plunger 16 16009

Spring Plungers with recess and ball



LONG-LOK secured

Material:

Steel version:

sleeve in steel quality class 5.8, ball in steel, spring in spring steel KI. D

Stainless steel version:

sleeve 1.4305, ball 1.4034, spring 1.4310

Stainless steel version with strong spring force:

sleeve 1.4305, ball 1.4034, spring 1.4568

LONG-LOK thread lock in nylon

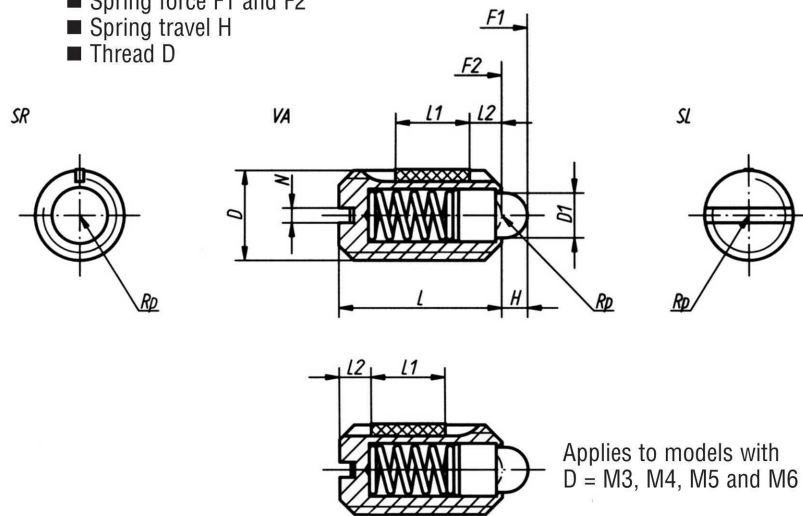
Surface finish:

Black oxide finish, ball hardened natural finish, stainless steel version natural finish

Note:

The following functional values of sizes M3 - M12 are tested optoelectronically:

- Spring force F1 and F2
- Spring travel H
- Thread D



Spring Plungers with recess and ball, LONG-LOK secured

Order No. steel	Order No. stainless steel	D	D1	L	L1 ±0.5	L2	H	N	Spring force initial press. F1 approx. N	Spring force final press. F2 approx. N	Tightening torque M _a approx. Nm	Loosening torque M _a approx. Nm	Approx. weight g
16 03058	16 03059	M 3	1,5	7	4	approx. two thread dists	0,5	0,4	1,5	3	0,1	0,25	0,2
16 04058	16 04059	M 4	2,5	9	5	approx. two thread dists	0,8	0,6	4	10	0,1	0,25	0,6
16 05058	16 05059	M 5	3	12	6	approx. two thread dists	0,9	0,8	6	11	0,1	0,25	0,9
16 06058	16 06059	M 6	3,5	14	7	approx. two thread dists	1	1	9	13	0,25	0,45	1,5
16 08058	16 08059	M 8	5	16	8	approx. two thread dists	1,5	1,2	15	30	0,4	0,6	3,5
16 10058	16 10059	M 10	6	19	9	approx. two thread dists	2	1,6	20	35	0,7	0,8	7
16 12058	16 12059	M 12	8	22	10	approx. two thread dists	2,5	2	30	55	1	1,2	10
16 16058	16 16059	M 16	10	24	14	approx. two thread dists	3,5	2,5	65	125	4,2	4,3	24

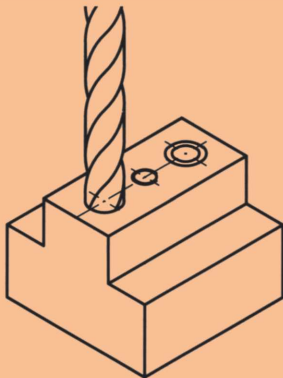
Spring Plungers with recess and ball, strong spring force, LONG-LOK secured

Order No. steel strong spring force	Order No. stainless steel strong spring force	D	D1	L	L1 ±0.5	L2	H	N	Spring force initial press. F1 approx. N	Spring force final press. F2 approx. N	Tightening torque M _a approx. Nm	Loosening torque M _a approx. Nm	Approx. weight g
16 05078	16 05079	M 5	3	12	6	approx. two thread dists	0,9	0,8	19	30	0,1	0,25	0,9
16 06078	16 06079	M 6	3,5	14	7	approx. two thread dists	1	1	28	40	0,25	0,45	1,5
16 08078	16 08079	M 8	5	16	8	approx. two thread dists	1,5	1,2	47	73	0,4	0,6	3,5
16 10078	16 10079	M 10	6	19	9	approx. two thread dists	2	1,6	66	100	0,7	0,8	7
16 12078	16 12079	M 12	8	22	10	approx. two thread dists	2,5	2	66	120	1	1,2	10
16 16078	16 16079	M 16	10	24	14	approx. two thread dists	3,5	2,5	90	180	4,2	4,3	24

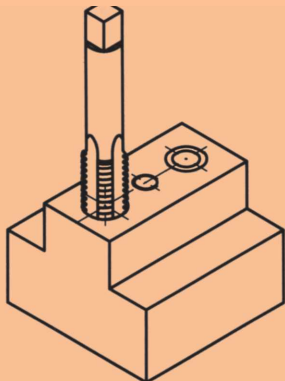
Sample order: Spring Plunger LONG-LOK secured 16 12058

Operating Instructions for Threaded Inserts

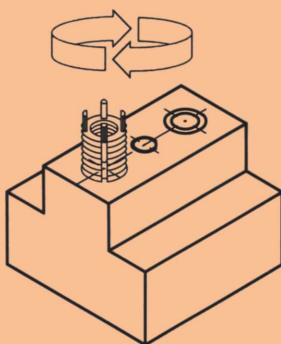
Installation Instructions



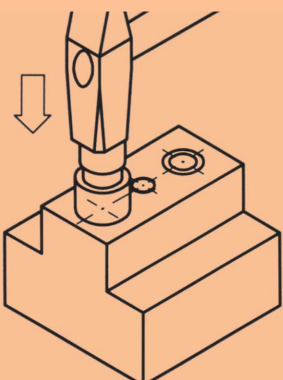
1.*
Rebore the old thread and countersink it (82°–100°)



2.*
Tap planned thread with a standard screw tap



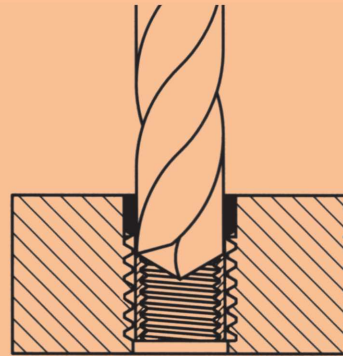
3.
Screw in the insert to just below the surface (0.3–0.7 mm)



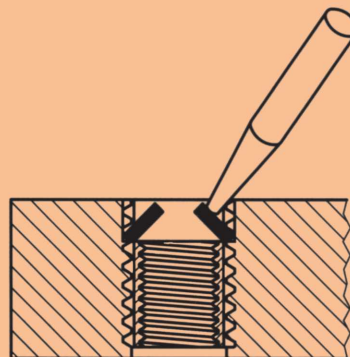
4.
Drive in the locking pins by striking the assembly tool lightly with a hammer

* For steps 1 and 2 see table under installation of threaded inserts

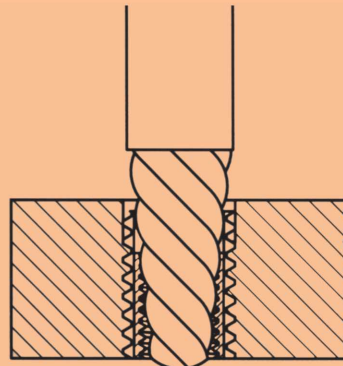
Removal Instructions



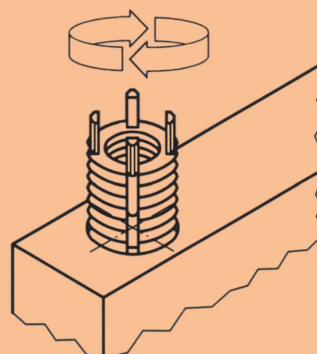
1.*
Rebore the material between the locking pins and the internal thread to the specified depth



2.
Bend the locking pins inwards and break them off



3.
Remove the old insert with a screw extractor



4.
Install a new threaded insert in the original threaded hole

* For step 1 see table under removal of threaded inserts

Threaded Inserts



Material:

Threaded insert in hardened steel or stainless steel

Surface finish:

Phosphated

Note:

Threaded Inserts allow threaded holes which have been damaged, torn out or jammed to be used again or repaired. This makes it possible to recover scrap and rejects of expensive products.

Threaded Inserts are suitable for use in various materials, including light metals and castings.

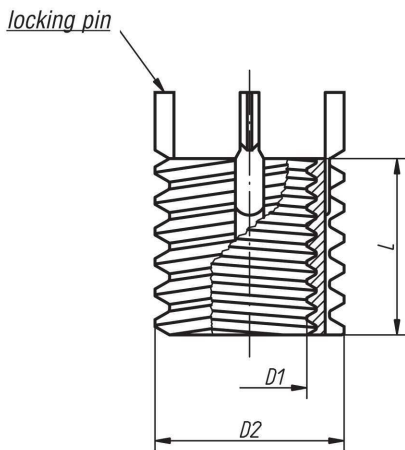
Inserts with internal threads larger than M6 are supplied with four locking pins instead of two.

Permissible deviations: the medium tolerance class applies to the threads listed, i.e. 6H for nut threads and 6g for bolt threads.

Other dimensions ± 0.25 mm.

Benefits of Threaded Inserts:

- Quick and easy installation.
- The insert is fixed with pins in order to prevent torsion due to twisting or vibrations.
- No other special tools are needed besides the installation tool.



