

# 2.8

## Tube clamp connectors Clamp mountings Linear actuators



2.1

2.2

2.3

2.4

2.5

2.6

2.7

2.8

2.9





**GN 131**  
Two-way  
connector clamps  
Aluminium

→ Page 976



**GN 145**  
Flanged  
connector clamps  
Stainless Steel

→ Page 982



**GN 162.3**  
Base plate  
connector clamps  
Stainless Steel

→ Page 989



**GN 131**  
Two-way  
connector clamps  
Stainless Steel

→ Page 976



**GN 146**  
Flanged  
connector clamps  
Aluminium

→ Page 984



**GN 163**  
Base plate  
connector clamps  
Aluminium

→ Page 990



**GN 132**  
Two-way  
connector clamps  
Aluminium

→ Page 978



**GN 146.3**  
Flanged  
connector clamps  
Aluminium

→ Page 985



**GN 165**  
Base plate  
connector clamps  
Aluminium

→ Page 991



**GN 133**  
Two-way  
connector clamps  
Aluminium

→ Page 979



**GN 147**  
Flanged  
connector clamps  
Aluminium

→ Page 986



**GN 166**  
Off-set base plate  
connector clamps  
Aluminium

→ Page 992



**GN 134**  
Two-way  
connector clamps  
Aluminium

→ Page 980



**GN 162**  
Base plate  
connector clamps  
Aluminium

→ Page 988



**GN 167**  
Wide base plate  
connector clamps  
Aluminium

→ Page 993



**GN 141**  
Flanged  
two-way  
connector clamps  
Aluminium

→ Page 981



**GN 162**  
Base plate  
connector clamps  
Stainless Steel

→ Page 988



**GN 171**  
Flanged  
base plate  
connector clamps  
Aluminium

→ Page 994



**GN 145**  
Flanged  
connector clamps  
Aluminium

→ Page 982



**GN 162.3**  
Base plate  
connector clamps  
Aluminium

→ Page 989



**GN 191**  
T-Angle  
connector clamps  
Aluminium

→ Page 995

## 2.8 Tube clamp connectors, Clamp mountings, Linear actuators




**GN 191**  
T-Angle  
connector clamps  
Stainless Steel

→ Page 995



**GN 242**  
Tube  
connector joints  
Aluminium

→ Page 1003



**GN 277**  
Swivel clamp  
connectors  
Aluminium

→ Page 1010



**GN 192**  
T-Angle  
connector clamps  
Aluminium

→ Page 996



**GN 271**  
Swivel clamp  
connector bases  
Aluminium

→ Page 1004



**GN 278**  
Swivel clamp  
connectors  
Aluminium

→ Page 1011



**GN 193**  
T-Angle  
connector clamps  
Aluminium

→ Page 998



**GN 272**  
Swivel clamp  
connector bases  
Aluminium

→ Page 1005



**GN 279**  
Swivel clamp  
connectors  
Aluminium

→ Page 1014



**GN 194**  
T-Angle  
connector clamps  
Aluminium

→ Page 999



**GN 273**  
Swivel clamp  
connectors  
Aluminium

→ Page 1006



**GN 281**  
Swivel clamp  
connector joints  
Aluminium

→ Page 1015



**GN 195**  
T-Angle  
connector clamps  
Aluminium

→ Page 1000



**GN 274**  
Swivel clamp  
connectors  
Aluminium

→ Page 1007



**GN 282**  
Swivel clamp  
connector joints  
Aluminium

→ Page 1016



**GN 231**  
Tube supports  
Aluminium

→ Page 1001



**GN 275**  
Swivel clamp  
connectors  
Aluminium

→ Page 1008



**GN 283**  
Swivel clamp  
connector joints  
Aluminium

→ Page 1017



**GN 241**  
Tube  
connector joints  
Aluminium

→ Page 1002



**GN 276**  
Swivel clamp  
connectors  
Aluminium

→ Page 1009



**GN 284**  
Swivel clamp  
connector joints  
Aluminium

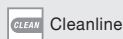
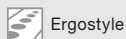
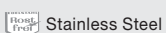
→ Page 1018

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9

## 2.8 Tube clamp connectors, Clamp mountings, Linear actuators



 <p><b>GN 285</b> Swivel clamp connector joints Aluminium</p> <p>→ Page 1019</p>	 <p><b>GN 273.4</b> Sensor holders Aluminium</p> <p>→ Page 1026</p>	 <p><b>GN 291</b> Linear actuators Steel, Stainless Steel</p> <p>→ Page 1036</p>
 <p><b>GN 286</b> Swivel clamp connector joints Aluminium</p> <p>→ Page 1020</p>	 <p><b>GN 990</b> Construction tubes Steel, Aluminium</p> <p>→ Page 1027</p>	 <p><b>GN 292</b> Linear actuators Steel, Stainless Steel</p> <p>→ Page 1038</p>
 <p><b>GN 287</b> Swivel clamp connector joints Aluminium</p> <p>→ Page 1021</p>	 <p><b>GN 990</b> Construction tubes Stainless Steel</p> <p>→ Page 1027</p>	 <p><b>GN 293</b> Linear actuators Steel, Stainless Steel</p> <p>→ Page 1039</p>
 <p><b>GN 288</b> Swivel clamp connector joints Aluminium</p> <p>→ Page 1022</p>	 <p><b>GN 991</b> Tube end plugs Plastic</p> <p>→ Page 1028</p>	 <p><b>GN 491</b> Double tube linear actuators</p> <p>→ Page 1040</p>
 <p><b>GN 289</b> Swivel clamp connector joints Aluminium</p> <p>→ Page 1023</p>	 <p><b>GN 992</b> Insert bushes Aluminium</p> <p>→ Page 1029</p>	 <p><b>GN 492</b> Double tube linear actuators</p> <p>→ Page 1044</p>
 <p><b>GN 271.4</b> Sensor holders Aluminium</p> <p>→ Page 1024</p>	 <p><b>GN 992.5</b> Insert bushes Stainless Steel</p> <p>→ Page 1029</p>	 <p><b>GN 131.1</b> Linear actuator connectors Aluminium</p> <p>→ Page 1046</p>
 <p><b>GN 272.4</b> Sensor holders Aluminium</p> <p>→ Page 1025</p>	 <p><b>GN 911</b> Clamping kits Zinc die casting / Stainless Steel</p> <p>→ Page 1031</p>	 <p><b>GN 131.1</b> Linear actuator connectors Stainless Steel</p> <p>→ Page 1046</p>





## 2.8 Tube clamp connectors, Clamp mountings, Linear actuators

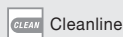
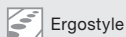
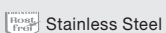


 <p><b>GN 131.2</b> Linear actuator connectors Aluminium</p> <p>→ Page 1046</p>	 <p><b>GN 162.1</b> Base plate linear actuator connectors Aluminium</p> <p>→ Page 1050</p>	 <p><b>GN 274.1</b> Swivel clamp linear actuator connectors Aluminium</p> <p>→ Page 1055</p>
 <p><b>GN 131.2</b> Linear actuator connectors Stainless Steel</p> <p>→ Page 1046</p>	 <p><b>GN 162.1</b> Base plate linear actuator connectors Stainless Steel</p> <p>→ Page 1050</p>	 <p><b>GN 291.1</b> Square linear actuators Steel, Stainless Steel</p> <p>→ Page 1056</p>
 <p><b>GN 132.1</b> Linear actuator connectors Aluminium</p> <p>→ Page 1047</p>	 <p><b>GN 163.1</b> Base plate linear actuator connectors Aluminium</p> <p>→ Page 1051</p>	 <p><b>GN 147.1</b> Linear actuator connectors Aluminium</p> <p>→ Page 1058</p>
 <p><b>GN 132.2</b> Linear actuator connectors Aluminium</p> <p>→ Page 1047</p>	 <p><b>GN 191.1</b> T-Angle linear actuator connectors Aluminium</p> <p>→ Page 1052</p>	 <p><b>GN 134.1</b> Linear actuator connectors Aluminium</p> <p>→ Page 1059</p>
 <p><b>GN 145.1</b> Flanged linear actuator connectors Aluminium</p> <p>→ Page 1048</p>	 <p><b>GN 191.1</b> T-Angle linear actuator connectors Stainless Steel</p> <p>→ Page 1052</p>	 <p><b>GN 165.1</b> Linear actuator connectors Aluminium</p> <p>→ Page 1060</p>
 <p><b>GN 145.1</b> Flanged linear actuator connectors Stainless Steel</p> <p>→ Page 1048</p>	 <p><b>GN 192.1</b> T-Angle linear actuator connectors Aluminium</p> <p>→ Page 1053</p>	 <p><b>GN 923.18</b> Handwheel for linear actuators Ø 18</p> <p>→ Page 1062</p>
 <p><b>GN 146.1</b> Flanged linear actuator connectors Aluminium</p> <p>→ Page 1049</p>	 <p><b>GN 273.1</b> Swivel clamp linear actuator connectors Aluminium</p> <p>→ Page 1054</p>	 <p><b>GN 923.30</b> Handwheel for linear actuators Ø 30</p> <p>→ Page 1062</p>

## 2.8 Tube clamp connectors, Clamp mountings, Linear actuators



 <p><b>GN 923.40</b> Handwheel for linear actuators Ø 40</p> <p>→ Page 1062</p>	 <p><b>GN 297</b> Bevel gear wheels for linear actuators / transfer units Steel</p> <p>→ Page 1069</p>	 <p><b>GN 478</b> Clamp mountings Aluminium</p> <p>→ Page 1081</p>
 <p><b>GN 924.40</b> Handwheel for linear actuators Ø 40</p> <p>→ Page 1062</p>	 <p><b>GN 298</b> Housings for angular gears / T-gears Aluminium</p> <p>→ Page 1070</p>	 <p><b>GN 479</b> Sensor holders Stainless Steel</p> <p>→ Page 1082</p>
 <p><b>GN 924.50</b> Handwheel for linear actuators Ø 50</p> <p>→ Page 1063</p>	 <p><b>GN 473</b> Foot clamp mountings Aluminium</p> <p>→ Page 1076</p>	 <p><b>GN 479.1</b> Retaining plates Stainless Steel</p> <p>→ Page 1083</p>
 <p><b>GN 924.60</b> Handwheel for linear actuators Ø 60</p> <p>→ Page 1063</p>	 <p><b>GN 477</b> Clamp mountings Aluminium</p> <p>→ Page 1077</p>	 <p><b>GN 480</b> Flanged bolts Steel</p> <p>→ Page 1084</p>
 <p><b>GN 295</b> Installation kits for position indicators at linear actuators</p> <p>→ Page 1064</p>	 <p><b>GN 474</b> Two-way clamp mountings Aluminium</p> <p>→ Page 1078</p>	 <p><b>GN 480.1</b> Retaining rods round Stainless Steel</p> <p>→ Page 1085</p>
 <p><b>GN 299</b> Longitudinal scales for linear actuators</p> <p>→ Page 1066</p>	 <p><b>GN 475</b> Twistable two-way clamp mountings Aluminium</p> <p>→ Page 1079</p>	 <p><b>GN 480.1</b> Retaining tubes round Stainless Steel</p> <p>→ Page 1085</p>
 <p><b>GN 391</b> Transfer units Steel, Stainless Steel</p> <p>→ Page 1068</p>	 <p><b>GN 476</b> T-Clamp mountings Aluminium</p> <p>→ Page 1080</p>	 <p><b>GN 480.1</b> Retaining square tubes Aluminium</p> <p>→ Page 1085</p>





### GN 511

**Clamping kits**  
Zinc die casting /  
Stainless Steel

→ Page 1086



### GN 960

**Angle pieces for  
profile systems**  
Aluminium

→ Page 1087



### GN 961

**Angle pieces for  
profile systems**  
Aluminium

→ Page 1088



### GN 963

**Cover caps**  
for angle pieces  
for profile systems  
Plastic

→ Page 1089

2.1

2.2

2.3

2.4

2.5

2.6

2.7

2.8

2.9

**Tube clamp connectors** are clamping components made of **Aluminium** which offer the facility for simply and rapidly constructing jigs, fixtures and operating systems using standard round and square section tubings.

The vast range of clamp connectors in split monoblock or multi-part form offer almost unlimited possibilities.

Split monoblock clamp connectors give very robust and sturdy tubular constructions. For this purpose only precision tubings DIN 2391, with an outside diameter which lies within relatively tight tolerances, should be used. (Construction tubes GN 990 → [Page 1027](#)).

Multi-part clamp connectors (consisting of two or more separate parts) are not tied to tight tolerances as they can also be used with square tubes thus allowing incorporation into already existing systems.

As clamping screws there is a choice of either cap head screws to DIN 912 or adjustable clamping kits GN 911 if repeated removal and re-installation is required. As for nuts, hexagon nuts DIN 985 (ISO 10511) which are self-locking with polyamide ring are recommended.

The clamping points are provided on **both sides** with sockets, cast in the component, which give a free choice for positioning hexagon nuts and clamping connectors.

**Linear actuators** consist of a guide tube, a threaded internal spindle i.e. lead screw and a follower nut.

Within the tube clamp connectors range there are numerous clamping components available to mount the linear actuators in a static position for the linear actuator connectors to perform operations which require a linear movement. Linear actuators are designed for manual operation (handwheels).

Further details about tube clamp connectors and linear actuators are given on the separate standards sheets.

**Two-way connector clamps**  
→ [Page 976](#)

**Flanged two-way connector clamps**  
→ [Page 981](#)

**Flanged connector clamps**  
→ [Page 982](#)

**Base plate connector clamps**  
→ [Page 988](#)

**Flanged base plate connector clamps**  
→ [Page 994](#)

**T-Angle connector clamps**  
→ [Page 995](#)

**Tube connectors**  
→ [Page 1002](#)

**Swivel clamp connectors**  
→ [Page 1004](#)

**Swivel clamp connector joints**  
→ [Page 1015](#)

**Sensor holders**  
→ [Page 1024](#)

**Linear actuators**  
→ [Page 1036](#)

# Tube clamp connectors / Linear actuators

Design shapes



2.1

2.2

2.3

2.4

2.5

2.6

2.7

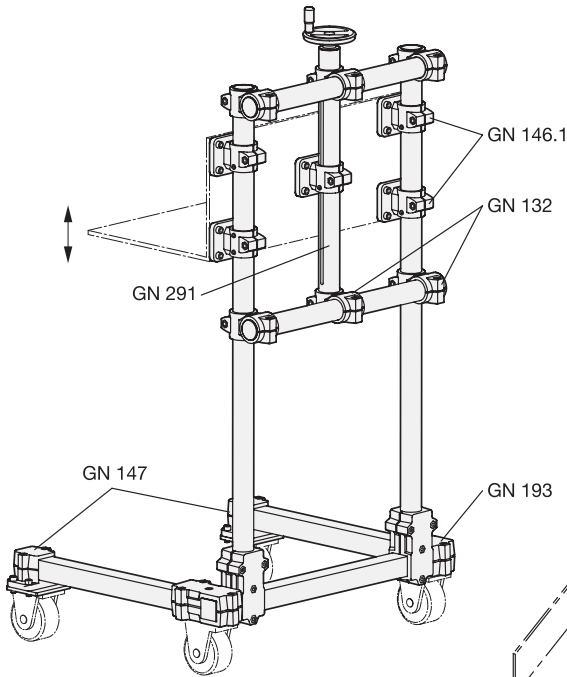
2.8

2.9

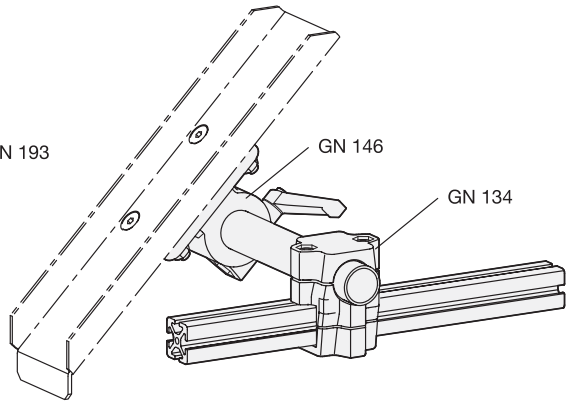
←

# Tube clamp connectors

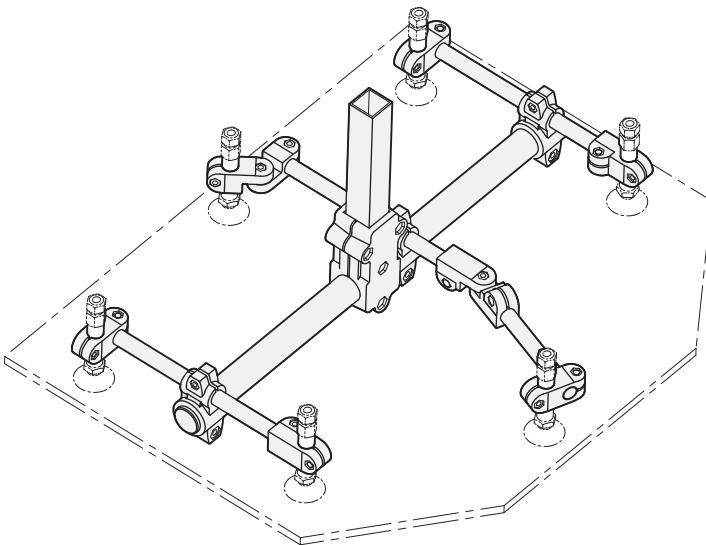
Installation examples



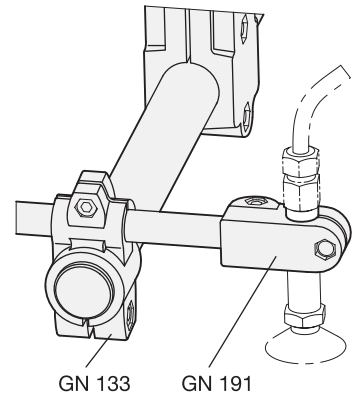
Mobile lifting table



Workpiece chute  
Transfer to aluminium profile section system



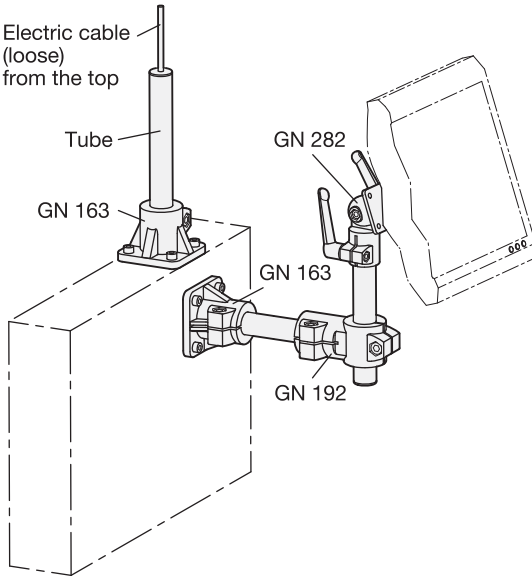
Vacuum gripper



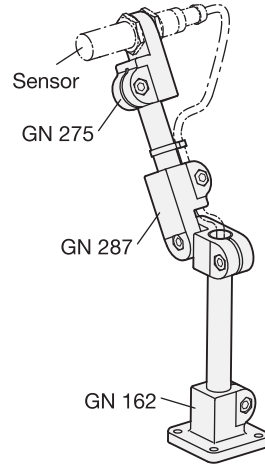


# Tube clamp connectors

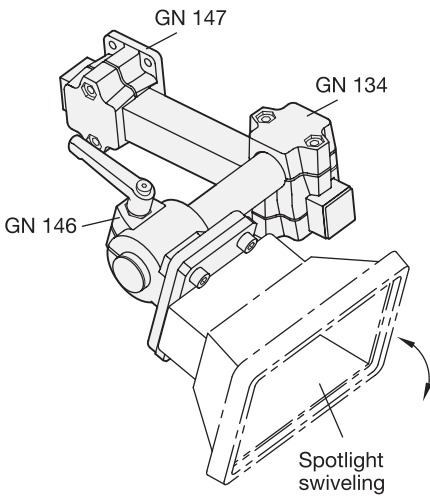
Installation examples



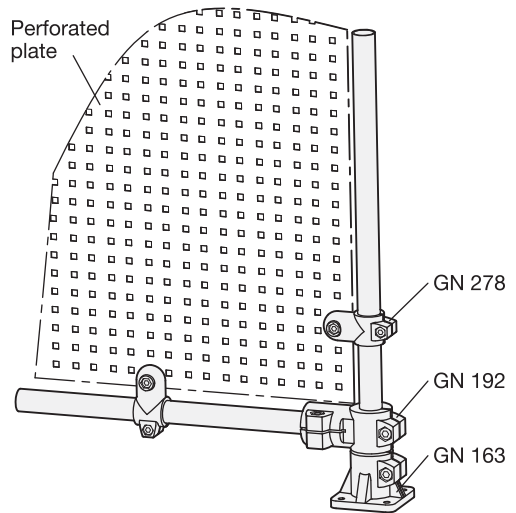
Screen holder



Sensor holder

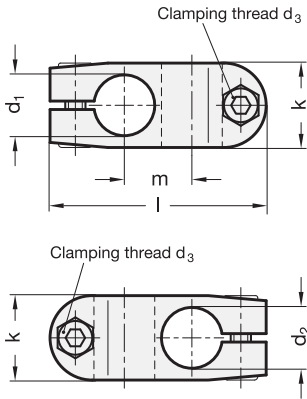


Holder for spotlight



Safety fence

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9

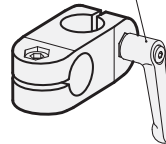


Clamping screw  
Socket cap screw DIN 912



Hexagon nut DIN 985  
self-locking (Polyamide ring)

Adjustable  
clamping lever GN 911



**Rost**refret  
Inox  
Stainless  
Steel

**Inch**  
Inch  
sizes  
available

**3 Identification No.**

- 1 with 2 clamping screws  
DIN 912, zinc plated
- 2 with 2 Stainless Steel-  
clamping screws DIN 912

<b>1</b> <b>d<sub>1</sub></b> Bore B		<b>2</b> <b>d<sub>2</sub></b> Bore B		<b>d<sub>3</sub></b> Clamping thread	<b>k</b> Clamping length	Length <b>l</b>	<b>m</b>	Clamping lever for <b>d<sub>3</sub></b>
Aluminium	Stainless Steel	Aluminium	Stainless Steel					Distance bushing
B 10	-	B 10	-	M 6	25	64	20	GN 911-M6-22
B 12	B 12	B 12	B 12	M 6	25	64	20	GN 911-M6-22
B 14	B 14	B 14	B 14	M 6	25	64	20	GN 911-M6-22
B 15	B 15	B 15	B 15	M 6	25	64	20	GN 911-M6-22
B 16	B 16	B 16	B 16	M 6	25	64	20	GN 911-M6-22
B 18	B 18	B 18	B 18	M 6	25	64	20	GN 911-M6-22
-	B 20	-	B 20	M 6	25	64	20	GN 911-M6-22

**Specification**

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish **● SW**
  - blank **○ BL**
  - matt shot-blasted
- Stainless Steel AISI CF-8 **NI**  
matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping lever GN 911  
- Zinc die casting  
- Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- RoHS compliant

**On request**

- d<sub>1</sub> / d<sub>2</sub> with different bores

**Information**

The clamping bores of the two-way connector clamps GN 131 are mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screws are socket cap screws DIN 912. They can be replaced by adjustable clamping levers GN 911 (article code see table of dimensions).

see also...

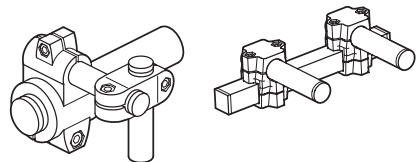
- Two-way clamp mountings GN 474 → Page 1078
- Construction tubes GN 990 → Page 1027
- Linear connectors GN 131.1 / GN 131.2 (for linear actuators) → Page 1046

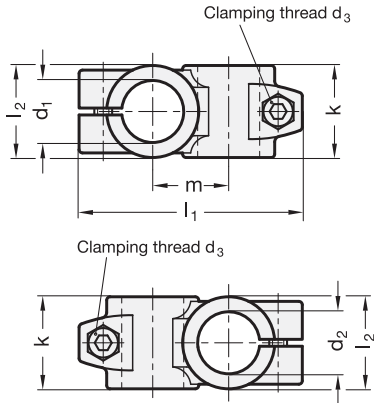
Two-way connector clamp	<b>1</b> d <sub>1</sub>
	<b>2</b> d <sub>2</sub>
<b>GN 131-B14-B14-1-SW</b>	<b>3</b> Identification No.
	<b>4</b> Finish

Stainless Steel-Two-way connector clamp	<b>1</b> d <sub>1</sub>
	<b>2</b> d <sub>2</sub>
<b>GN 131-B18-B18-2-NI</b>	<b>3</b> Identification No.
	<b>4</b> Stainless Steel



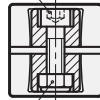
- Two-way connector clamps GN 131 → [Page 976](#)
- Stainless Steel**-Two-way connector clamps GN 131 → [Page 976](#)
- Two-way connector clamps GN 132 → [Page 978](#)
- Two-way connector clamps GN 133 → [Page 979](#)
- Two-way connector clamps GN 134 → [Page 980](#)
- Flanged two-way connector clamps GN 141 → [Page 981](#)



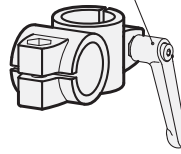


Clamping screw  
Socket cap screw DIN 912

Adjustable  
clamping lever GN 911



Hexagon nut DIN 985  
self-locking (Polyamide ring)



Inch sizes available

**4 Identification No.**

- 1 with 2 clamping screws DIN 912, zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912

<b>1</b> d <sub>1</sub> Bore B	<b>2</b> d <sub>2</sub> Bore B	<b>3</b> k Clamping length	d <sub>3</sub> Clamping thread	l <sub>1</sub>	l <sub>2</sub>	m	Clamping lever for d <sub>3</sub> 
B 20	B 20	40	M 8	97	40	33	GN 911-M 8-32
B 25	B 25	40	M 8	97	40	33	GN 911-M 8-32
B 30	B 30	40	M 8	97	40	33	GN 911-M 8-32
B 30	B 30	56	M 10	125	56	45	GN 911-M10-40
B 32	B 32	56	M 10	125	56	45	GN 911-M10-40
B 35	B 35	56	M 10	125	56	45	GN 911-M10-40
B 40	B 40	56	M 10	125	56	45	GN 911-M10-40
B 40	B 40	65	M 10	143	65	53	GN 911-M10-55
B 42	B 42	65	M 10	143	65	53	GN 911-M10-55
B 45	B 45	65	M 10	143	65	53	GN 911-M10-55
B 48	B 48	65	M 10	143	65	53	GN 911-M10-55
B 50	B 50	65	M 10	143	65	53	GN 911-M10-55
B 50	B 50	80	M 10	169	80	65	GN 911-M10-55
B 55	B 55	80	M 10	169	80	65	GN 911-M10-55
B 60	B 60	80	M 10	169	80	65	GN 911-M10-55

**Specification**

- Aluminium
  - plastic coated black, RAL 9005, textured finish **● SW**
  - blank **○ BL**
  - matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911  
Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- RoHS compliant

**On request**

- d<sub>1</sub> / d<sub>2</sub> with different bores

**5 Information**

The clamping bores of the two-way connector clamps GN 132 are mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screws are socket cap screws DIN 912. They can be replaced by adjustable clamping levers GN 911 (article code see table of dimensions).

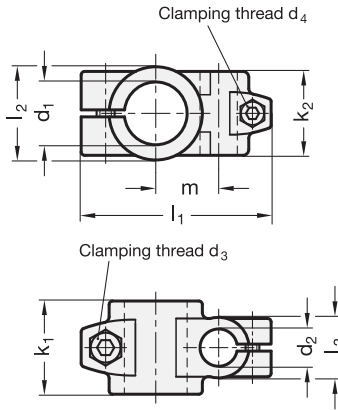
**see also...**

- Construction tubes GN 990 → Page 1027
- Linear connectors GN 132.1 / GN 132.2 (for linear actuators) → Page 1047

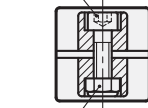
**How to order**

<b>1</b>	d <sub>1</sub>
<b>2</b>	d <sub>2</sub>
<b>3</b>	k
<b>4</b>	Identification No.
<b>5</b>	Finish

**GN 132-B30-B30-56-1-BL**

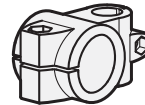
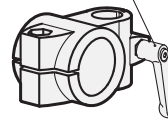


Clamping screw  
Socket cap screw DIN 912



Hexagon nut DIN 985  
self-locking (Polyamide ring)

Adjustable  
clamping lever GN 911



**3 Identification No.**

- 1 with 2 clamping screws  
DIN 912, zinc plated
- 2 with 2 Stainless Steel-  
clamping screws DIN 912

<b>1</b> $d_1$ Bore B					<b>2</b> $d_2$ Bore B					$d_3$ Clamping thread	$d_4$ Clamping thread	$k_1$ Clamping length	$k_2$ Clamping length	$l_1$	$l_2$	$l_3$	$m$	Clamping lever for $d_3$	Distance bushing for $d_4$
B 20	B 12	B 14	B 16	B 18	M 8	M 6	40	36	81,5	40	26	27	GN 911-M 8-32	GN 911-M6-25					
B 25	B 12	B 14	B 16	B 18	M 8	M 6	40	36	81,5	40	26	27	GN 911-M 8-32	GN 911-M6-25					
B 30	B 12	B 14	B 16	B 18	M 8	M 6	40	36	81,5	40	26	27	GN 911-M 8-32	GN 911-M6-25					
B 40	B 20	B 25	B 30	-	M 10	M 8	65	59	122	65	40	45	GN 911-M10-55	GN 911-M8-32					
B 42	B 20	B 25	B 30	-	M 10	M 8	65	59	122	65	40	45	GN 911-M10-55	GN 911-M8-32					
B 45	B 20	B 25	B 30	-	M 10	M 8	65	59	122	65	40	45	GN 911-M10-55	GN 911-M8-32					
B 48	B 20	B 25	B 30	-	M 10	M 8	65	59	122	65	40	45	GN 911-M10-55	GN 911-M8-32					
B 50	B 20	B 25	B 30	-	M 10	M 8	65	59	122	65	40	45	GN 911-M10-55	GN 911-M8-32					

**Specification**

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**  
matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**On request**

- $d_1 / d_2$  with different bores

**Information**

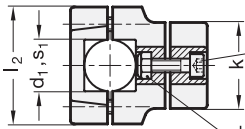
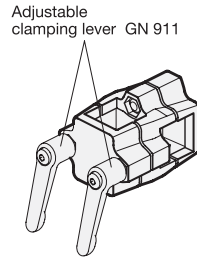
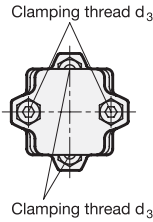
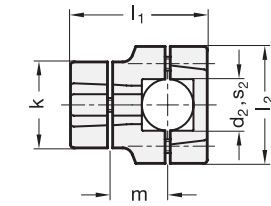
The clamping bores of the two-way connector clamps GN 133 are mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screws are socket cap screws DIN 912. They can be replaced by adjustable clamping levers GN 911 (article code see table of dimensions).

see also...

- *Construction tubes GN 990* → Page 1027

How to order	1 $d_1$
	2 $d_2$
<b>GN 133-B30-B16-1-SW</b>	3 <b>Identification No.</b>
	4 <b>Finish</b>



Clamping screw  
Socket cap screw DIN 912

Hexagon nut DIN 985  
self-locking (Polyamide ring)

**4 Identification No.**

- 1 with 4 clamping screws DIN 912, zinc plated
- 2 with 4 Stainless Steel-clamping screws DIN 912

<b>1</b> $d_1$ Bore B	<b>1</b> $s_1$ Square V	<b>2</b> $d_2$ Bore B	<b>2</b> $s_2$ Square V	<b>3</b> $k$ Clamping length	$d_3$ Clamping thread	$l_1$	$l_2$	$m$	Clamping lever for $d_3$ 
B 20	V 20	B 20	V 20	50	M 8	79,5	68	33,5	GN 911-M 8-35
B 25	V 25	B 25	V 25	50	M 8	79,5	68	33,5	GN 911-M 8-35
B 30	V 30	B 30	V 30	50	M 8	79,5	68	33,5	GN 911-M 8-35
B 30	V 30	B 30	V 30	60	M 8	109	79	50	GN 911-M 8-55
B 32	-	B 32	-	60	M 8	109	79	50	GN 911-M 8-55
B 35	V 35	B 35	V 35	60	M 8	109	79	50	GN 911-M 8-55
B 40	V 40	B 40	V 40	60	M 8	109	79	50	GN 911-M 8-55
B 40	V 40	B 40	V 40	76	M 10	125	98	55	GN 911-M10-63
B 42	-	B 42	-	76	M 10	125	98	55	GN 911-M10-63
B 45	V 45	B 45	V 45	76	M 10	125	98	55	GN 911-M10-63
B 48	-	B 48	-	76	M 10	125	98	55	GN 911-M10-63
B 50	V 50	B 50	V 50	76	M 10	125	98	55	GN 911-M10-63

**Specification**

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish **● SW**
  - blank **○ BL**
  - matt shot-blasted
- Clamping bores not machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**



**Information**

The clamping bores of the flanged two-way connector clamps GN 134 are not machined and specially designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively. The versions with square bores are also suitable for **profile systems**.

Bores and square bores of the same nominal size can be assembled in any combination. For instance, nominal size 20 has the following combination options: B20-B20, B20-V20, V20-B20 and V20-V20.

The standard clamping screws are socket cap screws DIN 912. They can be used in place of adjustable clamping levers GN 911 (article code see table of dimensions).

see also...

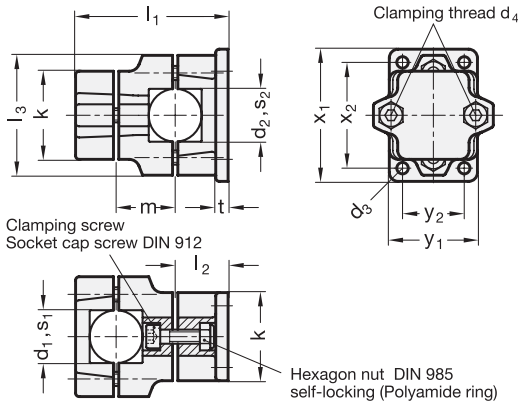
- *Construction tubes GN 990* → Page 1027
- *Linear actuators connectors GN 134.1 (for linear actuators)* → Page 1059

**How to order**

<b>1</b> $d_1$ ( $s_1$ )
<b>2</b> $s_2$ ( $d_2$ )
<b>3</b> $k$
<b>4</b> Identification No.
<b>5</b> Finish

**GN 134-B45-V45-76-1-SW**





**3 Identification No.**

- 1 with 4 clamping screws DIN 912, zinc plated
- 2 with 4 Stainless Steel-clamping screws DIN 912

<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>d<sub>3</sub></b>	<b>d<sub>4</sub></b> Clamping thread	<b>k</b> Clamping length	<b>l<sub>1</sub></b>	<b>l<sub>2</sub></b>	<b>l<sub>3</sub></b>	<b>m</b>	<b>t</b>	<b>x<sub>1</sub></b>	<b>x<sub>2</sub></b>	<b>y<sub>1</sub></b>	<b>y<sub>2</sub></b>	Clamping lever for $d_4$ 
<b>d<sub>1</sub></b> Bore B	<b>s<sub>1</sub></b> Square V	<b>d<sub>2</sub></b> Bore B	<b>s<sub>2</sub></b> Square V													
B 20	V 20	B 20	V 20	6,5	M 8	50	89	30	68	36	7	75	60	50	35	GN 911-M 8-35
B 25	V 25	B 25	V 25	6,5	M 8	50	89	30	68	36	7	75	60	50	35	GN 911-M 8-35
B 30	V 30	B 30	V 30	6,5	M 8	50	89	30	68	36	7	75	60	50	35	GN 911-M 8-35
B 40	V 40	B 40	V 40	11	M 10	76	136	46	98	55	14	115	90	76	50	GN 911-M10-63
B 42	-	B 42	-	11	M 10	76	136	46	98	55	14	115	90	76	50	GN 911-M10-63
B 45	V 45	B 45	V 45	11	M 10	76	136	46	98	55	14	115	90	76	50	GN 911-M10-63
B 48	-	B 48	-	11	M 10	76	136	46	98	55	14	115	90	76	50	GN 911-M10-63
B 50	V 50	B 50	V 50	11	M 10	76	136	46	98	55	14	115	90	76	50	GN 911-M10-63

**Specification**

- Aluminium
  - plastic coated
  - black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bores not machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- RoHS compliant



**Information**

The clamping bores of the flanged two-way connector clamps GN 141 are not machined and specially designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

Bores and square bores of the same nominal size can be assembled in any combination. For instance, nominal size 20 has the following combination options: B20-B20, B20-V20, V20-B20 and V20-V20.

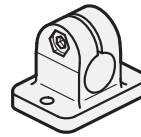
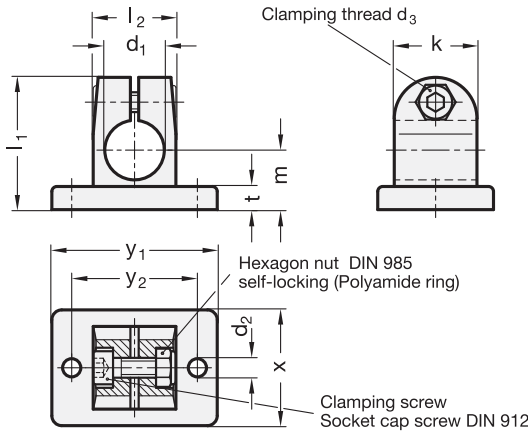
The standard clamping screws are socket cap screws DIN 912. They can be used in place of adjustable clamping levers GN 911 (article code see table of dimensions).

see also...

- *Construction tubes GN 990* → Page 1027

Flanged two-way connector clamp	1	<b>d<sub>1</sub> (s<sub>1</sub>)</b>
	2	<b>d<sub>2</sub> (s<sub>2</sub>)</b>
<b>GN 141-B20-B20-1-SW</b>	3	<b>Identification No.</b>
	4	<b>Finish</b>

Flanged two-way connector clamp	1	<b>s<sub>1</sub> (d<sub>1</sub>)</b>
	2	<b>d<sub>2</sub> (s<sub>2</sub>)</b>
<b>GN 141-V50-B50-1-BL</b>	3	<b>Identification No.</b>
	4	<b>Finish</b>



**Rost frei** Inox Stainless Steel **Inch** Inch sizes available

**2 Identification No.**

- 1 with one clamping screw DIN 912, zinc plated
- 2 with one Stainless Steel-clamping screw DIN 912

**1**

d <sub>1</sub> Bore B Aluminium	Stainless Steel	d <sub>2</sub>	d <sub>3</sub> Clamping screw	k Clamping length	l <sub>1</sub>	l <sub>2</sub>	m	t	x	y <sub>1</sub>	y <sub>2</sub>	Clamping lever for d <sub>3</sub>
B 10	-	5,5	M6	25	40	25	18	7	35	50	38	Distance bushing
B 12	B 12	5,5	M6	25	40	25	18	7	35	50	38	GN 911-M6-22
B 14	B 14	5,5	M6	25	40	25	18	7	35	50	38	GN 911-M6-22
B 15	B 15	5,5	M6	25	40	25	18	7	35	50	38	GN 911-M6-22
B 16	B 16	5,5	M6	25	40	25	18	7	35	50	38	GN 911-M6-22
B 18	B 18	5,5	M6	25	40	25	18	7	35	50	38	GN 911-M6-22

**Specification**

- Aluminium
  - plastic coated
  - black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - blank matt shot-blasted
- Stainless Steel AISI CF-8 **NI**  
matt matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**3**

**Information**

The clamping bores of the flanged connector clamps GN 145 are mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screws are socket cap screws DIN 912. They can be used in place of adjustable clamping levers GN 911 (article code see table of dimensions).

Flanged connector clamps GN 145 are also suitable for mounting on profile systems

see also...

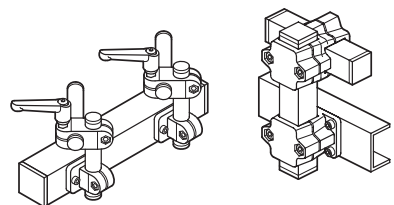
- *Foot clamp mountings GN 473* → Page 1076
- *Construction tubes GN 990* → Page 1027
- *Flanged linear actuator connector GN 145.1* → Page 1048

Flanged connector clamp	1 d <sub>1</sub>
<b>GN 145-B14-1-SW</b>	2 Identification No.
	3 Finish

Stainless Steel-Flanged connector clamp	1 d <sub>1</sub>
<b>GN 145-B12-2-NI</b>	2 Identification No.
	3 Material

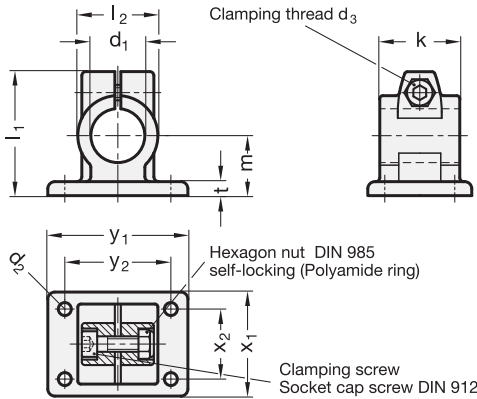


- Flanged connector clamps GN 145 → [Page 982](#)
- Stainless Steel**-Flanged connector clamps GN 145 → [Page 982](#)
- Flanged connector clamps GN 146 → [Page 984](#)
- Flanged connector clamps GN 146.3 → [Page 985](#)
- Flanged connector clamps GN 147 → [Page 986](#)

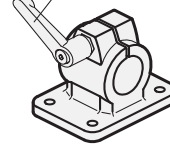


# GN 146 Flanged connector clamps

with 4 mounting holes



Adjustable clamping lever GN 911




Inch sizes available

### Identification No.

- with one clamping screw DIN 912, zinc plated
- with one Stainless Steel-clamping screw DIN 912

1

2

d <sub>1</sub> Bore B	k Clamping length	d <sub>2</sub>	d <sub>3</sub> Clamping thread	l <sub>1</sub>	l <sub>2</sub>	m	t	x <sub>1</sub>	x <sub>2</sub>	y <sub>1</sub>	y <sub>2</sub>	Clamping lever for d <sub>3</sub>  Distance bushing
B 20	40	6,5	M 8	62	40	30	7	52	35	70	53	GN 911-M 8-32
B 25	40	6,5	M 8	62	40	30	7	52	35	70	53	GN 911-M 8-32
B 30	40	6,5	M 8	62	40	30	7	52	35	70	53	GN 911-M 8-32
B 30	56	8,5	M 10	83	56	42	10	78	52	108	82	GN 911-M10-40
B 32	56	8,5	M 10	83	56	42	10	78	52	108	82	GN 911-M10-40
B 35	56	8,5	M 10	83	56	42	10	78	52	108	82	GN 911-M10-40
B 40	56	8,5	M 10	83	56	42	10	78	52	108	82	GN 911-M10-40
B 40	65	11	M 10	95	65	50	14	92	62	128	98	GN 911-M10-55
B 42	65	11	M 10	95	65	50	14	92	62	128	98	GN 911-M10-55
B 45	65	11	M 10	95	65	50	14	92	62	128	98	GN 911-M10-55
B 48	65	11	M 10	95	65	50	14	92	62	128	98	GN 911-M10-55
B 50	65	11	M 10	95	65	50	14	92	62	128	98	GN 911-M10-55
B 50	80	11	M 10	112	80	60	14	110	74	154	118	GN 911-M10-55
B 55	80	11	M 10	112	80	60	14	110	74	154	118	GN 911-M10-55
B 60	80	11	M 10	112	80	60	14	110	74	154	118	GN 911-M10-55

## Specification

- Aluminium
  - plastic coated black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - blank matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- RoHS compliant

4

## Information

The clamping bores of the flanged connector clamps GN 146 are mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screws are socket cap screws DIN 912. They can be used in place of adjustable clamping levers GN 911 (see table of dimensions).

see also...

- Construction tubes GN 990 → Page 1027
- Flanged linear actuator connector GN 145.1 → Page 1048

### How to order

GN 146-B30-56-1-BL

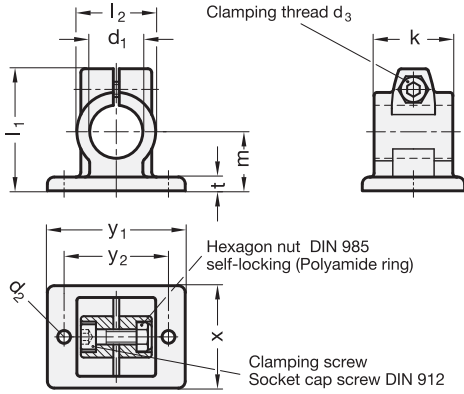
- d<sub>1</sub>
- k
- Identification No.
- Finish

# GN 146.3 Flanged connector clamps

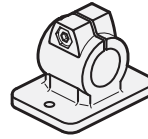
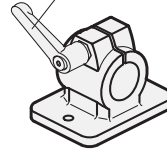
with 2 mounting holes



2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9




Adjustable clamping lever GN 911



### 3 Identification No.

- 1 with clamping screws DIN 912, zinc plated
- 2 with Stainless Steel-clamping screw DIN 912

1 2

d <sub>1</sub> Bore B	k Clamping length	d <sub>2</sub>	d <sub>3</sub> Clamping thread	l <sub>1</sub>	l <sub>2</sub>	m	t	x	y <sub>1</sub>	y <sub>2</sub>	Clamping lever for d <sub>3</sub> 
B 20	40	6,5	M 8	62	40	30	7	52	70	53	GN 911-M 8-32
B 25	40	6,5	M 8	62	40	30	7	52	70	53	GN 911-M 8-32
B 30	40	6,5	M 8	62	40	30	7	52	70	53	GN 911-M 8-32
B 30	56	8,5	M 10	83	56	42	10	78	108	82	GN 911-M10-40
B 32	56	8,5	M 10	83	56	42	10	78	108	82	GN 911-M10-40
B 35	56	8,5	M 10	83	56	42	10	78	108	82	GN 911-M10-40
B 40	56	8,5	M 10	83	56	42	10	78	108	82	GN 911-M10-40

## Specification

4

- Aluminium
  - plastic coated black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- Stainless Steel characteristics → Page 1144
- RoHS compliant

## Information

The clamping bores of the flanged connector clamps GN 146.3 are mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screws are socket cap screws DIN 912. They can be used in place of adjustable clamping levers GN 911 (see table of dimensions).

Flanged connector clamps GN 146.3 are also suitable for attaching to aluminium section systems.

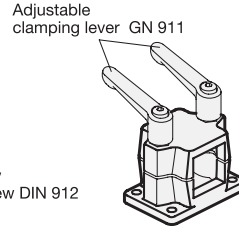
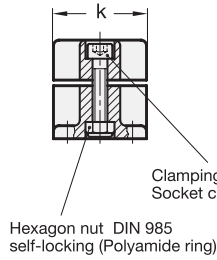
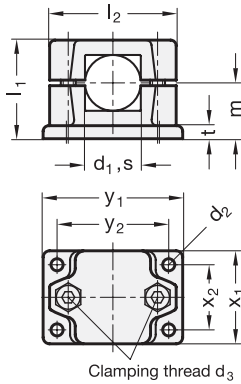
see also...

- Construction tubes GN 990 → Page 1027
- Flanged linear actuator connectors GN 146.1 → Page 1049

### How to order

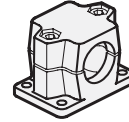
1	d <sub>1</sub>
2	k
3	Identification No.
4	Finish

GN 146.3-B25-40-1-SW



**2 Identification No.**

- 1 with 2 clamping screws DIN 912, zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912



<b>d<sub>1</sub></b> Bore B	<b>s</b> Square V	<b>d<sub>2</sub></b>	<b>d<sub>3</sub></b> Clamping thread	<b>k</b> Clamping length	<b>l<sub>1</sub></b>	<b>l<sub>2</sub></b>	<b>m</b>	<b>t</b>	<b>x<sub>1</sub></b>	<b>x<sub>2</sub></b>	<b>y<sub>1</sub></b>	<b>y<sub>2</sub></b>	Clamping lever for d <sub>3</sub> 
B 20	V 20	6,5	M 8	50	53	68	30	7	50	35	75	60	GN 911-M 8-45
B 25	V 25	6,5	M 8	50	53	68	30	7	50	35	75	60	GN 911-M 8-45
B 30	V 30	6,5	M 8	50	53	68	30	7	50	35	75	60	GN 911-M 8-45
B 40	V 40	11	M 10	76	81,5	98	46,5	14	76	50	115	90	GN 911-M10-70
B 42	-	11	M 10	76	81,5	98	46,5	14	76	50	115	90	GN 911-M10-70
B 45	V 45	11	M 10	76	81,5	98	46,5	14	76	50	115	90	GN 911-M10-70
B 48	-	11	M 10	76	81,5	98	46,5	14	76	50	115	90	GN 911-M10-70
B 50	V 50	11	M 10	76	81,5	98	46,5	14	76	50	115	90	GN 911-M10-70

**Specification**

- Aluminium
  - plastic coated black, RAL 9005, textured finish **● SW**
  - blank **○ BL**
  - matt shot-blasted
- Clamping bores not machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**



**Information**

The clamping bores of the flanged connector clamps GN 147 are not machined and specially designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screws are socket cap screws DIN 912. They can be used in place of adjustable clamping levers GN 911 (article code see table of dimensions).

see also...

- *Construction tubes GN 990* → Page 1027
- *Linear actuator connectors GN 147.1* → Page 1058

How to order

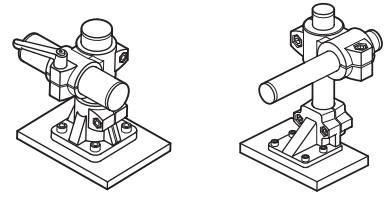
**GN 147-B25-1-SW**

- 1 **d<sub>1</sub> (s)**
- 2 **Identification No.**
- 3 **Finish**





- Base plate connector clamps GN 162 → Page 988
- Stainless Steel**-Base plate connector clamps GN 162 → Page 988
- Base plate connector clamps GN 163 → Page 990
- Base plate connector clamps GN 165 → Page 991
- Base plate connector clamps GN 166 → Page 992
- Wide base plate connector clamps GN 167 → Page 993
- Flanged base plate connector clamps GN 171 → Page 994

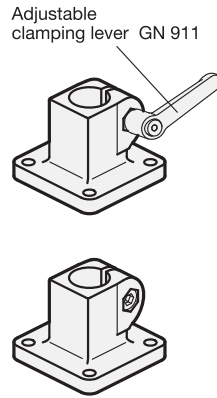
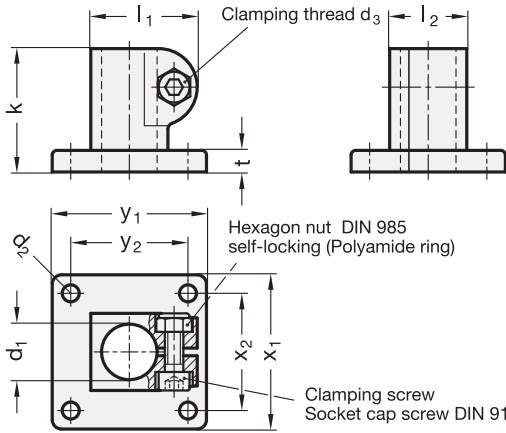


# GN 162

Aluminium / Stainless Steel

# Base plate connector clamps

with 4 mounting holes



Rost free  
Inox  
Stainless  
Steel  
Inch  
sizes  
available

- 2 Identification No.**
- 1 with one clamping screw DIN 912, zinc plated
  - 2 with one Stainless Steel-clamping screw DIN 912

**1**

d <sub>1</sub> Bore B Aluminium	Stainless Steel	d <sub>2</sub>	d <sub>3</sub> Clamping thread	k Clamping length	l <sub>1</sub>	l <sub>2</sub>	t	x <sub>1</sub>	x <sub>2</sub>	y <sub>1</sub>	y <sub>2</sub>	Clamping lever for d <sub>3</sub> 
B 10	-	5,5	M 6	40	34,5	25	7	50	38	50	38	GN 911-M6-22
B 12	B 12	5,5	M 6	40	34,5	25	7	50	38	50	38	GN 911-M6-22
B 14	B 14	5,5	M 6	40	34,5	25	7	50	38	50	38	GN 911-M6-22
B 15	B 15	5,5	M 6	40	34,5	25	7	50	38	50	38	GN 911-M6-22
B 16	B 16	5,5	M 6	40	34,5	25	7	50	38	50	38	GN 911-M6-22
B 18	B 18	5,5	M 6	40	34,5	25	7	50	38	50	38	GN 911-M6-22

## Specification

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**  
matt shot-blasted
- Stainless Steel AISI CF-8 **NI**  
matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- Stainless Steel characteristics → Page 1144
- RoHS compliant

**3**

## Information

The clamping bores of the base plate connector clamps GN 162 are mechanically machined and specially designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screws are socket cap screws DIN 912. They can be used in place of adjustable clamping levers GN 911 (article code see table of dimensions).

see also...

- Foot clamp mountings GN 473 → Page 1077
- Construction tubes GN 990 → Page 1027
- Base plate linear actuator connectors GN 162.1 → Page 1050
- Base plate connector clamps GN 162.3 (with 2 mounting holes) → Page 989

Base plate connector clamps <b>GN 162-B14-1-SW</b>	1 d <sub>1</sub>
	2 Identification No.
	3 Finish

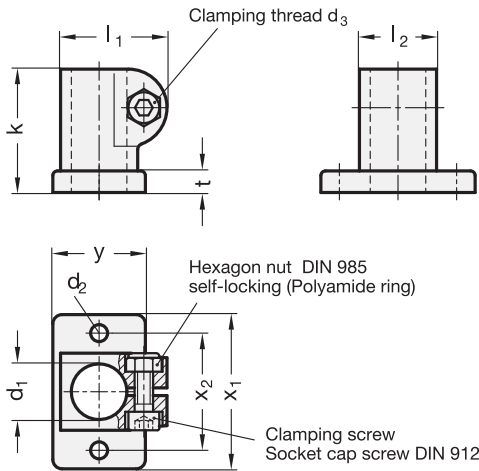
Stainless Steel-Base plate connector clamps <b>GN 162-B12-2-NI</b>	1 d <sub>1</sub>
	2 Identification No.
	3 Material

# GN 162.3

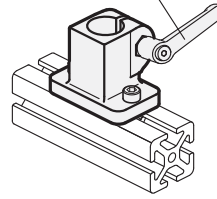
Aluminium / Stainless Steel

# Base plate connector clamps

with 2 retaining bores



Adjustable clamping lever GN 911



## 2 Identification

- 1 with clamping screw DIN 912, steel zinc plated
- 2 with Stainless Steel-clamping screw DIN 912

## 1

d <sub>1</sub> Bore B	Aluminium Stainless Steel	d <sub>2</sub>	d <sub>3</sub> Clamping thread	k Clamping length	l <sub>1</sub>	l <sub>2</sub>	t	x <sub>1</sub>	x <sub>2</sub>	y	Clamping lever for d <sub>3</sub>
B 10	-	5,5	M 6	40	34,5	25	7	50	38	30	GN 911-M6-22
B 12	B 12	5,5	M 6	40	34,5	25	7	50	38	30	GN 911-M6-22
B 14	B 14	5,5	M 6	40	34,5	25	7	50	38	30	GN 911-M6-22
B 15	B 15	5,5	M 6	40	34,5	25	7	50	38	30	GN 911-M6-22
B 16	B 16	5,5	M 6	40	34,5	25	7	50	38	30	GN 911-M6-22
B 18	B 18	5,5	M 6	40	34,5	25	7	50	38	30	GN 911-M6-22

## Specification

- Aluminium
  - plastic coated black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Stainless Steel AISI CF-8 **NI**
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings
 Stainless Steel AISI 303 → Page 1031
- Stainless Steel characteristics → Page 1144
- RoHS compliant

## 3

## Information

The clamping bore of the base plate connector clamps GN 162.3 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 screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

Base plate connector clamps GN 162.3 are also suitable for mounting on **profile systems**.

see also...

- Construction tubes GN 990 → Page 1027
- Base plate connector clamps GN 162 (with 4 retaining bores) → Page 988

Base plate connector clamp

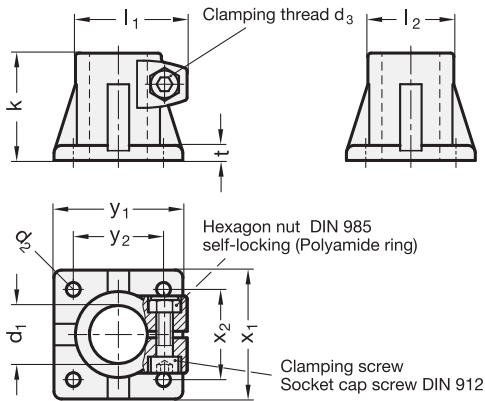
GN 162.3-B14-1-SW

- 1 d<sub>1</sub>
- 2 Identification
- 3 Finish

Stainless Steel-Base plate connector clamp

GN 162.3-B12-2-NI

- 1 d<sub>1</sub>
- 2 Identification
- 3 Material



Inch sizes available

**3 Identification No.**

- 1 with one clamping screw DIN 912, zinc plated
- 2 with one Stainless Steel-clamping screw DIN 912

1 2

d <sub>1</sub> Bore B	k Clamping length	d <sub>2</sub>	d <sub>3</sub> Clamping thread	l <sub>1</sub>	l <sub>2</sub>	t	x <sub>1</sub>	x <sub>2</sub>	y <sub>1</sub>	y <sub>2</sub>	Clamping lever for d <sub>3</sub> 
B 20	50	6,5	M 8	52	40	7	60	42	60	42	GN 911-M 8-32
B 25	50	6,5	M 8	52	40	7	60	42	60	42	GN 911-M 8-32
B 30	50	6,5	M 8	52	40	7	60	42	60	42	GN 911-M 8-32
B 30	70	8,5	M 10	68	56	10	90	64	90	64	GN 911-M10-40
B 32	70	8,5	M 10	68	56	10	90	64	90	64	GN 911-M10-40
B 35	70	8,5	M 10	68	56	10	90	64	90	64	GN 911-M10-40
B 40	70	8,5	M 10	68	56	10	90	64	90	64	GN 911-M10-40
B 40	85	11	M 10	77,5	65	14	105	74	105	74	GN 911-M10-55
B 42	85	11	M 10	77,5	65	14	105	74	105	74	GN 911-M10-55
B 45	85	11	M 10	77,5	65	14	105	74	105	74	GN 911-M10-55
B 48	85	11	M 10	77,5	65	14	105	74	105	74	GN 911-M10-55
B 50	85	11	M 10	77,5	65	14	105	74	105	74	GN 911-M10-55
B 55	100	11	M 10	92	80	14	125	89	125	89	GN 911-M10-55
B 60	100	11	M 10	92	80	14	125	89	125	89	GN 911-M10-55

**Specification**

- Aluminium
  - plastic coated black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

4

**Information**

The clamping bores of the base plate connector clamps GN 163 are mechanically machined and specially designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screws are socket cap screws DIN 912. They can be used in place of adjustable clamping levers GN 911 (article code see table of dimensions).

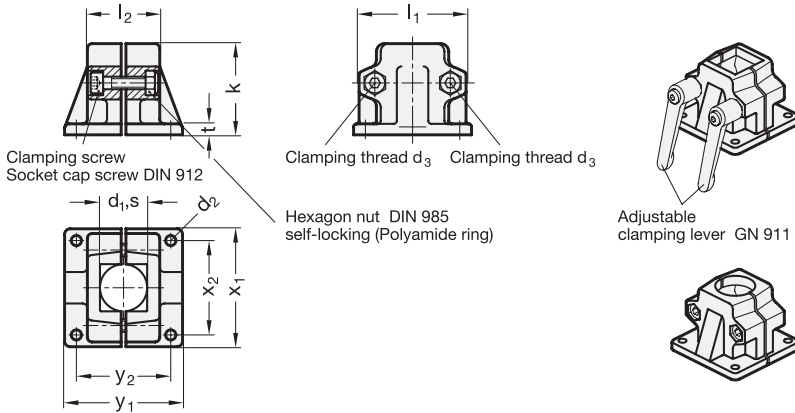
see also...

- *Construction tubes GN 990* → Page 1027
- *Base plate linear actuator connectors GN 163.1* → Page 1051

How to order

**GN 163-B40-85-1-BL**


1	d <sub>1</sub>
2	k
3	Identification No.
4	Finish



**2 Identification No.**

- 1 with 2 clamping screws DIN 912, zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912



d <sub>1</sub> Bore B	s Square V	d <sub>2</sub>	d <sub>3</sub> Clamping thread	k Clamping length	l <sub>1</sub>	l <sub>2</sub>	t	x <sub>1</sub>	x <sub>2</sub>	y <sub>1</sub>	y <sub>2</sub>	Clamping lever for d <sub>3</sub> 
B 20	V 20	7	M 8	58	69	46	7	75	60	75	60	GN 911-M 8-40
B 25	V 25	7	M 8	58	69	46	7	75	60	75	60	GN 911-M 8-40
B 30	V 30	7	M 8	58	69	46	7	75	60	75	60	GN 911-M 8-40
B 40	V 40	11	M 10	91	98	70	14	115	90	119	90	GN 911-M10-63
B 42	-	11	M 10	91	98	70	14	115	90	119	90	GN 911-M10-63
B 45	V 45	11	M 10	91	98	70	14	115	90	119	90	GN 911-M10-63
B 48	-	11	M 10	91	98	70	14	115	90	119	90	GN 911-M10-63
B 50	V 50	11	M 10	91	98	70	14	115	90	119	90	GN 911-M10-63

**Specification**

- Aluminium
  - plastic coated
  - black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bores not machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**



**Information**

The clamping bores of the base plate connector clamps GN 165 are not machined and specially designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively. The square versions are also suitable for **profile systems**.

The standard clamping screws are socket cap screws DIN 912. They can be used in place of adjustable clamping levers GN 911 (article code see table of dimensions).

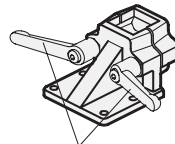
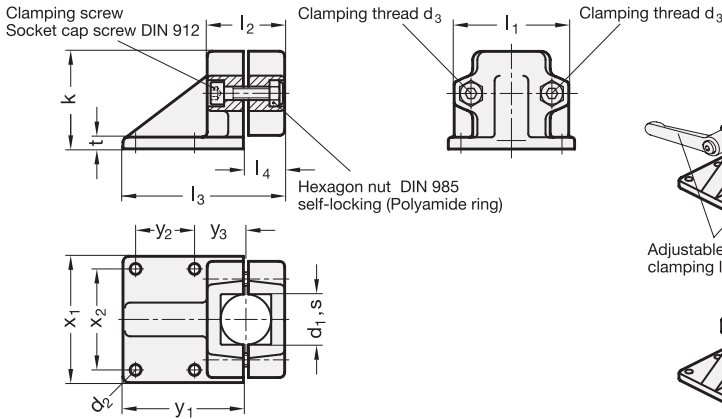
see also...

- *Construction tubes GN 990* → Page 1027
- *Linear actuator connectors GN 165.1* → Page 1060

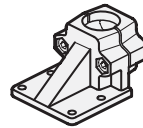
How to order

GN 165-V25-1-SW

- 1 s (d,)
- 2 Identification No.
- 3 Finish



Adjustable clamping lever GN 911



**2 Identification No.**

- 1 with 2 clamping screws DIN 912, zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912



d <sub>1</sub> Bore B	s Square V	d <sub>2</sub>	d <sub>3</sub> Clamping thread	k Clamping length	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	t	x <sub>1</sub>	x <sub>2</sub>	y <sub>1</sub>	y <sub>2</sub>	y <sub>3</sub>	Clamping lever for d <sub>3</sub> Distance bushing
B 20	V 20	7	M 8	58	69	46	96	23	7	75	60	72	35	30	GN 911-M 8-40
B 25	V 25	7	M 8	58	69	46	96	23	7	75	60	72	35	30	GN 911-M 8-40
B 30	V 30	7	M 8	58	69	46	96	23	7	75	60	72	35	30	GN 911-M 8-40
B 40	V 40	11	M 10	91	98	70	145	35	14	115	90	108	50	45	GN 911-M10-63
B 42	-	11	M 10	91	98	70	145	35	14	115	90	108	50	45	GN 911-M10-63
B 45	V 45	11	M 10	91	98	70	145	35	14	115	90	108	50	45	GN 911-M10-63
B 48	-	11	M 10	91	98	70	145	35	14	115	90	108	50	45	GN 911-M10-63
B 50	V 50	11	M 10	91	98	70	145	35	14	115	90	108	50	45	GN 911-M10-63

**Specification**

- Aluminium
  - plastic coated black, RAL 9005, textured finish ● **SW**
  - blank matt shot-blasted ○ **BL**
- Clamping bores not machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- RoHS compliant



**Information**

The clamping bores of the off-set base plate connector clamps GN 166 are not machined and specially designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively. The square versions are also suitable for **profile systems**.

The standard clamping screws are socket cap screws DIN 912. They can be used in place of adjustable clamping levers GN 911 (article code see table of dimensions).

see also...

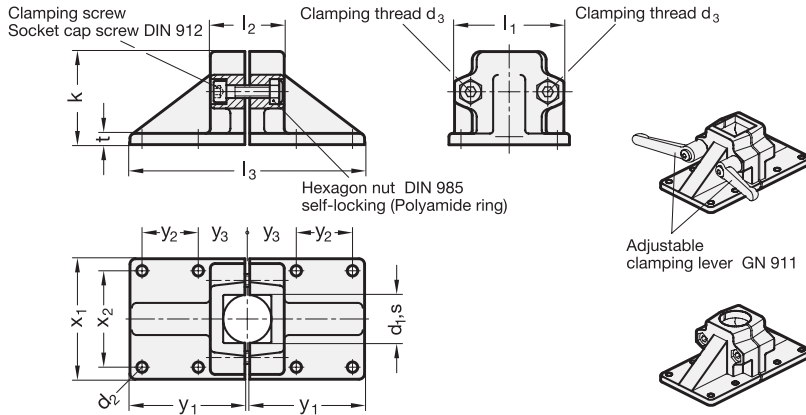
- *Construction tubes GN 990* → Page 1027

**How to order**

**GN 166-B48-2-BL**

- 1 **d<sub>1</sub> (s)**
- 2 **Identification No.**
- 3 **Finish**





**2 Identification No.**

- 1 with 2 clamping screws DIN 912, zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912

1 1

d <sub>1</sub> Bore B	s Square V	d <sub>2</sub>	d <sub>3</sub> Clamping thread	k Clamping length	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	t	x <sub>1</sub>	x <sub>2</sub>	y <sub>1</sub>	y <sub>2</sub>	y <sub>3</sub>	Clamping lever for d <sub>3</sub>
B 20	V 20	7	M 8	58	69	46	146	7	75	60	72	35	30	GN 911-M 8-40
B 25	V 25	7	M 8	58	69	46	146	7	75	60	72	35	30	GN 911-M 8-40
B 30	V 30	7	M 8	58	69	46	146	7	75	60	72	35	30	GN 911-M 8-40
B 40	V 40	11	M 10	91	98	70	218	14	115	90	108	50	45	GN 911-M10-63
B 42	-	11	M 10	91	98	70	218	14	115	90	108	50	45	GN 911-M10-63
B 45	V 45	11	M 10	91	98	70	218	14	115	90	108	50	45	GN 911-M10-63
B 48	-	11	M 10	91	98	70	218	14	115	90	108	50	45	GN 911-M10-63
B 50	V 50	11	M 10	91	98	70	218	14	115	90	108	50	45	GN 911-M10-63

**Specification**

- Aluminium
  - plastic coated black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bores not machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

3

**Information**

The clamping bores of the wide base plate connector clamps GN 167 are not machined and specially designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively. The square versions are also suitable for **profile systems**.

The standard clamping screws are socket cap screws DIN 912. They can be used in place of adjustable clamping levers GN 911 (article code see table of dimensions).

see also...

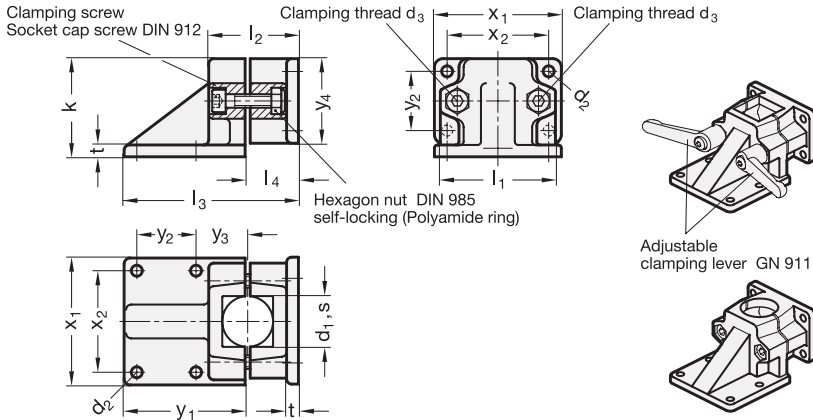
- *Construction tubes GN 990* → Page 1027

How to order

GN 167-V30-1-SW

- 1 s (d)
- 2 Identification No.
- 3 Finish


2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



**2 Identification No.**

- 1 with 2 clamping screws DIN 912, zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912



d <sub>1</sub> Bore B	s Square V	d <sub>2</sub>	d <sub>3</sub> Clamping thread	k Clamping length	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	t	x <sub>1</sub>	x <sub>2</sub>	y <sub>1</sub>	y <sub>2</sub>	y <sub>3</sub>	y <sub>4</sub>	Clamping lever for d <sub>3</sub> 
B 20	V 20	7	M 8	58	69	53	103	30	7	75	60	72	35	30	50	GN 911-M 8-45
B 25	V 25	7	M 8	58	69	53	103	30	7	75	60	72	35	30	50	GN 911-M 8-45
B 30	V 30	7	M 8	58	69	53	103	30	7	75	60	72	35	30	50	GN 911-M 8-45
B 40	V 40	11	M 10	91	98	82	156	47	14	115	90	108	50	45	76	GN 911-M10-70
B 42	-	11	M 10	91	98	82	156	47	14	115	90	108	50	45	76	GN 911-M10-70
B 45	V 45	11	M 10	91	98	82	156	47	14	115	90	108	50	45	76	GN 911-M10-70
B 48	-	11	M 10	91	98	82	156	47	14	115	90	108	50	45	76	GN 911-M10-70
B 50	V 50	11	M 10	91	98	82	156	47	14	115	90	108	50	45	76	GN 911-M10-70

**Specification**

- Aluminium
  - plastic coated black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bores not machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**



**Information**

The clamping bores of the flanged base plate connector clamps GN 171 are not machined and specially designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively. The square versions are also suitable for **profile systems**.

