1.4

Indexing mechanisms
Control knobs
Adjustable slide units
Position indicators
1.8 Indexing mechanisms, Control knobs, Adjustable slide units

- **GN 711**
  - Rulers
  - Plastic, Stainless Steel
  - Page 336

- **GN 726.1**
  - Control knobs
  - Aluminium black anodized
  - Page 344

- **GN 727**
  - Control knobs with adjustable spindle
  - Aluminium / Steel
  - Page 352

- **GN 711.1**
  - Indicator arrows
  - Plastic, Stainless Steel
  - Page 336

- **GN 726.2**
  - Control knobs
  - Aluminium black anodized
  - Page 345

- **GN 200**
  - Indexing mechanisms
  - Steel
  - Page 354

- **GN 164**
  - Scale rings
  - Steel
  - Page 338

- **GN 436**
  - Control knobs
  - Stainless Steel
  - Page 346

- **GN 200**
  - Indexing mechanisms with tension lever
  - Steel
  - Page 356

- **GN 264**
  - Scale rings
  - Steel
  - Page 340

- **GN 436.1**
  - Control knobs
  - Stainless Steel
  - Page 347

- **GN 200**
  - Indexing mechanisms
  - Stainless Steel
  - Page 356

- **GN 268**
  - Collar bushes for GN 264
  - Steel
  - Page 341

- **GN 723.4**
  - Control knobs
  - Aluminium, anodized, natural colour
  - Page 348

- **GN 700**
  - Adjustable knobs
  - Stepless positioning Aluminium / Steel
  - Page 358

- **GN 374**
  - Flat springs for GN 264
  - Steel
  - Page 341

- **GN 723.3**
  - Reference flanges for GN 723.4
  - Steel
  - Page 350

- **GN 215**
  - Indexing levers
  - Steel
  - Page 360

- **GN 726**
  - Control knobs
  - Aluminium black anodized
  - Page 342

- **GN 729**
  - Control knobs
  - Aluminium black anodized
  - Page 351

- **GN 900**
  - Adjustable slide units
  - Aluminium
  - Page 366

---

Stainless Steel  | Ergostyle  | Softline  | Cleanline  | Sanline  | ATEX  | ESD  | Inch
1.8 Adjustable slide units

- **GN 900.1** Fastening units
  - Aluminium
  - Page 368

- **GN 900.2** Connecting sets X-Y
  - Aluminium
  - Page 369

- **GN 900.3** Connecting sets X-Y
  - Aluminium
  - Page 370

- **GN 900.4** Mounting plates
  - Aluminium
  - Page 372

- **GN 900.5** Rotary plates
  - Aluminium
  - Page 373

- **GN 900.6** Rotary tables
  - Stainless Steel / Aluminium
  - Page 374
To stick the ruler GN 711 remove the protective strip at the back. The engraved side of the Stainless Steel-Rulers is also protected by a strip.

* The Ni-version of this length consists of 2 parts.

**Specification**
- Stainless Steel
  - Thickness 0,6 mm
  - Scale etched
- Plastic
  - Thickness 0,3 mm
  - Highlighted in silver
  - Scale printed
- Plastic
  - Thickness 0,3 mm
  - Transparent
  - Scale printed
- RoHS compliant

**Information**

**Ruler**

<table>
<thead>
<tr>
<th>GN711-NI-100-W-L</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Material</td>
</tr>
<tr>
<td>2 Length l</td>
</tr>
<tr>
<td>3 Type</td>
</tr>
<tr>
<td>4 Figure sequence</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>711.1-KUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Material</td>
</tr>
</tbody>
</table>

**Indicator arrow**

**Type**
- W Figures horizontally arranged (Figure sequence L, M, R)
- S Figures vertically arranged (Figure sequence U, M, O)
Graduations

“How to order”

Graduation

60 / 100 A LA 0 - 10 - 20 . . . 90 /10

Scale ring-dia.

Number of graduations

Total number of figures required

Increasing number sequence list first 3 and last numbers required

Graduation arrangement

Number sequence-Number position

A
B
C
D
E
F
G
H

RA
RE
RI
RU
LA
LE
LI
LU

Information

The size of numbers and length of graduations depend on the number of graduations, quantity of numbers and the scale ring diameter.
**Specifications**

- **Steel**
  - Knurl milled
  - Scale lug $d_1$ fine turned
  - blank (standard version)
  - matt chrome plated
  - matt chrome plated with std. scale
  - add MCR or MCRS on order code

- **Scale**
  - engraved with laser precision, black

- **Clamp ring**
  - Rubber

- **Friction ring**
  - Polyamide

- **ISO-Fundamental Tolerances** → Page 1132

- **RoHS compliant**

**Information**

The non-wearing friction ring ensures perfect engagement of the scale ring when re-aligning the spindle. In addition it allows the setting of the scale ring on a static shaft.

Besides the standard scale (Type MCRS) the scale rings can be supplied with any type of graduation. It is suggested to use the matt chrome plated version (MCR) so that a nice discrepancy in colour is given.

Regarding design, numbering run, numbering position and numbering sequence of the scale please see the layout for scale rings on the order sheet „How to order Graduations“ → Page 337

**On request**

- special graduations
  see „How to order Graduations“ → Page 337

<table>
<thead>
<tr>
<th>Bore code</th>
<th>B without friction ring</th>
<th>R with friction ring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>MCR matt chrome plated</td>
<td>MCRS matt chrome plated, standard scale 0...90, 100 graduations, acc. scale scheme $d_{1/100}$ A RA 0-10 20...90/10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>$d_1$</th>
<th>$d_2$</th>
<th>$d_3$</th>
<th>$d_4$</th>
<th>$d_5$</th>
</tr>
</thead>
<tbody>
<tr>
<td>±0,02</td>
<td>H7</td>
<td>12</td>
<td>14</td>
<td>31,7</td>
</tr>
<tr>
<td>30</td>
<td>12</td>
<td>14</td>
<td>31,7</td>
<td>12</td>
</tr>
<tr>
<td>40</td>
<td>14</td>
<td>16</td>
<td>41,3</td>
<td>14</td>
</tr>
<tr>
<td>50</td>
<td>16</td>
<td>18</td>
<td>51,8</td>
<td>16</td>
</tr>
<tr>
<td>60</td>
<td>18</td>
<td>20</td>
<td>61,4</td>
<td>18</td>
</tr>
</tbody>
</table>

**Scale rings without scale, blank**

- **GN 164-40-R14**

**Scale rings with standard scale**

- **GN 164-50-R16-MCRS**

---

1. **d_1**
2. **d_2**
3. **d_3**
4. **d_4**
5. **d_5**
Scaling sets

Assembly and installation example

The scale set is used for the precision setting of all machine components which are adjustable via spindles.

All individual parts are made of steel. The flat springs are a perfect and virtually non-wearing connecting link between scale ring and spindle or collar bushes. When adjusting the spindle, they ensure that the scale ring is safely driven without impairing the setting options of the ring when the shaft is at rest.

The individual parts belonging to a scale set must be ordered separately.

### Information

A complete scale set is composed of:

<table>
<thead>
<tr>
<th>1 Scale ring</th>
<th>2 Collar bushes</th>
<th>3 Flat springs</th>
</tr>
</thead>
<tbody>
<tr>
<td>GN 264-30</td>
<td>GN 268-24-K12</td>
<td>GN 374-0,3-10</td>
</tr>
<tr>
<td>GN 264-40</td>
<td>GN 268-32-K12</td>
<td>GN 374-0,4-10</td>
</tr>
<tr>
<td>GN 264-40</td>
<td>GN 268-32-K14</td>
<td>GN 374-0,4-10</td>
</tr>
<tr>
<td>GN 264-40</td>
<td>GN 268-32-K16</td>
<td>GN 374-0,4-10</td>
</tr>
<tr>
<td>GN 264-60</td>
<td>GN 268-50-K12</td>
<td>GN 374-0,6-10</td>
</tr>
<tr>
<td>GN 264-60</td>
<td>GN 268-50-K16</td>
<td>GN 374-0,6-10</td>
</tr>
<tr>
<td>GN 264-60</td>
<td>GN 268-50-K20</td>
<td>GN 374-0,6-10</td>
</tr>
<tr>
<td>GN 264-60</td>
<td>GN 268-50-K28</td>
<td>GN 374-0,6-10</td>
</tr>
<tr>
<td>GN 264-80</td>
<td>GN 268-68-K12</td>
<td>GN 374-0,8-10</td>
</tr>
<tr>
<td>GN 264-80</td>
<td>GN 268-68-K14</td>
<td>GN 374-0,8-10</td>
</tr>
<tr>
<td>GN 264-80</td>
<td>GN 268-68-K16</td>
<td>GN 374-0,8-10</td>
</tr>
<tr>
<td>GN 264-80</td>
<td>GN 268-68-K22</td>
<td>GN 374-0,8-10</td>
</tr>
</tbody>
</table>
**GN 264**

**Scale rings**

Accessories for scaling sets

---

### Scale rings

<table>
<thead>
<tr>
<th>d₁</th>
<th>d₂</th>
<th>d₃</th>
<th>d₄</th>
<th>l₁</th>
<th>l₂</th>
<th>Scaling set consists of:</th>
<th>1 Scale ring GN 264</th>
<th>2 Collar bushes</th>
<th>3 Flat springs</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>27</td>
<td>24</td>
<td>33</td>
<td>16</td>
<td>23,7</td>
<td>GN 268-24-K...</td>
<td>GN 374-0,3-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>36</td>
<td>32</td>
<td>43</td>
<td>16</td>
<td>23,7</td>
<td>GN 268-32-K...</td>
<td>GN 374-0,4-10</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>55</td>
<td>50</td>
<td>63</td>
<td>16</td>
<td>25,7</td>
<td>GN 268-50-K...</td>
<td>GN 374-0,6-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>75</td>
<td>68</td>
<td>83</td>
<td>16</td>
<td>25,7</td>
<td>GN 268-68-K...</td>
<td>GN 374-0,8-10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Types

- **MCR** matt chrome plated
- **MCRS** matt chrome plated, standard scale 0...90, 100 graduations, acc. scale scheme d₁/100 A RA 0-10 20...90/10

### Information

Besides the standard scale (Type MCRS) the scale rings can be supplied with any type of graduation. It is suggested to use the matt chrome plated version (MCR) so that a nice discrepancy in colour is given.