Threaded Inserts and Assembly Tools

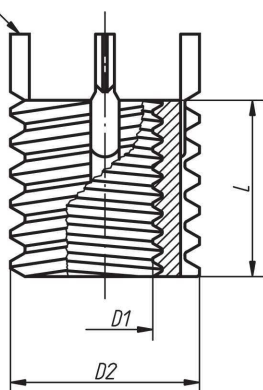
Order No. steel	Order No. stainless steel	Threaded insert			Assembly tool Order No.	Installation				Removal	
		Internal thread D1	External thread D2	Length L		Drill \emptyset	Countersunk $\emptyset +0.25 / 0$	Screw tap	Min. thread depth	Drill \emptyset	Drilling depth
07660-05	07660-105	M 5	M 8	8	07660-805	6,9	8,3	M 8	9,5	5,5	4
07660-06	07660-106	M 6	M 10 x 1,25	10	07660-806	8,8	10,3	M 10 x 1,25	11,5	7,5	4,8
07660-08	07660-108	M 8	M 12 x 1,25	12	07660-808	10,8	12,3	M 12 x 1,25	13,5	9,5	4,8
07660-08 x 1	07660-108 x 1	M 8 x 1	M 12 x 1,25	12	07660-808	10,8	12,3	M 12 x 1,25	13,5	9,5	4,8
07660-10	07660-110	M 10	M 14 x 1,5	14	07660-810	12,8	14,3	M 14 x 1,5	15,5	11,5	4,8
07660-10 x 125	07660-110 x 125	M 10 x 1,25	M 14 x 1,5	14	07660-810	12,8	14,3	M 14 x 1,5	15,5	11,5	4,8
07660-12	07660-112	M 12	M 16 x 1,5	16	07660-812	14,8	16,3	M 16 x 1,5	17,5	13,5	4,8
07660-12 x 125	07660-112 x 125	M 12 x 1,25	M 16 x 1,5	16	07660-812	14,8	16,3	M 16 x 1,5	17,5	13,5	4,8

Sample order: Threaded Insert 07660-12 / KIPP Assembly Tool 07660-812

Reinforced Threaded Inserts



locking pin



Material:

Threaded insert in hardened steel or stainless steel

Surface finish:

Phosphated

Note:

Reinforced Threaded Inserts allow threaded holes which have been damaged, torn out or jammed to be used again or repaired. This makes it possible to recover scrap and rejects of expensive products.

Reinforced Threaded Inserts are suitable for use in various materials, including light metals and castings.

Inserts with internal threads larger than M6 are supplied with four locking pins instead of two.

Permissible deviations: the medium tolerance class applies to the threads listed, i.e. 6H for nut threads and 6g for bolt threads.

Other dimensions ± 0.25 mm.

Benefits of Reinforced Threaded Inserts:

- Quick and easy installation.
- The insert is fixed with pins in order to prevent torsion due to twisting or vibrations.
- No other special tools are needed besides the installation tool.

Reinforced Threaded Inserts and Assembly Tools

Order No. steel	Order No. stainless steel	Threaded insert			Assembly tool		Installation			Removal	
		Internal thread D1	External thread D2	Length L	Order No.	Drill \emptyset	Countersun $k\emptyset +0.25_0$	Screw tap	Min. thread depth	Drill \emptyset	Drilling depth
07661-04	07661-104	M 4	M 8	8	07661-804	6,9	8,3	M 8	9,5	5,5	4
07661-05	07661-105	M 5	M 10 x 1,25	10	07661-805	8,8	10,3	M 10 x 1,25	12,5	7,5	4,8
07661-06	07661-106	M 6	M 12 x 1,25	12	07661-806	10,8	12,3	M 12 x 1,25	14,5	9,5	4,8
07661-08	07661-108	M 8	M 14 x 1,5	14	07661-808	12,8	14,3	M 14 x 1,5	16,5	11,5	4,8
07661-08 x 1	07661-108 x 1	M 8 x 1	M 14 x 1,5	14	07661-808	12,8	14,3	M 14 x 1,5	16,5	11,5	4,8
07661-10	07661-110	M 10	M 16 x 1,5	16	07661-810	14,8	16,3	M 16 x 1,5	18,5	13,5	4,8
07661-10 x 125	07661-110 x 125	M 10 x 1,25	M 16 x 1,5	16	07661-810	14,8	16,3	M 16 x 1,5	18,5	13,5	4,8
07661-12	07661-112	M 12	M 18 x 1,5	18	07661-812	16,8	18,3	M 18 x 1,5	20,5	15,5	4,8
07661-12 x 125	07661-112 x 125	M 12 x 1,25	M 18 x 1,5	18	07661-812	16,8	18,3	M 18 x 1,5	20,5	15,5	4,8
07661-14	07661-114	M 14	M 20 x 1,5	20	07661-814	18,8	20,3	M 20 x 1,5	22,5	17,5	4,8
07661-14 x 15	07661-114 x 15	M 14 x 1,5	M 20 x 1,5	20	07661-814	18,8	20,3	M 20 x 1,5	22,5	17,5	4,8
07661-16	07661-116	M 16	M 22 x 1,5	22	07661-816	20,7	22,3	M 22 x 1,5	24,5	17,8	6,4
07661-16 x 15	07661-116 x 15	M 16 x 1,5	M 22 x 1,5	22	07661-816	20,7	22,3	M 22 x 1,5	24,5	17,8	6,4
07661-18 x 15	07661-118 x 15	M 18 x 1,5	M 24 x 1,5	24	07661-818	22,5	24,3	M 24 x 1,5	26,5	19,8	6,4
07661-20	07661-120	M 20	M 30 x 2	30	07661-820	28	30,3	M 30 x 2	34,5	25,8	6,4
07661-20 x 15	07661-120 x 15	M 20 x 1,5	M 30 x 2	30	07661-820	28	30,3	M 30 x 2	34,5	25,8	6,4
07661-22 x 15	07661-122 x 15	M 22 x 1,5	M 32 x 2	32	07661-822	30	32,3	M 32 x 2	36,5	27,8	6,4
07661-24	07661-124	M 24	M 33 x 2	33	07661-824	31	33,3	M 33 x 2	37,5	28,8	6,4
07661-24 x 2	07661-124 x 2	M 24 x 2	M 33 x 2	33	07661-824	31	33,3	M 33 x 2	37,5	28,8	6,4

Sample order: Reinforced Threaded Insert 07661-12 / KIPP Assembly Tool 07661-812

Solid Body Threaded Inserts



Material:

Threaded insert in hardened steel

Surface finish:

Phosphated

Note:

Solid Body Threaded Inserts allow threaded holes which have been damaged, torn out or jammed to be used again or repaired. This makes it possible to recover scrap and rejects of expensive products.

Solid Body Threaded Inserts are suitable for use in various materials, including light metals and castings.

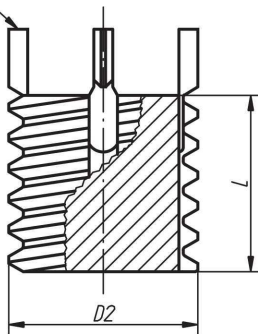
Permissible deviations: the medium tolerance class applies to the threads listed, i.e. 6g for bolt threads.

Other dimensions ± 0.25 mm.

Benefits of Solid Body Threaded Inserts:

- Quick and easy installation.
- The insert is fixed with pins in order to prevent torsion due to twisting or vibrations.
- No other special tools are needed besides the installation tool.

locking pin



Solid Body Threaded Inserts and Assembly Tools

Order No.	Threaded inserts		Assembly tool Order No.	Installation			Removal		
	External thread D2	Length L		Drill Ø	Countersun kØ +0.25 0	Screw tap	Min. thread depth	Drill Ø	Drilling depth
07662-08	M 8	8	07662-808	6,9	8,3	M 8	9,5	5,5	4
07662-10 x 125	M 10 x 1,25	10	07662-810	8,8	10,3	M 10 x 1,25	12,5	7,5	4,8
07662-12 x 125	M 12 x 1,25	12	07662-812	10,8	12,3	M 12 x 1,25	14,5	9,5	4,8
07662-14 x 15	M 14 x 1,5	14	07662-814	12,8	14,3	M 14 x 1,5	16,5	11,5	4,8
07662-16 x 15	M 16 x 1,5	16	07662-816	14,8	16,3	M 16 x 1,5	18,5	13,5	4,8
07662-18 x 15	M 18 x 1,5	18	07662-818	16,8	18,3	M 18 x 1,5	20,5	15,5	4,8
07662-20 x 15	M 20 x 1,5	20	07662-820	18,8	20,3	M 20 x 1,5	22,5	17,5	4,8
07662-22 x 15	M 22 x 1,5	22	07662-822	20,7	22,3	M 22 x 1,5	24,5	17,8	6,4
07662-24 x 15	M 24 x 1,5	24	07662-824	22,5	24,3	M 24 x 1,5	26,5	19,8	6,4
07662-30 x 2	M 30 x 2	30	07662-830	28	30,3	M 30 x 2	34,5	25,8	6,4
07662-32 x 2	M 32 x 2	32	07662-832	30	32,3	M 32 x 2	36,5	27,8	6,4
07662-33 x 2	M 33 x 2	33	07662-833	31	33,3	M 33 x 2	37,5	28,8	6,4

Sample order: Solid Body Threaded Insert 07662-10 x 125 / KIPP Assembly Tool 07662-810

Repair Kit



Material:

Threaded insert in hardened steel

Surface finish:

Phosphated

Note:

The Repair Kit allows threaded holes which have been damaged, torn out or jammed to be used again or repaired. This makes it possible to recover scrap and rejects of expensive products.

Threaded Inserts are suitable for use in various materials, including light metals and castings.

