Standard Parts.
Ganter.

16.0
New products

Content

Otto GANTER GmbH & Co. KG, April 2019

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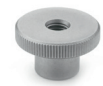

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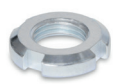

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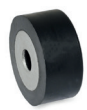

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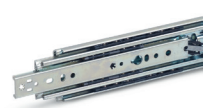

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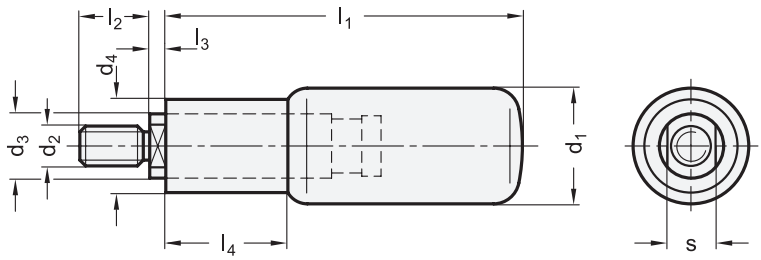

Inox Stainless Steel

2 d1 KT	d1 NI	3 d2	d3	d4	l1	l2	l3 ≈	l4	s
16	-	M 6	10	13	41,5	12	4	15	8
18	18	M 6	10	14,5	56	13	4	19	8
22	22	M 8	14	18,5	59	14	5,2	21	11
24	24	M 10	14	18,5	74	16	5,2	27	11
25	-	M 10	16	20	84	16	5,5	30	13

Specification

1

- Plastic **KT**
  Technopolymer (Polyamide PA)
  - temperature resistant up to 90 °C
  - black, matte
- Stainless Steel **NI**
  - AISI 303
  - fine turned, blank
- Spindle
  Stainless Steel AISI 303
- *Plastic characteristics*
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- *Stainless Steel characteristics*
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- RoHS

Information

Typical in design are the revolving handles GN 798.4 with their stepped shape consisting of two cylinders giving the operator a better grip.

see also...

- *Retractable handles GN 798.5 (with hold in both positions)*
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How to order

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GN 798.4-KT-16-M6

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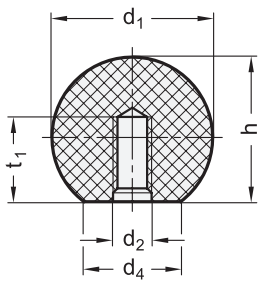
3	**d_2**

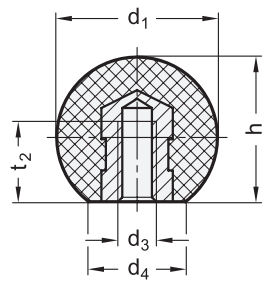
Ball knobs

Plastic

Type **C**



Type **E**



4 Type

C with tapped hole, no bushing
E with tapped bushing

2 **d_1**	3 **d_2** KU Type C Thread			KT Type C Thread		3 **d_3** KU Type E Thread		KT Type E Thread	**d_4 ≈**	**h ≈**	**t_1** min.	**t_2** min.
10	M 3	-	-	-	-	-	-	-	5	9,3	6	-
12	M 4	-	-	-	-	-	-	-	6	11,2	6	-
16	M 4	M 5	-	M 4	M 5	M 4**	-	-	8	15	6	6
20	M 5	M 6	-	M 5	M 6	M 5	-	M 5	12	18	7,5	7,5
25	M 5	M 6	M 8	M 6	M 8	M 6	M 8*	M 6	15	22,5	9	9
30	M 8	-	-	-	-	-	-	-	15	28	12	-
32	M 6	M 8	M 10	M 8	M 10	M 8	-	M 8	18	29	12	12
35	M 10	-	-	-	-	-	-	-	18	32,5	15	-
40	M 8	M 10	M 12	M 10	M 12	M 10	-	-	22	37	15	15
50	M 12	M 14	-	-	-	M 12	-	-	28	46	18	18

* This size is only available in black with bushing in steel. ** This size is only available in black with bushing in brass.

Specification

1

- Plastic **KU**
  Duroplast (Phenolic PF)
  - Flash removed and polished
  - black (standard color)
  - red **RT**, similar RAL 3003: add RT on order code

  Bushing (Type E)
  - Steel, zinc plated (standard)
  - Brass **MS** ad MS on order code
- Plastic **KT**
  Technopolymer (Polyamide PA)
  - shock resistant
  - black, finish (standard color)
  - red **RT**, similar RAL 3000: add RT on order code

  Bushing (Type E)
  Steel, zinc plated
- *Plastic characteristics*
  → *Main Catalogue Page 1483*
- RoHS

Information

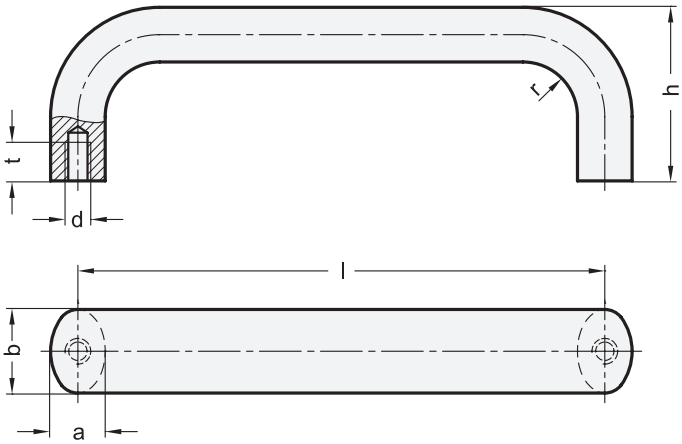
Ball knobs DIN 319 in sizes 30 and 35, as well as various thread of type C and ball knobs made of technopolymer (KT) are not on the official DIN standard sheet.

see also...
- *Ball knobs, Press on type DIN 319 → Main Catalogue Page 48*

How to order

1 2 3 4
DIN 319-KU-25-M6-C

1	**Material**
2	**d_1**
3	**d_2 (d_3)**
4	**Type**



Inch

Internationaler Designpreis Baden-Württemberg

1 b	2 Length l ±0,25						Finish WSA / SMA			a	d	h	r	t min.
20	100	112	117	120*	-	-	100	112	-	13	M 6	49	13	10
20	128	160	180*	200	235*	-	128	160	-	13	M 6	51	13	10
26	112	117	120	125	128	-	128	-	-	17	M 8	55	17	12
26	160	179	192	300	400	500	160	192	300	17	M 8	57	17	12

* suitable for 19“ rack and enclosure layout

Specification

3

- Aluminum
  - plastic coated
    black, RAL 9005, textured finish — **SW**
    black, RAL 9005, textured finish UV-resistant — **SWU**
    black, RAL 9005, antibacterial — **SMA**
    red, RAL 3000, textured finish — **RS**
    silver, RAL 9006, textured finish — **SR**
    white, RAL 9016, antibacterial — **WSA**
  - anodized, natural color — **EL**
  - blank tumbled — **BL**
- *Load rating information* → *Page 245*
- RoHS

Information

GN 565 cabinet U-handles are manufactured from a bent aluminum profile and have excellent stability and ergonomic design. Due to the manufacturing process, **special designs** can be supplied even in relatively small quantities.

In addition to the standard surfaces, these cabinet U-handles are also available with a functional coating.

The **SWU** version is coated with a highly weather-resistant and UV-protective powder coating system, making this version excellent for outdoor use.

The **WSA** / **SMA** versions have a powder coating based on zinc molybdate, which gives it antibacterial properties. The principle of action, which is activated by the presence of moisture, demonstrably reduces the growth of bacteria within 24 hours, so that contaminated surfaces ultimately have less than 0.2 % of the original number of microbes.

Standard elements with antibacterial plastic coating are primarily used in the health care sector and in public buildings, such as airports, train stations, stadiums, etc.

see also...

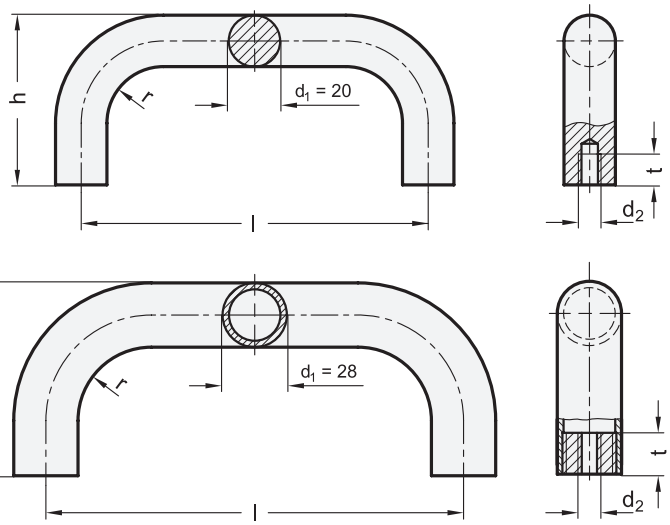
- *Inclined Cabinet U-handles GN 565.2 (Aluminum)* → *Main Catalogue Page 86*
- *Stainless Steel-Cabinet U-handles GN 565.5* → *Main Catalogue Page 82*
- *Cabinet U-handles GN 725 (Plastic)* → *Main Catalogue Page 84*

How to order

1 2 3

GN 565-20-100-SW

1	**b**
2	**Length l**
3	**Finish**



2 d_1	3 Length l ±0,25	Finish **WSA / SMA**	d_2	h	r	t min.
20	200	200	M 8	68	22	15
20	250	250	M 8	68	22	15
20	300	300	M 8	68	22	15
20	350	-	M 8	68	22	15
28	250	250	M 10	78	32	15
28	300	300	M 10	78	32	15
28	350	-	M 10	78	32	15
28	400	400	M 10	78	32	15

Specification

- Aluminum (1 **AL**)
  d_1 = 20: Solid material
  d_1 = 28: Tube-Ø 28 x 4
  - plastic coated
    black, RAL 9005, textured finish (4 **SW**)
    black, RAL 9005, antibacterial (4 **SMA**)
    silver, RAL 9006, textured finish (4 **SR**)
    white, RAL 9016, antibacterial (4 **WSA**)
  - blank
    tumbled (4 **BL**)
- Threaded bushing
  Aluminum
- *Load rating information* → *Page 244*
- RoHS

Information

GN 426 cabinet U-handles are manufactured from a bent aluminum profile and have excellent stability and ergonomic design. Due to the manufacturing process, **special designs** can be supplied even in relatively small quantities.

In addition to the standard surfaces, these cabinet U-handles are also available with a functional coating.

The **WSA** / **SMA** versions have a powder coating based on zinc molybdate, which gives it antibacterial properties. The principle of action, which is activated by the presence of moisture, demonstrably reduces the growth of bacteria within 24 hours, so that contaminated surfaces ultimately have less than 0.2% of the original number of microbes.

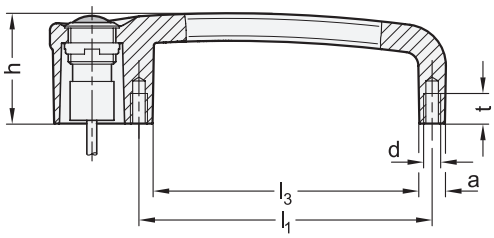
Standard elements with antibacterial plastic coating are primarily used in the health care sector and in public buildings, such as airports, train stations, stadiums, etc.

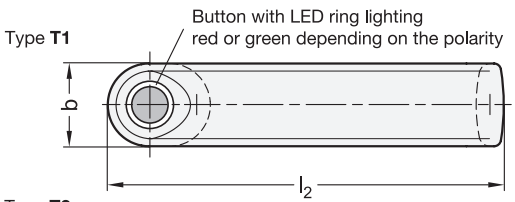
see also...
- *Cabinet U-handles GN 428 (Aluminum)* → *Page 39*

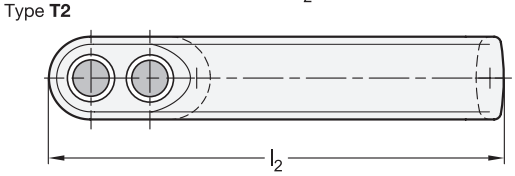
How to order

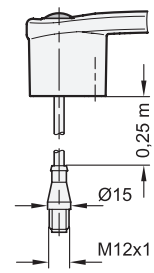
1 2 3 4
GN 426-AL-28-300-SW

1	**Material**
2	**d_1**
3	**Length l**
4	**Finish**

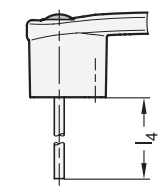








Connection type **S**



Connection type **K**

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2 Type

T1 with 1 button
T2 with 2 buttons

3 Connection type

K Cable
S Plug (with 0,25 m cable)

l_1 ±0,2	l_2 Type T1	l_2 Type T2	l_3	a	b	d	h	t	4 Cable length l_4 in meter Connection type K	
117	158	181,5	105,5	10,2	33	M 6	44	12	2	5

Specification

1 5

- Zinc die casting ZD
  plastic coated
  black, RAL 9005, textured finish ● SW
  silver, RAL 9006, textured finish ○ SR
- Button
  Stainless Steel AISI 304
- Cable (Outer sheath)
  Polyurethan PUR
  black
- *Load rating information* → *Page 244*
- *IP-Protection classes*
  → *Main Catalogue Page 1482*
- *Plastic characteristics*
  → *Main Catalogue Page 1483*
- RoHS

Accessory

- Cables with connector coupling M12x1 GN 330
  → *Main Catalogue Page 1004*

Information

GN 422 cabinet U-handles come with one or two push buttons. Each button has a changeover switch and integrated LED ring lighting.

When the button is pressed, an electrical control impulse to switch off a machine, for example, can be triggered based on the wiring of the contacts (NC or NO).

Independent whether or not the button is actuated, the integrated LED ring lighting shines either red or green depending on the polarity of connections 1 and 2 of the LED.

The cabinet „U“ handle is functional and highly compact and can be used for any application due to its universal design.

see also...
- *Tubular handles GN 331 (with power switching function)*
  → *Main Catalogue Page 132*

How to order (with plug)

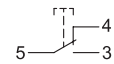
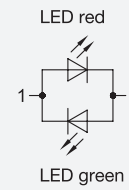
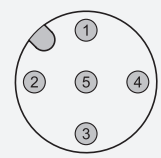
1 2 3 5
GN 422-ZD-T2-S-SR

1	Material
2	Type
3	Connection type
5	Finish

How to order (with cable)

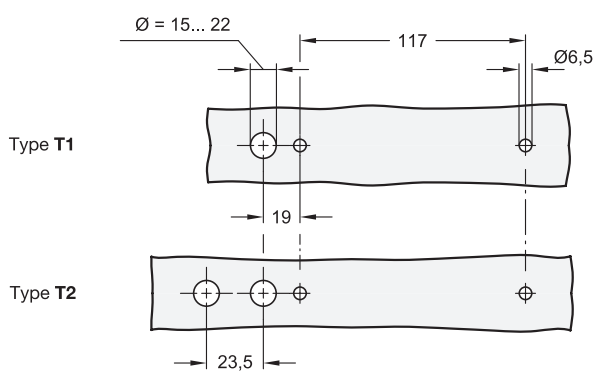
1 2 3 4 5
GN 422-ZD-T1-K-5-SW

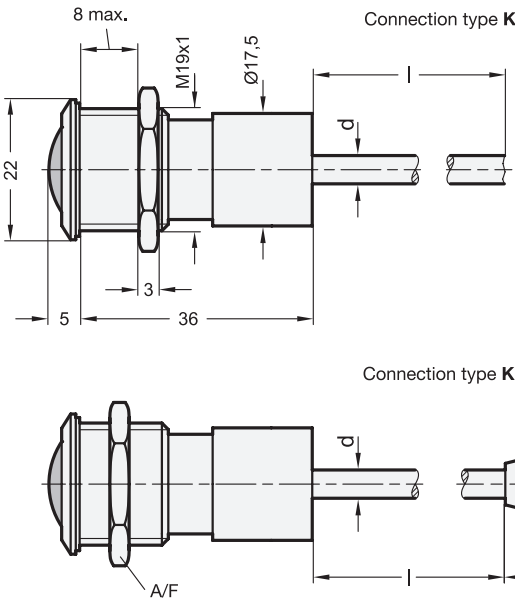
1	Material
2	Type
3	Connection type
4	Cable length l_4
5	Finish

Electrical and mechanical properties		
Button		
Contacts	changeover contact, snap contact	
Contact material	silver alloy	
Switching voltages	max. 125 V (plug) max. 240 V (cable)	
Switching current	max. 3 A	
mech. lifespan	10^6 switching cycles	
elect. lifespan	50,000 switching cycles (under full load)	
LED ring lighting Operating voltage / operating current - bi-color (red / green)	24 Vdc ± 10 % / 7 mA	
Category of use (button)	AC 15: 24 Vac / 1 A / DC 13: 24 Vdc / 0.7 A AC 15: 110 Vac / 1 A / DC 13: 110 Vdc / 0.2 A AC 15: 220 Vac / 0.5 A / DC 13: 220 Vdc / 0.1 A	according to IEC 60947-5-1
	AC: 120 Vac / 5 A / DC: 12 Vdc / 1 A AC: 240 Vac / 3 A	according to UL 508
Connection type Cable (K) or Plug connector (S)	PUR cable with open stranded wires (2 m or 5 m) 5-pin connector M12x1 with PUR cable 0.25 m	 1 - brown 2 - white 3 - blue 4 - black 5 - gray Pin configuration and cable assignment
Protection class	IP 67	
Approvals, conformity declarations CE marking	CE	

Installation holes

The holes must be free of burrs to prevent damage to the cable.





1 Contact type
W Changeover contact

2 Lighting
RG red/green (bi-color)

3 Identification no.
2 Button rounded

4 Connection type
K Cable
KS Plug

5

Cable length l in meter			d		A/F
Connection type K		Connection type KS	Connection type K	Connection type KS	
2	5	0,25	6	5	22

Specification

- Button
  Stainless Steel AISI 304
- Cable (Outer sheath)
  Polyurethan PUR
  black
- Hexagon nut
  Stainless Steel AISI 304
- *IP-Protection classes*
  → *Main Catalogue Page 1482*
- *Plastic characteristics*
  → *Main Catalogue Page 1483*
- RoHS

Accessory

- Cables with connector coupling M12x1
  GN 330 → *Main Catalogue Page 1004*

Information

GN 3310 switches with a light button come with a changeover switch and integrated LED ring light.

When the button is pressed, an electrical control impulse to switch off a machine, for example, can be triggered based on the wiring of the contacts (NC or NO).

Independent whether or not the button is actuated, the integrated LED ring lighting shines either red or green depending on the polarity of connections 1 and 2 of the LED.

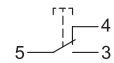
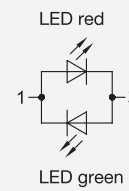
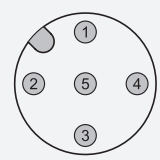
see also...

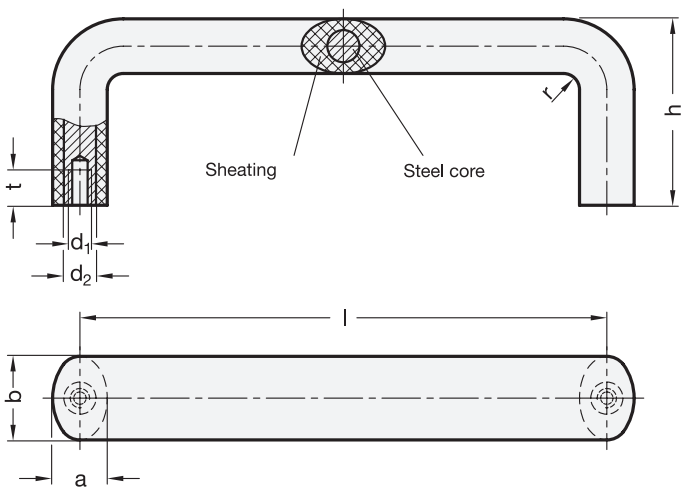
- *Cabinet U-handles GN 422 (with power switching function)* → *Page 32*

How to order

1 2 3 4 5
GN 3310-W-RG-2-K-5

1	**Contact type**
2	**Lighting**
3	**Identification no.**
4	**Connection type**
5	**Cable length l**

Electrical and mechanical properties		
Button Contacts Contact material Switching voltages Switching current mech. lifespan elect. lifespan	 changeover contact, snap contact silver alloy max. 125 V (plug) max. 240 V (cable) max. 3 A 10^6 switching cycles 50,000 switching cycles (under full load)	
LED ring lighting Operating voltage / operating current - bi-color (red / green)	24 Vdc ± 10 % / 7 mA	
Category of use (button)	AC 15: 24 Vac / 1A / DC 13: 24 Vdc / 0,7 A AC 15: 110 Vac / 1A / DC 13: 110 Vdc / 0,2 A AC 15: 220 Vac / 0,5A / DC 13: 220 Vdc / 0,1 A	according to IEC 60947-5-1
	AC: 120 Vac / 5A / DC: 12 Vdc / 1A AC: 240 Vac / 3A	according to UL 508
Connection type Cable (K) *or* Plug connector (S) Protection class	 PUR cable with open stranded wires (2 m or 5 m) 5-pin connector M12x1 with PUR cable 0.25 m IP 67	 1 - brown 2 - white 3 - blue 4 - black 5 - gray Pin configuration and cable assignment
Tightening torque	5 - 12 Nm	
Mounting cut-out	Ø 19 $^{+0,3}_{+0,1}$	
Approvals, conformity declarations CE marking	CE	



SOFT

1 b	2 Length l ±0,25	a	d_1	d_2	h	r	t min.
25	112	16	M 6	10	50	5	10
25	128	16	M 6	10	54	7	10
25	160	16	M 6	10	54	9	10
25	192	16	M 6	10	54	9	10

Specification

- Sheating
  Thermoplastic polyurethane (TPU)
  - black, textured matte finish
  - elastic, 65±5 Shore A
  - temperature resistant up to 70 °C
  - abrasion-resistant
  - insulating
  - weather-proof
- Steel core, blank
- *Load rating information* → *Page 245*
- *Elastomer characteristics* → *Main Catalogue Page 1483*
- RoHS

Information

The shock absorbing casing of the GN 564 cabinet U-handles made of thermoplastic polyurethane (TPU) offers protection from injuries, while its elliptical shape give it a nice hold.

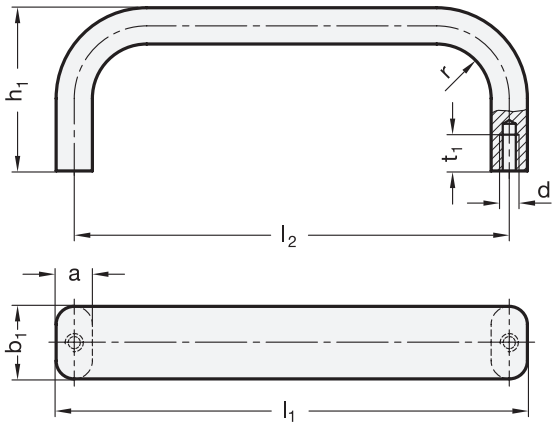
The steel core guarantees high durability.

see also...

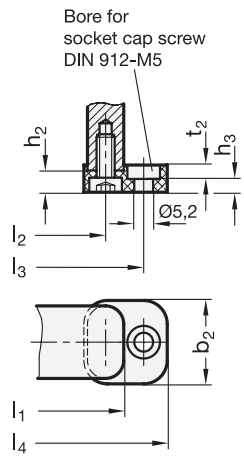
- *Product family Softline* → *Main Catalogue Page 17*
- *Cabinet U-handles GN 565 (Aluminum)* → *Page 30*
- *Cabinet U-handles GN 725 (Plastic)* → *Main Catalogue Page 84*

How to order		
GN 564-25-128 (1 2)	1	b
	2	Length l

Type **A**



Type **B**



3 Type

A Mounting from the back (threaded blind bore)

B Mounting from the operator's side (only for $b_1 = 20$)

1 b_1	2 l_1 ±0,25	a	b_2	d	h_1	h_2	h_3	l_2	l_3	l_4	r	t_1 min.	t_2
20	130	10	23	M 5	45	6,5	2,5	120	141	153	15	10	5
20	170	10	23	M 5	45	6,5	2,5	160	181	193	15	10	5
20	190	10	23	M 5	45	6,5	2,5	180	201	213	15	10	5
20	210	10	23	M 5	45	6,5	2,5	200	221	233	15	10	5
30	262	12	-	M 6	50	-	-	250	-	-	15	12	-
30	312	12	-	M 6	50	-	-	300	-	-	15	12	-
30	362	12	-	M 6	50	-	-	350	-	-	15	12	-
30	412	12	-	M 6	50	-	-	400	-	-	15	12	-

Specification

4

- Aluminum
  - plastic coated
    black, RAL 9005, textured finish — **SW**
    silver, RAL 9006, textured finish — **SR**
  - blank
    tumbled — **BL**
- Handle base
  Plastic
  Technopolymer (Polyamide PA)
  - black, matte (for SW / BL)
  - light gray, matte (for SR)
- *Load rating information → Page 245*
- RoHS

Information

Flat cabinet U-handles GN 668 are manufactured from a bent aluminum profile.

They can be mounted either from the back (Type A) or by means of the handle base from the operator's side (Type B).

Due to the manufacturing process, **special designs** can be supplied even in relatively small quantities.

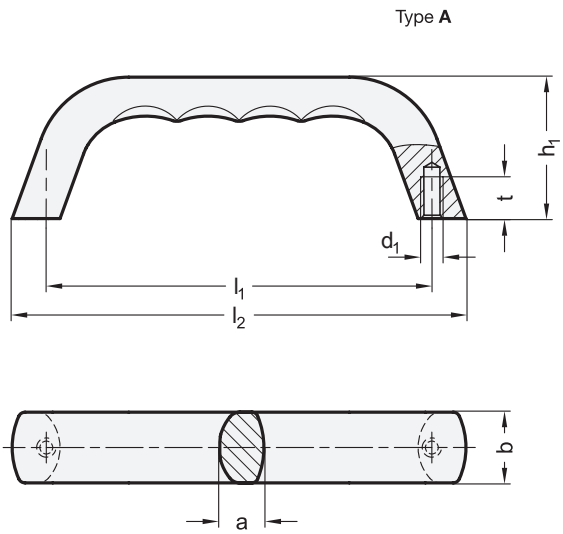
see also...

- *Cabinet U-handles GN 728*
  (Aluminum, Mounting from the operator's side or back)
  → Main Catalogue Page 92

How to order

1 2 3 4
GN 668-20-170-B-SW

1	b_1
2	l_1
3	Type
4	Finish



Inox Stainless Steel

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2 Type

A Mounting from the back (threaded blind bore)

B Mounting from the operator's side

1

l_1 ±0,25	a	b	d_1 Type A	d_2 Type B	h_1	h_2	l_2	t
120	14	22	M 6	6,5	44	5	141,2	13
140	18	28	M 8	8,5	55	6	166,5	17

Specification

3

- **GN 328**
  Aluminum die casting
  - plastic coated
    black, RAL 9005, textured finish **SW**
    silver, RAL 9006, textured finish **SR**
  - blank **BL**
    round
- **GN 328.5**
  Stainless Steel-precision casting
  matte shot-blasted **GS**
- *Load rating information → Page 244*
- *Stainless Steel characteristics → Main Catalogue Page 1489*
- RoHS

On request

- other finishes

Information

GN 328 / GN 328.5 cabinet U-handles have excellent stability and ergonomic design. The finger recesses on the underside of the handle provide a specially comfortable grip.

In particular in combination with the larger GN 428 cabinet U-handles, they meet the requirements of modern industrial design.

see also...

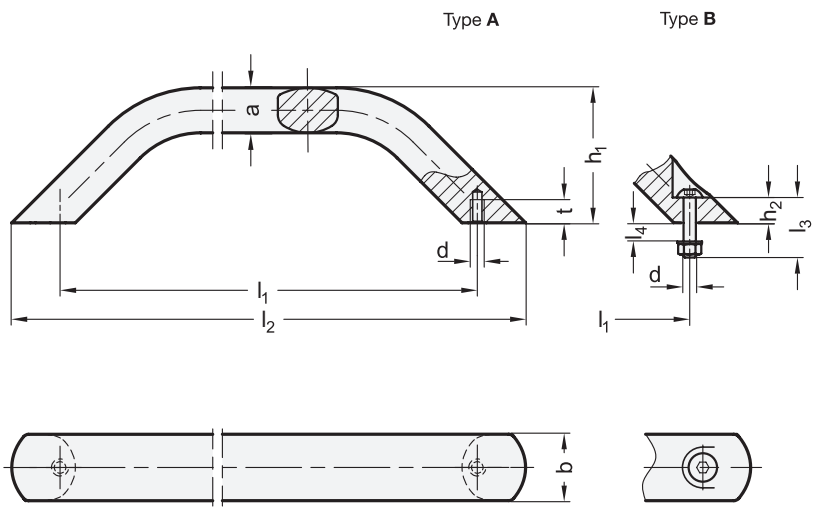
- *Cabinet U-handles GN 565 → Page 30*

How to order (Aluminum)		
1 2 3	1	l_1
GN 328-120-A-SW	2	Type
	3	Finish

How to order (Stainless Steel)		
1 2 3	1	l_1
GN 328.5-120-A-GS	2	Type
	3	Finish

GN 428 Cabinet U-handles

Aluminum



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4 Type

A Mounting from the back (threaded blind bore)

B Mounting from the operators side

2 b	3 l_1	a	d	h_1	h_2	l_2	l_3	l_4	t
28	250	18	M 8	63	11,8	290	30	10	10
28	300	18	M 8	63	11,8	340	30	10	10
28	400	18	M 8	63	11,8	440	30	10	10
36	300	26	M 10	71	16,6	355	40	13	14
36	400	26	M 10	71	16,6	455	40	13	14
36	500	26	M 10	71	16,6	555	40	13	14
36	600	26	M 10	71	16,6	655	40	13	14
36	800	26	M 10	71	16,6	855	40	13	14

Specification

1 5

- Aluminum **AL**
  - plastic coated
    black, RAL 9005, textured finish **SW**
    silver, RAL 9006, textured finish **SR**
  - anodized, natural color **EL**
- Type B
  - Socket button head screws ISO 7380
  - Hexagon nuts ISO 4032
  - Washers DIN 125

  Stainless Steel AISI 304
- *Load rating information → Page 244*
- *Stainless Steel characteristics → Main Catalogue Page 1489*
- RoHS

On request

- other finishes

Information

GN 428 cabinet U-handles are manufactured from a bent aluminum profile and have excellent stability and ergonomic design. Due to the production process, **special designs** can be supplied even in relatively small quantities.

For type B, socket button head screws, hexagon nuts and washers are included parts of the order.

Especially in combination with the smaller GN 328 cabinet U-handles, they meet the requirements of modern industrial design.

see also...

- *Cabinet U-handles GN 426 (Aluminum) → Page 31*

How to order

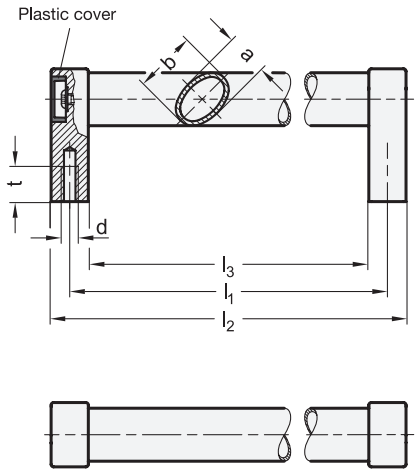
1 2 3 4 5

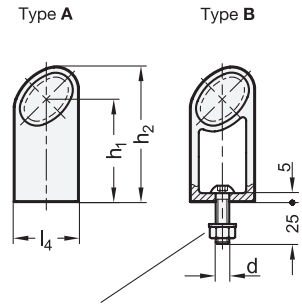
GN 428-AL-28-300-A-SW

1	Material
2	b
3	l_1
4	Type
5	Finish

GN 335 Oval tubular handles

with inclined handle profile





Socket button head screw ISO 7380
Washer DIN 125
Hexagon nut ISO 4032
Stainless Steel AISI 304

3 Type

A Mounting from the back (threaded blind bore)

B Mounting from the operators side

1 b	2 l_1 ±0,5	a	d	h_1	h_2	h_3	l_2	l_3	l_4	t min.
36	200	24	M 8	60,5	79,5	5	222	178	38	15
36	250	24	M 8	60,5	79,5	5	272	228	38	15
36	300	24	M 8	60,5	79,5	5	322	278	38	15
36	350	24	M 8	60,5	79,5	5	372	328	38	15
36	400	24	M 8	60,5	79,5	5	422	378	38	15
36	500	24	M 8	60,5	79,5	5	522	478	38	15
36	600	24	M 8	60,5	79,5	5	622	578	38	15
36	800	24	M 8	60,5	79,5	5	822	778	38	15

Specification

4

- Handle tube
  Aluminum
- Handle legs
  Zinc die casting
  plastic coated
- Tube
  black, RAL 9005, textured finish
  plastic coated
  SW
  Handle legs
  black, RAL 9005, textured finish
- Tube
  anodized, natural color
  EL
  Handle legs
  black, RAL 9005, textured finish
- Tube
  anodized, natural color
  ES
  Handle legs
  silver, RAL 9006, textured finish
- Cover
  plastic, light gray
- RoHS

Information

GN 335 oval tubular handles have an inclined handle profile with a 45° angle. These handles are comfortable and ergonomic to grasp in a variety of applications such as sliding doors.

For type B, socket button head screws, hexagon nuts and washers are included parts of the order.

The tubular handle can be screwed onto the handle shanks without further modification. This allows even a small quantity of **special lengths** to be ordered.

see also...

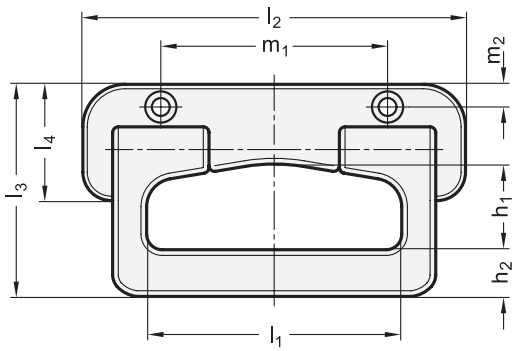
- *Oval tubular handles GN 334 (Mounting from the back)*
  → *Main Catalogue Page 142*
- *Oval tubular handles GN 334.1 (Mounting from the operators side)*
  → *Main Catalogue Page 143*
- *Assembly sets for profile systems 30 / 40 GN 965*
  → *Main Catalogue Page 1428*
- *Assembly sets for profile systems 30 / 40 / 45 GN 968*
  → *Main Catalogue Page 1438*

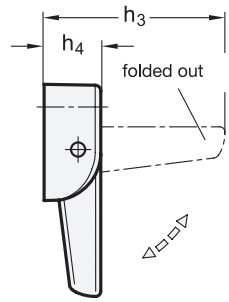
How to order

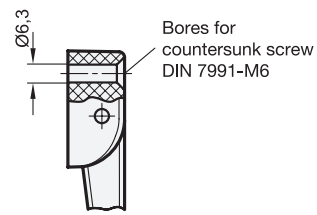
1 2 3 4

GN 335-36-500-A-SW

1	b
2	l_1
3	Type
4	Finish







ELESA original design MPE.

CLEAN

1

l_1	h_1	h_2	h_3	h_4	l_2	l_3	l_4	m_1 ±0,1	m_2
90	29	16,5	63	20	135	74	41	80	8

Specification

2

- Plastic
  Polyamide PA
  - glass fiber reinforced
  - temperature resistant up to 100 °C
- Color (matte):
  black, RAL 9005 ● SW
  gray, RAL 7040 ○ GR
  white, RAL 9002, Cleanline ○ CL
- Pin
  Stainless Steel AISI 303
- Return spring
  Stainless Steel AISI 302
- *Strength properties → Page 246*
- *Plastic characteristics*
  → Main Catalogue Page 1483
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

The folding handles GN 825.1 are used in places where the handle must not protrude.

After releasing the handle, it returns to its starting position by spring-loaded return.

see also...

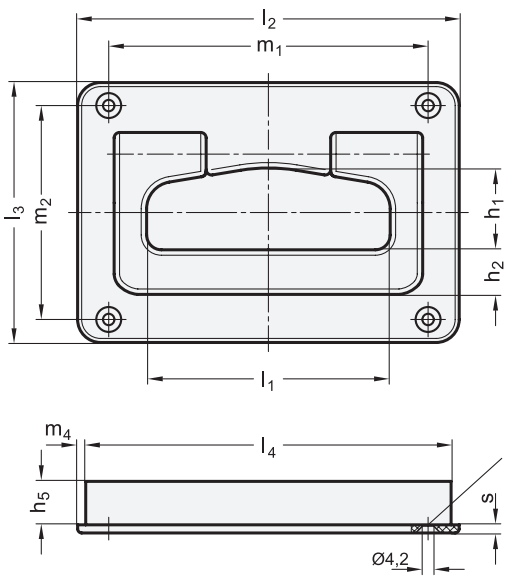
- *Product family Cleanline → Main Catalogue Page 17*
- *Folding handles GN 425.5 (in both end positions retained)*
  → Main Catalogue Page 123
- *Folding handles GN 425.2 (in both end positions retained)*
  → Main Catalogue Page 112
- *Folding handles with recessed tray GN 825.2*
  (Plastic, with spring-loaded return) → Page 42

How to order

1 2

GN 825.1-90-SW

1	l_1
2	Color



ELESA original design MPR.

CLEAN

iF product design award

1

l_1	h_1	h_2	h_3	h_4	h_5	l_2	l_3	l_4	l_5	m_1 ±0,1	m_2 ±0,1	m_3	m_4	s
90	29	16,5	47	77	16	141	96	135	65	118	79	16	3	3

Specification

2

- Plastic
  Polyamide PA
  - glass fiber reinforced
  - temperature resistant up to 100 °C
- Color (matte):
  black, RAL 9005 ● SW
  gray, RAL 7040 ○ GR
  white, RAL 9002, Cleanline ○ CL
- Pin
  Stainless Steel AISI 303
- Return spring
  Stainless Steel AISI 302
- *Strength properties → Page 246*
- *Plastic characteristics*
  → Main Catalogue Page 1483
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

The folding handles with recessed tray GN 825.2 are used if the handle is to protrude by a maximum of 3 mm when folded down.

After releasing the handle, it returns to its starting position by spring-loaded return.

see also...

- *Folding handles with recessed tray GN 425.8*
  (with handle locking or spring-loaded return) → Main Catalogue Page 124
- *Folding handles GN 825.1 (Plastic, with spring-loaded return)*
  → Main Catalogue Page 41

How to order

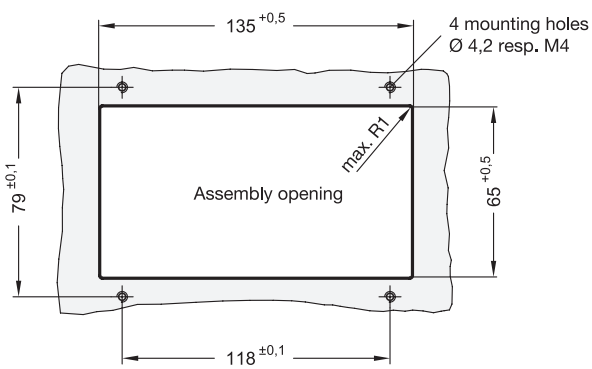
1 2

GN 825.2-90-SW

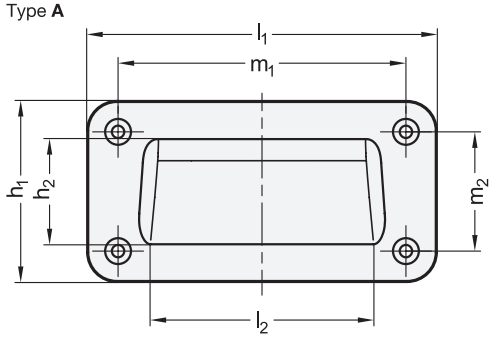
1	l_1
2	Color

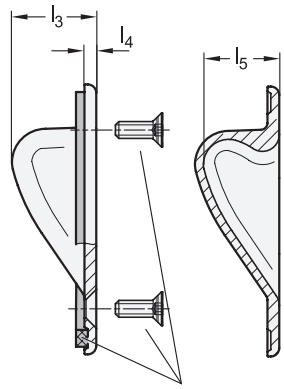
Folding handle with recessed tray GN 825.2
Folding handle GN 825.1 → *Page 41*

Installation dimensions



Type **A**





Countersunk sealing screws /
Housing seal
(for identification no. 2)

2 **Type**

A Mounting
from the operator's side

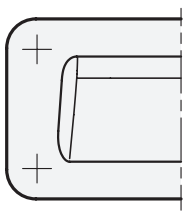
C Mounting from the back

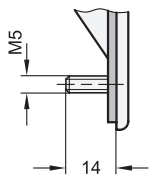
3 **Identification no.**

1 without sealing

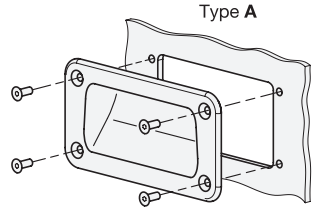
2 with sealing

Type **C**

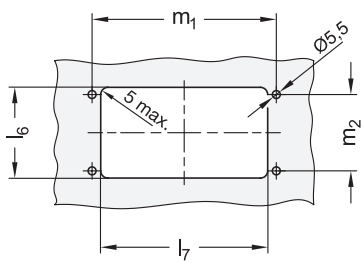




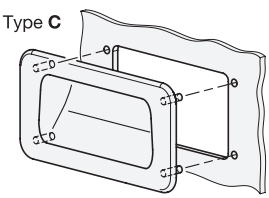
Type **A**



Mounting cut-out



Type **C**



1

l_1	h_1	h_2	l_2	l_3	l_4	l_5	l_6 +1	l_7 +1	m_1	m_2
127	80	43	72	25	3,5	22,5	60	88	100	53
155	80	43	99	25	3,5	22,5	60	115	128	53

Specification

4

- Zinc die casting
  plastic coated
  black, RAL 9005, textured finish ● **SW**
  silver, RAL 9006, textured finish ○ **SR**
- Housing seal (Identification no. 2)
  - Rubber NBR, black
  - glued
- Countersunk sealing screws DIN 7991 M5x16
  (Type A, identification no. 2)
  - Stainless Steel A2
  - Polyamide coating on head
- Grub screws (Type C)
  - Stainless Steel A2
  - molded-in
- Protection class IP 66
- RoHS

Information

Gripping trays GN 7330 can be easily and quickly installed from the front using countersunk screws or from the back with grub screws.

Gripping trays with housing seal (Identification no. 2) prevent the penetration of any dirt or liquids into the housing interior. Type A is supplied with four additional countersunk sealing screws, which feature a polyamide coating on the head to create a tight seal.

see also...
- *IP-Protection classes → Main Catalogue Page 1482*
- *Gripping trays GN 731 → Main Catalogue Page 162*

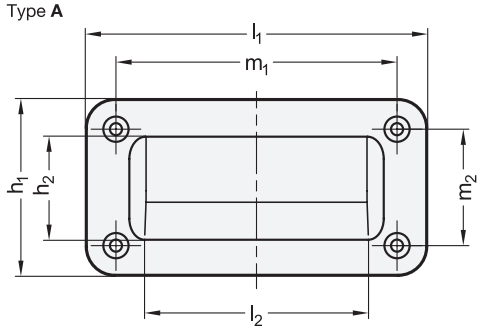
How to order

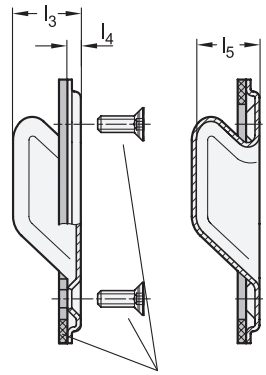
1 **2** **3** **4**

GN 7330-127-A-2-SW

1	l_1
2	**Type**
3	**Identification no.**
4	**Finish**

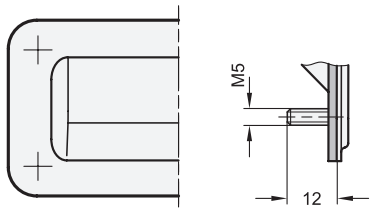
Type **A**



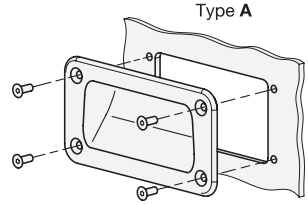


Countersunk sealing screws /
Housing seal
(for identification no. 2)

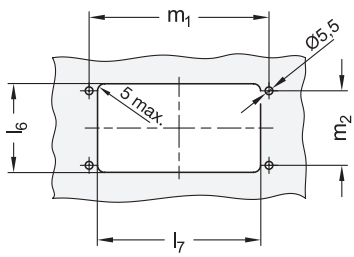
Type **C**



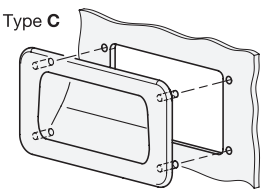
Type **A**



Mounting cut-out



Type **C**



Inox
Stainless
Steel

2 Type

A Mounting
from the operator's side
C Mounting from the back

3 Identification no.

1 without sealing
2 with sealing

1

l_1	h_1	h_2	l_2	l_3	l_4	l_5	l_6 +1	l_7 +1	m_1	m_2
155	80	42	109	20	3,5	19,2	60	115	128	53

Specification

4

- Stainless Steel AISI 304
  matte shot-blasted **GS**
- Housing seal (Identification no. 2)
  - Rubber NBR, black
  - glued
- Countersunk sealing screws
  (Type A, identification no. 2)
  DIN 7991 M5x16
  - Stainless Steel A2
  - Polyamide coating on head
- Grub screws (Type C)
  - Stainless Steel AISI 304
  - welded
- Protection class IP 66
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Information

Stainless Steel-Gripping trays GN 7332 can be easily and quickly installed from the front using countersunk screws or from the back with grub screws.

Stainless Steel-Gripping trays with housing seal (no. 2) prevent the penetration of any dirt or liquids into the housing interior. Type A is supplied with four additional countersunk sealing screws, which feature a polyamide coating on the head to create a tight seal.

see also...
- *IP-Protection classes → Main Catalogue Page 1482*
- *Gripping trays GN 731 → Main Catalogue Page 162*

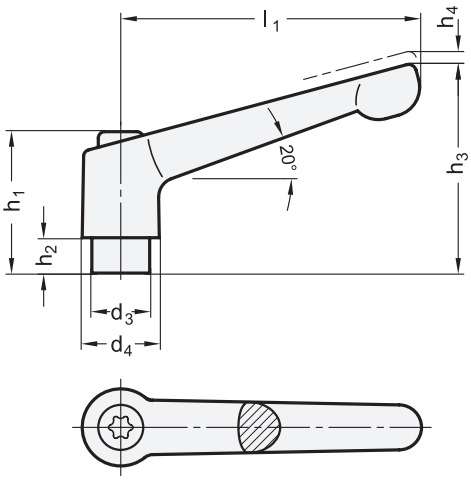
How to order

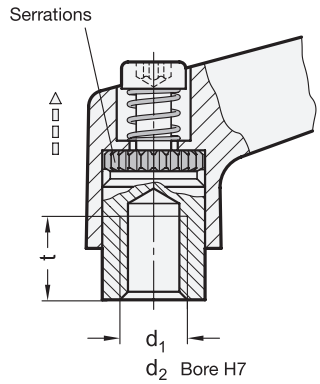
1 2 3 4
GN 7332-155-A-2-GS

1	l_1
2	Type
3	Identification no.
4	Finish

GN 300 Adjustable hand levers

Zinc die casting, bushing steel blackened





Inch sizes available

1 l1	2 d1 Thread			2 d2 H7 Bore		d3	d4	h1	h2	h3	h4 Stroke	t min.
22	M 3	M 4	M 5	B 4	B 5	8	10,5	18,5	2	23	3	5
30	M 3	-	-	-	-	10	13	24,5	4	31	3,5	7
30	M 4	M 5	M 6	B 5	B 6	10	13	24,5	4	31	3,5	9
45	M 4	M 5	M 6	B 5	B 6	10	13	24,5	4	34	3,5	9
63	M 6	M 8	-	B 8	-	13,5	17,5	31	6,5	45	4	11
78	M 8	M 10	M 12	B 8	B 10	16	21	36	8	54	4	14
92	M 10	M 12	-	B 12	-	19	24	43	11	64	4	17
108	M 12	M 14	M 16	B 12	B 16	23	30	50,5	12	75	5	22

Specification

3

- Handle
  Zinc die casting
- Plastic coated
  black, RAL 9005, textured finish — SW
  black, RAL 9011, silk finish — SZ
  orange, RAL 2004, textured finish — OS
  red, RAL 3000, textured finish — RS
  silver, RAL 9006, textured finish — SR
- chrome-plated — CR
- uncoated
  slide grinded — RH
- Bushing and retaining screw
  Steel, blackened
- *ISO-Fundamental tolerances*
  → Main Catalogue Page 1479
- RoHS

Information

Adjustable hand levers GN 300 are ideal whenever parts have to be clamped in a confined space or in a particular lever position. The centre insert is connected to the lever via serrations which can easily be disengaged.

Pulling the lever, disengages the serrations and allowing it to be swivelled to the ideal clamping position. On releasing the lever the serrations automatically re-engage.

see also...

- *Adjustable hand levers GN 300.1 (bushing Stainless Steel) → Page 52*
- *Adjustable Stainless Steel-Hand levers GN 300.5 (matte shot-blasted) → Page 54*
- *Flat adjustable hand levers GN 302 → Page 56*
- *Adjustable hand levers GN 300.4 (with increased clamping force) → Main Catalogue Page 332*
- *Adjustable hand levers GN 303 (with push button) → Main Catalogue Page 328*

How to order

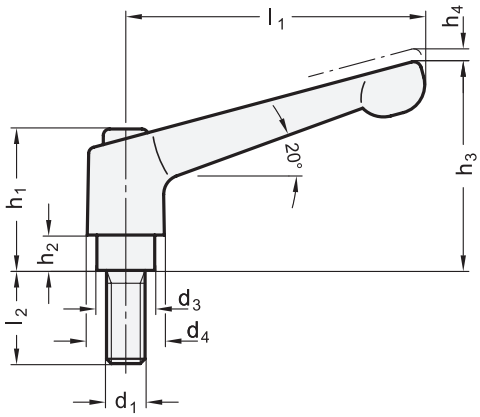
1 2 3

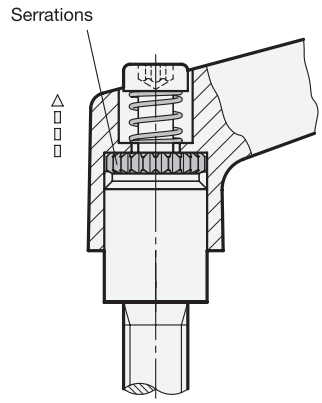
GN 300-92-M12-SR

1	l_1
2	d_1 (d_2)
3	Color (Finish)

Adjustable hand levers

Zinc die casting, threaded stud steel blackened





Inch sizes available

1 l_1	2 d_1		3 l_2								d_3	d_4	h_1	h_2	h_3	h_4 Stroke
22	M 3	-	6	8	10	12	16	-	-	-	8	10,5	18,5	2	23	3
22	M 4	M 5	12	16	20	25	32	-	-	-	8	10,5	18,5	2	23	3
30	M 3	-	6	8	10	12	16	-	-	-	10	13	24,5	4	31	3,5
30	M 4	-	12	16	20	25	32	-	-	-	10	13	24,5	4	31	3,5
30	M 5	M 6	12	16	20	25	32	40	50	-	10	13	24,5	4	31	3,5
45	M 4	-	12	16	20	25	32	-	-	-	10	13	24,5	4	34	3,5
45	M 5	M 6	12	16	20	25	32	40	50	-	10	13	24,5	4	34	3,5
63	M 6	M 8	12	16	20	25	32	40	50	63	13,5	17,5	31	6,5	45	4
63	M 10	-	20	25	32	40	50	63	80	-	13,5	17,5	31	6,5	45	4
78	M 8	M 10	16	20	25	32	40	50	63	80	16	21	36	8	54	4
78	M 12	-	20	25	32	40	50	63	80	-	16	21	36	8	54	4
92	M 10	M 12	16	20	25	32	40	50	63	80	19	24	43	11	64	4
92	M 16	-	25	32	40	50	63	80	-	-	19	24	43	11	64	4
108	M 12	M 16	25	32	40	50	63	80	120	-	23	30	50,5	12	75	5

Specification

4

- Handle
  Zinc die casting
- plastic coated
  black, RAL 9005, textured finish — SW
  black, RAL 9011, silk finish — SZ
  orange, RAL 2004, textured finish — OS
  red, RAL 3000, textured finish — RS
  silver, RAL 9006, textured finish — SR
- chrome-plated — CR
- uncoated — RH
  slide grinded
- Threaded stud and retaining screw
  Steel
  - Tensile strength class 5.8
  - blackened
- *Strength values of screws*
  → Main Catalogue Page 1481
- RoHS

Information

Adjustable hand levers GN 300 are ideal whenever parts have to be clamped in a confined space or in a particular lever position. The centre insert is connected to the lever via serrations which can easily be disengaged.

Pulling the lever, disengages the serrations and allowing it to be swivelled to the ideal clamping position. On releasing the lever the serrations automatically re-engage.

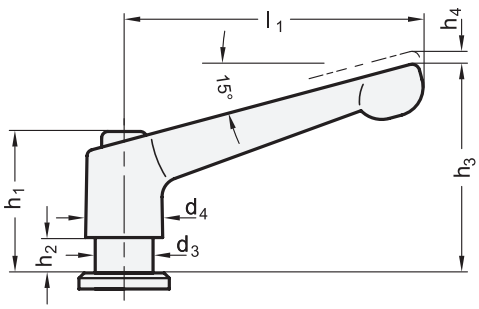
see also...

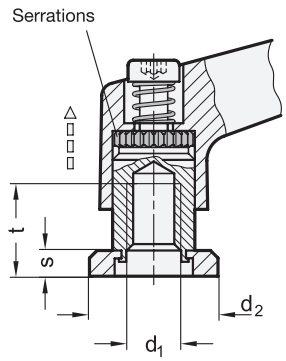
- *Adjustable hand levers GN 300.1 (threaded stud Stainless Steel) → Page 53*
- *Adjustable Stainless Steel-Hand levers GN 300.5 → Page 55*
- *Flat adjustable hand levers GN 302 → Page 57*
- *Adjustable hand levers GN 300.4 (increased clamping force)*
  → Main Catalogue Page 333

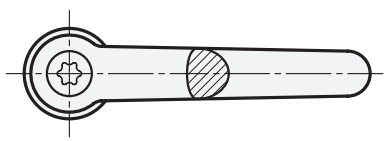
How to order

1 2 3 4
GN 300-63-M8-25-SW

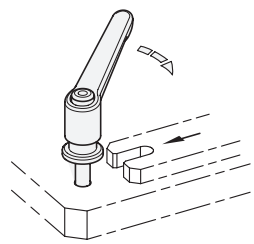
1	l_1
2	d_1
3	l_2
4	**Color (Finish)**







Application example



1 l_1	2 d_1	d_2	d_3	d_4	h_1	h_2	h_3	h_4 Stroke	s	t min.
30	M 5	13	10	13	24,5	4	31	3,5	2,5	10
45	M 6	15	10	13	24,5	4	34	3,5	3	10
63	M 8	20	13,5	17,5	31	6,5	45	4	3,5	13
78	M 10	25	16	21	36	8	54	4	4	16

Specification

3

- Handle
  Zinc die casting
- Plastic coated
  black, RAL 9005, textured finish **SW**
  orange, RAL 2004, textured finish **OS**
  red, RAL 3000, textured finish **RS**
  silver, RAL 9006, textured finish **SR**
- Threaded bushing and retaining screw
  Steel, blackened
- Washer
  Steel
  - case hardened
  - blackened
- RoHS

Information

Adjustable hand levers GN 307 are ideal whenever parts have to be clamped in a confined space or in a particular lever position. On releasing the handle the serrations re-engage automatically.

When pulling the handle, the serration frees itself and can be re-located into any required position. Engagement is achieved by „releasing“ the lever.

The washer cannot be removed and does not turn when the lever is actuated. It protects the clamped surface from damage. One typical application is to use the hand lever for slotted holes.

see also...

- *Adjustable hand levers GN 300 (without washer)* ➔ *Page 46*
- *Adjustable hand levers GN 300.4 (with increased clamping force)*
  ➔ *Main Catalogue Page 332*
- *Adjustable hand levers GN 303 (with push button)*
  ➔ *Main Catalogue Page 328*

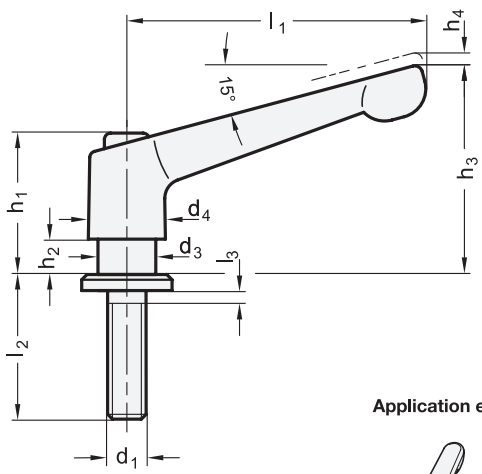
How to order

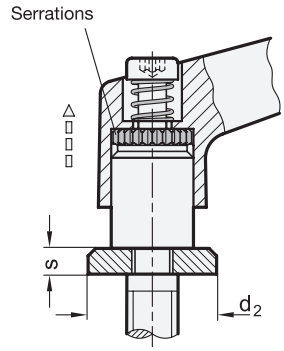
1 2 3
GN 307-63-M8-SW

1	l_1
2	d_1
3	Color

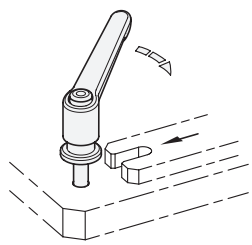
GN 307 Adjustable hand levers

Zinc die casting, with threaded stud steel and washer





Application example



1 l_1	2 d_1	3 l_2					d_2	d_3	d_4	l_3	h_1	h_2	h_3	h_4 Stroke	s
30	M 5	12	16	20	25	32	13	10	13	0,4	24,5	4	31	3,5	2,5
45	M 6	16	20	25	32	40	15	10	15	0,4	24,5	4	34	3,5	3
63	M 8	20	25	32	40	50	20	13,5	17,5	0,4	31	6,5	45	4	3,5
78	M 10	20	25	32	40	50	25	16	21	0,5	36	12	54	4	4

Specification

4

- Handle
  Zinc die casting
- Plastic coated
  black, RAL 9005, textured finish — SW
  orange, RAL 2004, textured finish — OS
  red, RAL 3000, textured finish — RS
  silver, RAL 9006, textured finish — SR
- Threaded stud and retaining screw
  Steel
  - Tensile strength class 5
  - blackened
- Washer
  Steel
  - case hardened
  - blackened
- *Strength values of screws*
  → Main Catalogue Page 1481
- RoHS

Information

Adjustable hand levers GN 307 are ideal whenever parts have to be clamped in a confined space or in a particular lever position. On releasing the handle the serrations re-engage automatically.

When pulling the handle, the serration frees itself and can be re-located into any required position. Engagement is achieved by „releasing“ the lever.

The washer cannot be removed and does not turn when the lever is actuated. It protects the clamped surface from damage. One typical application is to use the hand lever for slotted holes.

see also...

- *Adjustable hand levers GN 300 (without washer)* *→ Page 47*
- *Adjustable hand levers GN 300.4 (with increased clamping force)*
  → Main Catalogue Page 333
- *Adjustable hand levers GN 303 (with push button)*
  → Main Catalogue Page 329

How to order

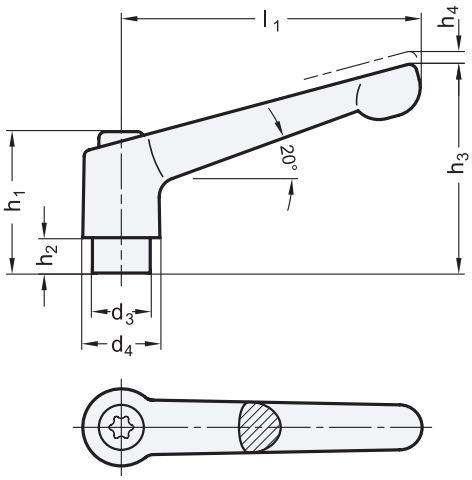
1 2 3 4

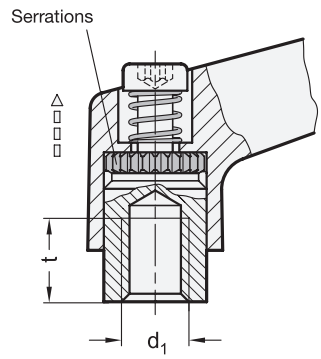
GN 307-45-M6-25-SW

1	l_1
2	d_1
3	l_2
4	Color

GN 300.2 Adjustable hand levers

Zinc die casting, bushing steel zinc plated





1 l1	2 d1			d3	d4	h1	h2	h3	h4 Stroke	t min.
22	M 3	M 4	M 5	8	10,5	18,5	2	23	3	5
30	M 4	M 5	M 6	10	13	24,5	4	31	3,5	9
45	M 4	M 5	M 6	10	13	24,5	4	34	3,5	9
63	M 6	M 8	-	13,5	17,5	31	6,5	45	4	11
78	M 8	M 10	-	16	21	36	8	54	4	14
92	M 10	M 12	-	19	24	43	11	64	4	17
108	M 12	M 16	-	23	30	50,5	12	75	5	22

Specification

3

- Handle
  Zinc die casting
- Plastic coated
  black, RAL 9005, textured finish — SW
  orange, RAL 2004, textured finish — OS
  red, RAL 3000, textured finish — RS
  silver, RAL 9006, textured finish — SR
- chrome-plated — CR
- uncoated
  slide grinded — RH
- Bushing and retaining screw
  Steel
  zinc plated, blue passivated
- *ISO-Fundamental tolerances*
  → Main Catalogue Page 1479
- RoHS

Information

Adjustable hand levers GN 300.2 are ideal whenever parts have to be clamped in a confined space or in a particular lever position. The centre insert is connected to the lever via serrations which can easily be disengaged.

Pulling the lever, disengages the serrations and allowing it to be swivelled to the ideal clamping position. On releasing the lever the serrations automatically re-engage.

see also...

- *Adjustable hand levers GN 300 (bushing steel, blackened) → Page 46*
- *Adjustable hand levers GN 300.1 (bushing Stainless Steel) → Page 52*
- *Adjustable Stainless Steel-Hand levers GN 300.5 (matte shot-blasted) → Page 54*
- *Adjustable hand levers GN 303 (with push button, bushing steel) → Main Catalogue Page 328*
- *Adjustable hand levers GN 303.1 (with push button, bushing St. Steel) → Main Catalogue Page 330*

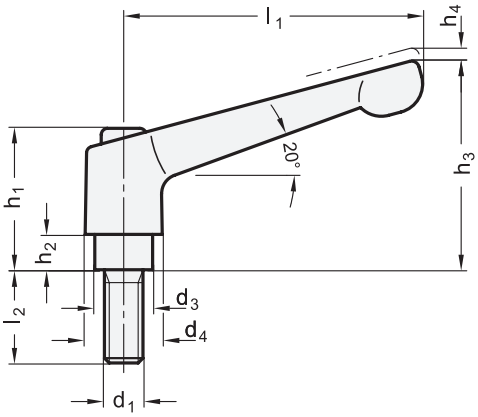
How to order

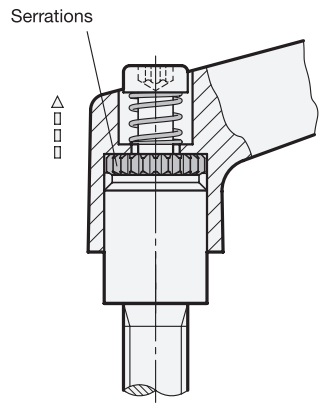
1 2 3
GN 300.2-78-M10-OS

1	l_1
2	d_1
3	Color (Finish)

GN 300.2 Adjustable hand levers

Zinc die casting, threaded stud steel zinc plated





1 l_1	2 d_1		3 l_2							d_3	d_4	h_1	h_2	h_3	h_4 Stroke
22	M 3	-	6	8	10	12	16	-	-	8	10,5	18,5	2	23	3
22	M 4	M 5	12	16	20	25	32	-	-	8	10,5	18,5	2	23	3
30	M 4	-	12	16	20	25	32	-	-	10	13	24,5	4	31	3,5
30	M 5	M 6	12	16	20	25	32	40	50	10	13	24,5	4	31	3,5
45	M 4	-	12	16	20	25	32	-	-	10	13	24,5	4	34	3,5
45	M 5	M 6	12	16	20	25	32	40	50	10	13	24,5	4	34	3,5
63	M 6	M 8	16	20	25	32	40	50	63	13,5	17,5	31	6,5	45	4
78	M 8	M 10	20	25	32	40	50	63	80	16	21	36	8	54	4
92	M 10	M 12	20	25	32	40	50	63	80	19	24	43	11	64	4
108	M 16	-	32	40	50	63	80	-	-	23	30	50,5	12	75	5

Specification

4

- Handle
  Zinc die casting
- Plastic coated
  black, RAL 9005, textured finish — SW
  orange, RAL 2004, textured finish — OS
  red, RAL 3000, textured finish — RS
  silver, RAL 9006, textured finish — SR
- chrome-plated — CR
- uncoated
  slide grinded — RH
- Threaded stud and retaining screw
  Steel
  zinc plated, blue passivated
- RoHS

Information

Adjustable hand levers GN 300.2 are ideal whenever parts have to be clamped in a confined space or in a particular lever position. The centre insert is connected to the lever via serrations which can easily be disengaged.

Pulling the lever, disengages the serrations and allowing it to be swivelled to the ideal clamping position. On releasing the lever the serrations automatically re-engage.

see also...

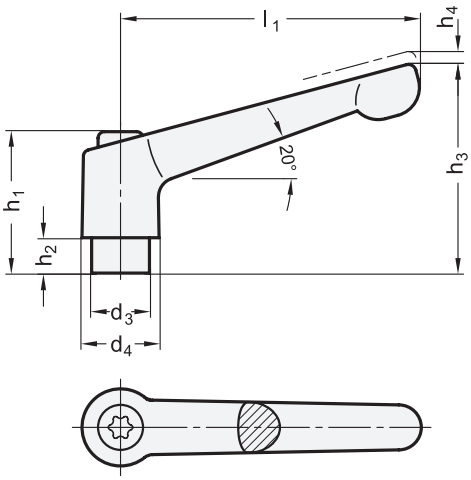
- *Adjustable hand levers GN 300 (threaded stud steel, blackened)* → *Page 47*
- *Adjustable hand levers GN 300.1 (threaded stud St. Steel)* → *Page 53*
- *Adjustable Stainless Steel-Hand levers GN 300.5 (matte shot-blasted)* → *Page 55*
- *Adjustable hand levers GN 303 (with push button, threaded stud steel)* → *Main Catalogue Page 329*
- *Adjustable hand levers GN 303.1 (with push button, threaded stud St. Steel)* → *Main Catalogue Page 331*

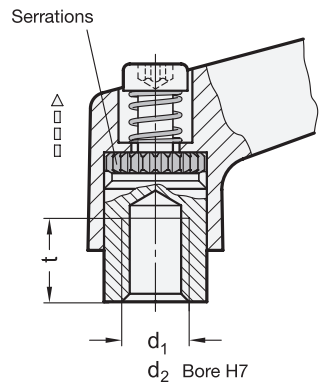
How to order

1 2 3 4

GN 300.2-63-M6-25-RS

1	l_1
2	d_1
3	l_2
4	**Color (Finish)**





Inch sizes available

1 l1	2 d1 Thread			2 d2 H7 Bore		d3	d4	h1	h2	h3	h4 Stroke	t min.
22	M 3	M 4	M 5	-	-	8	10,5	18,5	2	23	3	5
30	M 3	-	-	-	-	10	13	24,5	4	31	3,5	7
30	M 4	M 5	M 6	B 5	B 6	10	13	24,5	4	31	3,5	8
45	M 4	M 5	M 6	B 5	B 6	10	13	24,5	4	34	3,5	8
63	M 6	M 8	-	B 8	-	13,5	17,5	31	6,5	45	4	11
78	M 8	M 10	M 12	B 8	B 10	16	21	36	8	54	4	14
92	M 10	M 12	-	B 12	-	19	24	43	11	64	4	17
108	M 12	M 16	-	B 12	B 16	23	30	50,5	12	75	5	22

Specification

3

- Handle
  Zinc die casting
- plastic coated
  black, RAL 9005, textured finish — SW
  black, RAL 9011, silk finish — SZ
  orange, RAL 2004, textured finish — OS
  red, RAL 3000, textured finish — RS
  silver, RAL 9006, textured finish — SR
- chrome-plated — CR
- uncoated
  slide grinded — RH
- Bushing and retaining screw
  Stainless Steel AISI 303
- *ISO-Fundamental tolerances*
  → Main Catalogue Page 1479
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

Adjustable hand levers GN 300.1 are ideal whenever parts have to be clamped in a confined space or in a particular lever position. The centre insert is connected to the lever via serrations which can easily be disengaged.

Pulling the lever, disengages the serrations and allowing it to be swivelled to the ideal clamping position. On releasing the lever the serrations automatically re-engage.

see also...
- *Adjustable hand levers GN 300 (bushing steel) → Page 46*
- *Adjustable Stainless Steel-Hand levers GN 300.5 (matte shot-blasted) → Page 54*
- *Adjustable hand levers GN 303.1 (with push button) → Main Catalogue Page 330*

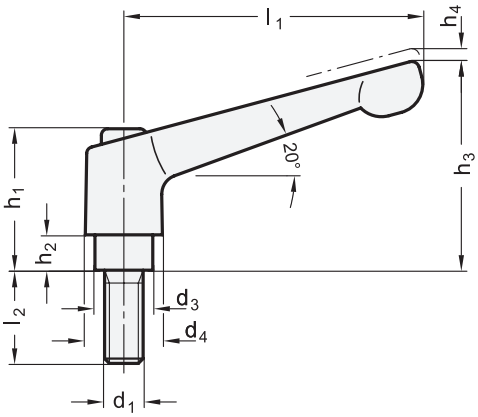
How to order

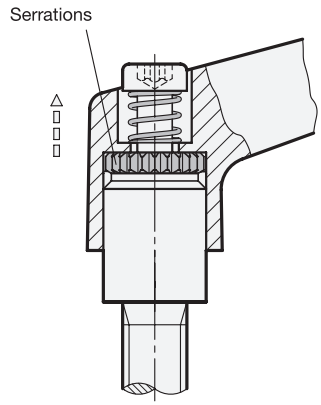
1 2 3
GN 300.1-78-M10-OS

1	l_1
2	d_1 (d_2)
3	Color (Finish)

Adjustable hand levers

Zinc die casting, threaded stud Stainless Steel





Inch sizes available

1 l1	2 d1			3 l2							d3	d4	h1	h2	h3	h4 Stroke
22	M 3	-	-	6	8	10	12	16	-	-	8	10,5	18,5	2	23	3
22	M 4	M 5	-	12	16	20	25	32	-	-	8	10,5	18,5	2	23	3
30	M 3	-	-	6	8	10	12	16	-	-	10	13	24,5	4	31	3,5
30	M 4	-	-	12	16	20	25	32	-	-	10	13	24,5	4	31	3,5
30	M 5	M 6	-	12	16	20	25	32	40	50	10	13	24,5	4	31	3,5
45	M 4	-	-	12	16	20	25	32	-	-	10	13	24,5	4	34	3,5
45	M 5	M 6	-	12	16	20	25	32	40	50	10	13	24,5	4	34	3,5
63	M 6	M 8	-	16	20	25	32	40	50	63	13,5	17,5	31	6,5	45	4
78	M 8	M 10	M 12	20	25	32	40	50	63	80	16	21	36	8	54	4
92	M 10	M 12	-	20	25	32	40	50	63	80	19	24	43	11	64	4
108	M 12	M 16	-	32	40	50	63	80	-	-	23	30	50,5	12	75	5

Specification

4

- Handle
  Zinc die casting
- plastic coated
  black, RAL 9005, textured finish — SW
  black, RAL 9011, silk finish — SZ
  orange, RAL 2004, textured finish — OS
  red, RAL 3000, textured finish — RS
  silver, RAL 9006, textured finish — SR
- chrome-plated — CR
- uncoated
  slide grinded — RH
- Threaded stud and retaining screw
  Stainless Steel AISI 303
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

Adjustable hand levers GN 300.1 are ideal whenever parts have to be clamped in a confined space or in a particular lever position. The centre insert is connected to the lever via serrations which can easily be disengaged.

Pulling the lever, disengages the serrations and allowing it to be swivelled to the ideal clamping position. On releasing the lever the serrations automatically re-engage.

see also...

- *Adjustable hand levers GN 300 (threaded stud steel) → Page 47*
- *Adjustable Stainless Steel-Hand levers GN 300.5 (matte shot-blasted) → Page 54*
- *Adjustable hand levers GN 303.1 (with push button) → Main Catalogue Page 331*

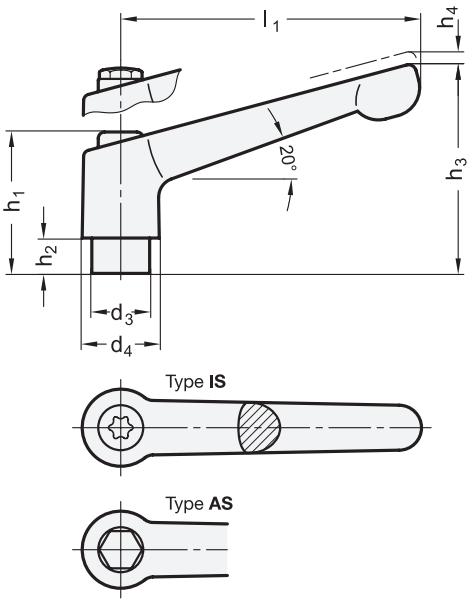
How to order

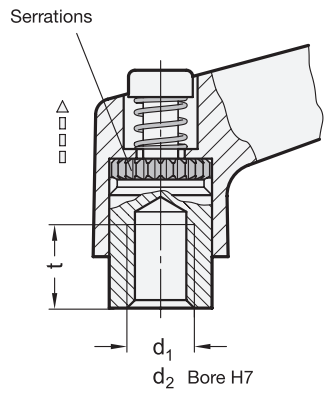
1 2 3 4

GN 300.1-63-M8-32-RS

1	l_1
2	d_1
3	l_2
4	**Color (Finish)**

Adjustable St. Steel-Hand levers





Inox Stainless Steel

Inch sizes available

3 Type

AS with external hexagon
IS with internal hexalobular

1	2			2								
l_1	**d_1** Thread			**d_2** H7 Bore		**d_3**	**d_4**	**h_1**	**h_2**	**h_3**	**h_4** Stroke	**t** min.
30	M 3	-	-	-	-	10	13	24,5	4	31	3,5	7
30	M 4	M 5	M 6	B 5	B 6	10	13	24,5	4	31	3,5	8
45	M 4	M 5	M 6	B 5	B 6	10	13	24,5	4	34	3,5	8
63	M 6	M 8	-	B 8	-	13,5	17,5	31	6,5	45	4	11
78	M 8	M 10	M 12	B 8	B 10	16	21	36	8	54	4	14
92	M 10	M 12	-	B 12	-	19	24	43	11	64	4	17

Specification

- **GN 300.5**
  Handle
  Precision casting
  - Stainless Steel AISI CF-8
  - matte shot-blasted
- **GN 300.6**
  Handle
  Stainless Steel-Precision casting
  - AISI CF-8
  - electropolished
- Bushing
  Stainless Steel AISI 303
- Retaining screw
  Stainless Steel AISI 303
- Spring
  Stainless Steel AISI 301
- *ISO-Fundamental tolerances*
  → Main Catalogue Page 1479
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

Adjustable hand levers GN 300.5 / GN 300.6 with solid Stainless Steel-Handle, correspond to applications where „agressive“ surrounding conditions are given, or where Stainless Steel materials are prescribed such as in food processing or chemical industry.

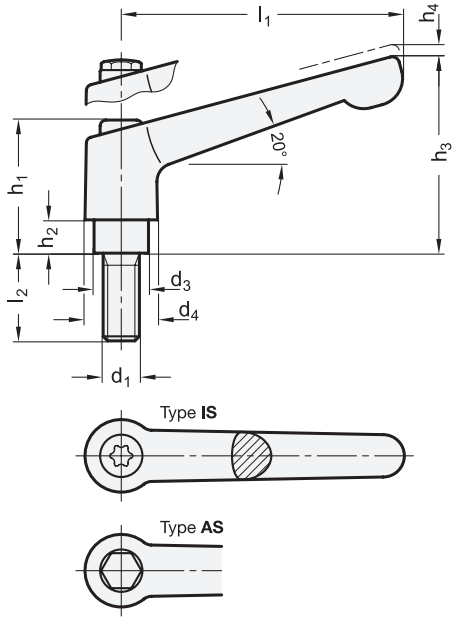
Retaining screws with hexagon head (Type AS) comply with the requirement „prevents water from accumulating“.

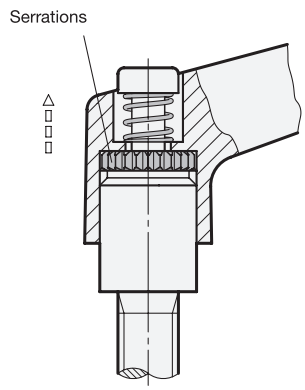
Adjustable hand levers have proved to be ideal whenever parts have to be clamped in a confined space or in a particular lever position. The centre insert is connected to the lever via serrations which can easily be disengaged.

Pulling the lever, disengages the serrations and allowing it to be swivelled to the ideal clamping position. On releasing the lever the serrations automatically re-engage.

How to order (matte shot-blasted)		
1 2 3	1	l_1
GN 300.5-78-M10-AS	2	d_1 (d_2)
	3	Type

How to order (electropolished)		
1 2 3	1	l_1
GN 300.6-92-M12-IS	2	d_1 (d_2)
	3	Type





Inox Stainless Steel

Inch sizes available

4 Type

AS with external hexagon
IS with internal hexalobular

1 l_1	2 d_1			3 l_2							d_3	d_4	h_1	h_2	h_3	h_4 Stroke
30	M 3	-	-	6	8	10	12	16	-	-	10	13	24,5	4	31	3,5
30	M 4	-	-	12	16	20	25	32	-	-	10	13	24,5	4	31	3,5
30	M 5	M 6	-	12	16	20	25	32	40	50	10	13	24,5	4	31	3,5
45	M 4	-	-	12	16	20	25	32	-	-	10	13	24,5	4	34	3,5
45	M 5	M 6	-	12	16	20	25	32	40	50	10	13	24,5	4	34	3,5
63	M 6	M 8	-	16	20	25	32	40	50	63	13,5	17,5	31	6,5	45	4
78	M 8	M 10	M 12	20	25	32	40	50	63	80	16	21	36	8	54	4
92	M 10	M 12	-	20	25	32	40	50	63	80	19	24	43	11	64	4

Specification

- **GN 300.5**
  Handle
  Stainless Steel-Precision casting
  - AISI CF-8
  - matte shot-blasted
- **GN 300.6**
  Handle
  Stainless Steel-Precision casting
  - AISI CF-8
  - electropolished
- Threaded stud
  Stainless Steel AISI 303
- Retaining screw
  Stainless Steel AISI 303
- Spring
  Stainless Steel AISI 301
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Information

Adjustable hand levers GN 300.5 / GN 300.6 with solid Stainless Steel-Handle, correspond to applications where „agressive“ surrounding conditions are given, or where Stainless Steel materials are prescribed such as in food processing or chemical industry.