The standard clamping screws are socket cap screws DIN 912. They can be used in place of adjustable clamping levers GN 911 (article code see table of dimensions).

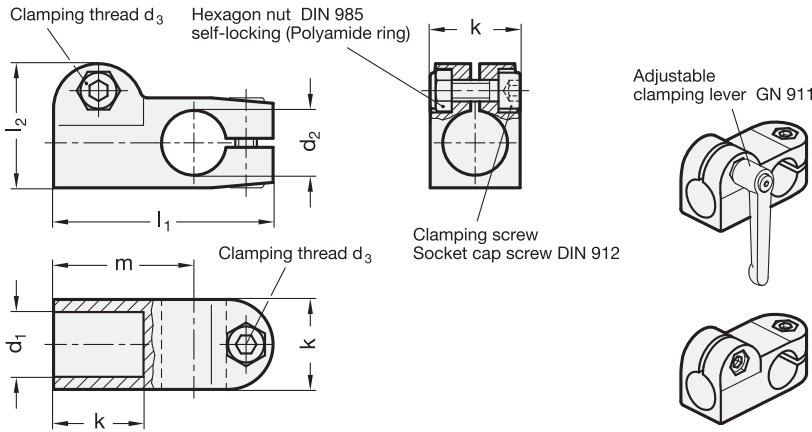
see also...

- *Construction tubes GN 990* → Page 1027

How to order

GN 171-B45-1-BL

- 1 d<sub>1</sub> (s)
- 2 Identification No.
- 3 Finish



Rost free  
Inox Stainless Steel  
Inch sizes available

**3 Identification No.**

- 1 with one clamping screw DIN 912, zinc plated
- 2 with one Stainless Steel-clamping screw DIN 912

**1**

**2**

<b>d<sub>1</sub></b> Bore B Aluminium		<b>d<sub>2</sub></b> Bore B Aluminium		<b>d<sub>3</sub></b> Clamping thread	<b>k</b> Clamping length	<b>l<sub>1</sub></b>	<b>l<sub>2</sub></b>	<b>m</b>	Clamping lever for d <sub>3</sub>
Aluminium	Stainless Steel	Aluminium	Stainless Steel						Distance bushing
B 10	-	B 10	-	M 6	25	61	34,5	39	GN 911-M6-22
B 12	B 12	B 12	B 12	M 6	25	61	34,5	39	GN 911-M6-22
B 14	B 14	B 14	B 14	M 6	25	61	34,5	39	GN 911-M6-22
B 15	B 15	B 15	B 15	M 6	25	61	34,5	39	GN 911-M6-22
B 16	B 16	B 16	B 16	M 6	25	61	34,5	39	GN 911-M6-22
B 18	B 18	B 18	B 18	M 6	25	61	34,5	39	GN 911-M6-22

**Specification**

**4**

- Aluminium
  - plastic coated black, RAL 9005, textured finish **● SW**
  - blank matt shot-blasted **○ BL**
- Stainless Steel **NI**
  - AISI CF-8
  - matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping lever GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- RoHS compliant

**On request**

- d<sub>1</sub> / d<sub>2</sub> with different bores

**Information**

The clamping bores of the T-Angle connector clamps GN 191 are mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screws are socket cap screws DIN 912. They can be used in place of adjustable clamping levers GN 911 (article code see table of dimensions).

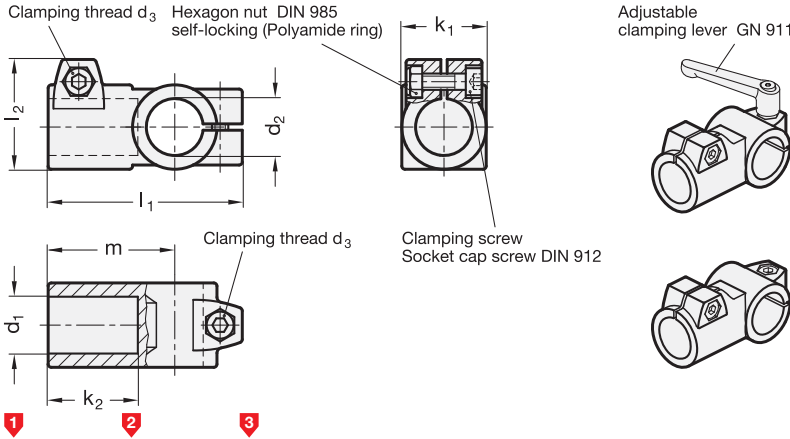
see also...

- Construction tubes GN 990 → Page 1027
- T-Angle linear actuator connectors GN 191.1 → Page 1052

T-Angle connector clamps	1 d <sub>1</sub>
	2 d <sub>2</sub>
<b>GN 191-B12-B12-1-SW</b>	3 Identification No.
	4 Finish

Stainless Steel-T-Angle connector clamps	1 d <sub>1</sub>
	2 d <sub>2</sub>
<b>GN 191-B16-B16-2-NI</b>	3 Identification No.
	4 Material

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



#### 4 Identification No.

- 1 with 2 clamping screws DIN 912, zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912

d <sub>1</sub> Bore B	d <sub>2</sub> Bore B	k <sub>1</sub> Clamping length	d <sub>3</sub> Clamping thread	k <sub>2</sub> Clamping length	l <sub>1</sub>	l <sub>2</sub>	m	Clamping lever for d <sub>3</sub> Distance bushing
B 20	B 20	40	M 8	42,5	92	52	60	GN 911-M 8-32
B 25	B 25	40	M 8	42,5	92	52	60	GN 911-M 8-32
B 30	B 30	40	M 8	42,5	92	52	60	GN 911-M 8-32
B 30	B 30	56	M 10	62	129	69	88	GN 911-M10-40
B 32	B 32	56	M 10	62	129	69	88	GN 911-M10-40
B 35	B 35	56	M 10	62	129	69	88	GN 911-M10-40
B 40	B 40	56	M 10	62	129	69	88	GN 911-M10-40
B 40	B 40	65	M 10	75	148	77,5	103	GN 911-M10-55
B 42	B 42	65	M 10	75	148	77,5	103	GN 911-M10-55
B 45	B 45	65	M 10	75	148	77,5	103	GN 911-M10-55
B 48	B 48	65	M 10	75	148	77,5	103	GN 911-M10-55
B 50	B 50	65	M 10	75	148	77,5	103	GN 911-M10-55
B 50	B 50	80	M 10	80	177	92	125	GN 911-M10-55
B 55	B 55	80	M 10	80	177	92	125	GN 911-M10-55
B 60	B 60	80	M 10	80	177	92	125	GN 911-M10-55

## Specification

- Aluminium
  - plastic coated black, RAL 9005, textured finish
  - blank matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

### On request

- d<sub>1</sub> / d<sub>2</sub> with different bores



## Information

The clamping bores of the T-Angle connector clamps GN 192 are mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screws are socket cap screws DIN 912. They can be used in place of adjustable clamping levers GN 911 (article code see table of dimensions).

see also...

- *Construction tubes GN 990* → Page 1027
- *T-Angle linear actuator connectors GN 192.1* → Page 1053

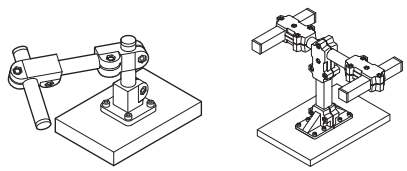
### How to order

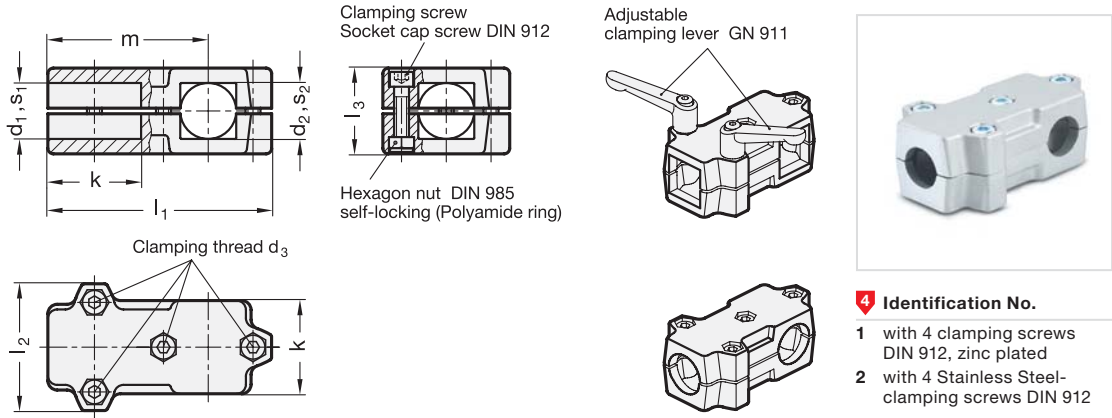
1	d <sub>1</sub>
2	d <sub>2</sub>
3	k <sub>1</sub>
4	Identification No.
5	Finish

GN 192-B32-B32-56-1-BL




- T-Angle connector clamps GN 191 → Page 995
- Stainless Steel**-T-Angle connector clamps GN 191 → Page 995
- T-Angle connector clamps GN 192 → Page 996
- T-Angle connector clamps GN 193 → Page 998
- T-Angle connector clamps GN 194 → Page 999
- T-Angle connector clamps GN 195 → Page 1000





- 4 Identification No.**
- 1 with 4 clamping screws DIN 912, zinc plated
  - 2 with 4 Stainless Steel-clamping screws DIN 912

<b>1</b> $d_1$ Bore B	<b>1</b> $s_1$ Square V	<b>2</b> $d_2$ Bore B	<b>2</b> $s_2$ Square V	<b>3</b> $k$ Clamping length	$d_3$ Clamping thread	$l_1$	$l_2$	$l_3$	$m$	Clamping lever for $d_3$ 
B 20	V 20	B 20	V 20	50	M 8	120	68	46	85	GN 911-M 8-40
B 25	V 25	B 25	V 25	50	M 8	120	68	46	85	GN 911-M 8-40
B 30	V 30	B 30	V 30	50	M 8	120	68	46	85	GN 911-M 8-40
B 30	V 30	B 30	V 30	60	M 8	141	79	59	101,5	GN 911-M 8-55
B 32	-	B 32	-	60	M 8	141	79	59	101,5	GN 911-M 8-55
B 35	V 35	B 35	V 35	60	M 8	141	79	59	101,5	GN 911-M 8-55
B 40	V 40	B 40	V 40	60	M 8	141	79	59	101,5	GN 911-M 8-55
B 40	V 40	B 40	V 40	76	M 10	176	98	70	126	GN 911-M10-63
B 42	-	B 42	-	76	M 10	176	98	70	126	GN 911-M10-63
B 45	V 45	B 45	V 45	76	M 10	176	98	70	126	GN 911-M10-63
B 48	-	B 48	-	76	M 10	176	98	70	126	GN 911-M10-63
B 50	V 50	B 50	V 50	76	M 10	176	98	70	126	GN 911-M10-63

**Specification**

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish **● SW**
  - blank **○ BL**  
matt shot-blasted
- Clamping bores not machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- Stainless Steel characteristics → Page 1144
- RoHS compliant

**5 Information**

The clamping bores of the T-Angle connector clamps GN 193 are not machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively. The versions with square bores are also suitable for **profile systems**.

Bores and square bores of the same nominal size can be assembled in any combination. For instance, nominal size 20 has the following combination options: B20-B20, B20-V20, V20-B20 and V20-V20.

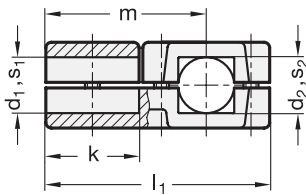
The standard clamping screws are socket cap screws DIN 912. They can be replaced by adjustable clamping levers GN 911 (article code see table of dimensions).

T-Angle connector clamps	<b>1</b> $s_1$ ( $d_1$ )
	<b>2</b> $s_2$ ( $d_2$ )
	<b>3</b> $k$
<b>1</b> <b>2</b> <b>3</b> <b>4</b> <b>5</b> <b>GN 193-V20-V20-50-1-SW</b>	<b>4</b> Identification No.
	<b>5</b> Finish

T-Angle connector clamps	<b>1</b> $d_1$ ( $s_1$ )
	<b>2</b> $s_2$ ( $d_2$ )
	<b>3</b> $k$
<b>1</b> <b>2</b> <b>3</b> <b>4</b> <b>5</b> <b>GN 193-B45-V45-76-2-BL</b>	<b>4</b> Identification No.
	<b>5</b> Finish

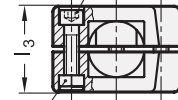
# GN 194 T-Angle connector clamps

multi part assembly

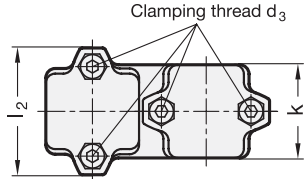
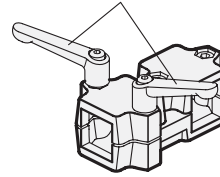


Clamping screw  
Socket cap screw DIN 912

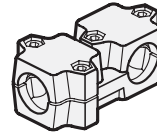
Adjustable  
clamping lever GN 911



Hexagon nut DIN 985  
self-locking (Polyamide ring)




Clamping thread  $d_3$



#### 4 Identification No.

- with 4 clamping screws  
DIN 912, zinc plated
- with 4 Stainless Steel-  
clamping screws DIN 912



$d_1$ Bore B	$s_1$ Square V	$d_2$ Bore B	$s_2$ Square V	k Clamping length	$d_3$ Clamping thread	$l_1$	$l_2$	$l_3$	m	Clamping lever for $d_3$ 
B 20	V 20	B 20	V 20	50	M 8	120	68	46	85	GN 911-M 8-40
B 25	V 25	B 25	V 25	50	M 8	120	68	46	85	GN 911-M 8-40
B 30	V 30	B 30	V 30	50	M 8	120	68	46	85	GN 911-M 8-40
B 30	V 30	B 30	V 30	60	M 8	141	79	59	101,5	GN 911-M 8-55
B 32	-	B 32	-	60	M 8	141	79	59	101,5	GN 911-M 8-55
B 35	V 35	B 35	V 35	60	M 8	141	79	59	101,5	GN 911-M 8-55
B 40	V 40	B 40	V 40	60	M 8	141	79	59	101,5	GN 911-M 8-55
B 40	V 40	B 40	V 40	76	M 10	176	98	70	126	GN 911-M10-63
B 42	-	B 42	-	76	M 10	176	98	70	126	GN 911-M10-63
B 45	V 45	B 45	V 45	76	M 10	176	98	70	126	GN 911-M10-63
B 48	-	B 48	-	76	M 10	176	98	70	126	GN 911-M10-63
B 50	V 50	B 50	V 50	76	M 10	176	98	70	126	GN 911-M10-63

## Specification

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bores not machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- Stainless Steel characteristics → Page 1144
- RoHS compliant

## Information

The clamping bores of the T-Angle connector clamps GN 194 are not machined and specially designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively. The versions with square bores are also suitable for **profile systems**.

Bores and square bores of the same nominal size can be assembled in any combination. For instance, nominal size 20 has the following combination options: B20-B20, B20-V20, V20-B20 and V20-V20.

The standard clamping screws are socket cap screws DIN 912. They can be replaced by adjustable clamping levers GN 911 (article code see table of dimensions).

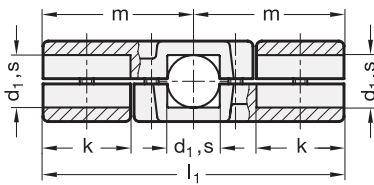
T-Angle connector clamps	1 $d_1$ ( $s_1$ )
	2 $d_2$ ( $s_2$ )
	3 k
<b>GN 194-B42-B42-76-1-BL</b>	4 Identification No.
	5 Finish

T-Angle connector clamps	1 $s_1$ ( $d_1$ )
	2 $d_2$ ( $s_2$ )
	3 k
<b>GN 194-V50-B50-76-2-SW</b>	4 Identification No.
	5 Finish



# GN 195 T-Angle connector clamps

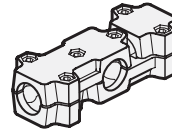
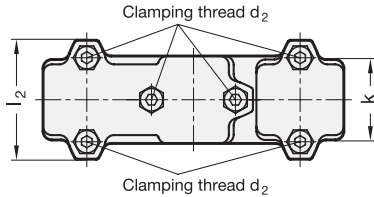
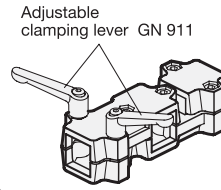
multi part assembly



Clamping screw  
Socket cap screw DIN 912


Adjustable  
clamping lever GN 911

Hexagon nut DIN 985  
self-locking (Polyamide ring)



### 3 Identification No.

- 1 with 6 clamping screws  
DIN 912, zinc plated
- 2 with 6 Stainless Steel-  
clamping screws DIN 912

<b>1</b> $d_1$ Bore B	<b>1</b> $s$ Square V	<b>2</b> $k$ Clamping length	$d_2$ Clamping thread	$l_1$	$l_2$	$l_3$	$m$	Clamping lever for $d_2$ 
B 20	V 20	50	M 8	172	68	46	86	GN 911-M 8-40
B 25	V 25	50	M 8	172	68	46	86	GN 911-M 8-40
B 30	V 30	50	M 8	172	68	46	86	GN 911-M 8-40
B 30	V 30	60	M 8	203	79	59	101,5	GN 911-M 8-55
B 32	-	60	M 8	203	79	59	101,5	GN 911-M 8-55
B 35	V 35	60	M 8	203	79	59	101,5	GN 911-M 8-55
B 40	V 40	60	M 8	203	79	59	101,5	GN 911-M 8-55
B 40	V 40	76	M 10	254	98	70	127	GN 911-M10-63
B 42	-	76	M 10	254	98	70	127	GN 911-M10-63
B 45	V 45	76	M 10	254	98	70	127	GN 911-M10-63
B 48	-	76	M 10	254	98	70	127	GN 911-M10-63
B 50	V 50	76	M 10	254	98	70	127	GN 911-M10-63

## Specification

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**  
matt shot-blasted
- Clamping bores not machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- Stainless Steel characteristics → Page 1144
- RoHS compliant



## Information

The clamping bores of the T-Angle connector clamps GN 195 are not machined and specially designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screws are socket cap screws DIN 912. They can be replaced by adjustable clamping levers GN 911 (article code see table of dimensions).

see also...

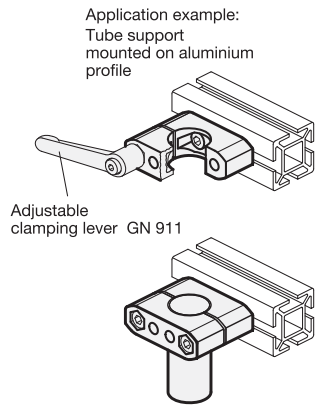
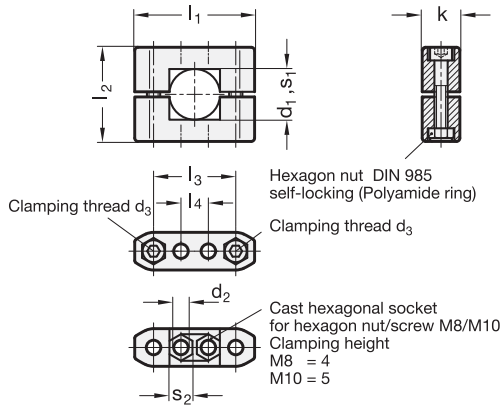
- Construction tubes GN 990 → Page 1027

### How to order

**GN 195-V35-60-1-SW**

- |   |                    |
|---|--------------------|
| 1 | $s$ ( $d_1$ )      |
| 2 | $k$                |
| 3 | Identification No. |
| 4 | Finish             |





**2 Identification No.**

- 1 with 2 clamping screws DIN 912, zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912

<b>d<sub>1</sub></b> Bore B	<b>s<sub>1</sub></b> Square V	<b>d<sub>2</sub></b>	<b>d<sub>3</sub></b> Clamping thread	<b>k</b> Clamping length	<b>l<sub>1</sub></b>	<b>l<sub>2</sub></b>	<b>l<sub>3</sub></b>	<b>l<sub>4</sub></b>	<b>s<sub>2</sub></b>	Clamping lever for d <sub>3</sub> 
B 20	V 20	8,5	M 8	22	70	55	48	16	13	GN 911-M 8-50
B 25	V 25	8,5	M 8	22	70	55	48	16	13	GN 911-M 8-50
B 30	V 30	8,5	M 8	22	70	55	48	16	13	GN 911-M 8-50
B 40	V 40	11	M 10	27	100	80	73	30	17	GN 911-M10-70
B 42	-	11	M 10	27	100	80	73	30	17	GN 911-M10-70
B 45	V 45	11	M 10	27	100	80	73	30	17	GN 911-M10-70
B 48	-	11	M 10	27	100	80	73	30	17	GN 911-M10-70
B 50	V 50	11	M 10	27	100	80	73	30	17	GN 911-M10-70
B 55	V 55	11	M 10	27	100	90	78	30	17	GN 911-M10-80
B 60	V 60	11	M 10	27	100	90	78	30	17	GN 911-M10-80

**Specification**

- Aluminium
  - plastic coated black, RAL 9005, textured finish **● SW**
  - blank **○ BL**
  - matt shot-blasted
- Clamping bores not machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**



**Information**

The clamping bores of the tube supports GN 231 are not machined and specially designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screws are socket cap screws DIN 912. They can be replaced by adjustable clamping levers GN 911 (article code see table of dimensions).

see also...

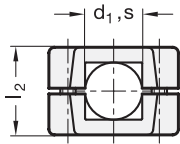
- *Construction tubes GN 990* → Page 1027

**How to order**

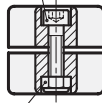
**GN231-B40-1-BL**

- 1 **d<sub>1</sub> (s<sub>1</sub>)**
- 2 **Identification No.**
- 3 **Finish**

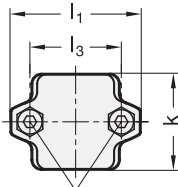
2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



Clamping screw  
Socket cap screw DIN 912

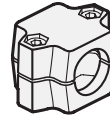
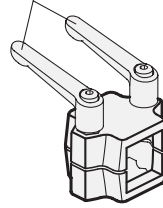


Hexagon nut DIN 985  
self-locking (Polyamide ring)




Clamping thread  $d_2$

Adjustable  
clamping lever GN 911



**3 Identification No.**

- 1 with 2 clamping screws  
DIN 912, zinc plated
- 2 with 2 Stainless Steel-  
clamping screws DIN 912

<b>d<sub>1</sub></b> Bore B	<b>s</b> Square V	<b>k</b> Clamping length	<b>d<sub>2</sub></b> Clamping thread	<b>l<sub>1</sub></b>	<b>l<sub>2</sub></b>	<b>l<sub>3</sub></b>	Clamping lever for $d_2$ 
B 20	V 20	50	M 8	68	46	48	GN 911-M 8-40
B 25	V 25	50	M 8	68	46	48	GN 911-M 8-40
B 30	V 30	50	M 8	68	46	48	GN 911-M 8-40
B 30	V 30	60	M 8	79	59	58	GN 911-M 8-55
B 32	-	60	M 8	79	59	58	GN 911-M 8-55
B 35	V 35	60	M 8	79	59	58	GN 911-M 8-55
B 40	V 40	60	M 8	79	59	58	GN 911-M 8-55
B 40	V 40	76	M 10	98	70	73	GN 911-M10-63
B 42	-	76	M 10	98	70	73	GN 911-M10-63
B 45	V 45	76	M 10	98	70	73	GN 911-M10-63
B 48	-	76	M 10	98	70	73	GN 911-M10-63
B 50	V 50	76	M 10	98	70	73	GN 911-M10-63

**Specification**

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bores not machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**



**Information**

The clamping bores of the tube connector joints GN 241 are not machined and specially designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screws are socket cap screws DIN 912. They can be replaced by adjustable clamping levers GN 911 (article code see table of dimensions).

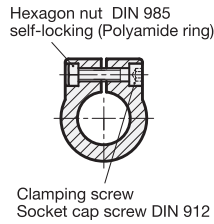
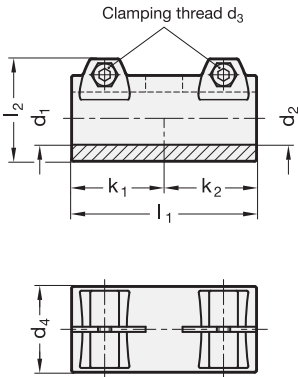
see also...

- *Construction tubes GN 990* → Page 1027

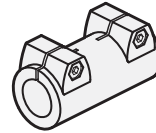
**How to order**


**GN241-V45-76-1-SW**

1	s (d <sub>1</sub> )
2	k
3	Identification No.
4	Finish



- 3 Identification No.**
- with 2 clamping screws DIN 912, zinc plated
  - with 2 Stainless Steel-clamping screws DIN 912



<b>1</b> $d_1$ Bore B	<b>2</b> $d_2$ Bore B	$d_3$ Clamping thread	$d_4$	$k_1$ Clamping length	$k_2$ Clamping length	$l_1$	$l_2$	Clamping lever for $d_3$ 
B 20	B 20	M 8	40	45	45	90	52	GN 911-M 8-32
B 25	B 25	M 8	40	45	45	90	52	GN 911-M 8-32
B 30	B 30	M 8	40	45	45	90	52	GN 911-M 8-32
B 40	B 40	M 10	65	70	70	140	77,5	GN 911-M10-50
B 42	B 42	M 10	65	70	70	140	77,5	GN 911-M10-50
B 45	B 45	M 10	65	70	70	140	77,5	GN 911-M10-50
B 48	B 48	M 10	65	70	70	140	77,5	GN 911-M10-50
B 50	B 50	M 10	65	70	70	140	77,5	GN 911-M10-50

**Specification**

- Aluminium
  - plastic coated black, RAL 9005, textured finish **● SW**
  - blank **○ BL**
  - matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- Stainless Steel characteristics → Page 1144
- RoHS compliant

**On request**

- $d_1$  /  $d_2$  with different bores

**Information**

The clamping bores of the tube connector joints GN 242 are mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screws are socket cap screws DIN 912. They can be replaced by adjustable clamping levers GN 911 (article code see table of dimensions).

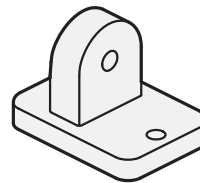
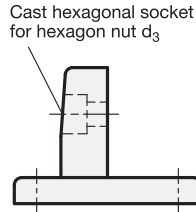
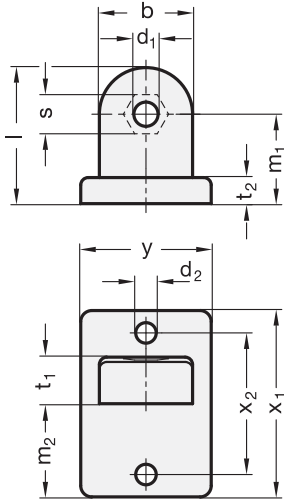
see also...

- Construction tubes GN 990 → Page 1027

**How to order**

<b>1</b> $d_1$
<b>2</b> $d_2$
<b>3</b> Identification No.
<b>4</b> Finish

**GN 242-B50-B50-2-SW**



1

b Swivel width	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	Length l	m <sub>1</sub>	m <sub>2</sub>	t <sub>1</sub>	t <sub>2</sub>	s	x <sub>1</sub>	x <sub>2</sub>	y
25	6,5	5,5	M 6	36,5	24	25	12,5	7	10	50	38	35

**Specification**

- Aluminium
  - plastic coated black, RAL 9005, textured finish
  - blank matt shot-blasted

- SW
- BL

• RoHS compliant

2

**Information**

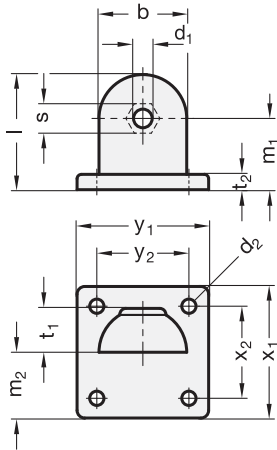
Swivel clamp connector bases GN 271 can be assembled with the swivel clamp connectors GN 273, GN 275 or GN 277 to create swivel clamp connector joints.

see also...

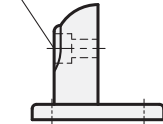
- Swivel clamp connector joints GN 281 (Connection of GN 271 with GN 275) → Page 1015
- Sensor holders GN 271.4 → Page 1055

How to order  
**GN 271-25-SW**

1	b
2	Finish



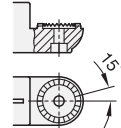
Cast hexagonal socket for hexagon nut  $d_3$



Type **OZ**  
without centring step  
(smooth)



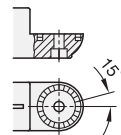
Type **AV**  
with male serration



Type **MZ**  
with centring step



Type **IV**  
with female serration



**2 Type**

- OZ** without centring step (smooth)
- MZ** with centring step
- AV** with male serration
- IV** with female serration

**1**

b Swivel width	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	Length l	m <sub>1</sub>	m <sub>2</sub>	t <sub>1</sub>	t <sub>2</sub>	s	x <sub>1</sub>	x <sub>2</sub>	y <sub>1</sub>	y <sub>2</sub>
40	8,5	6,5	M 8	52,5	32,5	30	20	7	13	60	42	60	42
65	10,2	11	M 10	84,5	52	52,5	32,5	14	17	105	74	105	74

**Specification**

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish
  - blank
- RoHS compliant

- **SW**
- **BL**

**3**

**Information**

Swivel clamp connector bases GN 272 can be assembled with swivel clamp connectors GN 274, GN 276 or GN 278 to create swivel clamp connector joints.

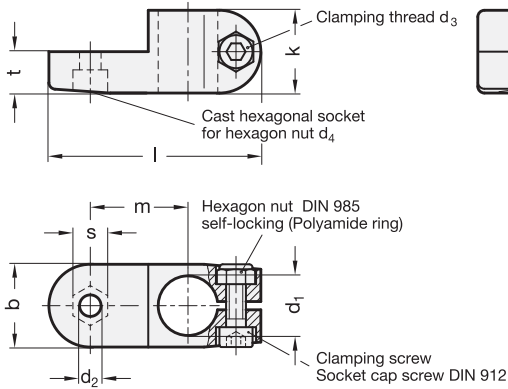
see also...

- Swivel clamp connector joints GN 282  
(Connection of GN 272 with GN 276) → Page 1016
- Sensor holders GN 272.4 → Page 1025

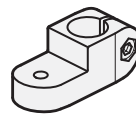
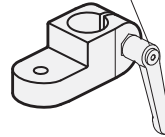
How to order

**GN272-40-OZ-BL**

- 1** b
- 2** Type
- 3** Finish




Adjustable clamping lever GN 911



## 2 Identification No.

- 1 with clamping screw DIN 912, zinc plated
- 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	Length l	m	s	t	Clamping lever for $d_3$ 
B 12	25	6,5	M 6	M 6	25	64	29,5	10	12,5	GN 911-M6-22
B 14	25	6,5	M 6	M 6	25	64	29,5	10	12,5	GN 911-M6-22
B 16	25	6,5	M 6	M 6	25	64	29,5	10	12,5	GN 911-M6-22
B 18	25	6,5	M 6	M 6	25	64	29,5	10	12,5	GN 911-M6-22

## Specification

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**  
matt shot-blasted
- Clamping bore mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- Stainless Steel characteristics → Page 1144
- RoHS compliant

3

## Information

The clamping bore of the swivel clamp connectors GN 273 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 an adjustable clamping lever GN 911 (see table of dimensions).

Swivel clamp connectors GN 273 can be assembled with swivel clamp connectors GN 271, GN 275 or GN 277 to create swivel clamp connector joints.

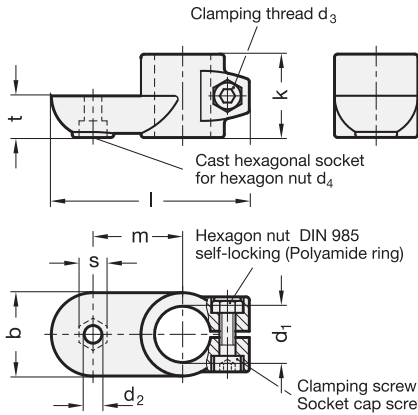
see also...

- Construction tubes GN 990 → Page 1027
- Swivel clamp connector joints GN 283  
(Connection of GN 273 with GN 275) → Page 1017
- Swivel clamp linear actuator connectors GN 273.1 → Page 1054
- Sensor holders GN 273.4 → Page 1026

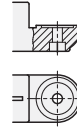
How to order

GN273-B16-1-SW

1	$d_1$
2	Identification No.
3	Finish

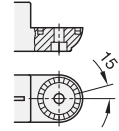
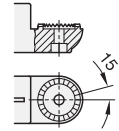


Type **OZ**  
without centring step  
(smooth)



Type **MZ**  
with centring step

Type **AV**  
with male serration



Type **IV**  
with female serration



**2** Type

- OZ** without centring step (smooth)
- MZ** with centring step
- AV** with male serration
- IV** with female serration

**3** Identification No.

- 1** with clamping screw DIN 912, zinc plated
- 2** with Stainless Steel-clamping screw DIN 912

**1**

d <sub>1</sub> Bore B	b Swivel width	d <sub>2</sub>	d <sub>3</sub> Clamping thread	d <sub>4</sub>	k	Length l	m	s	t	Clamping lever for d <sub>3</sub>
B 20	40	8,5	M 8	M 8	40	95	43	13	20	GN 911-M 8-32
B 25	40	8,5	M 8	M 8	40	95	43	13	20	GN 911-M 8-32
B 30	40	8,5	M 8	M 8	40	95	43	13	20	GN 911-M 8-32
B 40	65	10,5	M 10	M 10	65	148	70	17	32,5	GN 911-M10-55
B 42	65	10,5	M 10	M 10	65	148	70	17	32,5	GN 911-M10-55
B 45	65	10,5	M 10	M 10	65	148	70	17	32,5	GN 911-M10-55
B 48	65	10,5	M 10	M 10	65	148	70	17	32,5	GN 911-M10-55
B 50	65	10,5	M 10	M 10	65	148	70	17	32,5	GN 911-M10-55

**Specification**

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**  
matt shot-blasted
- Clamping bore mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**4**

**Information**

The clamping bore of the swivel clamp connectors GN 274 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 an adjustable clamping lever GN 911 (see table of dimensions).

Swivel clamp connectors GN 274 can be assembled with swivel clamp connectors GN 272, GN 276 or GN 278 to create swivel clamp connector joints.

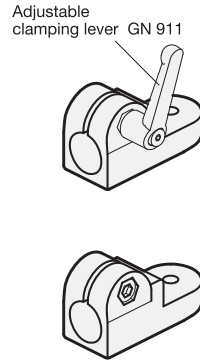
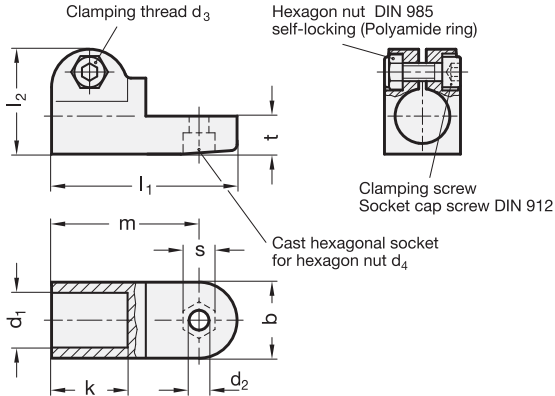
see also...

- *Construction tubes GN 990* → Page 1027
- *Swivel clamp connector joints GN 284*  
(Connection of GN 274 with GN 276) → Page 1018
- *Swivel clamp linear actuator connectors GN 274.1* → Page 1055

How to order

**GN274-B45-AV-1-BL**


1	d <sub>1</sub>
2	Type
3	Identification No.
4	Finish



**2 Identification No.**

- 1 with clamping screw DIN 912, zinc plated
- 2 with Stainless Steel-clamping screw DIN 912

**1**

d <sub>1</sub> Bore B	b Swivel width	d <sub>2</sub>	d <sub>3</sub> Clamping thread	d <sub>4</sub>	k	l <sub>1</sub>	l <sub>2</sub>	m	s	t	Clamping lever for d <sub>3</sub> 
B 12	25	6,5	M 6	M 6	25	61	34,5	48,5	10	12,5	GN 911-M6-22
B 14	25	6,5	M 6	M 6	25	61	34,5	48,5	10	12,5	GN 911-M6-22
B 16	25	6,5	M 6	M 6	25	61	34,5	48,5	10	12,5	GN 911-M6-22
B 18	25	6,5	M 6	M 6	25	61	34,5	48,5	10	12,5	GN 911-M6-22

**Specification**

- Aluminium
  - plastic coated black, RAL 9005, textured finish **● SW**
  - blank matt shot-blasted **○ BL**
- Clamping bore mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**3**

**Information**

The clamping bore of the swivel clamp connectors GN 275 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 an adjustable clamping lever GN 911 (see table of dimensions).

Swivel clamp connectors GN 275 can be assembled with swivel clamp connectors GN 271, GN 273 or GN 277 to create swivel clamp connector joints.

see also...

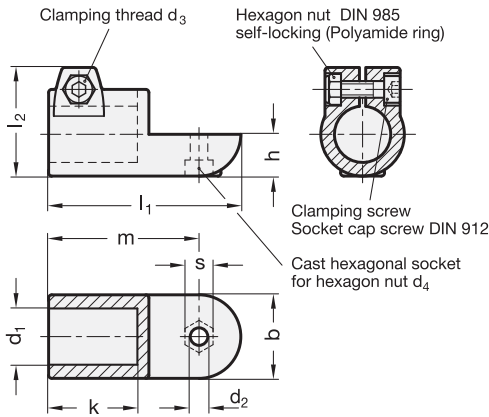
- *Construction tubes GN 990* → Page 1027
- *Swivel clamp connector joints GN 281*  
(Connection of GN 275 with GN 271) → Page 1015

How to order

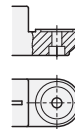
**GN275-B18-1-SW**

1	d <sub>1</sub>
2	Identification No.
3	Finish



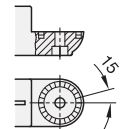
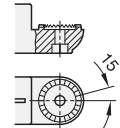


Type **OZ**  
without centring step  
(smooth)



Type **MZ**  
with centring step

Type **AV**  
with male serration



Type **IV**  
with female serration



- 2 Type**
- OZ** without centring step (smooth)
  - MZ** with centring step
  - AV** with male serration
  - IV** with female serration

- 3 Identification No.**
- 1 with clamping screw DIN 912, zinc plated
  - 2 with Stainless Steel-clamping screw DIN 912



d <sub>1</sub> Bore B	b Swivel width	d <sub>2</sub>	d <sub>3</sub> Clamping thread	d <sub>4</sub>	h	k	l <sub>1</sub>	l <sub>2</sub>	m	s	Clamping lever for d <sub>3</sub> Distance bushing
B 20	40	8,5	M 8	M 8	20	42,5	92	52	72	13	GN 911-M 8-32
B 25	40	8,5	M 8	M 8	20	42,5	92	52	72	13	GN 911-M 8-32
B 30	40	8,5	M 8	M 8	20	42,5	92	52	72	13	GN 911-M 8-32
B 40	65	10,5	M 10	M 10	32,5	74	148	77,5	115	17	GN 911-M10-55
B 42	65	10,5	M 10	M 10	32,5	74	148	77,5	115	17	GN 911-M10-55
B 45	65	10,5	M 10	M 10	32,5	74	148	77,5	115	17	GN 911-M10-55
B 48	65	10,5	M 10	M 10	32,5	74	148	77,5	115	17	GN 911-M10-55
B 50	65	10,5	M 10	M 10	32,5	74	148	77,5	115	17	GN 911-M10-55

### Specification

- Aluminium
  - plastic coated black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bore mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**



### Information

The clamping bore of the swivel clamp connectors GN 276 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 an adjustable clamping lever GN 911 (see table of dimensions).

Swivel clamp connectors GN 276 can be assembled with swivel clamp connectors GN 272, GN 274 or GN 278 to create swivel clamp connector joints.

see also...

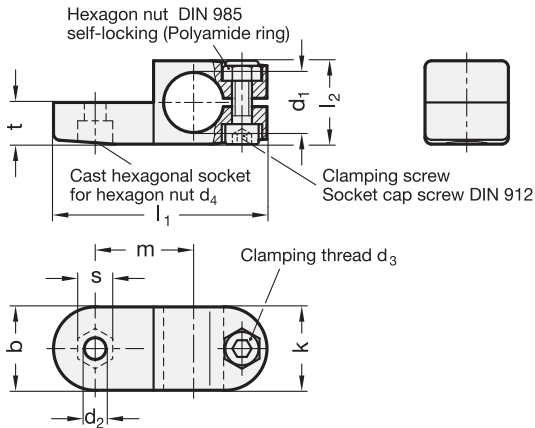
- *Construction tubes GN 990* → Page 1027
- *Swivel clamp connector joints GN 284*  
(Connection of GN 276 with GN 274) → Page 1018

#### How to order

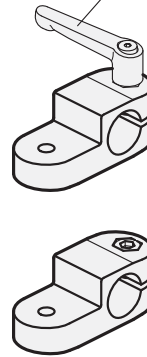
**GN276-B30-OZ-1-BL**

- 1 d<sub>1</sub>
- 2 Type
- 3 Identification No.
- 4 Finish

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9




Adjustable clamping lever GN 911



**2 Identification No.**

- 1 with clamping screw DIN 912, zinc plated
- 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 lever 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**

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bore mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**3**

**Information**

The clamping bore of the swivel clamp connectors GN 277 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 an adjustable clamping lever GN 911 (see table of dimensions).

Swivel clamp connectors GN 277 can be assembled with swivel clamp connectors GN 271, GN 273 or GN 275 to create swivel clamp connector joints.

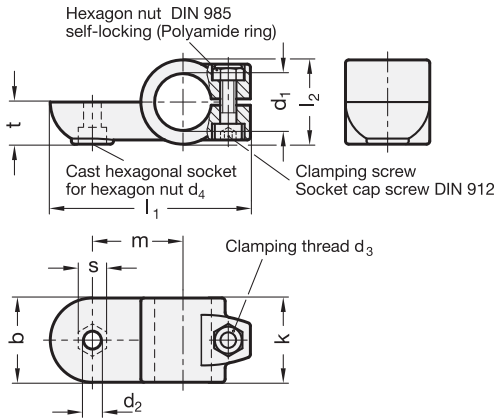
see also...

- *Construction tubes GN 990* → Page 1027
- *Swivel clamp connector joints GN 287*  
(Connection of GN 277 with GN 275) → Page 1021

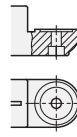
How to order

**GN277-B16-1-SW**

1	$d_1$
2	Identification No.
3	Finish

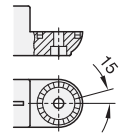
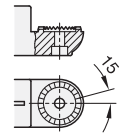


Type **OZ**  
without centring step  
(smooth)



Type **MZ**  
with centring step

Type **AV**  
with male serration



Type **IV**  
with female serration




**2 Type**

- OZ** without centring step (smooth)
- MZ** with centring step
- AV** with male serration
- IV** with female serration

**3 Identification No.**

- 1** with clamping screw DIN 912, zinc plated
- 2** with Stainless Steel-clamping screw DIN 912

**1**

d <sub>1</sub> Bore B	b Swivel width	d <sub>2</sub>	d <sub>3</sub> Clamping thread	d <sub>4</sub>	k	l <sub>1</sub>	l <sub>2</sub>	m	s	t	Clamping lever for d <sub>3</sub> 
B 20	40	8,5	M 8	M 8	40	95	40	43	13	20	GN 911-M 8-32
B 25	40	8,5	M 8	M 8	40	95	40	43	13	20	GN 911-M 8-32
B 30	40	8,5	M 8	M 8	40	95	40	43	13	20	GN 911-M 8-32
B 40	65	10,5	M 10	M 10	65	148	65	70	17	32,5	GN 911-M10-55
B 42	65	10,5	M 10	M 10	65	148	65	70	17	32,5	GN 911-M10-55
B 45	65	10,5	M 10	M 10	65	148	65	70	17	32,5	GN 911-M10-55
B 48	65	10,5	M 10	M 10	65	148	65	70	17	32,5	GN 911-M10-55
B 50	65	10,5	M 10	M 10	65	148	65	70	17	32,5	GN 911-M10-55

**Specification**

- Aluminium
  - plastic coated
  - black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bore mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**4**

**Information**

The clamping bore of the swivel clamp connectors GN 278 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 an adjustable clamping lever GN 911 (see table of dimensions).

Swivel clamp connectors GN 278 can be assembled with swivel clamp connectors GN 272, GN 274 or GN 276 to create swivel clamp connector joints.

see also...

- *Construction tubes GN 990* → Page 1027
- *Swivel clamp connector joints GN 288*  
(Connection of GN 276 with GN 278) → Page 1022

**How to order**

**GN 278-B50-MZ-1-BL**

<b>1</b>	d <sub>1</sub>
<b>2</b>	Type
<b>3</b>	Identification No.
<b>4</b>	Finish

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9

# Swivel clamp connectors and swivel clamp connector joints





2.1

2.2

2.3

2.4

2.5

2.6

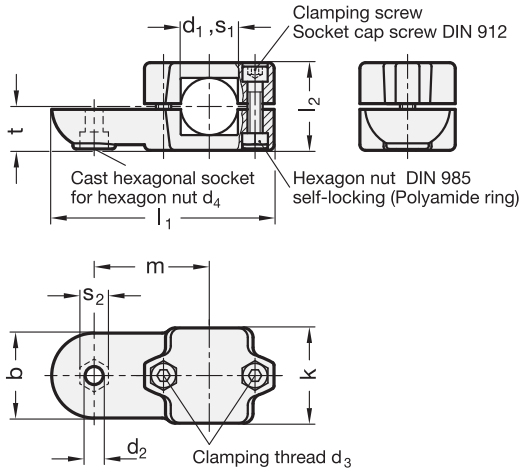
2.7

**2.8**

2.9



Variations of swivel clamp connectors and swivel clamp connector joints → Page 1014



Type **OZ**  
without centring step



**2** Type

**OZ** without centring step

**3** Identification no.

- 1 with clamping screw DIN 912, steel zinc plated
- 2 with Stainless Steel-clamping screw DIN 912

**1** **1**

d <sub>1</sub> Bore B	s <sub>1</sub> Square V	b Swivel width	d <sub>2</sub>	d <sub>3</sub> Clamping thread	d <sub>4</sub>	k Clamping length	l <sub>1</sub>	l <sub>2</sub>	m	s <sub>2</sub>	t	Clamping lever for d <sub>3</sub> Distance bushing
B 40	V 40	65	10,5	M 10	M 10	76	166,5	70	85	17	35	GN 911-M10-63
B 42	-	65	10,5	M 10	M 10	76	166,5	70	85	17	35	GN 911-M10-63
B 45	V 45	65	10,5	M 10	M 10	76	166,5	70	85	17	35	GN 911-M10-63
B 48	-	65	10,5	M 10	M 10	76	166,5	70	85	17	35	GN 911-M10-63
B 50	V 50	65	10,5	M 10	M 10	76	166,5	70	85	17	35	GN 911-M10-63

**Specification**

- Aluminium
  - plastic coated black, RAL 9005, textured finish **● SW**
  - blank matt shot-blasted **○ BL**
- Clamping bore not machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**4**

**Information**

The clamping bore of the swivel clamp connectors GN 279 is not machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard clamping screw is a socket cap screw with hexagonal socket DIN 912. It can be replaced by an adjustable clamping lever GN 911 (see table of dimensions).

Two swivel clamp connectors GN 279 can be combined to swivel clamp connector joints GN 289.

Swivel clamp connectors GN 279 can be assembled with swivel clamp connectors GN 272, GN 274 and GN 276 to create swivel clamp connector joints.

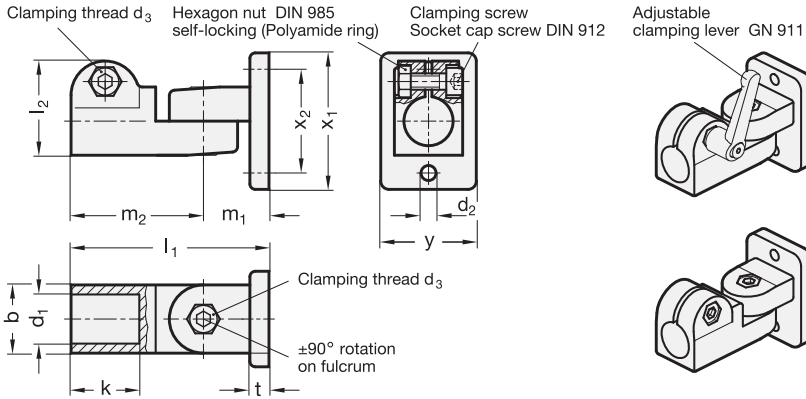
see also...

- *Construction tubes GN 990* → Page 1027
- *Swivel clamp connector joints GN 289* → Page 1023

How to order

**GN279-V40-OZ-1-BL**


- 1 s<sub>1</sub> (d<sub>1</sub>)
- 2 Type
- 3 Identification no.
- 4 Finish



**2 Identification No.**

- 1 with 2 clamping screws DIN 912, zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912

**1**

d <sub>1</sub> Bore B	b Swivel width	d <sub>2</sub>	d <sub>3</sub> Clamping thread	k	l <sub>1</sub>	l <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	t	x <sub>1</sub>	x <sub>2</sub>	y	Clamping lever for d <sub>3</sub> 
B 12	25	5,5	M 6	25	72,5	34,5	24	48,5	7	50	38	35	GN 911-M6-22
B 14	25	5,5	M 6	25	72,5	34,5	24	48,5	7	50	38	35	GN 911-M6-22
B 16	25	5,5	M 6	25	72,5	34,5	24	48,5	7	50	38	35	GN 911-M6-22
B 18	25	5,5	M 6	25	72,5	34,5	24	48,5	7	50	38	35	GN 911-M6-22

**Specification**

- Aluminium
  - plastic coated black, RAL 9005, textured finish **● SW**
  - blank **○ BL**
  - matt shot-blasted
- Clamping bore mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**3**

**Information**

The swivel clamp connector joints GN 281 are an assembly of the swivel clamp connectors GN 271 and GN 275.

The clamping bore 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 screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

see also...

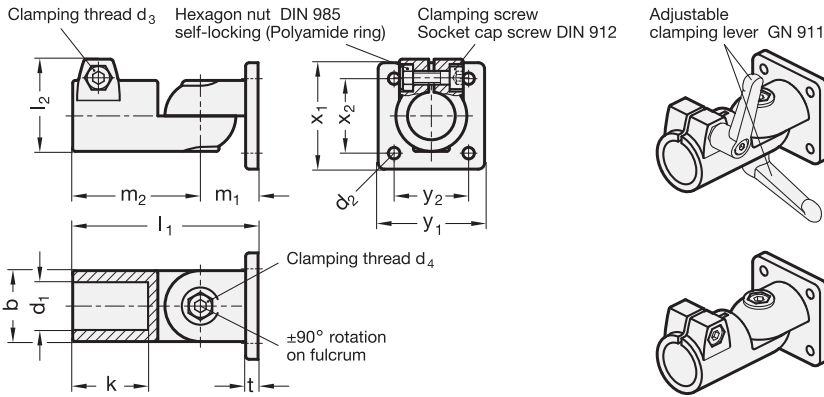
- *Construction tubes GN 990* → Page 1027
- *Swivel clamp connector bases GN 271* → Page 1004
- *Swivel clamp connectors GN 275* → Page 1008

**How to order**

**GN281-B14-1-BL**

1	d <sub>1</sub>
2	Identification No.
3	Finish

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



## 2 Type

- S** stepless adjustment
- T** adjustment by 15°-division (serration)

## 3 Identification No.

- 1 with 2 clamping screws DIN 912, zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912



d <sub>1</sub> Bore B	b Swivel width	d <sub>2</sub>	d <sub>3</sub> Clam- ping thread	d <sub>4</sub> Clam- ping thread	k	l <sub>1</sub>	l <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	t	x <sub>1</sub>	x <sub>2</sub>	y <sub>1</sub>	y <sub>2</sub>	Clamping lever	
															for d <sub>3</sub>	for d <sub>4</sub>
B 20	40	6,5	M 8	M 8	42,5	104,5	52	32,5	72	7	60	42	60	42	GN 911-M 8-32	GN 911-M 8-35
B 25	40	6,5	M 8	M 8	42,5	104,5	52	32,5	72	7	60	42	60	42	GN 911-M 8-32	GN 911-M 8-35
B 30	40	6,5	M 8	M 8	42,5	104,5	52	32,5	72	7	60	42	60	42	GN 911-M 8-32	GN 911-M 8-35
B 40	65	11	M 10	M 10	74	167	77,5	52	115	14	105	74	105	74	GN 911-M10-55	GN 911-M10-63
B 42	65	11	M 10	M 10	74	167	77,5	52	115	14	105	74	105	74	GN 911-M10-55	GN 911-M10-63
B 45	65	11	M 10	M 10	74	167	77,5	52	115	14	105	74	105	74	GN 911-M10-55	GN 911-M10-63
B 48	65	11	M 10	M 10	74	167	77,5	52	115	14	105	74	105	74	GN 911-M10-55	GN 911-M10-63
B 50	65	11	M 10	M 10	74	167	77,5	52	115	14	105	74	105	74	GN 911-M10-55	GN 911-M10-63

## Specification

- Aluminium
  - plastic coated
  - black, RAL 9005, textured finish **● SW**
  - blank **○ BL**
  - matt shot-blasted
- Clamping bore mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**



## Information

The swivel clamp connector joints GN 282 are an assembly of of the swivel clamp connectors GN 272 and GN 276.

For the type with stepless adjustment (Type S) swivel clamp connectors with a centring step are used.

The clamping bore 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 screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

see also...

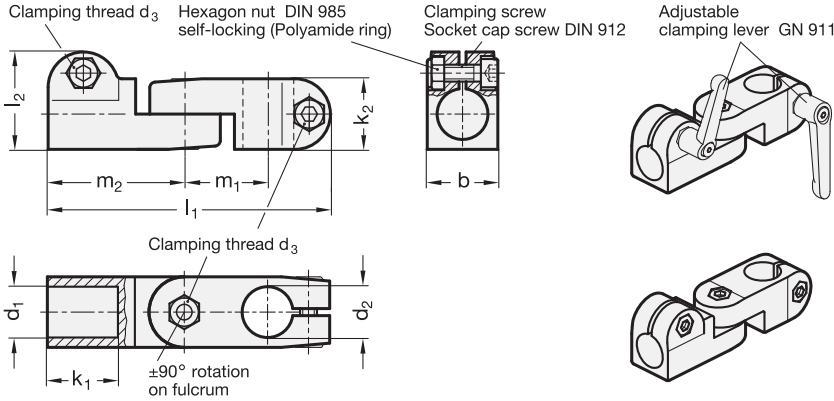
- *Construction tubes GN 990* → Page 1027
- *Swivel clamp connector bases GN 272* → Page 1005
- *Swivel clamp connectors GN 276* → Page 1009

### How to order


**GN282-B42-S-1-BL**

- 1 d<sub>1</sub>
- 2 Type
- 3 Identification No.
- 4 Finish





- 3 Identification No.**
- 1 with 3 clamping screws DIN 912, zinc plated
  - 2 with 3 Stainless Steel-clamping screws DIN 912

<b>1</b> $d_1$ Bore B	<b>2</b> $d_2$ Bore B	$b$ Swivel width	$d_3$ Clamping thread	$k_1$	$k_2$	$l_1$	$l_2$	$m_1$	$m_2$	Clamping lever for $d_3$ 
B 12	B 12	25	M 6	25	25	100	34,5	29,5	48,5	GN 911-M6-22
B 14	B 14	25	M 6	25	25	100	34,5	29,5	48,5	GN 911-M6-22
B 16	B 16	25	M 6	25	25	100	34,5	29,5	48,5	GN 911-M6-22
B 18	B 18	25	M 6	25	25	100	34,5	29,5	48,5	GN 911-M6-22

**Specification**

- Aluminium
  - plastic coated black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- Stainless Steel characteristics → Page 1144
- RoHS compliant



**Information**

The swivel clamp connector joints GN 283 are an assembly of the swivel clamp connectors GN 273 and GN 275. Since the swivel clamp connectors have an identical swivel width “b”, all bores “ $d_1 / d_2$ ” can be combined as required.

The clamping bores are mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

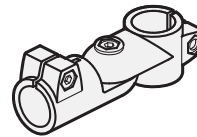
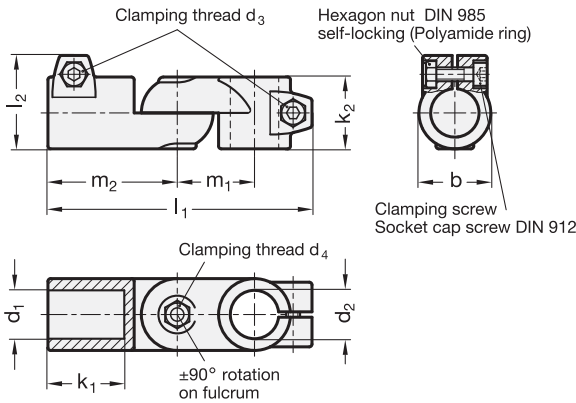
The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

see also...

- Construction tubes GN 990 → Page 1027
- Swivel clamp connectors GN 273 → Page 1006
- Swivel clamp connectors GN 275 → Page 1008

How to order	
<b>1</b>	$d_1$
<b>2</b>	$d_2$
<b>3</b>	Identification No.
<b>4</b>	Finish

**GN283-B12-B14-1-SW**




**3 Type**

- S** stepless adjustment
- T** adjustment by 15°-division (serration)

**4 Identification No.**

- 1** with 2 clamping screws DIN 912, zinc plated
- 2** with 2 Stainless Steel-clamping screws DIN 912

**1 2**

d <sub>1</sub> Bore B	d <sub>2</sub> Bore B	b Swivel width	d <sub>3</sub> Clamping thread	d <sub>4</sub> Clamping thread	k <sub>1</sub>	k <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	Clamping lever  for d <sub>3</sub> for d <sub>4</sub>	
B 20	B 20	40	M 8	M 8	42,5	40	147	52	43	72	GN 911-M 8-32	GN 911-M 8-35
B 25	B 25	40	M 8	M 8	42,5	40	147	52	43	72	GN 911-M 8-32	GN 911-M 8-35
B 30	B 30	40	M 8	M 8	42,5	40	147	52	43	72	GN 911-M 8-32	GN 911-M 8-35
B 40	B 40	65	M 10	M 10	74	65	230	77,5	70	115	GN 911-M10-63	GN 911-M10-63
B 42	B 42	65	M 10	M 10	74	65	230	77,5	70	115	GN 911-M10-63	GN 911-M10-63
B 45	B 45	65	M 10	M 10	74	65	230	77,5	70	115	GN 911-M10-63	GN 911-M10-63
B 48	B 48	65	M 10	M 10	74	65	230	77,5	70	115	GN 911-M10-63	GN 911-M10-63
B 50	B 50	65	M 10	M 10	74	65	230	77,5	70	115	GN 911-M10-63	GN 911-M10-63

**Specification**

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**5**

**Information**

The swivel clamp connector joints GN 284 are an assembly of the swivel clamp connectors GN 274 and GN 276.

For the type with stepless adjustment (Type S) swivel clamp connectors with a centring step are used. Within the identical swivel width “b”, all bores “d<sub>1</sub> / d<sub>2</sub>” can be combined as required.

The clamping bores are mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

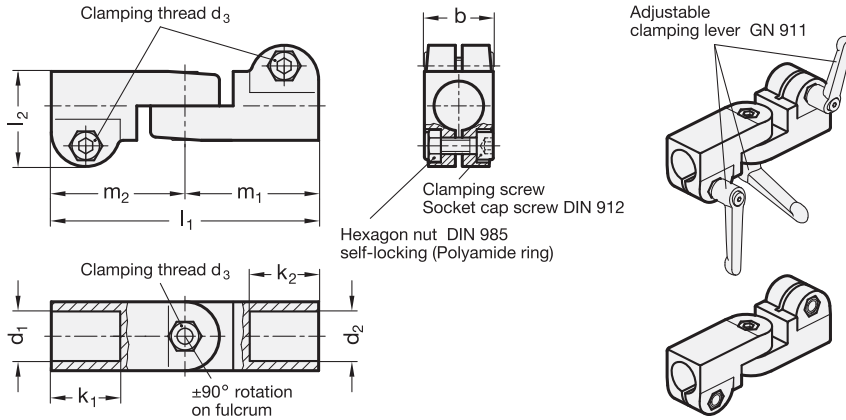
see also...

- *Construction tubes GN 990* → Page 1027


**How to order**

<b>1</b>	d <sub>1</sub>
<b>2</b>	d <sub>2</sub>
<b>3</b>	Type
<b>4</b>	Identification No.
<b>5</b>	Finish

**GN 284-B40-B40-T-1-BL**



- 3 Identification No.**
- 1 with 3 clamping screws DIN 912, zinc plated
  - 2 with 3 Stainless Steel-clamping screws DIN 912

<b>1</b> $d_1$ Bore B	<b>2</b> $d_2$ Bore B	<b>b</b> Swivel width	$d_3$ Clamping thread	$k_1$	$k_2$	$l_1$	$l_2$	$m_1$	$m_2$	Clamping lever for $d_3$  Distance bushing
B 12	B 12	25	M 6	25	25	97	34,5	48,5	48,5	GN 911-M6-22
B 14	B 14	25	M 6	25	25	97	34,5	48,5	48,5	GN 911-M6-22
B 16	B 16	25	M 6	25	25	97	34,5	48,5	48,5	GN 911-M6-22
B 18	B 18	25	M 6	25	25	97	34,5	48,5	48,5	GN 911-M6-22

**Specification**

- Aluminium
  - plastic coated black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- Stainless Steel characteristics → Page 1144
- RoHS compliant

**4 Information**

The swivel clamp connector joints GN 285 are an assembly of two swivel clamp connectors GN 275.

Since the swivel clamp connectors have an identical swivel width “b”, all bores “ $d_1$  /  $d_2$ ” can be combined as required.

The clamping bores are mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

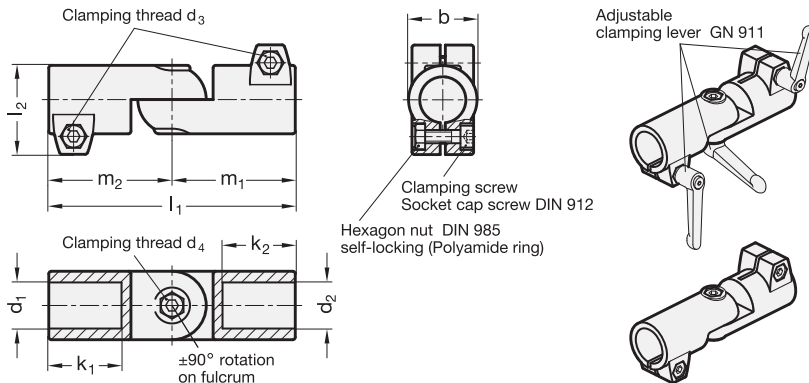
see also...

- Construction tubes GN 990 → Page 1027
- Swivel clamp connectors GN 275 → Page 1008

How to order	
<b>1</b>	$d_1$
<b>2</b>	$d_2$
<b>3</b>	Identification No.
<b>4</b>	Finish

**GN285-B12-B16-1-BL**

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9




### 3 Type

- S** stepless adjustment
- T** adjustment by 15°-division (serration)

### 4 Identification No.

- 1** with 3 clamping screws DIN 912, zinc plated
- 2** with 3 Stainless Steel-clamping screws DIN 912

1 2

d <sub>1</sub> Bore B	d <sub>2</sub> Bore B	b Swivel width	d <sub>3</sub> Clamping thread	d <sub>4</sub> Clamping thread	k <sub>1</sub>	k <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	m <sub>1</sub>	m <sub>2</sub>	Clamping lever  Distance bushing	
											for d <sub>3</sub>	for d <sub>4</sub>
B 20	B 20	40	M 8	M 8	42,5	42,5	144	52	72	72	GN 911-M 8-32	GN 911-M 8-35
B 25	B 25	40	M 8	M 8	42,5	42,5	144	52	72	72	GN 911-M 8-32	GN 911-M 8-35
B 30	B 30	40	M 8	M 8	42,5	42,5	144	52	72	72	GN 911-M 8-32	GN 911-M 8-35
B 40	B 40	65	M 10	M 10	74	74	230	77,5	115	115	GN 911-M10-55	GN 911-M10-63
B 42	B 42	65	M 10	M 10	74	74	230	77,5	115	115	GN 911-M10-55	GN 911-M10-63
B 45	B 45	65	M 10	M 10	74	74	230	77,5	115	115	GN 911-M10-55	GN 911-M10-63
B 48	B 48	65	M 10	M 10	74	74	230	77,5	115	115	GN 911-M10-55	GN 911-M10-63
B 50	B 50	65	M 10	M 10	74	74	230	77,5	115	115	GN 911-M10-55	GN 911-M10-63

## Specification

5

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

## Information

The swivel clamp connector joints GN 286 are an assembly of two swivel clamp connectors GN 276.

For the type with stepless adjustment (Type S) swivel clamp connectors with a centring step are used. Within the identical swivel width “b”, all bores “d<sub>1</sub> / d<sub>2</sub>” can be combined as required.

The clamping bores are mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

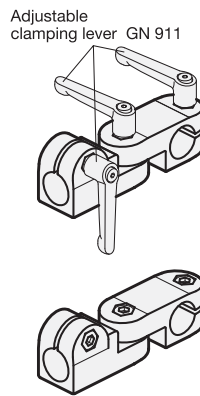
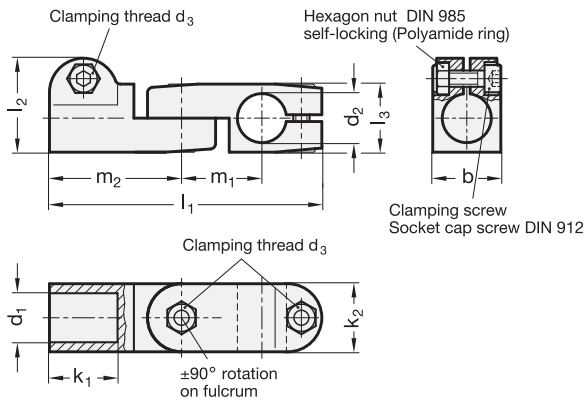
see also...

- *Construction tubes GN 990* → Page 1027
- *Swivel clamp connectors GN 276* → Page 1009

### How to order

1	d <sub>1</sub>
2	d <sub>2</sub>
3	Type
4	Identification No.
5	Finish

**GN 286-B40-B45-S-1-SW**



**3 Identification No.**

- 1 with 3 clamping screws DIN 912, zinc plated
- 2 with 3 Stainless Steel-clamping screws DIN 912

<b>1</b> <b>d<sub>1</sub></b> Bore B	<b>2</b> <b>d<sub>2</sub></b> Bore B	<b>b</b> Swivel width	<b>d<sub>3</sub></b> Clamping thread	<b>k<sub>1</sub></b>	<b>k<sub>2</sub></b>	<b>l<sub>1</sub></b>	<b>l<sub>2</sub></b>	<b>l<sub>3</sub></b>	<b>m<sub>1</sub></b>	<b>m<sub>2</sub></b>	Clamping lever for <b>d<sub>3</sub></b> Distance bushing
B 12	B 12	25	M 6	25	25	100	34,5	25	29,5	48,5	GN 911-M6-22
B 14	B 14	25	M 6	25	25	100	34,5	25	29,5	48,5	GN 911-M6-22
B 16	B 16	25	M 6	25	25	100	34,5	25	29,5	48,5	GN 911-M6-22
B 18	B 18	25	M 6	25	25	100	34,5	25	29,5	48,5	GN 911-M6-22

**Specification**

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish **● SW**
  - blank **○ BL**
  - matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**



**Information**

The swivel clamp connector joints GN 287 are an assembly of swivel clamp connectors GN 275 and GN 277.

Since the swivel clamp connectors have an identical swivel width “b”, all bores “d<sub>1</sub> / d<sub>2</sub>” can be combined as required.