Inserts with internal threads larger than M6 are supplied with four locking pins instead of two.

Permissible deviations: the medium tolerance class applies to the threads listed, i.e. 6H for nut threads and 6g for bolt threads.

Other dimensions ± 0.25 mm.

Benefits of Threaded Inserts:

- Quick and easy installation.
- The insert is fixed with pins in order to prevent torsion due to twisting or vibrations.
- No other special tools are needed besides the installation tool.

Repair Kit

Order No.	Threaded inserts supplied		Length of inserts	Number of inserts	Number of fitting tools	Order No. threaded insert
	Internal threads	External threads				
	M 5	M 8	8	8	1	07660-05
	M 6	M 10 x 1,25	10	8	1	07660-06
	M 8	M 12 x 1,25	12	6	1	07660-08
07666-01	M 8 x 1	M 12 x 1,25	12	6	1	07660-08 x 1
	M 10	M 14 x 1,5	14	4	1	07660-10
	M 10 x 1,25	M 14 x 1,5	14	4	1	07660-10 x 125
	M 12	M 16 x 1,5	16	3	1	07660-12
	M 12 x 1,25	M 16 x 1,5	16	3	1	07660-12 x 125

Sample order: Repair Kit 07666-01

Locking Bolts



Material:

Steel version: quality class 5.8, stainless steel version: threaded sleeve X 10 CrNiS 18 9 = 1.4305, locking pin X 46 Cr 13 = 1.4034, mushroom knob in black thermoplastic

Surface finish:

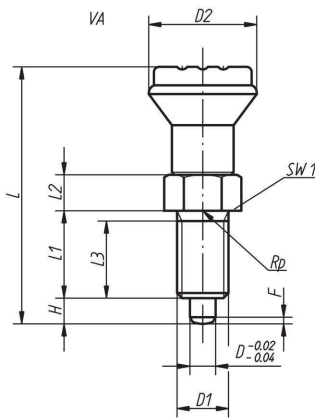
Black oxide finish, locking pin hardened and ground, stainless steel version natural finish

Note:

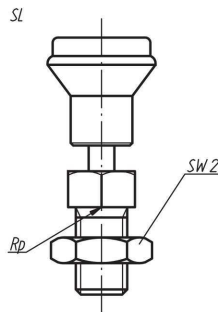
Locking Bolts are used to prevent any change in locking position due to lateral forces. A new locking position can only be set after the bolt has been manually disengaged. Form C or D is recommended for applications in which gradual disengagement of the locking bolt is desired, without any relocking of the locking pin.

Other threads and materials, surface finishes, special versions, etc. are available.

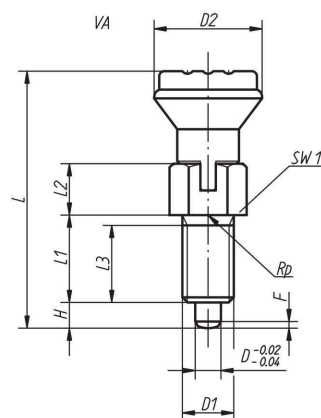
Form A
without locking slot
without locking nut



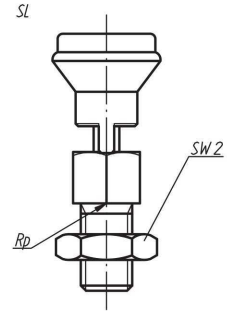
Form B
without locking slot
with locking nut



Form C
with locking slot
without locking nut



Form D
with locking slot
with locking nut



Locking Bolts

Order No. Form A	Order No. Form B	Order No. Form C	Order No. Form D	Size	D	D1	D2	L	L1	L2 Form A+B	L3 Form C+D	H	SW1	SW2	F x 30°	Spring force initial press. final press. F1 ca.N F2 ca.N		
45 105 A	45 105 B	45 105 C	45 105 D	1	5	M 10x1	21	50	17	7	10	15	5	13	17	1,3	5	12
45 206 A	45 206 B	45 206 C	45 206 D	2	6	M 12x1,5	25	59	20	8	11	17	6	14	19	1,8	6	14
45 308 A	45 308 B	45 308 C	45 308 D	3	8	M 16x1,5	33	77	26	10	13	23	8	19	24	2,3	15	35
45 410 A	45 410 B	45 410 C	45 410 D	4	10	M 20x1,5	33	83	28	12	15	25	10	22	30	2,8	20	40

Locking Bolts in stainless steel

Order No. Form A	Order No. Form B	Order No. Form C	Order No. Form D	Size	D	D1	D2	L	L1	L2 Form A+B	L3 Form C+D	H	SW1	SW2	F x 30°	Spring force initial press. final press. F1 ca.N F2 ca.N		
45 105 AN	45 105 BN	45 105 CN	45 105 DN	1	5	M 10x1	21	50	17	7	10	15	5	13	17	1,3	5	12
45 206 AN	45 206 BN	45 206 CN	45 206 DN	2	6	M 12x1,5	25	59	20	8	11	17	6	14	19	1,8	6	14
45 308 AN	45 308 BN	45 308 CN	45 308 DN	3	8	M 16x1,5	33	77	26	10	13	23	8	19	24	2,3	15	35
45 410 AN	45 410 BN	45 410 CN	45 410 DN	4	10	M 20x1,5	33	83	28	12	15	25	10	22	30	2,8	20	40

Sample order: KIPP Locking Bolt 45 206 DN

Locking Bolts



Material:

Steel version: quality class 5.8, stainless steel version: threaded sleeve X 10 CrNiS 18 9 = 1.4305, locking pin X46 Cr 13 = 1.4034

Surface finish:

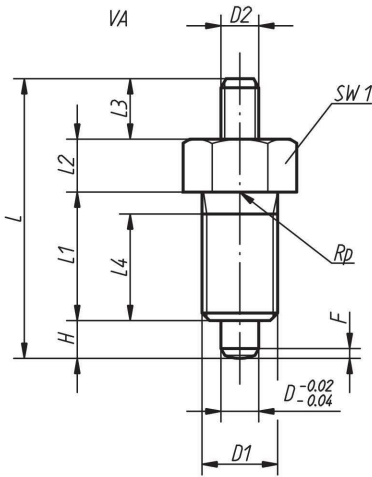
Black oxide finish, locking pin hardened and ground, stainless steel version natural finish

Note:

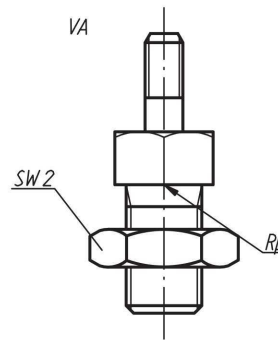
Locking Bolts are used to prevent any change in locking position due to lateral forces. A new locking position can only be set after the bolt has been manually disengaged.

Special grips can be fitted on the projecting threaded pins. These pins are also suitable for actuation of the locking bolt, for example automatically (programme-controlled) with the aid of a pneumatic cylinder or actuation by remote control with bowden cables.

Other threads and materials, surface finishes, special versions, etc. are available.



Form E with threaded pin without locking nut



Form F with threaded pin with locking nut

Locking Bolts

Order No. Form E	Order No. Form F	Size	D	D1	D2	L	L1	L2	L3	L4	H	SW1	SW2	F x 30°	Spring force initial press. F1 ca. N	Spring force final press. F2 ca. N
45 105 E	45 105 F	1	5	M 10x1	M 5	37	17	7	8	15	5	13	17	1,3	5	12
45 206 E	45 206 F	2	6	M 12x1,5	M 6	43	20	8	9	17	6	14	19	1,8	6	14
45 308 E	45 308 F	3	8	M 16x1,5	M 8	56	26	10	12	23	8	19	24	2,3	15	35
45 410 E	45 410 F	4	10	M 20x1,5	M 10	62	28	12	12	25	10	22	30	2,8	20	40

Locking Bolts in stainless steel

STAINLESS STEEL OPTION

Order No. Form E	Order No. Form F	Size	D	D1	D2	L	L1	L2	L3	L4	H	SW1	SW2	F x 30°	Spring force initial press. F1 ca. N	Spring force final press. F2 ca. N
45 105 EN	45 105 FN	1	5	M 10x1	M 5	37	17	7	8	15	5	13	17	1,3	5	12
45 206 EN	45 206 FN	2	6	M 12x1,5	M 6	43	20	8	9	17	6	14	19	1,8	6	14
45 308 EN	45 308 FN	3	8	M 16x1,5	M 8	56	26	10	12	23	8	19	24	2,3	15	35
45 410 EN	45 410 FN	4	10	M 20x1,5	M 10	62	28	12	12	25	10	22	30	2,8	20	40

Sample order: Locking Bolt 45 308 FN

Locking Bolts without collar



Material:

Steel version: quality class 5.8, stainless steel version: threaded sleeve X 10 CrNiS 18 9 = 1.4305, locking pin X 46 Cr 13 = 1.4034, mushroom knob in black thermoplastic

Surface finish:

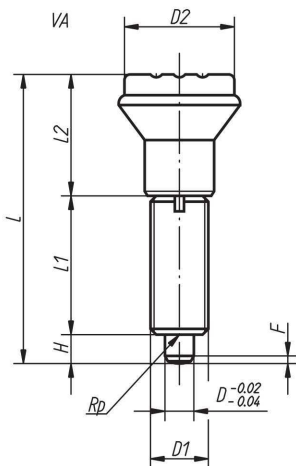
Black oxide finish, locking pin hardened and ground, stainless steel version natural finish

Note:

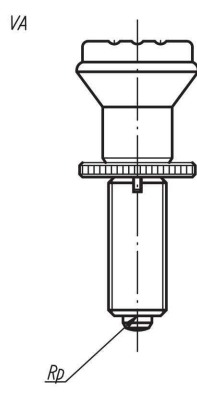
Locking Bolts are used to prevent any change in locking position due to lateral forces. A new locking position can only be set after the bolt has been manually disengaged. In order to screw in the locking bolts, a screw-in washer can be supplied. The washer is slid beneath the disengaged mushroom knob so that the follower pins engage in the slot.