Retaining screws with hexagon head (Type AS) comply with the requirement „prevents water from accumulating“.

Adjustable hand levers have proved to be ideal whenever parts have to be clamped in a confined space or in a particular lever position. The centre insert is connected to the lever via serrations which can easily be disengaged.

How to order (matte shot-blasted)

1 2 3 4
GN 300.5-63-M8-32-IS

1	l_1
2	d_1
3	l_2
4	Type

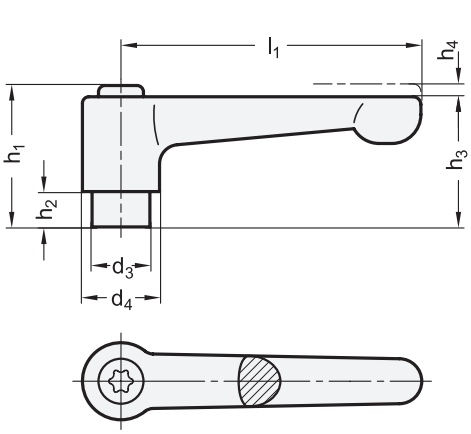
How to order (electropolished)

1 2 3 4
GN 300.6-92-M12-50-AS

1	l_1
2	d_1
3	l_2
4	Type

GN 302 Flat adjustable hand levers

Zinc die casting, bushing steel



Inch sizes available

1	2			2								
l_1	d_1 Thread			d_2 H7 Bore		d_3	d_4	h_1	h_2	h_3	h_4 Stroke	t min.
22	M 3	M 4	M 5	B 4	B 5	8	10,5	18,5	2	16,5	3	5
30	M 3	-	-	-	-	10	13	24,5	4	22	3,5	7
30	M 4	M 5	M 6	B 5	B 6	10	13	24,5	4	22	3,5	9
45	M 4	M 5	M 6	B 5	B 6	10	13	24,5	4	22	3,5	9
63	M 6	M 8	-	B 8	-	13,5	17,5	31	6,5	28,5	4	11
78	M 8	M 10	M 12	B 8	B 10	16	21	36	8	34	4	14

Specification

3

- Handle
  Zinc die casting
- plastic coated
  black, RAL 9005, textured finish **SW**
  orange, RAL 2004, textured finish **OS**
  red, RAL 3000, textured finish **RS**
  silver, RAL 9006, textured finish **SR**
- Bushing and retaining screw
  Steel, blackened
- *ISO-Fundamental tolerances*
  → Main Catalogue Page 1479
- RoHS

Information

Adjustable hand levers GN 302 have a straight lever, not inclined, being parallel to the clamping space.

Adjustable hand levers are ideal whenever parts have to be clamped in a confined space or in a particular lever position. The centre insert is connected to the lever via serrations which can easily be disengaged.

Pulling the lever, disengages the serrations and allowing it to be swivelled to the ideal clamping position. On releasing the lever the serrations automatically re-engage.

see also...

- *Flat adjustable hand levers GN 302.1 (bushing Stainless Steel) → Page 58*
- *Adjustable hand levers GN 300 (bushing steel) → Page 46*
- *Adjustable hand levers GN 300.1 (bushing Stainless Steel) → Page 52*

How to order

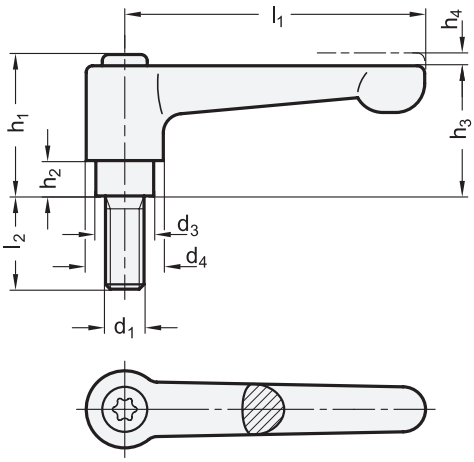
1 2 3

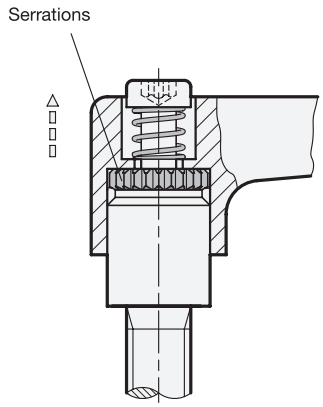
GN 302-45-M4-SR

1	l_1
2	d_1 (d_2)
3	Color

GN 302 Flat adjustable hand levers

Zinc die casting, threaded stud steel





Inch sizes available

1 l1	2 d1		3 l2								d3	d4	h1	h2	h3	h4 Stroke
22	M 3	-	6	8	10	12	16	-	-	-	8	10,5	18,5	2	16,5	3
22	M 4	M 5	12	16	20	25	32	-	-	-	8	10,5	18,5	2	16,5	3
30	M 3	-	6	8	10	12	16	-	-	-	10	13	24,5	4	22	3,5
30	M 4	-	12	16	20	25	32	-	-	-	10	13	24,5	4	22	3,5
30	M 5	M 6	12	16	20	25	32	40	50	-	10	13	24,5	4	22	3,5
45	M 4	-	12	16	20	25	32	-	-	-	10	13	24,5	4	22	3,5
45	M 5	M 6	12	16	20	25	32	40	50	-	10	13	24,5	4	22	3,5
63	M 6	M 8	12	16	20	25	32	40	50	63	13,5	17,5	31	6,5	28,5	4
63	M 10	-	20	25	32	40	50	63	80	-	13,5	17,5	31	6,5	28,5	4
78	M 8	M 10	16	20	25	32	40	50	63	80	16	21	36	8	34	4
78	M 12	-	20	25	32	40	50	63	80	-	16	21	36	8	34	4

Specification

4

- Handle
  Zinc die casting
- plastic coated
  black, RAL 9005, textured finish — SW
  orange, RAL 2004, textured finish — OS
  red, RAL 3000, textured finish — RS
  silver, RAL 9006, textured finish — SR
- Threaded stud and retaining screw
  Steel
  - Tensile strength class 5.8
  - blackened
- *Strength values of screws*
  → Main Catalogue Page 1481
- RoHS

Information

Adjustable hand levers GN 302 have a straight lever, not inclined, being parallel to the clamping space.

Adjustable hand levers are ideal whenever parts have to be clamped in a confined space or in a particular lever position. The centre insert is connected to the lever via serrations which can easily be disengaged.

Pulling the lever, disengages the serrations and allowing it to be swivelled to the ideal clamping position. On releasing the lever the serrations automatically re-engage.

see also...

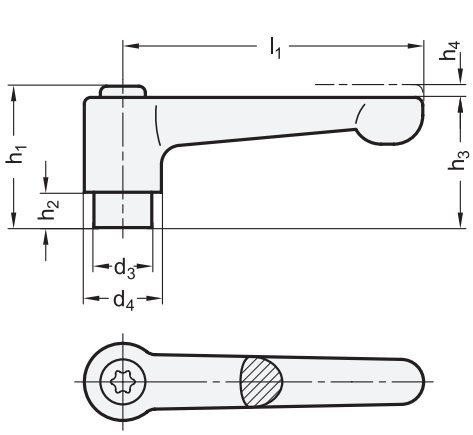
- *Flat adjustable hand levers GN 302.1 (threaded stud Stainless Steel)*
  → Page 59
- *Adjustable hand levers GN 300 (threaded stud steel) → Page 47*
- *Adjustable hand levers GN 300.1 (threaded stud Stainless Steel)*
  → Page 53

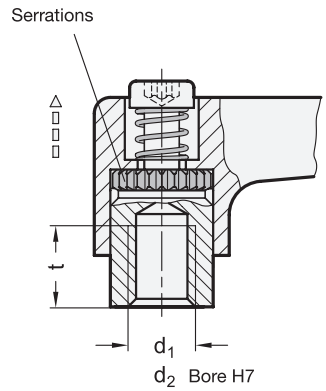
How to order

1 2 3 4

GN 302-63-M8-25-SW

1	l_1
2	d_1
3	l_2
4	Color





Inch sizes available

1 l_1	2 d_1 Thread			2 d_2 H7 Bore		d_3	d_4	h_1	h_2	h_3	h_4 Stroke	t min.
22	M 3	M 4	M 5	-	-	8	10,5	18,5	2	16,5	3	5
30	M 4	M 5	M 6	B 5	B 6	10	13	24,5	4	22	3,5	9
45	M 4	M 5	M 6	B 5	B 6	10	13	24,5	4	22	3,5	9
63	M 6	M 8	-	B 8	-	13,5	17,5	31	6,5	28,5	4	11
78	M 8	M 10	M 12	B 8	B 10	16	21	36	8	34	4	14

Specification

3

- Handle
  Zinc die casting
- plastic coated
  black, RAL 9005, textured finish **SW**
  orange, RAL 2004, textured finish **OS**
  red, RAL 3000, textured finish **RS**
  silver, RAL 9006, textured finish **SR**
- Bushing and retaining screw
  Stainless Steel AISI 303
- *ISO-Fundamental tolerances*
  → Main Catalogue Page 1479
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

Adjustable hand levers GN 302.1 have a straight lever, not inclined, being parallel to the clamping space.

Adjustable hand levers are ideal whenever parts have to be clamped in a confined space or in a particular lever position. The centre insert is connected to the lever via serrations which can easily be disengaged.

Pulling the lever, disengages the serrations and allowing it to be swivelled to the ideal clamping position. On releasing the lever the serrations automatically re-engage.

see also...

- *Flat adjustable hand levers GN 302 (bushing steel) → Page 56*
- *Adjustable hand levers GN 300 (bushing steel) → Page 46*
- *Adjustable hand levers GN 300.1 (bushing Stainless Steel) → Page 52*

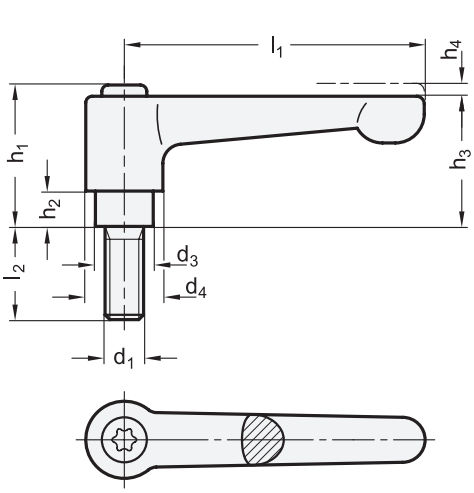
How to order

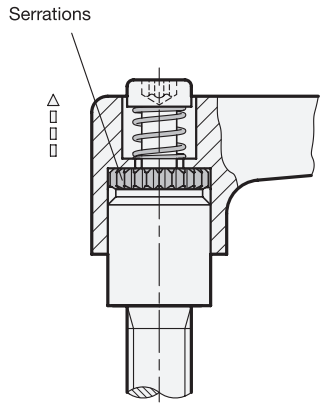
1 2 3
GN 302.1-63-M6-SW

1	l_1
2	d_1 (d_2)
3	Color

GN 302.1 Flat adjustable hand levers

Zinc die casting, threaded stud Stainless Steel





Inch sizes available

1 l_1	2 d_1			3 l_2							d_3	d_4	h_1	h_2	h_3	h_4 Stroke
22	M 3	-	-	6	8	10	12	16	-	-	8	10,5	18,5	2	16,5	3
22	M 4	M 5	-	12	16	20	25	32	-	-	8	10,5	18,5	2	16,5	3
30	M 4	-	-	12	16	20	25	32	-	-	10	13	24,5	4	22	3,5
30	M 5	M 6	-	12	16	20	25	32	40	50	10	13	24,5	4	22	3,5
45	M 4	-	-	12	16	20	25	32	-	-	10	13	24,5	4	22	3,5
45	M 5	M 6	-	12	16	20	25	32	40	50	10	13	24,5	4	22	3,5
63	M 6	M 8	-	16	20	25	32	40	50	63	13,5	17,5	31	6,5	28,5	4
78	M 8	M 10	M 12	20	25	32	40	50	63	80	16	21	36	8	34	4

Specification

4

- Handle
  Zinc die casting
- plastic coated
  black, RAL 9005, textured finish — SW
  orange, RAL 2004, textured finish — OS
  red, RAL 3000, textured finish — RS
  silver, RAL 9006, textured finish — SR
- Threaded stud and retaining screw
  Stainless Steel AISI 303
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

Adjustable hand levers GN 302.1 have a straight lever, not inclined, being parallel to the clamping space.

Adjustable hand levers are ideal whenever parts have to be clamped in a confined space or in a particular lever position. The centre insert is connected to the lever via serrations which can easily be disengaged.

Pulling the lever, disengages the serrations and allowing it to be swivelled to the ideal clamping position. On releasing the lever the serrations automatically re-engage.

see also...

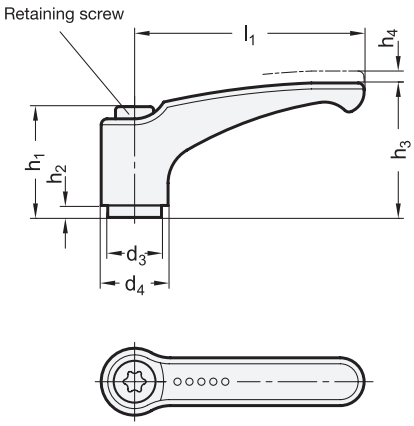
- *Flat adjustable hand levers GN 302 (threaded stud steel) → Page 57*
- *Adjustable hand levers GN 300 (threaded stud steel) → Page 47*
- *Adjustable hand levers GN 300.1 (threaded stud Stainless Steel) → Page 53*

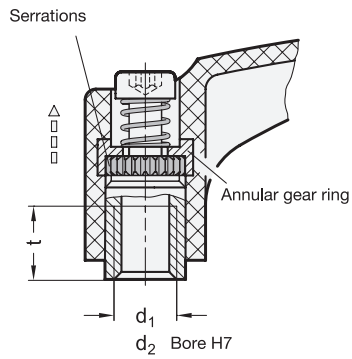
How to order

1 2 3 4

GN 302.1-78-M8-25-SW

1	l_1
2	d_1
3	l_2
4	Colour (Finish)





ELESA original design ERZ.

1 l_1	2 d_1 Thread			2 d_2 H7 Bore		d_3	d_4	h_1	h_2	h_3	h_4 Stroke	t min.
44	M 4	M 5	M 6	B 5	B 6	10	15,5	24,5	3,5	30,5	3,5	8
63	M 6	M 8	-	B 8	-	13,5	19	31	3,5	38,5	4	10
78	M 8	M 10	M 12	B 8	B 10	16	23	36	3,5	46,5	4	14
95	M 10	M 12	-	B 12	-	19	26,5	43	5	56,5	4	17

Specification

3

- Handle
  Plastic
  Technopolymer (Polyamide PA)
  - glass fiber reinforced
  - temperature resistant up to 130 °C
  - black-gray, RAL 7021 ● SG
  - orange, RAL 2004 ● OR
- Annular gear ring
  Zinc die casting
- Bushing and retaining screw
  Steel, blackened
- *Strength values of screws*
  → *Main Catalogue Page 1481*
- *Plastic characteristics*
  → *Main Catalogue Page 1483*
- RoHS

Information

Adjustable hand levers GN 604 like all the products of the Ergostyle® family are renowned for their good style but also their ergonomical shape. The gently arched handle with a reinforced end of the lever gives the operator a good grip.

Pulling the lever disengages the serration and allows it to be turned in either direction to reach the ideal new location. On releasing the handle the serrations re-engage automatically.

see also...
- *Product family Ergostyle®* → *Main Catalogue Page 17*
- *Adjustable hand levers GN 604.1 (Plastic, bushing Stainless Steel)*
  → *Page 62*

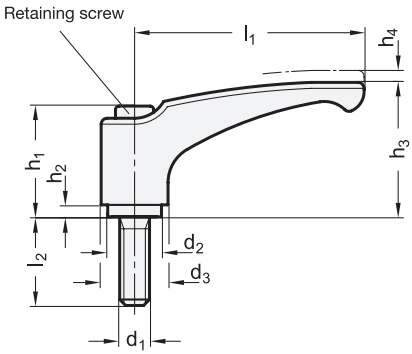
How to order

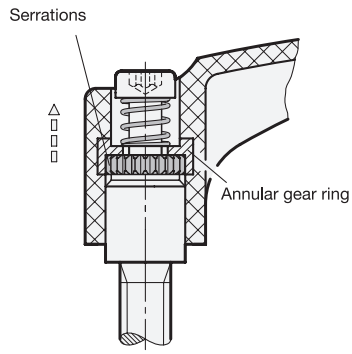
1 2 3
GN 604-44-M6-SG

1	l_1
2	d_1 (d_2)
3	Color

GN 604 Adjustable hand levers

Plastic, threaded stud steel





ELESA original design ERZ.p

1 l_1	2 d_1		3 l_2								d_2	d_3	h_1	h_2	h_3	h_4 Stroke
44	M 4	-	12	16	20	25	32	-	-	-	10	15,5	24,5	3,5	30,5	3,5
44	M 5	M 6	12	16	20	25	32	40	50	-	10	15,5	24,5	3,5	30,5	3,5
63	M 6	M 8	12	16	20	25	32	40	50	63	13,5	19	31	3,5	38,5	4
63	M 10	-	20	25	32	40	50	63	80	-	13,5	19	31	3,5	38,5	4
78	M 8	M 10	16	20	25	32	40	50	63	80	16	23	36	3,5	46,5	4
78	M 12	-	20	25	32	40	50	63	80	-	16	23	36	3,5	46,5	4
95	M 10	M 12	16	20	25	32	40	50	63	80	19	26,5	43	5	56,5	4
95	M 16	-	25	32	40	50	63	80	-	-	19	26,5	43	5	56,5	4

Specification

4

- Handle
  Plastic
  Technopolymer (Polyamide PA)
  - glass fiber reinforced
  - temperature resistant up to 130 °C
  - black-gray, RAL 7021 SG
  - orange, RAL 2004 OR
- Annular gear ring
  Zinc die casting
- Threaded stud and retaining screw
  Steel
  - Tensile strength class 5.8
  - blackened
- *Strength values of screws*
  → Main Catalogue Page 1481
- *Plastic characteristics*
  → Main Catalogue Page 1483
- RoHS

Information

Adjustable hand levers GN 604, like all the products of the Ergostyle® family are renowned for their good style but also their ergonomical shape.

The gently arched handle with a reinforced end of the lever gives the operator a good grip.

Pulling the lever disengages the serration and allows it to be turned in either direction to reach the ideal new location. On releasing the handle the serrations re-engage automatically.

see also...

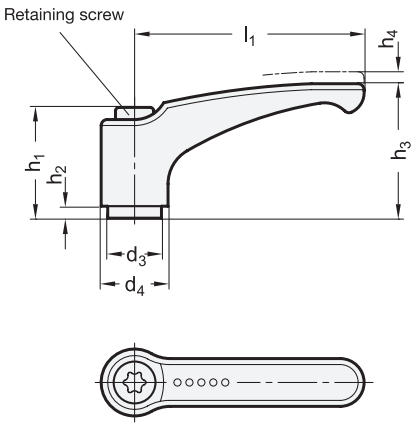
- *Product family Ergostyle® → Main Catalogue Page 17*
- *Adjustable hand levers GN 604.1 (Plastic, threaded stud Stainless Steel) → Page 63*

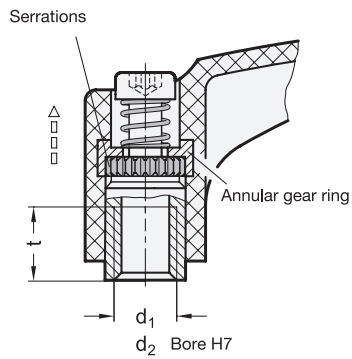
How to order

1 2 3 4

GN 604-95-M12-25-SG

1	l_1
2	d_1
3	l_2
4	Color





ELESA original design ERZ.SST

Rost frei Inox Stainless Steel

1 l1	2 d1 Thread			2 d2 H7 Bore		d3	d4	h1	h2	h3	h4 Stroke	t min.
44	M 4	M 5	M 6	B 5	B 6	10	15,5	24,5	3,5	30,5	3,5	8
63	M 6	M 8	-	B 8	-	13,5	19	31	3,5	38,5	4	10
78	M 8	M 10	M 12	B 8	B 10	16	23	36	3,5	46,5	4	14
95	M 10	M 12	-	B 12	-	19	26,5	43	5	56,5	4	17

Specification

3

- Handle
  Plastic
  Technopolymer (Polyamide PA)
  - glass fiber reinforced
  - temperature resistant up to 130 °C
  - black-gray, RAL 7021 ● SG
  - orange, RAL 2004 ● OR
- Annular gear ring
  Zinc die casting
- Bushing and retaining screw
  Stainless Steel AISI 303
- *ISO-Fundamental tolerances*
  → Main Catalogue Page 1479
- *Plastic characteristics*
  → Main Catalogue Page 1483
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

Adjustable hand levers GN 604 like all the products of the Ergostyle® family are renowned for their good style but also their ergonomical shape.

The gently arched handle with a reinforced end of the lever gives the operator a good grip.

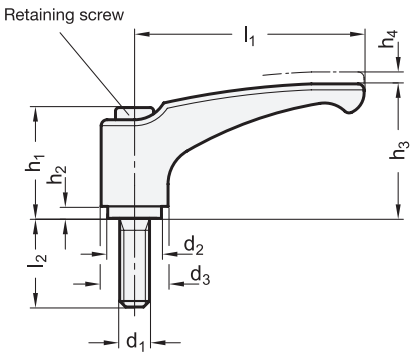
Pulling the lever disengages the serration and allows it to be turned in either direction to reach the ideal new location. On releasing the handle the serrations re-engage automatically.

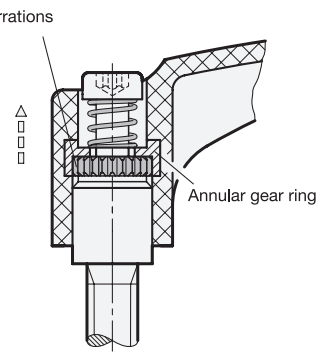
see also...
- *Product family Ergostyle® → Main Catalogue Page 17*
- *Adjustable hand levers GN 604 (Plastic, bushing steel) → Page 61*

How to order

GN 604.1-78-M10-SG (1 2 3)

1	l1
2	d1 (d2)
3	Color





ELESA original design: ERZ.SST-p

Rost frei Inox Stainless Steel

1 l_1	2 d_1			3 l_2							d_2	d_3	h_1	h_2	h_3	h_4 Stroke
44	M 4	-	-	12	16	20	25	32	-	-	10	15,5	24,5	3,5	30,5	3,5
44	M 5	M 6	-	12	16	20	25	32	40	50	10	15,5	24,5	3,5	30,5	3,5
63	M 6	M 8	-	16	20	25	32	40	50	63	13,5	19	31	3,5	38,5	4
78	M 8	M 10	M 12	20	25	32	40	50	63	80	16	23	36	3,5	46,5	4
95	M 10	M 12	-	20	25	32	40	50	63	80	19	26,5	43	5	56,5	4

Specification

4

- Handle
  Plastic
  Technopolymer (Polyamide PA)
  - glass fiber reinforced
  - temperature resistant up to 130 °C
  - black-gray, RAL 7021 ● SG
  - orange, RAL 2004 ● OR
- Annular gear ring
  Zinc die casting
- Threaded stud and retaining screw
  Stainless Steel AISI 303
- *Plastic characteristics*
  → *Main Catalogue Page 1483*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Information

Adjustable hand levers GN 604 like all the products of the Ergostyle® family are renowned for their good style but also their ergonomical shape.

The gently arched handle with a reinforced end of the lever gives the operator a good grip.

Pulling the lever disengages the serration and allows it to be turned in either direction to reach the ideal new location. On releasing the handle the serrations re-engage automatically.

see also...
- *Product family Ergostyle® → Main Catalogue Page 17*
- *Adjustable hand levers GN 604 (Plastic, threaded stud steel) → Page 61*

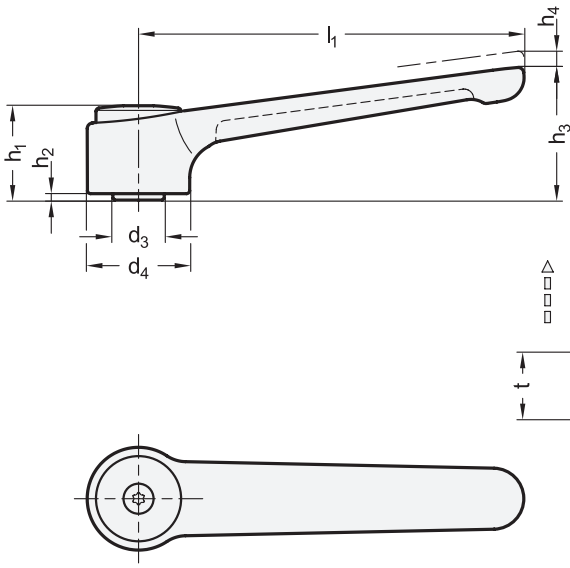
How to order

1 2 3 4
GN 604.1-95-M12-25-SG

1	l_1
2	d_1
3	l_2
4	Color

Flat adjustable tension levers

Zinc die casting



Inch sizes available

iF product design award

GERMAN DESIGN AWARD

1	2			2								
l_1	d_1 Thread			d_2 H7 Bore		d_3	d_4	h_1	h_2	h_3	h_4 Stroke	t min.
120	M 8	M 10	M 12	B 8	B 10	16	32	29,5	2	41,5	2,5	14
145	M 12	M 16	-	B 12	B 16	23	40	42	4	56	4	22

Specification

3

- Handle
  Zinc die casting
- Plastic coated
  black, RAL 9005, textured finish ● SW
  silver, RAL 9006, textured finish ○ SR
- Hub cover
  Plastic
  - black for SW
  - light gray for SR
- Countersunk screw
  Stainless Steel
  - chemically blackened for SW
  - blank for SR
- **GN 126**
  Threaded bushing / bore bushing
  Steel, blackened
- **GN 126.1**
  Threaded bushing / bore bushing
  Stainless Steel AISI 303
- *ISO-Fundamental tolerances*
  → Main Catalogue Page 1479
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

Flat adjustable tension levers GN 126 / GN 126.1 are characterized by their low height and the timelessly elegant design.

They are ideal whenever swiveling in a confined space is required or the lever is to be clamped in a particular position. The threaded insert / bored bushing is moveably attached to the handle with serrations.

Pulling the lever disengages the serrations, allowing it to be swiveled to the ideal clamping position. On “releasing” the handle, the serrations re-engage automatically.

see also...

- *Adjustable hand levers GN 300 (Bushing steel) → Page 46*
- *Adjustable hand levers GN 300.1 (Bushing Stainless Steel) → Page 52*
- *Adjustable Stainless Steel-Hand levers GN 300.5 (matte shot-blasted) → Page 54*
- *Flat adjustable tension levers GN 125 (Bushing steel) → Main Catalogue Page 352*
- *Flat adjustable Stainless Steel-Tension levers GN 125.5 → Main Catalogue Page 354*

How to order (Bushing steel)

1 2 3

GN 126-120-M10-SR

1	l_1
2	d_1 (d_2)
3	Color

How to order (Bushing Stainless Steel)

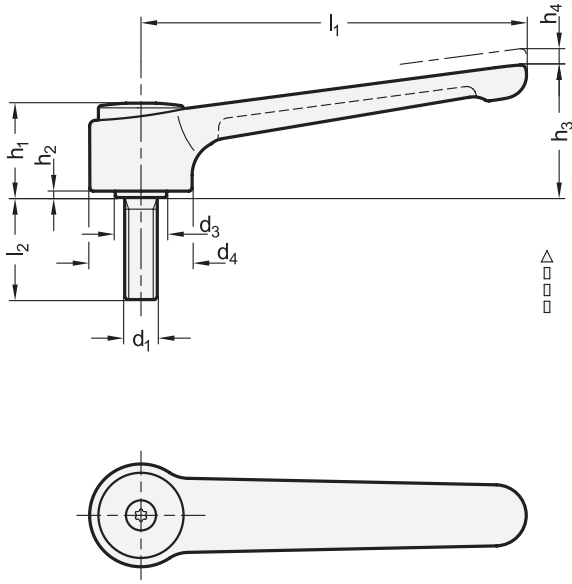
1 2 3

GN 126.1-145-M12-SW

1	l_1
2	d_1 (d_2)
3	Color

Flat adjustable tension levers

Zinc die casting



Inch sizes available

iF product design award

GERMAN DESIGN AWARD

1 l1	2 d1		3 l2							d3	d4	h1	h2	h3	h4 Stroke
120	M 10	M 12	20	25	32	40	50	63	80	16	32	29,5	2	41,5	2,5
145	M 12	M 16	32	40	50	63	80	-	-	23	40	42	4	56	4

Specification

4

- Handle
  Zinc die casting
- Plastic coated
  black, RAL 9005, textured finish ● SW
  silver, RAL 9006, textured finish ● SR
- Hub cover
  Plastic
  - light gray for SR
  - black for SW
- Countersunk screw
  Stainless Steel
  - chemically blackened for SW
  - blank for SR
- **GN 126**
  Threaded stud
  Steel, blackened
- **GN 126.1**
  Threaded stud
  Stainless Steel AISI 303
- *ISO-Fundamental tolerances*
  → Main Catalogue Page 1479
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

Flat adjustable tension levers GN 126 / GN 126.1 are characterized by their low height and the timelessly elegant design.

They are ideal whenever swiveling in a confined space is required or the lever is to be clamped in a particular position. The threaded insert / bored bushing is moveably attached to the handle with serrations.

Pulling the lever disengages the serrations, allowing it to be swiveled to the ideal clamping position. On “releasing” the handle, the serrations re-engage automatically.

see also...

- *Adjustable hand levers GN 300 (Threaded stud steel) → Page 47*
- *Adjustable hand levers GN 300.1 (Threaded stud St. Steel) → Page 53*
- *Adjustable Stainless Steel-Hand levers GN 300.5 (matte shot-blasted) → Page 55*
- *Flat adjustable tension levers GN 125 (Threaded stud steel) → Main Catalogue Page 353*
- *Flat adjustable Stainless Steel-Tension levers GN 125.5 → Main Catalogue Page 355*

How to order (Threaded stud steel)

1 2 3 4

GN 126-145-M12-32-SW

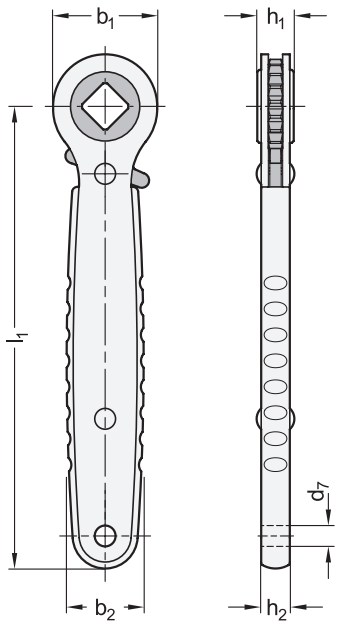
1	l_1
2	d_1
3	l_2
4	Color

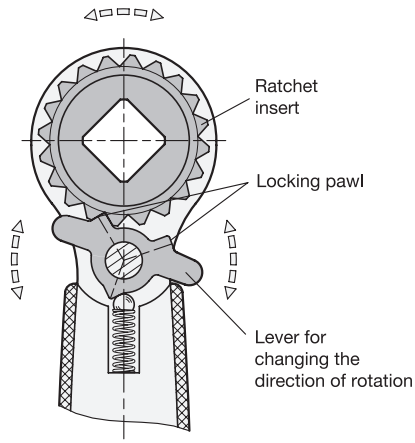
How to order (Threaded stud Stainless Steel)

1 2 3 4

GN 126.1-120-M10-40-SR

1	l_1
2	d_1
3	l_2
4	Color





Rostfrei Inox Stainless Steel

4 Type

- **A** Ratchet insert with through hole
- **B** Ratchet insert with blind hole
- **C** Ratchet insert with threaded stud

1 2 2 2 2

Type **A**

l_1	d_1 Thread	d_2 H7 Bore with keyway	s_1 Square	s_2 Hexagon	b_1	b_2	d_7	h_1	h_2
178	M 10	K 10	V 10	SK 10	40	29,6	8	14	10,9
178	M 12	K 12	V 14	SK 14	40	29,6	8	14	10,9
178	M 16	K 16	V 17	SK 17	40	29,6	8	14	10,9

1 2 2

Type **B**

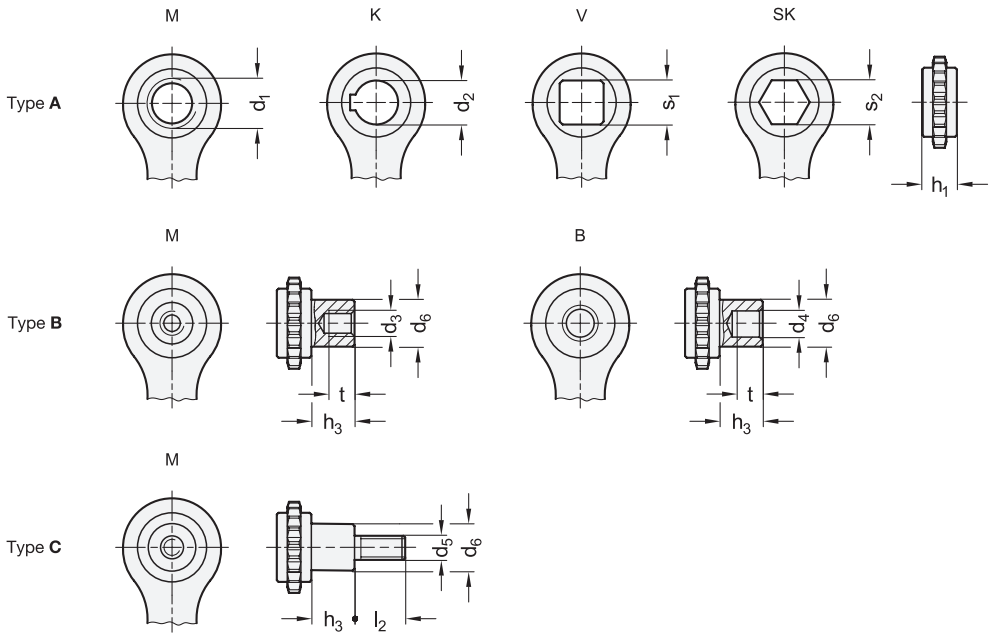
l_1	d_3 Thread	d_4 H7 Bore	b_1	b_2	d_6	d_7	h_1	h_2	h_3	t min.
178	M 8	B 8	40	29,6	19	8	14	10,9	17,5	17
178	M 10	B 10	40	29,6	19	8	14	10,9	17,5	17
178	M 12	B 12	40	29,6	19	8	14	10,9	17,5	17

1 2 3

Type **C**

l_1	d_5 Threaded stud	l_2		b_1	b_2	d_6	d_7	h_1	h_2	h_3
178	M 8	16	32	40	29,6	19	8	14	10,9	17,5
178	M 10	20	40	40	29,6	19	8	14	10,9	17,5
178	M 12	25	50	40	29,6	19	8	14	10,9	17,5

Ratchet inserts, versions



Specification

- Housing
  Stainless Steel-Sheet AISI 304
- Ratchet inserts
  - Type A
    Stainless Steel AISI 316 LHC
    sintered
  - Type B and Type C
    Stainless Steel AISI 303
    turned
- Locking pawl
  Stainless Steel AISI 316 LHC
  sintered
- Grip element
  Plastic, Technopolymer (Polyamide)
- other components
  Stainless Steel
- *Square DIN 79* → *Main Catalogue Page 1424*
- *Keyway P9 DIN 6885*
  → *Main Catalogue Page 1420*
- *ISO-Fundamental tolerances*
  → *Main Catalogue Page 1479*
- *Plastic characteristics*
  → *Main Catalogue Page 1483*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

On request

- Other inserts (Type A / B)
- Other inserts (Type C) analog GN 300.1-92
  → *Page 53*

Information

GN 318 Stainless Steel-Ratchet spanners are robust, easy to handle and ergonomically shaped to sit easily in the hand.

Stainless Steel-Ratchet spanners are normally used wherever the same ratchet insert is always required or where it makes sense to leave the ratchet spanner at the place of use or attach it to equipment or machinery as a „stationary“ tool. The ratchet inserts are available in different versions depending on their type and are permanently fixed in the housing. Due to the high-quality materials, the ratchet spanner is suitable for use in aggressive environments.

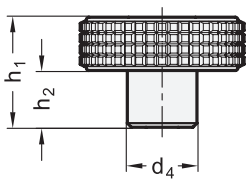
see also...

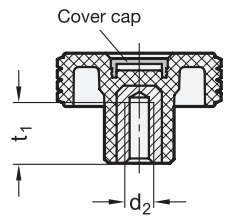
- *Ratchet spanners GN 316* → *Main Catalogue Page 362*
- *Stainless Steel-Countersunk washers GN 184.5 (for axial fixing)*
  → *Main Catalogue Page 815*

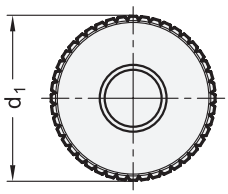
How to order (with through hole)		
GN 318-178-V17-A (1 2 4)	1	l_1
	2	s_1 (s_2, d_1, d_2)
	4	Type

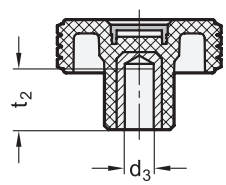
How to order (with blind hole)		
GN 318-178-B10-B (1 2 4)	1	l_1
	2	d_3 (d_4)
	4	Type

How to order (with threaded stud)		
GN 318-178-M12-50-C (1 2 3 4)	1	l_1
	2	d_5
	3	l_2
	4	Type









ELESA Original design MBT

1 d1 Nominal dimension	d1 Actual dimension	2 d2 Thread	2 d3 H9 Bore	d4	h1	h2	t1 min.	t2 min.
32	31	M 5	-	15	24	11,5	10	-
32	31	M 6	-	15	24	11,5	12	-
40	39,5	M 6	B 6	17	26,5	12,5	12	14
40	39,5	M 8	-	17	26,5	12,5	13	-
50	50	M 8	B 8	20	33	16	20	20
50	50	M 10	-	20	33	16	18	-
60	61	M 10	B 10	23	39	18,5	20	25
60	61	M 12	-	23	39	18,5	20	-
70	70	M 12	-	24	42	20,5	20	-
70	70	M 14	-	24	42	20,5	20	-

Specification

3 4

- Plastic
  Technopolymer (Polypropylene PP)
  - reinforced, shock-resistant
  - temperature resistant up to 90 °C
  - black, RAL 9005, matte ● SW
- Bushing
  Brass
- Color of the cover cap (matte):
  black, RAL 9005 —
  red, RAL 3000 ● DRT
- *ISO-Fundamental tolerances*
  → Main Catalogue Page 1479
- *Cross holes GN 110*
  → Main Catalogue Page 1422
- *Plastic characteristics*
  → Main Catalogue Page 1483
- RoHS

On request

- Cover cap in further colors

Information

The unique profile (small squares) on the rim of the knurled knobs GN 534 is characteristic of its form and the function.

see also...

- *Control handwheels GN 735 → Main Catalogue Page 214*
- *Knurled knobs GN 7336 → Main Catalogue Page 444*
- *Knurled knobs GN 534 with loss protection GN 111.7*
  → Main Catalogue Page 1426

How to order (with cover cap black)

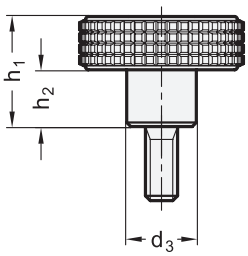
1 2 3
GN 534-40-M8-SW

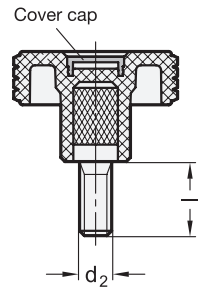
1	d_1
2	d_2 (d_3)
3	Color knob

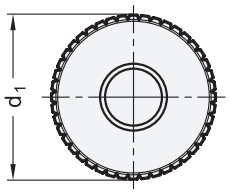
How to order (with cover cap red)

1 2 3 4
GN 534-50-M8-SW-DRT

1	d_1
2	d_2 (d_3)
3	Color knob
4	Color cover cap







ELESA Original design MBT.p

1 d1 Nominal dimension	d1 Actual dimension	2 d2	3 Length l						d3	h1	h2
32	31	M 5	10	20	40	-	-	-	15	24	11,5
32	31	M 6	10	16	20	25	30	40	15	24	11,5
40	39,5	M 6	10	16	20	30	40	-	17	26,5	12,5
40	39,5	M 8	16	20	25	30	40	50	17	26,5	12,5
50	50	M 8	16	30	50	-	-	-	20	33	16
50	50	M 10	20	30	50	-	-	-	20	33	16
60	61	M 10	20	30	50	-	-	-	23	39	18,5
60	61	M 12	20	30	50	-	-	-	23	39	18,5
70	70	M 12	30	50	-	-	-	-	24	42	20,5

Specification

4 5

- Plastic
  Technopolymer (Polypropylene PP)
  - reinforced, shock-resistant
  - temperature resistant up to 90 °C
  - black, RAL 9005, matte ● SW
- Threaded stud
  Steel zinc plated, blue passivated
- Color of the cover cap (matte):
  black, RAL 9005 —
  red, RAL 3000 ● DRT
- *Plastic characteristics*
  → Main Catalogue Page 1483
- RoHS

On request

- Cover cap in further colors

Information

The unique profile on the rim of the knurled screws GN 534 is characteristic of its form and the function.

see also...

- *Knurled screws GN 7336 → Main Catalogue Page 444*
- *Knurled screws GN 534 with loss protection GN 111.7*
  → Main Catalogue Page 1426

How to order (with cover cap black)

1 2 3 4
GN 534-60-M12-30-SW

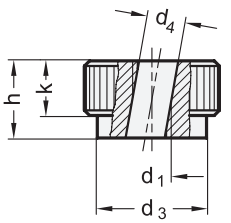
1	d_1
2	d_2
3	Length l
4	Color knob

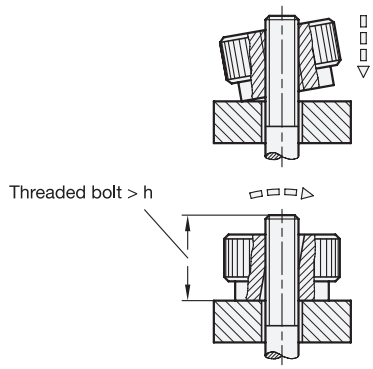
How to order (with cover cap red)

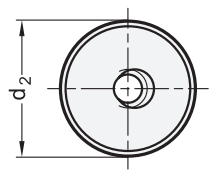
1 2 3 4 5
GN 534-32-M6-30-SW-DRT

1	d_1
2	d_2
3	Length l
4	Color knob
5	Color cover cap

Quick release knurled nuts







Inox Stainless Steel

[1]

d_1	d_2	d_3	d_4	h	k
M 5	20	14	5,3	12	8
M 6	24	16	6,7	14	10
M 8	30	20	8,7	17	12
M 10	36	28	11	20	14
M 12	40	32	13	24	16

Specification

[2]

- Steel —
  - Tensile strength class 5
  - blackened
- Stainless Steel AISI 303 matte shot-blasted — **NI**
- *Strength values of screws* → *Main Catalogue Page 1481*
- *Stainless Steel characteristics* → *Main Catalogue Page 1489*
- RoHS

Information

Quick release knurled nuts GN 6303.1 are used in such applications where the nut has to be completely removed after the releasing operation and refitted rapidly for re-clamping.

The nut is tilted over the threaded spindle. When in position, the nut is brought into a straight position for meshing of the two threads on nut and spindle. The nut will then have to be turned only by a fraction of a rotation to achieve clamping.

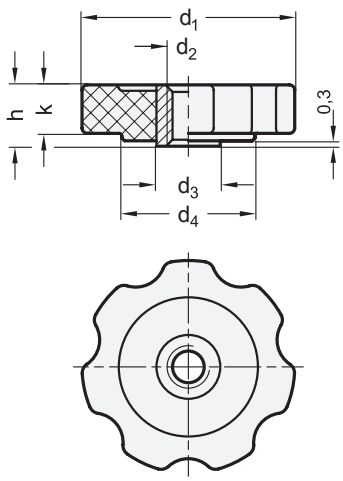
Functional safety exists only if the clamping surface lies at a right angle to the threaded bolt.

see also...

- *Quick release star knobs GN 6336.3* → *Main Catalogue Page 404*

How to order (Steel)		
GN 6303.1-M8 [1]	1	d_1

How to order (Stainless Steel)		
GN 6303.1-M12-NI [1] [2]	1	d_1
	2	**Material**



ELESA Original design GFL

1 d_1	2 d_2	d_3	d_4	h	k
40	M 8	12	25	10	8,5
40	M 10	13	25	10	8,5

Specification

3

- Plastic
  Thermoplast (Polyamid PA)
  - glass fiber reinforced
  - temperature resistant up to 100 °C
  - black, matte ● SW
- Bushing
  Brass
- *Plastic characteristics*
  → *Main Catalogue Page 1483*
- RoHS

On request

- other thread diameters

Information

GN 567 star nuts can be used to lock and secure and require minimal space.

The ergonomic shape makes them easy to grip during use.

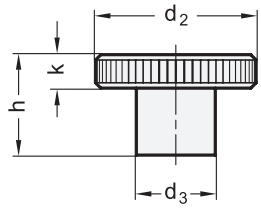
see also...

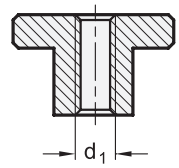
- *Flat knurled nuts DIN 467 → Page 74*

How to order		
1 2 3	1	d_1
GN 567-40-M8-SW	2	d_2
	3	Color

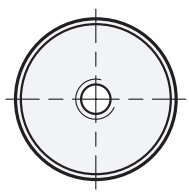
Knurled nuts

Steel / Stainless Steel





Inox
Stainless
Steel



[1]

d_1	d_2	d_3	h	k
M 2	9	4,5	5,3	2
M 2,5	11	5	6,5	2,5
M 3	12	6	7,5	2,5
M 4	16	8	9,5	3,5
M 5	20	10	11,5	4
M 6	24	12	15	5
M 8	30	16	18	6
M 10	36	20	23	8
M 12	40	22	25	10

Specification [2]

- Steel
  - Tensile strength class 5
  - visible face fine turned
  - blackened —
  - zinc plated, blue passivated **ZB**
- Stainless Steel AISI 303 **NI**
  - AISI 303
  - matte shot-blasted
- *Strength values of screws*
  → Main Catalogue Page 1481
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

The official standard sheet also provides for the sizes M1 / M1,2 / M1,4 and M1,6, on the other hand lack the size M12.

see also...

- *Stainless Steel-Knurled nuts GN 536 → Main Catalogue Page 452*
- *Stainless Steel-Knurled nuts DIN 6303 → Main Catalogue Page 455*
- *Knurled nuts DIN 466 with loss protection GN 111.7*
  → Main Catalogue Page 1426
- *Knurled nuts DIN 467 → Page 74*

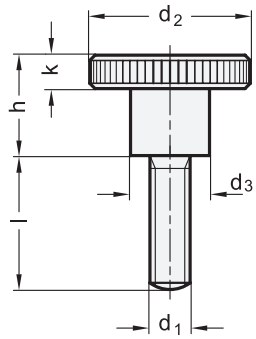
How to order (Steel, blackened)		
DIN 466-M6 [1]	1	d_1

How to order (Steel, zinc plated)		
DIN 466-M10-ZB [1] [2]	1	d_1
	2	Finish

How to order (Stainless Steel)		
DIN 466-M2-NI [1] [2]	1	d_1
	2	Material

Knurled screws

Steel / Stainless Steel



Inox
Stainless
Steel

1 d1	2 Length l								d2	d3	h	k
M 2	4	6	8	10	-	-	-	-	9	4,5	5,3	2
M 2,5	4	6	8	10	12	-	-	-	11	5	6,5	2,5
M 3	6	8	10	12	16	20	-	-	12	6	7,5	2,5
M 4	5	8	10	12	16	20	25	-	16	8	9,5	3,5
M 5	6	8	10	12	16	20	25	30	20	10	11,5	4
M 6	8	10	12	16	20	25	30	35	24	12	15	5
M 8	12	16	20	25	30	35	40	-	30	16	18	6
M 10	12	15	20	25	30	35	40	-	36	20	23	8

Specification

3

- Steel
  - Tensile strength class 5
  - visible face fine turned
  - blackened —
  - zinc plated, blue passivated **ZB**
- Stainless Steel AISI 303 **NI**
  - AISI 303
  - matte shot-blasted
- *Strength values of screws*
  → Main Catalogue Page 1481
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

Knurled screws DIN 464 are machined from solid bar.

Unlike in the official standard sheet, they are generally made with thread right up to the head and without recess groove at the end of the thread.

The official standard sheet also provides for the sizes M1 / M1,2 and M1,6.

see also...

- *Flat knurled screws DIN 653 → Page 75*
- *Knurled screws GN 653.2 (with recessed stud for loss protection)*
  → Main Catalogue Page 461
- *Stainless Steel-Knurled screws GN 535 → Main Catalogue Page 452*
- *Knurled screws DIN 464 with loss protection GN 111.7*
  → Main Catalogue Page 1426

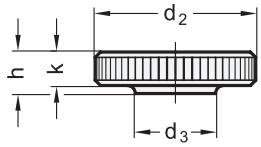
How to order (Steel, blackened)		
1 2	1	d_1
DIN 464-M6-20	2	Length l

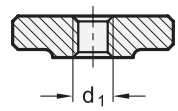
How to order (Steel, zinc plated)		
1 2 3	1	d_1
DIN 464-M2,5-6-ZB	2	Length l
	3	Finish

How to order (Stainless Steel)		
1 2 3	1	d_1
DIN 464-M10-35-NI	2	Length l
	3	Material

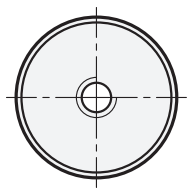
Flat knurled nuts

Steel / Stainless Steel





Inox Stainless Steel



[1]

d_1	d_2	d_3	h	k
M 3	12	6	3	2,5
M 4	16	8	4	3,5
M 5	20	10	5	4
M 6	24	12	6	5
M 8	30	16	8	6
M 10	36	20	10	8
M 12	40	22	12	10

Specification [2]

- Steel
  - Tensile strength class 5
  - visible face fine turned
  - blackened —
  - zinc plated, blue passivated **ZB**
- Stainless Steel AISI 303 **NI**
  - AISI 303
  - matte shot-blasted
- *Strength values of screws*
  → Main Catalogue Page 1481
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

The official standard sheet also provides for the sizes M1 / M1,2 / M1,4 / M1,6 / M2 and M2,5, on the other hand lack the size M12.

see also...

- *Stainless Steel-Knurled nuts GN 536 → Main Catalogue Page 452*
- *Stainless Steel-Knurled nuts DIN 6303 → Main Catalogue Page 455*
- *Knurled nuts DIN 466 → Page 72*
- *Knurled nuts DIN 466 with loss protection GN 111.7*
  → Main Catalogue Page 1426

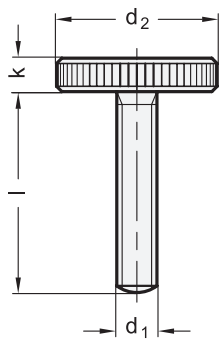
How to order (Steel, blackened)		
DIN 467-M3 [1]	1	d_1

How to order (Steel, zinc plated)		
DIN 467-M12-ZB [1] [2]	1	d_1
	2	Finish

How to order (Stainless Steel)		
DIN 467-M8- NI [1] [2]	1	d_1
	2	Material

Flat knurled screws

Steel / Stainless Steel



Inox
Stainless
Steel

1	2							
d_1	Length **l**						d_2	**k**
M 3	6	8	10	16	20	-	12	2,5
M 4	8	10	12	16	20	25	16	3,5
M 5	10	12	16	20	25	30	20	4
M 6	12	16	20	25	30	40	24	5
M 8	16	20	25	30	35	40	30	6
M 10	20	25	30	35	40	-	36	8

Specification

3

- Steel
  - Tensile strength class 5
  - visible face fine turned
  - blackened —
  - zinc plated, blue passivated **ZB**
- Stainless Steel AISI 303 **NI**
  - AISI 303
  - matte shot-blasted
- *Strength values of screws*
  → *Main Catalogue Page 1481*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Information

All flat knurled screws DIN 653 are produced from one piece and threaded over ist full length.

The official standard sheet also provides for the sizes M1 / M1,2 / M1,4 / M1,6 / M2 and M2,5.

see also...

- *Flat knurled screws GN 653.10 (Steel, with brass / plastic pivot)*
  → *Main Catalogue Page 460*
- *Knurled screws GN 653.2 (with recessed stud for loss prevention)*
  → *Main Catalogue Page 461*

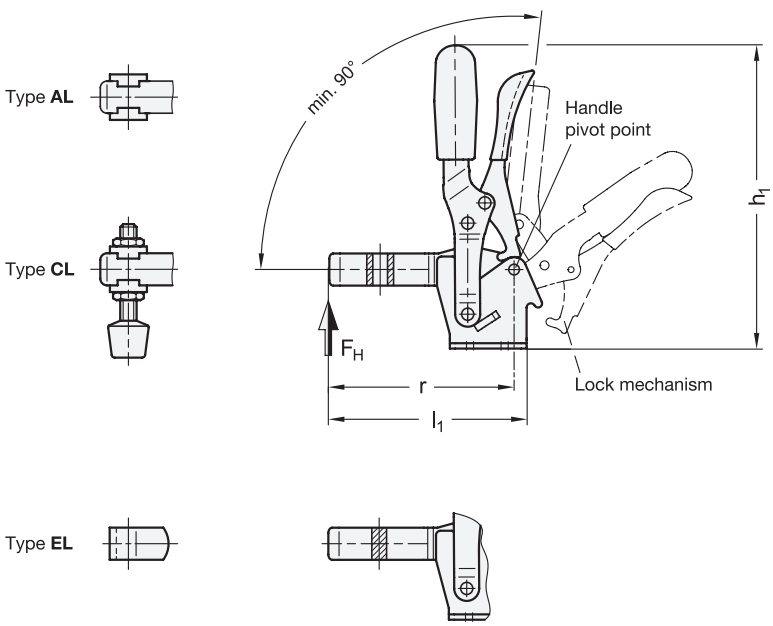
How to order (Steel, blackened)		
1 2	1	d_1
DIN 653-M8-35	2	**Length l**

How to order (Steel, zinc plated)		
1 2 3	1	d_1
DIN 653-M3-8-ZB	2	**Length l**
	3	**Finish**

How to order (Stainless Steel)		
1 2 3	1	d_1
DIN 653-M5-20-NI	2	**Length l**
	3	**Material**

Vertical acting toggle clamps

with safety hook, with horizontal mounting base



Inox
Stainless
Steel

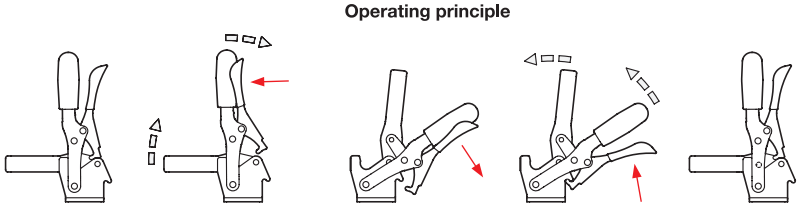
2 Type

AL U-bar version, with two flanged washers

CL U-bar version, with two flanged washers and GN 708.1 spindle assembly

EL Solid bar version, with clasp, for welding

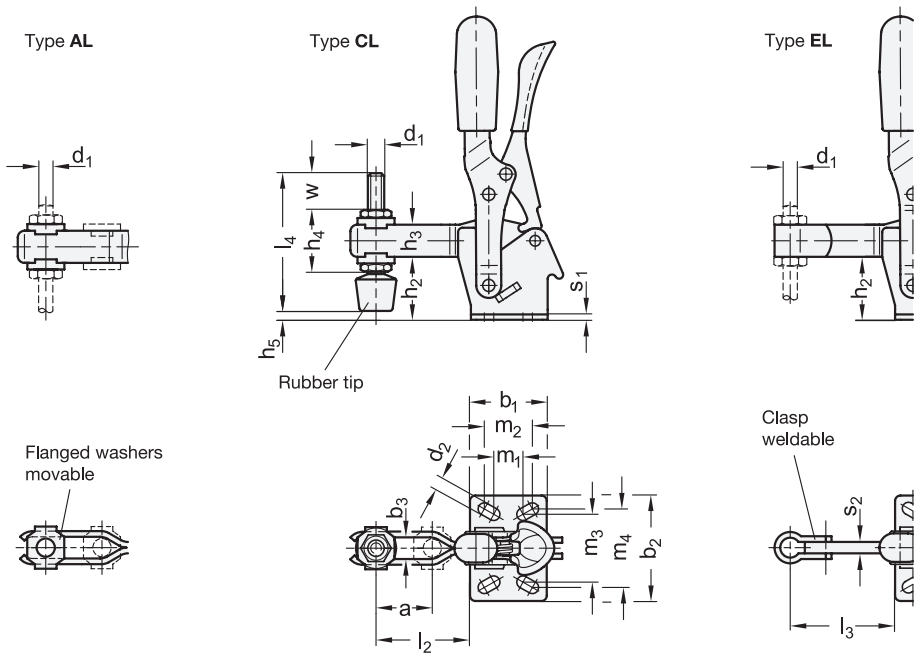
Operating principle



1

Size	F_H in N Holding capacity	a ≈	b_1	b_2	b_3	d_1	d_2 ≈	h_1 ≈	h_2	h_3	h_4	h_5
130	1050	28	35	42	6,2	M 6	5,5	142	28	16	25,5	11,3
230	2000	40	43	45	8,5	M 8	6,5	168	33,5	18	30	9,5

Size	l_1 ≈ Type AL Type CL	l_1 ≈ Type EL	l_2 ≈	l_3 max.	l_4	m_1	m_2	m_3	m_4	r ≈	s_1	s_2	w Adjustable range
130	85	86	42	54	55	12,5	19	27	29	79,5	2,5	5	17,5
230	110,5	112	58	73	68	18	21	32	32	104	3	6	20



Specification

3

- Steel —
  - Case-hardened Steel C 10 zinc plated, blue passivated
  - Bearing pins tempered
  - Bearing rivets case-hardened
- Stainless Steel AISI 304 **NI**
- All moving parts lubricated with special grease
- Hand grip
  High quality, oil resistant, red plastic
- Spindle assembly GN 708.1, type A
  - Steel, zinc plated / Stainless Steel AISI 304
  - Rubber tip 85 Shore A
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Accessory

- Spindle assemblies
  → Main Catalogue Page 585 ff.
- Clamp mounts GN 801 (for toggle clamps) (for type AL) *→ Main Catalogue Page 590*
- Clamp mounts GN 809 (for toggle clamps) (for type EL) *→ Main Catalogue Page 591*

Information

GN 810.3 vertical acting toggle clamps have a safety function whereby, during closing, a spring loaded safety hook latch ensures a secure locking connection. It prevents the inadvertent unlocking of the clamp due to vibrations or an accidental attempt of loosening / opening of the clamp. To open and release the clamp, pull up on the finger grip to disengage the safety hook latch mechanism (one hand operation).

They work according to the toggle principle: lever and clamping bar move in the same direction. In the clamped position the operating lever is in its vertical position.

Vertical acting toggle clamps in the U-bar version with two flanged washers (Type AL) can accommodate an application specific clamping screw. A spindle assembly with neoprene rubber tip is also included for type CL.

Type EL version can either be utilized by welding the clasp which can then accommodate an application specific hold-down fastener component, or by utilizing the bar in conjunction with the GN 809 clamp mounts to hold the work piece in place.

see also...

- *General information for toggle clamps → Main Catalogue Page 500*
- *Heavy duty vertical acting toggle clamps GN 910 → Main Catalogue Page 506*

How to order (Steel)

GN 810.3 - 230 - EL

1	Size	
2	Type	

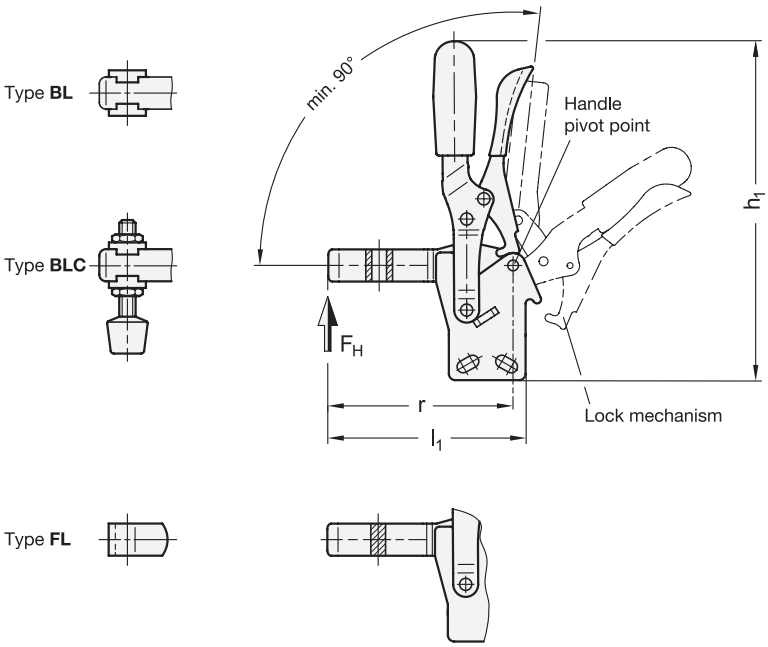
How to order (Stainless Steel)

GN 810.3 - 130 - CL - NI

1	Size	
2	Type	
3	Material	

Vertical acting toggle clamps

with safety hook, with vertical mounting base



Rostfrei Inox Stainless Steel

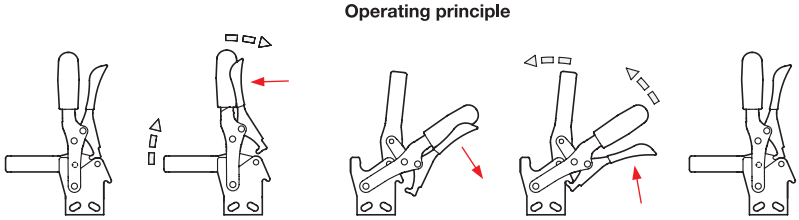
2 **Type**

BL U-bar version, with two flanged washers

BLC U-bar version, with two flanged washers and GN 708.1 spindle assembly

FL Solid bar version, with clasp, for welding

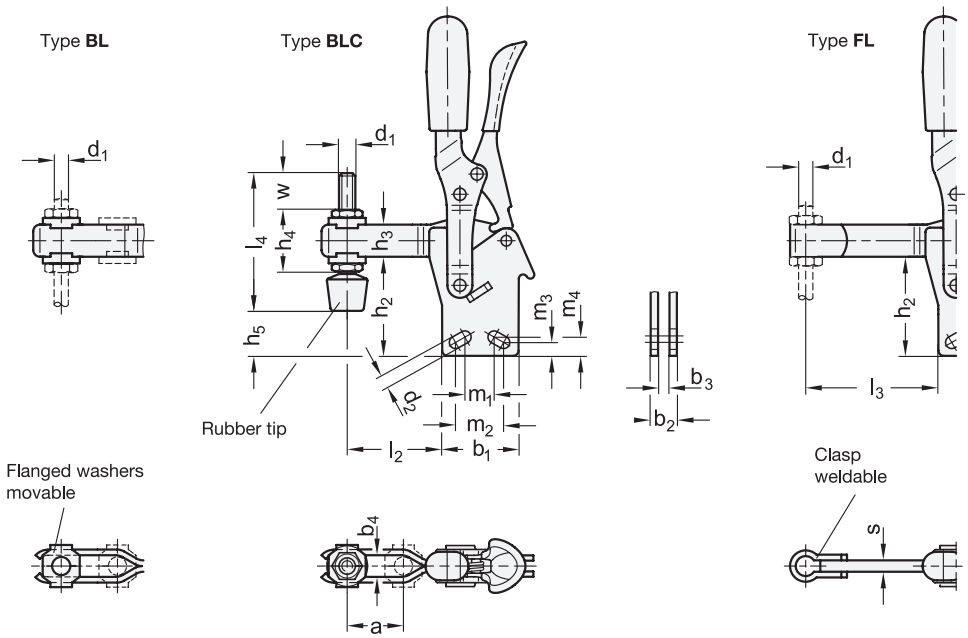
Operating principle



1

Size	F_H in N Holding capacity	a ≈	b_1	b_2	b_3	b_4	d_1	d_2 ≈	h_1 ≈	h_2	h_3	h_4	h_5 max.
130	1050	28	35	10	5	6,2	M 6	5,5	156	41,5	16	25,5	25
230	2000	40	43	12	6	8,5	M 8	6,5	183	48	18	30	24

Size	l_1 ≈ Type BL Type BLC	l_1 ≈ Type FL	l_2 ≈	l_3 max.	l_4	m_1	m_2	m_3	m_4	r ≈	s	w Adjustable range
130	85	86	42	54	55	12,5	19	6,5	7,5	79	5	17,5
230	110,5	112	58	73	68	18	21	6,5	6,5	104	6	20



Specification

- Steel — 3
  - Case-hardened Steel C 10 zinc plated, blue passivated
  - Bearing pins tempered
  - Bearing rivets case-hardened
- Stainless Steel AISI 304 — NI
- All moving parts lubricated with special grease
- Hand grip High quality, oil resistant, red plastic
- Spindle assembly GN 708.1, type A
  - Steel, zinc plated / Stainless Steel AISI 304
  - Rubber tip 85 Shore A
- *Stainless Steel characteristics* → *Main Catalogue Page 1489*
- RoHS

Accessory

- Spindle assemblies → *Main Catalogue Page 585 ff.*
- Clamp mounts GN 801 (for toggle clamps) (for type BL) → *Main Catalogue Page 590*
- Clamp mounts GN 809 (for toggle clamps) (for type FL) → *Main Catalogue Page 591*

Information

GN 810.4 vertical acting toggle clamps have a safety function whereby, during closing, a spring loaded safety hook latch ensures a secure locking connection. It prevents the inadvertent unlocking of the clamp due to vibrations or an accidental attempt of loosening / opening of the clamp. To open and release the clamp, pull up on the finger grip to disengage the safety hook latch mechanism (one hand operation).

They work according to the toggle principle: lever and clamping bar move in the same direction. In the clamped position the operating lever is in its vertical position.

Vertical acting toggle clamps in the U-bar version with two flanged washers (Type BL) can accommodate an application specific clamping screw. A spindle assembly with neoprene rubber tip is also included for type BLC.

Type FL version can either be utilized by welding the clasp which can then accommodate an application specific hold-down fastener component, or by utilizing the bar in conjunction with the GN 809 clamp mounts to hold the work piece in place.

see also...

- *General information for toggle clamps* → *Main Catalogue Page 500*
- *Heavy duty vertical acting toggle clamps GN 910.1* → *Main Catalogue Page 508*

How to order (Steel)

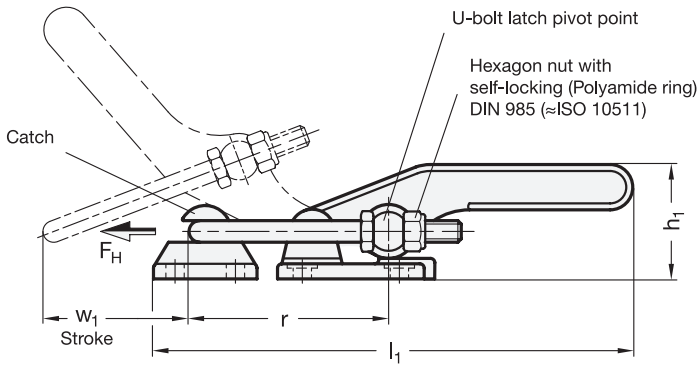
GN 810.4-230-BL

1	Size
2	Type

How to order (Stainless Steel)

GN 810.4-130-FL-NI

1	Size
2	Type
3	Material



2 Type

T2 with mounting holes, with U-bolt latch, with catch

T with mounting holes, without U-bolt latch, with catch

T2S for welding, with U-bolt latch, with catch

TS for welding, without U-bolt latch, with catch

1

Size	F_H in N Holding capacity	a_1	a_2	b_1	b_2	b_3	b_4	b_5	b_6	b_7	b_8	b_9	d_1	d_2	d_3	h_1 ≈
1700	17000	22	21	68	64	46	48	68	26,5	38	28	6	M 10	8,5	14	55
4000	40000	28	27	85	80	55	60	80	32	50	32	6	M 12	10,5	16	68

Size	h_2	l_1 ≈ Type T2S/TS	l_1 ≈ Type T2/T	l_2 min.	l_3 ≈	m_1	m_2	m_3	m_4	m_5	r ≈ at $w_2 = 0$	s	t	w_1 Stroke	w_2 ≈ Adjustable range
1700	34,5	218	223	33	129	45	11,5	45	10	28	96	7	2	54	15
4000	42,5	265	271	30	151	57	14	57	12,5	35	107	9	2	62	25

Specification

- Body / catch / clamping lever
  Steel C22
  - forged
  - black lacquered (type T2 / T)
  - blackened (type T2S / TS)
- U-bolt latch / bearing pin
  Steel St 37
  zinc plated, blue passivated
- All moving parts
  lubricated with special grease
- RoHS

Information

GN 852 latch type toggle clamps are used for very high holding forces as may be required in plastic high pressure mold forming.

The stroke of the U-bolt latch can be adjusted within its range.

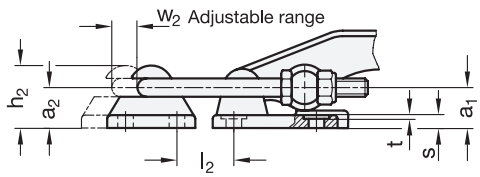
In addition to the standard lengths of the U-bolt latches shown in the table, a variety of other lengths are also available under the GN 951.2 series.

see also...
- *General information for toggle clamps → Main Catalogue Page 500*
- *Stainless Steel-Latch type toggle clamps GN 852 → Page 82*
- *Latch type toggle clamps GN 852.3 (with safety hook) → Main Catalogue Page 554*
- *Square U-bolts GN 951.2 → Main Catalogue Page 561*

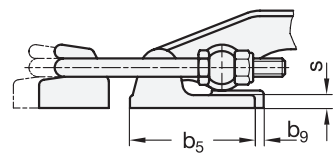
How to order

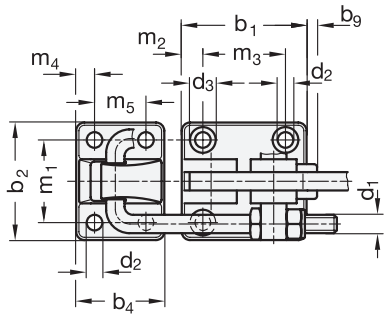
GN 852-4000-T2 (1 = Size, 2 = Type)

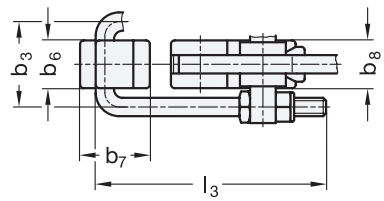
Type **T2**

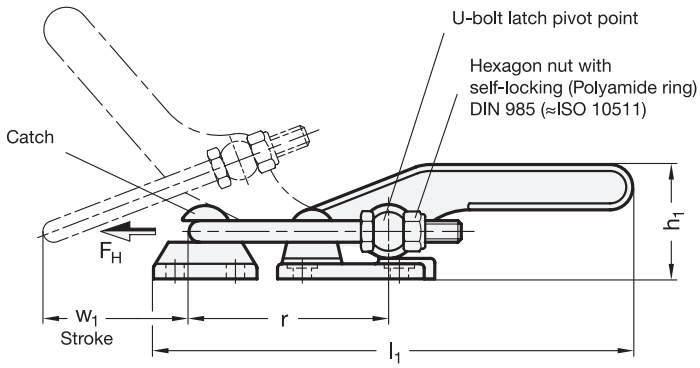


Type **T2S**









Rostfrei Inox Stainless Steel

2 Type

T2 with mounting holes, with U-bolt latch, with catch

T with mounting holes, without U-bolt latch, with catch

T2S for welding, with U-bolt latch, with catch

TS for welding, without U-bolt latch, with catch

1

Size	F_H in N Holding capacity	a_1	a_2	b_1	b_2	b_3	b_4	b_5	b_6	b_7	b_8	b_9	d_1	d_2	d_3	h_1 ≈
1700	14000	22	21	68	64	46	48	68	26,5	38	28	6	M 10	8,5	14	55
4000	30000	28	27	85	80	55	60	80	32	50	32	6	M 12	10,5	16	68

Size	h_2	l_1 ≈ Type T2S/TS	l_1 ≈ Type T2/T	l_2 min.	l_3 ≈	m_1	m_2	m_3	m_4	m_5	r ≈ at $w_2 = 0$	s	t	w_1 Stroke	w_2 ≈ Adjustable range
1700	34,5	218	223	33	129	45	11,5	45	10	28	96	7	2	54	15
4000	42,5	265	271	30	151	57	14	57	12,5	35	107	9	2	62	25

Specification

3

- Body / catch / clamping lever / U-bolt latch
  Stainless Steel AISI 304 forged **NI**
- Other parts
  Stainless Steel AISI 303
- All moving parts
  lubricated with special grease
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

GN 852 heavy duty latch type toggle clamps are used for very high holding forces as may be required in plastic high pressure mold forming.

The stroke of the U-bolt latch can be adjusted within its range.

In addition to the standard lengths of the U-bolt latches shown in the table, a variety of other lengths are also available under the GN 951.2 series.

see also...

