2.1 Indexing plungers
Locking pins
Spring plungers

GN 617
Indexing plungers
Steel /
Plastic knob
Inch

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GN 618
Indexing plungers
without thread
Steel /
Plastic knob

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GN 817
Indexing plungers
Stainless Steel
Plastic knob
Rost frei
Inch

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GN 617
Indexing plungers
Stainless Steel
Plastic knob
Rost frei
Inch

→ *Page 416*

GN 617.1
Indexing plungers
with rest position
Steel / Plastic knob
Inch

→ *Page 420*

GN 817.2
Indexing plungers
Steel /
long plastic knob

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GN 617
Indexing plungers
Stainless Steel
Rost frei
Inch

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GN 617.1
Indexing plungers
w. rest position
Stainless Steel /
Plastic knob
Rost frei
Inch

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GN 817.2
Indexing plungers
Stainless Steel /
long plastic knob
Rost frei

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GN 613
Indexing plungers
without collar
Steel /
Plastic knob

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GN 617.1
Indexing plungers
w. rest position
Stainless Steel
Rost frei
Inch

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GN 817.3
Indexing plungers
for precision
locating
Steel / Plastic knob

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GN 613
Indexing plungers
without collar
Stainless Steel /
Plastic knob
Rost frei

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GN 717
Indexing plungers
Steel
Inch

→ *Page 421*

GN 817.4
Indexing plungers
with T-handle
Steel / Plastic knob

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GN 613
Indexing plungers
without collar
Stainless Steel
Rost frei

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GN 717
Indexing plungers
Stainless Steel
Rost frei
Inch

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GN 817.4
Indexing plungers
with T-handle
Stainless Steel /
Plastic knob

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GN 613.1
Screw drivers
for GN 613

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GN 817
Indexing plungers
Steel /
Plastic knob
Inch

→ *Page 422*

GN 607
Indexing plungers
Steel /
Plastic knob

→ *Page 426*

Rost frei Stainless Steel | Ergostyle | SOFT Softline | CLEAN Cleanline | SAN Sanline | Ex ATEX | ESD | Inch Inch

GN 607
Indexing plungers
Stainless Steel / Plastic knob
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GN 607.1
Indexing plungers
with rest position
Steel / Plastic knob
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GN 607.1
Indexing plungers
with rest position
Stainless Steel / Plastic knob
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GN 607.2
Indexing plungers
for installation in thin walled equipment
→ *Page 428*

GN 607.9
Double ring spanner
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GN 607.3
Indexing plungers
with rest position, for installation in thin walled equipment
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GN 607.4
Indexing plungers
for welding
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GN 607.5
Indexing plungers
for welding
with rest position
→ *Page 431*

GN 608
Indexing plungers
Plunger Steel
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GN 608.5
Indexing plungers
Plunger
Stainless Steel
→ *Page 432*

GN 608.1
Indexing plungers
with rest position
Plunger Steel
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GN 608.6
Indexing plungers
with rest position
Plunger
Stainless Steel
→ *Page 433*

GN 822
Mini indexing plungers
Steel /
Plastic knob
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GN 822
Mini indexing plungers
Stainless Steel / Plastic knob
→ *Page 434*

GN 822.6
Mini indexing plungers
Steel /
Plastic knob
→ *Page 435*

GN 822.7
Mini indexing plungers
Stainless Steel / Plastic knob
→ *Page 435*

GN 822.8
Mini indexing plungers
Zinc die casting / Plastic knob
→ *Page 436*

GN 822.1
Mini indexing plungers
Open indexing mechanism
Steel / Plastic knob
→ *Page 437*

GN 822.1
Mini indexing plungers
Open mechanism
Stainless Steel / Plastic knob
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GN 417
Indexing plungers
without rest position
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GN 417
Indexing plungers
with rest position
→ *Page 439*

Stainless Steel | Ergostyle | Softline | Cleanline | Sanline | ATEX | ESD | Inch

GN 816
Locking plungers
Plunger protruded

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GN 816
Locking plungers
Plunger protruded with key

→ *Page 440*

GN 816-10
Keys
for locking plungers GN 816

→ *Page 440*

GN 816.1
Locking plungers
Plunger retracted

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GN 816.1
Locking plungers
Plunger retracted with key

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GN 816.1-10
Keys
for locking plungers GN 816.1

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GN 414
Safety indexing plungers

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GN 514
Locking plungers
Push-Push-locking mechanism

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GN 7336.7
Clamping knobs with indexing plungers

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GN 7336.8
Clamping indexing plungers
with safety function

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GN 313
Spring bolts
Steel / Plastic knob

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GN 313
Spring bolts
Stainless Steel / Plastic knob

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GN 609
Distance bushings
for indexing plungers
Steel

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GN 609.5
Distance bushings
for indexing plungers
Stainless Steel

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GN 909
Flat hexagon nuts
Steel

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GN 909.5
Flat hexagon nuts
Stainless Steel

→ *Page 451*

GN 412.1
Mounting blocks
for cam action indexing plungers
Zinc die casting

→ *Page 452*

GN 612.1
Mounting blocks
for cam action indexing plungers
Steel

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GN 612.1
Mounting blocks
for cam action indexing plungers
Stainless Steel

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GN 412.2
Positioning bushings
for cam action indexing plungers

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GN 412.3
Positioning bushings
for cam action indexing plungers

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Stainless Steel | Ergostyle | Softline | Cleanline | Sanline | ATEX | ESD | Inch

GN 612
Cam action indexing plungers
Steel

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GN 612
Cam action indexing plungers
Stainless Steel

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GN 612.2
Cam action indexing plungers
with flange for surface mounting

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GN 612.3
Cam action indexing plungers
for welding

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GN 612.8
Cam action indexing plungers
Zinc die casting

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GN 612.9
Cam action indexing plungers
with flange for surface mounting

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GN 722.1
Spring latches
for welding

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GN 722.2
Spring latches
with flange for surface mounting

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GN 722.3
Spring latches
with flange for surface mounting

→ *Page 463*

GN 712
Cam action indexing plungers
Plunger protruded

→ *Page 464*

GN 712.1
Cam action indexing plungers
Plunger retracted

→ *Page 465*

GN 113.1
Ball lock pins
with axial lock
Stainless Steel

→ *Page 469*

GN 113.3
Ball lock pins
Stainless Steel
AISI 303

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GN 113.4
Ball lock pins
Stainless Steel
AISI 630

→ *Page 470*

GN 113.5
Ball lock pins
Stainless Steel
AISI 303

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GN 113.6
Ball lock pins
Stainless Steel
AISI 630

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GN 113.7
Ball lock pins
with T-handle
Stainless Steel
AISI 303

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GN 113.8
Ball lock pins
with T-handle
Stainless Steel
AISI 630

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GN 214.2
Locking pins
with axial lock
Steel

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GN 214.3
Locking pins
with axial lock
Stainless Steel
AISI 303

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GN 114.2
Locking pins
with axial lock
Steel

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Stainless Steel | Ergostyle | Softline | Cleanline | Sanline | ATEX | ESD | Inch

GN 114.3
Locking pins
with axial lock
Stainless Steel
AISI 303

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GN 114.6
Locking pins
with axial lock
Stainless Steel
AISI 303

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GN 124
Locking pins
with axial lock
Stainless Steel
AISI 303

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GN 111
Ball chains

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GN 111.5
Ball chains
Stainless Steel

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GN 111.3
Key rings
Stainless Steel

→ *Page 477*

GN 111.2
Retaining cables
Stainless Steel

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GN 111.4
Spiral retaining cables
Plastic

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GN 615
Spring plungers
with slot
Steel

→ *Page 480*

GN 615
Spring plungers
with slot
Stainless Steel

→ *Page 480*

GN 615.3
Spring plungers
with internal hexagon
Steel

→ *Page 481*

GN 615.3
Spring plungers
with internal hexagon
Stainless Steel

→ *Page 481*

GN 615.1
Spring plungers
with bolt, with slot
Steel

→ *Page 482*

GN 615.1
Spring plungers
with bolt, with slot
Stainless Steel

→ *Page 482*

GN 615.4
Spring plungers
with bolt, with internal hexagon
Steel

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GN 615.4
Spring plungers
with bolt, with internal hexagon
Stainless Steel

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GN 615.2
Spring plungers
Plastic

→ *Page 484*

GN 815
Spring plungers
with collar
Steel

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GN 815
Spring plungers
with collar
Stainless Steel

→ *Page 485*

GN 616
Spring plungers
with bolt
Steel /
Stainless Steel

→ *Page 486*

GN 616.5
Screw drivers
for GN 616

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Stainless Steel | Ergostyle | Softline | Cleanline | Sanline | ATEX | ESD | Inch

GN 611
Spring plungers
long version

→ *Page 488*

GN 611.5
Screw drivers
for GN 611

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GN 615.7
Spring plungers
with limit switch

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GN 614
Spring plungers
Press on type
Stainless Steel, Brass

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GN 614
Spring plungers
Press on type
Plastic

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GN 614.1
Side thrust pins
Holder for spring plungers GN 614

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GN 614.2
Spring plungers
double ended,
Press on type

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GN 614.3
Spring plungers
plain type
Stainless Steel

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GN 614.4
Spring plungers
Press on type
Stainless Steel

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GN 610
Spring loaded shells
Press on type
Steel

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GN 610
Spring loaded shells
Press on type
Stainless Steel

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GN 249
Ball buttons
for spring plungers

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GN 250
Indent blocks
for spring plungers

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GN 513
Spring elements

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GN 716
Side thrust pins

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GN 715
Side thrust pins
Press on type

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GN 715.1
Mounting tools
for GN 715 / GN 714

→ *Page 500*

GN 714
Side thrust pins
without pressure pin
Press on type

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GN 713
Side thrust pins
with thread

→ *Page 502*

GN 713.1
Mounting tools
for GN 713

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GN 715.2
Eccentric bushes
for side thrust pins

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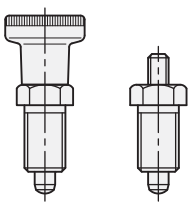
Stainless Steel | Ergostyle | Softline | Cleanline | Sanline | ATEX | ESD | Inch

GN 617
GN 617 ... NI
Indexing plungers without rest position
→ *Page 416*



Ø Plunger / Stroke
Ø 5 / 5 ... Ø 10 / 10

Dimensions / Assembly
M 10 x 1 ... M 20 x 1,5

Material / Finish
- Steel version:
  Body blackened,
  Plunger hardened
- Version **NI**:
  Stainless Steel AISI 303
  Plunger
  chemically nickel plated

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance GN 617: H7 / GN 617 ... NI: H8

The plastic or Stainless Steel knob is not removable.

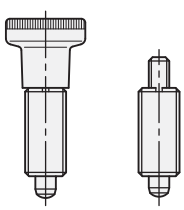
The Plunger is very stable, it features the identical diameter over the whole length. So it counters the risk of breakage at the knob.

The type with threaded rod is for applications where a special knob is required or the operation of the indexing plunger is not carried out manually.

With the use of distance bushes GN 609 / GN 609.5 → Page 450 the length of the protruding plunger can be adjusted to the thread length required.

Flat hexagonal nuts GN 909 / GN 909.5 → Page 451

GN 613
GN 613 ... NI
Indexing plungers without rest position
→ *Page 418*



Ø Plunger / Stroke
Ø 5 / 5 ... Ø 10 / 10

Dimensions / Assembly
M 10 x 1 ... M 20 x 1,5

Material / Finish
- Steel version:
  Body blackened,
  Plunger hardened
- Version **NI**:
  Stainless Steel AISI 303
  Plunger
  chemically nickel plated

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance GN 613: H7 / GN 613 ... NI: H8

The plastic or Stainless Steel knob is not removable.

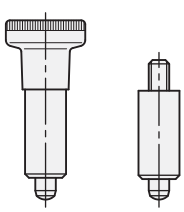
The Plunger is very stable, it features the identical diameter over the whole length. So it counters the risk of breakage at the knob.

This version corresponds to GN 617, but without the hexagon collar.

The type with threaded rod is for applications where a special knob is required or the operation of the indexing plunger is not carried out manually.

Flat hexagonal nuts GN 909 / GN 909.5 → Page 451

GN 618
Indexing plungers without rest position
→ *Page 419*



Ø Plunger / Stroke
Ø 5 / 5 ... Ø 8 / 8

Dimensions / Assembly
Ø 12 h9 ... Ø 18 h9

Material / Finish
- Steel
  weldable,
  Body blackened,
  Plunger hardened

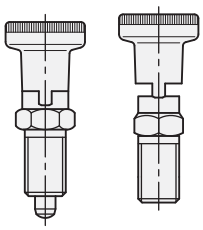
Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: G7

The plastic knob is not removable.

This version corresponds to GN 613 (with thread). They are required where the installation is done by welding, glueing or clamping.

The type with threaded rod is for applications where a special knob is required or the operation of the indexing plunger is not carried out manually.

GN 617.1
GN 617.1 ... NI
Indexing plungers with rest position
→ *Page 420*



Ø Plunger / Stroke
Ø 5 / 5 ... Ø 10 / 10

Dimensions / Assembly
M10 x 1 ... M 20 x 1,5

Material / Finish
- Steel version:
  Body blackened,
  Plunger hardened
- Version **NI**:
  Stainless Steel AISI 303
  Plunger
  chemically nickel plated

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance GN 617.1: H7 / GN 617.1 ... NI: H8

The Plastic or Stainless Steel knob is not removable.

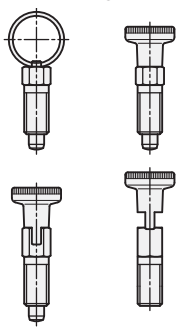
The Plunger is very stable, it features the identical diameter over the whole length. So it counters the risk of breakage at the knob.

The type with rest position is used when the plunger has to stay in its retracted position. To activate this, the knob is retracted and rotated by 90°.

With the use of distance bushes GN 609 / GN 609.5 → Page 450 the length of the protruding plunger can be adjusted to the thread length required.

Flat hexagonal nuts GN 909 / GN 909.5 → *Page 451*

GN 717 ... ST
GN 717 ... NI
Indexing plungers with and without rest position → *Page 421*



Ø Plunger / Stroke
Ø 3 / 3,5 ... Ø 8 / 8

Dimensions / Assembly
M 6 x ... M 12
M 6 x 0,75 ... M 16 x 1,5

Material / Finish
- Steel version **ST**:
  Body zinc plated,
  Plunger
  Stainless Steel AISI 303
- Version **NI**:
  Body and Plunger
  Stainless Steel AISI 303

Other features
Plunger tolerance: 0 / -0,05
Bore tolerance: +0,03 / +0,08

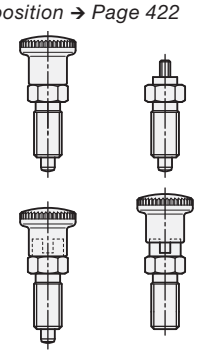
Indexing plungers GN 717 are known for its small dimensions and reasonably priced. They are available with standard or fine thread.

The type with rest position is used when the plunger has to stay in its retracted position. To activate this, the knob is retracted and rotated by 90°.

With the use of distance bushes GN 609 / GN 609.5 → *Page 450* the length of the protruding plunger can be adjusted to the thread length required.

Flat hexagonal nuts GN 909 / GN 909.5 → *Page 451*

GN 817
GN 817 ... NI
Indexing plungers with and without rest position → *Page 422*



Ø Plunger / Stroke
Ø 4 / 4 ... Ø 12 / 15

Dimensions / Assembly
M 8 x 1 ... M 20 x 1,5

Material / Finish
- Steel version:
  Body blackened,
  Plunger hardened
- Version **NI**:
  Stainless Steel AISI 303,
  Plunger
  chemically nickel plated

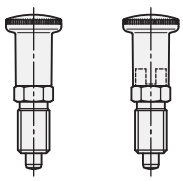
Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance GN 817: H7 / GN 817 ... NI: H8

Indexing plungers GN 817 are a further development based on GN 617 and GN 617.1: • two strokes / plunger-Ø • considerably reduced dimensions for the types with rest position and for plunger-Ø 10 • Locking mechanism integrated in the knob (DBP).

The type with rest position is used when the plunger has to stay in its retracted position. To activate this, the knob is retracted and rotated by 90°.The type with threaded rod is for applications where a special knob is required or the operation of the indexing plunger is not carried out manually.

Flat hexagonal nuts GN 909 / GN 909.5 → *Page 451*

GN 817.2
GN 817.2 ... NI
Indexing plungers with and without rest position
→ *Page 423*



Ø Plunger / Stroke
Ø 4 / 4 ... Ø 12 / 15

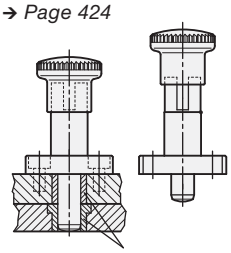
Dimensions / Assembly
M 8 x 1 ... M 20 x 1,5

Material / Finish
- Steel version:
  Body blackened,
  Plunger hardened
- Version **NI**:
  Stainless Steel AISI 303,
  Plunger
  chemically nickel plated

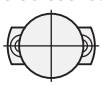
Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance GN 817.2: H7 / GN 817.2 ... NI: H8

Indexing plungers GN 817.2 correspond to GN 817, but they have a longer knob.

GN 817.3
Indexing plungers with and without rest position
→ *Page 424*



Guide bushes GN 770



Ø Plunger / Stroke
Ø 8 / 10 and Ø 10 / 12

Dimensions / Assembly
Socket head cap screw M 5

Material / Finish
- Steel
  Body blackened
  Plunger hardened

Other features
Plunger tolerance: h7
Bore tolerance of Positioning bushings: F7

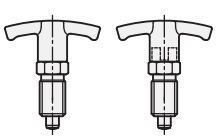
The Plastic knob is not removable.

Indexing plungers GN 817.3 have been designed to achive precision indexing with the help of positioning bushings DIN 179 → *Page 575*.

The type with rest position is used when the plunger has to stay in its retracted position. To activate this, the knob is retracted and rotated by 90°.

Indexing plungers GN 817.3 with rest position have the thrust spring and locking mechanism integrated in the knob. For this reason a perfect operation is always guaranteed.

GN 817.4
GN 817.4 ... NI
Indexing plungers with and without rest position
→ *Page 425*



Ø Plunger / Stroke
Ø 4 / 4 ... Ø 12 / 15

Dimensions / Assembly
M 8 x 1 ... M 20 x 1,5

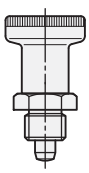
Material / Finish
- Steel version:
  Body blackened,
  Plunger hardened
- Version **NI**:
  Stainless Steel AISI 303,
  Plunger
  chemically nickel plated

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance GN 817.4: H7 / GN 817.4 ... NI: H8

Indexing plungers GN 817.4 correspond to GN 817. Instead of the round knob they have a T-handle (plastic).

Flat hexagonal nuts GN 909 / GN 909.5 → *Page 451*

GN 607 ... ST
GN 607 ... NI
Indexing plungers without rest position
→ *Page 426*



Ø Plunger / Stroke
Ø 6 / 6 and Ø 8 / 8

Dimensions / Assembly
M 12 x 1,5 and M 16 x 1,5

Material / Finish
- Steel version **ST**:
  Body blackened,
  Plunger hardened
- Version **NI**:
  Stainless Steel AISI 303,
  Plunger
  chemically nickel plated

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: H7

The Plastic knob is not removable.

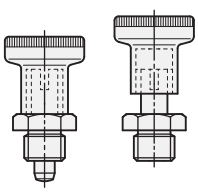
The thrust spring of the indexing plunger GN 607 is integrated with the knob which has led to a reduced overall height.

With the use of distance bushes GN 609 / GN 609.5 → *Page 450* the length of the protruding plunger can be adjusted to the thread length required.

A reasonably priced alternative to indexing plungers GN 607 are mini indexing plungers GN 822.6 / GN 822.7 → *Page 435*.

Flat hexagonal nuts GN 909 / GN 909.5 → *Page 451*

GN 607.1 ... ST
GN 607.1 ... NI
Indexing plungers with rest position
→ *Page 427*



Ø Plunger / Stroke
Ø 6 / 6 and Ø 8 / 8

Dimensions / Assembly
M 12 x 1,5 and M 16 x 1,5

Material / Finish
- Steel version **ST**:
  Body blackened,
  Plunger hardened
- Version **NI**:
  Stainless Steel AISI 303,
  Plunger
  chemically nickel plated

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: H7

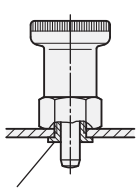
The Plastic knob is not removable.

The type with rest position is used when the plunger has to stay in its retracted position. To activate this, the knob is retracted and rotated by 90°.

The thrust spring and locking mechanism of the indexing plunger GN 607.1 are integrated with the knob. For this reason a perfect operation is always guaranteed. This also leads to a reduced overall height.

With the use of distance bushes GN 609 / GN 609.5 → *Page 450* the length of the protruding plunger can be adjusted to the thread length required.

GN 607.2
Indexing plungers without rest position
→ *Page 428*



Ø Plunger / Stroke
Ø 6 / 6 and Ø 8 / 7,5

Dimensions / Assembly
Ø 10 and Ø 12
These are the bore-Ø to fit the indexing plungers, they are locked with the hexagon nut.

Material / Finish
- Steel
  Body zinc plated,
  Plunger
  Stainless Steel AISI 303
  chemically nickel plated

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: G7

The Plastic knob is not removable.

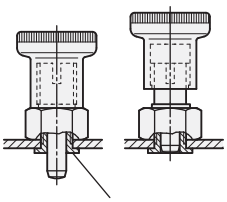
Indexing plungers GN 607.2 have been designed for use in thin walled sheet metal parts.

Due to their design, the accuracy of positioning them is lower than with GN 607.

The thrust spring of GN 607.2 is integrated with the knob which has led to a reduced overall height.

Flat hexagonal nuts GN 909 → *Page 451*

GN 607.3
Indexing plungers with rest position
→ *Page 429*



Ø Plunger / Stroke
Ø 6 / 6 and Ø 8 / 7,5

Dimensions / Assembly
Ø 10 and Ø 12
These are the bore-Ø to fit the indexing plungers, they are locked with the hexagon nut.

Material / Finish
- Steel
  Body zinc plated,
  Plunger
  Stainless Steel AISI 303
  chemically nickel plated

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: G7

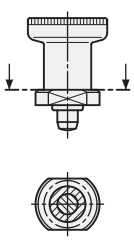
The Plastic knob is not removable.

Indexing plungers GN 607.3 have been designed for use in thin walled sheet metal parts. Due to their design, the accuracy of positioning them is lower than with GN 607.1.

The type with rest position is used when the plunger has to stay in its retracted position. To activate this, the knob is retracted and rotated by 90°. The thrust spring and locking mechanism of the indexing plunger GN 607.3 are integrated with the knob. For this reason a perfect operation is always guaranteed. This also leads to a reduced overall height.

Flat hexagonal nuts GN 909 → *Page 451*

GN 607.4
Indexing plungers for welding without rest position
→ *Page 430*



Ø Plunger / Stroke
Ø 6 / 6 and Ø 8 / 8

Dimensions / Assembly
for welding

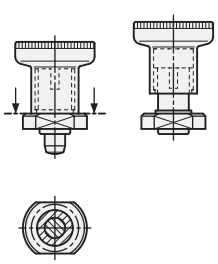
Material / Finish
- Steel
  weldable
  Body blackened
  Plunger hardened

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: +0,05 / +0,15

The plastic knob is driven on **after** the welding process and not removable.

The thrust spring of the indexing plunger GN 607.4 is integrated with the knob which has led to a reduced overall height.

GN 607.5
Indexing plungers for welding with rest position
→ *Page 431*



Ø Plunger / Stroke
Ø 6 / 6 and Ø 8 / 8

Dimensions / Assembly
for welding

Material / Finish
- Steel
  weldable
  Body blackened
  Plunger hardened

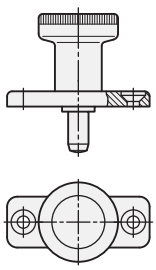
Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: +0,05 / +0,15

The plastic knob is driven on **after** the welding process and not removable.

The type with rest position is used when the plunger has to stay in its retracted position. To activate this, the knob is retracted and rotated by 90°.

The thrust spring and locking mechanism of the indexing plunger GN 607.5 are integrated with the knob. For this reason a perfect operation is always guaranteed. This also leads to a reduced overall height.

GN 608
GN 608.5
Indexing plungers without rest position
→ *Page 432*



Ø Plunger / Stroke
Ø 6 / 6 and Ø 8 / 8

Dimensions / Assembly
Countersunk screws
M 4 and M 5

Material / Finish
- Body Zinc die casting zinc plated
- GN 608: Plunger Steel hardened
- GN 608.5: Plunger Stainless Steel AISI 303

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: H7

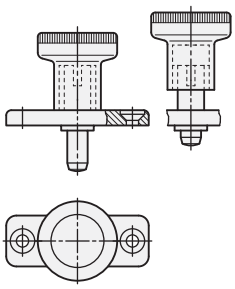
The plastic knob is not removable.

Worth mentioning about these indexing plungers GN 608 is the mounting with two countersunk screws.

The thrust spring of the indexing plunger GN 608 is integrated with the knob which has led to a reduced overall height.

A reasonably priced alternative to indexing plungers GN 608 / GN 608.5 are mini indexing plungers GN 822.6 / GN 822.7 → *Page 435*.

GN 608.1
GN 608.6
Indexing plungers with rest position
→ *Page 433*



Ø Plunger / Stroke
Ø 6 / 6 and Ø 8 / 8

Dimensions / Assembly
Countersunk screws
M 4 and M 5

Material / Finish
- Body Zinc die casting zinc plated
- GN 608.1: Plunger Steel hardened
- GN 608.6: Plunger Stainless Steel AISI 303

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: H7

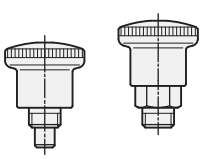
The plastic knob is not removable.

Worth mentioning about these indexing plungers GN 608.1 is the mounting with two countersunk screws.

The type with rest position is used when the plunger has to stay in its retracted position. To activate this, the knob is retracted and rotated by 90°. The thrust spring and locking mechanism of the indexing plunger GN 608.1 are integrated with the knob. For this reason a perfect operation is always guaranteed. This also leads to a reduced overall height.

A reasonably priced alternative to GN 608.1 / GN 608.6 are mini indexing plungers GN 822.6 / GN 822.7 → *Page 435*.

GN 822 ... ST
GN 822 ... NI
Mini indexing plungers with and without rest position
Covered indexing mechanism
→ *Page 434*



Ø Plunger / Stroke
Ø 4 / 5 ... Ø 7 / 7

Dimensions / Assembly
M 8 x 0,75 ... M 10 x 1

Material / Finish
- Steel version **ST**: Body zinc plated, Plunger Stainless Steel AISI 303
- Version **NI**: Body and Plunger Stainless Steel AISI 303

Other features
Plunger tolerance: -0,06
Bore tolerance: +0,05 / +0,1

The plastic knob is not removable.

Mini indexing plungers GN 822 are known for its small dimensions.

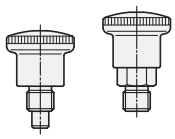
The type with rest position is used when the plunger has to stay in its retracted position. To activate this, the knob is retracted and rotated by 30°.

The overall height of the version with rest position is identical to the height of the version without rest position.

Distance bushes GN 609 / GN 609.5 → *Page 450*

Flat hexagonal nuts GN 909 / GN 909.5 → *Page 451*

GN 822.6
GN 822.7
Mini indexing plungers with and without rest position
Covered indexing mechanism
→ *Page 435*



Ø Plunger / Stroke
Ø 4 / 5 ... Ø 10 / 10

Dimensions / Assemby
M 8 x ... M 16
M 8 x 1 ... M 16 x 1,5

Werkstoff / Oberfläche
- GN 822.6:
  Body steel zinc plated,
  Plunger
  Stainless Steel AISI 303
- GN 822.7:
  Body and Plunger
  Stainless Steel
  German Material AISI 303

Other features
Plunger tolerance: h9
Bore tolerance: +0,03 / +0,08

The plastic knob is not removable.

Mini indexing plungers GN 822.6 / GN 822.7 are known for its small dimensions.

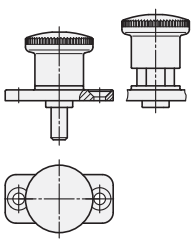
The type with rest position is used when the plunger has to stay in its retracted position. To activate this, the knob is retracted and rotated by 30°.

The overall height of the version with rest position is identical to the height of the version without rest position.

Distance bushes GN 609 / GN 609.5 → *Page 450*

Flat hexagonal nuts GN 909 / GN 909.5 → *Page 451*

GN 822.8
Mini indexing plungers with and without rest position
Covered indexing mechanism
→ *Page 436*



Ø Plunger / Stroke
Ø 4 / 5 und Ø 10 / 10

Dimensions / Assembly
Socket head cap screws
M 4 and M 5

Material / Finish
- Body
  Zinc die casting,
  corrosion-resistant
  via nano®-coating
- Plunger
  Stainless Steel AISI 303

Other features
Plunger tolerance: h9
Bore tolerance : +0,03 / +0,08

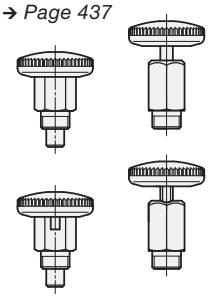
The plastic knob is not removable.

Mini indexing plungers GN 822.8 are known for its small dimensions.

The type with rest position is used when the plunger has to stay in its retracted position. To activate this, the knob is retracted and rotated by 30°.

The overall height of the version with rest position is identical to the height of the version without rest position.

GN 822.1 ... ST
GN 822.1 ... NI
Mini indexing plungers with and without rest position, open indexing mechanism
→ *Page 437*



Ø Plunger / Stroke
Ø 4 / 5 ... Ø 7 / 7

Dimensions / Assembly
M8 x 0,75 ... M 10 x 1

Material / Finish
- Steel version **ST**:
  Body zinc plated,
  Plunger
  Stainless Steel AISI 303
- Stainless Steel version **NI**:
  Body and Plunger
  Stainless Steel
  German Material AISI 303

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: +0,05 / +0,1

The plastic knob is not removable.

Mini indexing plungers GN 822.1 are known for its small dimensions.

The type with rest position is used when the plunger has to stay in its retracted position. To activate this, the knob is retracted and rotated by 30°.

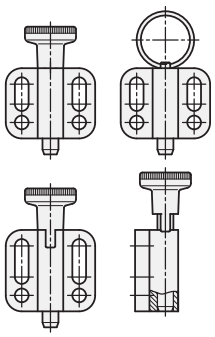
The overall height of the version with rest position is identical to the height of the version without rest position.

Distance bushes GN 609 / GN 609.5 → *Page 450*

Flat hexagonal nuts GN 909 / GN 909.5 → *Page 451*

GN 417

Indexing plungers with and without rest position → *Page 438*



Ø Plunger / Stroke
Ø 4 / 4 ... Ø 8 / 8

Dimensions / Assembly
Socket head cap screws
M 3, M 4, M 5

Material / Finish
- Body
  Zinc die casting, plastic coated black
- Plunger
  Stainless Steel AISI 303

Other features
Plunger tolerance: h9
Bore tolerance : +0,03 / +0,08

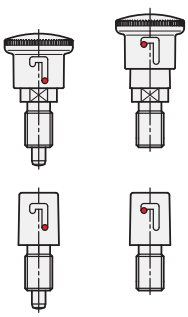
The plastic knob is not removable.

The screwing range is chosen in such a way that washers ISO 7092 can be used.

The type with rest position is used when the plunger has to stay in its retracted position. To activate this, the knob is retracted and rotated by 90°.

GN 816

Locking plungers Plunger in standard position protruded → *Page 440*



Ø Plunger / Stroke
Ø 6 / 8 and Ø 8 / 10

Dimensions / Assembly
M 12 x 1,5 and M 16 x 1,5

Material / Finish
- Body
  Steel zinc plated,
- Plunger
  Stainless Steel AISI 303

Other features
Plunger tolerance: 0 / -0,05
Bore tolerance: -0,03 / +0,05

The Plastic knob is not removable.

Locking plungers GN 816 feature the following safety functions:

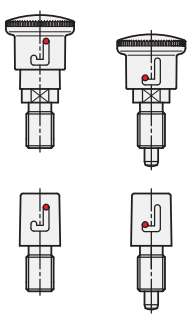
- In indexing position they are secured against accidental operation (rotating).
- In the version with key a special key is required to move the plunger.

With the use of distance bushes GN 609 / GN 609.5 → *Page 450* the length of the protruding plunger can be adjusted to the thread length required.

Flat hexagonal nuts GN 909 → *Page 451*

GN 816.1

Locking plungers Plunger in standard position retracted → *Page 442*



Ø Plunger / Stroke
Ø 6 / 8 and Ø 8 / 10

Dimensions / Assembly
M 12 x 1,5 and M 16 x 1,5

Material / Finish
- Body
  Steel, zinc plated
- Plunger
  Stainless Steel AISI 303

Other features
Plunger tolerance: 0 / -0,05
Bore tolerance: -0,03 / +0,05

The Plastic knob is not removable.

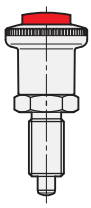
Locking plungers GN 816.1 feature the following safety functions:

- In indexing position they are secured against accidental operation (rotating).
- In the version with key a special key is required to move the plunger.

With the use of distance bushes GN 609 / GN 609.5 → *Page 450* the length of the protruding plunger can be adjusted to the thread length required.

Flat hexagonal nuts GN 909 → *Page 451*

GN 414
Safety indexing plungers
→ *Page 444*



Ø Plunger / Stroke
Ø 6 / 6 ... Ø 10 / 12

Dimensions / Assembly
M 12 x 1,5 and M 16 x 1,5

Material / Finish
- Steel,
  Body blackened,
  Plunger hardened

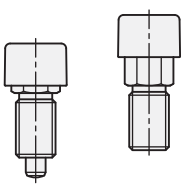
Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: H7

Safety indexing plungers GN 414 are secured against accidental operation of the plunger. It is locked in one or both end positions and can be unlocked only with the red safety push button.

With the use of distance bushes GN 609 → *Page 450* the length of the protruding plunger can be adjusted to the thread length required.

Flat hexagonal nuts GN 909 → *Page 451*

GN 514
Locking plungers with PUSH - PUSH locking mechanism
→ *Page 445*



Ø Plunger / Stroke
Ø 6 / 6 and Ø 8 / 8

Dimensions / Assembly
M 12 x 1,5 and M 16 x 1,5

Material / Finish
- Steel
  nitrided,
  blackened

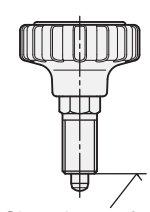
Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: H7

The indexing pin in the locking plungers GN 514 is moved via a so-called cardioid mechanism. This mechanism means that the indexing pin is both extended and retracted alone by pressing the operating button

With the use of distance bushes GN 609 → *Page 450* the length of the protruding plunger can be adjusted to the thread length required.

Flat hexagonal nuts GN 909 → *Page 451*

GN 7336.7
Clamping knobs with indexing plunger
→ *Page 446*



Ø Plunger / Stroke
Ø 5 / 5 ... Ø 8 / 8

Dimensions / Assembly
M 10 x 1 ... M 16 x 1,5

Material / Finish
- Body
  Steel, zinc plated
- Plunger
  Stainless Steel AISI 303

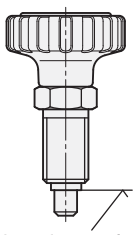
Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: G7

Knurled knob Plastic.

Clamping knobs with indexing plunger GN 7336.7 are used for positioning, securing and clamping adjusting elements at the same time.

Flat hexagonal nuts GN 909 → *Page 451*

GN 7336.8
Clamping indexing plungers
→ *Page 447*



Ø Plunger / Stroke
Ø 6 / 9 and Ø 8 / 9

Dimensions / Assembly
M 16 x 1,5

Material / Finish
- Body
  Steel, zinc plated
- Plunger
  Stainless Steel AISI 303

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: G7

Knurled knob Plastic.

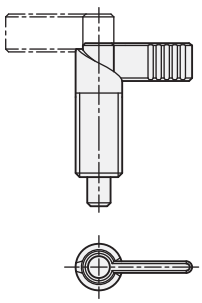
Clamping indexing GN 7336.8 plungers are an advanced development of the GN 7336.7 clamping knobs with indexing plunger. They are used for positioning, securing and clamping adjusting elements at the same time.

This configuration ensures that the indexing pin cannot be pulled from the indexing bore by turning the knurled knob, but only be deliberately pulling the handle (safety function).

With the use of distance bushes GN 609 → *Page 450* the length of the protruding plunger can be adjusted to the thread length required.

Flat hexagonal nuts GN 909 → *Page 451*

GN 612
GN 612 ... NI
Cam action indexing plungers
→ Page 456



Ø Plunger / Stroke
Ø 4 / 6 ... Ø 12 / 12

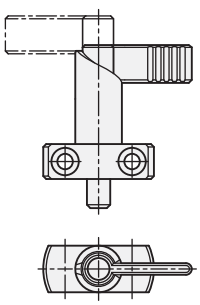
Dimensions / Assembly
M 10 ... M 20
M 10 x 1 ... M 20 x 1,5

Material / Finish
- Steel version:
  Body blackened,
  Plunger nitrided
- Version **NI**:
  Stainless Steel
  AISI 303 / AISI 316L
  Plunger
  chemically nickel plated

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: H7

Cam action indexing plungers GN 612 are used in cases where the locking pin must not protrude all the time. By rotating the lock through 180° the locking pin withdraws itself. A notch is provided in either position to prevent the lock from rotating.

GN 612.2
Cam action indexing plungers with flange for surface mounting *→ Page 457*



Ø Plunger / Stroke
Ø 6 / 10 ... Ø 12 / 12

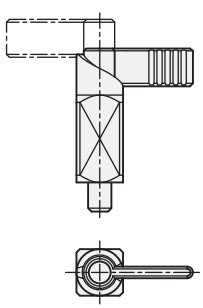
Dimensions / Assembly
Socket head cap screws
DIN 912-M 5

Material / Finish
- Steel
  Body blackened,
  Plunger nitrided

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: H7

Cam action indexing plungers GN 612.2 are used in cases where the locking pin must not protrude all the time. By rotating the lock through 180° the locking pin withdraws itself. A notch is provided in either position to prevent the lock from rotating.

GN 612.3
Cam action indexing plungers for welding
→ Page 458



Ø Plunger / Stroke
Ø 6 / 10 ... Ø 12 / 12

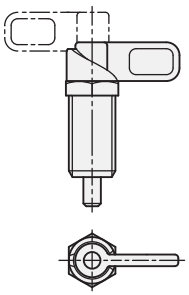
Dimensions / Assembly
for welding

Material / Finish
- Steel
  weldable
  Body blackened,
  Plunger nitrided

Other features
Plunger tolerance: -0,02 / -0,04
Bore tolerance: +0,1 / + 0,14

Cam action indexing plungers GN 612.3 are used in cases where the locking pin must not protrude all the time. By rotating the lock through 180° the locking pin withdraws itself. A notch is provided in either position to prevent the lock from rotating.

GN 612.8
Cam action indexing plungers
→ *Page 459*



Ø Plunger / Stroke
Ø 6 / 10 ... Ø 12 / 12

Dimensions / Assembly
M 16 x 1,5 / M 20 x 1,5

- Body zinc die casting
  Zinc die casting, corrosion-resistant via nano®-coating
- Plunger
  Steel, zinc plated
- Latch plastic

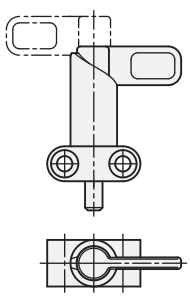
Other features
Plunger tolerance: -0,05
Bore tolerance: +0,1 / +0,05

Cam action indexing plungers GN 612.8 are used in cases where the locking pin must not protrude all the time. By rotating the lock through 180° the locking pin withdraws itself. A notch is provided in either position to prevent the lock from rotating.

Distance bushes GN 609 → *Page 450*

Flat hexagonal nuts GN 909 / GN 909.5 → *Page 451*

GN 612.9
Cam action indexing plungers with flange for surface mounting
→ *Page 460*



Ø Plunger / Stroke
Ø 6 / 10 ... Ø 12 / 12

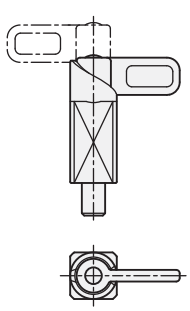
Dimensions / Assembly
Socket head cap screws DIN 912-M 5

Material / Finish
- Body zinc die casting plastic coated black
- Plunger
  Steel, zinc plated
- Latch plastic

Other features
Plunger tolerance: -0,05
Bore tolerance: +0,1 / + 0,05

Cam action indexing plungers GN 612.9 are used in cases where the locking pin must not protrude all the time. By rotating the lock through 180° the locking pin withdraws itself. A notch is provided in either position to prevent the lock from rotating.

GN 722.1
Spring latches for welding
→ *Page 461*



Ø Plunger / Stroke
Ø 8 / 14 ... Ø 14 / 14

Dimensions / Assembly
for welding

Material / Finish
- Body / Latch:
  Precision cast
- Body blackened,
- Latch / Plunger
  zinc plated

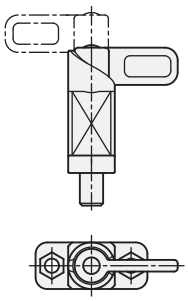
Other features
Plunger tolerance: -0,05 / -0,25
Bore tolerance: +0,1 / +0,3

Spring latches GN 722.1 are used when the indexing pin is temporarily not allowed to protrude. The indexing pin retracts by turning the latch by 180°. A lock notch will hold the latch in both positions.

They are designed for use in steel construction or in locksmith shops where less precise positioning / locking is normally required. Therefore functional safety is guaranteed even under dirt exposure.

Flat hexagonal nuts GN 909 / GN 909.5 → *Page 451*

GN 722.2
Spring latches with flange for surface mounting
→ *Page 462*



Ø Plunger / Stroke
Ø 8 / 14 ... Ø 14 / 14

Dimensions / Assembly
for surface mounting

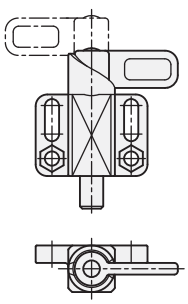
Material / Finish
- Body / Latch: Precision cast
- Body zinc plated and black plastic coated
- Latch / Plunger zinc plated

Other features
Plunger tolerance: -0,05 / -0,25
Bore tolerance: +0,1 / +0,3

Spring latches GN 722.2 are used when the indexing pin is temporarily not allowed to protrude. The indexing pin retracts by turning the latch by 180°. A lock notch will hold the latch in both positions.

They are designed for use in steel construction or in locksmith shops where less precise positioning / locking is normally required. Therefore functional safety is guaranteed even under dirt exposure.

GN 722.3
Spring latches with flange for surface mounting
→ *Page 463*



Ø Plunger / Stroke
Ø 8 / 14 ... Ø 14 / 14

Dimensions / Assembly
for surface mounting

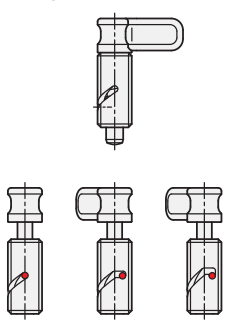
Material / Finish
- Body / Latch: Precision cast
- Body zinc plated and black plastic coated
- Latch / Plunger zinc plated

Other features
Plunger tolerance: -0,05 / -0,25
Bore tolerance: +0,1 / +0,3

Spring latches GN 722.3 are used when the indexing pin is temporarily not allowed to protrude. The indexing pin retracts by turning the latch by 180°. A lock notch will hold the latch in both positions.

They are designed for use in steel construction or in locksmith shops where less precise positioning / locking is normally required. Therefore functional safety is guaranteed even under dirt exposure.

GN 712
Cam action indexing plungers, plunger in normal position protruded
→ *Page 464*



Ø Plunger / Stroke
Ø 6 / 8 ... Ø 10 / 8

Dimensions / Assembly
M 16 x 1,5

Material / Finish
- Steel Body zinc plated, Plunger nitrided
- Latch plastic

Other features
Plunger tolerance: h9
Bore tolerance: +0,03 / +0,08

Cam action indexing plungers GN 712 are used in such applications where the plunger must not protrude continually. When turning the cam by 90 resp.120 degrees in anti-clockwise direction, the plunger is moved through a curved opening in the body.

There are three different types available:

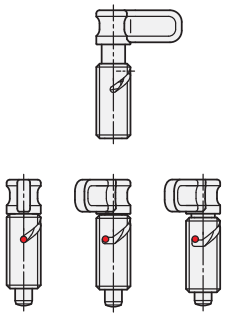
- the plunger moved back by a spring in its original position
- the plunger held in retracted position
- the plunger resp. is secured against accidental operation

Flat hexagonal nuts GN 909 → *Page 451*

Cam action indexing plungers

Range

GN 712.1
Cam action indexing plungers, plunger in normal position retracted
→ *Page 465*



Ø Plunger / Stroke
Ø 6 / 8 ... Ø 8 / 8

Dimensions / Assembly
M 16 x 1,5

Material / Finish
- Steel
  Body zinc plated,
  Plunger nitrided
- Latch plastic

Other features
Plunger tolerance: h9
Bore tolerance: +0,03 / +0,08

Cam action indexing plungers GN 712.1 are used in such applications where the plunger has to protrude only occasionally. When turning the cam by 90 resp.120 degrees in clockwise direction, the plunger is moved through a curved opening in the body.

There are three different types available:

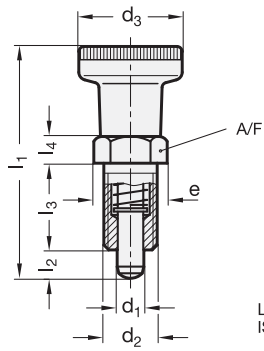
- the plunger moved back by a spring in its original position
- the plunger held in protruded position
- the plunger resp. is secured against accidental operation

Flat hexagonal nuts GN 909 → Page 451

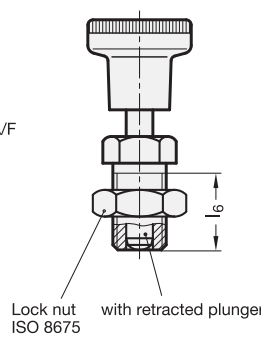
Indexing plungers

without rest position

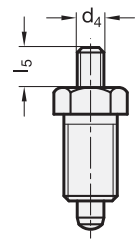
Type **A**



Type **AK**



Type **G**



Rost frei Inox Stainless Steel

Inch Inch sizes available

2 Type

A	with Plastic-Knob, without lock nut
AK	with Plastic-Knob, with lock nut
AN	with Stainless Steel-Knob, without lock nut
AKN	with Stainless Steel-Knob, with lock nut
G	with threaded rod, without lock nut
GK	with threaded rod, with lock nut

1

d_1 Plunger $^{-0,02}_{-0,04}$ Bore H7	d_2	d_3	d_4	e	l_1 ≈	l_2 min.	l_3	l_4	l_5	l_6 min.	A/F	Spring load in N ≈ Steel initial	Steel end	Stainless Steel initial	Stainless Steel end
5	M 10 x 1	21	M 5	13,8	45	5	17	5	6	15	12	7	17	6	15
6	M 12 x 1,5	25	M 6	16,2	54,5	6	20	6	10	17	14	9	24	8	21
8	M 16 x 1,5	31	M 8	21,9	69	8	26	8	12	23	19	11	30	9	26
10	M 20 x 1,5	31	M 8	25,4	80	10	33	10	12	30	22	19	45	17	40

Specification

3

- Steel
  - blackened
  - Plunger hardened
- Stainless Steel AISI 303 **NI**
  Plunger chemically nickel plated
- Knob Type A / AK
  - Plastic (Polyamide PA)
  - black, matt
  - not removable
- Knob Type AN / AKN
  - Stainless Steel AISI 303
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Type G or GK of the GN 617 indexing plungers have been designed for applications where the indexing plunger is not operated with the standard knob.

The indexing plungers are designed such that the plunger set in the end position (spring is „on block“) can also absorb axial forces. For applications in which these forces are substantially above the tensile force applied by the operator (Type G), GN 817 indexing plungers are to be preferred.

see also...

- *Range of indexing plungers → Page 402*
- *Mounting blocks GN 412.1 → Page 452*
- *Positioning bushings GN 412.2 → Page 454*

Indexing plungers 1 2 GN 617-6-A		
	1	d_1
	2	Type

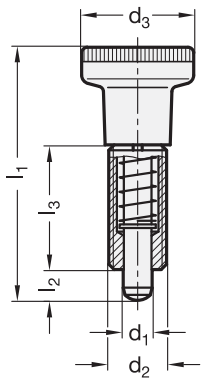
Stainless Steel-Indexing plungers 1 2 3 GN 617-8-AKN-NI		
	1	d_1
	2	Type
	3	Material

Indexing plungers GN 617 → *Page 416*
Indexing plungers with rest position GN 617.1 → *Page 420*
Safety indexing plungers GN 414 → *Page 444*
Locking plungers GN 514 → *Page 445*
Indexing plungers GN 717 → *Page 421*
Indexing plungers GN 817 → *Page 422*

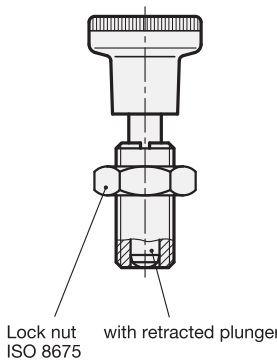
Indexing plungers

without rest position

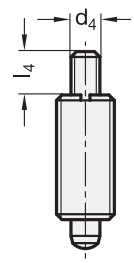
Type **A**



Type **AK**



Type **G**



Inox Stainless Steel

2	Type
A	with Plastic-Knob, without lock nut
AK	with Plastic-Knob, with lock nut
AN	with Stainless Steel-Knob, without lock nut
AKN	with Stainless Steel-Knob, with lock nut
G	with threaded rod, without lock nut
GK	with threaded rod, with lock nut

1

d_1 Plunger $^{-0,02}_{-0,04}$ Bore H7	d_2	d_3	d_4	l_1 ≈	l_2 min.	l_3	l_4	Spring load in N ≈ Steel initial	Steel end	Stainless Steel initial	Stainless Steel end	Code No. Screw driver
5	M 10 x 1	21	M 5	45	5	22	6	7	17	6	15	GN 613.1-5
6	M 12 x 1,5	25	M 6	54,5	6	26	10	9	24	8	21	GN 613.1-6
8	M 16 x 1,5	31	M 8	69	8	34	12	11	30	9	26	GN 613.1-8
10	M 20 x 1,5	31	M 8	80	10	43	12	19	45	17	40	GN 613.1-10

Specification

3

- Steel
  - blackened
  - Plunger hardened
- Stainless Steel AISI 303 **NI**
  Plunger chemically nickel plated
- Knob Type A / AK
  - Plastic (Polyamide PA)
  - black, matt
  - not removable
- Knob Type AN / AKN
  - Stainless Steel AISI 303
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Type G or GK of the GN 613 indexing plungers have been designed for applications where the indexing plunger is not operated with the standard knob. The indexing plungers are designed such that the plunger set in the end position (spring is „on block“) can also absorb axial forces. For applications in which these forces are substantially above the tensile force applied by the operator (Type G), GN 817 indexing plungers are to be preferred.

A special screw driver GN 613.1 is available. Two slots are provided in the upper end of the body which are accessible with the knob in its retracted position.

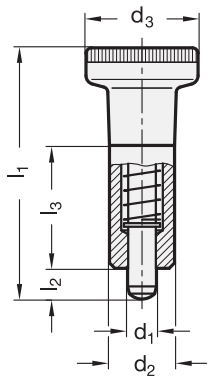
see also...

- *Range of indexing plungers → Page 402*

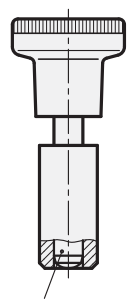
Indexing plungers 1 2 GN 613-8-G		
	1	d_1
	2	Type

Stainless Steel-Indexing plungers 1 2 3 GN 613-5-AKN-NI		
	1	d_1
	2	Type
	3	Material

Type **A**

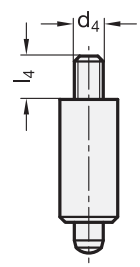


Type **A**



with retracted plunger

Type **G**



2 Type

A with knob
G with threaded rod

1

d_1 Plunger $^{-0,02}_{-0,04}$ Bore G7	d_2 h9	d_3	d_4	l_1 ≈	l_2 min.	l_3	l_4	Spring load in N ≈ initial	end
5	12	21	M 5	45	5	22	6	7	17
6	14	25	M 6	54,5	6	26	10	9	24
8	18	31	M 8	69	8	34	12	11	30

Specification

- Steel
  - weldable
  - blackened
  - Plunger hardened
- Knob Plastic (Polyamide PA)
  - black, matt
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Indexing plungers GN 618 without thread are for applications where welding, resin bonding (Loctite) or clamping is favoured.

Type G has been designed for applications where the indexing plunger is not operated with the standard knob.

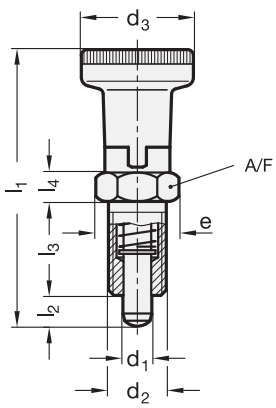
The indexing plungers are designed such that the plunger set in the end position (spring is „on block“) can also absorb axial forces. For applications in which these forces are substantially above the tensile force applied by the operator (Type G), additional information can be submitted on request.

see also...

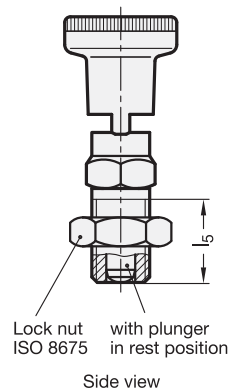
- *Range of indexing plungers → Page 402*
- *Positioning bushings GN 412.2 → Page 454*

How to order **1** **2** GN 618-8-A		
	1	d_1
	2	Type

Type **A**



Type **AK**
(with plunger in rest position)



Side view

Inox Stainless Steel

Inch sizes available

2 **Type**

A	with Plastic-Knob, without lock nut
AK	with Plastic-Knob with lock nut
AN	with Stainless Steel-Knob, without lock nut
AKN	with Stainless Steel-Knob, with lock nut

1

d_1 Plunger $^{-0,02}_{-0,04}$ Bore H7	d_2	d_3	e	l_1 ≈	l_2 min.	l_3	l_4	l_5 min.	A/F	Spring load in N ≈ Steel initial	Steel end	Stainless Steel initial	Stainless Steel end
5	M 10 x 1	21	13,8	51	5	17	5	15	12	7	17	6	15
6	M 12 x 1,5	25	16,2	61	6	20	6	17	14	9	24	8	21
8	M 16 x 1,5	31	21,9	75,5	7	26	8	23	19	11	30	9	26
10	M 20 x 1,5	31	25,4	91	10	33	10	30	22	19	45	17	40

Specification

3

- Steel
  - blackened
  - Plunger hardened
- Stainless Steel AISI 303 **NI**
  Plunger chemically nickel plated
- Knob Type A / AK
  - Plastic (Polyamide PA)
  - black, matt
  - not removable
- Knob Type AN / AKN
  - Stainless Steel AISI 303
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Indexing plungers GN 617.1 with rest position are used for such applications where the plunger has to stay in its retracted position. To achieve this, the knob is rotated by 90° degrees after being retracted. A notch keeps the plunger in this position.

see also...

- *Range of indexing plungers → Page 402*
- *Mounting blocks GN 412.1 → Page 452*
- *Positioning bushings GN 412.2 → Page 454*
- *Distance bushings GN 609 / GN 609.5 (to limit the thread length) → Page 450*
- *Flat hexagonal nuts GN 909 / GN 909.5 → Page 451*

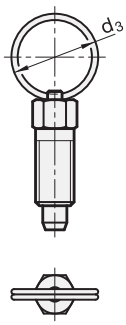
Indexing plungers 1 2 GN 617.1-6-A		
	1	d_1
	2	Type

Stainless Steel-Indexing plungers 1 2 3 GN 617.1-8-AKN-NI		
	1	d_1
	2	Type
	3	Material

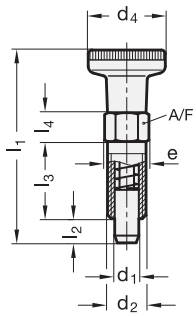
Indexing plungers

with and without rest position

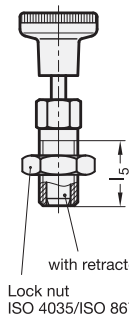
Type **A**



Type **B**



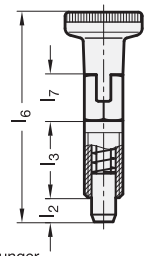
Type **BK**



with retracted plunger

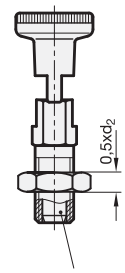
Lock nut
ISO 4035/ISO 8675

Type **C**



Type **CK**

(knob rotated by 90°)



with retracted plunger

Side view

Inox Stainless Steel

Inch sizes available

3 Type

- **A** without rest position (lifting ring) without lock nut
- **AK** without rest position (lifting ring) with lock nut
- **B** without rest position (Knob), without lock nut
- **BK** without rest position (Knob), with lock nut
- **C** with rest position (Knob), without lock nut
- **CK** with rest position (Knob), with lock nut

1 d_1 Plunger h11 Bore $^{+0,03}_{+0,08}$	2 d_2	d_3	d_4	e	l_1	l_2 min.	l_3	l_4	l_5 min.	l_6	l_7	A/F	max. tightening torque in Nm	Spring load in N ≈ initial	end
3	M 6	14	12	6,9	30	3,5	12	4,5	10	32,5	7	6	2	3	12
3	M 6 x 0,75	14	12	6,9	30	3,5	12	4,5	10	32,5	7	6	3	3	12
4	M 6	14	12	6,9	30,5	4	12	4,5	10	33	7	6	2	3	12
4	M 8 x 1	18	16	9,2	39,5	4,5	16	6	13,5	43	9,5	8	8	5	24
5	M 8	18	16	9,2	40	5	16	6	13,5	43,5	9,5	8	7	5	24
5	M 10 x 1	18	18	11,5	42,5	5	16	6	16	46	10	10	22	5	24
6	M 10	24	18	11,5	52	6	20	7,5	17	52	10,5	10	15	5	21
6	M 12 x 1,5	24	21	13,8	52	6	20	7,5	20	55	11	12	38	5	21
8	M 12	30	21	13,8	59	8	24	9	20,5	63,5	13,5	12	20	6	22
8	M 16 x 1,5	30	25	19,6	63,5	8	24	9	24	68	13,5	17	80	6	22

Specification

4

- Threaded body
  - Steel zinc plated, blue passivated **ST**
  - Stainless Steel AISI 303 **NI**
- Plunger
  Stainless Steel AISI 303
- Spring
  Stainless Steel AISI 301
- Lifting ring
  Stainless Steel AISI 301
- Knob Plastic (Polyamide PA)
  - black, matt
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

Indexing plungers GN 717 are a reasonably priced indexing plunger variant which are distinguished for their small dimensions. Their use should be limited to such applications where high precision indexing is not required.

Due to the comparably small dimensions of indexing plungers GN 717, it is adviseable to follow the values listed above regarding maximum tightening torque during assembly.

- *Range of indexing plungers → Page 402*
- *Distance bushings GN 609 / GN 609.5 (to limit the thread length) → Page 450*

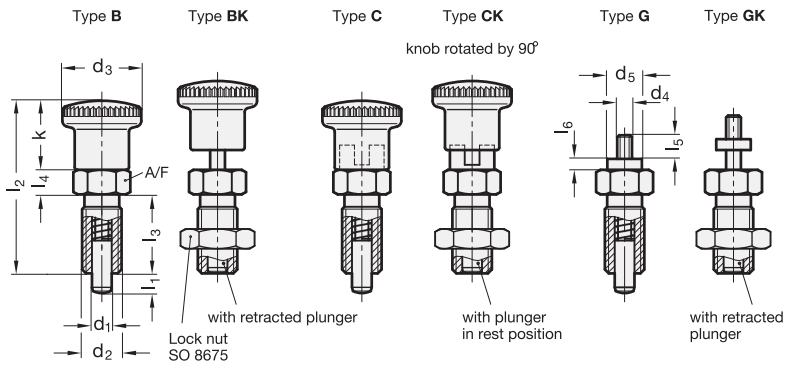
How to order

1 2 3 4
GN 717-8-M12-A-ST

1	d_1
2	d_2
3	Type
4	Material

Indexing plungers

with and without rest position



Rost frei Inox Stainless Steel

Inch Inch sizes available

3 Type

B without rest position, without lock nut

BK without rest position, with lock nut

C with rest position, without lock nut

CK with rest position, with lock nut

G with threaded rod, without lock nut

GK with threaded rod, with lock nut

1 d_1 Plunger $^{-0,02}_{-0,04}$ Bore H7	2 l_1 min.	d_2	d_3	d_4	d_5	k	l_2	l_3	l_4	l_5	l_6	A/F	Spring load in N ≈ initial	end
4	4	M 8 x 1	16	M 3	7	14	35	16	5	4,5	2,5	10	4,5	12
4	6	M 8 x 1	16	M 3	7	14	35	16	5	4,5	2,5	10	4	12,5
5	5	M 10 x 1	19	M 4	8	16	40	18	6	5,5	3	12	5	15
5	8	M 10 x 1	19	M 4	8	16	40	18	6	5,5	3	12	5	18
6	6	M 12 x 1,5	23	M 5	9	20	48	22	6	7	3,5	14	6,5	19
6	9	M 12 x 1,5	23	M 5	9	20	48	22	6	7	3,5	14	6	25
8	8	M 16 x 1,5	28	M 6	10	24	58	26	8	8,5	4	17	8,5	26
8	12	M 16 x 1,5	28	M 6	10	24	58	26	8	8,5	4	17	8,5	28
10	12	M 16 x 1,5	28	M 6	10	24	58	26	8	8,5	4	17	9,5	38
12	15	M 20 x 1,5	28	M 6	12	24	67	33	10	8,5	4	22	11,5	40

Specification

4

- Steel
  - blackened
  - Plunger hardened
- Stainless Steel AISI 303 **NI**
  Plunger chemically nickel plated
- Knob Plastic (Polyamide PA)
  - black, matt
  - red **RT** RAL 3000
    add RT on order code
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Indexing plungers GN 817 with rest position (Type C / CK) are used for such applications where the plunger has to stay in its retracted position. To achieve this, the knob is rotated by 90° degrees after being retracted. A notch keeps the plunger in this position.

see also...

- *Range of indexing plungers → Page 402*

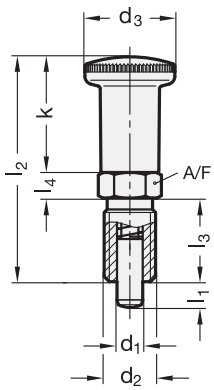
Indexing plungers 1 2 3 GN 817-4-6-C		
	1	d_1
	2	l_1
	3	Type

Stainless Steel-Indexing plungers 1 2 3 4 GN 817-6-9-B-NI		
	1	d_1
	2	l_1
	3	Type
	4	Material

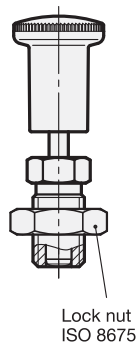
Indexing plungers

with long knob, with and without rest position

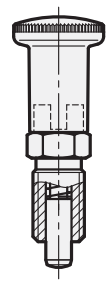
Type **B**



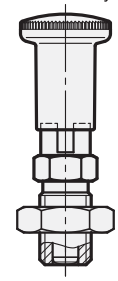
Type **BK** (with retracted plunger)



Type **C**



Type **CK** (with plunger in rest position knob rotated by 90°)



Inox
Stainless
Steel

3 Type

B without rest position, without lock nut
BK without rest position, with lock nut
C with rest position, without lock nut
CK with rest position, with lock nut

1 d_1 Plunger $^{-0.02}_{-0.04}$ Bore H7	2 l_1 min.	d_2	d_3	k	l_2	l_3	l_4	A/F	Spring load in N ≈ initial	end
4	4	M 8 x 1	16	21	42	16	5	10	4,5	12
4	6	M 8 x 1	16	21	42	16	5	10	4	12,5
5	5	M 10 x 1	19	24	48	18	6	12	5	15
5	8	M 10 x 1	19	24	48	18	6	12	5	18
6	6	M 12 x 1,5	23	30	58	22	6	14	6,5	19
6	9	M 12 x 1,5	23	30	58	22	6	14	6	25
8	8	M 16 x 1,5	28	36	70	26	8	17	8,5	26
8	12	M 16 x 1,5	28	36	70	26	8	17	8,5	28
10	12	M 16 x 1,5	28	36	70	26	8	17	9,5	38
12	15	M 20 x 1,5	28	36	79	33	10	22	11,5	40

Specification

4

- Steel
  - blackened
  - Plunger hardened
- Stainless Steel AISI 303 **NI**
  Plunger chemically nickel plated
- Knob Plastic (Polyamide PA)
  - black, matt
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

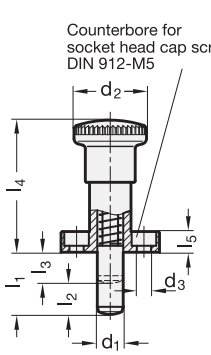
Indexing plungers GN 817.2 correspond to GN 817, they only differ by a longer knob.

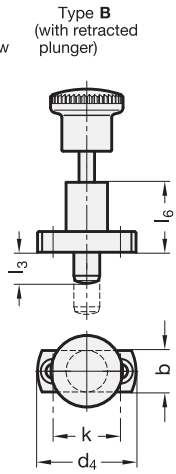
Type C / CK are used for such applications where the plunger has to stay in its retracted position. To achieve this, the knob is rotated by 90° degrees after being retracted. A notch keeps the plunger in this position.

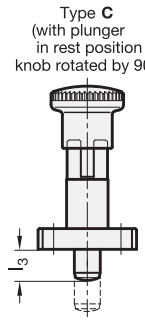
see also...
- *Range of indexing plungers → Page 402*

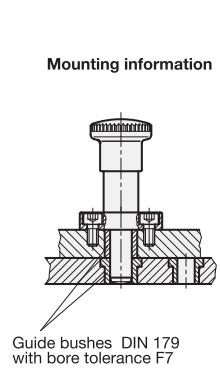
Steel-Indexing plungers		
1 2 3	1	d_1
GN 817.2-4-6-C	2	l_1
	3	Type

Stainless Steel-Indexing plungers		
1 2 3 4	1	d_1
GN 817.2-6-9-B-NI	2	l_1
	3	Type
	4	Material









3 Type

B without rest position
C with rest position

1 d_1 Plunger h7	2 l_1	l_2 Stroke	l_3	b	d_2	d_3	d_4	k	l_4	l_5	l_6	Spring load in N ≈ initial	end
8	20	10	10	16	28	5,5	38	26	51	8	27	8,5	28
8	22	10	12	16	28	5,5	38	26	51	8	27	8,5	28
8	26	10	16	16	28	5,5	38	26	51	8	27	8,5	28
8	30	10	20	16	28	5,5	38	26	51	8	27	8,5	28
10	22	12	10	16	28	5,5	38	26	51	8	27	9,5	38
10	24	12	12	16	28	5,5	38	26	51	8	27	9,5	38
10	28	12	16	16	28	5,5	38	26	51	8	27	9,5	38
10	32	12	20	16	28	5,5	38	26	51	8	27	9,5	38

Specification

- Steel
  - blackened
  - Plunger hardened and ground
- Knob Plastic (Polyamide PA)
  - black, matt
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Accessory

- Guide bushes DIN 179 → *Page 575*

Information

Indexing plungers GN 817.3 realize a reasonable priced precision locating when guide bushes DIN 179 are used.

For this purpose a guide bush DIN 179 is used as guide, whereby the dimension l_3 of the plunger determines the length of the bush.

The precise location is, therefore, not dependent on the guide pin in the plunger, but on the accuracy of the guide bush (bore tolerance F7) and the plunger (tolerance h7). Both components are hardened and ground. It goes without saying that the bush length also influences the accuracy of the positioning.

Type C is used for such applications where the plunger has to stay in its retracted position. To achieve this, the knob is rotated by 90° degrees after being retracted. A notch keeps the plunger in this position.

see also...
- *Range of indexing plungers → Page 402*

How to order

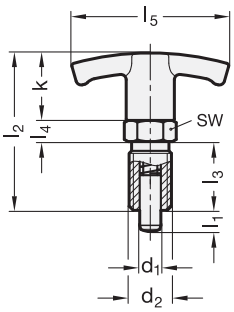
1 2 3
GN 817.3-10-24-C

1	d_1
2	l_1
3	Type

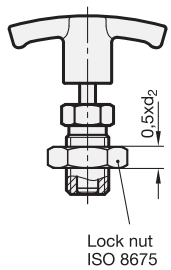
Indexing plungers

with T-Handle, with and without rest position

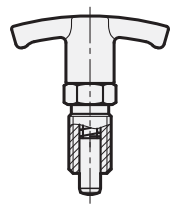
Type **B**



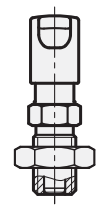
Type **BK**
(Plunger retracted)



Type **C**



Type **CK**
(Plunger retracted
T-Handle rotated by 90°)



Inox
Stainless
Steel

3 Type

B without rest position, without lock nut
BK without rest position, with lock nut
C with rest position, without lock nut
CK with rest position, with lock nut

1 d_1 Plunger $^{-0,02}_{-0,04}$ Bore H7	2 l_1 min.	d_2	k	l_2	l_3	l_4	l_5	A/F	Spring load in N ≈ initial	end
6	6	M 12 x 1,5	20	48	22	6	54	14	6,5	19
6	9	M 12 x 1,5	20	48	22	6	54	14	6	25
8	8	M 16 x 1,5	25	59	26	8	59	17	8,5	26
8	12	M 16 x 1,5	25	59	26	8	59	17	8,5	28
10	12	M 16 x 1,5	25	59	26	8	59	17	9,5	38
12	15	M 20 x 1,5	25	68	33	10	59	22	11,5	40

Specification

4

- Steel —
  - blackened
  - Plunger hardened
- Stainless Steel **NI**
  - AISI 303
  - Plunger chemically nickel plated
- T-Handle
  Plastic (Polyamide PA)
  - not removable
  - black, matt
- *ISO-Fundamental tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Indexing plungers GN 817.4 are similar to GN 817, but with a T-handle instead of a round head.

This shape allows better visual orientation of the indexing position of Type C and is advantageous when greater unlocking forces occur.

Type C with rest position is used in such applications where the plunger must not protrude continually. In that case the knob is retracted and afterwards turned by 90°. A notch keeps the plunger in this position.

see also...

- *Guide bushes DIN 172 / DIN 179 → Page 575*

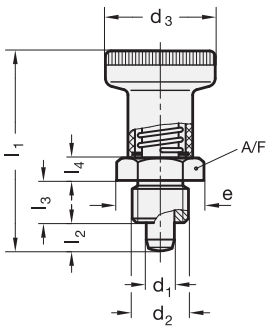
Indexing plunger
1 2 3
GN 817.4-8-12-CK

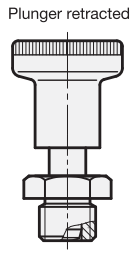
1	d_1
2	l_1
3	Type

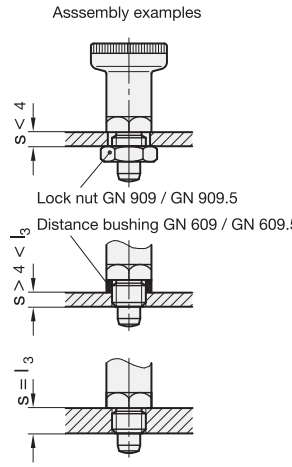
Stainless Steel-Indexing plunger
1 2 3 4
GN 817.4-12-15-B-NI

1	d_1
2	l_1
3	Type
4	Material

Indexing plungers







Inox Stainless Steel

2 Type

A without lock nut
AK with lock nut

1

d_1 Plunger $^{-0,02}_{-0,04}$ Bore H7	d_2	d_3	e ≈	l_1	l_2 ±0,5	l_3 −0,15	l_4	A/F	Spring load in N ≈ Steel initial	Steel end	Stainless Steel initial	Stainless Steel end	Axial load in N
6	M 12 x 1,5	25	19,6	45	6	10	5	17	7	8,5	18	22	400
8	M 16 x 1,5	31	21,9	54	8	12	6	19	14	15,5	24	28	500

Specification

3

- Steel **ST**
  - blackened
  - Plunger hardened
- Stainless Steel AISI 303 **NI**
  Plunger chemically nickel plated
- Knob
  Plastic (Polyamide PA)
  - black, matt
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Indexing plungers GN 607 are distinguished for their small dimension. The extremely low lock nuts GN 909 / GN 909.5 enlarge the mounting options.

