

# Check valve, cartridge design

Type M-SR

**RE 20380**

Edition: 2017-07

Replaces: 03.11



H7004

- ▶ Size 6 ... 30
- ▶ Component series 1X
- ▶ Maximum operating pressure 420 bar
- ▶ Maximum flow 400 l/min

## Features

- ▶ For installation in block designs
  - As angle valve
  - As straight-through valve
- ▶ Leakage-free blocking in one direction
- ▶ Various cracking pressures, optional (see ordering codes)

## Contents

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**Ordering code**

|             |    |    |    |          |           |          |          |
|-------------|----|----|----|----------|-----------|----------|----------|
| 01          | 02 | 03 | 04 | 05       | 06        | 07       | 08       |
| <b>M-SR</b> |    |    |    | <b>-</b> | <b>1X</b> | <b>/</b> | <b>*</b> |

|    |                               |             |
|----|-------------------------------|-------------|
| 01 | Check valve, cartridge design | <b>M-SR</b> |
| 02 | Size 6 (not version "KE")     | <b>6</b>    |
|    | Size 8                        | <b>8</b>    |
|    | Size 10                       | <b>10</b>   |
|    | Size 15                       | <b>15</b>   |
|    | Size 20                       | <b>20</b>   |
|    | Size 25                       | <b>25</b>   |
|    | Size 30                       | <b>30</b>   |

**Unit design**

|    |                        |           |
|----|------------------------|-----------|
| 03 | Angle valve            | <b>KE</b> |
|    | Straight-through valve | <b>KD</b> |

**Cracking pressure** (see characteristic curves on page 5 and 6)

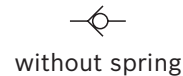
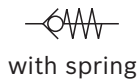
|    |                                                                                          |           |
|----|------------------------------------------------------------------------------------------|-----------|
| 04 | 0 bar, without spring (not version "KD")                                                 | <b>00</b> |
|    | 0.2 bar                                                                                  | <b>02</b> |
|    | 0.5 bar (standard)                                                                       | <b>05</b> |
|    | 1.5 bar                                                                                  | <b>15</b> |
|    | 3.0 bar                                                                                  | <b>30</b> |
|    | 5.0 bar                                                                                  | <b>50</b> |
| 05 | Component series 10 ... 19 (10 ... 19: unchanged installation and connection dimensions) | <b>1X</b> |

**Orifice in channel B** (version "KD" only)

|    |                  |                |
|----|------------------|----------------|
| 06 | Without orifice  | <b>no code</b> |
|    | Core hole M4     | <b>B00</b>     |
|    | Orifice Ø 1.0 mm | <b>B10</b>     |
|    | Orifice Ø 1.2 mm | <b>B12</b>     |

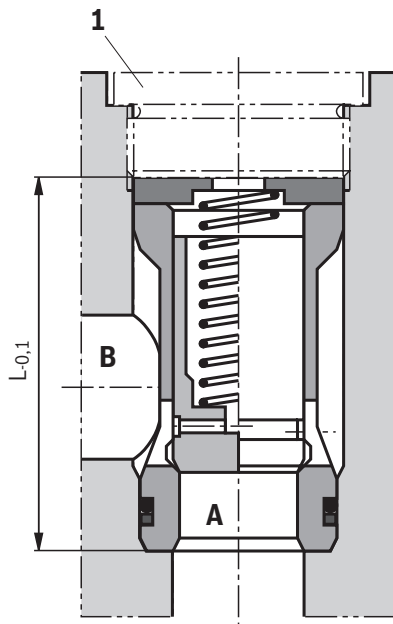
**Seal material** (version "KE" only)

|    |                                                                                      |                |
|----|--------------------------------------------------------------------------------------|----------------|
| 07 | NBR seals                                                                            | <b>no code</b> |
|    | FKM seals                                                                            | <b>V</b>       |
|    | Observe compatibility of seals with hydraulic fluid used. (Other seals upon request) |                |
| 08 | Further details in the plain text                                                    |                |

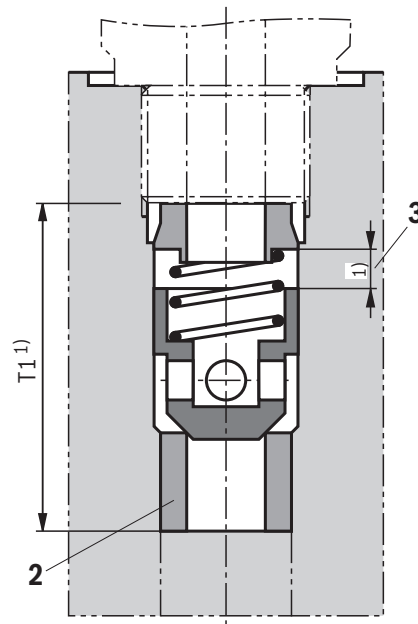
**Symbols**

## Sections

Angle valve "KE"