The clamping bores are mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

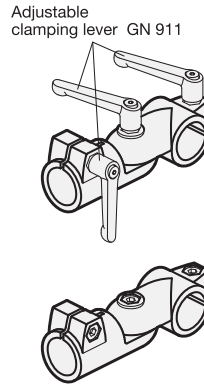
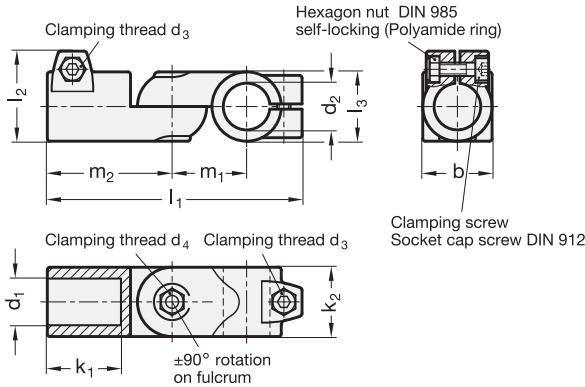
The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

see also...

- *Construction tubes GN 990* → Page 1027
- *Swivel clamp connectors GN 275* → Page 1008
- *Swivel clamp connectors GN 277* → Page 1010


How to order		1	<b>d<sub>1</sub></b>
		2	<b>d<sub>2</sub></b>
<b>GN287-B12-B12-1-SW</b>		3	<b>Identification No.</b>
		4	<b>Finish</b>

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



- 3 Type**  
**S** stepless adjustment  
**T** adjustment by 15°-division (serration)
- 4 Identification No.**  
**1** with 3 clamping screws DIN 912, zinc plated  
**2** with 3 Stainless Steel-clamping screws DIN 912

**1** **2**

<b>d<sub>1</sub></b> Bore B	<b>d<sub>2</sub></b> Bore B	<b>b</b> Swivel width	<b>d<sub>3</sub></b> Clamping thread	<b>d<sub>4</sub></b> Clamping thread	<b>k<sub>1</sub></b>	<b>k<sub>2</sub></b>	<b>l<sub>1</sub></b>	<b>l<sub>2</sub></b>	<b>l<sub>3</sub></b>	<b>m<sub>1</sub></b>	<b>m<sub>2</sub></b>	Clamping lever  Distance bushing	
												for d <sub>3</sub>	for d <sub>4</sub>
B 20	B 20	40	M 8	M 8	42,5	40	147	52	40	43	72	GN 911-M 8-32	GN 911-M 8-35
B 25	B 25	40	M 8	M 8	42,5	40	147	52	40	43	72	GN 911-M 8-32	GN 911-M 8-35
B 30	B 30	40	M 8	M 8	42,5	40	147	52	40	43	72	GN 911-M 8-32	GN 911-M 8-35
B 40	B 40	65	M 10	M 10	74	65	230	77,5	65	70	115	GN 911-M10-55	GN 911-M10-63
B 42	B 42	65	M 10	M 10	74	65	230	77,5	65	70	115	GN 911-M10-55	GN 911-M10-63
B 45	B 45	65	M 10	M 10	74	65	230	77,5	65	70	115	GN 911-M10-55	GN 911-M10-63
B 48	B 48	65	M 10	M 10	74	65	230	77,5	65	70	115	GN 911-M10-55	GN 911-M10-63
B 50	B 50	65	M 10	M 10	74	65	230	77,5	65	70	115	GN 911-M10-55	GN 911-M10-63

**Specification**

- Aluminium
  - plastic coated
  - black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**
  - matt shot-blasted
- Clamping bores mechanically machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- Stainless Steel characteristics → Page 1144
- RoHS compliant

**5**

**Information**

The swivel clamp connector joints GN 288 are an assembly of swivel clamp connectors GN 276 and GN 278.

For the type with stepless adjustment (Type S) swivel clamp connectors with a centring step are used. Within the identical swivel width “b”, all bores “d<sub>1</sub> / d<sub>2</sub>” can be combined as required.

The clamping bores are mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

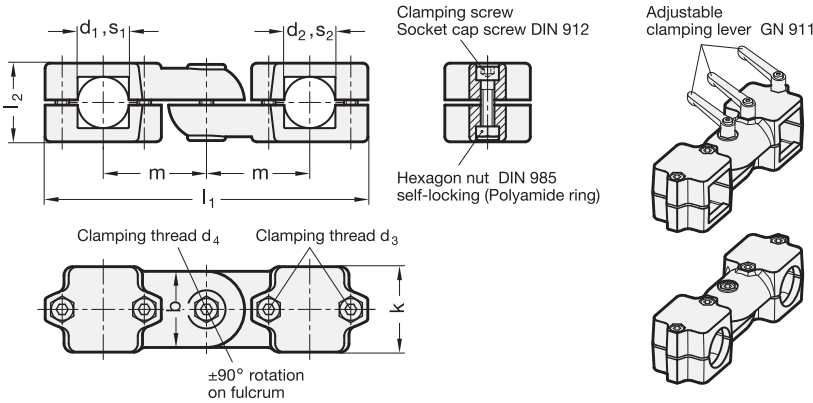
see also...

- Construction tubes GN 990 → Page 1027


**How to order**

<b>1</b>	<b>d<sub>1</sub></b>
<b>2</b>	<b>d<sub>2</sub></b>
<b>3</b>	<b>Type</b>
<b>4</b>	<b>Identification No.</b>
<b>5</b>	<b>Finish</b>

**GN 288-B25-B25-S-1-BL**



- 3 Type**  
S stepless adjustment
- 4 Identification no.**
- with 5 clamping screws  
DIN 912, steel zinc plated
  - with 5 Stainless Steel  
clamping screws DIN 912

<b>1</b> $d_1$ Bore B	<b>1</b> $s_1$ Square V	<b>2</b> $d_2$ Bore B	<b>2</b> $s_2$ Square V	<b>b</b> Swivel width	$d_3$ Clam- ping thread	$d_4$ Clam- ping thread	<b>k</b>	$l_1$	$l_2$	<b>m</b>	Clamping lever 	
											for $d_3$	for $d_4$
B 40	V 40	B 40	V 40	65	M 10	M 10	76	268	70	85	GN 911-M10-55	GN 911-M10-63
B 42	-	B 42	-	65	M 10	M 10	76	268	70	85	GN 911-M10-55	GN 911-M10-63
B 45	V 45	B 45	V 45	65	M 10	M 10	76	268	70	85	GN 911-M10-55	GN 911-M10-63
B 48	-	B 48	-	65	M 10	M 10	76	268	70	85	GN 911-M10-55	GN 911-M10-63
B 50	V 50	B 50	V 50	65	M 10	M 10	76	268	70	85	GN 911-M10-55	GN 911-M10-63

**Specification**

- Aluminium
  - plastic coated  
black, RAL 9005, textured finish ● **SW**
  - blank ○ **BL**  
matt shot-blasted
- Clamping bores not machined
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- Stainless Steel characteristics → Page 1144
- RoHS compliant

**Information**

The swivel clamp connector joints GN 289 are an assembly of two swivel clamp connectors GN 279.

The clamping bores of the swivel clamp connector joints GN 289 are not machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

The swivel clamp connectors have an identical swivel width "b", so that all bores „ $d_1 / s_1$ “ and „ $d_2 / s_2$ “ can be combined as required.

The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

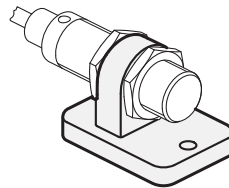
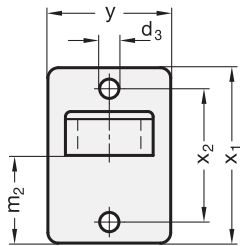
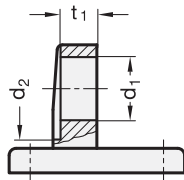
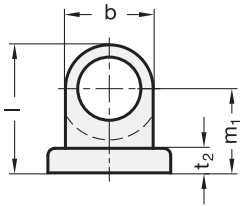
see also...

- Construction tubes GN 990 → Page 1027
- Swivel clamp connectors GN 279 → Page 1014

How to order

**1** **2** **3** **4** **5**  
GN 289-B40-V40-S-2-BL

<b>1</b>	$d_1$ ( $s_1$ )
<b>2</b>	$s_2$ ( $d_2$ )
<b>3</b>	Type
<b>4</b>	Identification no.
<b>5</b>	Finish



<b>1</b> $d_1$ Bore B for sensor	<b>2</b> $b$ Swivel width	$d_2$	$d_3$	Length $l$	$m_1$	$m_2$	$t_1$	$t_2$	$x_1$	$x_2$	$y$
B 12	25	30	5,5	36,5	24	25	11,5	7	50	38	35
B 18	25	30	5,5	36,5	24	25	11,5	7	50	38	35

**Specification**

- Aluminium  
plastic coated  
black, RAL 9005, textured finish
- RoHS compliant



**Information**

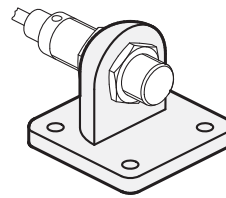
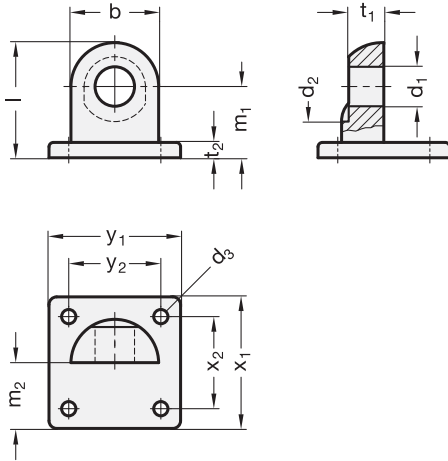
- see also...
- Clamp mountings GN 478  
(for sensor holders GN 479) → Page 1081

How to order

**GN271.4-B12-25-SW**

<b>1</b>	$d_1$
<b>2</b>	$b$
<b>3</b>	Finish





1 2

d <sub>1</sub>	b	d <sub>2</sub>	d <sub>3</sub>	Length l	m <sub>1</sub>	m <sub>2</sub>	t <sub>1</sub>	t <sub>2</sub>	x <sub>1</sub>	x <sub>2</sub>	y <sub>1</sub>	y <sub>2</sub>
B 18	40	50	6,5	52,5	32,5	30	10	7	60	42	60	42
B 30	40	50	6,5	52,5	32,5	30	10	7	60	42	60	42

Specification

- Aluminium plastic coated black, RAL 9005, textured finish ● SW
- RoHS compliant

3

Information

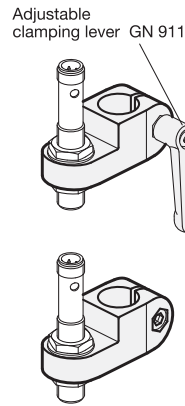
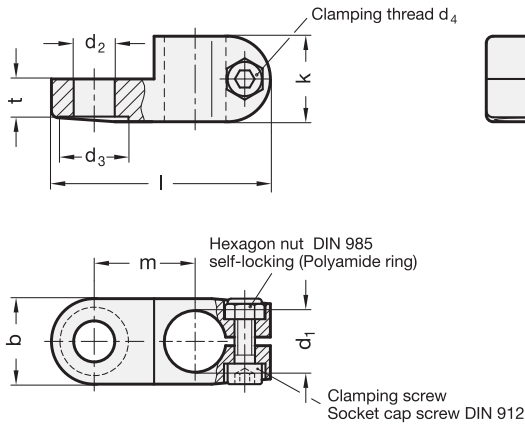
- see also...
- Clamp mountings GN 478 (for sensor holders GN 479) → Page 1081

How to order

GN272.4-B30-40-SW

1	d <sub>1</sub>
2	b
3	Finish

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



- 3 Identification No.**
- 1 with clamping screw DIN 912, zinc plated
  - 2 with Stainless Steel-clamping screw DIN 912

<b>1</b> $d_1$ Bore B for clamping-Ø	<b>2</b> $d_2$ Bore B for sensor	<b>b</b> Swivel width	$d_3$	$d_4$ Clamping thread	<b>k</b>	Length <b>l</b>	<b>m</b>	<b>t</b> -0,5	Clamping lever for $d_4$
B 12	B 12	B 18	25	M 6	25	64	29,5	11	GN 911-M6-22
B 14	B 12	B 18	25	M 6	25	64	29,5	11	GN 911-M6-22
B 16	B 12	B 18	25	M 6	25	64	29,5	11	GN 911-M6-22
B 18	B 12	B 18	25	M 6	25	64	29,5	11	GN 911-M6-22

**Specification**

- Aluminium plastic coated black, RAL 9005, textured finish ● **SW**
- Clamping bore mechanically machined
- Socket cap screws DIN 912 Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985 Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings Stainless Steel AISI 303 → Page 1031
- Stainless Steel characteristics → Page 1144
- RoHS compliant

**Information**

The clamping bore of the sensor holders GN 273.4 is mechanically machined and designed for construction tubes GN 990 or DIN 2391, DIN 2395 and DIN 2462 respectively.

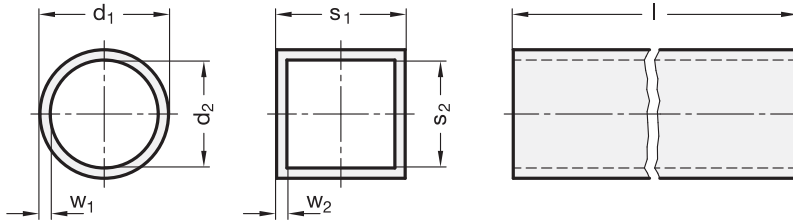
The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

The aluminium design guarantees a highly safe and secure clamping action and safe positioning.

see also...

- Construction tubes GN 990 → Page 1027
- Clamp mountings GN 478 (for sensor holders GN 479) → Page 1081

How to order	<b>1</b>	$d_1$
	<b>2</b>	$d_2$
	<b>3</b>	Identification No.
	<b>4</b>	Finish
<b>GN273.4-B14-B18-1-SW</b>		



**Rostfrei**  
Inox  
Stainless  
Steel

2			3			2			3		
d <sub>1</sub> Diameter D ST	AL	NI	Length l ±0,5	d <sub>2</sub>	w <sub>1</sub>	s <sub>1</sub> Square V ST	AL	NI	Length l ±0,5	s <sub>2</sub>	w <sub>2</sub>
D 10 ±0,1	D 10 ±0,1	D 10 ±0,1	available are all lengths in 1 mm steps max. length 3000 mm	7	1,5	-	V 10	-	available are all lengths in 1 mm steps max. length 3000 mm	7	1,5
D 12 ±0,1	D 12 ±0,1	D 12 ±0,1		9	1,5	-	V 12	-		9	1,5
D 14 ±0,1	D 14 ±0,1	D 14 ±0,1		11	1,5	-	V 16	-		13	1,5
D 15 ±0,1	D 15 ±0,1	D 15 ±0,1		12	1,5	V 20	V 20	V 20		16	2
D 16 ±0,1	D 16 ±0,1	D 16 ±0,1		13	1,5	V 25	V 25	V 25		21	2
D 18 ±0,1	D 18 ±0,1	D 18 ±0,1		15	1,5	V 30	V 30	V 30		26	2
D 20 ±0,1	D 20 ±0,1	D 20 ±0,1		16	2	V 35	V 35	-		31	2
D 25 ±0,1	D 25 ±0,1	D 25 ±0,1		21	2	V 40	V 40	V 40		34	3
D 30 ±0,1	D 30 ±0,1	D 30 ±0,1		26	2	V 45	V 45	V 45		39	3
D 32 ±0,15	D 32 ±0,15	D 32 ±0,15		28	2	V 50	V 50	V 50		44	3
D 35 ±0,15	D 35 ±0,15	D 35 ±0,15		31	2	-	-	-		-	-
D 40 ±0,15	D 40 ±0,15	D 40 ±0,15		34	3	-	-	-		-	-
D 42 ±0,2	-	-		36	3	-	-	-		-	-
-	-	D 42,4 (1 1/4")		37,2	2,6	-	-	-		-	-
D 45 ±0,2	D 45 ±0,2	-		39	3	-	-	-		-	-
D 48 ±0,2	D 48 ±0,2	-		42	3	-	-	-		-	-
-	-	D 48,3 (1 1/2")		43,1	2,6	-	-	-		-	-
D 50 ±0,2	D 50 ±0,2	D 50 ±0,2		44	3	-	-	-		-	-
D 55 ±0,25	-	-		47	4	-	-	-		-	-
D 60 ±0,25	D 60 ±0,25	D 60 ±0,25		52	4	-	-	-		-	-
-	-	D 60,3 (2")		53,1	3,6	-	-	-		-	-

**Specification**

- Steel **ST**
- zinc plated, blue passivated **ZB**
- Aluminium **AL**
- blank **BL**
- untreated **EL**
- anodized
- natural colour
- Stainless Steel AISI 304 **NI**
- blank **BL**
- untreated
- Sawed cross sections deburred blank, i.e. not surface treated
- Stainless Steel characteristics → Page 1144

**Information**

Construction tubes GN 990 can be supplied in any length up to 3000 mm. The tolerances specified for the outside diameter of the round construction tubes comply with the requirements for split mono-block connector clamps. Otherwise the tolerances comply with DIN 2391, DIN 2395 and DIN 2462.

Two-piece connector clamps allow obviously larger tolerances on construction tubes.

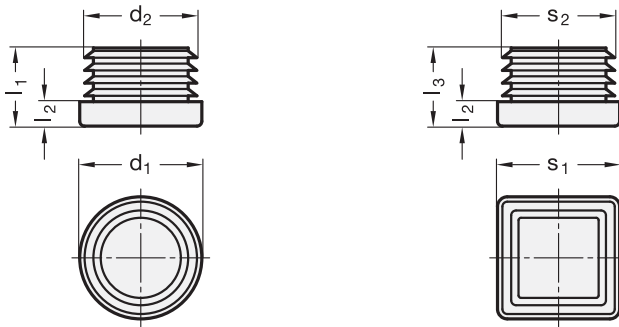
see also...

- Tube end plugs GN 991 → Page 1028
- Insert bushes GN 992 → Page 1029

How to order

GN990-ST-D32-460-ZB

- 1 Material
- 2 d<sub>1</sub> (s<sub>1</sub>)
- 3 Length l
- 4 Finish



d <sub>1</sub> Diameter D	s <sub>1</sub> Square V	d <sub>2</sub> ≈	s <sub>2</sub> ≈	l <sub>1</sub> ≈	l <sub>2</sub>	l <sub>3</sub>
D 10	V 10	9	9	15	3	14
D 12	V 12	11	11	14	4	15
D 14	-	13	-	13	4	-
D 15	-	14	-	16	4	-
D 16	V 16	14,5	15	15	5	17
D 18	-	17	-	16	5	-
D 20	V 20	19	19	16	5	17
D 25	V 25	23,5	24	16	5	17
D 30	V 30	29	29	16	5	17
D 32	-	30,5	-	16	5	-
D 35	V 35	34	33	16	5	17
D 40	V 40	35	35	17	5	20
D 42	-	38,5	-	17	5	-
D 45	V 45	44	44	16	5	20
D 48	-	45	-	20	5	-
D 50	V 50	45,5	46	23	5	24
D 55	-	53	-	19	5	-
D 60	-	58	-	22	4	-

## Specification

- Plastic (Polyamide PA)  
black
- *Plastic characteristics* → Page 1141
- **RoHS compliant**

## 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.

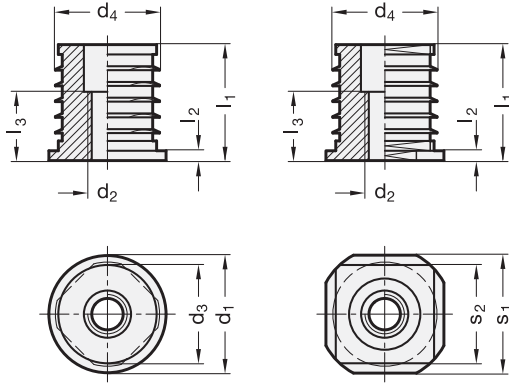
see also...

- *Construction tubes GN 990* → Page 1027
- *Insert bushes GN 348 (Plastic, with female thread)* → Page 842
- *Insert bushes GN 992 (Aluminium, with female thread)* → Page 1029

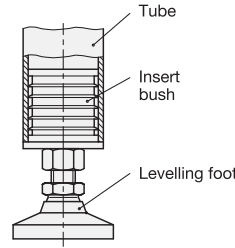
How to order

**GN991-V25**

1 s<sub>1</sub> (d<sub>1</sub>)



**Application example**



ROSTFREI  
Inox  
Stainless  
Steel

1		1		2		d <sub>3</sub> Inside-Ø	s <sub>2</sub> Inside-∇	d <sub>4</sub> Lamella-Ø	l <sub>1</sub>		l <sub>2</sub>	l <sub>3</sub> +0,5
d <sub>1</sub>	GN 992 Outside-Ø for tube, round	GN 992.5 Outside-Ø for tube, round	GN 992 Outside-∇ for tube, square	GN 992.5 Outside-∇ for tube, square	d <sub>2</sub>				GN 992	GN 992.5		
D 20	D 20	V 20	V 20	M 8	-	16	16	16,5	29,5	29,5	2,5	16
D 25	D 25	V 25	V 25	M 8	M 10	21	21	21,5	33,5	29,5	2,5	16
D 30	D 30	V 30	V 30	M 8	M 10	26	26	26,5	33,5	29,5	2,5	18
D 32	-	-	-	M 8	M 10	28	-	28,5	33,5	29,5	2,5	18
D 35	-	V 35	-	M 10	M 12	31	31	31,5	37,5	29,5	2,5	24
D 40	D 40	V 40	V 40	M 10	M 12	34	34	34,5	41,5	33,5	2,5	24
D 42	-	-	-	M 10	M 12	36	-	36,5	41,5	33,5	2,5	24
D 45	-	V 45	-	M 12	M 16	39	39	39,5	45,5	37,5	2,5	30
D 48	-	-	-	M 12	M 16	42	-	42,5	45,5	37,5	2,5	30
D 50	D 50	V 50	V 50	M 12	M 16	44	44	44,5	45,5	37,5	2,5	30

**Specification**

- **GN 992**  
Aluminium  
blank
- **GN 992.5**  
Stainless Steel AISI 303
- *Stainless Steel characteristics* → Page 1144

**Information**

Insert bushes GN 992 / GN 992.5 offer the possibility of mounting screws in profiled tubes. They are matched for construction tubes GN 990.

With their lamellas, insert bushes can bridge a production tolerance of the internal diameter or of the internal square of ±0,5 mm. Use a soft mallet to drive in the insert bushes.

see also...

- *Construction tubes GN 990* → Page 1027

Aluminium-Insert bush <b>GN992-D40-M10</b>	1	d <sub>1</sub> (s <sub>1</sub> )
	2	d <sub>2</sub>

Stainless Steel-Insert bush <b>GN992.5-V25-M8</b>	1	s <sub>1</sub> (d <sub>1</sub> )
	2	d <sub>2</sub>



Insert bushes

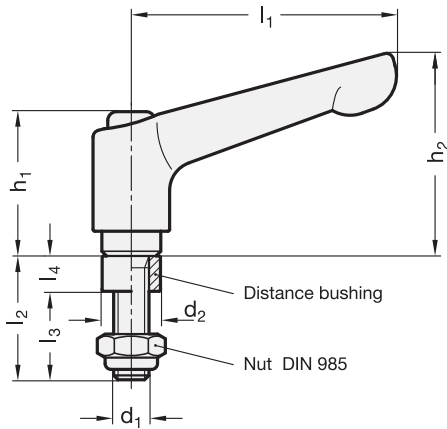
made of Plastic GN 348 → [Page 842](#)

made of Aluminium GN 992 → [Page 1029](#)

made of Stainless Steel GN 992.5 → [Page 1029](#)

with levelling feet for GN 343.2 to GN 343.4 → [Page 812 / 813](#)

Construction tubes GN 990 → [Page 1027](#)



Clamping kit Order no.	<sup>1</sup> $d_1$	<sup>2</sup> $l_2$	$d_2$	$l_1$	$l_3$	$l_4$	$h_1$	$h_2$
GN 911-M 6-22	M 6	22	9,9	45	19	3	24,5	35
GN 911-M 6-25	M 6	25	9,9	45	22	3	24,5	35
GN 911-M 8-32	M 8	32	12,9	63	27,5	4,5	31	45
GN 911-M 8-35	M 8	35	12,9	63	30,5	4,5	31	45
GN 911-M 8-40	M 8	40	12,9	63	35,5	4,5	31	45
GN 911-M 8-45	M 8	45	12,9	63	40,5	4,5	31	45
GN 911-M 8-50	M 8	50	12,9	63	45,5	4,5	31	45
GN 911-M 8-55	M 8	55	12,9	63	50,5	4,5	31	45
GN 911-M10-40	M 10	40	16,9	78	34,5	5,5	36	55
GN 911-M10-50	M 10	50	16,9	78	44,5	5,5	36	55
GN 911-M10-55	M 10	55	16,9	78	49,5	5,5	36	55
GN 911-M10-63	M 10	63	16,9	78	57,5	5,5	36	55
GN 911-M10-70	M 10	70	16,9	78	64,5	5,5	36	55
GN 911-M10-80	M 10	80	16,9	78	74,5	5,5	36	55

## Specification

- Handle  
Zinc die casting  
plastic coated  
silver, RAL 9006, textured finish
- Threaded stud / Distance bushing  
Stainless Steel AISI 303
- Hexagon nut DIN 985  
Stainless Steel AISI 304
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

## Information

The clamping kits GN 911 replace the hexagon socket screws DIN 912 of the connector clamps.

The table of dimensions of the connector clamps shows the corresponding clamping kits for each clamping thread.

Distance bushing and hexagon nut are included parts of the order.

### How to order

**GN911-M8-45**

<sup>1</sup>  $d_1$

<sup>2</sup>  $l_2$







2.1

2.2

2.3

2.4

2.5

2.6

2.7

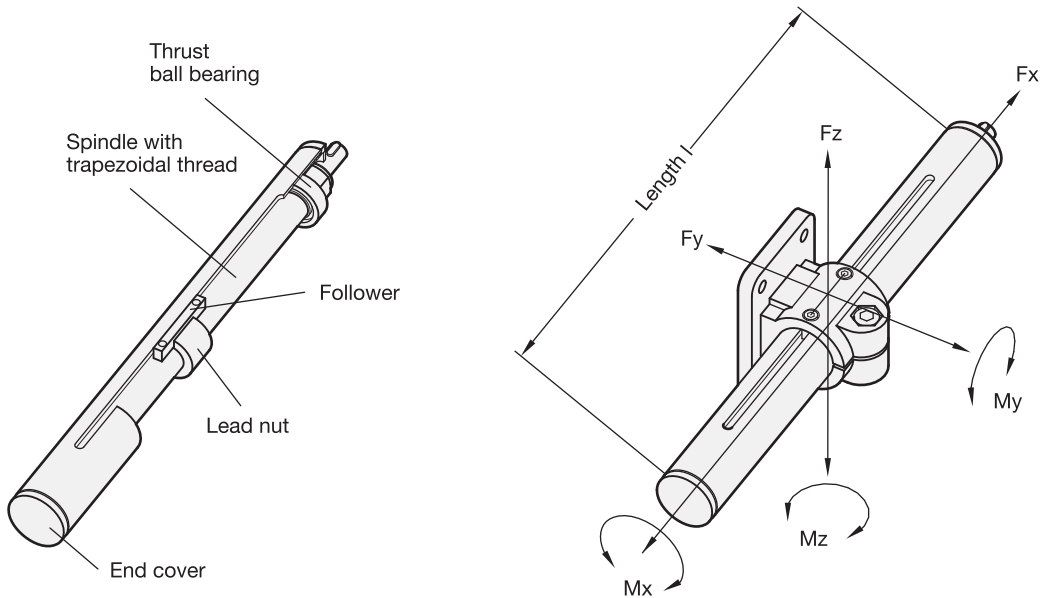
**2.8**

2.9



# Linear actuators

Technical description



Ø Linear actuator	F <sub>x</sub> in N	F <sub>y</sub> in N l = 500	l = 1000	l = 1500	F <sub>z</sub> in N l = 500	l = 1000	l = 1500	M <sub>x</sub> in Nm	M <sub>y</sub> in Nm	M <sub>z</sub> in Nm
18	400	80	-	-	65	-	-	1,5	4,5	4,5
30	850	500	70	15	550	55	10	6,5	15	15
40	1100	2150	250	65	1900	150	50	15	42	42
50	1750	3100	650	150	3100	650	150	29	69	69
60	2600	4550	1500	400	4550	1400	350	45	125	125

The load data are applicable to linear actuators GN 291, GN 292, GN 293 made of Steel (SCR) or Stainless Steel (NI). The specified forces  $F_y$  and  $F_z$  cause a flexure of the guide tube of approx. 0,5 mm.

## Description

A lead nut moves in axial direction over the ball bearing trapezoidal thread spindle of the linear actuator. The follower ensures the anti-rotation and makes the link to the different linear actuator connectors. The linear actuators have been designed for manual operation (handwheel).

The positioning accuracy is 0.2 mm / 300 mm stroke, the maximum reverse play is 0.1 mm.

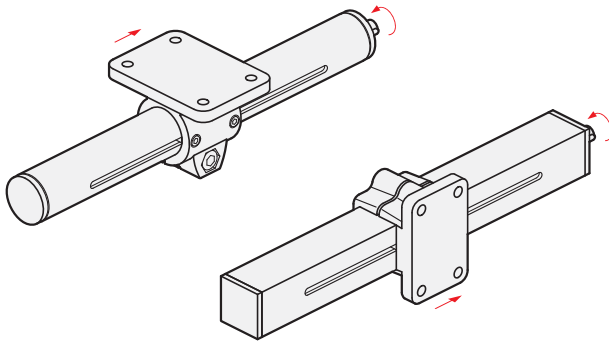
Guide tubes are available in chromed Steel (SCR) or Stainless Steel (NI) non-rusting. They are made with the tolerance range of precision steel tubes DIN 2391 or DIN 2462.

A wide variety of different components are available in the tube clamp connector program to fix the linear actuators in place and to upgrade these into linear actuator connectors.

Also, digital position indicators (GN 953 / GN 954 → Page 388 / 390) may be attached to measure the displacement or the positioning.

In applications where high torsion forces  $M_x$  occur, linear actuators with square tubing or double tube linear actuators should be given preference.

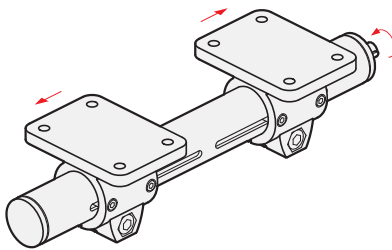
A wide variety of different components from the tube clamp connector program is also available for this design. The linear actuator connectors are composed of two-part elements, with the effect that the precision of the square tubes involves no special requirements.



## Description

Linear actuator **GN 291** (→ Page 1036) with right **or** left hand thread, with shaft journal at either one or both ends, with a linear actuator connector **GN 146.1** (→ Page 1049).

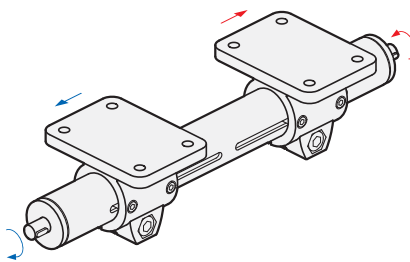
Square linear actuator **GN 291.1** (→ Page 1056) with right **or** left hand thread, shaft journal at either one or both ends, with a linear actuator connector **GN 147.1** (→ Page 1058).



## Description

Linear actuator **GN 292** (→ Page 1038) with left **and** right hand thread, shaft journal at either one or both ends, with two linear actuator connectors **GN 146.1** (→ Page 1049), the two connectors move symmetrically.

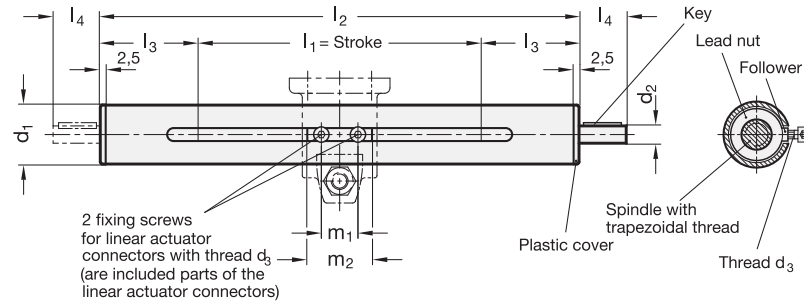
Square linear actuators **GN 292.1** on request.



## Description

Linear actuator **GN 293** (→ Page 1039) with two separate threaded spindles, each with right **or** left hand thread with two linear actuator connectors **GN 146.1** (→ Page 1049), the two connectors move independently of one another.

Square linear actuators **GN 293.1** on request.



RODELSTAHL Rost fre! Inox Stainless Steel

- 3 Type**
- R1** Right hand thread, shaft journal at one end
  - R2\*** Right hand thread, shaft journal at both ends
  - L1** Left hand thread, shaft journal at one end
  - L2\*** Left hand thread, shaft journal at both ends

**1 2**

d <sub>1</sub>	l <sub>1</sub> Stroke (standard lengths)						max. stroke	Threaded spindle	d <sub>2</sub> f7	d <sub>3</sub>	l <sub>2</sub> Total length	l <sub>3</sub>	l <sub>4</sub>	m <sub>1</sub>	m <sub>2</sub>	for key DIN 6885
	65	165	265	-	-	-										
18	65	165	265	-	-	350	TR10x3	6	M 3	l <sub>1</sub> +140	70	16	17	24	A2x2x12	
30	100	150	200	300	-	1250	TR14x4	8	M 4	l <sub>1</sub> +205	102,5	16	23	38	A2x2x12	
40	70	170	220	270	320	1570	TR20x4	12	M 5	l <sub>1</sub> +235	117,5	17	42	54	A4x4x12	
50	65	115	215	265	315	1565	TR20x4	12	M 6	l <sub>1</sub> +240	120	18	42	54	A4x4x12	
60	220	720	-	-	-	1520	TR24x5	14	M 8	l <sub>1</sub> +285	142,5	19	58	70	A5x5x16	

\* usually not available from stock

**Specification**

- Guide tube
  - Tube DIN 2391  
Steel, chrome-plated **SCR**
  - Tube DIN 2462  
Stainless Steel AISI 304 **NI\***
- Spindle with trapezoidal thread
  - Steel respectively  
Stainless Steel AISI 303
  - ball bearing
- Lead nut  
Gunmetal
- End cap  
Plastic
- ISO-Fundamental Tolerances → Page 1132
- Stainless Steel characteristics → Page 1144
- RoHS compliant

**Accessory**

- Linear actuator connectors, tube clamp connectors and accessory have to be ordered separately.

**Information**

In addition to the standard stroke lengths specified in the above table for linear actuators GN 291 any stroke inside the maximum stroke length is available.

Besides the extensive range of tube clamp connectors there are a number of different components for fixing the linear actuators and to build linear actuator connectors.

In order to measure the displacement and positioning of the linear actuator connectors, digital as well as analogue position indicators can be installed and furthermore the guide tube can be provided with a longitudinal scale.

see also...

- Longitudinal scales GN 299 → Page 1066
- Linear actuator connectors → Page 1046
- Handwheels for linear actuators → Page 1062
- Position indicators GN 953 → Page 388
- Position indicators GN 954 → Page 390
- Installation kits GN 295 (for position indicators) → Page 1064
- Technical description / Load data → Page 1034

**How to order**

<b>1</b> d <sub>1</sub>
<b>2</b> l <sub>1</sub>
<b>3</b> Type
<b>4</b> Material

**GN291-30-200-R1-SCR**



Linear actuators GN 291 → *Page 1036*

Linear actuators GN 292 → *Page 1038*

Linear actuators GN 293 → *Page 1039*

Longitudinale scales GN 299 → *Page 1066*

Flanged linear actuator connectors GN 145.1 → *Page 1047*

Flanged linear actuator connectors GN 146.1 → *Page 1049*

2.1

2.2

2.3

2.4

2.5

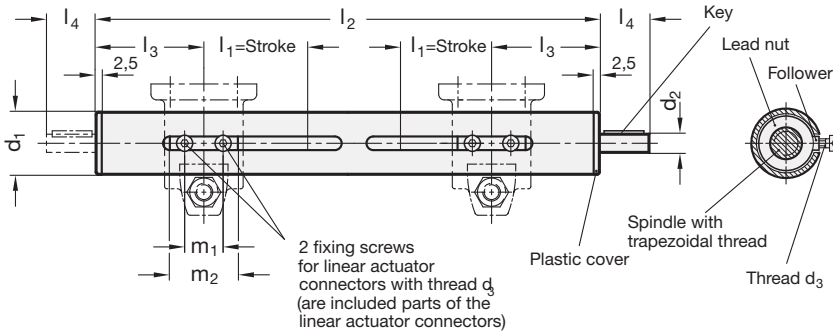
2.6

2.7

**2.8**

2.9





ROSTFREI  
Rost  
frei  
Inox  
Stainless  
Steel

**3 Type**

- RL1** Shaft journal at one end
- RL2** Shaft journal at both ends

**1** **2**

$d_1$	$l_1$ Stroke (standard lengths)			Threaded spindle	$d_2$ f7	$d_3$	$l_2$ Total length	$l_3$	$l_4$	$m_1$	$m_2$	for key DIN 6885
18	120*	-	every 167	TR10x3	6	M 3	$2 \times l_1 + 171$	70	16	17	24	A2x2x12
30	130*	-	every 601	TR14x4	8	M 4	$2 \times l_1 + 253$	102,5	16	23	38	A2x2x12
40	205*	255*	every 753	TR20x4	12	M 5	$2 \times l_1 + 299$	117,5	17	42	54	A4x4x12
50	300*	350*	every 748	TR20x4	12	M 6	$2 \times l_1 + 309$	120	18	42	54	A4x4x12
60	300*	-	every 715	TR24x5	14	M 8	$2 \times l_1 + 375$	142,5	19	58	70	A5x5x16

\* usually not available from stock

**Specification**

- Guide tube
  - Tube DIN 2391  
Steel, chrome-plated **SCR**
  - Tube DIN 2462  
Stainless Steel AISI 304 **NI\***
- Spindle with trapezoidal thread
  - Steel respectively  
Stainless Steel AISI 303
  - ball bearing
- Lead nut  
Gunmetal
- End cap  
Plastic
- ISO-Fundamental Tolerances → Page 1132
- Stainless Steel characteristics → Page 1144
- RoHS compliant

**Accessory**

- Linear actuator connectors, tube clamp connectors and accessory have to be ordered separately.

**On request**

- Special lengths

**4 Information**

In addition to the standard stroke lengths specified in the above table for linear actuators GN 292 any stroke inside the maximum stroke length is available.

Besides the extensive range of tube clamp connectors there are a number of different components for fixing the linear actuators and to build linear actuator connectors.

In order to measure the displacement and positioning of the linear actuator connectors, digital as well as analogue position indicators can be installed and furthermore the guide tube can be provided with a longitudinal scale.

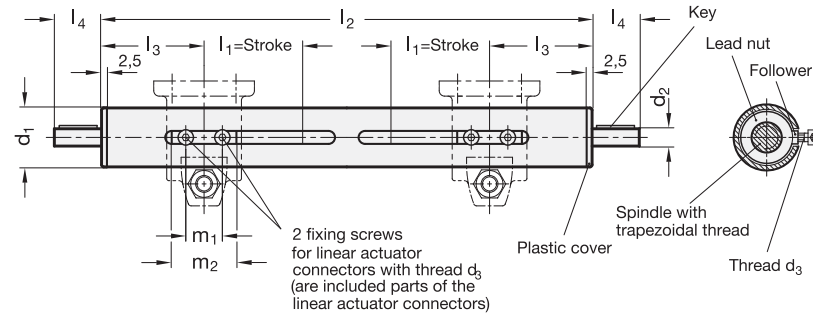
see also...

- Longitudinal scales GN 299 → Page 1066
- Linear actuator connectors → Page 1046
- Handwheels for linear actuators → Page 1062
- Position indicators GN 953 → Page 388
- Position indicators GN 954 → Page 390
- Installation kits GN 295 (for position indicators) → Page 1064
- Technical description / Load data → Page 1034

**How to order**

<b>1</b>	$d_1$
<b>2</b>	$l_1$
<b>3</b>	Type
<b>4</b>	Material

**GN 292-40-205-RL1-SCR**



ROESTSTAHL  
Rost  
fret  
Inox  
Stainless  
Steel

**3 Type**

- RL2** one spindle right hand thread, one spindle left hand thread
- RR2** both spindles right hand thread
- LL2** both spindles left hand thread

1 2

d <sub>1</sub>	l <sub>1</sub> Stroke (standard lengths)	max. stroke	Threaded spindle	d <sub>2</sub> f7	d <sub>3</sub>	l <sub>2</sub> Total length	l <sub>3</sub>	l <sub>4</sub>	m <sub>1</sub>	m <sub>2</sub>	for key DIN 6885
30	100*	every 601	TR14x4	8	M 4	2x l <sub>1</sub> + 253	102,5	16	23	38	A2x2x12
40	170*	every 753	TR20x4	12	M 5	2x l <sub>1</sub> + 299	117,5	17	42	54	A4x4x12
50	200*	every 748	TR20x4	12	M 6	2x l <sub>1</sub> + 309	120	18	42	54	A4x4x12
60	250*	every 715	TR24x5	14	M 8	2x l <sub>1</sub> + 375	142,5	19	58	70	A5x5x16

\* usually not available from stock

**Specification**

- Guide tube
  - Tube DIN 2391  
Steel, chrome-plated **SCR**
  - Tube DIN 2462  
Stainless Steel AISI 304 **NI\***
- Spindle with trapezoidal thread
  - Steel respectively  
Stainless Steel AISI 303
  - ball bearing
- Lead nut  
Gunmetal
- End cap  
Plastic
- ISO-Fundamental Tolerances → Page 1132
- Stainless Steel characteristics → Page 1144
- RoHS compliant

**Accessory**

- Linear actuator connectors, tube clamp connectors and accessory have to be ordered separately.

**On request**

- Special lengths

**4 Information**

In addition to the standard stroke lengths specified in the above table for linear actuators GN 293 any stroke inside the maximum stroke length is available.

Besides the extensive range of tube clamp connectors there are a number of different components for fixing the linear actuators and to build linear actuator connectors.

In order to measure the displacement and positioning of the linear actuator connectors, digital as well as analogue position indicators can be installed and furthermore the guide tube can be provided with a longitudinal scale.

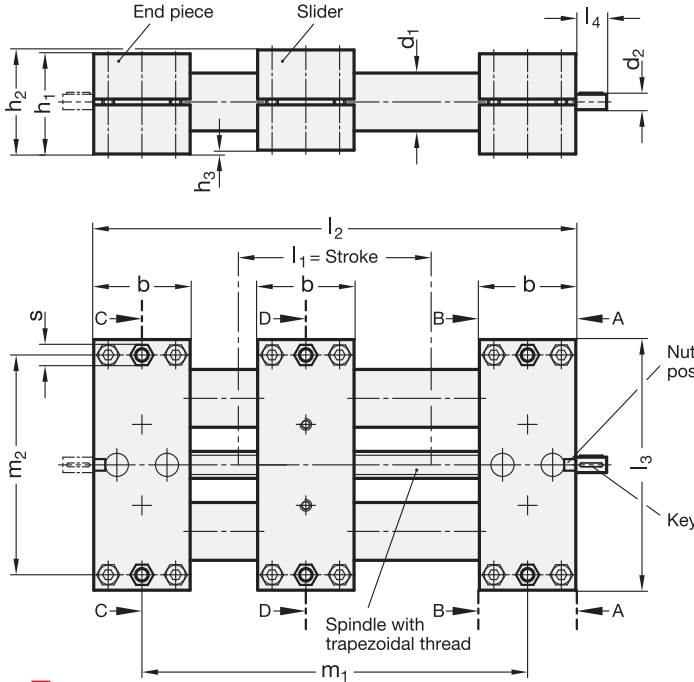
see also...

- Longitudinal scales GN 299 → Page 1066
- Linear actuator connectors → Page 1046
- Handwheels for linear actuators → Page 1062
- Position indicators GN 953 → Page 388
- Position indicators GN 954 → Page 390
- Installation kits GN 295 (for position indicators) → Page 1064
- Technical description / Load data → Page 1034

**How to order**

1	d <sub>1</sub>
2	l <sub>1</sub>
3	Type
4	Material

**GN 293-50- 740-RR2-SCR**



- 3 Type**
- R1** Right hand thread, single shaft end
  - R2\*** Right hand thread, two shaft ends
  - L1\*** Left hand thread, single shaft end
  - L2\*** Left hand thread, two shaft ends
- 4 Identification No.**
- Version of the shaft ends
- 1** short
  - 2\*** long (for position indicator)
  - 3\*** 1 x short  
1 x long (for position ind.)

$d_1$	$l_1$	Travel (Adjustable stroke of the slider) Standard length				max. travel	Shaft thread	$b$	$d_2$	$d_3$	$d_4^{**}$	$d_5$	$d_6$	for screw DIN 912	$h_1$	$h_2$	$h_3$	$l_2$	Total length	$l_3$
30	100	150	200	300	1500	TR14x4	50	8	M 6	M 6	6,5	10	M 5	52	54	2	$3x b + l_1$	130		
50	100	150	200	300	2675	TR20x4	72	12	M 10	M 8	8,5	15	M 8	72	76	4	$3x b + l_1$	206		

$d_1$	$l_4$	short	long	$m_1$	$m_2$	$m_3$	$m_4$	$m_5$	$m_6$	$m_7$	$m_8$	$m_9$	s	Hexagon	Key DIN 6885	Position indicator	Handwheel
30	16	49	$2x b + l_1$	114	92	40	35	30	42	9,5	12	10	10	A2x2x12	GN 954	GN 923.30	
50	18	55	$2x b + l_1$	184	150	46	50	46	62	13	15	13	13	A4x4x12	GN 953	GN 924.50	

\*\* usable depth of thread min.  $1,5 \times d_4$  \* normally not available from stock

**Specification**

- Guide tube DIN 2391  
Steel, chrome-plated **SCR**
- End pieces / Slider  
Aluminium
  - plastic coated  
black, RAL 9005, textured finish
  - Fixing surface / mounting surface  
machined, blank
- Spindle with trapezoidal thread
  - Steel, blank
  - with ball-bearing
  - Positioning accuracy  $\pm 0,2$  mm/300 mm travel
- Follower nut, gun metal
- Cylinder head screws DIN 912 /  
Hexagon nuts DIN 985  
Steel, zinc plated
- RoHS compliant

**5 Information**

In addition to the standard travel lengths specified in the above table for the double tube linear actuator GN 491 any length inside the maximum length is available.

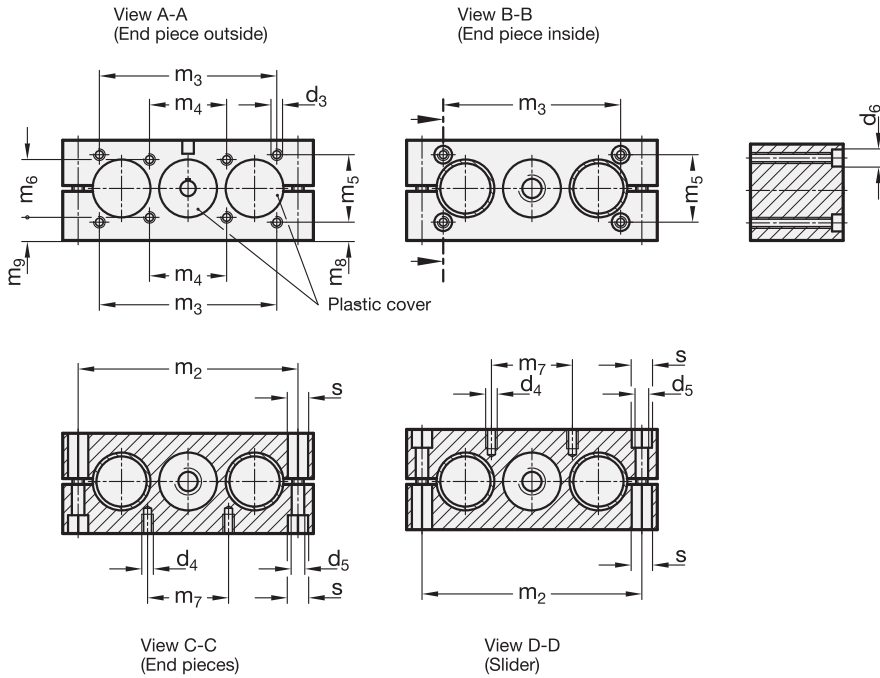
In order to measure the movement and positioning of the sliders, digital position indicators can be added.

see also...

- *Technical information / load data* → Page 1042
- *Double tube linear actuators GN 492 (with double slider)* → Page 1044
- *Handwheels for linear actuators* → Page 1062
- *Position indicators GN 953 / GN 954* → Page 388 / 389

<p>How to order</p> <p><b>GN 491-30-200-R1-1-SCR</b></p>	1	$d_1$
	2	$l_1$
	3	Type
	4	Identification No.
	5	Material

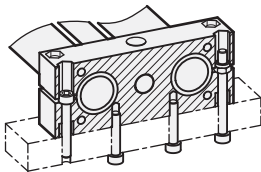




### Mounting facilities of the end pieces

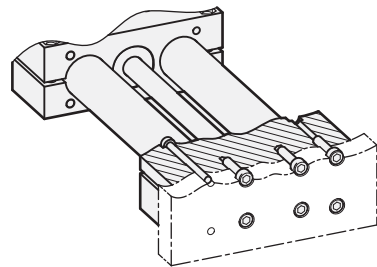
#### Horizontal

with screws for thread  $d_4$  or bore  $d_5$



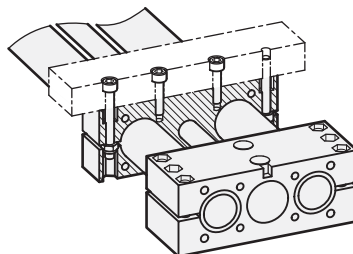
#### Vertical

From outside, with screws for thread  $d_3$   
From inside, with screws for bore  $d_6$



### Mounting facilities at the slider

Mounting with screws  
for thread  $d_4$  or bore  $d_5$



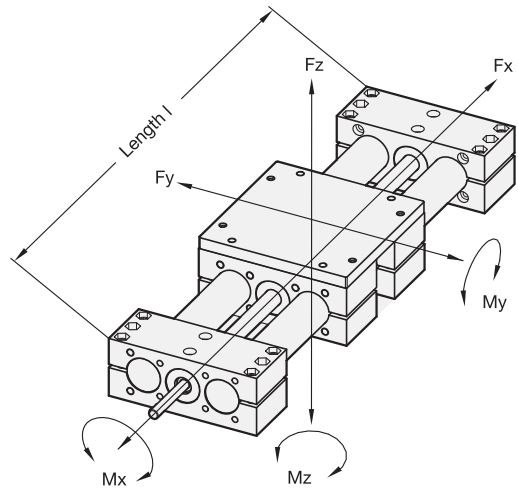
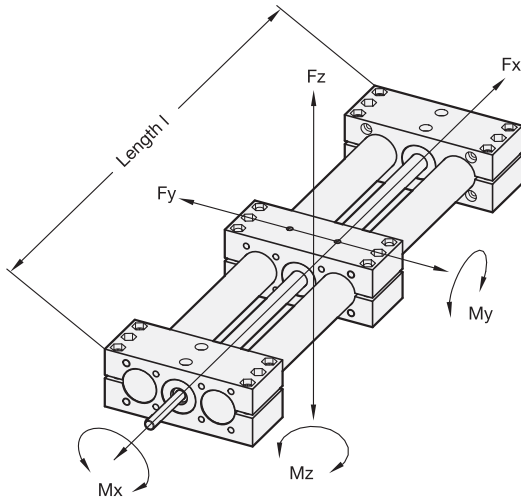
# Double tube linear actuators

Technical description



**GN 491**

**GN 492**



d	Fx in N	Fy in N for l =			Fz in N for l =			Mx	My	Mz
<b>GN 491</b>		500	1000	1500	500	1000	1500	in Nm	in Nm	in Nm
30	850	1100	900	550	600	350	150	100	100	100
50	1900	3850	2400	2100	3100	700	200	180	220	290

d	Fx in N	Fy in N for l =			Fz in N for l =			Mx	My	Mz
<b>GN 492</b>		500	1000	1500	500	1000	1500	in Nm	in Nm	in Nm
30	850	1550	1300	800	700	550	250	150	150	200
50	1900	7500	5100	2700	3400	850	340	250	350	530

The specified forces Fy and Fz cause a flexure of the guide tube of approx. 0,5 mm.

## Description

The slider is moved via a bearing-type trapezoidal thread spindle and a guide nut. The slider is guided through two parallel chrome-plated tubes, resulting in a high load capacity and allowing high bending moments to be compensated by the linear actuator.

For type GN 492, a second slider and an adapter plate extend the options for applications.

These double tube linear actuators have been designed for manual operation (handwheel). With the appropriate lubrication, they can also absorb rotary spindle speeds of as much as 250 rpm.

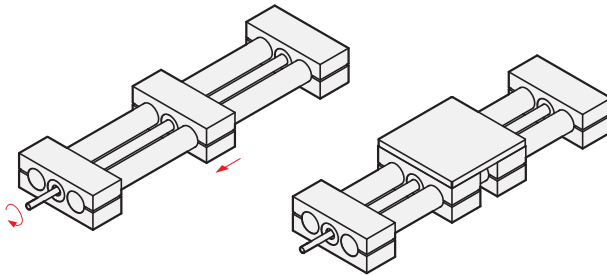
The positioning accuracy is 0,2 mm / 300 mm travel, the maximum reverse play is 0,1 mm.

To measure the adjustment or the positioning, digital position indicators GN 953 / GN 954 may be attached.

Further information see on the standard pages of GN 491 / GN 492 → Page 1040 / 1044.

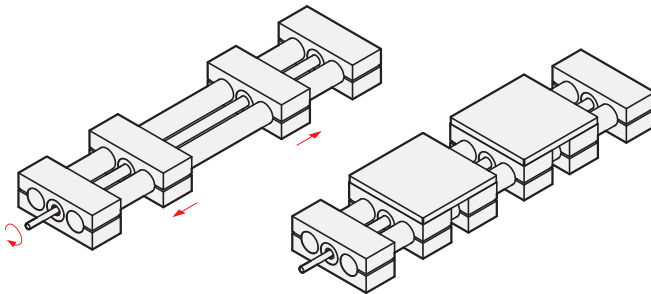
# Double tube linear actuators

Designs



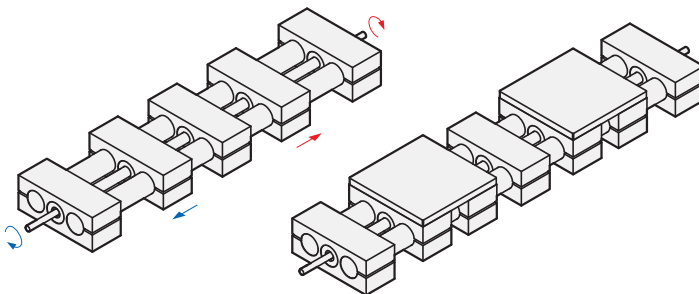
GN 491

GN 492



GN 493

GN 494



GN 495

GN 496

## Description

Double tube linear actuators

**GN 491 / GN 492**

(→ Page 1040 / Page 1044)

with right **or** left hand thread,  
single shaft end or two shaft ends.

## Description

Double tube linear actuators

**GN 493 / GN 494**

with right **and** left hand thread,  
single shaft end or two shaft ends,  
both sliders move symmetrically.

Double tube linear actuators

**GN 493 / GN 494** → on request.

## Description

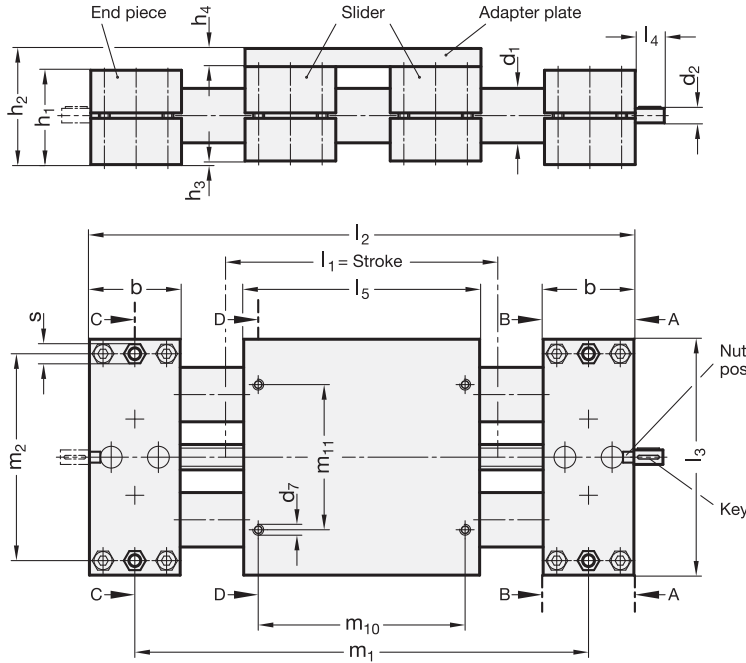
Double tube linear actuators

**GN 495 / GN 496**

with two separate spindles,  
each with right **or** left hand thread,  
both sliders move independently of  
each other.

Double tube linear actuators

**GN 495 / GN 496** → on request.



- 3 Type**
  - R1** Right hand thread, single shaft end
  - R2\*** Right hand thread, two shaft ends
  - L1\*** Left hand thread, single shaft end
  - L2\*** Left hand thread, two shaft ends
- 4 Identification No.**

Version of the shaft ends

  - 1** short
  - 2\*** long (for position indicator)
  - 3\*** 1 x short  
1 x long (for position ind.)

d <sub>1</sub>	I <sub>1</sub>	Travel (Adjustable stroke of the slider) Standard length				max. travel	Shaft thread	b	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub> **	d <sub>5</sub>	d <sub>6</sub>	for screw DIN 912	d <sub>7</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	I <sub>2</sub>	I <sub>3</sub>			
30	100	150	200	300	1500	TR14x4	50	8	M	6	M	6	6,5	10	M	5	M	6	52	64	2	10	2xb+I <sub>5</sub> +I <sub>1</sub>	130
50	100	150	200	300	2540	TR20x4	72	12	M10	M	8	8,5	15	M	8	M	8	72	92	4	16	2xb+I <sub>5</sub> +I <sub>1</sub>	206	

d <sub>1</sub>	I <sub>4</sub>	short	long	I <sub>5</sub>	m <sub>1</sub>	m <sub>2</sub>	m <sub>3</sub>	m <sub>4</sub>	m <sub>5</sub>	m <sub>6</sub>	m <sub>7</sub>	m <sub>8</sub>	m <sub>9</sub>	m <sub>10</sub>	m <sub>11</sub>	s	Key DIN 6885	Position indicator	Handwheel
30	16	49	130	b+I <sub>5</sub> +I <sub>1</sub>	114	92	40	35	30	42	9,5	12	114	80	10	A2x2x12	GN 954	GN 923.30	
50	18	55	206	b+I <sub>5</sub> +I <sub>1</sub>	184	150	46	50	46	62	13	15	184	134	13	A4x4x12	GN 953	GN 924.50	

\*\* usable depth of thread min. 1,5 x d<sub>4</sub> \* normally not available from stock

Specification

- Guide tube DIN 2391  
Steel, chrome-plated **SCR**
- End pieces / Slider / Adapter plate  
Aluminium
  - plastic coated
  - black, RAL 9005, textured finish
  - Fixing surface / mounting surface machined, blank
- Spindle with trapezoidal thread
  - Steel, blank
  - with ball-bearing
  - Positioning accuracy ±0,2 mm/300 mm travel
- Follower nut, gun metal
- Cylinder head screws DIN 912 / Hexagon nuts DIN 985  
Steel, zinc plated
- RoHS compliant

5 Information

In addition to the standard travel lengths specified in the above table for the double tube linear actuator GN 491.1 any length inside the maximum length is available.

In order to measure the movement and positioning of the sliders, digital position indicators can be added.

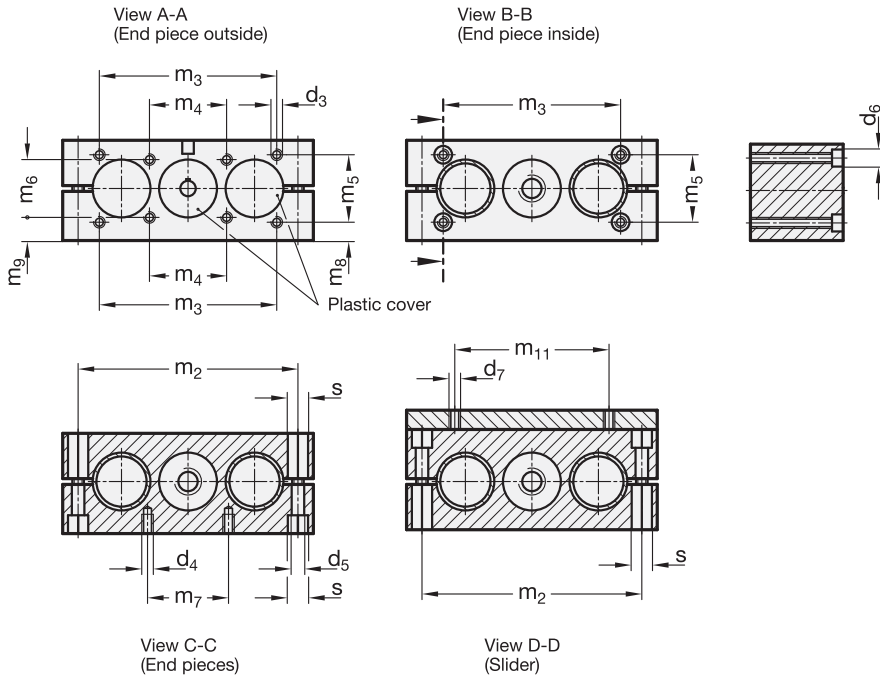
see also...

- Technical information / Load data → Page 1042
- Double tube linear actuators GN 491 (with single slider) → Page 1040
- Handwheels for linear actuators → Page 1062
- Position indicators GN 953 / GN 954 → Page 388 / 390

How to order

1	d <sub>1</sub>
2	I <sub>1</sub>
3	Type
4	Identification No.
5	Material

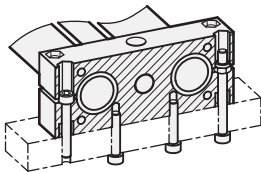
1 2 3 4 5  
**GN 492-30-100-R1-1-SCR**



### Mounting facilities of the end pieces

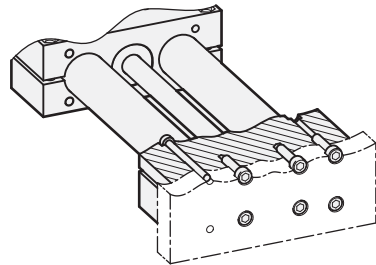
#### Horizontal

with screws for thread  $d_4$  or bore  $d_5$



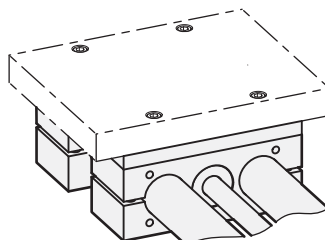
#### Vertical

From outside, with screws for thread  $d_3$   
From inside, with screws for bore  $d_6$

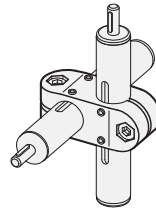
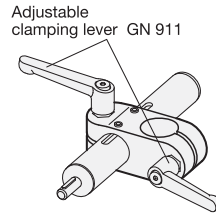
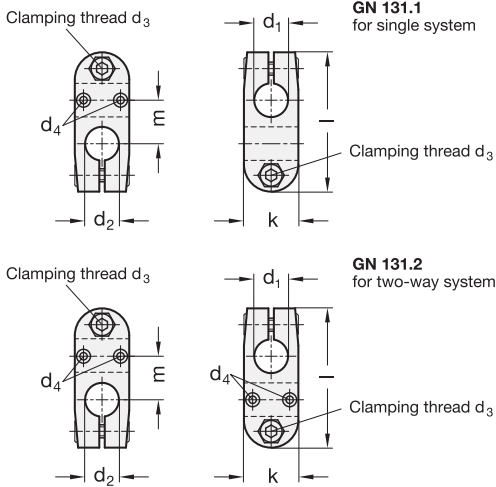


### Mounting facilities at the slider

Mounting with screws  
for thread  $d_7$



2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



Rostfrei  
Inox  
Stainless  
Steel

**3 Identification No.**

- 1 with 2 clamping screws DIN 912, steel zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912

1		2		d <sub>3</sub>	d <sub>4</sub>	k	Length l	m	Clamping lever for d <sub>3</sub>
d <sub>1</sub>	Bore B without slide bush	Bore G with slide bush	Bore B without slide bush	Bore G with slide bush	Clamping thread	Mounting screw on the follower	Clamping length		
B 18	G 18	B 18	G 18	M 6	M 3	25	64	20	GN 911-M6-22

**Specification**

- Aluminium plastic coated black, RAL 9005, textured finish ● **SW**
- Stainless Steel AISI CF-8 **NI**
  - matt shot-blasted
  - Bore only with slide bush (G18)
- Clamping bores mechanically machined
- Slide bush Polyamide
- Socket cap screws DIN 912 Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985 Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**Information**

Linear actuator connectors GN 131.1 / GN 131.2 are normally supplied **mounted** only in connection with a linear actuator and for function control.

By means of the clamping screws on the guide bores d<sub>1</sub> / d<sub>2</sub> the movement can either be set or the linear actuator connector can be clamped (after setting of final adjustment).

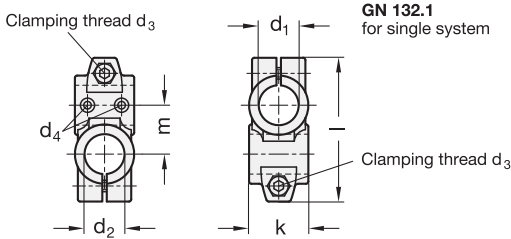
The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

see also...

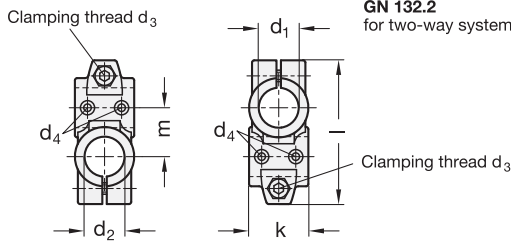
- *Construction tubes GN 990* → Page 1027
- *Linear actuators GN 291* → Page 1036
- *Linear actuators GN 292* → Page 1038

Linear actuator connector	1	d <sub>1</sub>
GN 131.1-G18-B18-1-SW	2	d <sub>2</sub>
	3	Identification No.
	4	Finish

St. Steel-Linear actuator connector	1	d <sub>1</sub>
GN 131.2-G18-G18-2-NI	2	d <sub>2</sub>
	3	Identification No.
	4	Material



**GN 132.1**  
for single system

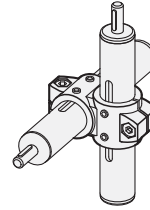



**GN 132.2**  
for two-way system



**3 Identification No.**

- 1 with 2 clamping screws DIN 912, steel zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912



<b>d<sub>1</sub></b> Bore B without slide bush		<b>d<sub>2</sub></b> Bore B with slide bush		<b>d<sub>3</sub></b> Clamping thread	<b>d<sub>4</sub></b> Mounting screw on the follower	<b>k</b> Clamping length	Length <b>l</b>	<b>m</b>	Clamping lever for d <sub>3</sub>
B 30	G 30	B 30	G 30	M 8	M 4	40	97	33	
B 40	G 40	B 40	G 40	M 10	M 5	56	125	45	GN 911-M10-40
B 50	G 50	B 50	G 50	M 10	M 6	65	143	53	GN 911-M10-55
B 60	G 60	B 60	G 60	M 10	M 8	80	169	65	GN 911-M10-55

**Specification**



- Aluminium plastic coated black, RAL 9005, textured finish ● **SW**
- Clamping bores mechanically machined
- Slide bush Polyamide
- Socket cap screws DIN 912  
Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985  
Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911  
- Zinc die casting  
- Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**Information**

Linear actuator connectors GN 132.1 / GN 132.2 are normally supplied **mounted** only in connection with a linear actuator and for function control.

By means of the clamping screw on the clamping bores d<sub>1</sub> / d<sub>2</sub> the movement can either be set or the linear actuator connector can be clamped (after setting of final adjustment).

The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

see also...

- *Construction tubes GN 990* → Page 1027
- *Linear actuators GN 291* → Page 1036
- *Linear actuators GN 292* → Page 1038
- *Linear actuators GN 293* → Page 1039

Linear actuator connector	1 d <sub>1</sub>
	2 d <sub>2</sub>
<b>GN 132.1-G40-B40-1-SW</b>	3 Identification No.
	4 Finish

Linear actuator connector	1 d <sub>1</sub>
	2 d <sub>2</sub>
<b>GN 132.2-G50-G50-2-SW</b>	3 Identification No.
	4 Finish

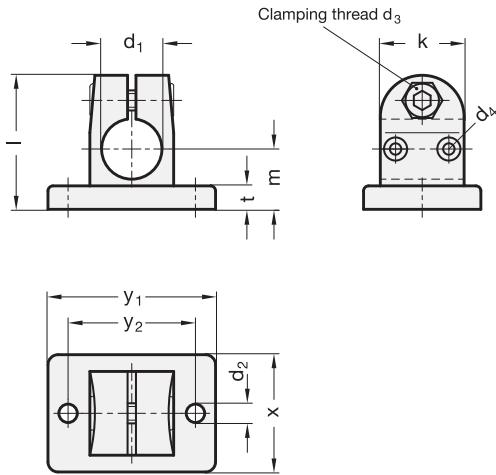
2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



**Rostfrei**  
Inox  
Stainless  
Steel

**2 Identification No.**

- 1 with clamping screw DIN 912, steel zinc plated
- 2 with Stainless Steel-clamping screw DIN 912



**1**

$d_1$ Bore B without slide bush	Bore G with slide bush	$d_2$	$d_3$ Clamping thread	$d_4$ Mounting screw on the follower	$k$ Clamping length	Length l	m	t	x	$y_1$	$y_2$	Clamping lever for $d_3$
B 18	G 18	5,5	M 6	M 3	25	40	18	7	35	50	38	GN 911-M6-22

**Specification**

- Aluminium plastic coated black, RAL 9005, textured finish **● SW**
- Stainless Steel AISI CF-8 **NI**
  - matt shot-blasted
  - Bore only with slide bush (G18)
- Guide bore mechanically machined
- Slide bush Polyamide
- Socket cap screws DIN 912 Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985 Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**3**

**Information**

Linear actuator connectors GN 145.1 are normally supplied **mounted** only in connection with a linear actuator and for function control.