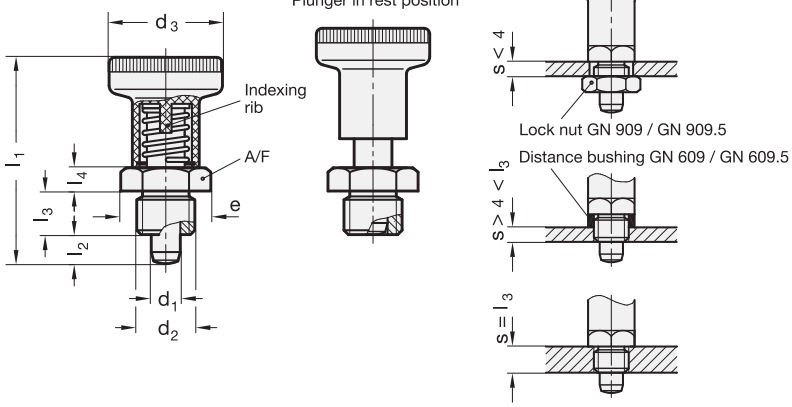
see also...

- *Range of indexing plungers → Page 402*
- *Distance bushings GN 609 (to limit the thread length) → Page 450*
- *Stainless Steel-Distance bushings GN 609.5 (to limit the thread length) → Page 450*
- *Positioning bushings GN 412.2 → Page 454*
- *Flat hexagonal nuts GN 909 → Page 451*
- *Flat Stainless Steel-Hexagonal nuts GN 909.5 → Page 451*

Indexing plungers 1 2 3 GN 607-8-AK-ST		
	1	d_1
	2	Type
	3	Material

Stainless Steel-Indexing plungers 1 2 3 GN 607-6-AK-NI		
	1	d_1
	2	Type
	3	Material

Indexing plungers
with rest position



Rostfrei Inox Stainless Steel

2 Type

A without lock nut
AK with lock nut

1

d_1 Plunger $^{-0,02}_{-0,04}$ Bore H7	d_2	d_3	e ≈	l_1	l_2 ±0,5	l_3 −0,15	l_4	A/F	Spring load in N ≈ Steel initial	Steel end	Stainless Steel initial	Stainless Steel end	Axial load in N
6	M 12 x 1,5	25	19,6	45	6	10	5	17	7	8,5	18	22	400
8	M 16 x 1,5	31	21,9	54	8	12	6	19	14	15,5	24	28	500

Specification

3

- Steel **ST**
  - blackened
  - Plunger hardened
- Stainless Steel AISI 303 **NI**
  Plunger chemically nickel plated
- Knob
  Plastic (Polyamide PA)
  - black, matt
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Indexing plungers GN 607.1 with rest position are used for such applications where the plunger has to stay in its retracted position. To achieve this, the knob is rotated by 90° degrees after being retracted. A notch keeps the plunger in this position.

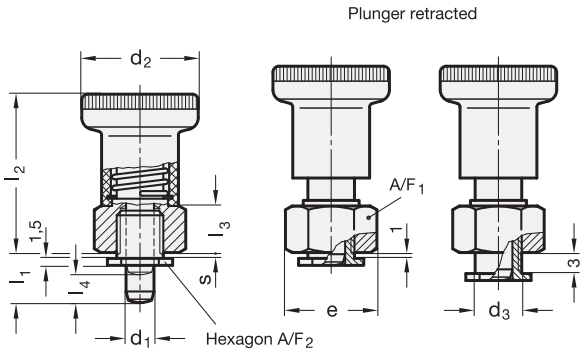
Indexing plungers GN 607.1 are distinguished for their small dimensions. The extremely low lock nuts GN 909 / GN 909.5 enlarge the mounting options. The locking tab is an integral part of the knob thus giving reliable operation at all times.

see also...

- *Range of indexing plungers → Page 402*
- *Distance bushings GN 609 (to limit the thread length) → Page 450*
- *Stainless Steel-Distance bushings GN 609.5 (to limit the thread length) → Page 450*
- *Positioning bushings GN 412.2 → Page 454*
- *Flat hexagonal nuts GN 909 → Page 451*
- *Flat Stainless Steel-Hexagonal nuts GN 909.5 → Page 451*

Indexing plungers 1 2 3 GN 607.1-6-A-ST		
	1	d_1
	2	Type
	3	Material

Stainless Steel-Indexing plungers 1 2 3 GN 607.1-8-A-NI		
	1	d_1
	2	Type
	3	Material



1 d1 Plunger Bore G7 −0,02 −0,04	2 l1		d2	d3	e	l2	l3	l4 Stroke	s Clamping distance	A/F1	A/F2	Spring load in N ≈ initial	end	Axial load in N
6	8,5	10,5	25	10	19,5	34	10	6	1 bis 5	17	14	7	18	400
8	10	12	31	12	22	40	12	7,5	1 bis 5	19	16	14	24	500

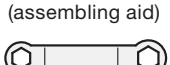
Specification

3

- Guide Steel zinc plated, blue passivated **ST**
- Plunger Stainless Steel AISI 303 chemically nickel plated
- Knob Plastic (Polyamide PA)
  - black, matt
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Accessory

- Double ring spanner GN 607.9-SW14-SW16 (assembling aid)



Information

Indexing plungers GN 607.2 have been developed for installation in thin walled equipment.

It has to be taken into consideration that, depending on the mounting plate thickness ‚s', the protruding plunger length ‚l1' and the position of the hexagon nut on its centre bush, the plunger nose might not always be fully retractable.

For design reasons the positional accuracy of this indexing plunger is not as precise as plunger GN 607.

see also...

- *Range of indexing plungers → Page 402*
- *Positioning bushings GN 412.2 → Page 454*

How to order

1 2 3

GN 607.2-6-10,5-ST

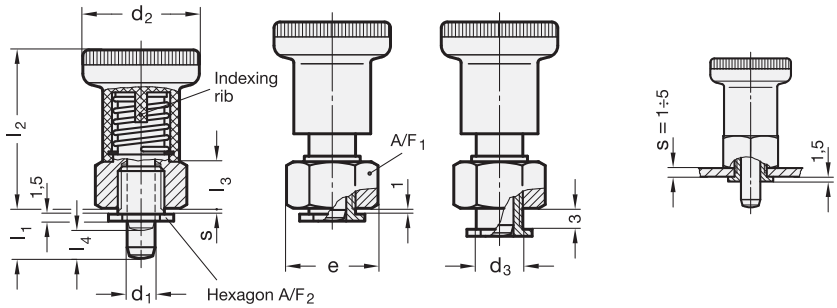
1	d_1
2	l_1
3	Material

Indexing plungers

for installation in thin walled equipment, with rest position

Plunger in rest position

Assembly example



1 d_1 Plunger Bore G7 $^{-0,02}_{-0,04}$	2 l_1		d_2	d_3	e	l_2	l_3	l_4 Stroke	s Clamping distance	A/F_1	A/F_2	Spring load in N ≈ initial	end	Axial load in N
6	8,5	10,5	25	10	19,5	34	10	6	1 bis 5	17	14	7	18	400
8	10	12	31	12	22	40	12	7,5	1 bis 5	19	16	14	24	500

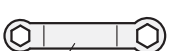
Specification

3

- Guide Steel zinc plated, blue passivated **ST**
- Plunger Stainless Steel AISI 303 chemically nickel plated
- Knob Plastic (Polyamide PA)
  - black, matt
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Accessory

- Double ring spanner GN 607.9-SW14-SW16 (assembling aid)



1mm thick

Information

Indexing plungers GN 607.3 have been developed for installation in thin walled equipment.

It has to be taken into consideration that, depending on the mounting plate thickness ‚s', the protruding plunger length ‚l1' and the position of the hexagon nut on its centre bush, the plunger nose might not always be fully retractable.

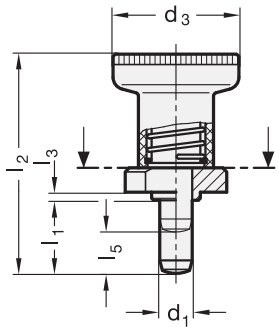
For design reasons the positional accuracy of this indexing plunger is not as precise as plunger GN 607.

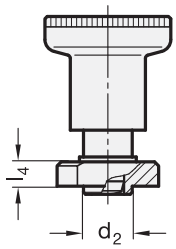
Indexing plungers with rest position are used for such applications where the plunger has to stay in its retracted position. To achieve this, the knob is rotated by 90° degrees after being retracted. A notch keeps the plunger in this position.

see also...

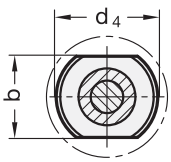
- *Range of indexing plungers → Page 402*
- *Positioning bushings GN 412.2 → Page 454*

Indexing plungers 1 2 3 GN 607.3-8-10-ST		
	1	d_1
	2	l_1
	3	Material

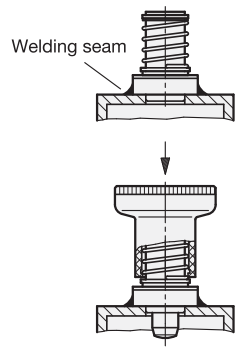




Plunger retracted
(if $l_1 = d_1$)



Assembly instruction



To prevent damage of the plastic knob, it will be driven onto the shaft using a plastic mallet, after the welding process.

1 d_1 Plunger $^{-0,02}_{-0,04}$ Bore $^{+0,30}_{+0,25}$	2 l_1	b	d_2 $^{-0,02}_{-0,1}$	d_3	d_4	l_2	l_3	l_4	l_5 Stroke	Spring load in N ≈ initial	end	Axial load in N ≈
6	6	18	10	25	22	37	1,5	5,5	6	8,5	22	400
6	14	18	10	25	22	45	1,5	5,5	6	8,5	22	400
8	8	20	12	31	25	44	2	6,5	8	15,5	28	500
8	18	20	12	31	25	54	2	6,5	8	15,5	28	500

Specification

3

- Steel **ST**
  - blackened
  - Plunger hardened
- Knob Plastic (Polyamide PA)
  - black, matt
  - not removable
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Indexing plungers GN 607.4 are designed for welded fixing, in particular for use in steel square tubings.

The lug d_2 is intended for positioning.

The plastic knob with the in-moulded indexing pin is driven on after the welding process.

see also...

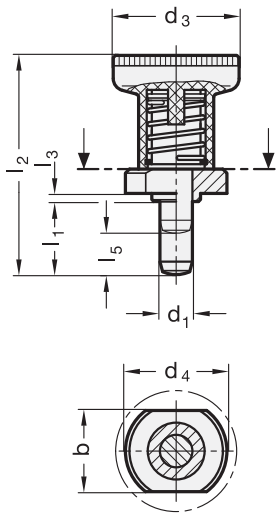
- *Range of indexing plungers → Page 402*
- *Positioning bushings GN 412.2 → Page 454*

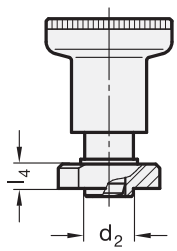
How to order

1 2 3

GN 607.4-6-14-ST

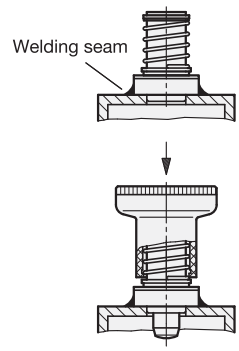
1	d_1
2	l_1
3	Material





Plunger retracted
(if $l_1 = d_1$)

Assembly instruction



To prevent damage of the plastic knob, it will be driven onto the shaft using a plastic mallet, after the welding process.

1 d_1 Plunger $^{-0,02}_{-0,04}$ Bore $^{+0,30}_{+0,25}$	2 l_1	b	d_2 $^{-0,02}_{-0,1}$	d_3	d_4	l_2	l_3	l_4	l_5 Stroke	Spring load in N ≈ initial	end	Axial load in N ≈
6	6	18	10	25	22	37	1,5	5,5	6	8,5	22	400
6	14	18	10	25	22	45	1,5	5,5	6	8,5	22	400
8	8	20	12	31	25	44	2	6,5	8	15,5	28	500
8	18	20	12	31	25	54	2	6,5	8	15,5	28	500

Specification

3

- Steel — ST
  - blackened
  - Plunger hardened
- Knob Plastic (Polyamide PA)
  - black, matt
  - not removable
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Indexing plungers GN 607.5 with rest position are used in cases where the indexing pin is temporarily not allowed to protrude. After pulling out, the knob is turned by 90°.

A notch keeps the plunger in this position.

The GN 607.5 indexing plungers are intended for welded fixing, in particular for use in steel square tubings.

The lug d_2 is intended for positioning.

The plastic knob with the in-moulded indexing pin is driven on after the welding process.

see also...

- *Range of indexing plungers → Page 402*
- *Mounting blocks GN 412.1 → Page 452*

How to order

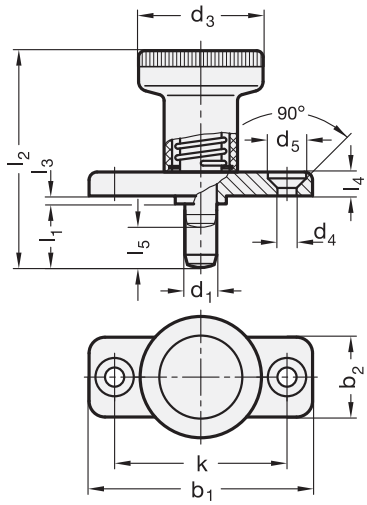
1 2 3

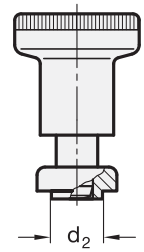
GN 607.5-6-6-ST

1	d_1
2	l_1
3	Material

Indexing plungers

without rest position





Plunger retracted
(if $l_1 = d_1$)

Inox Stainless Steel

1	2												Spring load in N ≈		
d_1 Plunger $^{-0,02}_{-0,04}$ Bore H7	l_1	b_1	b_2	d_2 $^{-0,02}_{-0,1}$	d_3	d_4	d_5	k	l_2	l_3 –0,15	l_4	l_5 Stroke	initial	end	Axial load in N
6	6	40	18	10	25	4,3	8,3	30	37	2,5	4,5	6	8,5	22	400
6	14	40	18	10	25	4,3	8,3	30	45	2,5	4,5	6	8,5	22	400
8	8	46	20	12	31	5,3	10,4	34	44	2,5	5,5	8	15,5	28	500
8	18	46	20	12	31	5,3	10,4	34	54	2,5	5,5	8	15,5	28	500

Specification

- Guide
  Zinc die casting
  zinc plated, blue passivated
- Knob
  Plastic (Polyamide PA)
  - black, matt
  - not removable
- **GN 608**
  - Plunger Steel, hardened
  - Single components Steel / Brass
- **GN 608.5**
  - Plunger Stainless Steel AISI 303
    chemically nickel plated
  - Single components Stainless Steel
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Indexing plungers GN 608 / GN 608.5 are distinguished for their small dimensions.

see also...

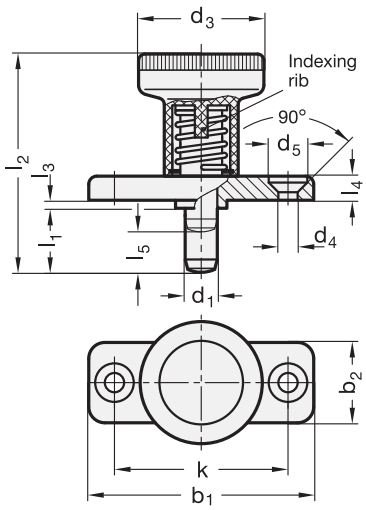
- *Range of indexing plungers → Page 402*
- *Positioning bushings GN 412.2 → Page 454*

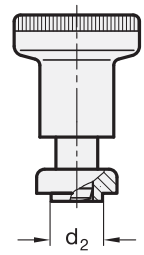
Plunger Steel 1 2 GN 608-8-18		
	1	d_1
	2	l_1

Plunger Stainless Steel 1 2 GN 608.5-6-14		
	1	d_1
	2	l_1

Indexing plungers

with rest position





with plunger in rest position

(if $l_1 = d_1$)

Rost frei Inox Stainless Steel

1 d_1 Plunger $^{-0,02}_{-0,04}$ Bore H7	2 l_1	b_1	b_2	d_2 $^{-0,02}_{-0,1}$	d_3	d_4	d_5	k	l_2	l_3 −0,15	l_4	l_5 Stroke	Spring load in N ≈ initial	Spring load in N ≈ end	Axial load in N
6	6	40	18	10	25	4,3	8,3	30	37	2,5	4,5	6	8,5	22	400
6	14	40	18	10	25	4,3	8,3	30	45	2,5	4,5	6	8,5	22	400
8	8	46	20	12	31	5,3	10,4	34	44	2,5	5,5	8	15,5	28	500
8	18	46	20	12	31	5,3	10,4	34	54	2,5	5,5	8	15,5	28	500

Specification

- Guide
  Zinc die casting
  zinc plated, blue passivated
- Knob
  Plastic (Polyamide PA)
  - black, matt
  - not removable
- **GN 608.1**
  - Plunger Steel, hardened
  - Single components Steel / Brass
- **GN 608.6**
  - Plunger Stainless Steel AISI 303
    chemically nickel plated
  - Single components Stainless Steel
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Indexing plungers GN 608.1 / GN 608.6 with rest position are used for such applications where the plunger has to stay in its retracted position. To achieve this, the knob is rotated by 90° degrees after being retracted. A notch keeps the plunger in this position.

Indexing plungers GN 608.1 / GN 608.6 are distinguished for their small dimensions. The locking tab is integrated into the knob thus giving reliable operation at all times.

see also...

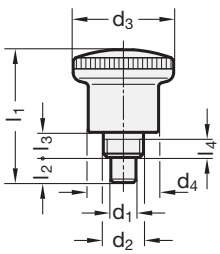
- *Range of indexing plungers → Page 402*
- *Positioning bushings GN 412.2 → Page 454*

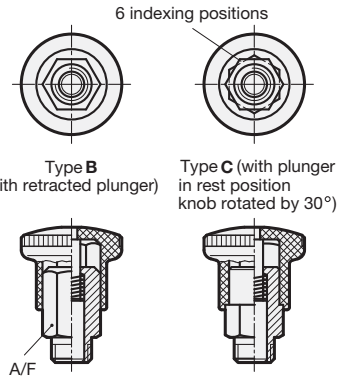
Plunger Steel		
GN 608.1-8-8 (1 2)	1	d_1
	2	l_1

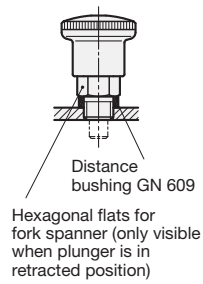
Plunger Stainless Steel		
GN 608.6-6-14 (1 2)	1	d_1
	2	l_1

GN 822
Steel / Stainless Steel

Mini indexing plungers
Covered indexing mechanism, with and without rest position







Inox
Stainless
Steel

2 Type

B without rest position
C with rest position

1

d_1 Plunger Bore $^{0}_{-0,06}$ $^{+0,05}_{+0,1}$	d_2	d_3	d_4	l_1	l_2 min.	l_3	l_4 min.	A/F	Spring load in N ≈ initial	end
4	M 8 x 0,75	21	15	26,5	5	5	3,5	10	4,5	12
5	M 8 x 0,75	21	15	26,5	5	5	3,5	10	4,5	12
6	M 10 x 1	25	18	34	7	7	4,5	12	5	18
7	M 10 x 1	25	18	34	7	7	4,5	12	5	18

Specification

3

- Steel zinc plated, blue passivated **ST**
- Stainless Steel AISI 303 **NI**
- Plunger Stainless Steel AISI 303
- Spring Stainless Steel AISI 301
- Knob Plastic (Polyamide PA)
  - black, matt
  - not removable
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Accessory

- Distance bushings GN 609 / GN 609.5 are to be ordered separately.

Information

Mini indexing plungers GN 822 are distinguished for their small dimensions. They have been designed for installation in thin walled sheet metal constructions.

They are inserted into position by holding them by the serrated knob. The spanner flats on the lock nut are revealed when retracting the pin, so that the mini indexing plunger can be easily tightened by means of a fork spanner.

With Type C the knob can be turned by 30° and a notch keeps the knob in this position.

see also...

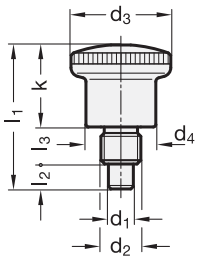
- *Range of indexing plungers → Page 402*
- *Distance bushings GN 609 / GN 609.5 → Page 450*
- *Flat hexagonal nuts GN 909 / GN 909.5 → Page 451*

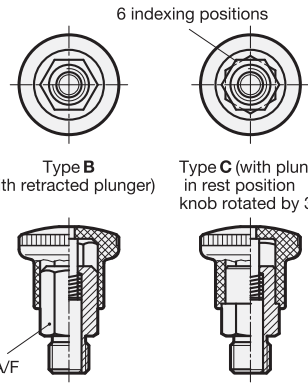
Steel-Mini indexing plungers 1 2 3 GN 822-6-C-ST		
	1	d_1
	2	Type
	3	Material

Stainless Steel-Mini indexing plungers 1 2 3 GN 822-4-B-NI		
	1	d_1
	2	Type
	3	Material

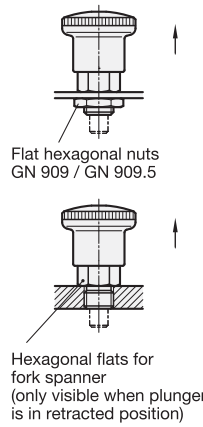
Mini indexing plungers

covered indexing mechanism, with and without rest position





Mounting information



Inox Stainless Steel

Inch sizes available

3 Type

B without rest position

C with rest position

1 d_1 Plunger h9 Bore $^{+0,03}_{+0,08}$	2 d_2		d_3	d_4	l_1	l_2 min.	l_3	k	A/F	Spring load in N ≈ initial	end
4	M 8	M 8 x 1	21	15	27,5	5	6	16,5	10	4	12
5	M 10	M 10 x 1	25	18	34	6	8	20	12	6	16
6	M 10	M 10 x 1	25	18	34	6	8	20	12	6	16
6	M 12	M 12 x 1,5	28	20	40,5	7	10	23,5	14	10	23
7	M 12	M 12 x 1,5	28	20	40,5	7	10	23,5	14	10	23
8	M 16	M 16 x 1,5	33	23	47,5	10	12	25,5	17	11	35
10	M 16	M 16 x 1,5	33	23	47,5	10	12	25,5	17	11	35

Specification

- **GN 822.6**
  Socket Steel
  zinc plated, blue passivated
- **GN 822.7**
  Socket
  Stainless Steel AISI 303

This information applies to both standards:

- Plunger
  Stainless Steel AISI 303
- Spring
  Stainless Steel AISI 301
- Knob Plastic (Polyamide PA)
  - black, matt
  - not removable
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- *ISO-Fundamental tolerances → Page 1132*
- RoHS compliant

Accessory

- Distance bushings GN 609 / GN 609.5 or flat hexagonal nuts GN 909 / GN 909.5 are to be ordered separately.

Information

Mini indexing plungers GN 822.6 / GN 822.7 are distinguished for their small dimensions.

Based on the principle of the GN 822 mini indexing plungers, this model combines their clever type of construction with a complete series of all current sizes of bolts and threads. They provide a reasonably priced alternative to the GN 607 / GN 607.1 indexing plungers of the appropriate sizes. To mount, first turn the mini indexing plunger in with the knurled button. Pulling the indexing pin will release the hexagon nut which can then be tightened with an open-end spanner.

They are inserted into position by holding them by the serrated knob. The spanner flats on the lock nut are revealed when retracting the pin, so that the mini indexing plunger can be easily tightened by means of a fork spanner.

In type C, the button can be turned by 30° after retracting the indexing pin, holding it in the “retraced” position using the indexing lock.

see also...

- *Range of indexing plungers → Page 402*

Steel-Mini indexing plungers

1 2 3

GN 822.6-8-M16x1,5-B

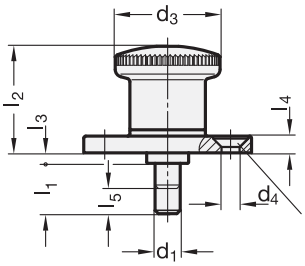
1	d_1
2	d_2
3	Type

Stainless Steel-Mini indexing plungers

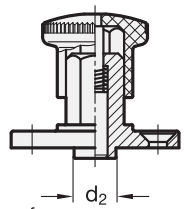
1 2 3

GN 822.7-6-M12x1,5-C

1	d_1
2	d_2
3	Type

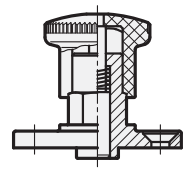


Type **B**
(with retracted plunger)

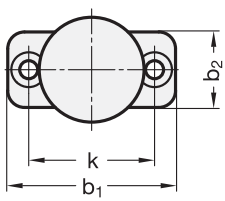


Bore for
countersunk screw
DIN 7991

Type **C** (with plunger
in rest position
knob rotated by 30°)



Rest position with
6 indexing positions (6x30°)



3 Type

B without rest position
C with rest position

1 d_1 Plunger h9 Bore $^{+0,03}_{+0,08}$	2 l_1		b_1	b_2	d_2 −0,15	d_3	d_4	k	l_2	l_3	l_4	l_5 Stroke	Spring load in N ≈ initial	end
4	5	10	35	15	8	21	4,3	25	20,5	2	4	5	4	12
5	6	12	40	18	10	25	4,3	30	25,5	2,5	4	6	6	16
6	6	12	40	18	10	25	4,3	30	25,5	2,5	4	6	6	16
8	10	20	50	23	14	33	5,3	38	35	2,5	5	10	11	35
10	10	20	50	23	14	33	5,3	38	35	2,5	5	10	11	35

Specification

- Socket
  Zinc die casting
  - corrosion-resistant
    ZNDG Pass nano®-coating
  - anthracite coloured
- Plunger
  Stainless Steel AISI 303
- Spring
  Stainless Steel AISI 301
- Knob
  Plastic (Polyamide PA)
  - black, matt
  - not removable
- *ISO-Fundamental tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Mini indexing plungers GN 822.8 are distinguished for their small dimensions. They are mounted by countersunk screws.

see also...

- *Range of indexing plungers → Page 402*

How to order

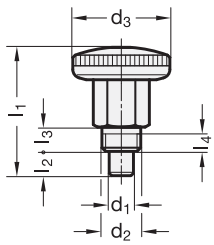
1 2 3
GN 822.8-6-12-B

1	d_1
2	l_1
3	Type

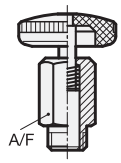
Mini indexing plungers

Open indexing mechanism, with and without rest position

Type **B**



Plunger retracted

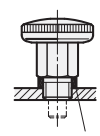


Type **C**

Plunger retracted
Knob rotated by 90°

Side view

Mounting information



Distance bushing
GN 609 / GN 609.5

Inox
Stainless
Steel

2 Type

B without rest position
C with rest position

1

d_1 Plunger Bore $^{0}_{-0,06}$ $^{+0,05}_{+0,1}$	d_2	d_3	l_1	l_2 min.	l_3	l_4 min.	A/F	Spring load in N ≈ initial	end
4	M 8 x 0,75	21	26,5	5	5	3,5	10	4,5	12
5	M 8 x 0,75	21	26,5	5	5	3,5	10	4,5	12
6	M 10 x 1	25	34	7	7	4,5	12	5	18
7	M 10 x 1	25	34	7	7	4,5	12	5	18

Specification

3

- Steel
  zinc plated, blue passivated **ST**
- Stainless Steel AISI 303 **NI**
- Plunger
  Stainless Steel AISI 303
- Spring
  Stainless Steel AISI 301
- Knob Plastic (Polyamide PA)
  - black, matt
  - not removable
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Accessory

- Distance bushings GN 609 / GN 609.5 are to be ordered separately.

Information

Mini indexing plungers GN 822.1 are distinguished for their small dimensions. They have been designed for installation in thin walled sheet metal constructions.

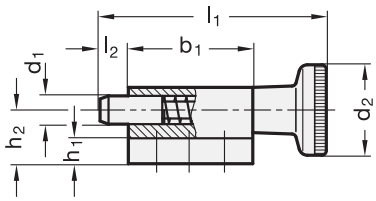
Type C with rest position is used for such applications where the plunger has to stay in its retracted position. To achieve this, the knob is rotated by 90° degrees after being retracted. A notch keeps the plunger in this position.

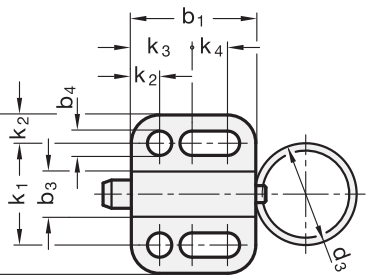
see also...

- *Range of indexing plungers → Page 402*
- *Distance bushings GN 609 / GN 609.5 → Page 450*

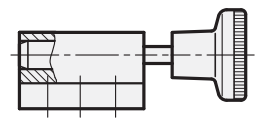
Steel-Mini indexing plungers		
1 2 3	1	d_1
GN 822.1-6-C-ST	2	Type
	3	Material

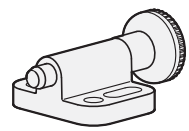
Stainless Steel-Mini indexing plungers		
1 2 3	1	d_1
GN 822.1-4-B-NI	2	Type
	3	Material





Plunger retracted





2 Type

A without rest position (lifting ring)
B without rest position (Knob)

1

d_1 Plunger h11 Bore $^{+0,03}_{+0,08}$	d_2	d_3	b_1	b_2	b_3	b_4 −0,2	h_1	h_2	k_1 ±0,05	k_2	k_3	k_4	l_1	l_2 ±0,5	Spring load in N ≈ initial	end
4	12	14	16,5	22	6	3,3	4	7	14	4	8	4,5	30,5	4	3	12
5	16	18	22	28	8	4,3	4,5	9,5	18	5	10	7	40	5	5	24
6	18	24	27,5	32	10	5,4	5	10,5	21	5,5	12	10	49	6	5	21
8	21	30	33	34	12	5,4	6	12,5	23	5,5	12	15,5	59	8	6	22

Specification

- Guide
  Zinc die casting
  plastic coated
  black, textured finish
- Plunger
  Stainless Steel AISI 303
- Spring
  Stainless Steel AISI 301
- Lifting ring
  Stainless Steel AISI 301
- Knob
  Plastic (Polyamide PA)
  - black, matt
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

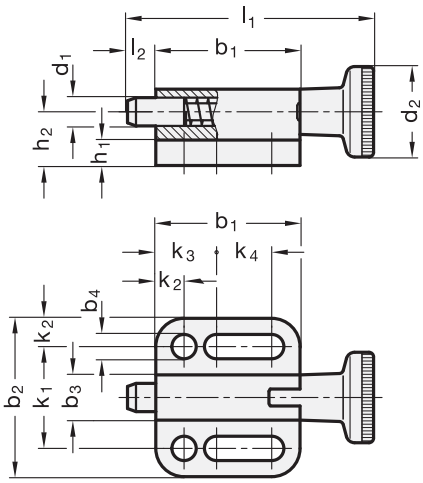
Information

The screwing range of indexing plungers GN 417 is chosen in such a way that washers ISO 7092 can be used.

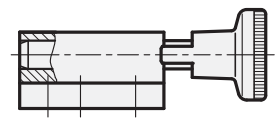
see also...

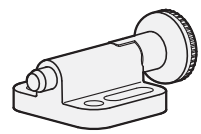
- *Range of indexing plungers → Page 402*
- *Positioning bushings GN 412.2 → Page 454*

How to order 1 2		
GN 417-6-B	1	d_1
	2	Type



Plunger in rest position





2 Type

C with rest position (Knob)

1

d_1 Plunger h11 Bore $^{+0,03}_{+0,08}$	d_2	b_1	b_2	b_3	b_4 −0,2	h_1	h_2	k_1 ±0,05	k_2	k_3	k_4	l_1	l_2 min.	Spring load in N ≈ initial	end
4	12	19	22	6	3,3	4	7	14	4	8	7	33	4	3	12
5	16	25,5	28	8	4,3	4,5	9,5	18	5	10	10,5	43,5	5	5	24
6	18	30,5	32	10	5,4	5	10,5	21	5,5	12	13	52	6	5	21
8	21	37,5	34	12	5,4	6	12,5	23	5,5	12	20	63,5	8	6	22

Specification

- Guide
  Zinc die casting
  plastic coated
  black, textured finish
- Plunger
  Stainless Steel AISI 303
- Spring
  Stainless Steel AISI 301
- Knob
  Plastic Technopolymer (Polyamide PA)
  - black, matt
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Indexing plungers GN 417 type C with rest position are used for such applications where the plunger has to stay in its retracted position. To achieve this, the knob is rotated by 90° degrees after being retracted. A notch keeps the plunger in this position.

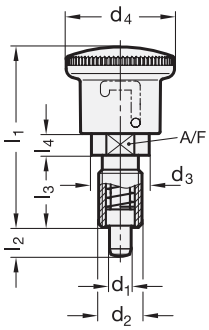
The screwing range is chosen in such a way that washers ISO 7092 can be used.

see also...

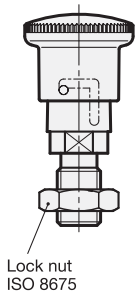
- *Range of indexing plungers → Page 402*
- *Positioning bushings GN 412.2 → Page 454*

How to order		
GN 417-8-C (1 2)	1	d_1
	2	Type

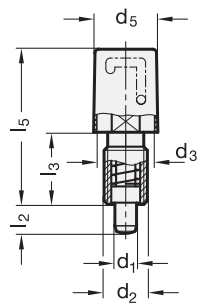
Plunger protruded



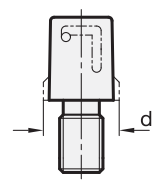
Plunger retracted and locked



Plunger protruded



Plunger retracted and locked



3 Type

A with knob, without lock nut
AK with knob, with lock nut
B with key, without lock nut
BK with key, with lock nut

1 d_1 Plunger $^{0}_{-0,05}$ Bore $^{+0,15}_{+0,07}$	2 d_2	d_3	d_4	d_5	d_6	$l_1 \approx$	l_2	l_3	$l_4 \approx$	l_5	A/F	Spring load in N ≈ initial	end
6	M 12 x 1,5	16	28	17	-	50	8	20	6	43	14	13	28
8	M 16 x 1,5	18	28	17	20	52	10	22	6	48	16	14	38

Specification

- Threaded body
  Steel zinc plated, blue passivated
- Plunger
  Stainless Steel AISI 303
- Spring
  Stainless Steel AISI 301
- Knob
  Plastic (Polyamide PA)
  - black, matt
  - not removable
- Sleeve
  Plastic (Polyamide PA)
  - black, matt
  - not removable
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Accessory

- Keys GN 816-10
  (Locking plungers Ø 6 and Ø 8 have the same keys)

Information

If not operated, the plunger of the locking plungers GN 816 protrudes. To retract, move against the spring force and hold in the end position by turning by 90°.

The shape of the cam curve secures the plunger against accidental operation.

For the execution with operation with key (Type B / BK) a key is required to move the plunger. In this execution, a cover sleeve provides additional security and safety from unauthorized removal of the locking plunger. The cover sleeve also provides additional protection against malfunction caused by dirt.

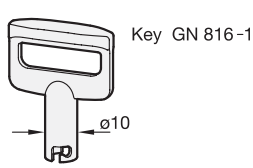
see also...

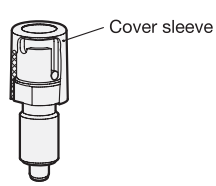
- *Range of indexing plungers → Page 402*
- *Distance bushings GN 609 (to limit the thread length) → Page 450*
- *Mounting blocks GN 412.1 → Page 452*
- *Positioning bushings GN 412.2 → Page 454*
- *Flat hexagonal nuts GN 909 / GN 909.5 → Page 451*

Locking plungers
1 2 3
GN 816-8-M16x1,5-A

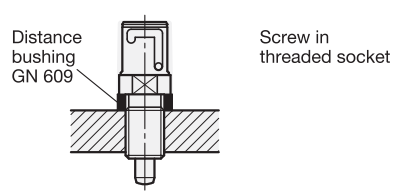
1	d_1
2	d_2
3	Type

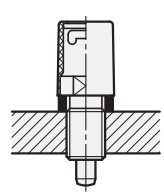
Version with key (Type B / Type BK)



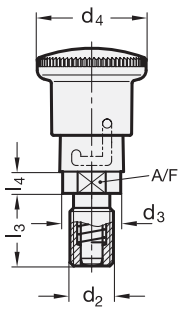


Assembly instruction

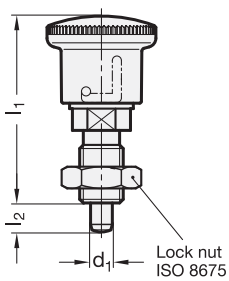




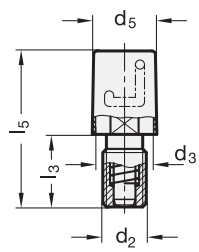
Plunger retracted



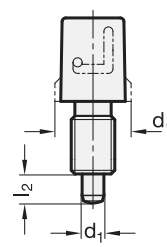
Plunger protruded and locked



Plunger retracted



Plunger protruded and locked



3 Type

A with knob, without lock nut
AK with knob, with lock nut
B with key, without lock nut
BK with key, with lock nut

1 d_1 Plunger $^{0}_{-0,05}$ Bore $^{+0,15}_{+0,07}$	2 d_2	d_3	d_4	d_5	d_6	$l_1 \approx$	l_2	l_3	$l_4 \approx$	l_5	A/F	Spring load in N ≈ initial	end
6	M 12 x 1,5	16	28	17	-	51,5	8	20	6	43	14	12	27
8	M 16 x 1,5	18	28	17	20	54,5	10	22	6	48	16	12	35

Specification

- Threaded body
  Steel zinc plated, blue passivated
- Plunger
  Stainless Steel AISI 303
- Spring
  Stainless Steel AISI 301
- Knob
  Plastic (Polyamide PA)
  - black, matt
  - not removable
- Sleeve
  Plastic (Polyamide PA)
  - black, matt
  - not removable
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Accessory

- Keys GN 816.1-10
  (Locking plungers Ø 6 and Ø 8 have the same keys)

Information

If not operated, the plunger of the locking plungers GN 816 is retracted. To move out, move against the spring force and hold in the end position by turning by 90°.

The shape of the cam curve secures the plunger against accidental operation.

For the execution with operation with key (Type B / BK) a key is required to move the plunger. In this execution, a cover sleeve provides additional security and safety from unauthorized removal of the locking plunger. The cover sleeve also provides additional protection against malfunction caused by dirt.

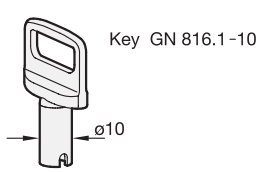
see also...

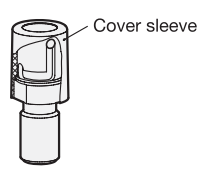
- *Range of indexing plungers → Page 402*
- *Distance bushings GN 609 (to limit the thread length) → Page 450*
- *Mounting blocks GN 412.1 → Page 452*
- *Positioning bushings GN 412.2 → Page 454*
- *Flat hexagonal nuts GN 909 / GN 909.5 → Page 451*

Locking plungers
1 2 3
GN 816.1-6-M12x1,5-B

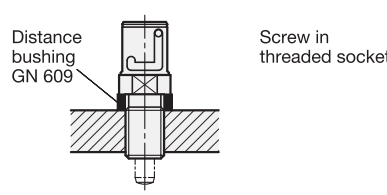
1	d_1
2	d_2
3	Type

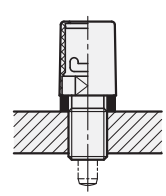
Version with key (Type B / Type BK)



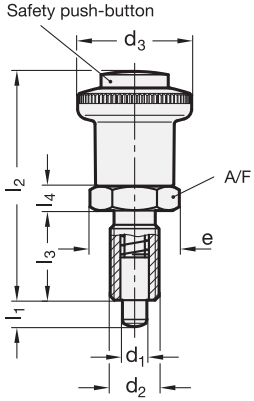


Assembly instruction

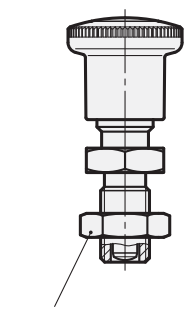




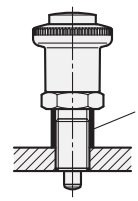
Safety push-button



Plunger retracted



Information:
Mounting with
distance bushing GN 609



3 Type

A with safety mechanism, without rest position, without lock nut

AK with safety mechanism, without rest position, with lock nut

B without safety mechanism, with rest position, without lock nut

BK without safety mechanism, with rest position, with lock nut

C with safety mechanism and rest position, without lock nut

CK with safety mechanism and rest position, with lock nut

1 d_1 Plunger $^{-0,02}_{-0,04}$ Bore H7	2 l_1 min.	d_2	d_3	e	l_2 ≈	l_3	l_4	A/F	Spring load in N ≈ initial	end	Axial load in N
6	6	M 12 x 1,5	28	21,9	56	22	6	19	6,5	19	120
6	9	M 12 x 1,5	28	21,9	56	22	6	19	6	25	120
8	8	M 16 x 1,5	28	21,9	62	26	8	19	8,5	26	120
8	12	M 16 x 1,5	28	21,9	62	26	8	19	8,5	28	120
10	12	M 16 x 1,5	28	21,9	62	26	8	19	9,5	30	120

Specification

- Steel
  - blackened
  - Plunger hardened
- Knob
  Plastic (Polyamide PA)
  - black-grey, RAL 7021, matt
  - temperature resistant up to 80 °C
  - not removable
- Safety push-button
  Plastic (Polyamide PA)
  red, RAL 3000, matt
- *ISO-Fundamental Tolerances → Page 1132*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Safety indexing plungers GN 414 in type A and C are used when the inadvertent retract of the plunger pin is to be prevented. The plunger pin is locked in one or both end positions and can be unlocked only with the red safety push button.

Types B and C also feature an index lock if the plunger is not to protrude temporarily, i.e. if it is to be held in the retracted position.

In every case, the safety lock engages in the front end position, i.e. automatically if the indexing pin protrudes, with the locking mechanism housed fully in the operating button and protected from malfunctions. The specified axial load bearing capacity refers to the locking force of the bolt against inadvertent operation which must not be exceeded.

see also...

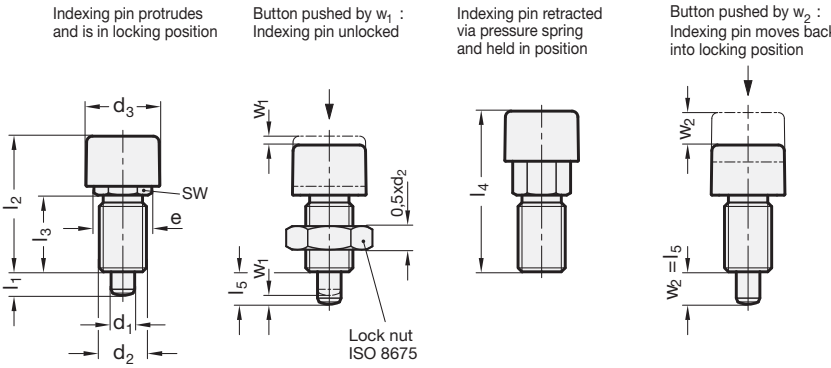
- *Range of indexing plungers → Page 402*
- *Distance bushings GN 609 (to limit the thread length) → Page 450*

How to order

1 2 3

GN 414-8-12-A

1	d_1
2	l_1
3	Type



2 Type

A without lock nut
AK with lock nut

1

d_1 Plunger $^{-0.02}_{-0.05}$ Bore H7	d_2	d_3	e	l_1	l_2	l_3	l_4	l_5	A/F	w_1	w_2	Spring load in N ≈ initial	end
6	M 12 x 1,5	19	15	6	38	20	44,5	9	13	3	9	8,5	25
8	M 16 x 1,5	25	19	8	46	26	54,5	11	17	3	11	18	44

Specification

- Steel
  - nitrided
  - blackened
- Knob
  Plastic (Polyamide PA)
  black, matt
- *ISO-Fundamental Tolerances* → *Page 1132*
- *Plastic characteristics* → *Page 1141*
- RoHS compliant

Information

The indexing pin in the locking plungers GN 514 is moved via a so-called cardioid mechanism.

This mechanism means that the indexing pin is both extended and retracted alone by **pressing** the operating button (PUSH-PUSH locking mechanism).

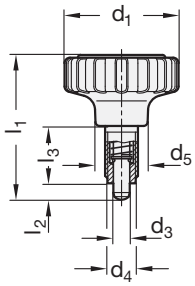
Please note that the indexing pin **cannot absorb any axial forces** and that it retracts virtually by spring action; the indexing pin must therefore remain free and easy to move.

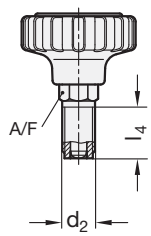
see also...

- *Range of indexing plungers* → *Page 402*
- *Distance bushings GN 609 (to limit the thread length)* → *Page 450*
- *Mounting blocks GN 412.1* → *Page 452*
- *Positioning bushings GN 412.2* → *Page 454*
- *Flat hexagonal nuts GN 909* → *Page 451*

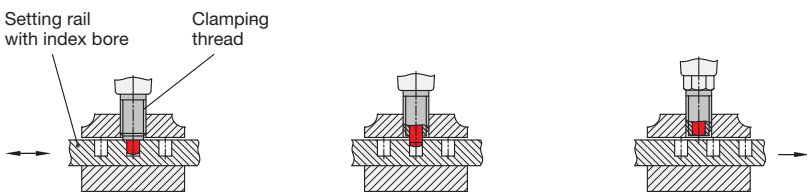
How to order 1 2		
GN 514-8-A	1	d_1
	2	Type

Plunger retracted





Assembly example



Setting rail positioned through indexing plunger, clamped with in position clamping handle

Clamping action released, indexing plunger still engaged

Clamping action released, indexing plunger disengaged, setting rail can be moved

1 d_1	2 d_2	3 d_3 Bolt $^{-0,02}_{-0,04}$ Bore G7	d_4	d_5	l_1	l_2	l_3	l_4 min.	A/F	Spring load in N ≈ initial	end
34	M 10 x 1	5	8,6	15,5	45	5	19	17	10	7	17
42	M 12 x 1,5	6	9,9	19	53	6	21	19	12	9	24
53	M 12 x 1,5	6	9,9	22,5	59	6	21	19	12	9	24
53	M 16 x 1,5	8	13,9	22,5	68	8	28	26	16	11	30

Specification

- Knurled knob 7336
  Plastic (Polyamide PA)
  black, matt
- Cover cap
  Plastic (Polyamide PA)
  light grey, matt
- Fixing thread Steel
  zinc plated, blue passivated
- Plunger
  Stainless Steel AISI 303
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Clamping knobs with indexing plunger GN 7336.7 are used for positioning, securing and clamping adjusting elements at the same time.

The axial movement of the handle (pulling) pulls the indexing pin from the engaged position against the spring force, with the star know at the same time remaining connected with form-lock to the clamping screw via a hexagonal element, allowing both clamping and releasing.

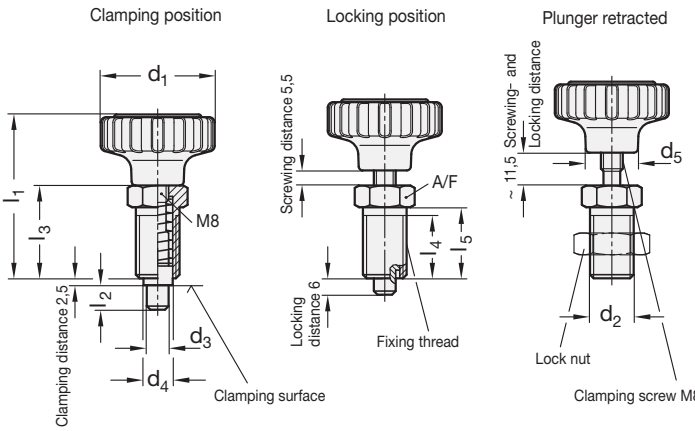
see also...

- *Range of indexing plungers → Page 402*
- *Knurled knobs GN 7336 → Page 314*
- *Flat hexagonal nuts GN 909 / GN 909.5 → Page 451*

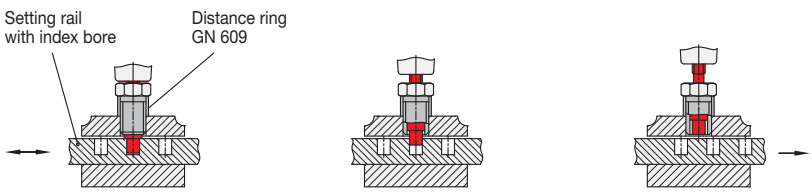
How to order

GN 7336.7-42-M12x1,5-6

1	d_1
2	d_2
3	d_3



Assembly example



Setting rail positioned through indexing plunger, clamped with the clamping surface of the indexing plunger via the knurled knob and the clamping screw M8

Clamping action released and clamping screw M8 fully turned outh. Indexing plunger remains engaged (safety funktion)

Clamping screw no longer engaged, the indexing plunger can now pulled out of indexing bore

1 d_1	2 d_2	3 d_3 Plunger $^{-0,02}_{-0,04}$ Bore G7		d_4	d_5	l_1	l_2	l_3	l_4 min.	l_5	A/F	Spring load in N ≈ initial	end
42	M 16 x 1,5	6	8	11	19	60	9	34	23	26	19	14	26
53	M 16 x 1,5	6	8	11	24	66	9	34	23	26	19	14	26

Specification

- Knurled knob
  Plastic (Polyamide PA)
  black, matt
- Cover cap
  Plastic (Polyamide PA)
  light grey, matt
- Fixing thread
  Steel zinc plated, blue passivated
- Plunger
  Steel nitrided and blackened
- *ISO-Fundamental Tolerances → Page 1132*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Clamping indexing GN 7336.8 plungers are an advanced development of the GN 7336.7 clamping knobs with indexing plunger.

Like the latter, they are used for positioning, securing and clamping adjusting elements at the same time. This configuration ensures that the indexing pin cannot be pulled from the indexing bore by turning the knurled knob, but only be deliberately pulling the handle (safety function).

see also...

- *Range of indexing plungers → Page 402*
- *Distance bushings GN 609 (to limit the thread length) → Page 450*
- *Flat hexagonal nuts GN 909 / GN 909.5 → Page 451*

How to order

GN 7336.8-42-M16x1,5-6

1	d_1
2	d_2
3	d_3

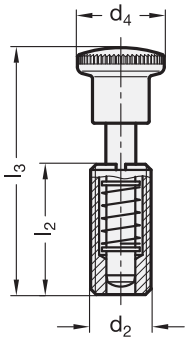
Knurled knobs GN 7336 → *Page 314*
Clamping knobs with indexing plungers GN 7336.7 → *Page 446*
Clamping indexing plungers GN 7336.8 → *Page 447*

GN 313
Steel / Stainless Steel

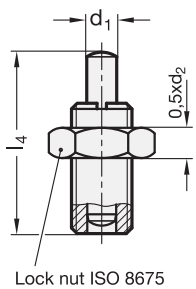
Spring bolts

Normal position:
Plunger retracted

Type **A**



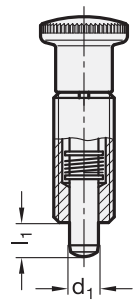
Type **DK**



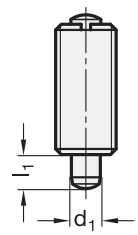
Lock nut ISO 8675

Operating position:
Plunger protruded

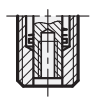
Type **A**



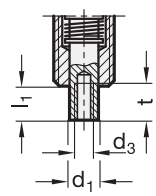
Type **D**



Identification **2**



Identification **2**



Inox
Stainless
Steel

2 Type

A with knob, without lock nut
AK with knob, with lock nut
D without knob, without lock nut
DK without knob, with lock nut

3 Identification no.

1 Plunger without internal thread
2 Plunger with internal thread

1

d_1 Plunger $^{-0.02}_{-0.04}$ Bore H7	d_2	d_3	d_4	l_1 ≈	l_2	l_3 ≈	l_4 ≈	t min.	Spring load in N ≈ Steel initial	Steel end	Stainless Steel initial	Stainless Steel end
6	M 12 x 1,5	M 4	19	7	26	49	35	7	9	28	8	21
8	M 16 x 1,5	M 5	23	9	34	65	48	9	12	40	11	32
10	M 20 x 1,5	M 6	28	11	43	78	57	12	22	50	18	43

Specification

4

- Threaded socket
  Steel
  blackened — **ST**
- Threaded socket
  Stainless Steel AISI 303 — **NI**
- Plunger
  Stainless Steel
  - AISI 303
  - chemically nickel plated
- Knob
  Plastic (Polyamide PA)
  - black, matt
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

The plunger in the GN 313 spring bolts does not protrude in the inoperative position.

It can be operated manually or in Type D and DK mechanically (pneumatic cylinder, cam plate, etc.) when it will protrude only as long as it is operated.

Using the internal thread at identification 2 on the pressure side, special pressure bolts or a rod arrangement can be operated, for instance.

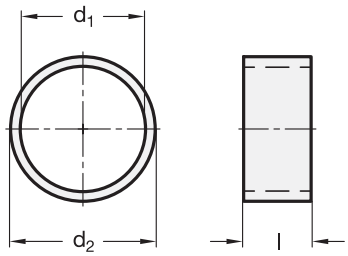
see also...

- *Spring elements GN 513 → Page 498*

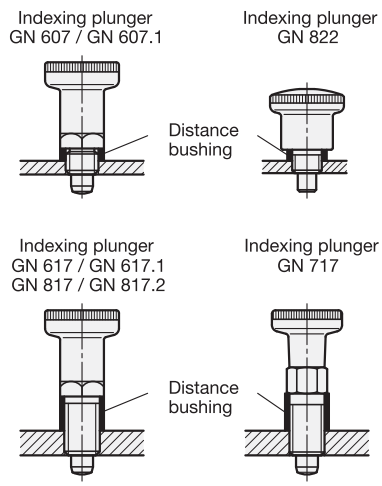
How to order

1 2 3 4
GN 313-8-AK-1-ST

1	d_1
2	Type
3	Identification no.
4	Material



Application examples



Rost frei Inox Stainless Steel

1 d_1 H12	2 d_2 −0,1	3 Length l ±0,1							for Indexing plungers / Mini indexing plungers with thread-Ø											
										GN 414	GN 514	GN 607 GN 607.1	GN 612.8	GN 617 GN 617.1 GN 617.2	GN 717	GN 816 GN 816.1	GN 817 GN 817.2	GN 817.4	GN 822	GN 7336.8
6	7	2	4	6	8	-	-	-	M 6	-	-	-	-	-	x	-	-	-	-	-
8	10	2	4	6	8	10	-	-	M 8	-	-	-	-	-	x	-	x	-	x	-
10	12	2	4	6	8	10	12	-	M 10	-	-	-	-	x	x	-	x	-	x	-
12*	13	2	4	6	8	10	-	-	M 12	-	x	-	-	-	-	-	-	-	-	-
12	14	2	4	6	8	10	12	14	M 12	-	-	-	-	x	x	x	x	-	-	-
12	17	2	4	6	8	10	12	-	M 12	x	-	x	-	-	-	-	-	-	-	-
16	17	2	4	6	8	10	12	-	M 16	-	x	-	-	-	x	-	x	x	-	-
16*	18	2	4	6	8	10	12	14	M 16	-	-	-	x	-	-	x	-	-	-	-
16	19	2	4	6	8	10	12	-	M 16	x	-	x	-	x	-	-	-	-	-	x
20	22	6	8	10	12	14	16	18	M 20	-	-	-	-	x	-	-	x	x	-	-

* Only GN 609

Specification

- **GN 609**
  Steel
  blackened
- **GN 609.5**
  Stainless Steel AISI 303
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

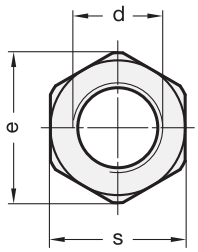
Distance bushings GN 609 / GN 609.5 compensate for the body thread lengths on the indexing plungers to allow mounting through walls of varying thickness.

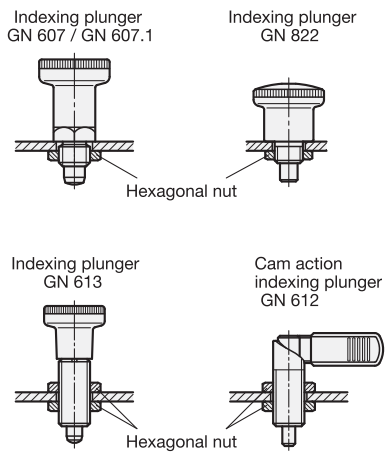
Steel-Distance bushing 1 2 3 GN 609-12-14-8		
	1	d_1
	2	d_2
	3	Length l

Stainless Steel-Distance bushing 1 2 3 GN 609.5-16-17-4		
	1	d_1
	2	d_2
	3	Length l

Flat hexagon nuts

for indexing plungers / cam action indexing plungers





Rostfrei Inox Stainless Steel

[1]

d	b	e	s
M 8 x 1	3,5	14,3	13
M 10 x 1	3,5	16,6	15
M 12 x 1,5	4	18,9	17
M 16 x 1,5	4,5	24,5	22
M 20 x 1,5	4,5	29,5	27

Specification [2]

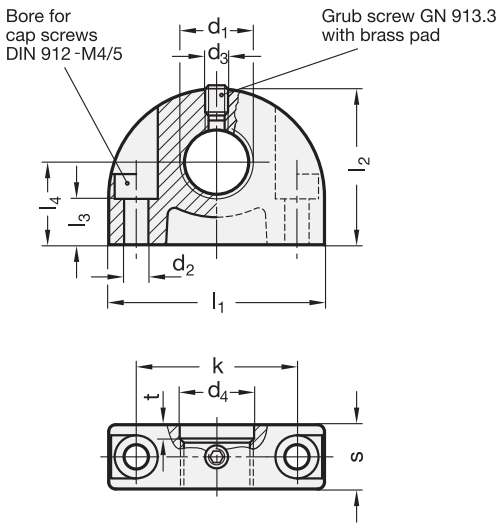
- Steel
  blackened **BT**
- Stainless Steel AISI 303
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

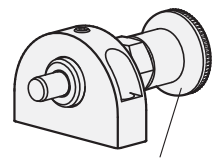
With their smaller dimensions, flat hexagon nuts GN 909 / GN 909.5 expand the mounting options of indexing plungers and cam action indexing plungers.

Flat hexagonal nuts, Steel [1] [2] GN 909-M10x1-BT		
	1	**d**
	2	**Finish**

Flat hexagonal nuts, Stainless Steel [1] GN 909.5-M12x1,5		
	1	**d**



Example of application



1 l_1	2 d_1		d_2	d_3	d_4	k	l_2	l_3	l_4	s	t
35	M 8	M 8 x 1	4,3	M 4	8,2	25	26	6	14	12	2
35	M 10	M 10 x 1	4,3	M 4	10,2	25	26	6	14	12	2
35	M 12	M 12 x 1,5	4,3	M 4	12,2	25	26	6	14	12	3
47	M 16	M 16 x 1,5	5,3	M 5	16,2	35	34	10	18	14	3
47	-	M 20 x 1,5	5,3	M 5	20,2	35	34	10	18	14	3

Specification

- Zinc die casting
- plastic coated
  black, textured finish
- RoHS compliant

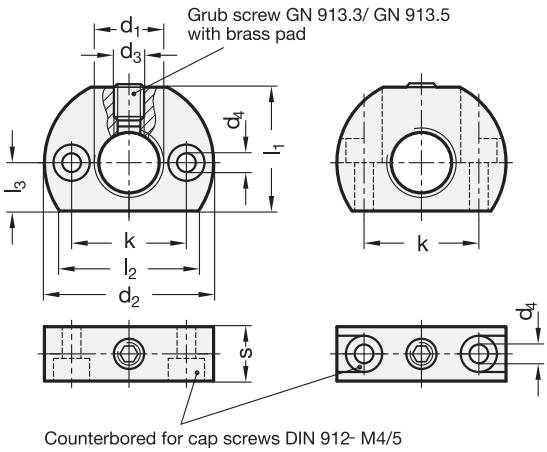
Information

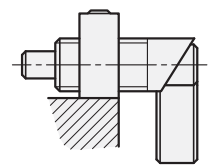
Mounting blocks GN 412.1 are a reasonably priced fitting aid for indexing plungers, cam action indexing plungers and for setting bolts and buffers.

To position the indexing pin of an indexing plunger or cam action indexing plunger, they can also hold GN 412.2 positioning bushings.

see also...
• *Positioning bushings GN 412.2 → Page 454*

How to order		
GN 412.1-35-M10x1	1	l_1
	2	d_1





Inox
Stainless
Steel

2 Type

A fixing holes parallel to plunger

B fixing holes vertical to plunger

1

d_1	d_2	d_3	d_4	k ±0,1	l_1	l_2 ≈	l_3	s
M 12 x 1,5	32	M 5	4,5	21	22	26,5	9	12
M 16 x 1,5	46	M 8	5,5	32	33	37	13	15
M 20 x 1,5	46	M 8	5,5	32	33	37	13	15

Specification

3

- Steel
  - blackened
  - Grub screw GN 913.3 with brass pad
- Stainless Steel AISI 303 **NI**
- Grub screw GN 913.5 with brass pad
- *Stainless Steel characteristics* → *Page 1144*
- RoHS compliant

Information

Mounting blocks GN 612.1 broaden the mounting possibilities and are an added feature for the cam action indexing plungers GN 612 and cam action indexing plungers GN 712 / GN 712.1.

To position the indexing pin of an indexing plunger or cam action indexing plunger, they can also hold GN 412.2 positioning bushings.

see also...

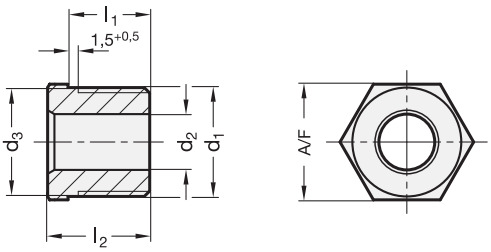
- *Positioning bushings GN 412.2* → *Page 454*
- *Grub screws GN 913.3 / GN 913.5* → *Page 520*

Steel-Mounting block		
GN 612.1-M20x1,5-A (1 2)	1	d_1
	2	Type

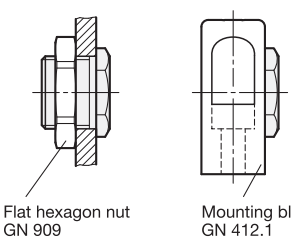
Stainless Steel-Mounting block		
GN 612.1-M16x1,5-B-NI (1 2 3)	1	d_1
	2	Type
	3	Material

Positioning bushings

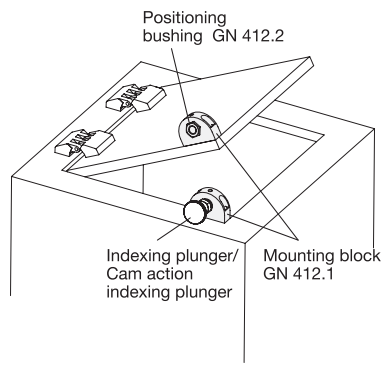
for indexing plungers, cam action indexing plungers



Assembly examples



Example of application



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

Specification

- Steel
  - hardened
  - blackened
- RoHS compliant

Information

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

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

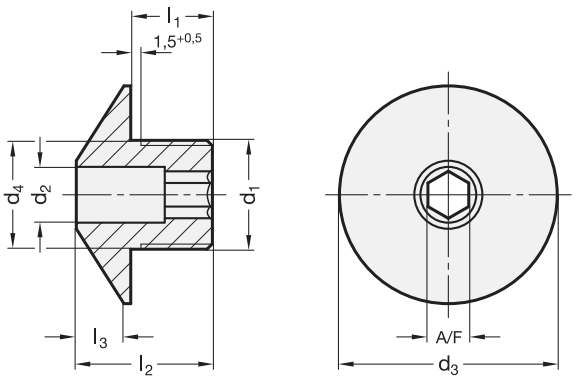
see also...

- *Mounting blocks GN 412.1* → *Page 452*
- *Mounting blocks GN 612.1* → *Page 453*
- *Flat hexagonal nuts GN 909* → *Page 451*

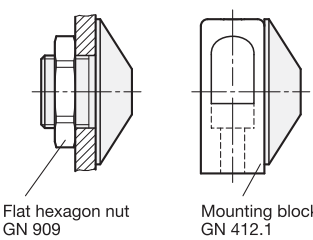
How to order		
GN 412.2-M12x1,5-B5,2 (1 = d_1, 2 = d_2)	1	d_1
	2	d_2

Positioning bushings with ramping cone

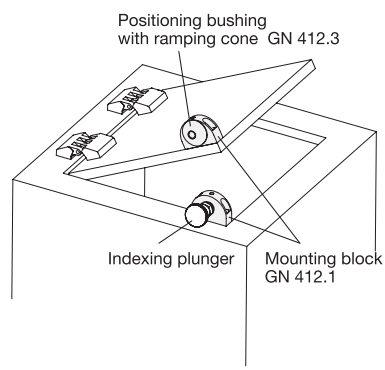
for indexing plungers



Assembly examples



Example of application



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

Specification

- Steel
  - hardened
  - blackened
- RoHS compliant

Information

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

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

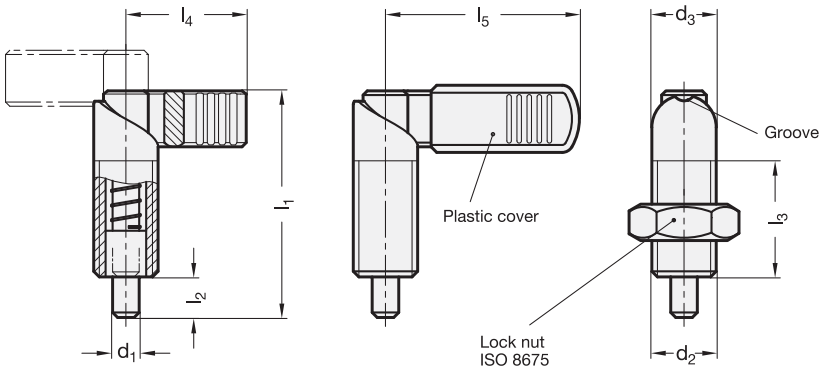
see also...

- *Mounting blocks GN 412.1* → *Page 452*
- *Mounting blocks GN 612.1* → *Page 453*
- *Flat hexagonal nuts GN 909* → *Page 451*

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

GN 612
Steel / Stainless Steel

Cam action indexing plungers



Inox Stainless Steel

Inch sizes available

3 Type

A without plastic cover, without lock nut

B with plastic cover, without lock nut

AK without plastic cover, with lock nut

BK with plastic cover, with lock nut

1 d_1 Plunger $^{-0.02}_{-0.04}$ Bore H7	2 d_2		d_3	l_1	l_2	l_3 +1,5	l_4	l_5	Spring load in N ≈ Steel initial	Steel end	Stainless Steel initial	Stainless Steel end
4*	M 10	M 10 x 1	10	37,5	6	19	21	-	8,5	25	8,5	25
5*	M 10	M 10 x 1	10	37,5	6	19	21	-	8,5	25	8,5	25
5	M 12	M 12 x 1,5	12	47	8	26	26	32	9	21	8	18
6*	M 10	M 10 x 1	10	37,5	6	19	21	-	8,5	25	8,5	25
6	M 12	M 12 x 1,5	12	47	8	26	26	32	9	21	8	18
6	M 16	M 16 x 1,5	16	56	10	30	32	42	12	32	11	29
8	M 12	M 12 x 1,5	12	47	8	26	26	32	9	21	8	18
8	M 16	M 16 x 1,5	16	56	10	30	32	42	12	32	11	29
8	M 20	M 20 x 1,5	20	69	12	36	37	52	21	58	21	57
10	M 16	M 16 x 1,5	16	56	10	30	32	42	12	32	11	29
10	M 20	M 20 x 1,5	20	69	12	36	37	52	21	58	21	57
12	M 20	M 20 x 1,5	20	69	12	36	37	52	21	58	21	57

* These sizes are only available in Type A and Type AK.

Specification

4

- Steel
  - blackened
  - Plunger nitrided
- Stainless Steel **NI**
  - AISI 303 / AISI 316L
  - Plunger chemically nickel plated
- Spring
  Stainless Steel AISI 301
- Plastic cover (Polyamide PA)
  black, matt
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

Cam action indexing plungers GN 612 are used in cases where the locking pin must not protrude all the time. By rotating the lock through 180° the locking pin withdraws itself. A notch is provided in either position to prevent the lock from rotating.

see also...

- *Range of cam action indexing plungers → Page 412*

Cam action indexing plungers

1 2 3

GN 612-10-M16x1,5-AK

1	d_1
2	d_2
3	Type

Stainless Steel-Cam action indexing plungers

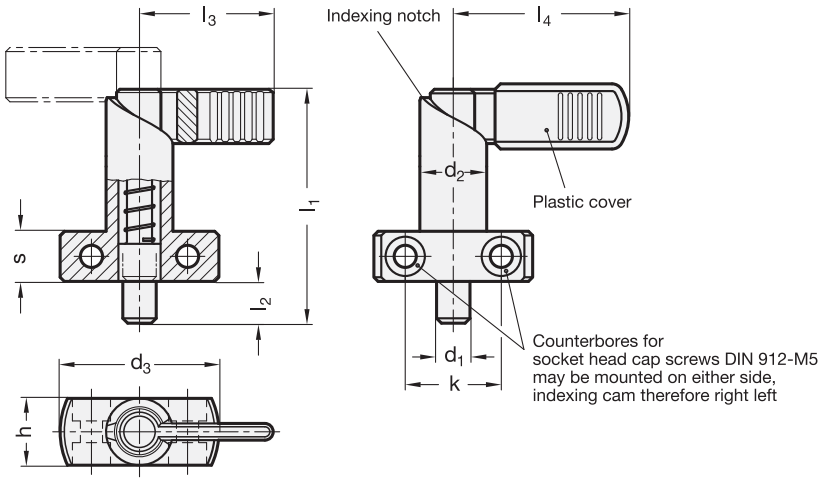
1 2 3 4

GN 612-12-M20x1,5-B-NI

1	d_1
2	d_2
3	Type
4	Material

Cam action indexing plungers

with flange for surface mounting



3 Type

A without plastic cover
B with plastic cover

1 d1 Plunger 0 −0,05 Bore H7	2 d2	d3	h	k	l1	l2	l3	l4	s	Spring load in N ≈ initial	end
6	16	35	16	20	56	10	32	42	12	12	32
8	16	35	16	20	56	10	32	42	12	12	32
8	20	40	20	22	69	12	37	52	15	21	58
10	16	35	16	20	56	10	32	42	12	12	32
10	20	40	20	22	69	12	37	52	15	21	58
12	20	40	20	22	69	12	37	52	15	21	58

Specification

- Steel
  - blackened
  - Plunger nitrided
- Plastic cover (Polyamide PA) black, matt
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Information

Cam action indexing plungers GN 612.2 are used in cases where the locking pin must not protrude all the time. By rotating the lock through 180° the locking pin withdraws itself. A notch keeps the plunger in this position.

see also...