- *General information for toggle clamps → Main Catalogue Page 500*
- *Latch type toggle clamps GN 852 (Steel) → Page 80*
- *Stainless Steel-Latch type toggle clamps GN 852.3 (with safety hook) → Main Catalogue Page 556*
- *Square U-bolts GN 951.2 → Main Catalogue Page 561*

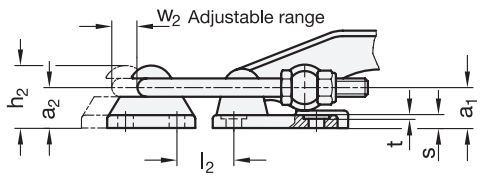
How to order

1 2 3

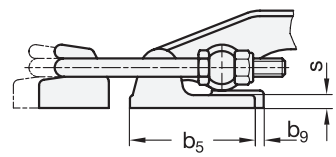
GN 852-4000-T2-NI

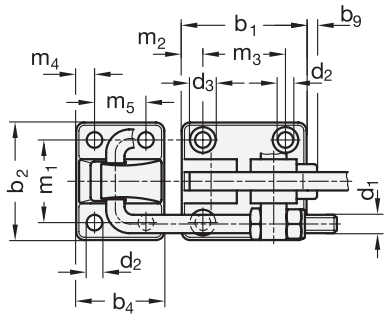
1	**Size**
2	**Type**
3	**Material**

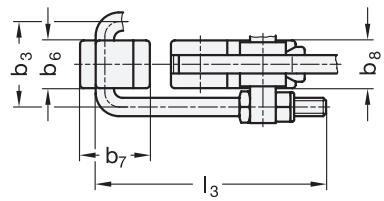
Type **T2**

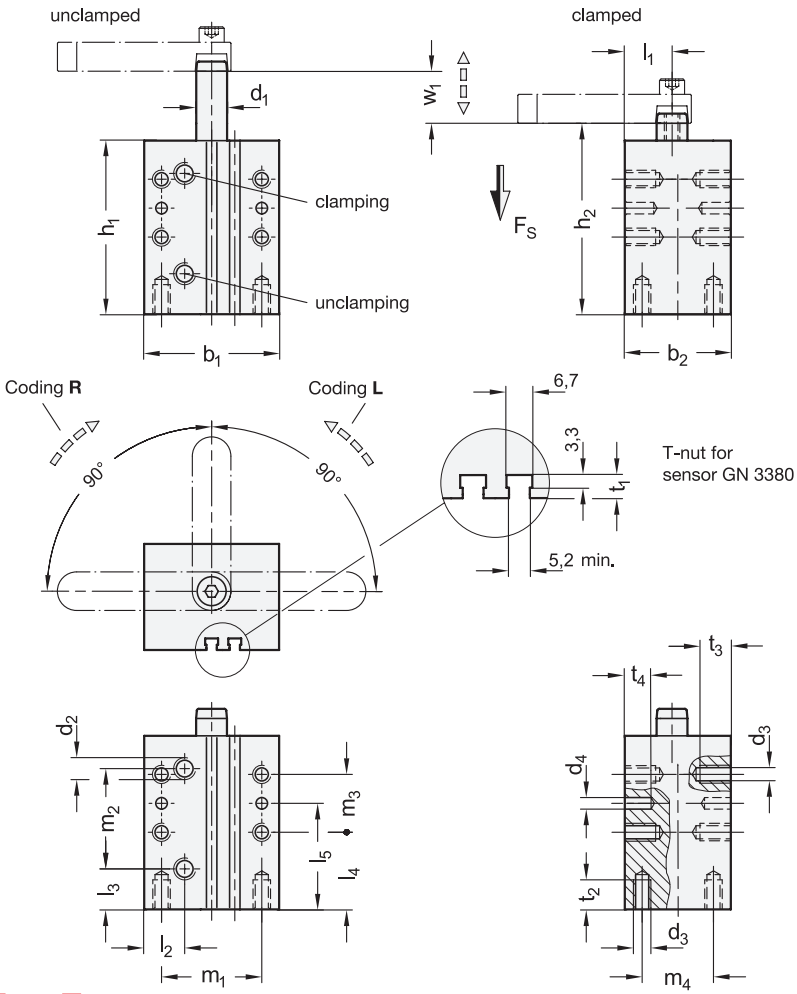


Type **T2S**









3 Coding

L	swiveling left
R	swiveling right

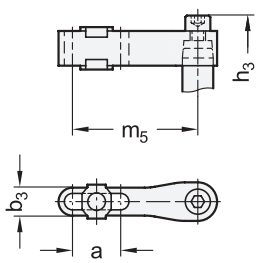
4 Type

A	Clamping arm with slotted hole and 2 flanged washers
AC	Clamping arm with slotted hole, 2 flanged washers and GN 708.1 spindle assembly
B	Clamping arm with threaded hole
F	Adapter flange
N	without clamping arm

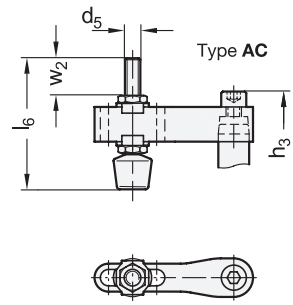
1 Size (Piston-Ø)	2 d_1	F_s in N Clamping force at 6 bar	a	b_1	b_2	b_3	b_4	b_5	d_2 Supply port	d_3	d_4 H7	d_5	d_6	d_7	h_1	$h_2 \approx$ clamped	$h_3 \approx$ unclamped		
																	Type A, AC	Type B	Type F
25	14	170	20	55	35	11,3	18	25	M 5	M 8	6	M 6	M 6	M 8	78	82	135	129	134
32	16	270	25	60	45	14,5	20	30	G ⅛	M 8	6	M 8	M 8	M 8	90	95	153	147	154
40	16	450	25	70	55	14,5	20	30	G ⅛	M 8	6	M 8	M 8	M 8	90	95	153	150	154
50	20	700	30	85	65	17,5	25	32	G ⅛	M 10	8	M 10	M 8	M 10	100	105	172	165	167
63	20	1100	30	100	80	17,5	25	32	G ⅛	M 10	8	M 10	M 8	M 10	100	105	170	165	165

Size (Piston-Ø)	d_1	l_1	l_2	l_3	l_4	l_5	l_6	m_1	m_2	m_3	m_4	m_5	m_6	m_7	$t_1 \approx$	t_2	t_3	t_4	t_5	w_1		w_2	max. tightening torque in Nm
																				Clamping stroke	Stroke		
25	14	15,5	17	17	33	48	55	40	44,5	30	20	50	50	38	4,5	15	10	10	14	14	27	18	9
32	16	20	18	20,5	40	55	68	45	51	30	30	65	60	45	6	20	15	15	16	14	30	21	18
40	16	24,5	21	21	40	55	68	52	52	30	37	65	70	45	7,5	20	15	15	16	15	30	21	18
50	20	31	26	26	40	60	77	66	53	40	46	85	80	48	6	20	20	15	16	15	32	19	35
63	20	38	30	27,5	40	60	77	80	53	40	60	85	90	48	7,5	20	20	15	16	15	30	19	35

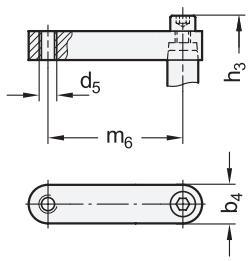
Type **A**



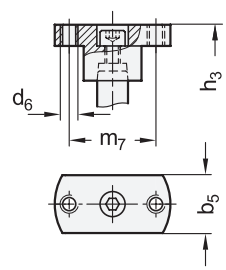
Type **AC**



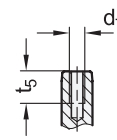
Type **B**



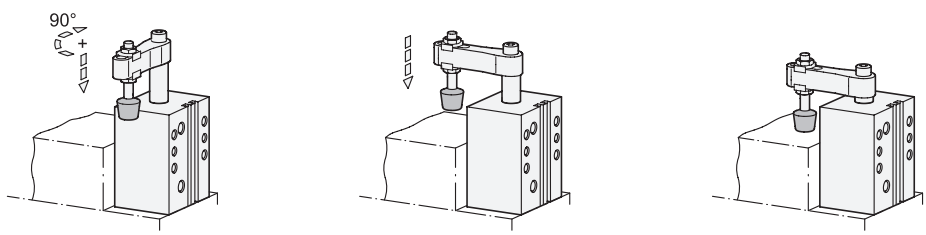
Type **F**



Type **N**



Operating principle



Specification

- Aluminum
  hard anodized
  wear-resistant surface
- Double-action air cylinder
  max. pressure 6 bar
- Socket cap screw DIN 912
  Steel, zinc plated, blue passivated
- Washer ISO 7092
  Steel, zinc plated, blue passivated
- Spindle assembly GN 708.1, type A
  - Steel, zinc plated
  - Rubber tip 85 Shore A
- RoHS

Accessory

- Clamping arms GN 875.2 → *Page 89*
- Clamping arms GN 875.3 → *Page 90*
- Adapter flanges GN 875.4 → *Page 91*
- Sensor GN 3380 → *Page 92*
- Toggle clamp spindle assemblies GN 708.1
  → *Main Catalogue Page 587*

Information

Swing clamps GN 875 are used when the clamping point for inserting and removing the workpiece must be freely accessible on top.

During the clamping action, the arm is first swiveled by 90° and lowered, followed by the linear tensioning motion. The workpiece clamping must take place within the clamping stroke.

The angle orientation of the tensioning arm can be set arbitrarily during mounting on the swing clamp. When tightening the screw, the piston rod must not experience any torque. The clamping arm must therefore be held to prevent twisting.

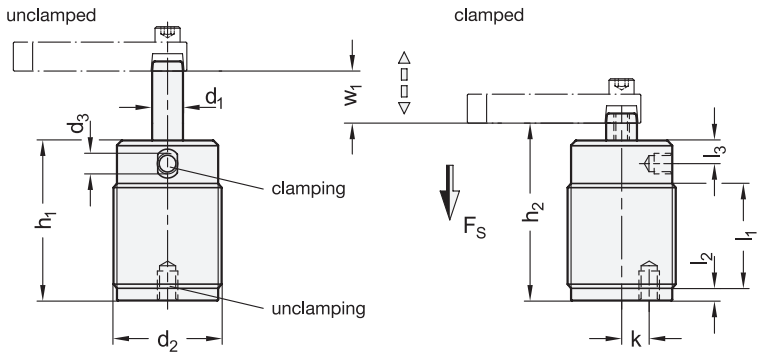
The swing clamps are equipped with a magnet ring piston and are therefore pre-fitted for end stop detection via sensor.

see also...
- *Swing clamps GN 876 (with screw-in thread)* → *Page 86*

How to order

GN 875-50-20-R-B

1	**Size**
2	**d_1**
3	**Coding**
4	**Type**

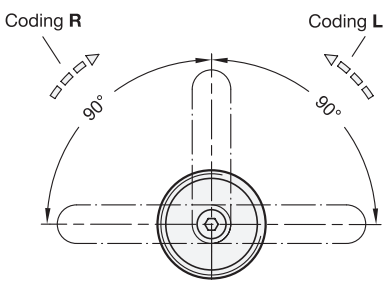


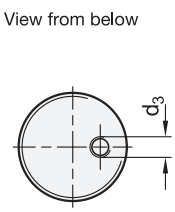
3 Coding

L	swiveling left
R	swiveling right

4 Type

A	Clamping arm with slotted hole and 2 flanged washers
AC	Clamping arm with slotted hole, 2 flanged washers and GN 708.1 spindle assembly
B	Clamping arm with threaded hole
F	Adapter flange
N	without clamping arm

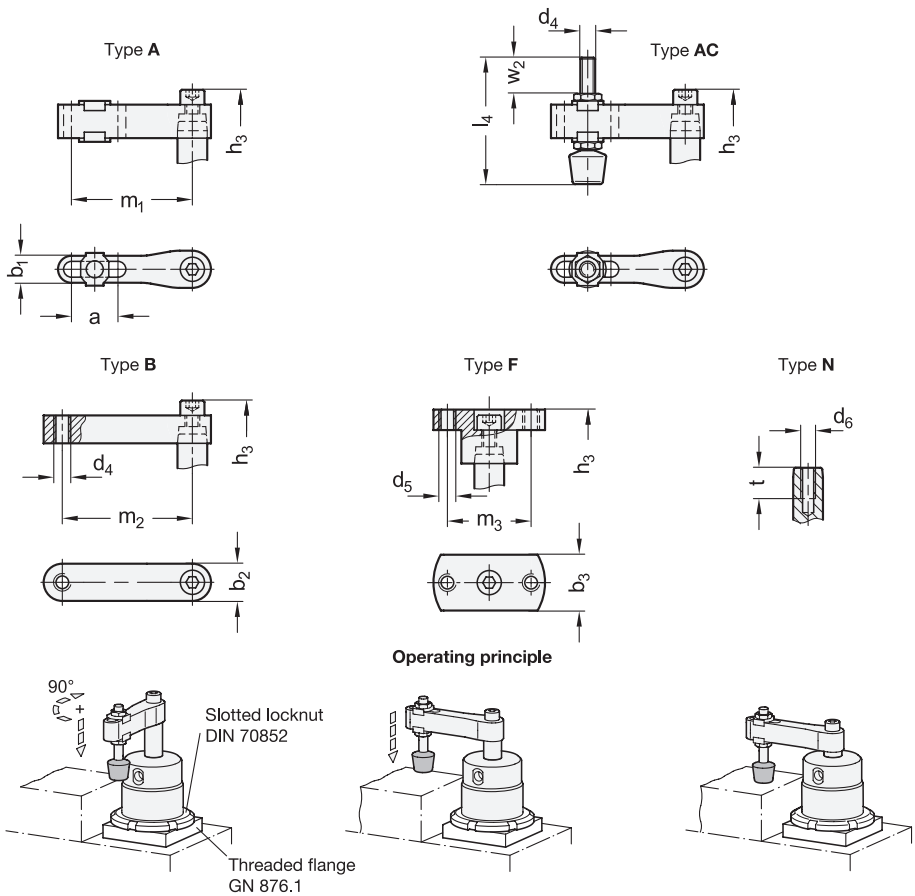




1 **2**

Size (Piston-Ø)	d_1	F_s in N Clamping force at 6 bar	a	b_1	b_2	b_3	d_2	d_3 Supply port	d_4	d_5	d_6	h_1	$h_2 \approx$ clamped	$h_3 \approx$ unclamped		
														Type A, AC	Type B	Type F
25	14	170	20	11,3	18	25	M 40x1,5	M 5	M 6	M 6	M 8	70	74	128	122	127
32	16	270	25	14,5	20	30	M 50x1,5	G ⅛	M 8	M 8	M 8	79	83	141	135	142
40	16	450	25	14,5	20	30	M 55x1,5	G ⅛	M 8	M 8	M 8	83	87	144	141	145
50	20	700	30	17,5	25	32	M 65x1,5	G ⅛	M 10	M 8	M 10	87	92	156	149	151
63	20	1100	30	17,5	25	32	M 80x1,5	G ⅛	M 10	M 8	M 10	92	97	162	157	157

Size (Piston-Ø)	d_1	k	l_1	l_2	l_3	l_4	m_1	m_2	m_3	t	w_1		w_2	max. tightening torque in Nm
											Clamping stroke	Stroke		
25	14	8,9	43	3	16	55	50	50	38	14	14	28	18	9
32	16	12,7	54	3	12	68	65	60	45	16	14	30	21	18
40	16	14,3	58	3	12	68	65	70	45	16	14	29	21	18
50	20	17,8	61	3	12	77	85	80	48	16	14	29	19	35
63	20	20,3	64	3	13	77	85	90	48	16	15	30	19	35



Specification

- Aluminum
  hard anodized
  wear-resistant surface
- Double-action air cylinder
  max. pressure 6 bar
- Socket cap screw DIN 912
  Steel, zinc plated, blue passivated
- Washer ISO 7092
  Steel, zinc plated, blue passivated
- Spindle assembly GN 708.1, type A
  - Steel, zinc plated
  - Rubber tip 85 Shore A
- RoHS

Accessory

- Clamping arms GN 875.2 → *Page 89*
- Clamping arms GN 875.3 →*Page 90*
- Adapter flanges GN 875.4 → *Page 91*
- Threaded flanges GN 876.1 → *Page 88*
- Spindle assemblies GN 708.1
  → *Main Catalogue Page 587*
- Slotted locknuts DIN 70852 → *Page 109*

Information

Swing clamps GN 876 are used when the clamping point for inserting and removing the workpiece must be freely accessible on top.

The design allows especially space-saving mounting. The height of the swing clamp can be adjusted via the screw-in thread.

During the clamping action, the arm is first swiveled by 90° and lowered, followed by the linear tensioning motion. The workpiece clamping must take place within the clamping stroke.

The angle orientation of the clamping arm can be set arbitrarily during mounting on the swing clamp. When tightening the screw, the piston rod must not experience any torque. The clamping arm must therefore be held to prevent twisting.

see also...

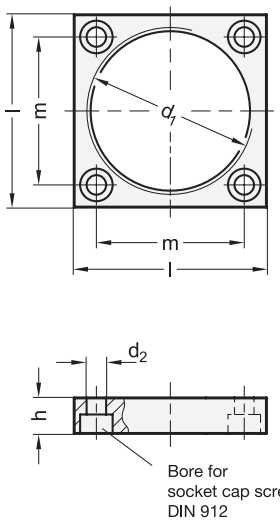
- *Swing clamps GN 875 (in block version)* → *Page 84*

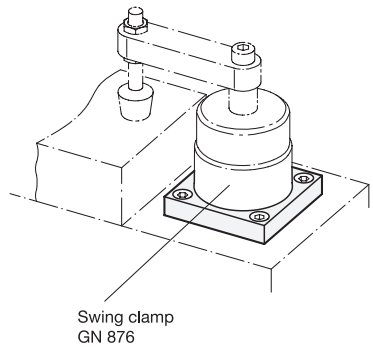
How to order

1 2 3 4

GN 876-32-16-L-A

1	**Size**
2	**d_1**
3	**Identification no.**
4	**Type**





for swing clamps Size	2 d_1	3 m	d_2	h	Length l
25	M 40x1,5	37	5,4	9	50
32	M 50x1,5	45	6,6	12	60
40	M 55x1,5	50	6,6	12	65
50	M 65x1,5	58	9	15	75
63	M 80x1,5	70	9	15	88

Specification

1

- Steel zinc plated, blue passivated — ST
- RoHS

Information

Threaded flanges GN 876.1 designed as accessories to swing clamps GN 876.

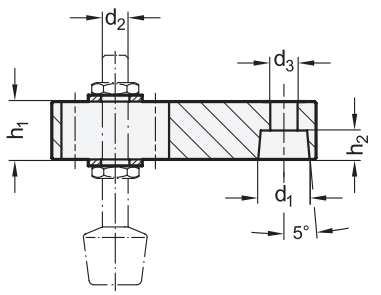
This makes it unnecessary to tap the mounting hole of the part.

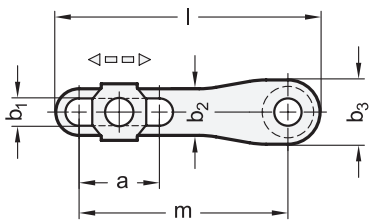
see also...
- *Swing clamps GN 876 (with screw-in thread)* → *Page 86*
- *Slotted locknuts DIN 70852* → *Page 109*

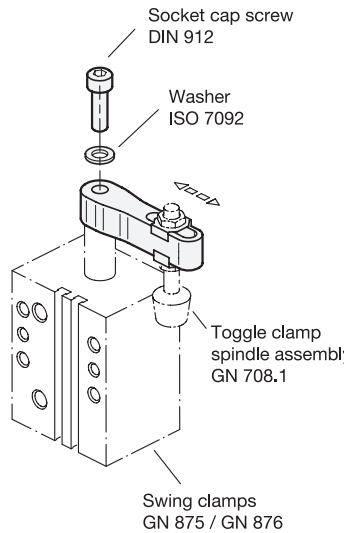
How to order

GN 876.1 - ST (1) - M55x1,5 (2) - 50 (3)

1	Material
2	d_1
3	m







for swing clamps Size	d_1 2	m 3	a	b_1	b_2	b_3	d_2	d_3	h_1	h_2	Length l
25	14	50	20	6,5	11,3	18	M 6	8,5	16	6,5	64,6
32 / 40	16	65	25	8,5	14,5	20	M 8	8,5	18	9	82,2
50 / 63	20	85	30	10,5	17,5	25	M 10	10,5	23	10	106,2

Specification

	1	4
• Aluminum hard anodized wear-resistant surface	AL	HE
• Flanged washers Steel, zinc plated, blue passivated		
• Socket cap screw DIN 912 Steel, zinc plated, blue passivated		
• Washer ISO 7092 Steel, zinc plated, blue passivated		
• RoHS		

Accessory

- Toggle clamp spindle assemblies GN 708.1
  → *Main Catalogue Page 587*

Information

Clamping arms GN 875.2 with slotted hole designed as accessories to swing clamps GN 875 / GN 876. The slotted hole allows arbitrary positioning of application-specific pressing elements in connection with the two flanged washers.

The angle orientation of the clamping arm can be set arbitrarily during mounting on the swing clamp. When tightening the screw, the piston rod must not experience any torque. The clamping arm must therefore be held to prevent twisting.

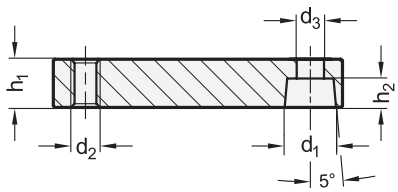
Included are a socket cap screw DIN 912 and a washer ISO 7092 for fastening to the swing clamp as well as two flanged washers for fastening the clamping bolts.

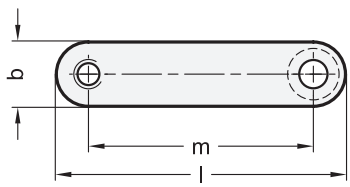
see also...
- *Swing clamps GN 875 (in block version)* → *Page 84*
- *Swing clamps GN 876 (with screw-in thread)* → *Page 86*

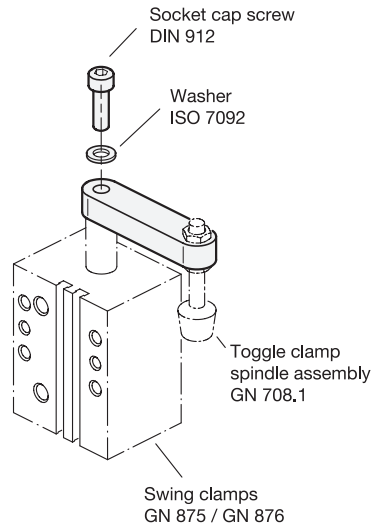
How to order

1 2 3 4
GN 875.2-AL-16-65-HE

1	**Material**
2	**d_1**
3	**m**
4	**Finish**







for swing clamps Size	[2] d_1	[3] m	b	d_2	d_3	h_1	h_2	Length l
25	14	50	18	M 6	8,5	10	6,5	68
32	16	60	20	M 8	8,5	12	9	80
40	16	70	20	M 8	8,5	15	9	90
50	20	80	25	M 10	10,5	16	10	105
63	20	90	25	M 10	10,5	18	10	115

Specification

	[1]	[4]
• Aluminum hard anodized wear-resistant surface	AL	HE
• Socket cap screw DIN 912 Steel, zinc plated, blue passivated		
• Washer ISO 7092 Steel, zinc plated, blue passivated		
• RoHS		

Accessory

- Toggle clamp spindle assemblies GN 708.1
  → *Main Catalogue Page 587*

Information

Clamping arms GN 875.3 with threaded hole designed as accessories to swing clamp GN 875 / GN 876. The thread can receive an application-specific clamping bolt.

The angle orientation of the clamping arm can be set arbitrarily during mounting on the swing clamp. When tightening the screw, the piston rod must not experience any torque. The clamping arm must therefore be held to prevent twisting.

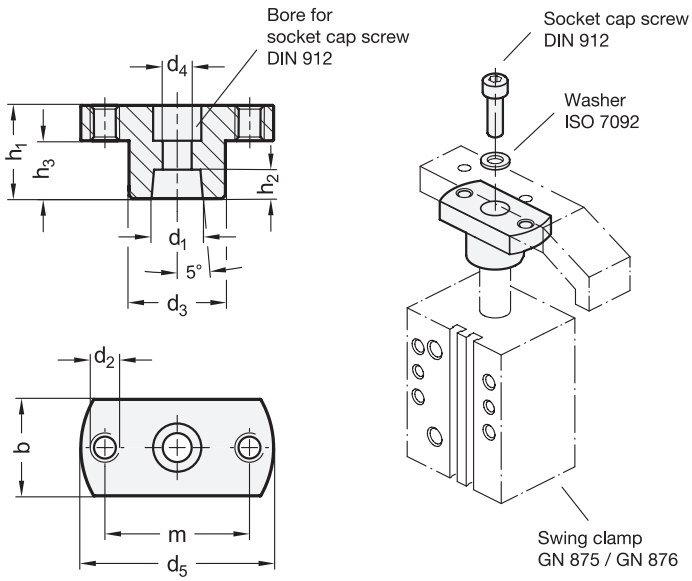
Included are a socket cap screw DIN 912 and a washer ISO 7092 for fastening to the swing clamp.

see also...
- *Swing clamps GN 875 (in block version)* → *Page 84*
- *Swing clamps GN 876 (with screw-in thread)* → *Page 86*

How to order

[1] [2] [3] [4]
GN 875.3-AL-16-60-HE

1	**Material**
2	**d_1**
3	**m**
4	**Finish**



for swing clamps Size	d1 (2)	m (3)	b	d2	d3	d4	d5	h1	h2	h3
25	14	38	25	M 6	25	8,5	50	24,5	8	12
32 / 40	16	45	30	M 8	30	9	60	29	9	18
50 / 63	20	48	32	M 8	32	10,5	65	30	10	18

Specification

	(1)	(4)
• Aluminum hard anodized wear-resistant surface	AL	HE
• Socket cap screw DIN 912 Steel, zinc plated, blue passivated		
• Washer ISO 7092 Steel, zinc plated, blue passivated		
• RoHS		

Information

Adapter flanges GN 875.4 are designed as accessories to swing clamps GN 875 / GN 876 and serve as adapter for mounting custom clamping arms.

The angle orientation of the clamping arm can be set arbitrarily during mounting on the swing clamp. When tightening the screw, the piston rod must not experience any torque. The clamping arm must therefore be held to prevent twisting.

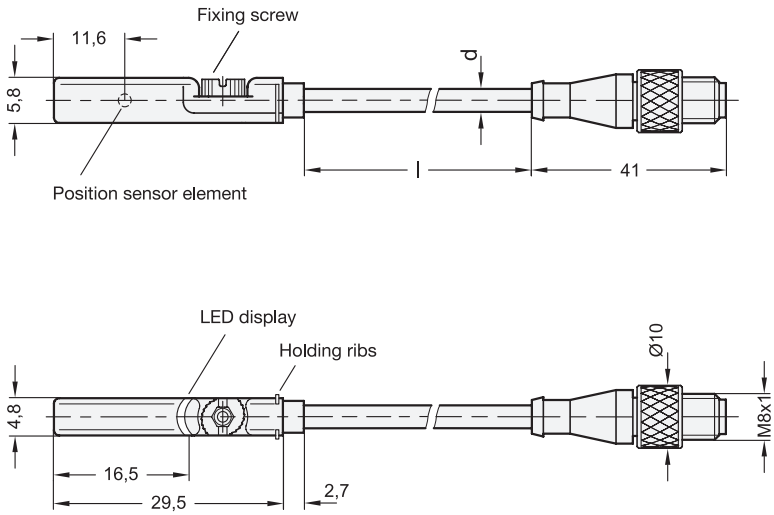
Included are a socket cap screw DIN 912 and a washer ISO 7092 for fastening to the swing clamp.

see also...
• *Swing clamps GN 875 (in block version)* → *Page 84*
• *Swing clamps GN 876 (with screw-in thread)* → *Page 86*

How to order

(1) (2) (3) (4)
GN 875.4-AL-16-45-HE

1	**Material**
2	**d_1**
3	**m**
4	**Finish**



1 Type
T for T-groove cylinder

2 Connection type
S Plug

3

Cable length **l** in meter	**d**
0,3	3

Specification

- Housing
  Plastic
- Cable (Outer sheath)
  Polyurethan PUR
  black
- Plug
  Plastic, 3-pole
- Knurled screw connection
  - Brass, nickel plated
  - freely rotating
- Temperature range: -30 °C to +80 °C
- Protection class IP 65, IP 67
- *IP-Protection classes*
  → Main Catalogue Page 1482
- *Elastomer characteristics*
  → Main Catalogue Page 1483
- RoHS

Information

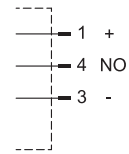
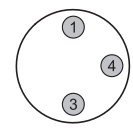
The sensor GN 3380 detects the piston position of pneumatic cylinders with magnetic pistons. Cylinders installed in pneumatic clamps enable the position detection of the clamp itself by means of this sensor. Upon reaching the switch point, the sensor electronics deliver a high signal, for instance to a machine controller, and also indicate this switch state via the integrated LED.

For installation, the sensor is inserted into the cylinder groove from above. The side retaining ribs prevent it from falling out. A quarter turn of the fastening screw quickly and reliably locks the sensor into place in the groove.

see also...
- *Swing clamps GN 875 → Page 84*
- *Heavy-duty pneumatic toggle clamps GN 861*
  → Main Catalogue Page 574
- *Heavy-duty pneumatic toggle clamps GN 863*
  → Main Catalogue Page 563

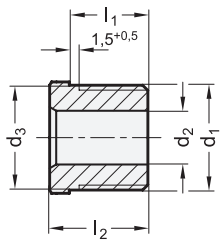
How to order
1 2 3
GN 3380-T-S-0,3

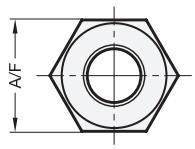
1	**Type**
2	**Connection type**
3	**Cable length l**

Electrical properties		
Output function	Normally open (NO)	
Output type	PNP	
Supply voltage	10 V DC - 30 V DC	
Continuous current I_a	≤ 100 mA	
Connection type Plug (S)	3-pole plug M8x1, with knurled screw connection, with PUR cable 0,3 m	
Switching frequency	1000 Hz	
Power consumption	≤ 8 mA	
Voltage drop	≤ 2 V	
Protection class	III	
Response sensitivity	3 mT	
Overrun distance	10 mm	
Hysteresis	< 0,8 mT	
Repeatability	≤ 0,1 mT	
Shock and vibration resistance	30 g, 11 ms / 10 ... 55 Hz, 1 mm	
EMC	According to EN 60947-5-2	
Switch state LED	Yes	
Reverse polarity protection	Yes	
Short-circuit protection	Yes	
Approvals, conformity declarations CE marking UL	CE c UL us LISTED	

Positioning bushings

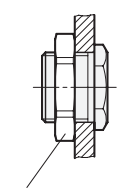
for indexing plungers / cam action indexing plunger



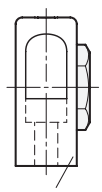


Inox Stainless Steel

Assembly examples

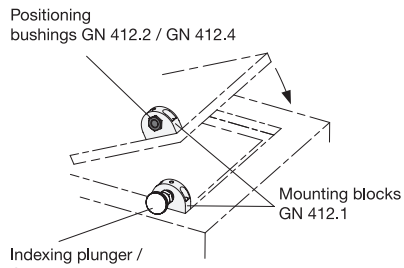


Flat hexagon nut GN 909



Mounting block GN 412.1

Application example



1 d_1	2 d_2 +0,1 Bore	d_3 −0,05	l_1 −0,2	l_2	A/F
M 12 x 1,5	B 4,2	12	10	13	13
M 12 x 1,5	B 5,2	12	10	13	13
M 12 x 1,5	B 6,2	12	10	13	13
M 16 x 1,5	B 8,2	16	12	15	17
M 16 x 1,5	B 10,2	16	12	15	17
M 16 x 1,5	B 12,2	16	12	15	17

Specification

- **GN 412.2**
  Steel
  - hardened
  - blackened
- **GN 412.4**
  Stainless Steel AISI 431
  hardened
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Information

Positioning bushings GN 412.2 / GN 412.4 are used in connection with bolts of indexing plungers and cam action indexing plungers.

The threads are adapted to the mounting blocks GN 412.1 and GN 612.1.

see also...

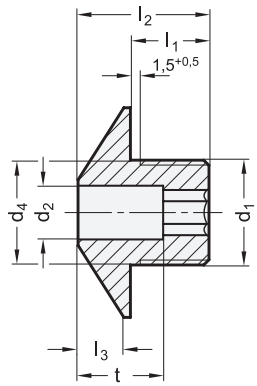
- *Mounting blocks GN 412.1* → *Main Catalogue Page 698*
- *Mounting blocks GN 612.1* → *Main Catalogue Page 699*
- *Flat hexagonal nuts GN 909* → *Main Catalogue Page 695*

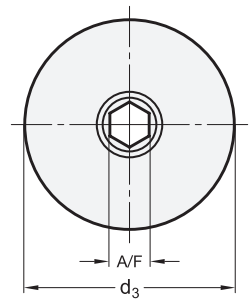
How to order (Steel)		
GN 412.2-M12x1,5-B5,2 (1 2)	1	d_1
	2	d_2

How to order (Stainless Steel)		
GN 412.4-M12x1,5-B5,2 (1 2)	1	d_1
	2	d_2

Positioning bushings with ramping cone

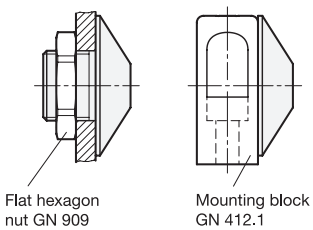
for indexing plungers / cam action indexing plunger



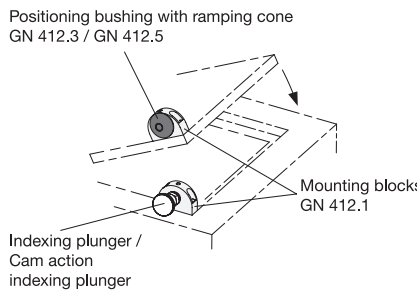


Inox Stainless Steel

Assembly examples



Application example



1 d_1	2 d_2 +0,1 Bore	d_3	d_4 −0,05	l_1	l_2	l_3	A/F	t
M 12 x 1,5	B 4,2	24	12	10	16	5	4	11
M 12 x 1,5	B 5,2	24	12	10	16	5	4	11
M 12 x 1,5	B 6,2	24	12	10	16	5	4	11
M 16 x 1,5	B 8,2	32	16	12	20	7	6	13
M 16 x 1,5	B 10,2	32	16	12	20	7	6	13
M 16 x 1,5	B 12,2	32	16	12	20	7	6	13

Specification

- **GN 412.3**
  Steel
  - hardened
  - blackened
- **GN 412.5**
  Stainless Steel AISI 431
  hardened
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

Positioning bushings with ramping cone GN 412.3 / GN 412.5 are used in connection with bolts of indexing plungers.

The threads are adapted to the mounting blocks GN 412.1 and GN 612.1.

see also...

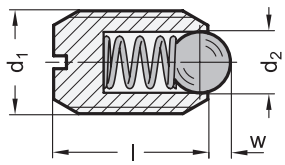
- *Mounting blocks GN 412.1 → Main Catalogue Page 698*
- *Mounting blocks GN 612.1 → Main Catalogue Page 699*
- *Flat hexagonal nuts GN 909 → Main Catalogue Page 695*

How to order (Steel)		
GN 412.3-M16x1,5-B8,2 (1 2)	1	d_1
	2	d_2

How to order (Stainless Steel)		
GN 412.5-M16x1,5-B8,2 (1 2)	1	d_1
	2	d_2

Spring plungers

with ball, with slot



Inox
Stainless
Steel

2 Type

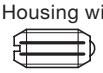
K	Steel, standard spring load
KS	Steel, high spring load
KN	Stainless Steel, standard spring load
KSN	Stainless Steel, high spring load

1

d_1 Type K	Type KN	Type KS Type KSN	d_2	l ±0,1	w Compression	Spring load in N ≈ standard (Type K / KN) initial	end	Spring load in N ≈ high (Type KS / KSN) initial	end
-	M 2	-	1	4	0,3	0,8	1,5	-	-
M 3	M 3	-	1,5	7	0,4	3	4,5	-	-
M 4	M 4	-	2,5	9	0,8	6	14,5	-	-
M 5	M 5	M 5	3	12	0,9	8	14	15	22
M 6	M 6	M 6	3,5	14	1	11	18	19	28
M 8	M 8	M 8	4,5	16	1,5	18	31	36	62
M 10	M 10	M 10	6	19	2	24	45	57	104
M 12	M 12	M 12	8	22	2,5	26	49	61	110
M 16	M 16	M 16	10	24	3,5	41	86	68	142
M 20	M 20	M 20	12	30	4,5	56	111	84	166
M 24	M 24	M 24	15	34	5,5	81	151	127	237

Specification

- Type K / KS
  - Housing Steel, blackened
  - Ball Steel, 1.3505, hardened
- Type KN / KSN
  - Housing
    Stainless Steel AISI 303
  - Ball
    Stainless Steel AISI 420C, hardened
- Spring
  Stainless Steel AISI 631
- Identification of type KS / KSN:
  Housing with 2 longitudinal markings



- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Information

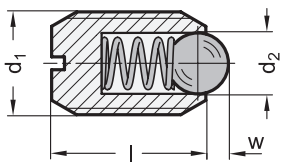
Spring plungers GN 615 are used as detents as well as for push-on and push-off applications and ejectors.

see also...

- *Plastic-Spring plungers GN 615.2 (with ball, with slot)*
  → *Main Catalogue Page 720*

How to order (Steel)		
GN 615-M6-K (1 2)	1	d_1
	2	Type

How to order (Stainless Steel)		
GN 615-M8-KSN (1 2)	1	d_1
	2	Type



Inox
Stainless
Steel

2 Type

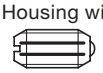
KN Stainless Steel A4, standard spring load
KSN Stainless Steel A4, high spring load

1

d_1		d_2	Length **l**	**w** compression	Spring load in N ≈ standard (Type KN)		Spring load in N ≈ high (Type KSN)	
Type KN	Type KSN				initial	end	initial	end
M 4	-	2,5	9	0,8	8,5	14	-	-
M 5	M 5	3	12	0,9	8	14	15	22
M 6	M 6	3,5	14	1	11	18	19	28
M 8	M 8	4,5	16	1,5	18	31	36	62
M 10	M 10	6	19	2	24	45	57	104
M 12	M 12	8	22	2,5	26	49	61	110
M 16	M 16	10	24	3,5	41	86	68	142

Specification

- Housing
  Stainless Steel A4
- Ball
  Ceramic
  Silicon nitride, black
- Spring
  Stainless Steel A4
- Identification of type KSN:
  Housing with 2 longitudinal markings



- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

GN 615.5 Stainless Steel-Spring plungers are used for locking as well as for pressure and hold-off functions.

Due to the selection of materials, the Stainless Steel-Spring plungers are suitable for use in highly corrosive environments. In addition the ceramic ball is low wearing, anti-magnetic and electrically insulating.

see also...

- *Plastic spring plungers GN 615.2 (Plastic) → Main Catalogue Page 720*
- *Spring plungers GN 615.8 (Ball with friction bearing) → Page 98*

How to order

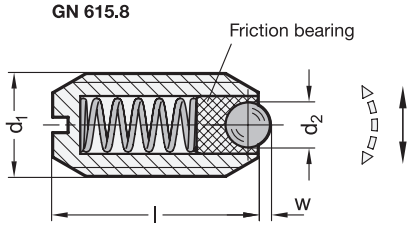
GN 615.5-M8-KSN (1 2)

1	d_1
2	Type

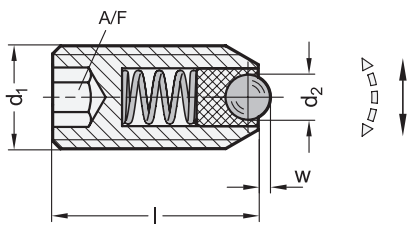
Spring plungers

Steel / Stainless Steel, Ball with friction bearing

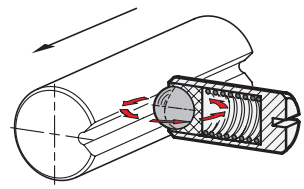
GN 615.8



GN 615.9



Application example



Inox Stainless Steel

2 Type

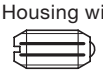
K	Steel, standard spring load
KS	Steel, high spring load
KN	Stainless Steel, standard spring load
KSN	Stainless Steel, high spring load

1

d_1	d_2	Length **l**		**A/F**	**w** Compression	Spring load in N ≈ standard (Type K / KN)		Spring load in N ≈ high (Type KS / KSN)	
		GN 615.8	GN 615.9			initial	end	initial	end
M 5	2	12	14	2,5	0,5	4,8	6,8	10	14
M 6	2,5	14	15	3	0,7	6,3	10	11	16
M 8	3,5	16	18	4	0,95	16	24	23	40
M 10	4,5	19	23	5	1,4	18,8	31,7	28	54,3
M 12	6,5	22	26	6	2,3	26	49	39,5	77,3
M 16	8,5	24	33	8	3,1	38	68	50	88,7

Specification

- Type K / KS
  - Housing steel, blackened
  - Ball steel, hardened
- Type KN / KSN
  - Housing Stainless Steel AISI 303
  - Ball Stainless Steel AISI 420C, hardened
- Spring
  Stainless Steel AISI 631
- Friction bearing
  - Plastic
  - temperature resistant up to 90 °C
- Identification of type KS / KSN:
  Housing with 2 longitudinal markings



- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Information

GN 615.8 / GN 615.9 spring plungers are used for locking as well as for pressure and hold-off functions.

The ball is mounted in a plastic shell so as to be freely movable, which enables rolling and therefor generally optimizes the locking characteristics. Above all, this reduces wear on the counter piece.

A further characteristic of these plungers is that the plastic bearing acts as an electrical insulator.

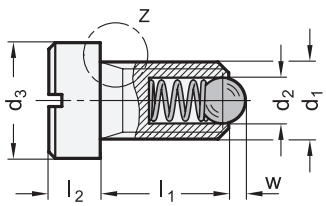
see also...

- *Spring plungers GN 615.3 (Ball without friction bearing)*
  → *Main Catalogue Page 718*

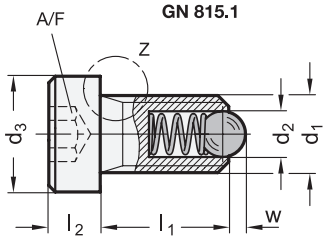
How to order (with slot)		
GN 615.8-M8-K (1 2)	1	d_1
	2	Type

How to order (with internal hexagon)		
GN 615.9-M6-KN (1 2)	1	d_1
	2	Type

GN 815

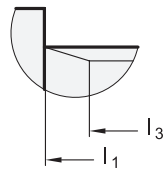


GN 815.1

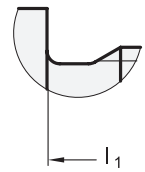


Detail Z; End of thread:

M4 / M5



M6 ... M12



Rostfrei Inox Stainless Steel

[1]

d_1	d_2	d_3	l_1		l_2	l_3		w Compression	A/F	Spring load in N ≈	
			GN 815	GN 815.1		GN 815	GN 815.1			initial	end
M 4	2,5	6	6,5	9	3	5	7,5	0,8	2	8	14
M 5	3	8	8,5	10	4	6,7	8,2	0,9	2,5	8	14
M 6	3,5	10	9	10	5	-	-	1	3	11	18
M 8	4,5	13	11	12,5	5,5	-	-	1,5	4	18	31
M 10	6	16	14	17	6	-	-	2	5	24	45
M 12	8	18	15	19	7	-	-	2,5	6	26	49

Specification

[2]

- Steel **ST**
  - Housing blackened
  - Ball hardened
- Stainless Steel **NI**
  - Housing AISI 303
  - Ball AISI 420C hardened
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

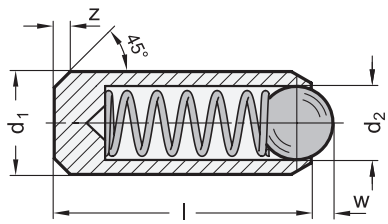
Information

Spring plungers GN 815 / GN 815.1 are used as stops as well as thrust elements or ejectors.

The collar gives a defined installation position.

How to order (with slot)		
GN 815-M8-ST (1 2)	1	d_1
	2	Material

How to order (with internal hexagon)		
GN 815.1-M8-ST (1 2)	1	d_1
	2	Material



Inox Stainless Steel

1

d_1 ±0,04	d_2	l	w Compression	z Chamfer	Spring load in N ≈ initial	end
2	1	3,5	0,3	0,15	0,8	1,5
2,5	1,5	5	0,4	0,15	2,8	4,7
3	2	7	0,65	0,15	4,5	7,5
3,5	2,5	9	0,8	0,15	6	14,5
4	3	11	0,9	0,25	8	14
4,5	3,2	12	0,95	0,25	9,5	16,5
5	3,5	13	1	0,25	11	18
5,5	4	14	1,2	0,3	15,5	25
6	4,5	15	1,5	0,3	18	31
8	6	18	2	0,3	24	45
10	8	20	2,5	0,5	26	49
12	10	22	3,5	0,5	41	86

Specification

2

- Housing
  Stainless Steel AISI 303 **NI**
- Ball
  Stainless Steel AISI 420C
  hardened
- Spring
  Stainless Steel AISI 631
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Information

Stainless Steel-Spring plungers GN 614.3 are installed axially through the depth of the bore whereby the dimension z of the chamfer has to be taken into consideration.

Due to the thin wall of the shell press fitting is not recommended.

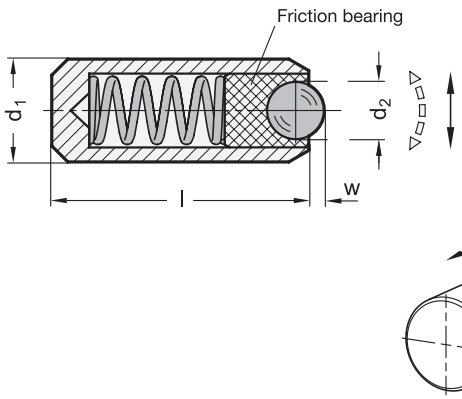
see also...

- *Spring plungers GN 614 (*Press on type, with ball)
  → *Main Catalogue Page 722*

How to order		
GN 614.3-5,5-NI (1 2)	1	d_1
	2	**Material**

GN 614.8 Stainless Steel-Spring plungers

without thread, ball with friction bearing



Inox Stainless Steel

[1]

d_1 ±0,04	d_2	Length **l**	**w** Compression	Spring load in N ≈ initial	end
4	2	11	0,5	4,8	6,8
5	2,5	13	0,7	6,3	10
6	3,5	15	0,95	16	24
8	4,5	18	1,5	18,8	31,7
10	6,5	20	2,3	26	49
12	8,5	22	3,1	38	68

Specification

[2]

- Housing
  Stainless Steel AISI 303 **NI**
- Ball
  Stainless Steel AISI 420C, hardened
- Spring
  Stainless Steel AISI 631
- Friction bearing
  - Plastic
  - temperature resistant up to 90 °C
- *ISO-Fundamental tolerances*
  → *Main Catalogue Page 1479*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Information

GN 614.8 Stainless Steel-Spring plungers are used for locking as well as for pressure and hold-off functions.

The ball is mounted in a plastic shell so as to be freely movable, which enables rolling and therefor generally optimizes the locking characteristics. Above all, this reduces wear on the counter piece.

A further characteristic of these plungers is that the plastic bearing acts as an electrical insulator.

For the mounting hole, tolerance d_1 F8 is recommended for joined fitting and d_1 H9 for press fitting.

see also...

- *Stainless Steel-Spring plungers GN 614.3 (Ball without* friction bearing*)*
  → *Main Catalogue Page 725*

How to order

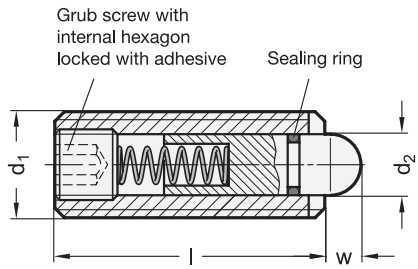
[1] [2]

GN 614.8-8-NI

1	d_1
2	**Material**

GN 616.1
Steel / Stainless Steel

Spring plungers
with sealed bolt



Inox
Stainless
Steel

2 Type

S Steel,
with standard spring load

SS Steel,
with high spring load

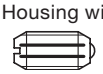
SN Stainless Steel,
with standard spring load

1

d_1	d_2	Length **l**	**A/F** internal hexagon	**w** compression	Spring load in N ≈ standard (Type S / SN) initial	Spring load in N ≈ standard (Type S / SN) end	Spring load in N ≈ high (Type SS) initial	Spring load in N ≈ high (Type SS) end	Code no. Screw driver
M 8	3,8	26	2,5	3	9	24	17	39	GN 616.5-M10
M 10	4	28	3	3,5	15	30	22	43	GN 616.5-M10
M 12	6	35	4	4	24	50	40	80	GN 616.5-M12
M 16	7,5	40	5	5	36	58	44	113	GN 616.5-M16

Specification

- Type S / SS
  - Housing steel, blackened
  - Bolt steel, hardened
- Type SN
  - Housing Stainless Steel AISI 303
  - Bolt Stainless Steel AISI 303
- Spring
  Stainless Steel AISI 303
- Sealing ring
  Rubber NBR (Perbunan)
- Identification of type SS:
  Housing with 2 longitudinal markings



- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Accessory

- Screw drivers GN 616.5
  (Code no. see table)

Information

GN 616.1 Stainless Steel-Spring plungers are used for locking as well as for pressure and hold-off functions. Entry of liquids and dirt is prevented by the seal.

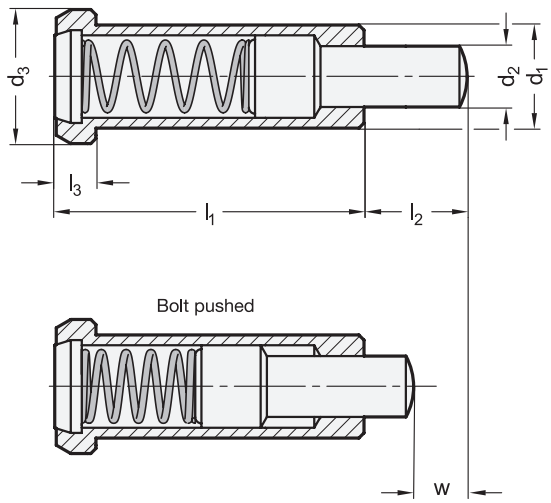
The slit on the plunger side is used for screwing into pocket holes. For this, a special screwdriver is available as GN 616.5-M... (see table).

see also...

- *Spring plungers GN 616 (Bolt without sealing ring)*
  → *Main Catalogue Page 732*

How to order (Steel)		
GN 616.1-M10-S (1 2)	1	d_1
	2	Type

How to order (Stainless Steel)		
GN 616.1-M8-SN (1 2)	1	d_1
	2	Type



2 Type

K Steel, standard spring load

1

d_1 −0,05	d_2	d_3	l_1	l_2	l_3	**w** Compression	Spring load in N ≈ initial	end
6	2,7	8	20	6	3,2	3,5	10	22
8	3,9	10	24	8	3,2	4,5	30	88
10	5,9	13	30	10	4	5,5	42	110
12	7,9	16	36	12	5	6,5	50	130

Specification

- Housing
  Steel
  blackened
- Bolt
  Steel
  blackened, case
- Spring
  Stainless Steel AISI 631
- *ISO-Fundamental tolerances*
  → Main Catalogue Page 1479
- RoHS

Information

GN 614.6 spring plungers are primarily used in toolmaking as spring-loaded stops as well as for pressure and hold-off functions.

Tolerance d_1 H7 is recommended for the mounting hole.

see also...

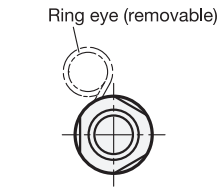
- *Spring plungers GN 611 (with thread) → Main Catalogue Page 735*

How to order		
GN 614.6-10-K (1 2)	1	d_1
	2	Type

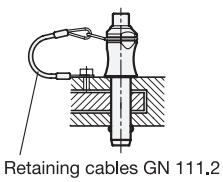
GN 113.3 / GN 113.4 Stainless Steel-Ball lock pins

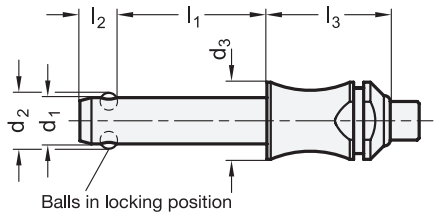
GN 113.3 Material AISI 303 | **GN 113.4** Material AISI 630

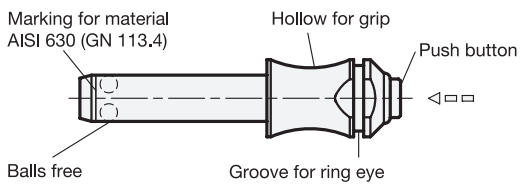
with hollow for grip



Application example







Inox Stainless Steel

1 2

d_1 $^{-0,04}_{-0,08}$	l_1 +0,6															d_2	d_3	l_2 ±1	l_3 +0,2	Location bore H11
5	10	15	20	25	30	35	40	45	50	60	70	80	-	-	-	5,5	10	6	22	5
6	10	15	20	25	30	35	40	45	50	60	70	80	-	-	-	7	10	7	22	6
8	10	15	20	25	30	35	40	45	50	60	70	80	90	100	-	9,5	14	8,2	27	8
10	15	20	25	30	35	40	45	50	60	70	80	90	100	110	120	12	14	9,6	27	10
12	20	25	30	35	40	45	50	60	70	80	90	100	110	120	-	14,5	20	10,6	32	12
16	30	35	40	45	50	60	70	80	90	100	110	120	130	140	150	19	20	14	32	16
20	50	60	70	80	90	100	110	120	130	140	150	-	-	-	-	25	28	20,5	39	20
25	50	60	70	80	90	100	110	120	130	140	150	-	-	-	-	30,8	28	22	39	25

Specification

- **GN 113.3**
  Stainless Steel AISI 303
- **GN 113.4**
  Stainless Steel AISI 630
  - precipitation-hardened
  - hard coated
- Balls
  Stainless Steel AISI 420C
- Spring
  Stainless Steel AISI 631
- temperature resistant up to 250 °C
- *ISO-Fundamental tolerances*
  → *Main Catalogue Page 1479*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Accessory

- Ball chains GN 111 / GN 111.5
  → *Main Catalogue Page 876*
- Retaining cables GN 111.2 → *Page 130*
- Spiral retaining cables GN 111.4
  → *Main Catalogue Page 878*

Information

Stainless Steel-Ball lock pins GN 113.3 / GN 113.4 are used for quick fixing, connecting and locking of various parts and workpieces. A typical application is locating pins which have often to be removed and installed again.

By pressing the spring loaded push button both balls are unlocked and by releasing it the balls are locked again.

Ball lock pins GN 113.3 / GN 113.4 are renowned for their compactness. The eye ring is enclosed unmounted.

Ball lock pins GN 113.4 have an extreme load capacity, the pin is made of heavy duty, hardened and highly abrasion-resistant stainless steel.

The load values given in the above table at shear stress are theoretically obtained and indicative only. They are non-binding recommended values and rule out any liability. They constitute no general warranty of quality and condition. The user must determine from case to case whether a product is suitable for the intended use.

see also...

• *List of lock pin types → Main Catalogue Page 746 ff.*

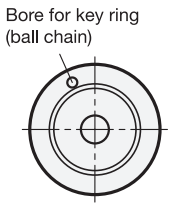
How to order (Stainless Steel AISI 303)		
1 2	1	d_1
GN 113.3-6-20	2	l_1

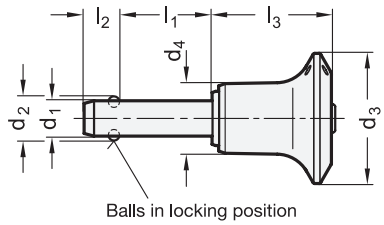
How to order (Stainless Steel AISI 630)		
1 2	1	d_1
GN 113.4-8-35	2	l_1

GN 113.9 / GN 113.10 Stainless Steel-Ball lock pins

GN 113.9 Material AISI 303 | **GN 113.10** Material AISI 630

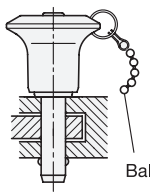
with Stainless Steel-Knob

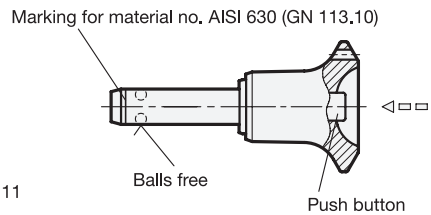




Inox Stainless Steel

Application example





1 d_1 $^{-0,04}_{-0,08}$	2 l_1 +0,6															d_2	d_3	d_4	l_2 ±1	l_3 −0,2	Location bore H11
5	10	15	20	25	30	35	40	45	50	60	70	80	-	-	-	5,5	23	10,2	6,2	20,2	5
6	10	15	20	25	30	35	40	45	50	60	70	80	-	-	-	7	23	10,2	7,2	20,2	6
8	10	15	20	25	30	35	40	45	50	60	70	80	90	100	-	9,5	27	13,2	8,4	26,8	8
10	15	20	25	30	35	40	45	50	60	70	80	90	100	110	120	12	27	13,2	9,9	26,8	10
12	20	25	30	35	40	45	50	60	70	80	90	100	110	120	-	14,5	31	16,4	10,9	32,7	12
16	30	35	40	45	50	60	70	80	90	100	110	120	130	140	150	19	38	23,4	14,5	42,6	16
20	50	60	70	80	90	100	110	120	130	140	150	-	-	-	-	24,8	38	23,4	17,4	42,6	20
25	50	60	70	80	90	100	110	120	130	140	150	-	-	-	-	30,8	50	30,4	22,3	54,3	25

Specification

- **GN 113.9**
  Plunger Stainless Steel AISI 303
- **GN 113.10**
  Plunger Stainless Steel AISI 630 precipitation-hardened
- Knob, push button
  Stainless Steel AISI 316L
- Balls
  Stainless Steel AISI 420C
- Spring
  Stainless Steel German material no. 1.4565
- *ISO-Fundamental tolerances*
  → *Main Catalogue Page 1479*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Accessory

- Ball chains GN 111 / GN 111.5
  → *Main Catalogue Page 876*
- Retaining cables GN 111.2 → *Page 130*
- Spiral retaining cables GN 111.4
  → *Main Catalogue Page 878*

Information

Stainless Steel-Ball lock pins GN 113.9 / GN 113.10 are used for quick fixing, connecting and locking of various parts and workpieces. A typical application is location pins which have to be often removed and replaced again.

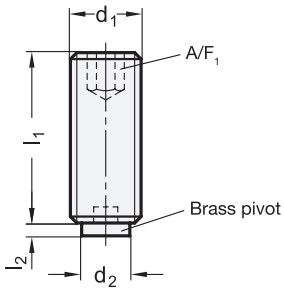
By pressing the spring loaded push button both balls are unlocked and by releasing it, the balls are locked again.

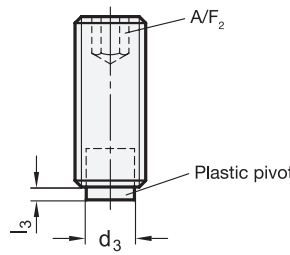
Ball lock pins GN 113.10 have an extreme load capacity, the pin is made of heavy duty, hardened and highly abrasion-resistant Stainless Steel.

see also...
- *List of lock pin types → Main Catalogue Page 746 ff.*

How to order (Stainless Steel AISI 303)		
GN 113.9-6-60 (1 2)	1	d_1
	2	l_1

How to order (Stainless Steel AISI 630)		
GN 113.10-20-100 (1 2)	1	d_1
	2	l_1





1 d_1	2 l_1 Nominal length										d_2	d_3	l_2	l_3 ±0,3	A/F_1	A/F_2
M 3	3	4	5	6	8	10	-	-	-	-	1,9	1,5	0,5	0,8	1,5	1,5
M 4	4*	5*	6	8	10	12	16	20	-	-	2,5	2	0,5	1	2	1,5
M 5	5*	6*	8	10	12	16	20	25	-	-	3	3	0,5	1	2,5	2,5
M 6	6	8	10	12	16	20	25	32	40	50	4	3,5	1	1,3	3	3
M 8	8	10*	12	16	20	25	32	40	50	63	6	5	1,5	1,6	4	4
M 10	16	20	25	32	40	50	63	80	-	-	8	6,5	2	1,9	5	5
M 12	20	25	32	40	50	63	80	100	-	-	10	8	2	2,1	6	6

* These lengths are only available with brass pivot.

Specification

3

- Screw Steel
  - Tensile strength class 5.8
  - blackened
- Thrust pivot
  - Brass **MS**
  - Plastic (Polyacetal POM) **KU**
- *Strength values of screws* → *Main Catalogue Page 1481*
- *Plastic characteristics* → *Main Catalogue Page 1483*
- RoHS

Information

Grub screws GN 913.3 with pivots in brass or plastic are used in applications, where marks and damage on the workpiece are unacceptable.

see also...

- *Grub screws GN 913.2 (with hardened thrust pivot)* → *Main Catalogue Page 780*
- *Ball point screws GN 605 (with flat ball)* → *Main Catalogue Page 782*

How to order

1 2 3

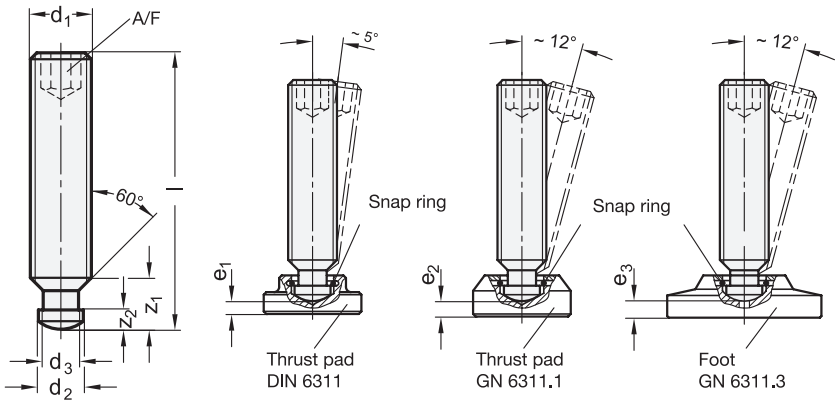
GN 913.3-M6-20-MS

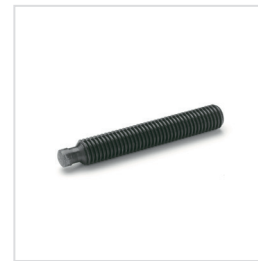
1	d_1
2	l_1
3	**Thrust pivot**

Grub screws

with thrust point

Mounting example





Inox
Stainless
Steel

3 Type

SK with thrust point, hardened (only in steel, blackened)

SKN with thrust point, not hardened

Steel, blackened / Stainless Steel

d_1	Length l						d_2 h11	d_3	$e_1 \approx$	$e_2 \approx$ Type A	$e_2 \approx$ Type P	$e_3 \approx$	A/F	$z_1 \approx$	$z_2 \approx$
M 6	30	35	40	45	50	-	4,5	4	2,1	1,5	4,5	-	3	6	2,5
M 8	35	40	45	50	60	70	6	5,4	3	2,3	5,3	-	4	7,5	3
M 10	45	50	55	60	65	80	8	7,2	3,6	2,6	5,6	-	5	9	4,5
M 12	50	60	65	70	80	100	8	7,2	4,6	2,9	6,9	3,7	6	10	4,5
M 16	65	70	75	80	100	125	12	11	5,4	4,5	9,5	4	8	12	5
M 20	80	90	100	125	150	-	15,5	14,4	5,5	4,5	10,5	4,3	10	14	5,5

Steel, zinc plated

d_1	Length l					d_2 h11	d_3	$e_1 \approx$	$e_3 \approx$	A/F	$z_1 \approx$	$z_2 \approx$
M 10	45	55	65	80	-	8	7,2	3,6	-	5	9	4,5
M 12	50	60	70	80	100	8	7,2	4,6	3,7	6	10	4,5
M 16	65	70	80	100	125	12	11	5,4	4	8	12	5
M 20	90	100	125	150	-	15,5	14,4	5,5	4,3	10	14	5,5

Specification

- Steel
  Tensile strength class 5.8
  - blackened —
    Thrust point hardened (Type SK)
    Thrust point not hardened (Type SKN)
  - zinc plated, blue passivated **ZB**
    Thrust point not hardened (Type SKN)
- Stainless Steel AISI 304 **NI**
  Thrust point not hardened (Type SKN)
- *ISO-Fundamental tolerances*
  → *Main Catalogue Page 1479*
- *Strength values of screws*
  → *Main CataloguePage 1481*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Information

The thrust point of these screws DIN 6332 is designed to be used with or without the thrust pad for clamping.

The pin diameter of the grub screws is smaller than the core diameter of the thread, allowing them to be screwed in on the pin side.

The snap ring resp. snap spring of the the thrust pad is a simple and quick method to connect the thrust pad to the grub screw.

How to order (Steel, blackened)

DIN 6332-M12-60-SK

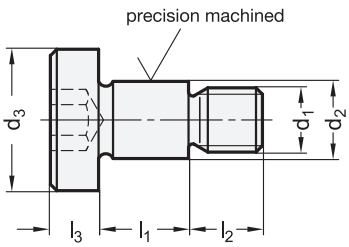
1	d_1
2	Length l
3	Type

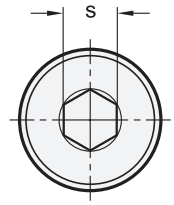
How to order (Steel, zinc plated)

DIN 6332-M16-80-SKN-ZB

1	d_1
2	l_1
3	Type
4	Finish (Material)

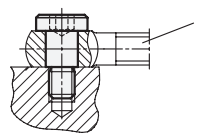
Cylinder head shoulder bolts





Inox Stainless Steel

Application example



1	2	3										
d_1	d_2	l_1 $^{+0,20}_{+0,13}$							d_3	l_2	l_3	s
M 5	6 $^{-0,03}_{-0,05}$	5	6	7	8	-	-	-	12	7	3	3
M 6	8 $^{-0,05}_{-0,08}$	5	6	8	9	10	12	13	14	8	4	4
M 8	10 $^{-0,05}_{-0,08}$	8	10	12	14	15	-	-	16	11	5	5
M 10	12 $^{-0,05}_{-0,08}$	12	14	16	17	-	-	-	19	13	6	6
M 12	14 $^{-0,05}_{-0,08}$	14	16	18	-	-	-	-	22	16	8	8
M 14	16 $^{-0,05}_{-0,08}$	17	18	-	-	-	-	-	25	19	8	8

Specification

4

- Steel **ST**
  - Tensile strength class 5.8
  - blackened
  - case hardened
    (all round depth 0,2 to 0,4 mm)
- Stainless Steel **NI**
  AISI 303
- *Strength values of screws*
  → Main Catalogue Page 1481
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

The dimensions d_2 / l_1 of the cylinder head shoulder bolts GN 732.1 permit a use as bearing pin for swing bolts DIN 444, swing bolts GN 1524, swing nuts GN 444.2 and hubs with eccentrical cam GN 919.

see also...

- *Swing bolts DIN 444 → Main Catalogue Page 776*
- *Swing bolts GN 1524 (with long threaded bolt)*
  → Main Catalogue Page 777
- *Swing nuts GN 444.2 → Main Catalogue Page 806*
- *Hubs with eccentrical cam GN 919 → Main Catalogue Page 480*

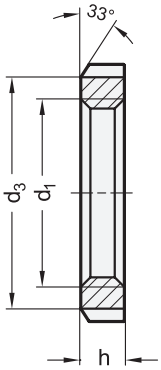
How to order

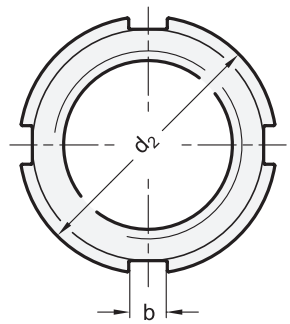
1 2 3 4
GN 732.1-M8-10-12-ST

1	d_1
2	d_2
3	l_1
4	**Material**

DIN 70852
Extract

Slotted locknuts
flat design





[2]

d_1	d_2 h12	d_3	b	h h11	Code no. C-Spanner DIN 1810-
M 10 x 1	20	16	4,5	5	A16-20
M 12 x 1,5	22	18	4,5	6	A16-20
M 14 x 1,5	24	20	4,5	6	A25-28
M 16 x 1,5	28	23	5,5	6	A25-28
M 18 x 1,5	30	25	5,5	6	A30-32
M 20 x 1,5	32	27	5,5	6	A30-32
M 22 x 1,5	36	30	6,5	7	A34-36
M 24 x 1,5	38	32	6,5	7	A34-36
M 26 x 1,5	40	34	6,5	7	A40-42
M 28 x 1,5	42	36	6,5	7	A40-42
M 30 x 1,5	44	38	6,5	7	A45-50
M 32 x 1,5	48	41	7	8	A45-50
M 35 x 1,5	50	43	7	8	A45-50

[2]

d_1	d_2 h12	d_3	b	h h11	Code no. C-Spanner DIN 1810-
M 38 x 1,5	54	47	7	8	A52-55
M 40 x 1,5	56	49	7	8	A58-62
M 42 x 1,5	60	52	8	8	A58-62
M 45 x 1,5	62	54	8	8	A58-62
M 48 x 1,5	65	57	8	8	A65-70
M 50 x 1,5	68	60	8	8	A68-75
M 52 x 1,5	70	62	8	8	A68-75
M 55 x 1,5	75	67	8	8	A68-75
M 60 x 1,5	80	71	11	9	A80-90
M 65 x 1,5	85	76	11	9	A80-90
M 70 x 1,5	90	81	11	9	A80-90
M 80 x 1,5	100	91	11	10	A95-100

Specification

[1]

- Steel **ST**
  - Tensile strength class 17H
  - zinc plated, blue passivated
- *ISO-Fundamental tolerances*
  → Main Catalogue Page 1479
- RoHS

Accessory

- C-Spanner DIN 1810
  (Code no. see table)

Information

Slotted locknuts DIN 70852 serve for adjusting the amount of play or for securing shaft-hub connections in an axial direction, for example. The flat design of the slotted locknuts allows for especially space-saving installation.

Sizes M 45x1,5 and larger have 6 slots.

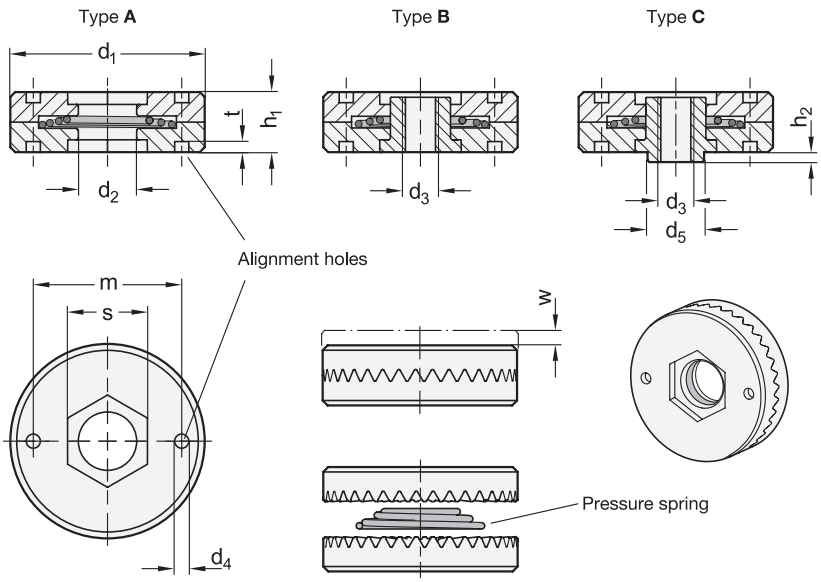
see also...

- *Slotted locknuts DIN 1804 → Main Catalogue Page 801*
- *Slotted locknuts GN 1804.1 (self-locking) → Main Catalogue Page 802*
- *Slotted locknuts GN 1804.2 (with thread locking)*
  → Main Catalogue Page 803

How to order

[1] [2]
DIN 70852-ST-M50x1,5

1	**Material**
2	**d_1**



Inox
Stainless
Steel

3 Type

A with pass-through hole, without bushing
B with threaded bushing
C with threaded bushing and centring step

1 d_1	2 z Number of teeth		d_2 Type A	d_3 Type B Type C	d_4	d_5 −0,15	h_1	h_2	m	s	t	w min. Stroke
35	24	36	B 12	M 8	3	12	12	1,7	26	17	2,5	2
55	24	36	B 16	M 10	4	16	17	2,8	42	22	3	3
75	24	36	B 20	M 12	5	20	22	4,7	60	27	4	4

Specification

4

- Stainless Steel precision casting AISI CF-8 **NI**
- Threaded bushing Stainless Steel AISI 304
- Thrust spring Stainless Steel AISI 301
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Information

With the aid of Stainless Steel-Serrated locking plates GN 188, standard components can be interlocked and firmly attached in defined angular increments. They are joined by welding.

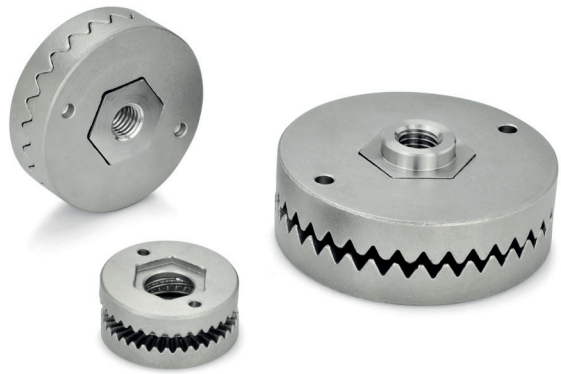
The toothing is positioned exactly on the alignment holes d_4, which guarantees a parallel or right-angled arrangement.

The thrust spring is placed between the toothed discs during assembly and ensures that the toothed discs separate properly when loosening. The scope of delivery includes two serrated locking plates, one thrust spring and, depending on the version, a threaded bushing.

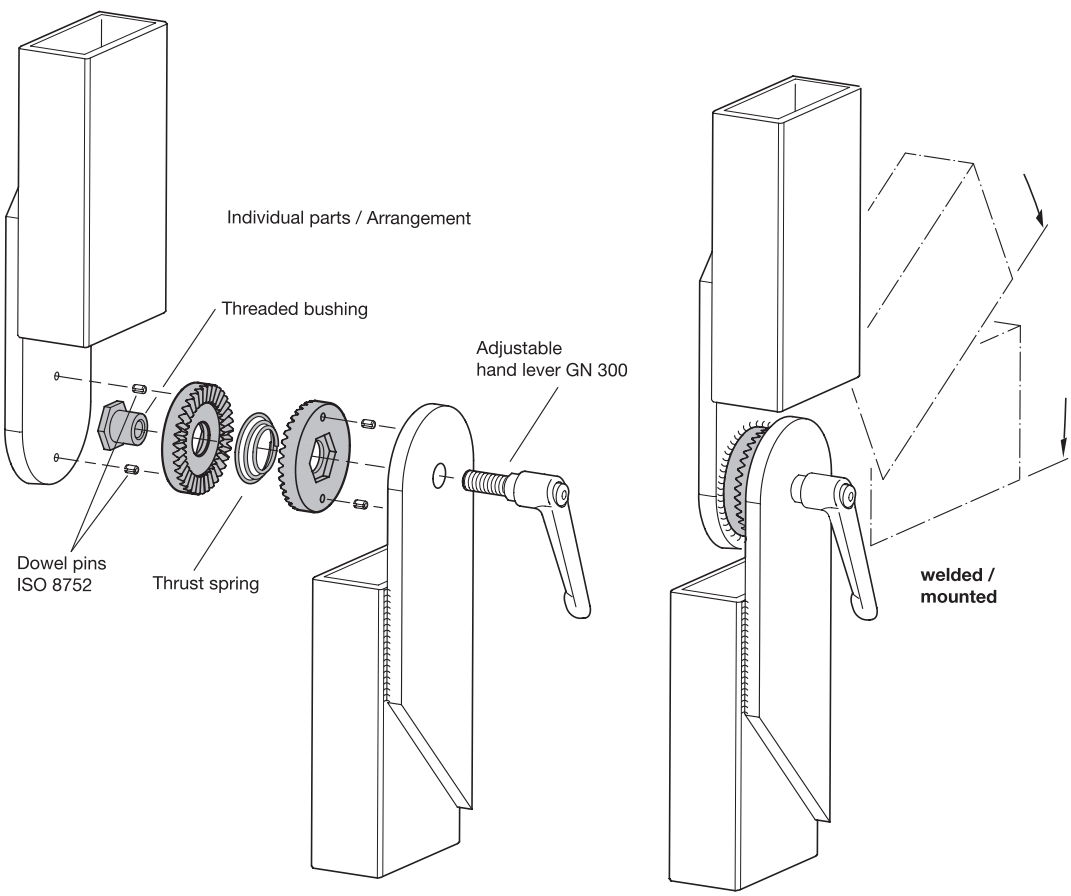
see also...

- *Serrated locking plates GN 187.4 (Sintered steel / Stainless Steel)*
  → *Main Catalogue Page 824*

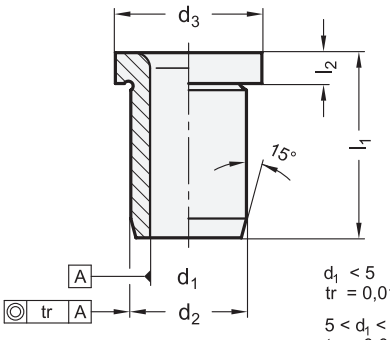
How to order		
1 2 3 4 GN 188-75-24-C-NI	1	d_1
	2	z
	3	Type
	4	Material



Application example



DIN 172

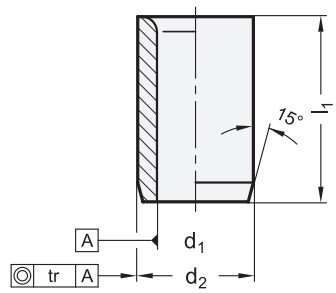


d_1 < 5
tr = 0,01

5 < d_1 < 30
tr = 0,02

d_1 > 30
tr = 0,04

DIN 179



3 Type

A Bore one-sided rounded

1

d_1 F7										**2** l_1			d_2 n6	d_3	l_2
... ,0	... ,1	... ,2	... ,3	... ,4	... ,5	... ,6	... ,7	... ,8	... ,9						
-	-	-	-	-	-	B 0,6	B 0,7	B 0,8	-	6	-	-	3	6	2
-	-	-	-	-	-	-	-	-	B 0,9	6	9	-	3	6	2
B 1	-	-	-	-	-	-	-	-	-	6	9	-	3	6	2
-	B 1,1	B 1,2	B 1,3	B 1,4	B 1,5	B 1,6	B 1,7	B 1,8	-	6	9	-	4	7	2
-	-	-	-	-	-	-	-	-	B 1,9	6	9	-	5	8	2
B 2	B 2,1	B 2,2	B 2,3	B 2,4	B 2,5	B 2,6	-	-	-	6	9	-	5	8	2
-	-	-	-	-	-	-	B 2,7	B 2,8	B 2,9	8	12	16	6	9	2,5
B 3	B 3,1	B 3,2	B 3,3	-	-	-	-	-	-	8	12	16	6	9	2,5
-	-	-	-	B 3,4	B 3,5	B 3,6	B 3,7	B 3,8	B 3,9	8	12	16	7	10	2,5
B 4	-	-	-	-	-	-	-	-	-	8	12	16	7	10	2,5
-	B 4,1	B 4,2	B 4,3	B 4,4	B 4,5	B 4,6	B 4,7	B 4,8	B 4,9	8	12	16	8	11	2,5
B 5	-	-	-	-	-	-	-	-	-	8	12	16	8	11	2,5
-	B 5,1	B 5,2	B 5,3	B 5,4	B 5,5	B 5,6	B 5,7	B 5,8	B 5,9	10	16	20	10	13	3
B 6	-	-	-	-	-	-	-	-	-	10	16	20	10	13	3
-	B 6,1	B 6,2	B 6,3	B 6,4	B 6,5	B 6,6	B 6,7	B 6,8	B 6,9	10	16	20	12	15	3
B 7	B 7,1	B 7,2	B 7,3	B 7,4	B 7,5	B 7,6	B 7,7	B 7,8	B 7,9	10	16	20	12	15	3
B 8	-	-	-	-	-	-	-	-	-	10	16	20	12	15	3
-	B 8,1	B 8,2	B 8,3	B 8,4	B 8,5	B 8,6	B 8,7	B 8,8	B 8,9	12	20	25	15	18	3
B 9	B 9,1	B 9,2	B 9,3	B 9,4	B 9,5	B 9,6	B 9,7	B 9,8	B 9,9	12	20	25	15	18	3
B 10	-	-	-	-	-	-	-	-	-	12	20	25	15	18	3
-	B 10,1	B 10,2	B 10,3	B 10,4	B 10,5	B 10,6	B 10,7	B 10,8	B 10,9	12	20	25	18	22	4
B 11	B 11,1	B 11,2	B 11,3	B 11,4	B 11,5	B 11,6	B 11,7	B 11,8	B 11,9	12	20	25	18	22	4
B 12	-	-	-	-	-	-	-	-	-	12	20	25	18	22	4
-	B 12,1	B 12,2	B 12,3	B 12,4	B 12,5	B 12,6	B 12,7	B 12,8	B 12,9	16	28	36	22	26	4
B 13	B 13,1	B 13,2	B 13,3	B 13,4	B 13,5	B 13,6	B 13,7	B 13,8	B 13,9	16	28	36	22	26	4
B 14	B 14,1	B 14,2	B 14,3	B 14,4	B 14,5	B 14,6	B 14,7	B 14,8	B 14,9	16	28	36	22	26	4
B 15	-	-	-	-	-	-	-	-	-	16	28	36	22	26	4
-	B 15,1	-	-	-	B 15,5	-	-	-	-	16	28	36	26	30	4
B 16	B 16,1	-	-	-	B 16,5	-	-	-	-	16	28	36	26	30	4
B 17	-	-	-	-	B 17,5	-	-	-	-	16	28	36	26	30	4
B 18	-	-	-	-	-	-	-	-	-	16	28	36	26	30	4
-	-	-	-	-	B 18,5	-	-	-	-	20	36	45	30	34	5
B 19	-	-	-	-	B 19,5	-	-	-	-	20	36	45	30	34	5
B 20	-	-	-	-	B 20,5	-	-	-	-	20	36	45	30	34	5

1										2					
d_1 F7										l_1			d_2 n6	d_3	l_2
... ,0	... ,1	... ,2	... ,3	... ,4	... ,5	... ,6	... ,7	... ,8	... ,9						
B 21	-	-	-	-	B 21,5	-	-	-	-	20	36	45	30	34	5
B 22	-	-	-	-	-	-	-	-	-	20	36	45	30	34	5
-	-	-	-	-	B 22,5	-	-	-	-	20	36	45	35	39	5
B 23	-	-	-	-	B 23,5	-	-	-	-	20	36	45	35	39	5
B 24	-	-	-	-	B 24,5	-	-	-	-	20	36	45	35	39	5
B 25	-	-	-	-	B 25,5	-	-	-	-	20	36	45	35	39	5
B 26	-	-	-	-	-	-	-	-	-	20	36	45	35	39	5
-	-	-	-	-	B 26,5	-	-	-	-	25	45	56	42	46	5
B 27	-	-	-	-	B 27,5	-	-	-	-	25	45	56	42	46	5
B 28	-	-	-	-	B 28,5	-	-	-	-	25	45	56	42	46	5
B 29	-	-	-	-	B 29,5	-	-	-	-	25	45	56	42	46	5
B 30	-	-	-	-	-	-	-	-	-	25	45	56	42	46	5
-	-	-	-	-	B 30,5	-	-	-	-	25	45	56	48	52	5
B 31	-	-	-	-	B 31,5	-	-	-	-	25	45	56	48	52	5
B 32	-	-	-	-	B 32,5	-	-	-	-	25	45	56	48	52	5
B 33	-	-	-	-	B 33,5	-	-	-	-	25	45	56	48	52	5
B 34	-	-	-	-	B 34,5	-	-	-	-	25	45	56	48	52	5
B 35	-	-	-	-	-	-	-	-	-	25	45	56	48	52	5
B 36	-	-	-	-	-	-	-	-	-	30	56	67	55	59	5
B 37	-	-	-	-	-	-	-	-	-	30	56	67	55	59	5
B 38	-	-	-	-	-	-	-	-	-	30	56	67	55	59	5
B 39	-	-	-	-	-	-	-	-	-	30	56	67	55	59	5
B 40	-	-	-	-	-	-	-	-	-	30	56	67	55	59	5
B 41	-	-	-	-	-	-	-	-	-	30	56	67	55	59	5
B 42	-	-	-	-	-	-	-	-	-	30	56	67	55	59	5

Specification

- Steel
  hardened (HRC 62 ±2)
- Fit sizes d_1, d_2 ground
- *ISO-Fundamental tolerances*
  → Main Catalogue Page 1479
- RoHS

On request

- other bores d_1
- Bore d_1 both-sided rounded (Type B)

Information

Guide bushings DIN 172 / DIN 179 are characterized by the tight dimensional and positional tolerances in connection with the hardened and finely machined surface. As a result, they are suitable for extremely universal use in many applications.