By means of the clamping screw on the guide bore  $d_1$  the movement can either be set or the linear actuator connector can be clamped (after setting of final adjustment).

The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

see also...

- *Linear actuators GN 291* → Page 1036
- *Linear actuators GN 292* → Page 1038

**Flanged linear actuator connector**

**GN 145.1-B18-1-SW**

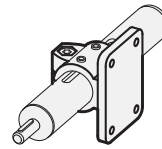
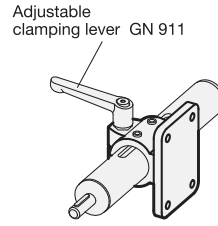
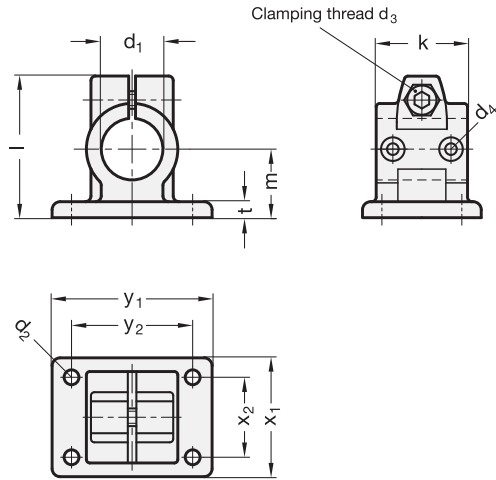
1	$d_1$
2	Identification No.
3	Finish

**St. Steel-Flanged linear actuator connector**

**GN 145.1-G18-2-NI**

1	$d_1$
2	Identification No.
3	Material






2 Identification No.

- 1 with clamping screw DIN 912, steel zinc plated
- 2 with Stainless Steel-clamping screw DIN 912

1

d <sub>1</sub> Bore B without slide bush	Bore G with slide bush	d <sub>2</sub>	d <sub>3</sub> Clamping thread	d <sub>4</sub> Mounting screw on the follower	k Clamping length	Length l	m	t	x <sub>1</sub>	x <sub>2</sub>	y <sub>1</sub>	y <sub>2</sub>	Clamping lever for d <sub>3</sub> 
B 30	G 30	6,5	M 8	M 4	40	62	30	7	52	35	70	53	GN 911-M 8-32
B 40	G 40	8,5	M 10	M 5	56	83	42	10	78	52	108	82	GN 911-M10-40
B 50	G 50	11	M 10	M 6	65	95	50	14	92	62	128	98	GN 911-M10-55
B 60	G 60	11	M 10	M 8	80	112	60	14	110	74	154	118	GN 911-M10-55

Specification

- Aluminium plastic coated black, RAL 9005, textured finish ● SW
- Guide bore mechanically machined
- Slide bush Polyamide
- Socket cap screws DIN 912 Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985 Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- RoHS compliant

3

Information

Linear actuator connectors GN 146.1 are normally supplied **mounted** only in connection with a linear actuator and for function control.

By means of the clamping screw on the guide bore d<sub>1</sub> the movement can either be set or the linear actuator connector can be clamped (after setting of final adjustment).

The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

see also...

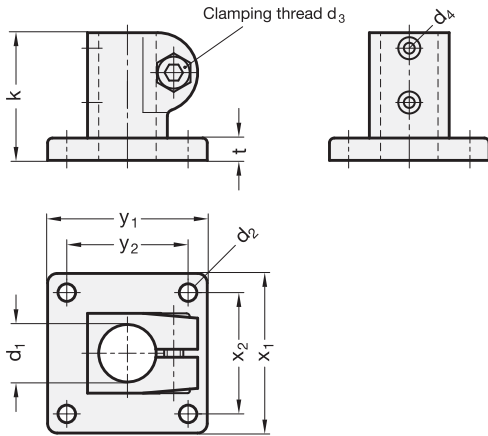
- *Linear actuators GN 291* → Page 1036
- *Linear actuators GN 292* → Page 1038
- *Linear actuators GN 293* → Page 1039

How to order

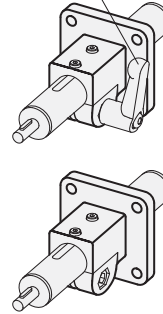
GN 146.1-G50-1-SW

1	d <sub>1</sub>
2	Identification No.
3	Finish

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



Adjustable clamping lever GN 911



**2 Identification No.**

- 1 with clamping screw DIN 912, steel zinc plated
- 2 with Stainless Steel-clamping screw DIN 912

**1**

d <sub>1</sub> Bore B without slide bush	Bore G with slide bush	d <sub>2</sub>	d <sub>3</sub> Clamping thread	d <sub>4</sub> Mounting screw on the follower	k Clamping length	t	x <sub>1</sub>	x <sub>2</sub>	y <sub>1</sub>	y <sub>2</sub>	Clamping lever for d <sub>3</sub>
B 18	G 18	5,5	M 6	M 3	40	7	50	38	50	38	GN 911-M6-22 

**Specification**

- Aluminium plastic coated black, RAL 9005, textured finish **● SW**
- Stainless Steel AISI CF-8 **● NI**
  - matt shot-blasted
  - Bore only with slide bush (G18)
- Guide bore mechanically machined
- Slide bush Polyamide
- Socket cap screws DIN 912 Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985 Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**3**

**Information**

Base plate linear actuator connectors GN 162.1 are normally supplied **mounted** only in connection with a linear actuator and for function control.

By means of the clamping screw on the guide bore d<sub>1</sub> the movement can either be set or the linear actuator connector can be clamped (after setting of final adjustment).

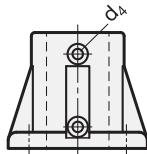
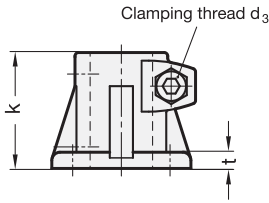
The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

see also...

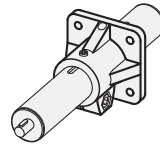
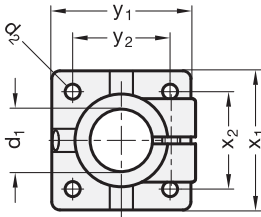
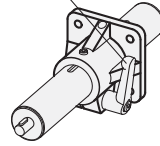
- *Linear actuators GN 291* → Page 1036
- *Linear actuators GN 292* → Page 1038

<b>Base plate linear actuator connector</b> <b>GN 162.1-B18-1-SW</b>	1	d <sub>1</sub>
	2	Identification No.
	3	Finish

<b>St. Steel-Base plate linear actuator connector</b> <b>GN 162.1-G18-2-NI</b>	1	d <sub>1</sub>
	2	Identification No.
	3	Material




Adjustable clamping lever GN 911



**2 Identification No.**

- 1 with clamping screw DIN 912, steel zinc plated
- 2 with Stainless Steel-clamping screw DIN 912

**1**

d <sub>1</sub> Bore B without slide bush	Bore G with slide bush	d <sub>2</sub>	d <sub>3</sub> Clamping thread	d <sub>4</sub> Mounting screw on the follower	k Clamping length	t	x <sub>1</sub>	x <sub>2</sub>	y <sub>1</sub>	y <sub>2</sub>	Clamping lever for d <sub>3</sub> 
B 30	G 30	6,5	M 8	M 4	50	7	60	42	60	42	GN 911-M 8-32
B 40	G 40	8,5	M 10	M 5	70	10	90	64	90	64	GN 911-M10-40
B 50	G 50	11	M 10	M 6	85	14	105	74	105	74	GN 911-M10-55
B 60	G 60	11	M 10	M 8	100	14	125	89	125	89	GN 911-M10-55

**Specification**

- Aluminium plastic coated black, RAL 9005, textured finish **● SW**
- Guide bore mechanically machined
- Slide bush Polyamide
- Socket cap screws DIN 912 Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985 Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**3**

**Information**

Base plate linear actuator connectors GN 163.1 are normally supplied **mounted** only in connection with a linear actuator and for function control.

By means of the clamping screw on the guide bore d<sub>1</sub> the movement can either be set or the linear actuator connector can be clamped (after setting of final adjustment).

The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

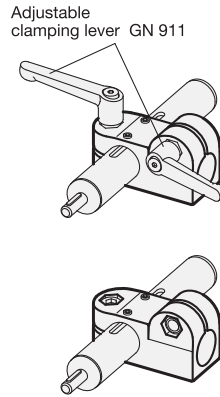
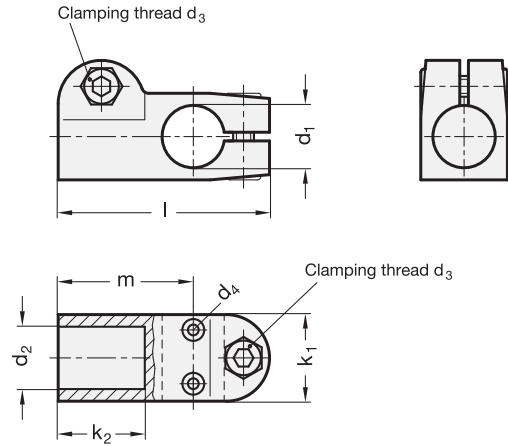
see also...

- *Linear actuators GN 291* → Page 1036
- *Linear actuators GN 292* → Page 1038
- *Linear actuators GN 293* → Page 1039

**How to order**

**GN 163.1-B30-1-SW**

1	d <sub>1</sub>
2	Identification No.
3	Finish



Rostfrei  
Inox  
Stainless  
Steel

**3 Identification No.**

- 1 with 2 clamping screws DIN 912, steel zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912

1		2													
$d_1$	Bore B without slide bush	Bore G with slide bush	$d_2$	Clamping bore B	$d_3$	Clamping thread	$d_4$	Mounting screw on the follower	$k_1$	Clamping length	$k_2$	Clamping length	Length l	m	Clamping lever for $d_3$
B 18		G 18	B 18		M 6		M 3		25		25		61	39	Distance bushing GN 911-M6-22

**Specification**

- Aluminium plastic coated black, RAL 9005, textured finish **● SW**
- Stainless Steel AISI CF-8 **NI**
  - matt shot-blasted
  - Bore only with slide bush (G18)
- Guide bores / Clamping bores mechanically machined
- Slide bush Polyamide
- Socket cap screws DIN 912 Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985 Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**Information**

T-Angle linear actuator connectors GN 191.1 are normally supplied **mounted** only in connection with a linear actuator and for function control.

By means of the clamping screw on the guide bore  $d_1$  the movement can either be set or the linear actuator connector can be clamped (after setting of final adjustment).

The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

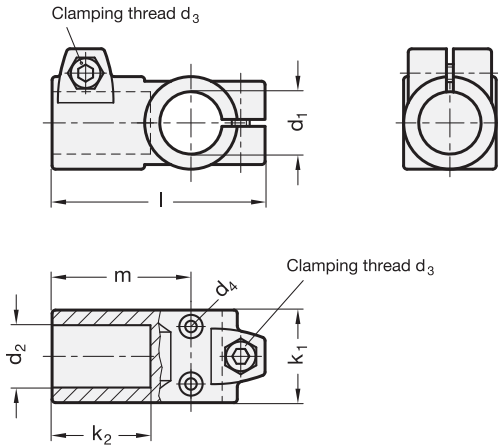
see also...

- *Construction tubes GN 990* → Page 1027
- *Linear actuators GN 291* → Page 1036
- *Linear actuators GN 292* → Page 1038

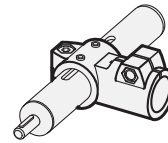
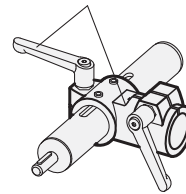
T-Angle linear actuator connectors		1	$d_1$
		2	$d_2$
1 2 3 4		3	Identification No.
<b>GN 191.1-G18-B18-1-SW</b>		4	Finish

St. Steel-T-Angle linear actuator connectors		1	$d_1$
		2	$d_2$
1 2 3 4		3	Identification No.
<b>GN 191.1-G18-B18-2-NI</b>		4	Material

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



Adjustable clamping lever GN 911



3 Identification No.

- 1 with 2 clamping screws DIN 912, steel zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912

1		2		d <sub>3</sub>	d <sub>4</sub>	k <sub>1</sub>	k <sub>2</sub>	Length l	m	Clamping lever for d <sub>3</sub>	
d <sub>1</sub>	Bore B without slide bush	Bore G with slide bush	d <sub>2</sub>	Clamping bore B	Clamping thread	Mounting screw on the follower	Clamping length	Clamping length			Distance bushing
B 30	G 30	B 30	M 8	M 4	40	42,5	92	60	GN 911-M 8-32		
B 40	G 40	B 40	M 10	M 5	56	62	129	88	GN 911-M10-40		
B 50	G 50	B 50	M 10	M 6	65	75	148	103	GN 911-M10-55		
B 60	G 60	B 60	M 10	M 8	80	80	177	125	GN 911-M10-55		

Specification

- Aluminium plastic coated black, RAL 9005, textured finish ● SW
- Guide bores / Clamping bores mechanically machined
- Slide bush Polyamide
- Socket cap screws DIN 912 Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985 Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings Stainless Steel AISI 303 → Page 1031
- Stainless Steel characteristics → Page 1144
- RoHS compliant

4

Information

T-Angle linear actuator connectors GN 192.1 are normally supplied **mounted** only in connection with a linear actuator and for function control.

By means of the clamping screw on the guide bore d<sub>1</sub> the movement can either be set or the linear actuator connector can be clamped (after setting of final adjustment).

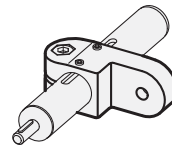
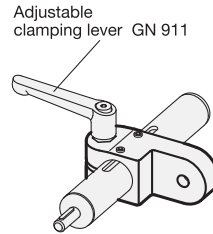
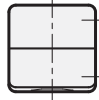
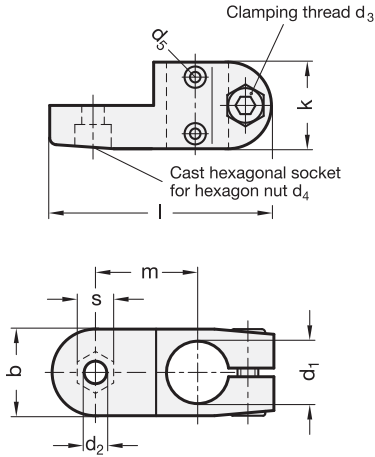
The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

see also...

- Construction tubes GN 990 → Page 1027
- Linear actuators GN 291 → Page 1036
- Linear actuators GN 292 → Page 1038
- Linear actuators GN 293 → Page 1039

How to order	
1	d <sub>1</sub>
2	d <sub>2</sub>
3	Identification No.
4	Finish


GN 192.1-G30-B30-1-SW



**2 Identification No.**

- 1 with 2 clamping screws  
DIN 912, steel zinc plated
- 2 with 2 Stainless Steel-  
clamping screws DIN 912

**1**

d <sub>1</sub> Bore B <b>without</b> slide bush	Bore G <b>with</b> slide bush	b Swivel width	d <sub>2</sub>	d <sub>3</sub> Clamping thread	d <sub>4</sub>	d <sub>5</sub> Mounting screw on the follower	k Clamping length	Length l	m	s	Clamping lever for d <sub>3</sub>  Distance bushing
B 18	G 18	25	6,5	M 6	M 6	M 3	25	64	29,5	10	GN 911-M6-22

**Specification**

- Aluminium plastic coated black, RAL 9005, textured finish **● SW**
- Guide bore mechanically machined
- Slide bush Polyamide
- Socket cap screws DIN 912 Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985 Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**3**

**Information**

Swivel clamp linear actuator connectors GN 273.1 are normally supplied **mounted** only in connection with a linear actuator and for function control.

By means of the clamping screw on the guide bore d<sub>1</sub> the movement can either be set or the linear actuator connector can be clamped (after setting of final adjustment).

The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

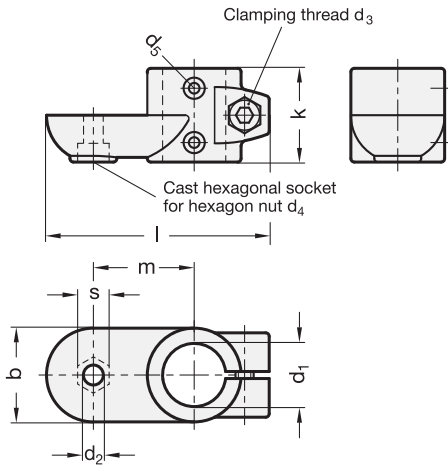
see also...

- *Linear actuators GN 291* → Page 1036
- *Linear actuators GN 292* → Page 1038

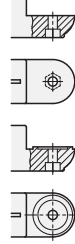
How to order

**GN273.1-B18-1-SW**

1	d <sub>1</sub>
2	Identification No.
3	Finish



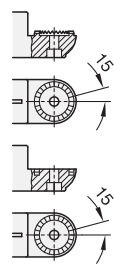
Type **OZ**  
without centring step  
(smooth)



Type **MZ**  
with centring step



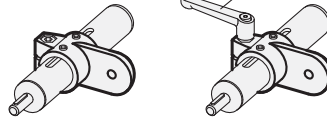
Type **AV**  
with male serration



Type **IV**  
with female serration



Adjustable clamping lever GN 911



**2 Type**

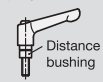
- OZ** without centring step (smooth)
- MZ** with centring step
- AV** with male serration
- IV** with female serration

**3 Identification No.**

- 1** with clamping screw DIN 912, steel zinc plated
- 2** with Stainless Steel-clamping screw DIN 912

**1**

d <sub>1</sub> Bore B without slide bush	Bore G with slide bush	b Swivel width	d <sub>2</sub>	d <sub>3</sub> Clamping thread	d <sub>4</sub>	d <sub>5</sub> Mounting screw on the follower	k	Length l	m	s	Clamping lever for d <sub>3</sub>
B 30	G 30	40	8,5	M 8	M 8	M 4	40	95	43	13	GN 911-M 8-32
B 40	G 40	65	10,5	M 10	M 10	M 5	65	148	70	17	GN 911-M10-55
B 50	G 50	65	10,5	M 10	M 10	M 6	65	148	70	17	GN 911-M10-55



**Specification**

- Aluminium plastic coated black, RAL 9005, textured finish **● SW**
- Guide bore mechanically machined
- Slide bush Polyamide
- Socket cap screws DIN 912 Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985 Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**4**

**Information**

Swivel clamp linear actuator connectors GN 274.1 are normally supplied **mounted** only in connection with a linear actuator and for function control.

By means of the clamping screw on the guide bore d<sub>1</sub> the movement can either be set or the linear actuator connector can be clamped (after setting of final adjustment).

The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

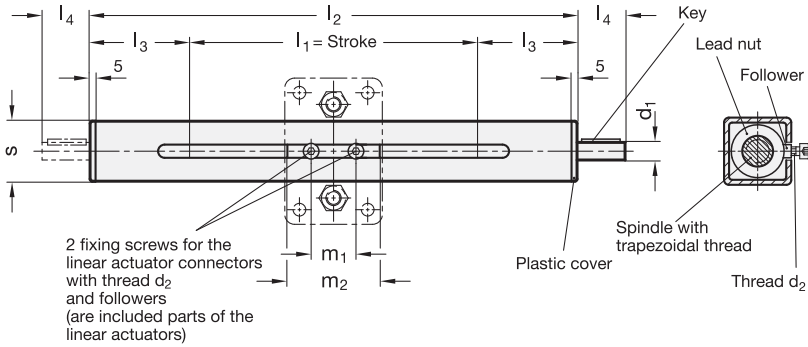
see also...

- *Linear actuators GN 291* → Page 1036
- *Linear actuators GN 292* → Page 1038
- *Linear actuators GN 293* → Page 1039

How to order

<b>1</b>	d <sub>1</sub>
<b>2</b>	Type
<b>3</b>	Identification No.
<b>4</b>	Finish

GN274.1-B30-OZ-1-SW



- 3 Type**
- R1** Right hand thread, shaft journal at one end
  - R2\*** Right hand thread, shaft journal at both ends
  - L1** Left hand thread, shaft journal at one end
  - L2\*** Left hand thread, shaft journal at both ends



s	l <sub>1</sub> Stroke (standard lengths)						max. stroke	Threaded spindle	d <sub>1</sub> f7	d <sub>2</sub>	l <sub>2</sub> Total length	l <sub>3</sub>	l <sub>4</sub>	m <sub>1</sub>	m <sub>2</sub>	for key DIN 6885
30	100	150	200	300	-	1250	TR14x4	8	M 4	11+210	105	16	23	38	A2x2x12	
40	70	170	220	270	320	1570	TR20x4	12	M 5	11+240	120	17	42	54	A4x4x12	
50	65	115	215	265	315	1565	TR20x4	12	M 6	11+245	122,5	18	42	54	A4x4x12	

\* usually not available from stock

**Specification**



- Square tube  
Steel, chrome-plated **SCR**
- Spindle with trapezoidal thread  
- Steel  
- ball bearing
- Lead nut  
Gunmetal
- End cap  
Plastic
- ISO-Fundamental Tolerances → Page 1132
- RoHS compliant

**Accessory**

- Linear actuator connectors, tube clamp connectors and accessory have to be ordered separately.

**On request**

- Square linear actuators GN 291.1 made of Stainless Steel

**Information**

Square linear actuators GN 291.1 are used if the linear actuator connectors are exposed to high torsion forces.

In addition to the standard stroke lengths specified in the above table for linear actuators any stroke inside the maximum stroke length is available.

Besides the extensive range of two-part tube clamp connectors there are a number of different components for fixing the linear actuators and to build linear actuator connectors.

In order to measure the displacement and positioning of the linear actuator connectors, the square tube can be provided with a longitudinal scale.

see also...

- Longitudinal scales GN 299 → Page 1066
- Linear actuator connectors → Page 1046
- Handwheels for linear actuators → Page 1062

**How to order**

**GN291.1-30-200-R1-SCR**

1	s
2	l <sub>1</sub>
3	Type
4	Material





2.1

2.2

2.3

2.4

2.5

2.6

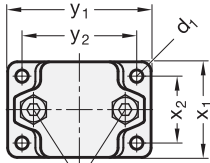
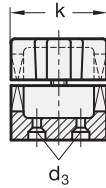
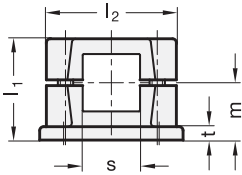
2.7

**2.8**

2.9

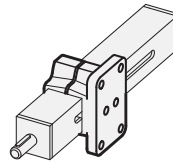
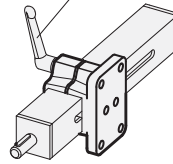


Square linear actuators GN 291.1 → *Page 1056*  
Linear actuator connectors GN 147.1 → *Page 1058*  
Linear actuator connectors GN 134.1 → *Page 1059*  
Linear actuator connectors GN 165.1 → *Page 1060*



Clamping thread  $d_2$

Adjustable clamping lever GN 911



**2 Identification No.**

- 1 with 2 clamping screws DIN 912, steel zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912

**1**

s	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	k	l <sub>1</sub>	l <sub>2</sub>	m	t	x <sub>1</sub>	x <sub>2</sub>	y <sub>1</sub>	y <sub>2</sub>	Clamping lever for d <sub>2</sub>
Square V		Clamping thread	Mounting screw on the follower	Clamping length									
V 30	6,5	M 8	M 4	50	53	68	30	7	50	35	75	60	GN 911-M 8-45
V 40	11	M 10	M 5	76	81,5	98	46,5	14	76	50	115	90	GN 911-M10-70
V 50	11	M 10	M 6	76	81,5	98	46,5	14	76	50	115	90	GN 911-M10-70

**Specification**

- Aluminium plastic coated black, RAL 9005, textured finish ● **SW**
- Clamping square not machined
- Socket cap screws DIN 912 Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985 Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics → Page 1144*
- **RoHS compliant**

**On request**

- Linear actuator connectors with little play

**3**

**Information**

Linear actuator connectors GN 147.1 are normally supplied **mounted** only in connection with a square linear actuator and for function control.

The square of the linear actuator connector is supplied not machined in the standard design. Together with the tolerance of the tube, this may result in a relatively large play.

This can be adjusted in one direction using the clamping screws. In the other direction (90° to it), a defined minimum play can be achieved only by appropriate machining (special design) of the square linear actuator connector.

The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

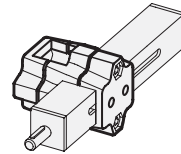
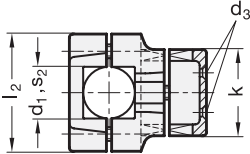
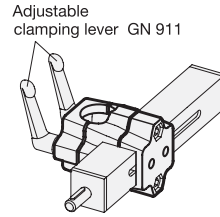
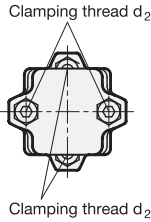
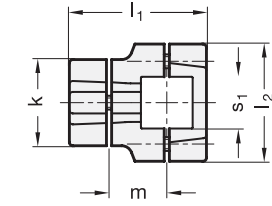
see also...

- *Square linear actuators GN 291.1 → Page 1056*

**How to order**

**GN 147.1-V30-1-SW**

1	s
2	Identification No.
3	Finish



- 3 Identification No.**
- with 4 clamping screws DIN 912, steel zinc plated
  - with 4 Stainless Steel-clamping screws DIN 912

<b>1</b> S <sub>1</sub> Square V	<b>2</b> S <sub>2</sub> Square V	<b>2</b> d <sub>1</sub> Bore B	d <sub>2</sub> Clamping thread	d <sub>3</sub> Mounting screw on the follower	k Clamping length	l <sub>1</sub>	l <sub>2</sub>	m	Clamping lever for d <sub>2</sub>
V 30	V 30	B 30	M 8	M 4	50	79,5	68	33,5	GN 911-M 8-32
V 40	V 40	B 40	M 10	M 5	76	125	98	55	GN 911-M10-55
V 50	V 50	B 50	M 10	M 6	76	125	98	55	GN 911-M10-55

**Specification**

- Aluminium plastic coated black, RAL 9005, textured finish ● **SW**
- Clamping square not machined
- Socket cap screws DIN 912 Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985 Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings Stainless Steel AISI 303 → Page 1031
- Stainless Steel characteristics → Page 1144
- RoHS compliant

**On request**

- Linear actuator connectors with little play

**Information**

Linear actuator connectors GN 134.1 are normally supplied **mounted** only in connection with a square linear actuator and for function control.

The square of the linear actuator connector is supplied not machined in the standard design. Together with the tolerance of the tube, this may result in a relatively large play.

This can be adjusted in one direction using the clamping screws. In the other direction (90° to it), a defined minimum play can be achieved only by appropriate machining (special design) of the square linear actuator connector.

The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

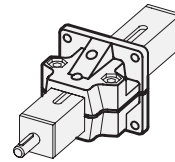
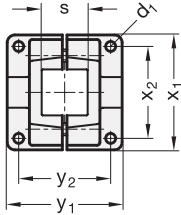
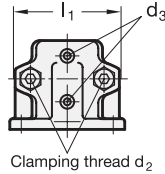
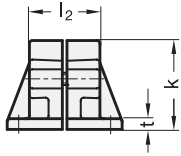
see also...

- Construction tubes GN 990 → Page 1027
- Square linear actuators GN 291.1 → Page 1056

Linear actuator connector	1	S <sub>1</sub>
	2	S <sub>2</sub> (d <sub>1</sub> )
<b>GN 134.1-V30-V30-1-SW</b>	3	Identification No.
	4	Finish

Linear actuator connector	1	S <sub>1</sub>
	2	d <sub>1</sub> (S <sub>2</sub> )
<b>GN 134.1-V50-B50-1-SW</b>	3	Identification No.
	4	Finish

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



**2 Identification No.**

- 1 with 2 clamping screws DIN 912, steel zinc plated
- 2 with 2 Stainless Steel-clamping screws DIN 912

**1**

s Square V	d <sub>1</sub>	d <sub>2</sub> Clamping thread	d <sub>3</sub> Mounting screw on the follower	k Clamping length	l <sub>1</sub>	l <sub>2</sub>	t	x <sub>1</sub>	x <sub>2</sub>	y <sub>1</sub>	y <sub>2</sub>	Clamping lever for d <sub>2</sub>	
V 30	6,5	M 8	M 4	58	69	46	7	75	60	75	60		
V 40	11	M 10	M 5	91	98	70	14	115	90	119	90		GN 911-M10-55
V 50	11	M 10	M 6	91	98	70	14	115	90	119	90		GN 911-M10-55

**Specification**

- Aluminium plastic coated black, RAL 9005, textured finish **● SW**
- Clamping square not machined
- Socket cap screws DIN 912 Steel zinc plated / Stainless Steel AISI 304
- Hexagon nuts DIN 985 Steel zinc plated / Stainless Steel AISI 304
- Adjustable clamping levers GN 911
  - Zinc die casting
  - Inserts / Distance bushings Stainless Steel AISI 303 → Page 1031
- *Stainless Steel characteristics* → Page 1144
- **RoHS compliant**

**On request**

- Linear actuator connectors with little play

**3**

**Information**

Linear actuator connectors GN 165.1 are normally supplied **mounted** only in connection with a square linear actuator and for function control.

The square of the linear actuator connector is supplied not machined in the standard design. Together with the tolerance of the tube, this may result in a relatively large play.

This can be adjusted in one direction using the clamping screws. In the other direction (90° to it), a defined minimum play can be achieved only by appropriate machining (special design) of the square linear actuator connector.

The standard version of the clamping screws are socket cap screws with hexagonal socket DIN 912. They can be replaced by adjustable clamping levers GN 911 (see table of dimensions).

see also...

- *Square linear actuators GN 291.1* → Page 1056

How to order

GN 165.1-V40-1-SW

1	s
2	Identification No.
3	Finish



2.1

2.2

2.3

2.4

2.5

2.6

2.7

**2.8**

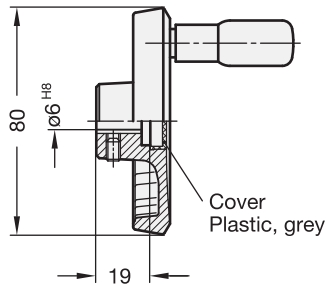
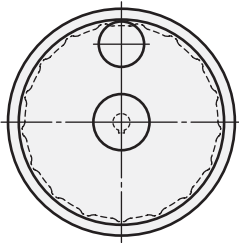
2.9



Square linear actuators GN 291.1 → Page 1056  
 with linear actuator connectors GN 147.1 → Page 1058  
 Linear actuators GN 291 → Page 1036  
 with position indicators GN 953 → Page 388  
 Disc handwheels GN 323.8 → Page 384  
 with position indicators GN 000.8 → Page 383  
 and linear actuator connectors GN 132.1 → Page 1048

# Handwheels for linear actuators and transfer units

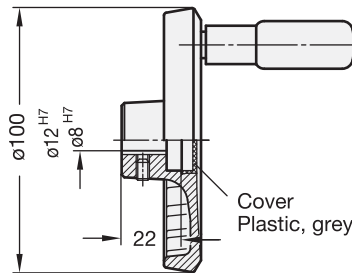
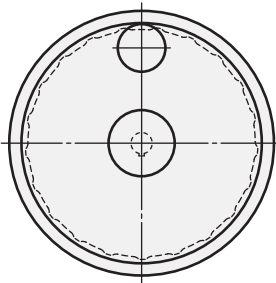
Aluminium, black plastic coated



Disc handwheel for  
linear actuator  $\varnothing 18$   
GN 923.18-80-K6-R

## Specification

see GN 923 → Page 150

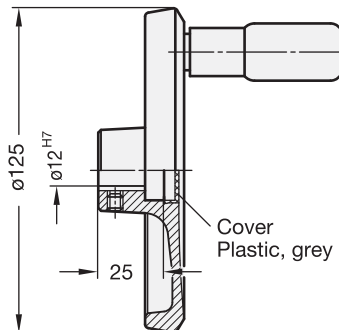
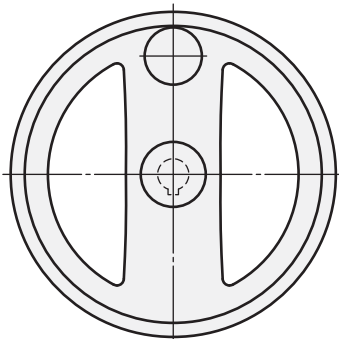


Disc handwheel for  
linear actuator  $\varnothing 30 / \varnothing 30$   
GN 923.30-100-K8-R

Disc handwheel for  
linear actuator  $\varnothing 40 / \varnothing 40$   
GN 923.40-100-K12-R

## Specification

see GN 923 → Page 150



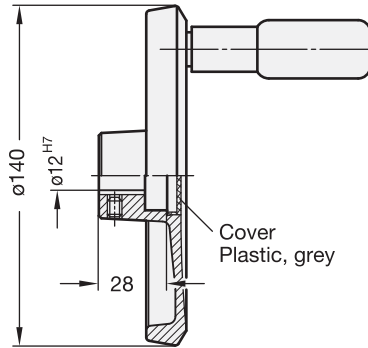
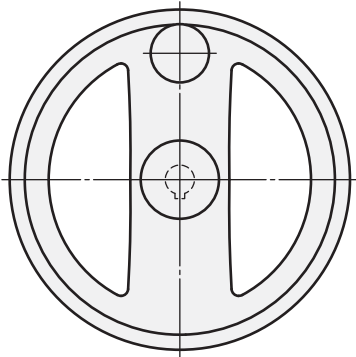
Spoked handwheel for  
linear actuator  $\varnothing 40 / \varnothing 40$   
GN 924.40-125-K12-R

## Specification

see GN 924 → Page 154

# Handwheels for linear actuators and transfer units

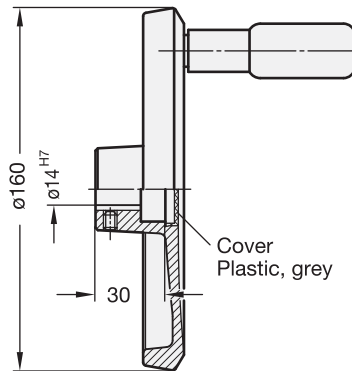
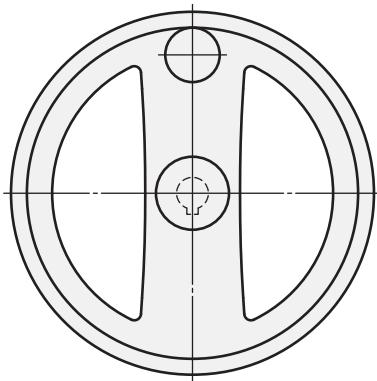
Aluminium, black plastic coated



Handwheel for  
linear actuator  $\varnothing 50 / \nabla 50$   
GN 924.50-140-K12-R

## Specification

see GN 924 → Page 154



Handwheel for  
linear actuator  $\varnothing 60$   
GN 924.60-160-K14-R

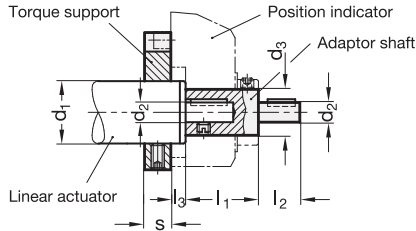
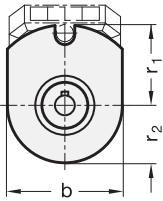
## Specification

see GN 924 → Page 154

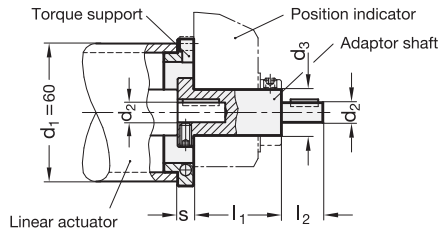
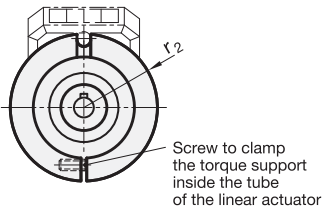


2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9

Version for linear actuators  $\varnothing 18, 30, 40, 50$



Version for linear actuator  $\varnothing 60$



1

2

$d_1$ $\varnothing$ Linear actuator	$d_2$ f7	b	$d_3$	$l_1$	$l_2$	$l_3$	$r_1$	$r_2$	s	for position indicator
18	6	35	14	30	16	4,5	24,5	17,5	8	GN 954
30	8	35	14	35	15	-	24,5	17,5	10	GN 954
40	12	47	20	40	16	-	32	24,5	10	GN 953
50	12	58	20	40	17	-	32	29	10	GN 953
60	14	-	20	39	18	-	-	32	7	GN 953

**Specification**

- Adaptor shaft  
Steel  
blackened
- Torque support  
Aluminium  
black anodized
- ISO-Fundamental Tolerances → Page 1032
- RoHS compliant

**Accessory**

- Position indicators and handwheels have to be ordered separately.

**On request**

- Linear actuators with analogue position indicator GN 000.8

**Information**

With the installation kit GN 295 the linear actuators can be fitted with a digital position indicator.

An installation kit comprises an adaptor shaft and a torque support.

A retrofit is possible. The handwheel is removed, the kit is mounted and the handwheel is refitted. For linear actuators  $\varnothing 60$  the plastic cover on the attachment side must be removed before assembly.

As a rule a counter is chosen which is matched to the pitch of the spindle with trapezoidal thread so the indicator after one complete revolution accords to the pitch of the spindle.

see also...

- Position indicators GN 953 → Page 388
- Position indicators GN 954 → Page 390

How to order

**GN 295-30-8**

1  $d_1$  ( $\varnothing$  Linear actuator)

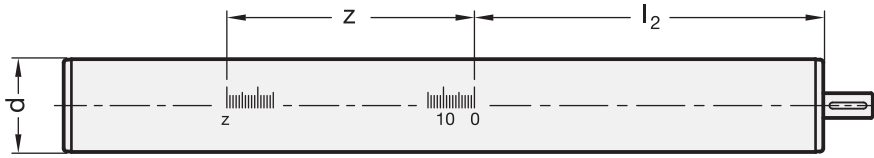
2  $d_2$





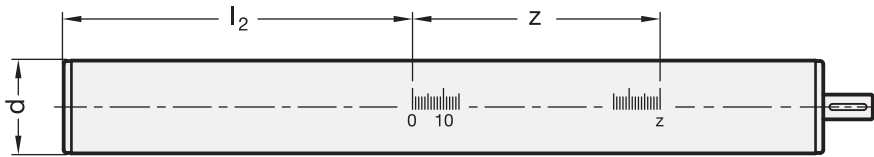
Position indicators GN 953 → Page 388  
Position indicators GN 954 → Page 390

3



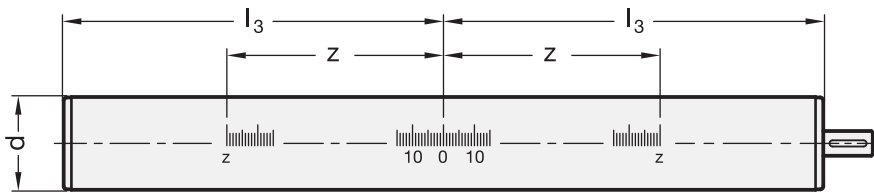
Type A

Scale values ascending to the left



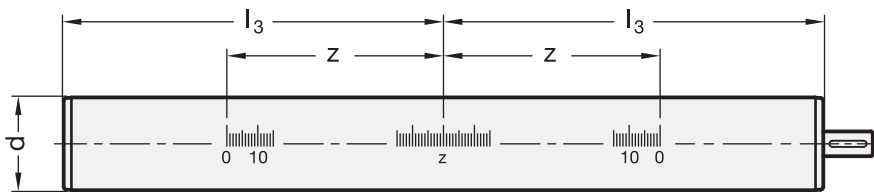
Type B

Scale values ascending to the right



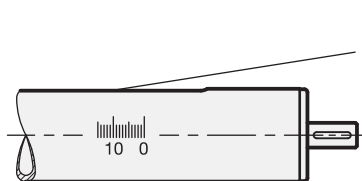
Type C

Scale values decreasing towards middle

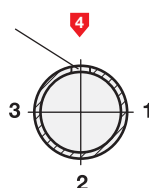


Type D

Scale values ascending towards middle



Guide slot for linear actuator connectors



The identification numbers 1, 2 or 3 determine the positioning of the scale relative to the guide slot.



<b>1</b> d Ø Linear actuator	<b>2</b> l <sub>1</sub> Stroke (Standard lengths)	l <sub>2</sub>	l <sub>3</sub>	z Scale length respectively highest figure
18	65	82,5	147,5	90
18	165	82,5	247,5	190
18	265	82,5	347,5	290
30	100	122,5	222,5	120
30	150	122,5	272,5	170
30	200	122,5	322,5	220
30	300	122,5	422,5	320
40	70	142,5	217,5	90
40	170	142,5	317,5	190
40	220	142,5	367,5	240
40	270	142,5	417,5	290
40	320	142,5	467,5	340
50	65	147,5	217,5	90
50	115	147,5	267,5	190
50	215	147,5	367,5	240
50	265	147,5	417,5	290
50	315	147,5	467,5	340
60	220	182,5	402,5	240
60	720	182,5	902,5	740

## Specification

- Scale engraved with laser precision
- RoHS compliant

## Information

The longitudinal scales GN 299 of type A and B are normally used in connection with the linear actuators GN 291 and GN 291.1, the scales of type C and D are normally used for the linear actuators GN 292 and GN 293.

Longitudinal scales can **only** be ordered together with linear actuators.

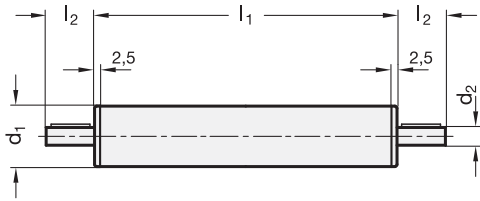
see also...

- Linear actuators GN 291 / GN 292 / GN 293 → Page 1036 - 1039
- Square linear actuators GN 291.1 → Page 1056

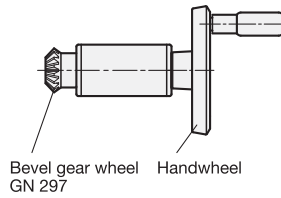
### How to order

**GN 299-50-315-A-1**

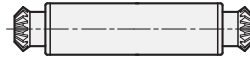
<b>1</b>	d
<b>2</b>	l <sub>1</sub>
<b>3</b>	Type
<b>4</b>	Identification no.



Drive unit with bevel gear wheel and handwheel



Transfer unit



ROSTFREI  
Inox  
Stainless  
Steel

d <sub>1</sub>	l <sub>1</sub> Standard lengths of the drive units	Transfer units	d <sub>2</sub>	l <sub>2</sub>
18	47	according to customer's requirement	6	16
30	60		8	16
40	93		12	17
50	93		12	18

**Specification**

- Guide tube
  - Tube DIN 2391  
Steel, chrome-plated **SCR**
  - Tube DIN 2462  
Stainless Steel AISI 304 **NI**
- Shaft
  - Steel respectively Stainless Steel
  - ball bearing
- End cap  
Plastic
- ISO-Fundamental Tolerances → Page 1132
- Stainless Steel characteristics → Page 1144
- RoHS compliant

**Accessory**

- Bevel gear wheels, handwheels, tube clamp connectors and accessory have to be ordered separately.

**Information**

Transfer units GN 391 are normally used in connection with linear actuators (GN 291, GN 292, GN 293). They are designed to transfer the rotary movement for operating the linear actuators to another or a further position. Application examples → Page 1072

The transfer unit in the standard length l<sub>1</sub> is a special design: It is designed to turn the operating axis for the linear actuators (handwheel) by 90° together with an angular gear.

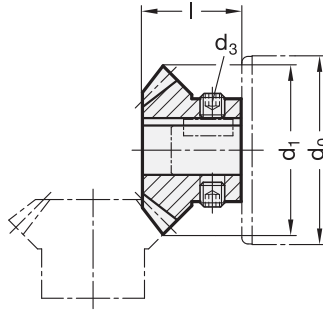
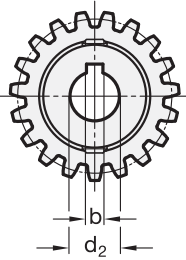
As in linear actuators, digital position indicators can be fitted.

see also...

- Housings GN 298 (for angular / T-gears) → Page 1070
- Bevel gear wheels GN 297 → Page 1069
- Application examples → Page 1072
- Handwheels → Page 1062
- Position indicators GN 953 → Page 388
- Position indicators GN 954 → Page 390
- Installation kits GN 295 (for position indicators) → Page 1064

Drive unit <b>GN 391-30-60-SCR</b>	1	d <sub>1</sub>
	2	l <sub>1</sub>
	3	Material

Transfer unit <b>GN 391-50-500-NI</b>	1	d <sub>1</sub>
	2	l <sub>1</sub>
	3	Material



<sup>1</sup> $d_0$ Ø Linear actuator / Transfer unit	$d_1$	<sup>2</sup> $d_2$ H7 Bore with keyway K	$b$	$d_3$	Length $l$
18	17,5	K 6	2	M 4	11
30	26	K 8	2	M 6	19
40 / 50	35	K 12	4	M 6	23,5

## Specification

- Steel hardened
- Teeth milled
- RoHS compliant

## Information

Bevel gear wheels GN 297 are used for angular / T-gears in connection with linear actuators / transfer units and housings GN 298.

Two bevel gear wheels are required for an angular gear, three for a T-gear. The transmission ratio is always 1:1.

see also...

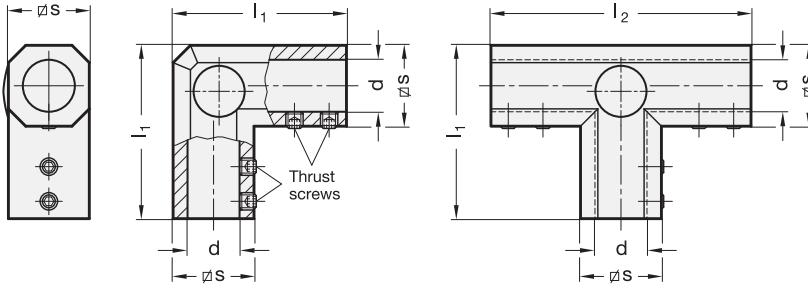
- *Linear actuators GN 291* → Page 1036
- *Linear actuators GN 292* → Page 1038
- *Linear actuators GN 293* → Page 1039
- *Housings GN 298 (for angular / T-gears)* → Page 1070
- *Assembly and application examples* → Page 1072

How to order

**GN 297-35-K12**

<sup>1</sup>  $d_1$

<sup>2</sup>  $d_2$



**3 Type**

- W** Housing for angular gears
- T** Housing for T-gears

**1**

**2**

<b>s</b>	<b>d</b> Bore for linear actuator / transfer unit	<b>l<sub>1</sub></b>	<b>l<sub>2</sub></b>
28	B 18	60	90
40	B 30	84	126
50	B 40	108	162
60	B 50	128	190

**Specification**

- Aluminium gravity die casting plastic coated black, RAL 9005, textured finish **● SW**
- Thrust screws  
Stainless Steel
- **RoHS compliant**

**4**

**Information**

Housings GN 298 for angular / T-gears are used in connection with bevel gear wheels GN 297 and linear actuators / transfer units. The angular / T-gears are designed to deflect the rotary movement of a linear actuator / transfer unit by 90°.

An operating instruction with more details and specifications is included with every delivery.

see also...

- *Linear actuators GN 291* → Page 1036
- *Linear actuators GN 292* → Page 1038
- *Linear actuators GN 293* → Page 1039
- *Drive / Transfer units GN 391* → Page 1068
- *Bevel gear wheels GN 297* → Page 1069
- *Assembly and application examples* → Page 1072

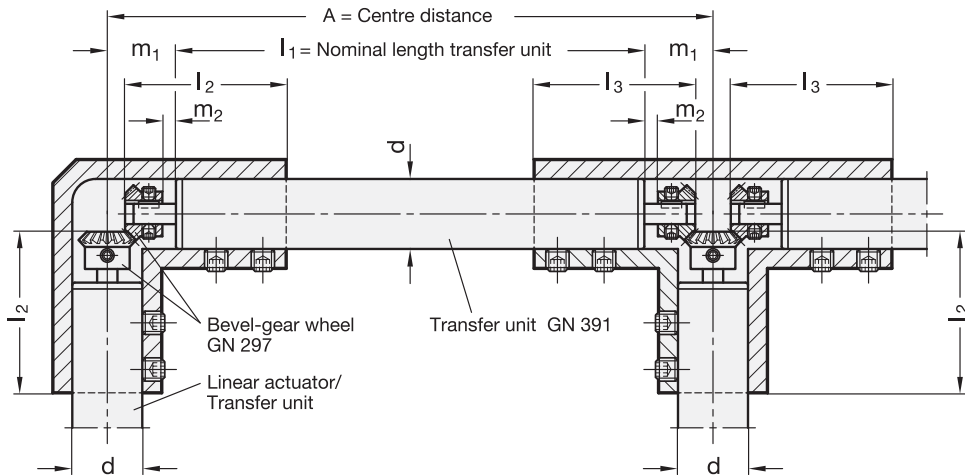
How to order

**GN 298-40-B30-T-SW**

<b>1</b>	<b>s</b>
<b>2</b>	<b>d</b>
<b>3</b>	<b>Type</b>
<b>4</b>	<b>Finish</b>



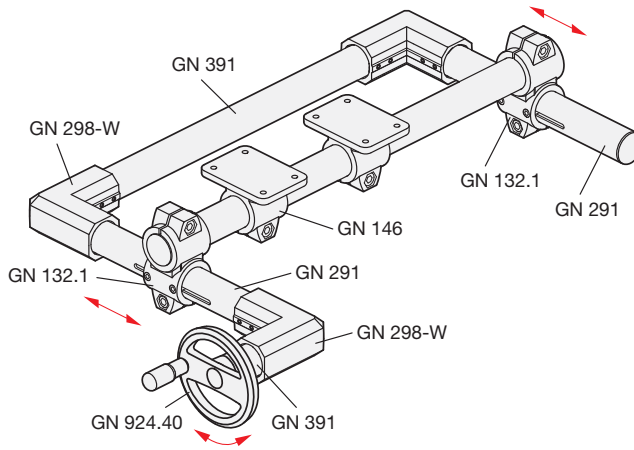
Assembly of linear actuators and transfer units with bevel gear wheels in housings GN 298



d ∅ Linear actuator / transfer unit	l <sub>2</sub>	l <sub>3</sub>	m <sub>1</sub>	m <sub>2</sub>	Bevel gear wheel	Housing	Length of the transfer unit GN 391: $l_1 = A - 2 \times m_1$
18	42	41	20	4	GN 297-17,5-K6	GN 298-28-B18-W/T-SW	
30	58	57	25	1	GN 297-26-K8	GN 298-40-B30-W/T-SW	
40	74	72	32	1	GN 297-35-K12	GN 298-50-B40-W/T-SW	
50	90	82	32	1	GN 297-35-K12	GN 298-60-B50-W/T-SW	

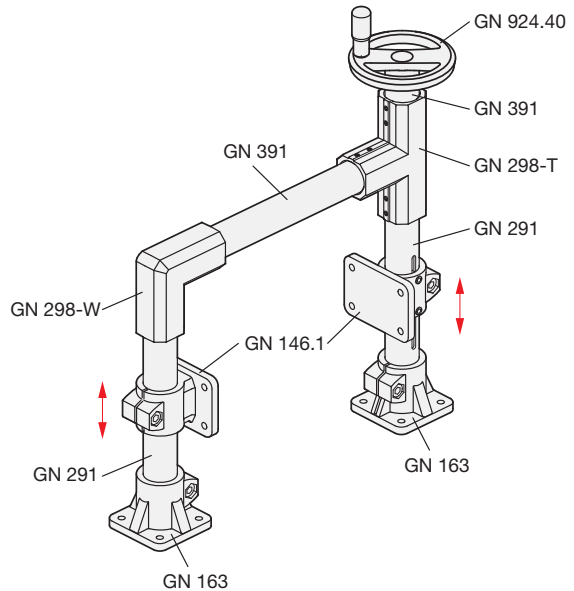
# Transfer units and angular gears

Application examples



Two parallel sliding linear actuators GN 291 are connected with a transfer unit GN 391.

The angular housings GN 298-W including the bevel gear wheels GN 297 and another transfer unit GN 391 connect the handwheel with the system. The handwheel is placed in a rectangular position to the moving axes.



Two flanged linear actuator connectors GN 146.1 are moved parallel. For this two linear actuators GN 291 are connected with a transfer unit GN 391.

The T- and angular gear GN 298-T-W including the bevel gear wheels GN 297 and another transfer unit GN 391 connect the handwheel with the system. The handwheel is placed in a parallel position to the moving axes.





2.1

2.2

2.3

2.4

2.5

2.6

2.7

**2.8**

2.9



Clamp mountings Aluminium → Page 1074.

# Clamp mountings

Range



Clamp mountings in **Aluminium** are construction elements for a wide variety of different uses. They are designed for positioning sensors, reflectors and similar elements and, owing to their many designs, variants and bore diameters, are true problem solvers in machine and jig construction.

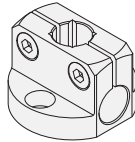
These are precision elements made of high-tensile aluminium which guarantees ultimate clamping stability even when exposed to strong vibrations. The clamping mechanism is largely independent of temperature and environmental factors, requiring no post-adjustment.

For extreme requirements in terms of stability, square profile sections may be used which provide a form-locking effect against rotation and twisting. Foot clamp mountings GN 473, clamp mountings GN 477 and flanged bolts GN 480 can be mounted both on base plates and on aluminium profile sections.

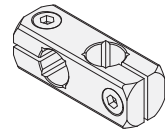
Extras and accessories for the clamp mounting range include retaining rods / retaining tubes GN 480.1 → Page 1085, flanged bolts GN 480 → Page 1084 and sensor holders GN 479 → Page 1082.

Other clamping elements made of aluminium → Page 972.

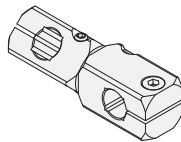
**Foot clamp mountings**  
GN 473 → Page 1076



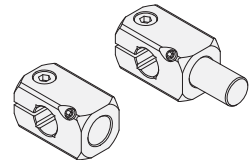
**Two-way clamp mountings**  
GN 474 → Page 1078



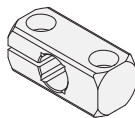
**Twistable two-way clamp mountings**  
GN 475 → Page 1079



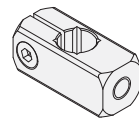
**T-Clamp mountings**  
GN 476 → Page 1080



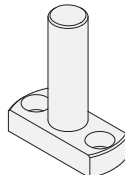
**Clamp mountings**  
GN 477 → Page 1077



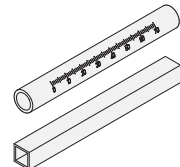
**Clamp mountings**  
GN 478 → Page 1081



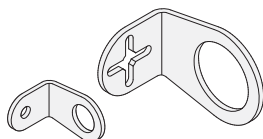
**Flanged bolts**  
GN 480 → Page 1084



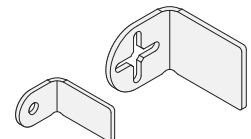
**Retaining rods**  
**Retaining tubes**  
GN 480.1 → Page 1085



**Sensor holders**  
GN 479 → Page 1082

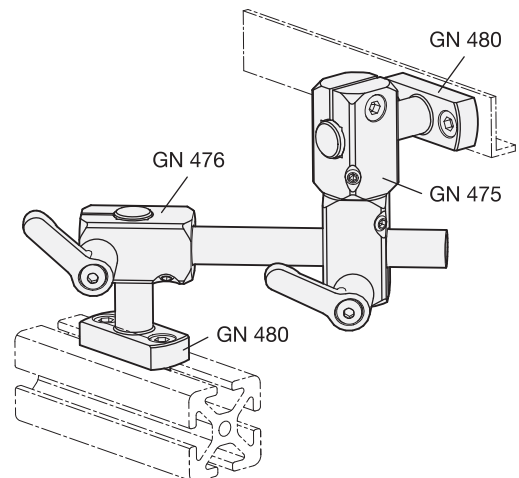
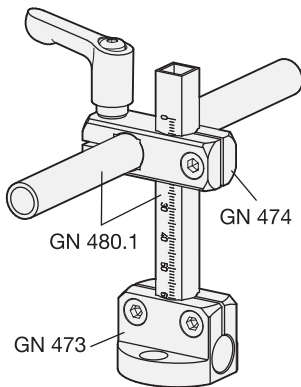
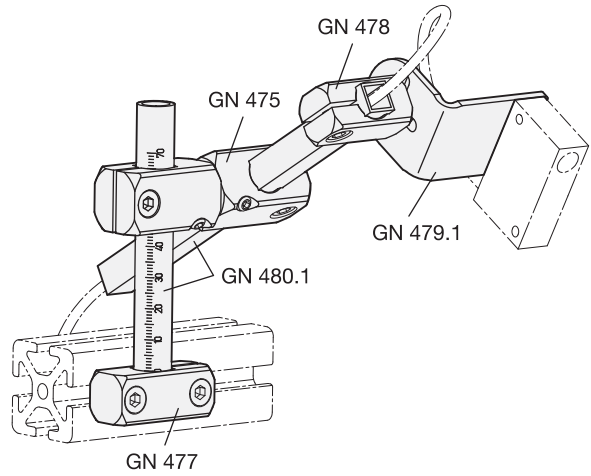
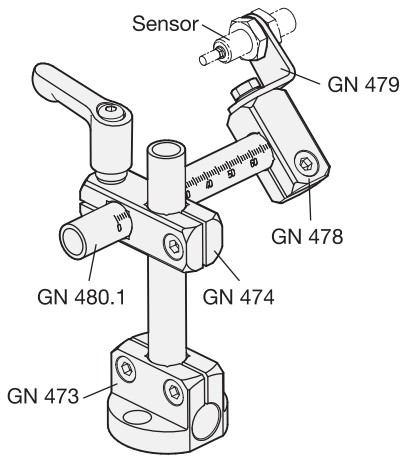


**Retaining plates**  
GN 479.1 → Page 1083



# Clamp mountings

Assembly examples



2.1

2.2

2.3

2.4

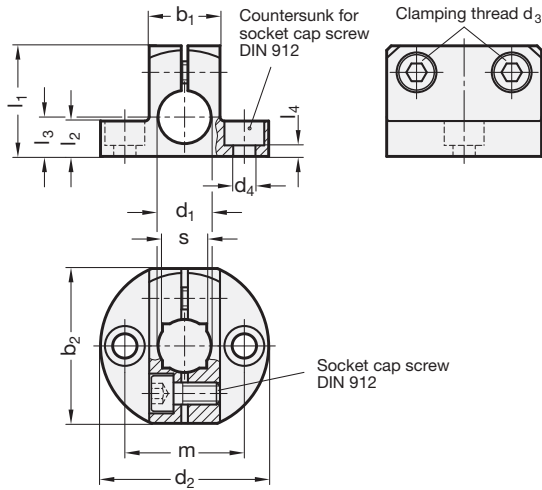
2.5

2.6

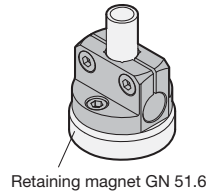
2.7

2.8

2.9



Application example



1

d <sub>1</sub> Bore B for shaft tol. h11	b <sub>1</sub>	b <sub>2</sub>	d <sub>2</sub>	d <sub>3</sub> Clamping thread	d <sub>4</sub> for screw	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	m	s Square V	Clamping lever for d <sub>3</sub> Distance bushing
B 8	14	29	31,5	M 4	M 4	20	7	7	3	22	-	GN 511-M4-14
B 10	16	35	38	M 5	M 5	24	8	8	2,5	27	8	GN 511-M5-16
B 12	16	35	38	M 5	M 5	25	8	8	2,5	27	10	GN 511-M5-16
B 15	20	41	45	M 6	M 6	30	10	10	4	32	12	GN 511-M6-20
B 16	20	41	45	M 6	M 6	31	10	10	4	32	-	GN 511-M6-20
B 20	25	44	50	M 6	M 6	35	12,5	12,5	6,5	36	16	GN 511-M6-25

## Specification

- Aluminium
  - matt, slide ground **MT**
  - anodized, black **ELS**
- Socket cap screws DIN 912  
Stainless Steel AISI 304
- Adjustable clamping levers GN 511
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1086
- Stainless Steel characteristics → Page 1144
- RoHS compliant

2

## Information

The foot clamp mountings GN 473 have a horizontal and a vertical clamping bore. The vertical clamping bore is additionally fitted with a square.

The bore distance *m* of the foot clamp mountings GN 473 is matched with the clamp mountings GN 477 and the flanged bolts GN 480 as well as retaining magnets GN 51.6.

The standard version of the clamping screw is a socket cap screw with hexagonal socket DIN 912. It can be replaced by an adjustable clamping lever GN 511 (see table of dimensions).

see also...

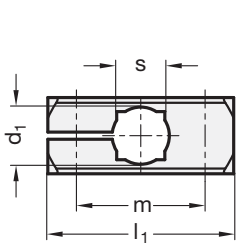
- Flanged bolts GN 480 → Page 1084
- Retaining rods / tubes GN 480.1 → Page 1085

How to order

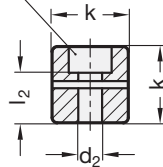
GN473-B12-MT

1 d<sub>1</sub>

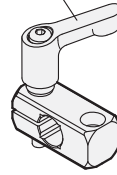
2 Finish



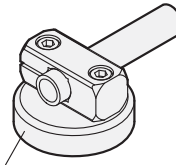
Countersunk for socket cap screw DIN 912



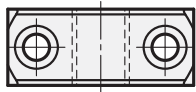
Adjustable clamping lever GN 511




Application example



Retaining magnet GN 51.6



$d_1$ Bore B for shaft tol. h11	k	$d_2$ for screw	$l_1$	$l_2$	m	s Square V	Clamping lever for $d_2$ 
B 8	14	M 4	31,5	10	22	-	GN 511-M4-20
B 10	16	M 5	38	10,5	27	8	GN 511-M5-25
B 12	16	M 5	38	10,5	27	10	GN 511-M5-25
B 15	20	M 6	45	14	32	12	GN 511-M6-25
B 16	20	M 6	45	14	32	-	GN 511-M6-25
B 20	25	M 6	50	14	36	16	GN 511-M6-32

Specification

- Aluminium
  - matt, slide ground **MT**
  - anodized, black **ELS**
- Adjustable clamping levers GN 511
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1086
- Stainless Steel characteristics → Page 1144
- RoHS-compliant



Information

The clamp mountings GN 477 have no thread. Fixing or clamping is made via two threads on the attachment side.

The bore distance  $m$  of the clamp mountings GN 477 is matched with the foot clamp mountings GN 473 and the flanged bolts GN 480 as well as retaining magnets GN 51.6.

see also...

- Flanged bolts GN 480 → Page 1084
- Retaining rods / tubes GN 480.1 → Page 1085

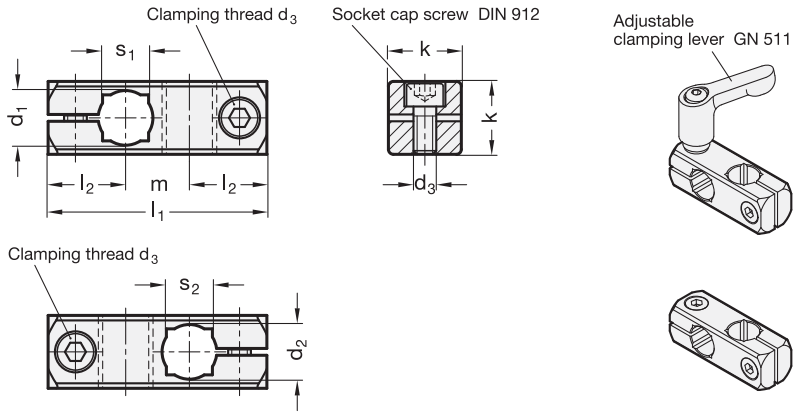
How to order

GN477-B12-MT

1  $d_1$

2 Finish

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



<b>1</b> <b>d<sub>1</sub></b> Bore B for shaft tol. h11	<b>2</b> <b>d<sub>2</sub></b> Bore B for shaft tol. h11	<b>k</b>	<b>d<sub>3</sub></b> Clamping thread	<b>l<sub>1</sub></b>	<b>l<sub>2</sub></b>	<b>m</b>	<b>s<sub>1</sub></b> Square V	<b>s<sub>2</sub></b> Square V	Clamping lever for d <sub>3</sub> Distance bushing
B 8	B 8	14	M 4	37	13,5	10	-	-	GN 511-M4-14
B 10	B 8	16	M 5	46	17	12	8	-	GN 511-M5-16
B 10	B 10	16	M 5	46	17	12	8	8	GN 511-M5-16
B 12	B 8	16	M 5	48	17	14	10	-	GN 511-M5-16
B 12	B 12	16	M 5	48	17	14	10	10	GN 511-M5-16
B 15	B 10	20	M 6	58	20,5	17	12	8	GN 511-M6-20
B 15	B 12	20	M 6	58	20,5	17	12	10	GN 511-M6-20
B 15	B 15	20	M 6	58	20,5	17	12	12	GN 511-M6-20
B 16	B 12	20	M 6	59	20,5	18	-	10	GN 511-M6-20
B 16	B 16	20	M 6	59	20,5	18	-	-	GN 511-M6-20
B 20	B 15	25	M 6	65	21,5	22	16	12	GN 511-M6-25
B 20	B 16	25	M 6	65	21,5	22	16	-	GN 511-M6-25
B 20	B 20	25	M 6	65	21,5	22	16	16	GN 511-M6-25

**Specification**

- Aluminium
  - matt, slide ground **MT**
  - anodized, black **ELS**
- Socket cap screws DIN 912  
Stainless Steel AISI 304
- Adjustable clamping levers GN 511
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1086
- Stainless Steel characteristics → Page 1144
- RoHS-compliant



**Information**

The standard version of the clamping screw is a socket cap screw with hexagonal socket DIN 912. It can be replaced by an adjustable clamping lever GN 511 (see table of dimensions).

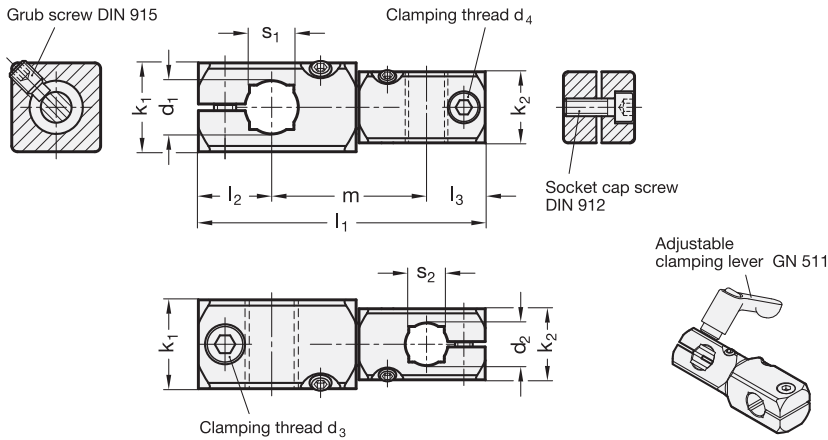
see also...

- Retaining rods / tubes GN 480.1 → Page 1085

How to order

**GN474-B12-B12-ELS**

<b>1</b>	<b>d<sub>1</sub></b>
<b>2</b>	<b>d<sub>2</sub></b>
<b>3</b>	<b>Finish</b>



<b>d<sub>1</sub></b> Bore B for shaft tol. h11	<b>d<sub>2</sub></b> Bore B for shaft tol. h11	<b>k<sub>1</sub></b>	<b>k<sub>2</sub></b>	<b>d<sub>3</sub></b> Claming thread	<b>d<sub>4</sub></b> Claming thread	<b>l<sub>1</sub></b>	<b>l<sub>2</sub></b>	<b>l<sub>3</sub></b>	<b>m</b>	<b>s<sub>1</sub></b> Square V	<b>s<sub>2</sub></b> Square V	Clamping lever for d <sub>3</sub>	Clamping lever for d <sub>4</sub>
B 8	B 8	16	16	M 4	M 4	52,5	13	13	26,5	-	-	GN 511-M4-16	GN 511-M4-16
B 10	B 8	20	16	M 5	M 4	58	15,5	13	29,5	8	-	GN 511-M5-20	GN 511-M4-16
B 10	B 10	20	20	M 5	M 5	63,5	15,5	15,5	32,5	8	8	GN 511-M5-20	GN 511-M5-20
B 12	B 8	20	16	M 5	M 4	62	16,5	13	32,5	10	-	GN 511-M5-20	GN 511-M4-16
B 12	B 12	20	20	M 5	M 5	71,5	16,5	16,5	38,5	10	10	GN 511-M5-20	GN 511-M5-20
B 15	B 10	25	16	M 6	M 4	75,5	20	15,5	40	12	8	GN 511-M6-25	GN 511-M4-16
B 15	B 12	25	20	M 6	M 5	79,5	20	16,5	43	12	10	GN 511-M6-25	GN 511-M5-20
B 15	B 15	25	25	M 6	M 6	87,5	20	20	47,5	12	12	GN 511-M6-25	GN 511-M6-25
B 16	B 12	25	20	M 6	M 5	81	20	16,5	44,5	-	10	GN 511-M6-25	GN 511-M5-20
B 16	B 16	25	25	M 6	M 6	90,5	20	20	50,5	-	-	GN 511-M6-25	GN 511-M6-25

**Specification**

- Aluminium
  - matt, slide ground
  - anodized, black
- Socket cap screws DIN 912  
Stainless Steel AISI 304
- Grub screw DIN 915  
Stainless Steel AISI 304
- Adjustable clamping levers GN 511
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1086
- Stainless Steel characteristics → Page 1144
- RoHS-compliant

**Information**

Twistable two-way clamp mountings GN 475 connect rods and tubes within the clamp mounting system under any adjustable angle. With the angle adjustment released, the clamp mounting halves stay connected with formlocking effect.