Straight-through valve "KD"



| NG | L <sub>-0,1</sub> |
|----|-------------------|
| 8  | 36.3              |
| 10 | 39.3              |
| 15 | 45.8              |
| 20 | 55.3              |
| 25 | 74.3              |
| 30 | 83.3              |

- 1** Plug screws, separate order, see page 7 and 9
- 2** Seat shrink-fitted with  $-60\text{ }^{\circ}\text{C}$
- 3** Poppet stroke

<sup>1)</sup> For dimensions, see installation bores

**Technical data**

(For applications outside these parameters, please consult us!)

| general                                           |                               |       |                                                          |      |      |      |      |      |      |
|---------------------------------------------------|-------------------------------|-------|----------------------------------------------------------|------|------|------|------|------|------|
| Sizes                                             |                               | NG    | 6                                                        | 8    | 10   | 15   | 20   | 25   | 30   |
| Weight                                            | ▶ Angle valve "KE"            | kg    | –                                                        | 0.03 | 0.05 | 0.08 | 0.14 | 0.32 | 0.47 |
|                                                   | ▶ Straight-through valve "KD" | kg    | 0.05                                                     | 0.05 | 0.05 | 0.1  | 0.2  | 0.25 | 0.3  |
| Installation position                             |                               | any   |                                                          |      |      |      |      |      |      |
| Ambient temperature range                         |                               | °C    | –20 ... +80 (NBR seals)<br>–20 ... +80 (FKM seals)       |      |      |      |      |      |      |
| MTTF <sub>d</sub> value according to EN ISO 13849 |                               | Years | 150 (for further details see data sheet 08012 and 90294) |      |      |      |      |      |      |

| <b>hydraulic</b>                                                                                               |                                                               |
|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Maximum operating pressure                                                                                     | bar 420                                                       |
| Cracking pressure                                                                                              | bar see characteristic curves on page 5 and 6                 |
| Maximum flow                                                                                                   | l/min see characteristic curves on page 5 and 6               |
| Hydraulic fluid                                                                                                | see table below                                               |
| Hydraulic fluid temperature range                                                                              | °C –30 ... +80 (for NBR seals)<br>–20 ... +80 (for FKM seals) |
| Viscosity range                                                                                                | mm <sup>2</sup> /s 2.8 ... 500                                |
| Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c) | Class 20/18/15 <sup>1)</sup>                                  |

| Hydraulic fluid | Classification       | Suitable sealing materials                          | Standards | Data sheet |
|-----------------|----------------------|-----------------------------------------------------|-----------|------------|
| Mineral oils    | HL, HLP              | NBR, FKM                                            | DIN 51524 | 90220      |
| Bio-degradable  | ► Insoluble in water | HETG                                                | ISO 15380 | 90221      |
|                 |                      | HEES                                                |           |            |
|                 | ► Soluble in water   | HEPG                                                | ISO 15380 |            |
| Flame-resistant | ► Water-free         | HFDU (glycol base)                                  | ISO 12922 | 90222      |
|                 |                      | HFDU (ester base)                                   |           |            |
|                 | ► containing water   | HFC (Fuchs Hydrotherm 46M, Petrofer Ultra Safe 620) | ISO 12922 | 90223      |

**Important information on hydraulic fluids:**

- For further information and data on the use of other hydraulic fluids, please refer to the data sheets above or contact us.
- There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.).