Other threads and materials, surface finishes, special versions, etc. are available.

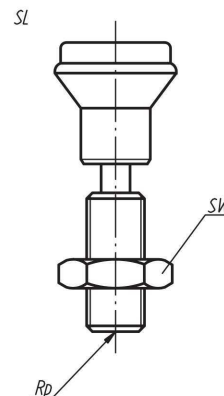
Form G without locking nut



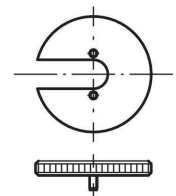
locking bolt with screw-in washer



Form H with locking nut



screw-in washer



Locking Bolts without collar

Order No. Form G	Order No. Form H	Size	D	D1	D2	L	L1	L2	H	SW	F x 30°	Spring force initial press. F1 ca. N	final press. F2 ca. N	Order No. screw-in washer
45 105 G	45 105 H	1	5	M 10 x 1	21	50	24	21	5	17	1,3	5	12	45 105 Z
45 206 G	45 206 H	2	6	M 12 x 1,5	25	59	28	25	6	19	1,8	6	14	45 206 Z
45 308 G	45 308 H	3	8	M 16 x 1,5	33	77	36	33	8	24	2,3	15	35	45 308 Z
45 410 G	45 410 H	4	10	M 20 x 1,5	33	83	40	33	10	30	2,8	20	40	45 410 Z

Locking Bolts without collar in stainless steel

STAINLESS
STEEL
OPTION

Order No. Form G	Order No. Form H	Size	D	D1	D2	L	L1	L2	H	SW	F x 30°	Spring force initial press. F1 ca. N	final press. F2 ca. N	Order No. screw-in washer
45 105 GN	45 105 HN	1	5	M 10 x 1	21	50	24	21	5	17	1,3	5	12	45 105 Z
45 206 GN	45 206 HN	2	6	M 12 x 1,5	25	59	28	25	6	19	1,8	6	14	45 206 Z
45 308 GN	45 308 HN	3	8	M 16 x 1,5	33	77	36	33	8	24	2,3	15	35	45 308 Z
45 410 GN	45 410 HN	4	10	M 20 x 1,5	33	83	40	33	10	30	2,8	20	40	45 410 Z

Sample order: Locking Bolt without collar 45206HN

Locking Bolts without collar



Material:

Steel version: quality class 5.8, stainless steel version: threaded sleeve X 10 CrNiS 18 9 = 1.4305, locking pin X 46 Cr 13 = 1.4034

Surface finish:

Black oxide finish, locking pin hardened and ground, stainless steel version natural finish

Note:

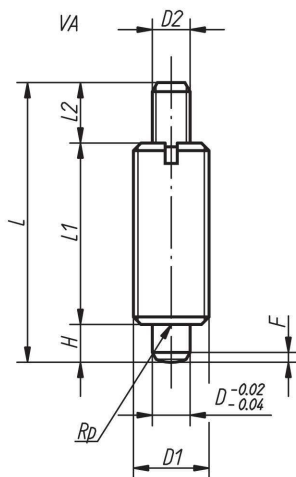
Locking Bolts are used to prevent any change in locking position due to lateral forces. A new locking position can only be set after the bolt has been manually disengaged.

Special grips can be fitted on projecting threaded pins. These pins are also suitable for actuation, for example automatically (programme-controlled) with the aid of a pneumatic cylinder or actuation by remote control with bowden cables.

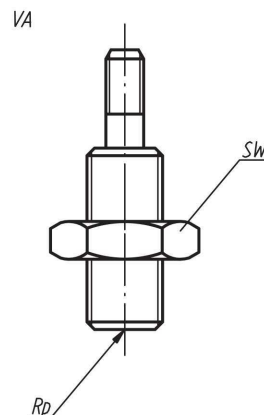
In order to screw in the locking bolts, a screw-in washer can be supplied. The washer is slid beneath the disengaged mushroom knob so that the follower pins engage in the slot.

Other threads and materials, surface finishes, special versions, etc. are available

Form J
with threaded pin
without locking nut



Form K with threaded pin
with locking nut



Locking Bolts without collar

Order No. Form J	Order No. Form K	Size	D	D1	D2	L	L1	L2	H	SW	F x 30°	Spring force initial press. F1 ca. N	Spring force final press. F2 ca. N	Order No. screw-in washer
45 105 J	45 105 K	1	5	M 10x1	M 5	37	24	8	5	17	1,3	5	12	45 105 Z
45 206 J	45 206 K	2	6	M 12x1,5	M 6	43	28	9	6	19	1,8	6	14	45 206 Z
45 308 J	45 308 K	3	8	M 16x1,5	M 8	56	36	12	8	24	2,3	15	35	45 308 Z
45 410 J	45 410 K	4	10	M 20x1,5	M 10	62	40	12	10	30	2,8	20	40	45 410 Z

Locking Bolts without collar in stainless steel

STAINLESS
STEEL
OPTION

Order No. Form J	Order No. Form K	Size	D	D1	D2	L	L1	L2	H	SW	F x 30°	Spring force initial press. F1 ca. N	Spring force final press. F2 ca. N	Order No. screw-in washer
45 105 JN	45 105 KN	1	5	M 10x1	M 5	37	24	8	5	17	1,3	5	12	45 105 Z
45 206 JN	45 206 KN	2	6	M 12x1,5	M 6	43	28	9	6	19	1,8	6	14	45 206 Z
45 308 JN	45 308 KN	3	8	M 16x1,5	M 8	56	36	12	8	24	2,3	15	35	45 308 Z
45 410 JN	45 410 KN	4	10	M 20x1,5	M 10	62	40	12	10	30	2,8	20	40	45 410 Z

Sample order: Locking Bolt without collar 45 105 KN

Locking Bolts without collar



Material:

Steel version: sleeve C 15 Pb weldable, locking pin quality class 5.8, stainless steel version: sleeve X 5 Cr NiX 1810 = 1.4301 weldable, locking pin X 46 Cr 13 = 1.4034, mushroom knob in black thermoplastic

Surface finish:

Black oxide finish, locking pin hardened and ground, stainless steel version natural finish

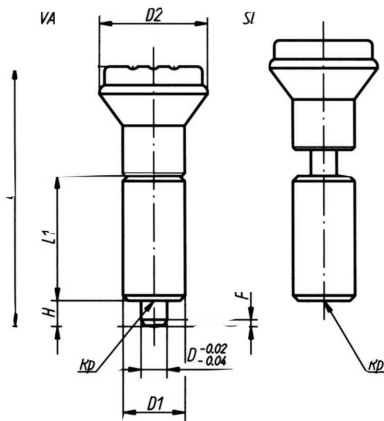
Note:

Locking Bolts are used to prevent any change in locking position due to lateral forces. A new locking position can only be set after the bolt has been manually disengaged. Form M is recommended for applications in which gradual disengagement of the locking bolt is desired, without any relocking of the pin. Special grips can be fitted on the projecting threaded pins of Form N. These pins are also suitable for actuation, for example automatically (programme-controlled) with the aid of a pneumatic cylinder or actuation by remote control with bowden cables.

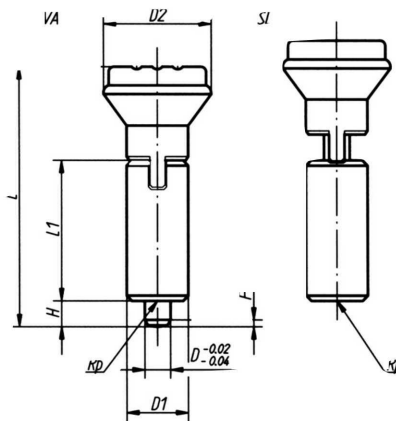
Other threads and materials, surface finishes, special versions, etc. are available.

In order to weld the locking bolts to another surface, we recommend inert gas-shielded welding with MIG welding equipment.

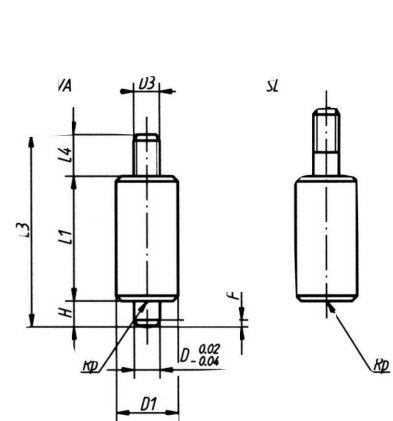
Form L
without locking slot



Form M
with locking slot



Form N
with threaded pin



Locking Bolts without collar

Order No. Form L	Order No. Form M	Order No. Form N	Size	D	D1*	D2	L	L1	L3	L4	H	D3	F x 30°	Spring force initial press. F1 ca. N	Spring force final press. F2 ca. N
45 105 L	45 105 M	45 105 N	1	5	12	21	50	21	27	37	8	M 5	1,3	5	12
45 206 L	45 206 M	45 206 N	2	6	14	25	59	25	31	43	9	M 6	1,8	6	14
45 308 L	45 308 M	45 308 N	3	8	18	33	77	33	39	56	12	M 8	2,3	15	35
45 410 L	45 410 M	45 410 N	4	10	22	33	83	33	43	62	12	M 10	2,8	20	40