The standard version of the clamping screw is a socket cap screw with hexagonal socket DIN 912. It can be replaced by an adjustable clamping lever GN 511 (see table of dimensions).

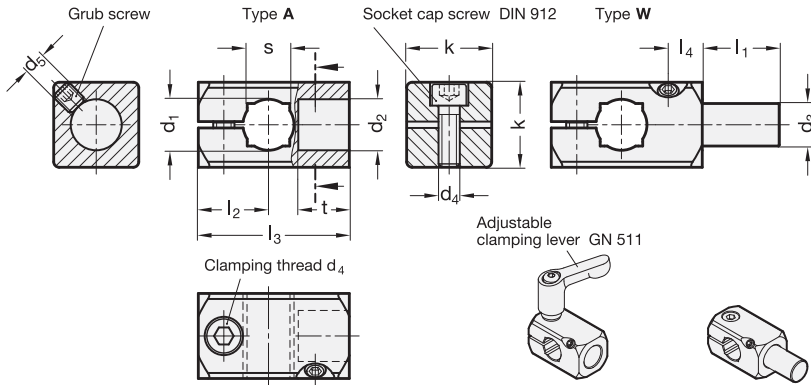
see also...

- Retaining rods / tubes GN 480.1 → Page 1085


How to order	
1	d <sub>1</sub>
2	d <sub>2</sub>
3	Finish

**GN475-B10-B10-MT**

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



**3** Type  
**A** with bore  
**W** with bolt

<b>1</b> $d_1$ Bore B for shaft tol. h11	<b>2</b> $d_2$ Type A	<b>2</b> $d_3$ Type W	$k$	$d_4$ Clamping thread	$d_5$	$l_1$	$l_2$	$l_3$	$l_4$	$t$	$s$ Square V	Clamping lever for $d_4$  Distance bushing
B 8	B 8	8	16	M 4	M 4	16	13	26	5,5	8	-	GN 511-M4-16
B 10	B 10	10	20	M 5	M 5	17	15,5	31,5	7	10	8	GN 511-M5-20
B 12	B 12	12	20	M 5	M 5	19	16,5	35,5	8	12	10	GN 511-M5-20
B 15	B 15	15	25	M 6	M 6	21	20	43,5	10	15	12	GN 511-M6-25
B 16	B 16	16	25	M 6	M 6	24	20	45	11	16	-	GN 511-M6-25

**Specification**

- Aluminium
  - matt, slide ground **MT**
  - anodized, black **ELS**
- Bolt (Type W)  
Steel zinc plated, blue passivated
- Socket cap screw DIN 912  
Stainless Steel AISI 304
- Grub screw DIN 913 (Type A)  
Stainless Steel AISI 304
- Grub screw DIN 915 (Type W)  
Stainless Steel AISI 304
- Adjustable clamping levers GN 511
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1086
- Stainless Steel characteristics → Page 1144
- RoHS-compliant

**4** Information

The T-Clamp mountings GN 476 (Type W) are an alternative to twistable two-way clamp mountings GN 475 if high angular forces are required.

The standard version of the clamping screw is a socket cap screw with hexagonal socket DIN 912. It can be replaced by an adjustable clamping lever GN 511 (see table of dimensions).

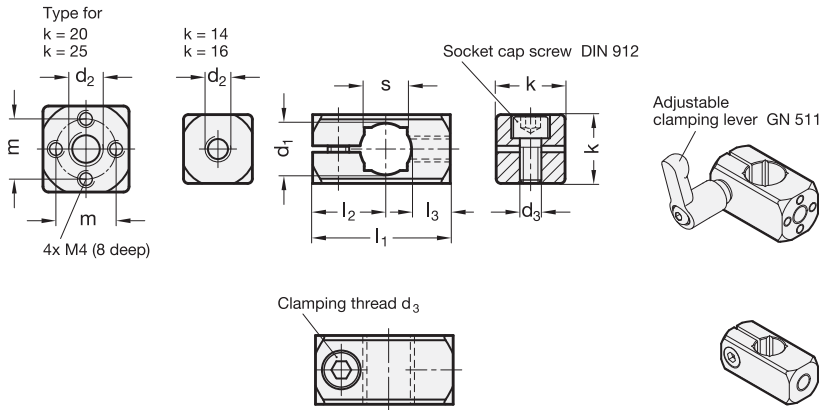
see also...


- Retaining rods / tubes GN 480.1 → Page 1085

T-Clamp mounting	<b>1</b> $d_1$
	<b>2</b> $d_2$
<b>GN476-B12-B12-A-MT</b>	<b>3</b> Type
	<b>4</b> Finish

T-Clamp mounting with bolt	<b>1</b> $d_1$
	<b>2</b> $d_3$
<b>GN476-B12-12-W-ELS</b>	<b>3</b> Type
	<b>4</b> Finish





<b>d<sub>1</sub></b> Bore B for shaft tol. h11	<b>d<sub>2</sub></b>			<b>d<sub>3</sub></b> Clamping thread	<b>k</b>	<b>m</b>	<b>l<sub>1</sub></b>	<b>l<sub>2</sub></b>	<b>l<sub>3</sub></b>	<b>s</b> Square V	Clamping lever for d <sub>3</sub> 
B 8	M 5	-	-	M 4	14	-	25	13,5	7,5	-	GN 511-M4-14
B 10	M 5	M 6	M 8	M 5	16	-	30	17	8	8	GN 511-M5-16
B 12	M 5	M 6	M 8	M 5	16	-	32	17	9	10	GN 511-M5-16
B 15	M 6	M 8	-	M 6	20	14	40	20,5	12	12	GN 511-M6-20
B 16	M 6	M 8	-	M 6	20	14	40	20,5	11,5	-	GN 511-M6-20
B 20	M 8	M 10	-	M 6	25	17	45	21,5	12	16	GN 511-M6-25

**Specification**

- Aluminium
  - matt, slide ground **MT**
  - anodized, black **ELS**
- Socket cap screws DIN 912  
Stainless Steel AISI 304
- Adjustable clamping levers GN 511
  - Zinc die casting
  - Inserts / Distance bushings  
Stainless Steel AISI 303 → Page 1086
- Stainless Steel characteristics → Page 1144
- RoHS-compliant

**Information**

Clamp mountings GN 478 are primarily designed for mounting sensor holders GN 479 and retaining plates GN 479.1. They are fitted with a central thread and, with d<sub>1</sub> = B15 bore and higher, an additional bore template 4 x M4.

The standard clamping screw is a socket cap screw with hexagonal socket DIN 912. It can be replaced by an adjustable clamping lever GN 511 (see table of dimensions).

see also...

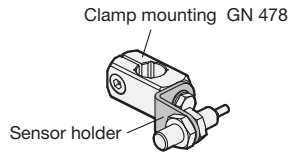
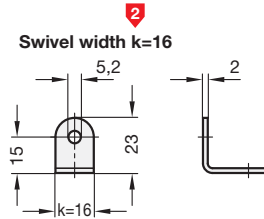
- Sensor holders GN 479 → Page 1082
- Retaining plates GN 479.1 → Page 1083

How to order

**GN478-B16-M6-ELS**

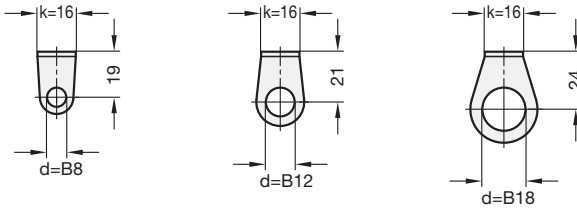
1	d <sub>1</sub>
2	d <sub>2</sub>
3	Finish

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



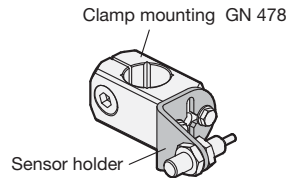
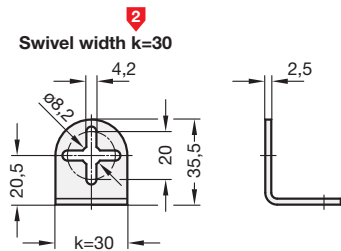
**1**

Front views for different bore- $\varnothing$  d



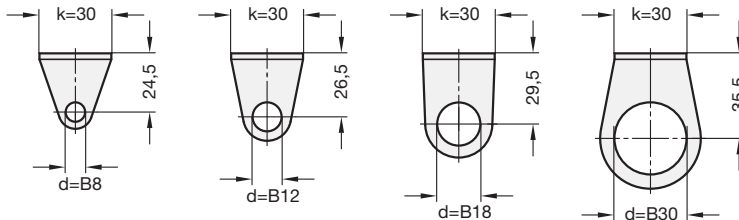
ROSTFREI  
 Rost  
 frei

Inox  
 Stainless  
 Steel



**1**

Front views for different bore- $\varnothing$  d



## Specification

- Stainless Steel AISI 303  
matt shot-blasted
- *Stainless Steel characteristics* → Page 1144
- **RoHS-compliant**

## Information

The sensor holders GN 479 are designed for holding sensors attached with two lock nuts.

The attachment bore matches the central thread of clamp mountings GN 478. For  $k=30$ , the cross-shaped slotted holes provide extra adjustability and allow the use of two fixing screws.

Fixing screws have to be ordered separately.

see also...

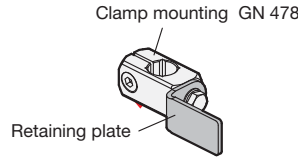
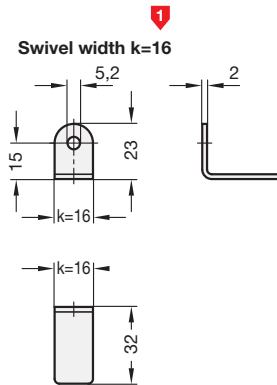
- *Clamp mountings (with threaded holes) GN 478* → Page 1081
- *Retaining plates GN 479.1 (without bore d)* → Page 1083
- *More fixing elements for sensors:*  
GN 271.4 / GN 272.4 / GN 273.4 → Page 1024 - 1026

How to order

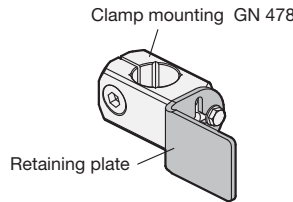
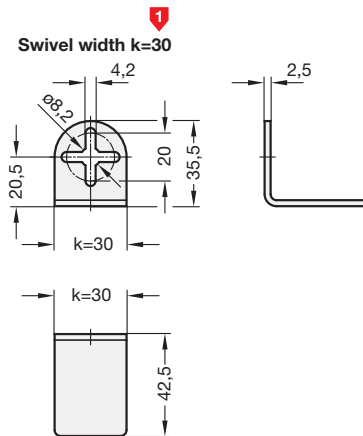
**GN479-B12-16**

**1** d

**2** k



ROSTFREI  
Inox  
Stainless  
Steel



**Specification**

- Stainless Steel AISI 303  
matt shot-blasted
- *Stainless Steel characteristics* → Page 1144
- **RoHS-compliant**

**Information**

Retaining plates GN 479.1 are designed as universal mounting elements, e.g. for integrating specific hole patterns.

The attachment bore matches the central thread of clamp mountings GN 478. For  $k=30$ , the cross-shaped slotted holes provide extra adjustability and allow the use of two fixing screws.

Fixing screws have to be ordered separately.

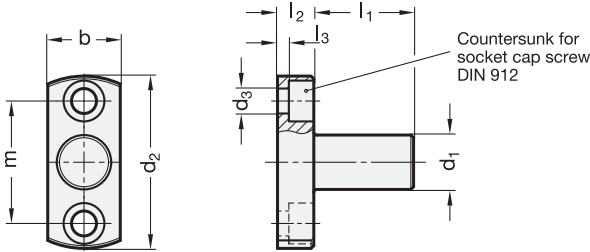
see also...

- *Clamp mountings (with threaded holes) GN 478* → Page 1081

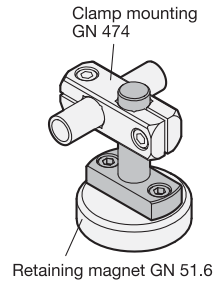
How to order

**GN479.1-16**

1 k



**Application example**



1 2

$d_1$ h9	$l_1$		$b$	$d_2$	$d_3$ for screw	$l_2$	$l_3$	$m$
8	18	32	14	31,5	M 4	6	2	22
10	21	37	16	38	M 5	8	2,5	27
12	22	39	16	38	M 5	8	2,5	27
15	27,5	47,5	20	45	M 6	10	4	32
16	28	49	20	45	M 6	10	4	32
20	35	60	25	50	M 6	10	4	36

**Specification**

- Steel zinc plated, blue passivated
- RoHS-compliant

**Information**

Flanged bolts GN 480 are used in connection with clamp mountings, as foot or as connecting element, e.g. for adjustments in width and height.

With their low flange height, they provide an alternative for the foot clamp mounting GN 473 in applications where clamping is required at low height above the clamping surface.

The bore distance  $m$  of the flanged bolts GN 480 is matched with the clamp mountings GN 473 and GN 477 as well as with retaining magnets GN 51.6.

see also...

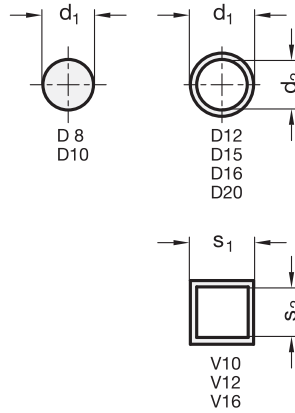
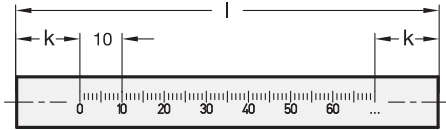
- Foot clamp mountings GN 473 → Page 1076
- Clamp mountings GN 477 → Page 1077

How to order

**GN 480-12-39**

1  $d_1$

2  $l_1$



**Rostfrei**  
Inox  
Stainless  
Steel

**4 Type**  
**OS** without scale  
**LS** with scale  
(mm-graduation)

d <sub>1</sub> Diameter D Material NI	s <sub>1</sub> Square V Material AL	Length l					d <sub>2</sub>	s <sub>2</sub>	k
		100	150	200	250	300			
D 8	-	100	150	200	250	300	-	-	15
D 10	V 10	100	150	200	250	300	-	7	15
D 12	V 12	100	150	200	250	300	9	9	15
D 16	V 16	100	150	200	250	300	13	13	20
D 20	-	100	150	200	250	300	16	-	25

**Specification**

- Retaining rods / tubes, round  
Stainless Steel AISI 304  
ground **NI**
- Retaining square tubes  
Aluminium  
anodized natural colour **AL**
- Longitudinal scale engraved  
in laser precision
- Stainless Steel characteristics → Page 1144
- RoHS-compliant

**On request**

- Special scales

**Information**

The outside dimensions of the retaining rods / retaining tubes GN 480.1 are matched for use with clamp mountings.

The retaining tubes can also be used as cable lead-through.

Retaining rod

**GN480.1-D10-150-NI-LS**

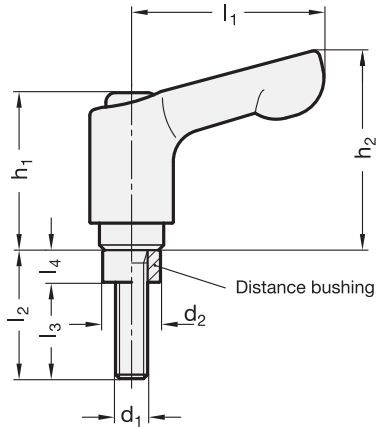
1	d <sub>1</sub>
2	Length l
3	Material
4	Type

Retaining tube

**GN480.1-V16-300-AL-OS**

1	s <sub>1</sub>
2	Length l
3	Material
4	Type

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



1

2

Clamping kit Order no.	d <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>3</sub>	l <sub>4</sub>	h <sub>1</sub>	h <sub>2</sub>
GN 511-M4-14	M 4	14	7,5	30	9,5	4,5	24,5	30,5
GN 511-M4-16	M 4	16	7,5	30	11,5	4,5	24,5	30,5
GN 511-M4-20	M 4	20	7,5	30	15,5	4,5	24,5	30,5
GN 511-M5-16	M 5	16	9	30	10	6	24,5	30,5
GN 511-M5-20	M 5	20	9	30	14	6	24,5	30,5
GN 511-M5-25	M 5	25	9	30	19	6	24,5	30,5
GN 511-M6-20	M 6	20	10,5	45	13,5	6,5	24,5	35
GN 511-M6-25	M 6	25	10,5	45	18,5	6,5	24,5	35
GN 511-M6-32	M 6	32	10,5	45	25,5	6,5	24,5	35

### Specification

- Handle  
Zinc die casting  
plastic coated  
silver, RAL 9006, textured finish
- Insert / Distance bushing  
Stainless Steel AISI 303
- *Stainless Steel characteristics* → Page 1144
- **RoHS-compliant**

### Information

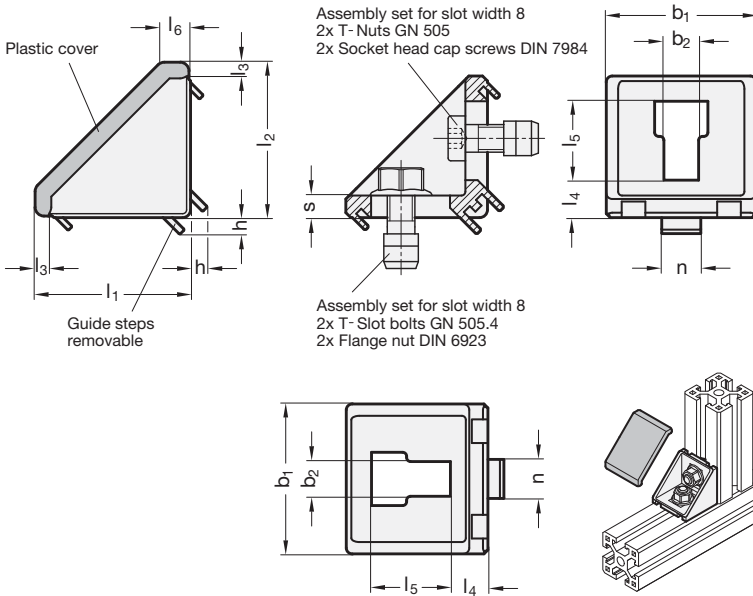
For clamp mountings, the clamping kits GN 511 replace the hexagon socket screw DIN 912. It is used on all clamping points where repeated clamping actions are required, e.g. for adjusting a stop mechanism.

The matching clamping kits for each clamping thread are listed in the dimensional tables of the clamp mountings.

How to order

GN511-M5-25

1 d<sub>1</sub>2 l<sub>2</sub>



5 Type

- A without assembly set, without cover
- B with assembly set, with cover

1 $b_1$		2 $n$		3 $l_1$		4 $l_2$		5 $b_2$		6 $h$		7 $l_3$		8 $l_4$		9 $l_5$		10 $l_6$		11 $s$	
nominal size	actual size																				
30	28	8	30	30	6,3	2,1	3	9,7	10,4	6,8	5,9										
40	38	10	40	40	8,5	4,1	4	9,5	20	7,2	5,6										
45	43	10	45	45	8,5	4,1	4	15,7	18,7	11,5	9,7										

Specification

- Aluminium  
Die casting  
- matt shot-blasted **MT**  
- plastic coated  
black, RAL 9005, textured finish ● **SW**  
silver, RAL 9006, textured finish ● **SR**
- T-Slot bolt GN 505.4  
with Hexagon flange nut DIN 6923  
Steel  
zinc plated, blue passivated
- T-Nuts GN 505  
with Socket head cap screw DIN 7984  
Steel  
zinc plated, blue passivated
- Cover  
Plastic (Polyamide PA)  
black, matt
- RoHS-compliant

6

Information

To fix the GN 960 angle pieces in place, insert the assembly sets into the profile slot through the opening. When tightened, the nut or screw will be cross-positioned and so anchored in the slot.

For crossing profiles or when using the angle piece with elements without slot, the superfluous guide steps can be simply broken out.

After assembly, the cover caps are snapped into place via four lugs. They lend the angle piece an attractive appearance and protect against dirt.

Even after repeated use, the cover caps will remain firmly in place inside the angle pieces thanks to the elastic snap-type lugs. If required, these are also available individually under standard GN 963 → Page 1089.

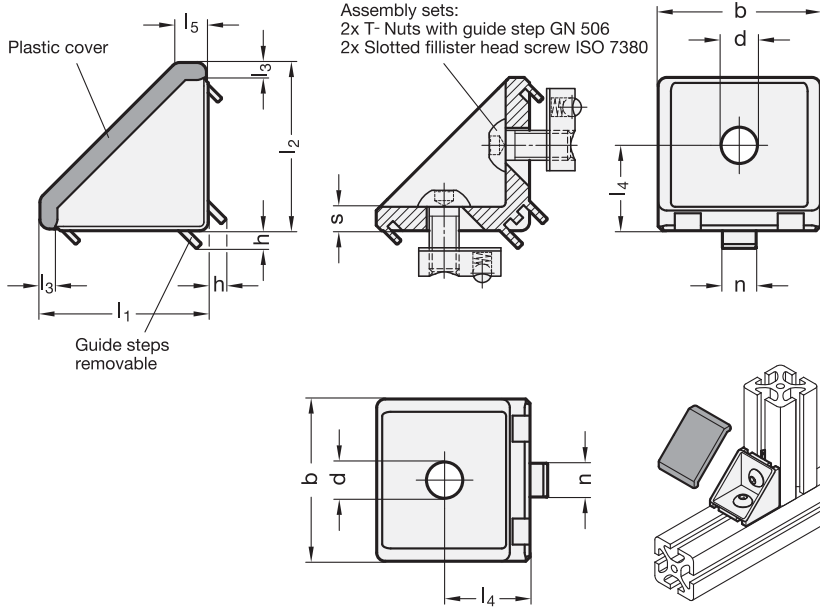
see also...

- T-Slot bolts GN 505.4 → Page 566
- T-Nuts GN 505 → Page 567

How to order	
1	$b_1$
2	$n$
3	$l_1$
4	$l_2$
5	Type
6	Finish

1 2 3 4 5 6  
**GN960-45-10-45-45-A-SW**

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



**5 Type**

- A** without assembly set, without cover
- B** with assembly set, with cover

<b>1</b> <b>b</b>		<b>2</b> <b>n</b>	<b>3</b> <b>l<sub>1</sub></b>	<b>4</b> <b>l<sub>2</sub></b>	<b>d</b>	<b>h</b>	<b>l<sub>3</sub></b>	<b>l<sub>4</sub></b>	<b>l<sub>5</sub></b>	<b>s</b>
nominal size	actual size									
30	28	6	30	30	6,3	2,6	3	15	6,8	5,9
40	38	8	40	40	8,5	4,1	4	20	7,2	5,6

**Specification**

- Aluminium  
Die casting  
- matt shot-blasted **MT**  
- plastic coated **● SW**  
black, RAL 9005, textured finish **● SR**  
silver, RAL 9006, textured finish
- T-Nuts with guide step GN 506  
Steel  
zinc plated, blue passivated
- Slotted fillister head screw ISO 7380  
Steel  
zinc plated, blue passivated
- Cover  
Plastic (Polyamide PA)  
black, matt
- RoHS-konform

**6**

**Information**

To fix the GN 961 angle pieces in place, first insert the nuts of the assembly set into the profile slot and fix the angle piece with the slotted fillister head screw. The guide step of the nut will then position these in parallel and centered to the slot; the spring element counteracts inadvertent sideways slip.

For crossing profiles or when using the angle piece with elements without slot, the superfluous guide steps can be simply broken out.

After assembly, the cover caps are snapped into place via four lugs. They lend the angle piece an attractive appearance and protect against dirt.

Even after repeated use, the cover caps will remain firmly in place inside the angle pieces thanks to the elastic snap-type lugs. If required, these are also available individually under standard GN 963 → Page 1089.

see also...

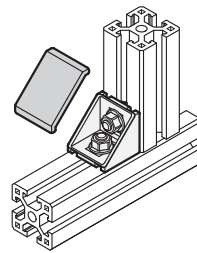
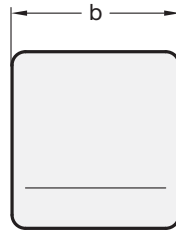
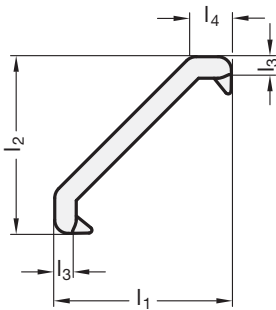
- T-Nuts with guide step GN 506 → Page 570

**How to order**

<b>1</b>	<b>b</b>
<b>2</b>	<b>n</b>
<b>3</b>	<b>l<sub>1</sub></b>
<b>4</b>	<b>l<sub>2</sub></b>
<b>5</b>	<b>Type</b>
<b>6</b>	<b>Finish</b>

**GN961-30-6-30-30-B-MT**





1

2

3

b		l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>
Nominal size	Actual size				
30	28	30	30	3	6,8
40	38	40	40	4	7,2
45	43	45	45	4	11,5

**Specification**

- Plastic (Polyamide PA) black, RAL 9005, textured finish ● **SW**
- RoHS compliant

**Information**

The cover caps GN 963 are suitable for use with angle pieces for profile systems GN 960 and GN 961. After assembly the angle pieces, the cover caps are snapped into place via four lugs. They lend the angle piece an attractive appearance and protect against dirt.

Even after repeated use, the cover caps will remain firmly in place inside the angle pieces thanks to the elastic snap-type lugs.

see also...

- Angle pieces for profile systems 30 / 40 / 45 GN 960 → Page 1087
- Angle pieces for profile systems 30 / 40 GN 961 → Page 1088

How to order

1 2 3 4  
**GN963-40-40-40-SW**

1	b
2	l <sub>1</sub>
3	l <sub>2</sub>
4	Finish



# 2.9 Retaining magnets



2.1

2.2

2.3

2.4

2.5

2.6

2.7

2.8

2.9



## 2.9 Retaining magnets



 <p><b>GN 50.1</b> Retaining magnets without thread</p> <p>→ Page 1097</p>	 <p><b>GN 58</b> Pot magnets with bore</p> <p>→ Page 1104</p>	 <p><b>GN 53.1</b> Magnets Plastic</p> <p>→ Page 1111</p>
 <p><b>GN 50.2</b> Retaining magnets with female thread</p> <p>→ Page 1098</p>	 <p><b>GN 51.2</b> Retaining magnets with rubber jacket</p> <p>→ Page 1105</p>	 <p><b>GN 52.1</b> Retaining magnets smooth finish</p> <p>→ Page 1112</p>
 <p><b>GN 50.25</b> Retaining magnets with female thread Stainless Steel</p> <p>→ Page 1099</p>	 <p><b>GN 51.5</b> Retaining magnets with rubber jacket</p> <p>→ Page 1106</p>	 <p><b>GN 54.1</b> Retaining magnets smooth finish Brass</p> <p>→ Page 1113</p>
 <p><b>GN 50.3</b> Retaining magnets with threaded stud</p> <p>→ Page 1100</p>	 <p><b>GN 51.3</b> Retaining magnets with rubber jacket</p> <p>→ Page 1107</p>	 <p><b>GN 52.2</b> Retaining magnets with female thread</p> <p>→ Page 1114</p>
 <p><b>GN 50.5</b> Retaining magnets with female thread</p> <p>→ Page 1101</p>	 <p><b>GN 51.4</b> Retaining magnets with rubber jacket</p> <p>→ Page 1108</p>	 <p><b>GN 52.3</b> Retaining magnets with female thread</p> <p>→ Page 1115</p>
 <p><b>GN 50.4</b> Retaining magnets with bore / with female thread</p> <p>→ Page 1102</p>	 <p><b>GN 51.6</b> Retaining magnets with rubber jacket, with two female threads</p> <p>→ Page 1109</p>	 <p><b>GN 52.4</b> Retaining magnets with stud</p> <p>→ Page 1116</p>
 <p><b>GN 50.45</b> Retaining magnets with bore Stainless Steel</p> <p>→ Page 1103</p>	 <p><b>GN 51.7</b> Magnets with ball knob / with key ring</p> <p>→ Page 1110</p>	 <p><b>GN 52.5</b> Retaining magnets with rubber jacket Stainless Steel</p> <p>→ Page 1117</p>



**GN 60**  
**Button-type magnets**  
with bore

→ Page 1118



**GN 62**  
**U-Magnets**  
with bore

→ Page 1119



**GN 251.6**  
**Setting bolts**  
with retaining magnet

→ Page 1120



**GN 913.6**  
**Grub screws**  
with retaining magnet

→ Page 1121

2.1

2.2

2.3

2.4

2.5

2.6

2.7

2.8

2.9

# Retaining magnets



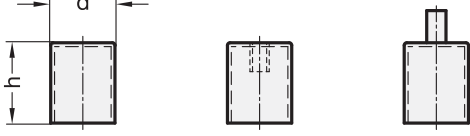
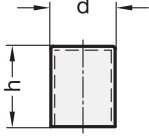
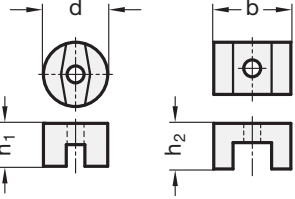
Types / Range of



Retaining magnets are simple problem solvers for no-wear fixings.

Owing to their structure, these magnet systems have only one adhesion level. The magnets and iron poles are optimal arranged such that the whole of the magnetic energy is focused on the adhesive surface.

The spatial effect of the magnetic field is limited in shielded systems, with the effect that surrounding objects are not magnetised.

<b>Flat gripper</b>	$\varnothing d = 6 \dots 125$ $h = 4,5 \dots 26$ Housing steel, zinc plated, red lacquered or Stainless Steel
	
	$\varnothing d = 12 \dots 88$ $h = 6 \dots 8,5$ Housing steel, zinc plated, with rubber jacket
	
<b>Rod gripper</b>	$\varnothing d = 4 \dots 63$ $h = 10 \dots 65$ Housing steel, zinc plated or red lacquered
	
	$\varnothing d = 6 \dots 32$ $h = 20 \dots 40$ Sandwich configuration of the steel poles , housing brass
	
<b>Button-type / U-Magnets</b>	$\varnothing d = 13 \dots 32$ $h_1 = 10 \dots 25,4$ $b = 22 \dots 79$ $h_2 = 17 \dots 54$ Cast, unshielded systems, red lacquered
	

# Retaining magnets

Materials of the magnet



## Hard ferrite (HF)

SrFe (Strontium ferrite)

Magnets made of hard ferrite (80% iron oxide) are made by sintering process.

Like all ceramic materials, these magnets are very hard and brittle and virtually non-machinable.

The magnetic adhesive force drops when the magnet is heated.

## AlNiCo (AN)

Aluminium nickel cobalt

Magnets made of AlNiCo (main constituents include aluminium, nickel, cobalt and iron) are made by sintering or casting process.

The material is very hard and tough, but can be redressed.

These magnets are used in applications in which the magnetic field is to remain as static and stable as possible, also under higher temperature fluctuations.

## SmCo (SC)

Samarium cobalt

Magnets made of SmCo (main constituents include samarium and cobalt) are made by sintering process.

The material is very hard and brittle and is virtually non-machinable.

The magnetic adhesive force drops when the magnet is heated.

## NdFeB (ND)

Neodymium iron boron

Magnets made of NdFeB (main constituents include neodymium, iron and boron) are made by sintering process.

The material is very hard and brittle and is virtually non-machinable.

This material delivers ultimate magnetic holding power.

The magnetic adhesive force drops when the magnet is heated.

## Materials of the magnet in comparison:

Description	Hard ferrite (HF)	AlNiCo (AN)	SmCo (SC)	NdFeB (ND)
Adhesive force	good	medium	strong	very strong
Max. working temperature *	≈ 200 °C	≈ 450 °C	≈ 200 °C	≈ 80 °C
Corrosion resistance	very good	very good	good	less good
Machineability	not possible	diamond cutting, grinding	not possible	not possible
Demagnetisation capability	moderate by demagnetising fields	easy by demagnetising fields	very difficult only by large demagnetising fields	difficult only by large demagnetising fields
Price	very reasonable	high	very high	reasonable

\* The max. temperature used is only a guide value because it also depends on the dimensions of the magnet.



**Other factors apart from the magnet material and the size of the magnet affecting the magnetic adhesive force are:**

- an air gap (magnetically non-conductive materials act like an air gap)
- the quality of the surface (roughness and shape)
- the temperature
- the content of ferro-magnetic material in the steel; the components must also be sufficiently thick to be able to absorb the entire magnetic flux.

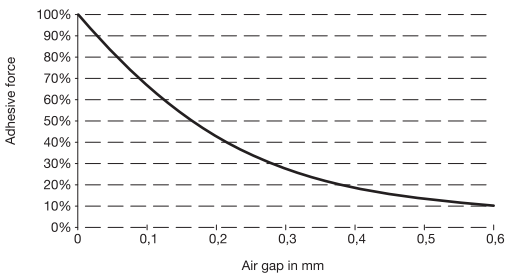
The magnetic adhesive force can also be impaired by alternating thermal stress and by chemical factors (aggressive baths, gases, etc.).

The diagrams and graphs below show guide values relating to the impact on the magnetic adhesive force caused by different mechanical specifications.

The nominal magnetic adhesive forces shown in the tables of the standard pages are minimum values which are achieved at:

- room temperature
- perpendicular „tear-off“ under full surface contact of the magnet
- workpieces made of low-carbon steel with a minimum thickness of 10 mm

**Influence of the air gap**

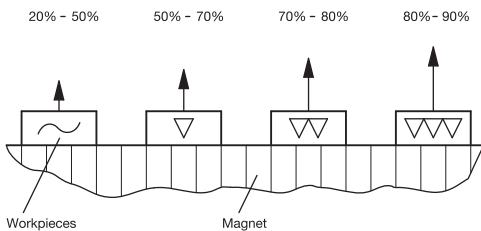


**Influence of the material (steel grade), examples**

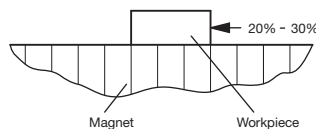
100%	technical pure iron	86%	C60, X6Cr17
95%	St37, C15	84%	42CrMo4
94%	St44-2, 34CrNiMo6	75%	St50
93%	St52-3	72%	X155CrMo12
92%	90MnV8	65%	X210CrW12
90%	C45	50%	20MnCr5
87%	Ck45	30%	GG

Hardened workpieces are bad conductors of the magnetic flux. The magnetic adhesive force is therefore lower.

**Influence of the workpiece surface on the magnetic adhesive force**

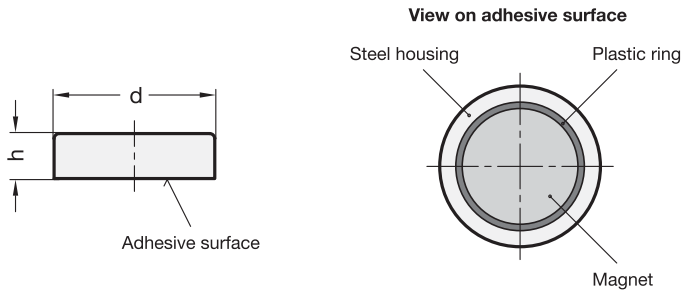


**Displacement force = 20% - 30% of the magnetic adhesive force**



The displacement force is also influenced by the surface roughness and the adhesion.





2

d	Tolerances		h	Tolerances		Nominal adhesive forces in N		
	HF	SC / ND		HF	SC / ND	HF Hard ferrite	SC SmCo	ND NdFeB
6	-	±0,1	4,5	-	±0,1	-	5	5
8	-	±0,1	4,5	-	±0,1	-	11	13
10	±0,1	±0,1	4,5	+0,2/-0,1	±0,1	4	20	25
13	±0,1	±0,1	4,5	+0,2/-0,1	±0,1	10	40	60
16	±0,1	±0,1	4,5	+0,2/-0,1	±0,1	18	60	95
20	±0,1	±0,1	6	+0,2/-0,1	±0,1	30	90	140
25	±0,1	±0,1	7	+0,3/-0,1	±0,2	40	150	200
32	±0,1	±0,1	7	+0,3/-0,1	±0,2	80	220	350
40	+0,2/-0,1	-	8	+0,4/-0,1	-	125	-	-
50	+0,2/-0,1	-	10	+0,5/-0,1	-	220	-	-
63	+0,3/-0,1	-	14	+0,5/-0,1	-	350	-	-
80	+0,5/-0,1	-	18	+0,5/-0,1	-	600	-	-
100	+0,5/-0,1	-	22	+0,5/-0,1	-	900	-	-
125	+0,5/-0,1	-	26	+0,5/-0,1	-	1300	-	-

## Specification

- Housing  
Steel, zinc plated
- Materials of the magnet:
  - Hard ferrite **HF**  
temperature resistant up to 200 °C
  - SmCo **SC**  
Samarium, cobalt  
temperature resistant up to 200 °C
  - NdFeB **ND**  
Neodymium, iron, boron  
temperature resistant up to 80 °C

• RoHS compliant

1

## Information

Retaining magnets GN 50.1 are a shielded magnetic system.

Fixed in place by gluing or side-mounted thrust bolt (e.g. GN 913.2 grub screw with pointed nose).

see also...

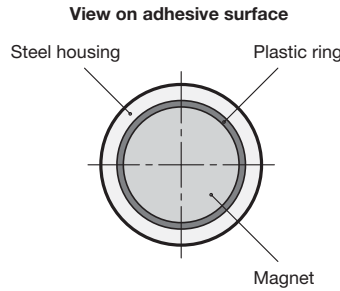
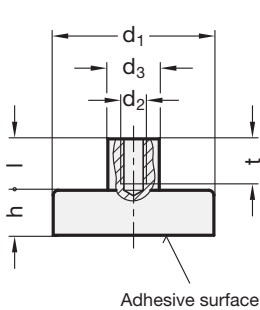
- *More information to retaining magnets* → Page 1094

How to order

GN50.1-SC-13

1 Material of the magnet

2 d



2

3

3

d <sub>1</sub>	Tolerances		Material of the magnet <b>HF</b>					Materials of the magnet <b>SC / ND</b>					Nominal adhesive forces in N		
	HF	SC / ND	d <sub>2</sub>	d <sub>3</sub>	h	l	t	d <sub>2</sub>	d <sub>3</sub>	h	l	t	HF	SC	ND
6	-	±0,1	-	-	-	-	-	M 3	6 ±0,1	4,5 ±0,1	7	6	-	5	5
8	-	±0,1	-	-	-	-	-	M 3	6 ±0,1	4,5 ±0,1	7	6	-	11	13
10	±0,1	±0,1	M 3	6 ±0,1	4,5 +0,2/-0,1	7	5	M 3	6 ±0,1	4,5 ±0,1	7	6	4	20	25
13	±0,1	±0,1	M 3	6 ±0,1	4,5 +0,2/-0,1	7	5	M 3	6 ±0,1	4,5 ±0,1	7	6	10	40	60
16	±0,1	±0,1	M 3	6 ±0,1	4,5 +0,2/-0,1	7	5	M 4	6 ±0,1	4,5 ±0,1	7	6	18	60	95
20	±0,1	±0,1	M 3	6 ±0,1	6 +0,2/-0,1	7	5	M 4	8 ±0,2	6 ±0,1	7	7	30	90	140
25	±0,1	±0,1	M 4	8 ±0,2	7 +0,3/-0,1	8	7	M 4	8 ±0,2	7 ±0,2	7	7	40	150	200
32	±0,1	±0,1	M 4	8 ±0,2	7 +0,3/-0,1	8	7	M 5	10 ±0,2	7 ±0,2	8,5	8	80	220	350
40	+0,2/-0,1	-	M 5	10 ±0,2	8 +0,4/-0,1	10	9	-	-	-	-	-	125	-	-
50	+0,2/-0,1	-	M 6	12 ±0,2	10 +0,5/-0,1	12	11	-	-	-	-	-	220	-	-
63	+0,3/-0,1	-	M 8	15 ±0,2	14 +0,5/-0,1	16	14	-	-	-	-	-	350	-	-
80	+0,5/-0,1	-	M 10	20 ±0,2	18 +0,5/-0,1	16	15	-	-	-	-	-	600	-	-
100	+0,5/-0,1	-	M 12	22 ±0,2	22 +0,5/-0,1	21	18	-	-	-	-	-	900	-	-
125	+0,5/-0,1	-	M 14	25 ±0,2	26 +0,5/-0,1	24	20	-	-	-	-	-	1300	-	-

**Specification**

- Housing / threaded bush  
Steel, zinc plated
- Materials of the magnet:
  - Hard ferrite **HF**  
temperature resistant up to 200 °C
  - SmCo **SC**  
Samarium, cobalt  
temperature resistant up to 200 °C
  - NdFeB **ND**  
Neodymium, iron, boron  
temperature resistant up to 80 °C

• RoHS compliant

1

**Information**

Retaining magnets GN 50.2 are a shielded magnetic system.

see also...

- More information to retaining magnets → Page 1094

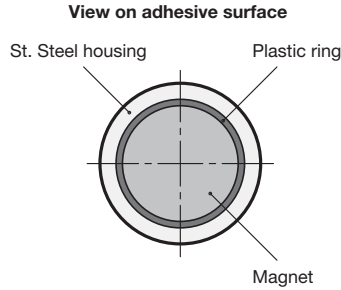
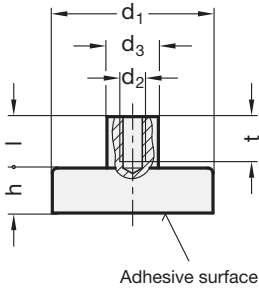
How to order

**GN 50.2-HF-20-M3**

1	Material of the magnet
2	d <sub>1</sub>
3	d <sub>2</sub>



ROSTFREI  
Inox  
Stainless  
Steel



2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9

2

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h	Length l	t	Nominal adhesive forces in N
25 ±0,1	M 5	8	7 +0,3/-0,1	9	8,25	32
32 ±0,1	M 5	8	7 +0,3/-0,1	9	9	64
40 +0,2/-0,1	M 5	8	8 +0,3/-0,1	8,5	9	100
50 +0,2/-0,1	M 5	8	10 +0,4/-0,1	8,5	9	175
63 +0,3/-0,1	M 5	8	14 +0,5/-0,1	8	9	280

**Specification**

- Housing / threaded bush  
Stainless Steel
- Material of the magnet  
Hard ferrite  
temperature resistant up to 220 °C
- RoHS compliant

1

HF

**Information**

Stainless Steel-Retaining magnets GN 50.25 are a shielded magnetic system.

Owing to the lower magnetic conductivity of the stainless steel housing, the adhesive forces are lower than in steel.

see also...

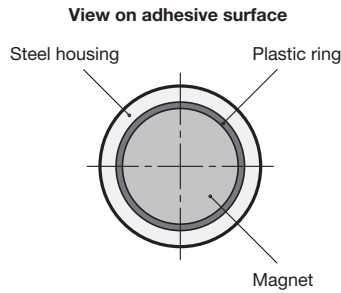
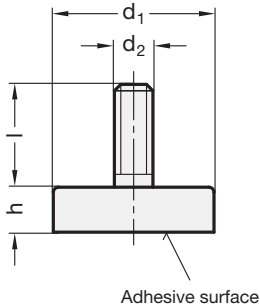
- More information to retaining magnets → Page 1094

How to order

GN 50.25-HF-50

1 Material of the magnet

2 d<sub>1</sub>



$d_1$	Tolerances		Material of the magnet <b>HF</b>			Material of the magnet <b>ND</b>			Nominal adhesive forces in N	
	HF	ND	$d_2$	h	Length l	$d_2$	h	Length l	HF Hard ferrite	ND NdFeB
10	$\pm 0,1$	$\pm 0,1$	M 3	4,5 +0,2/-0,1	7	M 4	4,5 $\pm 0,1$	8	4	25
13	$\pm 0,1$	$\pm 0,1$	M 3	4,5 +0,2/-0,1	7	M 5	4,5 $\pm 0,1$	8	10	60
16	$\pm 0,1$	$\pm 0,1$	M 3	4,5 +0,2/-0,1	7	M 6	4,5 $\pm 0,1$	8	18	95
20	$\pm 0,1$	$\pm 0,1$	M 3	6 +0,2/-0,1	7	M 6	6 $\pm 0,1$	10	30	140
25	$\pm 0,1$	$\pm 0,1$	M 4	7 +0,3/-0,1	8	M 6	7 $\pm 0,1$	10	40	200
32	$\pm 0,1$	$\pm 0,1$	M 4	7 +0,3/-0,1	8	M 6	7 $\pm 0,1$	10	80	350
47	+0,2/-0,1	-	M 6	9 +0,5/-0,1	8	-	-	-	180	-
63	+0,3/-0,1	-	M 6	14 +0,5/-0,1	15	-	-	-	350	-

**Specification**

- Housing / threaded stud  
Steel, zinc plated
- Materials of the magnet:
  - Hard ferrite **HF**  
temperature resistant up to 200 °C
  - NdFeB **ND**  
Neodymium, iron, boron  
temperature resistant up to 80 °C
- RoHS compliant



**Information**

Retaining magnets GN 50.3 are a shielded magnetic system.

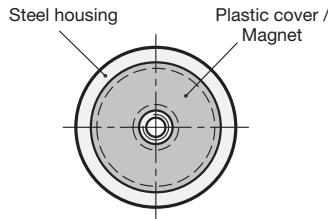
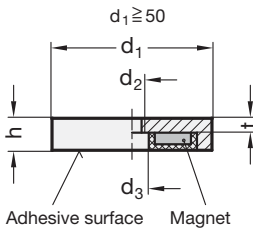
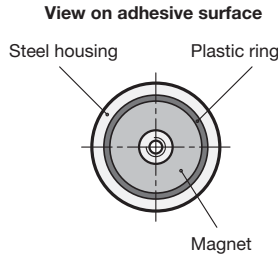
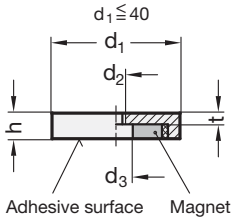
see also...

- More information to retaining magnets → Page 1094

How to order

**GN 50.3-ND-16-M6**

1	Material of the magnet
2	$d_1$
3	$d_2$



2

$d_1 \pm 0,1$	$d_2$	$d_3$	$h \pm 0,2$	$t$	Nominal adhesive forces in N
32	M 5	5,5	7	3	330
40	M 5	10,5	8	6	500
50	M 8	10,5	10	5,5	800
63	M 10	11,7	14	8,5	1100
75	M 10	13	15	8,5	1750

Specification

- Housing  
Steel, zinc plated
- Material of the magnet  
NdFeB  
Neodymium, iron, boron  
temperature resistant up to 80° C
- Plastic cover  
Technopolymer (Polyamide PA)
- Plastic characteristics → Page 1141
- RoHS compliant

1

ND

Information

Retaining magnets GN 50.5 are a shielded magnetic system. For diameter  $d_1 \geq 50$  the adhesive surface is lagged with a plastic cover.

To ensure that the magnetic properties (adhesive forces) are not impaired, the fixing screws must be made of **non-magnetic** material.

see also...

- More information to retaining magnets → Page 1094

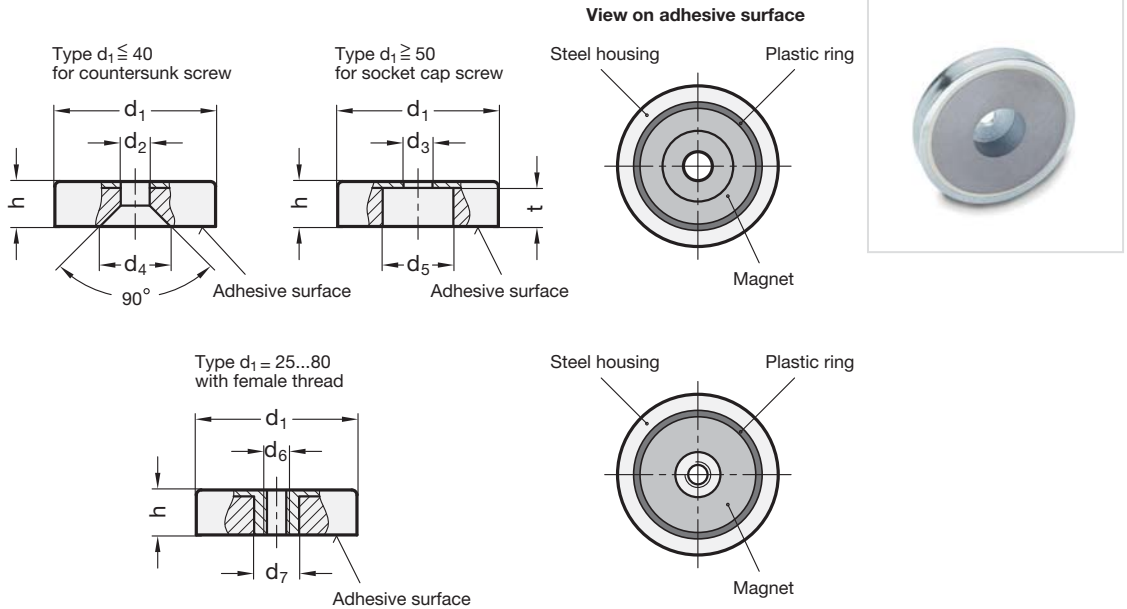
How to order

GN 50.5-ND-40

1 Material of the magnet

2  $d_1$





2

3

$d_1$	Material of the magnet HF								Material of the magnet ND			Nominal adhesive forces in N	
	$d_2$	$d_3$	$d_4$	$d_5$	$d_6$	$d_7$	t	$d_2$	$d_4$	h	HF Hard ferrite	ND NdFeB	
16 ±0,1	3,5	-	7,5	-	-	-	-	3,5	6,6	4,5 +0,2/-0,1	14	75	
20 ±0,1	4,1	-	10,5	-	-	-	-	4,5	9	6 +0,2/-0,1	27	105	
25 ±0,1	5,5	-	12	-	M 4	-	5,2	5,5	9	7 +0,3/-0,2	36	160	
32 ±0,1	5,5	-	12	-	M 4	-	5,2	5,5	11	7 +0,3/-0,1	72	310	
40 +0,2/-0,1	5,5	-	13,5	-	M 4	-	5,2	5,5	10,6	8 +0,4/-0,1	90	500	
50 +0,2/-0,1	-	8,5 ±0,2	-	22	M 6	M 8	12	8,5	-	10 +0,5/-0,1	180	-	
63 +0,3/-0,1	-	6,5 ±0,2	-	24	M 8	-	13	12	-	14 +0,5/-0,1	290	-	
80 +0,5/-0,1	-	6,5 ±0,2	-	11,5	M 8	M 10	14,5	15	-	18 +0,5/-0,1	540	-	
100 +0,5/-0,1	-	10,5 ±0,2	-	34	-	-	-	18	-	22 +0,5/-0,1	680	-	

Specification

- Housing  
Steel, zinc plated
- Materials of the magnet:
  - Hard ferrite  
temperature resistant up to 200 °C
  - NdFeB  
Neodymium, iron, boron
- RoHS compliant

1

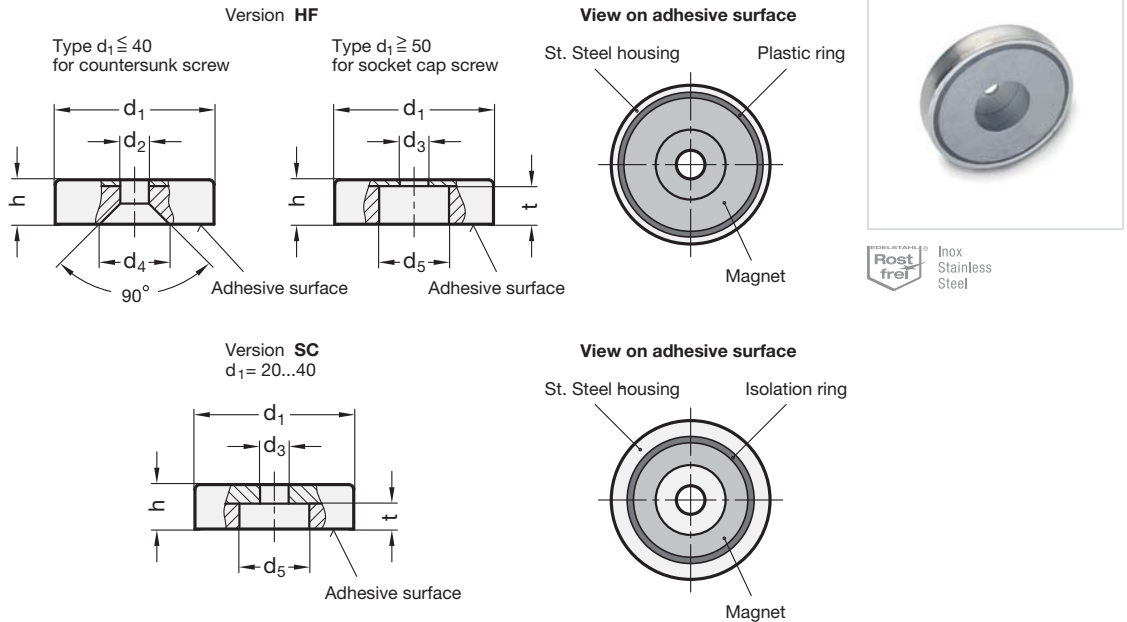
Information

Retaining magnets GN 50.4 are a shielded magnetic system. To ensure that the magnetic properties (adhesive forces) are not impaired, the fixing screws of the types for countersunk screws and socket cap screws must be made of **non-magnetic** material (magnetic not conductive).

- see also...
- More information to retaining magnets → Page 1094

Retaining magnet with bore	1	Material of the magnet
GN 50.4-HF-40	2	$d_1$

Retaining magnet with female thread	1	Material of the magnet
GN 50.4-HF-50-M8	2	$d_1$
	3	$d_6$



2

d <sub>1</sub>	Material of the magnet HF						Material of the magnet SC				Nominal adhesive forces in N	
	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	h	t	d <sub>3</sub>	d <sub>5</sub>	h	t	HF Hard ferrite	SC SmCo
20 ±0,1	4,1	-	10	-	6 +0,2/-0,1	-	4,5	8	6 ±0,1	3,5	22	60
25 ±0,1	5,5	-	11,5	-	7 +0,3/-0,2	-	4,5	8	7 ±0,2	4	29	80
32 ±0,1	5,5	-	11,5	-	7 +0,3/-0,2	-	5,5	11	7 ±0,2	4	58	200
40 +0,2/-0,1	5,5	-	11,5	-	8 +0,4/-0,2	-	5,5	10,5	8 ±0,2	4	72	420
50 +0,2/-0,1	-	8,5	-	22	10 +0,5/-0,2	8,5	-	-	-	-	145	-
63 +0,3/-0,1	-	6,5	-	24	14 +0,5/-0,2	12	-	-	-	-	230	-

Specification

- Housing  
Stainless Steel
- Materials of the magnet:
  - Hard ferrite  
temperature resistant up to 220 °C
  - SmCo  
Samarium, cobalt  
temperature resistant up to 350 °C
- RoHS compliant

1

Information

Stainless Steel-Retaining magnets GN 50.45 are a shielded magnetic system.

Owing to the lower magnetic conductivity of the stainless steel housing, the adhesive forces are lower than in steel.

To ensure that the magnetic properties (adhesive forces) are not impaired, the fixing screws must be made of **non-magnetic** material.

see also...

- More information to retaining magnets → Page 1094

On request

- Raw magnets in ring shape in hard ferrite (HF)

How to order

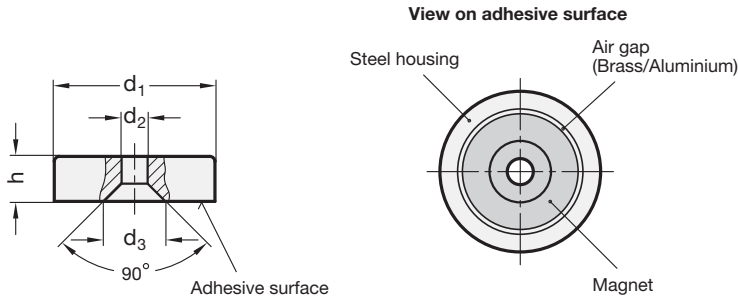
GN 50.45-HF-50

1 Material of the magnet

2 d<sub>1</sub>

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9





2

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h	Nominal adhesive forces in N
19	3,7	7,5	7,5	30
29	4,7	10	9	50
38	4,7	11	10,5	130

### Specification

- Housing  
Steel
- Material of the magnet  
AlNiCo  
Aluminium, nickel, cobalt  
temperature resistant up to 280 °C
- Lacquering red  
temperature resistant up to 180 °C
- RoHS compliant

1

AN

### Information

Pot magnets GN 58 are a shielded magnetic system.

To ensure that the magnetic properties (adhesive forces) are not impaired, the fixing screws must be made of non-magnetic material.

For easier handling and/or to avoid demagnetisation, these magnets have an iron plate on their adhesive surface.

see also...

- *More information to retaining magnets* → Page 1094

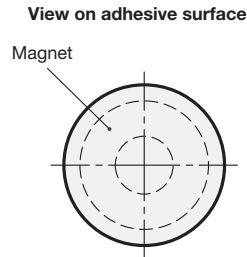
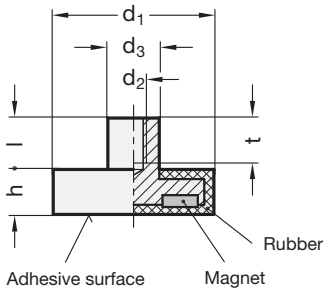
How to order

GN58-AN-29

1 Material of the magnet

2 d<sub>1</sub>





2

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h	Length l	t min.	Nominal adhesive forces in N
12	M 4	8	7	8	6	10
22	M 4	8	6	5,5	5	50
31	M 4	8	6	5,5	5	75
43	M 4	8	6	4,5	5	85
66	M 5	10	8,5	6,5	8	180
88	M 8	12	8,5	8,5	11	420

## Specification

- Steel part  
zinc plated
- Material of the magnet  
NdFeB  
Neodymium, iron, boron  
temperature resistant up to 80 °C
- Rubber jacket  
Elastomer (TPE)  
73 shore, black
- Elastomer characteristics → Page 1140
- RoHS compliant

1

ND

## Information

Retaining magnets GN 51.2 are a shielded magnetic system with rubber jacket.

They are preferably used for sensitive surfaces. Also, the coefficient of friction is increased, with the effect that high lateral retaining forces are achieved.

see also...

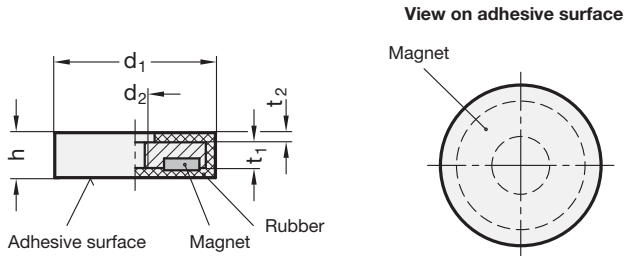
- More information to retaining magnets → Page 1094

How to order

GN51.2-ND-66

1 Material of the magnet

2 d<sub>1</sub>



2

d <sub>1</sub>	d <sub>2</sub>	h	t <sub>1</sub>	t <sub>2</sub>	Nominal adhesive forces in N
22	M 4	6	4,5	0,8	35
31	M 5	6	4,5	0,8	75
43	M 4	5,5	4	0,8	85
66	M 6	8,5	6	1,8	180
88	M 6	8,5	6	1,8	420

## Specification

- Steel part  
zinc plated
- Material of the magnet  
NdFeB  
Neodymium, iron, boron  
temperature resistant up to 80 °C
- Rubber jacket  
Elastomer (TPE)  
73 shore, black
- *Elastomer characteristics* → Page 1140
- **RoHS compliant**

1

ND

## Information

Retaining magnets GN 51.5 are a shielded magnetic system with rubber jacket.

They are preferably used for sensitive surfaces. Also, the coefficient of friction is increased, with the effect that high lateral retaining forces are achieved.

see also...

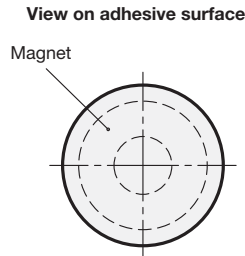
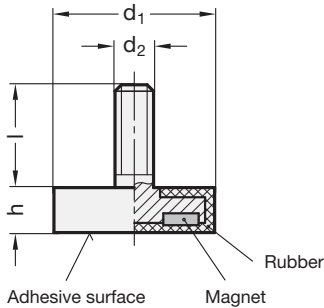
- *More information to retaining magnets* → Page 1094

How to order

GN51.5-ND-88

1 Material of the magnet

2 d<sub>1</sub>



2

$d_1$	$d_2$	h	Length l	Nominal adhesive forces in N
22	M 4	6	6,5	50
43	M 6	6	15	85
66	M 8	8,5	15	180
88	M 8	8,5	15	420

## Specification

- Steel part  
zinc plated
- Material of the magnet  
NdFeB  
Neodymium, iron, boron  
temperature resistant up to 80 °C
- Rubber jacket  
Elastomer (TPE)  
73 shore, black
- *Elastomer characteristics* → Page 1140
- RoHS compliant

1

ND

## Information

Retaining magnets GN 51.3 are a shielded magnetic system with rubber jacket.

They are preferably used for sensitive surfaces. Also, the coefficient of friction is increased, with the effect that high lateral retaining forces are achieved.

see also...

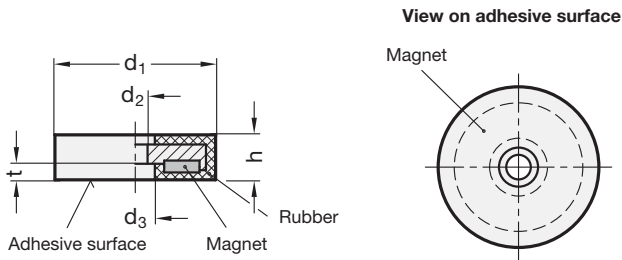
- *More information to retaining magnets* → Page 1094

How to order

GN51.3-ND-43

1 Material of the magnet

2  $d_1$



2

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	t	h	Nominal adhesive forces in N
22	4	8	3,5	6	35
31	6	9	3,5	6	75
57	8	25,3	3,5	7,5	175
66	5,5	25	3,5	8,5	210

## Specification

- Steel part  
zinc plated
- Material of the magnet  
NdFeB  
Neodymium, iron, boron  
temperature resistant up to 80 °C
- Rubber jacket  
Elastomer (TPE)  
73 shore, black
- *Elastomer characteristics* → Page 1140
- **RoHS compliant**

1

ND

## Information

Retaining magnets GN 51.4 are a shielded magnetic system with rubber jacket.

They are preferably used for sensitive surfaces. Also, the coefficient of friction is increased, with the effect that high lateral retaining forces are achieved.

see also...

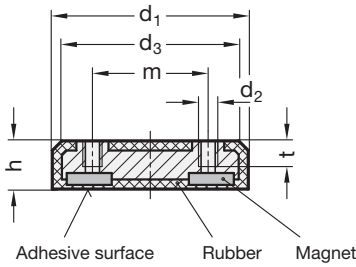
- *More information to retaining magnets* → Page 1094

How to order

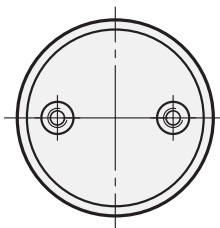
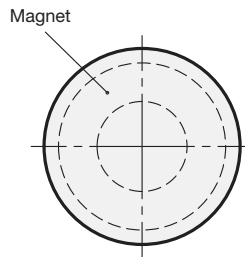
GN51.4-ND-31

1 Material of the magnet

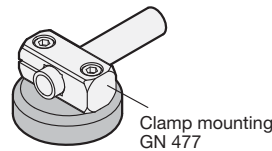
2 d<sub>1</sub>



View on adhesive surface



Application example



<sup>2</sup> d <sub>1</sub>	<sup>3</sup> m	<sup>4</sup> d <sub>2</sub>	d <sub>3</sub>	h	t min.	Nominal adhesive forces in N
43	22	M 4	39	10,3	6	85
43	27	M 5	39	10,3	7	85
57	32	M 6	53	11,3	7	175
57	36	M 6	53	11,3	7	175

Specification

- Steel part  
zinc plated
- Material of the magnet  
NdFeB  
Neodymium, iron, boron  
temperature resistant up to 80 °C
- Rubber jacket  
Elastomer (TPE)  
73 shore, black
- *Elastomer characteristics* → Page 1140
- *RoHS compliant*

<sup>1</sup>

Information

Retaining magnets GN 51.6 are a shielded magnetic system with rubber jacket.

The rubber jacket protects sensitive surfaces from being damaged by the magnet and also delivers a higher friction coefficient, resulting in high lateral adhesion forces.

Its dimensions, especially the drill hole spacing m and the thread d<sub>2</sub>, match the clamp mountings GN 473, GN 477 and GN 480.

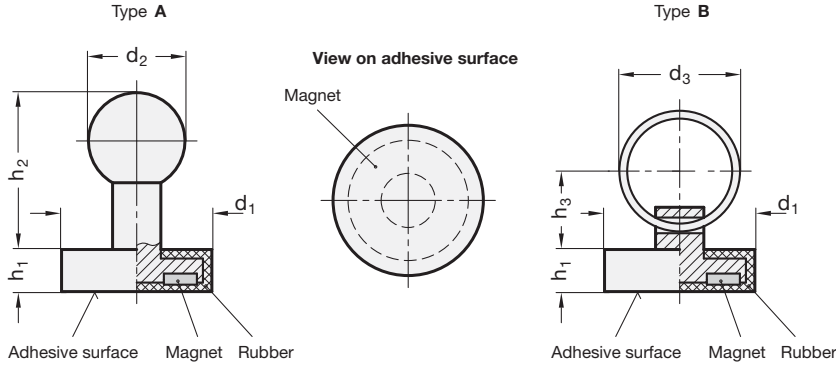
see also...

- *Foot clamp mountings GN 473* → Page 1076
- *Clamp mountings GN 477* → Page 1077
- *Flanged bolts GN 480* → Page 1084
- *More details to retaining magnets* → Page 1094

How to order

<sup>1</sup> <sup>2</sup> <sup>3</sup> <sup>4</sup>  
GN51.6-ND-43-22-M4

1	Material of the magnet
2	d <sub>1</sub>
3	m
4	d <sub>2</sub>



**3** Type  
**A** with knob  
**B** with key ring

**2**

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	Nominal adhesive forces in N
22	16	20	6	26	13	35
31	16	25	6	26	14,5	75
43	16	30	5,5	26	17	85

**Specification**

- Steel part  
nickel plated
- Material of the magnet  
NdFeB  
Neodymium, iron, boron  
temperature resistant up to 80 °C
- Rubber jacket  
Elastomer (TPE)  
73 shore, black
- Ball knob  
Plastic  
Technopolymer (Polyamide PA)  
black, matt
- Key ring  
Steel, nickel plated
- *Elastomer characteristics* → Page 1140
- **RoHS compliant**

**1**

**ND**

**Information**

Magnets GN 51.7 are a shielded magnetic system with rubber jacket. The rubber jacket protects sensitive surfaces from being damaged by the magnet and also delivers a higher friction coefficient, resulting in high lateral adhesion forces.

see also...

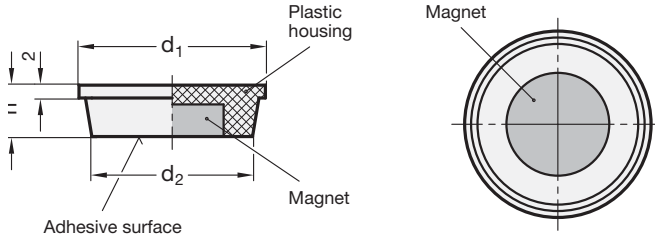
- *More information to retaining magnets* → Page 1094

How to order

**GN51.7-ND-31-A**

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

<b>1</b>	<b>Material of the magnet</b>
<b>2</b>	<b>d<sub>1</sub></b>
<b>3</b>	<b>Type</b>



2

d <sub>1</sub>	d <sub>2</sub>	h	Nominal adhesive forces in N
18	14	8	10
25	22	8,5	14
30	28,5	8,5	27
36	32,5	8,5	35
40	36	8	35

**Specification**

1

3

- Housing
  - Plastic
  - white, RAL 9003
  - grey, RAL 7040
  - red, RAL 3031

- WS
- GR
- RT

- Material of the magnet
  - NdFeB **ND**
  - Neodymium, iron, boron
  - temperature resistant up to 80 °C

• RoHS compliant

**On request**

- Magnets with custom imprint

**Information**

Magnets GN 53.1 are primarily used for holding drawings and the like. The magnetic material ND is characterized by a high adhesive force.

see also...