Holes with tolerance H7 are recommended for installing the bushings. In connection with the outer diameter of the bushing with a tolerance of n6, use of a transition adapter is recommended.

For mounting bushings with tolerance n6, a hole with tolerance H7 corresponding to the external diameter is usually provided.

see also...

- *Guide bushings GN 172.1 (with conical bore) → Main Catalogue Page 839*
- *Guide bushings GN 179.1 (with conical bore) → Main Catalogue Page 839*
- *Guide pins GN 771.1 → Main Catalogue Page 832*
- *Indexing plungers GN 817.3 → Main Catalogue Page 680*
- *Indexing plungers GN 817.5 → Main Catalogue Page 681*

How to order (with collar)

1 2 3

DIN 172-B4,7-16-A

1	d_1
2	l_1
3	Type

How to order (without collar)

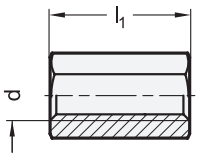
1 2 3

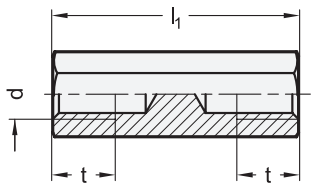
DIN 179-B32,5-45-A

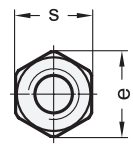
1	d_1
2	l_1
3	Type

Spacers

Type **A**

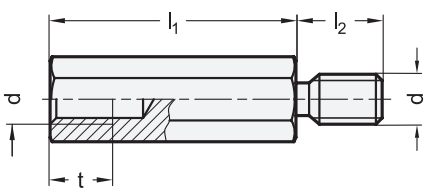




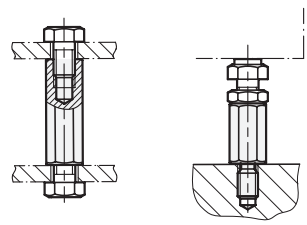


Inox Stainless Steel

Type **B**



Application example



4 Type

A female thread
B female thread / threaded stud

2 **3**

Type A

d	l_1 ±0,1 Through-hole thread			Threaded blind hole										e≈	s	t min.
M 4	10	12	15	20	25	30	35	40	45	50	60	70	80	8	7	9
M 5	12	15	-	20	25	30	35	40	45	50	60	70	80	9,2	8	10
M 6	12	15	-	20*	25	30	35	40	45	50	60	70	80	11,5	10	12
M 8	15	20	-	25**	30	35	40	45	50	60	70	80	-	15	13	14
M 10	25	30	-	35	40	45	50	60	70	80	100	-	-	19,5	17	16

* t min. = 10, ** t min. = 12

2 **3**

Type B

d	l_1 ±0,1													e≈	l_2	s	t min.
M 4	10*	12**	15	20	25	30	35	40	45	50	60	70	80	8	8	7	9
M 5	12**	15	20	25	30	35	40	45	50	60	70	80	-	9,2	8	8	10
M 6	15***	20	25	30	35	40	45	50	60	70	80	-	-	11,5	10	10	12
M 8	20	25	30	35	40	45	50	60	70	80	-	-	-	15	14	13	14
M 10	25	30	35	40	45	50	60	70	80	100	-	-	-	19,5	16	17	16

* t min. = 6, ** t min. = 7, *** t min. = 10

Specification

1

- Steel zinc plated, blue passivated **ST**
- Stainless Steel AISI 303 matte shot-blasted **NI**
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Information

Spacers GN 6220 are commonly used as spacing rods. They allow parts to be fastened with an offset parallel to their to their mounting plane. Type A is also used as a connecting nut.

Any total length can be realized through the combination of multiple spacers.

see also...

- *Stainless Steel-Countersunk washers GN 184.5*
  → *Main Catalogue Page 815*

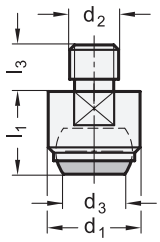
How to order

1 **2** **3** **4**
GN 6220-ST-M8-40-A

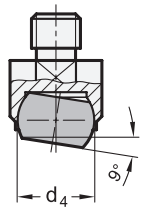
1	**Material**
2	**d**
3	**l_1**
4	**Type**

Clamping pads

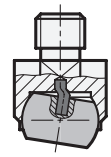
with threaded stud



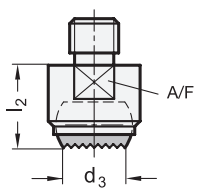
Type **B / R / RH**



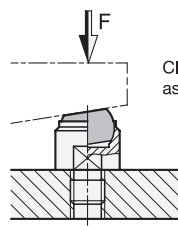
Type **BR / RR / RRH**



Inox Stainless Steel



Application example



Clamping pad when used as a workpiece support

3	Type
B	Smooth contact face
R*	Serrated contact face
BR	Smooth contact face, with automatic return
RR*	Serrated contact face, with automatic return
RH	Serrated contact face, with hard metal ball
RRH	Serrated contact face, with automatic return, with hard metal ball

1 d_1	2 d_2		d_3 Type B, R, BR, RR	d_3 Type RH	d_3 Type RRH	d_4 Ball-Ø	l_1 ±0,02	l_2 ±0,1	l_3	A/F	Static load max. in kN
13	M 6	M 8	7,2	8,3	8,3	10	13	13	8	11	10
20	M 8	M 10	10,5	12,8	10,5	16	18	18	10	17	25
20	M 12	-	10,5	12,8	10,5	16	18	18	12	17	25
30	M 16	-	20	20	20	25	27	27	16	27	90
50	M 20	-	34,5	34,5	34,5	40	35	35	20	41	165
50	M 24	-	34,5	34,5	34,5	40	35	35	24	41	165

*only available for GN 709.1

Specification

- **GN 709.1**
  Steel
  tempered, phosphated
  - Ball steel, hardened, blank (Type B / R / BR / RR)
  - Ball hard metal steel, nickel plated (Type RH / RRH)
  - Spring element plastic (PUR) (Type BR / RR / RRH)
- **GN 709.15**
  Stainless Steel AISI 431
  tempered
  - Ball Stainless Steel AISI 420C nickel plated (Type B / BR)
  - Ball hard metal steel, nickel plated (Type RH / RRH)
  - Spring element plastic (PUR) (Type BR / RRH)
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

GN 709.1 / GN 709.15 clamping pads are used as movable supports or plungers for clamping workpieces. They can also be used as stops. For cast components the use of clamping pads with a hard metal ball is recommended.

After the clamping process, the contact surfaces of clamping pads automatically reset themselves to their initial position. This prevents the bearing from jamming in an inclined position when the workpiece is inserted.

The bearing can be rotated by a maximum of 9° and is secured against further rotation.

see also...

- *Clamping pads GN 709.6 (with threaded stud, adjustable)*
  → Main Catalogue Page 847
- *Clamping pads GN 709.7 (with female thread)* *→ Page 848*

How to order (Steel)

GN 709.1-20-M10-R

1	d_1
2	d_2
3	Type

How to order (Stainless Steel)

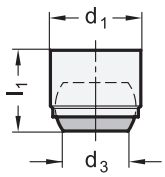
GN 709.15-13-M8-B

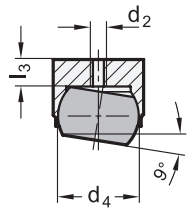
1	d_1
2	d_2
3	Type

Clamping pads

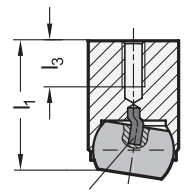
with female thread

Type **B / R**

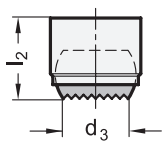




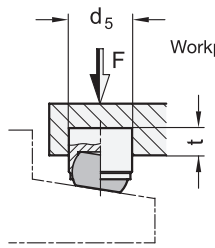
Type **BR / RR**



Spring element



Application example



Workpiece clamping

Inox Stainless Steel

2 Type

B	Smooth contact face
R*	Serrated contact face
BR	Smooth contact face, with automatic return
RR*	Serrated contact face, with automatic return

1

d_1 n6	d_2	d_3	d_4 Ball-Ø	d_5 H7 Location bore	l_1 ±0,02		l_2 ±0,1		l_3 max.		**t** min. for maximal static load		Static load max. in kN
					Type B, R	Type BR, RR	Type B, R	Type BR, RR	Type B, R	Type BR, RR	Type B, R	Type BR, RR	
12	M 3	7,2	10	12	11	17	11	17	3,2	3,2	6	12	10
18	M 4	10,5	16	18	17	23	17	23	4,0	4,0	8	14	25
28	M 5	20	25	28	25	34	25	34	5,5	6,0	13	22	90

*only available for GN 709.2

Specification

- **GN 709.2**
  Steel
  tempered, phosphated
  - Ball steel
    hardened, blank
  - Spring element plastic (PUR)
    (Type BR / RR)
- **GN 709.25**
  Stainless Steel AISI 431
  tempered
  - Ball Stainless Steel AISI 420C
    nickel plated
  - Spring element plastic (PUR)
    (Type BR)
- *ISO-Fundamental tolerances*
  → *Main Catalogue Page 1479*
- *Elastomer characteristics*
  → *Main Catalogue Page 1483*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

On request

- Serrated hard metal ball

Information

GN 709.2 / GN 709.25 clamping pads are used as movable supports or plungers for clamping workpieces. They can also be used as stops.

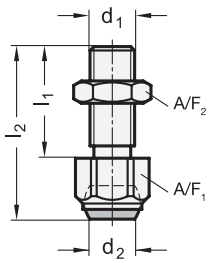
After the clamping process, the contact surfaces of clamping pads automatically reset themselves to their initial position. This prevents the bearing from jamming in an inclined position when the workpiece is inserted.

The bearing can be rotated by a maximum of 9° and is secured against further rotation.

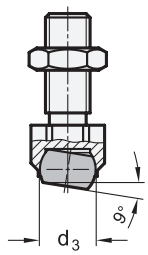
see also...
- *Clamping pads GN 709.7 (with female thread)*
  → *Main Catalogue Page 848*

How to order (Steel)		
GN 709.2-28-R (1 2)	1	d_1
	2	Type

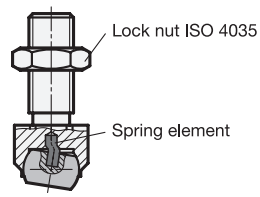
How to order (Stainless Steel)		
GN 709.25-18-B (1 2)	1	d_1
	2	Type

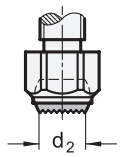


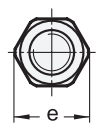
Type **B / R**



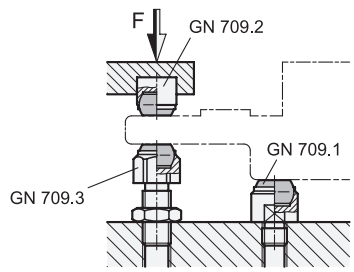
Type **BR / RR**







Application example



Workpiece clamping

Inox Stainless Steel

3 Type

B	Smooth contact face
R*	Serrated contact face
BR	Smooth contact face, with automatic return
RR*	Serrated contact face, with automatic return

1 A/F_1	2 d_1	d_2	d_3 Ball-Ø	e	l_1	l_2	A/F_2	Static load max. in kN
13	M 8	5,8	8,5	14,5	25	36,6	13	8
17	M 10	8,6	12	19	30	45,7	17	8
17	M 12	8,6	12	19	35	50,7	19	15
24	M 16	10,5	16	27	40	60,7	24	25
30	M 20	20	25	33	50	77,3	30	90
36	M 24	20	25	40	70	100	36	90
46	M 30x1,5	34,6	40	51	65	100	46	165

*only available for GN 709.3

Specification

- **GN 709.3**
  Steel
  tempered, phosphated
  - Ball steel
    hardened, blank
  - Spring element plastic (PUR)
    (Type BR / RR)
  - Hexagon nut ISO 4035 (DIN 439)
    Steel, blackened
- **GN 709.35**
  Stainless Steel AISI 431
  tempered
  - Ball Stainless Steel AISI 420C
    nickel plated
  - Spring element plastic (PUR)
    (Type BR)
  - Hexagon nut ISO 4035 (DIN 439)
    Stainless Steel
- *Elastomer characteristics*
  → *Main Catalogue Page 1483*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Information

GN 709.3 / GN 709.35 clamping pads are used as movable supports or plungers for clamping workpieces. They can also be used as stops.

After the clamping process, the contact surfaces of clamping pads automatically reset themselves to their initial position. This prevents the bearing from jamming in an inclined position when the workpiece is inserted.

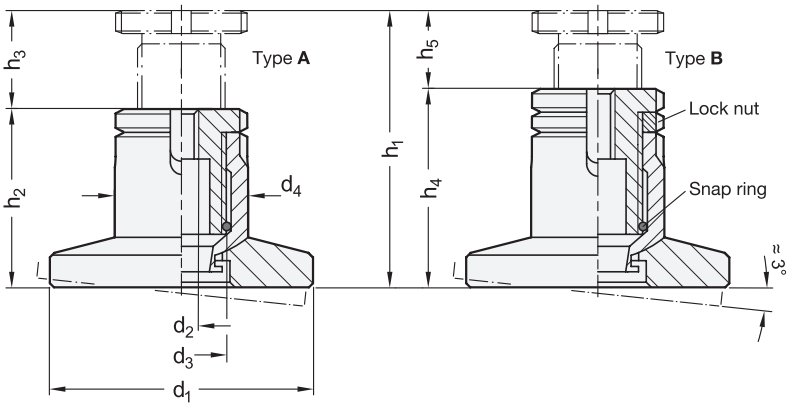
The bearing can be rotated by a maximum of 9° and is secured against further rotation.

see also...

- *Clamping pads GN 709.1 (with threaded stud)* → *Page 115*
- *Clamping pads GN 709.8 (with threaded stud, adjustable)*
  → *Main Catalogue Page 849*

How to order (Steel)		
GN 709.3-17-M10-R	1	A/F_1
	2	d_1
	3	Type

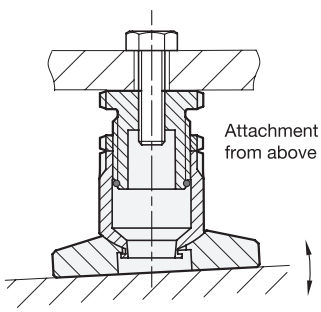
How to order (Stainless Steel)		
GN 709.35-24-M16-B	1	A/F_1
	2	d_1
	3	Type

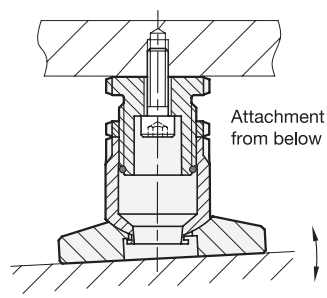


Inox
Stainless
Steel

4 Type

A without lock nut
B with lock nut





1 d_1		2 d_2	3 h_1 max.	d_3	d_4	h_2 min.	h_3 Adjustable range	h_4 min.	h_5 Adjustable range	Static load F in kN ST	Static load F in kN NI	Code no. C-Spanner
40	79	M 10	69	M 28 x 1,5	40	53	16	59	10	100	70	DIN 1810-A40-42
40	79	M 10	86	M 28 x 1,5	40	62	24	68	18	100	70	DIN 1810-A40-42
52	99	M 12	80	M 36 x 1,5	52	61	19	69	11	125	85	DIN 1810-A52-55
52	99	M 12	103	M 36 x 1,5	52	73	30	80	23	125	85	DIN 1810-A52-55
65	119	M 16	112	M 45 x 1,5	65	82	30	90	22	225	155	DIN 1810-A65-70
65	119	M 16	148	M 45 x 1,5	65	100	48	108	40	225	155	DIN 1810-A65-70

Specification

5

- Steel zinc plated, blue passivated — **ST**
- Stainless Steel AISI 304 — **NI**
- *Stainless Steel characteristics* → *Main Catalogue Page 1489*
- RoHS

Accessory

- C-Spanner DIN 1810 (code no. see table)

Information

GN 360 levelling sets are used for leveling and to compensate for any slope when setting up machines and systems.

The thread d_2 can also be used as a through-hole for attachment from below. The fine thread d_3 laws precise adjustment and readjustment using a DIN 1810 C-Spanner. A circlip limits the maximum path of adjustment.

see also...

- *Levelling sets GN 350 / GN 350.1 → Main Catalogue Page 850 / 851*
- *Levelling sets GN 350.2 / GN 350.5 → Main Catalogue Page 852 / 853*

How to order

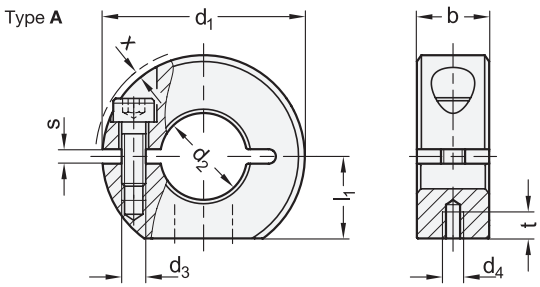
1 2 3 4 5
GN 360-119-M16-148-A-ST

1	d_1
2	d_2
3	h_1
4	Type
5	Material

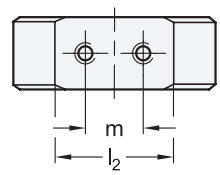
GN 7062.1 Semi-split Stainless Steel-Set collars

with extension-tapped holes

Type **A**

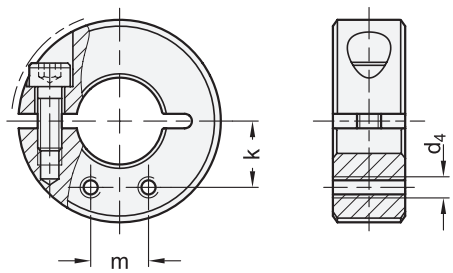


View from below

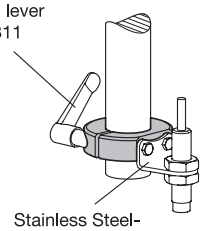


Inox Stainless Steel

Type **B**



Adjustable hand lever GN 311



Stainless Steel-Sensor holder GN 7062.10

4 Type

- **A** Extension-tapped holes, radial
- **B** Extension-tapped holes, axial

1 d_1	2 d_2 H10 recommended shaft tolerance h11 Bore series 1	2	b ±0,2	d_3	d_4	l_1	l_2	m	k Bore series 1	2	s	t	$x \approx$ max. protrusion of cap screw	Adjustable hand lever for d_3
30	B 12	-	11	M 4	M 3	13	15	8	9,7	-	2,1	4	0,7	GN 311-30-M4-12-SW
32	B 14	-	11	M 4	M 3	14	15,5	8	10,8	-	2,1	4	0,7	GN 311-30-M4-12-SW
36	B 15	B 16	13	M 5	M 4	15	19,9	10	11,7	12	2,1	5,5	1,4	GN 311-30-M5-13-SW
42	B 18	B 20	15	M 5	M 4	17	24,7	12	13,7	14,3	3	5,5	0,6	GN 311-30-M5-15-SW
48	B 22	B 25	15	M 5	M 4	20	26,5	12	16,4	17,2	3	5,5	0	GN 311-45-M5-16-SW
55	B 28	B 30	15	M 6	M 5	22,5	31,6	18	18,7	19,3	3	7	0,5	GN 311-45-M6-18-SW
60	B 32	B 35	15	M 6	M 5	25	33,2	18	21,2	22	4	7	0,4	GN 311-45-M6-19-SW
65	B 40	-	15	M 6	M 5	27,5	34,6	18	24,7	-	4	7	0,5	GN 311-45-M6-20-SW

Specification

3

- Stainless Steel **NI**
  Sintered Steel AISI 316 LHC
- Socket head cap screw DIN 912
  Stainless Steel AISI 304
- *ISO-Fundamental tolerances*
  → *Main Catalogue Page 1479*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Accessory

- Adjustable hand levers GN 311 → *Page 128*
- Dampening washer GN 7062.30 → *Page 127*
- Stainless Steel-Sensor holder GN 7062.10
  → *Page 126*

Information

With extension-tapped holes of the semi-split Stainless Steel-Set collars GN 7062.1, sensor holders GN 7062.10 or other elements such as the gear lever or cam can be attached to shafts and axles.

They can be assembled safely and easily with a high clamping force by reducing the slot height, without damaging the surface of shafts and axles.

The thread d_3 for sizes d_1 = 30 to 36 is designed as a through hole; for sizes d_1 = 42 and larger, it is designed as blind hole.

see also...

- *Split Stainless Steel-Set collars GN 7072.1 (with extension-tapped holes)* → *Page 123*

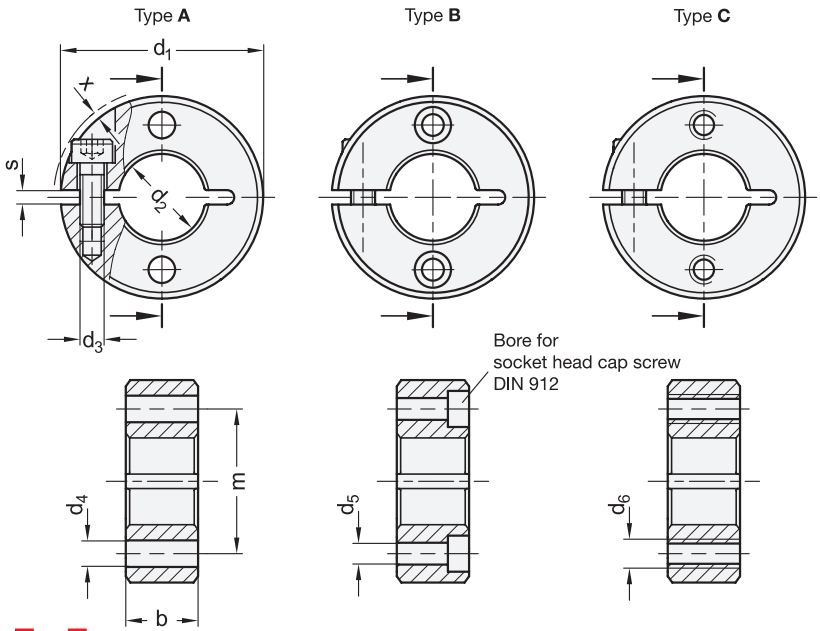
How to order

1 2 3 4
GN 7062.1-55-B28-NI-A

1	d_1
2	d_2
3	Material
4	Type

GN 7062.2 Semi-split Stainless Steel-Set collars

with flange holes



Inox Stainless Steel

4 Type

- **A** with two through holes
- **B** with two countersunk holes for socket head cap screws
- **C** with two tapped holes

1 d_1	2 d_2 H10 recommended shaft tolerance h11 Bore series 1	d_2 Bore series 2	b ±0,2	d_3	d_4	d_5	d_6	m Bore series 1	m Bore series 2	s	x ≈ max. protrusion of cap screw	Adjustable hand lever for d_3
30	B 12	-	11	M 4	4,5	3,5	M 4	21	-	2,1	0,7	GN 311-30-M4-12-SW
32	B 14	-	11	M 4	4,5	3,5	M 4	23	-	2,1	0,7	GN 311-30-M4-12-SW
36	B 15	B 16	13	M 5	5,5	4,5	M 5	25,5	26	2,1	1,4	GN 311-30-M5-13-SW
42	B 18	B 20	15	M 5	5,5	4,5	M 5	30	31	3	0,6	GN 311-30-M5-15-SW
48	B 22	B 25	15	M 5	6,5	5,5	M 6	35	36,5	3	0	GN 311-45-M5-16-SW
55	B 28	B 30	15	M 6	6,5	5,5	M 6	41,5	42,5	3	0,5	GN 311-45-M6-18-SW
60	B 32	B 35	15	M 6	6,5	5,5	M 6	46	47,5	4	0,4	GN 311-45-M6-19-SW
65	B 40	-	15	M 6	6,5	5,5	M 6	52,5	-	4	0,5	GN 311-45-M6-20-SW

Specification

3

- Stainless Steel NI
  Sintered Steel AISI 316 LHC
- Socket head cap screw DIN 912
  Stainless Steel AISI 304
- *ISO-Fundamental tolerances*
  → *Main Catalogue Page 1479*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Accessory

- Adjustable hand levers GN 311 → *Page 128*
- Dampening washer GN 7062.30 → *Page 127*

Information

With semi-split Stainless Steel-set collars GN 7062.2, e.g., axles are attached to housing, or wheels and washers are installed on shafts.

They can be assembled safely and easily with a high clamping force by reducing the slot height, without damaging the surface of shafts and axles.

The thread d_3 for sizes d_1 = 30 to 36 is designed as a through hole; for sizes d_1 = 42 and larger, it is designed as blind hole.

see also...

- *Split Stainless Steel-Set collars GN 7072.2 (with flange holes)*
  → *Page 124*
- *Semi-split set collars GN 706.2 → Main Catalogue Page 858*

How to order

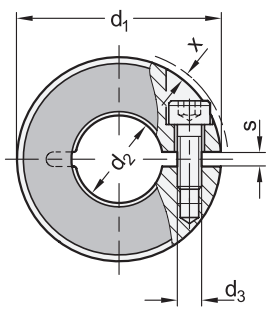
1 2 3 4

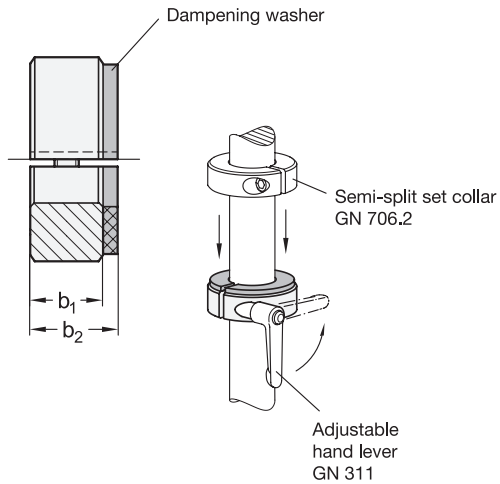
GN 7062.2-55-B28-NI-B

1	d_1
2	d_2
3	Material
4	Type

GN 7062.3 Semi-split Stainless Steel-Set collars

with dampening washer





Inox
Stainless
Steel

1 d_1	2 d_2 H10 recommended shaft tolerance h11		b_1	b_2	d_3	s	x ≈ max. protrusion of cap screw	Adjustable hand lever for d_3
30	B 12	-	11	13	M 4	2,1	0,7	GN 311-30-M4-12-SW
32	B 14	-	11	13	M 4	2,1	0,7	GN 311-30-M4-12-SW
36	B 15	B 16	13	15	M 5	2,1	1,4	GN 311-30-M5-13-SW
42	B 18	B 20	15	18	M 5	3	0,6	GN 311-30-M5-15-SW
48	B 22	B 25	15	18	M 5	3	0	GN 311-45-M5-16-SW
55	B 28	B 30	15	18	M 6	3	0,5	GN 311-45-M6-18-SW
60	B 32	B 35	15	18	M 6	4	0,4	GN 311-45-M6-19-SW
65	B 40	-	15	18	M 6	4	0,5	GN 311-45-M6-20-SW

Specification

3

- Stainless Steel **NI**
  Sintered Steel AISI 316 LHC
- Dampening washer
  Elastomer (PUR)
  - 70 Shore A
  - temperature resistant up to 80 °C
  - transparent
- Socket head cap screw DIN 912
  Stainless Steel AISI 304
- *ISO-Fundamental tolerances*
  → *Main Catalogue Page 1479*
- *Elastomer characteristics*
  → *Main Catalogue Page 1483*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Accessory

- Adjustable hand levers GN 311 → *Page 128*

Information

The affixed dampening washer of the semi-split Stainless Steel-Set collars GN 7062.3 absorbs mild shocks and has a sound-dampening effect when the set collars come into contact with other components.

They can be assembled safely and easily with a high clamping force by reducing the slot height, without damaging the surface of shafts and axles.

The thread d_3 for sizes d_1 = 30 to 36 is designed as a through hole; for sizes d_1 = 42 and larger, it is designed as blind hole.

see also...

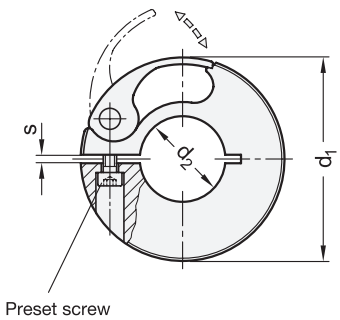
- *Split Stainless Steel-Set collars GN 7072.3 (with dampening washer)*
  → *Page 125*
- *Semi-split set collars GN 706.2 → Main Catalogue Page 858*

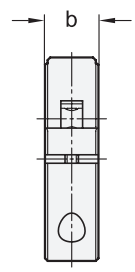
How to order

1 2 3

GN 7062.3-42-B18-NI

1	d_1
2	d_2
3	**Material**





1 d_1	2 d_2 recommended shaft tolerance h8							b	s	Tightening torque of the screw in Nm ≈	Axial load in N ≈ min.	Axial load in N ≈ max.
38	B 6	B 8	B 10	B 12	B 14	B 15	B 16	10	1,5	0,5	133	267
50	B 20	B 25	B 28	B 30	-	-	-	13	1,5	0,7	311	445
75	B 32	B 35	B 38	-	-	-	-	15	1,5	1,5	467	534
100	B 40	B 42	B 45	B 48	B 50	-	-	19	4,5	4,5	556	867
120	B 54	B 55	B 60	B 65	B 70	B 75	-	19	4,5	4,5	890	1379

Specification

- Ring
  Aluminum
  black anodized
- Lever
  Aluminum
  yellow anodized
- *ISO-Fundamental tolerances*
  → *Main Catalogue Page 1479*
- RoHS

Information

Quick release set collars GN 704 are clamped by reducing the slot height using an eccentric lever. That allows the collars to be adjusted easily and quickly without tools. The aluminum design delivers low inertia values.

The specified tightening torque of the screw is a recommended value with which the collar clamped to a shaft (with closed eccentric lever) is capable of reaching the specified axial load capacity. The details on axial load capacity are non-binding guidance values and do not constitute a warranty of characteristics.

Keeping the friction surface of the eccentric lever slightly greased will help to prolong the useful service life.

see also...

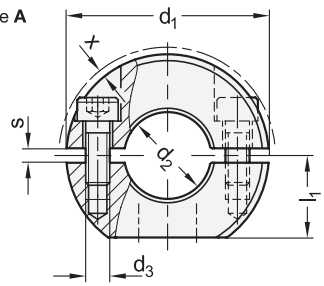
- *Semi-split set collars GN 706.2 (with* socket head cap screw*)*
  → *Main Catalogue Page 858*

How to order		
GN 704-38-B16 (1 2)	1	d_1
	2	d_2

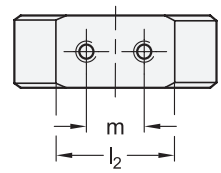
GN 7072.1 Split Stainless Steel-Set collars

with extension-tapped holes

Type **A**

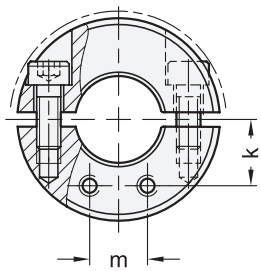


View from below

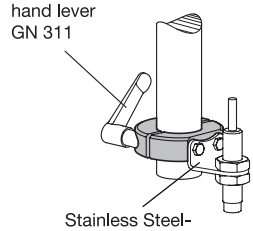


Inox Stainless Steel

Type **B**



Adjustable hand lever GN 311



Stainless Steel-Sensor holder GN 7062.10

4 Type

- **A** Extension-tapped holes, radial
- **B** Extension-tapped holes, axial

1 d_1	2 d_2 H10 recommended shaft tolerance h11 Bore series 1	2	b ±0,2	d_3	d_4	l_1	l_2	m	k Bore series 1	2	s	t	$x \approx$ max. protrusion of cap screw	Adjustable hand lever for d_3
30	B 12	-	11	M 4	M 3	13	15	8	9,7	-	2,1	4	0,7	GN 311-30-M4-12-SW
32	B 14	-	11	M 4	M 3	14	15,5	8	10,8	-	2,1	4	0,7	GN 311-30-M4-12-SW
36	B 15	B 16	13	M 5	M 4	15	19,9	10	11,7	12	2,1	5,5	1,4	GN 311-30-M5-13-SW
42	B 18	B 20	15	M 5	M 4	17	24,7	12	13,7	14,3	3	5,5	0,6	GN 311-30-M5-15-SW
48	B 22	B 25	15	M 5	M 4	20	26,5	12	16,4	17,2	3	5,5	0	GN 311-45-M5-16-SW
55	B 28	B 30	15	M 6	M 5	22,5	31,6	18	18,7	19,3	3	7	0,5	GN 311-45-M6-18-SW
60	B 32	B 35	15	M 6	M 5	25	33,2	18	21,2	22	4	7	0,4	GN 311-45-M6-19-SW
65	B 40	-	15	M 6	M 5	27,5	34,6	18	24,7	-	4	7	0,5	GN 311-45-M6-20-SW

Specification

3

- Stainless Steel **NI**
  Sintered Steel AISI 316 LHC
- Socket head cap screw DIN 912
  Stainless Steel AISI 304
- *ISO-Fundamental tolerances*
  → *Main Catalogue Page 1479*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Accessory

- Adjustable hand levers GN 311 → *Page 128*
- Dampening washers GN 7072.30 → *Page 127*
- Stainless Steel-Sensor holder GN 7062.10
  → *Page 126*

Information

With extension-tapped holes of the split Stainless Steel-Set collars GN 7072.1, sensor holders GN 7062.10 or other elements such as the gear lever or cam can be attached to shafts and axles.

They can be assembled safely and easily with a high clamping force by reducing the slot height, without damaging the surface of shafts and axles. As compared to semi-split set collars, split set collars can even be assembled radially.

The thread d_3 for sizes d_1 = 30 to 36 is designed as a through hole; for sizes d_1 = 42 and larger, it is designed as blind hole.

see also...

- *Semi-split Stainless Steel-Set collars GN 7062.1 (with extension-tapped holes)* → *Page 119*

How to order

1 2 3 4

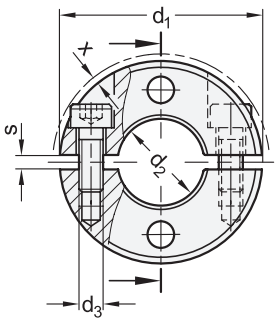
GN 7072.1-42-B18-NI-A

1	d_1
2	d_2
3	Material
4	Type

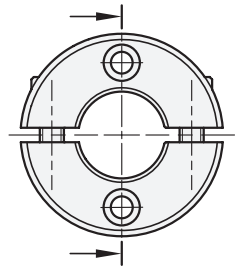
GN 7072.2 Split Stainless Steel-Set collars

with flange holes

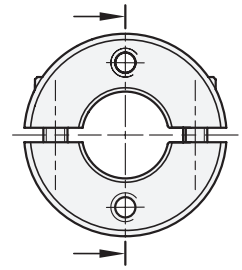
Type **A**



Type **B**

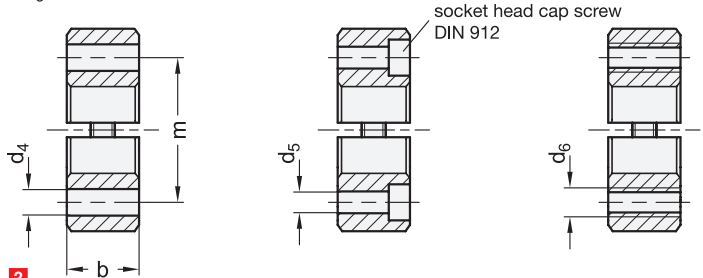


Type **C**



Inox Stainless Steel

Bore for socket head cap screw DIN 912



4 Type

A with two through holes

B with two countersunk holes for socket head cap screws

C with two tapped holes

1 d_1	2 d_2 H10 recommended shaft tolerance h11		b ±0,2	d_3	d_4	d_5	d_6	m		s	x ≈ max. protrusion of cap screw	Adjustable hand lever for d_3
	Bore series 1	Bore series 2						Bore series 1	Bore series 2			
30	B 12	-	11	M 4	4,5	3,5	M 4	21	-	2,1	0,7	GN 311-30-M4-12-SW
32	B 14	-	11	M 4	4,5	3,5	M 4	23	-	2,1	0,7	GN 311-30-M4-12-SW
36	B 15	B 16	13	M 5	5,5	4,5	M 5	25,5	26	2,1	1,4	GN 311-30-M5-13-SW
42	B 18	B 20	15	M 5	5,5	4,5	M 5	30	31	3	0,6	GN 311-30-M5-15-SW
48	B 22	B 25	15	M 5	6,5	5,5	M 6	35	36,5	3	0	GN 311-45-M5-16-SW
55	B 28	B 30	15	M 6	6,5	5,5	M 6	41,5	42,5	3	0,5	GN 311-45-M6-18-SW
60	B 32	B 35	15	M 6	6,5	5,5	M 6	46	47,5	4	0,4	GN 311-45-M6-19-SW
65	B 40	-	15	M 6	6,5	5,5	M 6	52,5	-	4	0,5	GN 311-45-M6-20-SW

Specification

3

- Stainless Steel Sintered Steel AISI 316 LHC **NI**
- Socket head cap screw DIN 912 Stainless Steel AISI 304
- *ISO-Fundamental tolerances* → *Main Catalogue Page 1479*
- *Stainless Steel characteristics* → *Main Catalogue Page 1489*
- RoHS

Accessory

- Adjustable hand levers GN 311 → *Page 128*
- Dampening washer GN 7072.30 → *Page 127*

Information

With split Stainless Steel-Set collars GN 7072.2, e.g., axles are attached to housing, or wheels and washers are installed on shafts.

They can be assembled safely and easily with a high clamping force by reducing the slot height, without damaging the surface of shafts and axles. As compared to semi-split set collars, split set collars can even be assembled radially.

The thread d_3 for sizes d_1 = 30 to 36 is designed as a through hole; for sizes d_1 = 42 and larger, it is designed as blind hole.

see also...

- *Semi-split Stainless Steel-Set collars GN 7062.2 (with flange holes)* → *Page 120*
- *Semi-split set collars GN 706.2* → *Main Catalogue Page 858*

How to order

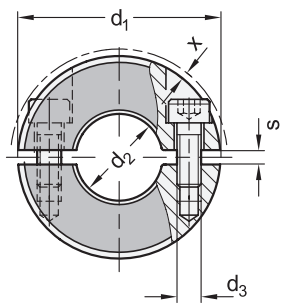
1 2 3 4

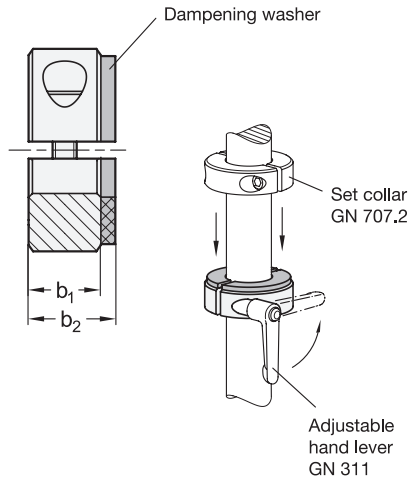
GN 7072.2-42-B18-NI-B

1	d_1
2	d_2
3	Material
4	Type

GN 7072.3 Split Stainless Steel-Set collars

with dampening washer





Inox Stainless Steel

1 d_1	2 d_2 H10 recommended shaft tolerance h11		b_1	b_2	d_3	s	x ≈ max. protrusion of cap screw	Adjustable hand lever for d_3
30	B 12	-	11	13	M 4	2,1	0,7	GN 311-30-M4-12-SW
32	B 14	-	11	13	M 4	2,1	0,7	GN 311-30-M4-12-SW
36	B 15	B 16	13	15	M 5	2,1	1,4	GN 311-30-M5-13-SW
42	B 18	B 20	15	18	M 5	3	0,6	GN 311-30-M5-15-SW
48	B 22	B 25	15	18	M 5	3	0	GN 311-45-M5-16-SW
55	B 28	B 30	15	18	M 6	3	0,5	GN 311-45-M6-18-SW
60	B 32	B 35	15	18	M 6	4	0,4	GN 311-45-M6-19-SW
65	B 40	-	15	18	M 6	4	0,5	GN 311-45-M6-20-SW

Specification

3

- Stainless Steel **NI**
  Sintered Steel AISI 316 LHC
- Dampening washer
  Elastomer (PUR)
  - 70 Shore A
  - temperature resistant up to 80 °C
  - transparent
- Socket head cap screw DIN 912
  Stainless Steel AISI 304
- *ISO-Fundamental tolerances*
  → *Main Catalogue Page 1479*
- *Elastomer characteristics*
  → *Main Catalogue Page 1483*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Accessory

- Adjustable hand levers GN 311 → *Page 128*

Information

The affixed dampening washer of the split Stainless Steel-Set collars GN 7072.3 absorbs mild shocks and has a sound-dampening effect when the set collars come into contact with other components.

They can be assembled safely and easily with a high clamping force by reducing the slot height, without damaging the surface of shafts and axles. As compared to semi-split set collars, split set collars can even be assembled radially.

The thread d_3 for sizes d_1 = 30 to 36 is designed as a through hole; for sizes d_1 = 42 and larger, it is designed as blind hole.

see also...

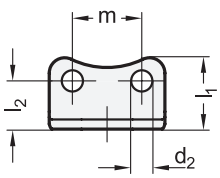
- *Semi-split Stainless Steel-Set collars GN 7062.3 (with dampening washer)* → *Page 121*
- *Split set collars GN 707.2* → *Main Catalogue Page 19*

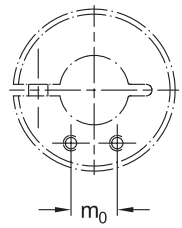
How to order

1 2 3

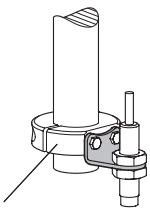
GN 7072.3-42-B18-NI

1	d_1
2	d_2
3	**Material**





Top views for various bore-Ø d_1

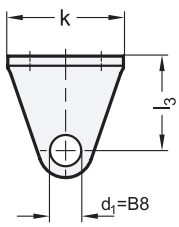


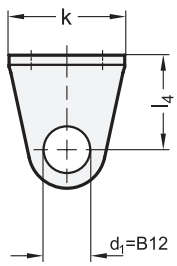
Set collar
GN 7062.1 / GN 7072.1

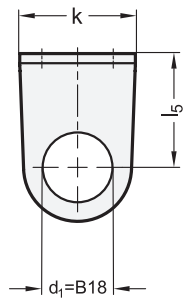
Inox
Stainless
Steel

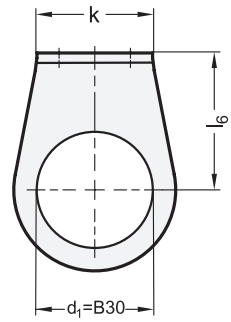
3 Type

L angled









m0	1 d1 +0,1				2 k	d2	l1	l2	l3	l4	l5	l6	m	s
8	B 8	B 12	-	-	14	3,5	13	9,5	15	19	-	-	8	2
10	B 8	B 12	B 18	-	18	4,5	14,5	10,5	19	24,5	29,5	-	10	2
12	B 8	B 12	B 18	B 30	23	4,5	17	12,5	19	24,5	29,5	35,5	12	2,5
18	B 8	B 12	B 18	B 30	30	5,5	18,5	12,5	24,5	24,5	29,5	35,5	18	2,5

Specification

- Stainless Steel AISI 304
  matte shot-blasted
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

The Stainless Steel-Sensor holders GN 7062.10 are designed for holding sensors attached with two lock nuts.

The holes d_2 match the extension-tapped holes of the set collars GN 7062.1 / GN 7072.1 in measurement and facilitate axial or radial positioning of sensors.

see also...

- *Semi-split Stainless Steel-Set collars GN 7062.1 (with extension-tapped holes) → Page 119*
- *Split Stainless Steel-Set collars GN 7072.1 (with extension-tapped holes) → Page 123*

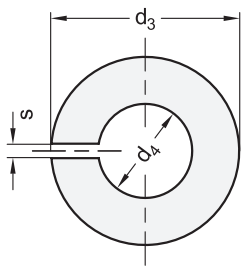
How to order

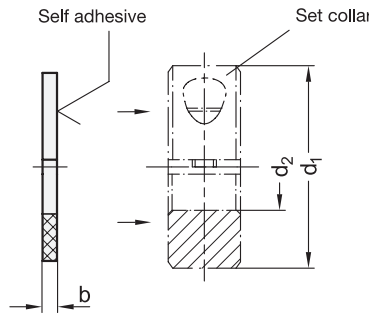
GN 7062.10-B18-30-L (1 2 3)

1	d_1
2	k
3	Type

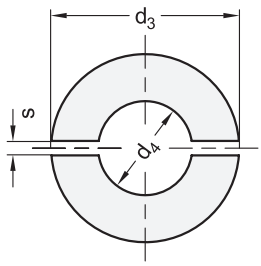
Dampening washers

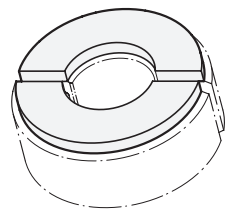
GN 7062.30





GN 7072.30





Dimension of matching set collars			Dimension dampening washers				
d_1	d_2		d_3	d_4		b ±0,2	s
	Bore series 1	Bore series 2		Bore series 1	Bore series 2		
30	B 12	-	28	13	-	2	2,1
32	B 14	-	30	15	-	2	2,1
36	B 15	B 16	34	16	17	2	2,1
42	B 18	B 20	39	19,5	21,5	3	3
48	B 22	B 25	45	23,5	26,5	3	3
55	B 28	B 30	52	29,5	31,5	3	3
60	B 32	B 35	57	33,5	36,5	3	4
65	B 40	-	62	41,5	-	3	4

Specification

- Elastomer (PUR)
  - 70 Shore A
  - temperature resistant up to 80 °C
  - transparent
- Adhesive film
  - acrylate dispersion, solvent-free
  - strong adhesion
- *Elastomer characteristics*
  → *Main Catalogue Page 1483*
- RoHS

Information

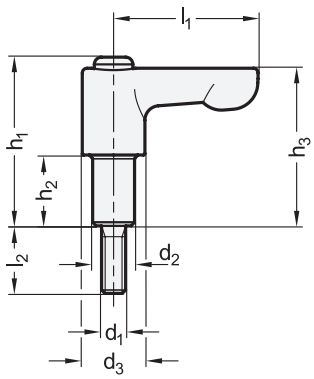
Dampening washers GN 7062.30 / GN 7072.30 are designed as accessories for split and semi-split set collars and are attached with the help of an adhesive film, preferably on the groove-less side of the set collar. They absorb mild shocks and have a sound-dampening effect when the set collars come into contact with other components.

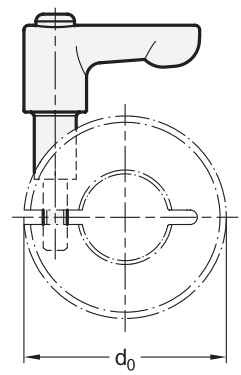
Generally, after the protective film is removed, the dampening washers can be attached to any suitable and clean surface.

Semi-split Stainless Steel-Set collars GN 7062.3 (→ *Page 121*) and Split Stainless Steel-Set collars GN 7072.3 (→ *Page 125*) are generally offered with assembled dampening washers.

How to order (for semi-split set collars)		
GN 7062.30-42-B18	1	d_1
	2	d_2

How to order (for split set collars)		
GN 7072.30-42-B18	1	d_1
	2	d_2





d0 = Set collar Ø d1	l1 [1]	d1 [2]	h2 [3]	d2	d3	l2	h1	h3
30 / 32	30	M 4	12	7,2	13	12	32	30
36	30	M 5	13	8,7	13	14	33,5	31
42	30	M 5	15	8,7	13	14	35	33
48	45	M 5	16	8,7	13	16	36,5	34
55	45	M 6	18	10	13	16	38,5	36
60	45	M 6	19	10	13	16	39,5	37
65	45	M 6	20	10	13	18	40,5	38

Specification [4]

- Handle
  Zinc die casting
  plastic coated
  black, RAL 9005, textured finish ● SW
- Threaded insert
  Stainless Steel AISI 303
- Retaining screw
  Stainless Steel AISI 304
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

For set collars of the standard families GN 706... and GN 707..., adjustable hand levers GN 311 replace the hexagon socket screw DIN 912. That allows the set collars to be adjusted easily and quickly without tools.

The table of dimensions of the set collars shows the corresponding hand lever for the respective set collar size d_1.

Under GN 706.4, semi-split set collars GN 706.2 are generally offered with clamping levers.

see also...

- *Semi-split set collars GN 706.2 → Main Catalogue Page 858*
- *Split set collars GN 707.2 → Main Catalogue Page 859*

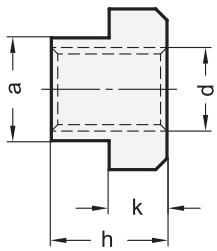
How to order

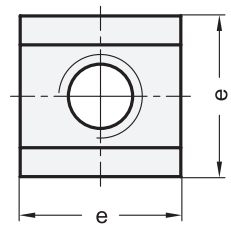
[1] [2] [3] [4]
GN 311-30-M5-15-SW

1	l_1
2	d_1
3	h_2
4	Color

DIN 508 T-nuts

Extract





1 a $^{-0,3}_{-0,5}$	2 d			e	h	k	T-slot width DIN 650
5	M 4	-	-	9 –0,5	6,5	3 –0,3	5
6	M 5	-	-	10 –0,5	8	4 –0,5	6
8	M 6	-	-	13 –0,5	10	6 –0,5	8
10	M 6	M 8	-	15 –0,5	12	6 –0,5	10
12	M 8	M 10	-	18 –0,5	14	7 –0,5	12
14	M 10	M 12	-	22 –0,5	16	8 –0,5	14
16	M 10	M 12	M 14	25 –0,5	18	9 –0,5	16
18	M 12	M 14	M 16	28 –0,5	20	10 –0,5	18
20	M 12	M 16	M 18	32 –0,5	24	12 –0,5	20
22	M 16	M 20	-	35 –0,5	28	14 –0,5	22
24	M 20	M 22	-	40 –0,5	32	16 –0,5	24
28	M 20	M 24	-	44 –1	36	18 –1	28
36*	M 30	-	-	54 –1	44	22 –1	36
42*	M 36	-	-	65 –1	52	26 –1	42

* not available from stock in tensile strength class 8, requires a minimum order quantity

Specification

3

- Heat-treatable Steel
  - Tensile strength class blank **8**
  - Tensile strength class blackened **10**
- *Strength values of nuts* → *Main Catalogue Page 1481*
- RoHS

Information

T-nuts DIN 508 with the tensile strength class 8 (blank) are also available without thread. They can be adapted for special applications in this way.

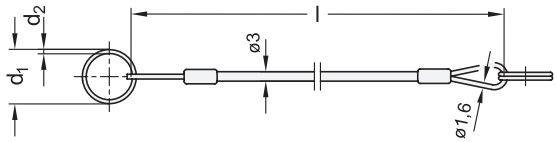
see also...

- *T-nuts GN 508.2 (with slip proof)* → *Main Catalogue Page 866*
- *Studs DIN 6379* → *Main Catalogue Page 868*

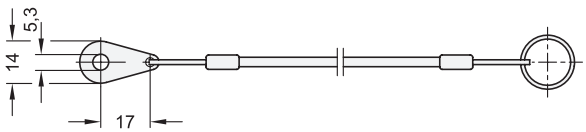
How to order (with thread)		
1 2 3 DIN 508-14-M12-8	1	a
	2	d
	3	Tensile strength class

How to order (without thread)		
1 3 DIN 508-20-8	1	a
	3	Tensile strength class

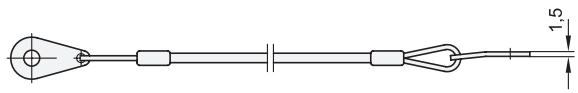
Type **A**



Type **B**

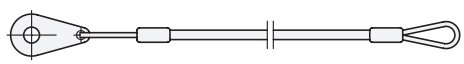


Type **C**



Type **D**

Type **E**



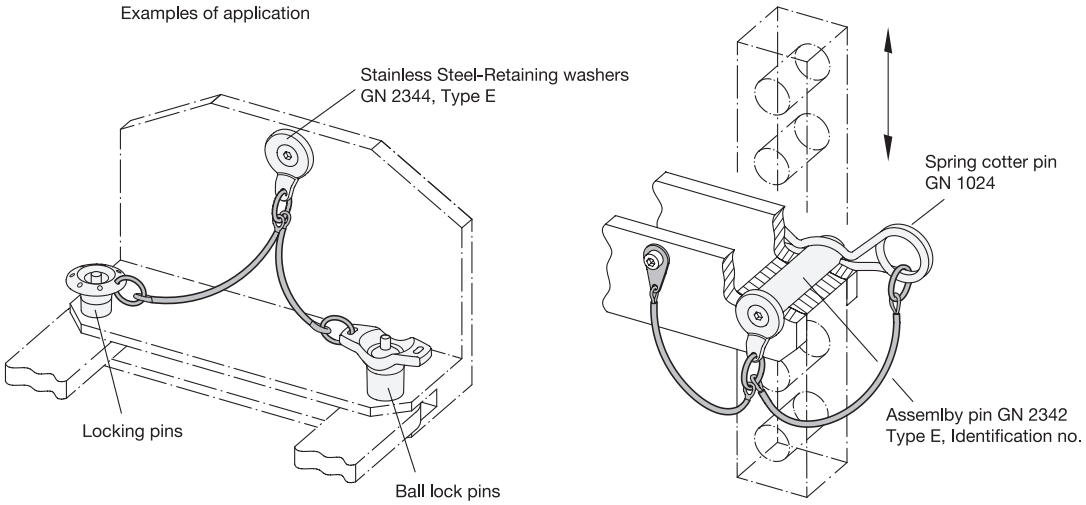
Inox Stainless Steel

3 Type

- **A** with 2 key rings
- **B** with tab and key ring
- **C** with 2 tabs
- **D** with 2 loops
- **E** with tab and loop

1 Length **l**	2 d_1	d_2	Static load in N ≈ with key ring	Static load in N ≈ without key ring	Type A and Type B are suitable for ball lock pins and locking pins with axial lock
150	14 *	1	50	1800	* GN 113.1, GN 113.3, GN 113.4, GN 113.7,GN 113.8, GN 113.9, GN 113.10, GN 214.2, GN 214.3, GN 214.6 for pins Ø 5, Ø 6, Ø 8 and GN 113.5, GN 113.6, GN 114.2, GN 114.3, GN 114.6, GN 124.1, GN 124.2 for all pins ** GN 113.1, GN 113.3, GN 113.4, GN 113.7, GN 113.8, GN 113.9, GN 113.10, GN 214.2, GN 214.3, GN 214.6 for pins Ø 10, Ø 12, Ø 16, Ø 20, Ø 25
150	18 **	1,3	90	1800	
150	24	1,5	100	1800	
150	30	1,8	120	1800	
200	14 *	1	50	1800	
200	18 **	1,3	90	1800	
200	24	1,5	100	1800	
200	30	1,8	120	1800	
320	14 *	1	50	1800	
320	18 **	1,3	90	1800	
320	24	1,5	100	1800	
320	30	1,8	120	1800	
500	14 *	1	50	1800	
500	18 **	1,3	90	1800	
500	24	1,5	100	1800	
500	30	1,8	120	1800	

Examples of application



Specification

4

- Retaining cable
  Stainless Steel AISI 304
  coated with clear plastic (PVC)
  transparent TR
  - Tab
    Stainless Steel AISI 304
    blank
  - Key ring
    Stainless Steel AISI 301
    blank, ground
  - Pressing sleeves
    Aluminum
    blank

  black SW
  - Tab
    Stainless Steel AISI 304
    zinc plated, black passivated
  - Key ring
    Stainless Steel AISI 301
    zinc plated, black passivated
  - Pressing sleeves
    Aluminum
    anodized, black
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Accessory

- Stainless Steel-Key rings GN 111.3
  → *Page 132*

Information

Stainless Steel-Retaining cables GN 111.2 are available in 5 different types and thus, can be used for numerous different applications, e.g. a securing device and as a connection and fastening cables.

The black design is visually discreet and is also used in situations where the reflections on the surface are to be minimized.

The key rings are supplied fixed to the Stainless Steel-Retaining cable. In type A, both rings have the same diameter d_1.

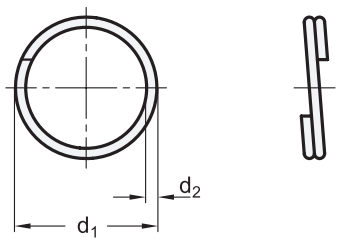
The details on load-bearing capacity are guide values given without warranty.

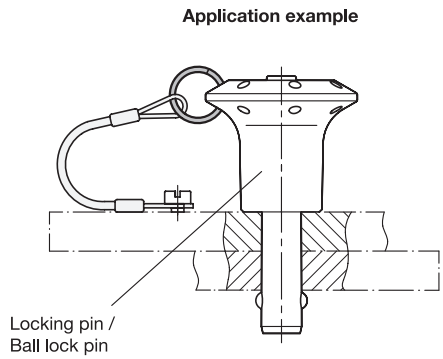
see also...

- *Ball chains GN 111 → Main Catalogue Page 876*
- *Stainless Steel-Ball chains GN 111.5 → Main Catalogue Page 876*
- *Spiral retaining cables GN 111.4 → Main Catalogue Page 878*

How to order (Type C, D and E)		
GN 111.2-150-E-TR (1 3 4)	1	Length l
	3	Type
	4	Color

How to order (Type A and B)		
GN 111.2-500-30-A-SW (1 2 3 4)	1	Length l
	2	d_1
	3	Type
	4	Color





Inox Stainless Steel

[1]

d_1	d_2	Static load in N	suitable for ball lock pins and locking pins
14 *	1	50	* GN 113.1, GN 113.3, GN 113.4, GN 113.7, GN 113.8, GN 113.9, GN 113.10, GN 214.2, GN 214.3, GN 214.6 for pins Ø 5, Ø 6, Ø 8 and GN 113.5, GN 113.6, GN 114.2, GN 114.3, GN 114.6, GN 124.1, GN 124.2 for all pins
18 **	1,3	90	** GN 113.1, GN 113.3, GN 113.4, GN 113.7, GN 113.8, GN 113.9, GN 113.10, GN 214.2, GN 214.3, GN 214.6 for pins Ø 10, Ø 12, Ø 16, Ø 20, Ø 25
24	1,5	100	
30	1,8	120	

Specification [2]

- Stainless Steel AISI 301
  - blank ground **BL**
  - zinc plated black passivated **SW**
- RoHS

Information

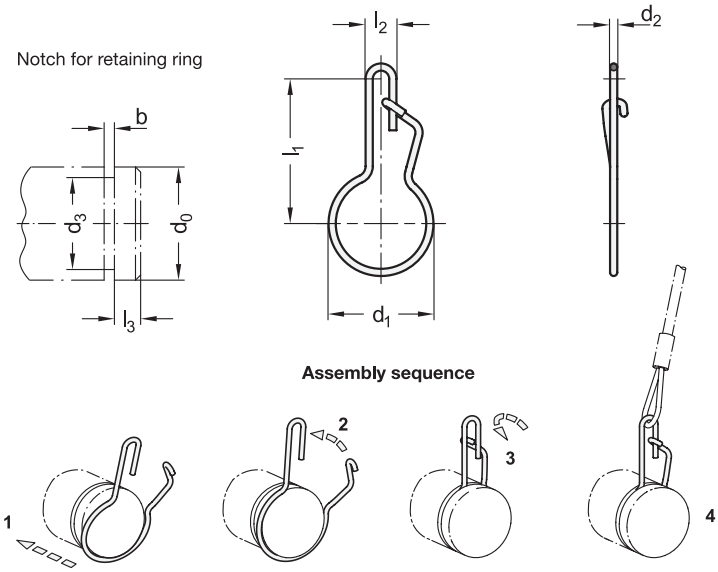
Stainless Steel-Key rings GN 111.3 are suitable as universal connection elements for traction cables, ball chains, retaining straps etc. where light loads are possible. The black design is visually discreet and is also used in situations where the reflections on the surface are to be minimized.

The locking pins and ball lock pins listed in the table have location holes, which the key rings are threaded into. Furthermore, Stainless Steel-Key rings can also be used to supplement retaining cables and ball chains. Thus, it is very easy to secure several elements at the same time from any loss.

The details on load-bearing capacity are guide values given without warranty.

see also...
- *Stainless Steel-Retaining cables GN 111.2 → Page 130*
- *Ball chains GN 111 → Main Catalogue Page 477*
- *Stainless Steel-Ball chains GN 111.5 → Main Catalogue Page 477*
- *Spiral retaining cables GN 111.4 → Main Catalogue Page 479*

How to order		
GN 111.3-24-SW [1] [2]	1	d_1
	2	Finish



Inox Stainless Steel

2 Type

S	Safety retaining ring

1

d_0 Hub-Ø	d_1 +0,5	d_2	d_3 ±0,1	b +0,2	l_1 ≈	l_2 ±0,5	l_3 +0,3
12	11,4	1,1	9,1	1,7	18,7	5	2,5
14	13,2	1,1	10,9	1,8	19,8	5	3,2
15	14,6	1,3	11,9	1,8	22,7	5,5	3,2
16	15,6	1,3	12,9	1,8	23,3	5,5	3,2
17	16,4	1,3	13,7	1,9	23,8	5,5	3,9
18	17,6	1,4	14,7	1,9	26,5	6	3,9
19	18,6	1,4	15,7	1,9	27,1	6	3,9
20	19,6	1,4	16,7	1,9	27,7	6	3,9
21	20,4	1,4	17,5	2	28,1	6	5,1
22	21,8	1,6	18,5	2	31,1	7	5,1
23	22,8	1,6	19,5	2	31,7	7	5,1
24	23,8	1,6	20,5	2	32,2	7	5,1
26	25,6	1,6	22,3	2,1	33,2	7	5,4

Specification

- Stainless Steel AISI 301
- *Stainless Steel characteristics* → *Main Catalogue Page 1489*
- RoHS

Information

GN 111.6 Stainless Steel-Retaining rings can be revolving mounted on the cut-in onto shaft ends or handle. Star knobs, for example, can be secured against loss at the place of use with an additional retaining cable.

Service standard GN 111.7 → *Main Catalogue Page 1426* lists all standard parts that can be delivered with loss protection, i.e., with groove and retaining ring.

Star knobs GN 6336.13 with loss protection → *Main Catalogue Page 405* are delivered as a complete standard part consisting of a star knobs with notch and mounted retaining ring, with retaining cable or ball chain.

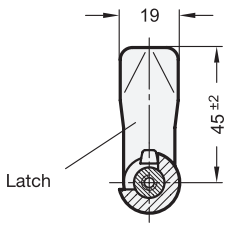
see also...

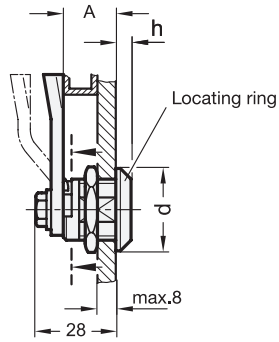
- *Stainless Steel-Retaining cables GN 111.2* → *Page 130*
- *Ball chains GN 111 / GN 111.5* → *Main Catalogue Page 876*

How to order

GN 111.6-12-S (1 2)

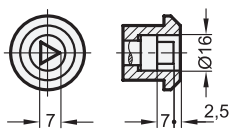
1	d_0
2	Type



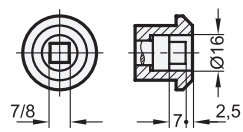


1 **Type**

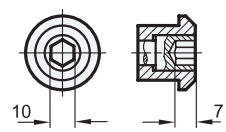
	Operation with
DK	triangular spindle (DK7)
VK7	square spindle A/F7
VK8	square spindle A/F8
SCH	slot
VDE	double bit
SK10	hexagon A/F10



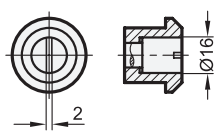
Type **DK**



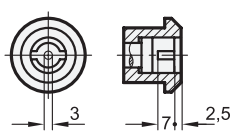
Type **VK7 / VK8**



Type **SK10**



Type **SCH**



Type **VDE**

2

Latch distance **A**											**d**	**h**
4	8	13	16	20	24	28	32	36	40	45	28	4
6	10	14	18	22	26	30	34	38	42	50	28	4

Specification

3

- Lock housing
  Zinc die casting
- Locating ring
  - chrome plated (Standard) —
  - plastic coated
    black, RAL 9005, textured finish ● **SW**
- All other parts
  Steel zinc plated, blue passivated
- RoHS

Accessories

- Socket keys GN 119.2
  → *Main Catalogue Page 940*
- Protective caps GN 120
  → *Main Catalogue Page 942*
- Opening handles GN 120.1
  → *Main Catalogue Page 943*

Information

Latches GN 115 lock by a turning operation limited to 90° which moves the locking behind the door frame. The bevels of the latch ease the closing of the door.

Latches with different cranks cover a latch distance A from 4 to 50 mm.

Latches GN 115 are supplied with loosely enclosed latch.

see also...

- *Construction and assembly instructions* → *Page 135*
- *List of latch types* → *Main Catalogue Page 892 ff.*
- *Latches GN 115 (operation with operating elements)*
  → *Main Catalogue Page 899*
- *Stainless Steel-Latches GN 115 (operation with key)*
  → *Main Catalogue Page 902*

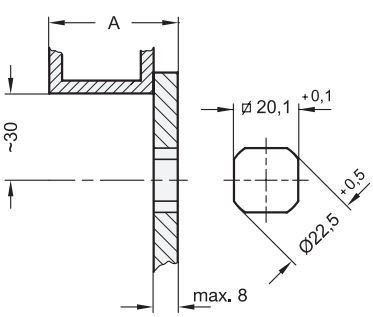
How to order (chrome plated locating ring)
1 **2**
GN 115-VK8-20

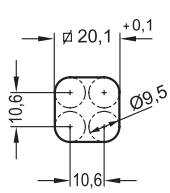
1	**Type**
2	**Latch distance A**

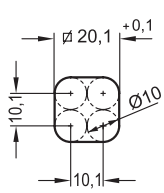
How to order (black locating ring)
1 **2** **3**
GN 115-SCH-32-SW

1	**Type**
2	**Latch distance A**
3	**Finish**

Latches, not lockable, with operating element GN 115
Latches, not lockable, with socket key GN 115 → *Main Catalogue Page 898*
Socket key GN 119.2 → *Main Catalogue Page 940*







Construction and assembly instructions

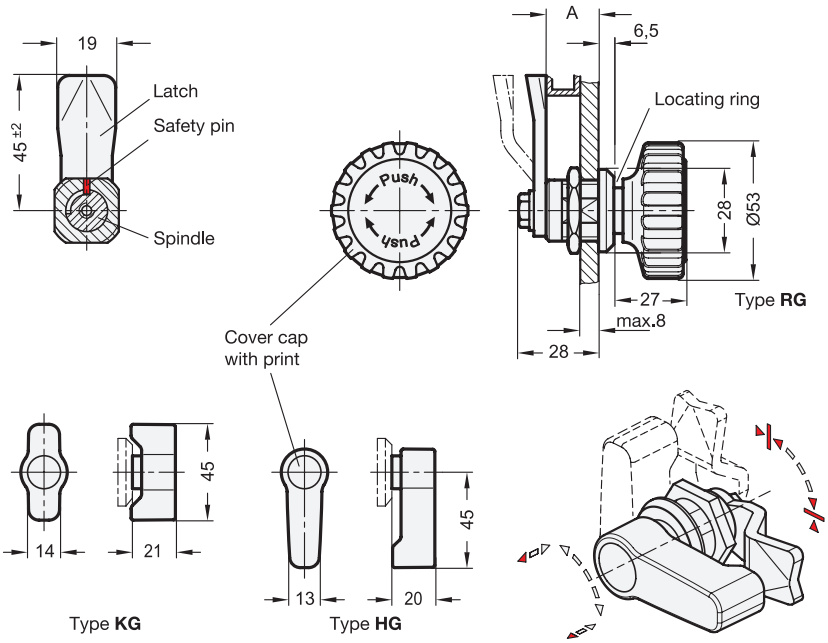
For installation, set a bore diameter in the door as shown in the outline drawing opposite.

Once assembled, the latch is pushed through the bore diameter from the front. The hexagon nut can then be pushed over the latch from the back and bolted in place.

The installation bore diameter in the door leaf is usually generated by punching or laser machining in series production.

For small series and steel sheets below 2 mm thickness, the sheet metal punches GN 123 are the tool of choice → *Main Catalogue Page 941.*

The installation bore diameter can also be set by drilling / milling as shown in the outline drawings opposite.



1 Type

Operation
RG with knurled knob GN 7336
KG with wing knob
HG with lever

2

Latch distance **A**														
4	6	8	10	13	14	16	18	20	22	24	26	28	30	32

Specification

3

- Lock housing
  Zinc die casting
- Locating ring
  plastic coated
  black, RAL 9005, textured finish ● **SW**
- All other parts
  Steel zinc plated, blue passivated
- Operating elements
  Plastic (Polyamide PA)
  black, matte
- Cover cap
  Plastic (Polyamide PA)
  light gray
- *Plastic characteristics*
  → Main Catalogue Page 1483
- RoHS

Information

Latches GN 115.9 have a **push-to-turn** safety function. In the two end positions the spindle is locked in place by the latch. The device can be turned 90° only when the operating element is pressed down, which releases the safety pin from the locked position. This feature protects the latch reliably from moving on its own or as the result of vibrations.

The beveled edges on the lock make closing the door easy. Latches with different cranks cover a latch distance A from 4 to 32 mm.

Latches GN 115.9 are supplied with loosely enclosed latch.

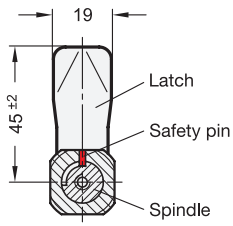
see also...
- *Construction and assembly instructions → Page 135*
- *List of latch types → Main Catalogue Page 892 ff.*
- *Protective guide plates GN 120.2 → Main Catalogue Page 944*

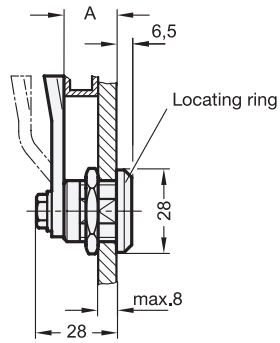
How to order
1 2 3
GN 115.9-HG-32-SW

1	**Type**
2	**Latch distance A**
3	**Finish (Locating ring)**

Latches with safety function

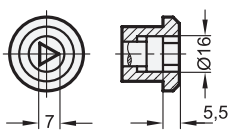
Operation with socket key, not lockable



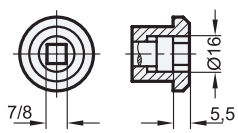


1 **Type**

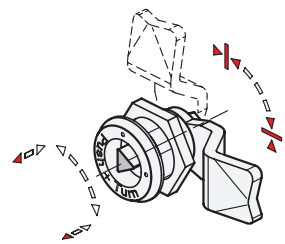
	Operation
DK	with triangular spindle (DK7)
VK7	with square spindle A/F7
VK8	with square spindle A/F8



Type **DK**



Type **VK7 / VK8**



2

Latch distance **A**														
4	6	8	10	13	14	16	18	20	22	24	26	28	30	32

Specification

3

- Lock housing
  Zinc die casting
- Locating ring
  plastic coated
  black, RAL 9005, textured finish ● **SW**
- All other parts
  Steel zinc plated, blue passivated
- RoHS

Accessories

- Socket keys GN 119.2
  → *Main Catalogue Page 940*
- Protective caps GN 120
  → *Main Catalogue Page 942*
- Opening handles GN 120.1
  → *Main Catalogue Page 943*

Information

Latches GN 115.9 have a **push-to-turn** safety function. In the two end positions the spindle is locked in place by the latch. The device can be turned 90° only when the operating element is pressed down with the socket key, which releases the safety pin from the locked position. This feature protects the latch reliably from moving on its own or as the result of vibrations.

The beveled edges on the lock make closing the door easy. Latches with different cranks cover a latch distance A from 4 to 32 mm.

Latches GN 115.9 are supplied with loosely enclosed latch.

see also...

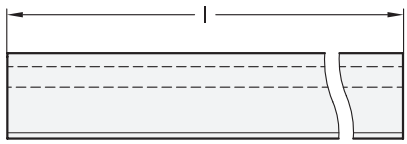
- *Construction and assembly instructions* → *Page 135*
- *List of latch types* → *Main Catalogue Page 892 ff.*
- *Protective guide plates GN 120.2* → *Main Catalogue Page 944*

How to order

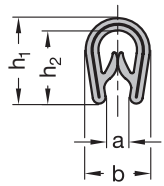
1 **2** **3**

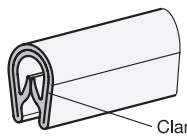
GN 115.9-DK-32-SW

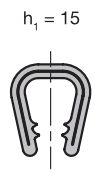
1	**Type**
2	**Latch distance A**
3	**Finish (Locating ring)**

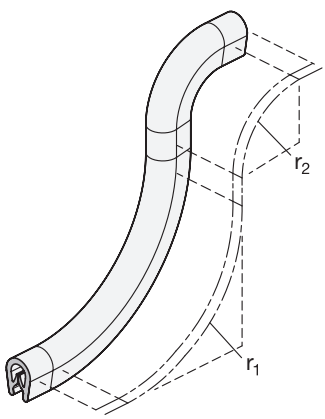


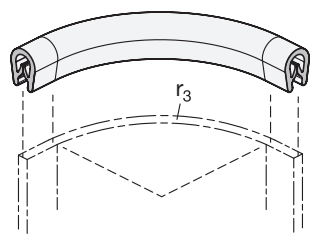
Profile cross-section at
h1 = 9,5 / 14











1 h_1	3 Cutting length **l** in meter		**a** Clamping area	**b**	h_2	r_1	r_2	r_3
9,5	20	50	1 - 2	6,5	8	15	10	10
14	20	50	1 - 4	10,5	12	25	25	25
15	20	50	6 - 8	13	12,75	15	30	20
17,5	20	50	4 - 6	12,25	15,5	30	45	15

Specification

2

- Profile
  Polyvinyl Chloride (PVC)
  - black ● SW
  - Hardness 70 ±5 Shore A
  - temperature resistant -40 °C to 90 °C
  - weather exposure
- Clamp insert
  Steel clamping band
- RoHS

On request

- Color white / gray

Information

GN 2184 edge protection profiles are installed on the front edge of metal sheets and plates. They protect the surfaces from damage by sharp edges. The edge finish additionally achieves an optical decorative effect, while the need for potential further treatment such as burring and chamfering of cut or laser-cut metal sheets is reduced to an absolute minimum.

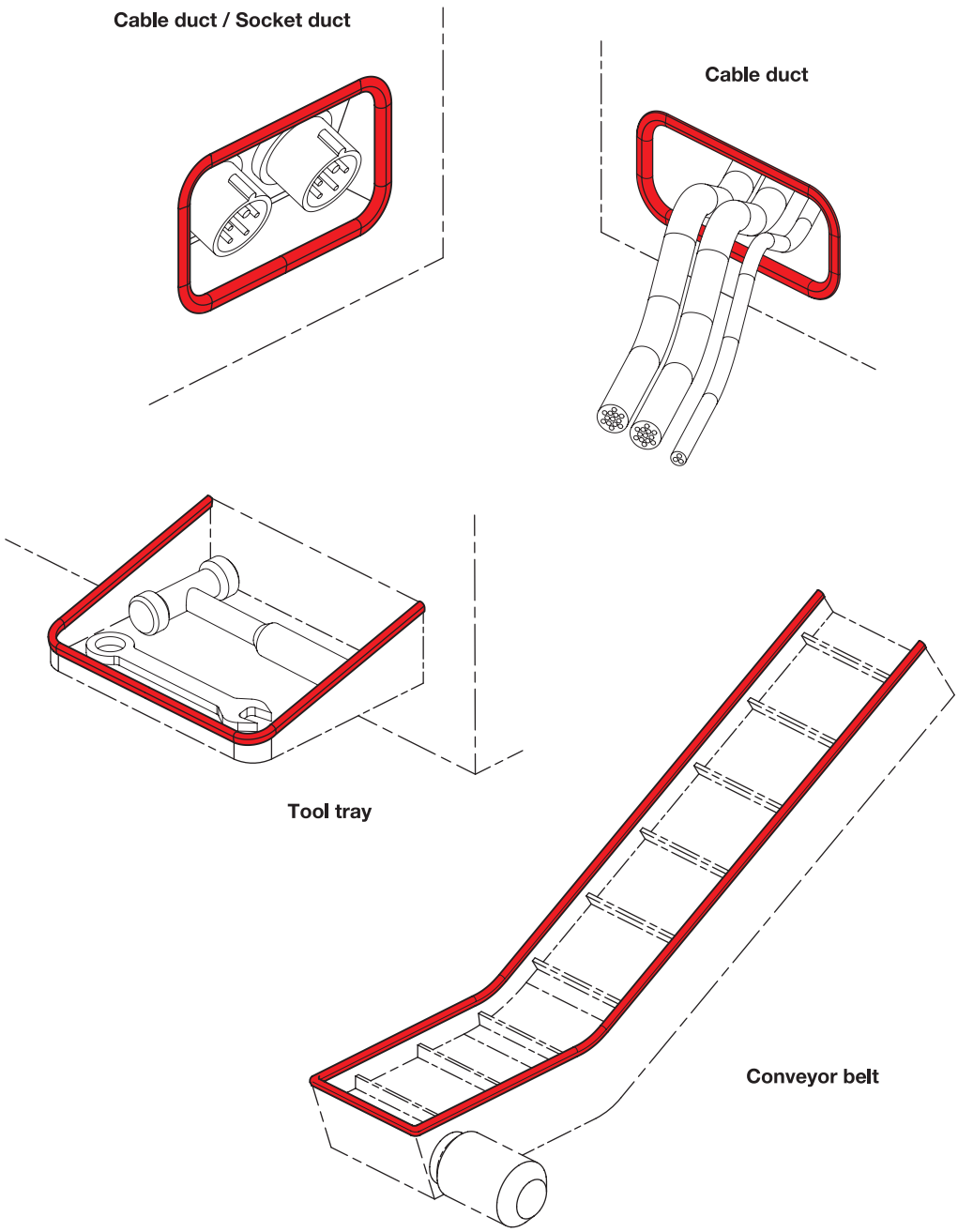
Adhering to the guideline placement radii (r_1...r_3) is recommended in order to guarantee permanent profile placement and to make assembly easier. Assembly can be carried out by hand, or alternatively with a soft-face hammer. The embedded clamp insert prevents it from detaching. Glue or other adhesive is not required.