Locking Bolts without collar, stainless steel

STAINLESS
STEEL
OPTION

Order No. Form L	Order No. Form M	Order No. Form N	Size	D	D1*	D2	L	L1	L3	L4	H	D3	F x 30°	Spring force initial press. F1 ca. N	Spring force final press. F2 ca. N
45 105 LN	45 105 MN	45 105 NN	1	5	12	21	50	21	27	37	8	M 5	1,3	5	12
45 206 LN	45 206 MN	45 206 NN	2	6	14	25	59	25	31	43	9	M 6	1,8	6	14
45 308 LN	45 308 MN	45 308 NN	3	8	18	33	77	33	39	56	12	M 8	2,3	15	35
45 410 LN	45 410 MN	45 410 NN	4	10	22	33	83	33	43	62	12	M 10	2,8	20	40

Sample order: Locking Bolt without collar 45 206 LN

Location Pins



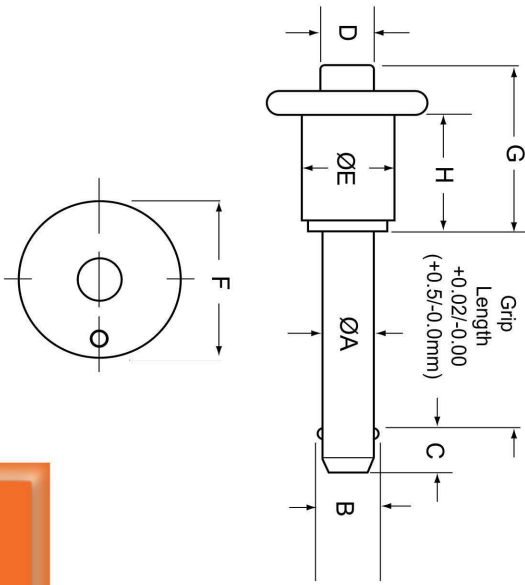
Button Handle Specifications – Inch

Nom Pin Dia	ØA		±0.005 B	+0.00/-0.04 C	D	E	F	G	H
	Min	Max							
3/16 (#10)	.1870	.1885	.220	.260	1/4	7/16	13/16	13/16	5/8
1/4	.2470	.2485	.289	.290	1/4	7/16	13/16	7/8	5/8
5/16	.3095	.3110	.375	.330	1/4	7/16	7/8	29/32	5/8
3/8	.3720	.3735	.440	.365	5/16	9/16	1 1/8	1 1/32	3/4
7/16	.4345	.4360	.509	.380	5/16	9/16	1 1/8	1 3/32	3/4
1/2	.4970	.4985	.594	.460	7/16	23/32	1 3/8	1 3/16	13/16
9/16	.5595	.5610	.666	.510	7/16	23/32	1 3/8	1 3/8	1
5/8	.6220	.6235	.750	.580	37/64	27/32	1 5/8	1 1/2	1 1/16
3/4	.7470	.7485	.887	.670	37/64	15/16	1 7/8	1 21/32	1 5/32
7/8	.8720	.8735	1.046	.760	3/4	1 1/8	2 3/16	1 31/32	1 1/2
1	.9970	.9985	1.219	.890	3/4	1 3/16	2 3/16	2 1/8	1 1/2

Button Handle Specifications – Metric

Nom Pin Dia	ØA		±0.13 B	+0.0/-1.0 C	D	E	F	G	H
	Min	Max							
5	4.92	4.96	5.54	6	6.4	11.1	20.6	20.6	15.9
6	5.92	5.96	6.99	7	6.4	11.1	20.6	22.2	15.9
8	7.92	7.96	9.42	8	6.4	11.1	22.2	23.0	15.9
10	9.92	9.96	11.86	9	7.9	14.3	28.6	27.8	19.1
12	11.92	11.96	14.45	10	11.1	18.3	34.9	34.9	25.4
16	15.92	15.96	19.00	14	14.7	21.4	41.3	38.1	27.0
20	19.92	19.96	24.08	17	14.7	23.8	47.6	42.1	29.4
25	24.92	24.96	30.94	22	19.1	30.2	55.6	54.0	38.1

Dimensions in millimeters



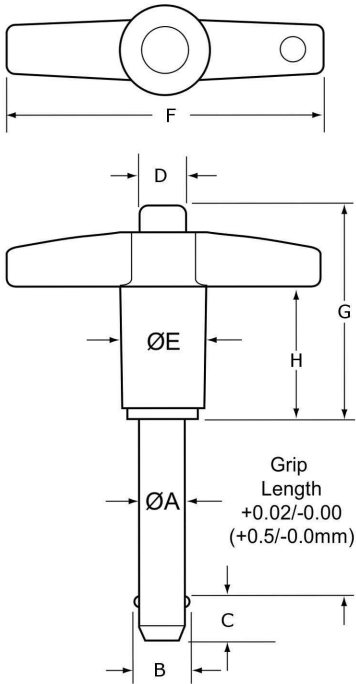
- The Button Handle Kwik-Lok® Pin is ideal for applications that have limited space around the handle.
- Light weight black anodized aluminum handle with blue anodized aluminum button.
- Pin body available in:
Heat Treated 17-4 PH Stainless Steel.
- Includes hole and split ring for easy attachment of optional lanyard.

Button Handle – Inch

Pin Dia	Grip Length (inches)											
	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	4	5	6
Stainless Steel – High Strength Stainless Steel, 17-4 PH heat treated												
3/16	800600	800601	800602	800603	800604	800605	800606	800608	800609	800611	800613	800615
1/4	800616	800617	800618	800619	800620	800621	800622	800624	800625	800627	800629	800631
5/16	800632	800633	800634	800635	800636	800637	800638	800640	800641	800643	800645	800647
3/8	800648	800649	800650	800651	800652	800653	800654	800656	800657	800659	800661	800663
7/16	800664	800665	800666	800667	800668	800669	800670	800672	800673	800675	800677	800679
1/2	800680	800681	800682	800683	800684	800685	800686	800688	800689	800691	800693	800695
9/16	800696	800697	800698	800699	800700	800701	800702	800704	800705	800707	800709	800711
5/8	800712	800713	800714	800715	800716	800717	800718	800720	800721	800723	800725	800727
3/4	800728	800729	800730	800731	800732	800733	800734	800736	800737	800739	800741	800743
7/8	800744	800745	800746	800747	800748	800749	800750	800752	800753	800755	800757	800759
1	800760	800761	800762	800763	800764	800765	800766	800768	800769	800771	800773	800775

Button Handle – Metric

Pin Dia	Grip Length (mm)											
	10	15	20	25	30	40	50	60	70	80	90	100
Stainless Steel – High Strength Stainless Steel, 17-4 PH heat treated												
5	850600	850601	850602	850603	850604	850605	850606	850607	850608	850609	850610	850611
6	850612	850613	850614	850615	850616	850617	850618	850619	850620	850621	850622	850623
8	850624	850625	850626	850627	850628	850629	850630	850631	850632	850633	850634	850635
10	850636	850637	850638	850639	850640	850641	850642	850643	850644	850645	850646	850647
12	850648	850649	850650	850651	850652	850653	850654	850655	850656	850657	850658	850659
16	850660	850661	850662	850663	850664	850665	850666	850667	850668	850669	850670	850671
20	850672	850673	850674	850675	850676	850677	850678	850679	850680	850681	850682	850683
25	850684	850685	850686	850687	850688	850689	850690	850691	850692	850693	850694	850695



T-Handle Specifications – Inch

Nom Pin Dia	ØA		±0.005 B	+0.00/-0.04 C	D	E	F	G	H
	Min	Max							
3/16 (#10)	.1870	.1885	.220	.260	1/4	1/2	1 13/16	1 1/4	3/4
1/4	.2470	.2485	.289	.290	1/4	1/2	1 13/16	1 1/4	3/4
5/16	.3095	.3110	.375	.330	1/4	1/2	1 13/16	1 1/4	3/4
3/8	.3720	.3735	.440	.365	5/16	19/32	2	1 7/16	15/16
7/16	.4345	.4360	.509	.380	5/16	19/32	2	1 7/16	15/16
1/2	.4970	.4985	.594	.460	15/32	3/4	2	1 5/8	1
9/16	.5595	.5610	.666	.510	15/32	3/4	2 3/8	1 5/8	1
5/8	.6220	.6235	.750	.580	9/16	15/16	3 1/8	1 31/32	1 3/16
3/4	.7470	.7485	.887	.670	5/8	15/16	3 1/8	1 31/32	1 3/16
7/8	.8720	.8735	1.046	.760	3/4	1 1/4	3 1/2	2 1/4	1 11/32
1	.9970	.9985	1.209	.890	3/4	1 1/4	3 1/2	2 1/4	1 11/32

T-Handle Specifications – Metric

Nom Pin Dia	ØA		±0.13 B	+0.0/-1.0 C	D	E	F	G	H
	Min	Max							
5	4.92	4.96	5.54	6	6.5	13.1	46.1	31.3	19.7
6	5.92	5.96	6.99	7	6.5	13.1	46.1	31.3	19.7
8	7.92	7.96	9.42	8	6.5	13.1	46.1	31.3	19.7
10	9.92	9.96	11.86	9	7.7	15.0	51.1	36.1	24.0
12	11.92	11.96	14.45	10	11.1	19.1	59.7	41.9	25.8
16	15.92	15.96	19.00	14	14.5	23.9	78.7	43.0	27.0
20	19.92	19.96	24.08	17	26.2	23.9	78.7	43.0	27.0
25	24.92	24.96	30.94	22	26.2	32.0	88.9	55.9	33.9