- More details to magnets → Page 1094

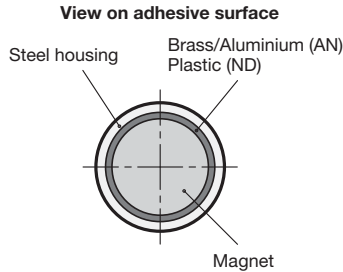
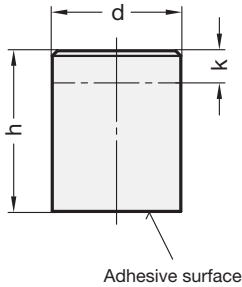
How to order

GN51.3-ND-30-RT

1	Material of the magnet
2	d <sub>1</sub>
3	Colour

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9





**3 Identification No.**

- 1 Tolerance d = ±0,2
- 2 Tolerance d = h6

**2**

d	Material of the magnet AN				Material of the magnet ND				Nominal adhesive forces in N	
	h ±0,2 Id. No. 1	k* Id. No. 1	h ±0,2 Id. No. 2	k* Id. No. 2	h ±0,2 Id. No. 1	k* Id. No. 1	h ±0,2 Id. No. 2	k* Id. No. 2	AN AlNiCo	ND NdFeB
4	-	-	-	-	20	15	-	-	-	2,5
5	-	-	-	-	20	15	-	-	-	4,5
6	20	12	10	2	20	15	10	5	2	6
8	20	11	12	3	20	15	12	7	4	12
10	20	10	16	6	20	15	16	11	8,5	24
13	20	8	18	6	20	15	18	13	12	60
16	20	6	20	6	20	15	20	15	20	90
20	25	5	25	5	25	18	25	18	40	135
25	35	13	30	7	35	27	30	22	60	190
32	40	9	35	4	40	32	35	27	160	340
40	50	10	45	5	-	-	-	-	240	-
50	60	10	50	-	-	-	-	-	400	-
63	65	10	60	5	-	-	-	-	660	-

\* k is the maximum dimension by which the retaining magnet can be shortened without losing its properties.

**Specification**

- Housing  
Steel  
- Identification No. 1: zinc plated  
- Identification No. 2: blank
- Materials of the magnet:
  - AlNiCo **AN**  
Aluminium, nickel, cobalt  
temperature resistant up to 450 °C
  - NdFeB **ND**  
Neodymium, iron, boron  
temperature resistant up to 80 °C
- RoHS compliant



**Information**

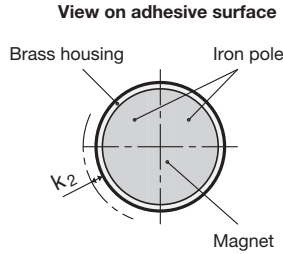
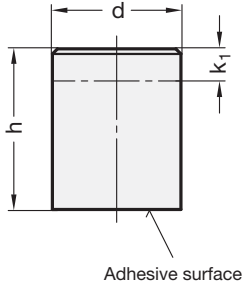
Retaining magnets GN 52.1 are a shielded magnetic system.  
Attachment options include pressing in, shrinking in or gluing in.  
**see also...**  
• *More information to retaining magnets* → Page 1094

How to order

GN52.1-AN-20-1

1	Material of the magnet
2	d
3	Identification No. (Tolerance d)





2

d h6	h	k <sub>1</sub> *	k <sub>2</sub> **	Nominal adhesive forces in N	
				SC SmCo	ND NdFeB
6	20 ±0,2	10	1,5	8	10
8	20 ±0,2	10	1,5	22	22
10	20 ±0,2	8	2	40	45
13	20 ±0,2	6	2,5	60	70
16	20 ±0,2	2	3	125	150
20	25 ±0,2	5	4	250	280
25	35 ±0,3	7	5	400	450
32	40 ±0,3	4,5	6	600	700

**Specification**

- Housing  
Brass
- Materials of the magnet:
  - SmCo **SC**  
Samarium, cobalt  
temperature resistant up to 200 °C
  - NdFeB **ND**  
Neodymium, iron, boron  
temperature resistant up to 80 °C
- Identification of ND:  
blue inked adhesive surface area
- RoHS compliant

1

**Information**

Retaining magnets GN 54.1 are a shielded magnetic system. The configuration of magnetic and iron poles is known as sandwich magnetic system. These retaining magnets deliver ultimate holding power, also with smaller workpieces.

Attachment options include pressing in or gluing in.

\* k<sub>1</sub> is the maximum dimension by which the retaining magnet can be shortened without losing its properties.

\*\* Mounting these retaining magnets directly in steel components will create a magnetic short circuit which reduces the retaining power by as much as 15%. To avoid this effect, the spacings k<sub>2</sub> between brass jacket and steel component should be observed. These spacings should also be maintained if the retaining magnet is shortened.

see also...

- More information to retaining magnets → Page 1094

How to order

**GN54.1-SC-13**

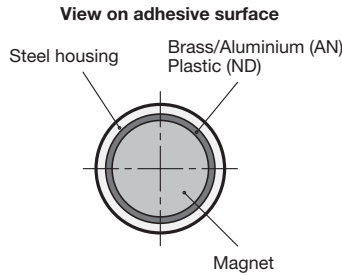
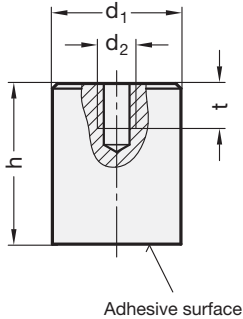
1	Material of the magnet
2	d

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



# GN 52.2 Retaining magnets

rod-shaped, with female thread



2

d <sub>1</sub> ±0,2	d <sub>2</sub>	h ±0,2	t min.	Nominal adhesive forces in N	
				AN AlNiCo	ND NdFeB
6	M 3	20	5	2	6
8	M 3	20	5	4	12
10	M 4	20	7	8,5	24
13	M 4	20	7	12	60
16	M 4	20	7	20	90
20	M 6	25	9	40	135
25	M 6	35	9	60	190
32	M 8	40	12	160	340
40	M 8	50	12	240	600
50	M 10	60	12	400	900
63	M 12	65	14	660	1300

## Specification

- Housing  
Steel, zinc plated
- Materials of the magnet:
  - AlNiCo **AN**  
Aluminium, nickel, cobalt  
temperature resistant up to 450 °C
  - NdFeB **ND**  
Neodymium, iron, boron  
temperature resistant up to 80 °C
- RoHS compliant

1

## Information

Retaining magnets GN 52.2 are a shielded magnetic system.

see also...

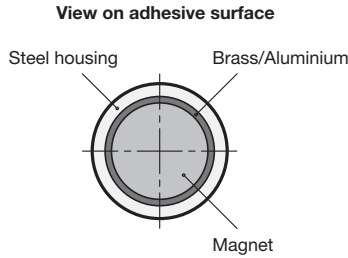
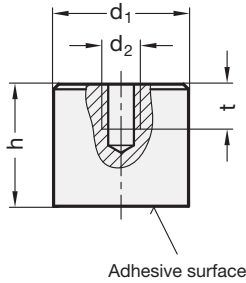
- More information to retaining magnets → Page 1094

How to order

GN52.2-ND-16

1 Material of the magnet

2 d<sub>1</sub>



2

$d_1 \pm 0,2$	$d_2$	$h \pm 0,2$	$t$	Nominal adhesive forces in N
12,5	M 4	16	7	20
17	M 6	16	5	26
21	M 6	19	7	40
27	M 6	25	9	65
35	M 6	30	9	150

Specification

- Housing  
Steel
- Material of the magnet  
AlNiCo  
Aluminium, nickel, cobalt  
temperature resistant up to 350 °C
- Lacquering red  
temperature resistant up to 180 °C
- RoHS compliant

1

AN

Information

Retaining magnets GN 52.3 are a shielded magnetic system.  
For easier handling and/or to avoid demagnetisation, these magnets have an iron plate on their adhesive surface.

see also...

- More information to retaining magnets → Page 1094

How to order

GN52.3-AN-21

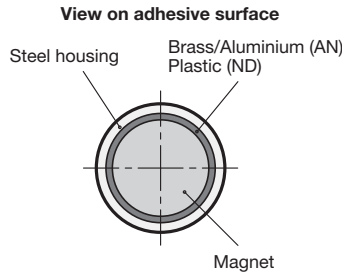
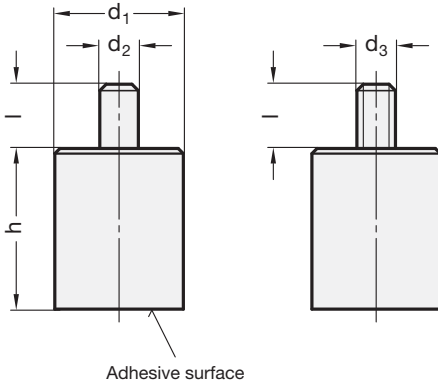
1	Material of the magnet
2	$d_1$

2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9



# GN 52.4 Retaining magnets

rod-shaped, with stud



### 4 Type

- D with smooth stud
- E with threaded stud

d <sub>1</sub>	d <sub>2</sub> ±0,2 Type D	d <sub>3</sub> Type E	h ±0,2	Length l		Nominal adhesive forces in N	
				Type D	Type E	AN AlNiCo	ND NdFeB
6	3	M 3	20	8	7	2	6
8	3	M 3	20	8	7	4	12
10	4	M 4	20	8	8	8,5	24
13	4	M 4	20	8	8	12	60
16	5	M 4	20	8	10	20	90
20	6	M 6	25	8	12	40	135
25	8	M 6	35	10	10	60	190
32	10	M 8	40	10	15	160	340
40	15*	M 8	50	20	15	240	600
50	18*	M 10	60	25	15	400	900
63	20*	M 12	65	30	20	660	1300

\* not available from stock and requires a minimum order quantity

## Specification

- Housing  
Steel, zinc plated
- Materials of the magnet:
  - AlNiCo **AN**  
Aluminium, nickel, cobalt  
temperature resistant up to 450 °C
  - NdFeB **ND**  
Neodymium, iron, boron  
temperature resistant up to 80 °C
- RoHS compliant



## Information

Retaining magnets GN 52.4 are a shielded magnetic system.  
Type D with smooth stud is designed for attachment with rivets.

see also...

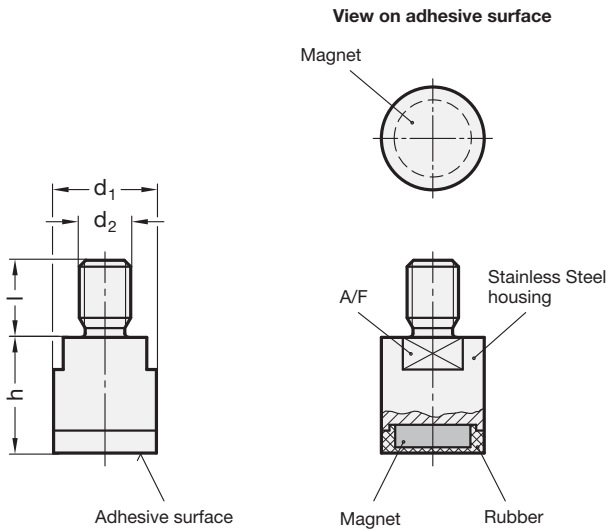
- More information to retaining magnets → Page 1094

Retaining magnet	1	Material of the magnet
	2	d <sub>1</sub>
	3	d <sub>2</sub>
	4	Type
<b>GN 52.4-AN-25-8-D</b>		

Retaining magnet	1	Material of the magnet
	2	d <sub>1</sub>
	3	d <sub>3</sub>
	4	Type
<b>GN 52.4-ND-20-M6-E</b>		



ROSTFREI  
Inox  
Stainless  
Steel



2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9

<sup>2</sup> d <sub>1</sub>	<sup>3</sup> d <sub>2</sub>	h	Length l	A/F	Nominal adhesive forces in N
13	M 6	16	10	11	15
16	M 8	18	12	13	23
20	M 10	20	14	17	46

**Specification**

- Housing  
Stainless Steel
- Material of the magnet  
NdFeB  
temperature resistant up to 80° C
- Rubber  
Elastomer (TPE)  
73 Shore, black
- *Elastomer characteristics* → Page 1140
- RoHS compliant

<sup>1</sup>

ND

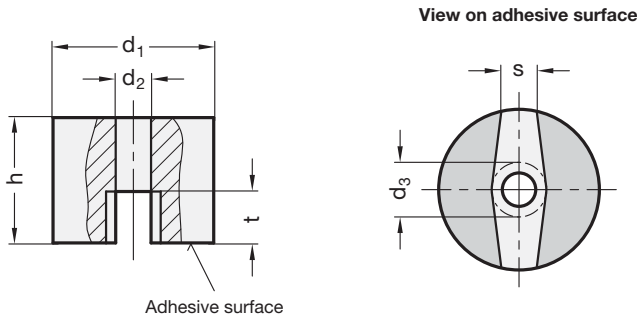
**Information**

Stainless Steel-Retaining magnets GN 52.5 are a shielded magnetic system with rubber jacket on the adhesive surface.  
They are preferably used for sensitive surfaces. Also, the coefficient of friction is increased, with the effect that high lateral retaining forces are achieved.  
**see also...**  
• *More information to retaining magnets* → Page 1094

How to order

GN 52.5 - <sup>1</sup>ND - <sup>2</sup>13 - <sup>3</sup>M6

1	Material of the magnet
2	d <sub>1</sub>
3	d <sub>2</sub>



2

d <sub>1</sub> Nominal dimension	Actual dimension	d <sub>2</sub>	d <sub>3</sub> max. Ø screw head	h	s	t	Nominal adhesive forces in N
13	13	4,5	7	10	4,5	5	7
19	19,1	4,8	8,7	12,7	5,7	6,5	19
25	25,4	4,5	8,5	20	5,6	8	29
32	31,8	7,1	10	25,4	7,9	12,7	66

**Specification**

- Material of the magnet  
AlNiCo  
Aluminium, nickel, cobalt  
temperature resistant up to 280 °C
- Lacquering red  
temperature resistant up to 180 °C
- RoHS compliant

1

AN

**Information**

The button-type magnets GN 60 have a split adhesive surface. These are non-shielded magnetic systems made by casting method.

To ensure that the magnetic properties (adhesive forces) are not impaired, the fixing screws must be made of **non-magnetic** material.

For easier handling and/or to avoid demagnetisation, these magnets have an iron plate on their adhesive surface.

see also...

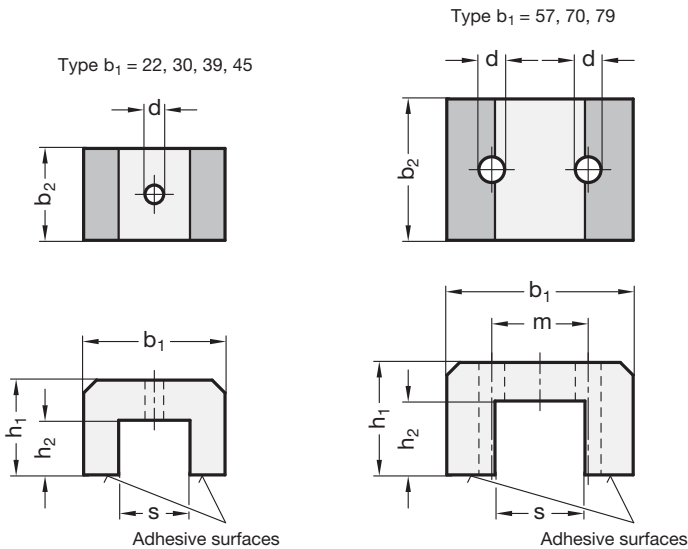
- More information to retaining magnets → Page 1094

How to order

GN60-AN-19

1 Material of the magnet

2 d<sub>1</sub>



2

$b_1$	$b_2$	$d$ max. $\varnothing$ screw head	$h_1$	$h_2$	$m$	$s$	Nominal adhesive forces in N
22	25	7	17	9	-	8	30
30	20	5	20	11	-	15	45
39	25,4	4,7	25	14	-	19	90
45	30	4,7	30	17	-	23	120
57	44,5	8	35	23	31,5	27,8	180
70	57	8	41	25	38	35	320
79	82	9,5	54	36	43	38,5	470

## Specification

- Material of the magnet  
AlNiCo  
Aluminium, nickel, cobalt  
temperature resistant up to 350 °C
- Lacquering red  
temperature resistant up to 180 °C
- RoHS compliant

1

AN

## Information

The U-Magnets GN 62 have a split adhesive surface. These are nonshielded magnetic systems made by casting method.

To ensure that the magnetic properties (adhesive forces) are not impaired, the fixing screws must be made of non-magnetic material.

For easier handling and/or to avoid demagnetisation, these magnets have an iron plate on their adhesive surface.

see also...

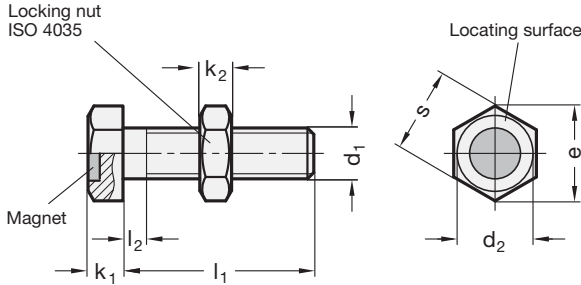
- More information to retaining magnets → Page 1094

How to order

GN62-AN-45

1 Material of the magnet

2  $b_1$



<b>d<sub>1</sub></b> *	<b>l<sub>1</sub></b>					<b>d<sub>2</sub></b>	<b>e ≈</b>	<b>k<sub>1</sub> -1</b>	<b>k<sub>2</sub></b>	<b>l<sub>2</sub> max.</b>	<b>s</b>	Nominal adhesive forces in N
M 6	12	16	20	25	30	10	11	4	3,2	3	10	25
M 8	16	20	25	30	40	13	14,4	5,3	4	3,7	13	50
M 10	20	25	30	40	50	17	17,8	6,4	5	4,5	17	75
M 12	25	30	40	50	60	19	20	7,5	6	5,2	19	110
M 16	30	40	50	60	80	24	26,8	10	8	6	24	145

\*thread: nut mobility

**Specification**

- Screw Steel
  - Tensile strength class 5.8 (500 N/mm<sup>2</sup>)
  - zinc plated, blue passivated
- Hexagon nut Steel
  - Tensile strength class 04 (400 N/mm<sup>2</sup>)
  - zinc plated, blue passivated
- Material of the magnet **ND**
  - NdFeB
  - Neodymium, iron, boron
  - temperature resistant up to 80 °C
- RoHS compliant



**Information**

Setting bolts GN 251.6 with retaining magnets are a shielded magnetic system.

Suitable e.g. as workpiece stop, with the magnet holding the workpiece in place.

The lock nut (included) can be used to secure the stop screw after positioning.

**see also...**

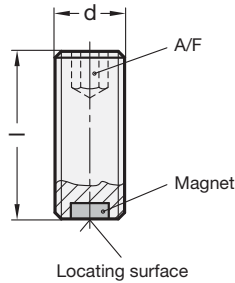
- *More information to retaining magnets* → Page 1094
- *Setting bolts GN 251 (without magnet)* → Page 584

How to order

**GN251.6-M6-12-ND**

<b>1</b>	<b>d<sub>1</sub></b>
<b>2</b>	<b>l<sub>1</sub></b>
<b>3</b>	<b>Material of the magnet</b>





2.1  
2.2  
2.3  
2.4  
2.5  
2.6  
2.7  
2.8  
2.9

d *	Length l –1 Nominal length					A/F	Nominal adhesive forces in N
	12	16	20	25	30		
M 6	12	16	20	25	30	3	2,5
M 8	16	20	25	30	40	4	7
M 10	20	25	30	40	50	5	11
M 12	25	30	40	50	60	6	17
M 16	30	40	50	60	80	8	35

\* thread: nut mobility

**Specification**

- Steel
  - Tensile strength class 5.8 (500 N/mm<sup>2</sup>)
  - zinc plated, blue passivated
- Material of the magnet  
NdFeB  
Neodymium, iron, boron  
temperature resistant up to 80 °C
- RoHS-compliant

**3**

**ND**

**Information**

Grub screws GN 913.6 with retaining magnets are a shielded magnetic system.

Suitable e.g. as workpiece stop, with the magnet holding the workpiece in place.

see also...

- More information to retaining magnets → Page 1094

How to order

**GN913.6-M6-25-ND**

1	d
2	Length l
3	Material of the magnet



# Annexe

---

**Technical information, Tables** → *from Page 1124*

---

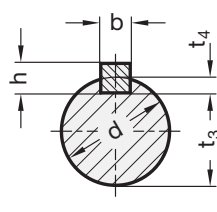
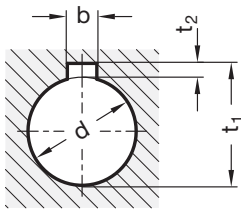
**Alphabetical Index** → *from Page 1157*

---

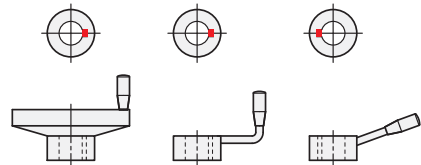
**Numerical Index** → *from Page 1171*

---





Positioning of the keyway:



Handwheels    Cranked handles    Control levers

d	b P9 / JS9 Hub keyway	b P9 / N9 Shaft keyway	h	$t_1 = d + t_2$	$t_2$	$t_3 = d - t_4$	$t_4$
6	2	2	2	7	1 +0,1	4,8	1,2 +0,1
7	2	2	2	8	1 +0,1	5,8	1,2 +0,1
8	2	2	2	9	1 +0,1	6,8	1,2 +0,1
9	3	3	3	10,4	1,4 +0,1	7,2	1,8 +0,1
10	3	3	3	11,4	1,4 +0,1	8,2	1,8 +0,1
11	4	4	4	12,8	1,8 +0,1	8,5	2,5 +0,1
12	4	4	4	13,8	1,8 +0,1	9,5	2,5 +0,1
13	5	5	5	15,3	2,3 +0,1	10	3 +0,1
14	5	5	5	16,3	2,3 +0,1	11	3 +0,1
15	5	5	5	17,3	2,3 +0,1	12	3 +0,1
16	5	5	5	18,3	2,3 +0,1	13	3 +0,1
17	5	5	5	19,3	2,3 +0,1	14	3 +0,1
18	6	6	6	20,8	2,8 +0,1	14,5	3,5 +0,1
20	6	6	6	22,8	2,8 +0,1	16,5	3,5 +0,1
22	6	6	6	24,8	2,8 +0,1	18,5	3,5 +0,1
24	8	8	7	27,3	3,3 +0,1	20	4 +0,2
25	8	8	7	28,3	3,3 +0,2	21	4 +0,2
26	8	8	7	29,3	3,3 +0,2	22	4 +0,2
28	8	8	7	31,3	3,3 +0,2	24	4 +0,2
30	8	8	7	33,3	3,3 +0,2	26	4 +0,2
32	10	10	8	35,3	3,3 +0,2	27	5 +0,2
34	10	10	8	37,3	3,3 +0,2	29	5 +0,2
35	10	10	8	38,3	3,3 +0,2	30	5 +0,2
36	10	10	8	39,3	3,3 +0,2	31	5 +0,2
38	10	10	8	41,3	3,3 +0,2	33	5 +0,2
40	12	12	8	43,3	3,3 +0,2	35	5 +0,2
42	12	12	8	45,3	3,3 +0,2	37	5 +0,2
44	12	12	8	47,3	3,3 +0,2	39	5 +0,2

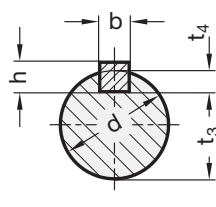
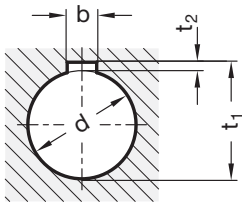
**Keyway width**

P9 tight fit (standard design)

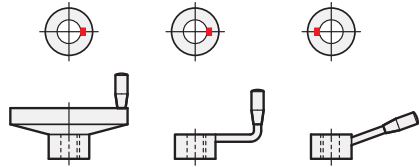
JS9 or N9 loose fit (requires written agreement)

see also...

- Keys DIN 6885 → Page 638



Positioning of the keyway:



Handwheels    Cranked handles    Control levers

d	b P9 / JS9 Hub keyway	b P9 / N9 Shaft keyway	h	$t_1 = d + t_2$	$t_2$	$t_3 = d - t_4$	$t_4$
11	4	4	4	12,1	1,1 +0,1	8	3 +0,1
12	4	4	4	13,1	1,1 +0,1	9	3 +0,1
13	5	5	5	14,3	1,3 +0,1	9,2	3,8 +0,1
14	5	5	5	15,3	1,3 +0,1	10,2	3,8 +0,1
15	5	5	5	16,3	1,3 +0,1	11,2	3,8 +0,1
16	5	5	5	17,3	1,3 +0,1	12,2	3,8 +0,1
17	5	5	5	18,3	1,3 +0,1	13,2	3,8 +0,1
18	6	6	6	19,7	1,7 +0,1	13,6	4,4 +0,1
20	6	6	6	21,7	1,7 +0,1	15,6	4,4 +0,1
22	6	6	6	23,7	1,7 +0,1	17,6	4,4 +0,1
24	8	8	7	25,7	1,7 +0,1	18,6	5,4 +0,2
25	8	8	7	26,7	1,7 +0,1	19,6	5,4 +0,2
26	8	8	7	27,7	1,7 +0,2	20,6	5,4 +0,2
28	8	8	7	29,7	1,7 +0,2	22,6	5,4 +0,2
30	8	8	7	31,7	1,7 +0,2	24,6	5,4 +0,2
32	10	10	8	34,1	2,1 +0,2	26	6 +0,2
34	10	10	8	36,1	2,1 +0,2	28	6 +0,2
35	10	10	8	37,1	2,1 +0,2	29	6 +0,2
36	10	10	8	38,1	2,1 +0,2	30	6 +0,2
38	10	10	8	40,1	2,1 +0,2	32	6 +0,2
40	12	12	8	42,1	2,1 +0,2	34	6 +0,2
42	12	12	8	44,1	2,1 +0,2	36	6 +0,2
44	12	12	8	46,1	2,1 +0,2	38	6 +0,2
45	14	14	9	47,6	2,6 +0,2	38,5	6,5 +0,2
46	14	14	9	48,6	2,6 +0,2	39,5	6,5 +0,2
48	14	14	9	50,6	2,6 +0,2	41,5	6,5 +0,2
50	14	14	9	52,6	2,6 +0,2	43,5	6,5 +0,2

\* This standard has been withdrawn without replacement in 2008-10.

### Keyway width

P9 tight fit (standard design)

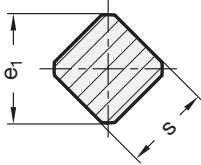
JS9 or N9 loose fit (requires written agreement)

see also...

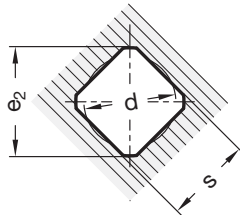
• Keys DIN 6885 → Page 638



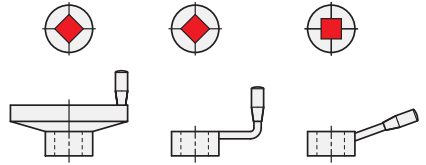
Type A external square



Type I internal square



Positioning of the square:



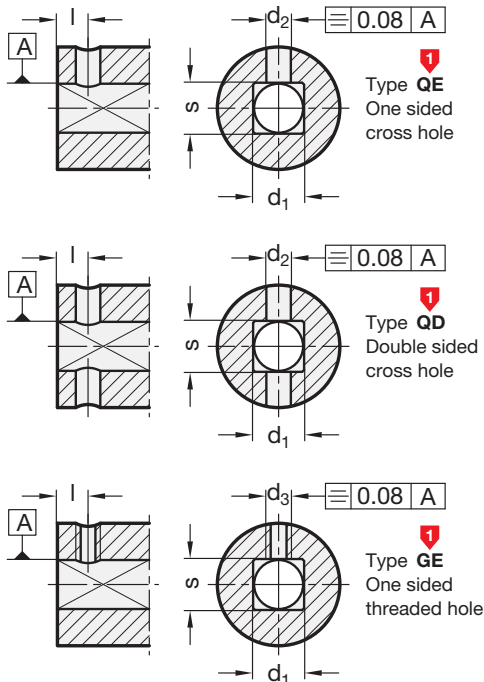
Handwheels      Cranked handles      Control levers

s H11 / h11	d max.	e <sub>1</sub> max.	e <sub>1</sub> min.	e <sub>2</sub> min.
4	4,2	5	4,7	5,3
5	5,3	6,5	5,9	6,6
5,5	5,8	7	6,5	7,2
6	6,3	8	7,1	8,1
7	7,3	9	8,3	9,1
8	8,4	10	9,5	10,1
9	9,5	12	10,7	12,1
10	10,5	13	11,9	13,1
11	11,6	14	13,1	14,1
12	12,6	16	14,3	16,1
13	13,7	17	15,5	17,1
14	14,7	18	16,7	18,1
16	16,8	21	19,1	21,2
17	17,9	22	20,3	22,2
19	20	25	22,7	25,2
22	23,1	28	26,3	28,2
24	25,3	32	28,7	32,2
27	28,4	36	32,2	36,2
30	31,7	40	35,8	40,2
32	33,7	42	38,2	42,2
36	38	48	43,1	48,2
41	43,2	54	49,1	54,2
46	48,5	60	55	60,2
50	52,7	65	59,8	65,2
55	57,9	72	65,8	72,2

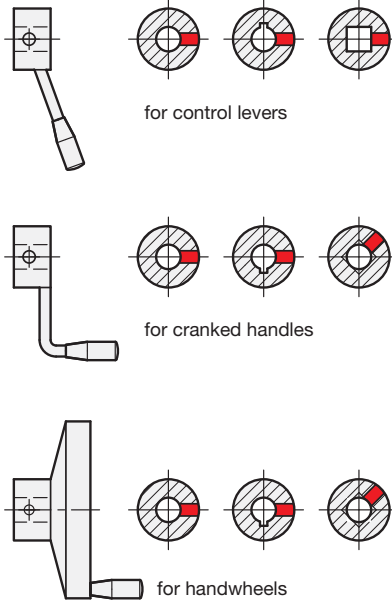
**Information**

Internal squares may be relieved in the middle third of each square side. The dimension d max. is designed in such way, that this conditions will be met.

The official standard sheet still lists the squares with s = 60, 65, 70, 75 and 80.



Positioning of the radial cross hole in relation to keyway / square



d <sub>1</sub> H7 / s H11		d <sub>2</sub> H11	d <sub>3</sub>	Length l –0,1 Standard version	Length l –0,1 Handwheels DIN 950 / GN 949 to Ø 250
6	7	2,5	M 3	4,5	–
8	9	3	M 5	5,5	4,5
10	11	3	M 5	5,5	4,5
12	13	4	M 6	6,5	5,5
14	15	4	M 6	6,5	5,5
16	17	5	M 6	8	7
18	19	5	M 6	8	7
20	21	5	M 6	8	7
22	23	6	M 6	10	9
24	25	6	M 6	10	9
26	27	6	M 6	10	9

## Information

The connection between the operating element and the shaft consists very often of a cross pin or a grub screw.

As a result the user is faced with relatively high costs since cross holes on operating elements are in general not readily available.

Components with cross holes to GN 110 are not only offered at very competitive prices but they also save the manufacturer unnecessary drawing work. The geometrical form of some of the operating elements, however, does not lend itself to modification to this particular GN standard.

The radial positioning of the cross holes is only specified as per above three specifications of product groups (control levers, cranked handles, handwheels). For all other operating elements and also for the product group 2.7 it can be arranged any way.

The pin hole d<sub>2</sub> H11 is drilled to suit drive spring pins.

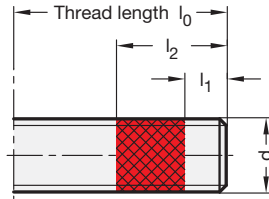
How to order

**GN 110-QE**

1

Handwheel DIN 950-GG-160-B14-A  
with cross hole **GN 110-QE**





$l_1 \approx 2 \text{ to } 3 \times \text{Thread pitch}$

$l_2 \approx 1,5 \times d$

d	$l_1$	$l_2 \approx$	$M_{IN}$ in Nm max. insertion torque	$M_{LB}$ in Nm min. breakaway torque	$M_{OUT}$ in Nm max. loosening torque
M 5	1,5 ... 2,5	7,5	0,5	1	6,5
M 6	2 ... 3	9	0,8	1,8	10
M 8	2,5 ... 4	12	1,5	4	26
M 10	3 ... 4,5	15	3	10	55
M 12	3,5 ... 5	18	5	16	95
M 16	4 ... 6	24	11	35	250
M 20	5 ... 7,5	30	14	45	500

The torque value comply with DIN 267 Part 27. They are based on a test of a thread without preload with a nut thread of 6H at room temperature. For thread lengths  $l_0 < l_2$ ,  $l_2$  is reduced in such a way that one to two thread turns are not coated at the end of the thread.

## Description

The principle of micro encapsulation MVK (gluing) consists of a liquid plastic material and hardener encapsulated in a thin polymer film which is embedded in a lacquer like carrier deposited in patch form on a thread. This patch dries and the component can be stored and handled in a normal manner.

When fitting a bolt with this patch the two capsules will burst under the pressure and friction between the two threads. The liquid plastic material and hardener will mix leading to a chemical reaction which will harden the glue, thus giving the required thread locking.

The setting of the mixture will start after 10-15 minutes. Sufficient hardness is achieved after about 30 minutes but complete setting is reached after 24 hours.

Adjustment and setting process must be completed within about 5 minutes.

The thread locking can be cracked by applying the  $M_{OUT}$  torque on the thread or alternatively by heating the component over +170 °C. It is not recommended to re-use the thread.

Threads, free from oil and grease give increased strength of locking action.

Components treated with this process can be stored for up to 4 years.

## Features

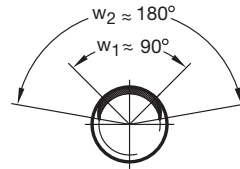
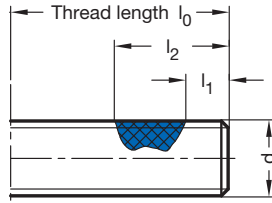
- Thread locking to the highest order to prevent the self loosening and component loss even under vibration. Not suitable for adjustable bolts or screws.
- This security aspect may be essential for certain applications of standard parts. Stockholding of liquid glue is eliminated.
- Low insertion torque
- Temperature resistant from -40 °C up to 170 °C
- Excellent chemical stability

How to order for GN 615.3

**GN 615.3-M8-K-MVK**

When ordering, the code **MVK** has to follow the product code.





$l_1 \approx 2 \text{ to } 3 \times \text{Thread pitch}$   
 $l_2 \approx 1,5 \times d$

$w_1$ : Coating core zone  
 $w_2$ : Coating including edge zone

d	$l_1$	$l_2 \approx$	$M_{IN}$ in Nm max. 1st insertion torque	$M_{OUT}$ in Nm min. 1st loosening torque
M 3	1 ... 1,5	4,5	0,43	0,1
M 4	1,5 ... 2	6	0,9	0,12
M 5	1,5 ... 2,5	7,5	1,6	0,18
M 6	2 ... 3	9	3	0,35
M 8	2,5 ... 4	12	6	0,85
M 10	3 ... 4,5	15	10,5	1,5
M 12	3,5 ... 5	18	15,5	2,3
M 16	4 ... 6	24	32	4

The torque values are based on a test of a thread without preload with a nut thread 6H at room temperature. For thread lengths  $l_0 < l_2$ ,  $l_2$  is reduced in such a way that one to two thread turns are not coated at the end of the thread.

### Description

The polyamide patch coating PFB is a process whereby an elastic plastic material (Polyamide) is applied to a part of thread which creates a jamming action during the tightening of a nut. The axial play between the bolts and nut thread is taken up by the polyamide thus ensuring maximum surface pressure between the opposite uncoated thread flanks. This process counteracts the loosening and unscrewing on their own.

There is no cure time required, the thread contact is instantaneous resilient. The typical spray edge zone of the polyamide deposit prevents shear blasting.

Threads with polyamide patch coating have unlimited stock life.

### Features

- High thread locking action, shakeproof. Excellent convenient for adjusting bolts.
- This security aspect may be essential for certain applications of standard parts. Stock holding of liquid glue is eliminated.
- Multi use is possible whereby the jamming effect after the 5th removal is around 50 % of its original strength.
- Temperature resistant from  $-50 \text{ }^\circ\text{C}$  up to  $90 \text{ }^\circ\text{C}$  (for a short time  $120 \text{ }^\circ\text{C}$ ).
- High chemical stability

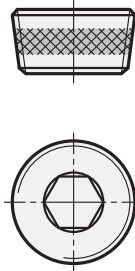
### Information

To mark Types K and KN, the spring plungers GN 615.3 ( $\rightarrow$  Page 481) are coated in blue; the coating is green for Types KS and KSN (high spring load).

<p>How to order for GN 615.3</p> <p style="text-align: center;"><b>1</b></p> <p><b>GN 615.3-M8-K-PFB</b></p>	<p>When ordering, the code <b>PFB</b> has to follow the product code.</p>
--	---



Threaded plugs DIN 906



## Description

Precote 5 is a non-reactive, film-forming emulsion with mineral solids for coating threaded parts.

The coating generates a seal against gases and liquids in threaded parts, both in cylindrical / cylindrical and in cylindrical / conical pairs. Corrosion in the threaded connection is prevented.

The coating is solvent-free, dry and non-sticky. It is non-hazardous for health.

The minimum storage stability in unmounted state is 4 years.

## Features

- The sealing coat is a captive element of the locking screw. It saves storing and mounting locking materials.
- The sealing effect sets in after mounting, no curing time is required.
- The friction rating of the thread remains virtually constant, the working-loose torque is low, max. reusable once.
- Sealing effect of thread:
  - cylindrical / cylindrical < 15 bar
  - cylindrical / conical > 50 bar
- Temperature resistance: from – 50 °C to 180 °C
- Good chemical resistance, e.g. against oils, water, petrol and solvents

How to order

DIN 906-ST-R<sup>3/4</sup>-GPC



1

When ordering, the code **GPC** has to follow the product code.

	Strength classes of screws						
	4.6	5.6	5.8	6.8	8.8	10.9	12.9
Nominal tensile strength $R_{m, nom}$ in N/mm <sup>2</sup>	400	500	500	600	800	1000	1200
Lower yield point $R_{eL}$ in N/mm <sup>2</sup>	240	300	400	480	–	–	–
0,2 %-Yield limit $R_{p 0,2}$ in N/mm <sup>2</sup>	–	–	–	–	640	900	1080
Tension under test force $S_p$ in N/mm <sup>2</sup>	225	280	380	440	580	830	970
Elongation <b>A</b> in %	22	20	–	–	12	9	8

## Features

The strength class identification number consists of two numerals:

- The first number corresponds to  $\frac{1}{100}$  of the nominal tensile strength in N/mm<sup>2</sup> (see table)
- The second number shows ten times the ratio of lower yield point  $R_{eL}$  (or 0.2 %-yield limit  $R_{p 0,2}$ ) to the nominal tensile strength  $R_{m, nom}$  (yield point ratio).

Example: Strength class 5.8 means:

Minimum tensile strength  $R_m = 500$  N/mm<sup>2</sup>,

Minimum yield point  $R_{eL} = 400$  N/mm<sup>2</sup>

Also, multiplying both numerals results in  $\frac{1}{10}$  of the yield point in N/mm<sup>2</sup>.

Test tension $S_p$ in N/mm <sup>2</sup> for thread	Strength classes of nuts				
	5	6	8	10	12
... M 4	520	600	800	1040	1150
above M 4 ... M 7	580	670	855	1040	1150
above M 7 ... M 10	590	680	870	1040	1160
above M 10 ... M 16	610	700	880	1050	1190
above M 16 ... M 39	630	720	920	1060	1200

## Features

The designation of a strength class consists of a identification number which provides information on the test tension of the material used:

Identification number x 100 = Test tension  $S_p$

The test tension is equal to the minimum tensile strength in N/mm<sup>2</sup> of a screw which, if paired with the appropriate nut, can be loaded up to the minimum yield point of the screw.

Example: Screw 8.8 – Nut 8, connection can be loaded up to the minimum yield point of the screw.





Tol. grades IT	Nominal size range												
	— ... 3	>3 ... 6	>6 ... 10	>10 ... 18	>18 ... 30	>30 ... 50	>50 ... 80	>80 ... 120	>120 ... 180	>180 ... 250	>250 ... 315	>315 ... 400	>400 ... 500
01	0,3	0,4	0,4	0,5	0,6	0,6	0,8	1	1,2	2	2,5	3	4
0	0,5	0,6	0,6	0,8	1	1	1,2	1,5	2	3	4	5	6
1	0,8	1	1	1,2	1,5	1,5	2	2,5	3,5	4,5	6	7	8
2	1,2	1,5	1,5	2	2,5	2,5	3	4	5	7	8	9	10
3	2	2,5	2,5	3	4	4	5	6	8	10	12	13	15
4	3	4	4	5	6	7	8	10	12	14	16	18	20
5	4	5	6	8	9	11	13	15	18	20	23	25	27
6	6	8	9	11	13	16	19	22	25	29	32	36	40
7	10	12	15	18	21	25	30	35	40	46	52	57	63
8	14	18	22	27	33	39	46	54	63	72	81	89	97
9	25	30	36	43	52	62	74	87	100	115	130	140	155
10	40	48	58	70	84	100	120	140	160	185	210	230	250
11	60	75	90	110	130	160	190	220	250	290	320	360	400
12	100	120	150	180	210	250	300	350	400	460	520	570	630
13	140	180	220	270	330	390	460	540	630	720	810	890	970
14	250	300	360	430	520	620	740	870	1000	1150	1300	1400	1550
15	400	480	580	700	840	1000	1200	1400	1600	1850	2100	2300	2500
16	600	750	900	1100	1300	1600	1900	2200	2500	2900	3200	3600	4000
17	1000	1200	1500	1800	2100	2500	3000	3500	4000	4600	5200	5700	6300
18	1400	1800	2200	2700	3300	3900	4600	5400	6300	7200	8100	2200	9700

Tolerances in µm

**Description**

This ISO Standard represents the basis for a system of limiting sizes and fits whereby the table mirrors the calculated values of fundamental tolerances in connection with fundamental dimensions.

The use of this table is limited to smooth circular cylindrical workpieces or such with two parallel fitting planes or contact areas.

The numerical values attributed to an ISO tolerance grade (IT) specify the size of the tolerance and hence the tolerance field. With ascending numbers, the size of the tolerance increases.

For identification purposes of the position of the tolerance field in relation to the nominal dimension (zero), the number chosen as tolerance grade IT is preceded by a letter.

Tolerance area H is the most common value for bores. It specifies that the minimum dimension of the bore corresponds to the nominal dimension. The permissible maximum dimension corresponds to the nominal dimension plus the IT tolerance.

**Examples**

Bore 20 H7 =  $20^{+0,021}_0$   
 min. dimension: 20,000  
 max. dimension: 20,021

Bore 8 H11 =  $8^{+0,090}_0$   
 min. dimension: 8,000  
 max. dimension: 8,090

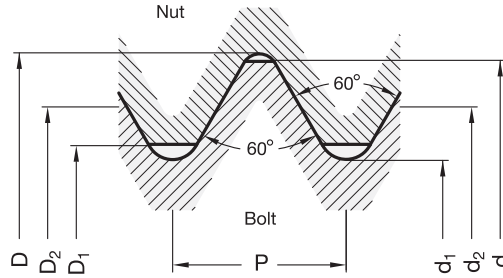
Tolerance classes for bore	Nominal size range									
	- ... 3	> 3 ... 6	> 6 ... 10	> 10 ... 18	> 18 ... 30	> 30 ... 50	> 50 ... 80	> 80 ... 120	> 120 ... 180	> 180 ... 250
D 9	+ 45 + 20	+ 60 + 30	+ 76 + 40	+ 93 + 50	+ 117 + 65	+ 142 + 80	+ 174 + 100	+ 207 + 120	+ 245 + 145	+ 285 + 170
D 12	+ 120 + 20	+ 150 + 30	+ 190 + 40	+ 230 + 50	+ 275 + 65	+ 330 + 80	+ 400 + 100	+ 470 + 120	+ 545 + 145	+ 630 + 170
F 7	+ 16 + 6	+ 22 + 10	+ 28 + 13	+ 34 + 16	+ 41 + 20	+ 50 + 25	+ 60 + 30	+ 71 + 36	+ 83 + 43	+ 96 + 50
G 6	+ 8 + 2	+ 12 + 4	+ 14 + 5	+ 17 + 6	+ 20 + 7	+ 25 + 9	+ 29 + 10	+ 34 + 12	+ 39 + 14	+ 44 + 15
G 7	+ 12 + 2	+ 16 + 4	+ 20 + 5	+ 24 + 6	+ 28 + 7	+ 34 + 9	+ 40 + 10	+ 47 + 12	+ 54 + 14	+ 61 + 15
H 7	+ 10 0	+ 12 0	+ 15 0	+ 18 0	+ 21 0	+ 25 0	+ 30 0	+ 35 0	+ 40 0	+ 46 0
H 8	+ 14 0	+ 18 0	+ 22 0	+ 27 0	+ 33 0	+ 39 0	+ 46 0	+ 54 0	+ 63 0	+ 72 0
H 9	+ 25 0	+ 30 0	+ 36 0	+ 43 0	+ 52 0	+ 62 0	+ 74 0	+ 87 0	+ 100 0	+ 115 0
H 10	+ 40 0	+ 48 0	+ 58 0	+ 70 0	+ 84 0	+ 100 0	+ 120 0	+ 140 0	+ 160 0	+ 185 0
H 11	+ 60 0	+ 75 0	+ 90 0	+ 110 0	+ 130 0	+ 160 0	+ 190 0	+ 220 0	+ 250 0	+ 290 0
H 12	+ 100 0	+ 120 0	+ 150 0	+ 180 0	+ 210 0	+ 250 0	+ 300 0	+ 350 0	+ 400 0	+ 460 0
H 13	+ 140 0	+ 180 0	+ 220 0	+ 270 0	+ 330 0	+ 390 0	+ 460 0	+ 540 0	+ 630 0	+ 720 0
H 14	+ 250 0	+ 300 0	+ 360 0	+ 430 0	+ 520 0	+ 620 0	+ 740 0	+ 870 0	+1000 0	+1150 0
JS 9	+ 12,5 - 12,5	+ 15 - 15	+ 18 - 18	+ 21,5 - 21,5	+ 26 - 26	+ 31 - 31	+ 37 - 37	+ 43,5 - 43,5	+ 50 - 50	+ 57,5 - 57,5
N 9	- 4 - 29	0 - 30	0 - 36	0 - 43	0 - 52	0 - 62	0 - 74	0 - 87	0 - 100	0 - 115
P 9	- 6 - 31	- 12 - 42	- 15 - 51	- 18 - 61	- 22 - 74	- 26 - 88	- 32 - 106	- 37 - 124	- 43 - 143	- 50 - 165

Tolerances in µm

Tolerance classes for shaft	Nominal size range									
	- ... 3	> 3 ... 6	> 6 ... 10	> 10 ... 18	> 18 ... 30	> 30 ... 50	> 50 ... 80	> 80 ... 120	> 120 ... 180	> 180 ... 250
f 7	- 6 - 16	- 10 - 22	- 13 - 28	- 16 - 34	- 20 - 41	- 25 - 50	- 30 - 60	- 36 - 71	- 43 - 83	- 50 - 96
f 9	- 6 - 31	- 10 - 40	- 13 - 49	- 16 - 59	- 20 - 72	- 25 - 87	- 30 - 104	- 36 - 123	- 43 - 143	- 50 - 165
g 6	- 2 - 8	- 4 - 12	- 5 - 14	- 6 - 17	- 7 - 20	- 9 - 25	- 10 - 29	- 12 - 34	- 14 - 39	- 15 - 44
h 6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16	0 - 19	0 - 22	0 - 25	0 - 29
h 7	0 - 10	0 - 12	0 - 15	0 - 18	0 - 21	0 - 25	0 - 30	0 - 35	0 - 40	0 - 46
h 8	0 - 14	0 - 18	0 - 22	0 - 27	0 - 33	0 - 39	0 - 46	0 - 54	0 - 63	0 - 72
h 9	0 - 25	0 - 30	0 - 36	0 - 43	0 - 52	0 - 62	0 - 74	0 - 87	0 - 100	0 - 115
h 11	0 - 60	0 - 75	0 - 90	0 - 110	0 - 130	0 - 160	0 - 190	0 - 220	0 - 250	0 - 290
h 13	0 - 140	0 - 180	0 - 220	0 - 270	0 - 330	0 - 390	0 - 460	0 - 540	0 - 630	0 - 720
h 14	0 - 250	0 - 300	0 - 360	0 - 430	0 - 520	0 - 620	0 - 740	0 - 870	0 -1000	0 -1150
js 14	+ 125 - 125	+ 150 - 150	+ 180 - 180	+ 215 - 215	+ 260 - 260	+ 310 - 310	+ 370 - 370	+ 435 - 435	+ 500 - 500	+ 575 - 575
n 6	+ 10 + 4	+ 16 + 8	+ 19 + 10	+ 23 + 12	+ 28 + 15	+ 33 + 17	+ 39 + 20	+ 45 + 23	+ 52 + 27	+ 60 + 31
p 6	+ 12 + 6	+ 20 + 12	+ 24 + 15	+ 29 + 18	+ 35 + 22	+ 42 + 26	+ 51 + 32	+ 59 + 37	+ 68 + 43	+ 79 + 50

Tolerances in µm





Nominal thread-Ø	Gradient P	Bolt thread 6g						Nut thread 6H					
		Major-Ø d		Pitch-Ø d <sub>2</sub>		Minor-Ø d <sub>1</sub>		Major-Ø D		Pitch-Ø D <sub>2</sub>		Minor-Ø D <sub>1</sub>	
		max.	min.	max.	min.	max.	min.	min.	max.	min.	max.	min.	max.
M 3	0,5	2,980	2,874	2,655	2,580	2,367	2,273	3,000	not specified	2,675	2,775	2,459	2,599
M 4	0,7	3,978	3,838	3,523	3,433	3,119	3,002	4,000		3,545	3,663	3,242	3,422
M 5	0,8	4,976	4,826	4,456	4,361	3,995	3,869	5,000		4,480	4,605	4,134	4,334
M 6	1	5,974	5,794	5,324	5,212	4,747	4,596	6,000		5,350	5,500	4,917	5,153
M 8	1,25	7,972	7,760	7,160	7,042	6,438	6,272	8,000		7,188	7,348	6,647	6,912
M 10	1,5	9,968	9,732	8,994	8,862	8,128	7,938	10,000		9,026	9,206	8,376	8,676
M 12	1,75	11,966	11,701	10,829	10,679	9,819	9,602	12,000		10,863	11,063	10,106	10,441
M 14	2	13,962	13,682	12,663	12,503	11,508	11,271	14,000		12,701	12,913	11,835	12,210
M 16	2	15,962	15,682	14,663	14,503	13,508	13,274	16,000		14,701	14,913	13,835	14,210
M 20	2,5	19,958	19,623	18,334	18,164	16,891	16,625	20,000		18,376	18,600	17,294	17,744
M 24	3	23,952	23,577	22,003	21,803	20,271	19,955	24,000	22,051	22,316	20,752	21,252	

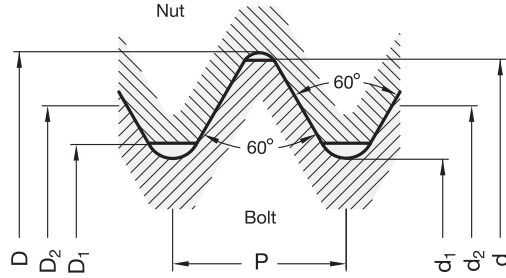
**Description**

The limiting sizes for standard threads given in the table comply with

- tolerance field **6g** for bolt threads
- tolerance field **6H** for nut threads.

The metric steel and metal threads specified in this catalogue are based on the tolerance fields given above.

For threads in plastic standard parts (without steel or metallic thread insert) this tolerances can as a rule not be maintained for production-orientated reasons.



Nominal thread-Ø	Gradient P	Bolt thread 6g						Nut thread 6H					
		Major-Ø d		Pitch-Ø d <sub>2</sub>		Minor-Ø d <sub>1</sub>		Major-Ø D		Pitch-Ø D <sub>2</sub>		Minor-Ø D <sub>1</sub>	
		max.	min.	max.	min.	max.	min.	min.	max.	min.	max.	min.	max.
M 5	0,5	4,980	4,874	4,655	4,580	4,367	4,273	5,000	not specified	4,675	4,775	4,459	4,599
M 6	0,5	5,980	5,874	5,655	5,570	5,367	5,263	6,000		5,675	5,787	5,459	5,599
M 8	0,5	7,980	7,874	7,655	7,570	7,367	7,263	8,000		7,675	7,787	7,459	7,599
M 10	0,5	9,980	9,874	9,655	9,570	9,367	9,263	10,000		9,675	9,787	9,459	9,599
M 12	0,5	11,980	11,874	11,655	11,565	11,367	11,258	12,000		11,675	11,793	11,459	11,599
M 6	0,75	5,978	5,838	5,491	5,391	5,058	4,929	6,000		5,513	5,645	5,188	5,378
M 8	0,75	7,978	7,838	7,491	7,391	7,058	6,929	8,000		7,513	7,645	7,188	7,378
M 10	0,75	9,978	9,838	9,491	9,391	9,058	8,929	10,000		9,513	9,645	9,188	9,378
M 12	0,75	11,978	11,838	11,491	11,385	11,058	10,923	12,000		11,513	11,653	11,188	11,378
M 16	0,75	15,978	15,838	15,491	15,385	15,058	14,923	16,000		15,513	15,653	15,188	15,378
M 8	1	7,974	7,794	7,324	7,212	6,747	6,596	8,000		7,350	7,500	6,917	7,153
M 10	1	9,974	9,794	9,324	9,212	8,747	8,596	10,000		9,350	9,500	8,917	9,153
M 12	1	11,974	11,794	11,324	11,206	10,747	10,590	12,000		11,350	11,510	10,917	11,153
M 16	1	15,974	15,794	15,324	15,206	14,747	14,590	16,000		15,350	15,510	14,917	15,153
M 20	1	19,974	19,794	19,324	19,206	18,747	18,590	20,000		19,350	19,510	18,917	19,153
M 12	1,5	11,968	11,732	10,994	10,854	10,128	9,930	12,000		11,026	11,216	10,376	10,676
M 14	1,5	13,968	13,732	12,994	12,854	12,128	11,930	14,000		13,026	13,216	12,376	12,676
M 16	1,5	15,968	15,732	14,994	14,854	14,128	13,930	16,000		15,026	15,216	14,376	14,676
M 18	1,5	17,968	17,732	16,994	16,854	16,128	15,930	18,000		17,026	17,216	16,376	16,676
M 20	1,5	19,968	19,732	18,994	18,854	18,128	17,930	20,000		19,026	19,216	18,376	18,676
M 22	1,5	21,968	21,732	20,994	20,854	20,128	19,930	22,000		21,026	21,216	20,376	20,676
M 26	1,5	25,968	25,732	24,994	24,844	24,128	23,920	26,000		25,026	25,226	24,376	24,676
M 27	1,5	26,968	26,732	25,994	25,844	25,128	24,920	27,000		26,026	26,226	25,376	25,676
M 30	1,5	29,968	29,732	28,994	28,844	28,128	27,920	30,000		29,026	29,226	28,376	28,676
M 35	1,5	34,968	34,732	33,994	33,844	33,128	32,920	35,000		34,026	34,226	33,376	33,676
M 40	1,5	39,968	39,732	38,994	38,844	38,128	37,920	40,000		39,026	39,226	38,376	38,676
M 20	2	19,962	19,682	18,663	18,503	17,508	17,271	20,000		18,701	18,913	17,835	18,210
M 24	2	23,962	23,682	22,663	22,493	21,508	21,261	24,000		22,701	22,925	21,835	22,210
M 30	2	29,962	29,682	28,663	28,493	27,508	27,261	30,000	28,701	28,925	27,835	28,210	
M 36	2	35,962	35,682	34,663	34,493	33,508	33,261	36,000	34,701	34,925	33,835	34,210	
M 42	2	41,962	41,682	40,663	40,493	39,508	39,261	42,000	40,701	40,925	39,835	40,210	

**Description**

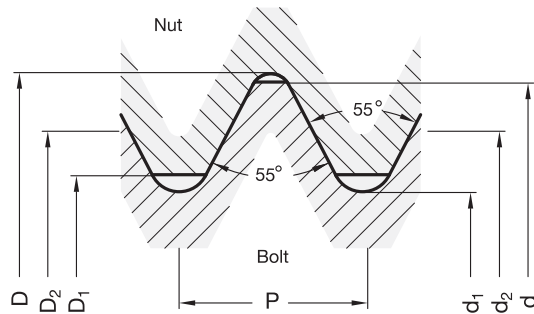
The limiting sizes for standard threads given in the table comply with

- tolerance field **6g** for bolt threads
- tolerance field **6H** for nut threads.

The metric steel and metal threads specified in this catalogue are based on the tolerance fields given above.

For threads in plastic standard parts (without steel or metallic thread insert) this tolerances can as a rule not be maintained for production-orientated reasons.





Nominal thread size	Gradient P		Bolt thread						Nut thread						
	Number of gears of 25,4 mm equal to mm		Major-Ø d		Pitch-Ø d <sub>2</sub>			Minor-Ø d <sub>1</sub>		Major-Ø D		Pitch-Ø D <sub>2</sub>		Minor-Ø D <sub>1</sub>	
			max.	min.	max.	min. A	min. B	max.	min.	max.	min.	min.	max.	min.	max.
G 1/8	28	0,907	9,728	9,514	9,174	9,040	8,933	8,566	not specified	not specified	9,728	9,254	9,147	8,848	8,566
G 1/4	19	1,337	13,157	12,907	12,301	12,176	12,051	11,445			13,157	12,426	12,301	11,890	11,445
G 3/8	19	1,337	16,662	16,412	15,806	15,681	15,556	14,950			16,662	15,931	15,806	15,395	14,950
G 1/2	14	1,814	20,955	20,671	19,793	19,651	19,509	18,631			20,955	19,935	19,793	19,172	18,631
G 5/8	14	1,814	22,911	22,627	21,749	21,607	21,465	20,587			22,911	21,891	21,749	21,128	20,587
G 3/4	14	1,814	26,441	26,157	25,279	25,137	24,995	24,117			26,441	25,421	25,279	24,658	24,117
G 7/8	14	1,814	30,201	29,917	29,039	28,897	28,755	27,877			30,201	29,181	29,039	28,418	27,877
G 1	11	2,309	33,249	32,889	31,770	31,590	31,410	30,291			33,249	31,950	31,770	30,931	30,291
G 1 1/8	11	2,309	37,897	37,537	36,418	36,238	36,058	34,939			37,897	36,598	36,418	35,579	34,939
G 1 1/4	11	2,309	41,910	41,550	40,431	40,251	40,071	38,952			41,910	40,611	40,431	39,592	38,952
G 1 1/2	11	2,309	47,803	47,443	46,324	46,144	45,964	44,845			47,803	46,504	46,324	45,485	44,845
G 1 3/4	11	2,309	53,746	53,386	52,267	52,087	51,907	50,788			53,746	52,447	52,267	51,428	50,788
G 2	11	2,309	59,614	59,254	58,135	57,955	57,775	56,656			59,614	58,315	58,135	57,296	56,656

**Description**







The pitch-diameter d<sub>2</sub> of the bolt thread has 2 tolerance classes, namely A and B.

The nut thread has only 1 tolerance class.

The metal pipe threads listed in this catalogue are made in the "more accurate" tolerance class A.



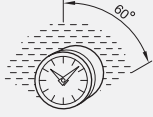



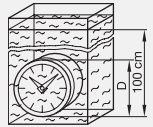
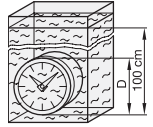
For threads in plastic standard parts this tolerance class can as a rule not be maintained for production-orientated reasons.



<b>First identification number:</b> Degree of protection (protection against foreign particles)		
<b>0</b>		No special protection
<b>1</b>		Protection against ingress of solid foreign particles with a diameter larger than 50 mm
<b>2</b>		Protection against ingress of solid foreign particles with a diameter larger than 12 mm
<b>3</b>		Protection against ingress of solid foreign particles with a diameter larger than 2,5 mm
<b>4</b>		Protection against ingress of solid foreign particles with a diameter larger than 1 mm
<b>5</b>		Protection against damaging dust deposits. Dust penetration is not fully prevented, but the proper function of the equipment must not be jeopardised (dust-protected)
<b>6</b>		Protection against dust penetration (dust-proof)

This standard addresses the protection of electrical equipment by means of housings, covers, and similar.

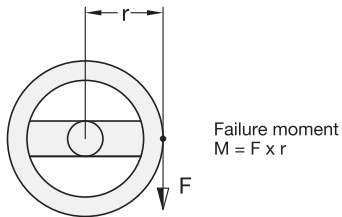
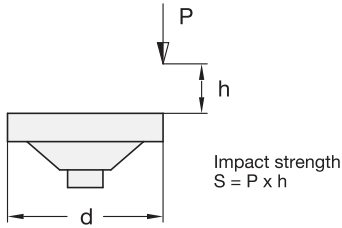
The degrees of protection (extract) are used in analogy with the different position indicators.

<b>Second identification number:</b> Degree of protection (water protection)		
<b>0</b>		No special protection
<b>1</b>		Protection against vertically falling drops of water
<b>2</b>		Protection against dripping water falling at an angle of up to 15°
<b>3</b>		Protection against dripping water falling at an angle of up to 60° (spray water)
<b>4</b>		Protection against water hitting from all directions (splash water)
<b>5</b>		Protection against water jets projected by a nozzle from any direction (jet water)
<b>6</b>		Protection against heavy seas or powerful water jets
<b>7</b>		Protection against immersion in water under stated conditions of pressure and time
<b>8</b>		Suitable for permanent immersion under specified conditions



# Strength values of plastic handwheels

in ascending order of the standard numbers



An extensive series of tests has been carried out to determine the strength values of the plastic handwheels listed below. The results provide information on the impact strength and the torque at which the handwheels break. With a maximum known transmitted torque, the safety factor can be determined.

The impact strength  $S$  is determined as shown in the outline drawing opposite:

The handwheel is firmly clamped at its steel hub. A cylindrical steel element rounded at the tip (0.680 kg in weight) repeatedly hits the wheel rim, with the height of fall  $h$  increasing by 0.1 m after every fall. Failure occurs at the listed  $S$  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 intended purpose or use.

## Disc handwheels GN 520 / GN 520.6 → Page 162

<b>d</b> in mm	50	63	80	100	125	150	175	200	250	300
<b>S</b> in J	3	4	8	11	14	19	27	36	40	48
<b>M</b> in Nm	55	75	90	150	300	300	500	700	1300	1500

## Disc handwheels GN 521 → Page 156

<b>d</b> in mm	80	100	125	150	175	200	250	300		
<b>S</b> in J	6	13	25	26	26	27	30	30		
<b>M</b> in Nm	34	60	125	180	195	320	500	500		

## Handwheels with retractable handle GN 521.3 → Page 157

<b>d</b> in mm	80	100	125	150	175	200	250	300		
<b>S</b> in J	6	14	14	15	20	27	30	30		
<b>M</b> in Nm	34	60	125	180	195	320	500	500		

## Spoked handwheels GN 522 / Handwheels with retractable handle GN 522.3 → Page 160

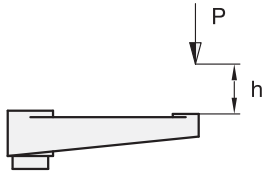
<b>d</b> in mm	80	100	125	160	200	250	300	375		
<b>S</b> in J	5	7	10	15	24	28	36	40		
<b>M</b> in Nm	32	54	94	185	300	420	480	480		

## Spoked handwheels GN 555 → Page 187

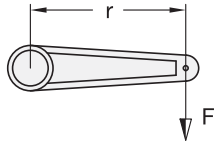
<b>d</b> in mm	100	125	140	160	200	250	300			
<b>S</b> in J	5	8	12	12	16	19	33			
<b>M</b> in Nm	67	120	165	165	300	405	800			

# Strength values of plastic cranked handles

in ascending order of the standard numbers



Impact strength  $S = P \times h$



Failure moment  $M = F \times r$

An extensive series of tests has been carried out to determine the strength values of the plastic cranked handles listed below. The results provide information on the impact strength and the torque at which the cranked handles break. With a maximum known transmitted torque, the safety factor can be determined.

The impact strength  $S$  is determined as shown in the outline drawing opposite:

The cranked handle is firmly clamped at its steel hub. A cylindrical steel element rounded at the tip (0.680 kg in weight) repeatedly hits the crank arm, with the height of fall  $h$  increasing by 0.1 m after every fall. Failure occurs at the listed  $S$  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 intended purpose or use.

Cranked handles GN 570.2 → Page 135							
<b>r</b> in mm	<b>50</b>	<b>64</b>	<b>80</b>	<b>100</b>	<b>130</b>	<b>160</b>	
<b>S</b> in J	7	11	15	27	45	55	
<b>M</b> in Nm	80	120	200	210	350	470	



# Material properties of Elastomers (rubber)



International symbol	NR	NBR	CR	FPM, FKM	TPE	PUR
<b>Trade name</b>		Perbunan®	Neoprene®	Viton®	Santoprene®	Bayflex®
<b>Chemical name</b>	Natural rubber	Acrylonitrile-butadiene rubber	Chloroprene rubber	Fluorine rubber Fluorine caoutchouc	Thermoplastic rubber	Polyurethane
<b>Hardness (Shore-A)</b>	30 ... 90	25 ... 95	30 ... 90	65 ... 90	55 ... 87	65 ... 90
<b>Temperature resistance</b>						
• short-term	-60° ... +130 °C	-40° ... +150 °C	-30° ... +150 °C	-30° ... +280 °C	-40° ... +150 °C	-40° ... +130 °C
• long-term	-40° ... + 80 °C	-30° ... +120 °C	-20° ... +120 °C	-20° ... +230 °C	-30° ... +125 °C	-25° ... +100 °C
<b>Tensile strength</b> in N/mm <sup>2</sup>	-	25	25	20	8,5	20
<b>Wear-/ abrasion resistance</b>	good	good	good	good	good	excellent
<b>Resistance to:</b>						
• Oil, greases	not suitable	outstanding	good	good	good	very good
• Solvents	low	partly good	partly good	very good	outstanding	satisfactory
• Acids	low	restricted	good	very good	outstanding	not suitable
• Alkalines	low	good	very good	very good	outstanding	not suitable
• Fuel	not suitable	good	slight	outstanding	good	good
<b>General</b>	<p>NR is a material with very good physical properties and excellent mechanical strength. Use e.g. for spring elements.</p> <p>Please note: natural rubber has a characteristic smell.</p>	<p>NBR is a synthetic special rubber for rubber parts with high requirements for resistance to swelling when in contact with oils and fuels.</p> <p>Standard material for o-rings.</p>	<p>CR is one of the most frequently used synthetic rubbers with a wide range of applications for parts which require exceptional resistance to ageing, atmospheric and environmental influences.</p>	<p>FPM is unmatched for applications with contact to fuels, oils, solvents, as well as many acids and caustic solutions; resistant to atmospheric and environmental influences.</p> <p>Due to its high price its use is restricted to high quality rubber parts which are exposed to extremely heavy wear.</p> <p>Viton® is a registered trademark of DuPont performance rubbers.</p>	<p>TPE is a thermoplastic rubber, the performance characteristics of which are comparable to those of many customary vulcanised special rubbers.</p> <p>TPE is a multi-purpose material with outstanding dynamic fatigue strength and excellent resistance to ozone and atmospheric influences (environmental influences).</p>	<p>PUR is known for exceptionally good mechanical characteristics with very good resistance to atmospheric and environmental influences.</p> <p>In addition, the extreme resistance to tearing and to wear, should also be mentioned.</p>

The plastic materials used for GANTER / ELESA products can be classed in three main groups:

Duroplast	Technopolymer	Elastomers Thermoplastic Elastomers
<p>This group includes plastic materials which solidify by chemical reactions. They closely crosslink into spatial lattice patterns of macromolecules which gives Duroplast material high mechanical strength and surface hardness. Their elasticity is low, however.</p> <p>The curing process is irreversible. Unlike Technopolymer, Duroplast cannot be melted because it is rigid up to degradation temperature. Phenolic resins are among the most commonly used Duroplast materials.</p> <p>In general, the molecular crosslinking of Duroplast creates good chemical stability.</p> <p>The colouring options of components made of Duroplast are limited.</p>	<p>With increasing temperature and once the softening point is exceeded, this group of Technopolymer melts, can be heat distorted and solidifies again after cooling. This process can be repeated any number of times. Unlike Duroplast, there is no chemical reaction during processing.</p> <p>Technopolymer materials can be subdivided into amorphous and partially crystalline plastics. The disordered structure of amorphous materials allows the production of transparent components by injection moulding right through to crystal-clear parts. Partially crystalline Technopolymer have a structure resulting in enhanced mechanical properties and temperatures of use.</p> <p>The wide variety of different Technopolymer and their options of modifications allow the production of “tailor-made” construction materials with respect to mechanical properties, chemical resistance, temperature resistance and different colours.</p>	<p>The group of elastomers includes materials which can be stretched and bent without exerting great force. Once the deforming force relaxes or no longer acts at all, the parts take their original shape.</p> <p>In chemical terms, these are macromolecules which are interconnected by only a few chemical crosslinking bridges.</p> <p>By way of modification, elastomers can be made in varying degrees of hardness. They can be dyed easily by adding colour pigments.</p>

## Information

The above details are general values without claiming to be complete. Material properties may vary widely through additives, modifications and environmental influence factors.