Regarding design, numbering run, numbering position and numbering sequence of the scale please see the layout for scale rings on the order sheet „How to order Graduations“ » Page 337

### Specification

- **Steel**
  - Scale lug d₁ fine turned
  - blank (standard version) — **MCR**
  - matt chrome plated — **MCRS**
  - matt chrome plated with std. scale
  - add MCR or MCRS on order code

- **Scale**
  - engraved with laser precision, black

- **ISO-Fundamental Tolerances** » Page 1132

- **RoHS compliant**

### On request

- special graduations
  - see „How to order Graduations“ » Page 337

---

**Scale ring without scale, blank**

1 d₁

**Scale ring with standard scale**

1 d₁

2 Type
**Indexing mechanisms, Control knobs, Adjustable slide units**

**Collar bushes / Flat springs**

**Accessories for scaling sets**

**Specification**

- Steel blank
- Keyway P9 DIN 6885 → Page 1124
- ISO-Fundamental Tolerances → Page 1132
- RoHS compliant

<table>
<thead>
<tr>
<th>d₁</th>
<th>d₂</th>
<th>Bore with keyway</th>
<th>d₃</th>
<th>d₄</th>
<th>l₁</th>
<th>l₂</th>
<th>l₃</th>
<th>s</th>
<th>b</th>
<th>Scaling set consists of: 2 Collar bushes GN 268 and 3 Flat springs</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>K 12</td>
<td>-</td>
<td>26,7</td>
<td>18</td>
<td>13,5</td>
<td>5,5</td>
<td>21</td>
<td>0,3</td>
<td>10</td>
<td>GN 264-30, GN 374-0,3-10</td>
</tr>
<tr>
<td>32</td>
<td>K 12</td>
<td>K 14 K 16</td>
<td>35,7</td>
<td>25</td>
<td>13,5</td>
<td>5,5</td>
<td>29</td>
<td>0,4</td>
<td>10</td>
<td>GN 264-40, GN 374-0,4-10</td>
</tr>
<tr>
<td>50</td>
<td>K 12</td>
<td>K 16 K 20 K 28</td>
<td>54,7</td>
<td>38</td>
<td>14,5</td>
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<td>45</td>
<td>0,6</td>
<td>10</td>
<td>GN 264-60, GN 374-0,6-10</td>
</tr>
<tr>
<td>68</td>
<td>K 12</td>
<td>K 14 K 16 K 22</td>
<td>74,7</td>
<td>50</td>
<td>14,5</td>
<td>5,5</td>
<td>60</td>
<td>0,8</td>
<td>10</td>
<td>GN 264-80, GN 374-0,8-10</td>
</tr>
</tbody>
</table>

**Collar bush**

GN 268-32-K16  
1. d₁  
2. d₂

**Flat spring**

GN374-0,4-10  
3. s  
4. b
The light grey cover of the control knobs GN 726 shrouds the fixing components as well as the shaft end. The cover also lends itself for a logo or other symbols.

Made from an aluminum extrusion allows the manufacture of customized solutions in existing diameters at relatively low cost.

see also...
- Control knobs GN 726.1 (with extension for scale) → Page 344

**Specification**
- Aluminium anodized, black
- Cover Plastic, light grey
- Collet / hexagon nut Brass
- Stainless Steel-Grub screw DIN 916 with internal hexagon and serrated point
- ISO-Fundamental Tolerances → Page 1132
- RoHS compliant

**Information**

**How to order**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>d₁</td>
<td>d₂ H₈</td>
<td>d₃ Collet</td>
<td>d₄</td>
</tr>
<tr>
<td>22</td>
<td>B 5</td>
<td>-</td>
<td>16</td>
</tr>
<tr>
<td>27</td>
<td>B 6</td>
<td>-</td>
<td>Z 6</td>
</tr>
<tr>
<td>34</td>
<td>B 6</td>
<td>B 8</td>
<td>Z 8</td>
</tr>
<tr>
<td>42</td>
<td>B 8</td>
<td>B 10</td>
<td>Z 10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>d₅</td>
<td>d₆</td>
<td>h₁</td>
<td>h₂</td>
<td>h₃</td>
<td>l</td>
</tr>
<tr>
<td>14</td>
<td>M 4</td>
<td>15</td>
<td>9</td>
<td>4,3</td>
<td>5</td>
</tr>
<tr>
<td>18</td>
<td>M 4</td>
<td>17</td>
<td>11</td>
<td>4,3</td>
<td>5,5</td>
</tr>
<tr>
<td>23</td>
<td>M 5</td>
<td>20</td>
<td>14</td>
<td>4,2</td>
<td>7</td>
</tr>
<tr>
<td>30</td>
<td>M 5</td>
<td>23</td>
<td>17</td>
<td>4</td>
<td>8,5</td>
</tr>
</tbody>
</table>

**Identification No.**

- 1 with grub screw
- 2 with collet

**Type**
- N Cover neutral
- M Cover with indicator point

**Information**

- Control knobs GN 726.1 (with extension for scale) → Page 344
Control knobs GN 726 → Page 342
Control knobs GN 726.1 → Page 344
Control knobs GN 726.2 → Page 345
Scale rings GN 736.1 → Page 179
Stainless Steel-Control knobs GN 436 → Page 346
Stainless Steel-Control knobs GN 436.1 → Page 347
Control knobs GN 723.4 → Page 348
Indexing mechanisms, Control knobs, Adjustable slide units

**GN 726.1**  
**Control knobs**

The light grey cover of the control knobs GN 726.1 shrouds the fixing components as well as the shaft end. The cover also lends itself for a logo or other symbols.

The collet version permits a simple adjustment of the types with scale or arrow.

Scale and arrow on the control knobs are indelibly marked and easily legible.

Besides the standard scale (Type S) the control knobs can be supplied with any type of graduation.

Regarding design, numbering run, numbering position and numbering sequence of the scale please see the layout for scale knobs on the order sheet „How to order Graduations“  

<table>
<thead>
<tr>
<th>Type</th>
<th>Identification No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1 with grub screw</td>
</tr>
<tr>
<td>B</td>
<td>2 with collet</td>
</tr>
</tbody>
</table>

### Specification

- Aluminium anodized, black
- Scale (Type S) and arrow (Type A) white, engraved with laser precision
- Cover  
  Plastic, light grey
- Collet / hexagon nut  
  Brass
- Stainless Steel-Grub screw DIN 916 with internal hexagon and serrated point  
  ISO-Fundamental Tolerances  
  RoHS compliant

### Information

The light grey cover of the control knobs GN 726.1 shrouds the fixing components as well as the shaft end. The cover also lends itself for a logo or other symbols.

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### On request

- special graduations  
  see „How to order Graduations“  
  Page 337

---

<table>
<thead>
<tr>
<th>(d_1)</th>
<th>(d_2)</th>
<th>(d_3)</th>
<th>(d_4)</th>
<th>(d_5)</th>
<th>(d_6)</th>
<th>(d_7)</th>
<th>(h_1)</th>
<th>(h_2)</th>
<th>(h_3)</th>
<th>(h_4)</th>
<th>(l)</th>
<th>(t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>B 5</td>
<td>-</td>
<td>16</td>
<td>14</td>
<td>M 4</td>
<td>20</td>
<td>22</td>
<td>16</td>
<td>4,3</td>
<td>8</td>
<td>12,5</td>
<td>-</td>
</tr>
<tr>
<td>27</td>
<td>B 6</td>
<td>-</td>
<td>Z 6</td>
<td>20</td>
<td>18</td>
<td>M 4</td>
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<td>26</td>
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<td>4,3</td>
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<td>14</td>
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<tr>
<td>34</td>
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<td>B 8</td>
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<td>42</td>
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<td>B 10</td>
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<td>M 5</td>
<td>40</td>
<td>34</td>
<td>28</td>
<td>4</td>
<td>11</td>
<td>16</td>
</tr>
</tbody>
</table>

### How to order

**GN 726.1-42-B10-A-1**

1. \(d_1\)  
2. \(d_2\) and \(d_3\)  
3. Type  
4. Identification No.
Control knobs GN 726.2

How to order

1. \( d_1 \)
2. \( d_2 \) (H8 Bore)
3. \( d_3 \) (Collet)
4. \( d_4 \)
5. \( d_5 \)
6. \( d_6 \)
7. \( d_7 \)
8. \( h_1 \)
9. \( h_2 \)
10. \( h_3 \)
11. \( h_4 \)
12. \( l \)
13. \( t \)

<table>
<thead>
<tr>
<th>( d_1 )</th>
<th>( d_2 ) H8 Bore</th>
<th>( d_3 ) Collet</th>
<th>( d_4 )</th>
<th>( d_5 )</th>
<th>( d_6 )</th>
<th>( d_7 )</th>
<th>( h_1 )</th>
<th>( h_2 )</th>
<th>( h_3 )</th>
<th>( h_4 )</th>
<th>( l )</th>
<th>( t )</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>B 5</td>
<td>-</td>
<td>16</td>
<td>14</td>
<td>M 4</td>
<td>27,5</td>
<td>22</td>
<td>16</td>
<td>4,3</td>
<td>8</td>
<td>12,5</td>
<td>-</td>
</tr>
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<td>27</td>
<td>B 6</td>
<td>-</td>
<td>Z 6</td>
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<td>18</td>
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<td>24</td>
<td>4,2</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>42</td>
<td>B 8</td>
<td>B 10</td>
<td>Z 10</td>
<td>32</td>
<td>30</td>
<td>M 5</td>
<td>50</td>
<td>34</td>
<td>28</td>
<td>4</td>
<td>11</td>
<td>16</td>
</tr>
</tbody>
</table>

Information

The light grey cover of the control knobs GN 726.2 shrouds the fixing components as well as the shaft end. The cover also lends itself for a logo or other symbols.

The collet version permits a simple adjustment of the types with scale or arrow.

Besides the standard scale (Type S) the control knobs can be supplied with any type of graduation.

Regarding design, numbering run, numbering position and numbering sequence of the scale please see the layout for scale knobs on the order sheet „How to order Graduations“ → Page 337

see also...