Dimensions in millimeters

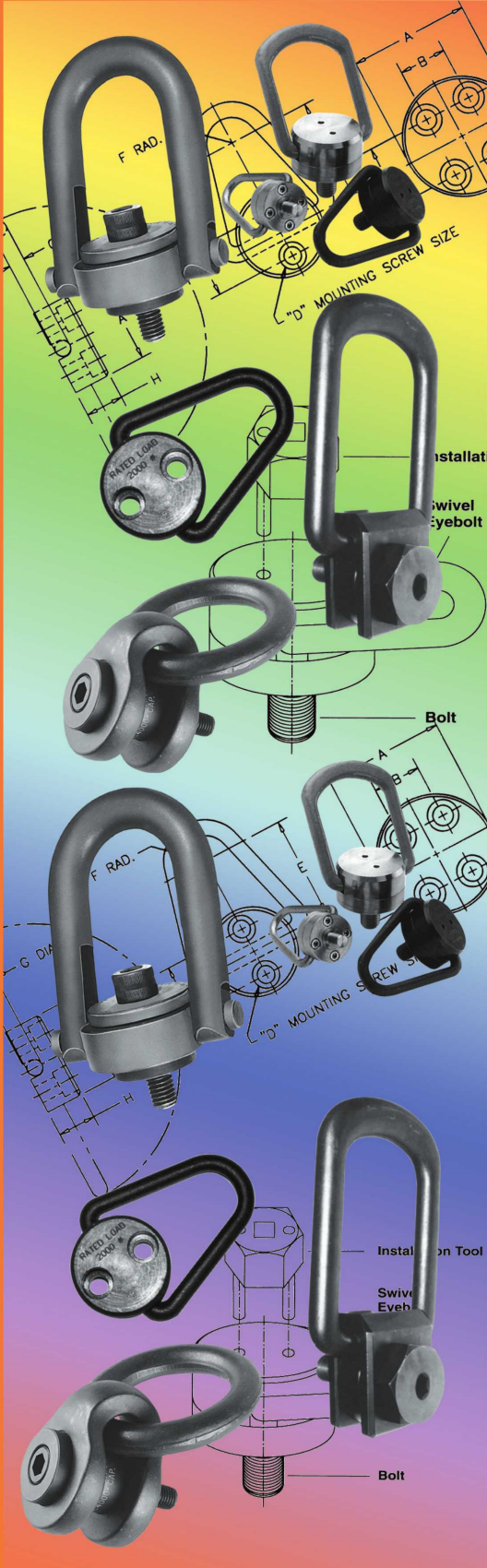
- The T-Handle Kwik-Lok® Pin provides a firm, even grip for smooth comfortable operation.
- Handle is black cast aluminum and the button is blue anodized aluminum.
- Pin body available in:
Heat Treated 17-4 PH Stainless Steel.
- Includes hole and split ring for easy attachment of optional lanyard.

T-Handle – Inch

Pin Dia	Grip Length (inches)											
	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	4	5	6
Stainless Steel – High Strength Stainless Steel, 17-4 PH heat treated												
3/16	801000	801001	801002	801003	801004	801005	801006	801008	801009	801011	801013	801015
1/4	801016	801017	801018	801019	801020	801021	801022	801024	801025	801027	801029	801031
5/16	801032	801033	801034	801035	801036	801037	801038	801040	801041	801043	801045	801047
3/8	801048	801049	801050	801051	801052	801053	801054	801056	801057	801059	801061	801063
7/16	801064	801065	801066	801067	801068	801069	801070	801072	801073	801075	801077	801079
1/2	801080	801081	801082	801083	801084	801085	801086	801088	801089	801091	801093	801095
9/16	801096	801097	801098	801099	801100	801101	801102	801104	801105	801107	801109	801111
5/8	801112	801113	801114	801115	801116	801117	801118	801120	801121	801123	801125	801127
3/4	801128	801129	801130	801131	801132	801133	801134	801136	801137	801139	801141	801143
7/8	801144	801145	801146	801147	801148	801149	801150	801152	801153	801155	801157	801159
1	801160	801161	801162	801163	801164	801165	801166	801168	801169	801171	801173	801175

T-Handle – Metric

Pin Dia	Grip Length (mm)											
	10	15	20	25	30	40	50	60	70	80	90	100
Stainless Steel – High Strength Stainless Steel, 17-4 PH heat treated												
5	851000	851001	851002	851003	851004	851005	851006	851007	851008	851009	851010	851011
6	851012	851013	851014	851015	851016	851017	851018	851019	851020	851021	851022	851023
8	851024	851025	851026	851027	851028	851029	851030	851031	851032	851033	851034	851035
10	851036	851037	851038	851039	851040	851041	851042	851043	851044	851045	851046	851047
12	851048	851049	851050	851051	851052	851053	851054	851055	851056	851057	851058	851059
16	851060	851061	851062	851063	851064	851065	851066	851067	851068	851069	851070	851071
20	851072	851073	851074	851075	851076	851077	851078	851079	851080	851081	851082	851083
25	851084	851085	851086	851087	851088	851089	851090	851091	851092	851093	851094	851095



HOIST RINGS



BS EN 9001:2000

HOIST RINGS - Quality Standards

For Centre-Pull and Side-Pull Style Hoist Rings

Load Bearing Components

- All material is USA manufactured certified alloy steel.
- All components are machined prior to manufacture to remove any surface defects.
- All components are heat treated and certified to manufacturing specifications.
- Bolts are:

METRIC

Grade 12.9

Tensile Strength

- 1220 MPa
- (177,000 psi)

100% Magnetic particle inspected to ASTM E709-80

INCHES

Socket Screw Grade

Tensile Strength

- 18,000 psi - ½" or smaller
- 170,000psi - over ½"

100% Magnetic particle inspected to ASTM E709-80

- All other load bearing components are magnetic particle inspected based upon ASTM E709-80 and MIL-STD-105 with zero defects permissible.
- Bolt torque and hoist ring load limit permanently marked on washer.

Assembly Data


- All hoist ring assemblies are pull-tested and certified to 200% of rated load capacity and stamped with identifying date code.
- All hoist rings are designed for 5:1 strength factor.
- Hoist rings are colour coded for easy identification: silver washer denotes metric sizes, gold washer denotes inch sizes.
- Finished assembly is black oxide plated (with the exception of the washer).
- Special plating or marking is available upon customer's request.
- Proper warning label is affixed to each clevis.
- Proof load testing, magnafluxing, heat treating and material certification are available on request from Brauer at cost.
- The finished hoist ring product is individually boxed.
- NOTE: Specifications for side pull style hoist rings are identical to centre pull style with the exception that the clevis is of precision cast alloy material which is serialised and conforms to X-ray specifications

Jergens <small>Cleveland, Ohio</small>		Certificate of Proof Test			
(1) Distinguishing Mark	(2) Description of Item Tested	(3) Quantity Tested	(4) Date Tested	(5) Load Applied	(6) Rated Load
JH	23462 HOIST RING	1	10/13/2000	2,100 KG	1,050 KG
(7) Name and address of supplier		Jergens, Inc., 15700 S. Waterloo Rd., Cleveland, OH 44110			
(8) Name and address of Company performing test:		Jergens, Inc., 15700 S. Waterloo Rd., Cleveland, OH 44110			
(9) Position of signatory in company:		Quality Assurance Manager			
We hereby certify that Jergens, Inc. Test Procedure 1001 requires all hoist rings to be proof tested and examined; and that this form is evidence that the test operator completed all procedures as required.					
MAB		(Signature) <i>James H. Hingenberg</i>			
In substantial agreement with (OSHA) 29 CFR 1918 & 1919 Form NO. 4					

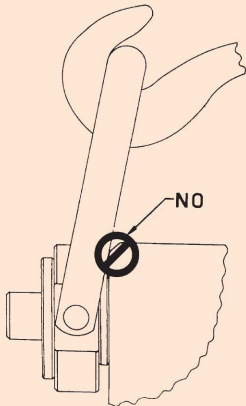
*All products are CE approved

Installation Data - HOIST RINGS

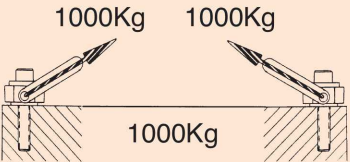
- Select the proper Hoist Ring for the job. Do not attempt to apply more than the rated load capacity. *The load capacity is stamped on the Hoist Ring*
- Drill and tap the workpiece so that the hoist ring bolt is installed perpendicular to the surface of the workpiece. countersink the tapped hole to prevent “swelling” of the top thread when the hoist ring bolt is torqued. The workpiece surface must be flat, providing complete contact for the hoist ring bushing.
- Do not use spacers between the hoist ring bushing and the workpiece surface.
- When installing in soft metal, such as aluminium, the minimum effective thread engagement should be two times the diameter of the thread.
- Always *tighten the bolt to the proper torque value*, which is stamped on the Hoist Ring.
- Loosening of the *bolt* may develop during use. *Re-tightening to the required torque must be done whenever the bolt loosens*. The proper tightening is stamped on the Hoist Ring.
- When lifting, apply force gradually. **DO NOT APPLY SHOCK LOADS.**



Never use a hook or other lifting device which will pry or tend to open the “U” shaped bar on Centre-Pull Hoist Rings.



After installation, check the Hoist Ring to be sure it swivels and pivots freely in all directions. **The side of the ring must not contact anything.**



Depending upon the sling angle, **the applied load may be more than the weight being lifted.** Two point lifting of a 1000Kg weight, with a sling angle of 30°, will result in an applied load of 1000Kg to **each** hoist ring



*All products are CE approved

BRAUER®

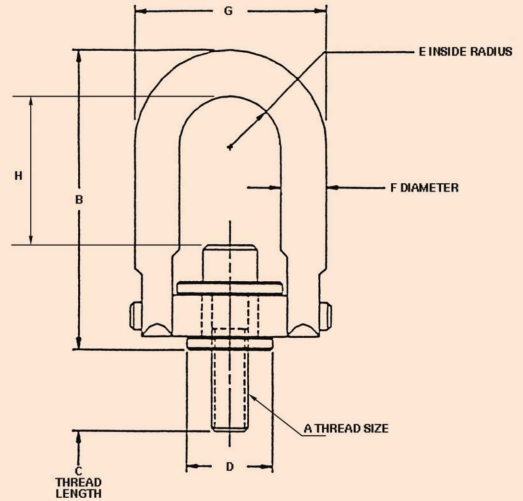
HOIST RINGS - Centre Pull Style



- Full Swivel and Pivot Action
- Rated at 5:1 Strength Factor
- Material: Alloy Steel
- Finish: Black Oxide (Except Washer)

- Clevis, Bolt, Pins, Base, Washer and Bushing are magnetic particle inspected
- Washer: Zinc Plated with clear conversion coating
- Proof Tested to 200% of Rated Load Capacity
- All products are **CE** marked

Available with Envirolox™ protective finish.