The details are unsuitable as the sole basis for constructions. The data may not be used in place of tests to determine the suitability of a material for a specific purpose. Reference is made at this point to the mechanical strength values of various plastic products which have been determined by tests. → *Page 1138 ff.*

No warranty or liability will be accepted for the above specifications and details.

The essential plastic materials used for GANTER / ELESA products are listed in the tables below.



	Duroplast	Technopolymer		
<b>Symbol</b>	PF 31	PA 6	PA 6 GF30	PA-T
<b>Description</b>	Phenolic resin	Polyamide	Polyamide with 30 % glass fibre	Polyamide transparent
<b>Specimen condition</b>	–	dry / air humid	dry / air humid	–
<b>Yield stress</b>	–	80 / 50	– / –	90
<b>Tensile strength</b> in MPa*	60	– / –	180 / 110	–
<b>Tension-E-Module</b> in MPa*	9000	3000 / 1500	9000 / 6500	2800
<b>Ball indentation hardness</b> in MPa*	250	150 / 70	220 / 150	140
<b>Temperature resistance:</b>				
• max. short-term	180 °C	180 °C	200 °C	180 °C
• max. long-term	140 °C	90 °C	120 °C	90 °C
• min. application temperature	–20 °C	–40 °C	–40 °C	–30 °C
<b>Resistance to:</b>				
• Oil, greases	+	+	+	+
• Solvents (Tri / Per)	o	+ / +	+ / +	+ / +
• Acids (weak/strong)	+ / –	o / –	o / –	– / –
• Alkalines (weak/strong)	+ / –	+ / o	o / –	+ / +
• Petrol	+	+	+	+
• Alcohol	+	+	+	–
• Hot water	o	o	o	–
• UV light / weather exposure	–	o	o	o
<b>Fire behaviour (UL 94)</b>	V-0	HB	HB	V-2
<b>General</b>	<p>This Duroplast material on phenolic resin basis with organic filler has the following properties:</p> <p>High stiffness and hardness, low tendency to creep, high heat forming resistance, low thermal linear expansion, high surface slip resilience, low flammability.</p> <p>Phenolic resins are available only in dark colour shades. They are not suitable for use with food.</p> <p>Typical applications include thermally insulating operating elements.</p>	<p>The material group polyamide 6 (partially crystalline) offers universal materials for mechanical function components in mechanical engineering.</p> <p>Polyamides are:</p> <ul style="list-style-type: none"> <li>- cold-temperature resistant</li> <li>- impact stress resilient and impact resistant</li> <li>- abrasion resistant</li> </ul> <p>Reinforced polyamides such as PA 6 GF30 combine high stiffness and rigidity with extreme impact strength, properties which make them highly robust under mechanical stress.</p> <p>Polyamide PA-T (amorphous) is translucent with a slightly yellow transparency. Typically used for oil level sight glass.</p>		

\*MPa = Megapascal, + resistant, o conditionally resistant, – non-resistant

	Technopolymer			
Symbol	PP GF20	PC	POM-C	POM-H
Description	Polypropylene with 20 % glass fibre	Polycarbonate	Polyacetal (Copolymer)	Polyacetal (Homopolymer)
Specimen condition	–	–	–	–
Yield stress	33	63	65	72
Tensile strength in MPa*	–	–	–	70
Tension-E-Module in MPa*	2900	2400	2700	3100
Ball indentation hardness in MPa*	80	110	145	174
Temperature resistance:				
• max. short-term	140 °C	140 °C	140 °C	140 °C
• max. long-term	100 °C	125 °C	90 °C	80 °C
• min. application temperature	0 °C	–100 °C	–50 °C	–50 °C
Resistance to:				
• Oil, greases	+	o	+	+
• Solvents (Tri/Per)	o/o	–/–	–/+	–/+
• Acids (weak/strong)	+/+	+/–	+/–	+/–
• Alkalines (weak/strong)	+/+	–/–	+/+	+/+
• Petrol	+	–	+	+
• Alcohol	+	o	+	+
• Hot water	+	–	+	o
• UV light / weather exposure	o	o	o	o
Fire behaviour (UL 94)	–	V-2	HB	HB
General	<p>Propylenes (partially crystalline) are universal standard plastic materials with balanced property levels:</p> <p>Average strength, stiffness, impact resistance, low density, excellent chemical resistance but very bad cold temperature properties.</p> <p>Embedded glass fibre, e.g. PP GF20, enhances stiffness and strength.</p> <p>Typical applications for propylenes are armatures.</p>	<p>Polycarbonates (amorphous) are translucent plastic materials with following properties:</p> <p>High strength, in particular high impact resistance, good optical properties, self-extinguishing.</p> <p>But: sensitive to chemicals and stress cracking, not suitable for high dynamic stress loads, notch sensitive at edges and corners.</p>	<p>Polyacetals (partially crystalline) are universal materials used in function components for precision engineering and in apparatus construction.</p> <p>They feature excellent properties:</p> <ul style="list-style-type: none"> <li>- low friction resistance</li> <li>- good abrasion resistance</li> <li>- good resilience</li> <li>- good fatigue resistance</li> <li>- good chemical resistance</li> </ul> <p>Typical applications include snap-fit elements (form-locking connecting elements).</p>	

\*MPa = Megapascal, + resistant, o conditionally resistant, – non-resistant



AISI Standard	304	303	CF-8 (Precision casting)	301
<b>German Material No.</b>	1.4301	1.4305	1.4308	1.4310
<b>DIN / EN-Number</b>	EN 10088-1; -2; -3	EN 10088-1; -2; -3	EN 10283	EN 10088-1; -2; -3
<b>Symbol</b>	X 5 CrNi 18-10	X 8 CrNiS 18-9	GX 5CrNi 19-10	X 10 CrNi 18-8
<b>Alloying components %</b>	C ≤ 0,07 % Si ≤ 1,0 % Mn ≤ 2,0 % P ≤ 0,045 % S ≤ 0,030 % Cr 17,0 ... 19,5 % Ni 8,0 ... 10,5 %	C ≤ 0,10 % Si ≤ 1,0 % Mn ≤ 2,0 % P ≤ 0,045 % S ≤ 0,15 ... 0,35 % Cr 17,0 ... 19,0 % Ni 8,0 ... 10,0 %	C ≤ 0,07 % Si ≤ 1,50 % Mn ≤ 1,5 % P ≤ 0,040 % S ≤ 0,03 % Cr 18,0 ... 20,0 % Ni 8,0 ... 11,0 %	C ≤ 0,05 ... 0,15 % Si ≤ 2,0 % Mn ≤ 2,0 % P ≤ 0,045 % S ≤ 0,015 % Mo ≤ 0,8 % Cr 16,0 ... 19,0 % Ni 6,0 ... 9,5 %
<b>Minimum tensile strength R<sub>m</sub> in N/mm<sup>2</sup></b>	500 ... 700	500 ... 700	440 ... 640	500 ... 750
<b>Yield strength R<sub>p0,2</sub> in N/mm<sup>2</sup></b>	≥ 190	≥ 190	≥ 175	≥ 195
<b>Machinability</b>	medium	very good	medium	poor
<b>Forgeability</b>	good	poor	–	good
<b>Weldability</b>	excellent	poor	good	good
<b>Special characteristics</b>	antimagnetic structure suitable for low temperatures, can be used up to + 700 °C	antimagnetic structure	antimagnetic, austenitic structure	austenitic structure
<b>Corrosion resistance</b>	good  Resistant to corrosion in the natural environment: water, rural and urban atmospheres without significant chloride or acid concentrations, in food areas and in agricultural food areas.	medium  Due to the sulphur content reservations in environments which contain acids and chlorides.	good  Resistant to corrosion, Material is largely comparable with AISI 304.	good  Resistant to corrosion in the natural environment: water, rural, urban and industrial atmospheres.
<b>Main areas of application</b>	Food industry Agriculture Chemical industry Vehicle construction Construction industry Machine construction Decorative purposes (Kitchen equipment)	Vehicle construction Electronics Decorative purposes (Kitchen equipment)	Food industry Beverage industry Packaging industry Fittings Pumps Agitators	Springs for temperatures up to 300 °C Tools (knives) Plates for vehicle construction Chemical and food industry

The characteristics described should be treated as guidelines only. No guarantee is made. The exact conditions of use have to be taken into account individually.



AISI Standard	316L Sintered Material	630	304 Cu
<b>German Material No.</b>	1.4404	1.4542	1.4567
<b>DIN / EN-Number</b>	(Sint C40)	EN 10088-3	EN 10088-1; -3
<b>Symbol</b>	X 2 CrNiMo 17-12-2	–	X 3 CrNiCu 18-9-4
<b>Alloying components %</b>	C ≤ 0,08 % Si ≤ 0,9 % Mn ≤ 0,1 % Mo 2,0 ... 4,0 Cr 16,0 ... 19,0 Ni 10,0 ... 14,0 %	C ≤ 0,06 % Si ≤ 0,6 % Mn ≤ 1,0 % P ≤ 0,03 % S ≤ 0,025 % Cr 15,0 ... 16,5 % Mo ≤ 0,5 % Ni 4,0 ... 5,0 %	C ≤ 0,04 % Si ≤ 1,0 % Mn ≤ 2,0 % P ≤ 0,045 % S ≤ 0,03 % Cr 17,0 ... 19,0 % Ni 8,5 ... 10,5 %
<b>Minimum tensile strength</b> R <sub>m</sub> in N/mm <sup>2</sup>	330	800 ... 1300	450 ... 650
<b>Yield strength</b> R <sub>p0,2</sub> in N/mm <sup>2</sup>	≥ 250	500 ... 1100	≥ 175
<b>Machinability</b>	–	poor	excellent
<b>Forgeability</b>	–	good	good
<b>Weldability</b>	–	good	very good
<b>Special characteristics</b>	antimagnetic structure	hardenable (precipitation hardening)	antimagnetic structure, suitable for low temperatures
<b>Corrosion resistance</b>	medium  By virtue of its coarser porosity the corrosion resistance is in general reduced as compared with Stainless Steel. Reservations especially in acid and salty environment.	good  Corrosion resistance comparable with AISI 304. Insensitive to intergranular corrosion.	very good  Resistant to corrosion in the natural environment: water, rural and urban atmospheres without significant acid concentrations, in food areas and in agricultural food areas.
<b>Main areas of application</b>	Paint, oil, soap and textile industry Electronics Decorative purposes (Kitchen equipment)	Shipbuilding Food industry Construction engineering Automotive industry	Food industry Agriculture Chemical industry Machine construction Shipbuilding Electronics Decorative purposes (Kitchen equipment)

The characteristics described should be treated as guidelines only. No guarantee is made. The exact conditions of use have to be taken into account individually.



# Strength values of cabinet "U" handles in plastic

in ascending order of the standard numbers



Impact strength  
 $S_1 = P \times h_1$



Impact strength  
 $S_2 = P \times h_2$



Breaking load  $K_1$



Breaking load  $K_2$

An extensive series of tests were carried out to determine the strength values of the plastic cabinet "U" handles listed below. The results provide information on the impact strength and the breaking load under normal stress loads in 2 stress load directions.

The impact strength  $S_1$  respectively  $S_2$  was determined shown in the outline drawing opposite:

A cylindrical steel element rounded at the tip (0.680 kg in weight) repeatedly hits the handle, with the height of fall  $h$  increasing by 0.1 mm after every fall. Failure occurs at the listed  $S$  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 intended purpose.

Cabinet "U" handles GN 528-PA → Page 70							
Size	94	117	132	140	160	179	235
$S_1$ in J	15	20	27	27	29	33	40
$S_2$ in J	8	13	14	20	20	20	34
$K_1$ in N	3500	4500	3500	3400	3300	2800	3200
$K_2$ in N	2500	2500	2500	2600	2700	2700	3500

Cabinet "U" handles GN 528-PP → Page 70							
Size	94	117	132	140	160	179	235
$S_1$ in J	8	10	12	13	15	16	17
$S_2$ in J	3	4	5	6	7	8	11
$K_1$ in N	1700	2000	2000	1800	1800	1800	1700
$K_2$ in N	1300	1500	1300	1300	1300	1300	1700

Cabinet "U" handles GN 528-SV → Page 70							
Size	94	117	132	179			
$S_1$ in J	9	10	12	20			
$S_2$ in J	5	8	8	13			
$K_1$ in N	1750	3500	3000	1400			
$K_2$ in N	1700	2200	1800	2100			

Cabinet "U" handles GN 528.1-PA → Page 72							
Size	94	105	117	132			
$S_1$ in J	10	10	12	10			
$S_2$ in J	6	7	9	8			
$K_1$ in N	2000	2000	3000	3000			
$K_2$ in N	1800	1800	1600	1700			

Cabinet "U" handles GN 528.1-PP → Page 72							
Size	117						
$S_1$ in J	9						
$S_2$ in J	4						
$K_1$ in N	1900						
$K_2$ in N	950						

# Strength values of cabinet "U" handles in plastic

in ascending order of the standard numbers



Cabinet "U" handles GN 625 → Page 66									
Size	86	117	179	300					
S <sub>1</sub> in J	50	50	27	25					
S <sub>2</sub> in J	120	120	80	75					
K <sub>1</sub> in N	4000	4000	3000	2000					
K <sub>2</sub> in N	7000	5000	3500	3000					

Cabinet "U" handles GN 628 → Page 78									
Size	94	117	132	150	179				
S <sub>1</sub> in J	8	10	11	12	16				
S <sub>2</sub> in J	3	4	4	5	9				
K <sub>1</sub> in N	2000	2700	2700	2700	2200				
K <sub>2</sub> in N	1500	1800	1800	1500	1500				

Cabinet "U" handles GN 725 → Page 68									
Size	86	94	117	120	132	150	179	235	300
S <sub>1</sub> in J	12	10	8	8	8	8	11	11	18
S <sub>2</sub> in J	6	8	12	12	12	13	13	13	11
K <sub>1</sub> in N	2400	2300	2250	2250	2200	2000	1900	1900	2000
K <sub>2</sub> in N	2400	2300	2650	2650	2450	2550	2000	2000	2000



# Load rating of cabinet "U" handles / tubular handles in metal

in ascending order of the standard numbers



Extensive test series 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 deformation irrelevant in terms of function and appearance remained at the listed values for  $L_1$  and  $L_2$  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.



Load capacity  $L_1$  in N



Load capacity  $L_2$  in N

## Tubular handles GN 331 → Page 100

Size	30-200	30-300					
$L_1$	3000	2400					
$L_2$	4000	3700					

## Tubular handles GN 332 → Page 106

Size	30-200	30-300					
$L_1$	2500	2250					
$L_2$	3500	3400					

## Tubular handles GN 333 → Page 102

Size	28-200	28-250	28-300	28-350	28-400	28-500	28-600	
$L_1$	2500	2250	2000	1750	1650	1575	1500	
$L_2$	4750	4250	3750	3250	2750	2250	1500	
Size	30-200	30-300	30-350	30-400	30-500	30-600	30-1000	
$L_1$	2500	2250	2200	2200	2000	1800	750	
$L_2$	3500	3400	3200	2850	2250	1900	800	

## Tubular handles GN 333.1 → Page 96

Size	20-180	20-200	20-250	20-300	20-350	20-400		
$L_1$	1600	1500	1400	1250	750	700		
$L_2$	2500	2000	1900	1600	1550	1250		
Size	28-200	28-250	28-300	28-350	28-400	28-500	28-600	
$L_1$	1700	1500	1500	1350	1000	1000	1000	
$L_2$	4800	3500	2800	2400	1800	1700	1500	
Size	30-200	30-300	30-350	30-400	30-500	30-600	30-1000	
$L_1$	3000	2400	2400	2350	2350	1750	1250	
$L_2$	4000	3700	3000	2700	2300	2000	1000	

## Stainless Steel-Tubular handles GN 333.5 → Page 98

Size	200	250	300	400	500	600		
$L_1$	3000	2500	2000	1750	1500	1450		
$L_2$	7500	6000	5000	4250	3500	2500		

## Oval tubular handles GN 334 → Page 114

Size	200	250	300	350	400	500	600	800
$L_1$	1750	1650	1500	1500	1250	1200	1100	700
$L_2$	3000	2400	1750	1750	1500	1350	1000	700

# Load rating of cabinet "U" handles / tubular handles in metal

in ascending order of the standard numbers



Oval tubular handles GN 366 → Page 117							
Size	200	250	300	400	500	600	
L <sub>1</sub>	2000	2000	2000	1500	1300	900	
L <sub>2</sub>	3500	2800	2250	1600	1450	1150	

Arch handles GN 424.1 → Page 85							
Size	64	96	128	160	192		
L <sub>1</sub>	1300	800	800	700	525		
L <sub>2</sub>	6500	5250	2700	2000	1550		

Stainless Steel-Arch handles GN 424.5 → Page 85							
Size	64	96	128	160	192		
L <sub>1</sub>	1500	900	900	800	600		
L <sub>2</sub>	7500	5750	3000	2250	1750		

Cabinet "U" handles, Steel GN 425 → Page 80							
Size	8-55	8-64	8-88	8-96	8-100	8-120	8-128
L <sub>1</sub>	475	550	500	500	500	450	500
L <sub>2</sub>	5000	4300	3300	3000	2800	1750	1250
Size	10-88	10-100	10-120	10-180	10-200	10-235	
L <sub>1</sub>	1300	900	900	700	500	400	
L <sub>2</sub>	4000	3750	3000	2000	1200	1150	

Stainless Steel-Cabinet "U" handles GN 425 → Page 82							
Size	8-64	8-88	8-96	8-100	8-120	8-128	
L <sub>1</sub>	600	850	700	700	700	700	
L <sub>2</sub>	4000	3000	2500	2000	1500	1300	
Size	10-88	10-100	10-120	10-180	10-200	10-235	
L <sub>1</sub>	1400	1000	1000	700	600	500	
L <sub>2</sub>	4000	3800	3000	2250	1500	1400	

Cabinet "U" handles, Steel GN 425.1 → Page 86							
Size	88	100	120				
L <sub>1</sub>	1000	900	900				
L <sub>2</sub>	2000	1500	1500				

Stainless Steel-Cabinet "U" handles GN 425.1 → Page 86							
Size	88	100	120				
L <sub>1</sub>	1500	1450	1450				
L <sub>2</sub>	2150	2000	2000				

Folding handles, Steel GN 425.2 → Page 87							
Size	100	120	180				
L <sub>1</sub>	1750	1600	1250				
L <sub>2</sub>	2600	2600	2500				

Stainless Steel-Folding handles GN 425.2 → Page 87							
Size	100	120	180				
L <sub>1</sub>	2000	2000	1750				
L <sub>2</sub>	5000	3500	2250				



# Load rating of cabinet "U" handles / tubular handles in metal

in ascending order of the standard numbers



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 deformation irrelevant in terms of function and appearance remained at the listed values for  $L_1$  and  $L_2$  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 intended purpose or use. Ambient factors and ageing may influence the specified values.



Load capacity  $L_1$  in N



Load capacity  $L_2$  in N

## Folding handles, Steel GN 425.5 → Page 90

Size	100	120	180					
$L_1$	500	500	500					
$L_2$	–	–	–					

## Stainless Steel-Folding handles GN 425.5 → Page 90

Size	100	120	180					
$L_1$	500	500	500					
$L_2$	–	–	–					

## Cabinet "U" handles GN 425.6 → Page 80

Size	8-55	8-64	8-88	8-96	8-100	8-120	8-128	
$L_1$	300	300	300	200	200	200	200	
$L_2$	1400	1200	825	750	700	575	450	
Size	10-88	10-100	10-120	10-180	10-200	10-235		
$L_1$	500	450	400	350	250	250		
$L_2$	2000	1500	1000	700	600	500		

## Cabinet "U" handles GN 426 → Page 92

Size	20-200	20-250	20-300	20-350	28-250	28-300	28-350	28-400
$L_1$	1400	1100	1100	1000	2000	1900	1800	1500
$L_2$	3300	3000	2300	2200	4500	3500	3500	3500

## Cabinet "U" handles GN 426.1 → Page 93

Size	20-200	20-300	28-250	28-350	28-500			
$L_1$	1500	1450	3000	2500	2300			
$L_2$	1600	1400	2000	2000	2000			

## Stainless Steel-Cabinet "U" handles GN 426.5 - Type A → Page 95

Size	28-250	28-300	28-400					
$L_1$	4000	3500	2750					
$L_2$	8000	7250	6500					

## Stainless Steel-Cabinet "U" handles GN 426.5 - Type B → Page 95

Size	28-250	28-300	28-400					
$L_1$	2700	2700	2700					
$L_2$	10000	7000	5000					

# Load rating of cabinet "U" handles / tubular handles in metal

in ascending order of the standard numbers



Cabinet "U" handles GN 427 → Page 91								
Size	55	88	100	120	180	200	235	
L <sub>1</sub>	650	600	500	450	300	250	200	
L <sub>2</sub>	1600	1150	1100	1000	550	500	400	

Stainless Steel-Cabinet "U" handles GN 427.5 → Page 91								
Size	55	88	100	120	180	200	235	
L <sub>1</sub>	2400	2100	2000	1800	1250	850	800	
L <sub>2</sub>	6000	5000	3750	3000	1700	1500	1200	

Cabinet "U" handles GN 559 - Type A → Page 76								
Size	162							
L <sub>1</sub>	5000							
L <sub>2</sub>	8000							

Cabinet "U" handles GN 559 - Type B → Page 76								
Size	162							
L <sub>1</sub>	1000							
L <sub>2</sub>	2500							

Cabinet "U" handles GN 564 → Page 69								
Size	112	128	160					
L <sub>1</sub>	900	900	900					
L <sub>2</sub>	1200	1200	1200					

Cabinet "U" handles GN 565 → Page 60								
Size	20-100	20-112	20-117	20-120	20-128	20-160		
L <sub>1</sub>	1250	1250	1250	1250	1250	1200		
L <sub>2</sub>	2100	2200	2200	2200	2200	2000		
Size	26-112	26-117	26-120	26-125	26-128	26-160	26-179	26-192
L <sub>1</sub>	3000	2900	2900	2800	2800	2800	2400	2300
L <sub>2</sub>	7000	6000	5500	5000	4500	3500	3250	3000
Size	26-300	26-400	26-500					
L <sub>1</sub>	1700	1600	1200					
L <sub>2</sub>	2250	1750	1500					

Cabinet "U" handles GN 565.1 → Page 61								
Size	20-100	20-112	20-128	20-160	26-116	26-132	26-164	26-196
L <sub>1</sub>	1000	1200	1000	1100	2000	2000	2000	1750
L <sub>2</sub>	2500	2400	2300	2000	5000	4000	3600	3000

Inclined cabinet "U" handles GN 565.2 → Page 64								
Size	20-112	20-128	26-128	26-160				
L <sub>1</sub>	1900	1900	2400	2000				
L <sub>2</sub>	2400	2000	5200	4800				

Cabinet "U" handles GN 565.3 → Page 74								
Size	20-120							
L <sub>1</sub>	1400							
L <sub>2</sub>	1900							



# Load rating of cabinet "U" handles/tubular handles in metal

in ascending order of the standard numbers



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 deformation irrelevant in terms of function and appearance remained at the listed values for  $L_1$  and  $L_2$  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.



Load capacity  $L_1$  in N



Load capacity  $L_2$  in N

## Arch handles GN 565.4 → Page 65

Size	20-160	20-192	26-160	26-192				
$L_1$	1300	1000	2000	2000				
$L_2$	3500	2500	5000	5000				

## Stainless Steel-Cabinet "U" handles GN 565.5 → Page 63

Size	20-112	20-128	20-160	20-200	20-250	20-300	20-350	20-400
$L_1$	4000	3200	3100	3000	2800	2500	2000	1500
$L_2$	7000	6000	4000	3800	3000	3000	2300	1500

## Arch handles GN 665 → Page 121

Size	26-350	26-450						
$L_1$	1200	1100						
$L_2$	2700	1550						

## Tubular handles GN 666 (Tube, Aluminium) → Page 109

Size	200	250	300	350	400	500	600	
$L_1$	900	850	950	1000	1000	1100	1000	
$L_2$	2500	2450	2400	2300	1750	1700	1350	

## Tubular handles GN 666 (Tube, Stainless Steel) → Page 109

Size	200	250	300	350	400	500	600	
$L_1$	900	850	950	1000	1000	1100	1000	
$L_2$	2500	2450	2400	2300	1750	1700	1350	

## Tubular handles GN 666.1 (Tube, Aluminium) → Page 110

Size	200	250	300	350	400	500	600	
$L_1$	1000	1350	1500	1500	1750	1750	1500	
$L_2$	5500	5500	5250	4500	4500	3500	2500	

## Tubular handles GN 666.1 (Tube Stainless Steel) → Page 110

Size	200	250	300	350	400	500	600	
$L_1$	1150	1150	1200	1200	1150	1100	1000	
$L_2$	3000	3000	2750	2500	2000	1850	1350	

## Tubular arch handles GN 666.4 (Tube, Aluminium) → Page 120

Size	400	500	600					
$L_1$	750	750	750					
$L_2$	1800	1700	1500					



# Load rating of cabinet "U" handles/tubular handles in metal

in ascending order of the standard numbers



Tubular arch handles GN 666.4 (Tube, Stainless Steel) → Page 120							
Size	400	500	600				
L <sub>1</sub>	1350	1700	1750				
L <sub>2</sub>	5000	4500	3750				

Cabinet "U" handles GN 667 (Tube, Aluminium) → Page 108							
Size	20-180	20-200	20-250	20-300	20-350	20-400	
L <sub>1</sub>	750	750	600	600	550	500	
L <sub>2</sub>	2000	2000	2000	1500	1250	1000	

Cabinet "U" handles GN 667 (Tube, Aluminium) → Page 108							
Size	30-300	30-350	30-400	30-500	30-600	30-700	30-1000
L <sub>1</sub>	1100	1100	750	750	750	625	550
L <sub>2</sub>	3000	2250	2250	1750	1500	1250	1000

Cabinet "U" handles GN 667 (Tube, Stainless Steel) → Page 108							
Size	20-180	20-200	20-250	20-300	20-350	20-400	
L <sub>1</sub>	1200	1100	1000	1000	750	700	
L <sub>2</sub>	4000	3500	3500	2500	2000	1000	
Size	30-300	30-350	30-400	30-500	30-600	30-700	30-1000
L <sub>1</sub>	1250	1250	1200	1200	1200	900	800
L <sub>2</sub>	5000	5000	4250	4000	2250	2000	1000

Flat cabinet "U" handles GN 668 - Type A → Page 75							
Size	130	170	190	210			
L <sub>1</sub>	1600	1600	1500	1350			
L <sub>2</sub>	2100	1900	1800	1650			

Flat cabinet "U" handles GN 668 - Type B → Page 75							
Size	130	170	190	210			
L <sub>1</sub>	-	-	-	-			
L <sub>2</sub>	-	-	-	-			

System handles GN 669 → Page 118							
Size	200	250	300	400	500	600	
L <sub>1</sub>	1750	1500	1250	1200	1000	900	
L <sub>2</sub>	3000	2250	2100	2000	1500	1000	

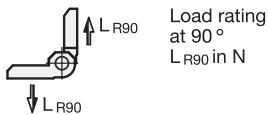
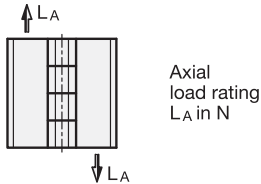
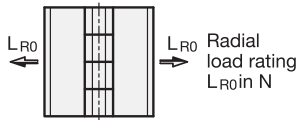
Cabinet "U" handles GN 728 → Page 73							
Size	120	180					
L <sub>1</sub>	2000	2500					
L <sub>2</sub>	2500	2750					

Stainless Steel-Cabinet "U" handles GN 728.5 → Page 73							
Size	120						
L <sub>1</sub>	2500						
L <sub>2</sub>	5000						



# 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				Axial load rating		Max. tightening torque of the hinge attachment in Nm		
	L <sub>R0</sub> in N		L <sub>R90</sub> in N		L <sub>A</sub> in N		Bore	Thread	Bolt
GN 151 -39-40-A	240	(2220)	100	(730)	200	(2050)	–	5	–
-39-40-B	230	(1760)	180	(1330)	137	(1800)	1	–	–
-39-40-C	290	(2030)	280	(1520)	130	(2080)	1	–	–
-48-49-A	440	(3070)	170	(1470)	400	(3770)	–	5	–
-48-49-B	310	(2530)	250	(1620)	360	(3080)	2	–	–
-48-49-C	310	(2880)	320	(2490)	300	(2960)	2	–	–
-48-49-D	360	(1970)	200	(1680)	370	(3070)	–	–	5
-48-49-E	320	(1970)	200	(1620)	360	(3070)	2	–	5
-48-49-F	280	(1970)	200	(1680)	370	(2960)	2	–	5
-48-49-G	360	(1970)	200	(1470)	370	(3070)	–	5	5
-48-49-H	320	(2530)	170	(1470)	360	(3080)	2	5	–
-48-49-I	280	(2880)	170	(1470)	400	(2960)	2	5	–
-64-65-A	690	(5670)	220	(2280)	640	(4570)	–	5	–
-64-65-B	490	(5790)	260	(3190)	510	(5280)	5	–	–
-64-65-C	720	(6270)	240	(4180)	520	(4760)	3	–	–
-64-65-D	460	(6620)	220	(3190)	510	(5890)	–	–	5
-64-65-E	460	(5790)	220	(3190)	510	(5280)	3	–	5
-64-65-F	460	(6270)	220	(3190)	510	(4760)	5	–	5
-64-65-G	460	(5670)	220	(2280)	510	(4570)	–	5	5
-64-65-H	460	(5670)	220	(2280)	510	(4570)	5	5	–
-64-65-I	690	(5670)	220	(2280)	640	(4570)	3	5	–
-98-98-A	2120	(17940)	590	(5210)	970	(7660)	–	5	–
-98-98-B	2060	(13670)	540	(4760)	1050	(4860)	5	–	–
-98-98-C	1230	(10460)	510	(4100)	1110	(6730)	5	–	–
-98-98-D	1730	(16190)	460	(3690)	890	(5950)	–	–	5
-98-98-E	1730	(13670)	460	(3690)	890	(4860)	5	–	5
-98-98-F	1230	(10460)	460	(3690)	890	(5950)	5	–	5
-98-98-G	1730	(16190)	460	(3690)	890	(5950)	–	5	5
-98-98-H	2060	(13670)	540	(4760)	970	(4860)	5	5	–
-98-98-I	1230	(10460)	510	(4110)	970	(6730)	5	5	–

# Load rating of plastic hinges

in ascending order of the standard numbers

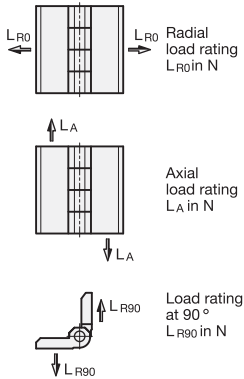


Article No.	Radial load rating		Axial load rating $L_A$ in N	Max. tightening torque of the hinge attachment in Nm		
	$L_{R0}$ in N	$L_{R90}$ in N		Bore	Thread	Bolt
GN 237.1-30-30-A	1700	1000	1400	3	-	-
-30-30-B	1700	850	1300	3	-	-
-40-40-A	1900	1280	1900	3	-	-
-40-40-B	1600	1000	1900	5	-	-
-40-40-C	1900	1000	2000	-	-	5
-40-40-D	1900	1000	1900	3	-	5
-40-40-E	1600	1000	1900	5	-	5
-50-50-A	2400	1720	2630	5	-	-
-50-50-B	2410	1360	2860	5	-	-
-50-50-C	2560	2100	2340	-	-	5
-50-50-D	2400	1720	2340	5	-	5
-50-50-E	2410	1360	2340	5	-	5
-60-60-A	2960	3070	3320	5	-	-
-60-60-B	2810	2170	3440	5	-	-
-60-60-C	3940	2130	3000	-	-	5
-60-60-D	2960	2130	3000	5	-	5
-60-60-E	2810	2130	3000	5	-	5



# 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
	$L_{R0}$ in N	$L_{R90}$ in N	$L_A$ in N
GN 127 -76-60	2000	2000	1150
GN 161 -57	1150	1500	600
-68	1500	1200	750
-80	2500	2500	1000
GN 237 -AL-30-30-A-EL	1200	750	550
-AL-40-40-A-EL	2000	2800	1060
-AL-50-50-A-EL	3000	4250	2250
-AL-60-60-A-EL	5000	5150	4050
-NI-30-30-A-GS	1700	750	750
-NI-40-40-A-GS	4000	1650	2100
-NI-50-50-A-GS	6500	2250	2550
-NI-60-60-A-GS	10000	5000	5000
-ZD-30-30-A	1200	750	500
-ZD-40-40-A	2100	2000	1150
-ZD-50-50-A	3500	2450	2100
-ZD-60-60-A	6000	4400	3200
-ZD-40-40-C	1700	1850	900
-ZD-50-50-C	3550	2000	2050
-ZD-60-60-C	4050	2550	3050
GN 238 -42-42-BJ	1500	2100	1050
-42-42-EJ	1000	1500	1200
-42-42-NJ	1250	1350	1500
-50-50-BJ	1500	2200	1500
-50-50-EJ	1500	1700	1500
-50-50-NJ	1800	1900	2000
-60-60-BJ	2500	3200	1500
-60-60-EJ	2000	2000	1500
-60-60-NJ	3700	2600	2550
GN 337 -NI-40-40-A-GS	3000	3500	2000
-NI-50-50-A-GS	5000	3500	2500
-NI-60-60-A-GS	6000	6000	5000
-ZD-40-40-A	2200	1600	1500
-ZD-50-50-A	3000	2500	2500
-ZD-60-60-A	4300	3500	3100

# A-Z

**Alphabetical  
Index**



<b>A</b>	<b>→ Page</b>		
<b>Adapter bushes</b> , for position indicators GN 952.1	392	<b>Ball joint heads</b> , with threaded bolt, Stainless Steel GN 648.6	951
<b>Adjustable clamping levers</b> , Steel GN 99.2	234/235	<b>Ball joint heads</b> , with threaded bolt, Steel GN 648.2	949
<b>Adjustable clamping levers</b> , Steel GN 6337.3	236/237	<b>Ball joint thrust pads</b> GN 346	590
<b>Adjustable flat tension levers</b> , Stainless Steel GN 125.5	232/233	<b>Ball knobs</b> , Plastic DIN 319	33
<b>Adjustable flat tension levers</b> , Steel GN 125	230/231	<b>Ball knobs</b> , press on type, Plastic DIN 319	35
<b>Adjustable hand levers</b> , increased clamping force GN 300.4	206/207	<b>Ball knobs</b> , revolving, Plastic / Stainless Steel GN 319.5	28
<b>Adjustable hand levers</b> , Plastic / Steel GN 604	214/215	<b>Ball knobs</b> , revolving, Plastic / Steel GN 319.2	28
<b>Adjustable hand levers</b> , Plastic / Stainless Steel GN 604.1	216/217	<b>Ball knobs</b> , Stainless Steel DIN 319	34
<b>Adjustable hand levers</b> , straight lever GN 302	210/211	<b>Ball knobs</b> , Steel, Aluminium DIN 319	34
<b>Adjustable hand levers</b> , Stainless Steel GN 300.5	200/201	<b>Ball levers</b> , Steel DIN 6337	247
<b>Adjustable hand levers</b> , push button, GN 303	202/203	<b>Ball lock pins</b> , with axial lock, Stainless Steel GN 113.1	469
<b>Adjustable hand levers</b> , push button, St. Steel GN 303.1	204/205	<b>Ball lock pins</b> , with hollow for grip, St. Steel AISI 303, GN 113.3	470
<b>Adjustable hand levers</b> , releasing button GN 603	218/219	<b>Ball lock pins</b> , with hollow for grip, St. Steel AISI 630, GN 113.4	470
<b>Adjustable hand levers</b> , releasing button, St. Steel GN 603.1	220/221	<b>Ball lock pins</b> , with knob, Stainless Steel AISI 303, GN 113.5	471
<b>Adjustable hand levers</b> , Zinc die casting GN 101	212/213	<b>Ball lock pins</b> , with knob, Stainless Steel AISI 630, GN 113.6	471
<b>Adjustable hand levers</b> , Zinc die casting GN 300	196/197	<b>Ball lock pins</b> , with T-handle, Stainless Steel AISI 303, GN 113.7	472
<b>Adjustable hand levers</b> , Zinc die casting / St. Steel GN 300.1	198/199	<b>Ball lock pins</b> , with T-handle, Stainless Steel AISI 630, GN 113.8	472
<b>Adjustable hand levers</b> see also under:		<b>Ball point screws</b> , Stainless Steel GN 605	525
Ball levers		<b>Ball point screws</b> , Stainless Steel GN 606	527
Clamping levers		<b>Ball point screws</b> , Steel GN 605	524
Ratchet spanner		<b>Ball point screws</b> , Steel GN 606	526
Safety tension levers		<b>Ball transfer units</b> , heavy duty, Steel, Stainless Steel GN 509.1	606
Tension levers		<b>Ball transfer units</b> , heavy duty, without collar GN 509.4	608
<b>Adjustable knobs</b> , with stepless positioning GN 700	358	<b>Ball transfer units</b> , Steel, Stainless Steel housing GN 509	604
<b>Adjustable slide units</b> , Aluminium GN 900	366	<b>Base plates</b> , for knee lever modules GN 910.9	693
<b>Adjustable tension levers</b> , Stainless Steel GN 212.5	224/225	<b>Base plate connector clamps</b> , Aluminium GN 162	988
<b>Adjustable tension levers</b> , Steel GN 212.3	222/223	<b>Base plate connector clamps</b> , Aluminium GN 162.3	989
<b>Aluminium discs</b> , for GN 745, neutral GN 745.1	915	<b>Base plate connector clamps</b> , Aluminium GN 163	990
<b>Aluminium discs</b> , for GN 745, with drain symbol GN 740.1	915	<b>Base plate connector clamps</b> , split assembly GN 165	991
<b>Aluminium discs</b> , for GN 745, with re-fill symbol GN 747.1	915	<b>Base plate connector clamps</b> , Stainless Steel GN 162	988
<b>Angled ball joints</b> , Stainless Steel DIN 71802	959	<b>Base plate connector clamps</b> , Stainless Steel GN 162.3	989
<b>Angled ball joints</b> , Steel DIN 71802	958	<b>Base plate connector clamps</b> see also under:	
<b>Angle pieces</b> , for profile systems 30 / 40 GN 961	1088	Flanged base plate connector clamps	
<b>Angle pieces</b> , for profile systems 30 / 40 / 45 GN 960	1087	Off-set base plate connector clamps	
<b>Arch handles</b> , Aluminium GN 565.4	65	Wide base plate connector clamps	
<b>Arch handles</b> , Aluminium GN 665	121	<b>Base plate linear actuator connectors</b> , Aluminium GN 162.1	1050
<b>Arch handles</b> , Stainless Steel GN 424.5	85	<b>Base plate linear actuator connectors</b> , Aluminium GN 163.1	1051
<b>Arch handles</b> , Stainless Steel GN 565.9	65	<b>Base plate linear actuator connectors</b> , St. Steel GN 162.1	1050
<b>Arch handles</b> , Steel GN 424.1	85	<b>Bevel gear wheels</b> , for linear actuators / transfer units GN 297	1069
<b>ATEX-Breather caps</b> , Plastic GN 552.6	924	<b>Bezel discs</b> , Stainless Steel GN 185	543
<b>ATEX-Sight glasses</b> , Aluminium / ESG-glass GN 743.6	905	<b>Blanking plugs</b> , Steel GN 252	531
		<b>Bolts</b> see under:	
		Locking pins	
		<b>Breather caps</b> , Plastic GN 552	922
		<b>Breather caps</b> see also under:	
		ATEX-Breather caps	
		Threaded plugs	
		<b>Breather filters</b> , Brass GN 882	930
		<b>Breather valves</b> , Brass GN 881	929
		<b>Breather valves</b> , Brass GN 883	931
		<b>Buffers</b> , Stainless Steel / Rubber GN 452	632
		<b>Buffers</b> , Stainless Steel / Rubber GN 453	636
		<b>Buffers</b> , Steel / Rubber GN 352	632

<b>Buffers, Steel / Rubber GN 353</b>	636
<b>Buffers, with Stainless Steel-retaining washer GN 454</b>	637
<b>Buffers</b> see also under:	
Rubber buffers	
<b>Bushes, for knee lever modules GN 910.8</b>	693
<b>Button-type magnets, with bore GN 60</b>	1118

## C → Page

<b>Cabinet „U“ handles, Aluminium GN 425.6</b>	80
<b>Cabinet „U“ handles, Aluminium GN 426</b>	92
<b>Cabinet „U“ handles, Aluminium GN 426.1</b>	93
<b>Cabinet „U“ handles, Aluminium GN 427</b>	91
<b>Cabinet „U“ handles, Aluminium GN 559</b>	76
<b>Cabinet „U“ handles, Aluminium GN 565</b>	60
<b>Cabinet „U“ handles, Aluminium GN 565.1</b>	61
<b>Cabinet „U“ handles, Aluminium GN 565.3</b>	74
<b>Cabinet „U“ handles, Aluminium GN 668</b>	75
<b>Cabinet „U“ handles, Aluminium GN 728</b>	73
<b>Cabinet „U“ handles, Aluminium / Plastic GN 667</b>	111
<b>Cabinet „U“ handles, Cast iron GN 225</b>	77
<b>Cabinet „U“ handles, inclined, Aluminium GN 565.2</b>	64
<b>Cabinet „U“ handles, Plastic GN 528</b>	70
<b>Cabinet „U“ handles, Plastic GN 528.1</b>	72
<b>Cabinet „U“ handles, Plastic GN 625</b>	66
<b>Cabinet „U“ handles, Plastic GN 725</b>	68
<b>Cabinet „U“ handles, Plastic, CLEANLINE GN 625</b>	66
<b>Cabinet „U“ handles, Plastic, ERGOSTYLE GN 628</b>	78
<b>Cabinet „U“ handles, Stainless Steel GN 425</b>	82
<b>Cabinet „U“ handles, Stainless Steel GN 425.1</b>	86
<b>Cabinet „U“ handles, Stainless Steel GN 425.3</b>	83
<b>Cabinet „U“ handles, Stainless Steel GN 426.5</b>	95
<b>Cabinet „U“ handles, Stainless Steel GN 427.5</b>	91
<b>Cabinet „U“ handles, Stainless Steel GN 565.5</b>	63
<b>Cabinet „U“ handles, Stainless Steel GN 728.5</b>	73
<b>Cabinet „U“ handles, Stainless Steel / Plastic GN 667</b>	111
<b>Cabinet „U“ handles, Steel GN 425</b>	80
<b>Cabinet „U“ handles, Steel GN 425.1</b>	86
<b>Cabinet „U“ handles, Steel GN 425.3</b>	83
<b>Cabinet „U“ handles, Steel / PU-foam, SOFTLINE GN 564</b>	69
<b>Cabinet „U“ handles</b> see also under:	
Arch handles	
Finger handles	
Folding handles	
Tubular handles	
<b>Cables with connector coupling, M12x1 GN 330</b>	890
<b>Cam action indexing plungers, for welding GN 612.3</b>	458
<b>Cam action indexing plungers, plunger protruded GN 712</b>	464
<b>Cam action indexing plungers, plunger retracted GN 712.1</b>	465
<b>Cam action indexing plungers, Stainless Steel GN 612</b>	456
<b>Cam action indexing plungers, Steel GN 612</b>	456
<b>Cam action indexing plungers, with flange GN 612.2</b>	457
<b>Cam action indexing plungers, with flange GN 612.9</b>	458
<b>Cam action indexing plungers, Zinc die casting GN 612.8</b>	457

**Cam action indexing plungers** see also under:  
Spring latches

<b>Cam latches GN 218</b>	845
<b>Cam point levers GN 418.1</b>	654
<b>Cam point screws GN 418</b>	656
<b>Captive C-Washers, Steel DIN 6371</b>	559
<b>C-Clamps, Steel GN 855</b>	750
<b>Centring bore clamps GN 411.2</b>	664
<b>Clamping arm elongations, for knee lever modules GN 910.7</b>	693
<b>Clamping bolts, downward clamping, Stainless Steel GN 918.7</b>	653
<b>Clamping bolts, downward clamping, Steel GN 918.2</b>	653
<b>Clamping bolts, upward clamping, Stainless Steel GN 918.6</b>	652
<b>Clamping bolts, upward clamping, Steel GN 918.1</b>	652
<b>Clamping bolts, with spring loaded thrust pad GN 804</b>	769
<b>Clamping bolts, with rubber pressure pad, Steel GN 708.1</b>	766
<b>Clamping bolts, with rubber pressure pad, Steel GN 708.1</b>	766
<b>Clamping bolts, with swivelling steel thrust pad GN 802</b>	767
<b>Clamping bolts, with swivelling thrust pad, St. Steel GN 903</b>	768
<b>Clamping bolts, with swivelling thrust pad, Steel GN 903</b>	768
<b>Clamping bolts, with / without protective cap, St. Steel GN 807</b>	765
<b>Clamping bolts, with / without protective cap, Steel GN 807</b>	765
<b>Clamping indexing plungers, with safety function GN 7336.8</b>	447
<b>Clamping jaws blank, for power clamps GN 872</b>	788
<b>Clamping kits, for clamp mountings, adjustable GN 511</b>	1086
<b>Clamping kits, for connector clamps, adjustable GN 911</b>	1031
<b>Clamping knobs with indexing plungers GN 7336.7</b>	446
<b>Clamping levers, Plastic GN 601</b>	252
<b>Clamping levers, short, Steel GN 204</b>	246
<b>Clamping levers, Stainless Steel DIN 99</b>	245
<b>Clamping levers, Steel DIN 99</b>	244
<b>Clamping levers, eccentrical cam, lever Steel GN 927.3</b>	644
<b>Clamping levers, eccentrical cam, lever zinc die cast GN 927</b>	644
<b>Clamping levers, eccentrical cam, Stainless Steel GN 927.4</b>	646
<b>Clamping levers, eccentrical cam, Stainless Steel GN 927.5</b>	646
<b>Clamping levers, eccentrical cam, Stainless Steel GN 927.7</b>	648
<b>Clamping levers</b> see also under:	
Adjustable clamping levers	
<b>Clamping pads, adjustable, Stainless Steel GN 709.35</b>	586
<b>Clamping pads, adjustable, Steel GN 709.3</b>	586
<b>Clamping pads, with female thread, Stainless Steel GN 709.25</b>	589
<b>Clamping pads, with female thread, Steel GN 709.2</b>	589
<b>Clamping pads, with male thread, Stainless Steel GN 709.15</b>	588
<b>Clamping pads, with male thread, Steel GN 709.1</b>	588
<b>Clamping plates, for GN 953 position indicators, GN 953.6</b>	393
<b>Clamping plates, for GN 954 position indicators, GN 954.6</b>	393
<b>Clamp mountings, Aluminium GN 477</b>	1077
<b>Clamp mountings, with threaded holes, Aluminium GN 478</b>	1081
<b>Clamp mountings</b> see also under:	
Collar clamps	
Flanged bolts	
Foot clamp mountings	
T-Clamp mountings	
Two-way clamp mountings	



<b>Clamp nuts</b> , Malleable cast iron GN 206	250
<b>Clamp nuts</b> , Stainless Steel GN 99.6	248
<b>Clamp nuts</b> , Stainless Steel-precision casting GN 206	250
<b>Clamp nuts</b> , Steel GN 99.5	248
<b>Clamp nuts</b> , double lever, Malleable cast iron GN 206.1	251
<b>Clamp nuts</b> , double lever, Steel GN 99.7	249
<b>Clamp nuts</b> , double lever, Stainless Steel GN 99.8	249
<b>Clamp nuts</b> , double lever, St. Steel-precision casting GN 206.1	251
<b>Collar bushes</b> , for scale rings GN 264, Steel GN 268	341
<b>Collar clamps</b> , for power clamps GN 873	790
<b>Conical handles</b> , fixed, Plastic / Steel GN 203	32
<b>Connecting sets X-Y</b> , for adjustable slide units, GN 900.2	369
<b>Connecting sets X-Y</b> , for adjustable slide units, GN 900.3	370
<b>Connector clamps</b> see under:	
Base plate connector clamps	
Flanged connector clamps	
Flanged two-way connector clamps	
Off-set base plate connector clamps	
Swivel clamp connectors	
Swivel clamp connector joints	
T-Angle connector clamps	
Tube connectors	
Tube connector joints	
Tube supports	
Two-way connector clamps	
Wide base plate connector clamps	
<b>Connector pieces</b> , for oil drain valves GN 880.1	928
<b>Connector pieces with drain hose</b> , for oil drain valves GN 880.1	928
<b>Construction tubes</b> , Stainless Steel GN 990	1027
<b>Construction tubes</b> , Steel, Aluminium GN 990	1027
<b>Control handles</b> , Zinc die casting GN 112.1	142
<b>Control handwheels</b> , Plastic GN 735	176
<b>Control handwheels</b> , Aluminium GN 736	178
<b>Control handwheels</b> , with deposition for scale GN 736.1	179
<b>Control knobs</b> , Aluminium, anodized, natural colour GN 723.4	348
<b>Control knobs</b> , Aluminium, black anodized GN 726	342
<b>Control knobs</b> , Aluminium, black anodized GN 726.1	344
<b>Control knobs</b> , Aluminium, black anodized GN 726.2	345
<b>Control knobs</b> , Aluminium, black anodized GN 729	351
<b>Control knobs</b> , Stainless Steel GN 436	346
<b>Control knobs</b> , Stainless Steel, with scale GN 436.1	347
<b>Control knobs with adjustable spindle</b> GN 727	352
<b>Control levers</b> , Steel GN 211	265
<b>Control levers</b> , Steel GN 223	264
<b>Control levers</b> , Steel GN 750	260
<b>Countersunk washers</b> , Stainless Steel GN 184.5	542
<b>Countersunk washers</b> , Steel GN 184	542
<b>Coupling attachments</b> , for safety handwheels GN 000.4	170
<b>Coupling attachments</b> , for safety handwheels GN 000.5	171
<b>Cover caps</b> , for angle pieces for profile systems GN 963	1089
<b>Cover discs</b> , for knurled handwheels GN 226.1	181
<b>Cranked handles</b> , Aluminium GN 471	134
<b>Cranked handles</b> , Cast iron DIN 468	136

<b>Cranked handles</b> , Cast iron, DIN 469	137
<b>Cranked handles</b> , Plastic GN 570.2	135
<b>Cranked handles</b> , Stainless Steel GN 269	138
<b>Cranked handles</b> , Steel GN 369	139
<b>Cranked handles</b> , with retractable handle, Aluminium GN 471.3	140
<b>Cranked handles</b> , with retractable handle, Aluminium GN 472.3	141
<b>Cranked handles</b> , Zinc die casting GN 471.1	134
<b>Cranked handles</b> see also under:	
Control handles	
Indexing cranked handles	
Tri-ball handles	
<b>C-Spanner</b> , Steel DIN 1810	532
<b>C-Washers</b> , Steel GN 183	558
<b>Cylinder head shoulder bolts</b> GN 732	529
<b>Cylindrical handles</b> , revolving, Plastic/Stainless Steel GN 599.5	29
<b>Cylindrical knobs</b> , Plastic GN 519	39
<b>Cylindrical knobs</b> , Plastic, SOFTLINE GN 519.6	41
<b>Cylindrical knobs</b> , press on type, Plastic GN 519.1	40

## D → Page

<b>Disc handwheels</b> , Aluminium GN 321	163
<b>Disc handwheels</b> , Aluminium GN 323	163
<b>Disc handwheels</b> , Aluminium GN 923	150
<b>Disc handwheels</b> , Aluminium DIN 3670	183
<b>Disc handwheels</b> , for position indicators GN 323.8	384
<b>Disc handwheels</b> , Plastic GN 521	156
<b>Disc handwheels</b> , Plastic / Stainless Steel-bush GN 520.6	162
<b>Disc handwheels</b> , Plastic / Steel-bush GN 520	162
<b>Discs with cover cap</b> , GN 338	544

**Discs** see also under:

Bezel discs	
Captive C-Washers	
C-Washers	
Countersunk washers	
Heavy duty washers	
Serrated locking plates	
Spherical levelling washers	
Spherical washers	

<b>Distance bushings</b> for GN 628, Plastic, ERGOSTYLE GN 628.2	78
<b>Distance bushings</b> , for indexing plungers, St. Steel GN 609.5	450
<b>Distance bushings</b> , for indexing plungers, Steel GN 609	450
<b>Domed gear knobs</b> , Plastic GN 719.2	36
<b>Domed gear knobs</b> , Plastic, CLEANLINE GN 719.2	36
<b>Double cam levers</b> , Stainless Steel GN 917.1	659
<b>Double cam levers</b> , Steel GN 917	659
<b>Double ring spanner</b> , for mounting indexing plungers GN 607.9	428
<b>Double tube linear actuators</b> , double slider GN 492	1044
<b>Double tube linear actuators</b> , single slider GN 491	1040
<b>Dust caps</b> , for DIN 71802 angled ball joints, GN 710	960

## E → Page

<b>Eccentrical cams</b> , radial clamping, Stainless Steel GN 918.5	650
<b>Eccentrical cams</b> , radial clamping, Steel GN 918	650



<b>Eccentric bushes</b> , for side thrust pins GN 715.2	505	<b>Grub screws</b> , with brass / plastic pad, Stainless Steel GN 913.5	521
<b>Edge handles</b> , Aluminium / Zinc die casting GN 481	122	<b>Grub screws</b> , with brass / plastic pad, Steel GN 913.3	520
<b>Elliptical shaped knobs</b> , Plastic GN 201	38	<b>Grub screws</b> , with hardened pad GN 913.2	522
<b>F</b>	<b>→ Page</b>	<b>Grub screws</b> , with retaining magnet GN 913.6	1121
<b>Fastening units</b> , for adjustable slide units, GN 900.1	368	<b>Grub screws</b> , with thrust point DIN 6332	592
<b>Feet</b> DIN 6320	583	<b>Guide bushes</b> , for power clamps GN 870	792
<b>Feet</b> see also under:		<b>Guide bushes</b> , with collar DIN 172	574
Ball jointed levelling feet		<b>Guide bushes</b> , without collar DIN 179	574
Joint pieces		<b>Guide pins</b> GN 771.1	576
Levelling feet		<b>Guide pots</b> , Stainless Steel GN 187.1	556
<b>Finger handles</b> , Stainless Steel GN 224.5	84	<b>Guide pots</b> , Steel GN 187.1	556
<b>Finger handles</b> , Steel GN 224.1	84	<b>Guide rollers</b> , Steel / Plastic GN 753	609
<b>Fixed conical handles</b> , Plastic / Steel GN 203	32	<b>H</b>	<b>→ Page</b>
<b>Fixed handles</b> , Stainless Steel DIN 39	31	<b>Hand knob</b> , for GN 954 position indicators, GN 954.3	391
<b>Fixed handles</b> , Steel, Plastic DIN 39	31	<b>Handles</b> , for knee lever modules, Plastic GN 910.5	693
<b>Fixing nuts</b> , for oil level sight glasses, Brass GN 543.1	910	<b>Handle shanks for tubular handles</b> GN 333.8	105
<b>Flanged base plate connector clamps</b> , split assembly GN 171 994		<b>Handle shanks for tubular handles</b> GN 333.9	105
<b>Flanged bolts</b> , for clamp mountings, Steel GN 480	1084	<b>Hand levers</b> see under:	
<b>Flanged connector clamps</b> , Aluminium GN 145	982	Adjustable hand levers	
<b>Flanged connector clamps</b> , Aluminium GN 146	984	<b>Handle tubes</b> , with screw channel, Aluminium GN 930	124
<b>Flanged connector clamps</b> , Aluminium GN 146.3	985	<b>Handwheels</b> , Aluminium, Cast iron DIN 950	184
<b>Flanged connector clamps</b> , split assembly, Aluminium GN 147 986		<b>Handwheels</b> , for linear actuators Ø 18 GN 923.18	1062
<b>Flanged connector clamps</b> , Stainless Steel GN 145	982	<b>Handwheels</b> , for linear actuators Ø 30 GN 923.30	1062
<b>Flanged linear actuator connectors</b> , Aluminium GN 145.1	1048	<b>Handwheels</b> , for linear actuators Ø 40 GN 923.40	1062
<b>Flanged linear actuator connectors</b> , Aluminium GN 146.1	1049	<b>Handwheels</b> , for linear actuators Ø 40 GN 924.40	1062
<b>Flanged linear actuator connectors</b> , St. Steel GN 145.1	1048	<b>Handwheels</b> , for linear actuators Ø 50 GN 924.50	1063
<b>Flanged two-way connector clamps</b> , Aluminium GN 141	981	<b>Handwheels</b> , for linear actuators Ø 60 GN 924.60	1063
<b>Flat tension levers</b> see under:		<b>Handwheels</b> , for valves, Pressed Steel GN 227	191
Adjustable tension levers		<b>Handwheels</b> , Plastic GN 527.1	182
<b>Flat springs</b> , for scale rings GN 264, Steel GN 374	341	<b>Handwheels</b> , Pressed Stainless Steel GN 227.2	189
<b>Folding handles</b> , Stainless Steel GN 425.2	87	<b>Handwheels</b> , Pressed Steel GN 227.1	190
<b>Folding handles</b> , Stainless Steel / Plastic GN 425.5	90	<b>Handwheels</b> , Stainless Steel GN 949	188
<b>Folding handles</b> , Steel GN 425.2	87	<b>Handwheels</b> , Stainless Steel GN 950.6	185
<b>Folding handles</b> , Steel / Plastic GN 425.5	90	<b>Handwheels</b> , with large hub, Cast iron GN 950.1	186
<b>Folding handles with recessed tray</b> GN 425.8	88	<b>Handwheels</b> , with retractable handle, Aluminium GN 322.3	165
<b>Foot clamp mountings</b> , Aluminium GN 473	1076	<b>Handwheels</b> , with retractable handle, Aluminium GN 923.3	151
<b>Fork heads</b> , Aluminium DIN 71752	954	<b>Handwheels</b> , with retractable handle, Aluminium GN 924.3	155
<b>Fork heads</b> , Stainless Steel DIN 71752	955	<b>Handwheels</b> , with retractable handle, Plastic GN 521.3	157
<b>Fork heads</b> , Steel DIN 71752	952	<b>Handwheels</b> , with retractable handle, Plastic GN 522.3	161
<b>Fork joints</b> , Aluminium GN 751	954	<b>Handwheels</b> , with retractable handle, Plastic GN 522.3	161
<b>Fork joints</b> , Stainless Steel GN 751	955	<b>Handwheels</b> , with safety-retractable handle GN 322.7	165
<b>Fork joints</b> , Steel GN 751	952	<b>Handwheels</b> , with safety-retractable handle GN 923.7	151
		<b>Handwheels</b> , with safety-retractable handle GN 924.7	155
<b>G</b>	<b>→ Page</b>	<b>Handwheels</b> see also under:	
<b>Gaiters</b> , for universal joints GN 808.1	945	Control handwheels	
<b>Gear lever handles</b> , Plastic / Stainless Steel DIN 310	43	Disc handwheels	
<b>Gear lever handles</b> , Plastic / Steel DIN 310	42	Handwheels with retractable handle	
<b>Gripping trays</b> , clip-in type, Plastic GN 731.1	128	Knurled handwheels	
<b>Grub screws</b> , Stainless Steel GN 551.1	530	Safety handwheels	
<b>Grub screws</b> , Steel GN 551.1	530	Spoked handwheels	
<b>Grub screws</b> , with ball point, Stainless Steel GN 632.5	596	<b>Headed dowels</b> DIN 6321	578
<b>Grub screws</b> , with ball point, Steel GN 632.1	596	<b>Headed dowels</b> GN 6321.1	582



<b>Headed dowels</b> see also under:		
Workholding bolts		
<b>Heavy duty washers</b> , GN 6339	540	
<b>Hexagon head screws</b> , with pivot, Stainless Steel GN 933.5	523	
<b>Hexagon nuts</b> , flat, for indexing plungers, St. Steel GN 909.5	451	
<b>Hexagon nuts</b> , flat, for indexing plungers, Steel GN 909	451	
<b>Hexagon nuts</b> , with ball socket GN 347	591	
<b>Hexagon nuts</b> , with collar DIN 6331	537	
<b>Hexagon nuts</b> , with spherical seating, St. Steel DIN 6330	536	
<b>Hexagon nuts</b> , with spherical seating, Steel DIN 6330	536	
<b>Hexagon nuts</b> see also under:		
Quick-action hexagon nuts		
<b>Hinges</b> , adjustable, with cover, Zinc die casting GN 238	880	
<b>Hinges</b> , adjustable, Zinc die casting GN 127	883	
<b>Hinges</b> , for profile systems, Zinc die casting GN 161	886	
<b>Hinges</b> , for welding, Aluminium GN 128.2	895	
<b>Hinges</b> , for welding, Stainless Steel GN 128.2	895	
<b>Hinges</b> , for welding, Steel GN 128	894	
<b>Hinges</b> , Plastic GN 151	884	
<b>Hinges</b> , Plastic GN 237.1	882	
<b>Hinges</b> , Plastic, CLEANLINE GN 237.1	882	
<b>Hinges</b> , Stainless Steel GN 237	878	
<b>Hinges</b> , Steel GN 129	893	
<b>Hinges</b> , to be unhinged, Stainless Steel GN 337	877	
<b>Hinges</b> , to be unhinged, Zinc die casting GN 337	877	
<b>Hinges</b> , with extended hinge wings GN 237	879	
<b>Hinges without switch</b> , Zinc die casting GN 139.2	888	
<b>Hinges with safety switch</b> , Zinc die casting GN 139.1	888	
<b>Hinges</b> , Zinc die casting GN 161.1	896	
<b>Hinges</b> , Zinc die casting GN 161.2	897	
<b>Hinges</b> , Zinc die casting, Aluminium GN 237	878	
<b>Hinges</b> see also under:		
Sheet metal hinges		
<b>Holders for clamping bolts</b> , for power clamps GN 867	782	
<b>Holders for clamping bolts</b> , for toggle clamps GN 801	771	
<b>Holders for clamping bolts</b> , for toggle clamps GN 809	770	
<b>Holders for clamping jaws</b> , for power clamps GN 868	784	
<b>Holders for clamping jaws</b> , for power clamps GN 868.1	785	
<b>Holders for clamping jaws</b> , for power clamps GN 868.2	787	
<b>Hook clamps</b> , Steel, Stainless Steel GN 821	794	
<b>Hook clamps</b> , Steel, Stainless Steel GN 831	796	
<b>Hook clamps</b> , Steel, Stainless Steel GN 831.1	798	
<b>Hook clamps</b> , Steel, Stainless Steel GN 832	799	
<b>Hook clamps</b> , Steel, Stainless Steel GN 832.1	800	
<b>Hook clamps</b> , Steel, Stainless Steel GN 832.2	802	
<b>Hook clamps</b> , Steel, Stainless Steel GN 832.3	803	
<b>Hook clamps</b> , Steel, Stainless Steel GN 832.4	804	
<b>Hook clamps</b> , Steel, Stainless Steel GN 833	805	
<b>Hook clamps</b> , Steel GN 850	724	
<b>Horizontal clamps</b> , for side mounting, St. Steel GN 820.2	710	
<b>Horizontal clamps</b> , for side mounting, Steel GN 820.2	708	
<b>Horizontal clamps</b> , with horizontal base, St. Steel GN 820	702	
<b>Horizontal clamps</b> , with horizontal base, Steel GN 820	700	
<b>Horizontal clamps</b> , with vertical base, St. Steel GN 820.1	706	
<b>Horizontal clamps</b> , with vertical base, Steel GN 820.1	704	
<b>Housings</b> , for angular / T-gears of linear actuators GN 298	1070	
<b>Hubs with eccentric cam</b> GN 919	658	
<b>Hygienic latches</b> , Stainless Steel, not lockable GN 115	863	
<b>I</b>		<b>→ Page</b>
<b>Indent blocks</b> , for spring plungers, GN 250	497	
<b>Indexing cranked handles</b> , Cast iron GN 558	145	
<b>Indexing levers</b> , Steel GN 215	360	
<b>Indexing mechanisms</b> , Stainless Steel GN 200	356	
<b>Indexing mechanisms</b> , Steel GN 200	354	
<b>Indexing mechanisms with tension lever</b> , Steel GN 200	354	
<b>Indexing plungers</b> , for thin walled equipment GN 607.2	428	
<b>Indexing plungers</b> , for thin walled equipment GN 607.3	429	
<b>Indexing plungers</b> , for precision locating GN 817.3	424	
<b>Indexing plungers</b> , for welding, with rest position GN 607.5	431	
<b>Indexing plungers</b> , for welding, without rest position GN 607.4	430	
<b>Indexing plungers</b> , long plastic knob, Stainless Steel GN 817.2	423	
<b>Indexing plungers</b> , long plastic knob, Steel GN 817.2	423	
<b>Indexing plungers</b> , Plunger Stainless Steel GN 608.5	432	
<b>Indexing plungers</b> , Plunger Steel GN 608	432	
<b>Indexing plungers</b> , Stainless Steel GN 617	416	
<b>Indexing plungers</b> , Stainless Steel / Plastic knob GN 607	426	
<b>Indexing plungers</b> , Stainless Steel / Plastic knob GN 617	416	
<b>Indexing plungers</b> , Steel / Plastic knob GN 607	426	
<b>Indexing plungers</b> , Steel / Plastic knob GN 617	416	
<b>Indexing plungers</b> , without collar, Stainless Steel GN 613	418	
<b>Indexing plungers</b> , without collar, Steel GN 613	418	
<b>Indexing plungers</b> , without rest position GN 417	438	
<b>Indexing plungers</b> , without thread, Steel / Plastic knob GN 618	419	
<b>Indexing plungers</b> , with rest position GN 417	439	
<b>Indexing plungers</b> , with rest position, Stainless Steel GN 607.1	427	
<b>Indexing plungers</b> , with rest position, Stainless Steel GN 608.6	433	
<b>Indexing plungers</b> , with rest position, Stainless Steel GN 617.1	420	
<b>Indexing plungers</b> , with rest position, Steel GN 607.1	427	
<b>Indexing plungers</b> , with rest position, Steel GN 608.1	433	
<b>Indexing plungers</b> , with rest position, Steel GN 617.1	420	
<b>Indexing plungers</b> , with T-handle, Stainless Steel GN 817.4	425	
<b>Indexing plungers</b> , with T-handle, Steel GN 817.4	425	
<b>Indexing plungers</b> , with/without rest position, St. Steel GN 717	421	
<b>Indexing plungers</b> , with/without rest position, Steel GN 717	421	
<b>Indexing plungers</b> , with/without rest position, St. Steel GN 817	422	
<b>Indexing plungers</b> , with/without rest position, Steel GN 817	422	
<b>Indexing plunger</b> see also under:		
Clamping indexing plungers		
Clamping knobs with indexing plungers		
Locking plungers		
Mini indexing plungers		
Safety indexing plungers		
Spring bolts		
<b>Indicator arrows</b> , Plastic, Stainless Steel GN 711.1	336	
<b>Insert bushes</b> , for construction tubes, Aluminium GN 992 843/1029		

<b>Insert bushes</b> , for construction tubes, St. Steel GN 992.5 843/1029	
<b>Insert bushes</b> , for profiled square tubes, Plastic GN 348	842
<b>Installation kit</b> , for position indicators at linear actuators GN 295	1064

## J → Page

<b>Joint pieces</b> , for GN 751 fork joints, Stainless Steel GN 752	956
<b>Joint pieces</b> , for GN 751 fork joints, Steel GN 752	956

**Joints** see under:

- Angled ball joints
- Ball joints
- Ball joint heads
- Fork joints
- Levelling feet
- Swivel clamp connector joints
- Universal joints
- Universal joint shafts

## K → Page

<b>Key rings</b> , for ball chains / retaining cables, St. Steel GN 111.3	477
<b>Keys</b> , for GN 816 locking plungers, GN 816-10	440
<b>Keys</b> , for GN 816.1 locking plungers, GN 816.1-10	442
<b>Keys</b> , for latches GN 119.2	870
<b>Keys</b> , Stainless Steel DIN 6885	639
<b>Keys</b> , Steel DIN 6885	638
<b>Knee lever modules</b> , for welding GN 910.3	692
<b>Knee lever modules</b> , to screw on GN 910.2	690
<b>Knobs</b> , Stainless Steel GN 676.5	51
<b>Knobs</b> , Steel, ERGOSTYLE GN 676.1	51

**Knobs** see also under:

- Ball levers
- Cylindrical knobs
- Domed gear knobs
- Elliptical shaped knobs
- Knurled knobs
- Mushroom type knobs
- Tapered knobs

<b>Knurled knobs</b> , Plastic GN 534	312
<b>Knurled knobs</b> , Plastic GN 7336	314
<b>Knurled knobs</b> , Plastic, ERGOSTYLE GN 676	48
<b>Knurled knobs</b> , Plastic / Stainless Steel GN 7336	314
<b>Knurled knobs</b> , with pivot, Plastic / Stainless Steel GN 7336.5	315
<b>Knurled knob screws</b> , Plastic, ERGOSTYLE GN 676	50
<b>Knurled nuts</b> , flat type, Stainless Steel DIN 467	331
<b>Knurled nuts</b> , flat type, Steel DIN 467	331
<b>Knurled nuts</b> , Plastic GN 420	316
<b>Knurled nuts</b> , Plastic / Stainless Steel GN 420	316
<b>Knurled nuts</b> , Stainless Steel DIN 466	325
<b>Knurled nuts</b> , Stainless Steel GN 536	321
<b>Knurled nuts</b> , Stainless Steel DIN 6303	323
<b>Knurled nuts</b> , Steel DIN 466	325
<b>Knurled nuts</b> , Steel DIN 6303	322