- Control knobs GN 723.4
  (Aluminium, anodized, natural colour) → Page 348

On request

- special graduations
  see „How to order Graduations“ → Page 337

Specification

- Aluminium anodized, black
- Scale ring Plastic, black pressed on
- Arrow (Type A) and scale (Type S) white, engraved with laser precision
- Cover Plastic, light grey
- Collet / hexagon nut Brass
- Stainless Steel-Grub screw DIN 916 with internal hexagon and serrated point
- ISO-Fundamental Tolerances → Page 1132
- RoHS compliant

How to order

GN 726.2-27-Z6-S-2

1. \( d_1 \)
2. \( d_2 \) (H8 Bore)
3. \( d_3 \) (Collet)
4. Type
5. Identification No.
GN 436
Stainless Steel-Control knobs

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 d₁</td>
<td>2 d₂</td>
<td>3 d₃</td>
<td>4 h</td>
<td>5 Length l</td>
<td>6 t min.</td>
</tr>
<tr>
<td>24 B 5 B 6 M 4</td>
<td>16</td>
<td>4</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 B 6 B 8 M 4</td>
<td>18</td>
<td>4</td>
<td>11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Specification**
- Stainless Steel AISI 304
  - matt shot-blasted
- Indicator point (Type M)
  - engraved with laser precision
- Stainless Steel-Grub screw DIN 916
  - with internal hexagon and serrated point
- RoHS compliant

**Information**
see also...
- Stainless Steel-Knurled nuts GN 536  Page 321

**How to order**
GN 436-24-B6-N-MT

1 d₁
2 d₂
3 Type
4 Finish
GN 436.1 | Stainless Steel-Control knobs

Indexing mechanisms, Control knobs, Adjustable slide units

1. Bore
2. Scale and arrow on the Stainless Steel-control knobs GN 436.1 are indelibly marked and easily legible.
3. Besides the standard scale (Type S) the control knobs can be supplied with any type of graduation.
4. Regarding design, numbering run, numbering position and numbering sequence of the scale please see the layout for scale knobs on the order sheet „How to order Graduations“ Page 337

<table>
<thead>
<tr>
<th>d₁</th>
<th>d₂ H8 Bore</th>
<th>d₃</th>
<th>d₄</th>
<th>h₁</th>
<th>h₂</th>
<th>Length</th>
<th>t min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>B 5</td>
<td>B 6</td>
<td>22</td>
<td>M 4</td>
<td>24</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>28</td>
<td>B 6</td>
<td>B 8</td>
<td>26</td>
<td>M 4</td>
<td>27</td>
<td>9</td>
<td>13</td>
</tr>
</tbody>
</table>

**Specification**
- Stainless Steel AISI 304 - matt shot-blasted
- Scale (Type S) and arrow (Type A) engraved with laser precision
- Stainless Steel-Grub screw DIN 916 with internal hexagon and serrated point
- ISO-Fundamental Tolerances Page 1132
- Stainless Steel characteristics Page 1144
- RoHS compliant

**Information**

1. d₁
2. d₂
3. Type
4. Finish

GN 436.1-28-B6-S-MT
Control knobs GN 723.4 can be combined with reference flanges GN 723.3 which offer the following advantages:

- they are provided with a reference mark relating to the scale on the control knobs
- they give additional support to the control shaft,
- the version with a friction ring prevents unexpected movement through vibration.

Scale and arrow on the control knobs are indelibly marked and easily legible.

Besides the standard scale (Type S) they can be supplied with any type of graduation.

Regarding design, numbering run, numbering position and numbering sequence of the scale please see the layout for scale knobs on the order sheet „How to order Graduations” → Page 337

see also...

- Reference flanges GN 723.3 → Page 350

Information

Control knobs GN 723.4 can be combined with reference flanges GN 723.3 which offer the following advantages:

- they are provided with a reference mark relating to the scale on the control knobs
- they give additional support to the control shaft,
- the version with a friction ring prevents unexpected movement through vibration.

Scale and arrow on the control knobs are indelibly marked and easily legible.

Besides the standard scale (Type S) they can be supplied with any type of graduation.

Regarding design, numbering run, numbering position and numbering sequence of the scale please see the layout for scale knobs on the order sheet „How to order Graduations” → Page 337

see also...

- Reference flanges GN 723.3 → Page 350

### Specification

- Aluminium anodized, natural colour
- Scale (Type S) and arrow (Type M) engraved with laser precision
- Stainless Steel-Grub screw DIN 916 with internal hexagon and serrated point
- ISO-Fundamental Tolerances → Page 1132
- RoHS compliant

### Accessory

- Reference flanges GN 723.3 are to be ordered separately

### On request

- special graduations see „How to order Graduations” → Page 337

### Table

<table>
<thead>
<tr>
<th>d₁</th>
<th>d₂ H8 Bore</th>
<th>d₃ −0,2</th>
<th>d₄</th>
<th>d₅</th>
<th>l₁</th>
<th>l₂</th>
<th>l₃</th>
<th>l₄</th>
<th>t₁</th>
<th>t₂</th>
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<tr>
<td>27</td>
<td>B 6</td>
<td>-</td>
<td>33,5</td>
<td>23,5</td>
<td>M 4</td>
<td>25,5</td>
<td>7,5</td>
<td>10,5</td>
<td>12,5</td>
<td>23,5</td>
</tr>
<tr>
<td>34</td>
<td>B 6</td>
<td>B 8</td>
<td>41</td>
<td>29,5</td>
<td>M 5</td>
<td>29,5</td>
<td>9,5</td>
<td>13,5</td>
<td>13</td>
<td>26,5</td>
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<tr>
<td>42</td>
<td>B 8</td>
<td>B 10</td>
<td>50</td>
<td>37,5</td>
<td>M 5</td>
<td>33,5</td>
<td>10,5</td>
<td>15,5</td>
<td>15</td>
<td>30,5</td>
</tr>
</tbody>
</table>
Control knob GN 723.4 combined with a reference flange GN 723.3 → Page 350
Reference flanges GN 723.3 are used together with control knobs GN 723.4 which offer the following advantages:
- they have a reference mark to line up with the control knob scale,
- they offer additional support for the control shaft,
- the version with friction ring prevents an unexpected movement of the control knob by vibration.

### Specification
- Aluminium anodized, black
- Reference arrow white, engraved with laser precision
- Clamp ring Rubber
- Friction ring Polyamide
- ISO-Fundamental Tolerances → Page 1132

### Information
Reference flanges GN 723.3 are used together with control knobs GN 723.4 which offer the following advantages:
- they have a reference mark to line up with the control knob scale,
- they offer additional support for the control shaft,
- the version with friction ring prevents an unexpected movement of the control knob by vibration.

### How to order
- **GN723.3-50-B8-A**
  1. \(d_1\)
  2. \(d_2\)
  3. Type

---

**Reference flanges GN 723.3**

**Control knobs GN 723.4** → Page 348
Control knobs GN 729 are usually selected for applications which require a limited movement within 180°.

With the aid of limiting pins which protrude into the circular groove the angle of rotation can be restricted. The bore $d_4$ is for a spring plunger GN 614 to act as a simple detent.

The indexing line is indelible and visible from two sides.

**Specification**
- Aluminium anodized, black
- Indexing line white, engraved with laser precision
- Stainless Steel-Grub screw DIN 916 with internal hexagon and serrated point
- ISO-Fundamental Tolerances → Page 1132

**Information**

Control knobs GN 729 are usually selected for applications which require a limited movement within 180°.

With the aid of limiting pins which protrude into the circular groove the angle of rotation can be restricted. The bore $d_4$ is for a spring plunger GN 614 to act as a simple detent.

The indexing line is indelible and visible from two sides.

<table>
<thead>
<tr>
<th>$d_1$</th>
<th>$d_2$ H8 Bore</th>
<th>$b$</th>
<th>$d_3$</th>
<th>$d_4$</th>
<th>$d_5$</th>
<th>$l_1$</th>
<th>$l_2$</th>
<th>$t_1$ min.</th>
<th>$t_2 +0,2$</th>
<th>$s \pm 0,3$</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>B 6</td>
<td>B 8</td>
<td>28</td>
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<td>6</td>
<td>20</td>
<td>20</td>
<td>7,5</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>42</td>
<td>B 8</td>
<td>B 10</td>
<td>35</td>
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<td>6</td>
<td>30</td>
<td>22</td>
<td>7,5</td>
<td>16</td>
<td>4</td>
</tr>
</tbody>
</table>

**How to order**

GN 729-42-B8

1. $d_1$
2. $d_2$
Control knobs with adjustable spindle

**Information**

Control knobs with adjustable spindle GN 727 allow precise adjustment or aligning i.e. of a positive stop. The spindle thread is without backlash.

The graduations on the control knob are non-abrasive and well legible,

The light grey cover shrouds the fixing components as well as the shaft end.

**Specification**

- **Body**
  - Steel
  - matt chrome plated

- **Spindel**
  - Steel
  - blank

- **Control knob**
  - Aluminium
  - anodized, black

- **Scales**
  - engraved with laser precision

- **Cover**
  - Plastic, light grey

- **RoHS compliant**

**How to order**

GN727-27-A-SR

<table>
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<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>d₁</td>
<td>Type</td>
<td>Coding</td>
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<tr>
<td>27</td>
<td>M 6</td>
<td>SR</td>
</tr>
<tr>
<td>34</td>
<td>M 8</td>
<td>SL</td>
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<tr>
<th>Adjusted range</th>
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<tr>
<td>M 12 x 1</td>
<td>6,4</td>
<td>0,2</td>
</tr>
<tr>
<td>M 16 x 1</td>
<td>8,5</td>
<td>0,2</td>
</tr>
</tbody>
</table>

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**Table**

<table>
<thead>
<tr>
<th>d₁</th>
<th>d₂</th>
<th>d₃</th>
<th>d₄</th>
<th>d₅</th>
<th>d₆</th>
<th>d₇</th>
<th>b</th>
<th>h</th>
<th>k₁</th>
<th>k₂</th>
<th>l₁ + 0,2</th>
<th>l₂</th>
<th>l₃</th>
<th>s</th>
<th>w</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>M 6</td>
<td>M 12 x 1</td>
<td>6,4</td>
<td>18</td>
<td>4,3</td>
<td>38</td>
<td>20</td>
<td>4,3</td>
<td>28</td>
<td>22</td>
<td>54</td>
<td>19,5</td>
<td>37,5</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>34</td>
<td>M 8</td>
<td>M 16 x 1</td>
<td>8,5</td>
<td>23</td>
<td>5,3</td>
<td>50</td>
<td>25</td>
<td>4,2</td>
<td>36</td>
<td>30</td>
<td>67</td>
<td>23,5</td>
<td>45,5</td>
<td>11</td>
<td>15</td>
</tr>
</tbody>
</table>

---

**Diagram**

Type A

2 Bores for socket head cap screw DIN 912-M4/M5

Type B

2 Bores for socket head cap screw DIN 912-M4/M5

**Type**

- A Fixing hole parallel to the spindle axle
- B Fixing hole vertical to the spindle axle

**Coding**

- SR with scale 0,1...0,9
  - 50 graduations ascending clockwise
- SL with scale 0,1...0,9
  - 50 graduations ascending anti-clockwise
Control knobs with adjustable spindle GN 727 - Complementary dimensions with technical details
Indexing mechanisms GN 200 replace and simplify complicated indexing and safety mechanisms. Besides the standard scale (Type AS) the control knob version may be supplied with any scale. In such cases, it is recommended to use the matt chrome plated version since the colour contrast is better. Regarding design, numbering run, numbering position and numbering sequence of the scale please see the layout for scale rings on the order sheet „How to order Graduations“ → Page 337

see also...