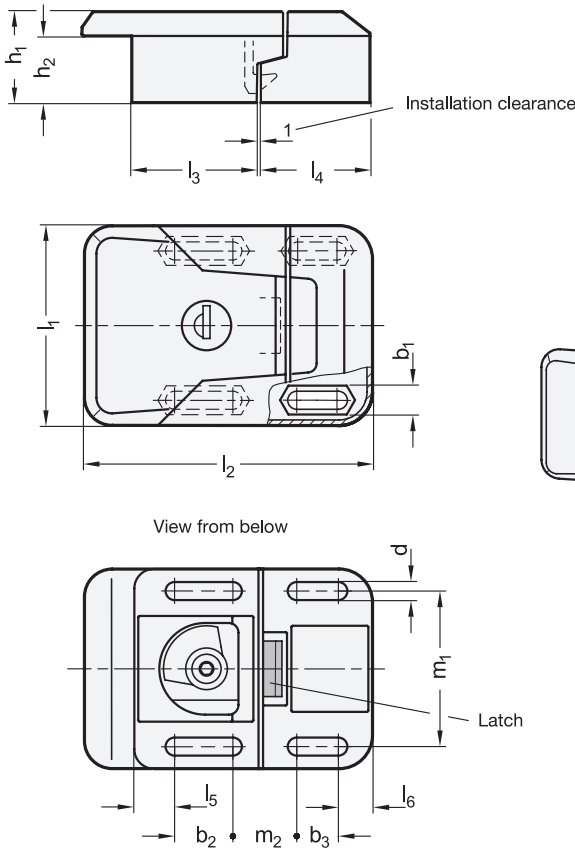
see also...
- *Edge protection seal profiles GN 2180 → Main Catalogue Page 948*
- *Edge protection seal profiles GN 2182 → Main Catalogue Page 950*

How to order
1 2 3
GN 2184-14-SW-50

1	h_1
2	Color
3	Length l

Application examples for edge protection profiles GN 2184





2 Type

SL not lockable
SCL lockable (same lock)
SUL lockable (different lock)

1

l_1	b_1	b_2	b_3	d	h_1	h_2	l_2	l_3	l_4	l_5	l_6	m_1	m_2
72	10,3	21	15	6,5	33	24	104	45	40	14,5	12,5	56	23

Specification

3

- Housing
  Zinc die casting
  plastic coated
  black, RAL 9005, textured finish ● **SW**
  silver, RAL 9006, textured finish ○ **SR**
- Covers and latch
  Plastic
  - black-gray for SW
  - light gray for SR
- Lock mechanism
  Zinc die casting
- Key
  Steel, nickel plated
- other parts
  Steel zinc plated, blue passivated
- RoHS

Information

GN 936 slam latches enable doors and closures to be effortlessly closed. The latch engages automatically when the door is closed preventing the door from opening unintentionally.

The slots enable the slam latch to be fitted to **profile systems** with different cross-sections.

The lockable versions of the slam latches (SCL and SUL types) are each supplied with 2 keys. The key can be removed in both end positions.

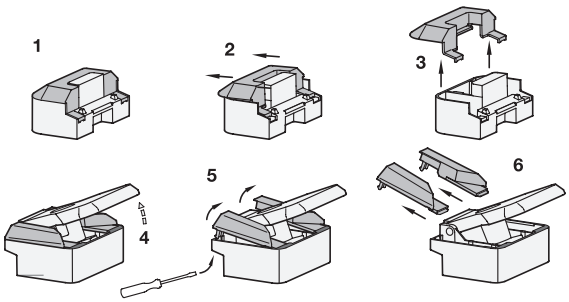
see also...

- *Assembly sets for profile systems 30 / 40 GN 965*
  → *Main Catalogue Page 1428*
- *Assembly sets for profile systems 30 / 40 / 45 GN 968*
  → *Main Catalogue Page 1438*

How to oder
1 2 3
GN 936-72-SCL-SW

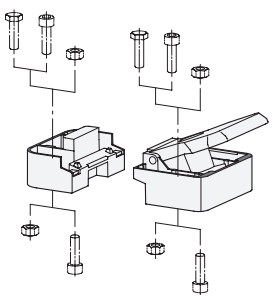
1	l_1
2	Type
3	Color

Assembly instruction

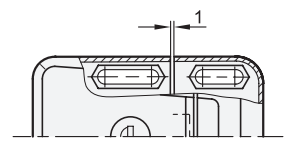


Prior to installation remove the slam latch cover as shown in the sketch. Socket head cap screws DIN 912, hexagon head screws DIN 933 and hexagon nuts ISO 4032 each with thread size M 6 can be used for mounting the slam latch.

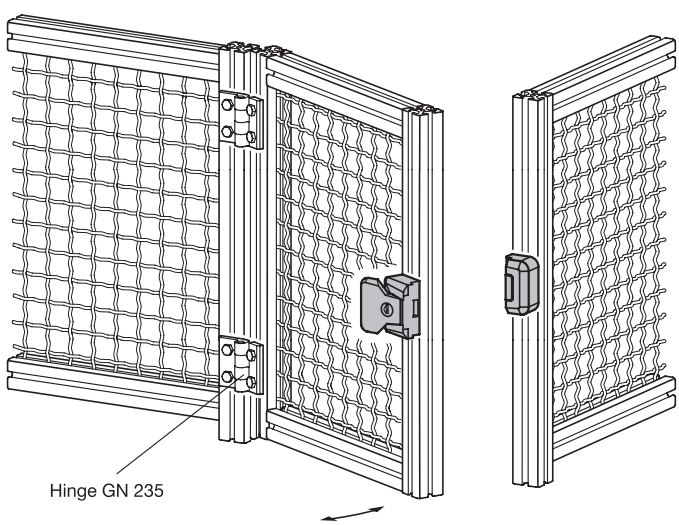
After installation the covers are reassembled in reverse order. The covers cannot be removed when the slam latch is closed and consequently protect against vandalism.



The slots allow the slam latch to be fitted to the door frame or profile systems both from the operating side and from the rear. The installation clearance of 1 mm is also easy to adjust.

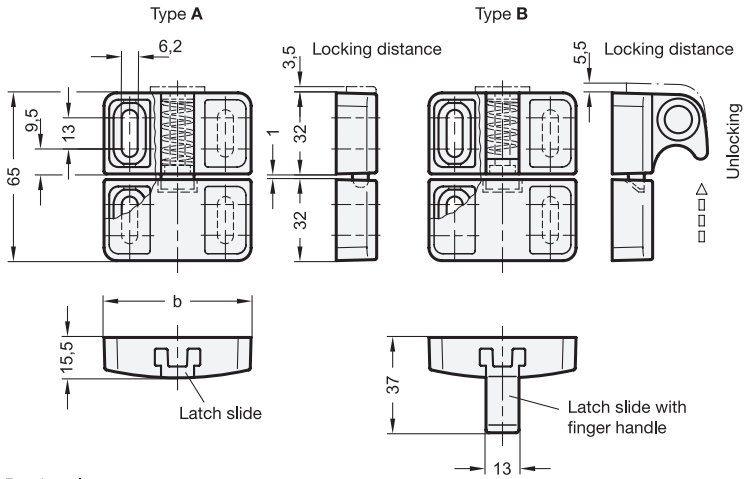


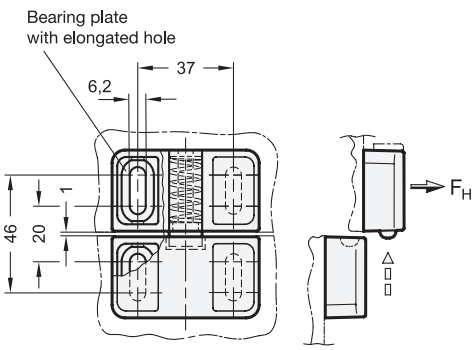
Example of application



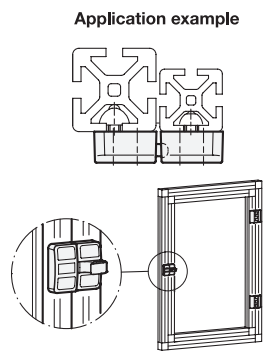
GN 449.1 Spring-bolt door latches

Plastic, adjustable, with cover





Mounting information (drilling template)



Application example

ELESA original design BMST

2 Type

A Snap lock, without interlock, without finger handle

B Snap lock, with interlock, with finger handle

1

b	Holding force F_H in N (Type A with 1 mm distance)
57	100

Specification

3

- Plastic (Polyamide PA)
  - glass fiber reinforced
  - temperature resistant up to 80 °C
  - black, matte — SW
  - gray, matte — LG
- Cover
  Plastic
  (Polybutylene terephthalate PBT)
- Bearing plate
  Steel, blackened
- Spring
  Stainless Steel
- *Plastic characteristics*
  → *Main Catalogue Page 1483*
- RoHS

Information

GN 449.1 spring-bolt door latches can be mounted on shaped parts and make it easier to hold swinging doors.

The slots allow the spring-bolt door latches to be mounted on shaped parts with different cross-sections. In addition, the distance of 1 mm between the individual elements, which is needed for the latches to work, can be easily adjusted.

In the design with finger handle (Type B), the door is held shut with form-locking effect. The door is opened by unlocking the finger handle. This handle often saves using the extra operating handle at the door.

GN 449.1 spring-bolt door latches will be delivered unmounted.

see also...

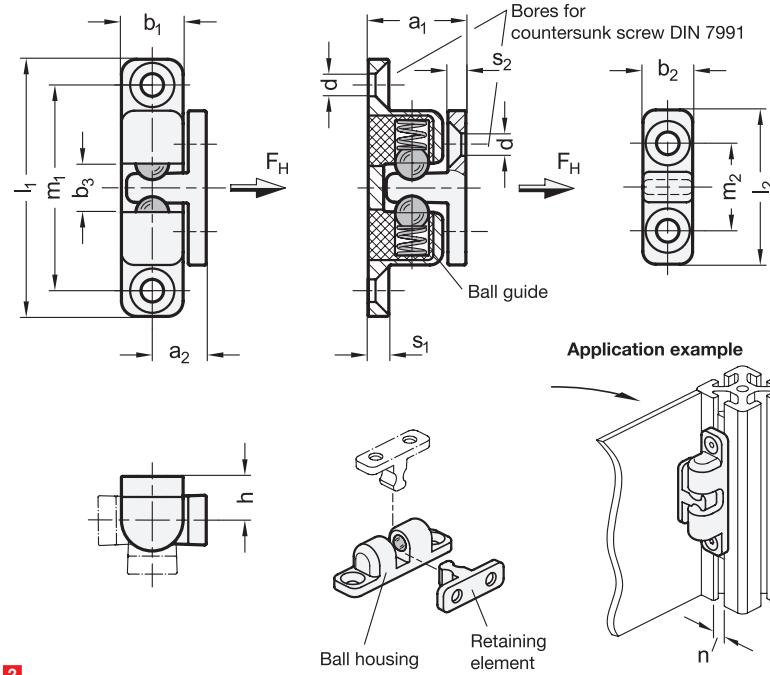
- *Assembly sets for profile systems 30 / 40 GN 965*
  → *Main Catalogue Page 1428*
- *Assembly sets for profile systems 30 / 40 / 45 GN 968*
  → *Main Catalogue Page 1438*

How to order

1 2 3

GN 449.1-57-B-SW

1	b
2	Type
3	Color



3 Identification no.

1 standard holding force
2 high holding force

2

l_1	a_1	a_2	b_1	b_2	b_3	d for screws	h	l_2	m_1	m_2	s_1	s_2	for nut width n	Holding force F_H in N	
														Id no. 1	Id no. 2
38	15	7,5	8	7	4,3	M 3	7,5	21	30	12	4	2,5	≤ 4,5	25	35
50	20	10,5	12	10	6,5	M 4	9,5	30	40	17	5	3,5	≤ 6	30	55
68	23	12	14,5	11	9,5	M 4	11	32,5	55	20	5	3,5	≤ 8	50	70
80	27	14	16,5	13	11	M 5	13	40	65	25	6	4	≤ 10	95	125

Specification

1 4

- Zinc die casting ZD
  plastic coated
  black, RAL 9005, textured finish ● SW
  silver, RAL 9006, textured finish ○ SR
- Ball
  Stainless Steel A2
- Spring
  Stainless Steel AISI 301
- Ball guide
  Plastic
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

On request

- other colors

Information

Ball catches GN 4490 are used, for example, to hold flaps and doors closed that must be opened and closed frequently and easily.

They consist of a ball housing and a retaining element that engages in the ball housing from the side or front. The installation orientation can be chosen as desired.

Beyond the typical uses, these solid and attractively designed ball catches are also utilized in technical environments. For example, thanks to the centered 90° countersunk holes, they can also be used with profile systems.

see also...

- *Assembly sets for profile systems 30 / 40 GN 965*
  → *Main Catalogue Page 1428*
- *Assembly sets for profile systems 30 / 40 / 45 GN 968*
  → *Main Catalogue Page 1438*

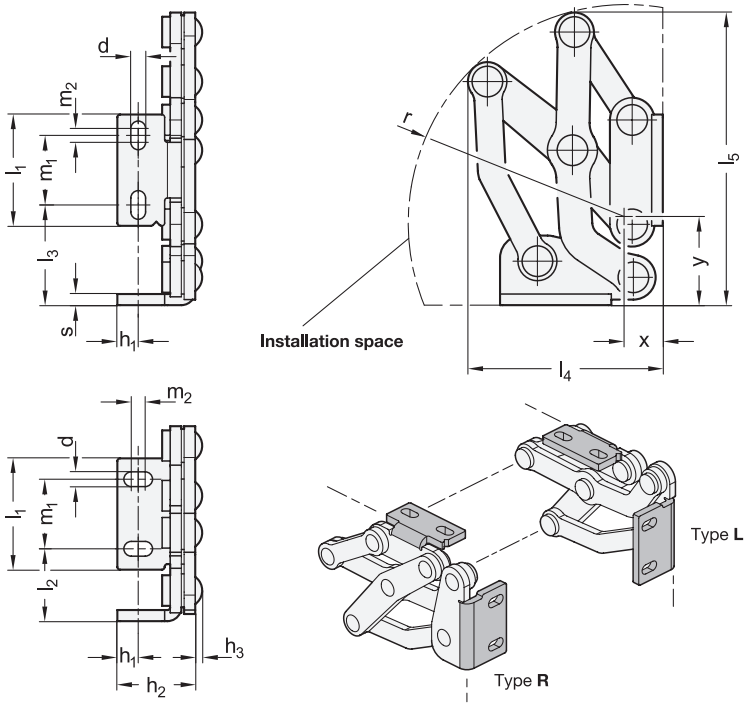
How to order

1 2 3 4
GN 4490-ZD-50-1-SW

1	Material
2	l_1
3	Identification no.
4	Finish

GN 7237 Multiple-joint hinges

inside, opening angle 180°



Inox Stainless Steel

3 Type

L Fixing angle piece left

R Fixing angle piece right

2

l_1	d	h_1	h_2	h_3	l_2	l_3	l_4	l_5	l_6	l_7	l_8	l_9	m_1	m_2	r	s	x	y
40	5,3	7,5	28	2,5	26	36	70,1	105,2	74,5	27,4	101,9	16	25	5	78,5	4	13	29,5
50	6,5	10	35	2,5	35	46	92,3	140	102,8	39,3	134,7	27,8	30	6	105	5	18	38
60	8,5	12,5	40	2,5	40	61	116,5	179,5	125,2	51,3	172,2	37,2	36	8	137,5	5	19	47

Specification

	1	4
• Stainless Steel	NI	
- AISI 304		
- matte, tumbled finish		MT
• Friction bearing Bronze self lubricated		
• *Stainless Steel characteristics* → *Main Catalogue Page 1489*		
• RoHS		

On request

- other opening angles
- other fixing angle pieces
- other materials
- other finishes
- other max. wall thicknesses
- other lifting motion
- with pneumatic spring connection

Information

Stainless Steel-Multiple-joint hinges GN 7237 are installed on the inside of flaps, hatches and doors to save space and ensure protection against vandalism. The hinges have a maximum opening angle of 180°, which provides optimal accessibility and avoids the blocking of escape routes by open doors, for example.

Use of this hinge type leaves housing exteriors free of attachments that do not match the design or that should be avoided entirely in the interests of fast and easy cleaning.

Stainless Steel-Multiple-joint hinges are generally used in pairs, meaning that one type L and one type R are used per opening. For higher loads, e.g. from large hatches, these can be supplemented with additional hinges of either type.

see also...

- *Construction instructions and load capacity* → *Page 147*
- *Stainless Steel-Spacer plates GN 2370* → *Main Catalogue Page 961*
- *Stainless Steel-Plates with tapped holes GN 2372* → *Main Catalogue Page 960*

How to order

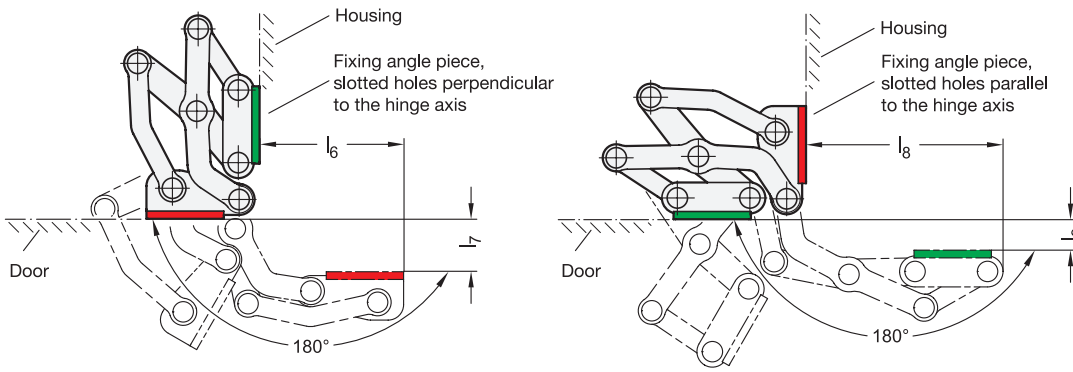
1 2 3 4

GN 7237-NI-40-L-MT

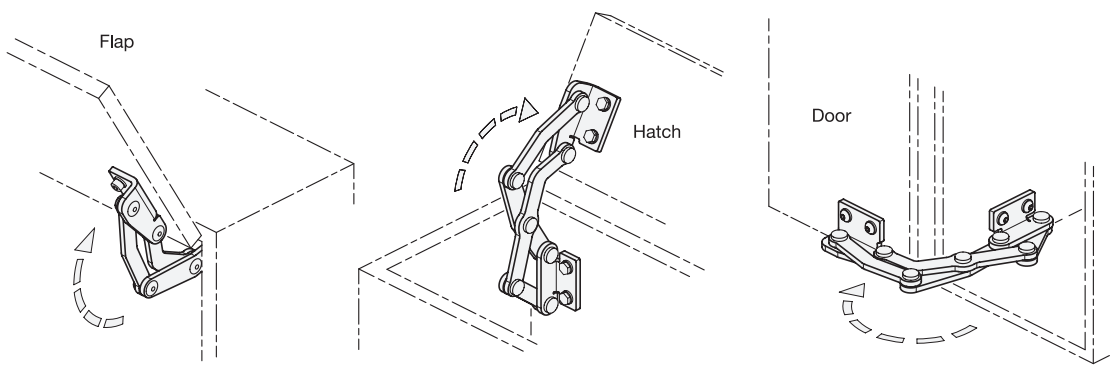
1	Material
2	l_1
3	Type
4	Finish

Installation position – pivot characteristics

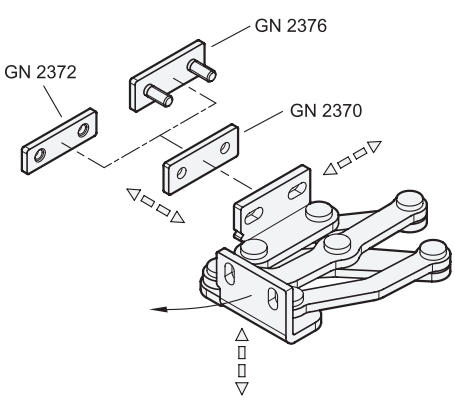
The Stainless Steel-Multiple-joint hinges can be installed to the housing either with slotted holes on the fixing angle piece that are either perpendicular or parallel to the hinge axis. This results in the two pivot characteristics depicted.



Application examples



Adjustment and fastening options



The Stainless Steel-Multiple-joint hinges can be adjusted in three planes during installation. For example, this allows adjustment for tolerances or establishing of required compressive forces for seals.

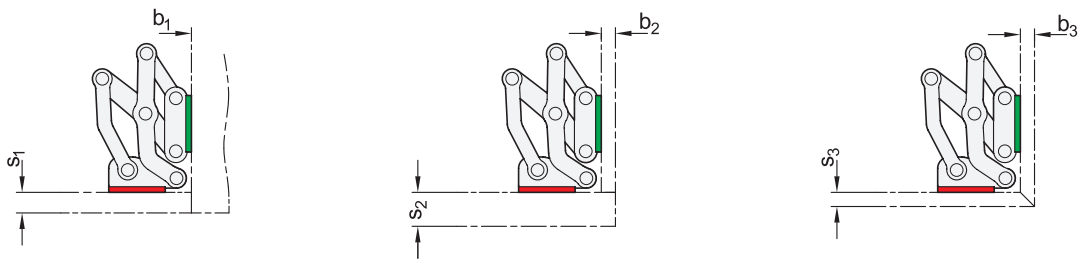
Two planes can be adjusted via parallel or perpendicular slotted holes in the fixing angle pieces. In the third plane, position corrections can be made using the Stainless Steel-Spacer plates GN 2370.

Stainless Steel-Plates with tapped holes GN 2372 as well as Stainless Steel-Plates with threaded studs GN 2376 are also available for fastening the hinges. The latter can be welded on or inserted through the wall from the outside and fastened in place. All accessory items are designed for use with both fixing angle pieces.

Design variants

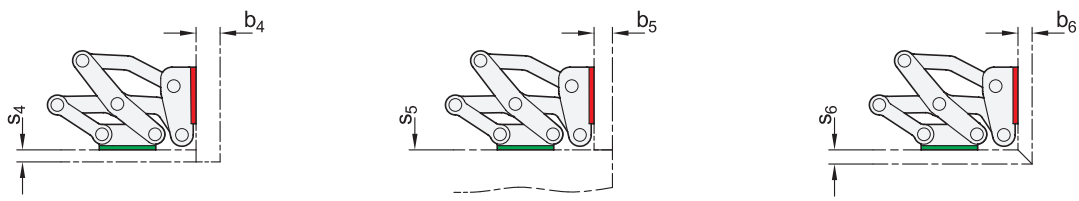
Flaps, hatches and doors can be inset, surface-mounted or mitered. The maximum wall thicknesses and bend sizes for planned sheet metal constructions arise from the respective installation type.

1. Fixing angle pieces mounted to the housing with slotted holes perpendicular to the hinge axis:



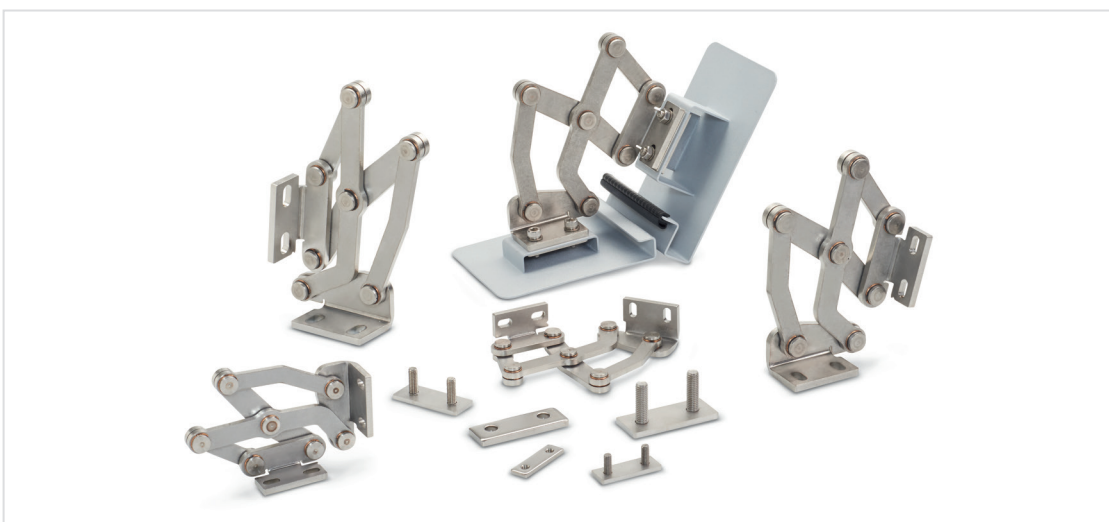
l_1	s_1 max.	b_1	s_2 max.	b_2 max.	s_3 max.	b_3 max.
40	13	1 ... ∞	24	10	10	10
50	19	1 ... ∞	34	17	16	16
60	25	1 ... ∞	44	24	21	21

2. Fixing angle pieces mounted to the housing with slotted holes parallel to the hinge axis:

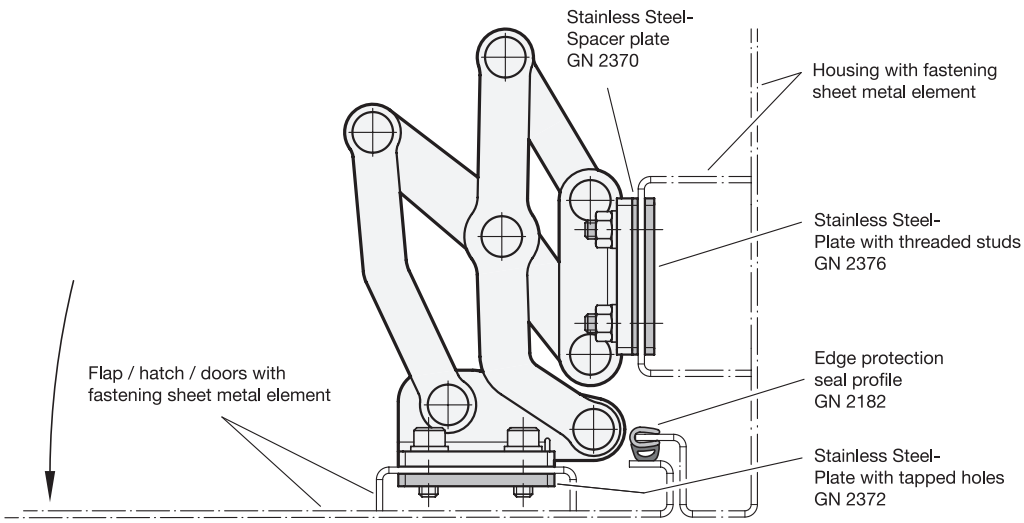


l_1	s_4 max.	b_4 max.	s_5	b_5 max.	s_6 max.	b_6 max.
40	9	27	1 ... ∞	13	10	10
50	17	35	1 ... ∞	19	16	16
60	23	45	1 ... ∞	25	21	21

The design variants shown represent standard installation conditions. If the installation position of the hinge is changed or one of the two wall thickness dimensions s or b are lower, the maximum achievable dimensions change independently of each other. This makes it possible in some cases to work with larger wall thickness dimensions than those specified with the same hinge size. A simple design check via CAD or a test setup is therefore recommended.

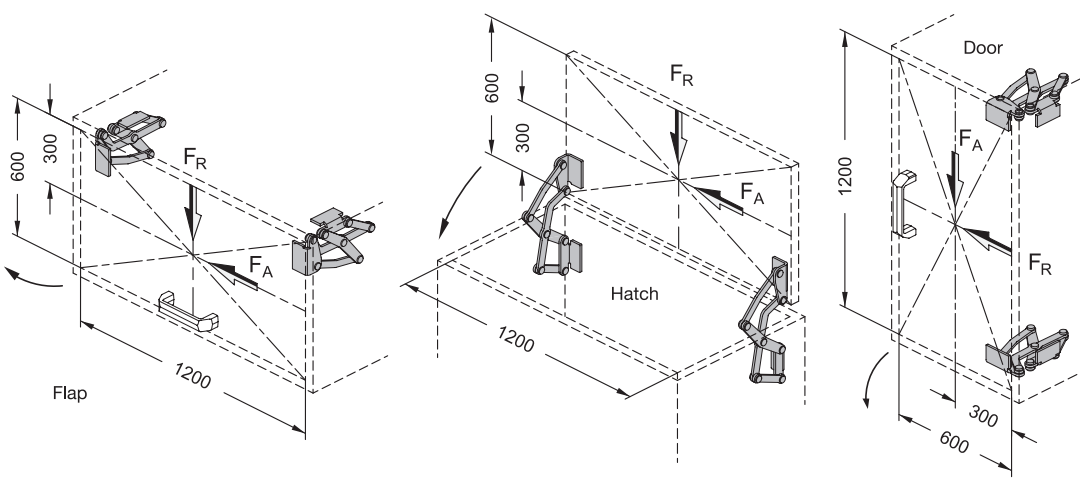


Construction assembly



Load capacity

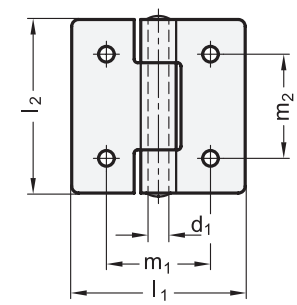
The maximum load of the Stainless Steel-Multiple-joint hinges specified below applies to the standard use cases and serves for orientation in the case of deviating applications. The resulting forces lead to slight elastic deformation, which can be compensated for by means of the adjustment options, if necessary.

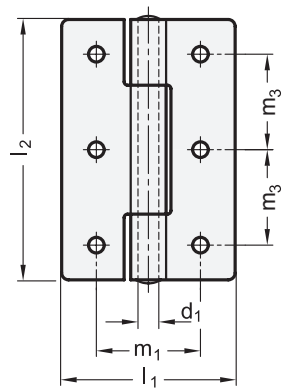


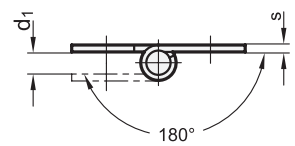
Load capacity per hinge pair in N		
l_1	**F_A (axial)**	**F_R (radial)**
40	125	450
50	125	600
60	125	450

Sheet metal hinges

square or vertically elongated





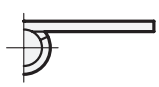


Inox Stainless Steel

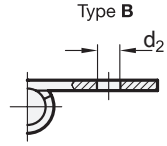
4 Type

A without bores (only in Stainless Steel NI)
B with through-holes
C with countersunk holes

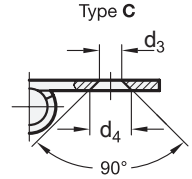
Type **A**



Type **B**



Type **C**



2 l_1	3 l_2 square	l_2 1,5x elongated	d_1	d_2	d_3	d_4	m_1	m_2	m_3	s
30	30	45	3	3,2	4	6,4	18	18	16,5	1,5
40	40	60	4	4,2	5	8,3	25	25	22,5	2
50	50	75	6	5,2	5	8,3	30	30	27,5	2
60	60	90	6	5,2	5	8,3	36	36	33	2

Specification

1

- Steel **ST**
  - only type B and C
  - zinc plated, blue passivated
- Stainless Steel AISI 304 **NI**
  all types
- Pin
  - Stainless Steel AISI 304
  - riveted
- *Load rating information → Page 242*
- *Stainless Steel characteristics → Main Catalogue Page 1489*
- RoHS

Information

GN 136 sheet metal hinges are available in many different versions and are suitable for light to medium-duty applications.

Type A can be fixed in place by welding or by using holes made by the customer.

see also...

- *List of hinge types → Main Catalogue Page 956 ff.*

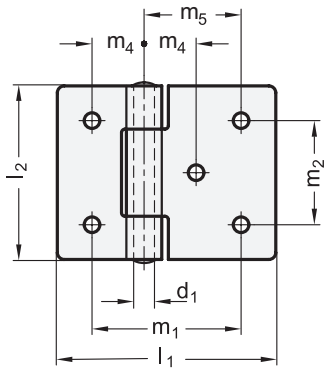
How to order

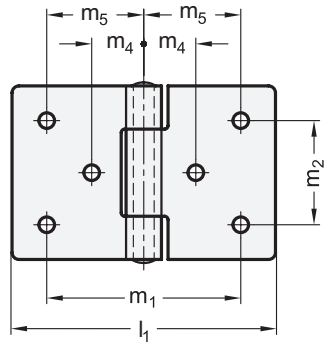
1 2 3 4
GN 136-NI-40-40-A

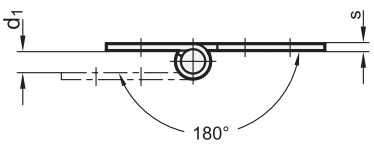
1	**Material**
2	l_1
3	l_2
4	**Type**

GN 136
Steel / Stainless Steel

Sheet metal hinges
horizontally elongated





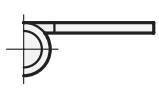


Inox Stainless Steel

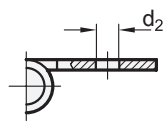
4 Type

A without bores (only in Stainless Steel NI)
B with through-holes
C with countersunk holes

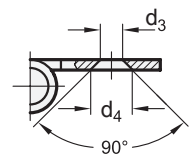
Type **A**



Type **B**



Type **C**



2 l_1 on one side elongated	l_1 on both sides elongated	3 l_2	d_1	d_2	d_3	d_4	m_1	m_2	m_4	m_5	s
45	-	30	3	3,2	4	6,4	33	18	9	24	1,5
-	60	30	3	3,2	4	6,4	48	18	9	24	1,5
60	-	40	4	4,2	5	8,3	45	25	12,5	32,5	2
-	80	40	4	4,2	5	8,3	65	25	12,5	32,5	2
75	-	50	6	5,2	5	8,3	55	30	15	40	2
-	100	50	6	5,2	5	8,3	80	30	15	40	2
90	-	60	6	5,2	5	8,3	66	36	18	48	2
-	120	60	6	5,2	5	8,3	96	36	18	48	2

Specification

1

- Steel **ST**
  - only type B and C
  - zinc plated, blue passivated
- Stainless Steel AISI 304 **NI**
  all types
- Pin
  - Stainless Steel AISI 304
  - riveted
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Information

GN 136 sheet metal hinges are available in many different versions and are suitable for light to medium-duty applications.

Type A can be fixed in place by welding or by using holes made by the customer.

see also...

- *List of hinge types → Main Catalogue Page 956 ff.*

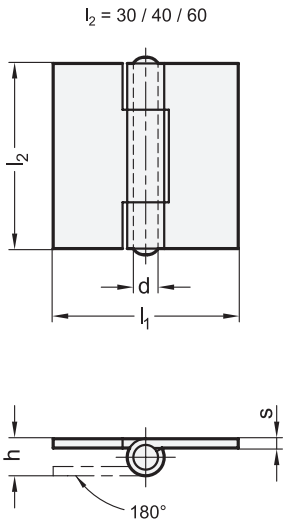
How to order

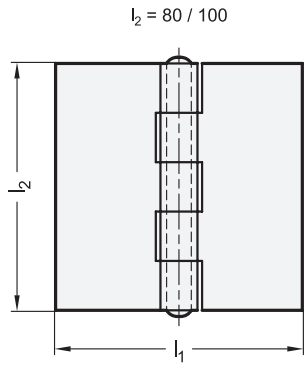
1 2 3 4
GN 136-ST-60-40-B

1	**Material**
2	l_1
3	l_2
4	**Type**

GN 1362 Stainless Steel-Sheet metal hinges

for welding





Inox Stainless Steel

4 Type

A without bores

2 l_1	3 l_2	d	h	s
60	30	6	12	3
60	40	6	12	3
60	60	6	12	3
80	30	6	12	3
80	40	6	12	3
80	80	6	12	3
100	100	6	12	3

Specification

	1	5
• Stainless Steel	**NI**	
- AISI 304		
- blank		**BL**
• Pin		
- Stainless Steel AISI 304		
- riveted		

• *Load rating information → Page 242*

• *Stainless Steel characteristics → Main Catalogue Page 1489*

• RoHS

On request

• other dimensions

• with bores

• other surface types

Information

Stainless Steel-Sheet metal hinges GN 1362 are distinguished by their universally compatible dimensions. The materials used also permit applications in aggressive environments.

Type A is fastened via welding or holes created by the customer.

Thanks to the standard dimensions, special application-specific solutions can be realized even in relatively small quantities.

see also...

• *Sheet metal hinges GN 136 (Steel / Stainless Steel) → Page 148 / 149*

• *Hinges GN 128 (Steel, for welding) → Main Catalogue Page 990*

• *Stainless Steel-Hinges GN 128.2 (for welding) → Main Catalogue Page 991*

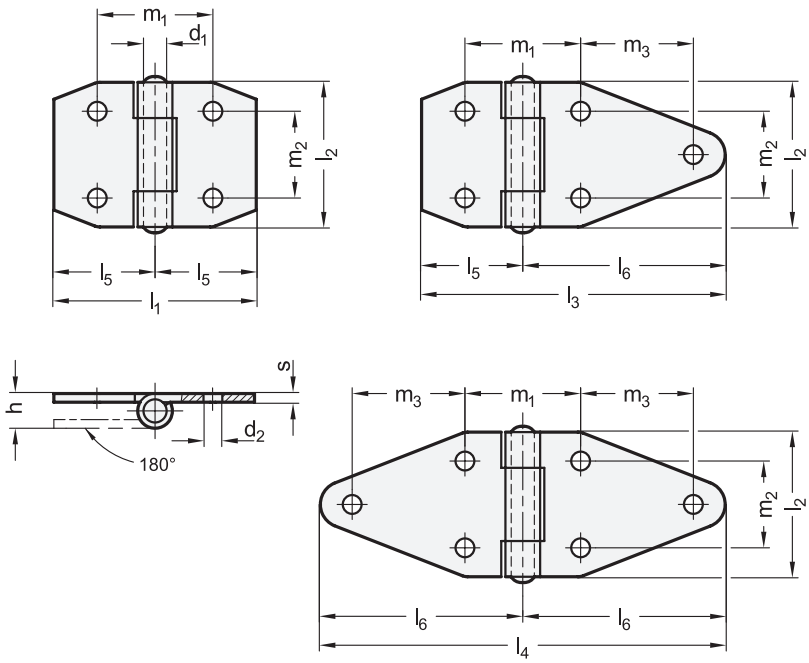
• *Hinges GN 1366 (Steel, for welding) → Page 152*

How to order

1 2 3 4 5

GN 1362-NI-60-40-A-BL

1	**Material**
2	**l_1**
3	**l_2**
4	**Type**
5	**Finish**



Inox Stainless Steel

4 Type

B with through-holes

2 l_1	2 l_3	2 l_4	3 l_2	d_1	d_2	h	l_5	l_6	m_1	m_2	m_3	s
70	105	140	50	6	6,5	12	35	70	42	30	39	3

Specification

	1	5
• Stainless Steel	NI	
- AISI 304		
- blank		BL
• Pin		
- Stainless Steel AISI 304		
- riveted		

• *Load rating information* → *Page 242*

• *Stainless Steel characteristics* → *Main Catalogue Page 1489*

• RoHS

On request

• without bores
• with countersunk holes
• other surface types

Information

Pointed Stainless Steel-Sheet metal hinges GN 1364 are characterized by their compact and universal dimensioning as well as their attractively shaped design. The materials used also permit applications in aggressive environments.

Type B is fastened via the existing through-holes using screws or rivets.

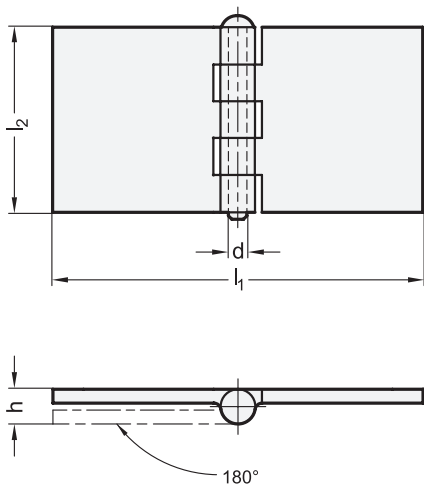
see also...

• *Sheet metal hinges GN 136 (Steel / Stainless Steel)* → *Page 148 / 149*

How to order

1 2 3 4 5
GN 1364-NI-70-50-B-BL

1	**Material**
2	**l_1 (l_3, l_4)**
3	**l_2**
4	**Type**
5	**Finish**



4 **Type**
A without bores

2			3			
l_1			**l_2**	**d**	**h**	**s**
60	120	160	30	6	12	5
60	120	160	40	6	12	5
60	120	160	50	6	12	5
60	120	-	60	6	12	5
160	-	-	60	8	15	6
200	160	-	80	8	15	6
200	160	-	100	8	16	7
220	-	-	100	13	26	10

Specification

	1	5
• Steel profile rolled, scaled or drawn, blank	**ST**	**BL**
• Pin Steel		

• *Load rating information* → *Page 242*

• RoHS

On request

- with loose pin
- with brass pin
- with lubricating nipple
- with holes
- other dimensions
- other finish types

Information

Hinges GN 1366 are made of rolled or drawn steel profiles and are very robust.

Type A is fastened via welding or holes created by the customer.

Thanks to the standard dimensions, special application-specific solutions can be realized even in relatively small quantities.

see also...

- *Hinges GN 128 (Steel, for welding)* → *Main Catalogue Page 990*
- *Stainless Steel-Hinges GN 128.2 (for welding)* → *Main Catalogue Page 991*
- *Sheet metal hinges GN 136 (Steel / Stainless Steel)* → *Page 148 / 149*
- *Stainless Steel-Sheet metal hinges GN 1362 (for welding)* → *Page 150*

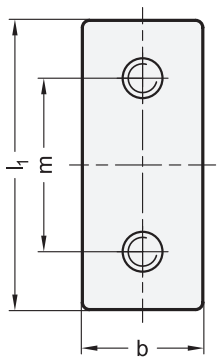
How to order

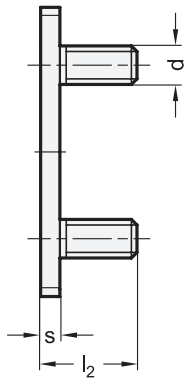
1 2 3 4 5
GN 1366-ST-60-50-A-BL

1	**Material**
2	**l_1**
3	**l_2**
4	**Type**
5	**Finish**

GN 2376 Stainless Steel-Plates

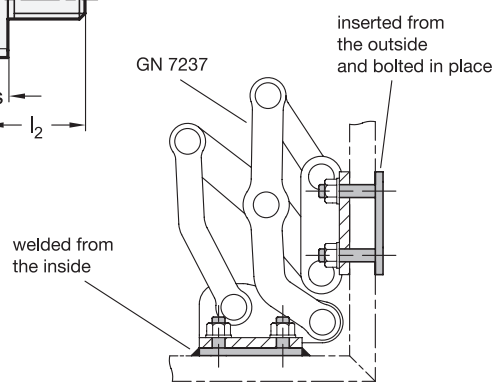
with threaded studs, for hinges GN 7237, GN 235





Inox Stainless Steel

Mounting example



2 l_1	3 l_2		b	d	m	s
40	15	25	15	M 5	25	3
50	20	30	20	M 6	30	3
60	20	30	25	M 8	36	4

Specification

	1	4
• Stainless Steel	NI	
- AISI 304		
- matte, tumbled finish		MT
• Threaded studs Stainless Steel		
- AISI 304		
- pressed in		

• *Stainless Steel characteristics* → *Main Catalogue Page 1489*

• RoHS

On request

• other threaded studs
• other plate sizes
• other plate geometries

Information

Stainless Steel-Plates with threaded studs GN 2376 are designed as accessories for Stainless Steel-Multiple-joint hinges GN 7237 as well as hinges GN 235. They make additional threads, bolts, nuts and washers unnecessary during installation. This eliminates the labor-intensive pre-installation of such parts as well as the need to hold them in place during tightening or loosening.

The Stainless Steel-Plates with threaded studs are fastened from the outside via through-holes in the housing wall or alternatively by welding to the inside of the wall. This results in effective protection against vandalism, and the outsides of the housing remain free of attachments that do not match the design or that should be avoided entirely in the interests of easy cleaning.

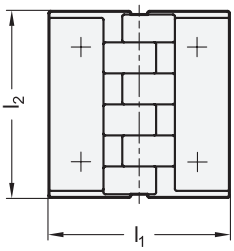
see also...

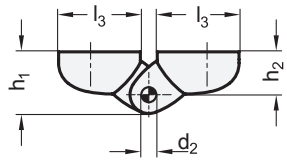
• *Stainless Steel-Multiple-joint hinges GN 7237* → *Page 144*
• *Stainless Steel-Spacer plates GN 2370* → *Main Catalogue Page 961*
• *Stainless Steel-Plates with tapped holes GN 2372* → *Main Catalogue Page 960*
• *Rubber bumper stops GN 2374* → *Main Catalogue Page 962*

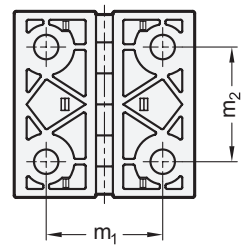
How to order

1 2 3 4
GN 2376-NI-40-15-MT

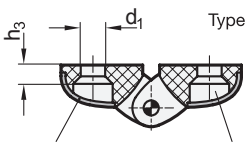
1	Material
2	l_1
3	l_2
4	Finish

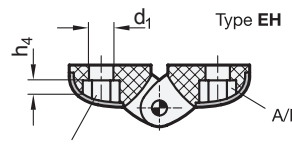






ELESA original design CFT



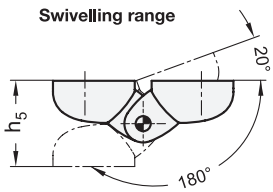


4 Type

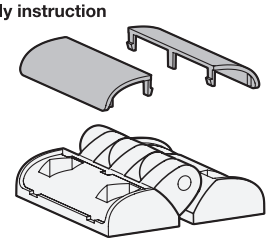
SH 2x2 bores for countersunk screws

EH 2x2 bores for socket head cap screws / hexagon screws

Swivelling range



Assembly instruction



1		2		3	3									
l_1 Nominal dimension	l_1 Actual dimension	l_2 Nominal dimension	l_2 Actual dimension	d_1 Type SH	d_1 Type EH	d_2	h_1	h_2	h_3	h_4 −0,5	l_3	m_1 ±0,25	m_2 ±0,25	sw Type EH
40	38	40	39,5	4,5	4,5	3	13	9	4,5	4	17,5	25	25	7
48	48	49	49,5	5,5	5,5	4	16,5	11,5	5	5	21,5	31	30,5	8,5
48	48	49	49,5	-	6,5*	4	16,5	11,5	5	5	21,5	31	30,5	10
65	63	65	65	6,5	6,5	5	21,5	15	7,5	7	29	40	40	10

* not suitable for socket head cap screw DIN 912-M6

Specification

- Plastic (Polyamide PA)
  - glass fiber reinforced
  - black, matte
  - temperature resistant up to 80 °C
- Pin
  Plastic (Polyacetal POM)
- Cover
  Plastic (Polyacetal BPT)
  - black, shiny finish
- *Load rating information* → *Page 243*
- *Plastic characteristics* → *Main Catalogue Page 1483*
- RoHS

Information

The covers of the hinges GN 151.3 conceal the fixing elements and lend the hinges an attractive optical appearance.

see also...

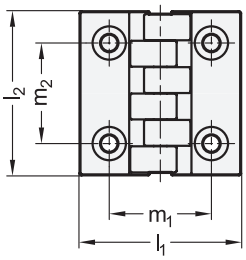
- *Hinges GN 122.2 (with covers)* → *Main Catalogue Page 984*
- *Hinges GN 238 (adjustable, with covers)* → *Main Catalogue Page 968*

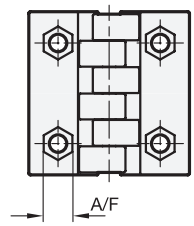
How to order

1 2 3 4

GN 151.3-48-49-5,5-EH

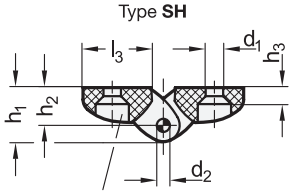
1	l_1
2	l_2
3	d_1
4	Type





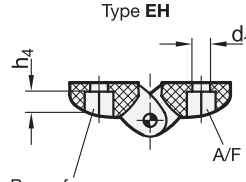
ELESA original design CFTX.

Type **SH**

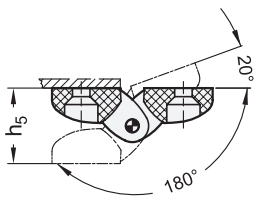


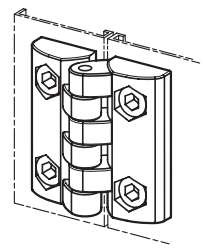
Bore for counter-sunk head screw DIN 7991

Type **EH**



Bores for
Socket head cap screws DIN 912
Hexagon screws ISO 4014





4 Type

SH 2x2 bores
for countersunk screws

EH 2x2 bores
for socket head cap screws / Hexagon screws

1		2		3										
l_1		l_2		d_1	d_2	h_1	h_2	h_3	h_4 −0,5	h_5	l_3	m_1 ±0,25	m_2 ±0,25	A/F
Nominal dimension	Actual dimension	Nominal dimension	Actual dimension											
40	38,5	40	39,5	4,5	3	13	9	4,5	4	18	16,5	25	25	7
49	49	49	49,5	5,5	4	16,5	11,5	5	6	23	21	31	30,5	8
49	49	49	49,5	6,5*	4	16,5	11,5	-	6	23	21	31	30,5	10
65	64	65	65	6,5	5	21,5	15	9	7,5	30	27,5	40	40	10

* only available in type EH

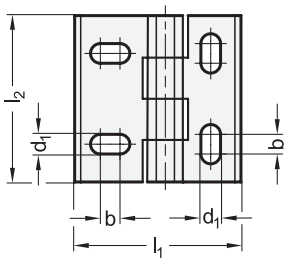
Specification

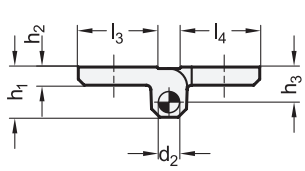
- Plastic (Polyamide PA)
  - black, matte
  - temperature resistant up to 80 °C
- Pin
  Plastic (Polyacetal POM)
- *Load rating information* → *Page 243*
- *Plastic characteristics*
  → *Main Catalogue Page 1483*
- RoHS

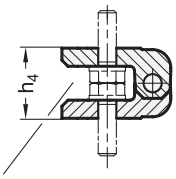
How to order

1 2 3 4
GN 151.5-49-49-5,5-SH

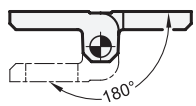
1	l_1
2	l_2
3	d_1
4	Type







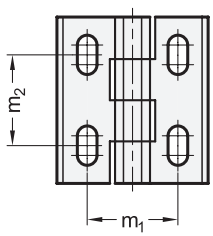
Swivelling range



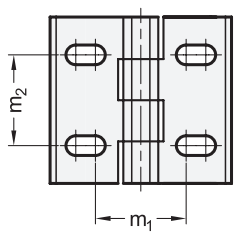
Installation space for e.g.
ISO 4014 hexagon head screws
and DIN 125 washers

Inox
Stainless
Steel

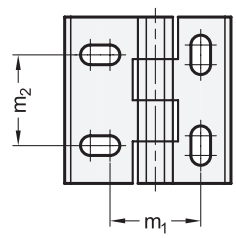
Type **H**



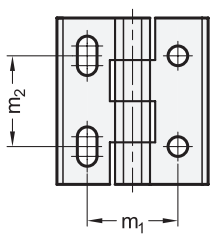
Type **B**



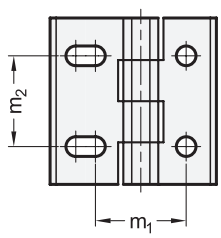
Type **HB**



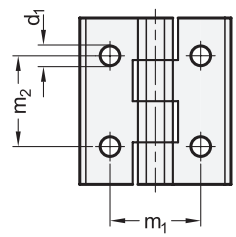
Type **DH**



Type **DB**



Type **D**



4 Type

- **H** horizontal adjustable
- **B** vertical adjustable
- **HB** vertical and/or horizontal adjustable
- **D** with through-holes
- **DH** with through-holes, horizontal adjustable
- **DB** with through-holes, vertical adjustable

2 l_1			3 l_2	b	d_1	d_2	h_1	h_2	h_3	h_4	l_3		l_4		m_1	m_2
D, DH, H	DB, HB	B									D, DH, H	DB, HB, B	D, DH, H, DB, HB	B		
40	45	50	45	5,3	5,3	4	13	5	9,5	19	16	21	16	21	25	25
50	55	60	55	6,5	6,5	6	16,6	6	11,6	23,2	21	26	21	26	30	30
60	68	76	65	8,3	8,3	8	21,4	8	14,9	29,8	26	33,5	26	33,5	36	36

Specification

1 5

- Zinc die casting **ZD**
  plastic coated
  black, RAL 9005, textured finish **SW**
  silver, RAL 9006, textured finish **SR**
- Stainless Steel
  - AISI CF-8 **NI**
  - matte shot-blasted **GS**
- Pin Stainless Steel AISI 316Ti
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Accessories

- Stainless Steel-Spacer plates GN 2370
  → Main Catalogue Page 961
- St. Steel-Plates with tapped holes GN 2372
  → Main Catalogue Page 960

Information

Depending on their shape, GN 235 hinges can be adjusted vertically and laterally along the cylindrical slots.

They can be mounted for example using hex-head, oval-head or cylinder screws with a low head, which allows a full pivoting range of 180°.

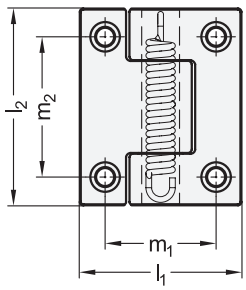
The hinge drill pattern corresponds with that of the GN 237 hinge family, which allows the hinges to be exchangeable.

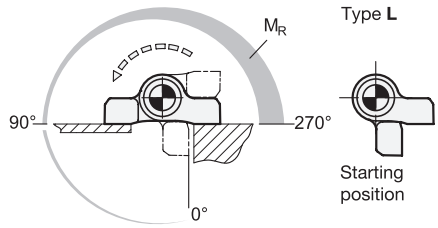
see also...
- *Hinges GN 237 → Main Catalogue Page 959 / 963*

How to order

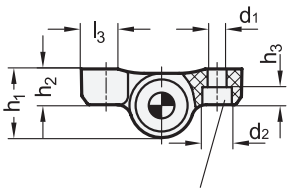
1 2 3 4 5
GN 235-ZD-45-45-DB-SR

1	**Material**
2	**l_1**
3	**l_2**
4	**Type**
5	**Finish**

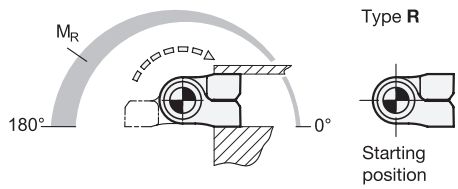




ELESA original design CFMR.



Bore for
socket cap screw DIN 912



3 Type

- **O** without spring-loaded return
- **L** Spring-loaded return, closing
- **R** Spring-loaded return, opening

4 Identification no.

- **1** light spring load
- **2** heavy spring load

1 l_1	2 l_2	d_1	d_2	h_1	h_2	h_3	l_3	m_1	m_2	max. return torque M_R in Nm	
										Identification no. 1	Identification no. 2
55	67	6,5	10	24	12,5	6,3	12,5	38	48	0,35	0,7

Specification

5

- Plastic (Polyamide PA)
  - glass fiber reinforced
  - temperature resistant up to 60 °C
  - black, matte ● SW
- Pin
  Aluminum
- Shaft cover
  Plastic (Polyacetal POM)
  black
- Torsion spring
  Stainless Steel
- *Load rating information* → *Page 243*
- *Plastic characteristics*
  → *Main Catalogue Page 1483*
- RoHS

Information

GN 233.3 hinges with spring-loaded return allow doors to be automatically opened and closed by means of the torsion spring.

The return torque varies with the opening angle of the hinge. Endurance tests have shown that the torque does not change even after 100.000 opening / closing cycles.

The following table shows the relationship between the opening angle and return torque. The indicated maximum opening angle should not be exceeded.

Return torque M_R in Nm (Type L)			
Id. no.	0°	90°	270°
1	0	0,12	0,35
2	0	0,25	0,7

Return torque M_R in Nm (Type R)		
Id. no.	0°	180°
1	0,12	0,35
2	0,25	0,7

How to order (without spring-loaded return)

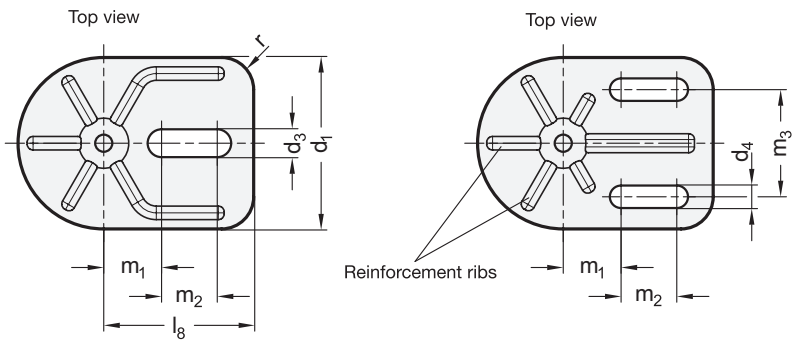
1 2 3 5
GN 233.3-55-67-O-SW

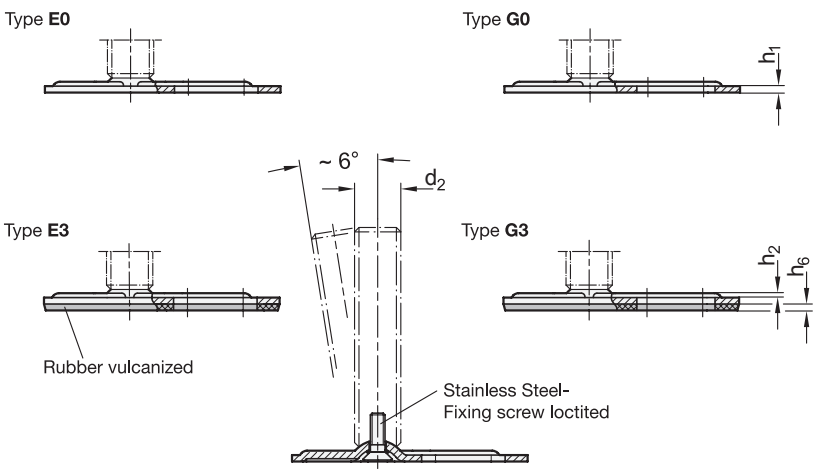
1	l_1
2	l_2
3	Type
5	Color

How to order (with spring-loaded return)

1 2 3 4 5
GN 233.3-55-67-R-1-SW

1	l_1
2	l_2
3	Type
4	Identification no.
5	Color



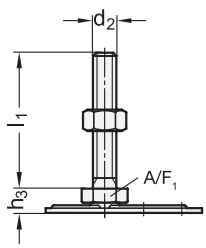


4 Type (Base)

E0 without rubber underlay, with one slotted hole
E3 with rubber underlay, vulcanized, black, with one slotted hole
G0 without rubber underlay, with 2 slotted holes
G3 with rubber underlay, vulcanized, black, with 2 slotted holes

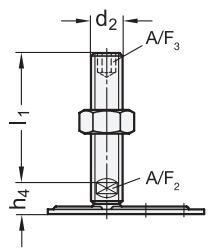
1	2	3									3										
d_1	d_2	l_1 Version S / SK				Version U / UK					l_7 Vers. X	d_3	d_4	h_1	h_2	h_6	l_8	m_1	m_2	m_3	r
80	M 8	40	50	63	-	-	-	-	-	-	26	13	10,5	3	1,3	3	70	27	26	50	15
80	M 10	50	60	80	100	-	-	-	-	-	29	13	10,5	3	1,3	3	70	27	26	50	15
80	M 12	60	80	100	125	-	-	-	-	-	32	13	10,5	3	1,3	3	70	27	26	50	15
80	M 16	-	-	-	-	75	100	125	150	200	38	13	10,5	3	1,3	3	70	27	26	50	15
80	M 20	-	-	-	-	75	100	125	150	200	45	13	10,5	3	1,3	3	70	27	26	50	15
80	M 24	-	-	-	-	100	125	150	200	-	-	13	10,5	3	1,3	3	70	27	26	50	15

Versions of threaded stem



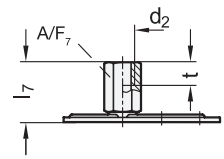
5
S without nut
SK with nut

External hexagon at the bottom at d_2
M 8, M 10, M 12



5
U without nut
UK with nut

Hexagon socket at the top and wrench flat at the bottom at d_2
M 16, M 20, M 24



5
X with female thread

External hexagon with female thread at d_2
M 8, M 10, M 12, M 16, M 20

d_1	d_2	h_3	h_4	A/F_1	A/F_2	A/F_3	A/F_7	t
80	M 8	12	-	17	-	-	14	8
80	M 10	12	-	17	-	-	14	10
80	M 12	12	-	17	-	-	17	12
80	M 16	-	18	-	12	8	22	16
80	M 20	-	19	-	15	10	27	20
80	M 24	-	22	-	19	12	-	-

Specification

- Base plate
  Steel
  zinc plated, blue passivated
- Threaded stem
  Steel
  zinc plated, blue passivated
- Hexagon nut ISO 4032
  Steel
  zinc plated, blue passivated
- Rubber underlay
  - vulcanized
  - black, Perbunan® (NBR)
    70 ±5 Shore A
- *Elastomer characteristics*
  → *Main Catalogue Page 1483*
- RoHS

Information

GN 42 levelling feet can be used in a host of combinations of base plates and adjustable spindle versions.

The levelling feet can be screwed to the mounting surface use the fixing lug, which prevents lateral shifting. Moreover, the types with the rubber underlay protect sensitive surfaces.

The levelling feet are supplied fully assembled and are not removable.

see also...

- *St. Steel-Levelling feet GN 44 / GN 45 (A4, without / with fixing lug)*
  → *Page 162 / 164*
- *Levelling feet GN 40 (Steel, without fixing lug)*
  → *Main Catalogue Page 1040*
- *Levelling feet GN 42 (Steel, with fixing lug, drop shape)*
  → *Main Catalogue Page 1040*
- *St. Steel-Levelling feet GN 41 (A2, without fixing lug)*
  → *Main Catalogue Page 1042*
- *St. Steel-Levelling feet GN 43 (A2, with fixing lug)*
  → *Main Catalogue Page 1042*
- *Insert bushings GN 992 / GN 992.5 (Aluminum / Stainless Steel, for tubes)*
  → *Main Catalogue Page 1309*

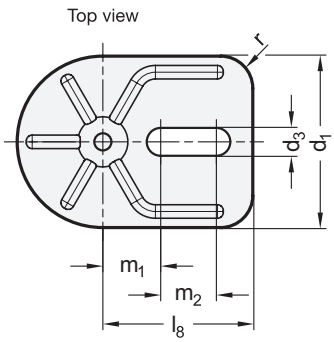
How to order

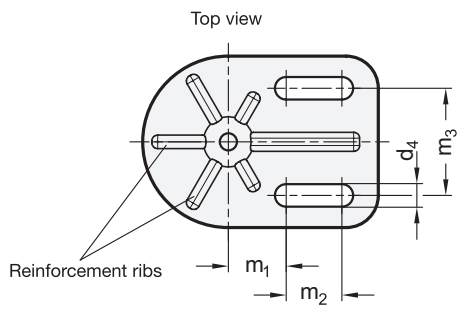
1 2 3 4 5
GN 42-80-M8-63-E3-SK

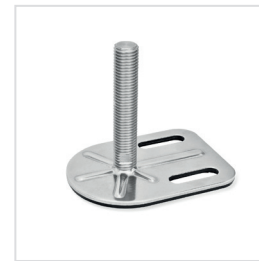
1	d_1
2	d_2
3	l_1 (l_7)
4	Type (Base)
5	Version (Screw)

GN 43 Stainless Steel-Levelling feet

Material no. AISI 304 (A2), with fixing lug, rectangular shape







Inox Stainless Steel

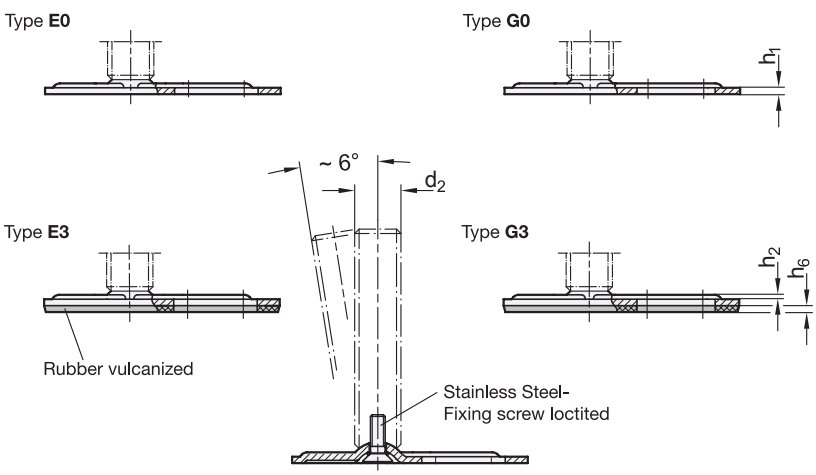
4 Type (Base)

E0 without rubber underlay, with one slotted hole

E3 with rubber underlay, vulcanized, black, with one slotted hole

G0 without rubber underlay, with 2 slotted holes

G3 with rubber underlay, vulcanized, black, with 2 slotted holes

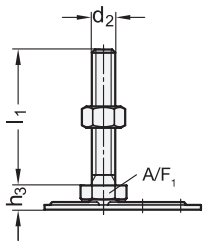


1 d_1	2 d_2	3 l_1 Version S / SK				3 l_1 Version T / TK und U / UK					3 l_2 Version V / VK					3 l_3 Version W				3 l_7 Vers. X	l_8	r
80	M 8	40	50	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	70	15
80	M 10	50	60	80	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	70	15
80	M 12	60	80	100	125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	70	15
80	M 16	-	-	-	-	75	100	125	150	200	75	100	125	150	110	135	160	185	38	70	15
80	M 20	-	-	-	-	75	100	125	150	200	-	-	-	-	-	-	-	-	45	70	15
80	M 24	-	-	-	-	100	125	150	200	-	-	-	-	-	-	-	-	-	-	70	15

Specification

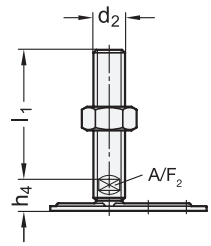
- Base plate
  Stainless Steel
  - blank, ground
  - AISI 304 (A2)
- Threaded stem
  Stainless Steel AISI 303 (A1)
- Hexagon nut ISO 4032
  Stainless Steel AISI 304
- Rubber underlay
  - vulcanized
  - black, Perbunan® (NBR)
    70 ±5 Shore A
- *Elastomer characteristics*
  → Main Catalogue Page 1483
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Versions of threaded stem



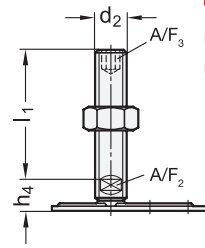
5
S without nut
SK with nut

External hexagon at the bottom at d_2
M 8, M 10, M 12



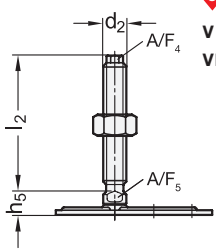
5
T without nut
TK with nut

Wrench flat at the bottom at d_2
M 16, M 20, M 24



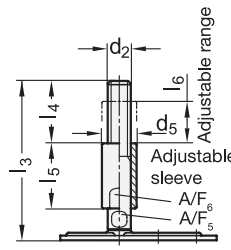
5
U without nut
UK with nut

Hexagon socket at the top
Wrench flat at the bottom at d_2
M 16, M 20, M 24



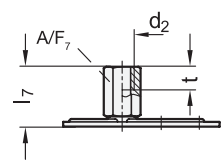
5
V without nut
VK with nut

External hexagon at the top
Wrench flat at the bottom at d_2
M 16



5
W with adjustable sleeve

Covered thread and
wrench flat at the bottom at d_2
M 16



5
X with female thread

External hexagon with
female thread at d_2
M 8, M 10, M 12, M 16, M 20

d_1	d_2	d_3	d_4	d_5	h_1	h_2	h_3	h_4	h_5	h_6	l_4	l_5	l_6	m_1	m_2	m_3	A/F_1	A/F_2	A/F_3	A/F_4	A/F_5	A/F_6	A/F_7	t
80	M 8	13	10,5	-	3	1,3	12	-	-	3	-	-	-	27	26	50	17	-	-	-	-	-	14	8
80	M 10	13	10,5	-	3	1,3	12	-	-	3	-	-	-	27	26	50	17	-	-	-	-	-	14	10
80	M 12	13	10,5	-	3	1,3	12	-	-	3	-	-	-	27	26	50	17	-	-	-	-	-	17	12
80	M 16	13	10,5	24	3	1,3	-	18	15	3	45	45	29	27	26	50	-	12	8	10	12	20	22	16
80	M 20	13	10,5	-	3	1,3	-	19	-	3	-	-	-	27	26	50	-	15	10	-	-	-	27	20
80	M 24	13	10,5	-	3	1,3	-	22	-	3	-	-	-	27	26	50	-	19	12	-	-	-	-	-

Information

GN 43 Stainless Steel-Levelling feet are for use in aggressive environments. The range of combinations of base plates and adjustable spindle versions allows these levelling feat to be used in every situation.

The levelling feet can be screwed to the mounting surface use the fixing lug, which prevents lateral shifting. Moreover, the types with the rubber underlay protect sensitive surfaces.

The levelling feet are supplied fully assembled and are not removable.

see also...

- *St. Steel-Levelling feet GN 44 / GN 45 (A4, without / with fixing lug)* → *Main Catalogue Page 162 /163*
- *Levelling feet GN 40 (Steel, without fixing lug)* → *Main Catalogue Page 1040*
- *Levelling feet GN 42 (Steel, with fixing lug)* → *Main Catalogue Page 1040*
- *St. Steel-Levelling feet GN 41 (A2, without fixing lug)* → *Main Catalogue Page 1042*
- *St. Steel-Levelling feet GN 43 (A2, with fixing lug, drop shape)* → *Main Catalogue Page 1042*
- *Stainless Steel-Insert bushings GN 992.5* → *Main Catalogue Page 1059*

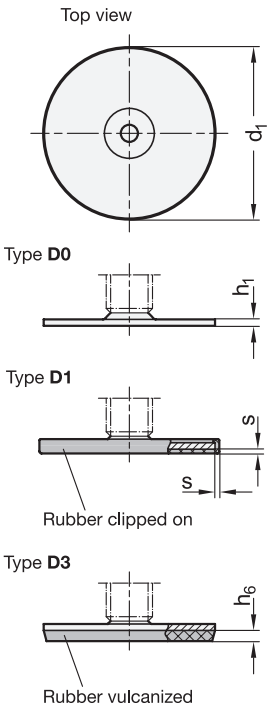
How to order

1 2 3 4 5
GN 43-80-M16-100-G3-UK

1	d_1
2	d_2
3	l_1 (l_2, l_3, l_7)
4	Type (Base)
5	Version (Screw)

GN 44 Stainless Steel-Levelling feet

Material no. AISI 316 L (A4)



Inox
Stainless
Steel

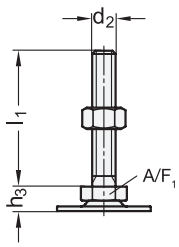
4 Type (Base plate)

D0 without rubber underlay
B0 without rubber underlay, with 2 fixing holes
D1 with rubber underlay, clipped on, black
D3 with rubber underlay, vulcanized, black

1	2	3								
d_1	d_2	l_1								
		Version S / SK				Version T / TK				
40	M 8	40	50	63	-	-	-	-	-	-
40	M 10	50	60	80	100	-	-	-	-	-
40	M 12	60	80	100	125	-	-	-	-	-
40*	M 16	-	-	-	-	75	100	125	150	200
50	M 8	40	50	63	-	-	-	-	-	-
50	M 10	50	60	80	100	-	-	-	-	-
50	M 12	60	80	100	125	-	-	-	-	-
50	M 16	-	-	-	-	75	100	125	150	200
60	M 8	40	50	63	-	-	-	-	-	-
60	M 10	50	60	80	100	-	-	-	-	-
60	M 12	60	80	100	125	-	-	-	-	-
60	M 16	-	-	-	-	75	100	125	150	200
80	M 8	40	50	63	-	-	-	-	-	-
80	M 10	50	60	80	100	-	-	-	-	-
80	M 12	60	80	100	125	-	-	-	-	-
80	M 16	-	-	-	-	75	100	125	150	200
80	M 20	-	-	-	-	75	100	125	150	200
80	M 24	-	-	-	-	100	125	150	200	-

* not available in type B0

Versions of threaded stem

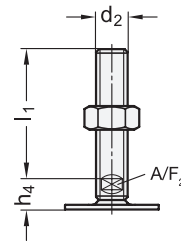


5

S without nut

SK with nut

External hexagon at the bottom at d_2
M 8, M 10, M 12



5

T without nut

TK with nut

Wrench flat at the bottom at d_2
M 16, M 20, M 24

d_1	d_2			d_3	h_1	h_3	h_4	h_6	m	s	A/F_1	A/F_2
40	M 8	M 10	M 12	5,4	2	11	-	3,5	30	1,5	17	-
40	M 16	-	-	5,4	2	-	17	3,5	30	1,5	-	12
50	M 8	M 10	M 12	6,6	2,5	11	-	4	38	2	17	-
50	M 16	-	-	6,6	2,5	-	17	4	38	2	-	12
60	M 8	M 10	M 12	6,6	2,5	11	-	4,5	48	2	17	-
60	M 16	-	-	6,6	2,5	-	17	4,5	48	2	-	12
80	M 8	M 10	M 12	8,5	3	12	-	5	64	2	17	-
80	M 16	-	-	8,5	3	-	18	5	64	2	-	12
80	M 20	-	-	8,5	3	-	19	5	64	2	-	15
80	M 24	-	-	8,5	3	-	22	5	64	2	-	19

Specification

- Base plate
  Stainless Steel
  - AISI 316 L (A4)
  - blank, ground
- Threaded stem
  Stainless Steel AISI 316 L (A4)
- Hexagon nut ISO 4032
  Stainless Steel, A4
- Rubber cap
  - clipped on
  - black, Santoprene® (TPE)
    ≈ 80 Shore A
- Rubber underlay
  - vulcanized
  - black, Perbunan® (NBR)
    70±5 Shore A
- *Elastomer characteristics*
  → Main Catalogue Page 1483
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

GN 44 Stainless Steel-Levelling feet are for use in aggressive environments. The range of combinations of base plates and adjustable spindle versions allows these levelling feat to be used in every situation.

The base plate with the rubber underlay protects sensitive surfaces and reduces lateral slippage. The type B0 can also be fastened to the mounting surface through two holes.

The levelling feet are supplied fully assembled and are not removable.

see also...