**Knurled nuts** see also under:

- Quick release knurled nuts

<b>Knurled handwheels</b> , Plastic GN 226	180
<b>Knurled screws</b> , flat type, Stainless Steel DIN 653	329
<b>Knurled screws</b> , flat type, Steel DIN 653	328
<b>Knurled screws</b> , flat type, with pivot, St. Steel DIN 653.10	330
<b>Knurled screws</b> , flat type, with pivot, Steel DIN 653.10	330
<b>Knurled screws</b> , Plastic GN 421	317
<b>Knurled screws</b> , Plastic GN 7336	314
<b>Knurled screws</b> , Plastic / Stainless Steel GN 421	318
<b>Knurled screws</b> , Plastic / Stainless Steel GN 7336	314
<b>Knurled screws</b> , Plastic GN 534	313
<b>Knurled screws</b> , Stainless Steel DIN 464	327
<b>Knurled screws</b> , Stainless Steel GN 535	321
<b>Knurled screws</b> , Steel DIN 464	326
<b>Knurled screws</b> , with ball pin, Plastic GN 421.11	320
<b>Knurled screws</b> , with pivot, Plastic GN 421.10	319
<b>Knurled screws</b> , with thrust pad, Plastic GN 421.12	320

## L → Page

<b>Latch clamps</b> , for pulling action, Stainless Steel GN 851.1	732
<b>Latch clamps</b> , for pulling action, Steel GN 851.1	730
<b>Latch clamps</b> , heavy duty type, for welding, St. Steel GN 852	738
<b>Latch clamps</b> , heavy duty type, for welding, Steel GN 852	736
<b>Latch clamps</b> , heavy duty type, to screw on, St. Steel GN 852	738
<b>Latch clamps</b> , heavy duty type, to screw on, Steel GN 852	736
<b>Latch clamps</b> , with locking mechanism GN 852.1	742
<b>Latch clamps</b> , with locking mechanism, Stainless Steel GN 853	746
<b>Latch clamps</b> , with locking mechanism, Steel GN 853	744
<b>Latch clamps</b> , with pulling action, Stainless Steel GN 851	728
<b>Latch clamps</b> , with pulling action, Steel GN 851	726
<b>Latch clamps</b> , with pulling action, Steel GN 851.2	734
<b>Latch clamps</b> , with trigger function GN 854	748
<b>Latches</b> GN 117	846
<b>Latches</b> GN 119	848
<b>Latches</b> , lockable GN 115	860
<b>Latches</b> , not lockable GN 115	858
<b>Latches</b> , Stainless Steel GN 115	862
<b>Latches</b> , Stainless Steel GN 119	850
<b>Latches with „U“ handle</b> GN 115.7	866

**Latches** see also under:

- Mini-Latches
- Snap locks
- Rotary clamping latches
- Hygienic latches

<b>Ledge handles</b> , Aluminium GN 730	125
<b>Ledge handles</b> , Aluminium / Plastic GN 430	126
<b>Ledge handles</b> , with lettering block GN 430.1	126
<b>Levelling feet</b> , rubber underlay black or white, St. Steel GN 341	828
<b>Levelling feet</b> , rubber underlay black, St. Steel GN 341.1	829
<b>Levelling feet</b> , rubber underlay white, St. Steel GN 341.2	829
<b>Levelling feet</b> , Steel GN 339	819
<b>Levelling feet</b> , Steel GN 6311.4	818
<b>Levelling feet</b> , with female thread, Plastic / St. Steel GN 343.7	815
<b>Levelling feet</b> , with female thread, Plastic / Steel GN 343.3	813



<b>Levelling feet</b> , with female thread, Stainless Steel GN 340.5	822	<b>Linear actuator connectors</b> , for single axis system GN 131.1	1046
<b>Levelling feet</b> , with female thread, Stainless Steel GN 343.5	814	<b>Linear actuator connectors</b> , for single axis systems GN 132.1	1047
<b>Levelling feet</b> , with female thread, Stainless Steel GN 440.5	830	<b>Linear actuator connectors</b> , for two-way axis system GN 131.2	1046
<b>Levelling feet</b> , with female thread, Steel GN 340	822	<b>Linear actuator connectors</b> , for two-way axis system GN 132.2	1047
<b>Levelling feet</b> , with female thread, Steel GN 343.1	812	<b>Linear actuator connectors</b> see also under:	
<b>Levelling feet</b> , with female thread, Steel GN 440	830	Base plate linear actuator connectors	
<b>Levelling feet</b> , with fixing lug, female thread, St. Steel GN 440.6	834	Flanged linear actuator connectors	
<b>Levelling feet</b> , with fixing lug, female thread, Steel GN 440.1	834	Swivel clamp linear actuator connectors	
<b>Levelling feet</b> , with fixing lug, threaded stud, St. Steel GN 340.6	826	T-Angle linear actuator connectors	
<b>Levelling feet</b> , with fixing lug, threaded stud, St. Steel GN 440.6	836	<b>Load rings</b> , for welding GN 587	620
<b>Levelling feet</b> , with fixing lug, threaded stud, Steel GN 340.1	826	<b>Load rings</b> , rotating GN 586	618
<b>Levelling feet</b> , with fixing lug, threaded stud, Steel GN 440.1	836	<b>Locking pins</b> , with axial lock, Stainless Steel GN 114.3	475
<b>Levelling feet</b> , with threaded stud, Plastic / St. Steel GN 343.8	815	<b>Locking pins</b> , with axial lock, St. Steel AISI 303, GN 114.6	475
<b>Levelling feet</b> , with threaded stud, Plastic / Steel GN 343.4	813	<b>Locking pins</b> , with axial lock, St. Steel AISI 303, GN 124	476
<b>Levelling feet</b> , with threaded stud, Stainless Steel GN 340.5	824	<b>Locking pins</b> , with axial lock, St. Steel AISI 303, GN 214.3	473
<b>Levelling feet</b> , with threaded stud, Stainless Steel GN 343.6	814	<b>Locking pins</b> , with axial lock, Steel GN 114.2	474
<b>Levelling feet</b> , with threaded stud, Stainless Steel GN 440.5	832	<b>Locking pins</b> , with axial lock, Steel GN 214.2	473
<b>Levelling feet</b> , with threaded stud, Steel GN 340	824	<b>Locking plungers</b> , plunger protruded GN 816	440
<b>Levelling feet</b> , with threaded stud, Steel GN 343.2	812	<b>Locking plungers</b> , plunger protruded, with key GN 816	440
<b>Levelling feet</b> , with threaded stud, Steel GN 440	832	<b>Locking plungers</b> , plunger retracted GN 816.1	442
<b>Levelling feet</b> , with vibration damping element GN 148	838	<b>Locking plungers</b> , plunger retracted, with key GN 816.1	442
<b>Levelling feet</b> , with vibration damping, female thread GN 342.1	820	<b>Locking plungers</b> , PUSH-PUSH-locking mechanism GN 514	445
<b>Levelling feet</b> , with vibration damping, threaded stud GN 342.2	820	<b>Longitudinal scales</b> , for linear actuators GN 299	1066
<b>Levelling feet</b> see also under:			
Ball jointed levelling feet			
<b>Levelling sets</b> , long version, Stainless Steel GN 350	548		
<b>Levelling sets</b> , long version, Steel GN 350	548		
<b>Levelling sets</b> , short version, Stainless Steel GN 350.1	550		
<b>Levelling sets</b> , short version, Steel GN 350.1	550		
<b>Levelling sets</b> , spherical washer, locknut, St. Steel GN 350.5	553		
<b>Levelling sets</b> , spherical washer, locknut, Steel GN 350.5	553		
<b>Levelling sets</b> , with spherical washer, Stainless Steel GN 350.2	552		
<b>Levelling sets</b> , with spherical washer, Steel GN 350.2	552		
<b>Levelling shims</b> , for power clamps GN 871	789		
<b>Level markings</b> , for oil dipsticks, Plastic GN 109	925		
<b>Lever arms</b> , for knee lever modules, Steel GN 910.6	693		
<b>Lifting eye bolts</b> , rotating, Stainless Steel GN 581.5	614		
<b>Lifting eye bolts</b> , rotating, Steel GN 581	612		
<b>Lifting eye bolts</b> , Stainless Steel DIN 580	610		
<b>Lifting eye bolts</b> , Steel DIN 580	610		
<b>Lifting eye nuts</b> , rotating GN 583	616		
<b>Lifting eye nuts</b> , Stainless Steel DIN 582	611		
<b>Lifting eye nuts</b> , Steel DIN 582	611		
<b>Lifting points</b> , for welding GN 589	622		
<b>Linear actuators</b> , with right and left hand thread GN 292	1038		
<b>Linear actuators</b> , with right or left hand thread GN 291	1036		
<b>Linear actuators</b> , with 2 separate threaded spindles GN 293	1039		
<b>Linear actuators</b> see also under:			
Double tube linear actuators			
Square linear actuators			
<b>Linear actuator connectors</b> , Aluminium GN 134.1	1059		
<b>Linear actuator connectors</b> , Aluminium GN 147.1	1058		
<b>Linear actuator connectors</b> , Aluminium GN 165.1	1060		
		<b>M</b>	<b>→ Page</b>
		<b>Magnetic plugs</b> , Aluminium GN 738	918
		<b>Magnetic plugs</b> , Aluminium / Viton-Seal GN 738.1	918
		<b>Magnets</b> , Plastic GN 53.1	1111
		<b>Magnets</b> , with ball knob / with key ring GN 51.7	1110
		<b>Magnets</b> see also under:	
		Button-type magnets	
		Magnetic plugs	
		Pot magnets	
		Retaining magnets	
		U-Magnets	
		<b>Mini indexing plungers</b> , covered indexing mechanism GN 822	434
		<b>Mini indexing plungers</b> , covered indexing mechanism GN 822.6	435
		<b>Mini indexing plungers</b> , covered indexing mechanism GN 822.7	435
		<b>Mini indexing plungers</b> , flange for surface mounting GN 822.8	436
		<b>Mini indexing plungers</b> , open indexing mechanism GN 822.1	437
		<b>Mini-latches</b> , Stainless Steel GN 115.6	864
		<b>Mini-latches</b> , Zinc die casting GN 115.1	864
		<b>Mounting blocks</b> , for indexing plungers, Stainless Steel GN 612.1	453
		<b>Mounting blocks</b> , for indexing plungers, Steel GN 612.1	453
		<b>Mounting blocks</b> , for indexing plungers, Zinc die casting GN 412.1	452
		<b>Mounting plate</b> , for hinges with safety switch, angled GN 139.4	892
		<b>Mounting plate</b> , for hinges with safety switch, flat GN 139.3	892
		<b>Mounting plates</b> , for adjustable slide units, GN 900.4	372
		<b>Mounting tool</b> , for GN 713 side thrust pins, GN 713.1	502
		<b>Mounting tool</b> , for GN 714 / GN 715 side thrust pins, GN 715.1	500
		<b>Mounting tool</b> , for GN 928 shaft clamping units, GN 928.1	666
		<b>Mushroom type knobs</b> , Plastic GN 76	53

<b>O</b>	<b>→ Page</b>		
<b>Off-set base plate connector clamps</b> , split assembly GN 166	992	<b>Protective caps</b> , Rubber GN 806	627
<b>Oil drain valves</b> , Steel, Brass GN 880	926	<b>Proximity switches</b> , for pneumatically operated clamps GN 896.1	764
<b>Oil level indicators</b> , narrow shape, Plastic GN 650.4	914	<b>Proximity switches</b> , for pneumatically operated clamps GN 896.2	764
<b>Oil level indicators</b> , Plastic / Stainless Steel-screw GN 650.1	912	<b>Proximity switches</b> , for pneumatically operated clamps GN 896.3	764
<b>Oil level indicators</b> , Plastic with protective housing GN 650.2	913	<b>Proximity switches</b> , for power clamps GN 893.1	793
<b>Oil level indicators</b> , with clamping element, Plastic GN 650	912	<b>Proximity switches</b> , for power clamps GN 893.2	793
<b>Oil level sight glasses</b> , Aluminium / ESG-glass GN 743.1	902	<b>Proximity switches</b> , for power clamps GN 893.3	793
<b>Oil level sight glasses</b> , Aluminium / Float-glass GN 743	902	<b>Proximity switches</b> , for power clamps GN 893.4	793
<b>Oil level sight glasses</b> , Aluminium / Perspex GN 537	908	<b>Pull-down plates</b> , for GN 920.1 wedge clamps, GN 920.2	662
<b>Oil level sight glasses</b> , Brass / ESG-glass GN 743.3	903	<b>Pulling latches</b> , for latch clamps, Stainless Steel GN 951.1	740
<b>Oil level sight glasses</b> , Brass / Float-glass GN 743.2	903	<b>Pulling latches</b> , for latch clamps, Steel GN 951.1	740
<b>Oil level sight glasses</b> , Stainless Steel / ESG-glass GN 743.5	904	<b>Pulling latches</b> , for GN 852 latch clamps, St. Steel GN 951.2	741
<b>Oil level sight glasses</b> , Stainless Steel / Float-glass GN 743.4	904	<b>Pulling latches</b> , for GN 852 latch clamps, Steel GN 951.2	741
<b>Oil level sight glasses</b> , conical thread, Brass/Float-glass GN 743.7	906		
<b>Oil level sight glasses</b> , conical thread, Brass/ESG-glass GN 743.8	906	<b>Q</b>	<b>→ Page</b>
<b>Oil level sight glasses</b> , crystal-clear plastic GN 541	909	<b>Quick action hexagon nuts</b> , Steel GN 6333	534
<b>Oil level sight glasses</b> see also under:		<b>Quick clamp</b> see under:	
ATEX-Sight glasses		Hook clamps	
Prismatic-Oil level sight glasses		Horizontal clamps	
<b>Opening handles</b> , for latches, Plastic GN 320	869	Knee lever modules	
<b>Oval tubular handles</b> , Aluminium / Zinc die casting GN 334	114	Latch clamps	
<b>Oval tubular handles</b> , Aluminium / Zinc die casting GN 334.1	115	Plunger clamps	
<b>Oval tubular handles</b> , Aluminium / Plastic GN 366	117	Pneumatically operated clamps	
		Vertical clamps	
		<b>Quick-fit couplings</b> , Steel GN 240	961
<b>P</b>	<b>→ Page</b>	<b>Quick-fit couplings</b> , Steel GN 240.1	962
<b>Pin keys</b> , for installation of oil level glasses GN 537, GN 537.1	908	<b>Quick-fit couplings</b> , Steel GN 240.2	963
<b>Plunger clamps</b> , for push-on clamping GN 841	716	<b>Quick release knurled nuts</b> , Steel GN 6303.1	324
<b>Plunger clamps</b> , for push-pull clamping GN 840	712	<b>Quick release set collars</b> , Aluminium GN 704	602
<b>Plunger clamps</b> , for push-pull clamping GN 842	718	<b>Quick release star knobs</b> , Plastic GN 6336.3	281
<b>Plunger clamps</b> , for push-pull clamping GN 844	714		
<b>Plunger clamps</b> , for push-pull clamping, St. Steel GN 843.1	722	<b>R</b>	<b>→ Page</b>
<b>Plunger clamps</b> , for push-pull clamping, Steel GN 843.1	720	<b>Ratchet spanner</b> , Steel GN 316	238
<b>Pneumatically operated clamps</b> GN 860	752	<b>Reference flanges</b> , for GN 723.4 control knobs, GN 723.3	350
<b>Pneumatically operated clamps</b> GN 862	756	<b>Retaining cables</b> , one/two fixing loops, Stainless Steel GN 111.2	478
<b>Pneumatically operated clamps</b> GN 862.1	758	<b>Retaining cables</b> see also under:	
<b>Pneumatically operated clamps</b> , heavy duty type GN 861	754	Spiral retaining cables	
<b>Pneumatically operated clamps</b> , heavy duty type GN 863	760	<b>Retaining magnets</b> , rod-shaped, female thread, Steel GN 52.2	1114
<b>Pneumatically operated clamps</b> , push-pull clamping GN 890	762	<b>Retaining magnets</b> , rod-shaped, female thread, Steel GN 52.3	1115
<b>Position indicators</b> , digital, 4 numbers GN 954	390	<b>Retaining magnets</b> , rod-shaped, rubber jacket, St. Steel GN 52.5	1117
<b>Position indicators</b> , digital, 5 numbers GN 953	388	<b>Retaining magnets</b> , rod-shaped, smooth finish, Brass GN 54.1	1113
<b>Position indicators</b> , Pendulum system, analog GN 000.8	383	<b>Retaining magnets</b> , rod-shaped, smooth finish, Steel GN 52.1	1112
<b>Positioning bushings</b> , for indexing plungers GN 412.2	454	<b>Retaining magnets</b> , rod-shaped, with stud, Steel GN 52.4	1116
<b>Positioning bushings with ramping cone</b> , GN 412.3	455	<b>Retaining magnets</b> , with bore, Stainless Steel GN 50.45	1103
<b>Positioning elements</b> , with female thread GN 409.2	581	<b>Retaining magnets</b> , with bore / female thread, Steel GN 50.4	1102
<b>Positioning elements</b> , with male thread GN 409.1	580	<b>Retaining magnets</b> , with female thread, St. Steel GN 50.25	1099
<b>Pot magnets</b> , with bore GN 58	1104	<b>Retaining magnets</b> , with female thread, Steel GN 50.2	1098
<b>Power clamps</b> GN 864	774	<b>Retaining magnets</b> , with female thread, Steel GN 50.5	1101
<b>Power clamps</b> GN 865	776	<b>Retaining magnets</b> , without thread, Steel GN 50.1	1097
<b>Power clamps</b> , for centred clamping GN 866	778	<b>Retaining magnets</b> , with rubber jacket, female thread GN 51.2	1105
<b>Power clamps</b> , for centred clamping GN 866.1	780	<b>Retaining magnets</b> , with rubber jacket, female thread GN 51.5	1106
<b>Prismatic oil level sight glasses</b> , Aluminium / Plastic GN 744	907	<b>Retaining magnets</b> , with rubber jacket, 2 female threads GN 51.6	1109
<b>Protective caps</b> , for latches, Plastic GN 120	868	<b>Retaining magnets</b> , with rubber jacket, threaded stud GN 51.3	1107





<b>Retaining magnets</b> , with rubber jacket, with bore GN 51.4	1108	<b>Set collars</b> , semi-split, Steel GN 706.2	600
<b>Retaining magnets</b> , with threaded stud, Steel GN 50.3	1100	<b>Set collars</b> , split, Stainless Steel GN 707.2	601
<b>Retaining plates</b> , for GN 478 clamp mountings, GN 479.1	1083	<b>Set collars</b> , split, Steel GN 707.2	601
<b>Retaining rods</b> , round, for clamp mountings, GN 480.1	1085	<b>Set collars</b> , Stainless Steel GN 705	598
<b>Retaining square tubes</b> , for clamp mountings GN 480.1	1085	<b>Set collars</b> , Steel GN 705	598
<b>Retaining tubes</b> , round, for clamp mountings, GN 480.1	1085	<b>Set collars</b> see also under:	
<b>Retractable handles</b> , automatic return, Plastic / Steel GN 798.7	24	Quick release set collars	
<b>Retractable handles</b> , Plastic / Stainless Steel GN 798.5	23	Threaded set collars	
<b>Retractable handles</b> , Plastic / Stainless Steel GN 598.5	25	<b>Setting bolts</b> GN 251	584
<b>Retractable handles</b> , Plastic / Steel GN 798.3	23	<b>Setting bolts</b> , with limit switch GN 251.2	585
<b>Retractable handles</b> , Plastic / Steel GN 598.3	25	<b>Setting bolts</b> , with retaining magnet GN 251.6	1120
<b>Revolving ball knobs</b> , Plastic / Stainless Steel GN 319.5	28	<b>Shackles</b> , cranked GN 585	625
<b>Revolving ball knobs</b> , Plastic / Steel GN 319.2	28	<b>Shackles</b> , straight GN 584	624
<b>Revolving cylindrical handles</b> , Plastic/Stainless Steel GN 599.5	29	<b>Shaft clamping units „trueround“</b> GN 928	666
<b>Revolving handles</b> , Plastic, Aluminium GN 798	20	<b>Sheet metal hinges</b> , Stainless Steel GN 136	885
<b>Revolving handles</b> , Plastic / Stainless Steel-Spindle GN 798.1	21	<b>Sheet metal hinges</b> , Steel GN 136	885
<b>Revolving handles</b> , Plastic / Stainless Steel-Spindle GN 598.1	27	<b>Sheet metal punches</b> , for mounting latches GN 123	876
<b>Revolving handles</b> , Plastic / Steel-Spindle GN 798.2	22	<b>Shoulder screws</b> , with collar ISO 7379	528
<b>Revolving handles</b> , Plastic, Steel GN 598	26	<b>Side thrust pins</b> , holder for GN 614 spring plungers, GN 614.1	491
<b>Revolving handles</b> , Plastic, Steel, Aluminium DIN 98	30	<b>Side thrust pins</b> , press on type GN 715	500
<b>Rhombus-T-Nuts</b> , GN 508.1	563	<b>Side thrust pins</b> , press on type GN 716	499
<b>Rotary clamping latches</b> GN 116.1	856	<b>Side thrust pins</b> , press on type, without pressure pin GN 714	501
<b>Rotary clamping latches</b> , Latch distance adjustable GN 516.1	854	<b>Side thrust pins</b> , with thread GN 713	502
<b>Rotary clamping latches</b> , Stainless Steel GN 516.5	855	<b>Slotted locknuts</b> , self-locking, polyamide insert DIN 1804.1	533
<b>Rotary clamping latches</b> , Zinc die casting / Steel GN 516	852	<b>Slotted locknuts</b> , Stainless Steel DIN 1804	532
<b>Rotary plates</b> , for adjustable slide units, GN 900.5	373	<b>Slotted locknuts</b> , Steel DIN 1804	532
<b>Rotary tables</b> , for adjustable slide units, GN 900.6	374	<b>Snap locks</b> , Locking distance adjustable GN 315	872
<b>Rubber buffers</b> , Stainless Steel GN 451	628	<b>Snap locks</b> , with two locking distances GN 315.1	874
<b>Rubber buffers</b> , Steel GN 351	628	<b>Spacer plate</b> , for GN 953 position indicators, GN 953.1	389
<b>Rubber pads</b> , for GN 148 levelling feet, GN 148.2	841	<b>Spacer plate</b> , for GN 954 position indicators, GN 954.1	391
<b>Rulers</b> , Plastic, Stainless Steel GN 711	336	<b>Spherical levelling washers</b> , Stainless Steel GN 350.3	551
		<b>Spherical levelling washers</b> , Steel GN 350.3	551
<b>S</b>	<b>→ Page</b>	<b>Spherical washers</b> , combined, Stainless Steel GN 6319.1	545
<b>Safety handwheels</b> , Aluminium GN *.4 / GN *.5	168	<b>Spherical washers</b> , combined, Steel GN 6319.1	545
<b>Safety handwheels</b> , Aluminium GN 321.6	172	<b>Spherical washers</b> , Stainless Steel DIN 6319	547
<b>Safety handwheels</b> , Aluminium GN 327	174	<b>Spherical washers</b> , Steel DIN 6319	546
<b>Safety indexing plungers</b> GN 414	444	<b>Spiral retaining cables</b> , Plastic GN 111.4	479
<b>Safety retractable handles</b> , Plastic / Steel GN 798.7	24	<b>Split hubs</b> , Sintered Steel GN 150	262
<b>Safety star knobs</b> , Plastic GN 5337.3	286	<b>Spoked handwheels</b> , Aluminium GN 322	164
<b>Safety star knobs</b> , with threaded bolt, Plastic GN 5337.3	286	<b>Spoked handwheels</b> , Aluminium GN 324	164
<b>Safety tension levers</b> , Steel GN 312	226/227	<b>Spoked handwheels</b> , Aluminium GN 924	154
<b>Scale rings</b> , Steel GN 164	338	<b>Spoked handwheels</b> , Plastic GN 522	160
<b>Scale rings</b> , Steel GN 264	340	<b>Spoked handwheels</b> , Plastic GN 555	187
<b>Screw drivers</b> , for GN 613 indexing plungers, GN 613.1	418	<b>Spring bolts</b> , Stainless Steel / Plastic knob GN 313	449
<b>Screw drivers</b> , for GN 611 spring plungers, GN 611.5	488	<b>Spring bolts</b> , Steel / Plastic knob GN 313	449
<b>Screw drivers</b> , for GN 616 spring plungers, GN 616.5	486	<b>Spring bolts</b> see also under:	
<b>Sensor holders</b> , Aluminium GN 271.4	1024	Cam action indexing plungers	
<b>Sensor holders</b> , Aluminium GN 272.4	1025	Indexing plungers	
<b>Sensor holders</b> , Aluminium GN 273.4	1026	Mini indexing plungers	
<b>Sensor holders</b> , for GN 478 clamp mountings, GN 479	1082	<b>Spring elements</b> , GN 513	498
<b>Serrated locking plates</b> , Sintered Steel GN 187.4	554	<b>Spring latches</b> , for welding GN 722.1	461
<b>Serrated locking plates</b> , Stainless Steel GN 187.4	554	<b>Spring latches</b> , with flange for surface mounting GN 722.2	462
<b>Set collars</b> , semi-split, Stainless Steel GN 706.2	600	<b>Spring latches</b> , with flange for surface mounting GN 722.3	463

	<b>→ Page</b>
<b>Spring loaded shells</b> , press on type, Stainless Steel GN 610	495
<b>Spring loaded shells</b> , press on type, Steel GN 610	495
<b>Spring plungers</b> , double ended, press on type GN 614.2	492
<b>Spring plungers</b> , long version GN 611	488
<b>Spring plungers</b> , plain type, without collar, St. Steel GN 614.3	493
<b>Spring plungers</b> , press on type, Plastic GN 614	490
<b>Spring plungers</b> , press on type, Stainless Steel GN 614.4	493
<b>Spring plungers</b> , press on type, Stainless Steel, Brass GN 614	490
<b>Spring plungers</b> , with bolt, internal hexagon, St. Steel GN 615.4	483
<b>Spring plungers</b> , with bolt, internal hexagon, St. Steel GN 616	486
<b>Spring plungers</b> , with bolt, internal hexagon, Steel GN 615.4	483
<b>Spring plungers</b> , with bolt, internal hexagon, Steel GN 616	486
<b>Spring plungers</b> , with bolt, with slot, Stainless Steel GN 615.1	482
<b>Spring plungers</b> , with bolt, with slot, Steel GN 615.1	482
<b>Spring plungers</b> , with collar, Stainless Steel GN 815	485
<b>Spring plungers</b> , with collar, Steel GN 815	485
<b>Spring plungers</b> , with internal hexagon, St. Steel GN 615.3	481
<b>Spring plungers</b> , with internal hexagon, Steel GN 615.3	481
<b>Spring plungers</b> , with limit switch GN 615.7	489
<b>Spring plungers</b> , with slot, Plastic GN 615.2	484
<b>Spring plungers</b> , with slot, Stainless Steel GN 615	480
<b>Spring plungers</b> , with slot, Steel GN 615	480
<b>Spring plungers</b> see also under:	
Side thrust pins	
Spring loaded shells	
Thrust pads	
<b>Spring rings</b> , for ball transfer units, Stainless Steel GN 509.3	607
<b>Square linear actuators</b> , with right or left hand thread GN 291.1	1056
<b>Swing bolts</b> , Stainless Steel DIN 444	516
<b>Swing bolts</b> , Steel DIN 444	516
<b>Swing bolts</b> , with long thread GN 1524	517
<b>Swing nuts</b> , Steel GN 444.2	518
<b>Swivel clamp connectors</b> , Aluminium GN 271	1004
<b>Swivel clamp connectors</b> , Aluminium GN 272	1005
<b>Swivel clamp connectors</b> , Aluminium GN 273	1006
<b>Swivel clamp connectors</b> , Aluminium GN 274	1007
<b>Swivel clamp connectors</b> , Aluminium GN 275	1008
<b>Swivel clamp connectors</b> , Aluminium GN 276	1009
<b>Swivel clamp connectors</b> , Aluminium GN 277	1010
<b>Swivel clamp connectors</b> , Aluminium GN 278	1011
<b>Swivel clamp connectors</b> , split assembly, Aluminium GN 279	1014
<b>Swivel clamp connector joints</b> , Aluminium GN 281	1015
<b>Swivel clamp connector joints</b> , Aluminium GN 282	1016
<b>Swivel clamp connector joints</b> , Aluminium GN 283	1017
<b>Swivel clamp connector joints</b> , Aluminium GN 284	1018
<b>Swivel clamp connector joints</b> , Aluminium GN 285	1019
<b>Swivel clamp connector joints</b> , Aluminium GN 286	1020
<b>Swivel clamp connector joints</b> , Aluminium GN 287	1021
<b>Swivel clamp connector joints</b> , Aluminium GN 288	1022
<b>Swivel clamp connector joints</b> , two-part clamp pieces GN 289	1023
<b>Swivel clamp linear actuator connectors</b> , Aluminium GN 273.1	1054
<b>Swivel clamp linear actuator connectors</b> , Aluminium GN 274.1	1055
<b>System handles</b> , Aluminium GN 669	118
<b>ST</b>	<b>→ Page</b>
<b>Star knobs</b> , Aluminium GN 5336	287
<b>Star knobs</b> , Aluminium DIN 6335	292
<b>Star knobs</b> , Aluminium DIN 6336	274
<b>Star knobs</b> , Cast iron DIN 6335	292
<b>Star knobs</b> , Cast iron DIN 6336	274
<b>Star knobs</b> , Plastic GN 5337.2	284
<b>Star knobs</b> , Plastic DIN 6335	293
<b>Star knobs</b> , Plastic / Steel DIN 6336	275
<b>Star knobs</b> , Plastic / Stainless Steel DIN 6336	275
<b>Star knobs</b> , protruding Stainless Steel bush GN 6335.2	295
<b>Star knobs</b> , protruding Stainless Steel bush GN 6336.1	277
<b>Star knobs</b> , protruding Stainless Steel bush GN 6336.2	277
<b>Star knobs</b> , protruding Steel bush GN 6335.1	294
<b>Star knobs</b> , protruding Steel bush GN 6335.2	294
<b>Star knobs</b> , protruding Steel bush GN 6336.1	276
<b>Star knobs</b> , protruding Steel bush GN 6336.2	276
<b>Star knobs</b> , Stainless Steel GN 5334	288
<b>Star knobs</b> , Stainless Steel GN 5335	291
<b>Star knobs</b> , Stainless Steel DIN 6335	292
<b>Star knobs</b> , Stainless Steel DIN 6336	274
<b>Star knobs</b> see also under:	
Quick release star knobs	
Safety-Star knobs	
Triangular knobs	
Tristar knobs	
<b>Star knobs</b> , threaded bolt, Aluminium / St. Steel GN 6335.5	297
<b>Star knobs</b> , threaded bolt, Aluminium / St. Steel GN 6336.5	279
<b>Star knobs</b> , threaded bolt, Plastic, Cast iron / Steel GN 6335.4	296
<b>Star knobs</b> , threaded bolt, Plastic, Cast iron / Steel GN 6336.4	278
<b>Star knobs</b> , threaded bolt, Plastic / Stainless Steel GN 6335.5	297
<b>Star knobs</b> , threaded bolt, Plastic / Stainless Steel GN 6336.5	279
<b>Star knobs</b> , threaded bolt, Stainless Steel GN 5334	289
<b>Star knobs</b> , threaded bolt, Stainless Steel GN 6335.5	297
<b>Star knobs</b> , threaded bolt, Stainless Steel GN 6336.5	279
<b>Star knobs</b> , with ball pin, Plastic / Stainless Steel GN 6336.11	283
<b>Star knobs</b> , with increased clamping force, Plastic GN 6335.9	298
<b>Star knobs</b> , with pivot, Plastic / Stainless Steel GN 6336.10	282
<b>Star knobs</b> , with thrust pad, Plastic/Stainless Steel GN 6336.12	283
<b>Static holders</b> , for power clamps GN 867.1	783
<b>Static holders</b> , for power clamps GN 869.1	786
<b>Stop locks</b> , with 4 indexing positions, Zinc die casting GN 702	871
<b>Studs</b> , for T-Nuts DIN 6379	564
<b>T</b>	<b>→ Page</b>
<b>T-Angle connector clamps</b> , Aluminium GN 191	995
<b>T-Angle connector clamps</b> , Aluminium GN 192	996
<b>T-Angle connector clamps</b> , multi part assembly GN 194	999
<b>T-Angle connector clamps</b> , multi part assembly GN 195	1000
<b>T-Angle connector clamps</b> , split assembly GN 193	998
<b>T-Angle connector clamps</b> , Stainless Steel GN 191	995
<b>T-Angle linear actuator connectors</b> , Aluminium GN 191.1	1052



<b>T-Angle linear actuator connectors</b> , Aluminium GN 192.1	1053	<b>T-Slot bolts</b> , accessory for extrusion systems, St. Steel GN 505.5	566
<b>T-Angle linear actuator connectors</b> , St. Steel GN 191.1	1052	<b>T-Slot bolts</b> , accessory for extrusion systems, Steel GN 505.4	566
<b>Tapered knobs</b> , Plastic GN 419	37	<b>Tubes</b> see under:	
<b>T-Clamp mountings</b> , Aluminium GN 476	1080	Construction tubes	
<b>Tension levers</b> , Stainless Steel GN 212	259	Retaining tubes	
<b>Tension levers</b> , Steel GN 212	258	<b>Tube connector clamps</b> see under:	
<b>Tension levers</b> see also under:		Connector clamps	
Adjustable flat tension levers		<b>Tube connectors</b> , split assembly, Aluminium GN 241	1002
Adjustable tension levers		<b>Tube connector joints</b> , Aluminium GN 242	1003
Safety tension levers		<b>Tube end plugs</b> , for construction tubes GN 990, Plastic GN 991	1028
<b>T-Handles</b> , Aluminium, female thread GN 563.2	44	<b>Tube supports</b> , split assembly, Aluminium GN 231	1001
<b>T-Handles</b> , Plastic, female thread GN 563	46	<b>Tubular arch handles</b> , Aluminium GN 666.4	120
<b>T-Handles</b> , Plastic, threaded stud GN 563.1	47	<b>Tubular arch handles</b> , Stainless Steel GN 666.4	120
<b>Thread adapters</b> GN 588, for GN 581 and GN 586	626	<b>Tubular handles</b> , Aluminium / Plastic GN 666	108
<b>Threaded mounting plates</b> , for levelling feet GN 349	844	<b>Tubular handles</b> , Aluminium / Plastic GN 666.1	109
<b>Threaded plugs</b> , Plastic GN 745	915	<b>Tubular handles</b> , Aluminium / Plastic, CLEANLINE GN 666	108
<b>Threaded plugs</b> , Steel GN 749	920	<b>Tubular handles</b> , Aluminium / Zinc die casting GN 333.1	96
<b>Threaded plugs</b> , up to 100 °C, Aluminium GN 441	919	<b>Tubular handles</b> , Aluminium / Zinc die casting GN 333	102
<b>Threaded plugs</b> , up to 100 °C, Aluminium GN 741	916	<b>Tubular handles</b> , oval, Aluminium / Zinc die casting GN 334	114
<b>Threaded plugs</b> , up to 180 °C, Aluminium / Viton-Seal GN 742	916	<b>Tubular handles</b> , oval, Aluminium / Zinc die casting GN 334.1	115
<b>Threaded plugs</b> , up to 200 °C, Aluminium / Viton-Seal GN 442	919	<b>Tubular handles</b> , oval, Aluminium / Plastic GN 366	117
<b>Threaded plugs</b> , with conical thread, Stainless Steel DIN 906	921	<b>Tubular handles</b> , Stainless Steel GN 333.5	98
<b>Threaded plugs</b> , with conical thread, Steel DIN 906	921	<b>Tubular handles</b> , Stainless Steel GN 666.5	112
<b>Threaded rods</b> , Stainless Steel GN 551.1	530	<b>Tubular handles</b> , Stainless Steel GN 666.7	112
<b>Threaded rods</b> , Steel GN 551.1	530	<b>Tubular handles</b> , Stainless Steel / Plastic GN 666	108
<b>Threaded set collars</b> , Stainless Steel GN 706.3	603	<b>Tubular handles</b> , Stainless Steel / Plastic GN 666.1	109
<b>Threaded set collars</b> , Steel GN 706.3	603	<b>Tubular handles</b> , with movable handle shanks GN 333.2	104
<b>Thrust pads</b> , Plastic GN 631	597	<b>Tubular handles</b> , with movable handle shanks GN 333.3	99
<b>Thrust pads</b> , Stainless Steel GN 631.5	597	<b>Tubular handles</b> , with power switching function GN 331	100
<b>Thrust pads</b> , Steel DIN 6311	594	<b>Tubular handles</b> , with power switching function GN 332	106
<b>Thrust pads</b> , Steel / Plastic GN 6311.1	595	<b>Tubular handles</b> see also under:	
<b>Thrust springs</b> , for serrated locking plates, St. Steel GN 187.2	557	Oval tubular handles	
<b>T-Nuts</b> , for extrusion systems GN 505	567	System handles	
<b>T-Nuts</b> , for extrusion systems GN 507	568	<b>Turret levers</b> , Steel GN 213	266
<b>T-Nuts</b> , for extrusion systems, with guide step GN 506	570	<b>Two-way clamp mountings</b> , Aluminium GN 474	1078
<b>T-Nuts</b> , for extrusion systems, without guide step GN 506.1	571	<b>Two-way clamp mountings</b> , twistable, Aluminium GN 475	1079
<b>T-Nuts</b> , for extrusion systems, with spring washer GN 506.2	572	<b>Two-way connector clamps</b> , Aluminium GN 131	976
<b>T-Nuts</b> , shallow GN 230	573	<b>Two-way connector clamps</b> , Stainless Steel GN 131	976
<b>T-Nuts</b> , Stainless Steel DIN 508	561	<b>Two-way connector clamps</b> , Aluminium GN 132	978
<b>T-Nuts</b> , Steel DIN 508	560	<b>Two-way connector clamps</b> , Aluminium GN 133	979
<b>T-Nuts</b> , with slip proof GN 508.2	562	<b>Two-way connector clamps</b> , multi part assembly GN 134	980
<b>T-Nuts</b> see also under:			
Rhombus-T-Nuts			
<b>Tommy nuts</b> , with fixed bar, Steel GN 6305	254		
<b>Tommy nuts</b> , with movable bar, Steel GN 6307	255		
<b>Tommy screws</b> , with fixed bar, Steel GN 6304	256		
<b>Tommy screws</b> , with movable bar, Steel GN 6306	257		
<b>Transfer units</b> , Steel, Stainless Steel GN 391	1068		
<b>Triangular knobs</b> , Stainless Steel GN 5339.5	299		
<b>Tri-ball handles</b> , Steel GN 10	144		
<b>Tristar knobs</b> , Plastic GN 5330	300		
<b>Tristar knobs</b> , with threaded bolt, Plastic GN 5330	301		
<b>T-Slot bolts</b> , DIN 787	565		

## U → Page

<b>U-Magnets</b> , with bore GN 62	1119
<b>Universal joint shafts</b> , with friction bearing, Steel GN 808.2	939
<b>Universal joint shafts</b> , with needle bearing, Steel GN 808.3	943
<b>Universal joints</b> , for ordinary applications, GN 9080	944
<b>Universal joints</b> , with friction bearing, Stainless Steel DIN 808	940
<b>Universal joints</b> , with friction bearing, Steel DIN 808	938
<b>Universal joints</b> , with needle bearing, Steel DIN 808	942



<b>V</b>	<b>→ Page</b>
<b>Vertical clamps</b> , heavy duty type GN 813	698
<b>Vertical clamps</b> , „Longlife“, with horizontal base GN 910	686
<b>Vertical clamps</b> , „Longlife“, with vertical base GN 910.1	688
<b>Vertical clamps</b> , with angled base GN 812	694
<b>Vertical clamps</b> , with angled base GN 812.1	696
<b>Vertical clamps</b> , with horizontal base, Stainless Steel GN 810	680
<b>Vertical clamps</b> , with horizontal base, Steel GN 810	678
<b>Vertical clamps</b> , with vertical base, Stainless Steel GN 810.1	684
<b>Vertical clamps</b> , with vertical base, Steel GN 810.1	682

<b>W</b>	<b>→ Page</b>
<b>Waist shaped knobs</b> , Steel GN 75	52
<b>Washers</b> , DIN 6340	539
<b>Washers</b> , Stainless Steel GN 6341	538
<b>Washers</b> , Steel GN 6341	538
<b>Washers</b> see also under:	
Bezel discs	
Captive C-Washers	
C-Washers	
Countersunk washers	
Heavy duty washers	
Serrated locking plates	
Spherical levelling washers	
Spherical washers	
<b>Wedge clamps</b> GN 920.1	660
<b>Welding sockets</b> , with and without collar, Steel GN 7490	911
<b>Wide base plate connector clamps</b> , split assembly GN 167	993
<b>Wing nuts</b> , Plastic GN 532	302
<b>Wing nuts</b> , Stainless Steel GN 432	311
<b>Wing nuts</b> , Stainless Steel GN 434	310
<b>Wing nuts</b> , Stainless Steel GN 834	306
<b>Wing screws</b> , Plastic / Stainless Steel GN 531	304
<b>Wing screws</b> , Plastic /Steel GN 531	303
<b>Wing screws</b> , Stainless Steel GN 431	311
<b>Wing screws</b> , Stainless Steel GN 433	310
<b>Wing screws</b> , Stainless Steel GN 835	307
<b>Wing screws</b> , with protruding hub, Plastic GN 531.1	305
<b>Workholding bolts</b> DIN 6321	578
<b>Workholding bolts</b> , with ball-type shoulder GN 6322	579
<b>Workholding bolts</b> see also under:	
Headed dowels	





# 0-9 Numerical Index



<b>000</b>	<b>→ Page</b>	<b>100</b>	<b>→ Page</b>	<b>GN 145.1</b>	1048	<b>200</b>	<b>→ Page</b>	<b>GN 274.1</b>	1055
<b>GN 000.4</b>	170	<b>GN 101</b>	212/213	<b>GN 146</b>	984	<b>GN 200</b>	354/356	<b>GN 275</b>	1008
<b>GN 000.5</b>	171	<b>GN 109</b>	925	<b>GN 146.1</b>	1049	<b>GN 201</b>	38	<b>GN 276</b>	1009
<b>GN 000.8</b>	383	<b>GN 110</b>	1127	<b>GN 146.3</b>	985	<b>GN 203</b>	32	<b>GN 277</b>	1010
<b>GN 10</b>	144	<b>GN 111</b>	477	<b>GN 147</b>	986	<b>GN 204</b>	246	<b>GN 278</b>	1011
<b>DIN 13</b>	1134/1135	<b>GN 111.2</b>	478	<b>GN 147.1</b>	1058	<b>GN 206</b>	250	<b>GN 279</b>	1014
<b>DIN 39</b>	31	<b>GN 111.3</b>	477	<b>GN 148</b>	838	<b>GN 206.1</b>	251	<b>GN 281</b>	1015
<b>GN 50.1</b>	1097	<b>GN 111.4</b>	479	<b>GN 148.2</b>	841	<b>GN 211</b>	265	<b>GN 282</b>	1016
<b>GN 50.2</b>	1098	<b>GN 111.5</b>	477	<b>GN 150</b>	262	<b>GN 212</b>	258/259	<b>GN 283</b>	1017
<b>GN 50.25</b>	1099	<b>GN 112.1</b>	142	<b>GN 151</b>	884	<b>GN 212.3</b>	222/223	<b>GN 284</b>	1018
<b>GN 50.3</b>	1100	<b>GN 113.1</b>	469	<b>GN 161</b>	886	<b>GN 212.5</b>	224/225	<b>GN 285</b>	1019
<b>GN 50.4</b>	1102	<b>GN 113.3</b>	470	<b>GN 161.1</b>	896	<b>GN 213</b>	266	<b>GN 286</b>	1020
<b>GN 50.45</b>	1103	<b>GN 113.4</b>	470	<b>GN 161.2</b>	897	<b>GN 214.2</b>	473	<b>DIN ISO 286</b>	1132
<b>GN 50.5</b>	1101	<b>GN 113.5</b>	471	<b>GN 162</b>	988	<b>GN 214.3</b>	473	<b>GN 287</b>	1021
<b>GN 51.2</b>	1105	<b>GN 113.6</b>	471	<b>GN 162.1</b>	1050	<b>GN 215</b>	360	<b>GN 288</b>	1022
<b>GN 51.3</b>	1107	<b>GN 113.7</b>	472	<b>GN 162.3</b>	989	<b>GN 218</b>	845	<b>GN 289</b>	1023
<b>GN 51.4</b>	1108	<b>GN 113.8</b>	472	<b>GN 163</b>	990	<b>GN 223</b>	264	<b>GN 291</b>	1036
<b>GN 51.5</b>	1106	<b>GN 114.2</b>	474	<b>GN 163.1</b>	1051	<b>GN 224.1</b>	84	<b>GN 291.1</b>	1056
<b>GN 51.6</b>	1109	<b>GN 114.3</b>	475	<b>GN 164</b>	338	<b>GN 224.5</b>	84	<b>GN 292</b>	1038
<b>GN 51.7</b>	1110	<b>GN 114.6</b>	475	<b>GN 165</b>	991	<b>GN 225</b>	77	<b>GN 293</b>	1039
<b>GN 52.1</b>	1112	<b>GN 115</b>	858/863	<b>GN 165.1</b>	1060	<b>GN 226</b>	180	<b>GN 295</b>	1064
<b>GN 52.2</b>	1114	<b>GN 115.1</b>	864	<b>GN 166</b>	992	<b>GN 226.1</b>	181	<b>GN 297</b>	1069
<b>GN 52.3</b>	1115	<b>GN 115.6</b>	864	<b>GN 167</b>	993	<b>GN 227</b>	191	<b>GN 298</b>	1070
<b>GN 52.4</b>	1116	<b>GN 115.7</b>	866	<b>GN 171</b>	994	<b>GN 227.1</b>	190	<b>GN 299</b>	1066
<b>GN 52.5</b>	1117	<b>GN 116.1</b>	856	<b>DIN 172</b>	574	<b>GN 227.2</b>	189		
<b>GN 53.1</b>	1111	<b>GN 117</b>	846	<b>DIN 179</b>	574	<b>DIN 228</b>	1136	<b>300</b>	<b>→ Page</b>
<b>GN 54.1</b>	1113	<b>GN 119</b>	848/850	<b>GN 183</b>	558	<b>GN 230</b>	573	<b>GN 300</b>	196/197
<b>GN 58</b>	1104	<b>GN 119.2</b>	870	<b>GN 184</b>	542	<b>GN 231</b>	1001	<b>GN 300.1</b>	198/199
<b>GN 60</b>	1118	<b>GN 120</b>	868	<b>GN 184.5</b>	542	<b>GN 237</b>	878/879	<b>GN 300.4</b>	206/207
<b>GN 62</b>	1119	<b>GN 123</b>	876	<b>GN 185</b>	543	<b>GN 237.1</b>	882	<b>GN 300.5</b>	200/201
<b>GN 75</b>	52	<b>GN 124</b>	476	<b>GN 187.1</b>	556	<b>GN 238</b>	880	<b>GN 302</b>	210/211
<b>GN 76</b>	53	<b>GN 125</b>	230/231	<b>GN 187.2</b>	557	<b>GN 240</b>	961	<b>GN 303</b>	202/203
<b>DIN 79</b>	1126	<b>GN 125.5</b>	232/233	<b>GN 187.4</b>	554	<b>GN 240.1</b>	962	<b>GN 303.1</b>	204/205
<b>DIN 98</b>	30	<b>GN 127</b>	883	<b>GN 191</b>	995	<b>GN 240.2</b>	963	<b>GN 310</b>	42/43
<b>DIN 99</b>	244/245	<b>GN 128</b>	894	<b>GN 191.1</b>	1052	<b>GN 241</b>	1002	<b>GN 312</b>	226/227
<b>GN 99.2</b>	234/235	<b>GN 128.2</b>	895	<b>GN 192</b>	996	<b>GN 242</b>	1003	<b>GN 313</b>	449
<b>GN 99.5</b>	248	<b>GN 129</b>	893	<b>GN 192.1</b>	1053	<b>GN 249</b>	496	<b>GN 315</b>	872
<b>GN 99.6</b>	248	<b>GN 131</b>	976	<b>GN 193</b>	998	<b>GN 250</b>	497	<b>GN 315.1</b>	874
<b>GN 99.7</b>	249	<b>GN 131.1</b>	1046	<b>GN 194</b>	999	<b>GN 251</b>	584	<b>GN 316</b>	238
<b>GN 99.8</b>	249	<b>GN 131.2</b>	1046	<b>GN 195</b>	1000	<b>GN 251.2</b>	585	<b>DIN 319</b>	33/34/35
		<b>GN 132</b>	978			<b>GN 251.6</b>	1120	<b>GN 319.2</b>	28
		<b>GN 132.1</b>	1047			<b>GN 252</b>	531	<b>GN 319.5</b>	28
		<b>GN 132.2</b>	1047			<b>GN 264</b>	340	<b>GN 320</b>	869
		<b>GN 133</b>	979			<b>GN 268</b>	341	<b>GN 321</b>	163
		<b>GN 134</b>	980			<b>GN 269</b>	138	<b>GN 321.4</b>	168
		<b>GN 134.1</b>	1059			<b>GN 271</b>	1004	<b>GN 321.5</b>	168
		<b>GN 136</b>	885			<b>GN 271.4</b>	1024	<b>GN 321.6</b>	172
		<b>GN 139.1</b>	888			<b>GN 272</b>	1005	<b>GN 322</b>	164
		<b>GN 139.2</b>	888			<b>GN 272.4</b>	1025	<b>GN 322.3</b>	165
		<b>GN 139.3</b>	892			<b>GN 273</b>	1006	<b>GN 322.4</b>	168
		<b>GN 139.4</b>	892			<b>GN 273.1</b>	1054	<b>GN 322.5</b>	168
		<b>GN 141</b>	981			<b>GN 273.4</b>	1026	<b>GN 322.7</b>	165
		<b>GN 145</b>	982			<b>GN 274</b>	1007	<b>GN 323</b>	163

<b>GN 323.4</b>	168	<b>400</b>	<b>→ Page</b>	<b>DIN 467</b>	331	<b>GN 528.1</b>	72	<b>600</b>	<b>→ Page</b>
<b>GN 323.5</b>	168	<b>GN 409.1</b>	580	<b>DIN 468</b>	136	<b>GN 531</b>	303/304	<b>GN 601</b>	252
<b>GN 323.8</b>	384	<b>GN 409.2</b>	581	<b>DIN 469</b>	137	<b>GN 531.1</b>	305	<b>GN 603</b>	218/219
<b>GN 324</b>	164	<b>GN 411.2</b>	664	<b>GN 471</b>	134	<b>GN 532</b>	302	<b>GN 603.1</b>	220/221
<b>GN 327</b>	174	<b>GN 412.1</b>	452	<b>GN 471.1</b>	134	<b>GN 534</b>	312/313	<b>GN 604</b>	214/215
<b>GN 330</b>	890	<b>GN 412.2</b>	454	<b>GN 471.3</b>	140	<b>GN 535</b>	321	<b>GN 604.1</b>	216/217
<b>GN 331</b>	100	<b>GN 412.3</b>	455	<b>GN 472.3</b>	141	<b>GN 536</b>	321	<b>GN 605</b>	524/525
<b>GN 332</b>	106	<b>GN 414</b>	444	<b>GN 473</b>	1076	<b>GN 537</b>	908	<b>GN 606</b>	526/527
<b>GN 333</b>	102	<b>GN 417</b>	438/439	<b>GN 474</b>	1078	<b>GN 537.1</b>	908	<b>GN 607</b>	426
<b>GN 333.1</b>	96	<b>GN 418</b>	656	<b>GN 475</b>	1079	<b>GN 541</b>	909	<b>GN 607.1</b>	427
<b>GN 333.2</b>	104	<b>GN 418.1</b>	654	<b>GN 476</b>	1080	<b>GN 543.1</b>	910	<b>GN 607.2</b>	428
<b>GN 333.3</b>	99	<b>GN 419</b>	37	<b>GN 477</b>	1077	<b>GN 551.1</b>	530	<b>GN 607.3</b>	429
<b>GN 333.5</b>	98	<b>GN 420</b>	316	<b>GN 478</b>	1081	<b>GN 552</b>	922	<b>GN 607.4</b>	430
<b>GN 333.8</b>	105	<b>GN 421</b>	317/318	<b>GN 479</b>	1082	<b>GN 552.6</b>	924	<b>GN 607.5</b>	431
<b>GN 333.9</b>	105	<b>GN 421.10</b>	319	<b>GN 479.1</b>	1083	<b>GN 555</b>	187	<b>GN 607.9</b>	428
<b>GN 334</b>	114	<b>GN 421.11</b>	320	<b>GN 480</b>	1084	<b>GN 558</b>	145	<b>GN 608</b>	432
<b>GN 334.1</b>	115	<b>GN 421.12</b>	320	<b>GN 480.1</b>	1085	<b>GN 559</b>	76	<b>GN 608.1</b>	433
<b>GN 337</b>	877	<b>GN 424.1</b>	85	<b>GN 481</b>	122	<b>GN 563</b>	46	<b>GN 608.5</b>	432
<b>GN 338</b>	544	<b>GN 424.5</b>	85	<b>GN 491</b>	1040	<b>GN 563.1</b>	47	<b>GN 608.6</b>	433
<b>GN 339</b>	819	<b>GN 425</b>	80/82	<b>GN 492</b>	1044	<b>GN 563.2</b>	44	<b>GN 609</b>	450
<b>GN 340</b>	822/824	<b>GN 425.1</b>	86			<b>GN 564</b>	69	<b>GN 609.5</b>	450
<b>GN 340.1</b>	826	<b>GN 425.2</b>	87	<b>500</b>	<b>→ Page</b>	<b>GN 565</b>	60	<b>GN 610</b>	495
<b>GN 340.5</b>	822/824	<b>GN 425.3</b>	83	<b>GN 505</b>	567	<b>GN 565.1</b>	61	<b>GN 611</b>	488
<b>GN 340.6</b>	826	<b>GN 425.5</b>	90	<b>GN 505.4</b>	566	<b>GN 565.2</b>	64	<b>GN 611.5</b>	488
<b>GN 341</b>	828	<b>GN 425.6</b>	80	<b>GN 505.5</b>	566	<b>GN 565.3</b>	74	<b>GN 612</b>	456
<b>GN 341.1</b>	829	<b>GN 425.8</b>	88	<b>GN 506</b>	570	<b>GN 565.4</b>	65	<b>GN 612.1</b>	453
<b>GN 341.2</b>	829	<b>GN 426</b>	92	<b>GN 506.1</b>	571	<b>GN 565.5</b>	63	<b>GN 612.2</b>	457
<b>GN 342.1</b>	820	<b>GN 426.1</b>	93	<b>GN 506.2</b>	572	<b>GN 565.9</b>	65	<b>GN 612.3</b>	458
<b>GN 342.2</b>	820	<b>GN 426.5</b>	95	<b>GN 507</b>	568	<b>GN 570.2</b>	135	<b>GN 612.8</b>	457
<b>GN 343.1</b>	812	<b>GN 427</b>	91	<b>DIN 508</b>	560/561	<b>DIN 580</b>	610	<b>GN 612.9</b>	458
<b>GN 343.2</b>	812	<b>GN 427.5</b>	91	<b>GN 508.1</b>	563	<b>GN 581</b>	612	<b>GN 613</b>	418
<b>GN 343.3</b>	813	<b>GN 430</b>	126	<b>GN 508.2</b>	562	<b>GN 581.5</b>	614	<b>GN 613.1</b>	418
<b>GN 343.4</b>	813	<b>GN 430.1</b>	126	<b>GN 509</b>	604	<b>DIN 582</b>	611	<b>GN 614</b>	490
<b>GN 343.5</b>	814	<b>GN 431</b>	311	<b>GN 509.1</b>	606	<b>GN 583</b>	616	<b>GN 614.1</b>	491
<b>GN 343.6</b>	814	<b>GN 432</b>	311	<b>GN 509.3</b>	607	<b>GN 584</b>	624	<b>GN 614.2</b>	492
<b>GN 343.7</b>	815	<b>GN 433</b>	310	<b>GN 509.4</b>	608	<b>GN 585</b>	625	<b>GN 614.3</b>	493
<b>GN 343.8</b>	815	<b>GN 434</b>	310	<b>GN 511</b>	1086	<b>GN 586</b>	618	<b>GN 614.4</b>	493
<b>GN 346</b>	590	<b>GN 436</b>	346	<b>GN 513</b>	498	<b>GN 587</b>	620	<b>GN 615</b>	480
<b>GN 347</b>	591	<b>GN 436.1</b>	347	<b>GN 514</b>	445	<b>GN 588</b>	626	<b>GN 615.1</b>	482
<b>GN 348</b>	842	<b>GN 440</b>	830/832	<b>GN 516</b>	852	<b>GN 589</b>	622	<b>GN 615.2</b>	484
<b>GN 349</b>	844	<b>GN 440.1</b>	834/836	<b>GN 516.1</b>	854	<b>GN 598</b>	26	<b>GN 615.3</b>	481
<b>GN 350</b>	548	<b>GN 440.5</b>	830/832	<b>GN 516.5</b>	855	<b>GN 598.1</b>	27	<b>GN 615.4</b>	483
<b>GN 350.1</b>	550	<b>GN 440.6</b>	834/836	<b>GN 519</b>	39	<b>GN 598.3</b>	25	<b>GN 615.7</b>	489
<b>GN 350.2</b>	552	<b>GN 441</b>	919	<b>GN 519.1</b>	40	<b>GN 598.5</b>	25	<b>GN 616</b>	486/487
<b>GN 350.3</b>	551	<b>GN 442</b>	919	<b>GN 519.6</b>	41	<b>GN 599.5</b>	29	<b>GN 616.5</b>	486/487
<b>GN 350.5</b>	553	<b>DIN 444</b>	516	<b>GN 520</b>	162			<b>GN 617</b>	416
<b>GN 351</b>	628	<b>GN 444.2</b>	518	<b>GN 520.6</b>	162			<b>GN 617.1</b>	420
<b>GN 352</b>	632	<b>GN 451</b>	628	<b>GN 521</b>	156			<b>GN 618</b>	419
<b>GN 353</b>	636	<b>GN 452</b>	632	<b>GN 521.3</b>	157			<b>GN 625</b>	66
<b>GN 366</b>	117	<b>GN 453</b>	636	<b>GN 522</b>	160			<b>GN 628</b>	78
<b>GN 369</b>	139	<b>GN 454</b>	637	<b>GN 522.3</b>	161			<b>GN 628.2</b>	78
<b>GN 374</b>	341	<b>DIN 464</b>	326/327	<b>GN 527.1</b>	182			<b>GN 631</b>	597
<b>GN 391</b>	1068	<b>DIN 466</b>	325	<b>GN 528</b>	70			<b>GN 631.5</b>	597

<b>GN 632.1</b>	596	<b>GN 717</b>	421	<b>800</b>	<b>→ Page</b>	<b>GN 853</b>	744/746	<b>900</b>	<b>→ Page</b>
<b>GN 632.5</b>	596	<b>GN 719.2</b>	36	<b>GN 801</b>	771	<b>GN 854</b>	748	<b>GN 900</b>	366
<b>GN 638</b>	816	<b>GN 722.1</b>	461	<b>GN 802</b>	767	<b>GN 855</b>	750	<b>GN 900.1</b>	368
<b>GN 648.1</b>	948	<b>GN 722.2</b>	462	<b>GN 804</b>	769	<b>GN 860</b>	752	<b>GN 900.2</b>	369
<b>GN 648.2</b>	949	<b>GN 722.3</b>	463	<b>GN 806</b>	627	<b>GN 861</b>	754	<b>GN 900.3</b>	370
<b>GN 648.5</b>	950	<b>GN 723.3</b>	350	<b>GN 807</b>	765	<b>GN 862</b>	756	<b>GN 900.4</b>	372
<b>GN 648.6</b>	951	<b>GN 723.4</b>	348	<b>DIN 808</b>	938/940	<b>GN 862.1</b>	758	<b>GN 900.5</b>	373
<b>GN 650</b>	912	<b>GN 725</b>	68	<b>GN 808.1</b>	945	<b>GN 863</b>	760	<b>GN 900.6</b>	374
<b>GN 650.1</b>	912	<b>GN 726</b>	342	<b>GN 808.2</b>	939	<b>GN 864</b>	774	<b>GN 903</b>	768
<b>GN 650.2</b>	913	<b>GN 726.1</b>	344	<b>GN 808.3</b>	943	<b>GN 865</b>	776	<b>DIN 906</b>	921
<b>GN 650.4</b>	914	<b>GN 726.2</b>	345	<b>GN 809</b>	770	<b>GN 866</b>	778	<b>GN 909</b>	451
<b>DIN 653</b>	328/329	<b>GN 727</b>	352	<b>GN 810</b>	678/680	<b>GN 866.1</b>	780	<b>GN 909.5</b>	451
<b>GN 653.10</b>	330	<b>GN 728</b>	73	<b>GN 810.1</b>	682/684	<b>GN 867</b>	782	<b>GN 910</b>	686
<b>GN 665</b>	121	<b>GN 728.5</b>	73	<b>GN 812</b>	694	<b>GN 867.1</b>	783	<b>GN 910.1</b>	688
<b>GN 666</b>	108	<b>GN 729</b>	351	<b>GN 812.1</b>	696	<b>GN 868</b>	784	<b>GN 910.2</b>	690
<b>GN 666.1</b>	109	<b>GN 730</b>	125	<b>GN 813</b>	698	<b>GN 868.1</b>	785	<b>GN 910.3</b>	692
<b>GN 666.4</b>	120	<b>GN 731.1</b>	128	<b>GN 815</b>	485	<b>GN 869.1</b>	786	<b>GN 910.5</b>	693
<b>GN 666.5</b>	112	<b>GN 732</b>	529	<b>GN 816</b>	440	<b>GN 869.2</b>	787	<b>GN 910.6</b>	693
<b>GN 666.7</b>	112	<b>GN 735</b>	176	<b>GN 816.1</b>	442	<b>GN 870</b>	792	<b>GN 910.7</b>	693
<b>GN 667</b>	111	<b>GN 736</b>	178	<b>GN 817</b>	422	<b>GN 871</b>	789	<b>GN 910.8</b>	693
<b>GN 668</b>	75	<b>GN 736.1</b>	179	<b>GN 817.2</b>	423	<b>GN 872</b>	788	<b>GN 910.9</b>	693
<b>GN 669</b>	118	<b>GN 738</b>	918	<b>GN 817.3</b>	424	<b>GN 873</b>	790	<b>GN 911</b>	1031
<b>GN 676</b>	48/50	<b>GN 738.1</b>	918	<b>GN 817.4</b>	425	<b>GN 880</b>	926	<b>GN 913.2</b>	522
<b>GN 676.1</b>	51	<b>GN 740.1</b>	915	<b>GN 820</b>	700/702	<b>GN 880.1</b>	928	<b>GN 913.3</b>	520
<b>GN 676.5</b>	51	<b>GN 741</b>	916	<b>GN 820.1</b>	704/706	<b>GN 881</b>	929	<b>GN 913.5</b>	521
		<b>GN 742</b>	916	<b>GN 820.2</b>	708/710	<b>GN 882</b>	930	<b>GN 913.6</b>	1121
<b>700</b>	<b>→ Page</b>	<b>GN 743</b>	902	<b>GN 821</b>	794	<b>GN 883</b>	931	<b>GN 917</b>	659
<b>GN 700</b>	358	<b>GN 743.1</b>	902	<b>GN 822</b>	434	<b>GN 890</b>	762	<b>GN 917.1</b>	659
<b>GN 702</b>	871	<b>GN 743.2</b>	903	<b>GN 822.1</b>	437	<b>GN 893.1</b>	793	<b>GN 918</b>	650
<b>GN 704</b>	602	<b>GN 743.3</b>	903	<b>GN 822.6</b>	435	<b>GN 893.2</b>	793	<b>GN 918.1</b>	652
<b>GN 705</b>	598	<b>GN 743.4</b>	904	<b>GN 822.7</b>	435	<b>GN 893.3</b>	793	<b>GN 918.2</b>	653
<b>GN 706.2</b>	600	<b>GN 743.5</b>	904	<b>GN 822.8</b>	436	<b>GN 893.4</b>	793	<b>GN 918.5</b>	650
<b>GN 706.3</b>	603	<b>GN 743.6</b>	905	<b>GN 831</b>	796	<b>GN 896.1</b>	764	<b>GN 918.6</b>	652
<b>GN 707.2</b>	601	<b>GN 743.7</b>	906	<b>GN 831.1</b>	798	<b>GN 896.2</b>	764	<b>GN 918.7</b>	653
<b>GN 708.1</b>	766	<b>GN 743.8</b>	906	<b>GN 832</b>	799	<b>GN 896.3</b>	764	<b>GN 919</b>	658
<b>GN 709.1</b>	588	<b>GN 744</b>	907	<b>GN 832.1</b>	800	<b>DIN 898-1</b>	1131	<b>GN 920.1</b>	660
<b>GN 709.2</b>	589	<b>GN 745</b>	915	<b>GN 832.2</b>	802	<b>DIN 898-2</b>	1131	<b>GN 920.2</b>	662
<b>GN 709.3</b>	586	<b>GN 745.1</b>	915	<b>GN 832.3</b>	803			<b>GN 923</b>	150
<b>GN 709.15</b>	588	<b>GN 747.1</b>	915	<b>GN 832.4</b>	804			<b>GN 923.18</b>	1062
<b>GN 709.25</b>	589	<b>GN 749</b>	920	<b>GN 833</b>	805			<b>GN 923.3</b>	151
<b>GN 709.35</b>	586	<b>GN 750</b>	260	<b>GN 834</b>	306			<b>GN 923.30</b>	1062
<b>GN 710</b>	960	<b>GN 751</b>	952/954	<b>GN 835</b>	307			<b>GN 923.40</b>	1062
<b>GN 711</b>	336	<b>GN 752</b>	956	<b>GN 840</b>	712			<b>GN 923.7</b>	151
<b>GN 711.1</b>	336	<b>GN 753</b>	609	<b>GN 841</b>	716			<b>GN 924</b>	154
<b>GN 712</b>	464	<b>GN 771.1</b>	576	<b>GN 842</b>	718			<b>GN 924.3</b>	155
<b>GN 712.1</b>	465	<b>GN 782</b>	957	<b>GN 843.1</b>	720/722			<b>GN 924.40</b>	1062
<b>GN 713</b>	502	<b>DIN 787</b>	565	<b>GN 844</b>	714			<b>GN 924.50</b>	1063
<b>GN 713.1</b>	502	<b>GN 798</b>	20	<b>GN 850</b>	724			<b>GN 924.60</b>	1063
<b>GN 714</b>	501	<b>GN 798.1</b>	21	<b>GN 851</b>	726/728			<b>GN 924.7</b>	155
<b>GN 715</b>	500	<b>GN 798.2</b>	22	<b>GN 851.1</b>	730/732			<b>GN 927</b>	644
<b>GN 715.1</b>	500	<b>GN 798.3</b>	23	<b>GN 851.2</b>	734			<b>GN 927.3</b>	644
<b>GN 715.2</b>	505	<b>GN 798.5</b>	23	<b>GN 852</b>	736/738			<b>GN 927.4</b>	646
<b>GN 716</b>	499	<b>GN 798.7</b>	24	<b>GN 852.1</b>	742			<b>GN 927.5</b>	646

GN 927.7	648	GN 6311.1	595
GN 928	666	GN 6311.4	818
GN 928.1	666	DIN 6319	546/547
GN 930	124	GN 6319.1	545
GN 933.5	523	DIN 6320	583
GN 949	188	DIN 6321	578
DIN 950	184	GN 6321.1	582
GN 950.1	186	GN 6322	579
GN 950.6	185	DIN 6330	536
GN 951.1	740	DIN 6331	537
GN 951.2	741	DIN 6332	592
GN 952.1	392	GN 6333	534
GN 953	388	DIN 6335	292/293
GN 953.1	389	GN 6335.1	294
GN 953.6	393	GN 6335.2294/295	
GN 954	390	GN 6335.4	296
GN 954.1	391	GN 6335.5	297
GN 954.3	391	GN 6335.9	298
GN 954.6	393	DIN 6336	274/275
GN 960	1087	GN 6336.1	276/277
GN 961	1088	GN 6336.2	276/277
GN 963	1089	GN 6336.3	281
GN 990	1027	GN 6336.4	278
GN 991	1028	GN 6336.5	279
GN 992	843/1029	GN 6336.10	282
GN 992.5	843/1029	GN 6336.11	283
		GN 6336.12	283
		DIN 6337	247
<b>1000</b>	<b>→ Page</b>	GN 6337.3	236/237
GN 1524	517	GN 6339	540
DIN 1804	532	DIN 6340	539
GN 1804.1	533	GN 6341	538
DIN 1810	532	DIN 6371	559
		DIN 6379	564
<b>3000</b>	<b>→ Page</b>	DIN 6885	638/1124
DIN 3670	183		
<b>5000</b>	<b>→ Page</b>	<b>7000</b>	<b>→ Page</b>
GN 5330	300/301	GN 7336	314
GN 5334	288/289	GN 7336.5	315
GN 5335	291	GN 7336.7	446
GN 5336	287	GN 7336.8	447
GN 5337.2	284/285	ISO 7379	528
GN 5337.3	286	GN 7490	911
GN 5339.5	299		
<b>6000</b>	<b>→ Page</b>	<b>9000</b>	<b>→ Page</b>
DIN 6303	322/323	GN 9080	944
GN 6303.1	324		
DIN 6304	256	<b>70000</b>	<b>→ Page</b>
DIN 6305	254	DIN 71752	952/954
DIN 6306	257	DIN 71802	958/959
DIN 6307	255		
DIN 6311	594		













**For your notes**