- Stainless Steel-Indexing mechanisms GN 200 → Page 356
- Indexing levers GN 215 → Page 360
- Adjustable knobs GN 700 (with stepless positioning) → Page 358

**Specification**
- Steel blackened
- Type AS:
  - Control knob matt chrome plated
    - Scale engraved with laser precision black
    - Reference line on location ring
- Keyway P9 DIN 6885/1 for bore K 10 → Page 1124
  Keyway P9 DIN 6885/2 for bores > K 10 → Page 1125
- Fixed cylindrical handles GN 539
  Plastic, Technopolymer
  black, shiny finish
- ISO-Fundamental Tolerances → Page 1132
- RoHS compliant

**Information**

On request

- Special graduations
  see „How to order Graduations“ → Page 337

---

### GN 200-44-K12-A

**How to order**

1. \(d_1\)
2. \(d_2\)
3. Type

---

### Table

<table>
<thead>
<tr>
<th>(d_1)</th>
<th>(d_2)</th>
<th>(d_3)</th>
<th>(d_4)</th>
<th>(d_5)</th>
<th>(d_6)</th>
<th>(l_1)</th>
<th>(l_2)</th>
<th>(l_3)</th>
<th>(l_4)</th>
<th>(w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>K 10</td>
<td>K 12</td>
<td>-</td>
<td>33</td>
<td>23</td>
<td>23</td>
<td>33</td>
<td>37</td>
<td>6</td>
<td>31</td>
</tr>
<tr>
<td>52</td>
<td>K 12</td>
<td>K 14</td>
<td>K 16</td>
<td>42</td>
<td>26</td>
<td>31,5</td>
<td>41,8</td>
<td>37,5</td>
<td>6</td>
<td>31,5</td>
</tr>
</tbody>
</table>

*Stainless Steel*:
- Indexing mechanisms GN 200
- Indexing levers GN 215
- Adjustable knobs GN 700 (with stepless positioning)
Continuation of GN 200 Indexing mechanisms

With these indexing mechanisms, shaft and lead screws can be turned and positioned in steps of 6° or multiples of it.

**Description**

The indexing mechanism is a self-contained unit, all the adjusting and securing components are housed in the smallest possible space. The unit consists of three main parts:

- **Bushing** – can be connected to the shaft with a key or crossdowel.
- **Location ring** – is screwed and doweled to the machine or equipment. The bushing is also a bearing for the location ring.
- **Knurled housing** – providing engagement between the locating ring and the shaft which can be turned or positioned.

In the locked position, the knurled housing via the internal teeth (60) connects the locating ring and the bush (both via external teeth), the latter being connected to the shaft. To turn the shaft, the knurled housing is pulled out against the spring pressure, disengaging from the location ring, but still engaged with the bush.

**More information**

With 60 teeth, the following divisions can be achieved: 2, 3, 4, 5, 6, 10, 20, 30.

A simple method provides indexing of the shaft to limited number of positions only, i.e. every 120°.

For this purpose, the location ring is manufactured with a dowel which allows engagement only when the bushing is provided with a corresponding hole (see assembly examples).

This hole can be manufactured oversize as the dowel is for rough positioning only. Accurate positioning is maintained via the teeth.

Knurled housing and tension levers can be supplied with scales and symbols.

With teeth, a more accurate and wear-resistant indexing mechanism is obtained than with single dowel locations.

When a very high torque is to be transmitted, engaging and disengaging of the teeth is made difficult due to the small clearance, i.e. the friction between them. In such cases, indexing levers GN 215 are recommended.
**Stainless Steel-Indexing mechanisms**

Stainless Steel-Indexing mechanisms GN 200 replace and simplify complicated indexing and safety mechanisms. Besides the standard scale (Type AS) the control knob version may be supplied with any scale.

Regarding design, numbering run, numbering position and numbering sequence of the scale please see the layout for scale rings on the order sheet „How to order Graduations“ → Page 337 see also...

- **Applications and more information to GN 200** → Page 354

**Specification**

- Stainless Steel AISI 303
- Type AS:
  - Scale engraved with laser precision
  - Reference line on location ring
- Keyway P9 DIN 6885/1 for bore K 10 → Page 1124
  Keyway P9 DIN 6885/2 for bores > K 10 → Page 1125
- ISO-Fundamental Tolerances → Page 1132
- Stainless Steel characteristics → Page 1144
- RoHS compliant

**On request**

- Special graduations see „How to order Graduations“ → Page 337

**Information**

Stainless Steel-Indexing mechanisms GN 200 replace and simplify complicated indexing and safety mechanisms. Besides the standard scale (Type AS) the control knob version may be supplied with any scale.

Regarding design, numbering run, numbering position and numbering sequence of the scale please see the layout for scale rings on the order sheet „How to order Graduations“ → Page 337 see also...

- **Applications and more information to GN 200** → Page 354

**How to order**

1. $d_1$ 
2. $d_2$ 
3. Type 
4. Stainless Steel

<table>
<thead>
<tr>
<th>$d_1$</th>
<th>$d_2$</th>
<th>$d_3$</th>
<th>$d_4$</th>
<th>$d_5$</th>
<th>$l_1$</th>
<th>$l_2$</th>
<th>$l_3$</th>
<th>$w$</th>
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<tbody>
<tr>
<td>44</td>
<td>K 10</td>
<td>K 12</td>
<td>-</td>
<td>33</td>
<td>23</td>
<td>33</td>
<td>37</td>
<td>6</td>
</tr>
<tr>
<td>52</td>
<td>K 12</td>
<td>K 14</td>
<td>K 16</td>
<td>42</td>
<td>31,5</td>
<td>41,8</td>
<td>37,5</td>
<td>6</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Stainless Steel AISI 303</th>
<th><strong>NI</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type AS:</td>
<td></td>
</tr>
<tr>
<td>- Scale engraved with laser precision</td>
<td></td>
</tr>
<tr>
<td>- Reference line on location ring</td>
<td></td>
</tr>
<tr>
<td>Keyway P9 DIN 6885/1 for bore K 10 → Page 1124</td>
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<td>Keyway P9 DIN 6885/2 for bores &gt; K 10 → Page 1125</td>
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<tr>
<td>ISO-Fundamental Tolerances → Page 1132</td>
<td></td>
</tr>
<tr>
<td>Stainless Steel characteristics → Page 1144</td>
<td></td>
</tr>
<tr>
<td>RoHS compliant</td>
<td></td>
</tr>
</tbody>
</table>
Indexing mechanisms GN 200 → Page 354
Stainless Steel-Indexing mechanisms GN 200 → Page 356
Indexing levers GN 215 → Page 360
Adjustable knob GN 700 → Page 358
Adjustable knobs
with stepless positioning

**Type**
- A with arrow
- B neutral, without arrow or scale
- S with standard scale 0...9
- KS with customized scale

**Specification**
- Attachment part and bush
  Steel blackened
- Blocking mechanism
  Steel hardened and ground
- Scale ring and rotating knob
  Aluminium black anodized
- Scale / arrow
  - engraved with laser precision
  - centered between two mounting holes
- ISO-Fundamental Tolerances ➔ Page 1132

**Information**
With this adjustable knob GN 700 a shaft can be infinitely adjusted in both directions. The anti-backlash mechanism with a max. load of 15 Nm ensures the firm locking of the shaft in any position.

This mechanism prevents any uncontrolled movement of the shaft. The locking action is a safety feature to prevent unwanted re-adjustments caused by backlash and vibration.

Scale and arrow on the control knobs are indelibly marked and easily legible.

Besides the standard scale (Type AS) the control knob version may be supplied with any other scale (Type KS).

Regarding design, numbering run, numbering position and numbering sequence of the scale please see the layout for scale rings on the order sheet „How to order Graduations“ ➔ Page 337

**On request**
- special graduations
  see „How to order Graduations“ ➔ Page 337

**How to order**

GN 700-66-K14-S

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>d₁</td>
<td>d₂ H7 Bore with keyway</td>
<td>d₃</td>
</tr>
<tr>
<td>66</td>
<td>K 12</td>
<td>K 14</td>
</tr>
<tr>
<td>d₄ -0,2</td>
<td>d₅</td>
<td>l₁</td>
</tr>
<tr>
<td>55</td>
<td>5,5</td>
<td>44</td>
</tr>
<tr>
<td>l₂</td>
<td>l₃</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

**Reference arrow**
- for types A, S and KS

**3 Bores for socket head cap screws DIN 7984-M5**

**Keyway P9 DIN 6885/2**

**How to order Graduations** ➔ Page 337
Description

The anti-backlash mechanism which operates on the principle of a bidirectional freewheeling and antireversing basis allows the transfer of movement in both directions without backlash. The adjustable knob is not suitable for applications on machines or equipments which are exposed to vibrations.

The bush is connected by the key and keyway to the revolving shaft.