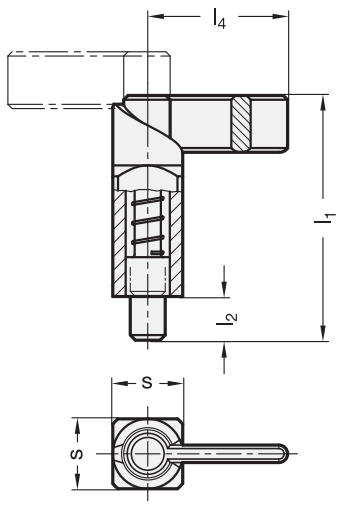
- *Range of cam action indexing plungers → Page 412*
- *Positioning bushings GN 412.2 → Page 454*

How to order

1 2 3

GN 612.2-8-16-B

1	d_1
2	d_2
3	Type



3 Type

A without plastic cover
B with plastic cover

1 d Plunger $^{-0.02}_{-0.04}$ Bore $^{+0.14}_{+0.1}$	2 s	l_1	l_2	l_3	l_4	l_5	Spring load in N ≈ initial	end
6	16	56	10	30	32	42	12	32
8	16	56	10	30	32	42	12	32
8	20	69	12	38	37	52	21	58
10	16	56	10	30	32	42	12	32
10	20	69	12	38	37	52	21	58
12	20	69	12	38	37	52	21	58

Specification

- Steel
  - blackened
  - weldable
  - Plunger nitrided
- Plastic cover (Polyamide PA) black, matt
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Information

Cam action indexing plungers GN 612.3 are used in cases where the locking pin must not protrude all the time. By rotating the lock through 180° the locking pin withdraws itself. A notch keeps the plunger in this position.

The square body can therefore be welded in any required position. In order to prevent a change in the spring load by the transferred heat we recommend spot welding the plunger body.

see also...
- *Range of cam action indexing plungers → Page 412*
- *Positioning bushings GN 412.2 → Page 454*

How to order

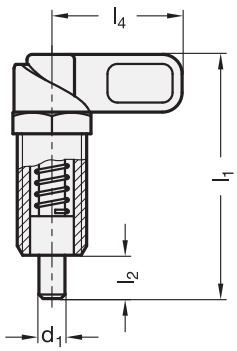
GN 612.3-10-16-A

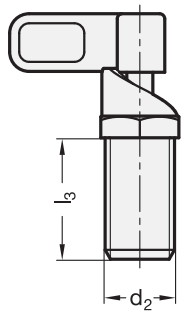
1	d
2	s
3	Type

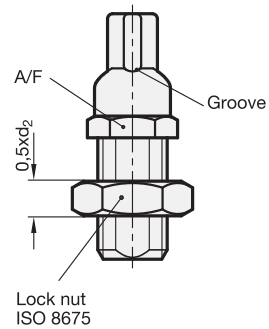
GN 612.8 Cam action indexing plungers

Threaded body in zinc die casting

Plunger retracted



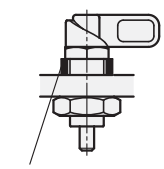




3 Type

A without lock nut
AK with lock nut

Mounting information



1 d_1 Plunger -0,05 Bore $^{+0,1}_{+0,05}$	2 d_2	l_1	l_2	l_3	l_4	A/F	Spring load in N ≈ initial	end
4	M 12 x 1,5	48	8	25	25	13	8	22
5	M 12 x 1,5	48	8	25	25	13	8	22
6	M 12 x 1,5	48	8	25	25	13	8	22
6	M 16 x 1,5	56,5	10	28	30	18	11	30
8	M 16 x 1,5	56,5	10	28	30	18	11	30
8	M 20 x 1,5	69,5	12	36	37	22	20	56
10	M 16 x 1,5	56,5	10	28	30	18	11	30
10	M 20 x 1,5	69,5	12	36	37	22	20	56
12	M 20 x 1,5	69,5	12	36	37	22	20	56

Specification

- Threaded body
  Zinc die casting
  - corrosion-resistant
    ZNDG Pass nano®-coating
  - anthracite
- Plunger
  Steel
  zinc plated, blue passivated
- Lever
  Plastic (Polyamide PA)
  - black, matt
  - not removable
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Cam action indexing plungers GN 612.8 are used in cases where the locking pin must not protrude all the time. By rotating the lock through 180° the locking pin withdraws itself. The notch allows safe positioning.

These cam action indexing plungers made of zinc die casting are very reasonably priced design versions.

see also...

- *Range of cam action indexing plungers → Page 412*
- *Mounting blocks GN 612.1 → Page 453*
- *Mounting blocks GN 412.1 → Page 452*
- *Distance bushings GN 609 → Page 450*
- *Hexagonal nuts GN 909 → Page 451*

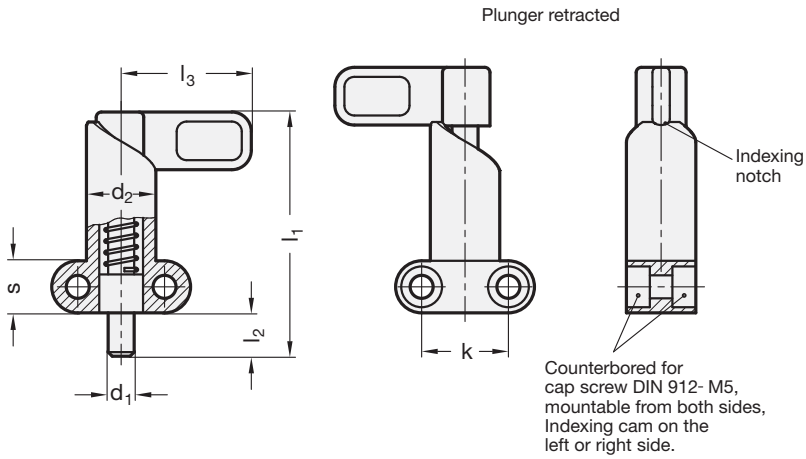
How to order

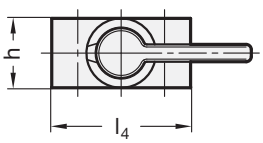
GN 612.8-8-M16x1,5-A
1 2 3

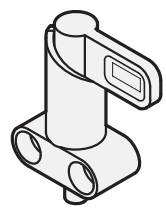
1	d_1
2	d_2
3	Type

Cam action indexing plungers

with flange for surface mounting







1 d1 Plunger -0,05 Bore +0,1 +0,05	2 d2	h	k	l1 ≈	l2	l3	l4	s
6	16	16	20	57	10	30	32	12
8	16	16	20	57	10	30	32	12
8	20	20	22	70	12	37	37	15
10	16	16	20	57	10	30	32	12
10	20	20	22	70	12	30	32	15
12	20	20	22	70	12	37	37	15

Specification

3

- Guide
  Zinc die casting
  plastic coated
  black, RAL 9005, textured finish ● SW
- Plunger
  Steel
  zinc plated, blue passivated
- Lever
  Plastic (Polyamide PA)
  - black, matt
  - not removable
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Cam action indexing plungers GN 612.9 are used in cases where the plunger must not protrude all the time. By rotating the lever through 180° the plunger withdraws itself. The notch allows safe positioning.

see also...

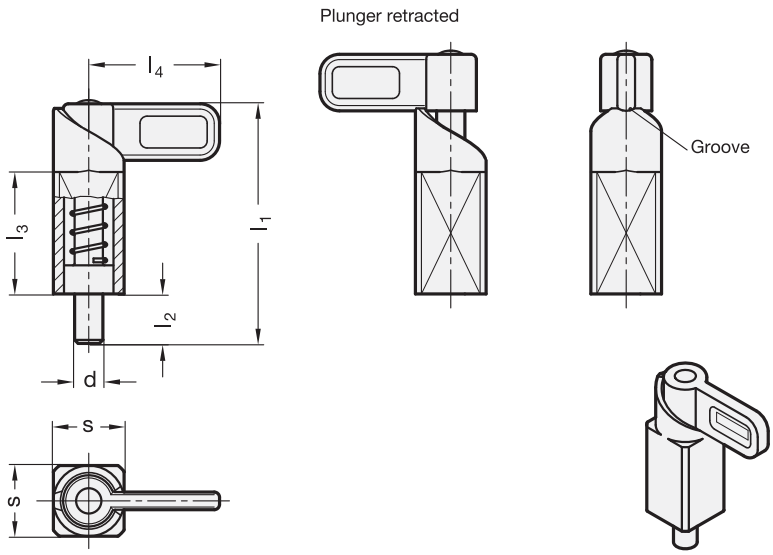
- *Range of cam action indexing plungers → Page 412*
- *Positioning bushings GN 412.2 → Page 454*

How to order

1 2 3

GN 612.9-10-16-SW

1	d_1
2	d_2
3	Finish



1 d Plunger $^{-0.05}_{-0.25}$ Bore $^{+0.1}_{+0.3}$	2 s	l_1 ≈	l_2	l_3	l_4	Spring load in N ≈ initial	end
8	20	68	14	35	37	16	55
10	20	68	14	35	37	16	55
12	20	68	14	35	37	16	55
14	20	68	14	35	37	16	55

Specification

- Guide
  Steel precision cast
  - weldable
  - blackened
- Latch
  Steel precision cast
  zinc plated, blue passivated
- Plunger
  Steel
  zinc plated, blue passivated
- RoHS compliant

Information

Spring latches GN 722.1 are used when the indexing pin is temporarily not allowed to protrude. The indexing pin retracts by turning the latch by 180°. A lock notch will hold the latch in both positions.

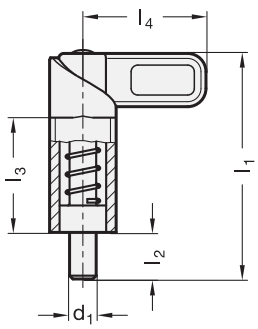
The square bar allows the latch to be welded in any desired position. To prevent excessive heating up and the resulting change in the spring properties, fixing with welding spots is recommended.

Spring latches GN 722.1 are designed for use in **steel construction** or in **locksmith** shops where less precise positioning / locking is normally required. The dimensional tolerances are therefore chosen to ensure that functional safety is guaranteed under dirt exposure and that cost-effetive production methods are used.

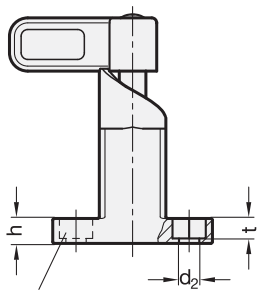
see also...
- *Range of cam action indexing plungers → Page 412*
- *Spring latches GN 722.2 / GN 722.3 (for surface mounting) → Page 462*

How to order		
GN 722.1-8-20 (1 2)	1	d
	2	s

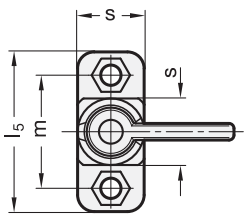
Plunger protruded (Type **A**)

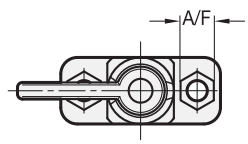


Plunger retracted (Type **B**)

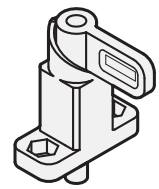


Counterbored for cap screw DIN 912 hexagon head screw DIN 931

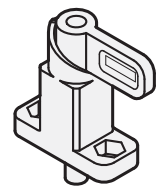




Type **A**



Type **B**



3 Type

A Latch position right-angled to fixing holes

B Latch position parallel to fixing holes

1 d_1 Plunger $^{-0,05}_{-0,25}$ Bore $^{+0,1}_{+0,3}$	2 s	d_2 +0,2	h	l_1 ≈	l_2	l_3	l_4	l_5	m	A/F	t	Spring load in N ≈ initial	end
8	20	6,1	7,5	68	14	35	37	48	34	10	6,1	16	55
10	20	6,1	7,5	68	14	35	37	48	34	10	6,1	16	55
12	20	6,1	7,5	68	14	35	37	48	34	10	6,1	16	55
14	20	6,1	7,5	68	14	35	37	48	34	10	6,1	16	55

Specification

4

- Guide
  Steel precision cast
  - zinc plated, blue passivated **ZB**
  - zinc plated and plastic coated black, textured finish **SW**
- Latch
  Steel precision cast
  zinc plated, blue passivated
- Plunger
  Steel
  zinc plated, blue passivated
- RoHS compliant

Information

Spring latches GN 722.2 are used when the indexing pin is temporarily not allowed to protrude. The indexing pin retracts by turning the latch by 180°. A lock notch will hold the latch in both positions.

Spring latches GN 722.2 are designed for use in **steel construction** or in **locksmith shops** where less precise positioning / locking is normally required. The dimensional tolerances are therefore chosen to ensure that functional safety is guaranteed under dirt exposure and that cost-effetive production methods are used.

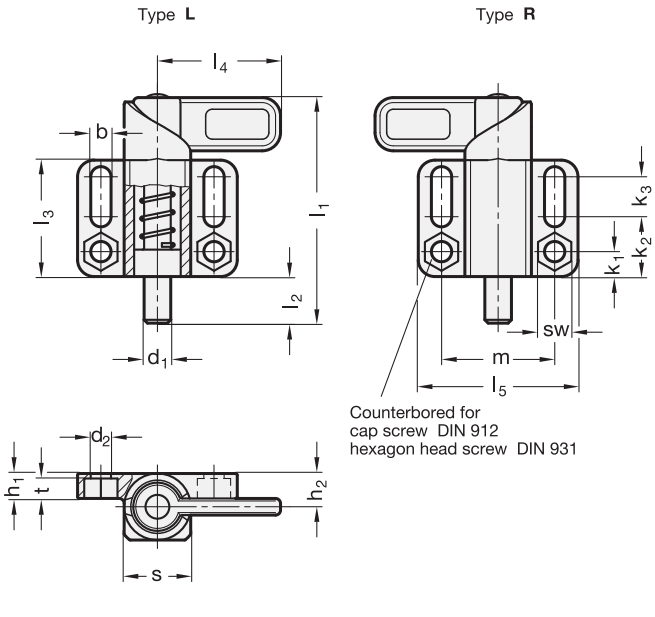
see also...
- *Range of cam action indexing plungers → Page 412*
- *Spring latches GN 722.1 (for welding) → Page 461*
- *Positioning bushings GN 412.2 → Page 454*

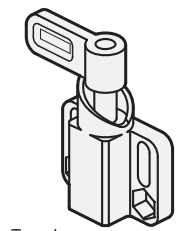
How to order

1 2 3 4

GN 722.2-12-20-A-SW

1	d_1
2	s
3	Type
4	Colour




Type L
with retracted plunger

3 Type

L left indexing cam
R right indexing cam

1 d_1 Plunger $^{-0,05}_{-0,25}$ Bore $^{+0,1}_{+0,3}$	2 s	b +0,3	d_2 +0,2	h_1	h_2	k_1	k_2	k_3	$l_1 \approx$	l_2	l_3	l_4	l_5	m	A/F	t	Spring load in N ≈ initial	end
8	20	6,1	6,1	7,5	10	7,5	18	12	68	14	35	37	48	34	10	6,1	16	55
10	20	6,1	6,1	7,5	10	7,5	18	12	68	14	35	37	48	34	10	6,1	16	55
12	20	6,1	6,1	7,5	10	7,5	18	12	68	14	35	37	48	34	10	6,1	16	55
14	20	6,1	6,1	7,5	10	7,5	18	12	68	14	35	37	48	34	10	6,1	16	55

Specification

3

- Guide
  Steel precision cast
  - zinc plated, blue passivated **ZB**
  - zinc plated and plastic coated black, textured finish **SW**
- Latch
  Steel precision cast
  zinc plated, blue passivated
- Plunger
  Steel
  zinc plated, blue passivated
- RoHS compliant

Information

Spring latches GN 722.3 are used when the indexing pin is temporarily not allowed to protrude. The indexing pin retracts by turning the latch by 180°.

A lock notch will hold the latch in both positions.

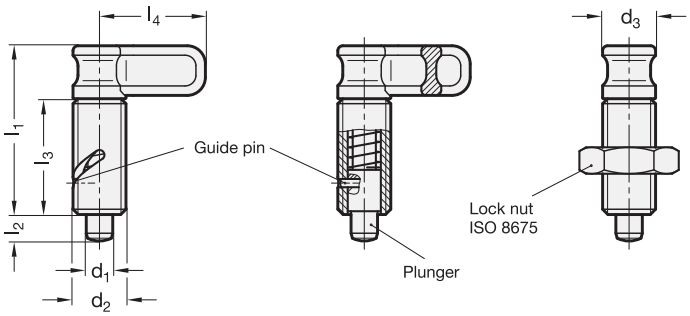
Spring latches GN 722.3 are designed for use in **steel construction** or in **locksmith shops** where less precise positioning / locking is normally required. The dimensional tolerances are therefore chosen to ensure that functional safety is guaranteed under dirt exposure and that cost-effetive production methods are used.

see also...
- *Range of cam action indexing plungers → Page 412*
- *Spring latches GN 722.1 (for welding) → Page 461*
- *Positioning bushings GN 412.2 → Page 454*

How to order

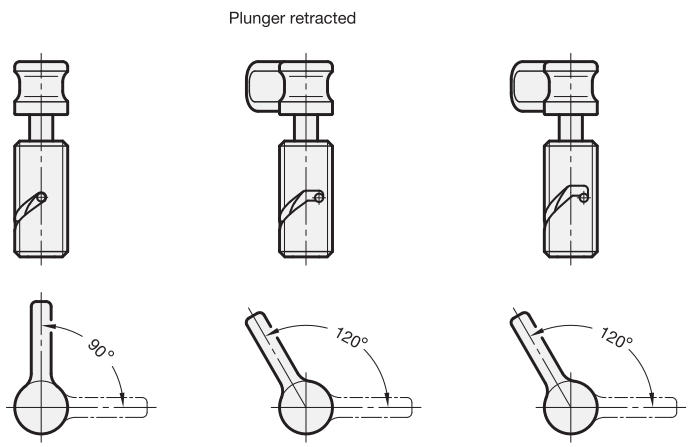
1 2 3 4
GN 722.3-14-20-L-SW

1	d_1
2	s
3	Type
4	Colour



3 Type

A without rest position, without lock nut
AK without rest position, with lock nut
R with rest position, without lock nut
RK with rest position, with lock nut
S with safety rest position, without lock nut
SK with safety rest position, with lock nut



1 d_1 Plunger $^{-0,02}_{-0,04}$ Bore G7	2 d_2	d_3	l_1 ≈	l_2	l_3 min.	l_4	Spring load in N ≈ initial	end
6	M 16 x 1,5	16	51	8	35	32	6,5	20
8	M 16 x 1,5	16	51	8	35	32	6,5	20
10	M 16 x 1,5	16	51	8	35	32	6,5	20

Specification

- Steel
  zinc plated, blue passivated
- Plunger
  Stainless Steel AISI 303
- Latch
  Plastic (Polyamide PA)
  - black, matt
  - not removable
- *ISO-Fundamental Tolerances* → *Page 1132*
- *Stainless Steel characteristics* → *Page 1144*
- *Plastic characteristics* → *Page 1141*
- RoHS compliant

On request

- Stainless Steel version

Information

Cam action indexing plungers GN 712 are used in such applications where the plunger must not protrude continually. When turning the cam by 90° resp.120° degrees in anti-clockwise direction, the plunger is moved through a curved opening in the body. After that, the plunger is retracted.

Depending on the type, the plunger is moved back by a spring in its original position (Type A), is held in retracted position (Type R), resp. is secured against accidental operation (Type S).

In order to move the plunger, safety version Type S requires an additional lifting of the latch.

see also...

- *Range of cam action indexing plungers* → *Page 412*

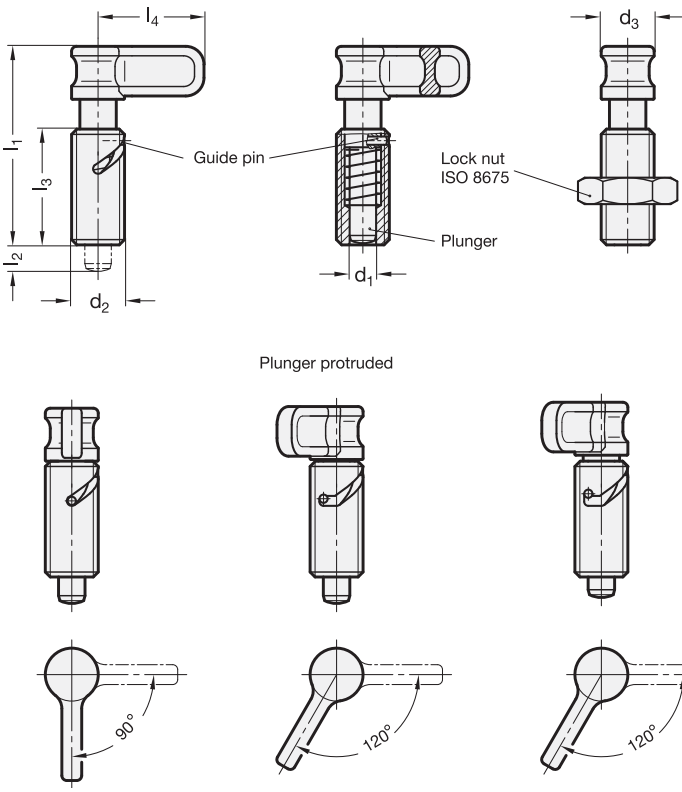
How to order

1	2	3
GN 712-8-	M16x1,5-	R

1	d_1
2	d_2
3	Type

Cam action indexing plungers

Plunger in standard position retracted



3 Type

A	without rest position, without lock nut
AK	without rest position, with lock nut
R	with rest position, without lock nut
RK	with rest position, with lock nut
S	with safety rest position, without lock nut
SK	with safety rest position, with lock nut

1 d_1 Plunger $^{-0,02}_{-0,04}$ Bore G7	2 d_2	d_3	l_1 ≈	l_2 ±0,5 Type A/AK Type R/RK	Type S/SK	l_3 min.	l_4	Spring load in N ≈	
6	M 16 x 1,5	16	60	8	6	35	32	7	16,5
8	M 16 x 1,5	16	60	8	6	35	32	7	16,5

Specification

- Steel
  zinc plated, blue passivated
- Plunger
  Stainless Steel AISI 303
- Latch
  Plastic Technopolymer (Polyamide PA)
  - black, matt
  - not removable
- *ISO-Fundamental Tolerances → Page 1132*
- *Plastic characteristics → Page 1141*
- RoHS compliant

On request

- Stainless Steel version

Information

Cam action indexing plungers GN 712.1 are used in such applications where the plunger has to protrude only occasionally. When turning the cam by 90° resp.120° degrees in clockwise direction, the plunger is moved through a curved opening in the body. After that, the plunger is protruded.

Depending on the type, the plunger is moved back by a spring in its original position (Type A), is held in protruded position (Type R), resp. is secured against accidental operation (Type S). In order to move the plunger, safety version Type S requires an additional lifting of the latch.

see also...

- *Range of cam action indexing plungers → Page 412*

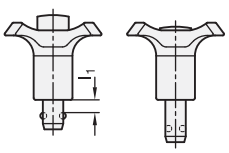
How to order

1 2 3

GN 712.1-6-M16x1,5-S

1	d_1
2	d_2
3	Type

GN 113.1
Ball lock pins with clamping length compensation
→ *Page 469*



Ø Pin
Ø 6 ... Ø 12

for clamping length l_1
0 ... 5 / 5 ... 10

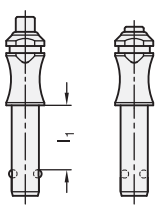
Material / Finish
- Stainless Steel AISI 303
- Knob
  Plastic

Other features
Locking pin tolerance: -0,04 / -0,08

Ball lock pins GN 113.1 are used for rapid fixing and, at the same time, play-free clamping of thin component.

By depressing the spring-loaded push button the pin advances by max. 5 mm and at the same time frees the two balls.

GN 113.3
GN 113.4
Ball lock pins
→ *Page 470*



Ø Pin
Ø 5 ... Ø 20

for safeguard length l_1
10 ... 120

Material / Finish
- GN 113.3:
  Stainless Steel AISI 303
- GN 113.4:
  Stainless Steel AISI 630
  precipitation-hardened
  hard coated

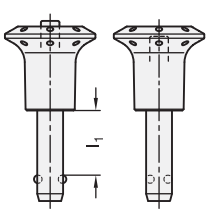
Other features
Locking pin tolerance: -0,04 / -0,08

Ball lock pins GN 113.3 / GN 113.4 offer an axial lock. By pressing the spring loaded push button both balls are unlocked and by releasing it the balls are locked again.

These ball lock pins are reasonably priced and renowned for their compactness.

Ball lock pins GN 113.4 are hardened and have an extreme load capacity.

GN 113.5
GN 113.6
Ball lock pins
→ *Page 471*



Ø Pin
Ø 5 ... Ø 16

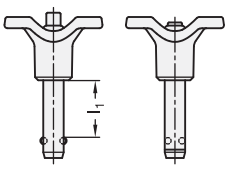
for safeguard length l_1
10 ... 80

Material / Finish
- GN 113.5:
  Stainless Steel AISI 303
- GN 113.6:
  Stainless Steel AISI 630
  precipitation-hardened
  hard coated
- Knob
  Plastic

Other features
Locking pin tolerance: -0,04 / -0,08

The opersation of ball lock pins GN 113.5 / GN 113.6 is identical to GN 113.3 / GN 113.4, they only differ by a plastic knob instead of the turned hollow for grip.

GN 113.7
GN 113.8
Stainless Steel-Ball lock pins
→ *Page 472*



Ø Pin
Ø 5 ... Ø 16

for safeguard length l1
10 ... 80

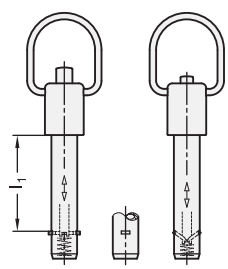
Material / Finish
- GN 113.7:
  Stainless Steel AISI 303
- GN 113.8:
  Stainless Steel AISI 630
  precipitation-hardened
  hard coated
- T-handle
  Plastic

Other features
Locking pin tolerance: -0,04 / -0,08

Stainless Steel-Ball lock pins GN 113.7 / GN 113.8 are identical with Stainless Steel-Ball lock pins GN 113.3 / GN 113.4. But they have a T-handle made of plastic instead of the twisted grip.

The opersation of ball lock pins GN 113.7 / GN 113.8 is identical to GN 113.3 / GN 113.4, they only differ by a plastic T-handle instead of the turned hollow for grip.

GN 214.2
GN 214.3
Locking pins with axial lock
→ *Page 473*



Ø Pin
Ø 6 ... Ø 16

for safeguard length l1
10 ... 80

Material / Finish
- GN 214.2:
  Pin Steel, zinc plated
- GN 214.3:
  Pin
  Stainless Steel AISI 303
- Knob / Push-button
  Plastic
- Pawls
  Stainless Steel AISI 304

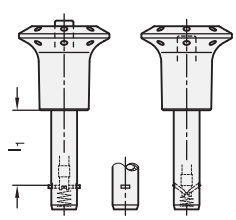
Other features
Locking pin tolerance: -0,01

As with ball lock pins the locking pins GN 214.2 / GN 214.3 also offer an axial lock, which can also be released by depressing the push button in the knob and re-engaged by releasing thr button.

The locking mechanism consists of rectangular locking pawls in Stainless Steel. These pawls are withdrawn from their lock position by depresing the push button.

Locking pins GN 214.2 / GN 214.3 are very reasonably priced.

GN 114.2
Locking pins with axial lock
→ *Page 474*



Ø Pin
Ø 6 ... Ø 20

for safeguard length l1
16 ... 80

Material / Finish
- Pin Steel, zinc plated
- Pawls
  Stainless Steel AISI 304
- Push button (slide) / Knob
  Plastic

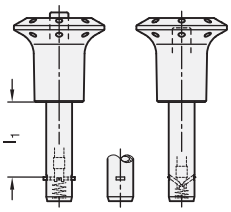
Other features
Locking pin tolerance: 0 / -0,04

As with ball lock pins the locking pins GN 114.2 also offer an axial lock, which can also be released by depressing the push button in the knob and re-engaged by releasing thr button.

The locking mechanism consists of rectangular locking pawls in Stainless Steel. These pawls are withdrawn from their lock position by depresing the push button.

Locking pins GN 114.2 are very reasonably priced.

GN 114.3
GN 114.6
Locking pins
with axial lock
→ *Page 475*



Ø Pin
Ø 6 ... Ø 20

for safeguard length l1
10 ... 80

Material / Finish
- Pin
  Stainless Steel AISI 303
- Pawls
  Stainless Steel AISI 304
- GN 114.3:
  Knob / Push-button
  Plastic
- GN 114.6:
  Knob / Push-button
  Stainless Steel AISI 304

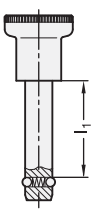
Other features
Locking pin tolerance: 0 / -0,04

As with ball lock pins the locking pins GN 114.3 / GN 114.6 also offer an axial lock, which can also be released by depressing the push button in the knob and re-engaged by releasing thr button.

The locking mechanism consists of rectangular locking pawls in Stainless Steel. These pawls are withdrawn from their lock position by depresing the push button.

Locking pins GN 114.3 / GN 114.6 are very reasonably priced.

GN 124
Locking pins
with axial lock
with ball retainer
→ *Page 476*



Ø Pin
Ø 6 ... Ø 12

for safeguard length l1
10 ... 50

Material / Finish
- Pin
  Stainless Steel AISI 303
- Knob
  Plastic

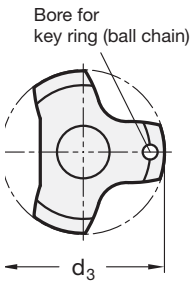
Other features
Locking pin tolerance: -0,04 / -0,08

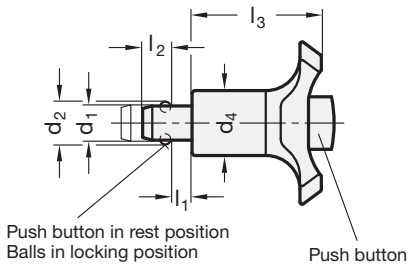
Locking pins GN 124 are used for rapid fixing.

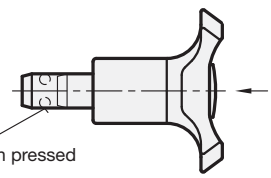
Contrary to ball lock pins GN 113.3 and GN 113.4 the balls are only kept in their lock position by the force of a thrust spring and not rigidly locked. The axial holding force is therefore reduced.

GN 113.1 Stainless Steel-Ball lock pins

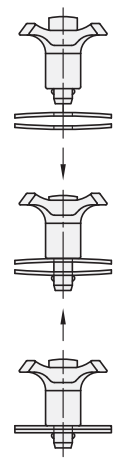
self-locking, with clamping length compensation







Example of application



Inox
Stainless
Steel

1 d_1 $^{-0,04}_{-0,08}$	l_1 (5mm stroke) max.	2 min.	d_2	d_3	d_4	l_2	l_3	Locating bore H11	Clamping force max. in N ≈
6	5	0	7	38	17,5	5	30	6	16
6	10	5	7	38	17,5	5	30	6	18
8	5	0	9,5	38	17,5	6,5	30	8	16
8	10	5	9,5	38	17,5	6,5	30	8	18
10	5	0	12	47	23	8,7	36	10	21
10	10	5	12	47	23	8,7	36	10	23
12	5	0	14	47	23	9,4	36	12	21
12	10	5	14	47	23	9,4	36	12	23

Specification

- Pin
  Stainless Steel AISI 303
- Handle
  Plastic (Polyamide PA)
  - black-grey / red
  - temperature resistant up to 80 °C
- Balls
  Stainless Steel AISI 420C
- Spring
  Stainless Steel AISI 631
- *Stainless Steel characteristics* → *Page 1144*
- *Plastic characteristics* → *Page 1141*
- RoHS compliant

Accessory

- Ball chains GN 111 / GN 111.5 → *Page 477*
- Retaining cables GN 111.2 → *Page 478*
- Spiral retaining cables GN 111.4 → *Page 479*

Information

Stainless Steel-Ball lock pins GN 113.1 are used for rapid clamping and, at the same time, play-free clamping of thin components in particular where frequent clamping and releasing is required. A typical application is the alignment and clamping of sheet metal during a welding process.

By depressing the spring-loaded push button the pin advances by the length l_2 and at the same time frees the two balls.

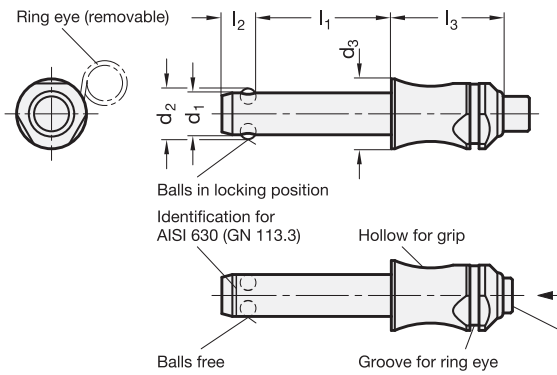
see also...

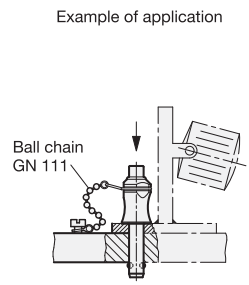
- *Range of locking pins* → *Page 466*

How to order		
GN 113.1-6-5 (1 2)	1	d_1
	2	l_1 min.

Stainless Steel-Ball lock pins

with hollow for grip





Rostfrei Inox Stainless Steel

1 d_1 $^{-0,04}_{-0,08}$	2 l_1 +0,6									d_2	d_3	l_2 ±1	l_3 +0,2	Load in kN ≈ (Double sided shear force) according DIN 50141)	
														AISI 303	AISI 630
5	10	15	20	25	30	-	-	-	-	5,5	10	6	22	14	24
6	10	15	20	25	30	35	40	45	50	7	10	7	22	21	35
8	20	25	30	35	40	45	50	-	-	9,5	14	8,2	27	38	63
10	20	25	30	35	40	45	50	60	-	12	14	9,6	27	60	100
12	25	30	35	40	45	50	60	70	80	14,5	20	10,6	32	87	144
16	30	35	40	45	50	60	70	80	-	19	20	14	32	155	257
20	60	80	100	120	-	-	-	-	-	25	28	20,5	39	244	403

Specification

- **GN 113.3**
  Stainless Steel AISI 303
- **GN 113.4**
  Stainless Steel AISI 630
  - precipitation-hardened
  - hard coated
- Balls
  Stainless Steel AISI 420C
- Spring
  Stainless Steel AISI 631
- temperature resistant up to 250 °C
- *Stainless Steel characteristics* → *Page 1144*
- RoHS compliant

Accessory

- Ball chains GN 111 / GN 111.5 → *Page 477*
- Retaining cables GN 111.2 → *Page 478*
- Spiral retaining cables GN 111.4 → *Page 479*

Information

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

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

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

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

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

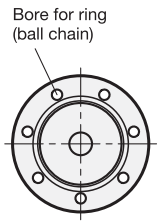
see also...
- *Range of locking pins* → *Page 466*

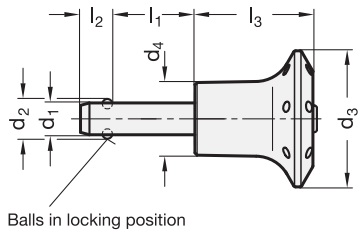
Ball lock pin, AISI 303		
1 2 **GN 113.3-6-20**	1	d_1
	2	l_1

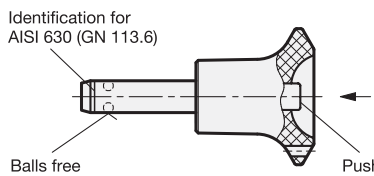
Ball lock pin, AISI 630		
1 2 **GN 113.4-8-35**	1	d_1
	2	l_1

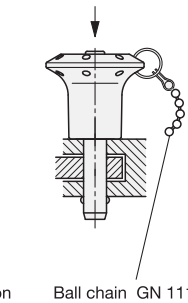
Stainless Steel-Ball lock pins

with knob









Rost frei Inox Stainless Steel

1 d_1 $^{-0,04}_{-0,08}$	2 l_1 +0,6									d_2	d_3	d_4	l_2 ±0,2	l_3 −0,2	Locating bore H11	Load in kN ≈ (Double sided shear force) according DIN 50141	
																AISI 303	AISI 630
5	10	15	20	25	30	-	-	-	-	5,5	30	16	6	26	5	14	24
6	10	15	20	25	30	35	40	45	50	7	30	16	7,1	26	6	21	35
8	20	25	30	35	40	45	50	-	-	9,5	35	19	8,2	32,5	8	38	63
10	20	25	30	35	40	45	50	60	-	12	35	19	9,6	32,5	10	60	100
12	25	30	35	40	45	50	60	70	80	14,5	42	25	10,6	39	12	87	144
16	30	35	40	45	50	60	70	80	-	19	42	25	14	39	16	155	257

Specification

- **GN 113.5**
  Pin Stainless Steel AISI 303
- **GN 113.6**
  Pin Stainless Steel AISI 630
  - precipitation-hardened
  - hard coated
- Knob
  Plastic (Polyamide PA)
  - black-grey / red
  - temperature resistant up to 80 °C
- Balls
  Stainless Steel AISI 420C
- Spring
  Stainless Steel
  German Material No. 1.4565
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Accessory

- Ball chains GN 111 / GN 111.5 → *Page 477*
- Retaining cables GN 111.2 → *Page 478*
- Spiral retaining cables GN 111.4 → *Page 479*

Information

Stainless Steel-Ball lock pins GN 113.5 / GN 113.6 are used for quick fixing, connecting and locking of various parts and workpieces. A typical application is locating pins which have often to be removed and installed again. By pressing the spring loaded push button both balls are unlocked and by releasing it, the balls are locked again.

Ball lock pins GN 113.6 have an extreme load capacity, the pin is made of heavy duty, hardened and highly abrasion-resistant stainless steel.

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

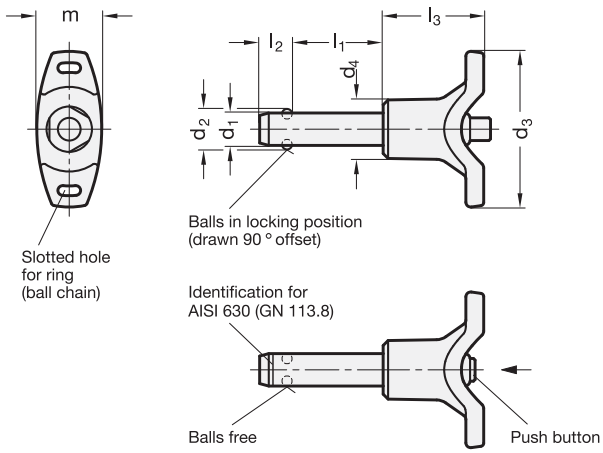
see also...

- *Range of locking pins → Page 466*

Ball lock pins, AISI 303		
GN 113.5-8-25	1	d_1
	2	l_1

Ball lock pins, AISI 630		
GN 113.6-16-50	1	d_1
	2	l_1

Stainless Steel-Ball lock pins
with T-Handle



Rost frei Inox Stainless Steel

1	2	d_1 $^{-0,04}_{-0,08}$	l_1 +0,6								d_2	d_3	d_4	l_2 ±0,2	l_3	m	Location bore H11	Load in kN (Double sided shear force) according DIN 50141	
																		AISI 303	AISI 630
●	●	5	10	15	20	25	30	-	-	-	-	5,5	40	13,5	6	25	15,5	5	14	24
●	●	6	10	15	20	25	30	35	40	45	50	7	40	13,5	7,1	25	15,5	6	21	35
●	●	8	20	25	30	35	40	45	50	-	-	9,5	48	18	8,2	31	20,5	8	38	63
●	●	10	20	25	30	35	40	45	50	60	-	12	48	18	9,6	31	20,5	10	60	100
●	●	12	25	30	35	40	45	50	60	70	80	14,5	58	24	10,6	36,5	27,5	12	87	144
●	●	16	30	35	40	45	50	60	70	80	-	19	58	24	14	36,5	27,5	16	155	257

Specification

- **GN 113.7**
  Plunger Stainless Steel AISI 303
- **GN 113.8**
  Plunger Stainless Steel AISI 630
  - precipitation-hardened
  - hard coated

This information applies to both standards:

- T-Handle
  Plastic (Polyamide PA)
  - black
  - temperature resistant up to 80° C
- Balls
  Stainless Steel AISI 420C
- Spring
  Stainless Steel
  German Material No. 1.4565
- *Stainless Steel characteristics* → *Page 1144*
- RoHS compliant

Accessory

- Ball chains GN 111 / GN 111.5 → *Page 477*
- Retaining cables GN 111.2 → *Page 478*
- Spiral retaining cables GN 111.4 → *Page 479*

Information

Stainless Steel-Ball lock pins GN 113.7 / GN 113.8 are used for quick fixing, connecting and locking of various parts and workpieces. A typical application is locating pins which have often to be removed and installed again.

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

Ball lock pins GN 113.8 have an extreme load capacity, the pin is made of heavy duty, hardened and highly abrasion-resistant stainless steel.

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

see also...

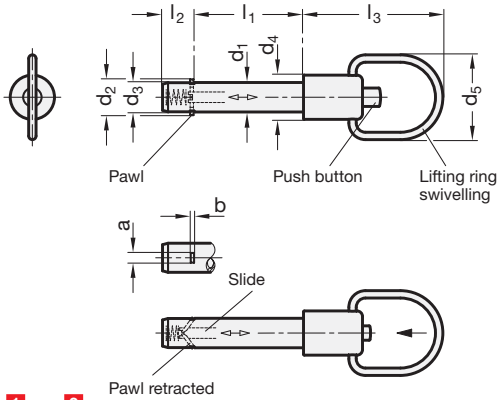
- *Range of locking pins* → *Page 466*

Ball lock pin, AISI 303		
1 ● 2 ●	1	d_1
GN 113.7-8-25	2	l_1

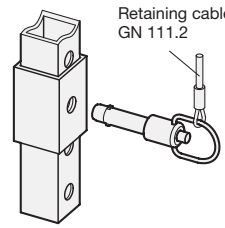
Ball lock pin, AISI 630		
1 ● 2 ●	1	d_1
GN 113.8-16-50	2	l_1

Lockin pins

with axial lock (Pawl)



Example of application



Inox Stainless Steel

[1] [2]

d_1 −0,04	l_1 +0,4 Minimum size										a	b	d_2	d_3	d_4	d_5	l_2	l_3	Load in kN ≈ (Double sided shear force) see information	
																			GN 214.2	GN 214.3
6	10	12	16	20	25	30	35	40	45	50	2,3	0,5	7,5	5,9	12	23	7	38	14	17
8	16	20	25	30	35	40	45	50	-	-	2,8	1	10,4	7,9	12	23	8,4	38	28	35
10	20	25	30	35	40	45	50	60	-	-	3,3	1	12,8	9,9	16	28	9,8	42	38	47
12	25	30	35	40	45	50	60	70	80	-	3,8	1	14,8	11,9	16	28	11,3	42	61	75
16	30	35	40	45	50	60	70	80	-	-	4,8	1,2	19,9	15,9	20	32	14,2	46,5	113	138

Specification

- **GN 214.2**
  Plunger Steel
  zinc plated, blue passivated
- **GN 214.3**
  Plunger Stainless Steel AISI 303
- Pawl
  Stainless Steel sheet metal AISI 304
- Lifting ring
  Stainless Steel AISI 301
- Push button
  Plastic
  - red
  - temperature resistant up to 80 °C
- Spring
  Stainless Steel AISI 301
- *Stainless Steel characteristics* → *Page 1144*
- RoHS compliant

Accessory

- Ball chains GN 111 / GN 111.5 → *Page 477*
- Retaining cables GN 111.2 → *Page 478*
- Spiral retaining cables GN 111.4 → *Page 479*

Information

Locking pins with axial lock GN 214.2 / GN 214.3 are used for quick fixing, connecting and locking of various jig and fixture systems. A typical application is location pins which have to be often removed and re-placed again.

The two locking pawls can be retracted by pressing the button and on releasing it the pawls will be locked again.

The rectangular shape of the locking pawls in stainless steel cretaes a linear contact area with axial lock of the pin.

The version with swivelling lifting ring is ideal for the use in confined spaces.

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

see also...

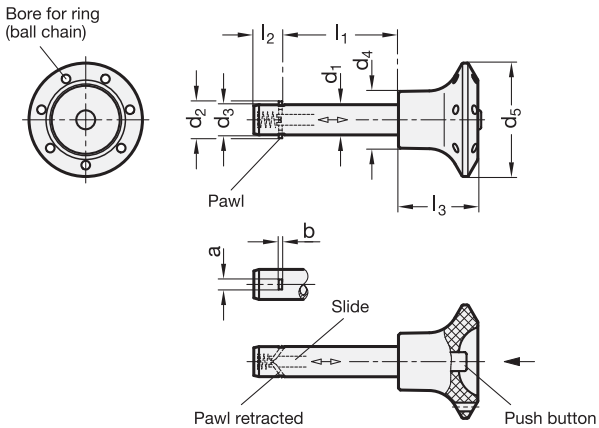
- *Range of locking pins* → *Page 466*

Steel-Pin [1] [2] GN 214.2-10-60		
	1	d_1
	2	l_1

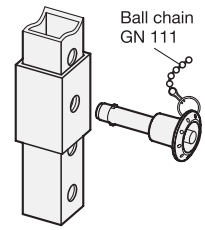
Stainless Steel-Pin [1] [2] GN 214.3-16-70		
	1	d_1
	2	l_1

GN 114.2 Locking pins

with axial lock (Pawl)



Example of application



1 d_1 −0,04	2 l_1 +0,4 Minimum size										a	b	d_2	d_3	d_4	d_5	l_2	l_3	Load in kN ≈ (Double sided shear force) See information
6	10	12	16	20	25	30	35	40	45	50	2,3	0,5	7,5	5,9	15	30	7	21	14
8	16	20	25	30	35	40	45	50	-	-	2,8	1	10,4	7,9	15	30	8,4	21	28
10	20	25	30	35	40	45	50	60	-	-	3,3	1	12,8	9,9	18	34	9,8	26	38
12	25	30	35	40	45	50	60	70	80	-	3,8	1	14,8	11,9	18	34	11,3	26	61
16	30	35	40	45	50	60	70	80	-	-	4,8	1,2	19,9	15,9	22	40	14,2	32	113
20	30	35	40	45	50	60	70	80	-	-	4,8	1,2	23,9	19,8	25	40	14,8	33	187

Specification

- Pin
  Steel
  zinc plated, blue passivated
- Pawl
  Stainless Steel AISI 304 (sheet metal)
- Knob
  Plastic (Polyamide PA)
  - black-grey
  - temperature resistant up to 80 °C
- Push button / Slide
  Plastic
  - Push button: red
  - temperature resistant up to 80 °C
- Spring
  Stainless Steel AISI 301
- *Stainless Steel characteristics* → *Page 1144*
- RoHS compliant

Accessory

- Ball chains GN 111 / GN 111.5 → *Page 477*
- Retaining cables GN 111.2 → *Page 478*
- Spiral retaining cables GN 111.4 → *Page 479*

Information

Locking pins with axial lock GN 114.2 are used for quick fixing, connecting and locking of various jig and fixture systems. A typical application is location pins which have to be often removed and re-placed again.

The two locking pawls can be retracted by pressing the button and on releasing it the pawls will be locked again.

The rectangular shape of the locking pawls in stainless steel cretaes a linear contact area which gives an increased axial shear strength.

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

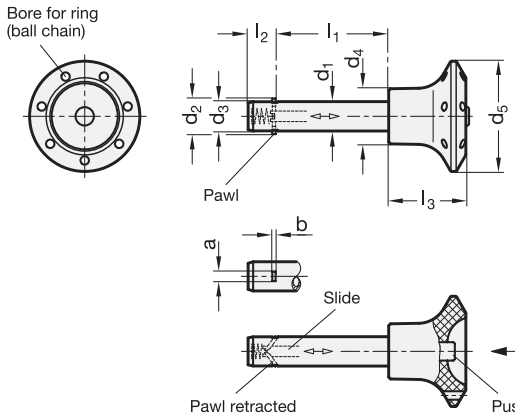
see also...

- *Range of locking pins* → *Page 466*

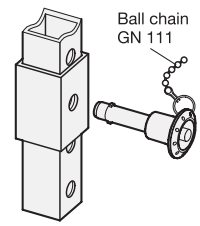
How to order		
GN 114.2-10-60 (1 2)	1	d_1
	2	l_1

Stainless Steel-Locking pins

with axial lock (Pawl)



Example of application



Inox Stainless Steel

1 d1 –0,01	2 l1 +0,4 Minimum size										a	b	d2	d3	d4		d5		l2	l3		Load in kN ≈ (Double sided shear force) See infomation
															GN 114.3	GN 114.6	GN 114.3	GN 114.6		GN 114.3	GN 114.6	
6	10*	12*	16	20	25	30	35	40	45	50	2,3	0,5	7,5	5,9	15	12	30	25	7	21	20	17
8	16	20	25	30	35	40	45	50	-	-	2,8	1	10,4	7,9	15	15	30	30	8,4	21	21	35
10	20	25	30	35	40	45	50	60	-	-	3,3	1	12,8	9,9	18	18	34	34	9,8	26	26	47
12	25	30	35	40	45	50	60	70	80	-	3,8	1	14,8	11,9	18	18	34	34	11,3	26	26	75
16	30	35	40	45	50	60	70	80	-	-	4,8	1,2	19,9	15,9	22	22	40	40	14,2	32	32	138
20	30	35	40	45	50	60	70	80	-	-	4,8	1,2	23,9	19,8	25	25	40	40	14,8	33	33	228

* only GN 114.3

Specification

- **GN 114.3**
  Knob / Push button / Slide
  - Plastic
  - temperature resistant up to 80 °C
  - Knob: black-grey
  - Push button: red
- **GN 114.6**
  Knob / Push button / Slide
  Stainless Steel AISI 303

This information applies to both standards:

- Pin
  Stainless Steel AISI 303
- Pawl
  Stainless Steel AISI 304 (sheet metal)
- Spring
  Stainless Steel AISI 301
- *Stainless Steel characteristics* → *Page 1144*
- RoHS compliant

Accessory

- Ball chains GN 111 / GN 111.5 → *Page 477*
- Retaining cables GN 111.2 → *Page 478*
- Spiral retaining cables GN 111.4 → *Page 479*

Information

Locking pins with axial lock GN 114.3 / GN 114.6 are used for quick fixing, connecting and locking of various jig and fixture systems. A typical application is location pins which have to be often removed and re-placed again.

The two locking pawls can be retracted by pressing the button and on releasing it the pawls will be locked again.

The rectangular shape of the locking pawls in stainless steel cretaes a linear contact area which gives an increased axial shear strength.

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

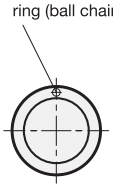
see also...

- *Range of locking pins* → *Page 466*

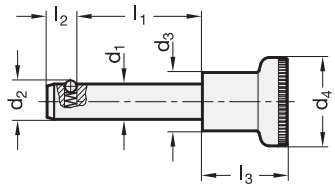
Stainless Steel-Pin with plastic knob		
1 2 **GN 114.3-10-60**	1	d_1
	2	l_1

Stainless Steel-Pin with Stainless Steel-Knob		
1 2 **GN 114.6-16-70**	1	d_1
	2	l_1

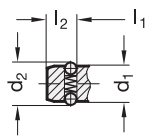
Hole for ring (ball chain)



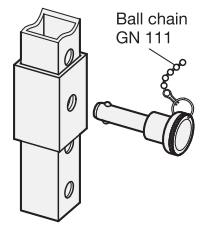
Pin ø 6/8
Ball retainer one sided



Pin ø 10/12
Ball retainer both sides



Example of application



Rostfrei Inox Stainless Steel

1 d_1 $^{-0,04}_{-0,08}$	2 l_1						d_2	d_3	d_4	l_2	l_3	Locating bore	Axial holding force in N ≈	Load in kN ≈ (Double sided shear force) according DIN 50141
6	10	15	20	25	30	50	6,5	14,5	25	5	22,5	6	8	22
8	15	20	25	30	50	-	8,7	14,5	25	6,3	22,5	8	15	40
10	15	20	25	30	50	-	12	18,5	31	8,7	27	10	30	62
12	20	30	40	50	-	-	14,5	18,5	31	9,5	27	12	32	90

Specification

- Pin
  Stainless Steel AISI 303
- Knob
  Plastic (Polyamide PA)
  - black, matt
  - temperature resistant up to 80 °C
- Balls
  Stainless Steel AISI 420C
- Spring
  Stainless Steel AISI 631
- *Stainless Steel characteristics* → *Page 1144*
- *Plastic characteristics* → *Page 1141*
- RoHS compliant

Accessory

- Ball chains GN 111 / GN 111.5 → *Page 477*
- Retaining cables GN 111.2 → *Page 478*
- Spiral retaining cables GN 111.4 → *Page 479*

Information

Stainless Steel-Pins GN 124 are used for quick fixing, connecting and locking of various jig and fixture systems.

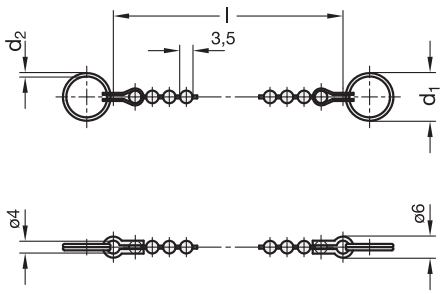
Contrary to the ball lock pins GN 113.3 ... GN 113.8 the balls are spring loaded and not rigidly locked. Hence the relatively low axial holding strength.

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

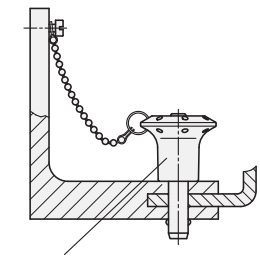
see also...

- *Range of locking pins* → *Page 466*

How to order		
GN 124-10-20	1	d_1
	2	l_1



Example of application



Pins GN 114.2 / 114.3
Ball lock pins GN 113.5 / 113.6

1 Length l ±3	2 d_1	d_2	Static load in N ≈ with key ring	Static load in N ≈ without key ring	suitable for locking pins
200	14 *	1	50	180	* GN 113.1, GN 124 Ø 6, Ø 8 and GN 113.3, GN 113.4, GN 113.5, GN 113.6, GN 113.7, GN 113.8 GN 114.2, GN 114.3 GN 114.6 all Ø
200	18 **	1,3	90	180	
200	24	1,5	100	180	
200	30	1,8	120	180	
320	14 *	1	50	180	
320	18 **	1,3	90	180	
320	24	1,5	100	180	
320	30	1,8	120	180	
500	14 *	1	50	180	
500	18 **	1,3	90	180	
500	24	1,5	100	180	
500	30	1,8	120	180	
1000	14 *	1	50	180	
1000	18 **	1,3	90	180	
1000	24	1,5	100	180	
1000	30	1,8	120	180	

** GN 124 Ø 10, Ø 12

Specification

- **GN 111**
  Ball chain
  Brass, nickel plated
- **GN 111.5**
  Ball chain
  Stainless Steel AISI 301
- Key ring
  Stainless Steel
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Accessory

- Single key rings are supplied with code no. GN 111.3-d_1

Information

Ball chains GN 111 / GN 111.5 are mainly used in connection with ball lock pins and pins with axial lock.

The key rings are supplied unmounted. Both rings have the same Ø d_1.

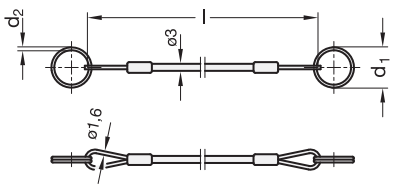
The load values given in the above table at shear stress are theoretically obtained and indicative only.

They are non-binding recommended values and rule out any liability.

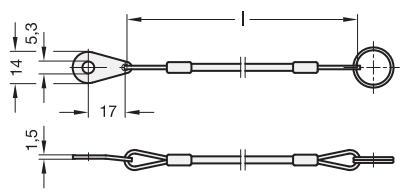
Ball chains		
GN 111-320-24	1	**Length l**
	2	**d_1**

Stainless Steel-Ball chains		
GN 111.5-200-14	1	**Length l**
	2	**d_1**

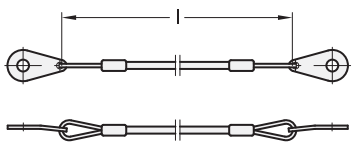
Type **A**



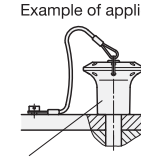
Type **B**



Type **C**



Example of application



Pin
Ball lock pins

Inox
Stainless
Steel

3 Type

A with 2 key rings
B with fixing loop and key ring
C with 2 fixing loops

1 Length l	2 d_1	d_2	Static load in N ≈ with key ring	without key ring	Type A and Type B are suitable for locking pins
150	14 *	1	50	1800	* GN 113.1, GN 124 Ø 6, Ø 8 and GN 113.3, GN 113.4, GN 113.5, GN 113.6, GN 113.7, GN 113.8, GN 114.2, GN 114.3, GN 114.6 all Ø
150	18 **	1,3	90	1800	
150	24	1,5	100	1800	
150	30	1,8	120	1800	
200	14 *	1	50	1800	
200	18 **	1,3	90	1800	
200	24	1,5	100	1800	
200	30	1,8	120	1800	
320	14 *	1	50	1800	
320	18 **	1,3	90	1800	** GN 124 Ø 10, Ø 12
320	24	1,5	100	1800	
320	30	1,8	120	1800	
500	14 *	1	50	1800	
500	18 **	1,3	90	1800	
500	24	1,5	100	1800	
500	30	1,8	120	1800	

Specification

- Retaining cable
  Stainless Steel
  coated with clear plastic
- Fixing loop
  Stainless Steel
- Key rings
  Stainless Steel
- RoHS compliant

Accessory

- Single key rings are supplied with code no. GN 111.3-d_1

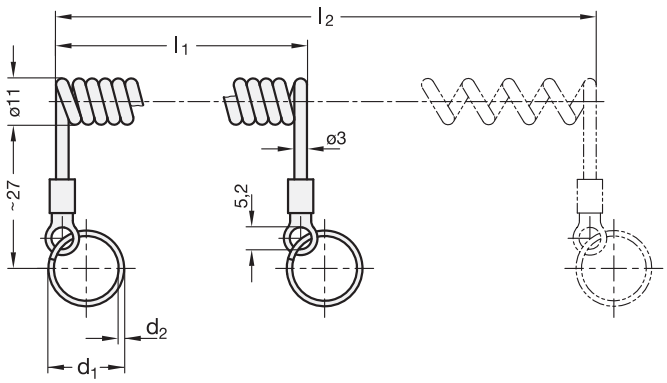
Information

Retaining cables GN 111.2 are mainly used in connection with ball lock pins and pins with axial lock.

The key rings are supplied unmounted. Both rings have the same Ø d_1.

Retaining cable with 2 fixing loops		
GN 111.2-200-C (1 3)	1	Length l
	3	Type

Retaining cable		
GN 111.2-150-14-B (1 2 3)	1	Length l
	2	d_1
	3	Type



1 l_1 ±3	2 d_1	l_2 max. ≈	d_2	Static load in N ≈ with key ring	without key ring	suitable for ball lock pins and pins with axial lock
50	14*	250	1	50	60	* GN 113.1, GN 124 Ø 6, Ø 8 and GN 113.3, GN 113.4 GN 113.5, GN 113.6 GN 113.7, GN 113.8 GN 114.2, GN 114.3 GN 114.6 all Ø
50	18**	250	1,3	60	60	
50	24	250	1,5	60	60	
100	14*	500	1	50	60	
100	18**	500	1,3	60	60	
100	24	500	1,5	60	60	
200	14*	1000	1	50	60	
200	18**	1000	1,3	60	60	** GN 124 Ø 10, Ø 12
200	24	1000	1,5	60	60	

Specification

- Spiral retaining cable
  Plastic (Polyuretan PUR)
  black
- Fixing loop
  Copper, tin-plated
- Key rings
  Stainless Steel
- RoHS compliant

Accessory

- Single key rings are supplied with code no.: GN 111.3-d_1

Information

Spiral retaining cables GN 111.4 are used in connection with low weight elements e. g. ball lock pins and pins with axial lock.

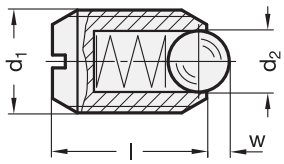
They are distinguished for a large „usalbe length“.

The key rings are supplied unmounted. Both rings have the same Ø d_1.

How to order		
GN 111.4-200-18 (1 2)	1	l_1
	2	d_1

Spring plungers

with slot



Inox
Stainless
Steel

2 Type

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

1

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

Specification

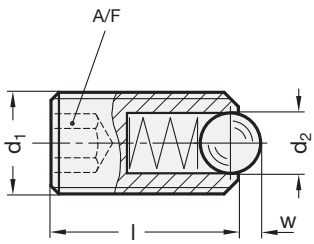
- Type K / KS
  - Housing Steel, blackened
  - Ball Steel, 1.3505, hardened
- Type KN / KSN
  - Housing Stainless Steel AISI 303
  - Ball Stainless Steel AISI 420C, hardened
- Spring Stainless Steel AISI 631
- Marking of Type KS / KSN: Housing with 2 longitudinal markings
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

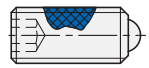
Information

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

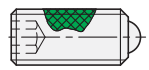
Steel-Spring plunger 1 2 GN 615-M6-K		
	1	d_1
	2	Type

Stainless Steel-Spring plunger 1 2 GN 615-M8-KSN		
	1	d_1
	2	Type

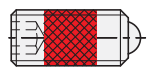




Thread locking **PFB**
Polyamide patch
for type **K** and **KN**



Thread locking **PFB**
Polyamide patch
for type **KS** and **KSN**



Thread locking **MVK**
Micro encapsulation precote
(for all types)

Inox
Stainless
Steel

2 Type

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

1

d_1 Type K / Type KN	d_1 Type KS / Type KSN	d_2	l ±0,1	w Compression	A/F	Spring load in N ≈ standard (type K / KN) initial	end	Spring load in N ≈ high (Type KS / KSN) initial	end
M 3	-	1,5	8	0,4	1,5	3	4,5	-	-
M 4	-	2,5	12	0,8	2	6	14,5	-	-
M 5	M 5	3	14	0,9	2,5	8	14	15	22
M 6	M 6	3,5	15	1	3	11	18	19	28
M 8	M 8	4,5	18	1,5	4	18	31	36	62
M 10	M 10	6	23	2	5	24	45	57	104
M 12	M 12	8	26	2,5	6	26	49	61	110
M 16	M 16	10	33	3,5	8	41	86	68	142
M 20	M 20	12	43	4,5	10	56	111	84	166
M 24	M 24	15	48	5,5	12	81	151	127	237

* not availble from stock, requires a minimum order quantity

Specification

3

- Type K / KS
  - Steel, blackened
  - Ball hardened
- Type KN / KSN
  - Stainless Steel AISI 303 / 420C
  - Ball hardened
- Marking of Type KS / KSN:
  Housing with 2 longitudinal markings
- Thread lockings (optional)
  - Polyamide patch **PFB**
    Type K/KS M 3 ... M16
    Type K*/KS* M20 ... M24
    Type KN/KSN M 3 ... M16
    Type KN*/KSN* M20 ... M24
  - Micro encapsulation* **MVK**
- RoHS compliant

Information

The **PFB** patch is a **jamming** thread locking (Polyamide patch). The coating for type K or KN (standard spring load) is indicated blue, for type KS or KSN (high spring load) green. For this type of thread locking a relatively high torque is required. Therefore this version with internal hexagon is more preferable than the version with slot (GN 615).

MVK (Micro encapsulation) is a **gluing** thread locking (indicated red).

see also...
• *More information to thread lockings → Page 1128*

Spring plunger
1 2
GN 615.3-M8-K

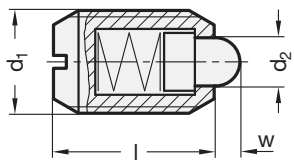
1	d_1
2	Type

Spring plunger with thread locking
1 2 3
GN 615.3-M6-KN-PFB

1	d_1
2	Type
3	Thread locking

Spring plungers

with bolt / with slot



Inox
Stainless
Steel

2 Type

B Steel, standard spring load
BN Stainless Steel, standard spring load
BS Steel, high spring load
BSN Stainless Steel high spring load

1

d_1 Type B Type BN	d_1 Type BS Type BSN	d_2 −0,1	l ±0,1	w Compression	Spring load in N ≈ standard (Type B / BN) initial	end	Spring load in N ≈ high (Type BS / BSN) initial	end
M 4	-	1,8	9	1,5 $^{+0,3}_{-0,4}$	4,5	12,5	-	-
M 5	-	2,4	12	2	5	13	-	-
M 6	M 6	2,7	14	2	6	17	11	25
M 8	M 8	3,8	16	2	16	33	23	59
M 10	M 10	4,5	19	2,5	19	42	20	54
M 12	M 12	6	22	3,5	22	57	38	96
M 16	M 16	8,5	24	4,5 ±0,3	38	78	50	100
M 20	M 20	10	30	6,5	39	81	52	133
M 24	M 24	13	34	8	72	155	91	223

Specification

- Type B / BS
  - Steel, blackened
  - Bolt hardened
- Type BN / BSN
  - Housing
    Stainless Steel AISI 303
  - Bolt
    Stainless Steel AISI 420C hardened
- Spring
  Stainless Steel AISI 631
- Marking of type BS / BSN:
  Housing with 2 longitudinal markings
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

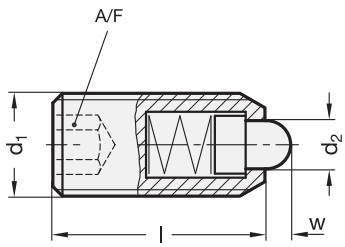
Information

Spring plungers GN 615.1 are used as detents as well as for push-on and push-off applications and ejectors.

How to order

GN 615.1-M8-B
1 2

1	d_1
2	Type



Inox
Stainless
Steel

2 Type

B	Steel, standard spring load
BN	Stainless Steel standard spring load
BS	Steel, high spring load
BSN	Stainless Steel, high spring load

1

d_1 Type B / Type BN	d_1 Type BS / Type BSN	d_2 −0,1	l ±0,1	w Compression	A/F	Spring load in N ≈ standard (Type B / BN) initial	end	Spring load in N ≈ high (Type BS / BSN) initial	end
M 4	-	1,8	12	1,5 $^{+0,3}_{-0,4}$	2	4,5	12,5	-	-
M 5	-	2,4	14	2	2,5	5	13	-	-
M 6	M 6	2,7	15	2	3	6	17	11	25
M 8	M 8	3,8	18	2	4	16	33	23	59
M 10	M 10	4,5	23	2,5	5	19	42	20	54
M 12	M 12	6,2	26	3,5	6	22	57	38	96
M 16	M 16	8,5	33	4,5 ±0,3	8	38	78	50	100
M 20	M 20	10	43	6,5	10	39	81	52	133
M 24	M 24	13	48	8	12	72	155	91	223

Specification

- Type B / BS
  - Steel, blackened
  - Bolt hardened
- Type BN / BSN
  - Housing
    Stainless Steel AISI 303
  - Bolt
    Stainless Steel AISI 420C
    hardened
- Spring
  Stainless Steel AISI 631
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

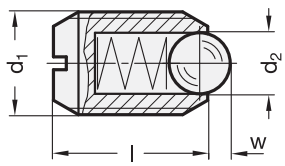
Information

Spring plungers GN 615.4 are used as detents as well as for push-on and push-off applications and ejectors.

How to order

GN 615.4-M10-BN (1 2)

1	d_1
2	Type



[1]

d_1	d_2	Length l	w compression	Spring load in N ≈ initial	end
M 6	3,5	14	0,9	12	17
M 8	5	16	1,5	20	35
M 10	6	19	1,9	25	45

Specification [2]

- Housing
  Plastic (Polyacetal POM)
  temperature resistant up to 50 °C
- Ball
  - Stainless Steel AISI 420C hardened **NI**
  - Plastic (Polyacetal POM) **P**
- Spring
  Stainless Steel AISI 631
  (all versions)
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

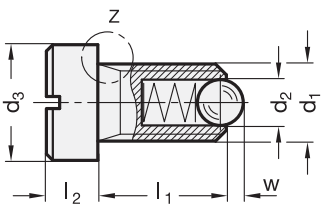
Information

Plastic-Spring plungers GN 615.2 are used as detents as well as for push-on and push-off applications and ejectors.

These spring plungers are all stainless versions.

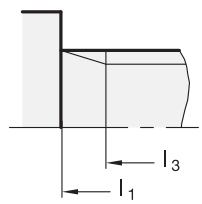
How to order [1] [2]		
GN 615.2-M6-NI	1	d_1
	2	Ball material

Spring plungers
with collar

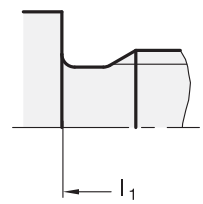


Detail Z; End of thread

M4 / M5



M6 ... M12



Rostfrei Inox Stainless Steel

[1]

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

Specification [2]

- Steel **ST**
  - Housing blackened
  - Ball hardened
- Stainless Steel **NI**
  - Housing AISI 303
  - Ball AISI 420C hardened
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

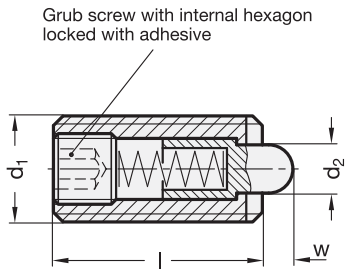
Information

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

The collar gives a defined installation position.

Steel-Spring plunger [1] [2] GN 815-M8-ST		
	1	d_1
	2	Material

Stainless Steel-Spring plunger [1] [2] GN 815-M12-NI		
	1	d_1
	2	Material



2 Type

S Bolt Steel,
standard spring load

SS Bolt Steel,
high spring load

K Bolt Plastic,
standard spring load

1

d_1 Type S Type SS	Type K	d_2	l +0,2	A/F Internal hexagon	w $^{+0,3}_{-0,1}$ Com-pression	Spring load in N ≈ standard (Type S / K) initial	end	Spring load in N ≈ high (Type SS) initial	end	Code no. for screw driver
M 3	-	1	12	0,7	1	2	4	-	-	GN 616.5-M 3
M 4	M 4	1,5	15	1,3	1,5	4,5	16	-	-	GN 616.5-M 4
M 5	M 5	2,4	18	1,5	2,3	6	19	11	40	GN 616.5-M 5
M 6	M 6	2,7	20	2	2,5	6	19	15	43	GN 616.5-M 6
M 8	M 8	3,5	22	2,5	3	10	39	20	75	GN 616.5-M 8
M 10	M 10	4	22	3	3	10	39	20	75	GN 616.5-M 10
M 12	M 12	6	28	4	4	12	53	45	120	GN 616.5-M 12
M 16	M 16	7,5	32	5	5	45	100	64	160	GN 616.5-M 16
M 20	-	10	40	6	7	52	125	75	195	GN 616.5-M 20
M 24	-	12	52	8	10	70	170	75	245	GN 616.5-M 24

Specification

- Housing
  Steel, blackened
- Type S / SS
  Bolt Steel, hardened
- Type K
  Bolt Plastic (Polyacetal POM)
  temperature resistant up to 50 °C
- Spring
  Stainless Steel AISI 631
- Marking of Type SS:
  Housing with 2 longitudinal markings
- RoHS compliant

Accessory

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

On request

- with thread locking
  PFB / MVK → *Page 1128*

Information

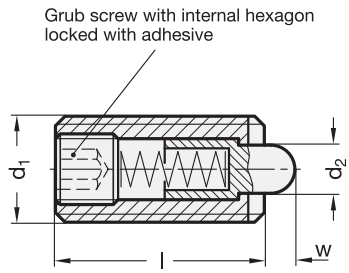
Spring plungers GN 616 are used as detents as well as for push-on and push-off applications and ejectors.