Metric Centre-Pull Hoist Rings

THREAD SIZE A	LOAD ¹ CAPACITY (Kg)	STD. CLEVIS		LONG CLEVIS		ENVIROLOX PART NUMBER ⁴	THREAD LENGTH					STD. CLEVIS H	LONG CLEVIS H	TORQUE ² (Kg m.)	WT. (Kg)
		PART NUMBER	B	PART NUMBER	B		C	D	E	F	G				
M8x1.25	400	23456	67.8	—	—	23356	12.5	19.0	10.9	9.7	46.7	32	—	1.0	.17
M10x1.50	450	23458	67.8	—	—	23358	17.5	19.0	10.9	9.7	46.7	30	—	1.7	.17
M12x1.75	1050	23462	121.4	23562	170.7	23362	19.0	38.1	22.4	19.0	89.4	60.5	108	3.8	1.08
M16x2.0	1900	23465	121.4	23565	170.7	23365	29.0	38.1	22.4	19.0	89.4	56.5	106	8.2	1.12
M20x2.5	1250	23468	121.4	23568	170.7	23368	34.0	38.1	22.4	19.0	89.4	52.5	101	13.6	1.19
M20x2.5	3000	23471	165.6	23571	206.0	23371	32.0	58.7	35.6	25.4	130.6	73	101	13.6	3.03
M24x3.0	4200	23474	165.6	23574	206.0	23374	37.0	58.7	35.6	25.4	130.6	69	111	31.0	3.10
M30x3.5	7000	23478	221.7	—	—	23378	41.9	81.0	44.5	31.7	165.1	107.4	—	60.0	6.3
M30x3.5	7000	23479	21.7	—	—	23379	61.7	81.0	44.5	31.7	165.1	107.4	—	60.0	6.4
M36x4.0	11000	23483	316.7	—	—	23383	63.5	106.4	57.2	44.4	217.2	166.5	—	100.0	15.5
M42x4.5	12500	23484	316.7	—	—	23384	68.0	106.4	57.2	44.4	217.2	160.5	—	100.0	16.0
M48x5.0	13500	23485	316.7	—	—	23385	88.0	106.4	57.2	44.4	217.2	154.5	—	100.0	16.8
M64x6.0	22500	23488	419.1	—	—	23388	96.0	146.0	76.2	57.15	297.6	210	—	290.0	40.0

Replacement Bolt Kits³

PART NUMBER	WT. (Kg)
23656	.01
23658	.01
23662	.03
23665	.05
23668	.09
23671	.10
23674	.18
23678	.36
23679	.41
23683	.69
23684	1.25
23685	1.5
23688	7

All dimensions are in millimetres.

¹ Stated load capacity is based upon specific thread torques shown in chart.

² It is recommended that these torques be used when installing hoist rings.

³ Replacement Bolt Kit contains bolt and retaining ring. Bolt Kits for Envirolox Hoist Rings available upon request.

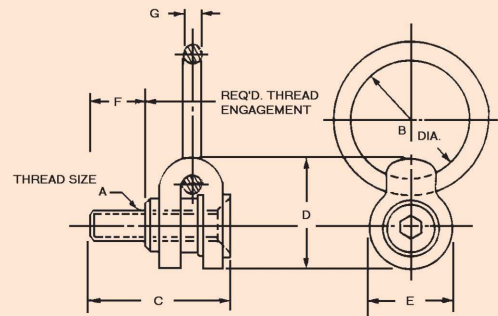
⁴ Available from stock as Standard Clevis.

TELEPHONE: 01908 374022 FAX: 01908 641628
 www.brauer.co.uk e-mail: sales@brauer.co.uk



Side Pull Style - HOIST RINGS

- Convenient Part Handling
- Rated at 5:1 strength factor
- Bushing: Zinc plated silver passivate
- Material: Alloy Steel
- Clevis, Ring, Bushing and Cap Screw are magnetic particle inspected
- Available with Envirolox Protective Finish upon request.
- Clevis is x-rayed
- Finish: Black Oxide
- Proof Tested to 200% of Rated Load Capacity
- All products are CE marked



Metric Side-Pull Hoist Rings

PART NUMBER	LOAD ¹ CAPACITY (Kg)	A	B	C	D	E	F	G	THREAD ² TORQUE (Kg m.)	WT. (Kg)
47351	325	M 8 X 1.25	50.8	61	50.8	38.1	16	9.5	0.43	0.12
47352	500	M 10 X 1.50	50.8	63	50.8	38.1	20	9.5	0.60	0.12
47353	725	M 12 X 1.75	76.2	85	81	60.3	24	15.9	2.00	1.47
47354	1400	M 16 X 2.0	76.2	94	81	60.3	31	15.9	3.50	1.47
47355	2290	M 20 X 2.5	101.6	133	125.4	95.3	40	25.4	7.00	5.10
47356	3050	M 24 X 3.0	101.6	147	125.4	95.3	47	25.4	12.50	5.22
47357	4850	M 30 X 3.5	127.0	173.8	173.0	117.5	43.6	31.7	34.6	12.61

Replacement Bolts

PART NUMBER	THREAD SIZE	WT. (Kg)
47391	M 8	0.02
47392	M 10	0.03
47393	M 12	0.07
47394	M 16	0.14
47395	M 20	0.32
47396	M 24	0.53
47397	M 30	1.03

All dimensions are in millimetres.

¹ Stated load capacity is based upon specific thread torques shown in charts.

² It is recommended that these torques be used when installing hoist rings.

The Envirolox™ Protective Finish

The Envirolox™ Protective Finish is a *proprietary coating that helps to prevent rusting and other environmental hazards from affecting the Hoist Rings*. This coating is *environmentally friendly* and is proven to be *effective in extreme conditions*. Envirolox Protective Finish is available as a standard on Centre-Pull Style Hoist Rings. It is also available on the Side-Pull Style Hoist Rings upon special request. It is not recommended for the Swivel Eyebolt or the SP 2000 products.

- Available as standard on Centre-Pull Style Hoist Rings
- Available upon request for Side-Pull Style
- Prevents rusting
- Environmentally safe

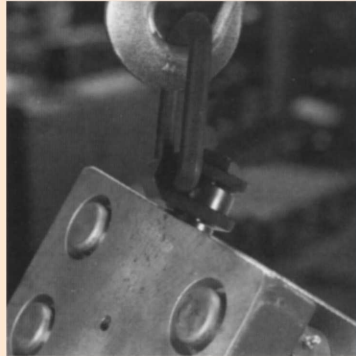
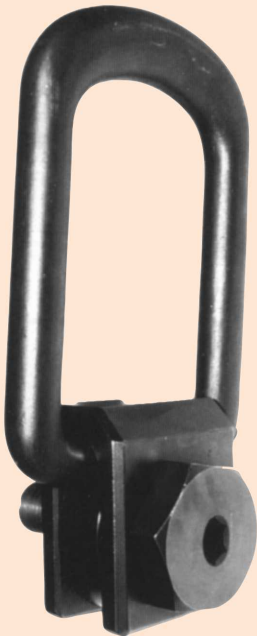


HOIST RINGS - Side Pull 2000 Style



The SP2000 Side-Pull Style Hoist Ring is ideal for flipping fixtures, dies and moulds. The hoist ring is low profile and has a unique bolt retention design. The oversized forged bale easily adapts to larger hoist hooks. Its relatively light weight makes it easier to handle than similar hoist rings and the installation is conveniently done with external wrenching (47581, 47582) or internal/external wrenching (all other sizes). All parts are made in the USA.

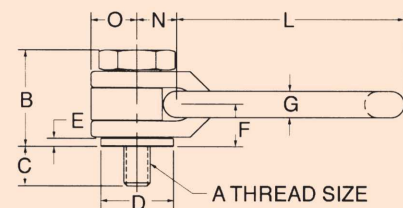
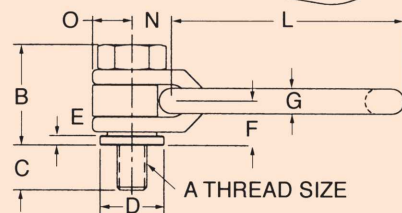
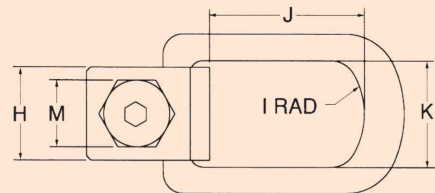
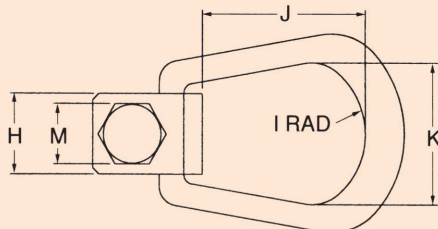
- Can be used for top lifts
- Full swivel and pivot action
- Rated at 5:1 strength factor
- All products are CE marked
- Material: Alloy Steel
- Finish: Black Oxide
- Proof Tested to 200% of Rated Load Capacity