The location ring remains static and centrally positioned by the bushing and the two pinch rollers, fixed to the machine frame or housing by three screws.

The rotating knob with the knurled barrel is carried by the bush.

The scale ring is firmly anchored to the bush and the driven shaft by two countersunk screws.

If the knob is repositioned, one of the follower pins – depending on the direction of rotation – pushes the pinch roller against the spring into an idling position which releases the bush and shaft to rotate freely.

The second follower pin on the opposite side reduces the movement of its pinch roller and ensures at the same time a firm grip and forward movement of the bush while the first pinch roller remains in an idling position.

When releasing the knob, the spring will push the pinch roller back into the grip position, thus linking the bush again with the static section.

The scale ring is connected firmly with the bush and any readjustment of the shaft can be accurately controlled.

This infinitely adjustable knob cannot, however, be used in such cases where the shaft to be adjusted runs ahead of the adjustment. The anti-backlash mechanism in this knob cannot be used as a bearing for the driven shaft.

Hints for installation

A perfect functioning can only be guaranteed if the shaft of the machine is positioned at a perfect right angle to the contact surface of the static part.
With indexing levers GN 215 shafts can be turned through a predetermined angle and positively locked. To index, lift the lever against spring pressure from serrations (one hand control).

Limiting the indexing angle can be achieved with two dowels (sketch).

The bush is connected to the shaft via keyway.

The location flange is bolted to the machine with two socket head cap screws (M5).

The lever, via the location pin, provides the connection between shaft and location flange.

The serrations are protected from swarf and similar particles by the cover. This cover can be inserted by hand (elastic segments engage into a groove) and removed with a screw driver.

see also...

- Indexing mechanisms GN 200 → Page 354
- Adjustable knob GN 700 (with stepless positioning) → Page 358
Technical and assembly instructions

The location pin is a wedge-type as standard, which guarantees backlash-free positioning and also achieving easy engagement and disengagement. Special serrations and dowel pins which restrict the indexing angle can be produced to customers' requirement. Please ask for a quotation.

If backlash-free positioning is not required, a dowel pin (made from a grub screw) can be used. The serrations can be made square or with dowels and suitable holes. Such holes have to be made large enough to ensure that the dowel is not restricted on engagement (lever swivel radius).

Smallest available angle for special serrations:
Size 54 - 11°
Size 60 - 9°

Smaller angles can be achieved with suitable serrations and dowels.

Milling cutter for standard serrations can be supplied.
Adjustable slide units

Description

The adjustable slide units GN 900 are a work holding system which can accommodate almost any type of application.

Four standard sizes are available with different slide widths i.e. 30, 50, 80 and 120 mm which again cover almost a full specific range of applications.

As standard for each slide width there are externally guided slides with different openings. The design of these adjustable slide units can accommodate outsize components.

These adjustable slide units can be combined with a range of adaptor components to bring the adjustable slide unit into any required position whether horizontal, vertical or any other angular position for machining operations. A unique clamping technique (design features page 364) allows simple and rapid workpiece clamping.

All components are in aluminium, stainless steel and plastic material which makes the adjustable slide units with control knob (Type D) a corrosion free unit.

A range of different operating features with or without digital position indicators is also available. In addition there is a range of other accessories.

Other features

- slides in anodized aluminium
- high load ratings
- favourable friction values
- high quality slideways by virtue of the anodized surface hardness
- backlash free shaft adjustment
- fine adjustment to 0,05 mm
- scale rings with zero position
- adjustable clamping levers to suit the positioning of the slides

Application examples

- Precision positioning of soldering / welding heads
- Adjustment of inkjet printers
- Adjustment of measurement cameras
- Adjustment of laser heads
- Re-adjustment of back stops
- Adjustment of sensors
Adjustable slide units

The manually operated rotary table GN 900.6 is a positioner which extends the range of applications for the adjustable slide units considerably.
This rotary table can, of course, also be used without the adjustable slide units.

The adjustable assembly X-Y consisting of two adjustable slide units GN 900 and an X - Y connecting set GN 900.2 with a mounting plate GN 900.4.

The adjustable assembly X-Y-Z consisting of three adjustable slide units GN 900, X- and Z-axis with position indicator, plus rotary table GN 900.6 mounted on Z-axis, assembled on mounting plate GN 900.4.

The adjustable assembly X-Y consisting of two adjustable slide units GN 900, Y-axis with rotary plate GN 900.5 positioned at a horizontal cross angle of 120°.

Adjustable slide unit type S with a mounted pneumatic cylinder.
Adjustable slide units

The outer slide is made of a press formed block of anodized aluminum extrusion which is usually the moving part. As a standard there is usually one outer slide size for each outside slide length on which the connecting sets GN 900.2 and mounting plates GN 900.4 and rotary plates GN 900.5 can be mounted. Special lengths can be supplied.

The inner slide is also made of a press formed block of anodized aluminum extrusion which is the carrier. The guides are made of two high grade shafts in stainless steel.

High load ratings and favourable friction values is achieved by the anodized hard guide surfaces.

The length of the inner slide is determined by the length of the outer slide by adding the stroke.

The backlash free drive unit consists of an end plate and a preloaded stainless steel spindle, ball bearing mounted, and a preloaded plastic nut.

The thread pitches are:
- Slide size 30 : 0.5 mm
- Slide size 50, 80, 120 : 1.0 mm

For positioning a scale is used (one graduation line = 0.05 mm adjustable range) which can be reset to „0“.

Permissible load values of the adjustable slide units GN 900

<table>
<thead>
<tr>
<th>b</th>
<th>F₁ in N</th>
<th>F₂* in N</th>
<th>F₃ in N</th>
<th>M₁ in Nm in relation to a</th>
<th>M₂ in Nm</th>
<th>M₃ in Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>150</td>
<td>40</td>
<td>65</td>
<td>2a = 45</td>
<td>2</td>
<td>1</td>
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<tr>
<td>50</td>
<td>300</td>
<td>120</td>
<td>215</td>
<td>4a = 70</td>
<td>5</td>
<td>3</td>
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<tr>
<td>80</td>
<td>500</td>
<td>150</td>
<td>365</td>
<td>8a = 120</td>
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<tr>
<td>120</td>
<td>1000</td>
<td>300</td>
<td>700</td>
<td>15a = 160</td>
<td>20</td>
<td>12</td>
</tr>
</tbody>
</table>

* F₂ is the max/permissible sliding thrust

Fastening units GN 900.1 consist to two mounting rails. On the latter, the adjustable slide unit is mounted on a base plate from the operator’s side.

Connecting sets GN 900.2 consist of four rails. With the latter, two adjustable slide units are combined to form an adjustable assembly X – Y (or Y – Z).

Connecting sets GN 900.3 consist of two plates. With the latter two adjustable slide units combined to form an adjustable assembly X-Z (or Y-Z). If this slide has to be parallel to the reference axis this is achieved by using an additional plate (Type P).
Mounting plates GN 900.4 serve as an adaptor plate to be machined on the side which is required for mounting. By using a machined mounting plate further work on the actual slide can be eliminated.

The plate is fixed with the fastening unit GN 900.1 on the adjustable slide unit.

The rotary plate GN 900.5 allows oblique positioning of the adjustable slide unit at any angle.

Adjustable slide unit with mounting plate GN 900.4 fitted to the base plate by using fastening unit GN 900.1.

Adjustable slide unit X-Y, adjustable slide unit is fitted to the base plate using connecting set GN 900.2.

Adjustable slide unit X-Z, adjustable slide unit is connected together using the connecting set GN 900.3.

Adjustable slide unit X-Y, Y-slide with rotary plate GN 900.5 set shown in an angular position.
Adjustable slide units GN 900 can be combined with a range of adaptors to give various axis configurations. These fastening units and connecting sets (GN 900.1, GN 900.2, GN 900.3) can be clamped to the adjustable slide units in a rapid and simple way.

For fine adjustment there is a scale ring graduated in increments of 0.05 mm, with digital position indicator 0.02 mm.

Furthermore this adjustable slide units (Type D, with control knob) is rust proof.

see also...
- Additional constructional features → Page 362

How to order

GN 900-80-170-50-D-1

1. b without adjustable hand lever
2. with adjustable hand lever (only from b=50)

<table>
<thead>
<tr>
<th>b</th>
<th>Length l1 - stroke l2</th>
<th>d1</th>
<th>d2</th>
<th>d3</th>
<th>d4</th>
<th>d5</th>
<th>h1</th>
<th>h2</th>
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<tr>
<td></td>
<td>l1 - l2</td>
<td>l1 - l2</td>
<td>l1 - l2</td>
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<td>145-75</td>
<td>170-100</td>
<td>M6 x 1</td>
<td>M4</td>
<td>17</td>
<td>50</td>
</tr>
<tr>
<td>80</td>
<td>145-25</td>
<td>170-50</td>
<td>195-75</td>
<td>220-100</td>
<td>M8 x 1</td>
<td>M5</td>
<td>22</td>
<td>80</td>
</tr>
<tr>
<td>120</td>
<td>185-25</td>
<td>210-50</td>
<td>235-75</td>
<td>260-100</td>
<td>M10 x 1</td>
<td>M5</td>
<td>34</td>
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<table>
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<td>51</td>
<td>120</td>
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<td>16</td>
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<td>25</td>
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<td>41</td>
<td>33</td>
<td>75</td>
<td>25</td>
<td>80</td>
<td>2</td>
</tr>
</tbody>
</table>

Specification

- Slides / end plates
  Aluminium press formed anodized extrusion, natural colour
- Guide shafts
  Stainless Steel
- Drive
  - Lead spindle / ball bearing
    Stainless Steel
  - Lead nut
    Plastic
- Fixing screws
  Stainless Steel
- Control knob / Scale ring
  Aluminium, black anodized
- Disc handwheels GN 520 → Page 162
- Position indicator GN 954 → Page 390
- RoHS compliant

Information

Adjustable slide units GN 900 can be combined with a range of adaptors to give various axis configurations.

These fastening units and connecting sets (GN 900.1, GN 900.2, GN 900.3) can be clamped to the adjustable slide units in a rapid and simple way.

For fine adjustment there is a scale ring graduated in increments of 0.05 mm, with digital position indicator 0.02 mm.