The slot on the plunger side is provided for blind hole applications. A special screw driver GN 616.5 is available (see table).

How to order

GN 616-M8-K (1 2)

1	d_1
2	Type



Inox Stainless Steel

2 Type

SN Bolt Stainless Steel, standard spring load

KN Bolt Plastic, standard spring load

1

d_1 Type SN	Type KN	d_2	l +0,2	A/F Internal hexagon	w $^{+0,3}_{-0,1}$ Compression	Spring load in N ≈ standard (Type SN / KN) initial	end	Code no. for screw driver
M 4	M 4	1,5	15	1,3	1,5	4,5	16	GN 616.5-M4
M 5	M 5	2,4	18	1,5	2,3	6	19	GN 616.5-M5
M 6	M 6	2,7	20	2	2,5	6	19	GN 616.5-M6
M 8	M 8	3,5	22	2,5	3	10	39	GN 616.5-M8
M 10	M 10	4	22	3	3	10	39	GN 616.5-M10
M 12	M 12	6	28	4	4	12	53	GN 616.5-M12
M 16	M 16	7,5	32	5	5	45	100	GN 616.5-M16
M 20	-	10	40	6	7	52	125	GN 616.5-M20

Specification

- Housing
  Stainless Steel AISI 303
- Type SN
  Bolt
  Stainless Steel AISI 303
- Type KN
  Bolt Plastic (Polyacetal POM)
  temperature resistant up to 50 °C
- Spring
  Stainless Steel AISI 631
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Accessory

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

On request

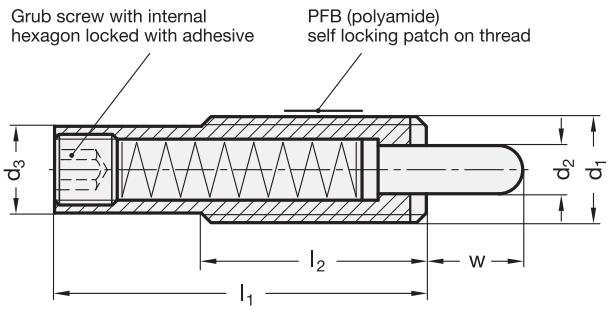
- with thread locking
  PFB / MVK → *Page 1128*

Information

Stainless Steel-Spring plungers GN 616 are used as detents as well as for push-on and push-off applications and ejectors.

The slot on the plunger side is provided for blind hole applications. A special screw driver GN 616.5 is available (see table).

How to order		
GN 616-M12-KN (1 2)	1	d_1
	2	Type



3 Type

L standard spring load
LS high spring load

1 d1	2 w Com-pression	d2	d3	l1	l2	A/F Internal hexagon	Spring load in N ≈ standard (Type L) initial	end	Spring load in N ≈ high (Type LS) initial	end	Code no. for screw driver
M 10	8	4	7,8	35	25	3	6	16	-	-	GN 611.5-M10
M 12	10	5,5	9,5	43	35	4	4	18	7	46	GN 611.5-M12
M 16	10	8	13,4	48	35	6	7	24	10	43	GN 611.5-M16
M 16	15	8	13,4	58	35	6	9	33	10	57	GN 611.5-M16
M 16	20	8	13,4	58	35	6	4	23	-	-	GN 611.5-M16
M 16	20	8	13,4	83	35	6	-	-	18	72	GN 611.5-M16
M 16	25	8	13,4	98	35	6	13	41	20	70	GN 611.5-M16
M 16	30	8	13,4	98	35	6	13	47	20	80	GN 611.5-M16
M 16	40	8	13,4	148	35	6	13	63	21	113	GN 611.5-M16
M 16	50	8	13,4	148	35	6	7	43	13	75	GN 611.5-M16

Specification

- Steel
  blackened
- Bolt
  case hardened
- Marking of Type LS:
  Housing with 2 longitudinal markings
- RoHS compliant

Accessory

- Screw drivers GN 611.5
  (Code no. see table)

Information

Spring plungers GN 611 are used as ejectors, push-on and push-off operations in the sheet metal industry, as well as cushioners.

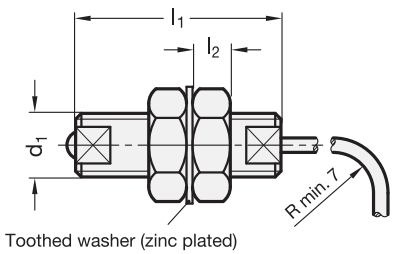
The slot on the plunger side is provided for blind hole application. A special screwdriver GN 611.5 is available (see table).

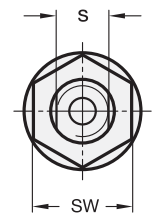
see also...
- *Thread locking PFB → Page 1128*

How to order

GN 611-M16-15-L

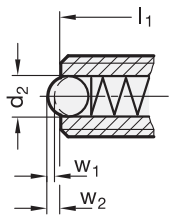
1	d_1
2	w
3	Type

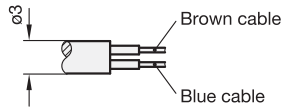




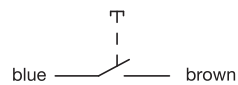
2 Type

S normally open
O normally closed

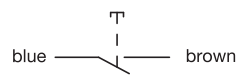




Type S normally open (NO)



Type O normally closed (NC)



1

d_1	d_2	l_1	s	l_2	A/F	w_1 ±0,1 Switching stroke	w_2 ±0,1 compression	Spring load in N ≈ initial	end
M 6	3	33	5	3,5	10	0,3	0,8	6	13
M 8	4	36	7	5	13	0,5	1	8	16
M 10	5	40	8	6	17	0,7	1,2	10	20

Specification

- Screw
  Steel, nickel plated
- Ball
  Steel, hardened
- Hexagonal nuts
  Steel, nickel plated
- Limit switch
  - Voltage: 12 ... 24 V DC
  - Switching load recom.: 5-10 mA
  - Switching load max.: 20 mA DC
  - Life expectancy: 3 million operations
  - Temperature range: -10 °C ... +80 °C
- Supply cable PVC:
  - Ø 3; 2 phase, ≈ 2 meters long
  - max. tensile load 20 N
  - grey for Type S (normally open)
    black for Type O (normally closed)
- Protection class IP 40
- RoHS compliant

Information

Spring plungers GN 615.7 are used for end stops as well as contacts.

Simultaneously an electrical control signal can be released from the built-in limit switch.

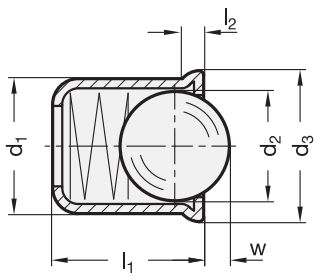
see also...
• *IP Protection classes → Page 1137*

How to order		
GN 615.7-M8-S (1 2)	1	d_1
	2	Type

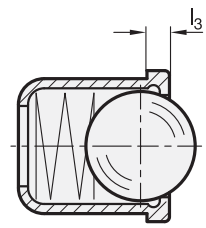
GN 614 Spring plungers

Press on type

Type **NI**



Type **MS, KU, KD**



Inox Stainless Steel

1

d_1 +0,1 NI KU	KD	MS	d_2 NI KU KD	MS	d_3	l_1 ≈	l_2 ≈ NI	l_3 ±0,1 MS KU KD	w NI	MS KU KD	Spring load in N ≈ Type NI / MS initial	end	Type KU / KD initial	end
3	-	3	2,4	2,4	3,5	4	0,75	0,6	0,7	0,6	1,8	3,5	1,7	3,6
4	4	4	3	2,5	4,6	5	0,9	1	1	0,8	2,5	6	2,5	6,5
5	5	5	4	3,5	5,6	6	0,9	1	1,4	1	3	6,5	4,5	9
6	6	6	5	4,5	6,5	7	1	1	1,8	1,6	5,5	11,5	6,5	13
8	8	8	6,5	6	8,5	9	1,1	1	2,4	1,9	7	12,5	8	18
10	10	-	8,5	-	11	13	1,7	1,5	3,3	2,4	8,5	18,5	12	23
12	12	-	10	-	13	16	2,3	1,5	4	3,3	12	26,5	13	25

Specification

2

- Housing and Ball Stainless Steel **NI**
  - AISI 305 / 420C
  - Housing sheet-metal
  - Ball hardened
- Housing Brass **MS**
  - turned
  - Ball
    Stainless Steel AISI 420C, hardened
- Housing Plastic (Polyacetal POM) **KU**
  - temperature resistant up to 50 °C
  - Ball
    Stainless Steel AISI 420C, hardened
- Housing and Ball Plastic
  (Polyacetal POM) **KD**
  temperature resistant up to 50 °C
- Spring
  Stainless Steel AISI 631
- *Stainless Steel characteristics* → *Page 1144*
- *Plastic characteristics* → *Page 1141*
- RoHS compliant

Information

Spring plungers GN 614 are used as detents as well as for push-on and push-off applications and ejectors.

A tolerance of H7 for the location hole of d_1 is recommended.

Due to different production methods, the dimensions l_2 and l_3 are different.

see also...

- *Spring plungers GN 614.2 (double ended)* → *Page 492*

How to order

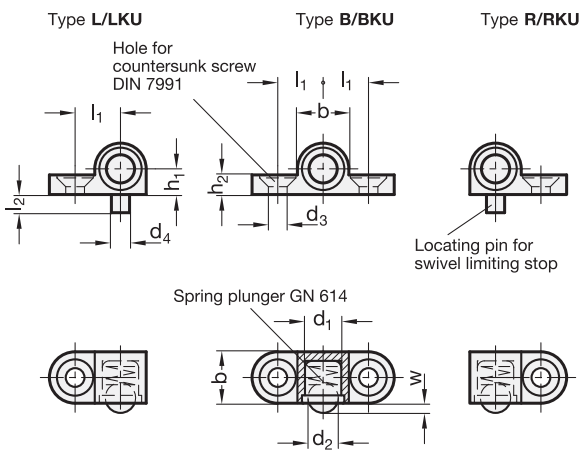
1 2

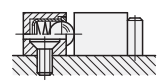
GN 614-6-NI

1	d_1
2	**Material**

Side thrust pins

Holder for spring plungers GN 614





2 Type

LKU	Fixing from the left, with spring plunger
RKU	Fixing from the right, with spring plunger
BKU	Fixing from both sides, with spring plunger
L	Fixing from the left, without spring plunger
R	Fixing from the right, without spring plunger
B	Fixing from both sides, without spring plunger

1

d_1 −0,05 Bore for spring plunger GN 614	d_2 Ball-Ø	d_3 for countersunk screw DIN 7991		d_4 −0,05	b	h_1 ±0,05	h_2	l_1 ±0,05	l_2	w −0,1 Compression
6	5	3,2	M 3	3	8,5	4,25	3,2	7,5	3	1,5
8	6,5	4,3	M 4	4	10,5	5,25	4,2	9,5	4	1,8

Specification

- Zinc die casting
  nickel plated
- Spring plunger GN 614-KU → *Page 490*
  - Housing
    Plastic (Polyacetal POM)
    temperature resistant up to 50 °C
  - Ball
    Stainless Steel AISI 420C, hardened
- RoHS compliant

Information

Side thrust pins GN 614.1 are used for arresting and as press-on or press-off elements. The easy attachment using one or two countersunk screws also allows its use where a location borehole with the tolerance field H7 for the spring plunger would not be possible from its size and manufacturability.

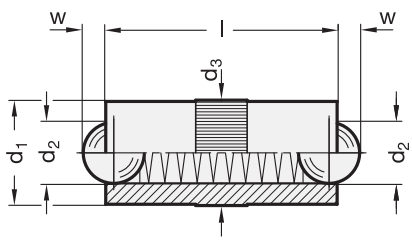
Side thrust pins GN 614.1 consist of a holder for spring plungers and a Stainless Steel-Spring plunger GN 614 of type KU.

For types R, L and B, only a „empty“ holder for spring plungers (without spring plungers) are supplied which can then be used together with all other design variants of GN 614-6 and GN 614-8 of the types KD, MS and NI.

How to order		
GN 614.1-6-R (1 2)	1	d_1
	2	Type

Spring plungers

Double ended, press on type



[1]

d_1	d_2	d_3 +0,05 (Knurl-Ø)	l	w Compression	Spring load in N ≈ initial	end
2,5	2	2,52	5,3	0,65	1,3	2,5
3	2,5	3,02	7,3	0,8	2	4,5
4	3	4,03	9	0,9	2,5	7,5
5	4	5,03	10,8	1,2	3,5	8
6	5	6,03	12,6	1,6	3,5	10,5
7	6	7,03	14	2,0	4	12
8	6,5	8,03	18	2,1	6	15

Specification

- Housing
  Brass
- Ball
  Stainless Steel AISI 420C
  hardened
- Spring
  Stainless Steel AISI 631
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

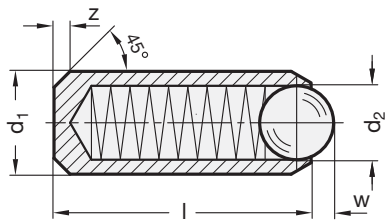
Spring plungers GN 614.2 are a result of a further development of spring plungers type GN 614 for special applications.

A toletance H8 is recommnded for the locating bore of d_1.

see also...

- *Spring plungers GN 614 → Page 490*

How to order [1]		
GN 614.2-4	1	d_1



Inox Stainless Steel

[1]

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

Specification [2]

- Housing
  Stainless Steel AISI 303 **NI**
- Ball
  Stainless Steel AISI 420C
  hardened
- Spring
  Stainless Steel AISI 631
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

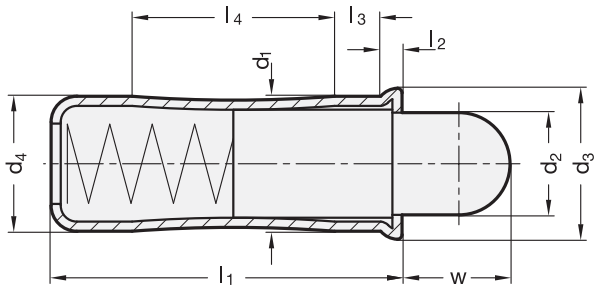
Spring plungers GN 614.3 are installed axially through the depth of the bore whereby the dimension ”z” of the chamfer has to be taken into consideration.

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

see also...

- *Spring plungers GN 614 (Press on type) → Page 490*

How to order [1] [2]		
GN 614.3-5,5-NI	1	d_1
	2	**Material**



Inox
Stainless
Steel

[1]

d_1 +0,1	d_2	d_3	d_4 ±0,05	l_1	l_2 ≈	l_3 ≈	l_4 ≈	w Compression	Spring load in N ≈ initial	end
4	2,8	4,6	4	10,7	0,9	1,8	5,6	2,7	3	8,2
5	3,8	5,6	5	12	0,9	2,1	6	4	3,3	9
6	4,8	6,5	6	15	1	2,3	8,2	5,5	6,1	12
8	6,2	8,5	8	18	1,1	2,9	9,5	6,5	10,7	17
10	8	11	10	26	1,5	3,5	15	8	16,2	29

Specification

[2]

- Housing
  Stainless Steel AISI 305
- Bolt
  - Stainless Steel AISI 303 **NI**
  - Plastic **KU**
    Polyacetal POM
    white
    temperature resistant up to +50 °C
- Spring
  Stainless Steel AISI 631
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

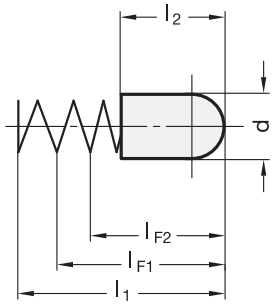
Spring plungers GN 614.4 are used for locking, as pressing and back-off pins, but also as impact dampers.

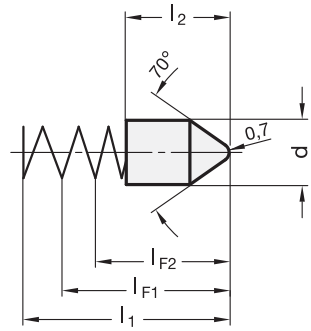
A tolerance of H7 for the location hole of d_1 is recommended.

see also...
- *Spring plungers GN 614 (with ball) → Page 490*

How to order [1] [2]
GN 614.4-8-KU

1	d_1
2	Material (Bolt)





Inox
Stainless
Steel

3 Type

H Semi-spherical, Steel
HN Semi-spherical, Stainless Steel
K Pointed nose

1 **2**

Type **H** Semi-spherical, Steel

d ±0,05	l_1	l_2	l_{F1}	F_1 Spring load in N ≈	l_{F2}	F_2 Spring load in N ≈
2,2	16	7,8	12	2,2	10,5	3
2,6	8	3,8	6,5	1,1	5,2	2
3	12	6	9	6,2	8,7	6,8
3	16	8,5	13	4,8	10,7	8,4
3,4	12	6	9	5	7,8	7
3,4	15	7,3	12	5,9	8,2	13,3
4	14	8	12	5	9	12,3
5	16	8	13	8	10,4	15

Type **HN** Semi-spherical, Stainless Steel

d ±0,05	l_1	l_2	l_{F1}	F_1 Spring load in N ≈	l_{F2}	F_2 Spring load in N ≈
3	16	8	13	4,8	10,6	8,6
3,6	18	9	15	6,7	11,5	14,5
4	16	7,5	13	8	11,4	12,3

Type **K** Pointed nose

d ±0,05	l_1	l_2	l_{F1}	F_1 Spring load in N ≈	l_{F2}	F_2 Spring load in N ≈
2,2	16	7,8	12	2,2	12,5	3
3	11	5	9	1,6	6,7	3,4
3	16	8,5	13	4,8	10,7	8,4

Specification

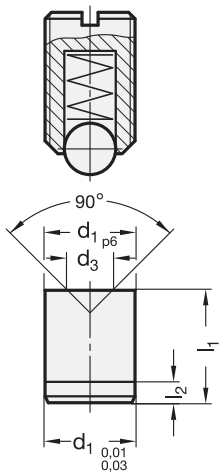
- Housing
  - Type H / K
    Steel, nickel plated
  - Type HN
    Stainless Steel AISI 305
- Spring
  Stainless Steel AISI 301
- *Stainless Steel characteristics* → *Page 1144*
- RoHS compliant

Information

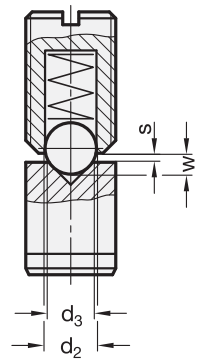
Spring loaded shells GN 610 have been designed for applications where in a confined space relatively long strokes are required. In such cases the depth of the mounting hole is determined by the preload required.

How to order
1 2 3
GN 610-3,4-15-H

1	**d**
2	l_1
3	**Type**



$$s = w \left(\frac{d_2 + d_3}{2} - \frac{\sqrt{2}}{2} d_2 \right)$$



[1]

d_1 p6	d_2	d_3	l_1 ±0,05	l_2	w	s for GN 614	s for GN 615 GN 615.2 GN 615.3	s for GN 615.1	s for GN 616
4		1,5	5	2		-	M 4=0,6	M 4=1,1	M 4=1,1
5		2	6	2		Ø 4=0,4	M 5=0,4	M 5=1,5	M 5=1,8
6	see	2	8	2	see	Ø 5=0,8	M 6=0,6	M 6=1,6	M 6=2,1
8	spring	3	10	2	spring	Ø 6=1,1	M 8=0,9	M 8=1,3	M 8=2,2
10	plunger	4	12	3	plunger	Ø 8=1,2	M 10=1,2	M 10=1,4	M 10=1,8
12		6	14	3		Ø 10=1,9	M 12=1,2	M 12=1,7	M 12=2,2
16		8	18	3		Ø 12=1,9	M 16=1,6	M 16=2,3	M 16=2,5

Specification

- Steel
  hardened and ground
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Information

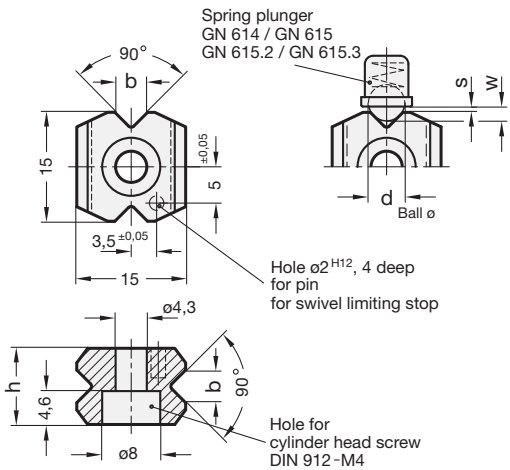
Ball buttons GN 249 are mainly used with spring plungers when a non-wearing and exact positioning is needed.

These ball buttons are especially recommended for use with spring plungers with high spring loads.

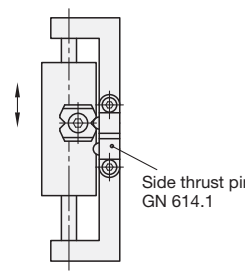
see also...

- *Spring plungers GN 614 → Page 490*
- *Spring plungers GN 615 → Page 480*
- *Spring plungers GN 615.1 → Page 482*
- *Plastic-Spring plungers GN 615.2 → Page 484*
- *Spring plungers GN 615.3 → Page 481*
- *Spring plungers GN 616 → Page 486*

How to order	1	d_1
[1] GN 249-8		



Example of application



[1]

h	b ±0,1	for GN 614				for GN 615 / GN 615.2 / GN 615.3			
		Size	d	w	s min.	Size	d	w	s min.
8,5	3,4	6	5	1,6	0,9	M 8	4,5	1,5	0,8
10,5	4,5	8	6,5	1,9	1	M 10	6	2	1

Specification

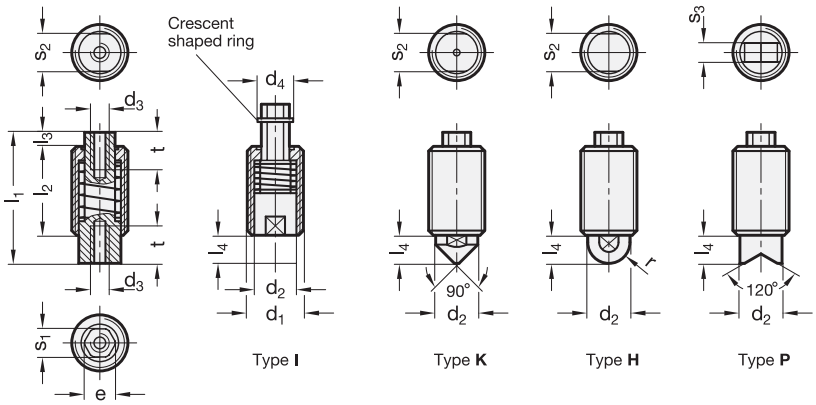
- Sintered Steel
  - case hardened
  - blank
- RoHS compliant

Information

Indent blocks GN 250 are used together with spring plungers for detent or positioning of sliders, flaps and similar applications.

see also...
- *Spring plungers GN 614 → Page 490*
- *Spring plungers GN 615 → Page 480*
- *Plastic-Spring plungers GN 615.2 → Page 484*
- *Spring plungers GN 615.3 → Page 481*
- *Side thrust pins GN 614.1 → Page 491*

How to order	[1]	h
[1] GN 250-8,5		



2 Type

I	Female thread
K	Pointed nose
H	Semi-spherical, Steel
P	Prism (120°)

3 Identification

1	standard spring load
2	high spring load

1

d_1	d_2	d_3	d_4	e	l_1	l_2	l_3	l_4	r	s_1	s_2	s_3	t min.	Spring load in N ≈ standard Identification 1 initial	standard Identification 1 end	high Identification 2 initial	high Identification 2 end
M 12 x 1,5	9	M 4	7,6	6,5	28	19	3	6	4,5	6	8	4	8	16	35	18	56
M 16 x 1,5	12	M 5	8,8	7,8	38	27	3	8	6	7	10	6	10	25	71	45	125
M 20 x 1,5	14,5	M 6	11,4	10	47	33	4	10	7,2	9	12	8	12	40	130	65	200

Specification

- Steel
  - Threaded sleeve
    zinc plated, blue passivated
  - Spring bolt
    case hardened, blackened
- Identification
  - standard spring load:
    Crescent shaped ring
    phosphated (anthracite)
  - high spring load:
    Crescent shaped ring
    zinc plated, blue passivated
- RoHS compliant

Information

Spring elements GN 513 are universal pressure elements used as detents, positioners or for clamping with spring pressure. The spring loaded nose can be used for a push-on or push-off operation. In addition the spring loaded nose cannot rotate.

At the pulling end the female thread will accept a pulling rod or an operating knob.

Type I with a female thread at the pushing end can be fitted with a special plunger nose.

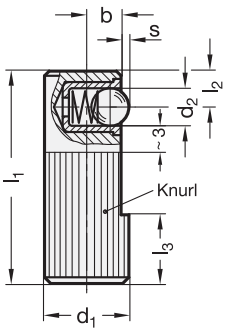
The spring element can be screwed into a thread at the hexagon on the pulling end or the spanner flats at the pushing end of the plunger.

How to order

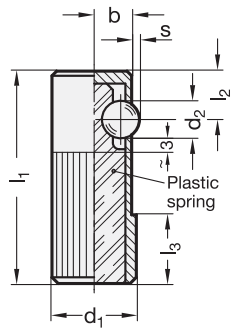
1 2 3
GN 513-M12x1,5-H-2

1	d_1
2	Type
3	Identification

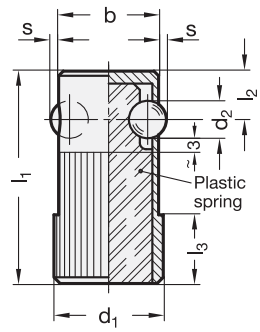
Type **ENI**
Type **EKU**



Type **EST**



Type **BST**



2 Type

ENI one-sided, ball Stainless Steel
EKU one-sided, ball Plastic
EST one-sided, ball Steel
BST both-sided, ball Steel

1

Type **ENI** one-sided, ball Steel
Type **EKU** one-sided, ball Plastic

d_1	d_2	b	l_1	l_2	l_3	s	Spring load in N ≈ initial	Spring load in N ≈ end	Locating bore
8	3	3,2	25	3,6	6	0,9	2,5	6,5	8 H8
10	4	4	30	4,2	7	1	4,5	9	10 H8
12	5	5	35	4,8	9	1,5	6,5	13	12 H8
14	6,5	5,4	40	5,8	10	1,8	8	18	14 H8

1

Type **EST** one-sided, ball Steel

d_1	d_2	b	l_1	l_2	l_3	s	Spring load in N ≈ initial	Spring load in N ≈ end	Locating bore
10	5,5	4,5	30	7	8	1	50	160	10 H8
12	6,5	5,5	35	8	9	1,5	60	270	12 H8
14	8	6,5	40	9	10	2	100	380	14 H8

1

Type **BST** both-sided, ball Steel

d_1	d_2	b	l_1	l_2	l_3	s	Spring load in N ≈ initial	Spring load in N ≈ end	Locating bore
16	5,5	15	35	7	11	1,5	36	190	16 H8
18	6,5	17	40	8	12	1,8	38	270	18 H8
22	8	21	45	9	15	2,5	40	410	22 H8

Specification

- Housing: Steel, blackened
- Sleeve (for Ball)
  - Type ENI / EKU: Plastic
  - Type EST / BST: Steel, blackened
- Ball
  - Type ENI: Stainless Steel
  - Type EKU: Plastic
  - Type EST / BST: Steel
- Spring
  - Type ENI / EKU: Stainless Steel
  - Type EST / BST: elastic plastic
- temperature resistant up to 80 °C
- RoHS compliant

Information

Side thrust pins GN 716 are designed for holding, positioning and locating a workpiece.

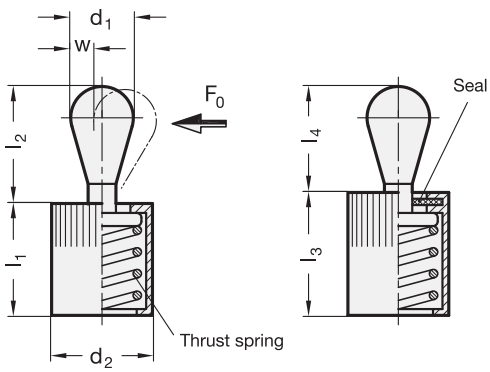
They have to be pressed into the housing by at least the dimension l_3, so as to ensure a positive hold.

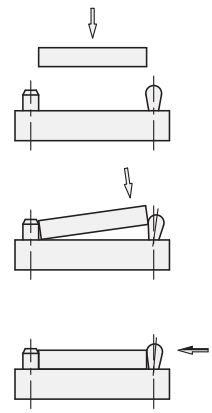
How to order
1 2
GN 716-12-ENI

1	d_1
2	Type

GN 715 Side thrust pins

Press on type





3 Type

SA thrust pin Steel, without seal
KA thrust pin Plastic, without seal
SB thrust pin Steel, with seal
KB thrust pin Plastic, with seal

1 d_1	2 Side thrust F_0 in N Thrust pin Steel Type SA / SB			Plastic Type KA / KB	a_1 see page 504	a_2 see page 504	d_2	d_3 H8 see page 504	h min. see page 504
3	10	20	40	10	1,5	3,5	6	6	7
5	20	50	100	20	2,5	5,7	10	10	12
6	40	75	150	40	3	7,7	10	10	12
8	50	100	200	50	4	8,9	12	12	14
10	100	200	300	100	5	10,7	16	16	18

d_1	l_1 –1	l_2	l_3 –1	l_4	w	x_1 see page 504	x_2 see page 504	Code no. for mounting tool
3	7	4	7	4	0,9	1	0,75	GN 715.1-3
5	11	6,7	11,5	6	1,6	1,7	1,3	GN 715.1-5.6
6	11	10,7	11,5	10	1,8	1,9	1,4	GN 715.1-5.6
8	13	13,9	14	13	2,6	2,7	2,1	GN 715.1-8
10	17	16,7	18	16	3,2	3,4	2,7	GN 715.1-10

Specification

- Housing Aluminium
  blank
- Type SA / SB
  thrust pin Steel, hardened
  zinc plated, blue passivated
- Type KA / KB
  thrust pin Plastic Polyacetal (POM)
- Thrust spring coding
  Force low thrust: grey
  medium thrust: black
  high thrust: silver
- Seal rubber
  NBR (Perbunan)
- *ISO-Fundamental Tolerances → Page 1132*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Spring loaded side thrust pins GN 715 are versatile and practical elements for holding, positioning and clamping of workpieces.

They eliminate costly alternatives, are space saving and easy to install. The knurled body requires only a hole tolerance of H8.

For easy mounting a suitable tool GN 715.1 is available (see table).

see also...

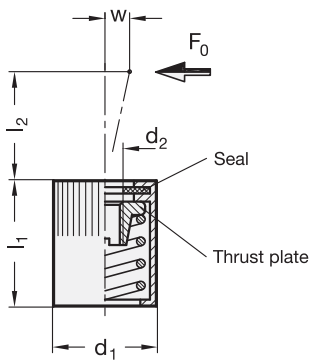
- *Technical and assembly instructions → Page 504*
- *Side thrust pins GN 713 (with thread) → Page 502*
- *Eccentric bushes GN 715.2 → Page 505*

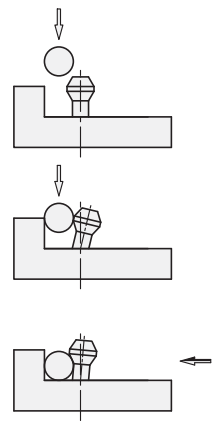
How to order

1 2 3

GN 715-5-50-SA

1	d_1
2	Side thrust F_0
3	Type





1 d_1	2 Side thrust F_0 in N ≈ at l_2			d_2	d_3 H8 see page 504	h min. see page 504	l_1 –1	l_2	w adjustable distance at l_2	Code no. for mounting tool
10	20	50	100	M4	10	12	12	4	1,6	GN 715.1-5,6
10	40	75	150	M4	10	12	12	7,5	2	GN 715.1-5,6
16	100	200	300	M6	16	18	18	11,5	3,2	GN 715.1-10

Specification

- Housing Aluminium
  blank
- Thrust plate with female thread
  hardened, blackened
- Thrust spring coding
  Force low thrust: grey
  medium thrust: black
  high thrust: silver
- Seal rubber
  NBR (Perbunan)
- *ISO-Fundamental Tolerances → Page 1132*
- *Elastomer characteristics → Page 1140*
- RoHS compliant

Accessory

- Mounting tools GN 715.1
  (Code no. see table)

On request

- Side thrust pins with thread

Information

Side thrust pins GN 714 are the result of further development of GN 715. It is left to the customer to design his own pressure pin which can be screwed into the thrust plate.

This design extends the field of applications for side thrust pins offering identical advantages i.e. they eliminate costly alternatives, are space saving and are simple to install. The knurled body requires bore to H8 tolerance only.

For easy mounting a suitable tool GN 715.1 is available (see table).

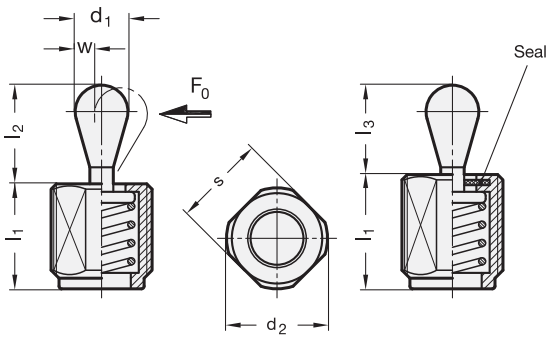
see also...

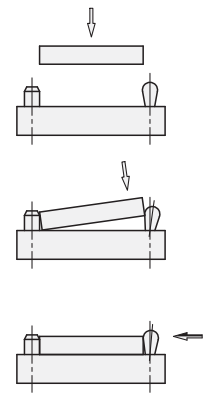
- *Technical and assembly instructions → Page 504*
- *Eccentric bushes GN 715.2 → Page 505*

How to order		
GN 714-16-200 (1 2)	1	d_1
	2	Side thrust F_0

GN 713 Side thrust pins

with thread





4 Type

SB thrust pin Steel, with seal

SA* thrust pin Steel, without seal

1 d_1	2 Side thrust F_0 in N ≈ at l_2			3 l_1 –1,5			d_2	a_1 see page 504	a_2 see page 504
5	20	50	100	11,5	19	26,5*	M12	2,5	5,7
6	40	75	150	11,5	19	26,5*	M12	3	7,7
10	100	200	300	18	31,5	45 *	M18 x 1,5	5	10,7

d_1	k see page 504	l_2	l_3	s	w	x_1 Page 504	x_2 Page 504	Code no. for mounting tool
5	1,5 x 45°	6,7	6	10	1,6	1,7	1,3	GN 713.1-5.6
6	1,5 x 45°	10,7	10	10	1,8	1,9	1,4	GN 713.1-5.6
10	2 x 45°	16,7	16	16	3,2	3,4	2,7	GN 713.1-10

* not availble from stock, requires a minimum order quantity

Specification

- Housing Steel
  zinc plated, blue passivated
- Thrust pin Steel, hardened
  zinc plated, blue passivated
- Thrust spring coding
  Force low thrust: grey
  medium thrust: black
  high thrust: silver
- Seal rubber
  NBR (Perbunan)
- *Elastomer characteristics → Page 1140*
- RoHS compliant

Accessory

- Mounting tools GN 713.1
  (Code no. see table)

Information

Spring loaded side thrust pins GN 713 are versatile and practical elements for holding, positioning and clamping workpieces.

They eliminate costly alternatives, are space saving and simple to install. The protruding height of the thrust pin can be adjusted with the threaded body.

For easy mounting a suitable tool GN 713.1 is available (see table).

see also...

- *Technical and assembly instructions → Page 504*
- *Side thrust pins GN 715 (Press on type) → Page 500*

How to order

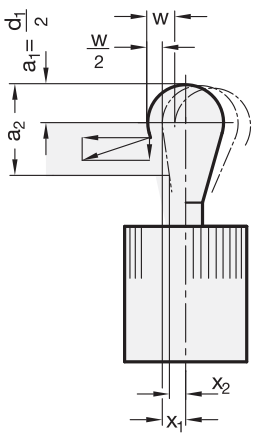
1 2 3 4

GN 713-6-75-11,5-SB

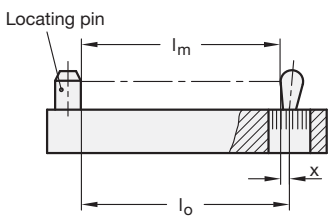
1	d_1
2	Side thrust F_0
3	l_1
4	Type

Side thrust pins GN 713 → *Page 502*
Side thrust pins GN 714 → *Page 501*
Side thrust pins GN 715 → *Page 500*
Eccentric bushes GN 715.2 → *Page 505*

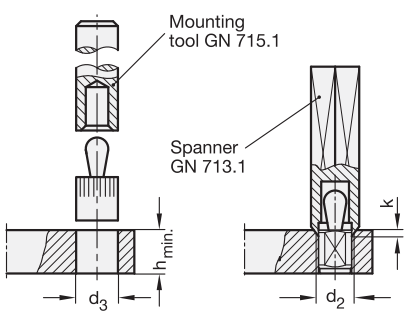
Technical and assembly instructions



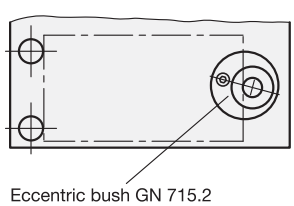
w	=	movement of pin
F	=	Side thrust in N initial thrust = F_0 end thrust = 1,1 x F_0
a_2-a_1	=	clamping range for workpiece
x	=	distance centre line – thrust point at $\frac{w}{2}$ x_1 for highest thrust point (a_1) x_2 for lowest thrust point (a_2)
l_0	=	Distance end stop – bore of thrust bush
l_0	=	l_m + x l_m = average length of workpiece $\frac{l_{max.} + l_{min.}}{2}$ For contact points (workpiece height) between a_1 and a_2 a value for x has to be used lying between x_1 and x_2 (interpolation).



By observing the above values the full movement of the side thrust pin will be available to cover the tolerance of the workpiece.



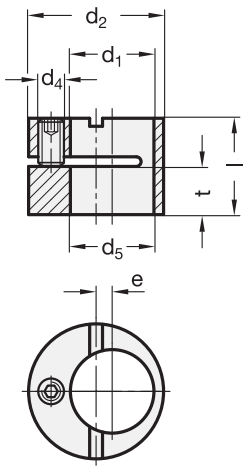
For inserting the side thrust pins the use of a mounting tool GN 715.1 or spanner GN 713.1 is recommended.

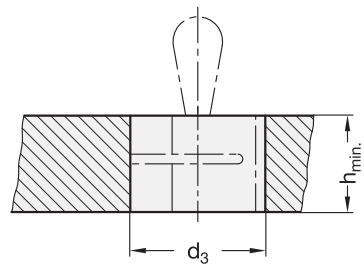


Eccentric bushes GN 715.2 are a tooling accessory for GN 714 / GN 715. They enable a precise optimum setting of side thrust pins. This allows an adjustment to l_0 to accommodate for instance a larger tolerance range on a workpiece.

Eccentric bushes

for side thrust pins GN 714 / GN 715





[1]

d_1	d_2 h9	d_3 H7	d_4	d_5 +0,1	e	h min.	l –0,2	t	for side thrust pin-Ø
6	12	12	M 4	6,2	2	10	9,9	4,4	3
10	16	16	M 4	10,2	2	12	11,9	5,4	5 | 6
12	18	18	M 4	12,2	2	14	13,9	6,6	8
16	25	25	M 6	16,2	3	18	17,9	7,9	10

Specification

- Steel
  blackened
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Information

Eccentric bushes GN 715.2 allow side thrust pins GN 715 / GN 714 to be adjusted. These bushes allow the side thrust pin to be precisely adjusted to suit the requirements for clamping of a component.

see also...

- *Side thrust pins GN 715 → Page 500*
- *Side thrust pins GN 714 → Page 501*

How to order		
GN 715.2-6 [1]	1	d_1

2.2 Screws and Nuts
Washers
Lifting accessories

DIN 444
Swing bolts

→ *Page 516*

GN 933.5
Hexagon head screws with pivot
Stainless Steel

→ *Page 523*

GN 551.1
Grub screws/ Threaded rods

→ *Page 530*

DIN 444
Swing bolts
Stainless Steel

→ *Page 516*

GN 605
Ball point screws

→ *Page 524*

GN 551.1
Grub screws/ Threaded rods
Stainless Steel

→ *Page 530*

GN 1524
Swing bolts with long thread

→ *Page 517*

GN 605
Ball point screws
Stainless Steel

→ *Page 525*

GN 252
Blanking plugs

→ *Page 531*

GN 444.2
Swing nuts

→ *Page 518*

GN 606
Ball point screws

→ *Page 526*

DIN 1804
Slotted locknuts

→ *Page 532*

GN 913.3
Grub screws with brass / plastic pad

→ *Page 520*

GN 606
Ball point screws
Stainless Steel

→ *Page 527*

DIN 1804
Slotted locknuts
Stainless Steel

→ *Page 532*

GN 913.5
Grub screws with brass / plastic pad
Stainless Steel

→ *Page 521*

ISO 7379
Shoulder screws with collar

→ *Page 528*

DIN 1810
C-Spanner

→ *Page 532*

GN 913.2
Grub screws with hardened pad

→ *Page 522*

GN 732
Cylinder head shoulder bolts

→ *Page 529*

DIN 1804.1
Slotted locknuts self-locking

→ *Page 533*

Stainless Steel | Ergostyle | Softline | Cleanline | Sanline | ATEX | ESD | Inch

GN 6333
Quick action hexagon nuts

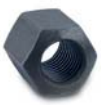
→ *Page 534*

GN 6339
Heavy duty washers

→ *Page 540*

DIN 6319
Spherical washers

→ *Page 546*



DIN 6330
Hexagon nuts with spherical seating

→ *Page 536*

GN 184
Countersunk washers

→ *Page 542*

DIN 6319
Spherical washers Stainless Steel

→ *Page 547*

DIN 6330
Hexagon nuts with spherical seating Stainless Steel

→ *Page 536*

GN 184.5
Countersunk washers Stainless Steel

→ *Page 542*

GN 350
Levelling sets long version

→ *Page 548*

DIN 6331
Hexagon nuts with collar

→ *Page 537*

GN 185
Bezel discs Stainless Steel

→ *Page 543*

GN 350
Levelling sets long version, Stainless Steel

→ *Page 548*

GN 6341
Washers

→ *Page 538*

GN 338
Discs with cover cap (Component feet)

→ *Page 544*

GN 350.1
Levelling sets short version

→ *Page 550*

GN 6341
Washers Stainless Steel

→ *Page 538*

GN 6319.1
Spherical washers combined

→ *Page 545*

GN 350.1
Levelling sets short version Stainless Steel

→ *Page 550*

DIN 6340
Washers

→ *Page 539*

GN 6319.1
Spherical washers combined Stainless Steel

→ *Page 545*

GN 350.3
Spherical levelling washers

→ *Page 551*

Stainless Steel | Ergostyle | Softline | Cleanline | Sanline | ATEX | ESD | Inch

GN 350.3
Spherical levelling washers
Stainless Steel

→ Page 551

GN 187.1
Guide pots

→ Page 556

GN 508.2
T-Nuts
with slip proof

→ Page 562

GN 350.2
Levelling sets
with spherical washer

→ Page 552

GN 187.1
Guide pots
Stainless Steel

→ Page 556

GN 508.1
Rhombus T-Nuts

→ Page 563

GN 350.2
Levelling sets
with spherical washer
Stainless Steel

→ Page 552

GN 187.2
Thrust springs
Stainless Steel

→ Page 557

DIN 6379
Studs
for T-Nuts

→ Page 564

GN 350.5
Levelling sets
with locknut

→ Page 553

GN 183
C-Washers

→ Page 558

DIN 787
T-Slot bolts

→ Page 565

GN 350.5
Levelling sets
with locknut,
Stainless Steel

→ Page 553

DIN 6371
Captive C-Washers

→ Page 559

GN 505.4
T-Slot bolts
Accessory for extrusion systems

→ Page 566

GN 187.4
Serrated locking plates
Sintered Steel

→ Page 554

DIN 508
T-Nuts

→ Page 560

GN 505.5
T-Slot bolts
Accessory for extrusion systems
Stainless Steel

→ Page 566

GN 187.4
Serrated locking plates
Stainless Steel

→ Page 554

DIN 508
T-Nuts
Stainless Steel

→ Page 561

GN 505
T-Nuts
Accessory for extrusion systems

→ Page 567

Stainless Steel | Ergostyle | Softline | Cleanline | Sanline | ATEX | ESD | Inch

GN 507
T-Nuts
Accessory for extrusion systems

→ *Page 568*

DIN 179
Guide bushes
without collar

→ *Page 574*

DIN 6320
Feet

→ *Page 583*

GN 506
T-Nuts
Accessory for extrusion systems, with guide step

→ *Page 570*

GN 771.1
Guide pins

→ *Page 576*

GN 251
Setting bolts

→ *Page 584*

GN 506.1
T-Nuts
Accessory for extrusion systems, without guide step

→ *Page 571*

DIN 6321
Workholding bolts / Headed dowels

→ *Page 578*

GN 251.2
Setting bolts
with limit switch

→ *Page 585*

GN 506.1
T-Nuts
Accessory for extrusion systems, without guide step
Stainless Steel

→ *Page 571*

GN 6322
Workholding bolts
with ball-type shoulder

→ *Page 579*

GN 709.3
Clamping pads
adjustable

→ *Page 586*

GN 506.2
T-Nuts
Accessory for extrusion systems, with spring washer

→ *Page 572*

GN 409.1
Positioning elements
with male thread

→ *Page 580*

GN 709.35
Clamping pads
adjustable, Stainless Steel

→ *Page 586*

GN 230
Shallow T-Nuts

→ *Page 573*

GN 409.2
Positioning elements
with female thread

→ *Page 581*

GN 709.1
Clamping pads
with male thread

→ *Page 588*

DIN 172
Guide bushes
with collar

→ *Page 574*

GN 6321.1
Headed dowels

→ *Page 582*

GN 709.15
Clamping pads
with male thread, Stainless Steel

→ *Page 588*

Stainless Steel | Ergostyle | Softline | Cleanline | Sanline | ATEX | ESD | Inch

GN 709.2
Clamping pads
with female thread

→ Page 589

GN 632.1
Grub screws
Semi-spherical pad

→ Page 596

GN 706.2
Semi-split set collars
Stainless Steel

→ Page 600

GN 709.25
Clamping pads
with female thread
Stainless Steel

→ Page 589

GN 632.5
Grub screws
Semi-spherical pad
Stainless Steel

→ Page 596

GN 707.2
Split set collars

→ Page 601

GN 346
Ball joint thrust pads

→ Page 590

GN 631
Thrust pads
Plastic

→ Page 597

GN 707.2
Split set collars
Stainless Steel

→ Page 601

GN 347
Hexagon nuts with ball socket

→ Page 591

GN 631.5
Thrust pads
Stainless Steel

→ Page 597

GN 704
Quick release set collars
Aluminium

→ Page 602

DIN 6332
Grub screws
with thrust point

→ Page 592

GN 705
Set collars

→ Page 598

GN 706.3
Threaded set collars

→ Page 603

DIN 6311
Thrust pads

→ Page 594

GN 705
Set collars
Stainless Steel

→ Page 598

GN 706.3
Threaded set collars
Stainless Steel

→ Page 603

GN 6311.1
Thrust pads
Steel / Plastic

→ Page 595

GN 706.2
Semi-split set collars

→ Page 600

GN 509
Ball transfer units
Steel,
Stainless Steel

→ Page 604

Stainless Steel | Ergostyle | Softline | Cleanline | Sanline | ATEX | ESD | Inch

GN 509.1
Ball transfer units
Heavy duty,
Steel, Stainless Steel

→ *Page 606*

GN 509.3
Spring rings
Stainless Steel

→ *Page 607*

GN 509.4
Ball transfer units
Heavy duty,
without collar

→ *Page 608*

GN 753
Guide rollers
Steel / Plastic

→ *Page 609*

DIN 580
Lifting eye bolts

→ *Page 610*

DIN 580
Lifting eye bolts
Stainless Steel

→ *Page 610*

DIN 582
Lifting eye nuts

→ *Page 611*

DIN 582
Lifting eye nuts
Stainless Steel

→ *Page 611*

GN 581
Lifting eye bolts
rotating

→ *Page 612*

GN 581.5
Lifting eye bolts
rotating,
Stainless Steel

→ *Page 614*

GN 583
Lifting eye nuts
rotating

→ *Page 616*

GN 586
Load rings
rotating

→ *Page 618*

GN 587
Load rings
for welding

→ *Page 620*

DIN 582
Lifting eye nuts

→ *Page 611*

GN 589
Lifting points
for welding

→ *Page 622*

GN 584
Shackles
straight

→ *Page 624*

GN 585
Shackles
cranked

→ *Page 625*

GN 588
Thread adapters
for GN 581, GN 586

→ *Page 626*

GN 806
Protective caps
Rubber

→ *Page 627*

GN 351
Rubber buffers

→ *Page 628*

GN 451
Rubber buffers
Stainless Steel

→ *Page 628*

GN 352
Buffers

→ *Page 632*

Stainless Steel | Ergostyle | Softline | Cleanline | Sanline | ATEX | ESD | Inch

GN 452
Buffers
Stainless Steel

→ *Page 632*

GN 353
Buffers

→ *Page 636*

GN 453
Buffers
Stainless Steel

→ *Page 636*

GN 454
Buffers
with Stainless Steel-Retaining washer

→ *Page 637*

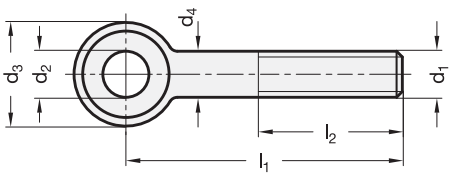
DIN 6885
Keys

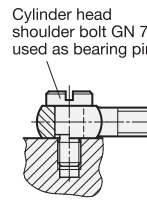
→ *Page 638*

DIN 6885
Keys
Stainless Steel

→ *Page 639*

Swing bolts





Inox
Stainless
Steel

1 d_1	2 l_1			l_2	d_2 H7	d_3 –0,3	s –0,15	d_4
M 5	50	75	-	32	5	12	6	5
M 6	50	75	-	32	6	14	7	6
M 8	50	75	-	32	8	18	9	8
M 10	50	75	100	40	10	20	12	10
M 12	75	100	130	40	12	25	14	12
M 16	75	100	130	50	16	32	17	16
M 20	100	130	160	63	18	40	22	20

Specification

3

- Steel
  - Tensile strength class 5.8 (500 N/mm²)
  - turned, thread rolled
  - blackened
- Stainless Steel AISI 303 **NI**
  - turned, thread rolled
  - matt shot-blasted
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

Precision type swing bolts DIN 444 are mainly used for jigs and fixtures.

For stocking purposes cylinder head shoulder bolts GN 732 can be used for the sizes M 6, M 8, M 10 and M 12.

see also...

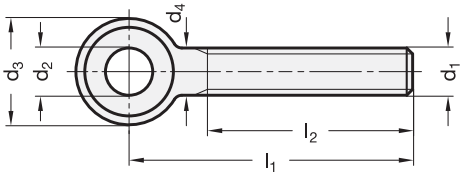
- *Cylinder head shoulder bolts GN 732 → Page 529*

Steel-Swing bolt		
DIN 444-M12-100 (1 2)	1	d_1
	2	l_1

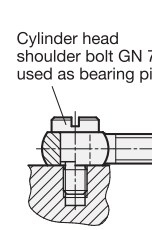
Stainless Steel-Swing bolt		
DIN 444-M10-50-NI (1 2 3)	1	d_1
	2	l_1
	3	Material

GN 1524 Swing bolts

with long threaded bolt



Cylinder head shoulder bolt GN 732 used as bearing pin



1 d1	2 l1				l2	d2 E8	d3 −0,4	s −0,2	d4
M 6	50	60	70	80	40	6	12	8	6
M 8	50	-	-	-	40	8	16	10	8
M 8	60	70	80	100	45	8	16	10	8
M 10	50	-	-	-	38	10	20	12	10
M 10	60	-	-	-	46	10	20	12	10
M 10	70	80	100	120	50	10	20	12	10
M 12	50	-	-	-	35	12	25	14	12
M 12	60	-	-	-	42	12	25	14	12
M 12	70	-	-	-	52	12	25	14	12
M 12	80	100	120	130	60	12	25	14	12
M 16	70	-	-	-	49	16	32	18	16
M 16	80	-	-	-	59	16	32	18	16
M 16	100	-	-	-	77	16	32	18	16
M 16	120	140	160	-	80	16	32	18	16
M 20	100	-	-	-	75	20	40	22	20
M 20	120	-	-	-	95	20	40	22	20
M 20	140	160	-	-	100	20	40	22	20
M 24	160	240	-	-	120	25	50	28	24

Specification

- Steel
  - Tensile strength class 5.8 (500 N/mm²)
  - turned, thread rolled
  - blank
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Information

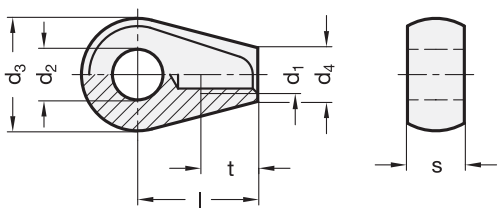
Swing bolts GN 1524 offer a longer threaded bolt contrary to DIN 444.

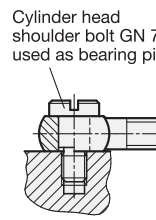
For stocking purposes cylinder head shoulder bolts GN 732 can be used for the sizes M8, M10 and M12.

see also...

- *Cylinder head shoulder bolts GN 732 → Page 529*

How to order		
GN 1524-M12-100 (1 2)	1	d_1
	2	l_1





1 d_1	2 d_2 H7	d_3 −0,3	d_4	l	s −0,15	t min.
M 6	8	18	8,5	19	9	9
M 8	10	20	11	24	12	11
M 10	12	25	13,5	28	14	14
M 12	16	32	16	34	17	16

Specification

- Steel
  - Tensile strength class 5.8 (500 N/mm²)
  - blackened
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Information

In combination with grub screws (i.e. DIN 913 or DIN 6379) swing nuts GN 444.2 can be used together as swing bolts in varying lengths.

In addition, used with a cap screw DIN 912, a swivelling clamping screw can be produced.

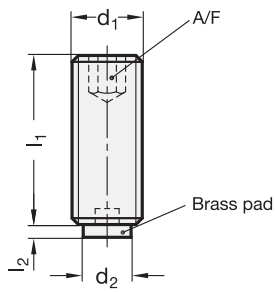
Dimensions d_2 ,d_3 and s are identical to DIN 444.

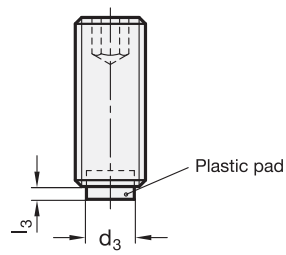
For stocking purposes cylinder head shoulder bolts GN 732 can be used for the sizes M8, M10 and M12.

see also...

- *Cylinder head shoulder bolts GN 732 → Page 529*
- *Joint pieces GN 752 (for Fork joints) → Page 956*

How to order		
GN 444.2-M10-12 (1 2)	1	d_1
	2	d_2





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

* These lengths are only available with brass pad.

Specification

3

- Screw Steel
  - Tensile strength class 5.8 (500 N/mm²)
  - blackened
- Thrust pad
  - Brass **MS**
  - Plastic (Polyacetal POM) **KU**
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

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

see also...

- *Grub screws GN 913.2 (with hardened thrust pad) → Page 522*
- *Ball point screws GN 605 (with flat ball) → Page 524*

How to order

1 2 3

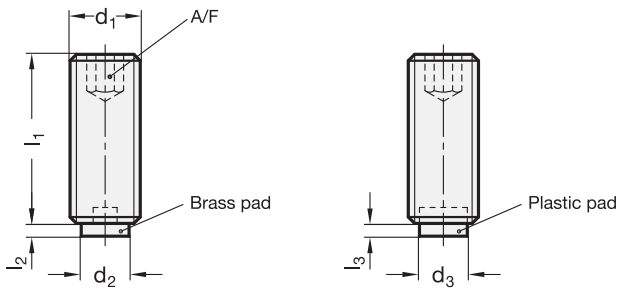
GN 913.3-M6-20-MS

1	d_1
2	l_1
3	**Thrust pad**

Stainless Steel-Grub screws

with brass / plastic pad

Inox Stainless Steel



1 d1	2 l1 Nominal length								d2 MS pad	d3 KU pad	l2 MS pad	l3 KU pad	A/F
M 3	3	4	5	6	8	10	-	-	1,4	1,5	0,5	0,8	1,5
M 4	4	-	-	-	-	-	-	-	2,5	2	0,5	1,2	1,5
M 4	5	-	-	-	-	-	-	-	2,5	2	0,5	1	1,5
M 4	6	8	10	12	16	-	-	-	2,5	2	0,5	1	2
M 5	5	6	-	-	-	-	-	-	3	3	0,5	1	2
M 5	8	10	12	16	20	-	-	-	3	3	0,5	1	2,5
M 6	6	8	10	12	16	20	25	32	4	3,5	1	1,3	3
M 8	8	10	12	16	20	25	32	40	6	5	1,5	1,6	4
M 10	16	20	25	32	40	50	-	-	8	6,5	2	1,9	5
M 12	20	25	32	40	50	63	-	-	10	8	2	2,1	6

Specification

3

- Screw
  Stainless Steel AISI 303
- Thrust pad
  - Brass **MS**
  - Plastic
    (Polyacetal POM) **KU**
- *Stainless Steel characteristics → Page 1144*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Stainless Steel-Grub screws GN 913.5 with pads in brass or plastic are used in applications, where marks and damage on the workpiece are unacceptable.

see also...

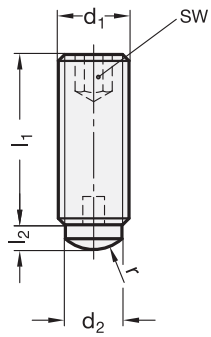
- *Stainless Steel-Ball point screws GN 605 (with flat ball) → Page 524*

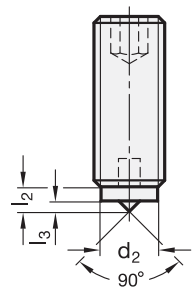
How to order

1 2 3

GN 913.5-M6-20-KU

1	d_1
2	l_1
3	**Thrust pad**





3 Type

A Semi-spherical pad
B Pointed pad

1 d_1	2 l_1 Nominal length					d_2	l_2	l_3	r	A/F
M 5	8	12	16	20	-	3	1	0,5	2,5	2,5
M 6	12	16	20	25	-	4	1,8	0,8	3	3
M 8	12	16	20	25	32	6	2,5	1	5	4
M 10	16	20	25	32	40	8	3,5	1,5	6	5

Specification

- Steel
  - Tensile strength class 5.8 (500 N/mm²)
  - blackened
- Thrust pad hardened
- RoHS compliant

Information

Grub screws GN 913.2 with hardened spherical pad (Type A) are used in such cases where point contact is required. They are a lower cost alternative to ball point screws GN 605 / GN 606.

Grub screws GN 913.2 with hardened pointed pad (Type B) offer an alternative form of finish.

see also...
- *Ball point screws GN 605 (with full ball) → Page 524*
- *Grub screws GN 913.3 / GN 913.5 (with brass / plastic pad) → Page 520 / 521*

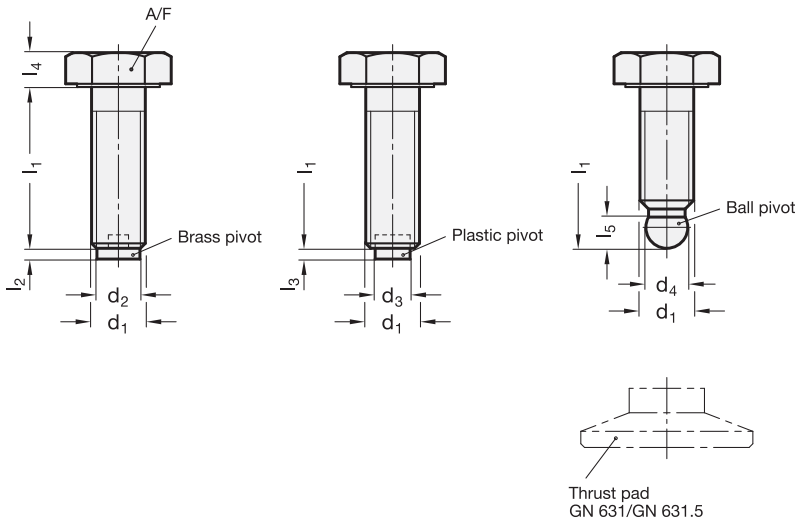
How to order

GN 913.2 – 1 M6 – 2 20 – 3 B

1	d_1
2	l_1
3	Type

Stainless Steel-Hexagon head screws

with brass / plastic / spherical pivot



Inox Stainless Steel

3 Type

MS Brass pivot
KU Plastic pivot (Polyacetal POM)
ZK spherical pivot

1 d_1	2 l_1 Nominal length					d_2 Brass pivot	d_3 Plastic pivot	d_4 Sperical pivot	l_2 Brass pivot	l_3 Plastic pivot	l_4	$l_5 \approx$ Sperical pivot	A/F
M 6	16*	20	25	30	35	4	3,5	4,5 ±0,03	1	1,3	4	5,1	10
M 8	20*	25	30	35	45	6	5	6,1 ±0,05	1,5	1,6	5,3	6,2	13
M 10	25*	30	35	45	55	8	6,5	7,8 ±0,05	2	1,9	6,4	7,3	17

* only available in type MS and KU

Specification

3

- Hexagon head screw
  Stainless Steel AISI 304 (A2)
- *Plastic characteristics* → *Page 1141*
- *Stainless Steel characteristics* → *Page 1144*
- RoHS compliant

Information

Stainless Steel-Hexagon head screws GN 933.5 with brass or plastic pivots are used when pressure dents or damage to the clamping surface must be avoided.

Stainless Steel-Hexagon head screws GN 933.5, type ZK, feature a spherical pivot whose diameter d_4 is smaller than the core diameter d_1 of the thread. This makes them suitable for holding thrust pads GN 631 / GN 631.5 which must be ordered separately.

see also...

- *Grub screws GN 913.3 / GN 913.5* → *Page 520 / 521*

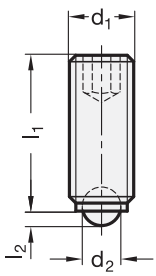
How to order

1 2 3

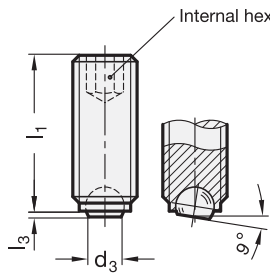
GN 933.5-M6-20-KU

1	d_1
2	l_1
3	Type

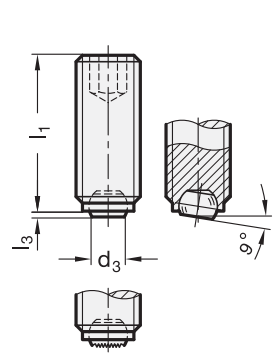
Type **A**



Type **B**



Type **V**
Type **VR**



3 Type

A full ball
B flat ball
V flat ball, with swivel limiting stop
VR flat ball, with swivel limiting stop, corrugated

1 d_1 Type A Type B	Type V Type VR	2 l_1 Nominal length					d_2	d_3	l_2 ≈	l_3 ≈	A/F	Static load in N Type A / Type B
M 4	-	6	10	16	-	-	2,5	1,8	0,8	0,4	2	3500
M 5	-	8	12	20	-	-	3	2	0,9	0,5	2,5	5000
M 6	M 6	10	16	20	25	-	4	3,2	1,4	0,6	3	9000
M 8	M 8	10	12	20	25	30	5,5	4,2	1,7	0,7	4	15000
M 10	M 10	12	16	20	25	35	7	5,7	2,3	0,8	5	24000
M 12	M 12	16	20	30	40	-	8	7,1	2,8	0,9	6	30000
M 16	M 16	20	25	35	50	-	12	9,7	4	1,5	8	73000

Specification

- Steel
  - Tensile strength class 10.9 (1000 N/mm²)
  - blackened
- Ball
  - hardened
  - blank
- RoHS compliant

On request

- Ball point screws with (full) plastic ball (Type AK)

Information

Ball point screws GN 605 with full ball (Type A) are used in applications where a ball point contact is required.

The flat faced moving ball (Type B) allows a clamping or supporting of non parallel surfaces.

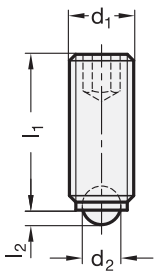
The ball of Type V/VR can be swivelled to a maximum of 9° to ensure that clamping is always maintained on the flat section of the ball.

see also...
- *Grub screws GN 913.2 (with hardened pad)* → *Page 522*
- *Ball point screws GN 606 (with cylinder head)* → *Page 526*

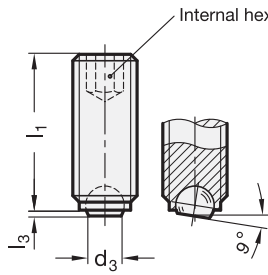
How to order
1 2 3
GN 605-M6-25-B

1	d_1
2	l_1
3	Type

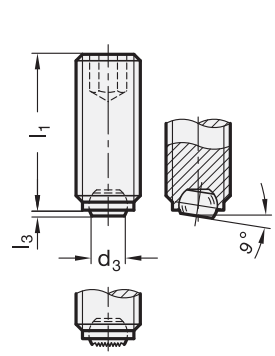
Type **AN**

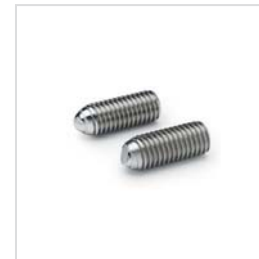


Type **BN**



Type **VN**
Type **VRN**





Inox
Stainless
Steel

3 Type

AN full ball
BN flat ball
VN flat ball, with swivel limiting stop
VRN flat ball, with swivel limiting stop, corrugated

1 d_1 Type AN Type BN	Type VN Type VRN	2 l_1 Nominal length					d_2	d_3	$l_2 \approx$	$l_3 \approx$	A/F	Static load in N Type AN / Type BN
M 4	-	6	10	16	-	-	2,5	1,8	0,8	0,4	2	2040
M 5	-	8	12	20	-	-	3	2	0,9	0,5	2,5	3000
M 6	M 6	10	16	20	25	-	4	3,2	1,4	0,6	3	4500
M 8	M 8	10	12	20	25	30	5,5	4,2	1,7	0,7	4	9000
M 10	M 10	12	16	20	25	35	7	5,7	2,3	0,8	5	14400
M 12	M 12	16	20	30	40	-	8	7,1	2,8	0,9	6	18000
M 16	M 16	20	25	35	50	-	12	9,7	4	1,5	8	43800

Specification

- Stainless Steel AISI 304 / 440C
- Ball hardened
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

Stainless Steel-Ball point screws GN 605 with full ball (Type AN) are used in applications where a ball point contact is required.

The flat faced moving ball (Type BN) allows a clamping or supporting of non parallel surfaces.

The ball of Type VN/VRN can be swivelled to a maximum of 9° to ensure that clamping is always maintained on the flat section of the ball.

see also...

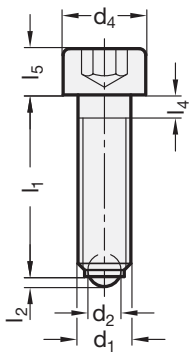
- *Stainless Steel-Ball point screws GN 606 (with cylinder head) → Page 526*
- *Stainless Steel-Grub screws GN 913.5 (with brass / plastic thrust pad) → Page 521*

How to order

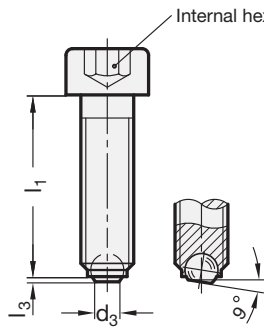
1 2 3
GN 605-M10-16-AN

1	d_1
2	l_1
3	Type

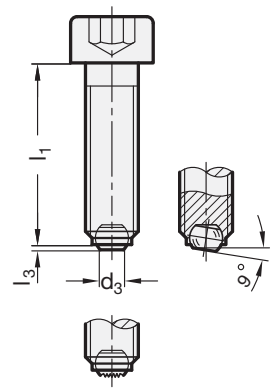
Type **A**



Type **B**



Type **V**
Type **VR**



3 Type

A full ball
B flat ball
V flat ball, with swivel limiting stop
VR flat ball, with swivel limiting stop, corrugated

1 d_1 Type A Type B	Type V Type VR	2 l_1 Nominal length					d_2	d_3	d_4	$l_2 \approx$	$l_3 \approx$	l_4	l_5	A/F	Static load in N Type A / Type B
M 4	-	10	12	16	20	25	2,5	1,8	7	0,8	0,4	2,1	4	3	3500
M 5	-	12	16	20	25	30	3	2	8,5	0,9	0,5	2,4	5	4	5000
M 6	M 6	16	20	25	30	40	4	3,2	10	1,4	0,6	3	6	5	9000
M 8	M 8	20	30	35	40	50	5,5	4,2	13	1,7	0,7	3,5	8	6	15000
M 10	M 10	25	30	40	50	60	7	5,7	16	2,3	0,8	4,5	10	8	24000
M 12	M 12	30	50	80	-	-	8	7,1	18	2,8	0,9	5	12	10	30000
M 16	M 16	40	60	80	-	-	12	9,7	24	4	1,5	6	16	14	73000

Specification

- Steel
  - Tensile strength class 10.9 (1000 N/mm²)
  - blackened
- Ball
  - hardened
  - blank
- RoHS compliant

On request

- Ball point screws with (full) plastic ball (Type AK)

Information

Ball point screws GN 606 with full ball (Type A) are used in applications where a ball point contact is required.

The flat faced moving ball (Type B) allows a clamping or supporting of non parallel surfaces.

The ball of the types V and VR can be swivelled to a maximum of 9° to ensure that clamping is always maintained on the flat section of the ball.