SIDE PULL APPLICATION



TOP PULL APPLICATION



47581
47582

EXTERNAL WRENCH MOUNTING

INTERNAL/EXTERNAL WRENCH MOUNTING

47583
47584
47585
47586
47587
47588
47589

Metric SP2000 Side-Pull Hoist Rings

PART NUMBER (Kg)	LOAD CAPACITY	THREAD SIZE															HEX SIZE	WT. (Kg)
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O		
47581	325	M 8 X 1.25	33	16	21	3	14	8	25	25	52	44	76	19	13	13	—	.25
47582	500	M 10 X 1.5	33	20	21	3	14	8	25	25	52	44	76	19	13	13	—	.25
47583	725	M 12 X 1.75	48	24	35	4	21	13	44	38	75	51	110	32	19	22	6	1
47584	1400	M 16 X 2	48	32	35	4	21	13	44	38	75	51	110	32	19	22	8	1
47585	2290	M 20 X 2.5	59	40	48	6	26	16	57	51	102	67	145	44	25	29	10	2
47586	3050	M 24 X 3	59	48	48	6	26	16	57	51	102	67	145	44	25	29	12	2
47587	4850	M 30 X 3.5	90	60	83	9	42	27	95	76	196	111	265	76	49	48	19	9
47588	7500	M36 X 4	90	72	83	9	42	27	95	76	196	111	265	76	49	48	19	9
47589	10000	M48 X 5	90	96	83	9	42	27	95	76	196	111	265	76	49	48	19	10

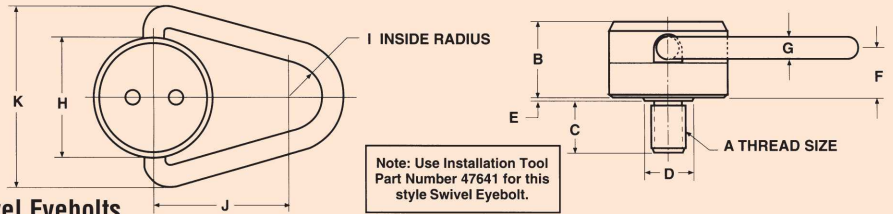


BRAUER®

SWIVEL EYEBOLT

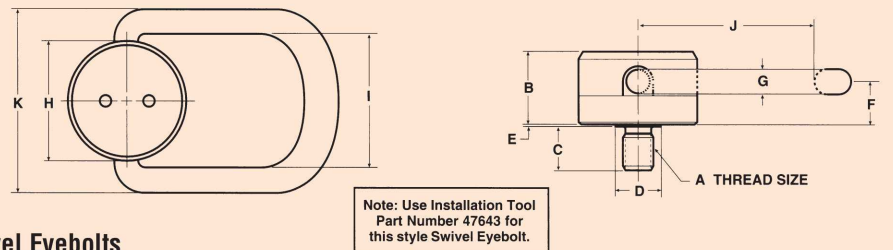
The Swivel Eyebolt lifting product has a full swivel and pivoting action that allows for the flipping and turning of the part without unhooking. The patented tamper resistant design is ideal for permanent mounting on OEM applications or on moulds, dies and fixtures.

- Tamper resistant design
- Swivels 360°, Pivots 180°
- Eliminates bending (of eyebolt) problem
- Forged, oversized, one-piece lift ring
- Rated at 5:1 strength factor
- All products are CE marked
- Load capacities to 2000Kg
- Economically priced
- Material: Alloy steel or 316 stainless steel
- Finish: Black oxide or passivated (SS)



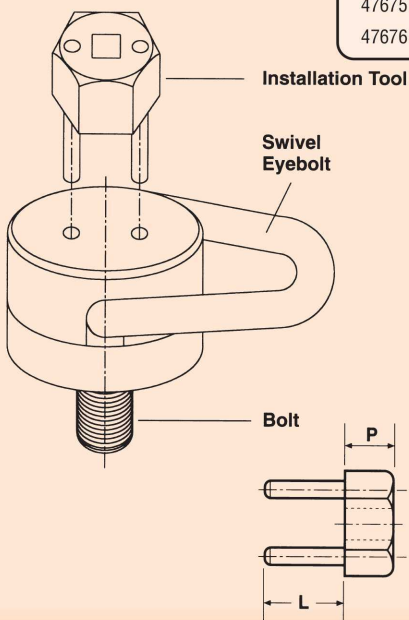
Metric Swivel Eyebolts

PART NUMBER		LOAD CAPACITY(Kg)		THREAD SIZE A	B	C	D	E	F	G	H	I	J	K
ALLOY STEEL	STAINLESS STEEL	ALLOY STEEL	STAINLESS STEEL											
47671	47681	500	250	M10 X 1.5	27.8	14.6	19.1	1.2	17.9	7.9	44.5	12.7	50.8	66.7
47672	47682	700	350	M12 X 1.75	27.8	19.1	19.1	1.2	17.9	7.9	44.5	12.7	50.8	66.7



Metric Swivel Eyebolts

PART NUMBER		LOAD CAPACITY(Kg)		THREAD SIZE A	B	C	D	E	F	G	H	I	J	K
ALLOY STEEL	STAINLESS STEEL	ALLOY STEEL	STAINLESS STEEL											
47675	47683	1500	750	M16 X 2.0	38.5	23.8	22.2	.8	22.6	12.7	63.5	70.0	88.9	96.8
47676	47684	2000	1000	M20 X 2.5	38.5	30.2	25.4	.8	22.6	12.7	63.5	70.0	88.9	96.8



Installation Tool Information

INSTALLATION TOOL PART NUMBER	PIN LENGTH L (mm)	HEAD THICKNESS P (mm)	HEX SIZE Q (in)	SQUARE DRIVE R (in)
47641	17.5	14	5/16	1/4
47643	28.5	16.5	1/4	3/8

Installation Tool Information

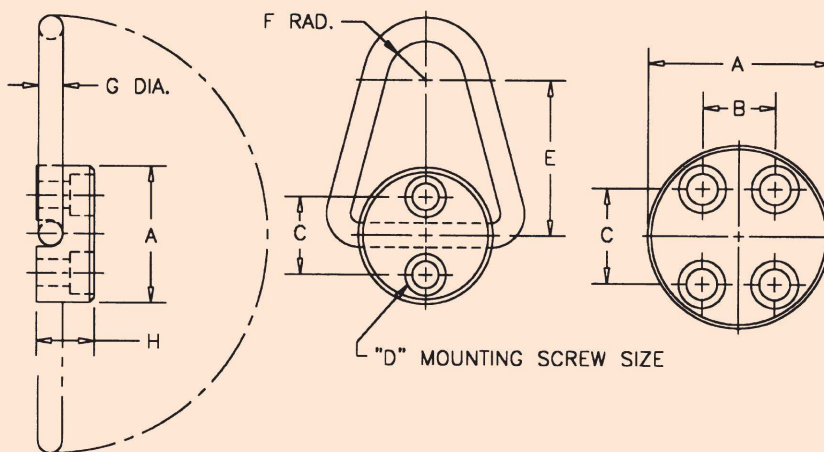
SWIVEL EYEBOLT PART NUMBER	INSTALLATION TOOL PART NUMBER	RECOMMENDED TORQUE	MAXIMUM COUNTERSINK DIAMETER N
47671	47641	10 N•m	13mm
47672	47641	25 N•m	16mm
47681	47641	10 N•m	13mm
47682	47641	25 N•m	16mm
47675	47643	50 N•m	19mm
47676	47643	80 N•m	22mm
47683	47643	50 N•m	19mm
47684	47643	80 N•m	22mm

PIVOTING LIFT RING



The Pivoting Lifting Ring is a low profile lifting device that pivots 180°. It is one of the most economical lifting devices available and is ideal for applications that do not require a rotating action. This Lift Ring is easy to install and is available in five sizes. Load ratings range from 900Kg - 9,000Kg. The product is manufactured from alloy steel, heat treated and magnafluxed.

- Base: Precision machined alloy steel
- Ring: Alloy steel forging, heat treated, magnafluxed and certified
- Finish: Black oxide
- Rated at 6:1 strength factor
- All products are **CE** marked



Pivoting Lifting Rings

PART NUMBER	LOAD CAPACITY (Kg)	RECOMMENDED SCREW SIZE							
		A	B	C	D	E	F	G	H
47411	900	45	—	25	M8 X 1.25 X 35	51	13	8	19
47412	1100	57	—	28.5	M10 X 1.5 X 40	63.5	16	9.5	22
47413	2250	63.5	—	38	M12 X 1.75 X 45	76	19	13	28.5
47414*	5400	79	32	41	M12 X 1.75 X 65	102	22	19	35
47415*	9000	92	32	52	M16 X 2.0 X 65	127	25	25	48

*The larger load capacity rings have four mounting holes.

Optional Mounting Screws

LIFTING RING PART NUMBER	SCREW PART NUMBER	SCREW SIZE
47411	47471	M8 X 1.25 x 35
47412	47472	M10 X 1.5 x 40
47413	47473	M12 X 1.75 x 45
47414	47474	M12 X 1.75 x 65
47415	47475	M16 X 2.0 x 65

* Note: Mounting Screws must be ordered separately.

* Recommend using socket head cap screws.

OTHER



PRODUCTS

BRAUER[®] **WHEELS AND CASTORS**
Durable by Design

www.brauer.co.uk

BRAUER[®]

**AIRMOVERS
(AIR AMPLIFIERS)**

BS EN 9001:2000

BRAUER[®]
CLAMPING PRODUCTS
Including Hoist Rings and Lever Handles

www.brauer.co.uk

BRAUER[®]

MACHINE ACCESSORIES

www.brauer.co.uk

For further details contact



TEL: 00 44 (0)1908 374022 FAX: 00 44 (0)1908 641628
E-mail: sales@brauer.co.uk Web: www.brauer.co.uk

Authorised Dealer stamp