Furthermore this adjustable slide units (Type D, with control knob) is rust proof.

see also...
- Additional constructional features → Page 362
4 Type **D** with Control knob

![Control knob diagram]

Type of control knob for sizes 50/80/120
Adjustable scale ring
Type of control knob for size 30

4 Type **H** with handwheel (from size 50 upwards)

![Handwheel diagram]

Adjustable scale ring

4 Type **DN** / Type **DR** with control knob and digital position indicator GN 954 (from size 50 upwards)

![Digital position indicator diagram]

Type **DN**
Figure in front of decimal point refers to the movement in mm

Type **DR**
Set ring to re-adjust the zero position of the position indicator
Zero position for slide and position indicator (standard type)
Type **DR** foreseen for front line of sight by vertical composition of slider (Z-axis)

4 Type **HN** / Type **HR** with handwheel and digital position indicator GN 954 (from size 50 upwards)

![Handwheel and digital position indicator diagram]

Type **HN**
Figure in front of decimal point refers to the movement in mm

Type **HR**
Zero position for slide and position indicator (standard type)
Type **HR** foreseen for front line of sight by vertical composition of slider (Z-axis)

4 Type **S** without adjustable spindle and operating element (i. e. for mounting a pneumatic cylinder)
GN 900.1  Fastening units

Fastening units GN 900.1 are fitted to the base of the adjustable slide units GN 900 from the operator’s side. The mounting is made on the outside ledge of the slide so that the inner slide can still be moved. A fastening unit GN 900.1 consists of two mounting rails. Four Stainless Steel-cap screws are included.

Specifications:
- Aluminium anodized, natural colour
- Socket head cap screw DIN 912 Stainless Steel
- RoHS compliant

<table>
<thead>
<tr>
<th>b</th>
<th>l₁</th>
<th>d₁ for cap screws DIN 912</th>
<th>d₂</th>
<th>h</th>
<th>l₂</th>
<th>l₃</th>
<th>l₄</th>
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<td>50</td>
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<td>3,3</td>
<td>M 3</td>
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<td>80</td>
<td>105</td>
<td>4,5</td>
<td>M 4</td>
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<td>105</td>
<td>92</td>
<td>14,5</td>
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<td>120</td>
<td>145</td>
<td>5,5</td>
<td>M 5</td>
<td>13,8</td>
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<td>145</td>
<td>131,8</td>
<td>14,5</td>
</tr>
</tbody>
</table>

Information

How to order

<table>
<thead>
<tr>
<th>GN900.1-80-105-A</th>
</tr>
</thead>
</table>

Page 368  |  Indexing mechanisms, Control knobs, Adjustable slide units
### GN 900.2 Connecting sets X-Y

#### Mounting example

**Small fixing plate**

**Connection piece**

**Mounting rail**

---

### Specification

- Aluminium anodized, natural colour
- Socket head cap screws DIN 912 Stainless Steel
- RoHS compliant

### Information

With connecting sets GN 900.2 two adjustable slide units GN 900 can be combined to produce an X-Y axis configuration.

This combination is achieved with a clamping system which eliminates the use of any kind of fixing holes in the slide.

The stationary base of the second adjustable slide unit is clamped on to the slide of the first unit to give the X-Y configuration. The slides on both units together give the X-Y movement.

The small fixing plate serves for the 90° alignment and fine adjustment of the XY-axis configuration.

All parts required to make up a set are included.

**see also...**

- *Adjustable slide units GN 900 → Page 366*

### How to order

**GN 900.2-50-67**

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<th>l₂</th>
<th>l₃</th>
<th>l₄</th>
<th>l₅</th>
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</tr>
<tr>
<td>80</td>
<td>105</td>
<td>M 4</td>
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<td>12,5</td>
<td>92</td>
<td>105</td>
<td>92</td>
<td>14,5</td>
</tr>
</tbody>
</table>
With connecting sets GN 900.3 two adjustable slide units GN 900 can be combined to produce an X-Z axis configuration.

The combination is created by using two connection plates which eliminate any type of fixing holes in the slides. At the same time the adjustable slide unit with the Z-axis can, to a limited extent (vertically to the Z-axis), still be adjusted.

In the case of a slide configuration of the Z-axis parallel to the reference axis (Type P) an adaptor plate (complete with a fastening set, small fixing plates and socket head cap screws) is required which is included in the set.

The small fixing plates serve for the 90° alignment of the Z-axis and fine adjustment of the adaptor plate (Type P).

All parts required to make up a set are included.

see also...
• Adjustable slide units GN 900 ➔ Page 366

### Specification

- Aluminium anodized, natural colour
- Grub screw DIN 912 Steel, zinc plated
- Socket head cap screws DIN 912 Stainless Steel
- RoHS compliant

### Information

<table>
<thead>
<tr>
<th>b</th>
<th>l₁</th>
<th>d₁</th>
<th>l₂</th>
<th>l₃</th>
<th>l₄</th>
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<td>50</td>
<td>50</td>
<td>M 5</td>
<td>67</td>
<td>32</td>
<td>8</td>
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<tr>
<td>80</td>
<td>80</td>
<td>M 6</td>
<td>105</td>
<td>52</td>
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<td>120</td>
<td>M 8</td>
<td>145</td>
<td>82</td>
<td>13</td>
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</tr>
</tbody>
</table>

How to order

GN 900.3-120-120-P
Installation example

Type S

Type P
Mounting plates GN 900.4

**Mounting example**

**Bore for mounting of rotary table GN 900.6 (Type B)**

- **Cap screw**
- **Mounting rail**
- **Small fixing plate**

**Mounting plates GN 900.4 type A are used for installing fixtures on the operator’s side. Type B is used for installing a rotary table GN 900.6.**

The mounting plate can be simply clamped on to the slide and no additional drilled holes are required.

The small fixing plates serves as an additional fine adjustment of the mounting plate with the adjustable slide unit.

All parts required to make up a set are included.

**Specification**

- Aluminium anodized, natural colour
- Socket head cap screws DIN 912
- Stainless Steel
- RoHS compliant

**Information**

Mounting plates GN 900.4 type A are used for installing fixtures on the operator’s side. Type B is used for installing a rotary table GN 900.6.

The mounting plate can be simply clamped on to the slide and no additional drilled holes are required.

The small fixing plates serve as an additional fine adjustment of the mounting plate with the adjustable slide unit.

All parts required to make up a set are included.

**How to order**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>l₁</td>
<td>Type</td>
</tr>
</tbody>
</table>

**GN 900.4-50-67-B**

- **Type**: A without retaining bores, B with retaining bores for rotary tables
**GN 900.5 | Rotary plates**

Rotary plates GN 900.5 allow rotation of one of the adjustable slide units at an off-set angle to the other. This possibility offers an additional axis configuration.

This alternative adaptor consists of two plates connected together in the centre so that they are rotatable. The lower plate is clamped to the lower sliding part while the upper one is clamped to the stationary base of the upper sliding unit.

The required parts include two fastening sets as well as the necessary socket head cap screws.

**Specification**
- Aluminium anodized, natural colour
- Socket head cap screws DIN 912 Stainless Steel
- RoHS compliant

**Information**

How to order

- GN 900.5-80-105

---

**Table**

<table>
<thead>
<tr>
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<th>h₁</th>
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<td>12</td>
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Rotary tables GN 900.6 is a turning unit for manual operation. To get the turning movement we use a high quality worm gear.

The rotary table is also fitted with a fast adjustment and for this purpose a grub screw on the side of the rotary disc has to be released. In addition the rotary disc can also be clamped via an easily accessible grub screw. In both cases internal conically shaped arresting components come into use.

**Specification**

- Rotary disc
  Stainless Steel AISI 303
- all other parts
  Steel (some zinc plated)
ad/or Brass
- Control knob
  Aluminium
  black anodized
- ISO-Fundamental Tolerances → Page 1132
- Stainless Steel characteristics → Page 1144
- RoHS compliant

**Information**

Rotary tables GN 900.6 is a turning unit for manual operation. To get the turning movement we use a high quality worm gear.

The rotary table is also fitted with a fast adjustment and for this purpose a grub screw on the side of the rotary disc has to be released. In addition the rotary disc can also be clamped via an easily accessible grub screw. In both cases internal conically shaped arresting components come into use.

**How to order**

| GN 900.6-55 | 1 d₁ |

**View from above**

Auxiliary hole to insert the two fixing screws (d₃)

**View from below**

Two bores for cap screw DIN 912

**Table:**

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<th>d₃ for cap screws DIN 912</th>
<th>d₄ H7 Bore depth</th>
<th>d₅ h₁ l₁ l₂ m₁ m₂ m₃ ±0.02 useable for mounting plates GN 900.4</th>
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<tbody>
<tr>
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<td>4 - 10</td>
</tr>
<tr>
<td>80</td>
<td>M 5 - 8</td>
<td>5,4</td>
<td>M 5</td>
<td>4 - 10</td>
</tr>
</tbody>
</table>
Continuation of GN 900.6 Rotary tables

<table>
<thead>
<tr>
<th>d₁</th>
<th>Rotating range</th>
<th>Concentricity tolerance</th>
<th>Circular runout tolerance</th>
<th>max. entry torque M₀</th>
<th>max. load capacity of rotary disc unclamped Mₖ</th>
<th>Max. load capacity of rotary disc clamped Mₖ</th>
<th>F max. in Newton</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>0° ∞</td>
<td>± 0,02</td>
<td>± 0,02</td>
<td>1,5 Nm</td>
<td>5 Nm</td>
<td>10 Nm</td>
<td>50</td>
</tr>
<tr>
<td>80</td>
<td>0° ∞</td>
<td>± 0,03</td>
<td>± 0,03</td>
<td>2,5 Nm</td>
<td>5 Nm</td>
<td>10 Nm</td>
<td>100</td>
</tr>
</tbody>
</table>
1.9 Position indicators

**GN 000.8**
Position indicators
Pendulum system analog
→ Page 383

**GN 952.1**
Adapter bushes
for position indicators GN 953, GN 954
→ Page 392

**GN 323.8**
Disc handwheels
for position indicators
Pendulum system
→ Page 384

**GN 953.6**
Clamping plates
for position indicators GN 953
→ Page 393

**GN 953**
Position indicators
digital, 5 Numbers
→ Page 388

**GN 954.6**
Clamping plates
for position indicators GN 954
→ Page 393

**GN 953.1**
Spacer plate
for position indicators GN 953
→ Page 389

**GN 954**
Position indicators
digital, 4 Numbers
→ Page 390

**GN 954.1**
Spacer plate
for position indicators GN 954
→ Page 391

**GN 954.3**
Hand knob
for position indicators GN 954
→ Page 391
1.9 Position indicators
Position indicators
Principles of operation / Examples of applications

Position indicators are mechanical measuring devices which indicate and monitor the movement of a machine component along a linear shaft or threaded lead spindle. They are used to move and give a read out of values such as lengths [m, mm], force [N], volumes [l], revolutions [rpm] etc.