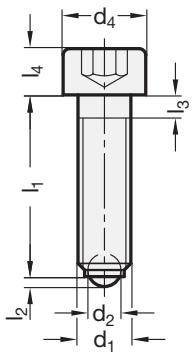
see also...
- *Ball point screws GN 605 (Grub screw)* → *Page 524*

How to order

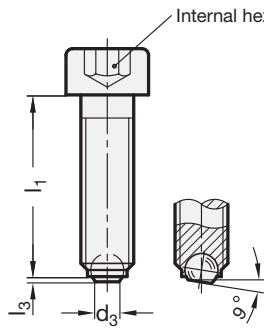
1 2 3
GN 606-M8-20-B

1	d_1
2	l_1
3	Type

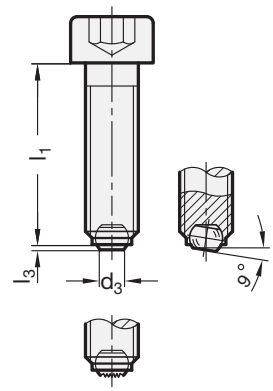
Type **AN**



Type **BN**



Type **VN**
Type **VRN**



Inox
Stainless
Steel

3 **Type**

AN full ball
BN flat ball
VN flat ball, with swivel limiting stop
VRN flat ball, with swivel limiting stop, corrugated

1 d_1 Type AN Type BN	Type VN Type VRN	**2** l_1 Nominal length					d_2	d_3	d_4	$l_2 \approx$	$l_3 \approx$	l_4	l_5	A/F	Static load in N Type AN / Type BN
M 4	-	10	12	16	20	25	2,5	1,8	7	0,8	0,4	2,1	4	3	2040
M 5	-	12	16	20	25	30	3	2	8,5	0,9	0,5	2,4	5	4	3000
M 6	M 6	16	20	25	30	40	4	3,2	10	1,4	0,6	3	6	5	4500
M 8	M 8	20	30	35	40	50	5,5	4,2	13	1,7	0,7	3,5	8	6	9000
M 10	M 10	25	30	40	50	60	7	5,7	16	2,3	0,8	4,5	10	8	14400
M 12	M 12	30	50	80	-	-	8	7,1	18	2,8	0,9	5	12	10	18000
M 16	M 16	40	60	80	-	-	12	9,7	24	4	1,5	6	16	14	43800

Specification

- Stainless Steel AISI 304 / AISI 440C
- Ball hardened
- *Stainless Steel characteristics* → *Page 1144*
- RoHS compliant

Information

Stainless Steel-Ball point screws GN 606 with full ball (Type AN) are used in applications where a ball point contact is required.

The flat faced moving ball (Type BN) allows a clamping or supporting of non parallel surfaces.

The ball of the types VN and VRN can be swivelled to a maximum of 9° to ensure that clamping is always maintained on the flat section of the ball.

see also...

- *Stainless Steel-Ball point screws GN 605 (Grub screw)* → *Page 524*

How to order

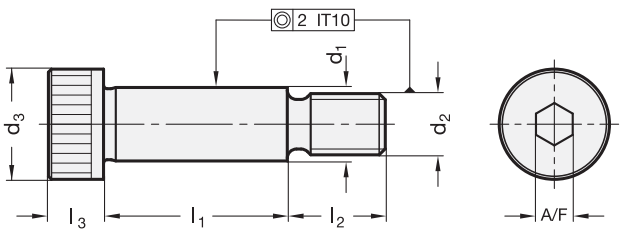
1 **2** **3**

GN 606-M16-40-AN

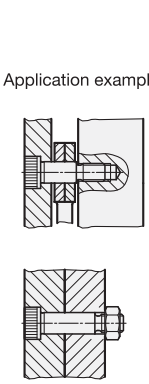
1	d_1
2	l_1
3	Type

ISO 7379
Extract

Shoulder screws
with collar



Application example



1	2	3																			
d_1	d_2	l_1 +0,25																d_3	l_2	l_3	A/F
6 $^{-0,013}_{-0,049}$	M 5	10	12	16	20	25	30	35	40	45	50	55	60	65	70	80		10	9,5	4,5	3
8 f9	M 6	16	20	25	30	35	40	45	50	55	60	65	70	80	90	100		13	11	5,5	4
10 f9	M 8	16	20	25	30	35	40	45	50	55	60	65	70	80	90	100		16	13	7	5
12 f9	M 10	16	20	25	30	35	40	45	50	55	60	65	70	80	90	100		18	16	8	6
16 f9	M 12	25	30	35	40	45	50	55	60	65	70	80	90	100	-	-		24	18	11	8
20 f9	M 16	30	35	40	45	50	55	60	65	70	80	90	100	-	-	-		30	22	14	10
24 f9	M 20	50	55	60	65	70	80	90	100	-	-	-	-	-	-	-		36	27	16	12

Specification

- Steel
  - Tensile strength class 12.9 (1200 N/mm²)
  - blackened
  - Adapter dimension d_1 ground
- *ISO-Fundamental Tolerances* → *Page 1132*
- RoHS compliant

Information

Shoulder screws ISO 7379 are cost-saving construction elements for a wide variety of different uses.

The maximum tightening torque must not be defined by strength class 12.9, it is instead limited by the relatively small bearing points (shoulders) and by the recesses at the transition point from d_1 to d_2 and d_3.

Standard deviation: the official ISO standard sheet has the following dimensions for d_2 - d_1:

M5-6,5 / M10-13 / M20-25.

see also...

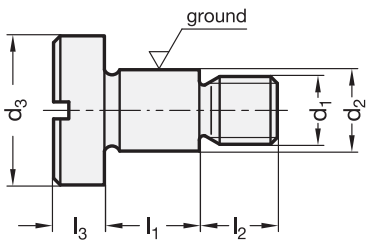
- *Cylinder head shoulder bolts GN 732* → *Page 529*

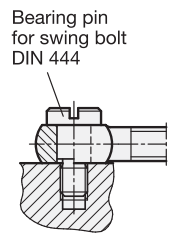
How to order

1 2 3

ISO 7379-10-M8-40

1	d_1
2	d_2
3	l_1





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

Specification

- Steel
  - Tensile strength class 5.8 (500 N/mm²)
  - blackened
  - case hardened
    (all round depth 0,2 to 0,4 mm)
- RoHS compliant

Information

The dimensions d_2 / l_1 of the cylinder head shoulder bolts GN 732 permit a use as bearing pin for swing bolts DIN 444, swing nuts GN 444.2 and hubs with eccentrical cam GN 919.

see also...

- *Swing bolts DIN 444* → *Page 516*
- *Swing nuts GN 444.2* → *Page 518*
- *Hubs with eccentrical cam GN 919* → *Page 658*

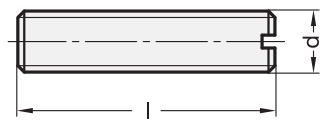
How to order

1 2 3

GN 732-M8-10-12

1	d_1
2	d_2
3	l_1

Grub screws / Threaded rods



Inox
Stainless
Steel

1	2										
Steel											
d	Length **l**										as threaded rod
M 6	20	25	30	35	40	45	50	55	60	70	1000
M 8	25	30	35	40	45	50	55	60	70	80	1000
M 10	25	30	35	40	45	50	55	60	70	80	1000
M 12	30	35	40	45	50	55	60	70	80	100	1000
M 16	30	35	40	45	50	55	60	70	80	100	1000
M 20	40	50	60	70	80	90	100	-	-	-	1000

1	2										
Stainless Steel											
d	Length **l**										
M 5	25	30	35	40	45	50	60	-	-	-	-
M 6	20	25	30	35	40	45	50	55	60	65	75
M 8	30	35	40	45	50	55	60	65	70	75	80
M 10	35	40	45	50	55	60	70	80	-	-	-

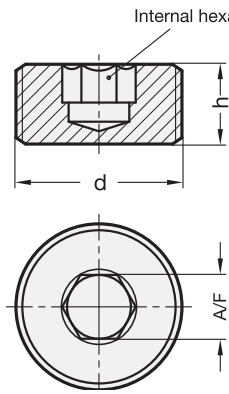
Specification

3

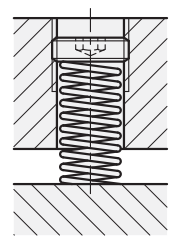
- Steel —
  - Tensile strengthclass 5.8 (500 N/mm²)
  - blackened
- Stainless Steel AISI 303 **NI**
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Steel-Grub screw		
1 2	1	**d**
GN 551.1-M10-50	2	**Length l**

Stainless Steel-Grub screw		
1 2 3	1	**d**
	2	**Length l**
GN 551.1-M8-50-NI	3	**Material**



Example for application



[1]

d	h	A/F
M 12 x 1,5	10	6
M 16 x 1,5	10	8
M 20 x 1,5	12	10
M 24 x 1,5	12	14
M 27 x 1,5	12	14
M 30 x 1,5	12	17
M 33 x 1,5	12	17

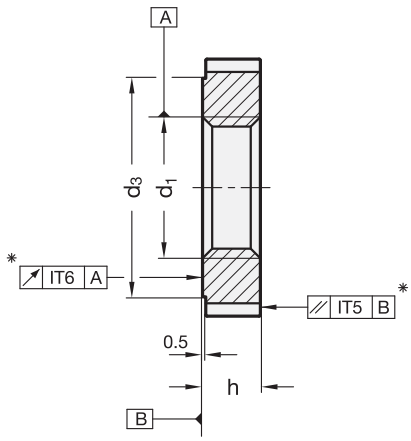
Specification

- Steel
  - Tensile strength class 5.8 (500 N/mm²)
  - blackened
- RoHS compliant

How to order		
GN 252-M24x1,5 [1]	1	d

DIN 1804 Slotted locknuts

Extract



Inox
Stainless
Steel

2 Type

W Steel, not hardened, not ground

WNI Stainless Steel, not hardened, not ground

H Steel, hardened and mating surface ground

1 d		d_2 h11	d_3	b	h h14	Code no. for C-Spanner	1 d_1		d_2 h11	d_3	b	h h14	Code no. for C-Spanner
Type W Type H	Type WNI						Type W Type H	Type WNI					
M 8 x 1	-	20	16	4	5	DIN A16-20	M 32 x 1,5	-	52	45	7	11	DIN A52-55
M 10 x 1	-	25	20	5	6	DIN A25-28	M 35 x 1,5	M 35 x 1,5	55	48	7	11	DIN A52-55
M 12 x 1,5	-	28	23	6	6	DIN A25-28	M 38 x 1,5	-	58	50	8	11	DIN A58-62
M 14 x 1,5	-	30	25	5	7	DIN A30-32	M 40 x 1,5	M 40 x 1,5	62	54	8	12	DIN A58-62
M 16 x 1,5	M 16 x 1,5	32	27	5	7	DIN A30-32	M 42 x 1,5	-	62	54	8	12	DIN A58-62
M 18 x 1,5	-	34	28	6	8	DIN A34-36	M 45 x 1,5	M 45 x 1,5	68	60	8	12	DIN A68-75
M 20 x 1,5	M 20 x 1,5	36	30	6	8	DIN A34-36	M 48 x 1,5	-	75	67	8	13	DIN A68-75
M 22 x 1,5	-	40	34	6	9	DIN A40-42	M 50 x 1,5	M 50 x 1,5	75	67	8	13	DIN A68-75
M 24 x 1,5	M 24 x 1,5	42	36	6	9	DIN A40-42	M 52 x 1,5	-	80	70	10	13	DIN A80-90
M 26 x 1,5	-	45	38	7	10	DIN A45-50	M 55 x 1,5	M 55 x 1,5	80	70	10	13	DIN A80-90
M 28 x 1,5	M 28 x 1,5	50	43	7	10	DIN A45-50	M 58 x 1,5	-	90	80	10	13	DIN A80-90
M 30 x 1,5	M 30 x 1,5	50	43	7	10	DIN A45-50	M 60 x 1,5	M 60 x 1,5	90	80	10	13	DIN A80-90

* Position tolerances apply to type H

Specification

- Type W
  Steel
  - Tensile strength class 5 (500 N/mm²)
  - not hardened, not ground
  - blackened
- Type WNI
  Stainless Steel AISI 303
  - not hardened, not ground
- Type H
  Steel
  - Tensile strength class 5 (500 N/mm²)
  - hardened HRC 60 ± 2
    (thread not hardened)
  - Mating surface ground
- RoHS compliant

Accessory

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

Information

On slotted locknuts DIN 1804 the ground surface d_3 stands proud and should be used as a mating surface.

The sizes M45x1,5 to M60x1,5 have 6 slots.

The official DIN standard sheet specifies additional sizes (up to M200 x 3).

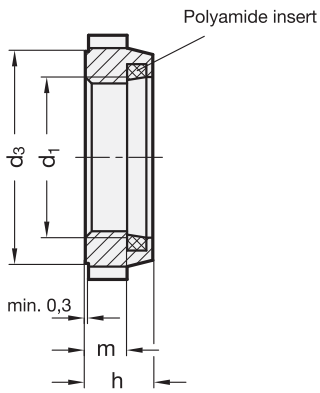
How to order

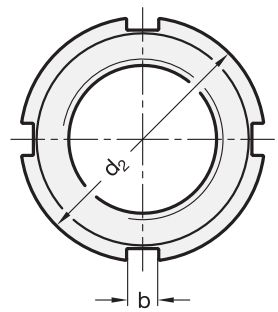
DIN 1804-M20x1,5-H (1 2)

1	d_1
2	Type

Slotted locknuts

self-locking, with polyamide insert





[1]

d_1 6H	d_2	d_3	b	h	m	Number of slots	Code no. for C-Spanner
M 10 x 0,75	18	15	3	7,5	4,5	4	DIN 1810-A16-20
M 12 x 1	21	18	3	7,5	4,5	4	DIN 1810-A16-20
M 15 x 1	24	21	4	8,5	5,5	4	DIN 1810-A25-28
M 17 x 1	28	24	4	8,5	5,5	4	DIN 1810-A25-28
M 20 x 1	32	27	4	9,5	6,5	4	DIN 1810-A30-32
M 25 x 1,5	38	33	5	10,5	6,5	4	DIN 1810-A40-42
M 30 x 1,5	44	38	5	11	6,5	4	DIN 1810-A45-50
M 35 x 1,5	50	44	5	11	7	4	DIN 1810-A45-50
M 40 x 1,5	56	50	6	12	8,2	4	DIN 1810-A58-62
M 45 x 1,5	62	55	6	12	8,2	4	DIN 1810-A58-62
M 50 x 1,5	68	61	6	13	8,5	4	DIN 1810-A68-75
M 55 x 2	75	68	7	13,5	8,5	6	DIN 1810-A68-75
M 60 x 2	80	73	7	13,5	8,5	6	DIN 1810-A80-90

Specification

- Steel
  - Tensile strength class 5 (500 N/mm²)
  - zinc plated, blue passivated
- *Metric ISO fine thread → Page 1135*
- *Plastic characteristics → Page 1141*
- RoHS compliant

Accessory

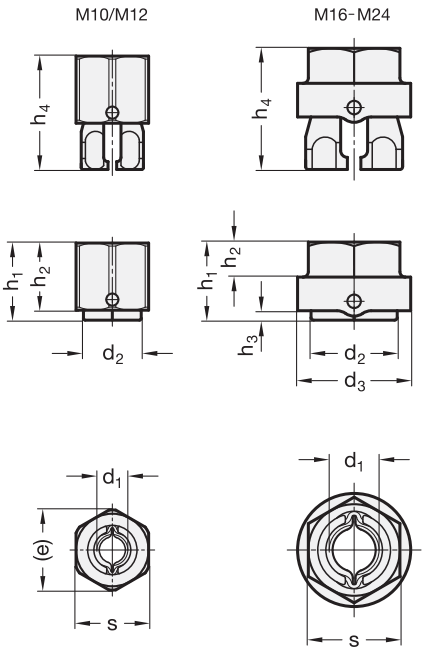
- C-Spanner DIN 1810
  (Code no. see table)

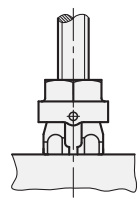
Information

Slotted locknuts GN 1804.1 are self-locking owing to their polyamide insert. They can therefore also be used as a setting nut and may be used more than once.

The thread series corresponds to roller bearing slotted locknuts DIN 981.

How to order		
GN 1804.1-M30x1,5 [1]	1	d_1

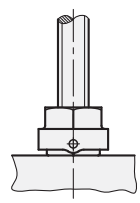




Installation

Push nut into the clamping position

Push on the outer sleeve (lock the nut in place) and tighten with max. 1/2 turn



Dismantling

After loosening, push back the outer sleeve and pull off the nut

[1]

d_1	d_2 ≈ max. Ø of the support plate	d_3 ≈	e	h_1 ≈	h_2 ≈	h_3 ≈	h_4 ≈	s ≈	Approved axial load F in kN
M 10	19	-	26,5	25,5	22	3,5	37,5	24	79
M 12	19	-	26,5	25,5	22	3,5	37,5	24	137
M 16	28	35	-	23	10	3	36	27	130
M 20	35	42	-	29	12	3,5	45	34	203
M 24	42	50	-	35	15	4	54	41	293

Specification

- Steel
  - Tensile strength class 10 (1000 N/mm²)
  - zinc plated
- RoHS compliant

Information

Quick action hexagon nuts GN 6333 are used if the nut is to be moved quickly to the clamping position and to be removed quickly after loosening.

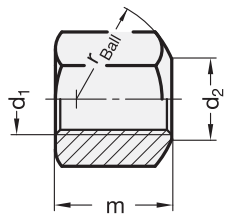
Special benefits of the nut:

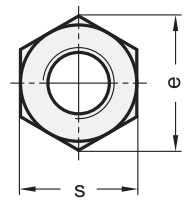
- the quick action adjustment is not impaired by soiled or damaged screw threads
- easy mounting / dismantling, even in tight spaces

How to order		
GN 6333-M16 [1]	1	d_1

DIN 6330
Steel / Stainless Steel

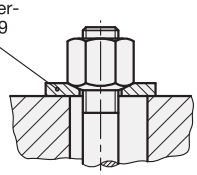
Hexagon nuts
with spherical seating



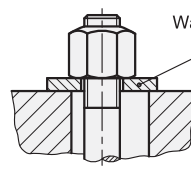


Inox Stainless Steel

Spherical washer-female DIN 6319



Washer DIN 6340



2 Type

B with one-sided spherical seating

1

d_1 Steel	d_1 Stainless Steel	d_2 H14	e min.	m	A/F	r
M 8	M 8	9	14,4	12	13	11
M 10	M 10	11,5	17,8	15	16	15
M 12	M 12	14	20	18	18	17
M 14	M 14	16	24,6	21	22	20
M 16	M 16	18	26,8	24	24	22
M 20	M 20	22	33,5	30	30	27
M 24	-	26	40	36	36	32
M 30	-	32	51,3	45	46	41
M 36	-	38	61,3	54	55	50

Specification

3

- Steel
  - Tensile strength class 10 (1000 N/mm²)
  - blackened
- Stainless Steel AISI 303 **NI**
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

Hexagon nuts DIN 6330 are used on clamping „applications which require frequent clamping and unclamping (m = 1,5 x d_1).

The spherical seating together with female washers DIN 6319 allows excessive positional inaccuracies to be equalized.

see also...

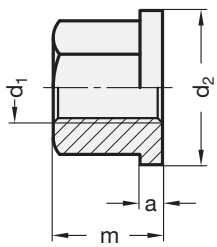
- *Spherical washers DIN 6319 → Page 546*
- *Washers DIN 6340 → Page 539*
- *Heavy duty washers GN 6339 → Page 540*

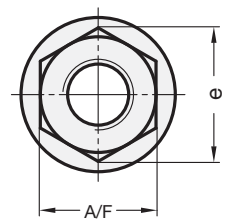
Steel-Hexagon nut 1 2 DIN 6330-M16-B		
	1	d_1
	2	Type

Stainless Steel-Hexagon nut 1 2 3 DIN 6330-M16-B-NI		
	1	d_1
	2	Type
	3	Material

DIN 6331
Extract

Hexagon nuts
with collar





d_1	d_2	a	e min.	m	A/F
M 6	14	3	11,5	9	10
M 8	18	3,5	14,4	12	13
M 10	22	4	17,8	15	16
M 12	25	4	20	18	18
M 14	28	4	24,6	21	22
M 16	31	5	26,8	24	24
M 20	37	6	33,5	30	30
M 24	45	6	40	36	36
M 30	58	8	51,3	45	46
M 36	68	10	61,3	54	55

Specification

- Steel
  - Tensile strength class 10 (1000 N/mm²)
  - blackened
- RoHS compliant

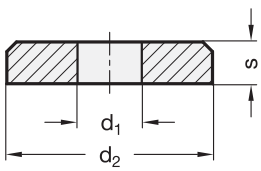
Information

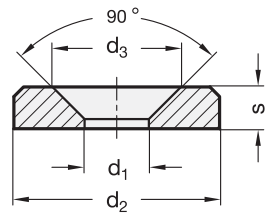
Collar nuts DIN 6331 are used on clamping applications which require frequent clamping and unclamping (m = 1,5 x d_1).

The collar of the nut eliminates the need for washers.

The official standard sheet specifies the additional sizes M 27, M 42 and M 48. But M 14 ist not forseen on the official standard sheet.

How to order		
DIN 6331-M16	1	d_1





Inox
Stainless
Steel

4 Type

A with cylindrical bore
B with bore for countersunk screw

2 d_1 $^{+0,5}_{+0,2}$	3 d_2		d_3 Type B	s
4	10	13	8,4	2,5
5	13	16	10,5	3
6	15	20	12,6	4
8	20	26	16,8	5
10	25	32	21	6,5
12	30	40	25,2	7,5

Specification

	1	5
• Steel	**ST**	
- turned		
- blackened		**BT**
- zinc plated, blue passivated		**ZB**
• Stainless Steel AISI 303	**NI**	
- turned		
- matt shot-blasted		**MT**

• *Stainless Steel characteristics → Page 1144*

• RoHS compliant

Information

Washers GN 6341 are used mainly in mechanical machine and jig construction when DIN 125, DIN 9021 and DIN 6340 washers no longer meet requirements.

In particular, Type B for countersunk screws is ideal for solid screw connections with a low construction height.

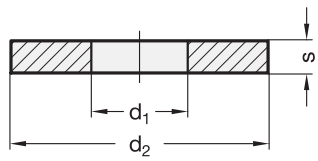
see also...

• *Heavy duty washers GN 6339 → Page 540*
• *Countersunk washers GN 184 → Page 542*
• *Washers DIN 6340 → Page 539*

How to order

1 2 3 4 5
GN 6341-ST-8-26-B-ZB

1	**Material**
2	**d_1**
3	**d_2**
4	**Type**
5	**Finish**



[1]

d_1	d_2	s	for threaded bolts
6,4	17	3	M 6
8,4	23	4	M 8
10,5	28	4	M 10
13	35	5	M 12
15	40	5	M 14
17	45	6	M 16
21	50	6	M 20
25	60	8	M 24
31	68	10	M 30

Specification

- Heat-treatable Steel
  - tempered
    hardness (350 + 80) HV 30
  - phosphate-treated
  - blanked
    not deburred
- RoHS compliant

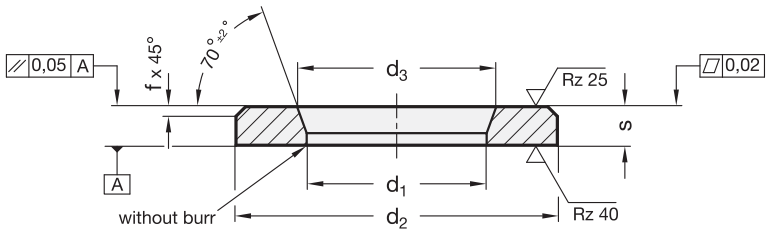
Information

Washers DIN 6340 are mainly used for elongated holes.

see also...

- *Heavy duty washers GN 6339* → *Page 540*

How to order		
DIN 6340-17 [1]	1	d_1



1	2		3					
d_1 H13	d_2 h13 low Type	high Type	s low Type	high Type	d_3 H13	f low Type	high Type	for threaded bolts
6,3	12	17	2,5	3	7	0,6	1	M 6
8,4	16	21	2,5	4	9,5	0,75	1,5	M 8
10,4	20	25	3	4	11,5	0,75	1,5	M 10
12,5	24	30	3,5	6	14	1	2	M 12
14,5	28	36	3,5	6	16	1	2	M 14
16,5	30	40	4	6	18	1	2	M 16
18,5	34	44	5	8	21	1,5	2,5	M 18
20,5	37	44	5	8	23	1,5	2,5	M 20
22,5	40	50	5	8	25	1,5	2,5	M 22
24,5	44	50	5	10	27	1,5	3,5	M 24
28	50	60	6	10	31	1,5	3,5	M 27
31	56	68	6	10	34	1,5	3,5	M 30
37	66	-	7	-	40	2	-	M 36

Specification

4

- Steel, 1.7227 (42 CrMoS 4 V)
  - tempered to tensile strength Rm = 1220 ... 1400 N/mm²
  - fine turned and slide ground
- blackened **BT**
- GEOMET 500-treated **GO**
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Information

The influence of a washer on the quality of the screwed connection is very often underestimated. With washers GN 6339, high quality preloaded screwed connections can be established.

A high static clamping force can be reached avoiding loss of tension.

At a specified preloaded clamping force it is often possible to use thinner bolts. This can result in a better ratio between clamping distance and bolt diameter to minimise the danger of failure.

The case hardened smooth bolt head/screw contact face leads to a lower and more constant friction co-efficient even when continuous clamping and releasing operations are required.

Washers GN 6339 are only suitable for machine construction bolts of classes 8.8 / 10.9 / 12.9, and not for steel bolts DIN 6916.

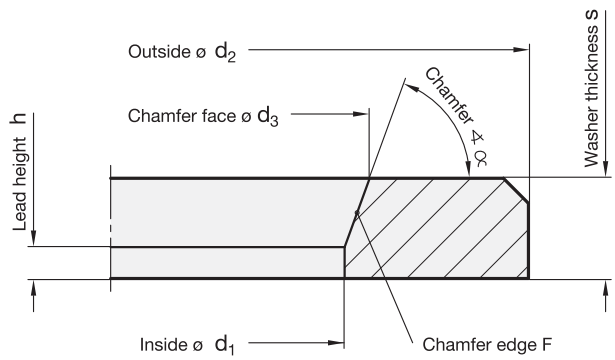
How to order

1 2 3 4

GN 6339-20,5-37-5-BT

1	d_1
2	d_2
3	s
4	Finish

Technical information



Outside diameter d_2

The outside diameter d_2 of the lower type refers to washers DIN 125 / ISO 7089, and the higher type to washers DIN 7349.

Chamfer face diameter d_3

This dimension is, together with the chamfer angle α 70° and the inside diameter d_1, the most important dimension of these heavy duty washers. Diameter d_3 is actually, even in the lower tolerance range, larger than the max. contact under head diameter on a bolt.

This will ensure that the chamfer of d_3 of the hardened washer will not be pressed into the underhead radius causing an indentation on the bolt which would damage the bolt.

Inside diameter d_1

The inside diameter d_1 is kept as small as possible ensuring that the bolt is inserted centrically into the washer. The choice of a matching pair of bolt and washer with least radial clearance is important in order to avoid a mismatch between chamfer diameter d_3 and the max. contact area diameter of the bolt head.

Chamfer angle α = 70° ± 2°

This relatively large angle is necessary when using hexagon headed bolts, which usually have a tapered transfer from shank to head (the so-called trumpet) to avoid fouling of the washer.

Chamfer edge F

The extended chamfer side F as seen from d_3 creates with d_1 an edge the so-called trumpet of the transfer from shank to head of the bolt, so that the smallest radial clearance prevails. Even with the smallest angle of 680 and the lower dimension of d_3 and d_1 the radial clearance of all bolts to DIN EN is still sufficient.

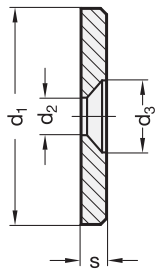
Lead height h

This is the height of the cylindrical part of the internal diameter d_1, h should be as high as possible in relation to the pitch of the thread of the bolt.

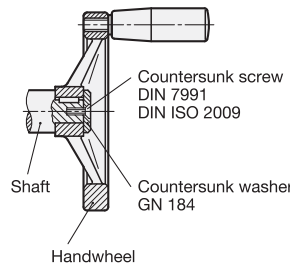
Washer thickness s

Washers GN 6339 are higher when compared with DIN washers (exception: DIN 7439 which is equal to the high type).

A larger thickness leads to a stronger washer. As a result, bearing in mind the chamfer d_3, a minimum height is established which ensures that the bolt thread will not be damaged when the bolt is tightened.



Example of application
Fixing of a handwheel
with keyway on the shaft



Inox Stainless Steel

[1]

d_1	d_2	d_3	s	for countersunk screws DIN 7991 DIN ISO 2009
16	4,3	8	3	M 4
20	4,3	8	3	M 4
22	5,3	10	3,5	M 5
25	5,3	10	3,5	M 5
28	5,3	10	3,5	M 5
32	6,4	12	4	M 6
36	6,4	12	4	M 6
40	6,4	12	5	M 6
45	6,4	12	6	M 6
52	6,4	12	6	M 6

Specification

- **GN 184**
  Steel
  - turned
  - blackened
- **GN 184.5**
  Stainless Steel AISI 303
  - turned
  - matt shot-blasted
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

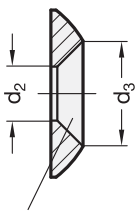
Information

Countersunk washers GN 184 / GN 184.5 are retained to the face of the shaft end with a countersunk head screw DIN ISO 2009 or DIN 7991 forming a clean-look end cap.

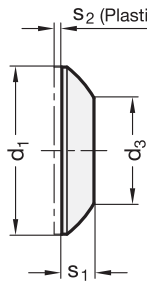
A typical application is the retention of handwheels with hub keyed to the shaft.

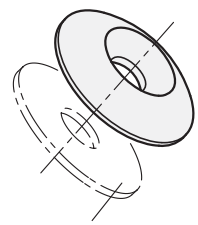
Steel-Countersunk washer [1] GN 184-28	1	d_1

Stainless Steel-Countersunk washer [1] GN 184.5-36	1	d_1



Bore for
countersunk head screw
DIN 7991 / DIN ISO 2009





Plastic disc

Inox
Stainless
Steel

[1]

d_1	d_2	d_3	s_1	s_2	for countersunk screws DIN 7991 / DIN ISO 2009
18	4,3	8,5	3	0,8	M 4
20	5,3	10,3	3,5	1	M 5
22	6,4	12,3	4	1	M 6
26	8,4	16,4	5	1	M 8

Specification

[2]

- Stainless Steel AISI 303 **NI**
  - matt shot-blasted
- Plastic disc (Polyamide PA)
  white
- *Stainless Steel characteristics* → *Page 1144*
- *Plastic characteristics* → *Page 1141*
- RoHS compliant

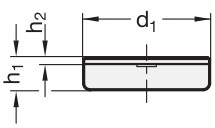
Information

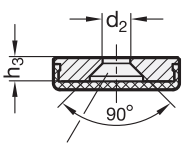
Stainless Steel-Bezel discs GN 185 are used for shrouding screw joints when a visually nice finish is required.

The purpose of the plastic discs supplied as a standard item on delivery is merely to avoid damage to improved surfaces.

How to order [1] [2] GN 185-20-NI		
	1	d_1
	2	**Material**

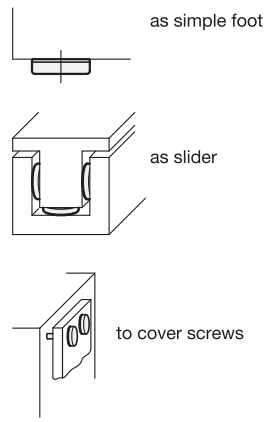
GN 338 Discs with cover cap (Component feet)





Bore for
countersunk head screw
DIN 7991 / DIN ISO 2009
Sheet metal screws
Wooden screws

Examples of application



2 Type

KS with cover cap, gliding
KR with cover cap, non-gliding

1

d_1	d_2	h_1	h_2	h_3
16	3,2	5	1	3,7
20	4,3	5	1	3,7
25	4,3	5,7	1	4
32	5,3	6,7	1	5

Specification

2

- Steel
  zinc plated, blue passivated
- Cover caps:
  - Cover cap, gliding **KS**
    Polyacetal (POM)
    white (natural colour) RAL 9001
  - Cover cap, non-gliding **KR**
    Elastomer (TPE)
    73 shore, black
- *Plastic characteristics → Page 1141*
- RoHS compliant

On request

- Cover cap in other colours
  (Standard white, natural colour)

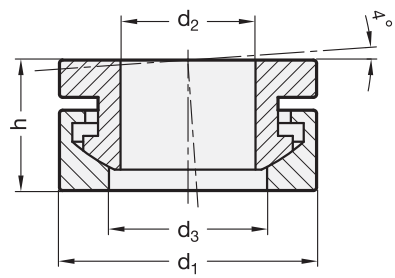
Information

Discs with cover caps GN 338 are suitable for use as gliding or non gliding feet on machinery.

Removal of the cover can be done by inserting a screwdriver in the gap on the edge.

How to order		
GN 338-25-KS (1 2)	1	d_1
	2	Type

Spherical washers



Rostfrei Inox Stainless Steel

[1]

d_1	d_2	d_3	h	for screw	Static load F in kN	
					Steel	Stainless Steel
13	6,4	7,4	7	M 6	9	on request
17	8,4	9,7	8,5	M 8	17	
21	10,5	12	10,5	M 10	26	
25	13	14,8	13	M 12	38	
32	17	19,7	17	M 16	73	
40	21	24,6	20,3	M 20	113	

Specification [2]

- Steel **ST**
  Case hardening steel
  case hardened
  all round depth 0,2 to 0,4 mm
  hardness (550 + 100) HV 10
- Stainless Steel AISI 303 **NI**
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

Spherical washers combinations GN 6319.1 provide an „undetachable“ connection for male and female spherical washers DIN 6319.

They simply storage and allow fast and efficient installation.

see also...

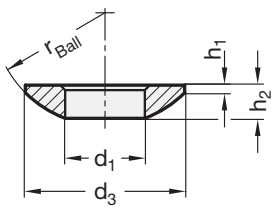
- *Spherical washers DIN 6319 → Page 546*
- *Stainless Steel Spherical washers DIN 6319 → Page 547*

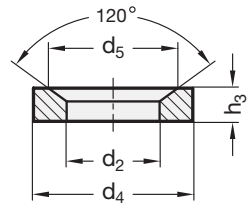
Steel Spherical washer [1] [2] GN 6319.1-21-ST		
	1	d_1
	2	Material

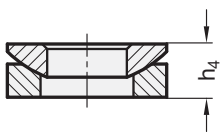
Stainless Steel Spherical washer [1] [2] GN 6319.1-17-NI		
	1	d_1
	2	Material

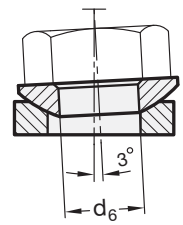
DIN 6319 Spherical washers

Extract









2 Type

C male
D female $d_4 = d_3$
G female $d_4 > d_3$

1 d_1 H12 Type C	1 d_2 H12 Type D Type G	d_3	d_4 Type D	d_4 Type G	d_5	d_6 Screw	h_1	h_2	h_3 Type D	h_3 Type G	h_4 Type D	r	Transferable static bolt force in kN max.
6,4	7,1	12	12	17	11	M 6	0,7	2,3	2,8	4	4,2	9	9
8,4	9,6	17	17	24	14,5	M 8	0,6	3,2	3,5	5	5,6	12	17
10,5	12	21	21	30	18,5	M 10	0,8	4	4,2	5	6,5	15	26
13	14,2	24	24	36	20	M 12	1,1	4,6	5	6	8	17	38
15	16,5	28	28	-	24,8	M 14	1,2	5	5,6	-	8,5	22	53
17	19	30	30	44	26	M 16	1,3	5,3	6,2	7	9,6	22	73
21	23,2	36	36	50	31	M 20	2	6,3	7,5	8	11,7	27	117
25	28	44	44	60	37	M 24	2,4	8,2	9,5	10	15,2	32	168
31	35	56	56	68	49	M 30	3,6	11,2	12	12	19,2	41	269
37	42	68	68	-	60	M 36	4,6	14	15	-	23,5	50	394
43	49	78	78	-	70	M 42	6,5	17	18	-	29	58	542
50	56	92	92	-	82	M 48	8	21	22	-	35,5	67	714

Specification

- Type **C** / **D**
  Case hardening steel
  case hardened
  all round depth 0,2 to 0,4 mm
  hardness (550 + 100) HV 10
- Type **G**
  Heat-treatable Steel
  tempered
  hardness (350 + 80) HV 30
- *ISO-Fundamental Tolerances* → *Page 1132*
- RoHS compliant

On request

- Not hardened spherical washers

Information

Spherical washers DIN 6319 are used for clamping on non-parallel surfaces.

Female washers Type G are mainly used on elongated holes.

When utilizing hexagon nuts with spherical seating DIN 6330 type B the male washer is redundant.

see also...

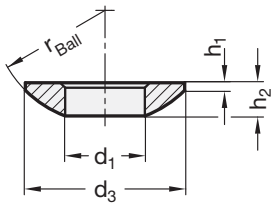
- *Spherical levelling washers GN 350.3 (high loads)* → *Page 551*

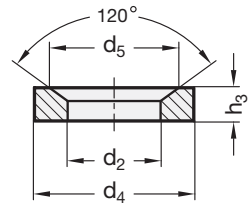
Spherical washer male 1 2 DIN 6319-17-C		
	1	d_1
	2	Type

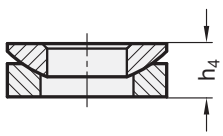
Spherical washer female 1 2 DIN 6319-19-D		
	1	d_2
	2	Type

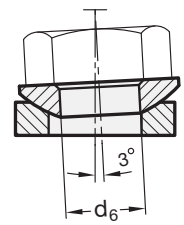
DIN 6319 Stainless Steel-Spherical washers

Extract









Inox Stainless Steel

2 Type

C male

D female $d_4 = d_3$

1 d_1 H12 Type C		1 d_2 H12 Type D		d_3	d_4	d_5	d_6 Screw	h_1	h_2	h_3	h_4	r
St. Steel NI	St. Steel A4	St. Steel NI	St. Steel A4									
6,4	6,4	7,1	7,1	12	12	11	M 6	0,7	2,3	2,8	4,2	9
8,4	8,4	9,6	9,6	17	17	14,5	M 8	0,6	3,2	3,5	5,6	12
10,5	10,5	12	12	21	21	18,5	M 10	0,8	4	4,2	6,5	15
13	13	14,2	14,2	24	24	20	M 12	1,1	4,6	5	8	17
17	17	19	19	30	30	26	M 16	1,3	5,3	6,2	9,6	22
21	21	23,2	23,2	36	36	31	M 20	2	6,3	7,5	11,7	27
25	25	28	28	44	44	37	M 24	2,4	8,2	9,5	15,2	32
31	31	35	35	56	56	49	M 30	3,6	11,2	12	19,2	41
37	-	42	-	68	68	60	M 36	4,6	14	15	23,5	50
43	-	49	-	78	78	70	M 42	6,5	17	18	29	58
50	-	56	-	92	92	82	M 48	8	21	22	35,5	67

Specification

3

- Stainless Steel AISI 303 not hardened **NI**
- Stainless Steel AISI 316 not hardened **A4**
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

Stainless Steel-Spherical washers DIN 6319 are used for clamping on non-parallel surfaces.

When utilizing Stainless Steel-Hexagon nuts with spherical seating DIN 6330 type B the male washer is redundant.

see also...

- *Stainless Steel-Spherical levelling washers GN 350.3 (high load) → Page 551*

Spherical washer male

1 2 3

DIN 6319-21-C-NI

1	d_1
2	Type
3	Material

Spherical washer female

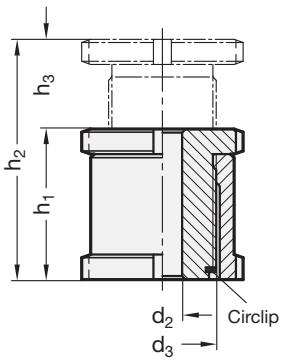
1 2 3

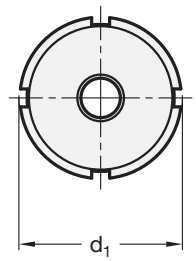
DIN 6319-23,2-D-NI

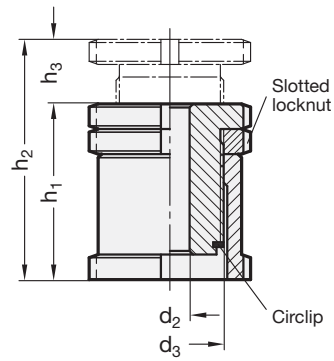
1	d_2
2	Type
3	Material

Levelling sets

long version







Inox Stainless Steel

3 Type

A without lock nut
AK with lock nut

1 d_1	2 d_2	d_3	h_1 Type A	h_1 Type AK	h_2	h_3 Adjustable range Type A	h_3 Adjustable range Type AK	for screw	Static load F in kN Steel F_1	Steel F_2	Stainless Steel F_1	Stainless Steel F_2	Code no. for C-Spanner
25	5,5	M 15 x 1	28	33	43	15	10	M 5	40	33,4	27,1	20,2	DIN 1810-A25-28
25	6,6	M 15 x 1	28	33	43	15	10	M 6	40	30,7	27,1	20,2	DIN 1810-A25-28
32	6,6	M 20 x 1	35	41	55	20	14	M 6	65	55,7	43,4	36,5	DIN 1810-A30-32
32	9	M 20 x 1	35	41	55	20	14	M 8	65	48	43,4	30,8	DIN 1810-A30-32
32	11	M 20 x 1	35	41	55	20	14	M 10	65	37,9	43,4	23,4	DIN 1810-A30-32
45	11	M 30 x 1,5	42	49	67	25	18	M 10	120	92,9	84	64	DIN 1810-A45-50
45	13,5	M 30 x 1,5	42	49	67	25	18	M 12	120	80,4	84	54,8	DIN 1810-A45-50
45	17,5	M 30 x 1,5	42	49	67	25	18	M 16	120	45,5	84	28,9	DIN 1810-A45-50
58	17,5	M 40 x 1,5	54	63	86	32	23	M 16	210	136	148	92,9	DIN 1810-A58-62
58	22	M 40 x 1,5	54	63	86	32	23	M 20	210	90	148	59	DIN 1810-A58-62
58	26	M 40 x 1,5	54	63	86	32	23	M 24	210	37	148	20,3	DIN 1810-A58-62
70	22	M 50 x 1,5	66	77	106	40	29	M 20	330	210	225	136	DIN 1810-A68-75
70	26	M 50 x 1,5	66	77	106	40	29	M 24	330	157	225	97,3	DIN 1810-A68-75
70	33	M 50 x 1,5	66	77	106	40	29	M 30	330	53	225	20,6	DIN 1810-A68-75
80	26	M 60 x 2	76	87	126	50	39	M 24	495	322	323	195,3	DIN 1810-A80-90
80	33	M 60 x 2	76	87	126	50	39	M 30	495	218	323	118,6	DIN 1810-A80-90
80	39	M 60 x 2	76	87	126	50	39	M 36	495	101	323	38,2	DIN 1810-A80-90

Specification

4

- Steel, 1.7225 (42 CrMo 4 V) zinc plated, blue passivated — **ST**
- Stainless Steel AISI 303 (X 10 CrNiS 18-9) — **NI**
- F_1: max. total load
- F_2: max. load after deduction of the max. preload
  - for screws 8.8, μ = 0,125 (Steel-version)
  - for screws 6.8, μ = 0,14 (Stainless Steel-version)
- RoHS compliant

Accessory

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

Information

Levelling sets GN 350 are used for levelling and linking operations. They comprise a threaded upper sleeve and a female threaded lower sleeve. The fine thread allows a stepless and precise setting and locking using the C-Spanner DIN 1810. A locking ring serves also as a height limiter for the max. height.

Normally this screw is permanently and securely locked by the static load created when the mounting screw is tightened.

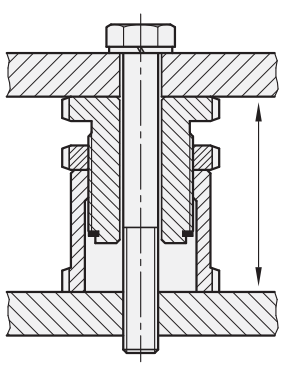
Should this not be sufficient, the use of a locknut (Type AK) is recommended.

How to order

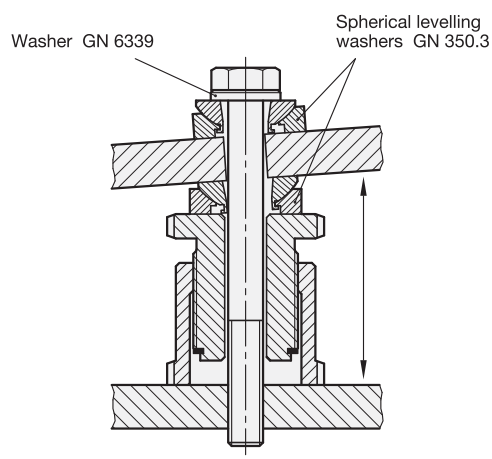
1 2 3 4
GN 350-45-13,5-AK-ST

1	d_1
2	d_2
3	Type
4	Material

Type **AK** (with lock nut)

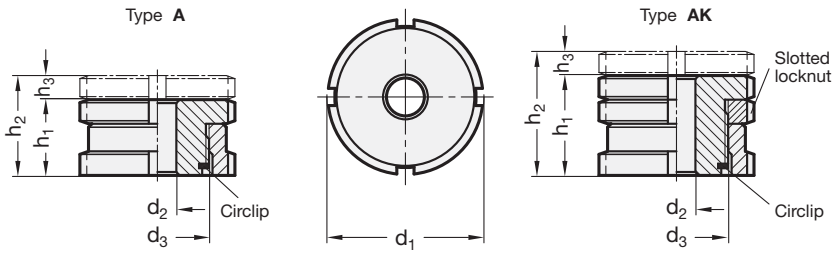


Type **A** (without lock nut)
with 2 spherical levelling washers



Levelling sets

short version



Inox Stainless Steel

3 Type

A without lock nut
AK with lock nut

1 d_1	2 d_2	d_3	h_1 Type A	h_1 Type AK	h_2 Type A	h_2 Type AK	h_3 Adjustable range	for screw	Static load F in kN Steel F_1	Steel F_2	Stainless Steel F_1	Stainless Steel F_2	Code no. for C-Spanner
25	5,5	M 15 x 1	15	20	19	24	4	M 5	40	33,4	27,1	22,4	DIN 1810-A25-28
25	6,6	M 15 x 1	15	20	19	24	4	M 6	40	30,7	27,1	20,2	DIN 1810-A25-28
32	6,6	M 20 x 1	18	24	23	29	5	M 6	65	55,7	43,4	36,5	DIN 1810-A30-32
32	9	M 20 x 1	18	24	23	29	5	M 8	65	48	43,4	30,8	DIN 1810-A30-32
32	11	M 20 x 1	18	24	23	29	5	M 10	65	37,9	43,4	23,4	DIN 1810-A30-32
45	11	M 30 x 1,5	22	29	29	36	7	M 10	120	92,9	84	64	DIN 1810-A45-50
45	13,5	M 30 x 1,5	22	29	29	36	7	M 12	120	80,4	84	54,8	DIN 1810-A45-50
45	17,5	M 30 x 1,5	22	29	29	36	7	M 16	120	45,5	84	28,9	DIN 1810-A45-50
58	17,5	M 40 x 1,5	28	37	37	46	9	M 16	210	136	148	92,9	DIN 1810-A58-62
58	22	M 40 x 1,5	28	37	37	46	9	M 20	210	90	148	59	DIN 1810-A58-62
58	26	M 40 x 1,5	28	37	37	46	9	M 24	210	37	148	20,3	DIN 1810-A58-62
70	22	M 50 x 1,5	33	44	43	54	10	M 20	330	210	225	136	DIN 1810-A68-75
70	26	M 50 x 1,5	33	44	43	54	10	M 24	330	157	225	97,3	DIN 1810-A68-75
70	33	M 50 x 1,5	33	44	43	54	10	M 30	330	53	225	20,6	DIN 1810-A68-75
80	26	M 60 x 2	38	49	50	61	12	M 24	495	322	323	195,3	DIN 1810-A80-90
80	33	M 60 x 2	38	49	50	61	12	M 30	495	218	323	118,6	DIN 1810-A80-90
80	39	M 60 x 2	38	49	50	61	12	M 36	495	101	323	38,2	DIN 1810-A80-90

Specification

4

- Steel, 1.7225 (42 CrMo 4 V) zinc plated, blue passivated **ST**
- Stainless Steel AISI 303 (X 10 CrNiS 18-9) **NI**
- F_1: max. total load
- F_2: max. total load after deduction of the max. preload
  - for screws 8.8, μ = 0,125 (Steel)
  - for screws 6.8, μ = 0,14 (Stainless Steel)
- RoHS compliant

Accessory

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

Information

Levelling sets GN 350.1 are used for levelling, adjusting and linking operations if small dimensions are given.

They comprise a threaded upper sleeve and a female threaded lower sleeve. The fine thread allows a stepless and precise setting and locking using the C-Spanner DIN 1810. A locking ring serves as a height limiter for the max. height.

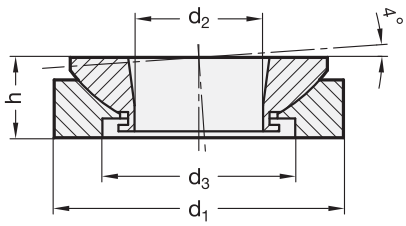
see also...
- *Levelling sets GN 350 (long version)* → *Page 548*

How to order

1 2 3 4
GN 350.1-25-6,6-AK-ST

1	d_1
2	d_2
3	Type
4	Material

Spherical levelling washers



Inox
Stainless
Steel

[1]

d_1 –1	d_2	d_3 Minimum dimension	h	for threaded bolt up to max.	Static load in kN Steel	Stainless Steel
25	8,5	15	8	M 8	40	27,1
32	13	20	10	M 10	65	43,4
45	20	30	12,5	M 16	120	84
58	29	38	16	M 24	210	148
70	36	48	20	M 30	330	225
80	44	61	20	M 36	495	323
105	58	78	25	M 48	920	546

Specification

[2]

- Steel, 1.7225 (42 CrMo 4 V) zinc plated, blue passivated **ST**
- Stainless Steel AISI 303 **NI**
- *Stainless Steel characteristics* → *Page 1144*
- RoHS compliant

Information

Spherical levelling washers GN 350.3 have been designed to match the levelling sets GN 350, GN 350.1, GN 350.2 and GN 350.5.

The two spherical washers are used together „undetachably“.

The load bearing capacity of these spherical washers is relatively high. This is not only due to the material quality but also to the matched sphere of the concave „pan“.

Furthermore it is recommended using high-strength washers for bridging d_2.

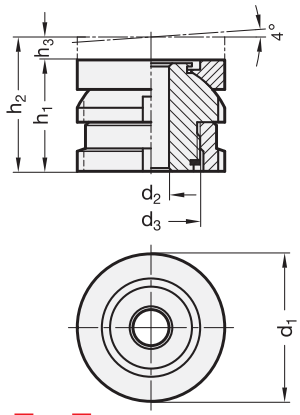
see also...

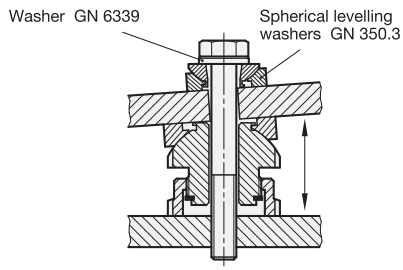
- *Heavy duty washers GN 6339* → *Page 540*
- *Levelling sets GN 350 (long version)* → *Page 548*
- *Levelling sets GN 350.1 (short version)* → *Page 550*

How to order		
GN 350.3-80-ST [1] [2]	1	d_1
	2	**Material**

Levelling sets

with spherical washer





Rostfrei Inox Stainless Steel

1 d_1	2 d_2	3 h_1		d_3	h_2		h_3 Adjustable range		for screw	Static load F in kN Steel		Stainless Steel		Code no. for C-Spanner
										F_1	F_2	F_1	F_2	
25	5,5	22	35	M 15 x 1	26	50	4	15	M 5	40	33,4	27,1	22,24	DIN 1810-A25-28
25	6,6	22	35	M 15 x 1	26	50	4	15	M 6	40	30,7	27,1	20,26	DIN 1810-A25-28
32	6,6	26	43	M 20 x 1	31	63	5	20	M 6	65	55,7	43,4	36,56	DIN 1810-A30-32
32	9	26	43	M 20 x 1	31	63	5	20	M 8	65	48	43,4	30,86	DIN 1810-A30-32
32	11	26	43	M 20 x 1	31	63	5	20	M 10	65	37,9	43,4	23,41	DIN 1810-A30-32
45	11	34	54	M 30 x 1,5	41	79	7	25	M 10	120	92,9	84	64,01	DIN 1810-A45-50
45	13,5	34	54	M 30 x 1,5	41	79	7	25	M 12	120	80,4	84	54,82	DIN 1810-A45-50
45	17,5	34	54	M 30 x 1,5	41	79	7	25	M 16	120	45,5	84	28,90	DIN 1810-A45-50
58	17,5	44	70	M 40 x 1,5	53	102	9	32	M 16	210	136	148	92,90	DIN 1810-A58-62
58	22	44	70	M 40 x 1,5	53	102	9	32	M 20	210	90	148	59,08	DIN 1810-A58-62
58	26	44	70	M 40 x 1,5	53	102	9	32	M 24	210	37	148	20,30	DIN 1810-A58-62
70	22	50	83	M 50 x 1,5	60	123	10	40	M 20	330	210	225	136,08	DIN 1810-A68-75
70	26	50	83	M 50 x 1,5	60	123	10	40	M 24	330	157	225	97,30	DIN 1810-A68-75
70	33	50	83	M 50 x 1,5	60	123	10	40	M 30	330	53	225	20,60	DIN 1810-A68-75
80	26	56	94	M 60 x 2	68	144	12	50	M 24	495	322	323	195,30	DIN 1810-A80-90
80	33	56	94	M 60 x 2	68	144	12	50	M 30	495	218	323	118,60	DIN 1810-A80-90
80	39	56	94	M 60 x 2	68	144	12	50	M 36	495	101	323	38,20	DIN 1810-A80-90

Specification

4

- Steel, 1.7225 (42 CrMo 4 V) zinc plated, blue passivated — **ST**
- Stainless Steel AISI 303 (X 10 CrNiS 18-9) — **NI**
- F_1: max. total load
- F_2: max. load after deduction of the max. preload
  - for screws 8.8, μ = 0,125 (Steel)
  - for screws 6.8, μ = 0,14 (Stainless Steel)
- RoHS compliant

Accessory

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

Information

Levelling sets GN 350.2 are used for levelling, adjusting and linking operations. The spherical washer allows precise installation of two non parallel planes at a required gradient up to ≈ 4°.

They comprise a threaded upper sleeve and a female threaded lower sleeve. The fine thread allows a stepless and precise setting and locking using the C-Spanner DIN 1810. A locking ring serves as a height limiter for the max. height.

see also...
- *Levelling sets GN 350 (long version)* → *Page 548*

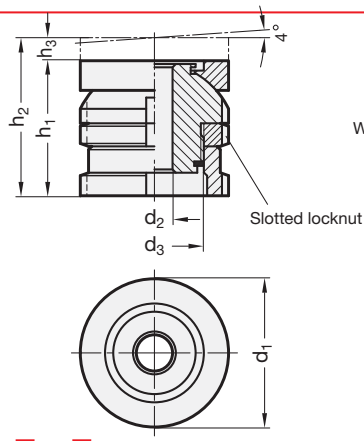
How to order

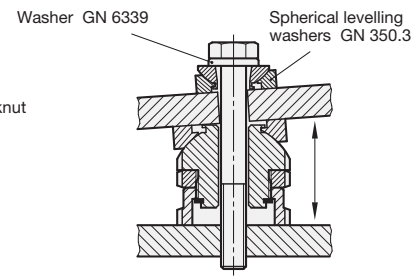
1 2 3 4
GN 350.2-32-11-43-NI

1	d_1
2	d_2
3	h_1
4	Material

Levelling sets

with spherical washer, with locknut





Inox Stainless Steel

1 d_1	2 d_2	3 h_1 version short	h_1 version long	d_3	h_2 version short	h_2 version long	h_3 Adjustable range short	h_3 Adjustable range long	for screw	Static load F in kN Steel F_1	Steel F_2	Stainless Steel F_1	Stainless Steel F_2	Code no. for C-Spanner
25	5,5	27	40	M 15 x 1	31	50	4	10	M 5	40	33,4	27,1	22,24	DIN 1810-A25-28
25	6,6	27	40	M 15 x 1	31	50	4	10	M 6	40	30,7	27,1	20,26	DIN 1810-A25-28
32	6,6	32	49	M 20 x 1	37	63	5	14	M 6	65	55,7	43,4	36,56	DIN 1810-A30-32
32	9	32	49	M 20 x 1	37	63	5	14	M 8	65	48	43,4	30,86	DIN 1810-A30-32
32	11	32	49	M 20 x 1	37	63	5	14	M 10	65	37,9	43,4	23,41	DIN 1810-A30-32
45	11	41	61	M 30 x 1,5	48	79	7	18	M 10	120	92,9	84	64,01	DIN 1810-A45-50
45	13,5	41	61	M 30 x 1,5	48	79	7	18	M 12	120	80,4	84	54,82	DIN 1810-A45-50
45	17,5	41	61	M 30 x 1,5	48	79	7	18	M 16	120	45,5	84	28,90	DIN 1810-A45-50
58	17,5	53	79	M 40 x 1,5	62	102	9	23	M 16	210	136	148	92,90	DIN 1810-A58-62
58	22	53	79	M 40 x 1,5	62	102	9	23	M 20	210	90	148	59,08	DIN 1810-A58-62
58	26	53	79	M 40 x 1,5	62	102	9	23	M 24	210	37	148	20,30	DIN 1810-A58-62
70	22	61	94	M 50 x 1,5	71	123	10	29	M 20	330	210	225	136,08	DIN 1810-A68-75
70	26	61	94	M 50 x 1,5	71	123	10	29	M 24	330	157	225	97,30	DIN 1810-A68-75
70	33	61	94	M 50 x 1,5	71	123	10	29	M 30	330	53	225	20,60	DIN 1810-A68-75
80	26	67	105	M 60 x 2	79	144	12	39	M 24	495	322	323	195,30	DIN 1810-A80-90
80	33	67	105	M 60 x 2	79	144	12	39	M 30	495	218	323	118,60	DIN 1810-A80-90
80	39	67	105	M 60 x 2	79	144	12	39	M 36	495	101	323	38,20	DIN 1810-A80-90

Specification

4

- Steel, 1.7225 (42 CrMo 4 V) zinc plated, blue passivated **ST**
- Stainless Steel AISI 303 (X 10 CrNiS 18-9) **NI**
- F_1: max. total load
- F_2: max. total load after deduction of the max. preload
  - for screws 8.8, μ = 0,125 (Steel)
  - for screws 6.8, μ = 0,14 (Stainless Steel)
- RoHS compliant

Accessory

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

Information

Levelling sets GN 350.5 are used for levelling, adjusting and linking operations. The spherical washer allows precise installation of two non parallel planes at a required gradient up to ≈ 4°.

They comprise a threaded upper sleeve and a female threaded lower sleeve. The fine thread allows a stepless and precise setting and locking using the C-Spanner DIN 1810. A locking ring serves as a height limiter for the max. height.

see also...
- *Levelling sets GN 350 (long version)* → *Page 548*

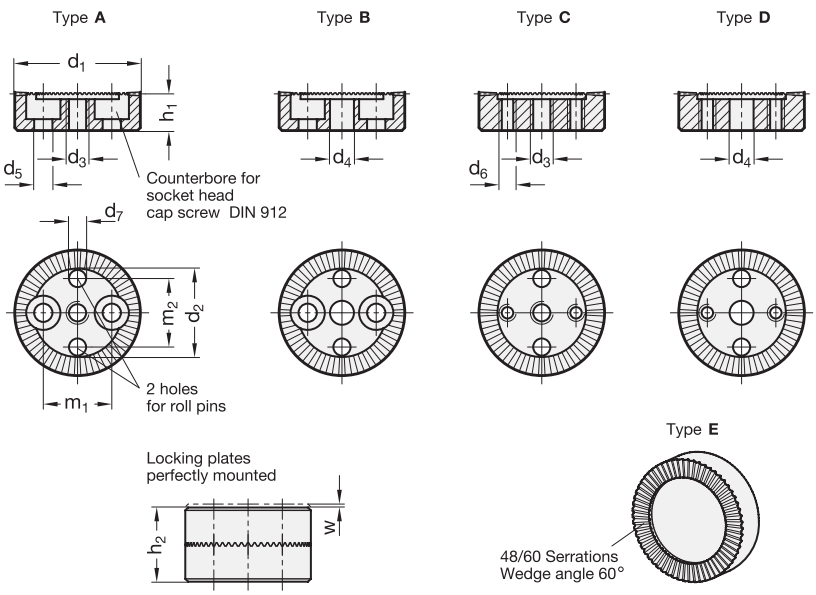
How to order

1 2 3 4
GN 350.5-45-11-41-NI

1	d_1
2	d_2
3	h_1
4	Material

GN 187.4
Steel / Stainless Steel

Serrated locking plates



Inox Stainless Steel

3 Type

- **A** with tapped hole d_3 in the centre, with two countersunk holes for socket head cap screws
- **B** with bore d_4 in the centre, with two countersunk holes for socket head cap screws
- **C** with tapped hole d_3 in the centre, with two tapped mounting holes
- **D** with bore d_4 in the centre, with two tapped mounting holes
- **E** without bores blank, not hardened

1 d_1	2 z Number of teeth		d_2	d_3	d_4 H11	d_5	d_6	d_7 H11	h_1 ±0,09 middle of the teeth	h_2 (2 x h1)	m_1	m_2	w min. Stroke
22	48	60	15,5	M 4	4,2	3,2	M 3	3	6,5	13	12	12	0,6
27	48	60	19,5	M 5	5,2	4,3	M 4	4	7,5	15	15	15	0,7
32	48	60	23,5	M 6	6,2	5,3	M 5	5	9	18	18	18	0,9
40	48	60	30	M 8	8,2	6,3	M 6	6	11,5	23	23	23	1,3

Specification

4

- Sintered Steel (Distaloy AB) hardened, black oxidised with vapor **ST**
- Stainless Steel (Sintered Steel) AISI 316L **NI**
- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Accessory

- Guide pots GN 187.1 → *Page 556*
- Thrust springs GN 187.2 → *Page 557*

Information

With the aid of serrated locking plates GN 187.4 standard components can be interlocked and firmly set at a defined angle.

The angular position of the fixing bores in relation to the serrations is not defined in the standard design. The exact positioning is available as special design.

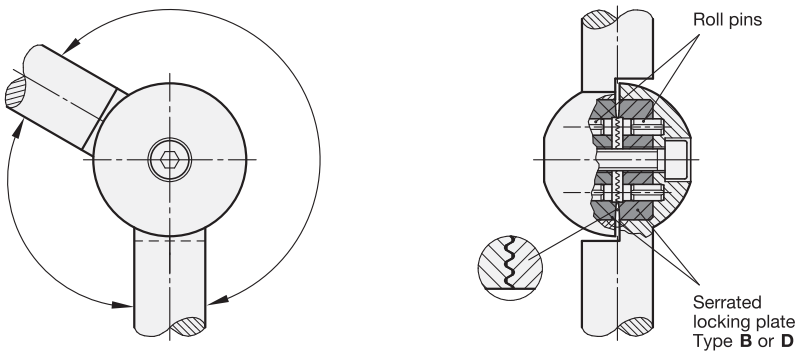
The range of designs makes these plates adaptable for almost any application in this particular field. To complement these serrated locking plates, accessories such as guide pots GN 187.1 and thrust springs GN 187.2 are useful additional standard parts.

How to order

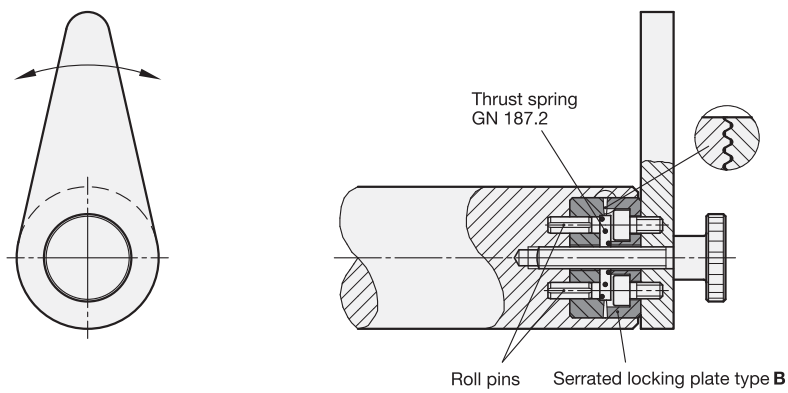
1 2 3 4
GN 187.4-27-48-C-ST

1	d_1
2	Number of teeth z
3	Type
4	Material

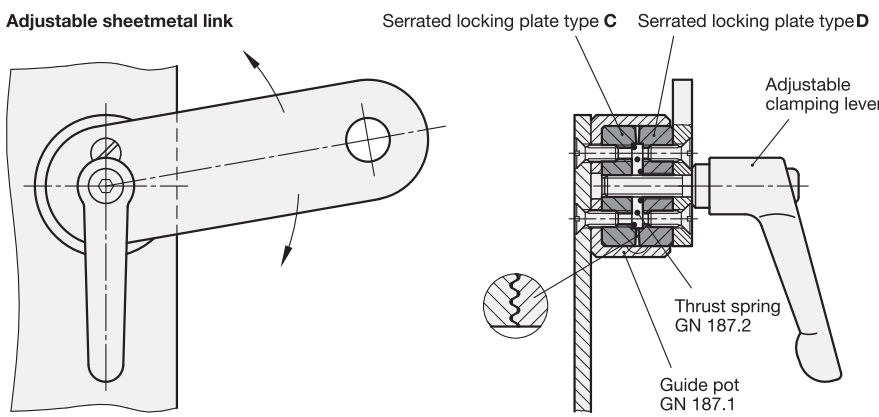
Connection of two joint rods

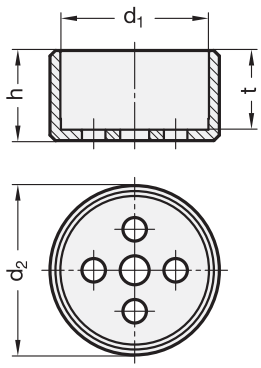


Connection cam/shaft



Adjustable sheetmetal link





Inox
Stainless
Steel

[1]

d_1 $^{+0,2}_{+0,3}$	d_2 −0,5	h	t	for serrated locking plates GN 187.4 - d_1
22	26	14,5	12,5	22
27	31	16,5	14,5	27
32	36	19,5	17,5	32
40	44	24,5	22,5	40

Specification

[2]

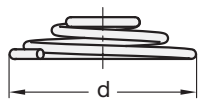
- Steel blackened — **ST**
- Stainless Steel AISI 303 — **NI**
- RoHS compliant

Information

see also...

- *Serrated locking plates GN 187.4 → Page 554*

How to order [1] [2] GN 187.1-27-NI		
	1	d_1
	2	**Material**



d	for serrated locking plates GN 187.4 - d_1	max. spring load in N ≈
15	22	40
18	27	45
23	32	65
29	40	90

Specification

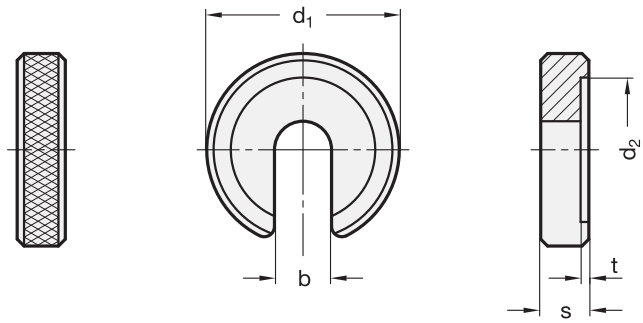
- Stainless Steel AISI 301
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

see also...

- *Serrated locking plates GN 187.4 → Page 554*

How to order		
GN 187.2-18	1	d



1 d_1	2 b	d_2	s	t	for threaded bolt
22	6,2	16	6	0,8	M 6
28	6,2	16	6	1	M 6
28	8,3	21	7	1	M 8
34	8,3	21	7	1,2	M 8
34	10,4	25	8	1,2	M 10
40	10,4	30	8	1,8	M 10
40	12,5	30	9	1,8	M 12
56	12,5	37	9	1,8	M 12
56	16,5	37	12	1,8	M 16

Specification

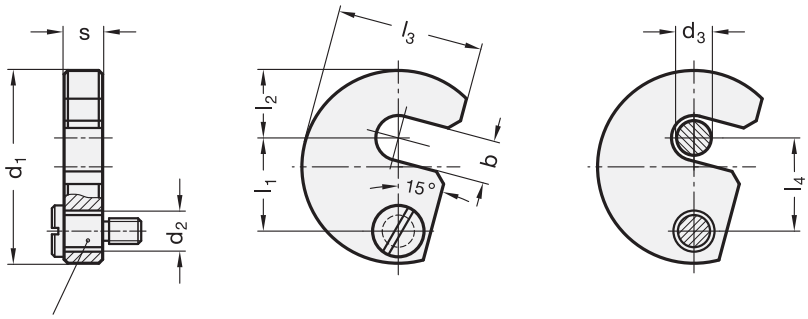
- Steel
  - case hardened
  - blackened
- RoHS compliant

Information

C-Washers GN 183 maybe installed without the removal of the nut from the stud.

Types 22-6,2 / 28-8,3 / 34-10,4 / 40-12,5 and 56-16,5 conform dimensionally to the C-Washers DIN 6372.

How to order		
GN 183-34-10,4 (1 2)	1	d_1
	2	b



Flat shoulder screw DIN 923

1 d_1	2 b	d_2	d_3	l_1	l_2	l_3	l_4	s –0,5	Screw DIN 923
38	7,5	9	6	19,6	11	29	19	9,8	M 6 x 10
43	9,5	9	8	21,6	14	32,5	21	9,8	M 6 x 10
48	11,5	9	10	23,6	17	36,5	23	9,8	M 6 x 10
61	13,5	11	12	29,6	22	45	29	11,8	M 8 x 12
68	17,5	11	16	33,6	25	50	33	11,8	M 8 x 12
74	21,5	11	20	36,6	28	55	36	11,8	M 8 x 12
82	25,5	11	24	40,6	32	62	40	15,8	M 8 x 16
97	32	11	30	49	39	73	48	15,8	M 8 x 16

Specification

- Steel
  - tempered
  - blackened
- Flat shoulder screw DIN 923 blackened
- RoHS compliant

Information

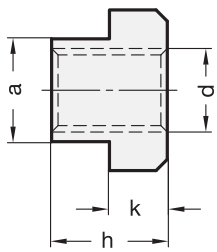
Captive C-Washers DIN 6371 transfer the clamping force of screw or nut to the workpiece. After releasing the thread they can be swung away from the clamping point. They are hinged and thus can never be mislaid.

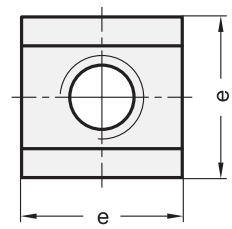
Flat shoulder screws DIN 923 are included.

How to order		
DIN 6371-48-11,5 (1 2)	1	d_1
	2	b

DIN 508 T-Nuts

Extract





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

Specification

3

- Heat-treatable Steel
  - Tensile strength class (800 N/mm²) blank **8**
  - Tensile strength class (1000 N/mm²) blackened **10**
- RoHS compliant

Information

T-Nuts DIN 508 combined with studs DIN 6379 provide T-Slot bolts.

T-Nuts DIN 508 **untapped** with the tensile strength class 8 (blank) are also available. When ordering the latter the thread size is omitted in part number.

see also...