- *Stainless Steel-Levelling feet GN 45 (A4, with fixing lug) → Page 164*
- *Levelling feet GN 40 (Steel, without fixing lug)*
  → Main Catalogue Page 1040
- *Levelling feet GN 42 (Steel, with fixing lug) → Main Catalogue Page 1040*
- *Stainless Steel-Levelling feet GN 43 (A2, with fixing lug)*
  → Main Catalogue Page 1042

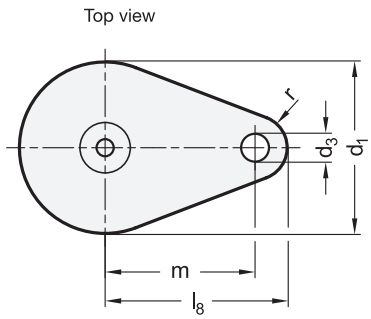
How to order

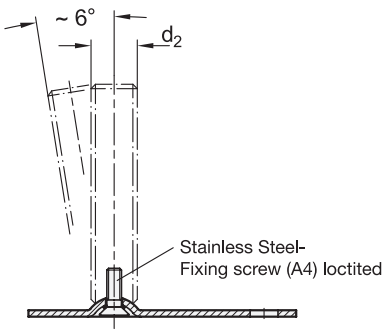
1 2 3 4 5
GN 44-80-M20-150-D1-T

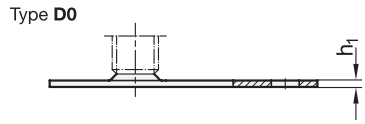
1	d_1
2	d_2
3	l_1
4	Type (Base)
5	Version (Screw)

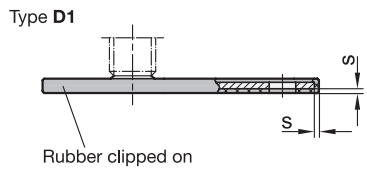
GN 45 Stainless Steel-Levelling feet

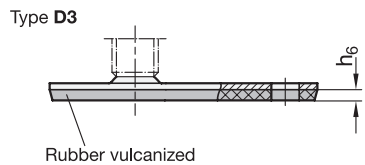
Material no. AISI 316 L (A4), with fixing lug, drop shape











Inox
Stainless
Steel

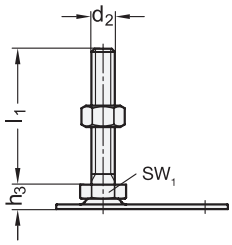
4 Type (Base plate)

D0 without rubber underlay
D1 with rubber underlay, clipped on, black
D3 with rubber underlay, vulcanized, black

1 d_1	2 d_2	3 l_1 Version S / SK				Version T / TK				
50	M 8	40	50	63	-	-	-	-	-	-
50	M 10	50	60	80	100	-	-	-	-	-
50	M 12	60	80	100	125	-	-	-	-	-
50	M 16	-	-	-	-	75	100	125	150	200
60	M 8	40	50	63	-	-	-	-	-	-
60	M 10	50	60	80	100	-	-	-	-	-
60	M 12	60	80	100	125	-	-	-	-	-
60	M 16	-	-	-	-	75	100	125	150	200
80	M 8	40	50	63	-	-	-	-	-	-
80	M 10	50	60	80	100	-	-	-	-	-
80	M 12	60	80	100	125	-	-	-	-	-
80	M 16	-	-	-	-	75	100	125	150	200
80	M 20	-	-	-	-	75	100	125	150	200
80	M 24	-	-	-	-	100	125	150	200	-

* not available in type B0

Versions of threaded stem

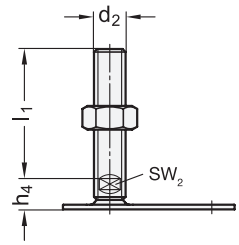


5

S without nut

SK with nut

External hexagon at the bottom at d_2
M 8, M 10, M 12



5

T without nut

TK with nut

Wrench flat at the bottom at d_2
M 16, M 20, M 24

d_1	d_2			d_3	h_1	h_3	h_4	h_6	l_8	m	r	s	A/F_1	A/F_2
50	M 8	M 10	M 12	6,6	2,5	11	-	4	60	45	15	2	17	-
50	M 16	-	-	6,6	2,5	-	17	4	60	45	15	2	-	12
60	M 8	M 10	M 12	6,6	2,5	11	-	4,5	75	50	15	2	17	-
60	M 16	-	-	6,6	2,5	-	17	4,5	75	50	15	2	-	12
80	M 8	M 10	M 12	8,5	3	12	-	5	85	70	15	2	17	-
80	M 16	-	-	8,5	3	-	18	5	85	70	15	2	-	12
80	M 20	-	-	8,5	3	-	19	5	85	70	15	2	-	15
80	M 24	-	-	8,5	3	-	22	5	85	70	15	2	-	19

Specification

- Base plate
  Stainless Steel
  - AISI 316 L (A4)
  - blank, ground
- Threaded stem
  Stainless Steel AISI 316 L (A4)
- Hexagon nut ISO 4032
  Stainless Steel, A4
- Rubber cap
  - clipped on
  - black, Santoprene® (TPE)
    ≈ 80 Shore A
- Rubber underlay
  - vulcanized
  - black, Perbunan® (NBR)
    70±5 Shore A
- *Elastomer characteristics*
  → Main Catalogue Page 1483
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

GN 45 Stainless Steel-Levelling feet are for use in aggressive environments. The range of combinations of base plates and adjustable spindle versions allows these levelling feat to be used in every situation.

The levelling feet can be screwed to the mounting surface use the fixing lug, which prevents lateral shifting. Moreover, the types with the rubber underlay protect sensitive surfaces.

The levelling feet are supplied fully assembled and are not removable.

see also...

- *Stainless Steel-Levelling feet GN 44 (A4, without fixing lug) → Page 162*
- *Levelling feet GN 40 (Steel, without fixing lug)*
  → Main Catalogue Page 1040
- *Levelling feet GN 42 (Steel, with fixing lug) → Main Catalogue Page 1040*
- *Stainless Steel-Levelling feet GN 41 (without fixing lug)*
  → Main Catalogue Page 1042
- *Stainless Steel-Levelling feet GN 43 (A2, with fixing lug)*
  → Main Catalogue Page 1042

How to order

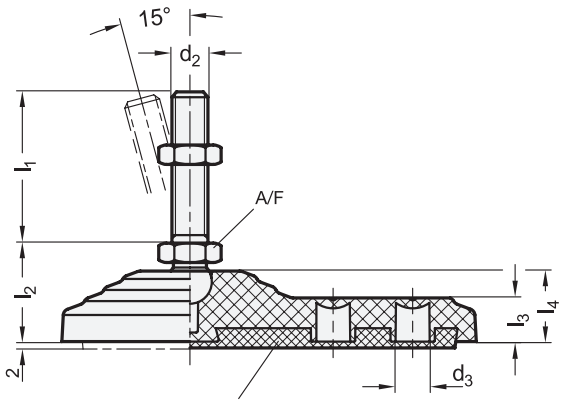
1 2 3 4 5

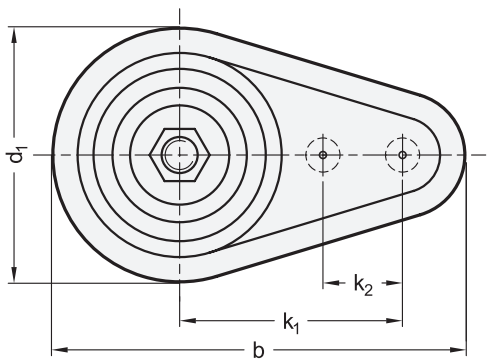
GN 45-50-M10-60-D3-SK

1	d_1
2	d_2
3	l_1
4	Type (Base)
5	Version (Screw)

Levelling feet

Foot plastic, threaded stud steel / Stainless Steel





ELESA original design LV.FO

Inox Stainless Steel

4 Type

A without nut, without rubber underlay

B with nut, without rubber underlay

AG without nut, with rubber underlay

BG with nut, with rubber underlay

1 d_1	2 d_2	3 l_1				b	d_3	k_1	k_2	l_2	l_3	l_4	A/F	Ball-Ø	Static load in kN (see information)
60	M 8	43	68	-	-	96,5	8,5	50	18	30	14	21	14	14	14
60	M 10	43	68	98	-	96,5	8,5	50	18	30	14	21	14	14	14
60	M 12	43	68	98	-	96,5	8,5	50	18	30	14	21	14	14	14
60	M 14	68	98	148	-	96,5	8,5	50	18	30	14	21	14	14	14
60	M 16	68	108	148	168	96,5	8,5	50	18	30	14	21	16	14	14
80	M 8	43	68	-	-	130	10,5	70	25	31	14	22	14	14	14
80	M 10	43	68	98	-	130	10,5	70	25	31	14	22	14	14	16
80	M 12	43	68	98	-	130	10,5	70	25	31	14	22	14	14	16
80	M 14	68	98	148	-	130	10,5	70	25	31	14	22	14	14	16
80	M 16	68	108	148	168	130	10,5	70	25	31	14	22	16	14	16

Specification

- Foot
  Plastic Technopolymer (Polyamide PA)
  - glass fiber reinforced
  - black, matte
  - temperature resistant up to 100 °C
- **GN 445**
  Threaded stud
  Steel zinc plated, blue passivated
  - Tensile strength class 5.8
  Hexagon nut ISO 4032
  Steel zinc plated, blue passivated
- **GN 445.5**
  Threaded stud
  Stainless Steel AISI 303
  Hexagon nut ISO 4032
  Stainless Steel AISI 304
- Rubber underlay (NBR)
  70 Shore A, black
- *Elastomer characteristics*
  → *Main Catalogue Page 1483*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Information

Levelling feet GN 445 / GN 445.5 are capable of withstanding high static loads through the use of a high density plastic material coupled with a design which distributes the load over a larger area.

The values given in the table regarding the static load capacity serve as a guide line only and if these are exceeded serious permanent deformation or breakage of the plastic socket could occur.

The above values have been arrived at by a series of tests whereby a limited number of levelling feet were subjected for a limited time to a vertical static load to the feet.

The fixing holes are closed by a thin plastic layer, which may be easily punctured.

Levelling feet GN 445 / GN 445.5 are supplied assembled, but are removable.

How to order (Threaded stud steel)		
1 2 3 4 GN 445-80-M10-98-B	1	d_1
	2	d_2
	3	l_1
	4	Type

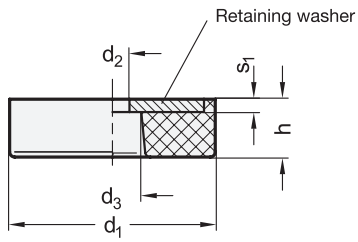
How to order (Threaded stud Stainless Steel)		
1 2 3 4 GN 445.5-60-M16-168-A	1	d_1
	2	d_2
	3	l_1
	4	Type

GN 438 / GN 438.5 Spacer disks and foot disks

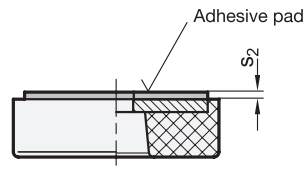
GN 438 Steel | **GN 438.5** Stainless Steel

with rubber underlay, vulcanized

Type **A**



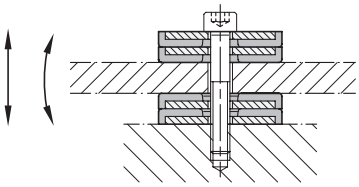
Type **B**



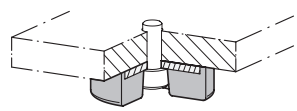
Inox Stainless Steel

Assembly examples

as spacer disk



as foot disk



4 Type

A Mounting with fixing hole

B Mounting with adhesive pad

1 d_1	2 h			3 d_2 +0,5	d_3 +0,5	s_1	s_2
19	3	7	14	4	7,5	1,5	1,1
25	3	8	16	4	7,5	1,5	1,1
32	4	9	18	5	9	2	1,1
38	4	10	20	5	9	2	1,1
50	5	11	22	6	11	2,5	1,1
64	5	13	26	6	11	2,5	1,1

Specification

5

- **GN 438**
  Steel
  zinc plated, blue passivated
- **GN 438.5**
  Stainless Steel AISI 304
- Rubber underlay
  Acrylonitrile butadiene rubber (NBR)
  - vulcanized
  - black
  - temperature resistant up to 120 °C
  - Hardness Shore A **70**
- Adhesive pad (only type B)
  Scotch mount TM 5952
  - double-sided
  - Acrylate rubber core
- *Elastomer characteristics*
  → *Main Catalogue Page 1483*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

On request

- other Shore hardnesses

Information

GN 438 / GN 438.5 spacer discs and foot discs provide a damping and muffling function and protect surfaces from damage.

By stacking several spacer discs on each other, the spring rate of the package can be increased, which opens up new possibilities for use.

Foot discs are used for installing small machines, systems or devices and, for the type A, are attached with screws. Bear in mind the maximum height of the screw head. Alternatively, after the protective film has been removed, the type B can be adhered to all suitable and clean surfaces by means of the adhesive pad.

see also...

- *Buffers GN 454* → *Page 174*

How to order (Steel)

1 2 3 4 5

GN 438-25-16-4-A-70

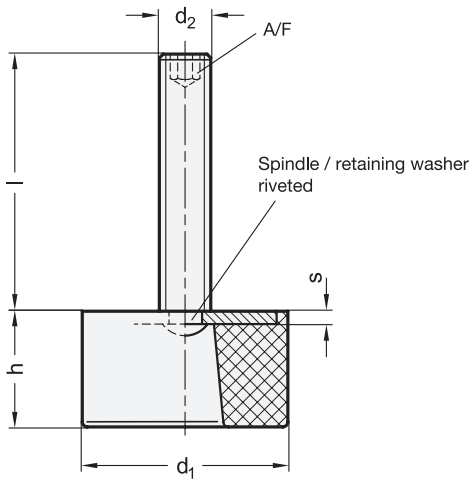
1	d_1
2	h
3	d_2
4	Type
5	Hardness

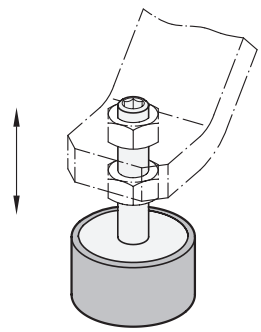
How to order (Stainless Steel)

1 2 3 4 5

GN 438.5-64-26-6-B-70

1	d_1
2	h
3	d_2
4	Type
5	Hardness





Inox Stainless Steel

1 d_1	2 d_2	3 Length l		h	s	A/F	Static load in N
19	M 6	30	45	14	1,5	3	240
25	M 6	30	45	16	1,5	3	540
32	M 8	40	65	18	2	4	840
38	M 8	40	65	20	2	4	920
50	M 10	45	70	22	2,5	5	2500
64	M 10	45	70	26	2,5	5	3700

Specification

4

- **GN 439**
  Steel
  - Tensile strength class 5
  - zinc plated, blue passivated
- **GN 439.5**
  Stainless Steel AISI 304
- Rubber underlay
  Acrylonitrile butadiene rubber (NBR)
  - vulcanized
  - black
  - temperature resistant up to 120 °C
  - Hardness Shore A **70**
- *Strength values of screws*
  → *Main Catalogue Page 1481*
- *Elastomer characteristics*
  → *Main Catalogue Page 1483*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

On request

- other spindle diameters and lengths

Information

GN 439 / GN 439.5 levelling feet are used for installing smaller machines, systems or devices.

Thanks to the rubber underlay, they have a damping, noise-reducing effect and prevent surface damage. They are also designed such that the threaded spindle can absorb compressive forces. This is necessary because the retaining washer is not evenly supported during leveling.

Thanks to the stable rivet connection between the threaded spindle and the retaining washer, the introduced forces can be reliably transmitted to the rubber underlay.

How to order (Steel)

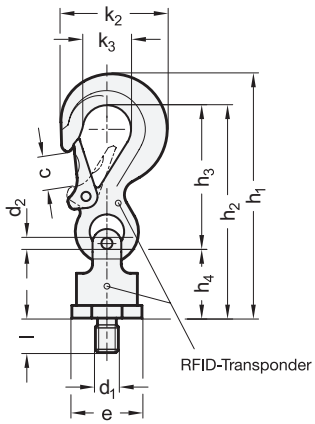
1 2 3 4
GN 439-38-M8-65-70

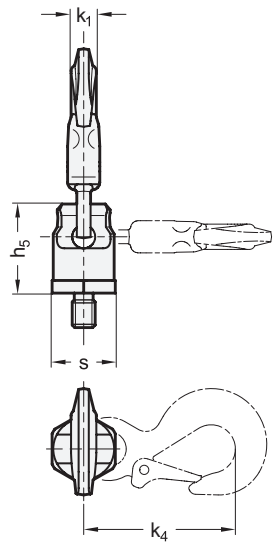
1	d_1
2	d_2
3	Length l
4	Hardness

How to order (Stainless Steel)

1 2 3 4
GN 439.5-64-M10-45-70

1	d_1
2	d_2
3	Length l
4	Hardness





1 d1	d2	2 Length l	e	h1	h2	h3	h4	h5	k1	k2	k3	k4	c	s	Tightening torque in Nm	Nominal load in t
M 12	4,8	18	40	129	116	75	41	49	12	52	25	82	18	36	10	0,63
M 16	7,4	24	46	167	147	97	50	63	16	73	32	105	25	41	30	1,50
M 20	9,6	30	61	215	187	126	61	78	20	95	42	136	30	55	70	2,50
M 24	12,1	36	78	263	227	150	77	96	26	118	52	163	35	70	150	4,00
M 30	15,6	45	95	304	267	174	93	119	30	135	57	189	40	85	225	5,00
M 36	19	54	100	359	310	208	102	137	36	161	68	227	48	90	410	8,00

Specification

- Hook
  Steel, German Material No. 1.6540
  - high-tensile tempered
  - 100% electro magnetic tensile tested to EN 1677
  - plastic coated, pink
- Safety catch
  Steel, German Material No. 1.6541
  - forged, high-tensile tempered
  - 100% electro magnetic tensile tested
- Bearing case
  Steel 1.6541
  - forged, high-tensile tempered
  - 100% electro magnetic tensile tested
  - zinc plated, blue passivated
- Threaded stud
  Steel, high-tensile tempered
  Finish: Delta Tone
- *Strength values of screws*
  → Main Catalogue Page 1481
- RoHS

On request

- other screw lengths l

Information

Load hooks GN 5862 rotate running in ball bearings. The freely rotating hook allows the bolts to hold loads in any allowed tensile direction.

The rated load carrying capacity listed in the table is shown clearly on bearing case. It applies to the most unfavourable load application of the load types listed opposite.

Load hooks GN 5862 comply with Mechanical Engineering Directive 2006 / 42 / EG and are BG tested.

The integrated RFID transponder clearly marks and identifies the sling and lifting gear, e.g. during the prescribed regular inspection.

see also...
- *Load rings GN 5860 → Main Catalogue Page 1068*
- *Shackles GN 584 → Main Catalogue Page 1076*
- *Shackles GN 585 → Main Catalogue Page 1077*

How to order

GN 5862-M12-18 (1 2)

1	d_1
2	Length l

Method of mounting	G_1	G_2	2xG_1	2xG_2	G_2		G_2	G_2		G_2	
Number Angles of inclination Factor	1 0° 1	1 90° 1	2 0° 2	2 90° 2	2 0 to 45° 1,4	2 45 to 60° 1	2 asymm. 1	3 and 4 0 to 45° 2,1	3 and 4 45 to 60° 1,5	3 and 4 asymm. 1
M 12	0,63 t	0,63 t	1,26 t	1,26 t	0,88 t	0,63 t	0,63 t	1,32 t	0,95 t	0,63 t
M 16	1,50 t	1,50 t	3,00 t	3,00 t	2,10 t	1,50 t	1,50 t	3,15 t	2,25 t	1,50 t
M 20	2,50 t	2,50 t	5,00 t	5,00 t	3,50 t	2,50 t	2,50 t	5,25 t	3,75 t	2,50 t
M 24	4,00 t	4,00 t	8,00 t	8,00 t	5,60 t	4,00 t	4,00 t	8,40 t	6,00 t	4,00 t
M 30	6,70 t	5,00 t	13,40 t	10,00 t	7,00 t	5,00 t	5,00 t	10,50 t	7,50 t	5,00 t
M 36	10,00 t	8,00 t	20,00 t	16,00 t	11,20 t	8,00 t	8,00 t	16,80 t	12,00 t	8,00 t

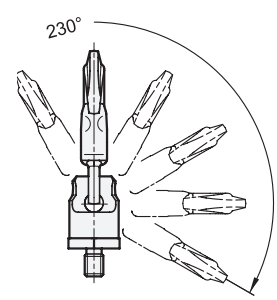
Safety instructions

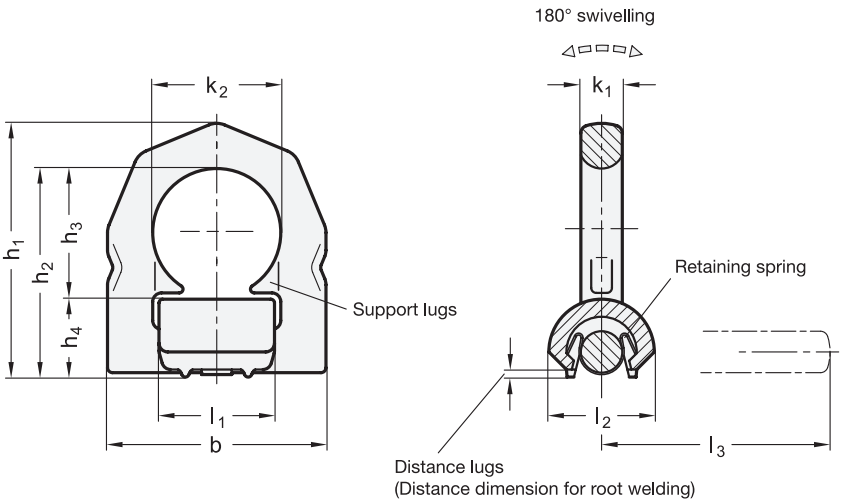
The above load capacity table shows the maximum loads in metric tonnes as factor of the load ring type and at an operating temperature range of –40 °C to +200 °C, with a safety coefficient of 4 taken into account for all values.

The load hooks GN 5862 may be used only if it is bolted with the minimum screw-in depth which depends on the material and if the bolt contact surface is plane and fixed at a right angle to the tap hole.

If permanently mounted in place, the load hooks must rotate freely by 360° and must not rest on edges or other fixture, e.g. crane hooks. The load hooks are not suitable for permanent rotary movement under load exposure.

Operating instructions with more details and specifications are included with every delivery (see also www.ganter-griff.com).





2 Type

A without retaining spring
F with retaining spring

1

b	h_1	h_2	h_3	h_4	k_1	k_2	l_1	l_2	l_3	Nominal load in t (WLL)
66	79	65	40	25	14	38	33	33	71	1,5
77	91	75	47	28	16	45	40	38	80	2,5
87	101	83	52	31	16	51	46	42	91	4
115	141	117	73	44	22	67	60	61	126,5	6,7
129	153	126	71	55	26	67	60	75	135,5	10

Specification

- Ring brackets
  Steel, German Material No. 1.6541
  - forged
  - high-tensile tempered
  - 100 % electro magnetic tensile tested to EN 1677
  - plastic coated, pink
- Weld-on block
  Steel, S355 J2 + N (ST52-3N)
  - forged, blank
  - high-tensile tempered
  - 100 % electro magnetic tensile tested to EN 1677
- Retaining spring
  Spring steel tape
  rustproof
- RoHS

Information

Load rings GN 587.1 for welding are designed for rapid mounting.

They provide high dynamic and static strength and can be load from any direction with approved safety (safety factor 4) for all loading directions.

The spring steel tape (Type F) holds the ring in any position and dampens any noise caused by vibrations. All parts are undetachably connected.

The two support lugs improve the bearing of hooks and enhance the support effect in the event of oblique suspension rings.

Load rings GN 587.1 comply with Mechanical Engineering Directive 2006 / 42 / EG.

This standard replaces the previous load rings GN 587.

see also ...

- *Lifting points GN 589 → Main Catalogue Page 1074*
- *Shackles GN 584 → Main Catalogue Page 1076*
- *Shackles GN 585 → Main Catalogue Page 1077*

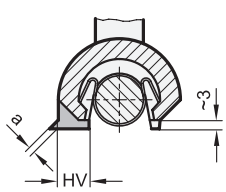
How to order		
GN 587.1-115-F (1 2)	1	b
	2	Type

Method of mounting	G_1	G_2	2xG_1	2xG_2	G_2		G_2	G_2		G_2
Number	1	1	2	2	2	2	2	3 and 4	3 and 4	3 and 4
Angles of inclination	0°	90°	0°	90°	0 to 45°	45 to 60°	asymm.	0 to 45°	45 to 60°	asymm.
Factor	1	1	2	2	1,4	1	1	2,1	1,5	1
b = 66	1,50 t	1,50 t	3,00 t	3,00 t	2,10 t	1,50 t	1,50 t	3,15 t	2,25 t	1,50 t
77	2,50 t	2,50 t	5,00 t	5,00 t	3,50 t	2,50 t	2,50 t	5,25 t	3,75 t	2,50 t
87	4,00 t	4,00 t	8,00 t	8,00 t	5,60 t	4,00 t	4,00 t	8,40 t	6,00 t	4,00 t
115	6,70 t	6,70 t	13,40 t	13,40 t	9,50 t	6,70 t	6,70 t	14,00 t	10,00 t	6,70 t
129	10,00 t	10,00 t	20,00 t	20,00 t	14,00 t	10,00 t	10,00 t	21,00 t	15,00 t	10,00 t

Safety instructions

The above details refer to the maximum load in metric tonnes.

The configuration of the welding seam (HV) complies with the requirements of DIN 18800, i. e., the closed seam means that no corrosive deposits can settle; this also makes the load rings suitable for outside use.



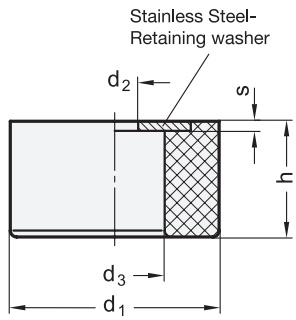
Load ring size **b**	Size welding seam	Length	Volume in cm³
66 (1,5 t)	HV 5 + a 3	2 × 33	1,2
77 (2,5 t)	HV 7 + a 3	2 × 40	2,6
87 (4,0 t)	HV 8 + a 3	2 × 46	3,2
115 (6,7 t)	HV 12 + a 4	2 × 60	8,7
129 (10,0 t)	HV 16 + a 4	2 × 60	15,5

Welding must be made by an approved welder in accordance with EN 287-1.

The specified loading values are valid for an operating temperature of between –20 °C and +100 °C. Load capacities under higher temperatures provided on request.

If the load rings are used for lashing instead of lifting, the nominal load is doubled.

Operating instructions with more details and specifications are included with every delivery (see also www.ganter-griff.com).



Inox
Stainless
Steel

1 d1	2 h	3 d2	d3	s	Spring rate ≈ in N/mm Hardness 55	max. load in N Hardness 55	max. travel ≈ in mm Hardness 55
16	8	4,3	8	1	140	280	2
20	10	5,3	9,5	1,2	148	370	2,5
25	12	6,4	12,2	1,6	210	630	3
35	16	8,4	14	2	345	1380	4
42	20	8,4	17,5	2	360	1800	5
42	20	10,5	17,5	2,5	360	1800	5
56	24	8,4	19,5	2	577	3460	6
56	24	13	19,5	3	577	3460	6

* not available from stock and requires a minimum order quantity

Specification

4

- Rubber
  Perbunan® (NBR)
  - black
  - vulcanized to the retaining washer
  - temperature resistant up to 120 °C
  - Hardness Shore A ±5
    soft* **40**
    medium **55**
    hard* **70**
- Retaining washer
  Stainless Steel AISI 304
- *Elastomer characteristics*
  → Main Catalogue Page 1483
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

Buffers GN 454 are used as end-stop buffers, e.g. for conveyor trolleys. They can be fixed on the damping side with socket head cap screws DIN 912.

They absorb most of the kinetic energy developing on impact. They act as dampers and prevent damaging shock and rebound. They also act as sound dampers.

These buffers are also used as levelling feet.

see also...

- *Buffers GN 353 / GN 453 → Main Catalogue Page 1082 / 1083*
- *Buffers GN 352 / GN 452 → Main Catalogue Page 1081*

How to order

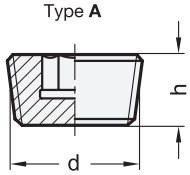
1 2 3 4
GN 454-42-20-10,5-55

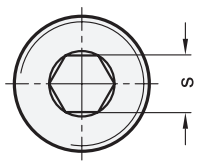
1	d_1
2	h
3	d_2
4	Hardness

DIN 906
Steel / Stainless Steel

Threaded plugs
with conical thread

Type **A**





Type **GPC**

Thread coating
(Precote 5)

Inox
Stainless
Steel

3 Type

A	without micro encapsulation
GPC	with micro encapsulation

2 d		2 d		h	s
Steel ST	Stainless Steel NI	Steel ST	Stainless Steel NI		
M 6 x 1	-	-	-	6	3
M 8 x 1	M 8 x 1	-	-	8	4
M 10 x 1	M 10 x 1	R 1/8	R 1/8	8	5
M 12 x 1,5	M 12 x 1,5	-	-	10	6
M 14 x 1,5	M 14 x 1,5	R 1/4	R 1/4	10	7
M 16 x 1,5	M 16 x 1,5	-	-	10	8
M 18 x 1,5	M 18 x 1,5	R 3/8	R 3/8	10	8
M 20 x 1,5	M 20 x 1,5	R 1/2	R 1/2	10	10
M 22 x 1,5	M 22 x 1,5	-	-	10	10
M 24 x 1,5	M 24 x 1,5	-	-	12	12
M 26 x 1,5	-	R 3/4	R 3/4	12	12
M 30 x 1,5	-	R 1	R 1	12	17
M 36 x 1,5	-	-	-	15	19
M 42 x 1,5	-	R 1 1/4	-	18	22
M 45 x 1,5	-	-	-	18	22
M 48 x 1,5	-	R 1 1/2	-	20	24

Specification

1

- Steel **ST**
  - ultrasonically and tensile tested
  - zinc plated, blue passivated
- Stainless Steel AISI 303 **NI**
- Thread coating **GPC** (Precote 5) → *Page 1497*
- *Stainless Steel characteristics* → *Main Catalogue Page 1489*
- RoHS

Information

Threaded plugs DIN 906 are used to close bore holes with cylindrical internal thread.

The tightness depends on the medium, pressure, temperature and material pairing. The design with GPC thread coating provides a higher degree of safety.

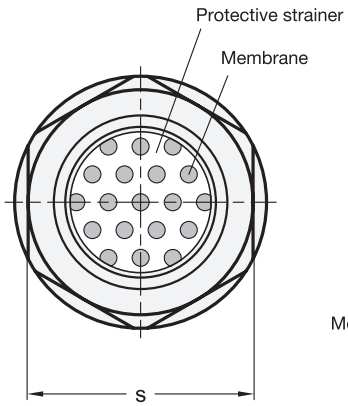
How to order

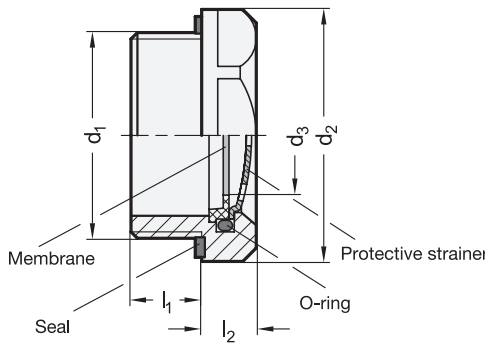
DIN 906-ST-M36x1,5-GPC
(1 = ST, 2 = M36x1,5, 3 = GPC)

1	**Material**
2	**d**
3	**Type**

GN 7404 Two-way breathable membranes

Oil repellent (oleophobic) / Water repellent (hydrophobic)





Inox Stainless Steel

2							3	
d_1		d_2	d_3	l_1	l_2	s	Membrane pore size in µm	Differential pressure Δ 1 bar Air permeability volume in l/min
G ½	M 20 x 1,5	26	10	8,5	7,5	23	1,2	11
G ¾	M 26 x 1,5	32	14	9	8	30	1,2	21
G 1	M 33 x 1,5	40	20	11	8,5	36	1,2	34

Specification

1

- Body
  - Aluminum **AL**
  - Stainless Steel AISI 303 **NI**
- Membrane
  Non-woven nylon material / Acrylic copolymer wetting
- Membrane enclosure
  Plastic (Polyamide PA)
  - glass fiber reinforced
  - temperature resistant up to 100 °C
- Protective strainer
  Stainless Steel AISI 304
- Seal / O-Ring
  Rubber NBR (Perbunan®)
- *Elastomer characteristics*
  → *Main Catalogue Page 1483*
- *Plastic characteristics*
  → *Main Catalogue Page 1483*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Accessory

- Mounting nuts GN 543.1
  → *Main Catalogue Page 1134*

On request

- Body in brass **MS**
- other membrane pore size

Information

GN 7404 two-way breathable membranes are used when constructing housings and equipment. When installed in the wall of a housing, they can be used to equalize the pressure between the interior of the housing and the surrounding area.

Any dirt, dust, oil, or water in the gaseous medium is kept out. This prevents dirt and moisture from entering the interior of the housing and prevents oil from dripping into the surrounding area.

In order to protect the membranes, they should not be completely covered with oil or water, and the differential pressure/air permeability volume should not be exceeded. They should be installed on the side/ vertically in a protected position.

The external Ø of the housing with the recessed hexagon is designed for tapped plates for DIN 3852 tube fittings.

The seal is embedded in a recess on the planar side. This prevents it from being lost and squeezed outwards during the tightening process.

see also...

- *Breather strainers GN 7403* → *Main Catalogue Page 1131*

How to order

GN 7404-AL-G1/2- 1,2

(1 = AL, 2 = G1/2, 3 = 1,2)

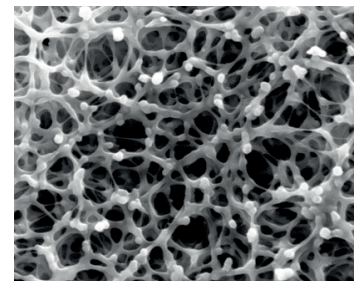
1	**Material**
2	**d_1**
3	**Membrane pore size**

Membrane structure – Materials

The membranes use a non-woven nylon material as a substrate with a completely unordered structure. The minuscule pores of the membrane are created by fully saturating the fibers with an acrylic copolymer, which does not fill the gaps in the material.

The material and process parameters affect the size of the pores during manufacturing, which can be between 0.2 and 10 µm. Porometry can be used to determine the quality of the membrane. This is a rating procedure which assesses, among other things, the distribution of the sizes of the membrane pores and air permeability. A microscopic image of the cross-section of a membrane is shown here.

For comparison: The minimum mesh width of a filter manufactured using economically viable methods is 50 µm.



Membrane, microscopic images, 2000x magnification

Functionality – Service conditions – Installation position

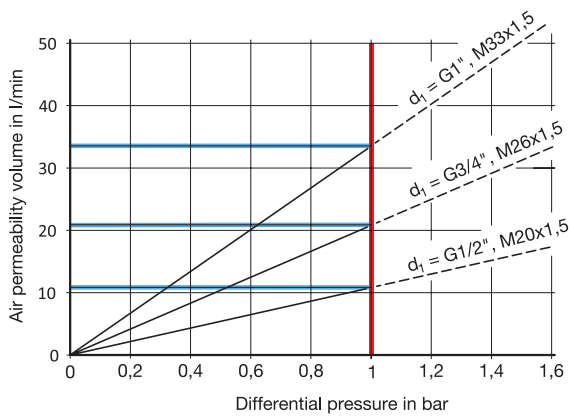
The membranes repel oil and water because of their materials and surface structure. This prevents water and oil droplets from completely suffusing the membrane surface. These properties are supported by installing the membrane on the side in a vertical position.

If the membrane is covered in exceptional circumstances, small quantities of oil or water can be pushed through the membrane due to the pressure differential. Once the situation has been rectified, the oil and water will drip off and the membrane will be fully functional.

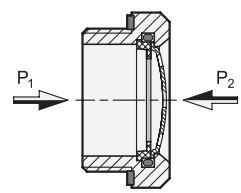
Technical parameters

The maximum air permeability volume, the maximum pressure differential, and the maximum rated/burst pressure are all important when using membranes. There is a linear correlation between the air permeability volume which can be achieved and the differential pressure, which should not exceed 1 bar.

Air permeability volume dependent on differential pressure



Differential pressure, burst pressure



Rated pressure / Differential pressure:

$P_1 / P_2 = 1$ bar

Burst pressure, (Membrane tears):

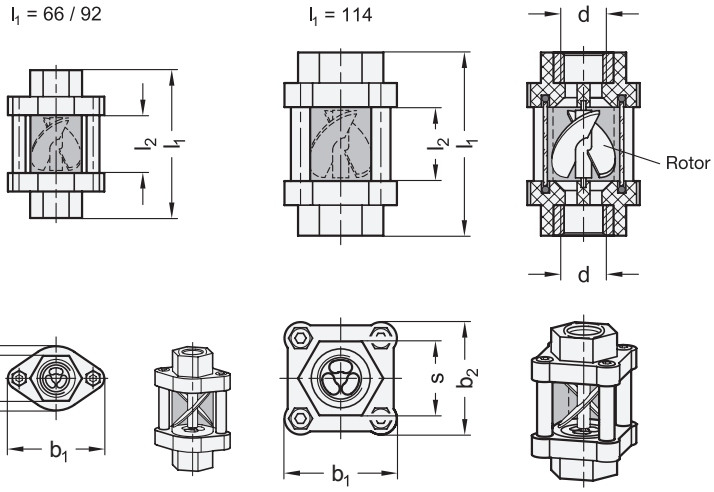
$P_1 > 10$ bar

$P_2 > 2$ bar

Resistances

Thermal - The membrane enclosure may not be used in temperatures exceeding 100 °C. The membrane itself can resist temperatures of up to 150 °C.

Chemical - The membranes are resistant to a wide range of chemical substances frequently used in mechanical and automotive engineering, e.g., oils, fuels, organic solvents, and alcohols. A tolerability test should be performed if you have any doubts.



ELESA Original design HVF

1 d	2 l_1	b_1	b_2	l_2	s	max. flow in l/min	max. permissible operating pressure in bar	≈ necessary minimum flow volume Q in l/min Water	Hydraulic oil (HPL 22)	Hydraulic oil (HPL 64)	max. pressure drop due to the flow indicator in bar
G ¼	66	44	27	22	20	10	25	0,6	2,5	3,5	0,15
G ⅜	92	60	40	36	28	20	15	1,2	3	4	0,25
G ½	92	60	40	36	28	40	15	1,2	3	4	0,3
G ¾	114	70	70	46	46	60	15	2,1	3,7	5	0,17
G 1	114	70	70	46	46	80	12	2,1	3,7	5	0,15

Specification

3

- Sight glass
  Borosilicate glass (Pyrex®)
  - temperature resistant up to 100 °C
  - highest chemical resistance
- Rotor
  - Technopolymer Polypropylene (PP)
  - red **RT**
- End pieces
  - Technopolymer Polypropylene (PP)
  - black, matte
  - Threaded bushings brass
- Connecting elements
  Brass nickel-plated / Steel zinc-plated
- Sealing ring
  Rubber NBR (Perbunan)
- *Plastic characteristics*
  → *Main Catalogue Page 1483*
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

On request

- Rotor in blue color **BL**
- Threaded bushings with NPT-Thread
- Threaded bushings in St. Steel AISI 316

Information

When GN 655 flow indicators are used, a rotor rotates above a minimum flow volume Q, depending on the medium and its viscosity. The flow rate is visible from all sides.

GN 655 flow indicators have a high chemical resistance and are also suitable for liquids containing glycol. Please contact us if you need any additional information about media and pressure resistance. The flow indicators can be used in temperatures of up to 100 °C.

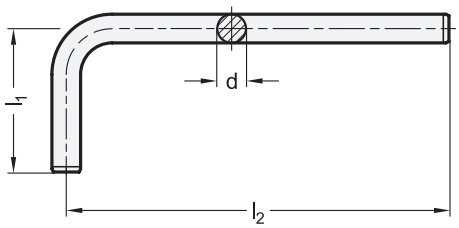
The flow indicator can be mounted in any position. The direction of flow and the installation position are irrelevant.

see also...
- *Stainless Steel-Strainer fittings GN 7405 → Main Catalogue Page 1133*
- *Oil level indicators GN 650 → Main Catalogue Page 1106*
- *Oil level indicators GN 650.2 → Main Catalogue Page 1110*

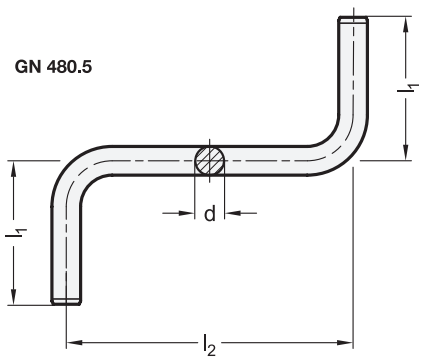
How to order
1 2 3
GN 655-G3/8-92-RT

1	**d**
2	**l_1**
3	**Color**

GN 480.3

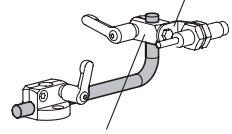


GN 480.5



Examples of application

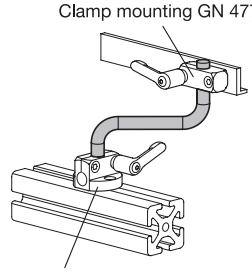
Sensor holder GN 479



Attachment clamp mounting GN 478

Inox Stainless Steel

Clamp mounting GN 477



Foot clamp mounting GN 473

1	2	3
GN 480.3		
d Diameter D	**l_1**	**l_2**
D 8	30	90
D 8	50	150
D 8	80	240
D 10	50	150
D 10	70	210
D 10	100	300

1	2	3
GN 480.5		
d Diameter D	**l_1**	**l_2**
D 8	30	60
D 8	50	100
D 8	80	160
D 10	50	100
D 10	70	140
D 10	100	200

Specification

4

- Stainless Steel **NI**
  - AISI 304
  - blank
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

On request

- other dimensions for l_1 and l_2

Information

The dimensions of GN 480.3 and GN 480.5 Stainless Steel-Retaining rods are tailored for use with clamp mountings.

The cranked/angled Stainless Steel-Retaining rods make it possible to create compact and space-saving clamp mounting structures efficiently and cost-effectively with few components.

see also...

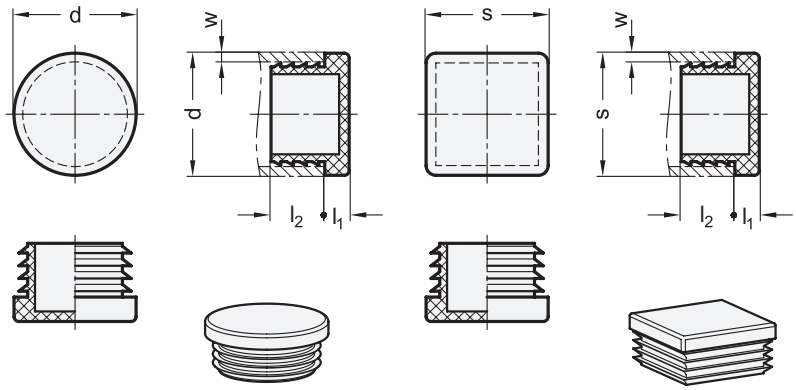
- *Retaining tubes / Retaining rods GN 480.1 → Main Catalogue Page 1256*

How to order (angled)		
1 2 3 4 GN 480.3-D10-50-150-NI	1	**d**
	2	**l_1**
	3	**l_2**
	4	**Material**

How to order (cranked)		
1 2 3 4 GN 480.5-D8-80-160-NI	1	**d**
	2	**l_1**
	3	**l_2**
	4	**Material**

GN 991 Tube end plugs

Plastic, round or square



ELESA Original design NIL.T / NIL.Q

[1]

d Ø	w	l_1	l_2	for tube
D 10	1 ... 2	3,5	11	GN 990
D 12	1 ... 2	3,5	11	GN 990
D 13	1 ... 2	4	11	¼“
D 14	1 ... 2	5	11,5	GN 990
D 15	1 ... 2	3	11,5	GN 990
D 16	1 ... 2	5	11	GN 990
D 18	1 ... 2	5	11,5	GN 990
D 20	1 ... 2,5	5	11,5	GN 990
D 22	1 ... 2	5	11,5	-
D 25	1 ... 3	5	11,5	GN 990
D 26	1 ... 3	5	11,5	-
D 27	1 ... 3	5	11,5	¾“
D 28	1 ... 3	5	11,5	-
D 30	1 ... 2,5	5	11,5	GN 990
D 32	1 ... 3	5	12	GN 990
D 34	1 ... 3	5	11,5	1“

[1]

d Ø	w	l_1	l_2	for tube
D 35	1 ... 3	5	11,5	GN 990
D 36	1 ... 3	5	11,5	-
D 38	1 ... 3,5	5	11,5	-
D 40	1 ... 3	5	11,5	GN 990
D 42	1 ... 3	5	11,5	GN 990
D 45	1 ... 3	5	11	GN 990
D 48	1,2 ... 3,6	5	11,5	GN 990
D 50	2,5 ... 4,5	5	11,5	GN 990
D 55	3 ... 5	5	14,5	GN 990
D 60	3 ... 5	5	17,5	GN 990
D 70	1,5 ... 3,5	5	21	-
D 76	1,6 ... 4	6	21,5	2 ½“
D 80	1,5 ... 3	5	22	-
D 88	1,5 ... 4	6	21,5	3“
D 90	1,5 ... 5	6	21	-
D 100	2 ... 4,5	6	28,5	-

[1]

s ⍁	w	l_1	l_2	for tube
V 10	0,8 ... 2,5	4	12	GN 990
V 12	1 ... 2	4	12	GN 990
V 15	1 ... 2	3	11,5	-
V 16	1 ... 2,5	5	11,5	GN 990
V 18	1,5 ... 3	5	11,5	-
V 20	1 ... 3	5	11,5	GN 990
V 22	1 ... 3,5	5	12	-
V 25	1 ... 3	5	11,5	GN 990
V 30	1 ... 3	5	11,5	GN 990
V 34	1 ... 3	5	14,5	-
V 35	1 ... 3	5	11,5	GN 990
V 40	1 ... 3	5	14,5	GN 990
V 45	1 ... 3	5	14,5	GN 990
V 50	2,6 ... 4	5,5	24	GN 990
V 55	2 ... 4,5	5	14,5	-
V 60	1,5 ... 3,5	5	15	-
V 70	2 ... 5	5	22	-
V 80	1,5 ... 4	6	21	-
V 90	3 ... 5	6	21	-
V 100	1 ... 4	7	21	-

Specification

- Plastic
  Technopolymer (Polyethylen PE)
  - black, RAL 9005, matte ● **SW**
  - gray, RAL 7042, matte ○ **GR**
- *Plastic characteristics*
  → Main Catalogue Page 1489
- RoHS

On request

- other sizes
- white (**WS**)

Information

Tube end plugs GN 991 have been designed for sealing tube ends for safety or optical reasons.

They are pressed into the tube end either by hand or with a mallet.

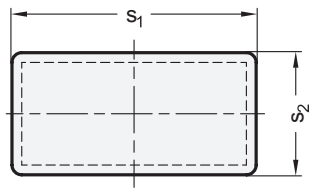
see also...

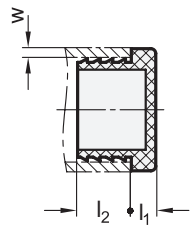
- *Construction tubes GN 990 → Main Catalogue Page 1277*
- *Retaining rods / Retaining tubes GN 480.1 → Main Catalogue Page 1276*
- *Insert bushings GN 992 (Aluminum, with female thread)*
  → Main Catalogue Page 1059

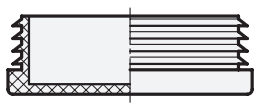
How to order		
GN 991-V25-GR (1 2)	1	s (d)
	2	Color

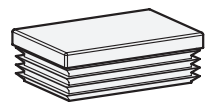
GN 991 Tube end plugs

Plastic, rectangular









ELESA Original design NIL.R

1 s_1	2 s_2	w	l_1	l_2
R 20	10	0,8 ... 2	3	12
R 20	15	1 ... 2	5	11,5
R 25	10	0,8 ... 2	3	11,5
R 25	15	1 ... 2,5	5	11,5
R 25	20	1 ... 3	5	11,5
R 30	10	1 ... 2	5	11,5
R 30	15	1 ... 2,5	5	11,5
R 30	20	1 ... 3	5	11,5
R 35	20	1 ... 2,5	5	11,5
R 35	25	1 ... 3	5	11,5
R 40	15	1 ... 2	5	12
R 40	20	1 ... 3	5	12
R 40	25	1 ... 3	5	11,5
R 40	30	1 ... 3	5	11
R 45	15	1,5 ... 2	5	11
R 45	20	1 ... 3	5	11,5
R 45	25	1 ... 3	5	12
R 50	20	1 ... 3	5	15

1 s_1	2 s_2	w	l_1	l_2
R 50	25	1 ... 3	5	11,5
R 50	30	1 ... 3	5	12
R 50	35	1 ... 3,5	5	14,5
R 50	40	1,5 ... 3	5	15
R 60	20	1 ... 3	5	14,5
R 60	30	1 ... 2,5	5	15
R 60	40	1 ... 3	5	14
R 60	50	1,5 ... 3,5	5	14,5
R 70	30	1 ... 3	5	15
R 70	40	1,5 ... 3	5	20
R 80	20	1 ... 3	5	18
R 80	30	1 ... 2,5	5	14,5
R 80	40	1 ... 3	5	14,5
R 80	50	1,5 ... 4	5	22
R 80	60	1,5 ... 3,5	5	25
R 100	40	1,5 ... 4	5	14,5
R 100	50	1,5 ... 4,5	5	24

Specification

- Plastic
  Technopolymer (Polyethylen PE)
  - black, RAL 9005, matte ● **SW**
  - gray, RAL 7042, matte ○ **GR**
- *Plastic characteristics*
  → *Main Catalogue Page 1489*
- RoHS

On request

- other sizes
- white (**WS**)

Information

Tube end plugs GN 991 have been designed for sealing tube ends for safety or optical reasons.

They are pressed into the tube end either by hand or with a mallet.

see also...

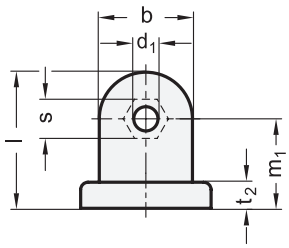
- *Insert bushings GN 992 (Aluminum, with female thread)*
  → *Main Catalogue Page 1059*

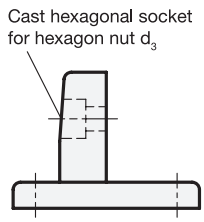
How to order

GN 991-R25-20-SW (1 2 3)

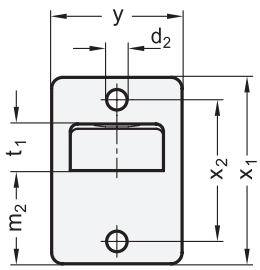
1	s_1
2	s_2
3	Color

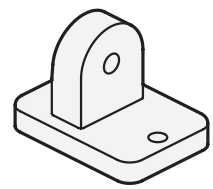
Swivel clamp connector bases





Rost frei Inox Stainless Steel





b Swivel width	d_1	d_2	d_3	Length l	m_1	m_2	t_1	t_2	s	x_1	x_2	y
25	6,5	5,5	M 6	36,5	24	25	12,5	7	10	50	38	35

Specification

- Aluminum
  - plastic coated
    black, RAL 9005, textured finish ● **SW**
  - blank
    matte shot-blasted ○ **BL**
- Stainless Steel **NI**
  - AISI CF-8
  - matte shot-blasted
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Information

GN 271 swivel clamp connector bases can be assembled with the swivel clamp connectors GN 273, GN 275 or GN 277 to create swivel clamp connector joints.

GN 271 swivel clamp connector bases are also suitable for mounting on **profile systems**.

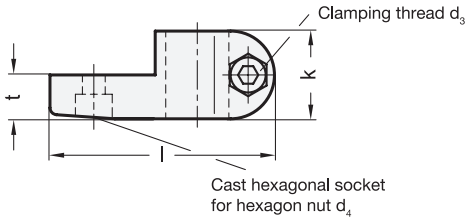
see also...

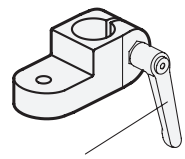
- *Swivel clamp connector joints GN 281 (Connection of GN 271 with GN 275) → Main Catalogue Page 1230*
- *Sensor holders GN 271.4 → Main Catalogue Page 1239*
- *Assembly sets for profile systems 30 / 40 GN 965 → Main Catalogue Page 1428*
- *Assembly sets for profile systems 30 / 40 / 45 GN 968 → Main Catalogue Page 1438*

How to order (Aluminum)		
GN 271-25-SW	1	b
	2	Finish

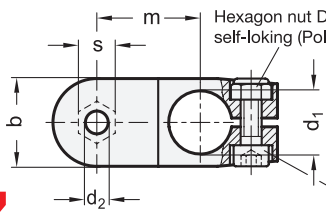
How to order (Stainless Steel)		
GN 271-25-NI	1	b
	2	Material

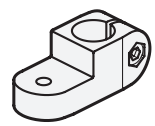
Swivel clamp connectors





Inox
Stainless
Steel





2 Identification no.

2 with Stainless Steel-
Clamping screw DIN 912

d_1 Bore B	b Swivel width	d_2	d_3 Clamping thread	d_4	k	Length l	m	s	t	Clamping kit for d_3 Lever zinc die casting	Lever Stainless Steel
B 12	25	6,5	M 6	M 6	25	64	29,5	10	12,5	GN 911-M6-22	GN 911.3-M6-22
B 14	25	6,5	M 6	M 6	25	64	29,5	10	12,5	GN 911-M6-22	GN 911.3-M6-22
B 15*	25	6,5	M 6	M 6	25	64	29,5	10	12,5	GN 911-M6-22	GN 911.3-M6-22
B 16	25	6,5	M 6	M 6	25	64	29,5	10	12,5	GN 911-M6-22	GN 911.3-M6-22
B 18	25	6,5	M 6	M 6	25	64	29,5	10	12,5	GN 911-M6-22	GN 911.3-M6-22
B 20*	25	6,5	M 6	M 6	25	64	29,5	10	12,5	GN 911-M6-22	GN 911.3-M6-22

* only available in Stainless Steel

Specification

- Aluminum
  - plastic coated
    black, RAL 9005, textured finish — SW
  - blank
    matte shot-blasted — BL
- Stainless Steel — NI
  - AISI CF-8
  - matte shot-blasted
- Clamping bore mechanically machined
- Socket cap screws DIN 912
  Stainless Steel AISI 304
- Hexagon nuts DIN 985
  Stainless Steel AISI 304
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Accessory

- Clamping kits GN 911 / GN 911.3
  → *Main Catalogue Page 1242*

Information

The clamping bore of GN 273 swivel clamp connectors is mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard version of the clamping screw is a socket cap screw with hexagonal socket DIN 912. It can be replaced by a clamping kit GN 911 (article code see table of dimensions).

GN 273 swivel clamp connectors can be assembled with swivel clamp connectors GN 271, GN 275 or GN 277 to create swivel clamp connector joints.

see also...

- *Construction tubes GN 990 → Main Catalogue Page 1277*
- *Retaining rods / Retaining tubes GN 480.1 → Main Catalogue Page 1276*
- *Swivel clamp connector joints GN 283*
  (Connection of GN 273 with GN 275) → Main Catalogue Page 1232
- *Swivel clamp linear actuator connectors GN 273.1*
  → Main Catalogue Page 1338
- *Sensor holders GN 273.4 → Main Catalogue Page 1241*
- *Swivel clamp mountings GN 482 → Main Catalogue Page 1257*

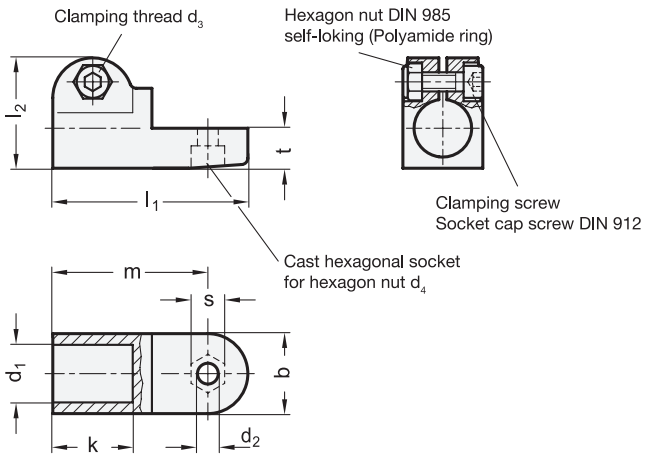
How to order (Aluminum)
1 2 3
GN 273-B16-2-SW

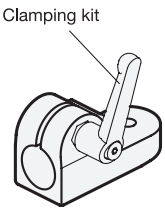
1	d_1
2	Identification no.
3	Finish

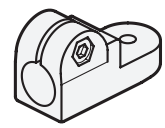
How to order (Stainless Steel)
1 2 3
GN 273-B20-2-NI

1	d_1
2	Identification no.
3	Material

Swivel clamp connectors







Inox
Stainless
Steel

2 Identification no.

2 with Stainless Steel-
Clamping screw DIN 912

1

d_1 Bore B	b Swivel width	d_2	d_3 Clamping thread	d_4	k Aluminum	k St. Steel	Length l	m	s	t	Clamping kit for d_3 Lever zinc die casting	Clamping kit for d_3 Lever Stainless Steel
B 12	25	6,5	M 6	M 6	25	31,5	64	29,5	10	12,5	GN 911-M6-22	GN 911.3-M6-22
B 14	25	6,5	M 6	M 6	25	31,5	64	29,5	10	12,5	GN 911-M6-22	GN 911.3-M6-22
B 15*	25	6,5	M 6	M 6	25	31,5	64	29,5	10	12,5	GN 911-M6-22	GN 911.3-M6-22
B 16	25	6,5	M 6	M 6	25	31,5	64	29,5	10	12,5	GN 911-M6-22	GN 911.3-M6-22
B 18	25	6,5	M 6	M 6	25	31,5	64	29,5	10	12,5	GN 911-M6-22	GN 911.3-M6-22
B 20*	25	6,5	M 6	M 6	25	31,5	64	29,5	10	12,5	GN 911-M6-22	GN 911.3-M6-22

* only available in Stainless Steel

Specification

3

- Aluminum
  - plastic coated
    black, RAL 9005, textured finish — **SW**
  - blank
    matte shot-blasted — **BL**
- Stainless Steel — **NI**
  - AISI CF-8
  - matte shot-blasted
- Clamping bore mechanically machined
- Socket cap screws DIN 912
  Stainless Steel AISI 304
- Hexagon nuts DIN 985
  Stainless Steel AISI 304
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

Accessory

- Clamping kits GN 911 / GN 911.3
  → *Main Catalogue Page 1242*

Information

The clamping bore of GN 275 swivel clamp connectors is mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard version of the clamping screw is a socket cap screw with hexagonal socket DIN 912. It can be replaced by a clamping kit GN 911 (article code see table of dimensions).

GN 275 swivel clamp connectors can be assembled with swivel clamp connectors GN 271, GN 273 or GN 277 to create swivel clamp connector joints.

see also...

- *Construction tubes GN 990* → *Main Catalogue Page 1277*
- *Retaining rods / Retaining tubes GN 480.1* → *Main Catalogue Page 1276*
- *Swivel clamp connector joints GN 281*
  (Connection of GN 275 with GN 271) → *Main Catalogue Page 1230*
- *Swivel clamp mountings GN 482* → *Main Catalogue Page 1257*

How to order (Aluminum)

1 2 3

GN 275-B18-2-SW

1	d_1
2	Identification no.
3	Finish

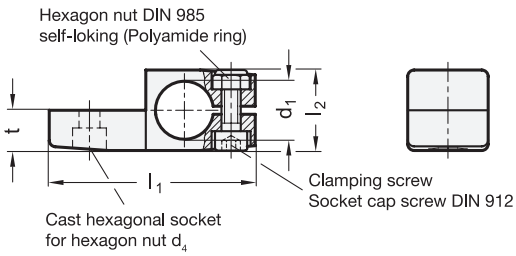
How to order (Stainless Steel)

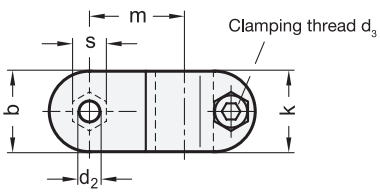
1 2 3

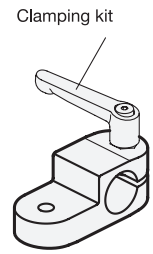
GN 275-B15-2-NI

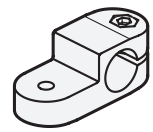
1	d_1
2	Identification no.
3	Material

Swivel clamp connectors









Rost frei Inox Stainless Steel

2 Identification no.

2 with Stainless Steel-Clamping screw DIN 912

1

d_1 Bore B	b Swivel width	d_2	d_3 Clamping thread	d_4	k	l_1	l_2	m	s	t	Clamping kit for d_3
B 12	25	6,5	M 6	M 6	25	64	25	29,5	10	12,5	GN 911-M6-22
B 14	25	6,5	M 6	M 6	25	64	25	29,5	10	12,5	GN 911-M6-22
B 16	25	6,5	M 6	M 6	25	64	25	29,5	10	12,5	GN 911-M6-22
B 18	25	6,5	M 6	M 6	25	64	25	29,5	10	12,5	GN 911-M6-22

Specification

3

- Aluminum
  - plastic coated
    black, RAL 9005, textured finish ● **SW**
  - blank
    matte shot-blasted ○ **BL**
- Stainless Steel **NI**
  - AISI CF-8
  - matte shot-blasted
- Clamping bore mechanically machined
- Socket cap screws DIN 912
  Stainless Steel AISI 304
- Hexagon nuts DIN 985
  Stainless Steel AISI 304
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

Accessory

- Clamping kits GN 911 / GN 911.3
  → Main Catalogue Page 1242

Information

The clamping bore of GN 277 swivel clamp connectors is mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard version of the clamping screw is a socket cap screw with hexagonal socket DIN 912. It can be replaced by a clamping kit GN 911 (article code see table of dimensions).

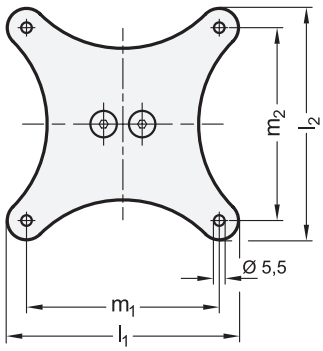
GN 277 swivel clamp connectors can be assembled with swivel clamp connectors GN 271, GN 273 or GN 275 to create swivel clamp connector joints.

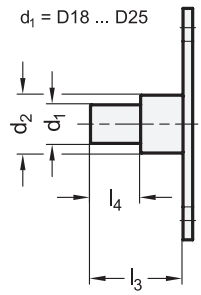
see also...

- *Construction tubes GN 990 → Main Catalogue Page 1277*
- *Retaining rods / Retaining tubes GN 480.1 → Main Catalogue Page 1276*
- *Swivel clamp connector joints GN 287*
  (Connection of GN 277 with GN 275) → Main Catalogue Page 1236
- *Swivel clamp mountings GN 482 → Main Catalogue Page 1257*

How to order (Aluminum)		
1 2 3 **GN 277-B16-2-SW**	1	d_1
	2	**Identification no.**
	3	**Finish**

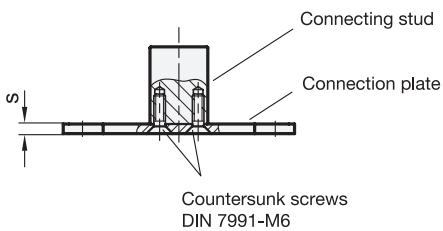
How to order (Stainless Steel)		
1 2 3 **GN 277-B20-2-NI**	1	d_1
	2	**Identification no.**
	3	**Material**

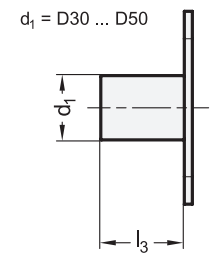




4 **Type**

A with connecting stud





1 **2** **3**

d_1	m_1	m_2	d_2	l_1	l_2	l_3	l_4	s
D 18	75	75	30	95	95	46	24	5
D 20	75	75	30	95	95	48	26	5
D 25	75	75	30	95	95	54	32	5
D 30	75	75	-	95	95	40	-	5
D 40	75	75	-	95	95	52	-	5
D 50	75	75	-	95	95	65	-	5

1 **2** **3**

d_1	m_1	m_2	d_2	l_1	l_2	l_3	l_4	s
D 18	100	100	30	120	120	46	24	5
D 20	100	100	30	120	120	48	26	5
D 25	100	100	30	120	120	54	32	5
D 30	100	100	-	120	120	40	-	5
D 40	100	100	-	120	120	52	-	5
D 50	100	100	-	120	120	65	-	5

Specification

5

- Aluminum
  - Connection plate blank, ground **BL**
  - Connection stud blank, turned
- Countersunk screws DIN 7991 Stainless Steel AISI 304
- *Stainless Steel characteristics* → *Main Catalogue Page 1489*
- RoHS

On request

- with additional VESA hole patterns

Information

Monitor mounts GN 197 have a hole pattern according to the VESA standard.

The connecting studs can be combined with diverse components within the tube clamp connector program in order to realize a wide range of fastening variants, degrees of freedom and adjusting options.

see also...

- *Construction tubes GN 990* → *Main Catalogue Page 1603*
- *Swivel clamp connector joints GN 288* → *Main Catalogue Page 1547*
- *Base plate connector clamps GN 163* → *Main Catalogue Page 1512*
- *T-Angle connector clamps GN 192* → *Main Catalogue Page 1520*

How to order

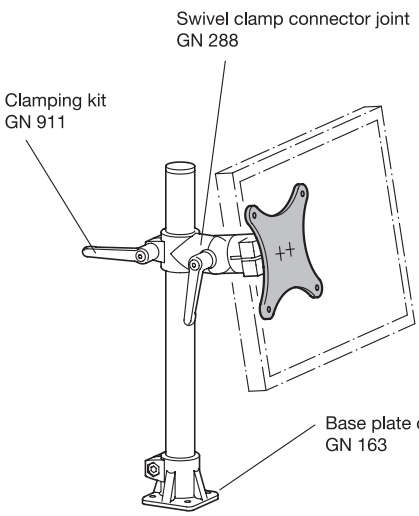
1 **2** **3** **4** **5**

GN 197-D30-100-100-A-BL

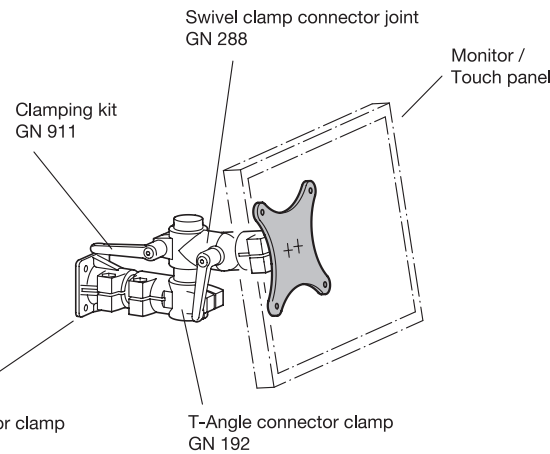
1	d_1
2	m_1
3	m_2
4	Type
5	Finish

Application examples

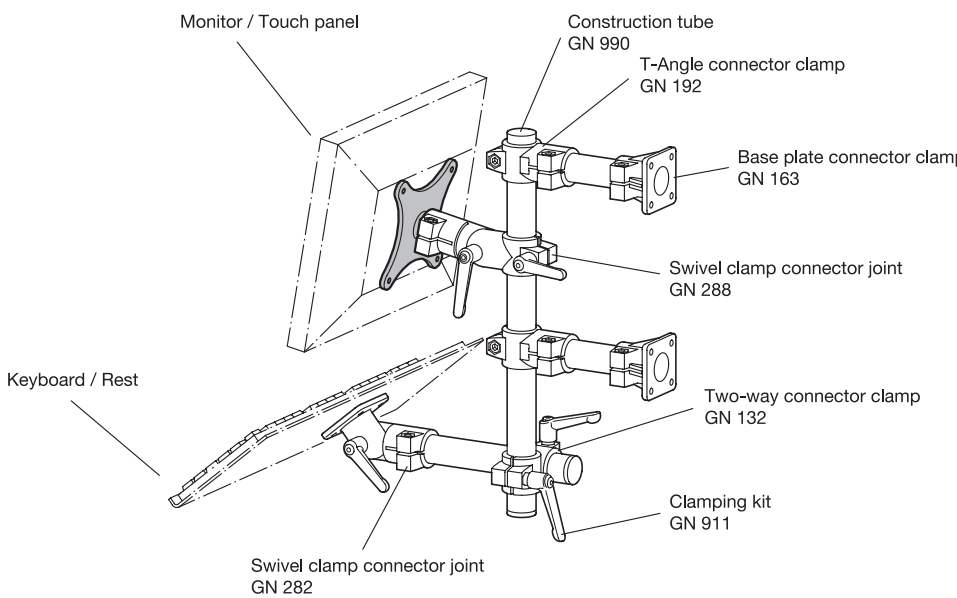
Depending on the requirements, monitor mounts GN 197 can be expanded with tube clamp connectors and construction tubes GN 990 to create complete solutions for wall or floor mounting. It is also easy to affix other accessories nearby, such as keyboards or hand scanners.



Floor mounting

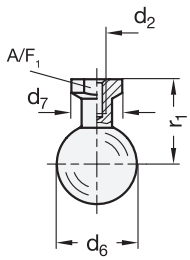


Wall mounting

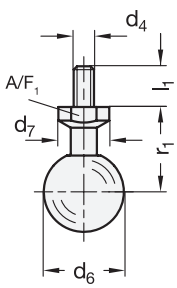


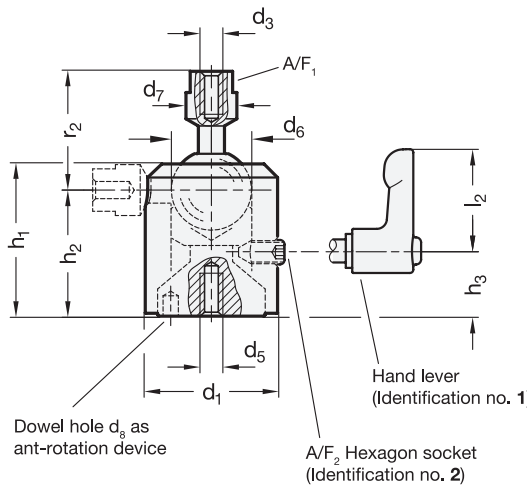
Wall mounting, support arm double

Type **A**



Type **B**





3 Type

A Ball with female thread
B Ball with male thread

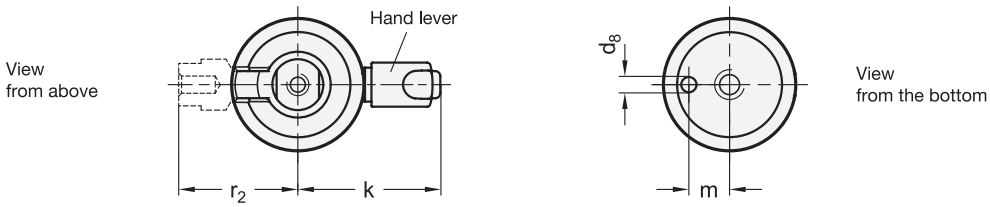
4 Identification no.

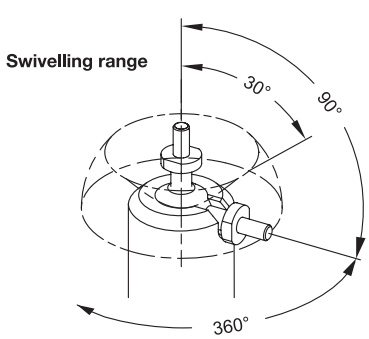
1 Clamping with adjustable hand lever
2 Clamping with set screw

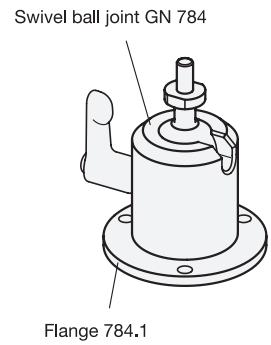
1	2		2			2			
d_1	**d_2*** Type A	**r_1**	**d_3**** Type A		**r_2**	**d_4** Type B		**r_1**	**l_1**
				Inch thread			Inch thread		
23	M 4	17,3	M 5	-	24,8	M 5	-	17,3	8
23	-	-	-	1/4 (≙ 1/4-20)	24,8	M 6	1/4 (≙ 1/4-20)	17,3	10
31	M 5	21,5	M 6	1/4 (≙ 1/4-20)	32,5	M 6	1/4 (≙ 1/4-20)	21,5	10
31	-	-	-	-	32,5	M 8	-	21,5	12
39	M 5	25,5	M 6	-	36,2	M 6	-	25,5	10
39	-	-	M 8	3/8 (≙ 3/8-16)	40,5	M 8	3/8 (≙ 3/8-16)	25,5	12
49	M 8	30,8	-	3/8 (≙ 3/8-16)	44,8	M 8	3/8 (≙ 3/8-16)	30,8	12
49	-	-	M 10	-	51,8	M 10	-	30,8	15

1														
d_1	**d_5*****	**d_6**	**d_7**	**d_8**	**h_1**	**h_2**	**h_3**	**k**	**l_2**	**m**	**A/F_1**	**A/F_2**	recommended tightening torque of the clamping (Identification no.) in Nm ≈	resulting stop torque on the ball in Nm ≈
23	M 5	14	11	2,5	26,6	21,7	10,6	32	22	7	9	2,5	1,5	4,5
31	M 6	18	14	3,5	35,5	29,6	14,9	36	22	9	12	3	2,5	6,5
39	M 8	24	15	4,5	45	37,2	18,9	44	30	12	13	4	4	16
49	M 8	28	19,5	4,5	56	46,1	24	49	30	16	17	4	4	20

* usable depth of thread min. 1,5 x d_2 ** usable depth of thread min. 1,5 x d_3 *** usable depth of thread min. 1,5 x d_5







Specification

5

- Housing
  Aluminum
  anodized black **ELS**
- Base plate, ball
  Aluminum, blank
- Adjustable hand lever (Identification no. 1)
  - Zinc die casting
    plastic coated
    silver, RAL 9006, textured finish
  - Threaded stud and retaining screw
    Stainless Steel AISI 303
- Set screw (Identification no. 2)
  Stainless Steel AISI 304
- *Stainless Steel characteristics*
  → Main Catalogue Page 1489
- RoHS

On request

- Clamping with star knob DIN 6335

Information

GN 784 Swivel ball joints allow precise and variable adjustment of the ball pivot within the rotation range. This is a particular advantage when adjusting scanners, cameras, lighting, monitors, etc.

Thanks to the efficient clamping mechanism, only small amounts of torque on the clamping screw result in comparatively strong clamping pressure on the ball. This force is easily applied by the clamping lever (Identification no. 1).

The ball joint can be mounted from below with the d_5 internal thread or together with the GN 784.1 flange, available as an accessory, using three through-holes from above.

For a permanent high stop torque, the contact surfaces of the balls must be kept free of grease. Exceeding the recommended tightening torque increases the securing of the ball joint in its end position, but may result in increased wear and potential failure of the clamping mechanism.

see also...

- *Flanges GN 784.1 → Main Catalogue Page 1266*

How to order (with female thread)		
GN 784-39-3/8-A-1-ELS	1	d_1
	2	d_3 (d_2)
	3	Type
	4	Identification no.
	5	Finish

How to order (with male thread)		
GN 784-49-M8-B-2-ELS	1	d_1
	2	d_4
	3	Type
	4	Identification no.
	5	Finish

General information

Telescopic slides offer smooth running, wear-free, and quiet linear motion. They are used in a very wide range of applications. The spectrum ranges from the most simple extensions and drawers to high-quality variants that are used in the industrial environment on machines, production systems, and equipment. The telescopic slides have a multitude of positive features and are still very interesting from an economic standpoint.
Here are a few examples of use: sliding doors, protective hoods, keyboards and PC pullouts, vehicle equipment, storage shelves, battery boxes etc.

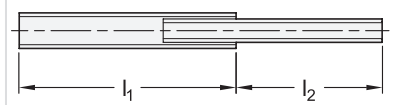
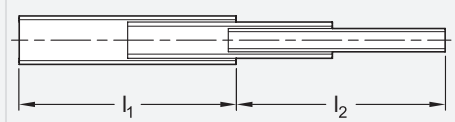
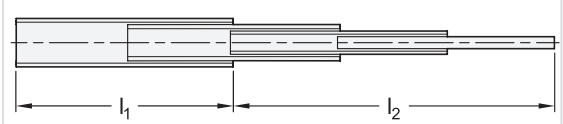
Telescopic slides can come with a number of component options. Some are available for one of the two stop positions and in combination, and they are defined by the type in the article number.

Structure

Telescopic slides consist of an outer and inner slide as well as additionally of one or two middle slides depending on design and/or required extension lengths. The slides are interconnected through appropriately shaped geometry and move by means of ball bearings. A ball cage keeps the bearings spaced and in position.

The slides are usually mounted through countersunk holes or through-holes. Other options, such as threaded bolts or support brackets, are available as an alternative.

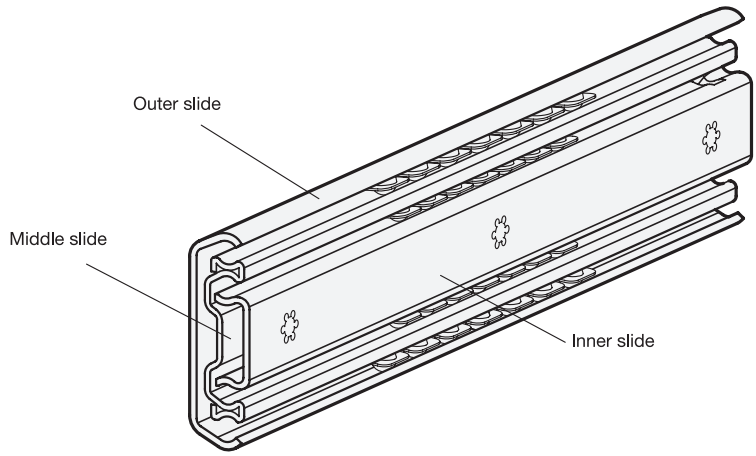
In regard to the length of the extension, telescopic slides can be divided into three categories: partial extension, full extension, and over extension. The categories are defined by the achievable stroke l_2, which is listed in relation to the nominal length l_1.

Type of extension	Extension diagram
Partial extension: l_1 = 100 % → l_2 = min. 75 %	
Full extension: l_1 = 100 % → l_2 = min. 100 %	
Over extension: l_1 = 100 % → l_2 = min. 150 %	

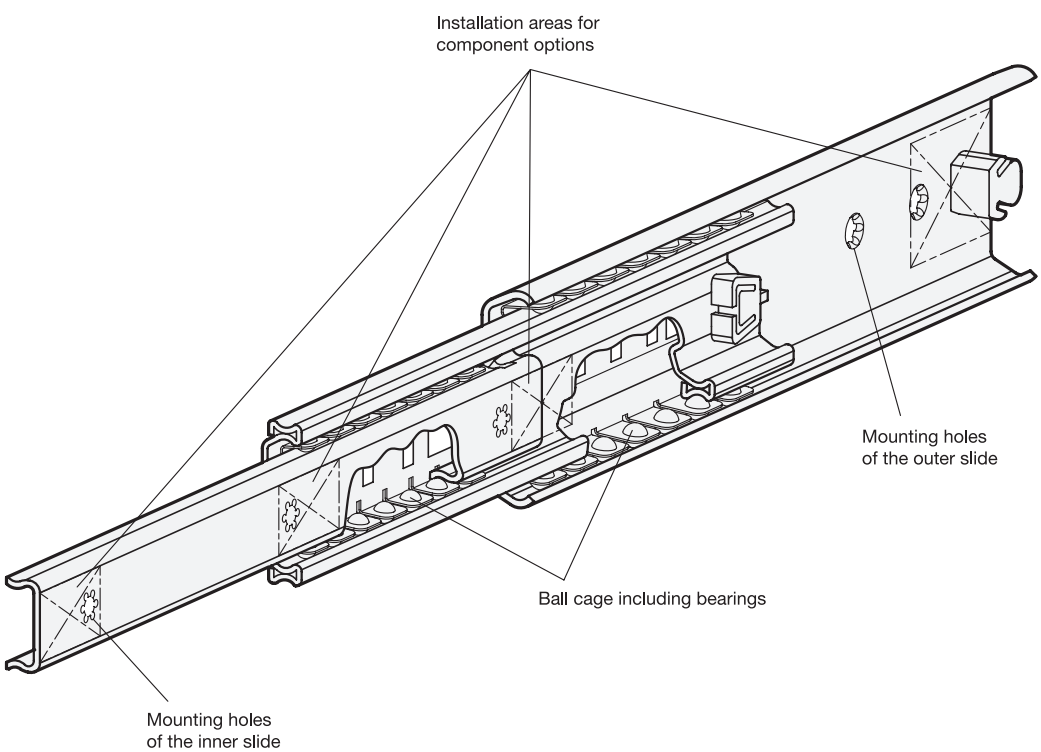
All slides have internally constructed stops in the front and back end position. The stops prevent the slides from extending unintentionally. Depending on the available installation space and required stability, the stops are designed accordingly in a metallic form or with additional plastic or elastomer parts as a rubber stop to prevent the slides from hitting the end positions with too much force.