Position indicators are split into the following categories:

Operating principle of the measuring mechanism

- Energized by a weighted pendulum and gravity (pendulum system) for connecting to a horizontal spindle
  GN 000.8  ➔ Page 383

- Self energized, direct or indirect, stationary system to be connected in any required position
  GN 953  ➔ Page 388
  GN 954  ➔ Page 390

Type of read out

- analogue (GN 000.8)
- digital (GN 953 / 954)

The movement is in most cases initiated by control systems. There is an extensive range of handwheels and hand knobs available which can be used for incorporating position indicators in their hubs.

Examples of applications

Handwheel with position indicators GN 000.8
Operating principle pendulum system, analogue read out

Applications:
Regulating rpm speed on steplessly adjustable gear boxes

Hand lever with position indicators GN 953 / GN 954
Operating principle stationary system (direct driven), digital read out

Applications:
Positioning of machine parts
Function

Fixed firmly to the housing or the operating element, the pointer shaft with the longer red pointer is mounted at the centre of the position indicator. The red pointer therefore shows the revolution of the spindle at a ratio of 1 to 1, at the same time turning in the same direction as the spindle. The pendulum is positioned freely on the same pointer shaft, with the pendulum not turning in sync but always held in the same position owing to its force of gravity.

The scale and the gear wheels required for the desired reduction ratio of the second pointer are mounted on this pendulum. The rotary motion of the operating element is now transferred to the second, shorter pointer via a gear wheel fixed to the pointer shaft and via the reduction gearing at the fixed pendulum. Any position (rotary position) of the spindle can now be read with accuracy on the scale.

Use

The outstanding feature of pendulum-type position indicators is that the measuring system is fully integrated in the operating element. During installation, they require no further measures on the machine side.

In principle, these position indicators have been designed solely for attachment to horizontal spindles, but the high precision of the mechanical measurement system (the pendulum system is mounted on ball bearings) and the extremely low centre of gravity allow these to be used also for spindles inclined by as much as 60°.

Selecting the reduction

While the longer red pointer shows the rotary motion of the spindle of a ratio of 1 to 1, the shorter black pointer makes only a fraction of the rotary motion defined by the reduction ratio.

The reduction ratio is selected depending on the maximum number of spindle revolutions over the entire range of adjustment. The preferred selection is the standard reduction ratio which is the same as or, if possible, slightly larger than the maximum number of revolutions.

Example:
Spindle adjustment range: 11 revolutions
Selected reduction ratio: 12 to 1
This selection gives virtually the whole scale range for the position indication.

Scale

The standard scales have divisions (number of graduation marks) matching the reduction ratio.

The numerical sequence also matches the reduction ratio depending on use, i.e. right turn (clockwise) or left turn (anti-clockwise).

If required and using a separately arranged table, the measured value corresponding the application in hand can be assigned to each scale number.

Special scales on request.
Position indicators
Pendulum system, analogue indication

Examples of 12:1 standard dial

Figures rising by
clockwise rotation

Figures rising by
anti-clockwise rotation
**Position indicators**

Pendulum system, analogue indication

---

**Table**

<table>
<thead>
<tr>
<th>( d_1 )</th>
<th>Reduction Counting gear</th>
<th>( d_2 )</th>
<th>( d_3 )</th>
<th>( l_1 )</th>
<th>( l_2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>2:1*</td>
<td>10:1</td>
<td>20:1</td>
<td>40:1</td>
<td>49,8</td>
</tr>
<tr>
<td>42</td>
<td>4:1*</td>
<td>12:1</td>
<td>24:1</td>
<td>48:1*</td>
<td>49,8</td>
</tr>
<tr>
<td>42</td>
<td>6:1*</td>
<td>15:1*</td>
<td>30:1</td>
<td>50:1*</td>
<td>49,8</td>
</tr>
<tr>
<td>42</td>
<td>8:1*</td>
<td>16:1*</td>
<td>36:1*</td>
<td>60:1*</td>
<td>49,8</td>
</tr>
<tr>
<td>60</td>
<td>2:1*</td>
<td>10:1</td>
<td>20:1</td>
<td>40:1*</td>
<td>68,5</td>
</tr>
<tr>
<td>60</td>
<td>4:1*</td>
<td>12:1</td>
<td>24:1</td>
<td>48:1*</td>
<td>68,5</td>
</tr>
<tr>
<td>60</td>
<td>6:1</td>
<td>15:1*</td>
<td>30:1</td>
<td>50:1*</td>
<td>68,5</td>
</tr>
<tr>
<td>60</td>
<td>8:1*</td>
<td>16:1*</td>
<td>36:1</td>
<td>60:1*</td>
<td>68,5</td>
</tr>
</tbody>
</table>

* not available from stock, requires a minimum order quantity

---

**Specification**

- Housing Plastic (Polyamide PA)
  - glass fibre reinforced
  - black, matt
- Sight glass Plastic (Polyamide PA)
  - clear glass, ageing proof
  - shock-resistant
- Housing / Sight glass
  - temperature resistant up to 100 °C
  - oil and solvent proof
  (not suitable for alcohol)
- Pointer Plastic
  - long pointer red
  - short pointer black
- Scale Aluminium
  - matt anodized
  - Graduation lines and numbers black
- Pendulum system on ball bearings
- Protection class IP 67
- RoHS compliant

**Information**

Position indicators GN000.8 are suitable for installation in various types of operating handles.

Points of special interest are:

- Housing, spindles of pointers and sight glass are all in **one piece** welded by ultrasonic process. They are spray water proof and corrosion proof (Protection class IP 67).
- The pendulum system is mounted on ball bearings for accurate display, and operational up to 60° C.
- The reducing ratio shows the number of revolutions (long red hand) required per 1 complete revolution of the small hand.

**see also...**

- More information to position indicators GN 000.8 → Page 381
- Hand wheels with GN 000.8 → Page 384
- IP Protection classes → Page 1137

---

**How to order**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>( d_1 )</td>
<td>Reduction</td>
<td>Type</td>
</tr>
</tbody>
</table>

**GN000.8-42-30-R**

---

**Position indicators**

Page 383
GN 323.8
Disc handwheels
for position indicators GN 000.8 / GN 000.3


Bore code
- B without keyway
- K with keyway

Type
- A without handle
- R with revolving handle

<table>
<thead>
<tr>
<th>d1</th>
<th>d2 H7</th>
<th>d3</th>
<th>d4</th>
<th>b</th>
<th>l1</th>
<th>l2 ≈</th>
<th>l3</th>
<th>Ø Handles</th>
<th>for position indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>10</td>
<td>26</td>
<td>20.5</td>
<td>13</td>
<td>16</td>
<td>48</td>
<td>3.5</td>
<td>16</td>
<td>Size 42 -</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>28</td>
<td>20.5</td>
<td>14</td>
<td>17</td>
<td>58</td>
<td>3.5</td>
<td>18</td>
<td>Size 42 -</td>
</tr>
<tr>
<td>125</td>
<td>12</td>
<td>31</td>
<td>25.5</td>
<td>15</td>
<td>18</td>
<td>61</td>
<td>4</td>
<td>22</td>
<td>Size 60 Size 60</td>
</tr>
<tr>
<td>160</td>
<td>14</td>
<td>36</td>
<td>29</td>
<td>18</td>
<td>20</td>
<td>67</td>
<td>4</td>
<td>24</td>
<td>Size 60 Size 60</td>
</tr>
<tr>
<td>200</td>
<td>18</td>
<td>42</td>
<td>33</td>
<td>20.5</td>
<td>24</td>
<td>75</td>
<td>4.5</td>
<td>25</td>
<td>Size 60 Size 60</td>
</tr>
<tr>
<td>250</td>
<td>22</td>
<td>48</td>
<td>37</td>
<td>23</td>
<td>28</td>
<td>81.5</td>
<td>4.5</td>
<td>25</td>
<td>Size 60 Size 60</td>
</tr>
</tbody>
</table>

Specification
- Aluminium Gravity die casting
  - Hub machined
  - Rim turned on all sides
  - Wheel body plastic coated
    - black, textured finish
- Rim concentric and square to bore IT 12
- Revolving handles GN 798
  Plastic, Technopolymer black, matt
- Keyway P9 DIN 6885 Page 1124
- Cross holes GN 110 Page 1127
- ISO-Fundamental Tolerances Page 1132
- RoHS compliant

Information
Handwheels GN 323.8 have a recessed hub to accept position indicators GN 000.8 / GN 000.3.
The hub dimensions (for fitting) correspond to those of disc handwheels GN 323 and/or handwheels to DIN 950.

see also...
- Position indicators GN 000.8 (Pendulum system, analogue indication) Page 383
- Countersunk washers GN 184 (for axial fixing) Page 542
- Disc handwheels GN 323 (without recess for position indicators) Page 163

Accessory
- Position indicators GN 000.8 / GN 000.3 are to be ordered separately.

How to order

<table>
<thead>
<tr>
<th>1</th>
<th>d1</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Bore code</td>
</tr>
<tr>
<td>3</td>
<td>d2</td>
</tr>
<tr>
<td>4</td>
<td>Type</td>
</tr>
</tbody>
</table>

GN323.8-125-K12-R
Installation sequence

1. Install the handwheel to the spindle and fix it with the grub screw or keyway/countersunk washer.
2. Turn the spindle to the starting point (0-position).
3. Move position indicator „by hand“ to the 0-position before mounting it.
4. Install the position indicator into the recess of the hub and fix it with a screw.
   Do not apply unnecessarily excessive torque to avoid deformation of the housing!
5. Rotate the handwheel and ascertain that the starting point of the spindle is aligned with the 0-position of the two pointers (GN 000.8) respectively pointer and counter (GN 000.3).