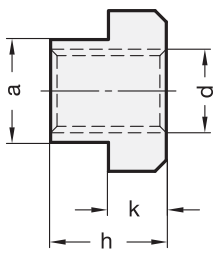
- *T-Nuts GN 508.2 (with slip proof)* → *Page 562*
- *Studs DIN 6379 (for T-Nuts)* → *Page 564*

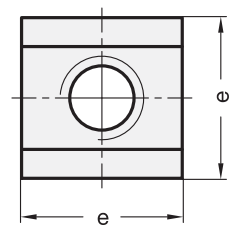
T-Nut		
1 2 3 DIN 508-14-M12-8	1	a
	2	d
	3	Tensile strength class

T-Nut without thread		
1 3 DIN 508-20-8	1	a
	2	Tensile strength class

DIN 508
Extract

Stainless Steel-T-Nuts





Inox
Stainless
Steel

1 a $^{-0,3}_{-0,5}$	2 d	e −0,5	h	k −0,5	T-Slot width DIN 650
8	M 6	13	10	6	8
10	M 8	15	12	6	10
12	M 10	18	14	7	12
14	M 12	22	16	8	14
16	M 14	25	18	9	16
18	M 16	28	20	10	18

Specification

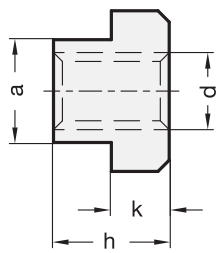
- Stainless Steel AISI 303 / 316Ti **NI** (3)
- *Stainless Steel characteristics* → *Page 1144*
- RoHS compliant

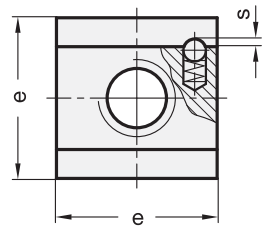
Information

Stainless Steel-T-Nuts DIN 508 are also available without tapped hole.

Stainless Steel-T-Nut		
DIN 508-14-M12-NI (1 2 3)	1	a
	2	d
	3	Material

Stainless Steel-T-Nut without thread		
DIN 508-18-NI (1 3)	1	a
	2	Material





1 a $^{-0,3}_{-0,5}$	2 d	e	h	k	s	T-Slot width DIN 650
10	M 8	15	12	6	0,65	10
12	M 10	18	14	7	0,65	12
14	M 12	22	16	8	1	14
18	M 16	28	20	10	1	18
22	M 20	35	28	14	1,6	22

Specification

3

- Heat-treatable Steel
  - Tensile strength class 8 (800 N/mm²) zinc plated, blue passivated
  - Tensile strength class 10 (1000 N/mm²) blackened
- RoHS compliant

Information

T-nuts GN 508.2 are dimensionally identical to DIN 508.

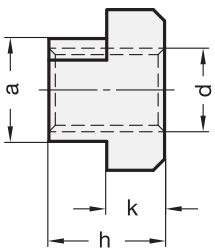
They are, however, fitted on the side with a spring loaded ball. This will prevent an unwanted movement of the nut, especially in a vertically mounted T-slot bed.

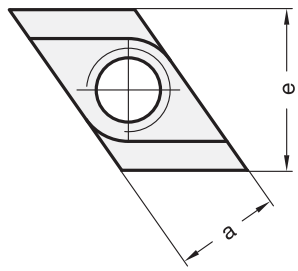
How to order

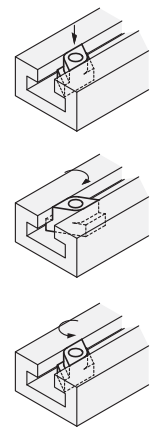
1 2 3

GN 508.2-22-M20-10

1	a
2	d
3	Tensile strength class







1 a $^{-0,3}_{-0,5}$	2 d	e −0,5	h	k −0,5	T-Slot width DIN 650
8	M 6	13	10	6	8
10	M 8	15	12	6	10
12	M 10	18	14	7	12
14	M 12	22	16	8	14
16	M 14	25	18	9	16
18	M 16	28	20	10	18
22	M 20	35	28	14	22

Specification

- Heat-treatable Steel
  - Tensile strength class 10 (1000 N/mm²)
  - blackened
- RoHS compliant

Information

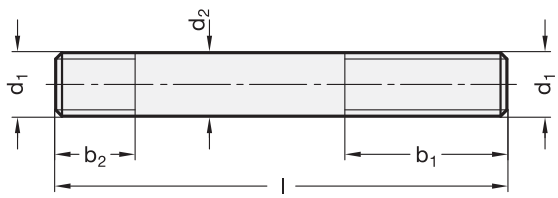
Rhombus T-Nuts GN 508.1 can be inserted vertically into the T-Slot.

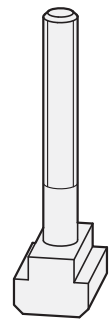
see also...

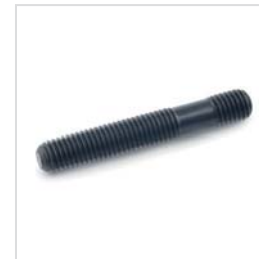
- *T-Nuts DIN 508 → Page 560*

How to order		
GN 508.1-14-M12 (1 2)	1	a
	2	d

Studs
for T-Nuts







1	2					
d_1	Length **l** - Thread length **b_1**				**b_2**	**d_2**
	l - b_1	l - b_1	l - b_1	l - b_1		
M 6	50 - 30	80 - 50	-	-	9	5,3
M 8	40 - 20	63 - 40	100 - 63	-	11	7,1
M 10	50 - 25	80 - 50	125 - 75	200 - 125	13	9
M 12	50 - 25	80 - 50	125 - 75	200 - 125	15	10,7
M 14	63 - 32	100 - 63	160 - 100	250 - 160	17	12,6
M 16	63 - 32	100 - 63	160 - 100	250 - 160	19	14,6
M 20	80 - 32	125 - 70	200 - 125	315 - 190	27	18,2
M 24	100 - 50	160 - 100	250 - 160	400 - 250	35	21,9

Specification

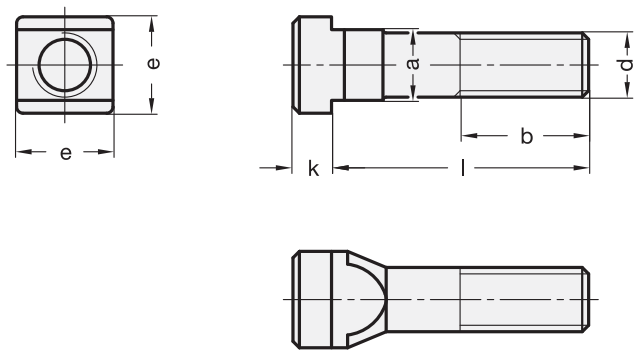
- Heat-treatable Steel
  - M 6 ... M12: Tensile strength class 10.9 (1000 N/mm²)
  - M14 ... M24: Tensile strength class 8.8 (800 N/mm²)
  - blackened
- RoHS compliant

Information

Studs DIN 6379 are mainly used in DIN 508, DIN 6330 and washers DIN 6430 to form a complete clamp unit.

see also...
- *T-Nuts DIN 508 → Page 560*
- *Hexagon nuts DIN 6330 → Page 536*
- *Washers DIN 6340 → Page 539*

How to order		
DIN 6379-M12-125 (1 2)	1	**d_1**
	2	**Length l**



1 a $^{-0,3}_{-0,5}$	2 d	3 Length **l** - Thread length **b**				e	k	T-Slot width DIN 650
		l - b	l - b	l - b	l - b			
6	M 6	25 - 15	40 - 28	63 - 40	-	10 –0,5	4 –0,5	6
8	M 8	32 - 22	50 - 35	80 - 50	-	13 –0,5	6 –0,5	8
10	M 10	40 - 30	63 - 45	100 - 60	-	15 –0,5	6 –0,5	10
12	M 12	50 - 35	80 - 55	125 - 75	200 - 120	18 –0,5	7 –0,5	12
14	M 12	50 - 35	80 - 55	125 - 75	200 - 120	22 –0,5	8 –0,5	14
18	M 16	63 - 45	100 - 63	160 - 100	250 - 150	28 –0,5	10 –0,5	18
22	M 20	80 - 55	125 - 85	200 - 125	-	35 –0,5	14 –0,5	22
28	M 24	100 - 70	160 - 110	250 - 150	-	44 –1	18 –1	28

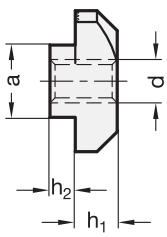
Specification

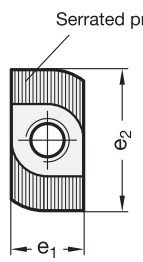
- Heat-treatable Steel
  - Tensile strength class 8.8 (800 N/mm²)
  - forged
  - blackened
- Slot flats milled
- RoHS compliant

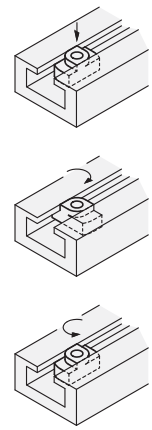
How to order		
DIN 787-18-M16-100	1	a
	2	d
	3	Length l

T-Slot bolts

Accessory for extrusion systems







Inox Stainless Steel

1 a	2 d	3 Length l - GN 505.4					4 h_1	h_2	e_1	e_2
8	M 6	20	25	30	40	60	1,6 –0,6	5 ±1,0	7,9 –0,5	16 +0,5 –1,0
8	M 6	20	25	30	40	60	3,5 –1,0	5 ±1,0	7,9 –0,5	16 +0,5 –1,0
8	M 8	20	25	30	-	-	1,6 –0,6	5 ±1,0	7,9 –0,5	16 +0,5 –1,0
8	M 8	20	25	30	-	-	3,5 –1,0	5 ±1,0	7,9 –0,5	16 +0,5 –1,0
10	M 6	20	25	30	40	60	1,6 –0,6	6,5 –1,5	10 0 –2,5	19 +0,5 –2,0
10	M 6	20	25	30	40	60	3,5 –1,0	6,5 –1,5	10 0 –2,5	19 +0,5 –2,0
10	M 8	20	25	30	40	60	1,6 –0,6	6,5 –1,5	10 0 –2,5	19 +0,5 –2,0
10	M 8	20	25	30	40	60	3,5 –1,0	6,5 –1,5	10 0 –2,5	19 +0,5 –2,0

1 a	2 d	3 Length l - GN 505.5					4 h_1	h_2	e_1	e_2
8	M 6	20	25	30	40	60	1,6 –0,6	5 ±1,0	7,9 –0,5	16 +0,5 –1,0
10	M 6	20	25	30	40	60	3,5 –1,0	6,5 –1,5	10 0 –2,5	19 +0,5 –2,0
10	M 8	20	25	-	-	-	3,5 –1,0	6,5 –1,5	10 0 –2,5	19 +0,5 –2,0

Specification

- **GN 505.4**
  Steel
  zinc plated, blue passivated
- **GN 505.5**
  Stainless Steel AISI 304
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

T-Slot bolts GN 505.4 / GN 505.5 can be inserted vertically into the slot. During tightening, the bolt is forced into the crosswise position and thus anchored in the slot. Conversely, the bolt is turned back during loosening and can then be removed.

The clamping face of the bolt is serrated to ensure that the eloxal coating is broken up to establish a good electrical contact.

Steel-T-Slot bolt

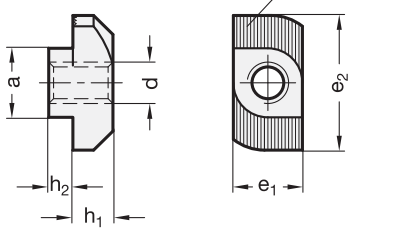
1 2 3 4
GN 505.4-10-M6-20-3,5

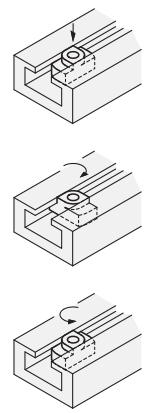
1	a
2	d
3	Length l
4	h_1

Stainless Steel-T-Slot bolt

1 2 3 4
GN 505.5-10-M8-25-3,5

1	a
2	d
3	Length l
4	h_1





3 Type

MB with increased torque
OB without increased torque

1 a $^{-0,1}_{-0,5}$	2 d				e_1 $^{-0,1}_{-0,5}$	e_2 ±0,5	h_1	h_2 −0,4
8	M 4	M 5	M 6	-	8	16	1,6 −0,4	5
10	M 4	M 5	M 6	M 8	10	19	3,5 −1	5,8

Specification

- Steel
  zinc plated, blue passivated
- RoHS compliant

Information

T-Nuts GN 505 can be inserted vertically into a T-Slot like rhombus T-Nuts GN 508.1.

When tightening the clamping bolt, the nut will be forced into a crosswise position by the applied torque and firmly anchored in the T-slot.

This action is achieved by using T-nut type MB which is intentionally fitted with an overtight fit requiring a higher torque.

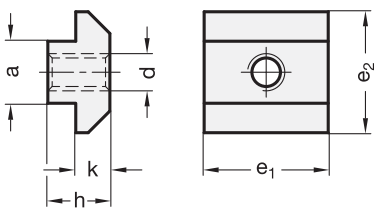
To remove the bolt and T-nut a 90° anticlockwise turn is sufficient to withdraw the two components with the clamped workpiece.

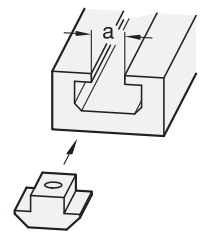
The clamping face of the T-nut is serrated to ensure that a possible plating coat in the T-slot is penetrated to establish a good electrical contact.

How to order
1 2 3
GN 505-8-M4-MB

1	a
2	d
3	Type

T-nuts to slide in





1 a $^{-0,1}_{-0,3}$	2 d				e_1	e_2	h	k +0,1
8	M 4	M 5	M 6	M 8	16	16	6	4,2
10	M 4	M 5	M 6	M 8	20	19,5	10,5	5,5

Specification

- Steel
  zinc plated, blue passivated
- RoHS compliant

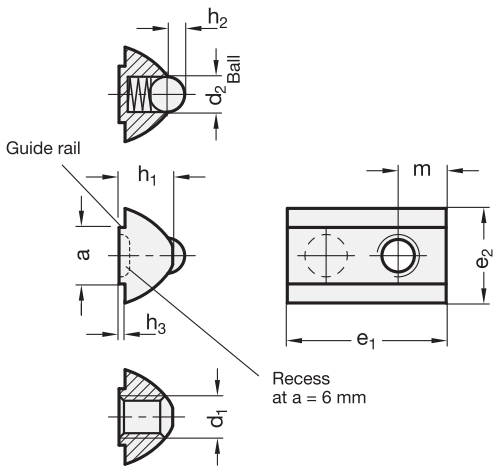
Information

T-nuts GN 507 have been specially designed for use on extrusion rails. They are inserted from either end of the T-slot.

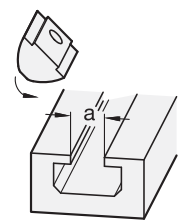
see also...
- *T-Nuts GN 506 / GN 506.1 (turnable)* → *Page 570*

How to order		
GN 507-8-M6	1	a
	2	d

T-Nuts GN 505 → *Page 567*
T-Slot bolts Steel / Stainless Steel GN 505.4 / GN 505.5 → *Page 566*
T-Nuts GN 507 → *Page 568*
T-Nuts with guide step GN 506 → *Page 570*
T-Nuts Steel / Stainless Steel GN 506.1 → *Page 571*
T-Nuts with spring washer GN 506.2 → *Page 572*



T-nuts to swivel in



1 a	2 d_1				d_2	e_1	e_2	h_1	h_2	h_3	m	for slot width a
5	M 3	M 4	M 5	-	3	12	7,7	4,5	0,7	0,6	4	5
6	M 3	M 4	M 5	M 6	3,5	17	10,5	6,8	0,5	0,8	5	6
8	M 4	M 5	M 6	M 8	5	22	13,4	7,6	1,7	0,85	6,8	8

Specification

- Steel
  zinc plated, blue passivated
- Ball
  Stainless Steel
- Spring
  Stainless Steel
- RoHS compliant

Information

T-nuts with guide step GN 506 can be turned into position, i.e. they can be inserted at any point along the slot.

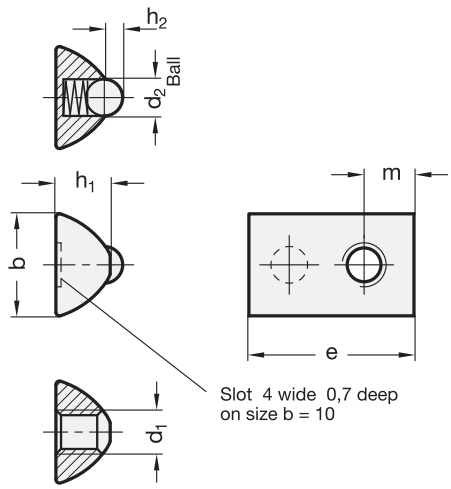
The spring loaded ball will prevent an unwanted movement of the nut in the slot which is highly desirable on a bed with the T-slots in a vertical position.

As an example, T-nuts GN 506 can be used to fit hinges to commercially available extrusion rails.

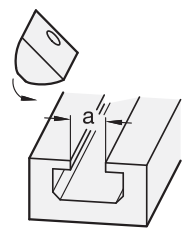
How to order		
GN 506-5-M4	1	a
	2	d_1

T-Nuts

Accessory for extrusion systems, without guide step



T-nuts to swivel in



Rost frei Inox Stainless Steel

1 b	2 d_1 Steel				Stainless Steel				d_2	e +0,5	h_1	h_2	m	for slot width a
8 –0,1	M 3	M 4	M 5	-	-	-	-	-	3	12	4,25	0,7	4	5
10 +0,3	M 3	M 4	M 5	M 6	-	-	-	-	4	17,5	6,25	1,15	5	6
14 –0,2	M 4	M 5	M 6	M 8	M 4	M 5	M 6	M 8	5	22,5	7,4	1,7	6,8	8

Specification

3

- Steel
  zinc plated, blue passivated
- Stainless Steel **NI**
- Ball
  Stainless Steel
- Spring
  Stainless Steel
- RoHS compliant

Information

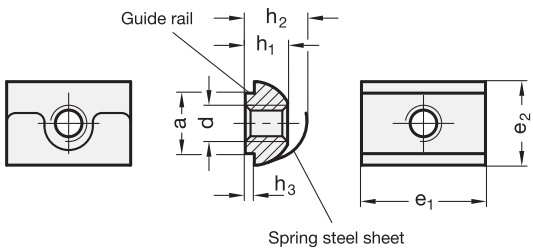
T-Nuts GN 506.1 can be turned into position, i.e. they can be inserted at any point along the slot.

The spring loaded ball will prevent an unwanted movement of the nut in the slot which can easily occur on a bed with the T-slots in a vertical position.

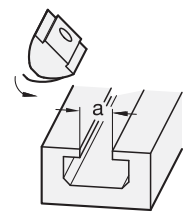
As an example Nuts GN 506.1 can be used to fit hinges to commercially available extrusion rails.

Steel-T-Nut		
GN 506.1-10-M6	1	b
	2	d_1

Stainless Steel-T-Nut		
GN 506.1-14-M5-NI	1	b
	2	d_1
	3	Material



T-nuts to swivel in



1 a	2 d				e_1	e_2	h_1	h_2	h_3 −0,1	for slot width a
8 $^{+0,1}_{-0,1}$	M 4	M 5	M 6	M 8	16	11,5	5,8	8,5	1	8
10 $^{-0,1}_{-0,3}$	M 5	M 6	M 8	-	20,5	13,8	5,2	10,2	1,5	10

Specification

- Steel
  zinc plated, blue passivated
- Spring washer
  Stainless Steel AISI 301
  - spot-welded
- RoHS compliant

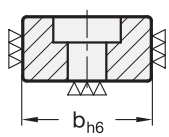
Information

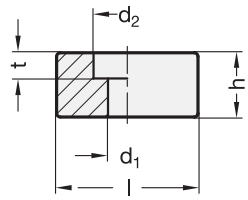
T-Nuts GN 506.2 can be turned into position, i.e. they can be inserted at any point along the slot.

The spring washer prevents the nut from inadvertently being displaced inside the slot, which is particularly advantageous if the profile rail is arranged vertically. The outstanding feature of this design is that different slot heights can be bridged.

As an example, T-Nuts GN 506.2 can be used to fit hinges to commercially available extrusion rails.

How to order		
GN 506.2-8-M6 (1 2)	1	a
	2	d





1

b h6	d_1	d_2	h	l	t	for Screws DIN 84 DIN 912
10	4,5	8	8	20	4,3	M4 x 10
12	5,5	10	8	20	5,3	M5 x 12
14	6,6	11	10	22	6,3	M6 x 16
16	6,6	11	10	22	6,3	M6 x 16
18	6,6	11	10	22	6,3	M6 x 16
20	6,6	11	10	22	6,3	M6 x 16
22	6,6	11	12	32	6,3	M6 x 16

Specification

- Steel
  - case hardened
  - blackened
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

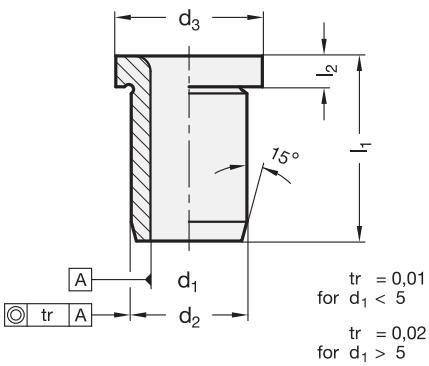
Information

Shallow T-nuts GN 230 are used for aligning and positioning of jigs and fixtures on machining tables with T-slots DIN 650.

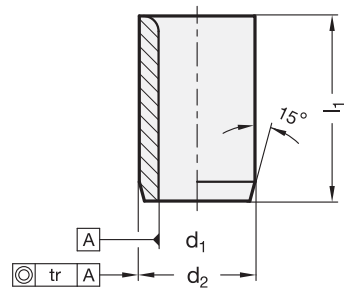
For this purpose they are inserted into the aligning slots of the jig or fixture.

How to order		
1 GN 230-12	1	b

DIN 172 (with collar)



DIN 179 (without collar)



3 Type

A bore one-sided

1 d_1 F7 Bore	2 l_1		d_2 n6	d_3	l_2
B 2	6	9	5	8	2
B 2,1	6	9	5	8	2
B 2,5 (M 3)	6	9	5	8	2
B 3	8	12	6	9	2,5
B 3,1	8	12	6	9	2,5
B 3,3 (M 4)	8	12	6	9	2,5
B 3,5	8	12	7	10	2,5
B 3,8	8	12	7	10	2,5
B 4	8	12	7	10	2,5
B 4,1	8	12	8	11	2,5
B 4,2 (M 5)	8	12	8	11	2,5
B 4,5	8	12	8	11	2,5
B 4,8	8	12	8	11	2,5
B 5 (M 6)	8	12	8	11	2,5
B 5,1	10	16	10	13	3
B 5,5	10	16	10	13	3
B 5,8	10	16	10	13	3
B 6	10	16	10	13	3
B 6,1	10	16	12	15	3
B 6,5	10	16	12	15	3
B 6,8 (M 8)	10	16	12	15	3
B 7	10	16	12	15	3
B 7,5	10	16	12	15	3
B 7,8	10	16	12	15	3
B 8	10	16	12	15	3
B 8,1	12	20	15	18	3
B 8,5 (M 10)	12	20	15	18	3
B 9	12	20	15	18	3
B 9,5	12	20	15	18	3
B 9,8	12	20	15	18	3

1 d_1 F7 Bore	2 l_1		d_2 n6	d_3	l_2
B 10	12	20	15	18	3
B 10,1	12	20	18	22	4
B 10,2 (M 12)	12	20	18	22	4
B 10,5	12	20	18	22	4
B 11	12	20	18	22	4
B 11,5	12	20	18	22	4
B 11,8	12	20	18	22	4
B 12	12	20	18	22	4
B 12,1	16	28	22	26	4
B 12,5	16	28	22	26	4
B 13 (M 14)	16	28	22	26	4
B 13,5	16	28	22	26	4
B 14 (M 16)	16	28	22	26	4
B 14,1	16	28	22	26	4
B 14,5	16	28	22	26	4
B 15	16	28	22	26	4
B 15,5	16	28	26	30	4
B 16	16	28	26	30	4
B 16,1	16	28	26	30	4
B 16,5	16	28	26	30	4
B 17	16	28	26	30	4
B 18	16	28	26	30	4
B 19	20	36	30	34	5
B 20	20	36	30	34	5
B 22	20	36	30	34	5
B 24	20	36	35	39	5
B 25	20	36	35	39	5
B 26	20	36	35	39	5
B 28	25	45	42	46	5
B 30	25	45	42	46	5

Specification

- Steel
  - hardened (HRC 62 ±2)
- Fit sizes d_1, d_2 ground
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

On request

- other bores d_1

Information

The dimensions listed in this standard sheet are merely a selection of the (currently withdrawn) DIN standards.

For applications involving positioning, we recommend the combination with the GN 771.1 guide pins.

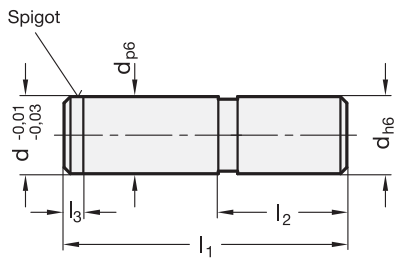
The tolerance n6 of the outside diameter d_2 guarantees a perfect pressfit in a mounting borehole H7.

see also...

- *Guide pins GN 771.1 → Page 576*

Guide bush with collar 1 2 3 DIN 172-B8,1-20-A		
	1	d_1
	2	l_1
	3	Type

Guide bush without collar 1 2 3 DIN 179-B12-12-A		
	1	d_1
	2	l_1
	3	Type



1	2	3	
d p6 / h6	**l_1**	**l_2**	**l_3**
4	16	8	1,5
5	18	8	1,5
6	22	10	1,5
8	24	10	2
10	28	12	2
12	30	12	2,5
16	36	16	2,5

Specification

- Steel
  - hardened (HRC 60 ±2)
  - Fit sizes d p6 / d h6 ground
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Information

Guide pins GN 771.1 are normally used in combination with DIN 172 / DIN 179 guide bushes.

The shaft tolerance p6 guarantees a perfect pressfit in a mounting borehole H7; the attachment lug l_3 makes the installation easier.

see also...

- *Guide bushes DIN 172 / DIN 179 → Page 574*

How to order

1 2 3

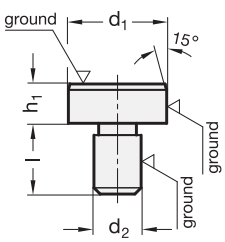
GN 771.1-8-24-10

1	d
2	l_1
3	l_2

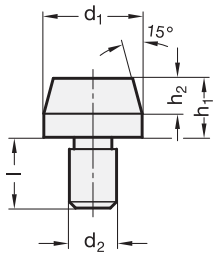
Guide bushes DIN 172 / DIN 179 → *Page 574*
Guide pins GN 771.1 → *Page 576*
Workholding bolts / Headed dowels DIN 6321 → *Page 578*
Workholding bolts with ball-type shoulder GN 6322 → *Page 579*

Workholding bolts / Headed dowels

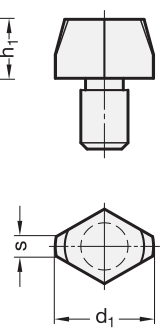
Type **A**



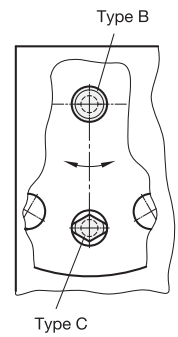
Type **B**



Type **C**



Example of Application



3 Type

A Headed dowel, low type
B Workholding bolt, high, cylindrical
C Workholding bolt, high, flattened

1		2						
d_1 g6 Type A	Type B / C	**h_1** h9 Type A	**h_1** ±0,1 Type B / C		**d_2** n6	**h_2** Type B / C	Length **l**	**s** ≈ Type C
6	6	5	7	12	4	4	6	1
-	8	-	10	16	6	6	9	1,6
10	10	6	10	18	6	6	9	2,5
-	12	-	10	18	6	6	9	2,5
16	16	8	13	22	8	8	12	3,5
-	20	-	15	25	12	9	18	5
25	25	10	15	25	12	9	18	5

Specification

- Steel
  - hardened
  - blackened
- Type A:
  without centre hole
- Type B / Type C:
  with centre hole
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Information

Workholding bolts DIN 6321 are inserted into bores for positioning, assisted by the flattened design (Type C) to compensate tolerances in the spacing of two bores. Another application of this design is to fix parts to be positioned in one direction only.

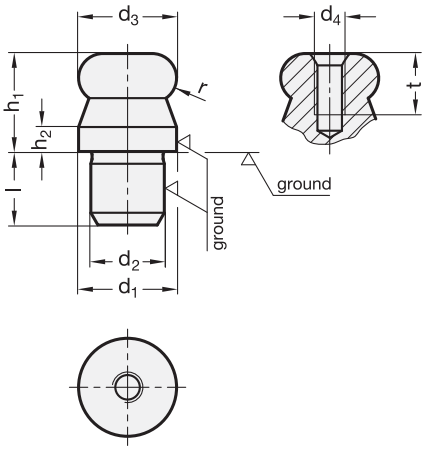
Types A and B can also be used as bearing surfaces, stops or as foot.

see also...

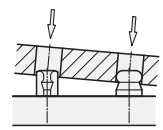
- *Headed dowels GN 6321.1 → Page 582*
- *Workholding bolts GN 6322 (with ball-type shoulder) → Page 579*
- *Guide bushes DIN 172 / DIN 179 → Page 574*

Workholding bolts		
1 2 3	1	d_1
DIN 6321-10-6-A	2	h_1
	3	Type

Headed dowels		
1 2 3	1	d_1
DIN 6321-12-18-B	2	h_1
	3	Type



Example of application



3 Type

B Workholding bolt cylindrical
C Workholding bolt flattened

1 d_1 g6	2 d_2 n6	d_3 $^{-0,01}_{-0,05}$	d_4	h_1	h_2	Length l	s Type C	t	r
10	7	10	M 3	10	2,5	7	2,5	6	2,5
12	8	12	M 4	12	3	8	2,5	8	3
16	12	16	M 5	16	4	12	4,3	10	4
20	14	20	M 5	20	5	14	5	10	5
22	16	22	M 5	22	5,5	16	5	10	5,5
25	18	25	M 5	25	6	18	5,6	10	6

Specification

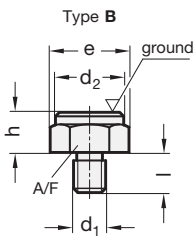
- Steel
  hardened
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

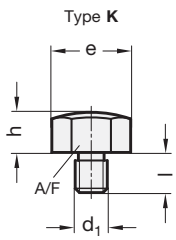
Information

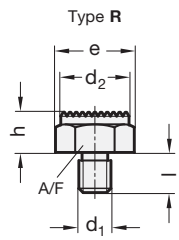
Workholding bolts GN 6322 are used for positioning in bores, with the ball-type shoulder facilitating the insertion into the bore.

The flattened design (Type C) helps to compensate tolerances in the spacing of two bores. Another application of this design is to fix parts to be positioned in one direction only.

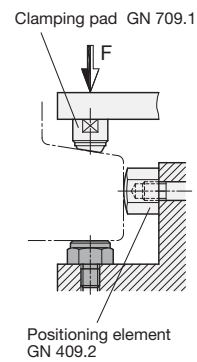
How to order		
1 2 3	1	d_1
GN 6322-16-12-B	2	d_2
	3	Type







Application example



3 Type

B Smooth contact face
K Spherical contact face
R Serrated contact face

1 **h** Type B: ±0,01 Type K / R: ±0,01	2 d_1	d_2 Type B / R	Length **l**	**A/F**	**e** Width across corners
10	M 8	17	10	17	19,4
10	M 10	19	12	19	21,9
10	M 12	22	14	22	25,2
15	M 10	19	12	19	21,9
15	M 12	22	14	22	25,2
15	M 16	30	19	30	33
20	M 16	30	19	30	33

Specification

- Steel
  - case hardened
  - blackened
- RoHS compliant

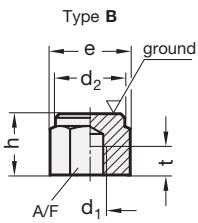
Information

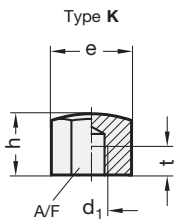
Positioning elements GN 409.1 with male thread are designed for use as locating plungers, stops and thrust blocks.

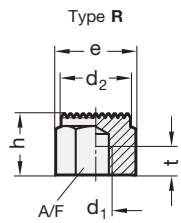
How to order

GN 409.1-15-M10-B (1 2 3)

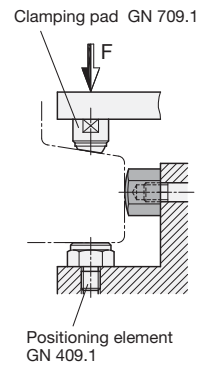
1	**h**
2	d_1
3	**Type**







Application example



3 Type

B Smooth contact face
K Spherical contact face
R Serrated contact face

1 **h** Type B: ±0,01 Type K / R: ±0,01	2 **d_1**	**d_2** Type B / R	**t** min.	**A/F**	**e** Width across corners
15	M 8	17	6	17	19,4
20	M 10	19	10	19	21,9
20	M 12	22	10	22	25,2
25	M 8	17	12	17	19,4
25	M 12	22	15	22	25,2
30	M 10	19	15	19	21,9
30	M 12	22	18	22	25,2
30	M 16	30	20	30	33
40	M 10	19	15	19	21,9
40	M 12	22	18	22	25,2
50	M 12	22	18	22	25,2
50	M 16	30	24	30	33

Specification

- Steel
  - hardened
  - blackened
- RoHS compliant

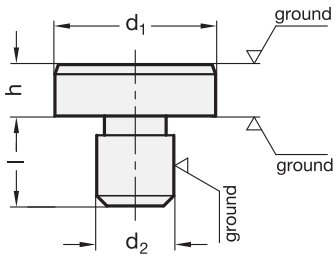
Information

Positioning elements GN 409.2 with female thread are designed for use as locating plungers, stops and thrust blocks.

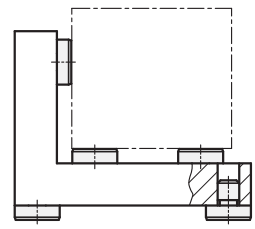
How to order

GN 409.2-25-M8-R (1 2 3)

1	h
2	d_1
3	Type



Example of Application



1		2	
d_1	**d_2** n6	**h** h9	Length **l**
6	4	2,5	6,5
6	4	4,5	8,5
6	4	5	6
10	6	4,5	8,5
10	6	8	8
16	8	5	10
16	8	13	10
20	10	6	12
20	10	12	12
25	12	8	14
25	12	20	14
25	12	30	14
30	16	25	20
30	16	40	20
30	16	50	20
30	16	65	20
40	20	13	20
40	20	32	20

Specification

- Steel
  hardened
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

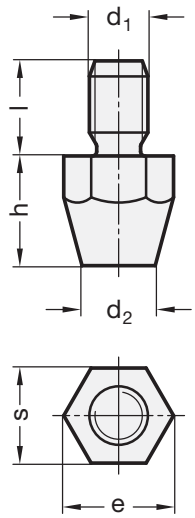
Information

Headed dowels GN 6321.1 can also be used as feet.

see also...

- *Headed dowels DIN 6321 → Page 578*

How to order		
1 2	1	d_1
6321.1-25-8	2	h



[1] h	[2] d_1	d_2	e min.	Length l	s
10	M 6	8	11,5	11	10
15	M 8	10	15	13	13
20	M 6	6	11,5	11	10
20	M 10	13	19,6	16	17
25	M 12	15	21,9	20	19
30	M 8	9	15	13	13
40	M 10	13	19,6	16	17
50	M 12	15	21,9	20	19

Specification

- Steel (1.0718)
  - not hardened
  - blackened
- RoHS compliant

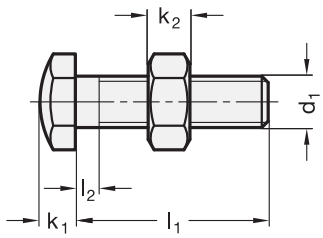
Information

Feet DIN 6320 are normally used in jig construction if neither a self-aligning support nor an axial adjustment is required.

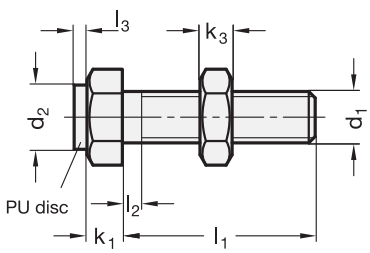
Unlike the models specified in the official standard sheet, these feet are made of 1.0718 steel (in place of quenched and tempered steel).

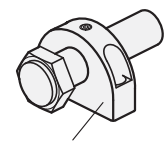
How to order		
DIN 6320-20-M6	1	h
	2	d_1

Type **AK**



Type **BK**





Mounting block GN 412.1

3 Type

AK Locating surface with rounded end, hardened

BK Locating surface with Polyurethan disc

1 d_1	2 l_1 - Type AK										e	k_1	k_2	l_2 max.	s
M 3	10	15	20	25	30	-	-	-	-	-	6,4	2	2,4	1,5	5,5
M 4	10	15	20	25	30	35	40	-	-	-	8,1	2,8	3,2	2,1	7
M 5	10	15	20	25	30	35	40	50	-	-	9,2	3,5	4	2,4	8
M 6	15	20	25	30	35	40	50	-	-	-	11,5	4	5	3	10
M 8	15	20	25	30	35	40	50	60	70	80	15	5,5	6,5	3,7	13
M 10	30	35	40	50	60	70	80	-	-	-	19,6	7	8	4,5	17
M 12	30	35	40	50	60	70	80	-	-	-	21,9	8	10	5,2	19
M 16	50	60	70	80	-	-	-	-	-	-	27,7	10	13	6	24

1 d_1	2 l_1 - Type BK							d_2	e	k_1	k_3	l_2 max.	l_3	s
M 4	15	20	25	30	35	40	-	5	8,1	2,8	2,4	2,1	1,5	7
M 5	15	20	25	30	35	40	-	6	9,2	3,5	3,2	2,4	1,5	8
M 6	20	25	30	35	40	45	50	8	11,5	4	3,6	3	2	10
M 8	20	25	30	35	40	45	50	10	15	5,5	5	3,7	2	13
M 10	20	25	30	35	40	45	50	13	19,6	7	6	4,5	2	17

Specification

- Screw
  Steel, tensile strength class 5.8
  (500 N/mm²)
- Type AK
  blackened
  Locating surface, hardened (HRC 45)
- Type BK
  nickel plated
  Polyurethan disc, 90 shore
- Hexagon nut
  Steel zinc plated, blue passivated
- RoHS compliant

Information

Setting bolts GN 251 are produced with a hardened and rounded head which can be used as support or setting bolt as an end stop.

The version with Polyurethan disc (Type BK) functions as damping element or protection for sensitive surfaces.

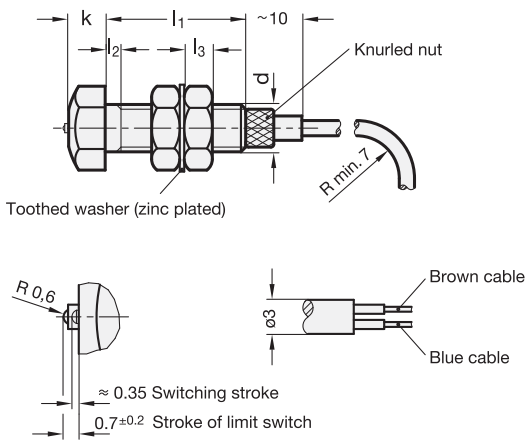
see also...
Mounting blocks GN 412.1 → Page 452

How to order

1 2 3

GN 251-M8-40-BK

1	d_1
2	l_1
3	Type



3 Type

S Normally open
O Normally closed

1 d	2 l_1	e	k	l_2 max.	l_3	s
M 6	21	11,5	4	3	3,6	10
M 8	25	15	7	4	5	13
M 10	25	19,6	7	4	6	17

Specification

- Bolt Steel
  - Tensile strength class 5.8 (500 N/mm²)
  - Hexagon head hardened to HRC 45
  - nickel plated
- Hexagon nuts Steel
  nickel plated
- End limit switch
  - Voltage: 12 ... 24 V DC
  - Switching load recom.: 5-10 mA
  - Switching load: 20 mA DC max.
  - Life expectancy: 3 mio. operations
  - Temperature range: -10 °C ... +80 °C
  - Load: ~1 N
- Supply cable PVC:
  - Ø 3 ; 2-phase, ~ 2 meters long
  - max. tensile load 30 N
  - grey for Type S (normally open)
  - black for Type O (normally closed)
- Protection class IP 40
- RoHS compliant

Information

Setting bolts GN 251.2 are supplied with a hardened round head which serves as a firm end stop.

In general these bolts are installed with a locknut.

When the workpiece contacts the bolt head an electrical signal is transmitted by means of the limit switch.

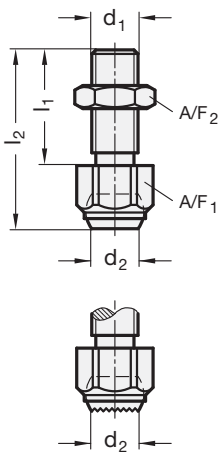
By means of the knurled nut, the limit switch can be installed resp. taken out without having the need to loosen the setting bolt.

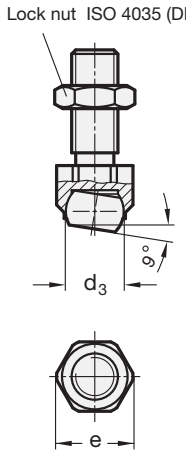
see also...
• *IP Protection classes → Page 1137*

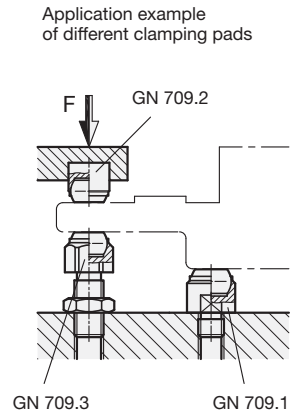
How to order

GN 251.2-M10-25-S (1 2 3)

1	d
2	l_1
3	Type







Rost frei Inox Stainless Steel

3 Type

B Smooth contact face
R Serrated contact face (only version in steel)

1 A/F1 GN 709.3	A/F1 GN 709.35	2 d1	d2	d3 Ball-Ø	e	l1	l2	A/F2	Static load max. in kN
13	13	M 8	5,8	8,5	14,5	25	36,6	13	8
17	17	M 10	8,6	12	19	30	45,7	17	8
17	17	M 12	8,6	12	19	35	50,7	19	15
24	24	M 16	10,5	16	27	40	60,7	24	25
30	30	M 20	20	25	33	50	77,3	30	90
36	-	M 24	20	25	40	70	100	36	90

Specification

- **GN 709.3**
  Steel
  - tempered
  - phosphated

  Ball
  Steel
  - hardened
  - blank

  Hexagon nut
  ISO 4035 (DIN 439)
  Steel, blackened
- **GN 709.35** (only Type B)
  Stainless Steel AISI 431
  tempered

  Ball
  Stainless Steel AISI 420C
  nickel plated

  Hexagon nut
  ISO 4035 (DIN 439)
  Stainless Steel
- RoHS compliant

On request

- Serrated hard metal ball

Information

Clamping pads GN 709.3 / GN 709.35 are used as mobile supports or as spring plungers for clamping workpieces. They can also be used as a back stop.

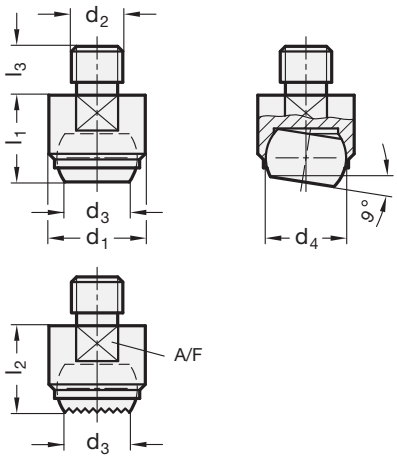
The ball is limited to an angular movement of 9° only.

see also...
- *Clamping pads GN 709.1 / GN 709.15* → *Page 588*
- *Clamping pads GN 709.2 / GN 709.25* → *Page 589*

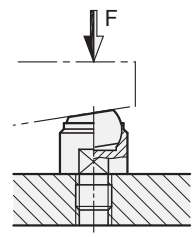
Steel-Clamping pad		
GN 709.3-17-M10-R (1 2 3)	1	A/F1
	2	d1
	3	Type

Stainless Steel-Clamping pad		
GN 709.35-24-M16-B (1 2 3)	1	A/F1
	2	d1
	3	Type

Clamping pads
GN 709.3 → *Page 586*
GN 709.1 → *Page 588*
GN 709.2 → *Page 589*



Application example when used as a workpiece support



Inox Stainless Steel

3 Type

B Smooth contact face
R Serrated contact face (only version in steel)

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

Specification

- **GN 709.1**
  Steel
  - tempered
  - phosphated

  Ball
  Steel
  - hardened
  - blank
- **GN 709.15** (only Type B)
  Stainless Steel AISI 431
  tempered

  Ball
  Stainless Steel AISI 420C
  nickel plated
- RoHS compliant

On request

- Serrated hard metal ball

Information

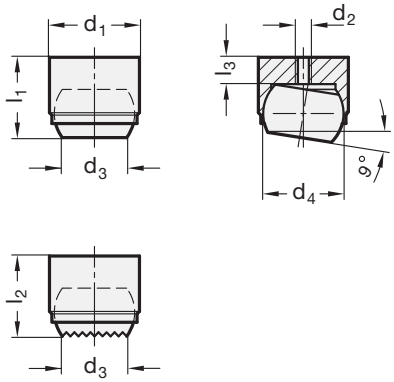
Clamping pads GN 709.1 / GN 709.15 are used as mobile supports or as spring plungers for clamping workpieces. They can also be used as a back stop.

The ball is limited to an angular movement of 9° only.

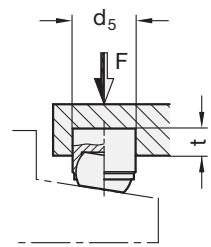
see also...
- *Clamping pads GN 709.3 / GN 709.35* → *Page 586*

Steel-Clamping pad		
GN 709.1-20-M10-R	1	d_1
	2	d_2
	3	Type

Stainless Steel-Clamping pad		
GN 709.15-13-M8-B	1	d_1
	2	d_2
	3	Type



Application example when used as spring plunger



Rostfrei Inox Stainless Steel

2 Type

B Smooth contact face
R Serrated contact face (only version in steel)

1

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

Specification

- **GN 709.2**
  Steel
  - tempered
  - phosphated

  Ball
  Steel
  - hardened
  - blank
- **GN 709.25** (only Type B)
  Stainless Steel AISI 431
  tempered

  Ball
  Stainless Steel AISI 420C
  nickel plated
- *ISO-Fundamental tolerances → Page 1132*
- RoHS compliant

On request

- Serrated hard metal ball

Information

Clamping pads GN 709.2 / GN 709.25 are used as mobile supports or as spring plungers for clamping workpieces. They can also be used as a back stop.

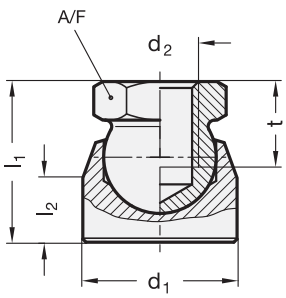
The ball is limited to an angular movement of 9° only.

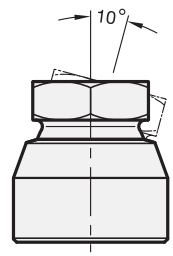
see also...

- *Clamping pads GN 709.35 → Page 586*

Steel-Clamping pad 1 2 GN 709.2-28-R		
	1	d_1
	2	Type

Stainless Steel-Clamping pad 1 2 GN 709.25-18-B		
	1	d_1
	2	Type





1 d1	2 d2	l1 ≈	l2	t min.	A/F	Static load in kN (see information)
16	M 8	19	7	9	12	5
20	M 10	22	8	11	15	7,5
24	M 12	25	10	12	17	10
30	M 16	34	13	16	24	15

Specification

- Steel
  - Tensile strength class 5.8 (N/mm²)
  - zinc plated, blue passivated
- RoHS compliant

Information

Ball joint thrust pads GN 346 are in general used for transfer of clamping forces. They adjust themselves to uneven or non-parallel surfaces and clamp without twisting the clamped parts.

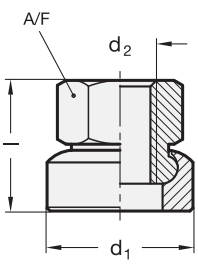
The values were arrived at by a series of tests whereby a limited number of ball joint pads were subjected for a limited time to a vertical static load to the pads.

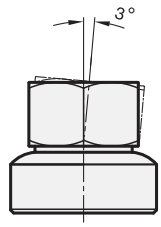
At the values given in the table a permanent deformation of the ball is almost impossible.

Ball joint thrust pads GN 346 can also be used as levelling feet with a small foot diameter.

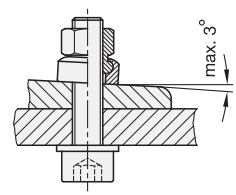
see also...
- *Levelling feet GN 343.1 → Page 812*

How to order		
GN 346-20-M10 (1 2)	1	d1
	2	d2





Example of application



1 d_1	2 d_2	$l \approx$	A/F
17	M 8	14	13
21	M 10	17,5	16
24	M 12	21,5	18
30	M 16	28	24
36	M 20	35	30
44	M 24	42,5	36

Specification

- Steel
  - Tensile strength class 10 (1000 N/mm²)
  - blackened
- RoHS compliant

Information

Hexagon nuts with ball socket GN 347 are capable of clamping slanting surfaces up to 3° without disturbing / twisting the clamped surface.

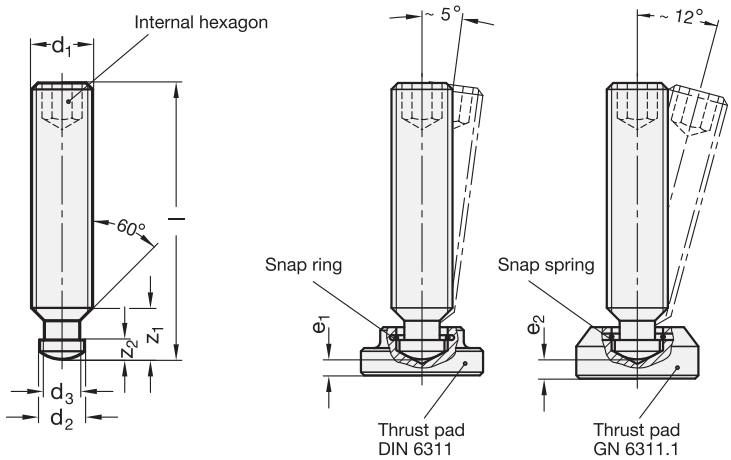
How to order

GN 347-30-M16 (1 2)

1	d_1
2	d_2

DIN 6332
Extract

Grub screws
with thrust point



3 Type

SK with internal hexagon, pad hardened

SKN with internal hexagon, not hardened

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

Specification

- Steel
  - Tensile strength class 5.8 (500 N/mm²)
  - blackened
- Type SK
  Thrust point hardened
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Information

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

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

Through the combination of grub screws DIN 6332 with various handles or knobs, simple clamping screws can be created.

see also...

- *Thrust pads DIN 6311 → Page 594*
- *Thrust pads GN 6311.1 → Page 595*
- *Grub screws GN 913.2 (with hardened pad) → Page 522*

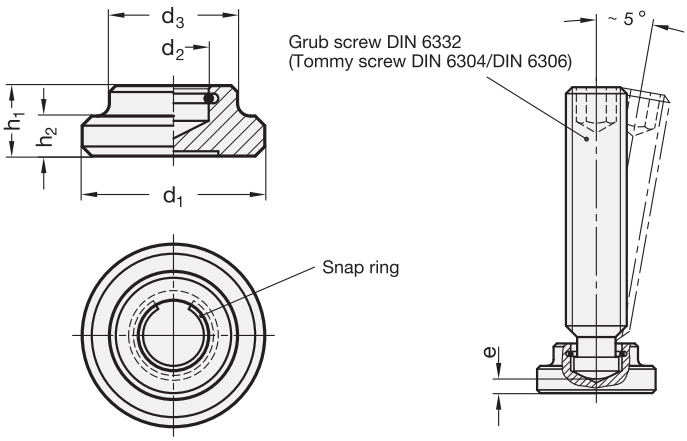
How to order

DIN 6332 – 1 – 2 – 3

DIN 6332-M12-60-SK

1	d_1
2	Length l
3	Type

Grub screws DIN 6332 → *Page 592*
Thrust pads DIN 6311 → *Page 594*
Thrust pads GN 6311.1 → *Page 595*
Ball jointed levelling feet GN 638 → *Page 816*
Ball joint thrust pads GN 346 → *Page 590*
Hexagon nut with ball socket GN 347 → *Page 591*



2 Type

S with circlip

1

d_1	d_2 H12	d_3	e ≈	h_1	h_2	Grub screw DIN 6332
12	4,6	10	2,2	7	2,5	M 6
16	6,1	12	3	9	4	M 8
20	8,1	15	3,6	11	5	M 10 / M 12
25	8,1	18	4,5	13	6	M 10 / M 12
32	12,1	22	5,3	15	7	M 16
40	15,6	28	5,6	16	9	M 20

Specification

- Steel
  case hardened
- Circlip
  Spring steel wire
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Information

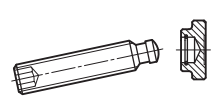
Thrust pads DIN 6311 are utilized to transmit clamping forces. They lean to uneven and unparallel surfaces and eliminate the transmission of any screw turning movement to the workpiece.

see also...

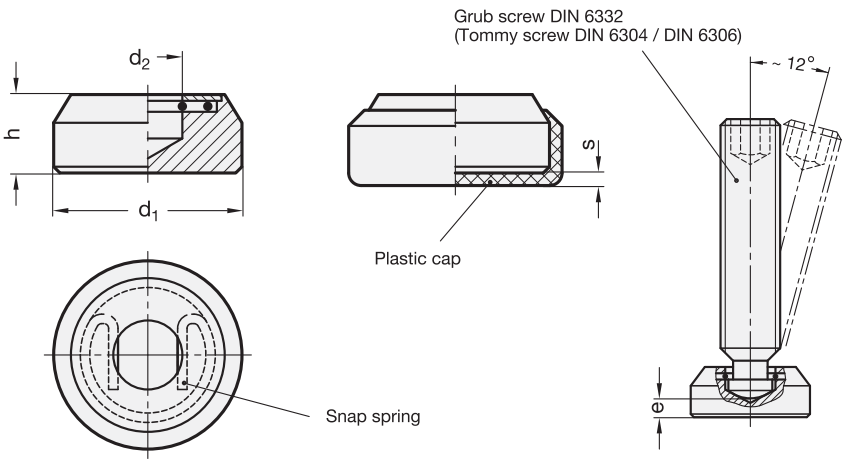
- *Grub screws DIN 6332 → Page 592*
- *Tommy screws DIN 6304 / DIN 6306 → Page 256 / 257*

Hint for installation

The thrust pad has to be held at an angle allowing the circlip to drop to the bottom of its groove with the split end downwards. The thrust pin is then offered up to the split end of the circlip at the lowest possible angle and pressed home.



How to order		
DIN 6311-40-S (1 2)	1	d_1
	2	Type



2 Type

A without plastic cap
K with plastic cap

1

d_1	d_2 +0,2	e ≈	h	s	Grub screw DIN 6332
16	6,3	2,2	8	1,5	M 8
20	9,2	2,6	10	1,5	M 10 / M 12
25	9,2	2,9	11	1,5	M 10 / M 12
32	12,5	4,5	14	1,5	M 16

Specification

- Steel
  blackened
- Circlip
  Spring steel wire
- Plastic cap (Polyacetal POM)
  - natural colour
  - temperature resistant up to 100 °C
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Thrust pads GN 6311.1 are used in conjunction with grub screws fitted with thrust point (grub screws DIN 6332, tommy screws DIN 6304 and DIN 6306) to transmit clamping force. They align themselves on uneven and non-parallel surfaces and thus prevent the rotating force being transmitted to the workpiece.

The plastic cap prevents damage to delicate workpieces.

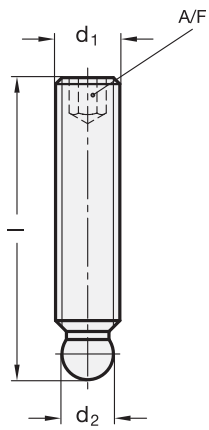
The unique shape of the non-removable retaining ring permits easy insertion and removal of grub screws into or from the thrust pad.

Thrust pads GN 6311.1 can be used in conjunction with DIN 6332 grub screws as levelling pad.

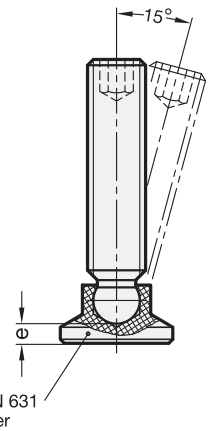
see also...

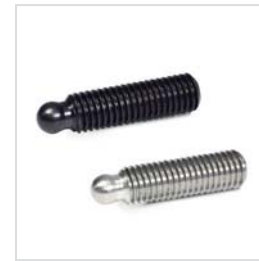
- *Grub screws DIN 6332 → Page 592*
- *Tommy screws DIN 6304 / DIN 6306 → Page 256 / 257*

How to order		
GN 6311.1-25-K (1 2)	1	d_1
	2	Type



Mounting example





Rost frei Inox Stainless Steel

1 d1	2 Length l				d2	A/F	Thrust pad GN 631 / GN 631.5 d1 - e					
M 6	30	40	50	-	4,5 ±0,025	3	15 - 3,6	18 - 5,2	21 - 6	25 - 6,5	32 - 7	-
M 8	25	40	50	63	6,1 +0,05	4	15 - 2,5	18 - 4,2	21 - 5	25 - 5,5	32 - 6	40 - 8
M 10	40	50	63	80	7,8 +0,05	5	18 - 3,8	21 - 4,3	25 - 4,6	32 - 5	40 - 7	-
M 12	40	63	80	100	9,4 +0,05	6	21 - 3,4	25 - 3,6	32 - 4,2	40 - 6,2	-	-

Specification

- **GN 632.1**
  Steel
  - Tensile strength class 5.8 (500 N/mm²)
  - blackened
- **GN 632.5**
  Stainless Steel AISI 303
- *Stainless Steel characteristics* → *Page 1144*
- RoHS compliant

Information

Grub screws GN 632.1 with ball point are as a rule used with thrust pads GN 631.

The ball-Ø d_2 is smaller than the thread core-Ø, which allows fitting over the ball end.

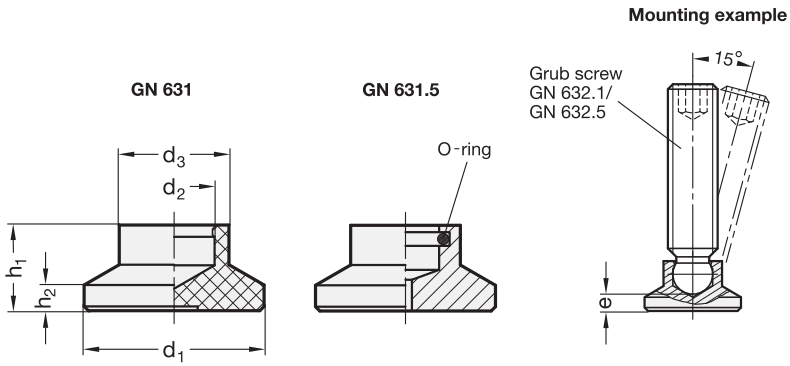
Through the combination of grub screws GN 632.1 and thrust pads GN 631 simple ball jointed levelling feet GN 638 can be created.

see also...

- *Ball jointed levelling feet GN 638 (thrust pads with grub screws)* → *Page 816*

Steel-Grub screw 1 2 GN 632.1-M10-50		
	1	d1
	2	Length l

Stainless Steel-Grub screw 1 2 GN 632.5-M8-63		
	1	d1
	2	Length l



Inox Stainless Steel

1 d_1 GN 631	GN 631.5	2 d_2	d_3	e ≈	h_1	h_2	Grub screw GN 632.1 / GN 632.5
15	-	4,5	8,6	3,6	7,6	2,5	M 6
15	-	6,1	8,6	2,5	7,6	2,5	M 8
18	-	4,5	10,8	5,2	9,2	2,5	M 6
18	-	6,1	10,8	4,2	9,2	2,5	M 8
18	-	7,8	10,8	3,8	9,2	2,5	M 10
21	21	4,5	12,8	6	10	3	M 6
21	21	6,1	12,8	5	10	3	M 8
21	21	7,8	12,8	4,3	10	3	M 10
21	21	9,4	12,8	3,4	10	3	M 12
25	25	4,5	13	6,5	10,5	3	M 6
25	25	6,1	13	5,5	10,5	3	M 8
25	25	7,8	13	4,6	10,5	3	M 10
25	25	9,4	13	3,6	10,5	3	M 12
32	32	4,5	14	7	11	3	M 6
32	32	6,1	14	6	11	3	M 8
32	32	7,8	14	5	11	3	M 10
32	32	9,4	14	4,2	11	3	M 12
40	40	6,1	16	8	13	4	M 8
40	40	7,8	16	7	13	4	M 10
40	40	9,4	16	6,2	13	4	M 12

Specification

- **GN 631**
  Plastic
  Technopolymer (Polyacetal POM)
  - temperature resistant up to 80° C
  - black, matt
- **GN 631.5**
  Stainless Steel AISI 303
  O-Ring rubber FPM (Viton®)
  temperature resistant up to 200 °C
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

Thrust pads GN 631 / GN 631.5 with ball point grub screw GN 632.1 / GN 632.5 are ideal to transmit clamping forces. They lean to uneven and unparallel surfaces. They are easy to press-on to the ball point of the grub screw by hand.

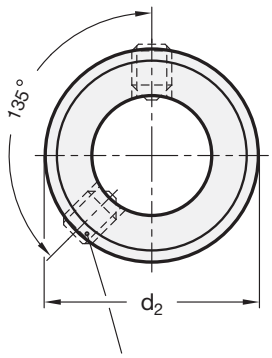
see also...

- *Ball jointed levelling feet GN 638 → Page 816*

Plastic-Thrust pads 1 2 GN 631-18-6,1		
	1	d_1
	2	d_2

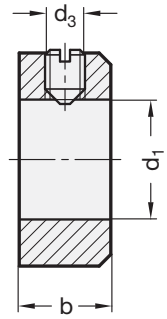
Stainless Steel-Thrust pads 1 2 GN 631.5-32-7,8		
	1	d_1
	2	d_2

Set collars

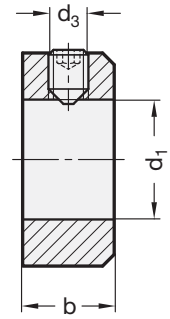


Second grub screw from size d_1 = 72

Type **A**



Type **E**



Inox
Stainless
Steel

2 Type

A Grub screw with slot ISO 7434 (DIN 553)

E Grub screw with internal hexagon DIN 914

1

d_1 H8			d_2	d_3	b js14
Steel blackened Type A Type E	Steel zinc plated ZB Type E	Stainless Steel NI Type A			
5	5	5	10	M 3 x 4	6
6	6	6	12	M 4 x 5	8
7	7	7	12	M 4 x 5	8
8	8	8	16	M 4 x 6	8
9	9	9	18	M 5 x 8	10
10	10	10	20	M 5 x 8	10
11	11	11	20	M 5 x 8	10
12	12	12	22	M 6 x 8	12
13	13	13	22	M 6 x 8	12
14	14	14	25	M 6 x 8	12
15	15	15	25	M 6 x 8	12
16	16	16	28	M 6 x 8	12
18	18	18	32	M 6 x 8	14
20	20	20	32	M 6 x 8	14
22	22	22	36	M 6 x 10	14
24	24	24	40	M 8 x 10	16
25	25	25	40	M 8 x 10	16
26	26	26	40	M 8 x 10	16
28	28	28	45	M 8 x 12	16

1

d_1 H8			d_2	d_3	b js14
Steel blackened Type A Type E	Steel zinc plated ZB Type E	Stainless Steel NI Type A			
30	30	30	45	M 8 x 10	16
32	32	32	50	M 8 x 12	16
34	-	34	50	M 8 x 12	16
35	35	35	56	M 8 x 12	16
36	-	36	56	M 8 x 12	16
38	-	38	56	M 8 x 12	16
40	40	40	63	M 10 x 16	18
42	-	42	63	M 10 x 16	18
45	45	45	70	M 10 x 16	18
48	-	48	70	M 10 x 16	18
50	50	50	80	M 10 x 16	18
52	-	-	80	M 10 x 16	18
55	-	-	80	M 10 x 16	18
60	60	-	90	M 10 x 16	20
65	-	-	100	M 10 x 20	20
70	70	-	100	M 10 x 20	20
75	-	-	110	M 12 x 20	22
80	80	-	110	M 12 x 20	22

Set collars GN 705 → *Page 598*
Semi-split set collars GN 706.2 → *Page 600*
Split set collars GN 707.2 → *Page 601*
Quick release set collars GN 704 → *Page 602*
Threaded set collars GN 706.3 → *Page 603*

Specification

	3
• Steel blackened (Standard)	—
• Steel zinc plated, blue passivated	ZB
• Stainless Steel AISI 303	NI

- *ISO-Fundamental Tolerances → Page 1132*
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

Set collars GN 705 essentially comply with the designs of DIN 705 which has been re-issued in April 2007.

The official standard sheet also lists the sizes d_1 = 2 / 2,5 / 3 / 3,5 / 4 / 4,5 / 85 / 90 / 100 / 110 / 120 / 125 / 125 / 140 / 150 / 160 / 180 and 200, although it does not show a whole series of the intermediate sizes listed in the above table.

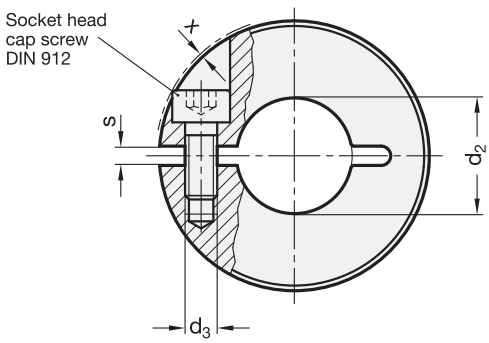
Also, the official standard sheet still lists the Types B and C for fixing the set collars with transverse pin, but not Type E.

Steel-Set collar, blackened		
GN 705-20-A	1	d_1
	2	Type

Steel-Set collar, zinc plated		
GN 705-10-E-ZB	1	d_1
	2	Type
	3	Finish

Stainless Steel-Set collar		
GN 705-10-A-NI	1	d_1
	2	Type
	3	Material

Semi-split set collars



Inox
Stainless
Steel

1 d_1	2 d_2 H10 recommended shaft tolerance h11		b ±0,2	d_3	s	$x \approx$ Protrusion of cap thread
20	B 6	-	9	M 3	2,1	1,2
22	B 8	-	9	M 3	2,1	1
26	B 10	-	11	M 4	2,1	1,6
30	B 12	-	11	M 4	2,1	0,7
32	B 14	-	11	M 4	2,1	0,7
36	B 15	B 16	13	M 5	2,1	1,4
42	B 18	B 20	15	M 5	3	0,6
48	B 22	B 25	15	M 5	3	0
55	B 28	B 30	15	M 6	3	0,5
60	B 32	B 35	15	M 6	4	0,4
65	B 40	-	15	M 6	4	0,5

Specification

3

- Steel **ST**
  - Sintered Steel (Distaloy AB) black oxidised with vapor
  - Socket head cap screw DIN 912 Steel, blank
- Stainless Steel (Sintered Steel) **NI**
  - AISI 316L
  - Socket head cap screw DIN 912 Stainless Steel AISI 304
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Information

Semi-split set collars GN 706.2 can safely and simply be assembled i. e. with high clamping force without damaging the surface of the shaft.

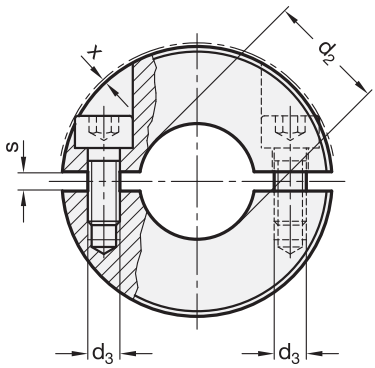
For size d_1 = 20 to 36 d_3 is a through hole; starting from d_1 = 42 d_3 is a threaded blind bore.

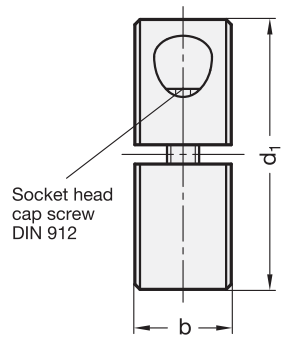
These set collars not only serve as an end stop, but they can also be used for fixing or triggering other components such as end limit switches.

Steel-Semi-split set collar 1 2 3 GN 706.2-36-B16-ST		
	1	d_1
	2	d_2
	3	Material

Stainless Steel-Semi-split set collar 1 2 3 GN 706.2-55-B28-NI		
	1	d_1
	2	d_2
	3	Material

Split set collars





Inox
Stainless
Steel

1 d_1	2 d_2 H10 recommended shaft tolerance h11		b ±0,2	d_3	s	x ≈ Protrusion of cap thread
20	B 6	-	9	M 3	2,1	1,2
22	B 8	-	9	M 3	2,1	1
26	B 10	-	11	M 4	2,1	1,6
30	B 12	-	11	M 4	2,1	0,7
32	B 14	-	11	M 4	2,1	0,7
36	B 15	B 16	13	M 5	2,1	1,4
42	B 18	B 20	15	M 5	3	0,6
48	B 22	B 25	15	M 5	3	0
55	B 28	B 30	15	M 6	3	0,5
60	B 32	B 35	15	M 6	4	0,4
65	B 40	-	15	M 6	4	0,5

Specification

3

- Steel **ST**
  - Sintered Steel (Distaloy AB) black oxidised with vapor
  - Socket head cap screw DIN 912 Steel, blank
- Stainless Steel (Sintered Steel) **NI**
  - AISI 316L
  - Socket head cap screw DIN 912 Stainless Steel AISI 304
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Information

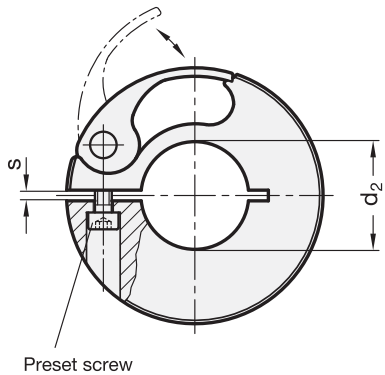
Split set collars GN 707.2 are used when the latter cannot be slipped over a shaft.

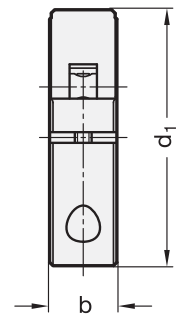
For size d_1 = 20 to 36 d_3 is a through hole; starting from d_1 = 42 d_3 is a threaded blind bore.

These set collars not only serve as an end stop, but they can also be used for fixing or triggering other components such as end limit switches.

Steel-Split set collar		
1 2 3 GN 707.2-65-B40-ST	1	d_1
	2	d_2
	3	Material

Stainless Steel-Split set collar		
1 2 3 GN 707.2-22-B8-NI	1	d_1
	2	d_2
	3	Material





1 d_1	2 d_2 recommended shaft tolerance h8	b	s	Tightening torque of the screw in Nm ≈	Axial load in N ≈
38	B 8	10	1,5	0,5	130
38	B 10	10	1,5	0,5	150
38	B 12	10	1,5	0,5	160
38	B 14	10	1,5	0,5	180
38	B 15	10	1,5	0,5	220
38	B 16	10	1,5	0,5	260
50	B 20	13	1,5	0,7	310
50	B 25	13	1,5	0,7	400
50	B 28	13	1,5	0,7	430
50	B 30	13	1,5	0,7	450
75	B 32	15	1,5	1,5	460
75	B 35	15	1,5	1,5	480

Specification

- Ring
  Aluminium
  black anodized
- Lever
  Aluminium
  yellow anodized
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Information

The force lock with the shaft is made in the GN 704 quick release set collars via an eccentric lever which allows the collars to be adjusted easily and quickly without tools. The aluminium design delivers low inertia values.