Also the telescopic slides can come with a variety of accessory functions. Examples include locking devices, latches, detach functions, and self-retracting mechanisms, some of which are dampened. Some additional functions are available, depending on slide variant, for the back or front stop position and in combination. Furthermore, customer-specific modifications regarding the fastening of the slides can be made.

Telescopic slides with full extension, back stop position



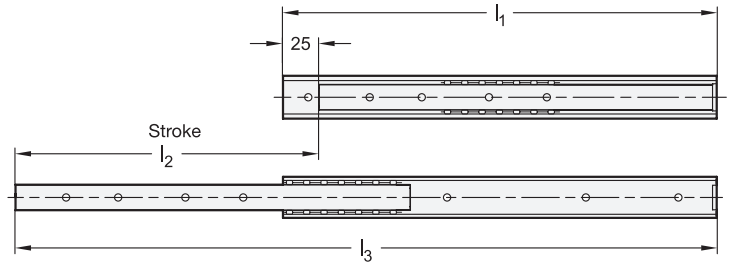
Telescopic slides with full extension, front stop position



Telescopic slides – Types

Standard	Type of extension Partial extension **T** Full extension **V**	Load capacity per pair at 10,000 cycles in N	Basic length retracted position in mm	Material Steel **ST** St. Steel **NI**	Fastening Through-holes (Id. no. **1**)	Countersunk holes (Id. no. **2**)	Outer slide, through-holes / Inner slide, countersunk holes (Id. no. **3**)
GN 1400 Page 194	T	280	300 - 500	ST	×		
GN 1404 Page 196	T	780	300 - 700	ST			×
GN 1410 Page 198	V	510	250 - 800	ST	×		
GN 1412 Page 201	V	430	300 - 700	ST	×		
GN 1420 Page 204	V	1290	300 - 1200	ST		×	
GN 1422 Page 206	V	1290	300 - 800	ST		×	
GN 1424 Page 209	V	750	350 - 700	ST		×	
GN 1426 Page 212	V	1380	500 - 800	ST		×	
GN 1430 Page 214	V	2120	400 - 1200	ST		×	
GN 1432 Page 216	V	2300	400 - 800	ST		×	
GN 1440 Type B Page 219	V	3100	300 - 1500	ST	×		
GN 1440 Type M Page 219	V	3100	300 - 1500	ST	×		
GN 1440 Type K Page 219	V	3100	300 - 1500	ST	×		
GN 1440 Type Q Page 219	V	3100	300 - 1500	ST	×		
GN 1450 Page 222	V	510	300 - 600	NI	×		
GN 1460 Page 225	V	1050	250 - 800	NI		×	

Standard	Component features								
	without rubber stop	with rubber stop back-front	Locking device back Type **E**	Locking device back, detach function Type **F**	Latch back Type **M**	Latch front Type **K**	Latch back-front Type **Q**	Self-retracting mechanism, dampened / not dampened	Extension on both sides
GN 1400 Page 194	×								
GN 1404 Page 196		×	×						
GN 1410 Page 198		×		×					
GN 1412 Page 201		×		×				×	
GN 1420 Page 204		×	×						
GN 1422 Page 206		×						×	
GN 1424 Page 209		×						×	
GN 1426 Page 212		×							×
GN 1430 Page 214		×	×						
GN 1432 Page 216		×						×	
GN 1440 Type B Page 219		×							
GN 1440 Type M Page 219		×			×				
GN 1440 Type K Page 219		×				×			
GN 1440 Type Q Page 219		×					×		
GN 1450 Page 222		×		×					
GN 1460 Page 225		×		×					

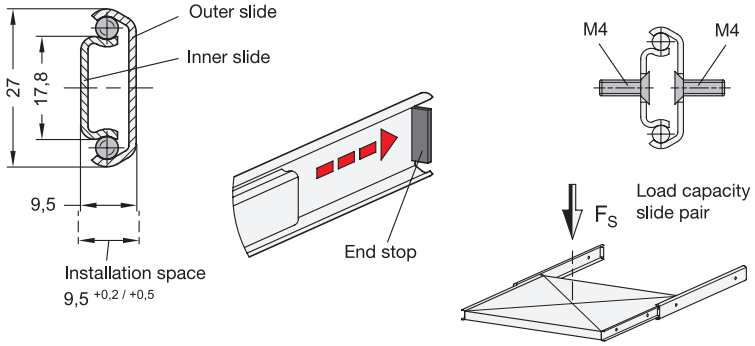


2 Type

A without rubber stop

3 Identification no.

1 Fastening using through-holes



1

l_1	l_2 $^{+2}_{-2}$ Stroke	l_3	F_S per pair in N at 10,000 cycles	at 100,000 cycles
300	210	485	220	170
350	240	565	260	200
400	290	665	260	200
500	370	845	280	220

Specification

4

- Slide profile
  Steel, zinc plated, blue passivated **ZB**
- Bearings
  Roller bearing steel, hardened
- Ball cage
  Steel, zinc plated
- Operating temperature -20 °C to 100 °C
- RoHS

On request

- other lengths and hole spacing
- other attachment options
- with rubber stop
- with locking device
  (back, front, or back-front)
- other surfaces
- with support bracket
- with retraction dampening, external

Information

Telescopic slides GN 1400 are installed vertically and in pairs. The stroke reaches ≈ 75 % of the nominal length l_1 (partial extension). With type A without rubber stop, the end stops are made out of steel, which prevents the slide from being unintentionally pulled out or detached. If larger static or dynamic loads occur in the direction of extension, they should be absorbed by external stop elements.

The telescopic slides are delivered in **pairs**. They can be installed on the extension on either the left or right side due to the mechanics. All mounting holes are easy to reach without additional auxiliary holes. Only the mounting holes are shown, but other production-related holes may be present.

see also...

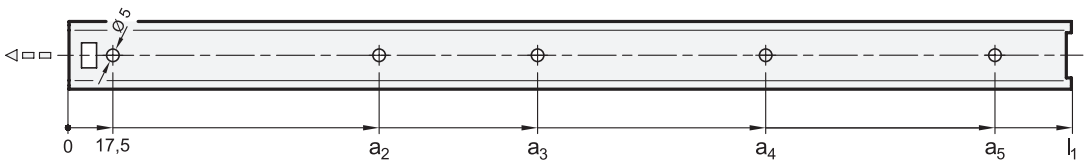
- *Technical information on telescopic slides* → *Page 228 ff.*
- *Telescopic slides (with full extension)* → *Page 198 ff.*
- *Stainless Steel-Telescopic slides (with full extension)* → *Page 222 ff.*

How to order

1 2 3 4
GN 1400-400-A-1-ZB

1	l_1
2	Type
3	Identification no.
4	Finish

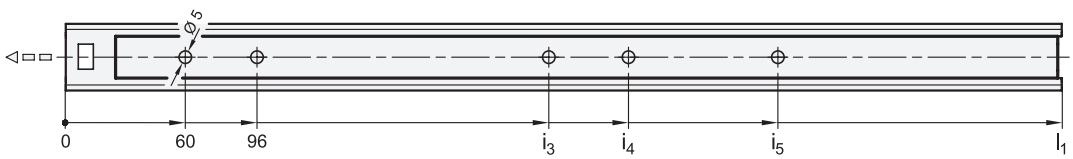
Mounting holes - outer slide



1

l_1	a_2	a_3	a_4	a_5
300	113,5	209,5	273,5	-
350	113,5	209,5	337,5	-
400	113,5	209,5	369,5	-
500	145,5	209,5	337,5	465,5

Mounting holes - inner slide



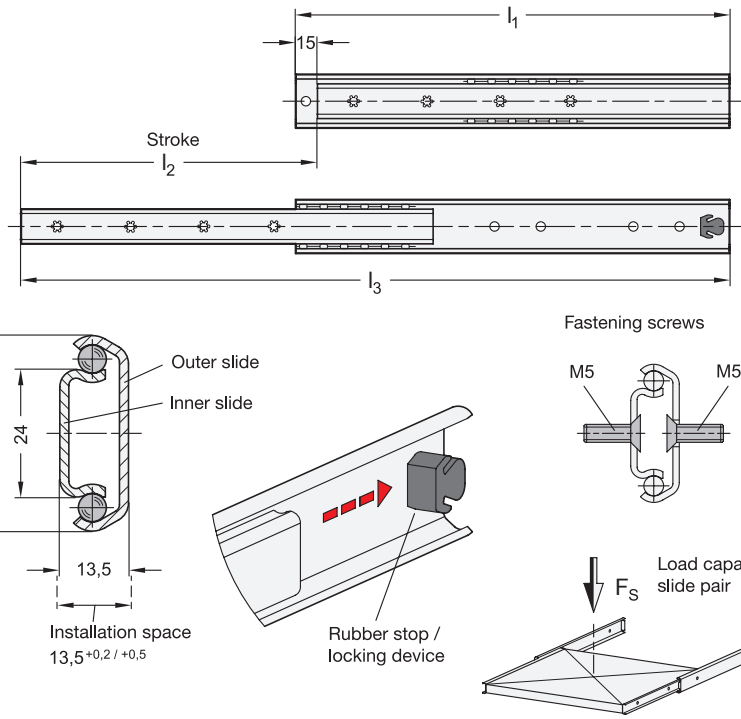
1

l_1	i_3	i_4	i_5
300	142,5	182,5	-
350	167,5	207,5	-
400	192,5	232,5	282,5
500	242,5	282,5	357,5

Fastening screws

For the said loading forces F_S to be absorbed reliably in the surrounding structure, all available through-holes of the outer and inner slide must be used. Failure to use fastening screws reduces the specified load capacity accordingly. The following screws can be used for mounting:

Designation - standard		Outer slide	Inner slide
Countersunk screw, Phillips	DIN 965	M 4	M 4
Countersunk screw, Phillips	DIN 7997	Size 3,5 / 4	Size 3,5



2 Type

E with rubber stop, locking device in back

3 Identification no.

3 Fastening using through-holes on external slide and countersunk holes on inner slide

1

l_1	l_2 +2 −2 Stroke	l_3	F_S per pair in N at 10,000 cycles	at 100,000 cycles
300	205	490	780	600
350	239	574	630	490
400	289	674	540	420
450	339	774	460	360

1

l_1	l_2 +2 −2 Stroke	l_3	F_S per pair in N at 10,000 cycles	at 100,000 cycles
500	373	858	540	420
600	457	1042	560	430
700	541	1226	560	430

Specification

4

- Slide profile
  Steel, zinc plated, blue passivated **ZB**
- Bearings
  Roller bearing steel, hardened
- Ball cage
  Steel, zinc plated
- Rubber stop
  Plastic / Elastomer
- Operating temperature -20 °C to 100 °C
- RoHS

On request

- other lengths and hole spacing
- other attachment options
- with rubber stop (without locking device)
- other surfaces
- with support bracket
- retraction dampening, external

Information

Telescopic slides GN 1404 are installed vertically and in pairs. The stroke reaches ≈ 75 % of the nominal length l_1 (partial extension). The rubber stops of type E dampen the impact of the slide in the two end positions and takes on the locking function of the back stop position. This feature is noticeable through a slight resistance on opening and closing. If larger static or dynamic loads occur in the direction of extension, they should be absorbed by external stop elements.

The telescopic slides are delivered in **pairs**. They can be installed on the extension on either the left or right side due to the mechanics. All mounting holes are easy to reach without auxiliary holes. Only the mounting holes are shown, but other production-related holes may be present.

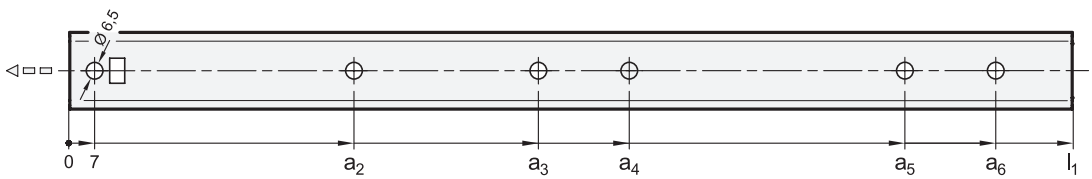
see also...
- *Technical information on telescopic slides* → *Page 228 ff.*
- *Telescopic slides (with full extension)* → *Page 198 ff.*

How to order

1 2 3 4
GN 1404-600-E-3-ZB

1	l_1
2	Type
3	Identification no.
4	Finish

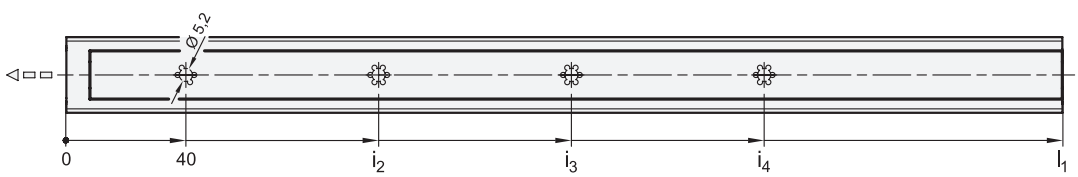
Mounting holes - outer slide



1

l_1	a_2	a_3	a_4	a_5	a_6
300	135	199	231	-	-
350	135	231	263	-	-
400	135	295	327	-	-
450	135	327	359	-	-
500	167	295	327	391	423
600	167	359	391	487	519
700	199	391	423	583	615

Mounting holes - inner slide



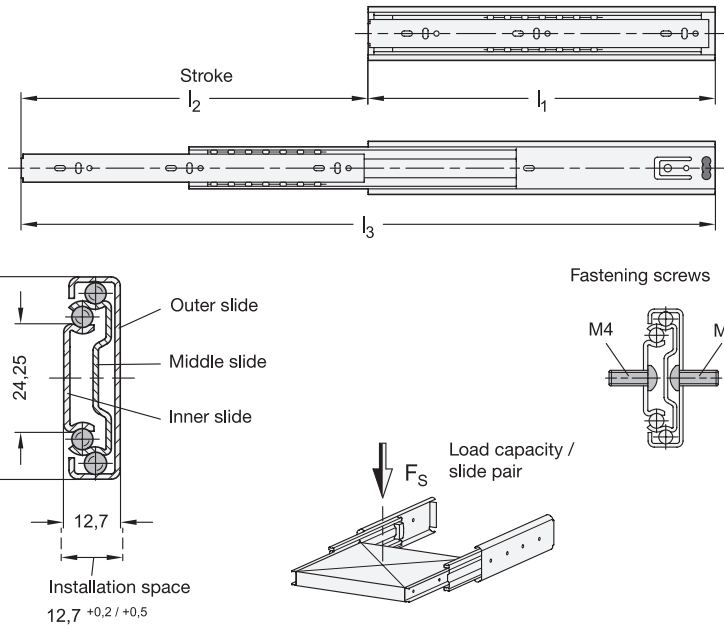
1

l_1	i_2	i_3	i_4
300	72	136	168
350	104	168	200
400	104	200	264
450	104	200	296
500	136	232	328
600	168	296	424
700	168	328	520

Fastening screws

For the said loading forces F_S to be absorbed reliably in the surrounding structure, all available through-holes and/or countersunk holes of the outer and inner slide must be used. Failure to use fastening screws reduces the specified load capacity accordingly. The following screws can be used for mounting:

Designation - standard		Outer slide	Inner slide
Countersunk screw, Phillips	DIN 965	M 5	M 5
Countersunk screw, Phillips	DIN 7997	Size 5	Size 4,5



2 Type

F with rubber stop, locking device in back, detach function

3 Identification no.

1 Fastening using through-holes

1

l_1	l_2 +3 −3 Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
250	250	500	450	320
300	300	600	460	340
350	350	700	480	360
400	400	800	510	390
450	450	900	510	390
500	500	1000	480	360

1

l_1	l_2 +3 −3 Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
550	550	1100	460	340
600	600	1200	440	340
650	650	1300	420	320
700	700	1400	420	320
750	750	1500	400	300
800	800	1600	400	300

Specification

4

- Slide profile
  Steel, zinc plated, blue passivated **ZB**
- Bearings
  Roller bearing steel, hardened
- Ball cage, outer slide
  Plastic
- Ball cage, inner slide
  Steel, zinc plated
- Rubber stop and detach function
  Plastic / Elastomer
- Operating temperature -20 °C to 100 °C
- RoHS

On request

- other lengths and hole spacing
- other attachment options
- other surfaces

Information

Telescopic slides GN 1410 are installed vertically and in pairs. The stroke reaches ≈ 100 % of the nominal length l_1 (full extension).

The telescopic slides are delivered in **pairs**. They can be installed on the extension on either the left or right side due to the mechanics. All mounting holes are easy to reach through auxiliary holes. Only the mounting holes are shown, but other production-related holes may be present.

see also...

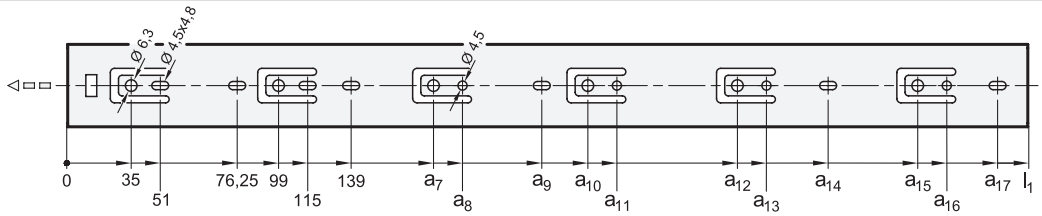
- *Technical information on telescopic slides* → *Page 228 ff.*
- *Stainless Steel-Telescopic slides GN 1450 (with full extension)* → *Page 222*
- *Telescopic slides GN 1412 (with self-retracting mechanism)* → *Page 201*

How to order

1 2 3 4
GN 1410-250-F-1-ZB

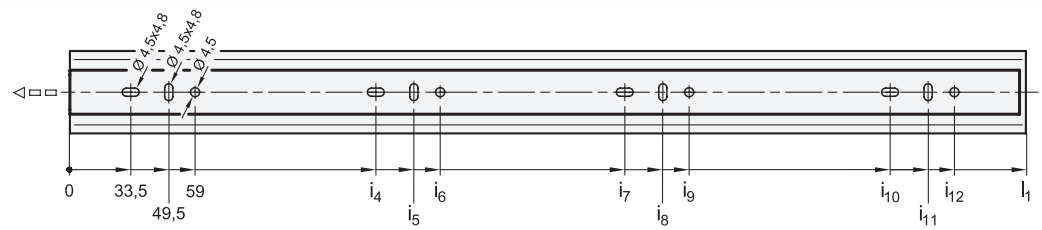
1	l_1
2	Type
3	Identification no.
4	Finish

Mounting holes - outer slide



l_1	a_7	a_8	a_9	a_{10}	a_{11}	a_{12}	a_{13}	a_{14}	a_{15}	a_{16}	a_{17}
250	183	199	-	-	-	-	-	-	-	-	-
300	259	275	-	-	-	-	-	-	-	-	-
350	259	275	309	-	-	-	-	-	-	-	-
400	259	275	-	323	339	-	-	373	-	-	-
450	259	275	361,5	387	403	-	-	-	-	-	-
500	259	275	361,5	387	403	451	467	-	-	-	-
550	259	275	361,5	387	403	451	467	501	-	-	-
600	259	275	361,5	387	403	515	531	565	-	-	-
650	259	275	361,5	387	403	579	595	629	-	-	-
700	259	275	361,5	387	403	579	595	629	-	-	-
750	259	275	361,5	387	403	547	563	597	643	659	693
800	259	275	361,5	387	403	579	595	629	707	723	757

Mounting holes - inner slide



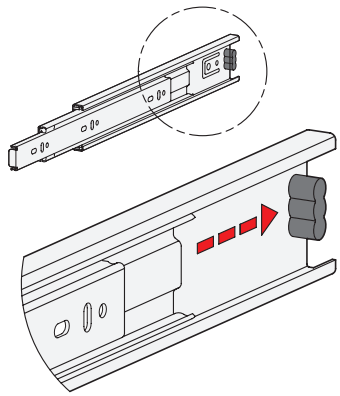
l_1	i_4	i_5	i_6	i_7	i_8	i_9	i_{10}	i_{11}	i_{12}
250	209,5	225,5	235	-	-	-	-	-	-
300	129,5	145,5	155	257,5	273,5	283	-	-	-
350	161,5	177,5	187	289,5	305,5	315	-	-	-
400	193,5	209,5	219	353,5	369,5	379	-	-	-
450	193,5	209,5	219	385,5	401,5	411	-	-	-
500	225,5	241,5	251	449,5	465,5	475	-	-	-
550	257,5	273,5	283	481,5	497,5	507	-	-	-
600	289,5	305,5	315	545,5	561,5	571	-	-	-
650	321,5	337,5	347	609,5	625,5	635	-	-	-
700	321,5	337,5	347	609,5	625,5	635	-	-	-
750	193,5	209,5	219	321,5	337,5	347	673,5	689,5	699
800	193,5	209,5	219	353,5	369,5	379	705,5	721,5	731

Fastening screws

For the said loading forces F_S to be absorbed reliably in the surrounding structure, all available through-holes of the outer and inner slide having a diameter (Ø) of 4.5 must be used. Alternatively, the outer slide has holes with a diameter (Ø) of 6.3 for Euro screws. The elongated holes, Ø 4.5 x 4.8, are used likewise for fastening and facilitate adjustment during mounting when needed. Failure to use fastening screws reduces the specified load capacity accordingly. The following screws can be used for mounting:

Designation - standard		Outer slide	Inner slide
Hexagon socket button head screw	ISO 7380	M 4	M 4
Pan head screw, Phillips	ISO 7045	M 4	M 4
Pan head tapping screw, Phillips	ISO 7049	ST 3,9 / 4,2	ST 3,9 / 4,2

Rubber stop, locking device in back

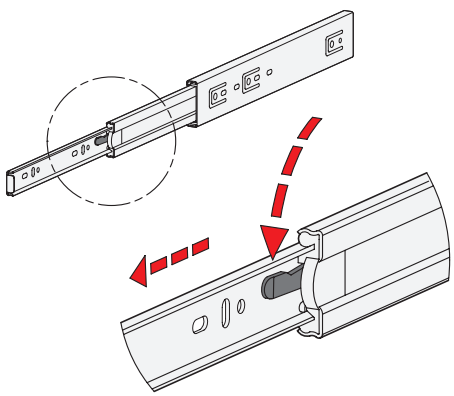


The rubber stops of type F dampen the impact of the slide in the respective end position. This feature minimizes noise development and increases the lifespan. Attached to the slides in a partially concealed, partially visible manner, the stops meet each of the requirements in regard to shape, material, and hardness.

In the back stop position, the rubber stop takes on additionally a locking function, which is noticeable through a slight resistance on opening and closing.

If larger static or dynamic loads occur in the direction of extension, they should be absorbed by external stop elements.

Detach function

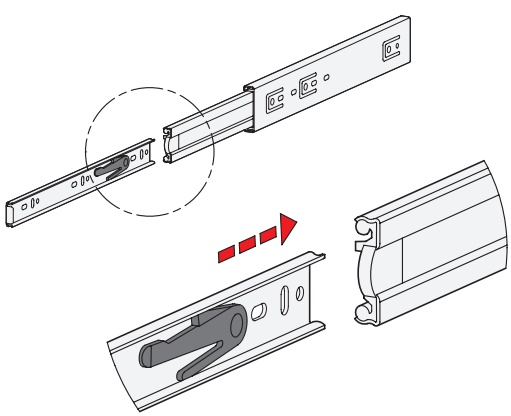


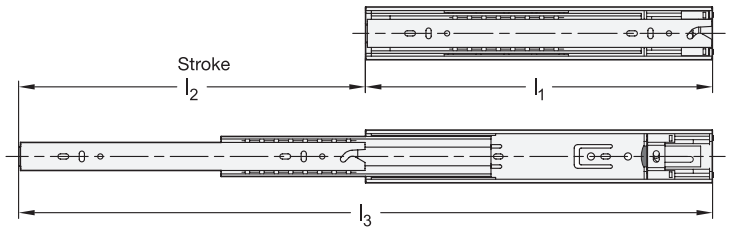
Type F has additionally a detach function through which the extension slides can be completely separated from one another in the area of the middle and inner slide. This feature not only facilitates mounting. It also allows the extension to be quickly removed, for example, when frequent maintenance work is performed on the components located behind.

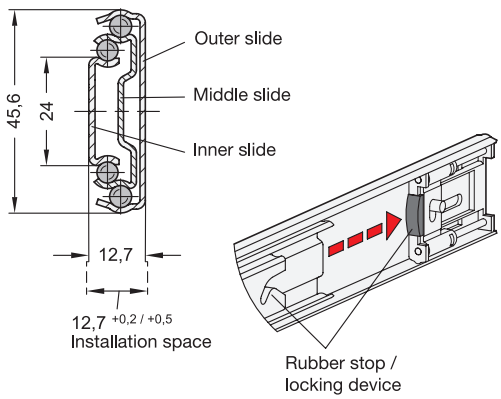
The telescopic slide can be quickly and easily detached in the extracted position through activation of the release lever, allowing the inner slide to be removed from the front.

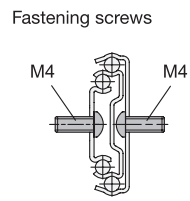
For reattaching the slides, the ball cages need to be moved to the front end position. Then the inner slide is inserted to the back end stop where it locks into place automatically.

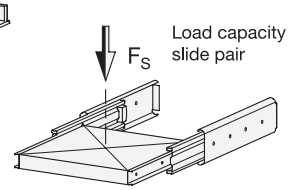
The protected arrangement of the release mechanism prevents accidental detachment of the slide.











2 Type

F with rubber stop, locking device in back, detach function

3 Identification no.

1 Fastening using through-holes

1

l_1	l_2 +3 −3 Stroke	l_3	F_S per pair in N at 10,000 cycles	at 100,000 cycles
300	300	600	330	240
350	350	700	380	290
400	400	800	430	340
450	450	900	430	340
500	500	1000	380	290

1

l_1	l_2 +3 −3 Stroke	l_3	F_S per pair in N at 10,000 cycles	at 100,000 cycles
550	550	1100	330	240
600	600	1200	320	240
650	650	1300	300	220
700	700	1400	300	220

Specification

4

- Slide profile
  Steel, zinc plated, blue passivated **ZB**
- Bearings
  Roller bearing steel, hardened
- Ball cage, outer slide
  Plastic
- Ball cage, inner slide
  Steel, zinc plated
- Rubber stop and detach function
  Plastic / Elastomer
- Self-retracting mechanism
  Zinc plated steel/plastic
- Operating temperature -20 °C to 100 °C
- RoHS

On request

- other lengths and hole spacing
- other attachment options
- other surfaces

Information

Telescopic slides GN 1412 are installed vertically and in pairs. The stroke reaches ≈ 100 % of the nominal length l_1 (full extension). The rubber stops of type F dampen the impact of the slide in the end positions. This feature minimizes noise development and increases the lifespan. If larger static or dynamic loads occur in the direction of extension, they should be absorbed by external stop elements.

The telescopic slides are delivered in **pairs**. They can be installed on the extension on either the left or right side due to the mechanics. All mounting holes are easy to reach through auxiliary holes. Only the mounting holes are shown, but other production-related holes may be present.

see also...

- *Technical information on telescopic slides* → *Page 228 ff.*
- *Telescopic slides GN 1410 (with full extension)* → *Page 198*

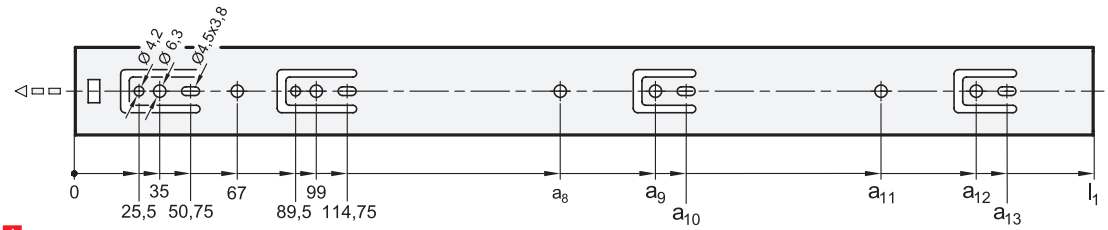
How to order

1 2 3 4

GN 1412-500-F-1-ZB

1	l_1
2	Type
3	Identification no.
4	Finish

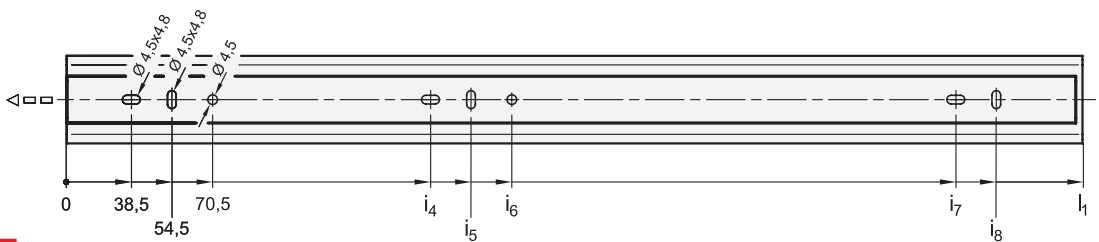
Mounting holes - outer slide



1

l_1	a_8	a_9	a_{10}	a_{11}	a_{12}	a_{13}
300	-	195	207,75	227	-	-
350	-	227	239,75	259	-	-
400	259	291	303,75	323	-	-
450	259	323	335,75	-	-	-
500	259	323	335,75	-	387	399,75
550	259	323	335,75	387	451	463,75
600	259	355	367,75	387	483	495,75
650	259	355	367,75	451	515	527,75
700	259	355	367,75	515	579	591,75

Mounting holes - inner slide



1

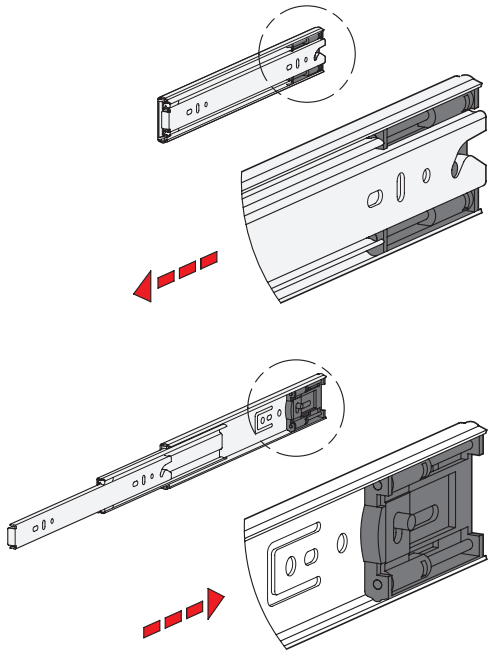
l_1	i_4	i_5	i_6	i_7	i_8
300	230,5	246,5	262,5	-	-
350	150,5	166,5	182,5	292,5	308,5
400	170,5	186,5	202,5	341,5	357,5
450	195,5	211,5	227,5	391,5	407,5
500	220,5	236,5	252,5	441,5	457,5
550	250,5	266,5	282,5	492,5	508,5
600	260,5	276,5	292,5	541,5	557,5
650	260,5	276,5	292,5	602,5	618,5
700	260,5	276,5	292,5	652,5	668,5

Fastening screws

For the said loading forces F_S to be absorbed reliably in the surrounding structure, all available through-holes of the outer slide having a diameter (Ø) of 4.2 and of the inner slide having a diameter (Ø) of 4.5 must be used. Alternatively, the outer slide has holes with a diameter (Ø) of 6.3 for Euro screws. The elongated holes, Ø 4.5 x 3.8 of the outer slide and Ø 4.5 x 4.8 of the inner slide, are used likewise for fastening and facilitate adjustment during mounting when needed. Failure to use fastening screws reduces the specified load capacity accordingly. The following screws can be used for mounting:

Designation - standard		Outer slide	Inner slide
Hexagon socket button head screw	ISO 7380	M 4	M 4
Pan head screw, Phillips	ISO 7045	M 4	M 4
Pan head tapping screw, Phillips	ISO 7049	ST 3,9 / 4,2	ST 3,9 / 4,2

Self-retracting mechanism

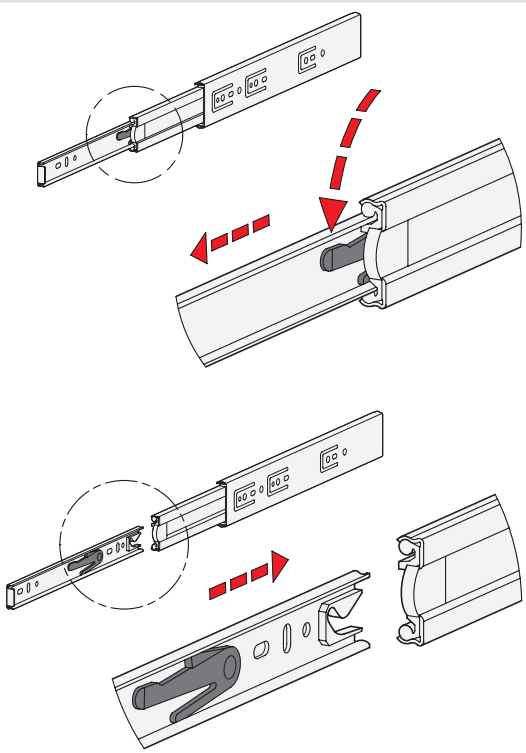


Telescopic slides GN 1412 have an integrated self-retracting mechanism, which improves considerably the ease of use when closing the extensions.

The slides are retracted and held in the back end position automatically by means of a retraction mechanism on the last 30 mm of stroke with a force of approximately 25 newtons for each slide pair.

In this slide variant the available retraction force can be regarded as a locking device, which is noticeable through a slight restriction on opening the extension.

Detach function

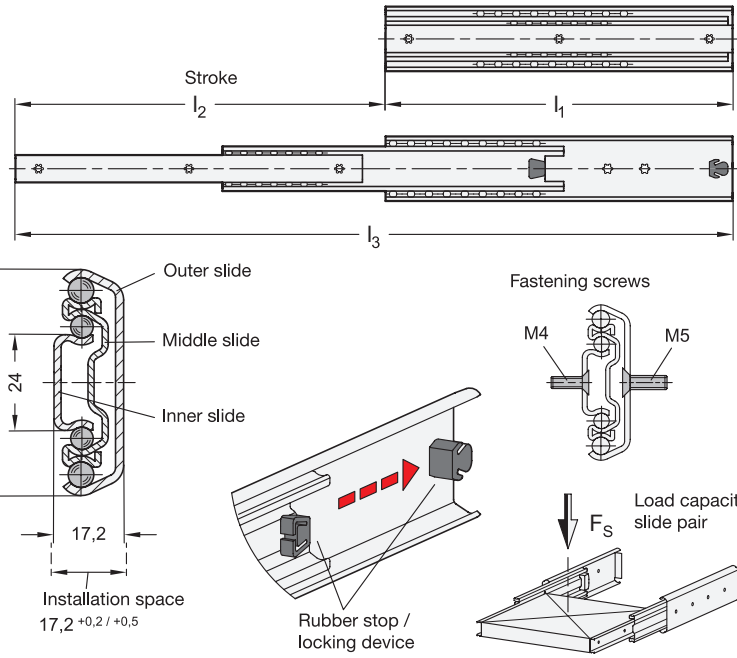


Type F has additionally a detach function through which the extension slides can be completely separated from one another in the area of the middle and inner slide. This feature not only facilitates mounting. It also allows the extension to be quickly removed, for example, when frequent maintenance work is performed on the components located behind.

The telescopic slide can be quickly and easily detached in the extracted position through activation of the release lever, allowing the inner slide to be removed from the front.

For reattaching the slides, the ball cages need to be moved to the front end position. Then the inner slide is inserted to the back end stop where it locks into place automatically.

The protected arrangement of the release mechanism prevents accidental detachment of the slide.



2 Type

E with rubber stop, locking device in back

3 Identification no.

2 Fastening using countersunk holes

1 l_1	l_2 +4 −4 Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
300	320	620	940	680
350	375	725	960	770
400	440	840	970	730
450	495	945	1100	830
500	550	1050	1190	910
550	600	1150	1180	900

1 l_1	l_2 +4 −4 Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
600	650	1250	1230	970
700	750	1450	1290	1030
800	848	1648	1210	1020
900	950	1850	1050	900
1000	1050	2050	810	720
1200	1250	2450	640	570

Specification

4

- Slide profile
  Steel, zinc plated, blue passivated **ZB**
- Bearings
  Roller bearing steel, hardened
- Ball cage
  Steel, zinc plated
- Rubber stop
  Plastic / Elastomer
- Operating temperature -20 °C to 100 °C
- RoHS

On request

- other lengths and hole spacing
- other attachment options
- with latches, partially with detach function (back, front, or back-front)
- with locking device (front or back-front)
- other surfaces
- with support bracket

Information

Telescopic slides GN 1420 are installed vertically and in pairs. The stroke reaches ≈ 100 % of the nominal length l_1 (full extension). The rubber stops of type E dampen the impact of the slide in the two end positions and takes on the locking function of the back stop position. This feature is noticeable through a slight resistance on opening and closing. If larger static or dynamic loads occur in the direction of extension, they should be absorbed by external stop elements.

The telescopic slides are delivered in **pairs**. They can be installed on the extension on either the left or right side due to the mechanics. All mounting holes are easy to reach through auxiliary holes. Only the mounting holes are shown, but other production-related holes may be present.

see also...

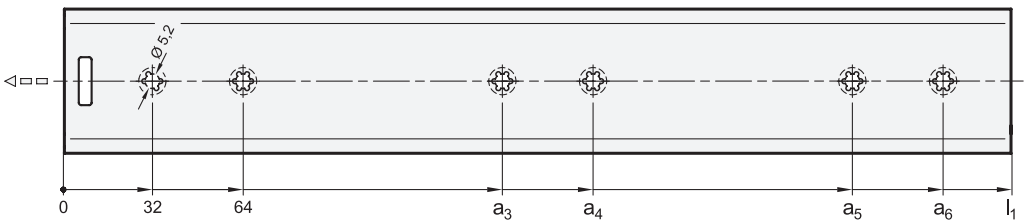
- *Technical information on telescopic slides → Page 228 ff.*
- *Stainless Steel-Telescopic slides GN 1460 (with full extension) → Page 225*

How to order

1 2 3 4
GN 1420-900-E-2-ZB

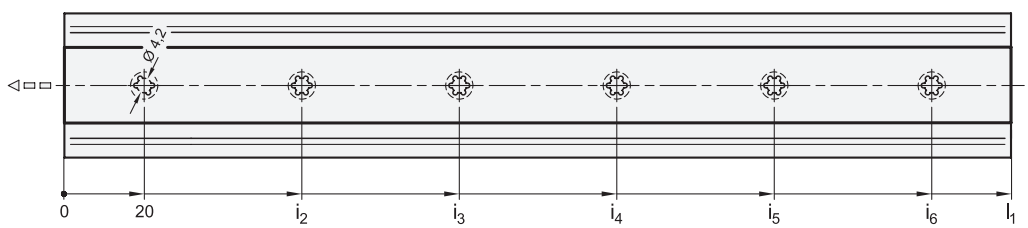
1	l_1
2	Type
3	Identification no.
4	Finish

Mounting holes - outer slide



l_1	a_3	a_4	a_5	a_6
300	192	224	-	-
350	192	224	-	-
400	224	256	-	-
450	288	320	-	-
500	320	352	-	-
550	352	384	-	-
600	416	448	-	-
700	448	480	-	-
800	384	416	672	704
900	416	448	768	800
1000	480	512	864	896
1200	576	608	1056	1088

Mounting holes - inner slide

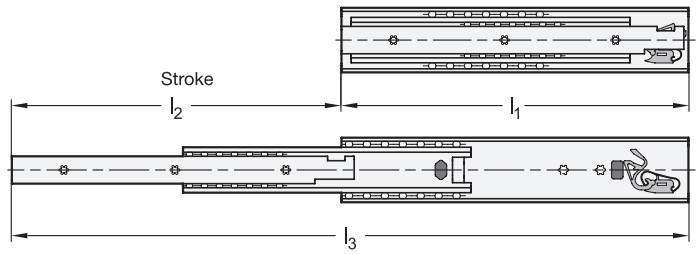


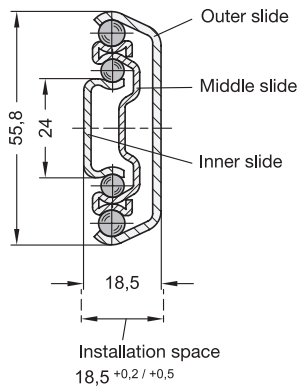
l_1	i_2	i_3	i_4	i_5	i_6
300	150	280	-	-	-
350	175	330	-	-	-
400	200	380	-	-	-
450	225	430	-	-	-
500	250	480	-	-	-
550	275	530	-	-	-
600	300	580	-	-	-
700	350	680	-	-	-
800	271	522,5	774	-	-
900	305	589	874	-	-
1000	258	497	735,5	974	-
1200	251	482	712	943	1174

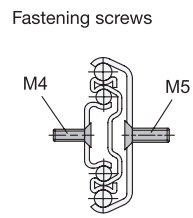
Fastening screws

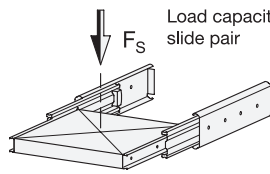
For the said loading forces F_S to be absorbed reliably in the surrounding structure, all available countersunk holes of the outer and inner slide must be used. Failure to use fastening screws reduces the specified load capacity accordingly. The following screws can be used for mounting:

Designation - standard		Outer slide	Inner slide
Countersunk screw, Phillips	DIN 965	M 5	M 4
Countersunk screw, Phillips	DIN 7997	Size 5	Size 4 / 4,5









2 Type
B with rubber stop

3 Identification no.
2 Fastening using countersunk holes

[1]

l_1	l_2 +4 −4 Stroke	l_3	F_S per pair in N at 10,000 cycles	at 100,000 cycles
300	285	585	940	640
350	350	700	960	730
400	400	800	970	770
450	450	900	1100	880
500	500	1000	1190	900

[1]

l_1	l_2 +4 −4 Stroke	l_3	F_S per pair in N at 10,000 cycles	at 100,000 cycles
550	550	1100	1180	980
600	600	1200	1230	990
700	700	1400	1290	1030
800	800	1600	1210	1060

Specification [4]

- Slide profile
  Steel, zinc plated, blue passivated **ZB**
- Bearings
  Roller bearing steel, hardened
- Ball cage
  Steel, zinc plated
- Rubber stop
  Plastic / Elastomer
- Self-retracting mechanism
  Stainless Steel / Plastic
- Operating temperature -20 °C to 100 °C
- RoHS

On request

- other lengths and hole spacing
- other attachment options
- with locking device (front)
- other surfaces
- with support bracket

Information

Telescopic slides with self-retracting mechanism GN 1422 are installed vertically and in pairs. The stroke reaches ≈ 100 % of the nominal length l_1 (full extension).

The telescopic slides are delivered in **pairs**. They can be installed on the extension on either the left or right side due to the mechanics. All mounting holes are easy to reach through auxiliary holes. Only the mounting holes are shown, but other production-related holes may be present.

see also...

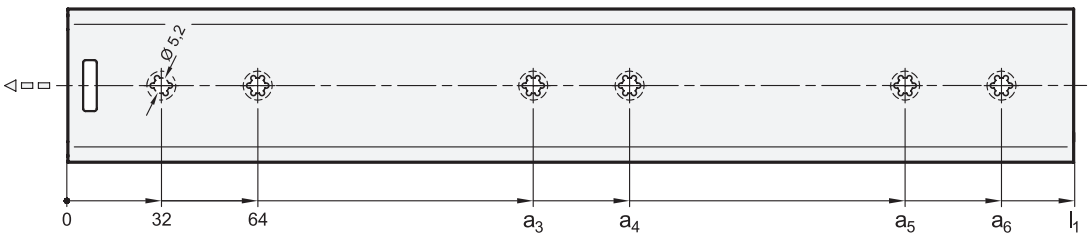
- *Technical information on telescopic slides* → *Page 228 ff.*
- *Telescopic slides GN 1432 (with self-retracting mechanism)* → *Page 216*
- *Telescopic slides GN 1424 (with dampened self-retracting mechanism)* → *Page 209*

How to order

[1] [2] [3] [4]
GN 1422-350-B-2-ZB

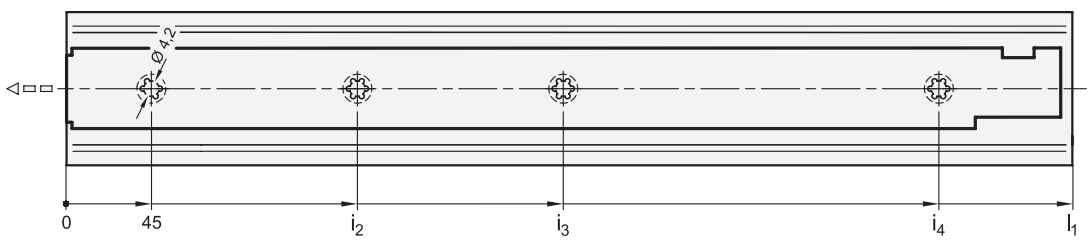
1	l_1
2	Type
3	Identification no.
4	Finish

Mounting holes - outer slide



l_1	a_3	a_4	a_5	a_6
300	192	224	-	-
350	192	224	-	-
400	224	256	-	-
450	288	320	-	-
500	320	352	-	-
550	352	384	-	-
600	416	448	-	-
700	448	480	-	-
800	384	416	672	704

Mounting holes - inner slide



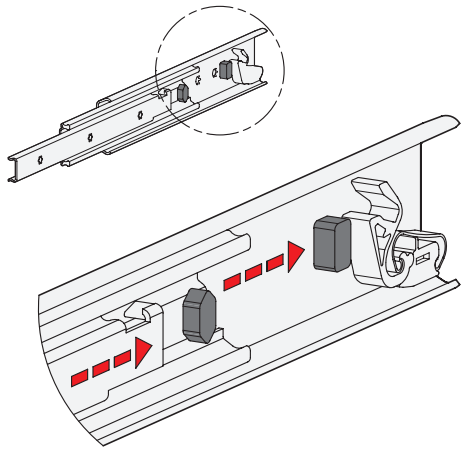
l_1	i_2	i_3	i_4
300	141	237	-
350	173	301	-
400	173	333	-
450	205	397	-
500	237	461	-
550	269	493	-
600	173	301	557
700	173	333	653
800	205	397	749

Fastening screws

For the said loading forces F_S to be absorbed reliably in the surrounding structure, all available countersunk holes of the outer and inner slide must be used. Failure to use fastening screws reduces the specified load capacity accordingly. The following screws can be used for mounting:

Designation - standard		Outer slide	Inner slide
Hexagon socket countersunk head screw	DIN 7991	M 5	M 4
Countersunk screw, Phillips	DIN 965	M 5	M 4
Countersunk screw, Phillips	DIN 7997	Size 5	Size 4 / 4,5

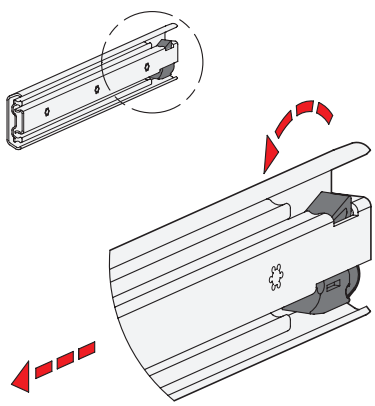
Rubber stop



The rubber stops of type B dampen the impact of the slide in the respective end position. This feature minimizes noise development and increases the lifespan. Attached to the slides in a partially concealed, partially visible manner, the stops meet each of the requirements in regard to shape, material, and hardness.

If larger static or dynamic loads occur in the direction of extension, they should be absorbed by external stop elements.

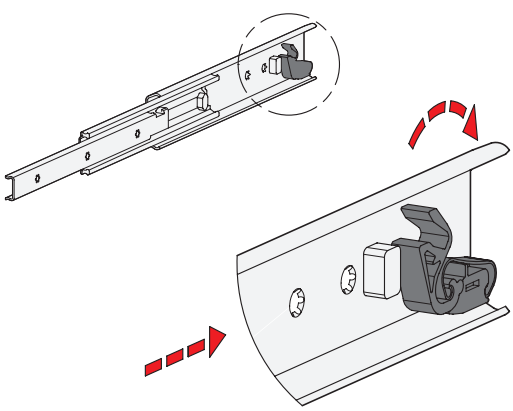
Self-retracting mechanism



Telescopic slides GN 1422 have an integrated self-retracting mechanism, which improves considerably the ease of use when closing the extensions.

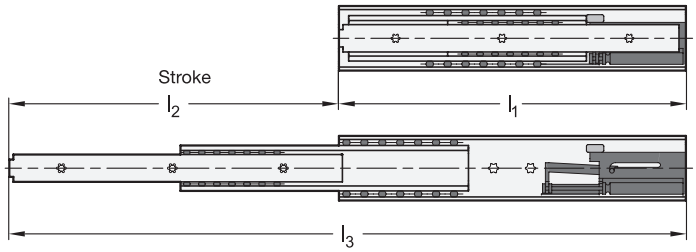
The slides are retracted and held in the back end position automatically by means of a retraction mechanism on the last 22 mm of stroke with a force of approximately 30 newtons for each slide pair. This force has to be overcome accordingly on opening the extension.

The self-retracting mechanism is also designed in such a way that it uncouples and will not be damaged when the extension is opened or closed in a jerky manner or too quickly. On the following stroke, the self-retracting mechanism clicks back into place automatically, ensuring that the function remains intact.



GN 1424 Telescopic slides

with full extension and dampened self-retracting mechanism, load capacity up to 750 N

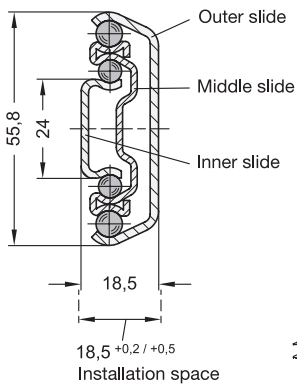


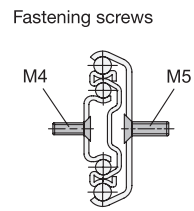
2 Type

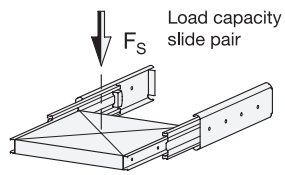
B with rubber stop

3 Identification no.

2 Fastening using countersunk holes







1

l_1	l_2 +4 −4 Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
350	335	685	650	570
400	400	800	750	680
450	451	901	750	750
500	506	1006	750	750

1

l_1	l_2 +4 −4 Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
550	555	1105	750	750
600	612	1212	750	750
700	700	1400	750	750

Specification

4

- Slide profile
  Steel, zinc plated, blue passivated **ZB**
- Bearings
  Roller bearing steel, hardened
- Ball cage
  Steel, zinc plated
- Rubber stop
  Plastic / Elastomer
- Self-retracting mechanism, dampened
  Stainless Steel / Plastic
- Operating temperature -20 °C to 100 °C
- RoHS

On request

- other lengths and hole spacing
- other attachment options
- with locking device (front)
- other surfaces
- variant with support bracket

Information

Telescopic slides with dampened self-retracting mechanism GN 1424 are installed vertically and in pairs. The stroke reaches ≈ 100 % of the nominal length l_1 (full extension).

The telescopic slides are delivered in **pairs**. They can be installed on the extension on either the left or right side due to the mechanics. All mounting holes are easy to reach through auxiliary holes. Only the mounting holes are shown, but other production-related holes may be present.

see also...

- *Technical information on telescopic slides* → *Page 228 ff.*
- *Telescopic slides GN 1422 (with self-retracting mechanism)* → *Page 206*
- *Telescopic slides GN 1432 (with self-retracting mechanism)* → *Page 216*

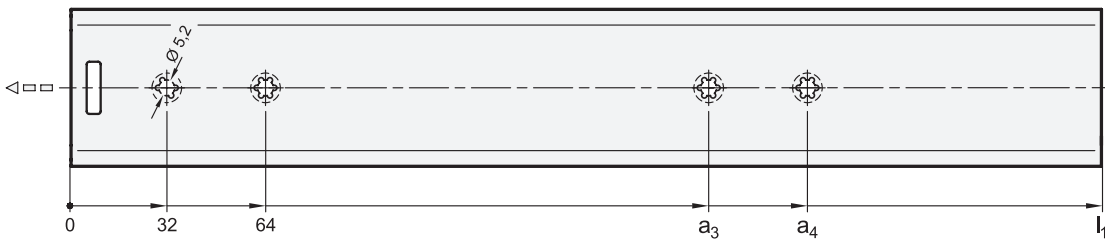
How to order

1 2 3 4

GN 1424-400-B-2-ZB

1	l_1
2	Type
3	Identification no.
4	Finish

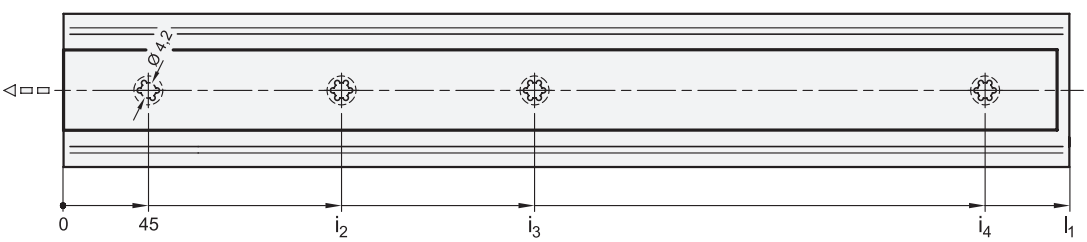
Mounting holes - outer slide



1

l_1	a_3	a_4
350	192	224
400	224	256
450	288	320
500	320	352
550	352	384
600	416	448
700	448	480

Mounting holes - inner slide



1

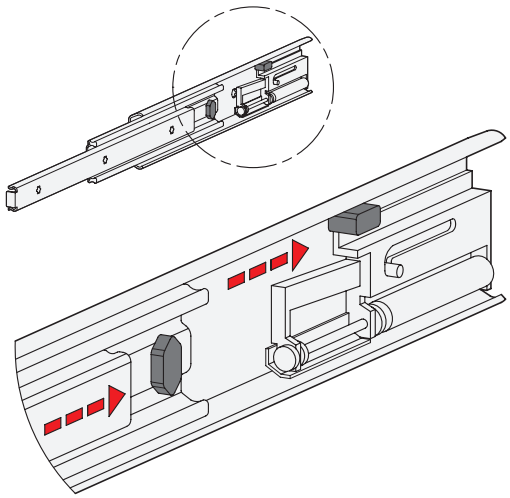
l_1	i_2	i_3	i_4
350	173	301	-
400	173	333	-
450	205	397	-
500	237	461	-
550	269	493	-
600	173	301	562
700	173	333	653

Fastening screws

For the said loading forces F_S to be absorbed reliably in the surrounding structure, all available countersunk holes of the outer and inner slide must be used. Failure to use fastening screws reduces the specified load capacity accordingly. The following screws can be used for mounting:

Designation - standard		Outer slide	Inner slide
Hexagon socket countersunk head screw	DIN 7991	M 5	M 4
Countersunk screw, Phillips	DIN 965	M 5	M 4
Countersunk screw, Phillips	DIN 7997	Size 5	Size 4 / 4,5

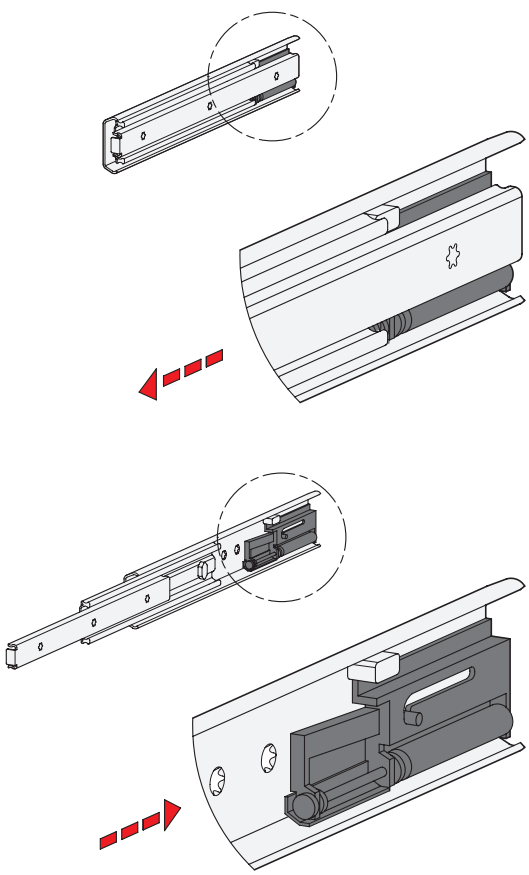
Rubber stop



The rubber stops of type B dampen the impact of the slide in the respective end position. This feature minimizes noise development and increases the lifespan. Attached to the slides in a partially concealed, partially visible manner, the stops meet each of the requirements in regard to shape, material, and hardness.

If larger static or dynamic loads occur in the direction of extension, they should be absorbed by external stop elements.

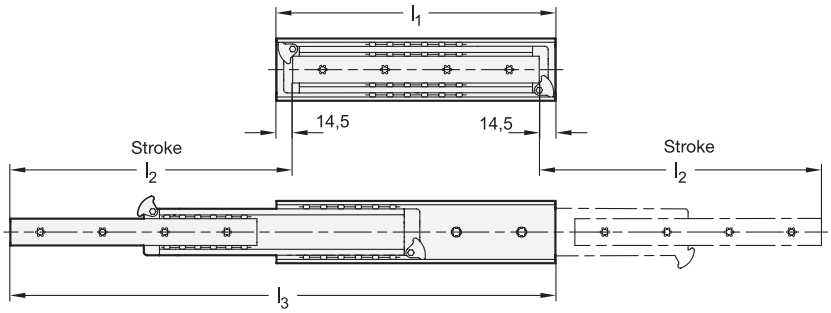
Self-retracting mechanism, dampened



Telescopic slides GN 1424 have a dampened self-retracting mechanism, which is also called “soft-close”. The dampened self-retracting mechanism is divided into two main functions and offers the best possible ease of use on closing the extension.

The self-retracting mechanism takes over the automatic retraction of the slides on the last 40 mm of stroke in the back stop position, where the slides are held in place accordingly. The retraction force is about 35 newtons per slide pair. Also, the dampening mechanism slows down to a considerably reduced speed the closing movement on the said stroke. An extremely smooth and gentle closing movement is achieved. This retraction force has to be overcome accordingly on opening the extension.

The dampened self-retracting mechanism is designed for loads weighing up to 75 kg based on 60,000 cycles (LGA standard). Proper use, including the reduction of the stroke speed to no more than 0.15 m/s on reaching the retraction mechanism, as well as compliance with the load values are required.

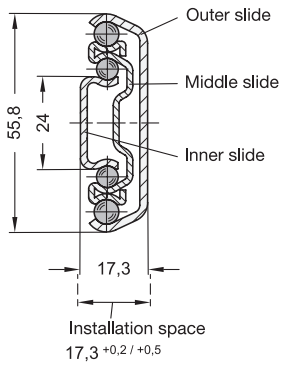


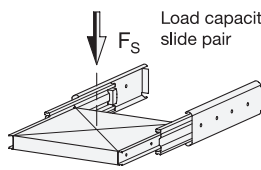
2 Type

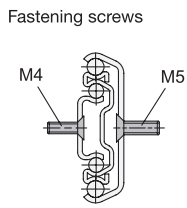
B with rubber stop

3 Identification no.

2 Fastening using countersunk holes







1

l_1	l_2 $^{+4}_{-4}$ Stroke	l_3	F_S per pair in N at 10,000 cycles	at 100,000 cycles
500	503	988,5	1140	760
600	607	1192,5	1190	790
700	711	1396,5	1310	870
800	815	1600,5	1380	920

Specification

4

- Slide profile
  Steel, zinc plated, blue passivated **ZB**
- Bearings
  Roller bearing steel, hardened
- Ball cage
  Steel, zinc plated
- Rubber stop
  Plastic / Elastomer
- Operating temperature -20 °C to 100 °C
- RoHS

On request

- other lengths and hole spacing
- other attachment options
- other surfaces
- with support bracket

Information

Telescopic slides GN 1426 are installed vertically and in pairs. The special design allows the stroke to achieve ≈ 100 % of the nominal length l_1 on both sides (double-sided full extension). Applications such as the double-sided loading of a drawer can be realized in this way. The rubber stops of type B dampen the impact of the slide in the front end positions. If larger static or dynamic loads occur in the direction of extension, they should be absorbed by external stop elements.

The telescopic slides are delivered in **pairs**. They can be installed on the extension on either the left or right side due to the mechanics. All mounting holes are easy to reach through auxiliary holes. Only the fastening holes are shown, but other production-related holes may be present.

see also...

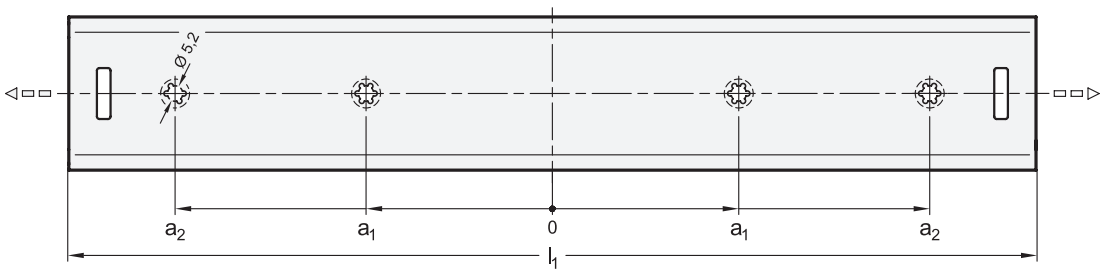
- *Technical information on telescopic slides* → *Page 228 ff.*
- *Telescopic slides GN 1420 (with full extension)* → *Page 204*

How to order

1 2 3 4
GN 1426-800-B-2-ZB

1	l_1
2	Type
3	Identification no.
4	Finish

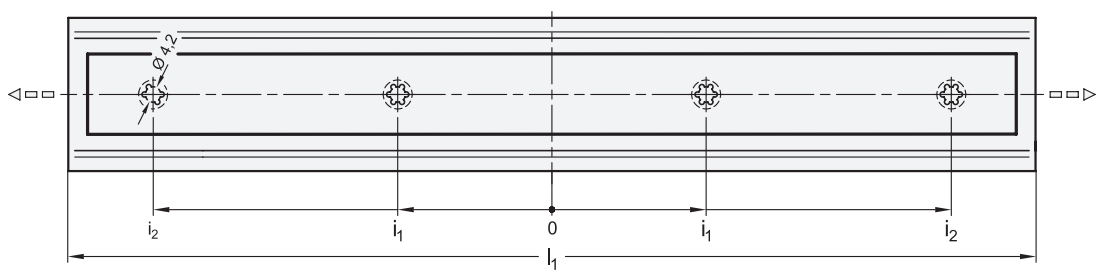
Mounting holes - outer slide



1

l_1	a_1	a_2
500	64	192
600	80	240
700	96	288
800	112	336

Mounting holes - inner slide



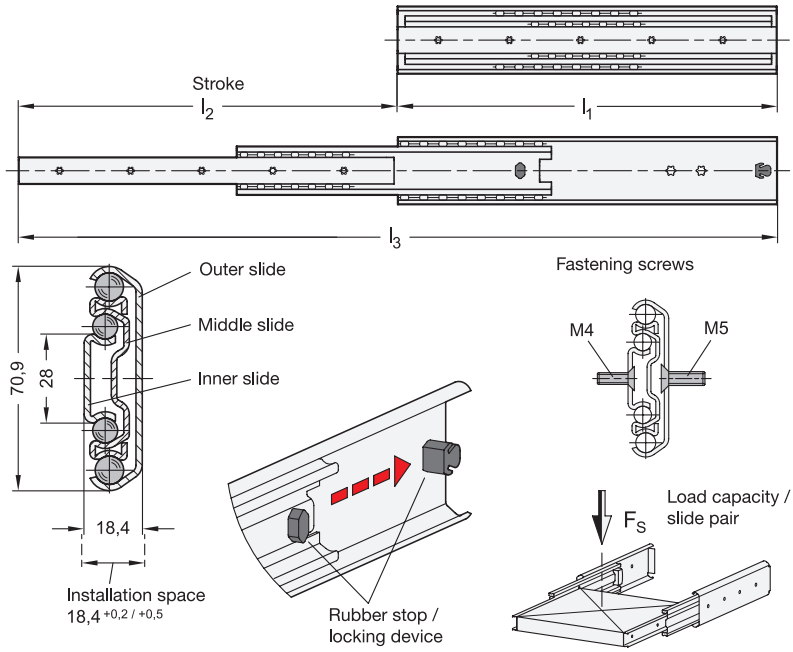
1

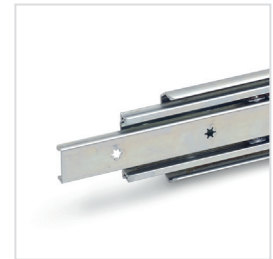
l_1	i_1	i_2
500	64	192
600	80	240
700	96	288
800	112	336

Fastening screws

For the said loading forces F_S to be absorbed reliably in the surrounding structure, all available countersunk holes of the outer and inner slide must be used. Failure to use fastening screws reduces the specified load capacity accordingly. The following screws can be used for mounting:

Designation - standard		Outer slide	Inner slide
Countersunk screw, Phillips	DIN 965	M 5	M 4
Countersunk screw, Phillips	DIN 7997	Size 5	Size 4 / 4,5





2 Type

E with rubber stop, locking device in back

3 Identification no.

2 Fastening using countersunk holes

1

l_1	l_2 +4 −4 Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
400	435	835	1570	970
450	485	935	1600	1030
500	545	1045	1690	1150
550	595	1145	1870	1160
600	650	1250	1890	1180

1

l_1	l_2 +4 −4 Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
700	750	1450	1870	1370
800	850	1650	2120	1470
900	950	1850	1920	1250
1000	1050	2050	1790	1080
1200	1250	2450	1630	950

Specification

4

- Slide profile
  Steel, zinc plated, blue passivated **ZB**
- Bearings
  Roller bearing steel, hardened
- Ball cage
  Steel, zinc plated
- Rubber stop
  Plastic / Elastomer
- Operating temperature -20 °C to 100 °C
- RoHS

On request

- other lengths and hole spacing
- other attachment options
- with latches, partially with detach function (back, front, or back-front)
- with locking devices (front or back-front)
- other surfaces
- with support bracket

Information

Telescopic slides GN 1430 are installed vertically and in pairs. The stroke reaches ≈ 100 % of the nominal length l_1 (full extension). The rubber stops of type E dampen the impact of the slide in the two end positions and takes on the locking function of the back stop position. This feature is noticeable through a slight resistance on opening and closing. If larger static or dynamic loads occur in the direction of extension, they should be absorbed by external stop elements.

The telescopic slides are delivered in **pairs**. They can be installed on the extension on either the left or right side due to the mechanics. All mounting holes are easy to reach through auxiliary holes. Only the mounting holes are shown, but other production-related holes may be present.

see also...

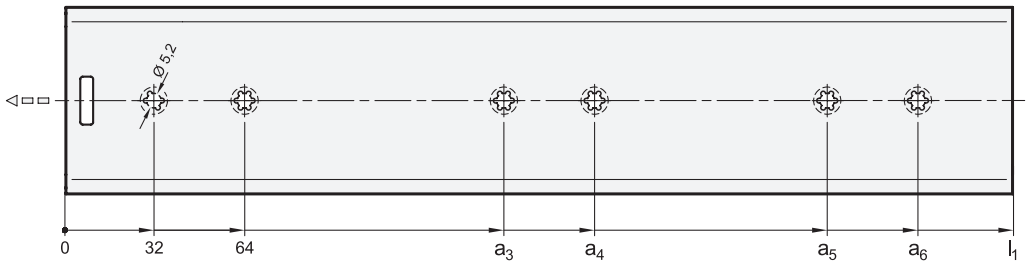
- *Technical information on telescopic slides* → *Page 228 ff.*
- *Telescopic slides GN 1440 (with full extension)* → *Page 219*
- *St. Steel-Telescopic slides GN 1460 (with full extension)* → *Page 225*

How to order

1 2 3 4
GN 1430-1200-E-2-ZB

1	l_1
2	Type
3	Identification no.
4	Finish

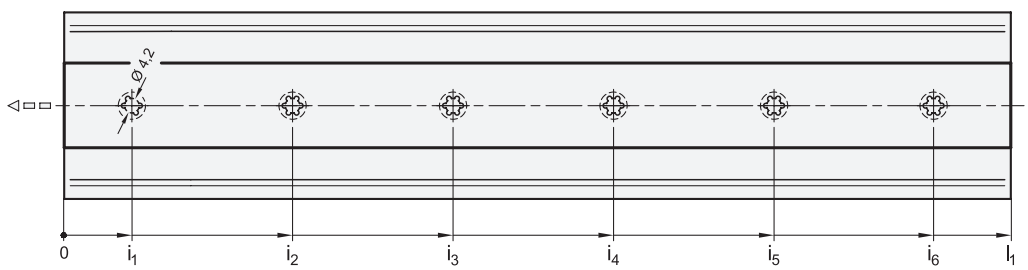
Mounting holes - outer slide



1

l_1	a_3	a_4	a_5	a_6
400	288	320	-	-
450	288	320	-	-
500	352	384	-	-
550	352	384	-	-
600	448	480	-	-
700	448	480	-	-
800	384	416	672	704
900	416	448	768	800
1000	480	512	864	896
1200	576	608	1056	1088

Mounting holes - inner slide



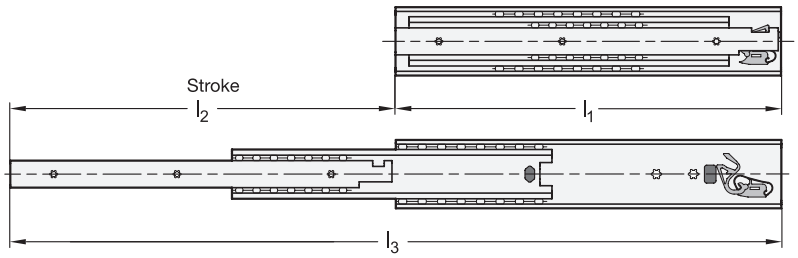
1

l_1	i_1	i_2	i_3	i_4	i_5	i_6
400	43	118	193	268	343	-
450	43	130,5	218	305,5	393	-
500	43	143	243	343	443	-
550	43	155,5	268	380,5	493	-
600	43	168	293	418	543	-
700	43	193	343	493	643	-
800	20	271	522,5	774	-	-
900	20	305	589	874	-	-
1000	20	258,5	497	735,5	974	-
1200	20	251	482	712	943	1174

Fastening screws

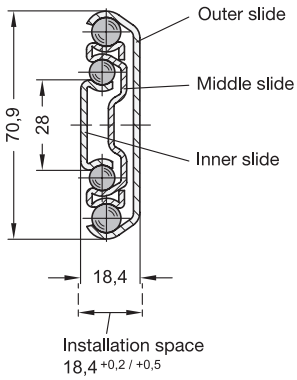
For the said loading forces F_S to be absorbed reliably in the surrounding structure, all available countersunk holes of the outer and inner slide must be used. Failure to use fastening screws reduces the specified load capacity accordingly. The following screws can be used for mounting:

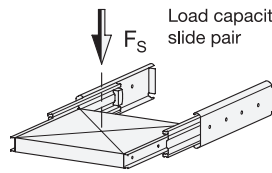
Designation - standard		Outer slide	Inner slide
Countersunk screw, Phillips	DIN 965	M 5	M 4
Countersunk screw, Phillips	DIN 7997	Size 5	Size 4 / 4,5

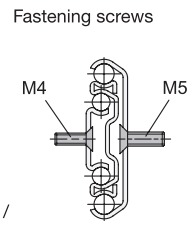


2 Type
B with rubber stop

3 Identification no.
2 Fastening using countersunk holes







1

l_1	l_2 +4 −4 Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
400	400	800	1700	1030
450	450	900	1900	1160
500	500	1000	2120	1250
550	550	1100	2300	1400

1

l_1	l_2 +4 −4 Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
600	600	1200	2300	1450
700	700	1400	2280	1450
800	800	1600	2190	1550

Specification

4

- Slide profile
  Steel, zinc plated, blue passivated **ZB**
- Bearings
  Roller bearing steel, hardened
- Ball cage
  Steel, zinc plated
- Rubber stop
  Plastic / Elastomer
- Self-retracting mechanism
  Stainless Steel / Plastic
- Operating temperature -20 °C to 100 °C
- RoHS

On request

- other lengths and hole spacing
- other attachment options
- with locking device (front)
- other surfaces
- with support bracket

Information

Telescopic slides with self-retracting mechanism GN 1432 are installed vertically and in pairs. The stroke reaches ≈ 100 % of the nominal length l_1 (full extension).

The telescopic slides are delivered in **pairs**. They can be installed on the extension on either the left or right side due to the mechanics. All mounting holes are easy to reach through auxiliary holes. Only the mounting holes are shown, but other production-related holes may be present.

see also...

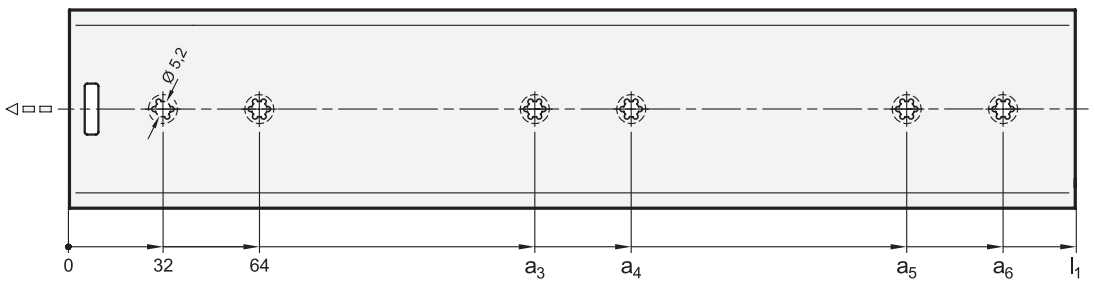
- *Technical information on telescopic slides → Page 228 ff.*
- *Telescopic slides GN 1422 (with self-retracting mechanism) → Page 206*
- *Telescopic slides GN 1424 (with dampened self-retracting mechanism) → Page 209*

How to order

1 2 3 4
GN 1432-550-B-2-ZB

1	l_1
2	Type
3	Identification no.
4	Finish

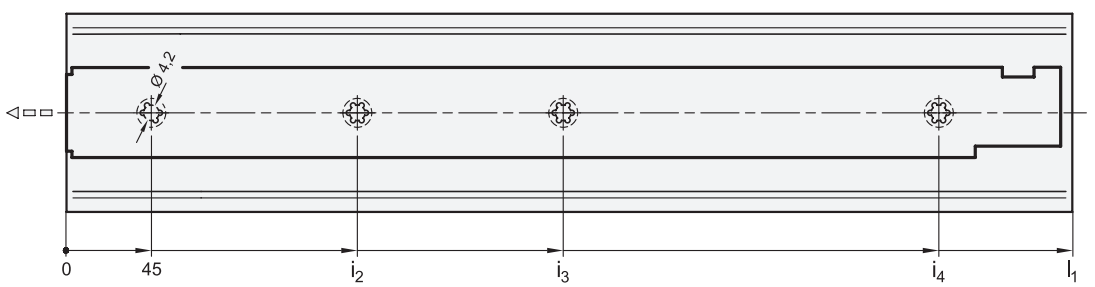
Mounting holes - outer slide



1

l_1	a_3	a_4	a_5	a_6
400	288	320	-	-
450	288	320	-	-
500	352	384	-	-
550	352	384	-	-
600	448	480	-	-
700	448	480	-	-
800	384	416	672	704

Mounting holes - inner slide



1

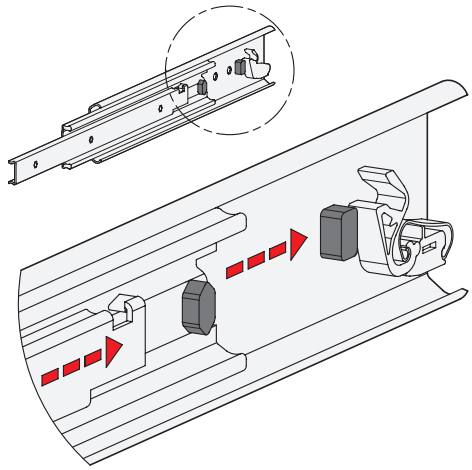
l_1	i_2	i_3	i_4
400	173	333	-
450	205	397	-
500	237	461	-
550	269	493	-
600	173	301	557
700	173	333	653
800	205	397	749

Fastening screws

For the said loading forces F_S to be absorbed reliably in the surrounding structure, all available countersunk holes of the outer and inner slide must be used. Failure to use fastening screws reduces the specified load capacity accordingly. The following screws can be used for mounting:

Designation - standard		Outer slide	Inner slide
Countersunk screw, Phillips	DIN 965	M 5	M 4
Countersunk screw, Phillips	DIN 7997	Size 5	Size 4 / 4,5

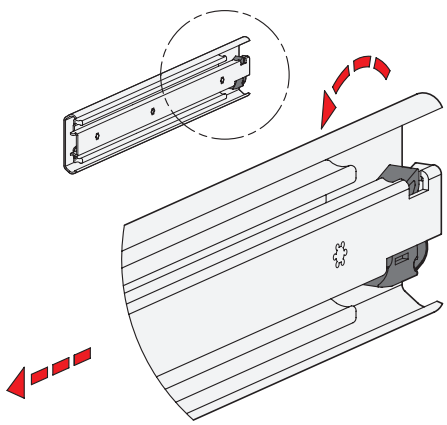
Rubber stop



The rubber stops of type B dampen the impact of the slide in the respective end position. This feature minimizes noise development and increases the lifespan. Attached to the slides in a partially concealed, partially visible manner, the stops meet each of the requirements in regard to shape, material, and hardness.