Should that not be the case, the screw has to be loosened and the position indicator adjusted. Tighten the screw again.
Operating principle

The position indicator is fitted with a hollow shaft which can be pushed directly on to the spindle.
The spindle revolutions are transmitted from the gear drive directly to a counter.
If this transmission method is used the position indicator must be fitted with a torque limiter. For this purpose a pin on the housing protrudes into a bore on the machine. The hollow shaft is fitted to the spindle and secured with a grub screw.

Application

Position indicators with direct driven counter are from the point of view of installation, not only relatively simple and reliable but also very accurate. The digital read out ensures rapid reading and resetting of the new position.
This position indicator is suitable for any type of installation, but it requires, however, a torque limiter on the machine side (Retaining system).
They are also suitable for motor driven spindles. For max. revolution please read the table in the data sheet.

Choice of counters

As a rule the choice of counter depends on the gradient of the thread on the spindle. As a guide line, the read out after one complete revolution starting from the zero (0) position.
The counter is for a pitch of 0,5 mm with two following decimals. For a pitch of 1mm with either 1 or 2 decimal points. All other gradients have 1 following decimal.
Furthermore there are counters with ascending numbers for clockwise rotation and ascending numbers for anti-clockwise rotation.
Position indicators
GN 953 → Page 388
GN 954 → Page 390
Position indicators

Position indicators GN 953 have a direct coupled drive with digital indication.

The two body parts are ultra-sonically welded, thus the housing is particularly sturdy and compact.

The foam rubber seal prevents the transmission of vibration to the counter mechanism and also has sealing properties.

Special attention was paid to the positioning of the read-out window. The numbers are easily legible and they are even enlarged by the magnifying effect of the sight glass. The decimal figures are in red and the last decimal is shown in ten line segments.

Counter

<table>
<thead>
<tr>
<th>Indication after one spindle revolution</th>
<th>corresponds to thread pitch</th>
<th>max. revolutions per minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>000.50</td>
<td>0.5</td>
<td>500</td>
</tr>
<tr>
<td>001.00</td>
<td>1.0</td>
<td>250</td>
</tr>
<tr>
<td>0001.0</td>
<td>1.0</td>
<td>1500</td>
</tr>
<tr>
<td>0002.0</td>
<td>2.0</td>
<td>1250</td>
</tr>
<tr>
<td>0002.5</td>
<td>2.5</td>
<td>1000</td>
</tr>
<tr>
<td>0003.0</td>
<td>3.0</td>
<td>830</td>
</tr>
<tr>
<td>0004.0 *</td>
<td>4.0 *</td>
<td>625</td>
</tr>
<tr>
<td>0005.0</td>
<td>5.0</td>
<td>500</td>
</tr>
<tr>
<td>0006.0</td>
<td>6.0</td>
<td>415</td>
</tr>
<tr>
<td>0010.0</td>
<td>10.0</td>
<td>250</td>
</tr>
</tbody>
</table>

* usable for linear actuators GN 291 Ø 40 and Ø 50

Information

Position indicators GN 953 have a direct coupled drive with digital indication.

The two body parts are ultra-sonically welded, thus the housing is particularly sturdy and compact.

The foam rubber seal prevents the transmission of vibration to the counter mechanism and also has sealing properties.

Special attention was paid to the positioning of the read-out window. The numbers are easily legible and they are even enlarged by the magnifying effect of the sight glass. The decimal figures are in red and the last decimal is shown in ten line segments.

How to order

1. Counter
2. pallet pin (front view)
3. Type
4. Colour

GN953-0005.0-AN-R-GR
Continuation of GN 953 Position indicators

Installation instructions for GN 953

With the adapter bushes GN 952.1 → Page 392, the hollow shaft (with Bore 20 H7) of the position indicator can be adapted to fit the spindle.

Before installation of the position indicator a bore for the torque limiting contact point is to be placed (see left).

The mounting of the position indicator is via the torque limiting contact point which is connected to the hollow spindle and secured with a grub screw.

Before completing the installation, turn the spindle to the starting point (0) position and zero the position indicator.

with clamping plates GN 953.6 → Page 393, spindles can be clamped and secured after adjusting.

---

**GN 953.1 | Spacer plate**

**Specification**

- Plastic (Polyamide PA)
  - black, matt

The previous position indicators GN 952 are replaced by position indicators GN 953, they are dimensionally reduced compared to GN 952.

The spacer plate is used as adapter in case the dimensions on the machine body are applied to match the previous model GN 952.

**How to order**

GN 953.1
Position indicators GN 954
Retaining system, digital indication

How to order
1 Counter
2 Installation (front view)
3 Type
4 Colour

GN 954-001.0-FN-R-GR

Counter

<table>
<thead>
<tr>
<th>indication after 1 spindle revolution</th>
<th>corresponds to thread pitch</th>
<th>max. revolutions per minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>00.50 0 0 5 0</td>
<td>0,5</td>
<td>500</td>
</tr>
<tr>
<td>01.00 0 1 0 0</td>
<td>1,0</td>
<td>250</td>
</tr>
<tr>
<td>001.0 0 0 1 0</td>
<td>1,0</td>
<td>1500</td>
</tr>
<tr>
<td>001.25 0 0 1 2 5</td>
<td>1,25</td>
<td>1500</td>
</tr>
<tr>
<td>001.5 0 0 1 5</td>
<td>1,5</td>
<td>1500</td>
</tr>
<tr>
<td>002.0 0 0 2 0</td>
<td>2,0</td>
<td>1250</td>
</tr>
<tr>
<td>002.5 0 0 2 5</td>
<td>2,5</td>
<td>1000</td>
</tr>
<tr>
<td>003.0 * 0 0 3 0</td>
<td>3,0</td>
<td>830</td>
</tr>
<tr>
<td>004.0 ** 0 0 4 0</td>
<td>4,0</td>
<td>625</td>
</tr>
<tr>
<td>005.0 0 0 5 0</td>
<td>5,0</td>
<td>500</td>
</tr>
<tr>
<td>006.0 0 0 6 0</td>
<td>6,0</td>
<td>415</td>
</tr>
<tr>
<td>008.0 0 0 8 0</td>
<td>8,0</td>
<td>315</td>
</tr>
<tr>
<td>010.0 0 0 1 0 0</td>
<td>10,0</td>
<td>250</td>
</tr>
</tbody>
</table>

* Suitable for linearer actuators GN 291 ff. Ø 18
** Suitable for linearer actuators GN 291 ff. Ø 30

Position indicators GN 954 are fitted with a direct drive counter with digital read out. Both housing sections are ultrasonically welded. This makes the housing particularly compact and stable.

The moss rubber seal prevents the transmission of vibration to the counter and also acts as a seal. The numbers are easily legible, which is assisted by the magnifying effect of the safety sight glass.

see also...

• More information to position indicators ➔ Page 386
Installation instructions

With the adapter bushes GN 952.1 → Page 392, the hollow shaft (with Bore 14 H7) of the position indicator can be adapted to fit the spindle.

Before installation of the position indicator a bore for the torque limiting contact point is to be placed.

The mounting of the position indicator is via the torque limiting contact point which is connected to the hollow spindle and secured with a grub screw.

Before completing the installation, turn the spindle to the starting point (0) position and zero the position indicator.

With clamping plates GN 954.6 → Page 393, spindles can be clamped and secured after adjusting.

---

**GN 954.1 | Spacer plate**

<table>
<thead>
<tr>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Plastic (Polyamide PA) black, matt</td>
</tr>
</tbody>
</table>

The spacer plate GN 954.1 are used for bridging spindle adaptors, spacer rings and so on for GN 954.

**GN 954.3 | Hand knob**

<table>
<thead>
<tr>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Plastic (Polyamide PA) black, matt</td>
</tr>
</tbody>
</table>

The hand knobs GN 954.3 are to fit the position indicator GN 954.
GN 952.1 Adapter bushes
for position indicators GN 953 / GN 954

With the help of adapter bushes GN 952.1 position indicators can be adapted to accept different smaller spindle diameters.

The adapter bushes are supplied with a set screw.

**Information**

- Steel blackened
- ISO-Fundamental Tolerances → Page 1132
- RoHS compliant

**Specification**

<table>
<thead>
<tr>
<th>d₁</th>
<th>d₂ H7 Bore</th>
<th>l₁</th>
<th>d₃</th>
<th>l₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>B6 B8 B10 B12 - - -</td>
<td>20</td>
<td>4.25</td>
<td>3.5</td>
</tr>
<tr>
<td>20</td>
<td>B6 B8 B10 B12 B14 B15 B16</td>
<td>20</td>
<td>5.5</td>
<td>4.5</td>
</tr>
</tbody>
</table>

**How to order**

GN952.1-14-B12-20

**see also...**

- Position indicators GN 953 → Page 388
- Position indicators GN 954 → Page 390
Clamping plates GN 953.6 / GN 954.6 are used in connection with position indicators GN 953 / GN 954.

In a simpler way and without large construction and installation effort these spindles can, after adjustment, be clamped and locked.

At the same time these plates are fitted with the bore Ø 6 to accept the torque limiter for the position indicator.

The spacer can be installed so that it lies as required either to the right or the left.

**Specfication**

- Zinc die casting
  - plastic coated
  - black, textured finish
- Adjustable hand levers GN 302-30
  - black, textured finish → Page 211
- RoHS compliant

**Information**

<table>
<thead>
<tr>
<th>b</th>
<th>d₁</th>
<th>d₂</th>
<th>l₁</th>
<th>l₂</th>
<th>l₃</th>
<th>l₄</th>
<th>m₁</th>
<th>m₂</th>
<th>for position indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>B8</td>
<td>4,5</td>
<td>47</td>
<td>30,5</td>
<td>11</td>
<td>22</td>
<td>21</td>
<td>23,5</td>
<td>GN 954</td>
</tr>
<tr>
<td>48</td>
<td>B12</td>
<td>5,5</td>
<td>67</td>
<td>43,1</td>
<td>16</td>
<td>22</td>
<td>34</td>
<td>33,6</td>
<td>GN 953</td>
</tr>
</tbody>
</table>