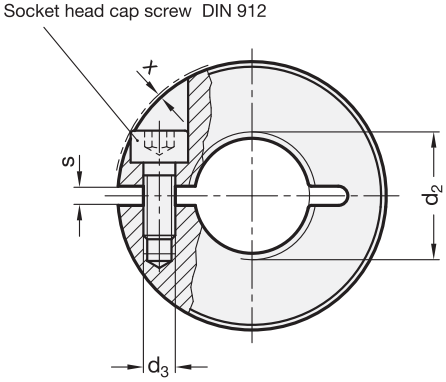
The specified tightening torque of the screw is a recommended value with which the collar clamped to a shaft (with closed eccentric lever) is capable of reaching the specified axial load capacity. The details on axial load capacity are non-binding guidance values and do not constitute a warranty of characteristics.

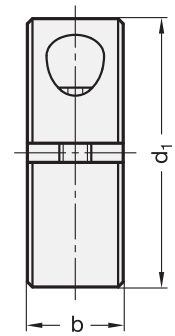
Keeping the friction surface of the eccentric lever slightly greased will help to prolong the useful service life.

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

Threaded set collars

Socket head cap screw DIN 912





Rost frei Inox Stainless Steel

1 d_1	2 d_2 Thread 6H		b	d_3	s	x ≈ max. protrusion of cap screw
20	M 8	M 8 x 1	9	M 3	2,1	1
22	M 10	M 10 x 1	9	M 3	2,1	0,8
26	M 12	M 12 x 1,5	11	M 4	2,1	1,6
32	M 16	M 16 x 1,5	11	M 4	2,1	0,7
42	M 20	M 20 x 1,5	15	M 5	3	0,6
48	-	M 24 x 1,5	15	M 5	3	0
55	-	M 30 x 1,5	15	M 6	3	0,4

Specification

3

- Steel **ST**
  - Sintered Steel (Distaloy AB) black oxidised with vapor
  - Socket head cap screw DIN 912 Steel, blank
- Stainless Steel (Sintered Steel) **NI**
  - AISI 316L
  - Socket head cap screw DIN 912 Stainless Steel AISI 304
- *Metric ISO thread → Page 1134*
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

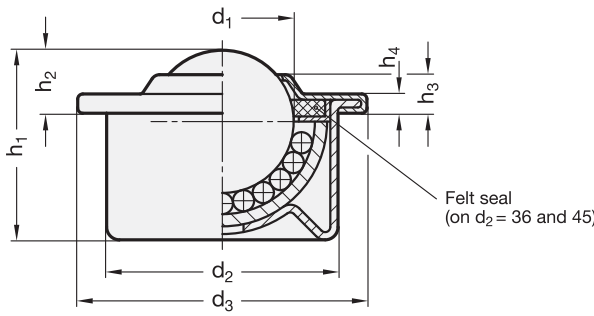
Information

Threaded set collars GN 706.3 can be used in connection with bolt thread tolerance 6g. After clamping, the thread of the semi-split set collar may no longer be tolerance-stable (6H).

The thread d_3 for sizes d_1 = 20 to 36 is designed as a through hole, from size d_1 = 42 it is designed as blind hole.

Steel-Threaded set collar		
GN 706.3-32-M16-ST (1 2 3)	1	d_1
	2	d_2
	3	Material

Stainless Steel-Threaded set collar		
GN 706.3-42-M20x1,5-NI (1 2 3)	1	d_1
	2	d_2
	3	Material



Inox Stainless Steel

[1]

Size	d_1 Ball	d_2	d_3	h_1 ±0,3	h_2 ±0,3	h_3 ±0,3	h_4	Load C in N Version			
								SBL	SKU	SNI	NNI
15	15,8	24 ±0,065	31	21	9,5	5	2,9	500	70	300	300
22	22,2	36 ±0,08	45	29,5	9,8	6	2,9	1200	100	900	900
30	30,1	45 ±0,1	55	37,8	13,8	7	3,7	2000	150	1500	1500

Specification

[2]

- Housing sheet steel — **SBL**
  - zinc plated, blue passivated
  - Ball Steel, blank
- Housing sheet steel — **SKU**
  - zinc plated, blue passivated
  - Ball Plastic (Polyacetal POM)
- Housing sheet steel — **SNI**
  - zinc plated, blue passivated
  - Ball Stainless Steel AISI 440C
- Housing sheet steel — **NNI**
  - Stainless Steel AISI 304
  - Ball Stainless Steel AISI 440C
- RoHS compliant

Accessory

- Spring rings GN 509.3
  (Retainers for ball transfer units)

→ *Page 607*

Information

Ball transfer units GN 509 are used on conveyer tracks. They assist a linear or rotary movement of heavy loads on a conveyer track.

see also...

• *Ball transfer units GN 509.1 (Heavy duty steel housing) → Page 606*

How to order		
GN 509-15-SBL	1	Size
	2	Material / Finish

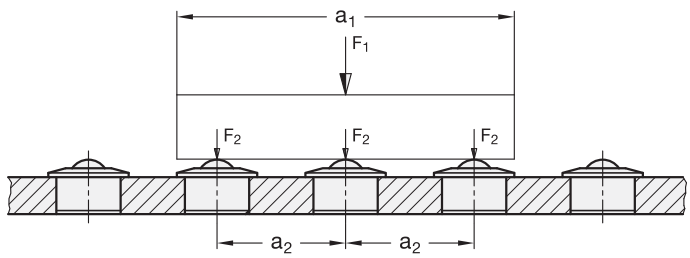
All ball operated conveyers are made up of a number of balls each located in a socket resting on a number of smaller support balls thus allowing the larger ball to rotate in any direction.

Arrangement and choice of ball size

When deciding on the size of the conveyer the following factors have to be taken into account: Weight, size, base material as well as the load to be carried.

The **max. distance between the roller balls „a2“** (on a plane surface) is arrived at by dividing the shortest edge length of the load to be conveyed by 2,5. This ensures that a load will always be supported by carrier balls thus preventing it from tipping over into an empty space.

The required **load carrying capacity** of the balls is determined by the weight of the actual load divided by three. This is arrived at from the assumption that, due to tolerances on the load carrying face and the spacing of the balls in general, only three balls will be under load at any one time.



a_1 = shortest edge length of the load

a_2 = max. distance between roller balls

F_1 = Load weight

F_2 = Load per roller ball

$$a_2 = \frac{a_1}{2,5}$$

$$F_2 = \frac{F_1}{3}$$

Speed and friction

The permissible conveying speed is 2 m/sec. With larger roller balls at speeds exceeding 1m/sec., depending on the weight being conveyed, an increased temperature would be expected.

The **friction values** of the balls at a speed of 1 m/sec. will be in the region of 0,005 µ. This value is, however, dependent on application of usage and could be subject to large variations.

In comparison of balls with sheet metal housings (GN 509) with balls in heavy duty steel housing (GN 509.1), the latter have a higher rigidity. Hence the static values of balls in steel housing can be applied.

Lubrication to prevent corrosion is recommended. The general recommendations applicable to ordinary roller bearings will be sufficient. In most applications lubrication can be ignored.

Resistance to temperature

Balls from size 36 upwards are fitted with a felt seal as protection against ingress of dirt and dust. The latter have a max temperature of 100 °C only.

Balls without the felt seal can also be used at higher operating temperatures. This, however, will lead to a reduced conveying capacity (c). The following table gives indicative values:

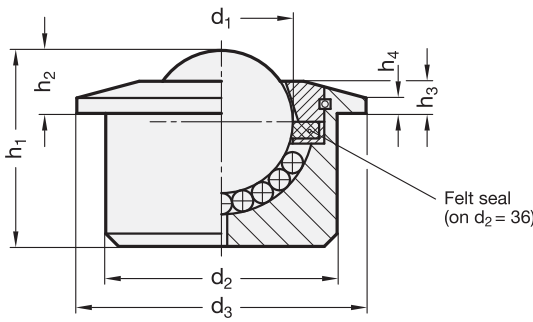
125 °C ./. 10 %

150 °C ./. 20 %

170 °C ./. 30 %

200 °C ./. 50 %

The max. operating temperatur for ball transfer units with plastic ball is 60 °C.



Inox Stainless Steel

1 Size	d1 ball	d2 ±0,08	d3	h1 ±0,3	h2 ±0,3	h3 ±0,3	h4	Load C in N Type SBL	SNI	NNI
12	12,7	22	27	17	8	4	3,2	200	150	150
15	15,8	24	30	20	8,1	3,5	1	500	400	400
22	22,2	36	45	30,5	9,8	5	2,4	1300	1000	1000
30	30,1	45	55	36,8	13,8	7	4,5	2500	2000	2000
45	44,4	62	75	53,5	19	9,5	5,5	6000	4500	4500
60	60	100	117	77,5	30	15	10	13000	10000	10000

Specification

2

- Housing Steel **SBL**
  - turned
  - zinc plated, blue passivated
  - Ball Steel, blank
- Housing Steel **SNI**
  - turned
  - zinc plated, blue passivated
  - Ball Stainless Steel 440C
- Housing Stainless Steel AISI 301 **NNI**
  Ball Stainless Steel 440C
- *Stainless Steel characteristics* → *Page 1144*
- RoHS compliant

On request

- Plastic ball (Polyamide)

Accessory

- Spring rings GN 509.3 → *Page 607*

Information

Ball transfer units GN 509.1 are used on conveyer tracks. They assist a linear or rotary movement of heavy loads on a conveyer track.

see also...

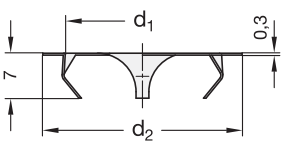
- *More information to ball transfer units* → *Page 605*
- *Ball transfer units GN 509 (Steel housing)* → *Page 604*

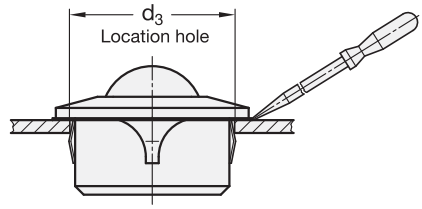
How to order

1 2

GN 509.1-30-SNI

1	**Size**
2	**Material / Finish**





Inox
Stainless
Steel

[1]

d_1	d_2	d_3 Location bore	for Ball transfer units GN 509 / GN 509.1 Size
24	31	25 $^{-0,2}$	15
36	44	37,3 $^{-0,3}$	22
45	55	46,7 $^{-0,3}$	30

Specification

- Spring
  Stainless Steel
- RoHS compliant

Information

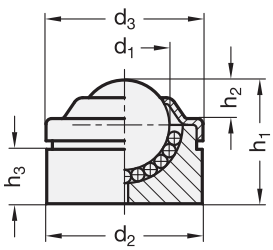
Spring rings GN 509.3 are part of the ball transfer units used on conveyer tracks. These spring retainers facilitate insertion and removal of balls from the upper side.

see also...

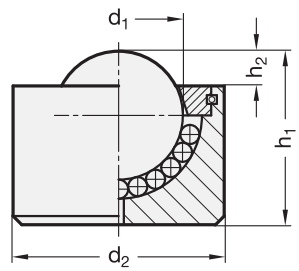
- *Ball transfer units GN 509 (Steel housing)* → *Page 604*

How to order [1]	1	d_1
GN 509.3-24		

Size 8, 12
(Sheet steel cover)



Size 15, 22, 30, 45



[1]

Size	d_1 Ball	d_2 ±0,08	d_3 Sheet steel cover	h_1 ±0,3	h_2 ±0,3	h_3	Load C in N
8	7,9	18	18	12	2	5,1	120
12	12,7	22	22,2	17,5	5,5	7,7	200
15	15,8	24	-	20	5	-	500
22	22,2	36,5	-	30	6	-	1300
30	30,1	44,4	-	36,8	7,5	-	2500
45	44,4	62,6	-	53,5	13	-	6000

Specification

[2]

- Housing Steel **SBL**
  - turned
  - zinc plated, blue passivated
  - Ball steel, blank
- RoHS compliant

On request

- Plastic balls (Polyamide)
- Stainless Steel-Balls
- Stainless Steel-Housings

Information

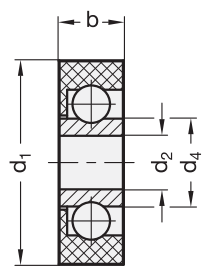
Ball transfer units GN 509.4 are used on conveyer tracks. They assist a linear or rotary movement of heavy loads on a conveyer track.

They have no support collar, taking the load at the housing diameter d_2 instead.

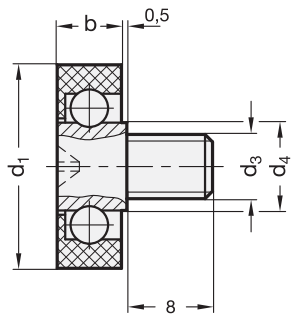
see also...
- *More information to ball transfer units → Page 605*
- *Ball transfer units GN 509.1 (with collar) → Page 606*

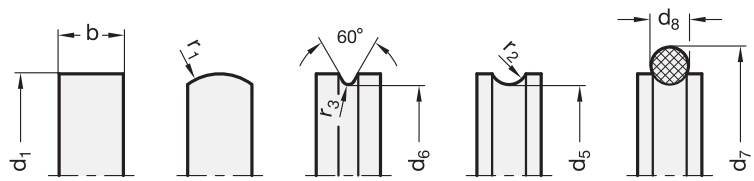
How to order		
GN 509.4-15-SBL [1] [2]	1	**Size**
	2	**Material / finish**

Identification **1**



Identification **2**





Type **ZL** Type **KV** Type **KF** Type **KK** Type **KR**

3 Type

ZL cylindrical
KV convex
KF wedge-shaped
KK concave
KR circular (O-ring)

4 Identification

1 with bore
2 with threaded stud

1 d_1	2 d_2 Bore		2 d_3 Thread	d_4		d_5	d_6	d_7	d_8	b	r_1	r_2	r_3	Radial load bearing capacity in N at max. 300 rpm			
	Type ZL	Type KV Type KK Type KF Type KR		Type ZL	Type KV Type KK Type KF Type KR									Size	ZL	KV	KK KF KR
19	B 5	B 5	M 6	8,2	8,2	17	17	24	3,5	6	5	1,75	0,6	19-B 5	49	49	39
19	B 6	-	-	8,2	-	-	-	-	-	6	-	-	-	19-B 6	49	-	-
22	B 6	B 6	M 6	9,5	9,5	19,2	19	29	5	7	5	2,5	0,6	22-B 6	196	196	156
22	B 8	-	-	11	-	-	-	-	-	7	-	-	-	22-B 8	196	-	-
26	B 6	B 6	M 6	9,5	9,5	23,2	23	33	5	7	5	2,5	0,6	26-B 6	196	196	156
26	B 10	-	-	13	-	-	-			8	-	-	-	26-B 10	196	-	-

Specification

- Outer ring
  Plastic (Polyacetal POM)
  Working temperature: 0°... 40 °C
- Inner ring / balls
  Steel, blank
- Threaded stud
  Steel, zinc plated
- O-ring rubber
  NBR (Perbunan)
- 70 Shore A
- RoHS compliant

On request

- Guide rollers with rivet spigot

Information

Guide rollers GN 753 are suitable for moving or guiding smaller loads. They are commonly used in drive engineering.

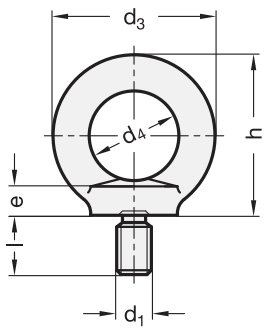
With the radial load bearing capacity given in the table, the guide rollers reach a minimum run time of 1 million revolutions. In general, the guide rollers should not be used under axial load.

How to order

1 2 3 4
GN 753-22-M6-KK-2

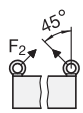
1	d_1
2	d_3 (d_2)
3	Type
4	Identification

Lifting eye bolts

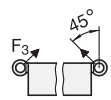


Inox
Stainless
Steel

Axial load-bearing capacity per eye bolt



Load-bearing capacity at max. 45° per eye bolt



Lateral load-bearing capacity at max. 45° per eye bolt

Do not use under shear tension

[1]

d_1 Steel ST	St. Steel NI	St. Steel A4	d_2	d_3	d_4	e	h	k	l	m	F_1 max. in N	F_2 max. in N	F_3 max. in N
M 8	M 8	-	20	36	20	6	36	8	13	10	1400	1000	700
M 10	M 10	M 10	25	45	25	8	45	10	17	12	2300	1700	1150
M 12	M 12	M 12	30	54	30	10	53	12	20,5	14	3400	2400	1700
M 16	M 16	M 16	35	63	35	12	62	14	27	16	7000	5000	3500
M 20	M 20	M 20	40	72	40	14	71	16	30	19	12000	8600	6000
M 24	M 24	M 24	50	90	50	18	90	20	36	24	18000	12900	9000
M 30	-	-	65	108	60	22	109	24	45	28	32000	23000	16000
M 36	-	-	75	126	70	26	128	28	54	32	46000	33000	23000

Specification

[2]

- Steel C 15 E **ST**
  - drop-forged
  - annealed
  - contact face machined
  - zinc plated, blue passivated
- Stainless Steel A2 **NI**
  - drop-forged
  - contact face machined
- Stainless Steel A4 **A4**
  - drop-forged
  - contact face machined
- *Stainless Steel characteristics* → *Page 1144*
- RoHS compliant

Information

The following guidelines of lifting eye bolts DIN 580 have to be observed in addition to the load values given in the above table:

The eye bolt must be of fully screwed in to achieve a perfect contact between the two mating faces.

Both threads must be of a equal length and the base material of equal strength to that of the bolt.

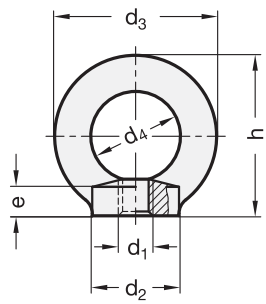
Operating instructions with more details and specifications are included with every delivery (see also www.ganter-griff.com/service).

The official DIN standard sheet specifies the additional sizes M42, M48, M56, M64, M72 x 6, M80 x 6 und M100 x 6.

see also...
- *Lifting eye bolts (rotating) GN 581* → *Page 612*

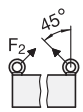
Lifting eye bolt [1] [2] DIN 580-M20-NI		
	1	d_1
	2	**Material**

Lifting eye nuts

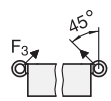


Inox
Stainless
Steel

Axial load-bearing capacity per eye nut



Load-bearing capacity at max. 45° per eye nut



Lateral load-bearing capacity at max. 45° per eye nut

Do not use under shear tension

[1]

d_1 Steel ST	St. Steel NI	St. Steel A4	d_2	d_3	d_4	e	h	k	m	F_1 max. in N	F_2 max. in N	F_3 max. in N
M 8	M 8	-	20	36	20	8,5	36	8	10	1400	1000	700
M 10	M 10	M 10	25	45	25	10	45	10	12	2300	1700	1150
M 12	M 12	M 12	30	54	30	11	53	12	14	3400	2400	1700
M 16	M 16	M 16	35	63	35	13	62	14	16	7000	5000	3500
M 20	M 20	M 20	40	72	40	16	71	16	19	12000	8600	6000
M 24	M 24	M 24	50	90	50	20	90	20	24	18000	12900	9000
M 30	-	-	65	108	60	25	109	24	28	32000	23000	16000
M 36	-	-	75	126	70	30	128	28	32	46000	33000	23000

Specification

[2]

- Steel C 15 E **ST**
  - drop-forged
  - annealed
  - contact face machined
  - zinc plated, blue passivated
- Stainless Steel A2 **NI**
  - drop-forged
  - contact face machined
- Stainless Steel A4 **A4**
  - drop-forged
  - contact face machined
- *Stainless Steel characteristics* → *Page 1144*
- RoHS compliant

Information

The following guidelines of the lifting eye nuts DIN 582 have to be observed in addition to the load values given in the above table:

The eye nut must be of fully screwd in to achieve a perfect contact between the two mating faces.

Both threads must be of a equal length and the base material of equal strength to that of the nut.

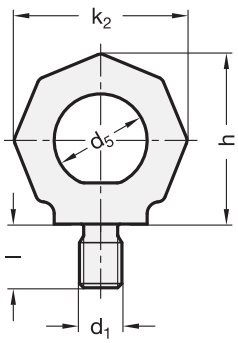
Operating instructions with more details and specifications are included with every delivery (see also www.ganter-griff.com/service).

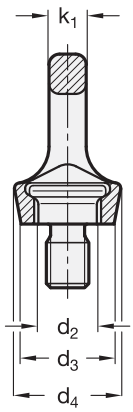
The official DIN standard sheet specifies the additional sizes M42, M48, M56, M64, M72 x 6, M80 x 6 und M100 x 6.

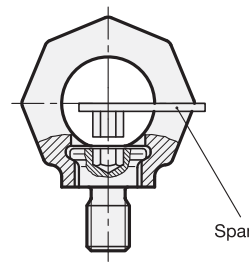
see also...

- *Lifting eye nuts (rotating) GN 583* → *Page 616*

Lifting eye nut		
DIN 582-M36-ST [1] [2]	1	d_1
	2	Material







2 Type

A without spanner
B with spanner

1

d_1	d_2	d_3	d_4	d_5	h	k_1	k_2	Length l	Nominal load
M 8	16	25	32	25	45	8,5	47	12	0,3 t [4,0 kN]
M 10	16	25	32	25	45	8,5	47	15	0,4 t [4,0 kN]
M 12	20	30	34	30	55	10	56	18	0,75 t [7,5 kN]
M 16	23,5	35	40	35	64	14	65	24	1,5 t [15,0 kN]
M 20	29	42	50	40	74	16	75	30	2,3 t [23,0 kN]
M 24	35	50	60	48	90	19	90	36	3,2 t [32,0 kN]
M 30	44	60	75	60	112	24	112	45	4,5 t [45,0 kN]
M 36	53	75	90	72	135	29	135	54	7,0 t [70,0 kN]

Specification

- Ring
  Steel, German Material No. 1.6541
  - forged
  - high-tensile tempered
    100 % electro magnetic tensile tested to EN 1677
  - plastic coated, pink
- Bolt
  Steel
  Tensile strength class 10.9 (1000 N/mm²)
  100 % electro magnetic tensile tested
- RoHS compliant

Information

The lifting eye bolts GN 581are mounted in rotating bearings, allowing the direction of the force action to be adjusted and preventing inadvertent loosening or overturning (as potentially possible in lifting eye bolts DIN 580).

Lifting eye bolts GN 581 offer a high load carrying capacity and they are tested to meet safety standards (safety factor 4).

The rated load carrying capacity listed in the above table is clearly marked on the ring. It applies to the most unfavourable load application of the load types listed opposite.

Lifting eye bolts GN 581 comply with Mechanical Engineering Directive 2006 / 42 / EG and are BG tested.

The hexagon socket bolt cannot be removed from the ring.

Type B is suitable for assembly without the need to use tools: inserting the spanner in the hexagon socket of the bolt allows the bolt to be turned in and out by hand.

see also...
Stainless Steel-Lifting eye bolts GN 581.5 → Page 614

How to order		
GN 581-M12-A (1 2)	1	d_1
	2	Type

Method of mounting	G_1	G_2	$2xG_1$	$2xG_2$	G_2		G_2	G_2		G_2	
Number	1	1	2	2	2	2	2	3 and 4	3 and 4	3 and 4	
Angles of inclination	0°	90°	0°	90°	0 to 45°	45 to 60°	asymm.	0 to 45°	45 to 60°	asymm.	
Factor	1	1	2	2	1,4	1	1	2,1	1,5	1	
M 8	1,00 [0,14]	0,30 t	2,00 [0,28]	0,60 t	0,42 [0,10]	0,30 t	0,30 t	0,63 t	0,45 t	0,30 t	
M 10	1,00 [0,23]	0,40 t	2,00 [0,46]	0,80 t	0,56 [0,17]	0,40 t	0,40 t	0,84 t	0,60 t	0,40 t	
M 12	2,00 [0,34]	0,75 t	4,00 [0,68]	1,50 t	1,00 [0,24]	0,75 t	0,75 t	1,60 t	1,12 t	0,75 t	
M 16	4,00 [0,70]	1,50 t	8,00 [1,40]	3,00 t	2,10 [0,50]	1,50 t	1,50 t	3,15 t	2,25 t	1,50 t	
M 20	6,00 [1,20]	2,30 t	12,00 [2,40]	4,60 t	3,22 [0,86]	2,30 t	2,30 t	4,83 t	3,45 t	2,30 t	
M 24	8,00 [1,80]	3,20 t	16,00 [3,60]	6,40 t	4,48 [1,29]	3,20 t	3,20 t	6,70 t	4,80 t	3,20 t	
M 30	12,00 [3,20]	4,50 t	24,00 [6,40]	9,00 t	6,30 [2,30]	4,50 t	4,50 t	9,40 t	6,70 t	4,50 t	
M 36	16,00 [4,60]	7,00 t	32,00 [9,20]	14,00 t	9,80 [3,30]	7,00 t	7,00 t	14,70 t	10,50 t	7,00 t	

Safety instructions

The loads given in brackets refer to the load capacity of the corresponding lifting eye bolt DIN 580. If such a value is not indicated the use of the lifting eye bolts DIN 580 is not permitted!

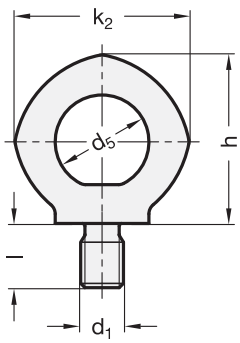
The bolt-on surface for the lifting eye bolts GN 581 must be plane and at a right angle to the threaded borehole; the counter-sinking must be ≤ the nominal diameter of the thread.

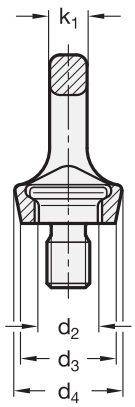
Screwed in, the collar of the screw must make firm contact (do not use washers) and the eye bolt must rotate freely by 360°.

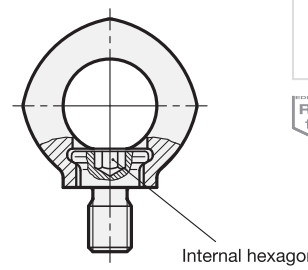
Before applying the load, turn the lifting eye bolt in the direction of the force. The lifting eye bolt is not suitable for frequent rotation cycles under load.

The specified load values apply for a minimum screw-in length of 1,5 × nominal thread diameter in steel with a minimum tensile strength of 37 kp/mm², at an ambient temperature of – 40° C to + 280° C. Load-bearing capacity under different conditions upon request.

Operating instructions with more details and specifications are included with every delivery (see also www.ganter-griff.com/service).







Rostfrei Inox Stainless Steel

d_1	d_2	d_3	d_4	d_5	h	k_1	k_2	Length l	Nominal load
M 12	18	30	32	30	57	14	56	18	0,5 t [5 kN]
M 16	22	35,5	38	35	66	16	65	24	1,0 t [10 kN]
M 20	27,5	41,5	47	40	76	19	74	30	2,0 t [20 kN]
M 24	33	50	56	48	94	24	92	35	2,5 t [25 kN]

Specification

- Ring
  Stainless Steel
  - German Material No. 1.4462
  - forged
  - 100 % electro magnetic tensile tested to EN 1677
  - blank
- Bolt
  Stainless Steel
  German Material No. 1.4462
- RoHS compliant

Information

Stainless Steel-Lifting eye bolts GN 581.5 are mounted in rotating bearings, allowing the direction of the force action to be adjusted and preventing inadvertent loosening or overturning (as potentially possible in Stainless Steel-Lifting eye bolts DIN 580).

Stainless Steel-Lifting eye bolts GN 581.5 offer a high load carrying capacity and they are tested to meet safety standards (safety factor 4).

The rated load carrying capacity listed in the above table is clearly marked on the ring. It applies to the most unfavourable load application of the load types listed opposite.

Stainless Steel-Lifting eye bolts GN 581.5 eye bolts comply with Mechanical Engineering Directive 2006 / 42 / EG and are BG tested.

The hexagon socket bolt cannot be removed from the ring.

see also...
• *Lifting eye bolts (rotating) GN 581 (Steel)* → *Page 612*

How to order		
GN 581.5-M24	1	d_1

Method of mounting	G_1	G_2	2xG_1	2xG_2	G_2		G_2	G_2		G_2	
Number	1	1	2	2	2	2	2	3 and 4	3 and 4	3 and 4	
Angles of inclination	0°	90°	0°	90°	0 to 45°	45 to 60°	asymm.	0 to 45°	45 to 60°	asymm.	
Factor	1	1	2	2	1,4	1	1	2,1	1,5	1	
M 12	1,20 [0,34]	0,50 t	2,40 [0,68]	1,00 t	0,70 [0,24]	0,50 t	0,50 t	1,06 t	0,75 t	0,50 t	
M 16	2,40 [0,70]	1,00 t	4,80 [1,40]	2,00 t	1,42 [0,50]	1,00 t	1,00 t	2,12 t	1,50 t	1,00 t	
M 20	3,60 [1,20]	2,00 t	7,20 [2,40]	4,00 t	2,83 [0,86]	2,00 t	2,00 t	4,24 t	3,00 t	2,00 t	
M 24	5,20 [1,80]	2,50 t	10,40 [3,60]	5,00 t	3,53 [1,29]	2,50 t	2,50 t	5,30 t	3,75 t	2,50 t	

Safety instructions

The loads given in brackets refer to the load capacity of the corresponding Stainless Steel-Lifting eye bolts DIN 580. If such a value is not indicated the use of the lStainless Steel-Lifting eye bolts DIN 580 is not permitted!

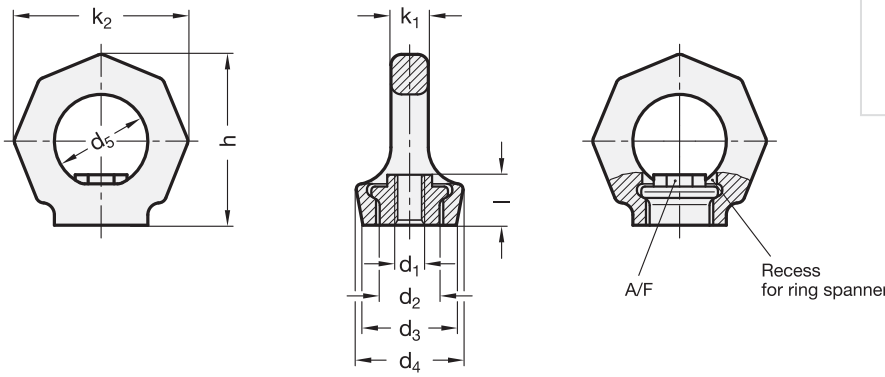
The bolt-on surface for the Stainless Steel-Lifting eye bolts GN 581.5 must be plane and at a right angle to the threaded borehole; the countersinking must be ≤ the nominal diameter of the thread.

Screwed in, the collar of the screw must make firm contact (do not use washers) and the eye bolt must rotate freely by 360°.

Before applying the load, turn the lifting eye bolt in the direction of the force. The lifting eye bolt is not suitable for frequent rotation cycles under load.

The specified load values apply for a minimum screw-in length of 1,5 × nominal thread diameter in steel with a minimum tensile strength of 37 kp/mm², at an ambient temperature of – 40° C to + 280° C. Load-bearing capacity under different conditions upon request.

Operating instructions with more details and specifications are included with every delivery (see also www.ganter-griff.com/service).



[1]

d_1	d_2	d_3	d_4	d_5	h	k_1	k_2	Length l	A/F	Nominal load
M 8	16	25	28	25	45	11	47	14	12	0,3 t [4 kN]
M 10	16	25	28	25	45	11	47	14	12	0,4 t [4 kN]
M 12	20	30	34	30	55	13	56	17	14	0,75 t [7,5 kN]
M 16	22	35,5	40	35	66	15	65	21	19	1,5 t [15 kN]
M 20	29	40	50	40	74	17	75	23	24	2,3 t [23 kN]
M 24	35	50	60	48	90	21	90	29	30	3,2 t [32 kN]
M 30	44	60	75	60	112	26	112	34	36	4,5 t [45 kN]

Specification

- Ring
  Steel, German Material No. 1.6541
  - forged
  - high-tensile tempered
  - 100 % electro magnetic tensile tested to EN 1677
  - plastic coated, pink
- Nut
  Steel
  Tensile strength class 10 (1000 N/mm²)
- RoHS compliant

Information

Lifting eye nuts GN 583 are mounted in rotating bearings, allowing the direction of the force action to be adjusted and preventing inadvertent loosening or overturning (as potentially possible in lifting eye nuts DIN 582).

Lifting eye nuts GN 583 offer a high load carrying capacity and they are tested to meet safety standards (safety factor 4).

The rated load carrying capacity listed in the above table is clearly marked on the ring. It applies to the most unfavourable load application of the load types listed opposite.

Lifting eye nuts GN 583 comply with Mechanical Engineering Directive 2006 / 42 / EG and are BG tested.

The hexagon socket nut cannot be removed from the ring.

see also...
• *Lifting eye bolts (rotating) GN 581 → Page 612*

How to order [1]	1	d_1
GN 583-M20		

Method of mounting	G_1	G_2	$2xG_1$	$2xG_2$	G_2		G_2	G_2		G_2	
Number	1	1	2	2	2	2	2	3 and 4	3 and 4	3 and 4	
Angles of inclination	0°	90°	0°	90°	0 to 45°	45 to 60°	asymm.	0 to 45°	45 to 60°	asymm.	
Factor	1	1	2	2	1,4	1	1	2,1	1,5	1	
M 8	1,00 [0,14]	0,30 t	2,00 [0,28]	0,60 t	0,42 [0,10]	0,30 t	0,30 t	0,63 t	0,45 t	0,30 t	
M 10	1,00 [0,23]	0,40 t	2,00 [0,46]	0,80 t	0,56 [0,17]	0,40 t	0,40 t	0,84 t	0,60 t	0,40 t	
M 12	2,00 [0,34]	0,75 t	4,00 [0,68]	1,50 t	1,00 [0,24]	0,75 t	0,75 t	1,60 t	1,12 t	0,75 t	
M 16	4,00 [0,70]	1,50 t	8,00 [1,40]	3,00 t	2,10 [0,50]	1,50 t	1,50 t	3,15 t	2,25 t	1,50 t	
M 20	6,00 [1,20]	2,30 t	12,00 [2,40]	4,60 t	3,22 [0,86]	2,30 t	2,30 t	4,83 t	3,45 t	2,30 t	
M 24	8,00 [1,80]	3,20 t	16,00 [3,60]	6,40 t	4,48 [1,29]	3,20 t	3,20 t	6,70 t	4,80 t	3,20 t	
M 30	12,00 [3,20]	4,50 t	24,00 [6,40]	9,00 t	6,30 [2,30]	4,50 t	4,50 t	9,40 t	6,70 t	4,50 t	

Safety instructions

The loads given in brackets refer to the load capacity of the corresponding lifting eye nut DIN 582. If such a value is not indicated the use of the lifting eye nuts DIN 582 is not permitted!

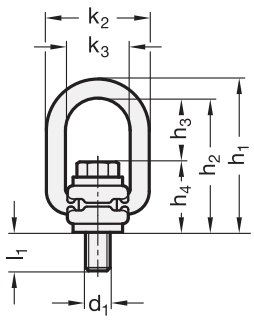
The bolt-on surface for the lifting eye nuts GN 583 must be plane and at a right angle to the threaded borehole. Screwed in, the collar of the nut must make firm contact (do not use washers) and the eye nut must rotate freely by 360°.

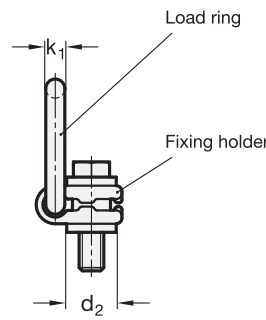
Before applying the load, turn the lifting eye nutt in the direction of the force. The lifting eye nut is not suitable for frequent rotation cycles under load.

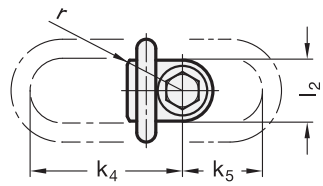
The specified load values apply only in connection with threaded bolts of steel grade > 10.9 if the bolt is turned in over its entire length l. These load values also apply only for a minimum screw-in length of 1.5 × nominal thread diameter in steel with a minimum tensile strength of 37 kp/mm², at an ambient temperature of – 40 °C to + 100 °C.

Load-bearing capacity under different conditions upon request.

Operating instructions with more details and specifications are included with every delivery (see also www.ganter-griff.com/service).







[1]

d_1	d_2	h_1	h_2	h_3	h_4	k_1	k_2	k_3	k_4	k_5	l_1	l_2	r	Tightening torque in Nm	Nominal load in t
M 8	24	85	75	40	35	10	54	34	75	45	11	30	32	30	0,3
M 10	24	85	75	39	36	10	54	34	75	45	16	30	32	60	0,63
M 12	26	85	75	38	37	10	54	34	75	45	21	32	32	100	1
M 16	30	99	85	39	46	13,5	56	36	87	47	24	33	38	150	1,5
M 20	45	127	110	55	55	16,5	82	54	113	64	32	50	48	250	2,5
M 24	45	143	125	67	58	18	82	54	130	78	37	50	48	400	4
M 30	60	170	147	67	80	22,5	103	65	151	80	49	60	67	500	5

Specification

- Load rings
  Steel, German Material No. 1.6541
  - forged
  - high-tensile tempered
  - 100 % electro magnetic tensile tested to EN 1677
- Fixing holder
  - forged
  - high-tensile tempered
  - 100 % electro magnetic tensile tested
  - plastic coated, pink
- Bolt
  Steel,
  Tensile strength class 10.9 (1000 N/mm²)
  Finish: Delta Tone
- Bush
  Steel
  galvanic zinc plated
- RoHS compliant

Information

The load rings GN 586 can be folded and rotated into all directions, carrying the full load in any tension direction.

They offer a high load carrying capacity and they are tested to meet safety standards (safety factor 4).

The rated load carrying capacity listed in the above table is clearly marked on the attachment bolt. It applies to the most unfavourable load application of the load types listed opposite.

Load rings GN 586 comply with Mechanical Engineering Directive 2006 / 42 / EG and are BG tested.

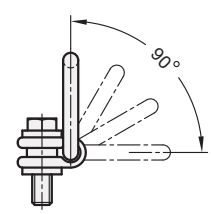
How to order		
[1] GN 586-M12	1	d_1

Method of mounting	G_1	G_2	$2xG_1$	$2xG_2$	G_2		G_2	G_2		G_2	
Number	1	1	2	2	2	2	2	3 and 4	3 and 4	3 and 4	
Angles of inclination	0°	90°	0°	90°	0 to 45°	45 to 60°	asymm.	0 to 45°	45 to 60°	asymm.	
Factor	1	1	2	2	1,4	1	1	2,1	1,5	1	
M 8	0,30 t	0,30 t	0,60 t	0,60 t	0,42 t	0,30 t	0,30 t	0,63 t	0,45 t	0,30 t	
M 10	0,63 t	0,63 t	1,26 t	1,26 t	0,88 t	0,63 t	0,63 t	1,32 t	0,95 t	0,63 t	
M 12	1,00 t	1,00 t	2,00 t	2,00 t	1,40 t	1,00 t	1,00 t	2,10 t	1,50 t	1,00 t	
M 16	1,50 t	1,50 t	3,00 t	3,00 t	2,10 t	1,50 t	1,50 t	3,15 t	2,25 t	1,50 t	
M 20	2,50 t	2,50 t	5,00 t	5,00 t	3,50 t	2,50 t	2,50 t	5,25 t	3,75 t	2,50 t	
M 24	4,00 t	4,00 t	8,00 t	8,00 t	5,60 t	4,00 t	4,00 t	8,40 t	6,00 t	4,00 t	
M 30	5,00 t	5,00 t	10,00 t	10,00 t	7,00 t	5,00 t	5,00 t	10,50 t	7,50 t	5,00 t	

Safety instructions

The above details specify the maximum load in metric tonnes, with the rotating load ring GN 586 fixed in place and set in load direction.

The contact surface of the rotating load ring GN 586 must be flat and at a right angle to the tapped bore.



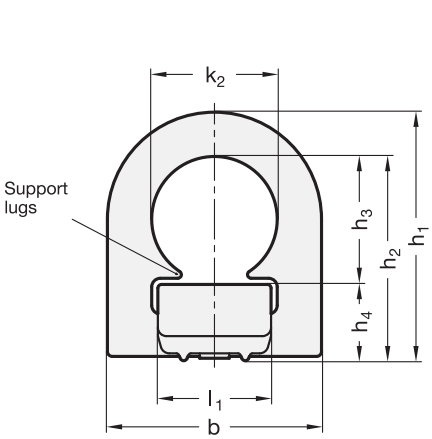
When fixed to the member, the attachment bolt must be allowed to rotate freely by 360°. Only the hexagonal bolt supplied with the load ring may be used.

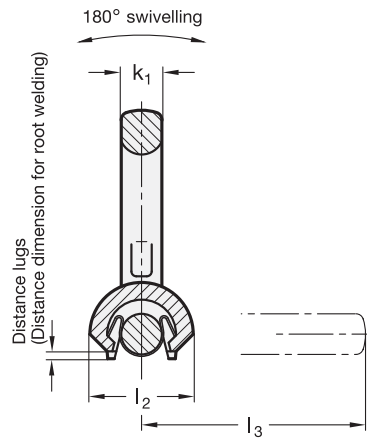
The load ring must move freely and must not be supported by edges.

Before applying the load, both the load ring and the attachment bolt must be turned in load direction, observing the permissible loading depending on the direction of the load ring. Rotating load rings are not suitable for frequent rotations under load.

The specified loading values are valid for a minimum bolt embedment depth of 1,5 × nominal thread diameter in steel with a minimum tensile strength of 37 kp/mm² at an operating temperature of between -40 °C and +100 °C. Load capacities under different conditions provided on request.

Operating instructions with more details and specifications are included with every delivery (see also www.ganter-griff.com/service).





2 Type

A without steel tape
F with steel tape

1

b	h_1	h_2	h_3	h_4	k_1	k_2	l_1	l_2	l_3	Nominal load in t (WLL)
66	79	65	40	25	13,5	38	33	32	71	1,5
77	91	75	48	27	13,5	45	40	33	80	2,5
87	101	83	52	31	16,5	51	46	42	91	4
115	141	117	73	44	22,5	67	60	65	126,5	6,7
129	153	126	71	55	26,5	67	60	75	135,5	10

Specification

- Ring brackets
  Steel, German Material No. 1.6541
  - forged
  - high-tensile tempered
  - 100 % electro magnetic tensile tested to EN 1677
  - plastic coated, pink
- Weld-on block
  Steel, S355 J2 + N (ST52-3N)
  - forged, blank
  - high-tensile tempered
  - 100 % electro magnetic tensile tested to EN 1677
- Retaining spring
  Stainless Steel tape
- RoHS compliant

Information

Load rings GN 587 for welding are designed for rapid mounting.

They provide high dynamic and static strength and can be load from any direction with approved safety (safety factor 4) for all loading directions.

The steel tape (Type F) holds the ring in any position and dampens any noise caused by vibrations. All parts are undetachably connected.

The two support lugs improve the bearing of hooks and enhance the support effect in the event of oblique suspension rings.

Load rings GN 587 comply with Mechanical Engineering Directive 2006 / 42 / EG.

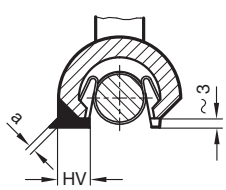
How to order		
GN 587-115-F (1 2)	1	b
	2	Type

Method of mounting	G_1	G_2	$2xG_1$	$2xG_2$	G_2		G_2	G_2		G_2	
Number	1	1	2	2	2	2	2	3 and 4	3 and 4	3 and 4	
Angles of inclination	0°	90°	0°	90°	0 to 45°	45 to 60°	asymm.	0 to 45°	45 to 60°	asymm.	
Factor	1	1	2	2	1,4	1	1	2,1	1,5	1	
b = 66	1,50 t	1,50 t	3,00 t	3,00 t	2,10 t	1,50 t	1,50 t	3,15 t	2,25 t	1,50 t	
77	2,50 t	2,50 t	5,00 t	5,00 t	3,50 t	2,50 t	2,50 t	5,25 t	3,75 t	2,50 t	
87	4,00 t	4,00 t	8,00 t	8,00 t	5,60 t	4,00 t	4,00 t	8,40 t	6,00 t	4,00 t	
115	6,70 t	6,70 t	13,40 t	13,40 t	9,50 t	6,70 t	6,70 t	14,00 t	10,00 t	6,70 t	
129	10,00 t	10,00 t	20,00 t	20,00 t	14,00 t	10,00 t	10,00 t	21,00 t	15,00 t	10,00 t	

Safety instructions

The above details refer to the maximum load in metric tonnes.

The configuration of the welding seam (HV) complies with the requirements of DIN 18800, i. e., the closed seam means that no corrosive deposits can settle; this also makes the load rings suitable for outside use.



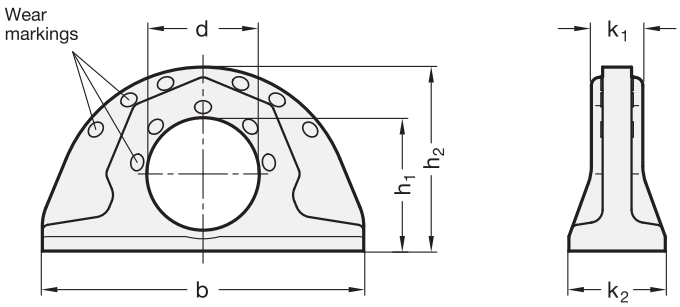
Load ring size	Size Welding seam	Length	Volume in cm^3
b = 66 (1,5 t)	HV 5 + a 3	2 × 33	1,2
77 (2,5 t)	HV 7 + a 3	2 × 40	2,6
87 (4,0 t)	HV 8 + a 3	2 × 46	3,2
115 (6,7 t)	HV 12 + a 4	2 × 60	8,7
129 (10,0 t)	HV 16 + a 4	2 × 60	15,5

Welding must be made by an approved welder in accordance with EN 287-1.

The specified loading values are valid for an operating temperature of between –40 °C and +100 °C. Load capacities under higher temperatures provided on request.

If the load rings are used for lashing instead of lifting, the nominal load is doubled.

Operating instructions with more details and specifications are included with every delivery (see also www.ganter-griff.com/service).



[1]

b	d	h_1	h_2	k_1	k_2	Nominal load in t (WLL)	max. permitted lashing force in daN (LC)
100	35	41,5	57	16	30	1,6	3200
137	50	59	80	23	41	3,2	6400
172	60	71,5	99	27	51	5	10000
228	80	95	130	38	70	10	20000

Specification

- Steel, German Material No. 1.6541
  - forged
  - high-tensile tempered
  - 100 % electro magnetic tensile tested to EN 1677
  - phosphated
- RoHS compliant

Information

Lifting points GN 589 are distinguished for their very low dimensions. They provide high dynamic and static strength and can be load from any direction with approved safety (safety factor 4) for all loading directions.

The rated load carrying capacity listed in the above table is clearly marked on the lifting point. It applies to the most unfavourable load application of the load types listed opposite.

Lifting points GN 589 comply with Mechanical Engineering Directive 2006 / 42 / EG.

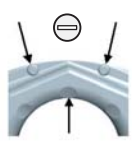
How to order		
[1] GN 589-137	1	b

Method of mounting	G_1	G_2	2xG_1	2xG_2	G_2		G_2	G_2		G_2	
Number	1	1	2	2	2	2	2	3 and 4	3 and 4	3 and 4	
Angles of inclination	0°	90°	0°	90°	0 to 45°	45 to 60°	asymm.	0 to 45°	45 to 60°	asymm.	
Factor	1	1	2	2	1,4	1	1	2,1	1,5	1	
b = 100	1,6 t	1,6 t	3,2 t	3,2 t	2,2 t	1,6 t	1,6 t	3,4 t	2,4 t	1,6 t	
137	3,2 t	3,2 t	6,4 t	6,4 t	4,5 t	3,2 t	3,2 t	6,8 t	4,8 t	3,2 t	
172	5,0 t	5,0 t	10,0 t	10,0 t	7,1 t	5,0 t	5,0 t	10,6 t	7,5 t	5,0 t	
228	10,0 t	10,0 t	20,0 t	20,0 t	14,1 t	10,0 t	10,0 t	21,2 t	15,0 t	10,0 t	

Safety instructions

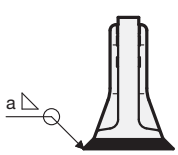
The above details specify the maximum load in metric tonnes.

Use permitted
No traces of wear



Use not permitted
Criteria reached:
Material worn down to the wear marks

Carefully check the wear markings for the abrasion of the lifting point.



Welding seam

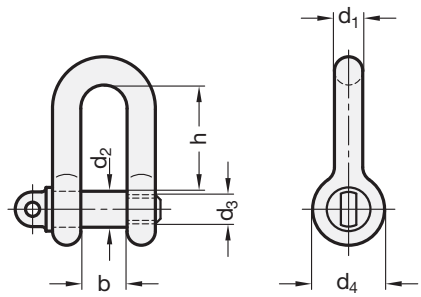
Lifting point	Size fillet seam	Length	Volume in cm³
b = 100 (1,6 t)	**a** = 4	251	4,016
137 (3,2 t)	6	344	12,38
172 (5,0 t)	7	431	21,10
228 (10,0 t)	8	576	36,86

Welding must be made by an approved welder in accordance with EN 287-1.

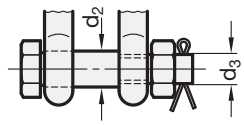
The specified loading values are valid for an operating temperature of between –40 °C and +200 °C. Load capacities under higher temperatures provided on request.

Operating instructions with more details and specifications are included with every delivery (see also www.ganter-griff.com/service).

Type **A**



Type **B**



2 Type

A with stud bolt
B Bolt with nut and split pin

1

d_1 Nominal size	in inch	b ±1	d_2 ±0,5	d_3 * UNC-thread	d_4	h	Nominal load (WLL)
6	1/4	12	8	5/16	17	22	0,5 t [5,0 kN]
8	5/16	13	10	3/8	21	26	0,75 t [7,5 kN]
10	3/8	16	12	7/16	26	31	1,0 t [10,0 kN]
11	7/16	18	14	1/2	28	36	1,5 t [15,0 kN]
13	1/2	21	16	5/8	30	41	2,0 t [20,0 kN]
16	5/8	27	20	3/4	42	51	3,25 t [32,5 kN]
19	3/4	32	22	7/8	48	60	4,75 t [47,5 kN]
22	7/8	36	27	1	57	71	6,5 t [65,0 kN]
25	1	43	28	1 1/8	62	81	8,5 t [85,0 kN]

* in general, the bolts and screws are threaded as specified. Variances are possible, however.

Specification

- Ring bracket
  - Heat-treatable steel, die-forged
  - hot-dip galvanised
- Bolt
  - Heat-treatable steel, die-forged
  - galvanic zinc plated, lacquered
- RoHS compliant

Information

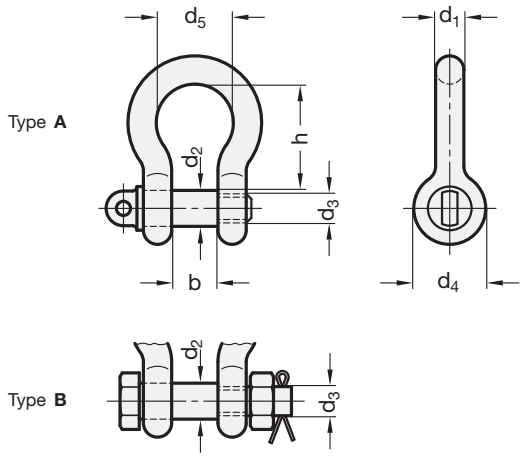
High-strength, straight shackles GN 584 are made in analogy with the US Federal Specification RR-C-271 and feature sixfold safety standards, which means that the minimum failure load is at least six times greater than the value of the nominal load (WLL).

The rated size and the nominal load (WLL) are drop-forged into the shackle which makes it easier to select the proper sling gear. In general, the nominal load must not be exceeded.

The designs with nut and split pin (Type B) are normally recommended for permanent connections. The bolts are allowed to rotate, and the nuts are secured against inadvertent loosening with a split pin.

Operating instructions with more details and specifications are included with every delivery (see also www.ganter-griff.com/service).

How to order 1 2 GN 584-16-A		
	1	d_1
	2	Type



2 Type

A with stud bolt
B Bolt with nut and split pin

1

d_1 Nominal size	in inch	b ±1	d_2 ±0,5	d_3 * UNC-thread	d_4	d_5	h	Nominal load (WLL)
6	1/4	12	8	5/16	17	19	28	0,5 t [5,0 kN]
8	5/16	13	10	3/8	21	21	31	0,75 t [7,5 kN]
10	3/8	16	12	7/16	26	26	36	1,0 t [10,0 kN]
11	7/16	18	14	1/2	28	29	42	1,5 t [15,0 kN]
13	1/2	21	16	5/8	30	33	48	2,0 t [20,0 kN]
16	5/8	27	20	3/4	42	43	60	3,25 t [32,5 kN]
19	3/4	32	22	7/8	48	51	71	4,75 t [47,5 kN]
22	7/8	36	27	1	57	58	84	6,5 t [65,0 kN]
25	1	43	28	1 1/8	62	68	95	8,5 t [85,0 kN]

* in general, the bolts and screws are threaded as specified. Variances are possible, however.

Specification

- Ring bracket
  - Heat-treatable steel, die-forged
  - hot-dip galvanised
- Bolt
  - Heat-treatable steel, die-forged
  - galvanic zinc plated, lacquered
- RoHS compliant

Information

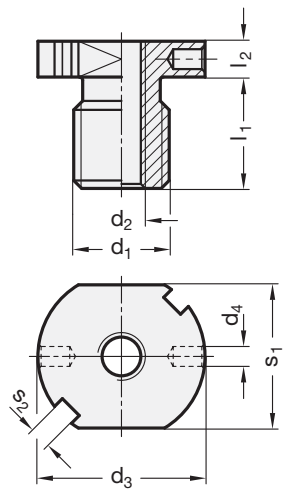
High-strength, cranked shackles GN 585 are made in analogy with the US Federal Specification RR-C-271 and feature sixfold safety standards, which means that the minimum failure load is at least six times greater than the value of the nominal load (WLL). The cranked shape is particularly suitable for applications where the shackles are exposed to multiple loads.

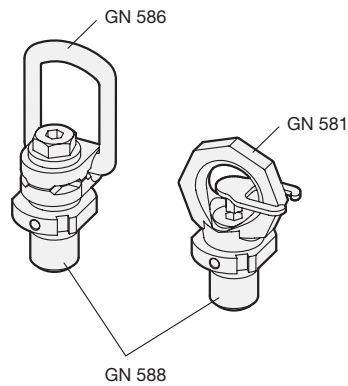
The rated size and the nominal load (WLL) are drop-forged into the shackle which makes it easier to select the proper sling gear. In general, the nominal load must not be exceeded.

The designs with nut and split pin (Type B) are normally recommended for permanent connections. The bolts are allowed to rotate, and the nuts are secured against inadvertent loosening with a split pin.

Operating instructions with more details and specifications are included with every delivery (see also www.ganter-griff.com/service).

How to order		
GN 585-11-B (1 2)	1	d_1
	2	Type





1 d_1	2 d_2	d_3	d_4	l_1	l_2	s_1	s_2	Code no. for C-Spanner
M 16	M 8	35	5	20	8	30	6	DIN 1810-A34-36
M 20	M 10	38	5	24	9	32	6	DIN 1810-A34-36
M 24	M 12	42	5	28	9	36	6	DIN 1810-A40-42
M 30	M 16	51	6	36	10	46	7	DIN 1810-A52-55
M 36	M 20	65	6	43	12	55	8	DIN 1810-A58-62

Specification

- Steel C35
  zinc plated, blue passivated
- RoHS compliant

Accessory

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

Information

Thread adapters GN 588 are used if high strength eye bolts GN 581 or rotating lifting eye bolts GN 586 are to be used for tapholes designed for inserting eye bolts DIN 580.

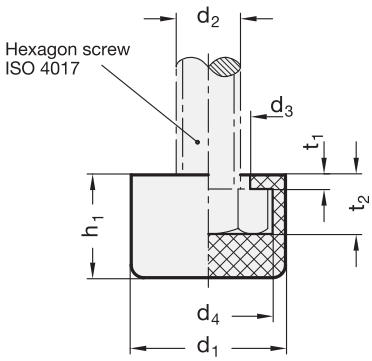
The load-bearing capacity of rotating lifting bolts GN 586 is such that a carrying element with a smaller thread is sufficient, which is normally a more cost effective option.

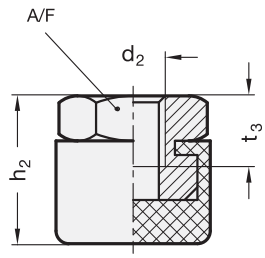
The head version allows the installation with fork or hook key, and with a pin.

Safety instructions:

- The contact surface must be plane and at a right angle to the threaded taphole.
- In the screwed-in state, the screw collar must make firm contact
- Minimum screw-in length 1,2 x rated thread diameter in steel. When used in other materials, the load-bearing capacity drops.
- Operating instructions with more details and specifications are included with every delivery (see also www.ganter-griff.com/service).

How to order		
GN 588-M20-M10 (1 2)	1	d_1
	2	d_2





2 Type

A Protective cap (without screw)

B Protective cap with threaded bush

1

d_1	d_2	d_3	d_4	h_1	h_2	A/F	t_1	t_2	t_3 min.
11*	M 4	5,5	8,2	6,5	-	-	1	4	-
12	M 5	7	9,3	8	11	10	1,5	5,3	6
15	M 6	8,5	11,5	10	14	12	2	6	7
19	M 8	11	15	13	18	16	2	7,5	8,5
24	M 10	13	20	16	23,5	21	2,2	9,2	10
26	M 12	16	22	19	26	22	2,5	10,5	12

* Protective caps d_1 = 11 are not available in Type B (with a threaded bush)

Specification

- Protective cap
  Rubber (CR)
  - 85 Shore
  - black
- Threaded bush
  Steel
  zinc plated, blue passivated
- *Elastomer characteristics → Page 1140*
- RoHS compliant

Information

Protective caps GN 806 can be used with hexagon screws ISO 4017 or together with threaded pins type B as thrust pins with soft clamping head surface, or as soft end stop bolts.

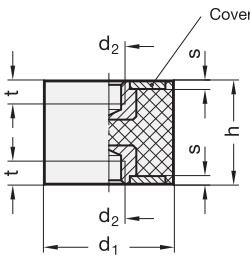
A typical application is in conjunction with toggle clamps (product group 2.4).

see also...

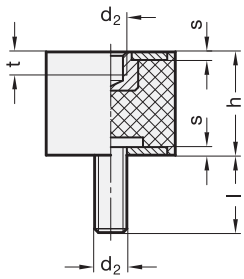
- *Mounting blocks GN 412.1 → Page 452*

How to order		
GN 806-24-B (1 2)	1	d_1
	2	Type

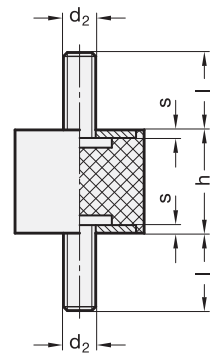
Type **EE**



Type **ES**



Type **SS**



Inox Stainless Steel

4 Type

EE with 2 internal threads
ES with internal thread / screw
SS with 2 screws

1 d_1	2 h Type EE			Type ES				Type SS				3 d_2	Length l Type ES / SS	s	t Type EE / ES
8	8	-	-	8	-	-	-	8	-	-	-	M 3	6	1	3
10	10	15	-	10	15	-	-	10	15	-	-	M 4	10	1,2	4
15	10	15	20	10	15	20	-	10	15	20	-	M 4	10	1,4	4
20	15	20	25	15	20	25	-	15	20	25	-	M 6	18	2	6
25	20	25	30	15	20	30	-	15	20	30	-	M 6	18	2	6
30	30	40	-	15	30	-	-	15	30	-	-	M 8	20	2	8
40	30	40	-	20	30	40	-	20	30	40	-	M 8	23	2	8
50	30	40	50	20	30	40	50	20	30	40	50	M 10	28	2	10
60	30	40	-	30	40	-	-	30	40	-	-	M 10	28	2	10
70	45	-	-	45	-	-	-	45	-	-	-	M 10	27	3	10
75	40	55	-	40	55	-	-	40	55	-	-	M 12	37	3	12
100	40	55	75	40	55	75	-	40	55	75	-	M 16	41	3	16

* not availble from stock, requires a minimum order quantity

Specification

5

- Natural rubber (NR)
  - vulcanized to the cover sheets
  - temperature resistant up to 80 °C
- **GN 351**
  Cover sheets, threaded inserts, screws
  Steel, zinc plated, blue passivated
  Hardness [Shore ±5 °]
  soft **40**
  medium **55**
  hard **70**
- **GN 451**
  Cover sheets, threaded inserts, screws
  Stainless Steel
  Hardness [Shore ±5 °]
  soft* **40**
  medium **55**
  hard* **70**
- *Elastomer characteristics → Page 1140*
- RoHS compliant

Information

Rubber buffers GN 351 / GN 451 are suitable for the elastic mounting of machine units such as motors, compressors and pumps.

see also...

- *Buffers GN 352 / GN 452 → Page 632*
- *Buffers GN 353 / GN 453 → Page 636*

Steel-Rubber buffer

GN 351-30-30-M8-EE-55 (1 2 3 4 5)

1	d_1
2	h
3	d_2
4	Type
5	Hardness

Stainless Steel-Rubber buffer

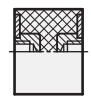
GN 451-100-40-M16-ES-55 (1 2 3 4 5)

1	d_1
2	h
3	d_2
4	Type
5	Hardness

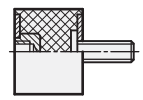
GN 351 / GN 451

Resilient characteristics for **40° Shore** under axial and static load.

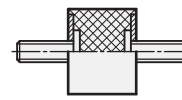
Type **EE**



Type **ES**



Type **SS**

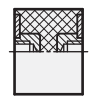


d_1	h	Spring rate ≈ in N/mm	max. load in N	max. travel in mm	Spring rate ≈ in N/mm	max. load in N	max. travel in mm	Spring rate ≈ in N/mm	max. load in N	max. travel in mm
8	8	35	38	1,1	22	24	1,1	19	24	1,3
10	10	26	37	1,4	23	37	1,6	22	37	1,7
10	15	12	27	2,2	11	27	2,5	10	27	2,7
15	10	900	960	0,4	75	113	1,5	50	73	1,5
15	15	39	61	1,6	36	61	1,7	29,5	61	2,1
15	20	42	61	1,4	27	61	2,2	20	61	3,1
20	15	900	109	0,1	85	109	1,3	70	109	1,6
20	20	47	95	2	60	95	1,6	42,5	95	2,2
20	25	40	109	2,7	37	109	2,9	28,5	109	3,8
25	15	-	-	-	131	303	2,3	110	303	2,8
25	20	90	272	3	85	272	3,2	95	272	2,9
25	25	49	221	4,5	55	165	3	45	265	5,5,
25	30	38	190	5	50	204	4,1	37,5	204	5,4
30	15	-	-	-	1350	408	0,3	257,5	408	1,6
30	30	75	238	3,2	65	238	3,7	60	238	4
30	40	65	390	6	-	-	-	-	-	-
40	20	-	-	-	-	-	-	-	-	-
40	30	225	544	2,4	175	544	3,1	145	544	3,8
40	40	105	469	4,5	90	469	5,2	85	469	5,5
50	20	-	-	-	785	1496	1,9	650	1496	2,3
50	30	300	884	2,9	275	844	3,2	240	884	3,7
50	40	185	816	4,4	165	816	4,9	150	816	5,4
50	50	105	683	6,5	95	684	7,2	120	780	6,5
60	30	457	1370	3	467	2100	4,5	480	2400	5
60	40	271	1220	4,5	267	1600	6	270	1890	7
70	45	375	1292	3,4	245	1292	5,3	237,5	1292	5,4
75	40	550	1700	3,1	400	1700	4,3	375	1700	4,5
75	55	250	1564	6,3	240	1564	6,5	215	1564	7,3
100	40	900	4692	5,2	800	4692	5,9	750	4692	6,3
100	55	600	2584	4,3	575	2584	4,5	525	2584	4,9
100	75	265	2380	9	265	2380	9	265	2380	9

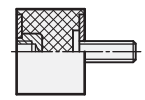
GN 351 / GN 451

Resilient characteristics for **55° Shore** under axial and static load.

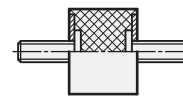
Type **EE**



Type **ES**



Type **SS**

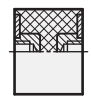


d_1	h	Spring rate ≈ in N/mm	max. load in N	max. travel in mm	Spring rate ≈ in N/mm	max. load in N	max. travel in mm	Spring rate ≈ in N/mm	max. load in N	max. travel in mm
8	8	38	75	2	38	75	2	35	70	2
10	10	36	90	2,5	36	90	2,5	36	89	2,5
10	15	17	65	3,75	17	65	3,75	16	60	3,75
15	10	80	200	2,5	80	200	2,5	79	198	2,5
15	15	36	135	3,75	35	130	3,75	33	125	3,75
15	20	30	152	5	30	150	5	29	145	5
20	15	95	355	3,75	95	355	3,75	94	352	3,75
20	20	53	267	5	53	265	5	52	260	5
20	25	50	315	6,25	50	315	6,25	50	310	6,25
25	15	-	-	-	184	690	3,75	183	687	3,75
25	20	121	605	5	121	605	5	120	602	5
25	25	85	530	6,25	-	-	-	-	-	-
25	30	77	575	7,5	76	570	7,5	75	562	7,5
30	15	-	-	-	143	535	3,75	142	534	3,75
30	30	114	855	7,5	113	850	7,5	112	843	7,5
30	40	76	757	10	-	-	-	-	-	-
40	20	-	-	-	302	1510	5	300	1500	5
40	30	205	1535	7,5	204	1530	7,5	204	1527	7,5
40	40	164	1635	10	163	1630	10	162	1620	10
50	20	-	-	-	720	3600	5	718	3589	5
50	30	343	2570	7,5	343	2575	7,5	343	2570	7,5
50	40	245	2445	10	244	2440	10	244	2436	10
50	50	178	2225	12,5	176	2200	12,5	176	2198	12,5
60	30	453	3400	7,5	453	3400	7,5	453	3400	7,5
60	40	330	3300	10	333	3330	10	330	3300	10
70	45	356	4000	11,25	356	4000	11,25	356	4000	11,25
75	40	465	4650	10	460	4600	10	450	4500	10
75	55	327	4500	13,75	328	4510	13,75	320	4400	13,75
100	40	800	8000	10	800	8000	10	800	8000	10
100	55	560	7700	13,75	553	7600	13,75	545	7500	13,75
100	75	384	7200	18,75	379	7100	18,75	373	7000	18,75

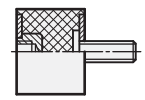
GN 351 / GN 451

Resilient characteristics for **70° Shore** under axial and static load.

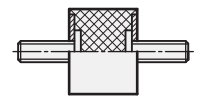
Type **EE**



Type **ES**

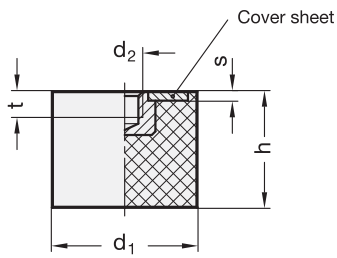


Type **SS**

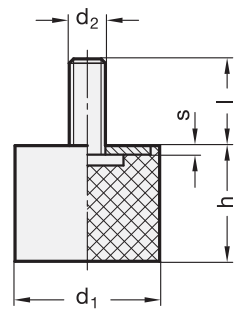


d_1	h	Spring rate ≈ in N/mm	max. load in N	max. travel in mm	Spring rate ≈ in N/mm	max. load in N	max. travel in mm	Spring rate ≈ in N/mm	max. load in N	max. travel in mm
8	8	145	87	0,6	89	49	0,6	76	49	0,6
10	10	106	77	0,7	92	77	0,8	88	77	0,9
10	15	50	56	1,1	44	56	1,3	40	56	1,4
15	10	1100	44	0,4	220	240	1,1	180	270	1,5
15	15	156	126	0,8	146	126	0,9	118	126	1,1
15	20	170	126	0,7	110	126	1,1	80	126	1,6
20	15	3600	224	0,1	340	224	0,7	280	224	0,8
20	20	190	196	1	240	196	0,8	170	196	1,2
20	25	160	224	1,4	150	224	1,5	114	224	1,2
25	15	-	-	-	526	623	1,2	440	623	1,4
25	20	360	560	1,6	340	560	1,6	380	560	1,5
25	25	196	455	2,3	186	455	2,4	190	455	2,4
25	30	150	450	3	200	420	2,1	150	420	2,8
30	15	-	-	-	5400	840	0,1	1030	840	0,8
30	30	300	490	1,6	260	490	1,9	240	490	2
30	40	270	1080	4	200	455	2,3	150	455	3
40	20	-	-	-	2600	2080	0,8	810	2430	3
40	30	900	1120	1,2	700	1120	1,6	580	1120	1,9
40	40	420	966	2,3	360	966	2,7	340	966	2,8
50	20	-	-	-	3140	3080	1	2600	3080	1,2
50	30	1200	1820	1,5	1100	1820	1,7	960	1820	1,9
50	40	740	1680	2,3	660	1680	2,5	600	1680	2,8
50	50	420	2520	6	380	1400	3,7	480	2880	6
60	30	1390	4170	3	1309	5890	4,5	1324	6620	5
60	40	849	3820	4,5	803	4820	6	789	5520	7
70	45	1500	2660	1,8	980	2660	2,7	950	2660	2,8
75	40	2200	3500	1,6	1600	3500	2,2	1500	3500	2,3
75	55	1000	3220	3,2	960	3220	3,4	860	3220	3,7
100	40	3600	9660	2,7	3200	9660	3	3000	9660	32
100	55	2400	5320	2,2	2300	5320	2,3	2100	12600	6
100	75	1060	4900	4,6	1060	4900	4,6	1060	4900	4,6

Type **E**



Type **S**



Inox Stainless Steel

4 Type

E with internal thread
S with screw

1 d_1	2 h Type E			h Type S				3 d_2	Length l Type S	s	t Type E
8	-	-	-	8	-	-	-	M 3	6	1	3
10	10	-	-	10	15	-	-	M 4	10	1,2	4
15	15	20	-	10	15	20	30	M 4	10	1,4	4
20	15	20	25	10	15	20	30	M 6	18	2	6
25	15	20	30	15	20	30	-	M 6	18	2	6
30	15	20	30	15	20	25	30	M 8	20	2	8
40	20	30	40	20	25	30	40	M 8	23	2	8
50	20	30	40	20	30	40	-	M 10	28	2	10
60	30	50	-	20	40	-	-	M 10	28	2	10
70	40	55	-	40	55	-	-	M 10	27	3	10
75	30	40	50	25	40	50	-	M 12	37	3	12
100	40	50	60	40	50	60	-	M 16	41	3	16

* not availble from stock, requires a minimum order quantity

Specification

5

- Natural rubber (NR)
  - vulcanized to the cover sheets
  - temperature resistant up to 80 °C
- **GN 352**
  Cover sheets, threaded inserts, screws
  Steel, zinc plated, blue passivated
  Hardness [Shore ±5 °]

soft	**40**
medium	**55**
hard	**70**

- **GN 452**
  Cover sheets, threaded inserts, screws
  Stainless Steel
  Hardness [Shore ±5 °]

soft*	**40**
medium	**55**
hard*	**70**

- *Elastomer characteristics → Page 1140*
- RoHS compliant

Information

Buffers GN 352 / GN 452 are used as end-stop buffers, e.g. for conveyor trolleys.