If larger static or dynamic loads occur in the direction of extension, they should be absorbed by external stop elements.

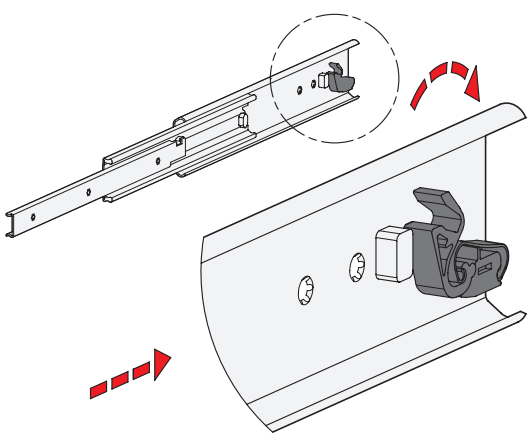
Self-retracting mechanism



Telescopic slides GN 1432 have an integrated self-retracting mechanism, which improves considerably the ease of use when closing the extensions.

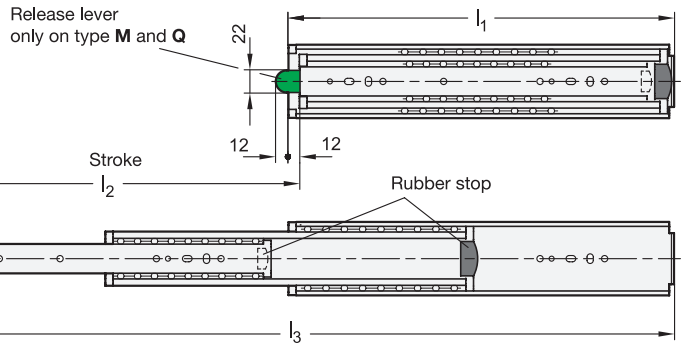
The slides are retracted and held in the back end position automatically by means of a retraction mechanism on the last 22 mm of stroke with a force of approximately 30 newtons for each slide pair. This force has to be overcome accordingly on opening the extension.

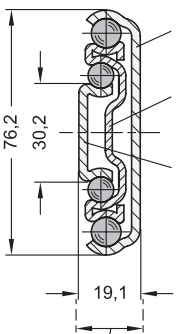
The self-retracting mechanism is also designed in such a way that it uncouples and will not be damaged when the extension is opened or closed in a jerky manner or too quickly. On the following stroke, the self-retracting mechanism clicks back into place automatically, ensuring that the function remains intact.

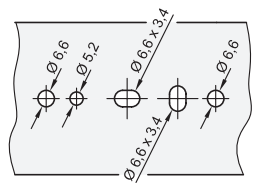


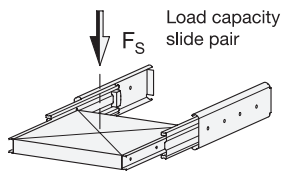
GN 1440 Telescopic slides

with full extension, load capacity up to 3100 N

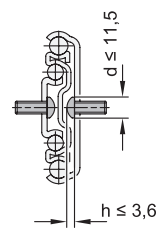








Fastening screws



max. head size of fastening screws

2 Type

- **B** with rubber stop
- **M** with rubber stop, latch in back
- **K** with rubber stop, latch in front
- **Q** with rubber stop, latch in back and in front

3 Identification no.

- **1** Fastening using through-holes

1

l_1	l_2 +4 −4 Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
300	298	586	2250	1575
400	398	786	2500	1750
500	512	1000	2600	1800
600	610	1198	2750	1920
700	708	1396	2950	2250

1

l_1	l_2 +4 −4 Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
800	806	1594	3100	2175
900	904	1792	3200	2250
1000	1000	1988	3250	2275
1200	1212	2400	2950	2025
1500	1504	2992	2250	1575

Specification

4

- Slide profile
  Steel, zinc plated, blue passivated **ZB**
- Bearings
  Roller bearing steel, hardened
- Ball cage
  Plastic
- Latches
  Zinc die casting / Plastic
- Rubber stop
  Plastic / Elastomer
- Operating temperature -20 °C to 100 °C
- RoHS

On request

- other lengths and hole spacing
- other attachment options
- other surfaces

Information

Telescopic slides GN 1440 are installed vertically and in pairs. The stroke reaches ≈100 % of the nominal length l_1 (full extension). Patented plastic ball cages ensure extremely smooth running of the slide.

Telescopic slides of various types, for example, with and without latch, can be combined freely, which is why GN 1440 is delivered **as a single unit** and **not in pairs**. Thanks to the symmetrical design, all types can be installed on either the right or left side on the extension.

All mounting holes are easy to reach through auxiliary holes. Only the mounting holes are shown, but other production-related holes may be present.

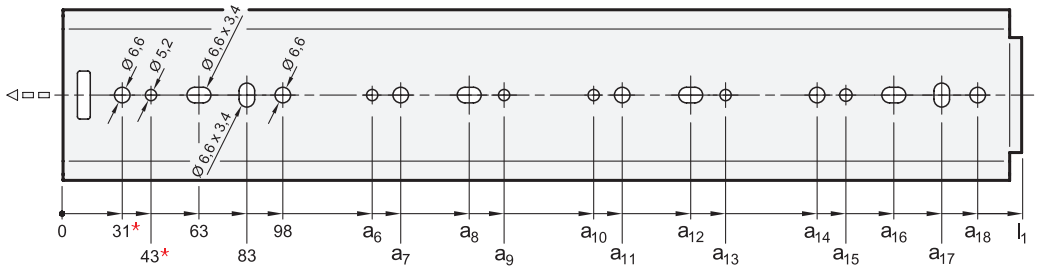
see also...
- *Technical information on telescopic slides → Page 228 ff.*

How to order

GN 1440-1500-K-1-ZB
1 2 3 4

1	l_1
2	Type
3	Identification no.
4	Finish

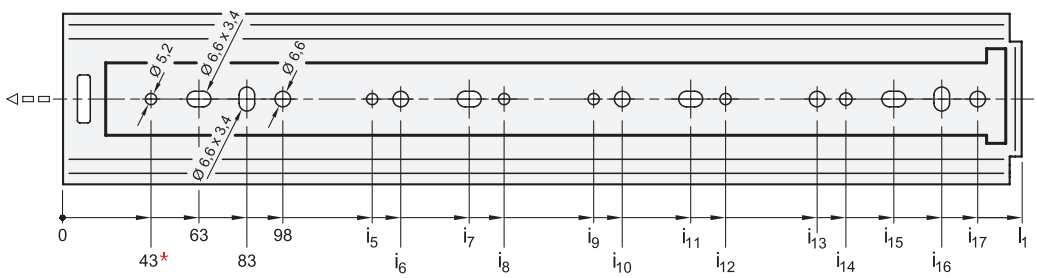
Mounting holes - outer slide



1

l_1	a_6	a_7	a_8	a_9	a_{10}	a_{11}	a_{12}	a_{13}	a_{14}	a_{15}	a_{16}	a_{17}	a_{18}
300	-	-	-	-	-	-	-	-	161	173	193	213	228
400	-	-	-	-	-	-	-	-	261	273	293	313	328
500	-	-	-	-	-	-	-	-	361	373	393	413	428
600	213	228	363	378	-	-	-	-	461	473	493	513	528
700	213	228	363	378	-	-	-	-	561	573	593	613	628
800	313	328	463	478	-	-	-	-	661	673	693	713	728
900	313	328	463	478	-	-	-	-	761	773	793	813	828
1000	413	428	563	578	-	-	-	-	861	873	893	913	928
1200	313	328	463	478	713	728	863	878	1061	1073	1093	1113	1128
1500	413	428	563	578	913	928	1063	1078	1361	1373	1393	1413	1428

Mounting holes - inner slide



1

l_1	i_5	i_6	i_7	i_8	i_9	i_{10}	i_{11}	i_{12}	i_{13}	i_{14}	i_{15}	i_{16}	i_{17}
300	-	-	-	-	-	-	-	-	-	173**	-	213	228
400	-	161	-	-	-	-	-	-	261	273	293	313	328
500	-	229	-	-	-	-	-	-	361	373	393	413	428
600	213	228	398	413	-	-	-	-	461	473	493	513	528
700	313	328	463	478	-	-	-	-	561	573	593	613	628
800	313	328	498	513	-	-	-	-	661	673	693	713	728
900	413	428	563	578	-	-	-	-	761	773	793	813	828
1000	413	428	598	613	-	-	-	-	861	873	893	913	928
1200	313	328	463	478	713	728	863	878	1061	1073	1093	1113	1128
1500	413	428	563	578	913	928	1063	1078	1361	1373	1393	1413	1428

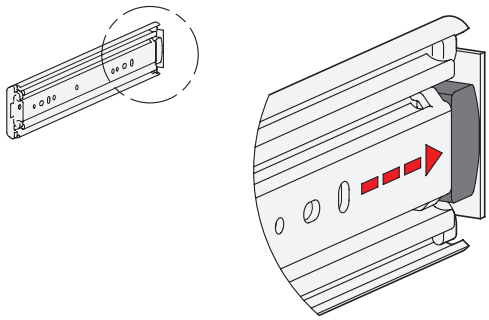
* Bores are only usable on type B and type K. ** Bores are only usable on type B and type M.

Fastening screws

For the said loading forces F_S to be absorbed reliably in the surrounding structure, all available through-holes of the outer and inner slide having a diameter (Ø) of 6.6 must be used. Alternatively, holes with a diameter (Ø) of 5.2 are available. The elongated holes, Ø 6.6 x 3.4, facilitate adjustment during mounting when needed. Failure to use fastening screws reduces the load capacity. The following screws can be used for mounting:

Designation - standard		Outer slide	Inner slide
Hexagon socket button head screw	ISO 7380	M 5 / M 6	M 5 / M 6
Hexagon socket low cylindrical head screw	DIN 7984 / DIN 6912	M 5	M 5

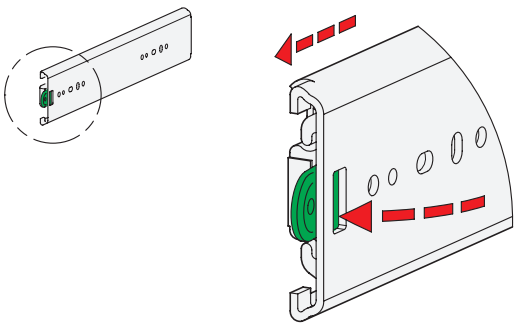
Type **B** with rubber stop



The rubber stops of type B dampen the impact of the slide in the respective end position. This feature minimizes noise development and increases the lifespan. Attached to the slides in a partially concealed, partially visible manner, the stops meet each of the requirements in regard to shape, material, and hardness.

If larger static or dynamic loads occur in the direction of extension, they should be absorbed by external stop elements.

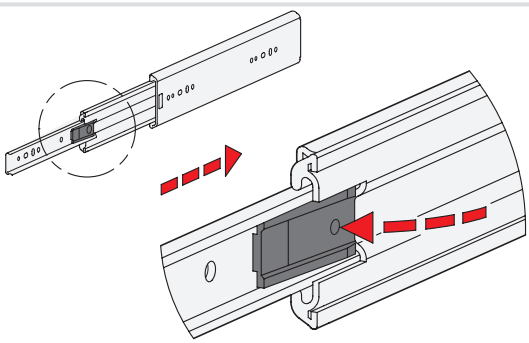
Type **M** with rubber stop, latch in back



Type M is used in applications in which the slide needs to be locked in the back end position. This feature prevents the slide from extending on its own, for example, due to a tilted position. If larger loads occur in the direction of extension in the latched position, they should be absorbed by external latch elements.

The latch mechanism locks into place in a spring-loaded opening of the outer slide in the closed state. Pressing the release lever releases the inner and middle slide for extension. Back in the back stop position, the mechanism locks into place automatically in the opening of the outer slide by moving over a ramp.

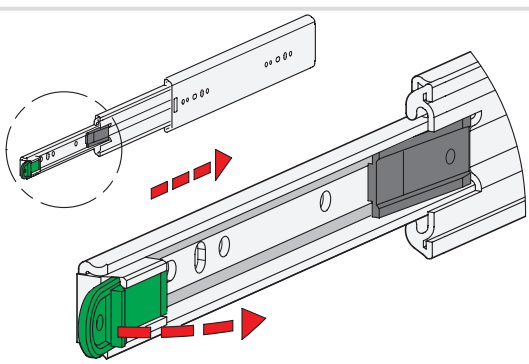
Type **K** with rubber stop, latch in front



Type K is used when the extension needs to stay in the front stop position for a certain amount of time. This feature allows maintenance work to be performed when the extension is expanded, for example. If larger loads occur in the latched position, they should be absorbed by external latch elements.

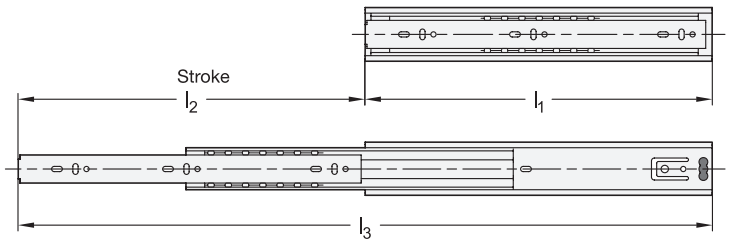
For the function to be activated, the slide has to be fully extended to the front, where it will automatically click into place through a pretensioned locking lever. Pressing the lever releases the slide, allowing slide to retract again.

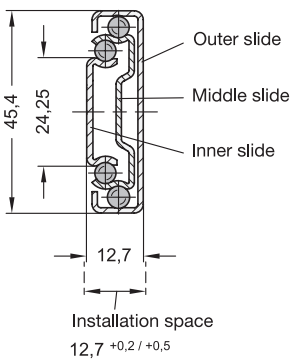
Type **Q** with rubber stop, latch in back-front

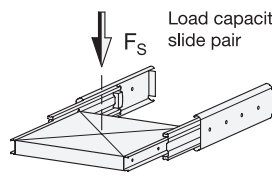


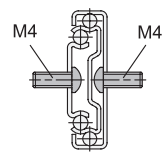
Type Q unites the properties of types M and K. The inner and middle slide lock into place in the respective end position.

Unlike the release of type K, type Q is activated through an internal rod by a convenient “remote control.” The green activation lever is pressed out, the locking lever activated, and the slide released for retraction.









Inox Stainless Steel

2 Type

F with rubber stop, locking device in back, detach function

3 Identification no.

1 Fastening using through-holes

1 l_1	l_2 $^{+3}_{-3}$ Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
300	300	600	460	340
350	350	700	480	360
400	400	800	510	390
450	450	900	510	390

1 l_1	l_2 $^{+3}_{-3}$ Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
500	500	1000	480	360
550	550	1100	460	340
600	600	1200	440	340

Specification

4

- Slide profile and bearings
  Stainless Steel
  AISI 304 **NI**
- Ball cage of outer slide
  Plastic
- Ball cage of inner slide
  Stainless Steel
  AISI 304
- Ruber stop and detach function
  Plastic / Elastomer
- Lubricant
  Roller bearing grease, FDA-compliant
- Operating temperature -20 °C to 100 °C
- *Stainless Steel characteristics*
  → *Main Catalogue Page 1489*
- RoHS

On request

- other lengths and hole spacing
- other attachment options

Information

Stainless Steel-Telescopic slides GN 1450 are installed vertically and in pairs. The stroke reaches ≈ 100 % of the nominal length l_1 (full extension).

The telescopic slides are delivered in **pairs**. They can be installed on the extension on either the left or right side due to the mechanics. All mounting holes are easy to reach through auxiliary holes. Only the mounting holes are shown, but other production-related holes may be present.

see also...

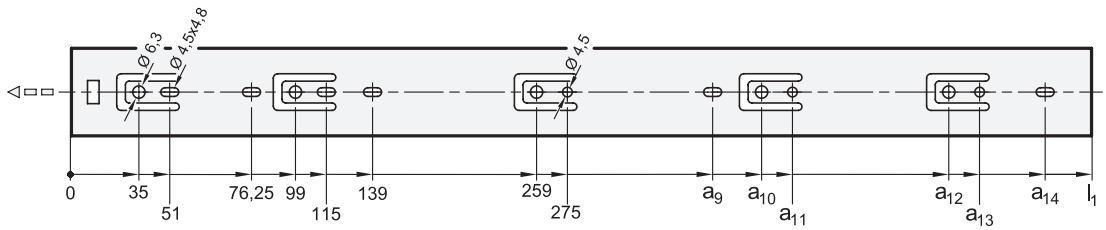
- *Technical information on telescopic slides* → *Page 228 ff.*
- *Stainless Steel-Telescopic slides GN 1460 (with full extension)* → *Page 225*
- *Telescopic slides GN 1410 (with full extension)* → *Page 198*

How to order

1 2 3 4
GN 1450-400-F-1-NI

1	l_1
2	Type
3	Identification no.
4	Material

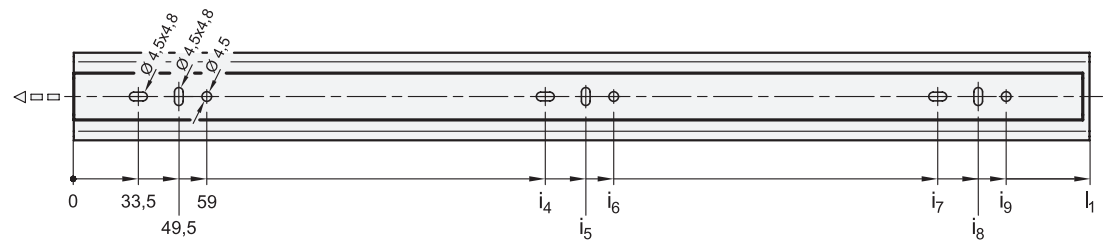
Mounting holes - outer slide



1

l_1	a_9	a_{10}	a_{11}	a_{12}	a_{13}	a_{14}
300	-	-	-	-	-	-
350	309	-	-	-	-	-
400	-	323	339	-	-	373
450	361,5	387	403	-	-	-
500	361,5	387	403	451	467	-
550	361,5	387	403	451	467	501
600	361,5	387	403	515	531	565

Mounting holes - inner slide



1

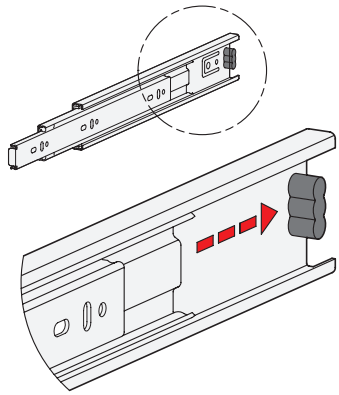
l_1	i_4	i_5	i_6	i_7	i_8	i_9
300	129,5	145,5	155	257,5	273,5	283
350	161,5	177,5	187	289,5	305,5	315
400	193,5	209,5	219	353,5	369,5	379
450	193,5	209,5	219	385,5	401,5	411
500	225,5	241,5	251	449,5	465,5	475
550	257,5	273,5	283	481,5	497,5	507
600	289,5	305,5	315	545,5	561,5	571

Fastening screws

For the said loading forces F_S to be absorbed reliably in the surrounding structure, all available through-holes of the outer and inner slide having a diameter (Ø) of 4.5 must be used. Alternatively, the outer slide has holes with a diameter (Ø) of 6.3 for Euro screws. The elongated holes, Ø 4.5 x 4.8, are used likewise for fastening and facilitate adjustment during mounting when needed. Failure to use fastening screws reduces the specified load capacity accordingly. The following screws can be used for mounting:

Designation - standard		Outer slide	Inner slide
Hexagon socket button head screw	ISO 7380	M 4	M 4
Pan head screw, Phillips	ISO 7045	M 4	M 4
Pan head tapping screw, Phillips	ISO 7049	ST 3,9 / 4,2	ST 3,9 / 4,2

Rubber stop, locking device in back

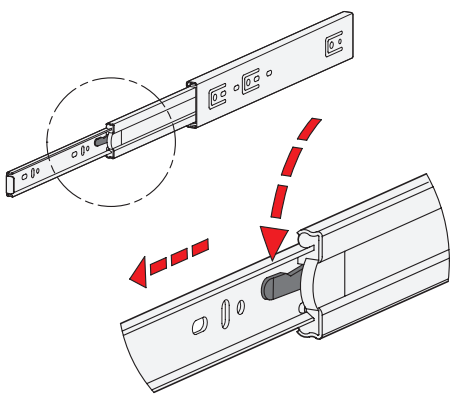


The rubber stops of type F dampen the impact of the slide in the respective end position. This feature minimizes noise development and increases the lifespan. Attached to the slides in a partially concealed, partially visible manner, the stops meet each of the requirements in regard to shape, material, and hardness.

The rubber stop takes on also a locking function in the back stop position. This feature is noticeable through a slight resistance on opening and closing the slide.

If larger static or dynamic loads occur in the direction of extension, they should be absorbed by external stop elements.

Detach function

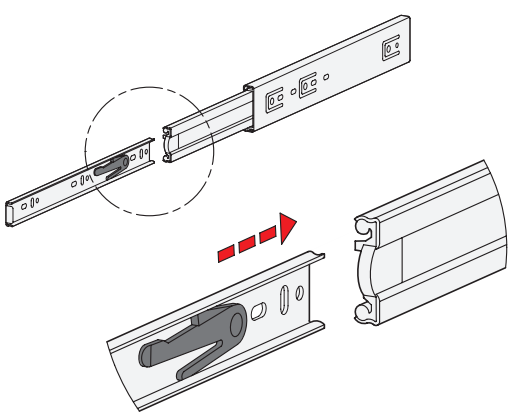


Type F has additionally a detach function through which the extension slides can be completely separated from one another in the area of the middle and inner slide. This feature not only facilitates mounting. It also allows the extension to be quickly removed, for example, when frequent maintenance work is performed on the components located behind.

The telescopic slide can be quickly and easily detached in the extracted position through activation of the release lever, allowing the inner slide to be removed from the front.

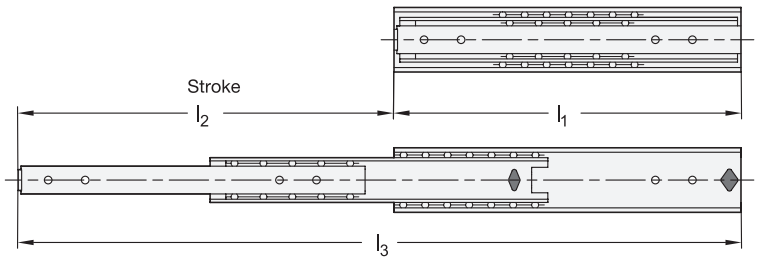
For reattaching the slides, the ball cages need to be moved to the front end position. Then the inner slide is inserted to the back end stop where it locks into place automatically.

The protected arrangement of the release mechanism prevents accidental detachment of the slide.

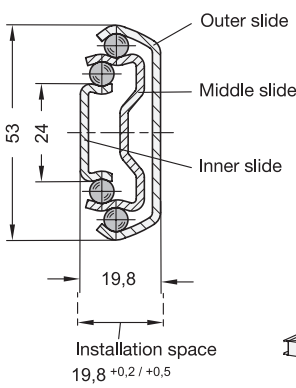


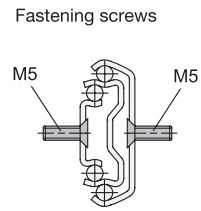
GN 1460 Stainless Steel-Telescopic slides

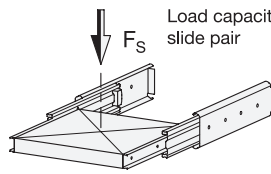
with full extension, load capacity up to 1050 N



Inox Stainless Steel







2 Type

F with rubber stop, locking device in back, detach function

3 Identification no.

1 Fastening using countersunk holes

1 l_1	l_2 +3 −3 Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
250	274	524	750	520
300	325	625	960	660
350	374	724	980	680
400	424	824	1000	700
450	475	925	1020	710
500	524	1024	1050	730

1 l_1	l_2 +3 −3 Stroke	l_3	F_S per pair in N at 10,000 cycles	F_S per pair in N at 100,000 cycles
550	575	1125	1050	730
600	625	1225	980	680
650	675	1325	930	650
700	750	1450	880	630
750	800	1550	880	630
800	850	1650	880	630

Specification

4

- Slide profile / Bearings / Ball cage Stainless Steel AISI 304 **NI**
- Ruber stop and detach function Plastic / Elastomer
- Lubricant Roller bearing grease, FDA-compliant
- Operating temperature -20 °C to 100 °C
- *Stainless Steel characteristics* → *Main Catalogue Page 1489*
- RoHS

On request

- other lengths and hole spacing
- other attachment options

Information

Stainless Steel-Telescopic slides GN 1460 are installed vertically and in pairs. The stroke reaches ≈ 100 % of the nominal length l_1 (full extension).

The telescopic slides are delivered in **pairs**. They can be installed on the extension on either the left or right side due to the mechanics. All mounting holes are easy to reach through auxiliary holes. Only the fastening holes are shown, but other production-related holes may be present.

see also...

- *Technical information on telescopic slides* → *Page 225 ff.*
- *Stainless Steel-Telescopic slides GN 1450 (with full extension)* → *Page 222*
- *Telescopic slides GN 1420 (with full extension)* → *Page 204*

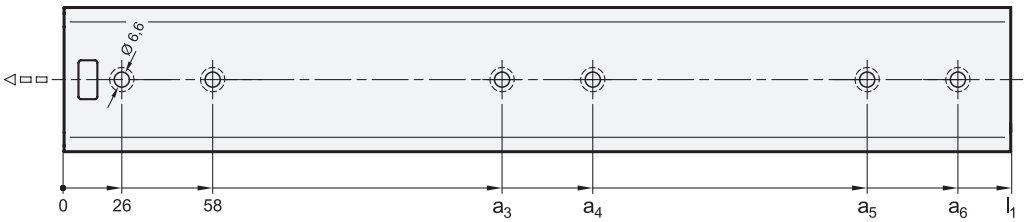
How to order

1 2 3 4

GN 1460-750-F-2-NI

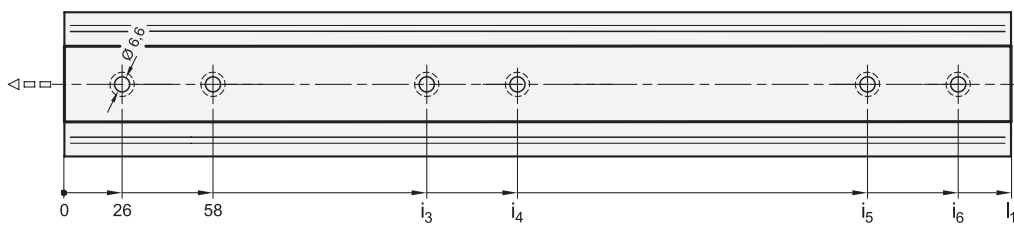
1	l_1
2	Type
3	Identification no.
4	Material

Mounting holes - outer slide



l_1	a_3	a_4	a_5	a_6
250	176	208	-	-
300	226	258	-	-
350	250	282	-	-
400	186	218	314	346
450	186	218	360	392
500	218	250	410	442
550	218	250	460	492
600	218	250	510	542
650	326	358	560	592
700	326	358	610	642
750	326	358	660	692
800	326	358	710	742

Mounting holes - inner slide



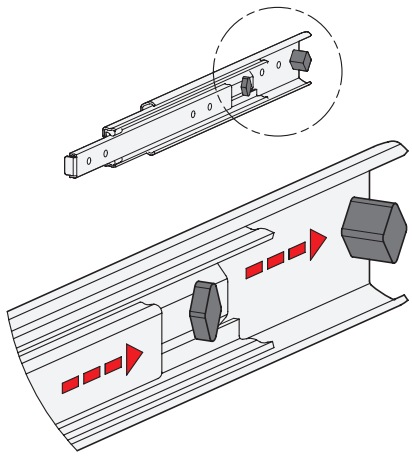
l_1	i_3	i_4	i_5	i_6
250	187	219	-	-
300	226	258	-	-
350	250	282	-	-
400	154	186	314	346
450	154	186	360	392
500	186	218	410	442
550	186	218	460	492
600	186	218	510	542
650	186	218	560	592
700	276	308	610	642
750	276	308	660	692
800	276	308	710	742

Fastening screws

For the said loading forces F_S to be absorbed reliably in the surrounding structure, all available countersunk holes of the outer and inner slide must be used. Failure to use fastening screws reduces the specified load capacity accordingly. The following screws can be used for mounting:

Designation - standard		Outer slide	Inner slide
Hexagon socket countersunk head screw	DIN 7991	M 5	M 5
Countersunk screw, Phillips	DIN 965	M 5	M 5
Countersunk screw, Phillips	DIN 7997	Size 5	Size 5

Rubber stop, locking device in back

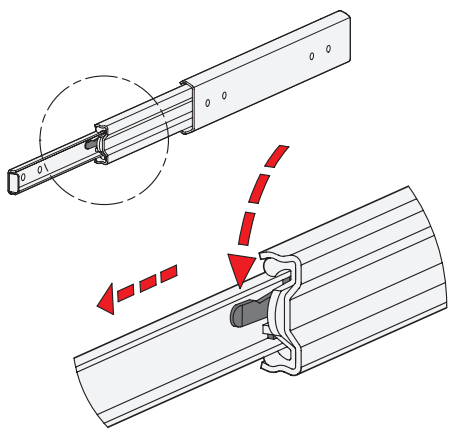


The rubber stops of type F dampen the impact of the slide in the respective end position. This feature minimizes noise development and increases the lifespan. Attached to the slides in a partially concealed, partially visible manner, the stops meet each of the requirements in regard to shape, material, and hardness.

The rubber stop takes on also a locking function in the back stop position. This feature is noticeable through a slight resistance on opening and closing the slide.

If larger static or dynamic loads occur in the direction of extension, they should be absorbed by external stop elements.

Detach function

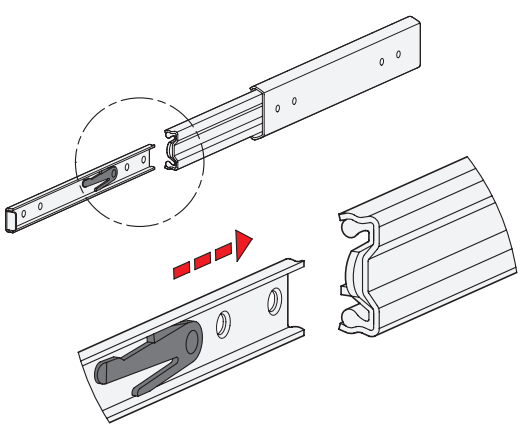


Type F has additionally a detach function through which the extension slides can be completely separated from one another in the area of the middle and inner slide. This feature not only facilitates mounting. It also allows the extension to be quickly removed, for example, when frequent maintenance work is performed on the components located behind.

The telescopic slide can be quickly and easily detached in the extracted position through activation of the release lever, allowing the inner slide to be removed from the front.

For reattaching the slides, the ball cages need to be moved to the front end position. Then the inner slide is inserted to the back end stop where it locks into place automatically.

The protected arrangement of the release mechanism prevents accidental detachment of the slide.

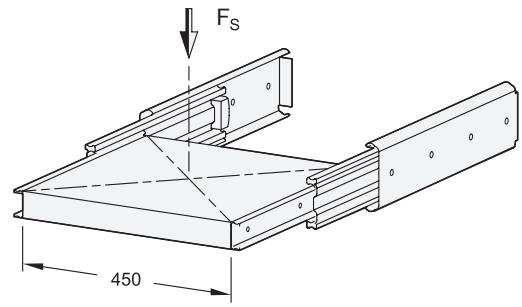


Load capacity

The maximum load capacity of telescopic slides depends on the slide profile, the nominal length l_1, and the resulting stroke l_2. Furthermore, the extension width, the slide materials used, and the parts of the component options, such as the dampened self-retracting mechanism, have a considerable influence.

The information on the maximum load capacity of the telescopic slides was determined in fatigue tests under the following conditions:

- Slide arrangement vertical in pairs
- Observance of all mounting information
- Warp-resistant test set-up
- Equal distribution of the load F_S throughout the extension finish
- Standard slide spacing of 450 mm
- 10,000 or 100,000 test cycles (one extraction and retraction = one cycle)
- Gradual increasing of load



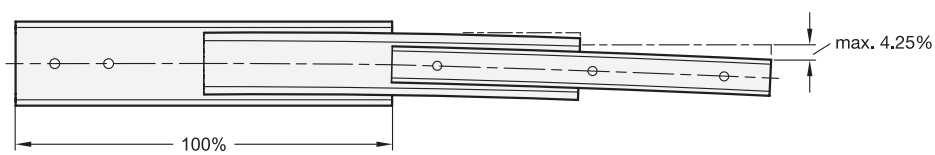
Wear, performance, and maximum bending were assessed after every test segment.

Bending

Telescopic slides demonstrate elastic bending under load in the extended state. The bending is most noticeable at the far end of the inner slide. The general rule is that the extent of deformation may not be higher than 4.25 % of the stroke path. All slides are within this value on maximum load.

Example:

A telescopic slide having a nominal length of l_1 = 500 mm is moved to the end position and stressed with the maximum load throughout the extension finish. The bending at the front-most point of the slide may now be a maximum of 21.25 mm.



Tolerances

All components of the telescopic slides are subject to manufacturing tolerances that ensure consistent quality and a long lifespan.

Since the stroke results from the interaction of all individual parts of the telescopic slides, the sum of all individual tolerances also has to be taken into account for the length tolerance of the stroke. In addition, slight deformation of any existing rubber stops should be mentioned. This results overall in proportionately large total tolerances that are listed on the respective catalog pages and can, therefore, be taken into account in the design layout of extensions.

Travel speed

The permissible extraction and retraction speeds of the telescopic slides are set at a maximum speed of 0.3 m/s. Shortly before the end of stroke, the speed should be reduced to less than 0.15 m/s so that the stops, rubber stops, dampened self-retracting mechanisms etc., do not have an excessive amount of impact stress.

Slide materials, surfaces and corrosion protection

The telescopic slides made by Ganter are manufactured out of high-quality steel or stainless steel bands.

The stainless steel telescopic slides are generally delivered with mill-finish surfaces.

The steel telescopic slides are partly made out of a pre-zinc plated steel band and are subsequently batch zinc plated and blue passivated with 5 to 7 µm. Corrosion resistance in the salt spray test for at least 72 hours against white rust is ensured in this way.

To achieve higher corrosion resistance, finish refinements can be provided on request. Two processes are available:

- Galvanically batch zinc plated 5 to 7 µm, black passivated,
  corrosion resistance in salt spray test for at least 120 hours against white rust
- Galvanically batch zinc plated 5 to 7 µm, passivated,
  electrolytically coated with T2 top coat / sealer 8 to 12 µm,
  corrosion resistance in the salt spray test for at least 96 hours against white rust /
  500 hours against red rust

All materials and finish refinements used are RoHS compliant.

Lubrication and maintenance

Telescopic slides are permanently lubricated with high-quality, mineral-oil-based and lead-free bearing lubricants.

For stainless steel telescopic slides, special FDA-compliant lubricants are used that are tasteless and odorless. The lubricants comply with lubricant class H1, which allows them to be used in areas where it is technically infeasible to prevent occasional contact with food. Generally direct contact can be prevented by taking appropriate actions, such as optimum placement of slides or the use of covers.

Re-lubrication is generally not necessary under normal conditions of use since the ball cages and bearings “push out” small amounts of obtained dirt from the slides when the slides move. In applications where there is heavy contamination, the slides should be cleaned from time to time with a clean cloth and then re-lubricated. Acceptable lubricants for the steel variants are, for example, Shell Alvania EP 1 and Klüberplex BE 31-222.

Cage slip

In the event of quick changes of direction and high acceleration forces, cage slip can occur in the worst case, especially with long ball cages. In these cases, the cage does not move synchronously at half the speed of the middle and inner slides. Instead it loses its correct position gradually due to sliding. In such cases an “idle stroke” may need to be moved in the front and back stop position of the slide, at a moderate speed and under slight load to reposition the cage.

Temperature of use

The temperature of use of telescopic slides is within the range of -20 °C to 100 °C and is determined primarily by the plastic and elastomer parts used in the slides. Depending on place of use and application, the user may have to check the function of the extensions if the temperature is at the limit.

General installation information

Follow the installation information below when mounting telescopic slides. Ideally this information should have already been taking into account in the design of the extensions. Doing so ensures smooth running, quiet, and low-wear operation of the slides over a long period of time and guarantees function in the long run.

- Telescopic slides are generally installed in pairs so that the mounting surfaces of the housing and extension side are level, parallel, and perpendicular and have to be aligned with one another correctly in regard to position. Furthermore attention should be given to adequate stability of the receiving structure so as to keep geometric errors caused by elastic deformation as minimal as possible.
- Fastening holes should be applied in such a way that excludes twisting or warping of the slides during mounting. Also the slides need to be positioned in the direction of extraction in such a way that the extensions reach the end position at the same time on retraction and extraction. In this way, an equal amount of stress acts on the rubber stops and locking devices.
- The width of the respective slide installation spaces should be designed with a tolerance of +0.2 / +0.5 mm. The slides will then tension slightly in the direction of the middle of the extension. This promotes optimum performance and a long lifespan.
- Before mounting, the inner slides should be moved to the front and back stop position once to allow the ball cages to assume their intended position. Installation should also take place at room temperature.
- After mounting, check the telescopic slides and extensions for ease of movement. If something is wrong, such as sticking or warping, the cause has to be determined and eliminated through appropriate actions.

Mounting holes, fastening screws

In general use all holes intended for fastening when mounting telescopic slides. Doing so will ensure that the forces resulting from the maximum load capacity F_S (nominal load) can be transferred safely from the telescopic slides from and to the surrounding structure. Failure to use fastening screws reduces the specified load capacity accordingly.

The outer and inner slides have other openings and auxiliary holes in addition to the holes intended for mounting. The catalog drawings and the CAD data available for download do not show these holes to exclude confusion and design faults. These holes are needed, among other things, for the fastening of type-dependent component features, such as the self-retracting mechanisms.

Some slide variants have fastening options for screws of various sizes. In this case, all positions of a size or type should be used. Auxiliary holes, which ensure that all mounting holes can be reached, are found accordingly in the CAD data, but are not pictured in the catalog drawings.

The type and specification of suitable screws can be found on the respective catalog pages. It is generally recommended to use screws of tensile strength class 8.8 under consideration of the specified tightening torque.

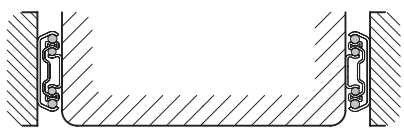
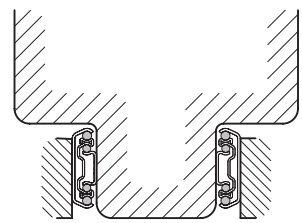
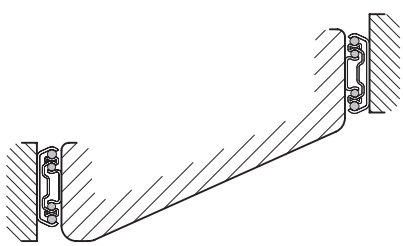
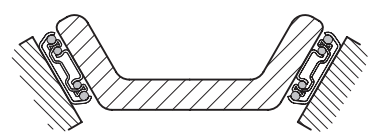
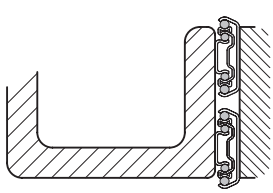
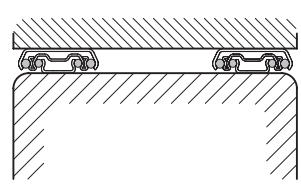
Installation position

Telescopic slides are preferably installed arranged vertically and in pairs in a horizontal position. This ensures that the highest possible stability and torsional stiffness is reached in the smallest installation spaces and allows for absorption of the maximum load (nominal load). The performance features are optimum in this installation position, and wear is reduced to a minimum.

The horizontal or lying installation of the slide is likewise possible with certain restrictions. The maximum load in this case is only about 20 % to 25 % of the specified nominal load. The less favorable slide profile results, therefore, in considerably higher bending in the extended state. As a result, the ball cages may leave streaks on the heads of the fastening screws. In case of doubt, check the function under load in a test set-up.

Installing slides in a perpendicular position to the direction of extraction is not recommended because increased cage slip occurs in this case. This means that the upper and lower end position of the slide can be reached in some circumstances only with an increased amount of force after a few cycles since the force of gravity causes the ball cage to become dislocated from its correct position.

The following examples show possible **installation positions** of telescopic slides that are considered favorable or acceptable and some that are regarded as unfavorable and should, therefore, be avoided.

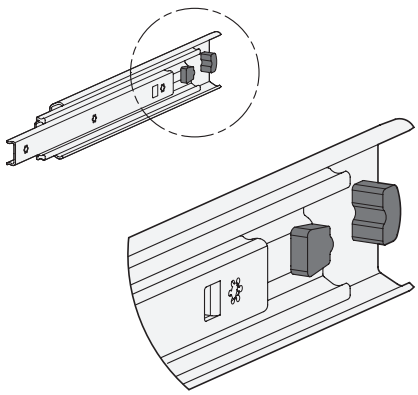
favorable	**vertically, on both sides**	
		
acceptable	**vertically shifted, on both sides**	**vertically inclined, on both sides**
		
unfavorable	**vertically, on one side**	**horizontally, on both sides**
		

Information

Telescopic slides can be delivered with a number of component options. Some are available for one of the two stop positions and in combination, and they are defined by the „type“ in the article number.

The following overview shows examples of possible characteristics of the various types and component features. The components used and the employed mechanisms are adapted to match the available installation space, cross section, and structure of the selected slides and have accordingly different designs depending on slide variant. Functionality is comparable, however, and sometimes even identical.

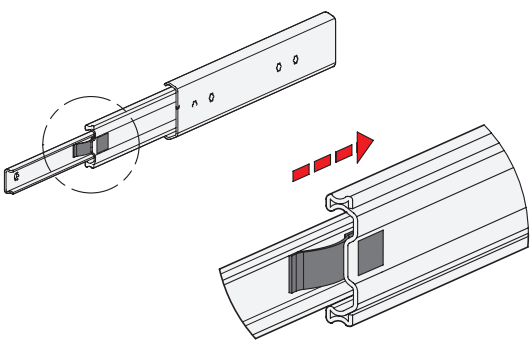
Rubber stops



The rubber stops used in almost all slide variants dampen the impact of the slide in the respective end position. This feature minimizes noise development and increases the lifespan. Attached to the slides in a partially concealed, partially visible manner, the stops meet each of the requirements in regard to shape, material, and hardness.

If larger static or dynamic loads occur in the direction of extension, they should be absorbed by external stop elements.

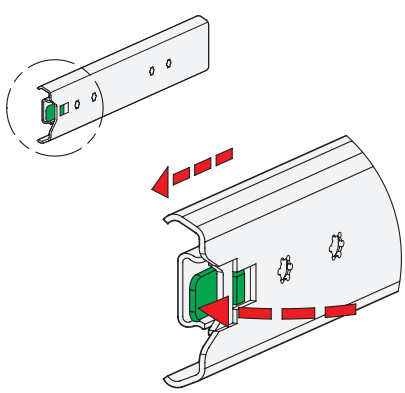
Locking devices



The locking function is noticeable by a slight resistance of the slides in the end positions, which has to be overcome on opening and closing. The locking device in the back stop position is usually integrated into the rubber stop function, making additional components unnecessary.

The locking device is frictionally engaged and, therefore, does not act as a positive locking latch.

Latches

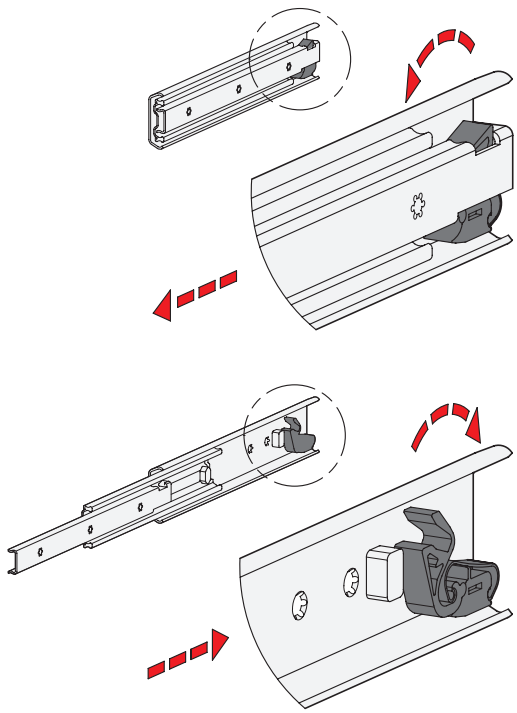


Unlike locking devices, a latch secures the slides in the stop positions in a frictionally engaged way. Telescopic slides with latches are used when the slides need to be protected against independent extension or retraction, for example, due to a tilted position.

A mechanism found within the inner slide latches automatically spring-loaded by moving over a ramp on reaching the respective stop position. Pressing the release lever releases the latch, allowing the slide to move again.

If larger loads occur in the direction of extension in the latched position, they should be absorbed by external latch elements.

Self-retracting mechanism

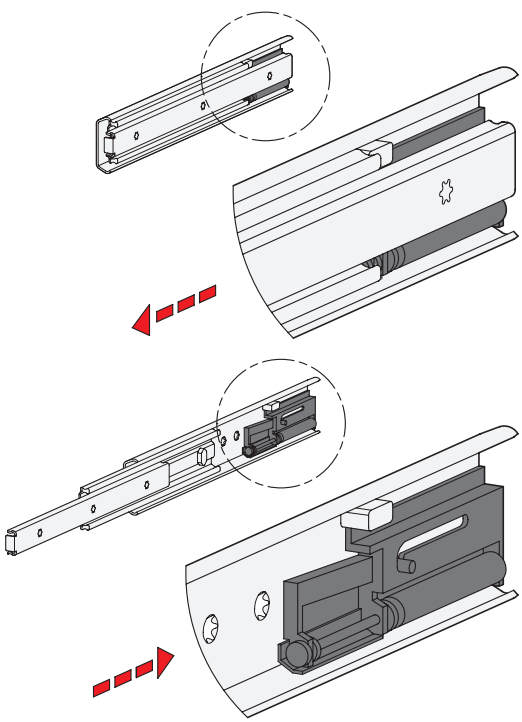


Telescopic slides can have an integrated self-retracting mechanism, which improves considerably the ease of use when closing the extensions.

In the version shown in the example, the slides are retracted and held in the back end position automatically by means of a retraction mechanism on the last 22 mm of stroke with a force of approximately 30 newtons for each slide pair. This force has to be overcome accordingly on opening the extension.

This variant is also designed in such a way that mechanism uncouples and will not be damaged when the extension is opened or closed in a jerky manner or too quickly. On the following stroke, the self-retracting mechanism clicks back into place automatically, ensuring that the function remains intact.

Self-retracting mechanism, dampened

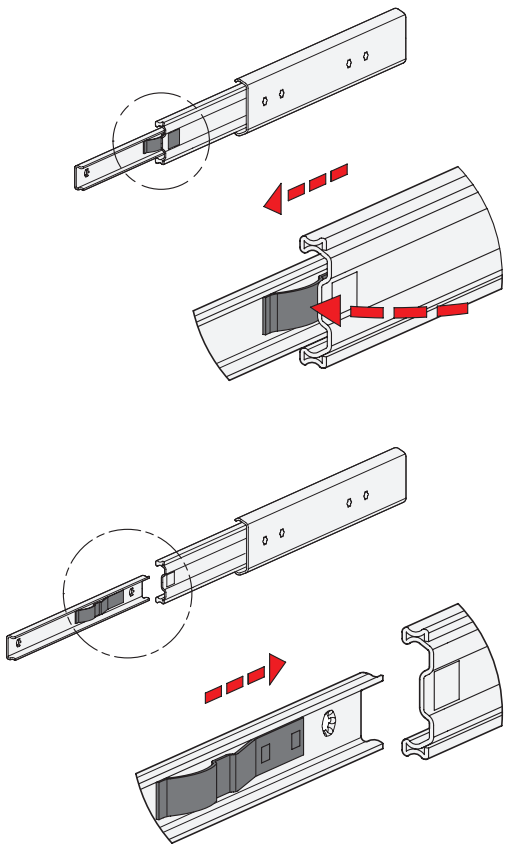


Dampened self-retracting mechanisms are also called “soft-close” and are divided into two main functions. They offer the best possible ease of use on closing the extension.

In the example shown, the self-retracting mechanism takes over the automatic retraction of the slides on the last 40 mm of stroke in the back stop position, where the slides are then held in place. The retraction force is about 35 newtons per slide pair. Also the dampening mechanism slows down to a considerably reduced speed the closing movement on the said stroke, while achieving a extremely gentle and smooth closing movement. This retraction force has to be overcome accordingly on opening the extension.

When dampened self-retracting mechanisms are used, the specified load values and stroke speeds may not be exceeded on reaching the retraction mechanism.

Detach function



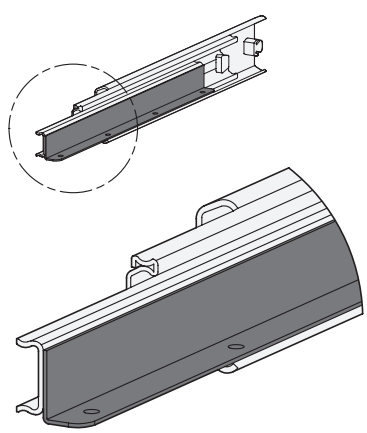
Telescopic slides with a detach function can be completely separated from one another in the area of the middle and inner slide. This feature not only facilitates mounting. It also allows the extension to be quickly removed, for example, when maintenance work is performed on the components located behind.

In the example shown, the telescopic slide can be quickly and easily detached in the extracted position through activation of a flat spring, allowing the inner slide to be removed from the front.

For reattaching the slides, the ball cages need to be moved basically to the front end position. Then the inner slide is inserted to the back end stop where it locks back into place automatically.

The protected arrangement of the various release mechanisms prevents accidental detachment of the slide.

Support and mounting brackets

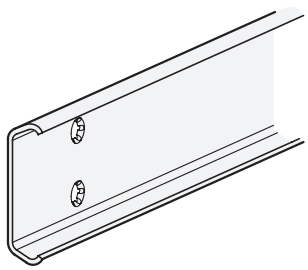
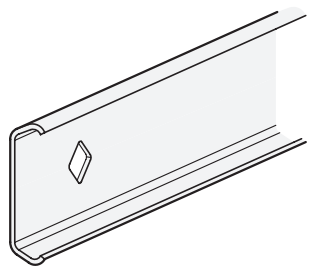
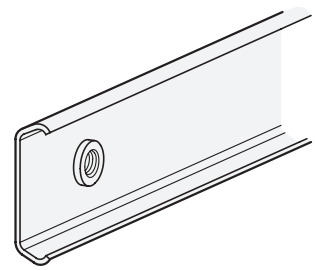


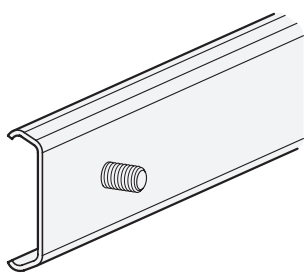
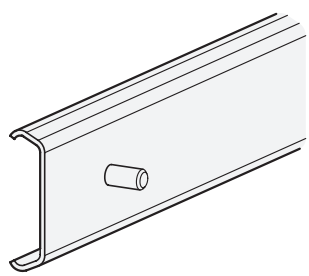
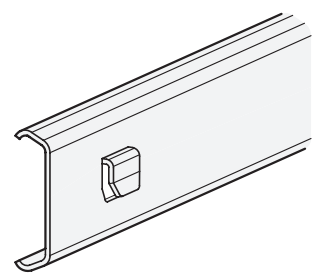
Support brackets on the inner slide are available on request for some slide variants, even in small quantities. The support bracket is used for simple fastening, for example, of a drawer, if side mounting is not possible. Fastening occurs by means of through-holes that are arranged at a right angle in the bracket.

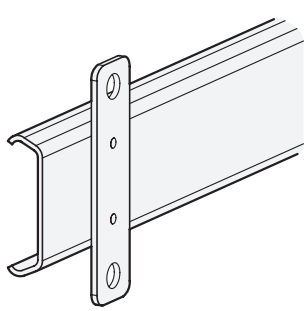
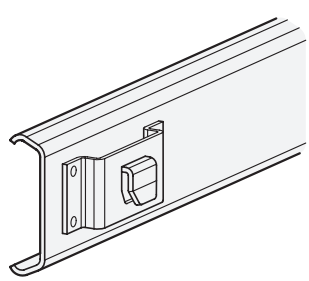
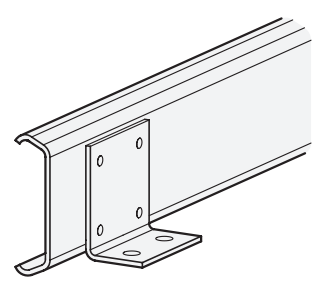
The fastening screws secure only the position of the drawer in this case. Additional reinforcement of the slides themselves, as with side mounting, is not possible. The drawers should therefore be designed as rigidly as possible so that the perpendicular load does not introduce any unnecessary tension through the support bracket into the slides.

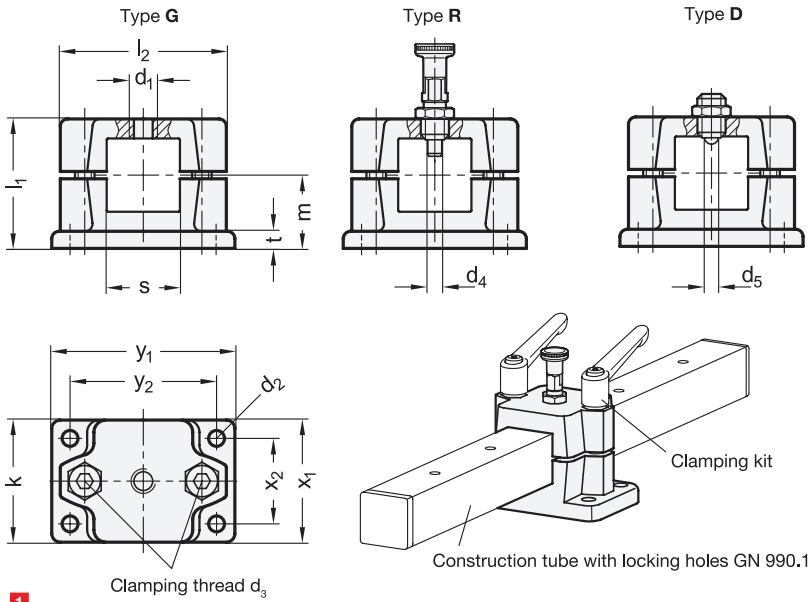
Information

In addition to the standard fastening of telescopic slides, with through-holes or countersunk holes, other fastening variants can be provided on request. Possible fastening types can be implemented on the inner or outer slide and in combination depending on the requirement. Some examples are shown below. Other, customer-specific special fastenings are also possible after feasibility has been checked.

Countersunk holes	Other fastening holes	Press nuts
		

Threaded studs / bolts	Mounting studs / bolts	Fastening clips
		

Mounting plates, spot-welded	Spacers, spot-welded	Support brackets, spot-welded
		



2 Identification no.

G with thread
R with indexing plunger
D with spring plungers

1

s Square	d_1	d_2	d_3 Clamping thread	d_4 Pin –0,05 Bore $^{+0,03}_{+0,08}$	d_5 Ball-Ø	k Clamping length	l_1	l_2	m	t	x_1	x_2	y_1	y_2	Clamping lever for d_3
V 25	M 8	6,5	M 8	5	3,5	50	53	68	30	7	50	35	75	60	GN 911-M 8-45
V 30	M 8	6,5	M 8	5	3,5	50	53	68	30	7	50	35	75	60	GN 911-M 8-45
V 40	M 12	11	M 10	8	6,5	76	81,5	98	46,5	14	76	50	115	90	GN 911-M10-70
V 50	M 12	11	M 10	8	6,5	76	81,5	98	46,5	14	76	50	115	90	GN 911-M10-70

Specification

4

- Aluminum
  plastic coated
  black, RAL 9005, textured finish ● **SW**
- Fastening elements / Transfer elements
  - Socket cap screws DIN 912
  - Hexagon nuts DIN 985
  - Centering bushings

  Stainless Steel AISI 304
- Indexing plunger GN 717, type CK
  - Plunger pin
    Stainless Steel AISI 303
  - Knob
    Plastic (Polyamide PA)
    black, matte
- Spring plunger GN 615.9, type KN
  - Stainless Steel AISI 304, ball with friction bearing
  - with internal hexagon
  - Stainless Steel-Lock nut ISO 4035
- RoHS

Accessory

- Clamping kits GN 911
  → *Main Catalogue Page 1242*

Information

With locking slide units GN 147.7, recurring positions along a square construction tube can be moved to easily and quickly. The required holes for type R or countersinks for type D can be created by the user according to the design instructions or ordered as completely finished construction tubes with locking holes GN 990.1.

They can be replaced by clamping kits GN 911 (see dimensions table for order designation) for fast and tool-free slide unit clamping. Centering bushings in the pass-through holes eliminate the axial play between the top and bottom parts of the locking slide units.

Locking slide units GN 147.7 are delivered with unmounted locking bolts (type R) or spring-loaded spacers (type D). Type G with thread is universally suitable for specific applications.

see also...
- *Locking slide units GN 134.7* → *Page 238*
- *Construction tubes with locking holes GN 990.1* → *Page 239*
- *Construction tubes GN 990 (Square, without locking holes)* → *Main Catalogue Page 1277*
- *Square linear actuators GN 291.1* → *Main Catalogue Page 1340*

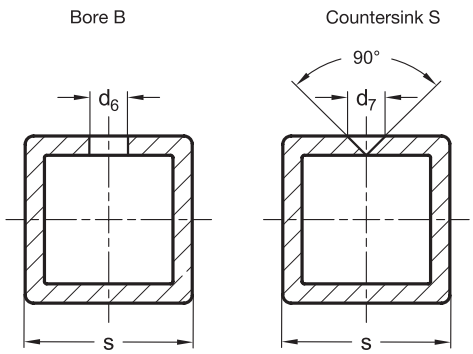
How to order

1 2 3

GN 147.7-V30-D-SW

1	**s**
2	**Identification no.**
3	**Finish**

Construction information

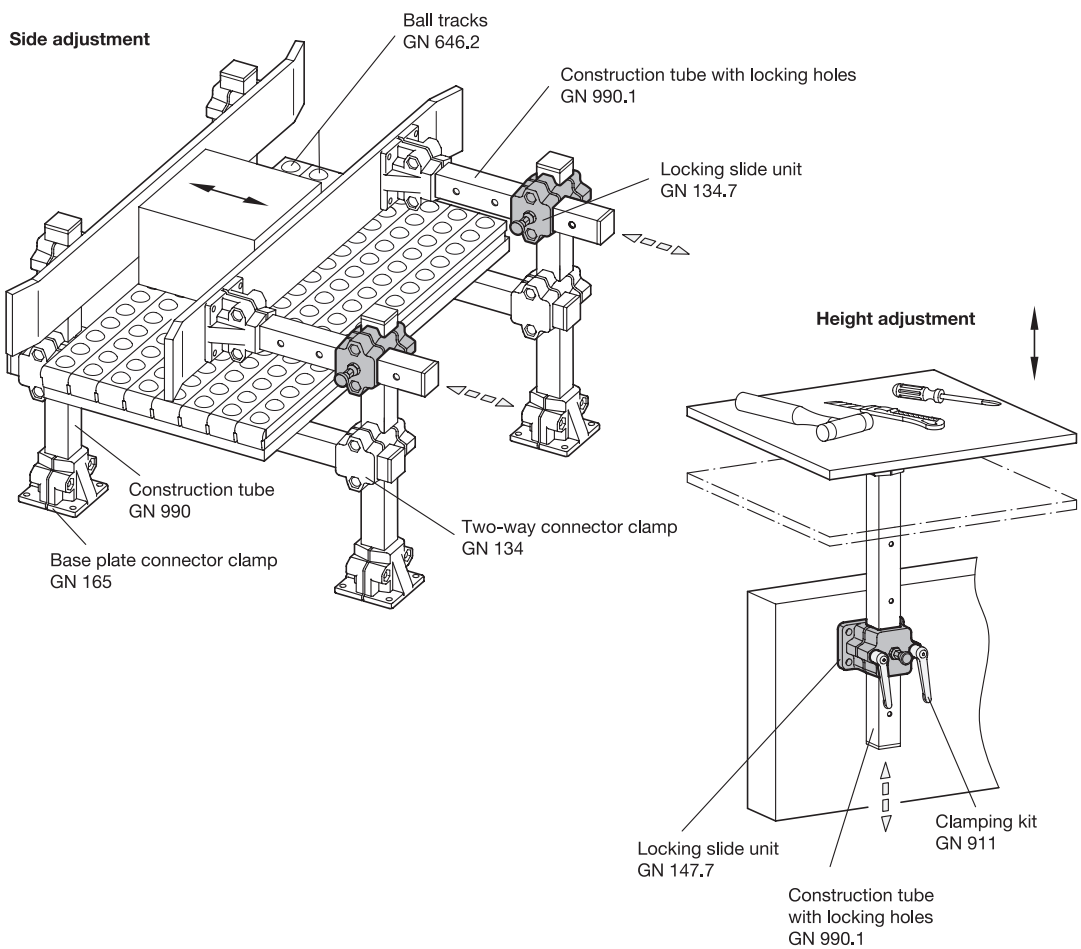


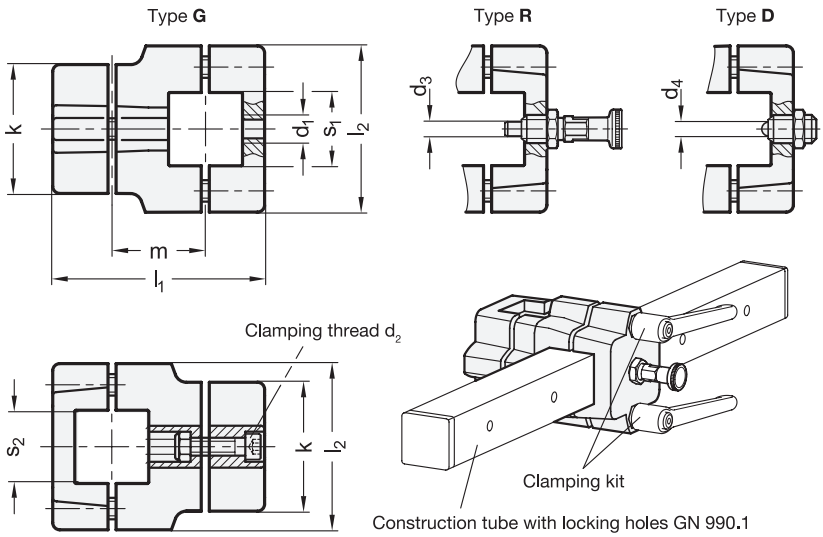
The square dimensions of the locking slide units are designed for construction tubes GN 990. These can be fitted with locking holes (B or S) by the user according to the dimensions specified in the table.

Construction tubes with locking holes can be ordered as standard part GN 990.1 cut to length and completely ready for installation.

s Square V	**d_6** +0,3 Bore B (for type R)	**d_7** +0,3 Countersink S (for type D)	for locking slides GN 134.7 GN 147.7
V 25	B 5	S 2,5	V 25
V 30	B 5	S 2,5	V 30
V 40	B 8	S 4,5	V 40
V 50	B 8	S 4,5	V 50

Assembly examples





3 Type
G with thread
R with indexing plunger
D with spring plungers

1 s_1 Square	2 s_2 Square	d_1	d_2 Clamping thread	d_3 Pin –0,05 Bore $^{+0,03}_{+0,08}$	d_4 Ball-Ø	k Clamping length	l_1	l_2	m	Clamping lever for d_2
V 25	V 25	M 8	M 8	5	3,5	50	79,5	68	33,5	GN 911-M 8-35
V 30	V 30	M 8	M 8	5	3,5	50	79,5	68	33,5	GN 911-M 8-35
V 40	V 40	M 12	M 10	8	6,5	76	125	98	55	GN 911-M10-63
V 50	V 50	M 12	M 10	8	6,5	76	125	98	55	GN 911-M10-63

Specification

4

- Aluminum
  plastic coated
  black, RAL 9005, textured finish ● SW
- Fastening elements / Transfer elements
  - Socket cap screws DIN 912
  - Hexagon nuts DIN 985
  - Centering bushings

  Stainless Steel AISI 304
- Indexing plunger GN 717, type CK
  - Plunger pin
    Stainless Steel AISI 303
  - Knob
    Plastic (Polyamide PA)
    black, matte
- Spring plunger GN 615.9, type KN
  - Stainless Steel AISI 304, ball with friction bearing
  - with internal hexagon
  - Stainless Steel-Lock nut ISO 4035
- *Stainless Steel characteristics → Page 1489*
- RoHS

Accessory

- Clamping kits GN 911 → *Page 1242*

Information

With locking slide units GN 134.7, recurring positions along a square construction tube can be moved to easily and quickly. The required holes for type R or countersinks for type D can be created by the user according to the design instructions or ordered as completely finished construction tubes with locking holes GN 990.1.

They can be replaced by clamping kits GN 911 (see dimensions table for order designation) for fast and tool-free slide unit clamping. Centering bushings in the pass-through holes eliminate the axial play between the top and bottom parts of the locking slide units.

Locking slide units GN 134.7 are delivered with unmounted locking bolts (type R) or spring-loaded spacers (type D). Type G with thread is universally suitable for specific applications.

see also...

- *Construction information and assembly examples → Page 237*
- *Locking slide units GN 147.7 → Page 236*
- *Construction tubes GN 990 (Square, without locking holes)*
  → Main Catalogue Page 1277
- *Square linear actuators GN 291.1 → Main Catalogue Page 1340*

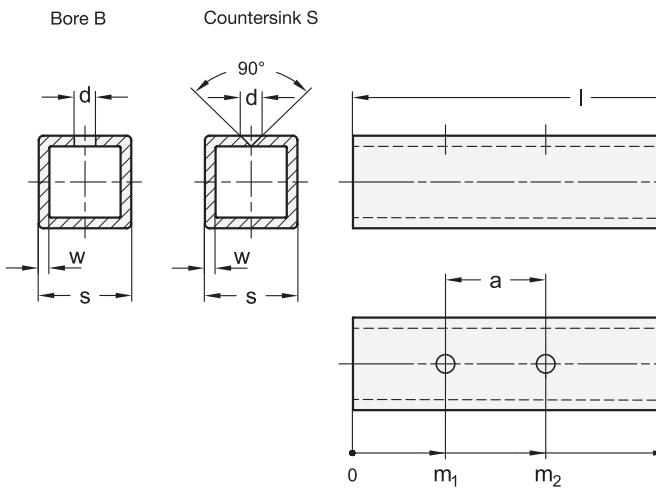
How to order

1 2 3 4
GN 134.7-V40-V40-R-SW

1	s_1
2	s_2
3	Type
4	Finish

GN 990.1
Aluminum / Stainless Steel

Construction tubes with locking holes
for locking slide units GN 134.7 / GN 147.7



6 Hole positions

Inox Stainless Steel

2 s Square	3 Length l ±0,5	5 d +0,3 Bore B (for indexing plungers)	d +0,3 Countersink S (for spring plungers)	a Minimum hole distance	m_1 Minimum edge distance	w
V 25	available in all lengths from 100 to 2000 mm (in 1 mm steps)	B 5	S 2,5	10	25	2
V 30		B 5	S 2,5	10	25	2
V 40		B 8	S 4,5	16	38	3
V 50		B 8	S 4,5	16	38	3

Specification

	1	4
• Aluminum	AL	
- anodized natural color		EL
• Stainless Steel	NI	
- AISI 304		
- blank untreated		BL
• Sawed cross sections deburred blank, i.e. not surface treated		
• Stainless Steel characteristics → *Main Catalogue Page 1489*		
• RoHS		

Information

Construction tubes with locking holes GN 990.1 are used together with locking slide units GN 134.7 / GN 147.7. These are fitted with holes B or countersinks S ordered with specification of the “hole pattern”. The matching hole diameter is described in the table or in the design information of the selected locking slide unit.

The hole positions are specified as an absolute dimension starting from the origin. The number of dimension values (m_1, m_2, ...) corresponds to the number of holes. The minimum edge or hole distance is specified in the table.

see also...

- *Construction tubes GN 990 (Square, without locking holes)* → *Main Catalogue Page 1277*
- *Tube end plugs GN 991* → *Main Catalogue Page 1604*
- *Locking slide units GN 147.7* → *Page 236*

How to order (Construction tube)

1 2 3 4
GN 990.1-AL-V30-1200-EL

Hole pattern (with locking hole)

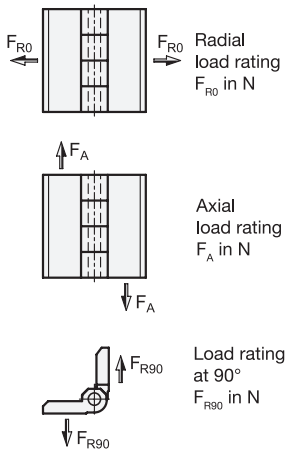
5 6
GN 990.1-B8-50-150-250

1	Material
2	s_1
3	Length l
4	Finish
5	d
6	m_1, m_2, ... (Hole positions)

Annexe

Load rating of metal hinges

in ascending order of the standard numbers



An extensive series of tests were carried out with the hinges listed below.

The hinges were slowly loaded and relieved at room temperature with incrementally increasing force. After load relieve, a deformation irrelevant in terms of function and appearance remained at the listed values for L_A, L_{R0} and L_{R90}. The breaking loads were in most cases multiples above the specified value.

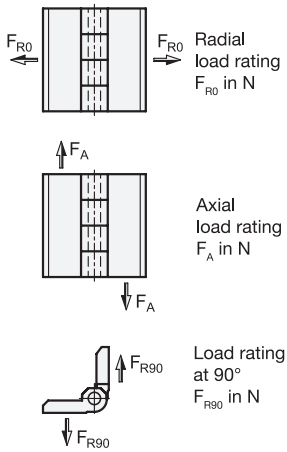
The details given on load rating are non-binding guide values without any liability. In general, they do not constitute a warranty of quality.

The user must determine from case to case if a product is suitable for the envisaged use. Ambient factors and ageing may influence the specified values.

Article No.		Radial load rating		Axial load rating
		F_{R0} in N	F_{R90} in N	F_A in N
GN 136	-ST-40-40	1000	700	2000
	-ST-50-50	2000	1000	2500
	-ST-60-60	2500	1200	2800
	-NI-40-40	1000	700	2000
	-NI-50-50	2000	1000	2500
	-NI-60-60	2500	1100	2800
GN 1362	-NI- 60- 30-A	1500	1700	2750
	-NI- 60- 40-A	1500	1950	3750
	-NI- 60- 60-A	1750	1350	4250
	-NI- 80- 30-A	1500	1700	2750
	-NI- 80- 40-A	1500	1950	3750
	-NI- 80- 80-A	3000	1500	6750
	-NI-100-100-A	3500	1750	7250
GN 1364	-NI- 70- 50-B	2750	2000	3750
	-NI-105- 50-B	2750	2000	3750
	-NI-140- 50-B	2750	2000	3750
GN 1366	-ST- 60- 30-A	9500	3750	5750
	-ST-120- 30-A	9500	3750	5750
	-ST-160- 30-A	9500	3750	5750
	-ST- 60- 40-A	10000	4350	7000
	-ST-120- 40-A	10000	4350	7000
	-ST-160- 40-A	10000	4350	7000
	-ST- 60- 50-A	12000	5000	7750
	-ST-120- 50-A	12000	5000	7750
	-ST-160- 50-A	12000	5000	7750
	-ST- 60- 60-A	17500	5500	11000
	-ST-120- 60-A	17500	5500	11000
	-ST-160- 60-A	14000	7000	11000
	-ST-160- 80-A	19000	7500	13500
	-ST-200- 80-A	19000	7500	13500
	-ST-160-100-A	26000	9750	17500
	-ST-200-100-A	26000	9750	17500
	-ST-220-100-A	26000	9750	17500

Load rating of plastic hinges

in ascending order of the standard numbers



The values given in (...) are the breaking loads determined in a series of tests. They are designed to estimate the safety factor.

When attaching the different hinges, a maximum tightening torque must not be exceeded.

The details given on load rating are non-binding guide values without any liability. In general, they do not constitute a warranty of quality. The user must determine from case to case if a product is suitable for the intended purpose.

Article No.	**Radial load rating** F_{R0} in N		F_{R90} in N		**Axial load rating** F_A in N		**Max. tightening torque of the hinge attachment** in Nm		
							Bore	Thread	Bolt
GN 151.3-40-40-SH	300	(1500)	200	(750)	300	(1500)	2	–	–
-40-40-EH	300	(1500)	200	(750)	300	(1500)	2	–	–
-49-49-SH	500	(3100)	300	(1300)	400	(2500)	2	–	–
-49-49-EH	500	(3100)	300	(1300)	400	(2500)	2	–	–
-65-65-SH	800	(4500)	500	(2200)	800	(4400)	2	–	–
-65-65-EH	800	(4500)	500	(2200)	800	(4400)	2	–	–
GN 151.5-40-40-4,5-SH	300	(1500)	200	(750)	300	(1500)	2	–	–
-40-40-4,5-EH	300	(1500)	200	(750)	300	(1500)	2	–	–
-49-49-5,5-SH	400	(3000)	300	(1600)	500	(2900)	2	–	–
-49-49-5,5-EH	400	(3000)	300	(1600)	500	(2900)	2	–	–
-49-49-6,5-EH	400	(3000)	300	(1600)	500	(2900)	2	–	–
-65-65-6,5-SH	800	(4400)	500	(2200)	800	(4500)	2	–	–
-65-65-6,5-EH	800	(4400)	500	(2200)	800	(4500)	2	–	–
GN 233.3-55-67-O	3500		1900		2100		6	–	–
-55-67-L-1	3500		1900		2100		6	–	–
-55-67-L-2	3500		1900		2100		6	–	–
-55-67-R-1	3500		1900		2100		6	–	–
-55-67-R-2	3500		1900		2100		6	–	–

Load rating of cabinet U-handles / tubular handles in metal

in ascending order of the standard numbers

Load capacity F_1 in N

Load capacity F_2 in N

An extensive series of tests were carried out with the cabinet U-handles / tubular handles listed below.

The handles were slowly loaded and relieved at room temperature with incrementally increasing force. After load relieve, a deTypeation irrelevant in terms of function and appearance remained at the listed values for F_1 and F_2 respectively. The breaking loads were in most cases multiples above the specified value.

Note:
The details given on load rating are non-binding guide values without any liability. In general, they do not constitute a warranty of quality.

The user must determine from case to case if a product is suitable for the envisaged use. Ambient factors and ageing may influence the specified values.

Cabinet U-handles GN 328 - Type A → *Page 38*								
Size	**120**	**140**						
F_1	1800	1300						
F_2	5500	6100						

Cabinet U-handles GN 328 - Type → *Page 38*								
Size	**120**	**140**						
F_1	1700	1000						
F_2	6000	7100						

Cabinet U-handles GN 422 → *Page 32*								
Type	**T1**	**T2**						
F_1	2900	2900						
F_2	5400	5400						

Cabinet U-handles GN 426 → *Page 31*								
Size	**20-200**	**20-250**	**20-300**	**20-350**	**28-250**	**28-300**	**28-350**	**28-400**
F_1	1400	1100	1100	1000	2000	1900	1800	1500
F_2	3300	3000	2300	2200	4500	3500	3500	3500

Cabinet U-handles GN 428 - Type A → *Page 39*								
Size	**28-250**	**28-300**	**28-400**					
F_1	1250	2250	1500					
F_2	4250	2750	2200					
Size	**36-300**	**36-400**	**36-500**	**36-600**	**36-800**			
F_1	5750	6250	3750	2500	1750			
F_2	7500	6750	5750	4000	1000			

Cabinet U-handles GN 428 - Type B → *Page 39*								
Size	**28-250**	**28-300**	**28-400**					
F_1	1500	1250	1250					
F_2	3500	2750	1750					
Size	**36-300**	**36-400**	**36-500**	**36-600**	**36-800**			
F_1	4500	7000	3750	2250	1750			
F_2	7500	6500	4500	3500	1000			

Cabinet U-handles GN 564 → *Page 36*								
Size	**112**	**128**	**160**	**192**				
F_1	900	900	900	900				
F_2	1200	1200	1200	1200				

Cabinet U-handles GN 565 → *Page 30*								
Size	**20-100**	**20-112**	**20-117**	**20-120**	**20-128**	**20-160**	**20-180**	**20-200**
F_1	1250	1250	1250	1250	1250	1200	1250	1250
F_2	2100	2200	2200	2200	2200	2000	1750	2000
Size	**20-235**							
F_1	1000							
F_2	1250							
Size	**26-112**	**26-117**	**26-120**	**26-125**	**26-128**	**26-160**	**26-179**	**26-192**
F_1	3000	2900	2900	2800	2800	2800	2400	2300
F_2	7000	6000	5500	5000	4500	3500	3250	3000
Size	**26-300**	**26-400**	**26-500**					
F_1	1700	1600	1200					
F_2	2250	1750	1500					

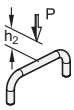
Flat cabinet U-handles GN 668 - Type A → *Page 37*								
Size	**20-130**	**20-170**	**20-190**	**20-210**				
F_1	1600	1600	1500	1350				
F_2	2100	1900	1800	1650				

Flat cabinet U-handles GN 668 - Type B → *Page 37*								
Size	**20-130**	**20-70**	**20-190**	**20-210**				
F_1	700	650	600	550				
F_2	2400	2000	1600	1200				

Strength properties of cabinet U-handles in plastic

sorted by ascending standard numbers

Impact strength
$S_1 = P \times h_1$



Impact strength
$S_2 = P \times h_2$

Breaking load K_1

Breaking load K_2

Extensive test series were carried out in order to obtain strength details of the plastic cabinet U-handles listed below. The results provide information on the impact strength and the tensile strength under normal stress loads in two stress load directions.

The impact strength S_1 and S_2 was determined using the outline drawing shown opposite:

A cylindrical steel element rounded at the tip (weight 0.680 kg) repeatedly hits the handle, with the height of drop increased by 0.1 mm with every drop. Failure occurs at the specified S values.

The details given on strength are non-binding guide values without any liability. In general, they do not constitute a warranty of quality. The user must determine from case to case if a product is suitable for the envisaged use.

Folding handles GN 825.1 → *Page 41*								
Size	**90**							
S_1 in J	-							
S_2 in J	-							
K_1 in N	1700							
K_2 in N	2500							

Folding handles with recessed tray GN 825.2 → *Page 42*								
Size	**90**							
S_1 in J	-							
S_2 in J	-							
K_1 in N	1650							
K_2 in N	2400							

Numerical Index

SP-GA-ENG-04.19-NEW New products

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