They absorb most of the kinetic energy developing on impact. They act as dampers and prevent damaging shock and rebound. They also act as sound dampers.

These buffers are also used as levelling feet.

see also...

- *Rubber buffers GN 351 / GN 451 → Page 628*
- *Buffers GN 353 / GN 453 → Page 636*

Steel-Buffer

1 2 3 4 5
GN 352-20-25-M6-E-55

1	d_1
2	h
3	d_2
4	Type
5	Hardness

Stainless Steel-Buffer

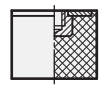
1 2 3 4 5
GN 452-75-40-M12-S-55

1	d_1
2	h
3	d_2
4	Type
5	Hardness

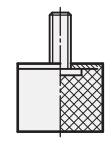
GN 352 / GN 452

Resilient characteristic for **40° Shore** under axial and static load.

Type **E**



Type **S**

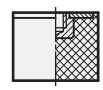


d_1	h	Spring rate ≈ in N/mm	max. load in N	max. travel in mm	Spring rate ≈ in N/mm	max. load in N	max. travel in mm
8	8	-	-	-	28	52	1,6
10	10	19	41	1,8	19	41	1,8
10	15	12	33	2,1	12	33	2,1
15	10	-	-	-	52	84	1,8
15	15	30	73	2,1	30	73	2,1
15	20	21	94	3,8	21	94	3,8
15	30	-	-	-	15	90	5
20	10	-	-	-	118	240	1,7
20	15	55	210	3,2	55	210	3,2
20	20	35	160	3,9	35	160	3,9
20	25	26	150	4,8	-	-	-
20	30	-	-	-	18	132	5,6
25	15	100	320	2,7	100	320	2,7
25	20	57	260	3,9	57	260	3,9
25	30	34	230	5,6	34	230	5,6
30	15	170	530	2	170	530	2
30	20	100	310	2,6	100	310	2,6
30	25	-	-	-	65	280	3
30	30	50	265	4,6	50	265	4,6
40	20	210	980	3,9	210	980	3,9
40	25	-	-	-	140	810	4,9
40	30	108	490	3,8	108	490	3,8
40	40	68	473	5,9	68	473	5,9
50	20	310	1470	3,9	310	1470	3,9
50	30	174	1140	5,5	174	1140	5,5
50	40	120	963	6,5	120	963	6,5
60	20	-	-	-	420	2280	4
60	30	215	1720	6	-	-	-
60	40	-	-	-	-	-	-
60	50	140	1340	9	150	1350	9
70	40	240	1550	5,4	240	1550	5,4
70	55	180	1980	9,3	180	1980	9,3
75	25	-	-	-	1500	3670	2
75	30	600	2600	3,6	-	-	-
75	40	380	2300	5	380	2300	5
75	50	216	1795	6,9	216	1795	6,9
100	40	625	3900	5,2	625	3900	5,2
100	50	271	3260	10,1	271	3260	10,1
100	60	140	2540	15,4	140	2540	15,4

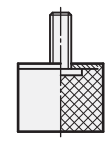
GN 352 / GN 452

Resilient characteristics for **55° Shore** under axial and static load.

Type **E**



Type **S**

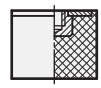


d_1	h	Spring rate ≈ in N/mm	max. load in N	max. travel in mm	Spring rate ≈ in N/mm	max. load in N	max. travel in mm
8	8	-	-	-	20	40	2
10	10	24	59	2,5	24	59	2,5
10	15	-	-	-	21	78	3,75
15	10	-	-	-	77	154	2
15	15	64	241	3,75	64	241	3,75
15	20	57	287	5	57	287	5
15	25	-	-	-	48	300	6,25
20	10	-	-	-	126	315	2,5
20	15	77	289	3,75	77	289	3,75
20	20	60	302	5	60	302	5
20	25	48	297	6,25	-	-	-
20	30	-	-	-	38	285	7,5
25	15	163	612	3,75	163	612	3,75
25	20	112	560	5	112	560	5
25	30	68	509	7,5	68	509	7,5
30	15	249	934	3,75	294	934	3,75
30	20	185	924	5	185	924	5
30	25	-	-	-	130	815	6,25
30	30	-	-	-	117	876	7,5
40	20	247	1235	5	247	1235	5
40	25	-	-	-	247	1546	6,25
40	30	213	1600	7,5	213	1600	7,5
40	40	182	1820	10	182	1820	10
50	20	517	2587	5	517	2587	5
50	30	327	2453	7,5	327	2453	7,5
50	40	247	2468	10	247	2468	10
60	20	-	-	-	726	3630	5
60	30	467	3500	7,5	-	-	-
60	40	-	-	-	340	3400	10
60	50	269	3367	12,5-	-	-	-
70	40	410	4100	10	410	4100	10
70	55	327	4500	13,75	327	4500	13,75
75	25	-	-	-	752	4700	6,25
75	30	600	4500	7,5	-	-	-
75	40	450	4500	10	450	4500	10
75	50	352	4400	12,5	352	4400	12,5
100	40	810	8100	10	810	8100	10
100	50	640	8000	12,5	640	8000	12,5
100	60	520	7800	15	520	7800	15

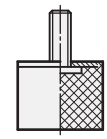
GN 352 / GN 452

Resilient characteristic for **70° Shore** under axial and static load.

Type **E**

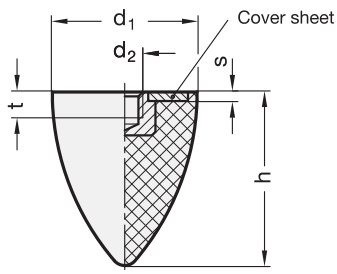


Type **S**

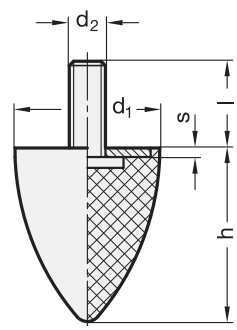


d_1	h	Spring rate ≈ in N/mm	max. load in N	max. travel in mm	Spring rate ≈ in N/mm	max. load in N	max. travel in mm
8	8	-	-	-	98	102	0,6
10	10	76	84	0,9	76	84	0,9
10	15	-	-	-	57	68	1,1
15	10	-	-	-	145	178	0,9
15	15	118	151	1,1	118	151	1,1
15	20	82	193	2	82	193	2
15	25	-	-	-	60	193	2
20	10	-	-	-	470	504	0,9
20	15	220	437	1,7	220	437	1,7
20	20	140	336	2	140	336	2
20	25	104	311	2,5	-	-	-
20	30	-	-	-	75	450	6
25	15	400	655	1,4	400	655	1,4
25	20	226	538	2	266	538	2
25	30	136	470	2,9	136	470	2,9
30	15	680	1100	1,3	680	1100	1,3
30	20	400	638	1,3	400	638	1,3
30	25	-	-	-	340	600	1,5
30	30	-	-	-	200	571	2,4
40	20	830	2020	2	830	2020	2
40	25	-	-	-	560	1680	2,5
40	30	430	1008	2	430	1008	2
40	40	270	974	3	270	974	3
50	20	1240	3024	2	1240	3024	2
50	30	694	2352	2,8	694	2352	2,8
50	40	430	1800	3,6	430	1800	3,6
60	20	-	-	-	1780	4900	2
60	30	1450	4120	2,9	-	-	-
60	40	860	3520	3,4	860	3520	3,4
60	50	600	3192	4,4	-	-	-
70	40	1300	3520	2,3	1300	3520	2,3
70	55	760	4368	4,8	760	4368	4,8
75	25	-	-	-	2400	5370	1,9
75	30	1840	4515	2,9	-	-	-
75	40	1150	4090	3,9	1150	4090	3,9
75	50	864	3690	4,5	864	3690	4,5
100	40	2500	8064	2,7	2500	8064	2,7
100	50	1082	6720	5,2	1082	6720	5,2
100	60	580	4200	7,8	580	4200	7,8

Type **E**



Type **S**



Inox Stainless Steel

4 Type

E with internal thread
S with screw

1 d_1	2 h	3 d_2	Length l Type S	s	t Type E	Spring rate ≈ in N/mm	max. load in N	max. travel ≈ in mm
20	24	M 6	18	2	6	166	100	6
30	30	M 8	18	2	8	24	150	6,25
30	36	M 8	20	2	8	26,6	200	7,5
35	40	M 8	23	2	8	65	650	10
50	61	M 8	28	2	8	50	750	15
50	68	M 10	28	2	10	50	850	17

* not availble from stock, requires a minimum order quantity

Specification

5

- Natural rubber (NR)
  - vulcanized to the cover sheets
  - temperature resistant up to 80 °C
  - Hardness [Shore ±5 °]
    soft* **40**
    medium **55**
    hard* **70**
- **GN 353**
  Cover sheets, threaded inserts, screws
  Steel
  zinc plated, blue passivated
- **GN 453**
  Cover sheets, threaded inserts, screws
  Stainless Steel
- *Elastomer characteristics* → *Page 1140*
- RoHS compliant

Information

Buffers GN 353 / GN 453 are used as end-stop buffers, e .g. for conveyor trolleys.

They absorb most of the kinetic energy developing on impact. They act as dampers and prevent damaging shock and rebound. They also act as sound dampers.

The parabolic shape of these buffers generates progressive resilience characteristics: impact and shock effects are absorbed gentler.

see also...

- *Rubber buffers GN 351 / GN 451* → *Page 628*
- *Buffers GN 352 / GN 452* → *Page 632*

Steel-Buffer

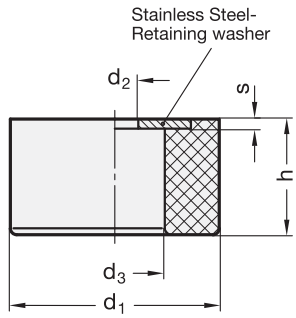
1 2 3 4 5
GN 353-30-36-M8-E-55

1	d_1
2	h
3	d_2
4	Type
5	Hardness

Stainless Steel-Buffer

1 2 3 4 5
GN 453-50-68-M10-E-55

1	d_1
2	h
3	d_2
4	Type
5	Hardness



Inox
Stainless
Steel

1 d_1	2 h	3 d_2	d_3	s	Spring rate ≈ in N/mm (hardness 55)	max. load in N (hardness 55)	max. travel ≈ in mm
16	8	4,3	8	1	140	280	2
20	10	5,3	9,5	1,2	148	370	2,5
25	12	6,4	12,2	1,6	210	630	3
35	16	8,4	14	2	345	1380	4
42	20	10,5	17,5	2,5	360	1800	5
56	24	13	19,5	3	577	3460	6

* not availble from stock and requires a minimum order quantity

Specification

4

- Natural rubber (NBR)
  - vulcanized to the retaining washer
  - temperature resistant up to 120 °C
  - Rubber hardness [Shore ±5°]
    soft* **40**
    medium **55**
    hard* **70**
- Retaining washer
  Stainless Steel A2
- *Elastomer characteristics* → *Page 1140*
- RoHS compliant

Information

Buffers GN 454 are used as end-stop buffers, e.g. for conveyor trolleys. They can be fixed on the damping side with socket head cap screws DIN 912.

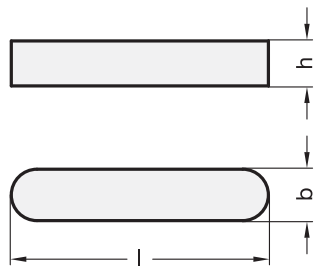
They absorb most of the kinetic energy developing on impact. They act as dampers and prevent damaging shock and rebound. They also act as sound dampers.

These buffers are also used as levelling feet.

How to order

1 2 3 4
GN 454-42-20-10,5-55

1	d_1
2	h
3	d_2
4	Hardness



4 Type

A front rounded, long version

1 b h9	2 h	Length l																		for shaft-Ø from to
2	2	6	8	10	12	14	16	18	20	-	-	-	-	-	-	-	-	-	-	6... 8
3	3	6	8	10	12	14	16	18	20	22	25	28	30	32	35	36	-	-	-	8...10
4	4	6	8	10	12	14	16	18	20	22	25	28	32	36	40	45	-	-	-	10...12
5	5	8	10	12	14	16	18	20	22	25	28	32	36	40	45	50	-	-	-	12...17
6	6	12	14	16	18	20	22	25	28	32	36	40	45	50	56	63	-	-	-	17... 22
8	7	12	14	16	18	20	22	25	28	32	36	40	45	50	56	63	70	80	90	22...30
10	8	16	18	20	22	25	28	32	36	40	45	50	56	63	70	80	90	100	110	30...38
12	8	20	25	28	32	36	40	45	50	56	63	70	80	90	100	125	-	-	-	38...44

Specification

- Steel C45+C blank
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

On request

- b = 14, 16, 18, 20

Information

Keys DIN 6885 are only in packing units of 50 pieces for each size and length available.

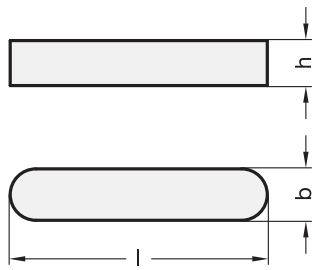
see also...

- *Keyway type in the bore and the shaft → Page 1124*

How to order		
1 2 3 4	1	b
DIN 6885-6-6-28-A	2	h
	3	Length l
	4	Type

DIN 6885
Extract

Stainless Steel-Keys



Inox
Stainless
Steel

4 Type

A front rounded, long version

1 b h9	2 h	3 Length l														for shaft-Ø from to
3	3	6	8	10	12	14	16	18	20	-	-	-	-	-	-	8...10
4	4	10	12	14	16	18	20	22	25	28	32	-	-	-	-	10...12
5	5	10	12	14	16	18	20	22	25	28	32	36	40	45	50	12...17
6	6	14	16	18	20	22	25	28	32	36	40	45	50	56	63	17...22
8	7	16	18	20	22	24	25	28	32	36	40	45	50	56	63	22...30
10	8	20	22	25	28	32	36	40	45	50	56	63	70	80	90	30...38
12*	8	25	28	32	36	40	45	50	56	63	70	80	90	100	-	38...44

* not availble from stock, requires a minimum order quantity

Specification

5

- Stainless Steel AISI 316Ti **NI**
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

On request

- b = 14, 16, 18, 20

Information

Stainless Steel-Keys DIN 6885 are only in packing units of 10 pieces for each size and length available.

see also...

- *Keyway type in the bore and the shaft → Page 1124*

How to order		
1 2 3 4 5	1	b
DIN 6885-10-8-36-A-NI	2	h
	3	Length l
	4	Type
	5	Material

2.3 Clamping bolts
Eccentrical cams
Shaft clamping units

GN 927 Inch
Clamping levers with eccentrical cam
Lever Zinc die cast
→ *Page 644*

GN 927.5 Rost Frei, Inch
Clamping levers with eccentrical cam
Lever Stainless Steel
→ *Page 646*

GN 918.2
Clamping bolts
downward clamping
→ *Page 653*

GN 927 Inch
Clamping levers with eccentrical cam
Lever Zinc die cast
→ *Page 644*

GN 927.7 Rost Frei, Inch
Stainless Steel Clamping levers with eccentrical cam
→ *Page 648*

GN 918.7 Rost Frei
Clamping bolts
downward clamping
Stainless Steel
→ *Page 653*

GN 927.3 Inch
Clamping levers with eccentrical cam
Lever Steel
→ *Page 644*

GN 927.7 Rost Frei, Inch
Stainless Steel Clamping levers with eccentrical cam
→ *Page 648*

GN 418.1
Cam point levers
→ *Page 654*

GN 927.3 Inch
Clamping levers with eccentrical cam
Lever Steel
→ *Page 644*

GN 918
Eccentrical cams
radial clamping
→ *Page 650*

GN 418
Cam point screws
→ *Page 656*

GN 927.4 Inch
Clamping levers with eccentrical cam
Stainless Steel,
Lever Zinc die cast
→ *Page 646*

GN 918.5 Rost Frei
Eccentrical cams
radial clamping
Stainless Steel
→ *Page 650*

GN 919
Hubs with eccentrical cam
→ *Page 658*

GN 927.4 Inch
Clamping levers with eccentrical cam
Stainless Steel,
Lever Zinc die cast
→ *Page 646*

GN 918.1
Clamping bolts
upward clamping
→ *Page 652*

GN 917
Double cam levers
→ *Page 659*

GN 927.5 Rost Frei, Inch
Clamping levers with eccentrical cam
Lever Stainless Steel
→ *Page 646*

GN 918.6 Rost Frei
Clamping bolts
upward clamping
Stainless Steel
→ *Page 652*

GN 917.1 Rost Frei
Double cam levers
Stainless Steel
→ *Page 659*

Rost Frei Stainless Steel | Ergostyle | SOFT Softline | CLEAN Cleanline | SAN Sanline | Ex ATEX | ESD ESD | Inch Inch

GN 920.1
Wedge clamps

→ *Page 660*

GN 920.2
Pull-down plates
for wedge clamps
GN 920.1

→ *Page 662*

GN 411.2
Centring bore clamps

→ *Page 664*

GN 928
Shaft clamping units „trueround“

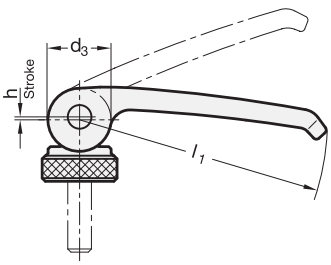
→ *Page 666*

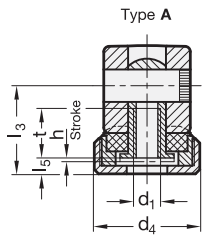
GN 928.1
Mounting tool
for GN 928

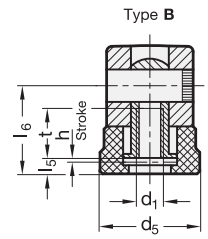
→ *Page 666*

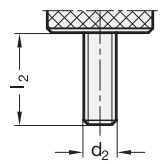
Clamping levers with eccentrical cam

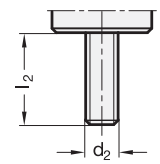
with plastic contact plate











Inch sizes available

iF product design award

4 Type

A with adjustable plastic contact plate

B with fixed plastic contact plate

1 l_1	2 d_1	2 d_2	3 l_2 in clamping position							b	d_3	d_4	d_5	h Stroke at 90° lever movement	l_3 in clamping position min.	l_3 max.	l_4 Adjustable range	l_5 in clamping position	l_6 in clamping position	t useable thread length
63	M 5	M 5	16	20	25	30	35	40	50	16	16	19	18,5	0,75	16,3	18,8	2,5	3	16,3	10
63	M 6	M 6	16	20	25	30	35	40	50	16	16	19	18,5	0,75	16,3	18,8	2,5	3	16,3	10
82	M 6	M 6	20	25	30	35	40	50	60	20	20	25	22,5	1	19,5	22,5	3	3,7	19,5	12
82	M 8	M 8	20	25	30	35	40	50	60	20	20	25	22,5	1	19,5	22,5	3	3,7	19,5	12
101	M 8	M 8	20	25	30	35	40	50	60	25	26	30	27	1,5	25,3	29,3	4	4,8	25,3	15
101	M 10	M 10	20	25	30	35	40	50	60	25	26	30	27	1,5	25,3	29,3	4	4,8	25,3	15

Specification

- **GN 927**
  Lever
  Zinc die casting
  - plastic coated
    (abrasion proof epoxy resin)
  - black, matt
- **GN 927.3**
  Lever
  Steel (precision casting)
  zinc plated, blue passivated

This information applies to both standards:

- Axis, lag nut / screw
  setting nut / screw
  Steel
  zinc plated, blue passivated
- Contact plates
  Plastic, glass fibre reinforced
  - Type A: Polyacetal (POM)
  - Type B: Polyamide (PA)
- *Plastic characteristics → Page 1141*
- RoHS compliant

Information

Clamping levers with eccentrical cam GN 927 / GN 927.3 are used for rapid clamping and releasing. Hereby, contrary to a clamping operation via a thread, these levers permit a **torque-free** clamping.

The lever has been designed to ensure that its movement cannot exceed the max. clamping force.

There are no loose components since they are all assembled and mounted in their correct order.

Type A has the following benefits:

The distance between the lever cam and the clamping surface is adjustable via a fine pitch thread, allowing the clamping position to be set easily with maximum clamping force. Also, the position of the lever relative to the clamping axis can be determined.

With these clamping levers with eccentrical cam GN 927 / GN 927.3, clamping forces of up to 8 kN can be reached.

Clamping levers with eccentrical cam, with screw

1 2 3 4
GN 927-82-M8-25-A

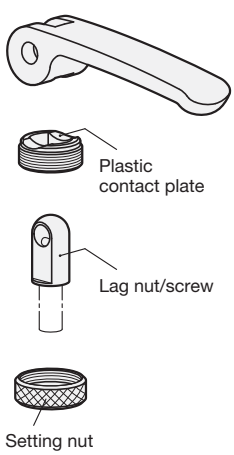
1	l_1
2	d_2
3	l_2
4	Type

Clamping levers with eccentrical cam, with internal thread

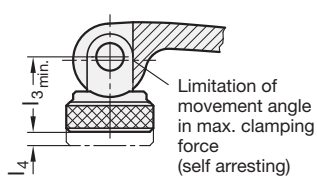
1 2 4
GN 927.3-63-M6-A

1	l_1
2	d_1
4	Type

Constructional features (Type A) / Application example



l_3 adjustable by the setting nut for optimum clamping force at the convenient lever position.

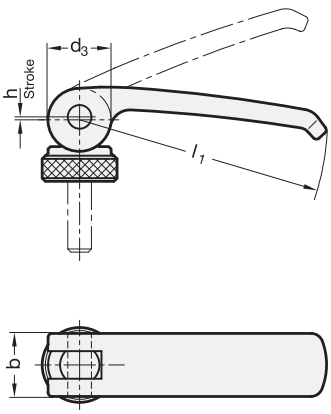


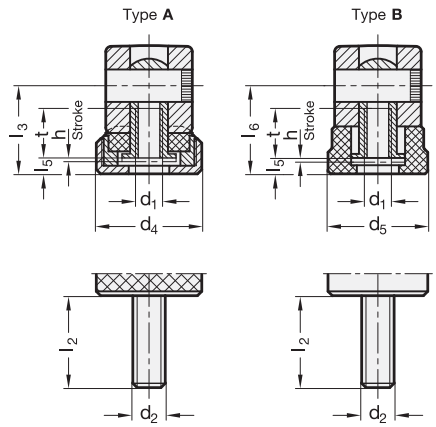
l_3 max. must not be exceeded, i.e. the red dot must not be visible.

Otherwise there is the risk that the positioning thread can no longer absorb the clamping force or may be damaged.

Clamping levers with eccentrical cam

with plastic contact plate





Rost frei Inox Stainless Steel

Inch Inch sizes available

4 Type

A with adjustable plastic contact plate

B with fixed plastic contact plate

1 l_1	2 d_1	2 d_2	3 l_2 in clamping position							b	d_3	d_4	d_5	h Stroke at 90° lever movement	l_3 in clamping position min.	l_3 max.	l_4 Adjustable range	l_5 in clamping position	l_6 in clamping position	t useable thread length
63	M 5	M 5	16	20	25	30	35	40	50	16	16	19	18,5	0,75	16,3	18,8	2,5	3	16,3	10
63	M 6	M 6	16	20	25	30	35	40	50	16	16	19	18,5	0,75	16,3	18,8	2,5	3	16,3	10
82	M 6	M 6	20	25	30	35	40	50	60	20	20	25	22,5	1	19,5	22,5	3	3,7	19,5	12
82	M 8	M 8	20	25	30	35	40	50	60	20	20	25	22,5	1	19,5	22,5	3	3,7	19,5	12
101	M 8	M 8	20	25	30	35	40	50	60	25	26	30	27	1,5	25,3	29,3	4	4,8	25,3	15
101	M 10	M 10	20	25	30	35	40	50	60	25	26	30	27	1,5	25,3	29,3	4	4,8	25,3	15

Specification

- **GN 927.4**
  Lever
  Zinc die casting
  - plastic coated (abrasion proof epoxy resin)
  - black, matt
- **GN 927.5**
  Lever
  Stainless Steel AISI CF-8 (precision casting)

This information applies to both standards:

- Axis, lag nut / screw setting nut / screw
  Stainless Steel AISI 303
- Contact plates
  Plastic, glass fibre reinforced
  - Type A: Polyacetal (POM)
  - Type B: Polyamide (PA)
- *Plastic characteristics → Page 1141*
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

Clamping levers with eccentrical cam GN 927.4 / GN 927.5 are used for rapid clamping and releasing. Hereby, contrary to a clamping operation via a thread, these levers permit a **torque-free** clamping.

The lever has been designed to ensure that its movement cannot exceed the max. clamping force.

There are no loose components since they are all assembled and mounted in their correct order.

Type A has the following benefits:

The distance between the lever cam and the clamping surface is adjustable via a fine pitch thread, allowing the clamping position to be set easily with maximum clamping force. Also, the position of the lever relative to the clamping axis can be determined.

With these clamping levers with eccentrical cam GN 927.4 / GN 927.5, clamping forces of up to 8 kN can be reached.

Clamping levers with eccentrical cam, with internal thread

1 2 4

GN 927.4-63-M6-A

1	l_1
2	d_1
3	Type

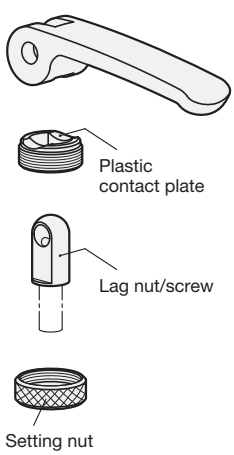
Clamping levers with eccentrical cam, with screw

1 2 3 4

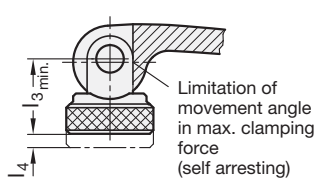
GN 927.5-82-M8-25-A

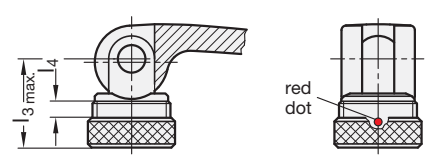
1	l_1
2	d_2
3	l_2
4	Type

Constructional features (Type A) / Application example



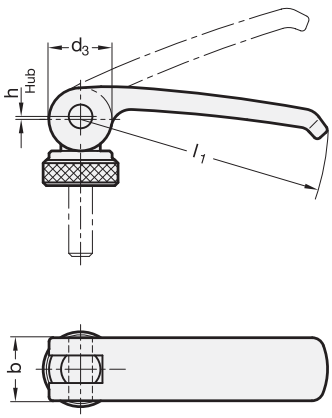
l_3 adjustable by the setting nut for optimum clamping force at the convenient lever position.

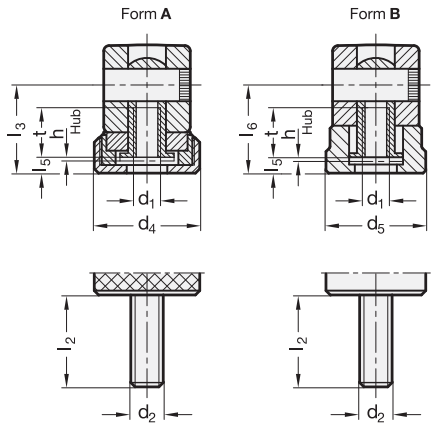




l_3 max. must not be exceeded, i.e. the red dot must not be visible.

Otherwise there is the risk that the positioning thread can no longer absorb the clamping force or may be damaged.





Rostfrei Inox Stainless Steel — Inch Inch sizes available

4 Type

A with adjustable Stainless Steel-Contact plate

B with fix Stainless Steel-Contact plate

1 l_1	1 2 d_1	2 d_2	3 l_2 in clamping position							b	d_3	d_4	d_5	h Stroke at 90° lever movement	l_3 in clamping position min.	l_3 max.	l_4 Adjustable range	l_5 in clamping position	l_6 in clamping position	t useable thread length
63	M 5	M 5	16	20	25	30	35	40	50	16	16	19	18,5	0,75	16,3	18,8	2,5	3	16,3	10
63	M 6	M 6	16	20	25	30	35	40	50	16	16	19	18,5	0,75	16,3	18,8	2,5	3	16,3	10
82	M 6	M 6	20	25	30	35	40	50	60	20	20	25	22,5	1	19,5	22,5	3	3,7	19,5	12
82	M 8	M 8	20	25	30	35	40	50	60	20	20	25	22,5	1	19,5	22,5	3	3,7	19,5	12
101	M 8	M 8	20	25	30	35	40	50	60	25	26	30	27	1,5	25,3	29,3	4	4,8	25,3	15
101	M 10	M 10	20	25	30	35	40	50	60	25	26	30	27	1,5	25,3	29,3	4	4,8	25,3	15

Ausführung

- Lever
  Stainless Steel AISI CF-8
- Axis, lag nut / screw
  setting nut / screw
  Stainless Steel AISI 303
- Contact plates
  Stainless Steel
  - Super Duplex 255
  - hardened
- RoHS compliant

On request

- Clamping surface free of grease

Hinweis

Stainless Steel-Clamping levers with eccentrical cam GN 927.7 are used for rapid clamping and releasing. Hereby, contrary to a clamping operation via a thread, these levers permit a **torque-free** clamping.

The lever has been designed to ensure that its movement cannot exceed the max. clamping force.

There are no loose components since they are all assembled and mounted in their correct order.

Type A has the following benefits:

The distance between the lever cam and the clamping surface is adjustable via a fine pitch thread, allowing the clamping position to be set easily with maximum clamping force. Also, the position of the lever relative to the clamping axis can be determined.

With these clamping levers with eccentrical cam GN 927.7, clamping forces of up to 8 kN can be reached.

Clamping levers with eccentrical cam, with internal thread

1 2 4

GN 927.7-63-M6-A

1	l_1
2	d_1
3	Type

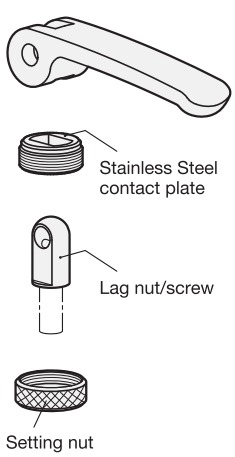
Clamping levers with eccentrical cam, with screw

1 2 3 4

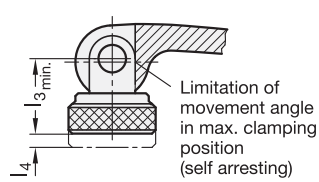
GN 927.7-82-M8-25-A

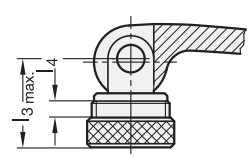
1	l_1
2	d_2
3	l_2
4	Type

Constructional features (Type A)

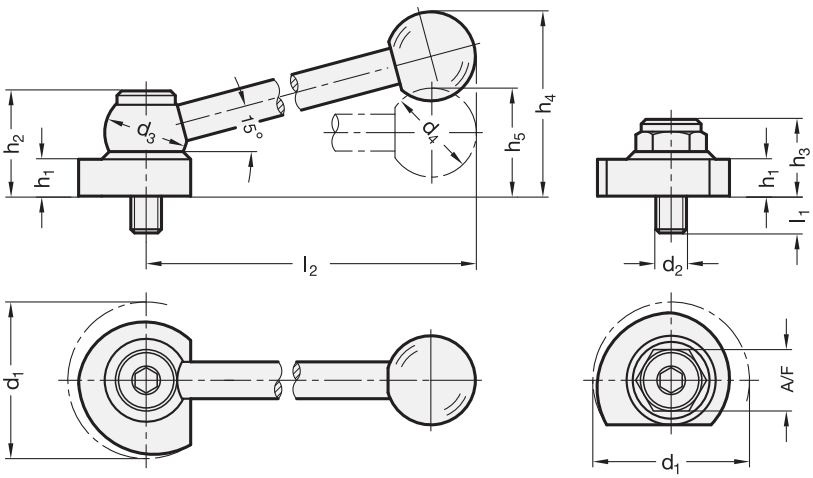


l_3 adjustable by the setting screw for optimum clamping force at the preferred lever position.





l_3 max. must not be exeeded. Otherwise there is the risk that the positioning thread can no longer absorb the clamping force or may be damaged.



Inox Stainless Steel

2 Type

KV with ball lever, angular (serration)
GV with ball lever, straight (serration)
SK with hexagon

3 Clamping direction

R by clockwise rotation (drawn version)
L by anti-clockwise rotation

1

d_1 –0,5	d_2	d_3	d_4	h_1	h_2	h_3	h_4 ≈	h_5	l_1	l_2 ≈	A/F
40	M 8	24	25	10	31	21	55	31	8	100	15
50	M 10	28	30	12	34,5	24	62	36	11	116	19

Specification

- **GN 918**
  Steel
  - blackened
  - Eccentrical cam and washer case hardened
  - Screw bolt nitrided
    Tensile strength class 8.8 (800 N/mm²)
- **GN 918.5**
  Stainless Steel
  - Eccentrical cam
    AISI 303
    chemically nickel plated
  - Screw bolt and washer
    AISI 420
    tempered, chemically nickel plated
  - Ball lever (Type KV)
    AISI 303
    matt shot-blasted

This information applies to both standards:

- Ball knob DIN 319
  Plastic
  Duroplast
  black, shiny finish
- *Stainless Steel characteristics → Page 1144*
- RoHs compliant

Information

Eccentrical cams GN 918 / GN 918.5 allow the rapid and safe clamping and releasing at a relatively large adjustable range and with high clamping force. The cam not only has the advantage that the clamping effect is of the same magnitude over the whole of the clamping surface (i.e. in every angular position), but also that it is self-arresting in every position.

The ball lever is linked with the eccentric cam via a serrated ratchet, allowing the adjustment of the most suitable clamping position or the „readjustment“ of the handle.

Screw bolt and washer (see technical instructions) are matched to ensure that the eccentric cam can be easily turned after tightening. Using a washer requires no special requirements in terms of the threaded hole design. This means it can also be mounted on tables using T grooves.

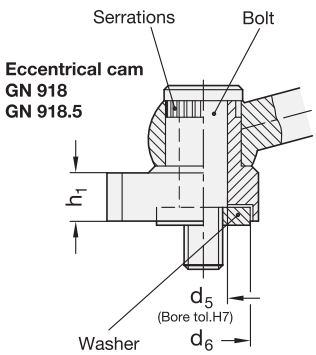
see also...

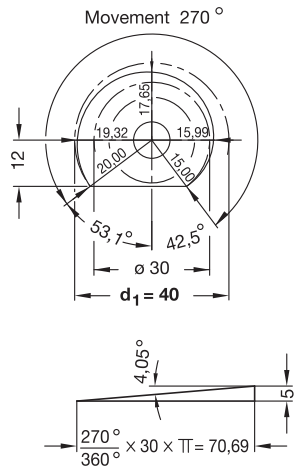
- *Clamping bolts GN 918.1 / GN 918.6 → Page 652*
- *Clamping bolts GN 918.2 / GN 918.7 → Page 653*

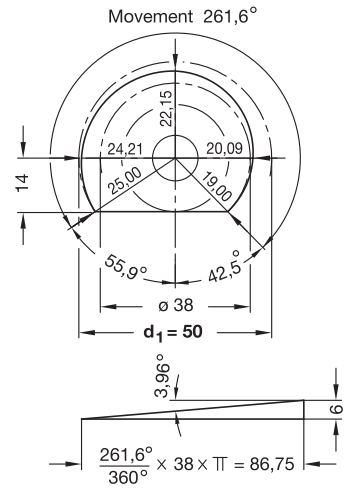
Steel-Eccentrical cam 1 2 3 GN 918-40-SK-L		
	1	d_1
	2	Type
	3	Clamping direction

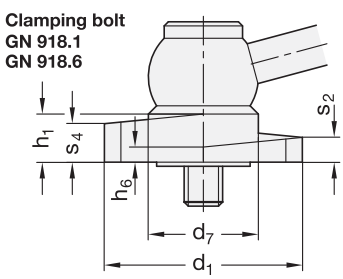
Stainless Steel-Eccentrical cam 1 2 3 GN 918.5-50-KV-R		
	1	d_1
	2	Type
	3	Clamping direction

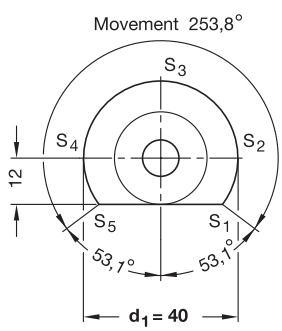
Drawn version: Type KV, Clamping direction R by clockwise rotation

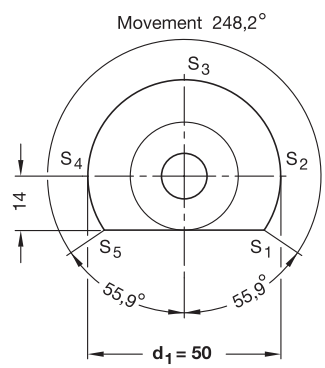


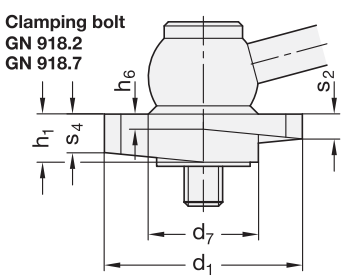


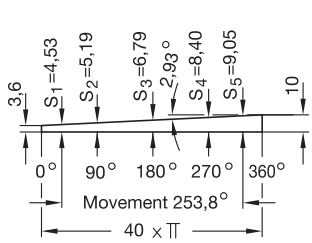


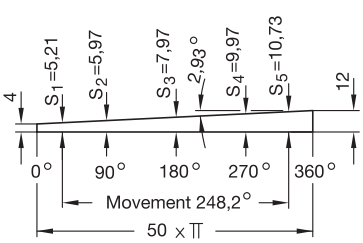




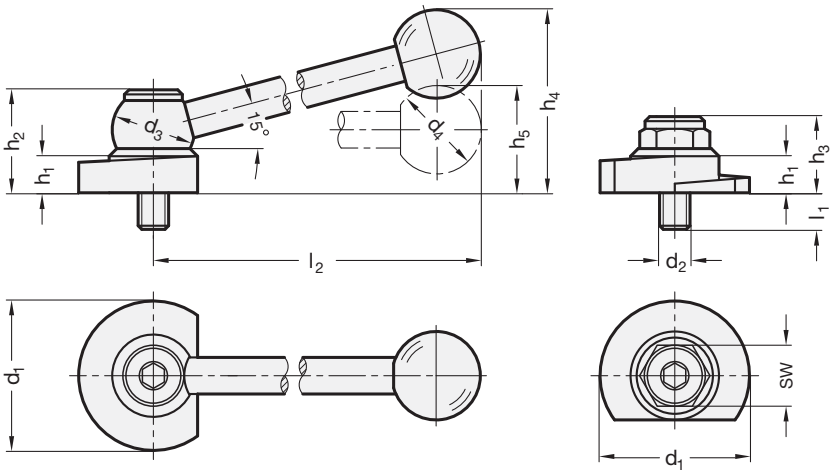








d_1 −0,5	d_5	d_6	d_7	h_1	h_6
40	10	20	24	10	3,6
50	12	24	28	12	4



Inox Stainless Steel

2 Type

KV with ball lever, angular (serration)
GV with ball lever, straight (serration)
SK with hexagon

3 Clamping direction

R by clockwise rotation (drawn version)
L by anti-clockwise rotation

1

d_1 −0,5	d_2	d_3	d_4	h_1	h_2	h_3	h_4 ≈	h_5	l_1	l_2 ≈	A/F
40	M 8	24	25	10	31	21	55	31	8	100	15
50	M 10	28	30	12	34,5	24	62	36	11	116	19

Specification

- **GN 918.1**
  Steel
  - blackened
  - Eccentrical cam and washer case hardened
  - Screw bolt nitrided
    Tensile strength class 8.8 (800 N/mm²)
- **GN 918.6**
  Stainless Steel
  - Eccentrical cam
    AISI 303
    chemically nickel plated
  - Screw bolt and washer
    AISI 420
    tempered, chemically nickel plated
  - Ball lever (Type KV)
    AISI 303
    matt shot-blasted

This information applies to both standards:

- Ball knob DIN 319
  Plastic
  Duroplast
  black, shiny finish
- *Stainless Steel characteristics* → *Page 1144*
- RoHs compliant

Information

Clamping bolts GN 918.1 / GN 918.6 have a circumferential wedge surface, allowing the rapid and safe clamping and releasing at a relatively large adjustable range and with high clamping force. Owing to the small pitch angle (wedge angle), the eccentric cam is self-arresting.

The ball lever is linked with the clamping bolt via a serrated ratchet, allowing the adjustment of the most suitable clamping position or the „re-adjustment“ of the handle.

Screw bolt and washer (see technical instructions) are matched to ensure that the clamping bolt can be easily turned after tightening. Using a washer requires no special requirements in terms of the threaded hole design. This means it can also be mounted on tables using T grooves.

Clamping bolts have the advantage that they can be turned after releasing in the clamping zone.

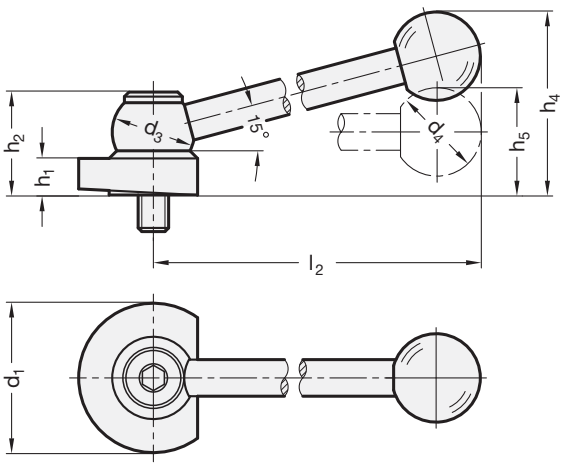
The use of GN 605 ball point screws with flattened ball is recommended in connection with the clamping bolts. → *page 524*

see also...

- *Technical instructions* → *Page 651*

Steel-Clamping bolt		
1 2 3	1	d_1
GN 918.1-50-KV-R	2	Type
	3	Clamping direction

Stainless Steel-Clamping bolt		
1 2 3	1	d_1
GN 918.6-40-SK-L	2	Type
	3	Clamping direction



Inox Stainless Steel

2 Type

KV with ball lever, angular (serration)
GV with ball lever, straight (serration)
SK with hexagon

3 Clamping direction

R by clockwise rotation (drawn version)
L by anti-clockwise rotation

1

d_1 −0,5	d_2	d_3	d_4	h_1	h_2	h_3	h_4 ≈	h_5	l_1	l_2 ≈	A/F
40	M 8	24	25	10	31	21	55	31	8	100	15
50	M 10	28	30	12	34,5	24	62	36	11	116	19

Specification

- **GN 918.2**
  Steel
  - blackened
  - Eccentrical cam and washer case hardened
  - Screw bolt nitrided
    Tensile strength class 8.8 (800 N/mm²)
- **GN 918.7**
  Stainless Steel
  - Eccentrical cam
    AISI 303
    chemically nickel plated
  - Screw bolt and washer
    AISI 420
    tempered, chemically nickel plated
  - Ball lever (Type KV)
    AISI 303
    matt shot-blasted

This information applies to both standards:

- Ball knob DIN 319
  Plastic
  Duroplast
  black, shiny finish
- *Stainless Steel characteristics → Page 1144*
- RoHs compliant

Information

Clamping bolts GN 918.2 / GN 918.7 have a circumferential wedge surface, allowing the rapid and safe clamping and releasing at a relatively large adjustable range and with high clamping force. Owing to the small pitch angle (wedge angle), the eccentric cam is self-arresting

The ball lever is linked with the clamping bolt via a serrated ratchet, allowing the adjustment of the most suitable clamping position or the „re-adjustment“ of the handle.

Screw bolt and washer (see technical instructions) are matched to ensure that the clamping bolt can be easily turned after tightening. Using a washer requires no special requirements in terms of the threaded hole design. This means it can also be mounted on tables using T grooves.

Clamping bolts have the advantage that they can be turned after releasing in the clamping zone.

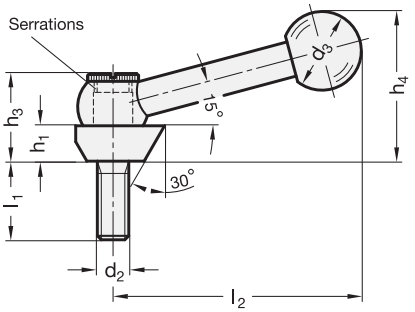
The use of GN 605 ball point screws with flattened ball is recommended in connection with the clamping bolts → *page 524*

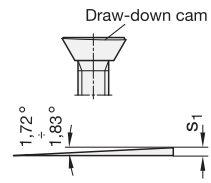
see also...

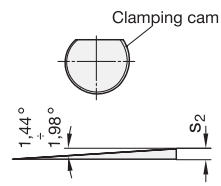
- *Technical instructions → Page 651*

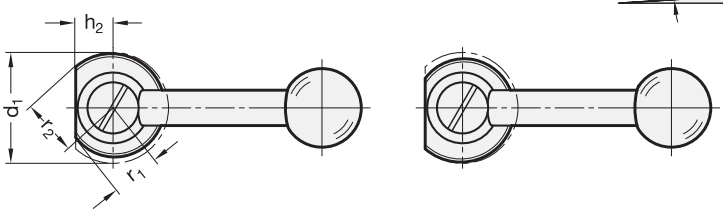
Steel-Clamping bolt		
1 2 3	1	d_1
GN 918.2-50-SK-R	2	Type
	3	Clamping direction

Stainless Steel-Clamping bolt		
1 2 3	1	d_1
GN 918.7-40-GV-L	2	Type
	3	Clamping direction









4 Type

R Clamping by clockwise rotation (d_2 = right-hand thread)

L Clamping by anti-clockwise rotation (d_2 = left-hand thread)

1 d_1 Nominal dimension	2 d_2		3 l_1	l_2	d_3	h_1	h_2	h_3	h_4	r_1	r_2	s_1	s_2	**x** ±0,2 see page 657	**z** ±0,2 see page 657	Clamping force F in kN
28	M 8	M 10	20	64	20	9	9,5	22,5	39	12,1	14,1	1,3	2	10,0	12,4	1,5
36	M 10	M 12	24	82	25	10,5	12	28,5	49	16,1	18,2	1,6	2,1	14,1	16,5	2,0

Specification

- Steel
  - Screw / Cam
    case hardened HRC 56 ±1
  - blackened
- Ball knob DIN 319
  Plastic
  Duroplast
  black, shiny finish
- RoHS compliant

Information

Cam point levers GN 418.1 have the same mode of action as the GN 418 cam point screws.

The ball lever is connected to the cam point lever via a serration, allowing the correct clamping position to be set and the lever to be re-adjusted.

The clamping forces F shown in the table refer to the maximum permissible tightening torque and to the specified screw-in depth t → *Page* 657

see also...

- *Construction and assembly instructions → Page 657*
- *Cam point screws GN 418 → Page 656*

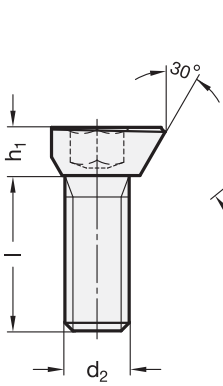
How to order

1 2 3 4

GN 418.1-36-M12-24-R

1	d_1
2	d_2
3	l_1
4	Type

Cam point screws GN 418 → *Page 656*
Cam point levers GN 418.1 → *Page 654*



4 Type

R Clamping by clockwise rotation (d_2 = right-hand thread)

L Clamping by anti-clockwise rotation (d_2 = left-hand thread)

1 d_1 Nominal dimension	2 d_2	3 Length l	h_1	h_2	r_1	r_2	s_1	s_2	A/F	x ±0,2	z ±0,2	Max. tightening torque in Nm	Max. clamping force F in kN
11	M 4	12	4	2,6	4,8	5,5	0,46	0,66	3	4	5	2	0,1
16	M 6	16	5,5	5	6,7	7,8	0,75	1,08	5	5,9	7	6	0,4
19	M 8	20	6,5	5,8	8,3	9,6	0,92	1,23	6	7,1	8,6	25	3
24	M 10	24	8	6,3	9,8	11,8	1,05	2,02	8	8,5	10,3	40	4,5
27	M 12	18	9	8,5	11,7	13,6	1,29	1,91	10	10,1	12,2	55	6
27	M 12	30	9	8,5	11,7	13,6	1,29	1,91	10	10,1	12,2	45	5
35	M 16	24	12	10,7	15,6	17,7	1,46	2,1	14	13,2	16,2	90	10
35	M 16	40	12	10,7	15,6	17,7	1,46	2,1	14	13,2	16,2	70	7,5

Specification

- Steel
  - case hardened HRC 56 ±1
  - Tensile strength class 8.8 (800 N/mm²)
  - Type R : zinc plated, blue passivated
  - Type L: blackened
- RoHS compliant

Information

Cam point screws GN 418 are sturdy and compact elements, requiring a minimum of installation space and offering ultimate convenience and ease in handling.

The clamping forces F given in the table refer to the maximum permitted tightening torque and the specified screw-in depth t.

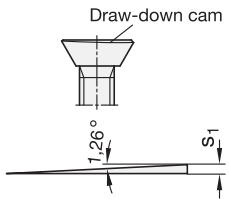
see also...
- *Cam point levers GN 418.1 → Page 654*

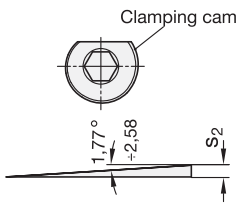
How to order

1 2 3 4

GN 418-27-M12-30-R

1	d_1
2	d_2
3	Length l
4	Type



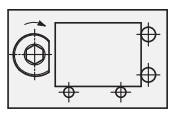


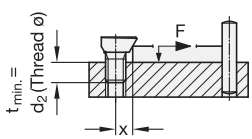
Function

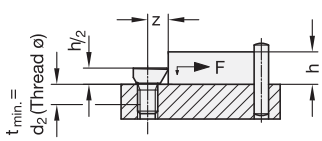
The head of the cam point screw has two cams: a radial clamping cam (with additional 30° taper) and an axial draw-down cam.
The cam ensures that the clamping force is the same in any angular position. The cam is also self-locking.

Force components act on the clamping point which generate a draw-down effect and which, in addition to the friction, cause the workpiece to be pressed against a fixed stop. An additional draw-down effect is created by the thread and the 30° taper.

To ensure safe and secure clamping in every application, a right-hand version (with right-hand thread) and a left-hand version (with left-hand thread) is available.



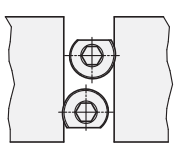




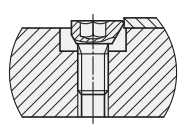
Assembly instructions

- Position the thread bore(s) as specified
- Screw the cam point screw in to the desired height and place it with its flat side facing the workpiece (note the minimum screw-in depth t)
- For clamping effect above the head taper, the minimum clamping height should be h2
- A turn of approx. 135° is required for clamping

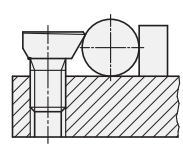
Application examples



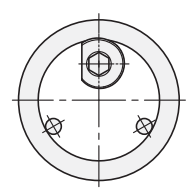
Multiple clamps in the narrowest of space



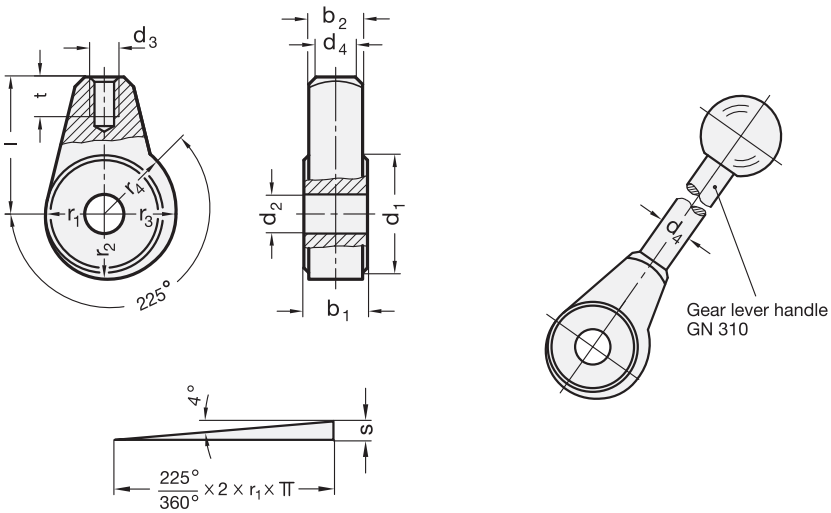
Clamping flat workpieces (sheet metal)



Clamping round workpieces



Centric clamping in a bore hole



1 d1	2 d2 H9	b1 −0,05 −0,15	b2	d3	d4 Gear lever handle	Length l	r1	r2	r3	r4	s	t min.
24	B 8	13	11	M 6	8	28	12	13,32	14,64	15,3	3,3	9
30	B 10	15	13	M 8	10	32	15	16,65	18,3	19,12	4,1	12
35	B 12	17	15	M 10	12	36	17,5	19,42	21,34	22,31	4,8	15

Specification

- Sintered Steel
  - case hardened
    EHT 0,2 to 0,4 mm
  - blank
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Accessory

- Gear lever handles GN 310 → *Page 42*
  (are to be ordered separately)

Information

Hubs with eccentrical cam GN 919 are used for adjusting and clamping operations. As a rule these are fitted with a gear lever handle GN 310.

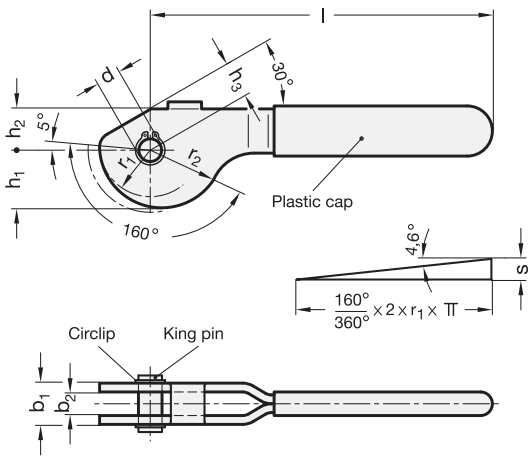
The cam offers the advantage that the clamping force remains constant in every position of its travel. In addition the cam is self locking.

Cylinder head shoulder bolts GN 732 can be used as bearing pins.

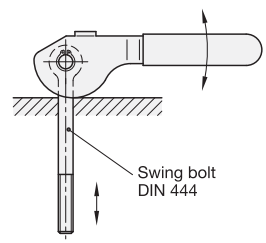
see also...

- *Cylinder head shoulder bolts GN 732 → page 529*

How to order		
GN 919-35-B12	1	d1
	2	d2



Application example



Rostfrei Inox Stainless Steel

1 d	2 b_1	b_2	h_1	h_2	h_3	Length l	r_1	r_2	s Stroke cam	r_2-h_3 Total stroke
8	13	9	19,54	14	12	114	17,2	21,07	3,87	9,07
10	17	12	24,54	17	15	138	21,6	26,45	4,85	11,45
12	20	14	31,81	21	18	157	28	34,29	6,29	16,29

Specification

- **GN 917**
  Steel
  - ST 52-3 / German Material No. 1.0570
  - blackened
- **GN 917.1**
  Stainless Steel AISI 304
  shot-blasted

This information applies to both standards:

- King pin
  Stainless Steel AISI 420
  tempered
- Circlip
  Stainless Steel AISI 303
- Plastic cover
  - red, oil resistant
  - temperature resistant up to 60 °C
- *Stainless Steel characteristics → Page 1144*
- RoHS compliant

Information

Double cam levers GN 917 / GN 917.1 are used for repositioning and clamping.

The eccentrical cam has the advantage that the clamping force remains constant in every position of its travel and in addition is self arresting.

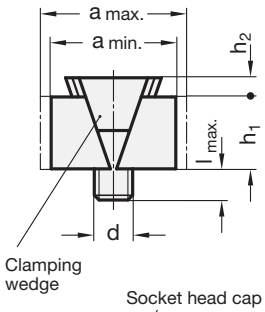
The dimension b_2 is made to match the head size of swing bolts DIN 444 and swing nuts GN 444.2 respectively.

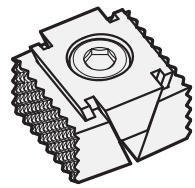
see also...

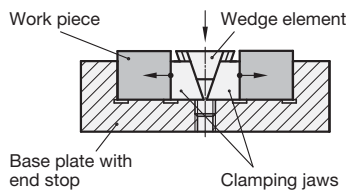
- *Swing bolts DIN 444 → Page 516*
- *Swing nuts GN 444.2 → Page 518*

Steel-Double cam lever 1 2 GN 917-10-17		
	1	d
	2	b_1

Stainless Steel-Double cam lever 1 2 GN 917.1-12-20		
	1	d
	2	b_1







3 Type

GL smooth clamping surfaces
GA with 2 fixing threads for attachment jaws
RF ribbed clamping surfaces
PR with prism jaws

1 d	2 b	a Type GA / Type GL min.	a Type GA / Type GL max.	a Type PR / Type RF min.	a Type PR / Type RF max.	h_1	h_2	h_3 Type GA Type PR	Length l max.	m Type GA	w Type PR	Clamping force in kN per clamping jaw
M 8	21	39,5	44,5	34,5	39,5	15	4,5	7,5	15	10	9	15 at 25 Nm
M 8	25	39,5	44,5	34,5	39,5	15	4,5	7,5	15	12	9	15 at 25 Nm
M 8	32	39,5	44,5	34,5	39,5	15	4,5	7,5	15	16	9	15 at 25 Nm
M 8	40	39,5	44,5	34,5	39,5	15	4,5	7,5	15	20	9	15 at 25 Nm
M 8	50	39,5	44,5	34,5	39,5	15	4,5	7,5	15	30	9	15 at 25 Nm
M 12	40	40	45,5	40	45,5	22	4,5	11	21	20	9	30 at 85 Nm
M 12	50	40	45,5	40	45,5	22	4,5	11	21	30	9	30 at 85 Nm

Specification

- Steel
  - Wedge surfaces hardened
  - blackened
- Socket head cap screw DIN 7984
  Tensile strength class 10.9 (1000 N/mm²)
- RoHS compliant

Information

Clamping with the wedge clamps GN 920.1 is achieved via the socket head cap screw and the clamp wedge which cause both clamping jaws to move outward.

When loosening the screw, the clamp wedge is returned via an internal return spring which, in turn, loosens the tension.

Wedge clamps are ideal for multiple clamping operations, but they are also suitable for clamping individual workpieces.

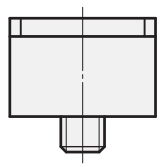
The long hole in the clamp wedge serves to compensate tolerances in the workpiece.

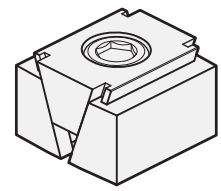
see also...
- *Pull-down plates GN 920.2*
  (for wedge clamps GN 920.1 with pull-down effect) → *Page 662*

How to order
1 2 3
GN 920.1-M8-32-RF

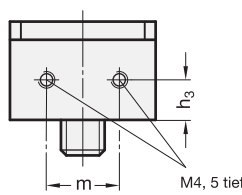
1	d
2	b
3	Type

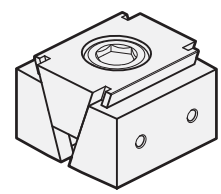
Type **GL** smooth clamping surfaces (jaw blank for workpiece-specific clamping contours)



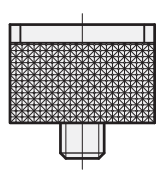


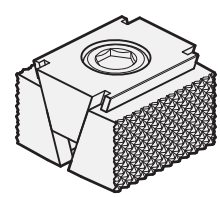
Type **GA** with 2 fixing threads for attachment jaws



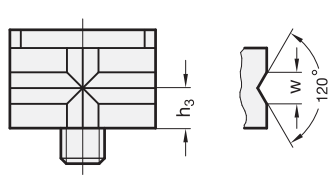


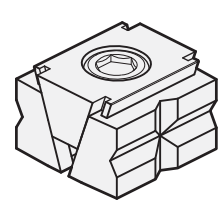
Type **RF** ribbed clamping surfaces





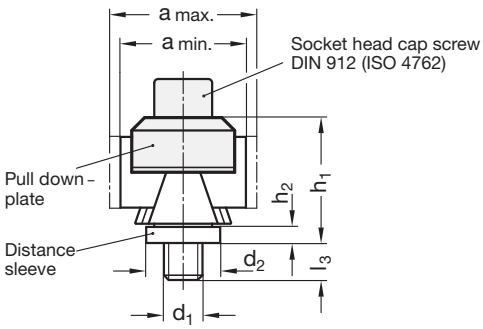
Type **PR** with prism jaws

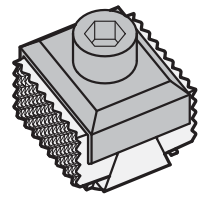


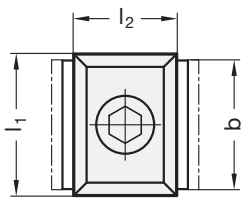


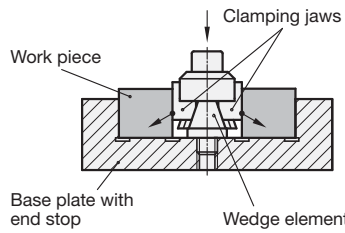
GN 920.2 Pull-down plates

for wedge clamps GN 920.1









1 l_1	2 l_2	3 d_1	b	a Type GA / Type GL max.	a Type GA / Type GL min.	a Type PR / Type RF max.	a Type PR / Type RF min.	d_2 Ø	h_1 ≈	h_2	Length l_3 max.	for wedge clamps GN 920.1 with: d	for wedge clamps GN 920.1 with: b
25	32	M 8	21	44,5	39,5	39,5	34,5	18	27,5	4	7,5	M 8	21
29	32	M 8	25	44,5	39,5	39,5	34,5	18	27,5	4	7,5	M 8	25
36	32	M 8	32	44,5	39,5	39,5	34,5	18	27,5	4	7,5	M 8	32
44	32	M 8	40	44,5	39,5	39,5	34,5	18	27,5	4	7,5	M 8	40
44	32	M 12	40	45,5	40	45,5	40	23	38	5	11,5	M 12	40
54	32	M 8	50	44,5	39,5	39,5	34,5	18	27,5	4	7,5	M 8	50
54	32	M 12	50	45,5	40	45,5	40	23	38	5	11,5	M 12	50

Specification

- Steel
  blackened
- Socket head cap screw DIN 912 (ISO 4762)
  Tensile strength class 12.9 (1200 N/mm²)
- Distance sleeve
  Steel
- RoHS compliant

Information

Pull-down plates GN 920.2 allow wedge clamps GN 920.1 to clamp easily with pull-down effect.

The socket head cap screw DIN 912 and the distance bush are included.

see also...

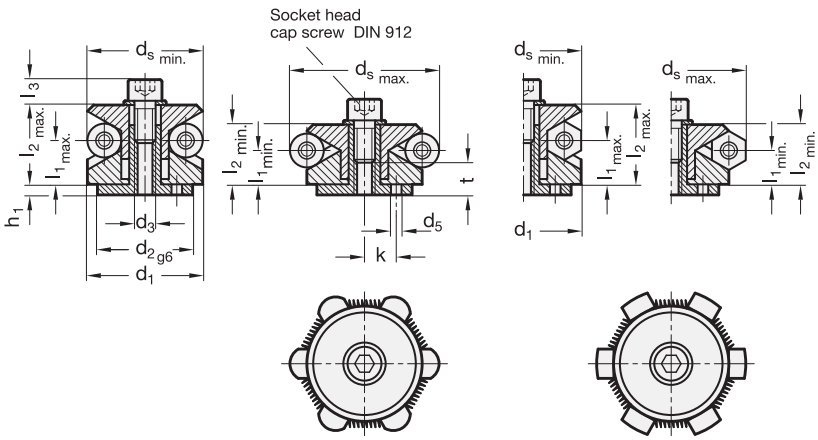
- *Wedge clamps GN 920.1 → Page 660*

How to order

GN 920.2- 36 -32- M8

1	l_1
2	l_2
3	d_1

Wedge clamps GN 920.1 → *Page 660*
Pull-down plates GN 920.2 → *Page 662*



2 Type

K with clamping balls
S with clamping segments

1

d_1	d_s Clamping-Ø min.	d_s Clamping-Ø max.	d_2	d_3	d_4	d_5	h_1	h_2	k ±0,1	l_1 min.	l_1 max.	l_2 min.	l_2 max.	l_3	t min.	Number of clamping elements	Clamping force in kN
11,7*	11,7*	14,2	10	M 3	3,3	1,5	3,5	2,5	3,5	8,6	9,2	10,5	12	3,5	6	3	0,5
14,5	14,5	18,5	12	M 4	4,3	2	5,5	3,5	4,5	7,9	9,1	11,8	14,1	5,6	6	3	3,5
18,5	18,5	22,5	15	M 5	5,3	2,5	7,5	3	5,5	10,4	11,6	14,3	16,6	7	10	3	4,5
22,5	22,5	26,5	15	M 6	6,4	3	6	4	7	13,9	15,1	17,8	20,1	9	10	3	5
26,5	26,5	30,5	20	M 6	6,4	3	6	4,5	7	13,9	15,1	17,8	20,1	9	10	3	5
30,5	30,5	38,5	25	M 8	6,4	4	7	4,5	9	12,8	15,2	19,6	24,2	9,2	12	3	5
38,5	38,5	46,5	30	M 8	8,4	4	7,5	4,5	11	15,7	18,1	22,5	27,1	10,5	13	6	6,5
46,5	46,5	54,5	30	M 8	8,4	4	7,5	4,5	11	15,7	18,1	22,5	27,1	10,5	13	6	6,5
54,5	54,5	70,5	45	M 10	10,5	5	9	5,5	15	19	23,7	31,4	40,7	13,5	14	6	8
70,5	70,5	86,5	60	M 12	13	5	10	5,5	17	23,6	28,3	36,3	45,6	16	16	6	10
86,5	86,5	102,5	60	M 12	13	5	10	5,5	17	23,6	28,3	36,3	45,6	16	16	6	10

* This size is only available as type K.

Specification

- Steel
  - hardened
  - blackened
- Clamping balls / -segments
  - hardened
  - blank, ground
- *ISO-Fundamental Tolerances → page 1132*
- RoHS compliant

On request

- Centring bore clamps GN 411.3, operable from the opposite side respectively for hydraulic or pneumatic operation
- Centring bore clamps with 2 clamping elements for clamping tubes

Information

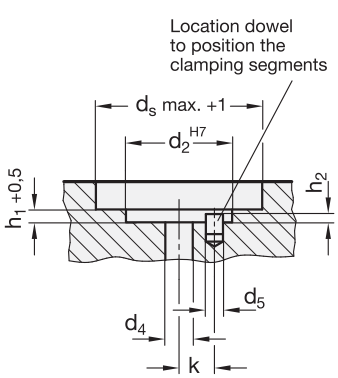
With centring bore clamps GN 411.2 workpieces can be centrally positioned and clamped from the inside of the bore.

They offer the following advantages:

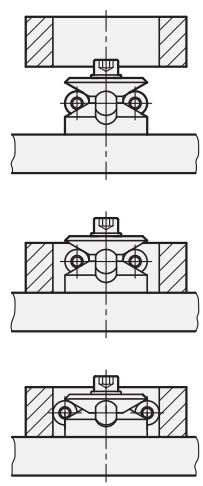
- Precise self centering
- Repetitive accuracy: ± 0,025
- Accuracy of concentricity: ± 0,05
- Solid and stable clamping through either 3 or 6 contact points on the workpiece
- Clamping of workpieces with uneven or irregular surface (such as catings)
- Distortion free clamping
- Reduced height
- Can be fitted in any position
- Large adjustable range
- Draw-down clamping

How to order		
GN 411.2-30,5-K (1 2)	1	d_1
	2	Type

Dimensions



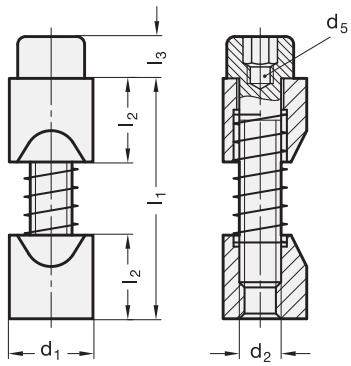
The recess d_s is only required for clamping very low parts.

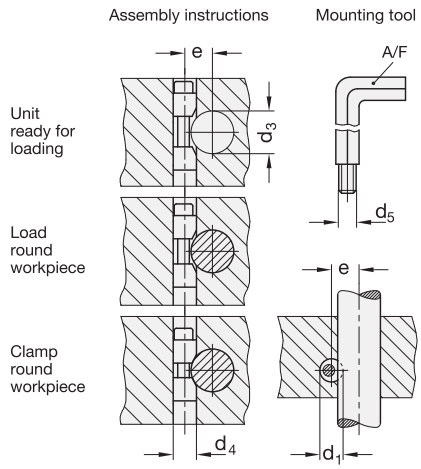


Operating principle

A circular ball cage containing 3 or 6 balls is forced outwards over an accurately guided cone by means of a screw which, through the exerted thrust, will enlarge the outside diameter of the circular ball cage. This in turn will lead to a firm contact between the centring clamp and bore of the workpiece.

Type K (with balls) is used for clamping applications where minute ball marks at the contact points with the workpiece are acceptable. Type S (with clamping segments) is used in such cases where marks at the clamping points on the workpiece would be acceptable.





d_1 h11	d_2	d_3 Round workpiece	d_4 H7	d_5	e +0,2	l_1 max.	l_2	l_3	A/F	Code no. Mounting tool
8	M 4	6 ... 10	8	M 2,5	$\frac{d_3}{2}$ + 2,8	22	8	4	3	GN 928.1-3
10	M 5	10 ... 15	10	M 3	$\frac{d_3}{2}$ + 3,3	30	10	5	4	GN 928.1-4
12	M 6	15 ... 20	12	M 4	$\frac{d_3}{2}$ + 3,5	36	12	6	5	GN 928.1-5
16	M 8	20 ... 30	16	M 5	$\frac{d_3}{2}$ + 4	48	16	8	6	GN 928.1-6
20	M 10	30 ... 40	20	M 6	$\frac{d_3}{2}$ + 4,8	60	20	10	8	GN 928.1-8
25	M 12	40 ... 60	25	M 8	$\frac{d_3}{2}$ + 5,6	72	25	12	10	GN 928.1-10
30	M 16	60 ... 125	30	M 10	$\frac{d_3}{2}$ + 7,9	85	30	16	14	GN 928.1-14

Specification

- Steel
  blackened
- Socket head cap screw DIN 912
  zinc plated, blue passivated
- *ISO-Fundamental Tolerances → Page 1132*
- RoHS compliant

Accessory

- Mounting tools GN 928.1
  (Code no. see table)

Information

With the shaft clamping unit „trueround“ GN 928, round workpieces from 6 to 125 mm can be rapidly, accurately and economically clamped.

The threaded hole d_5 can be used for attaching a jig or fixture or a fixing screw for holding the clamping unit in an axial position during an assembly operation.

How to order	1	d_1
GN 928-16