**► Flame-resistant – containing water:**

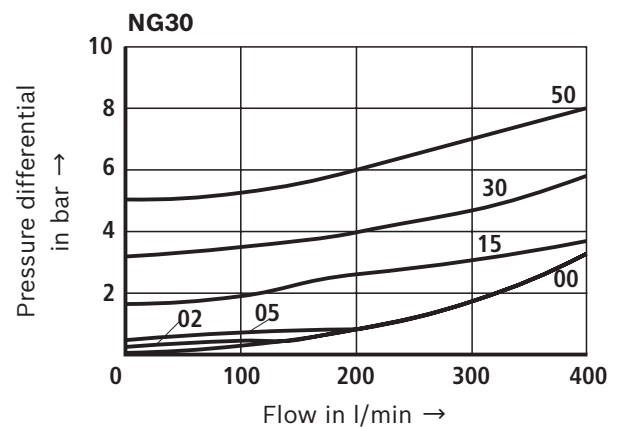
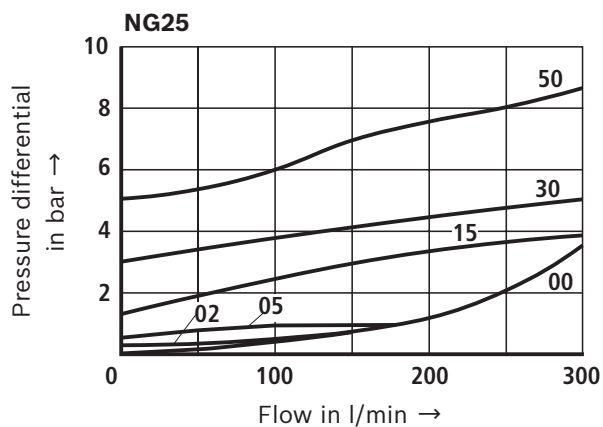
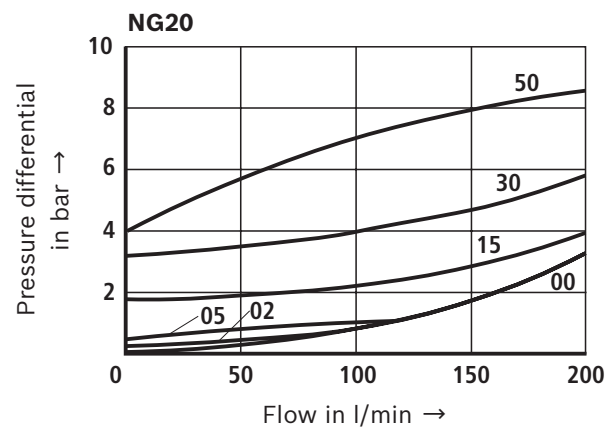
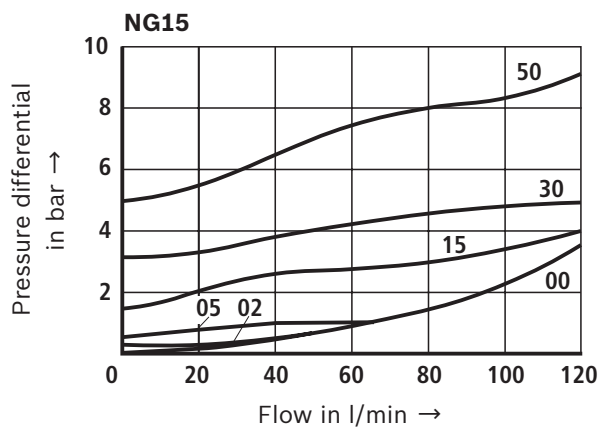
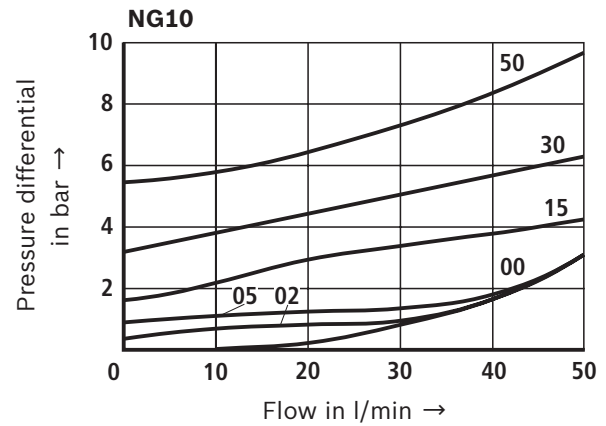
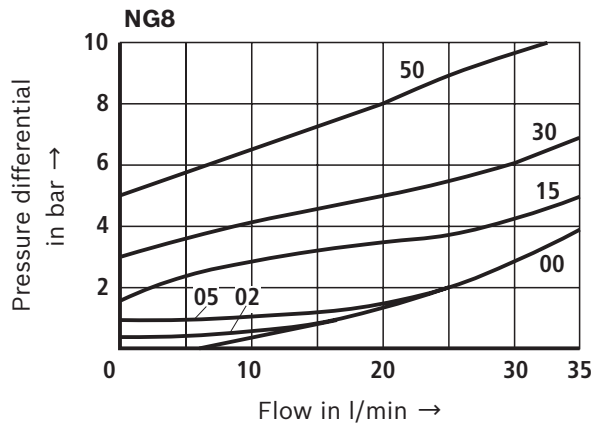
- Life cycle as compared to operation with mineral oil HL, HLP 30 ... 100%
- Maximum hydraulic fluid temperature 60 °C

<sup>1)</sup> The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and simultaneously increases the life cycle of the components.

For the selection of filters, see [www.boschrexroth.com/filter](http://www.boschrexroth.com/filter).

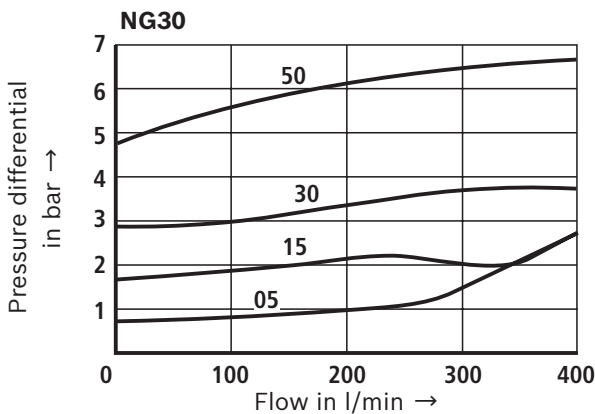
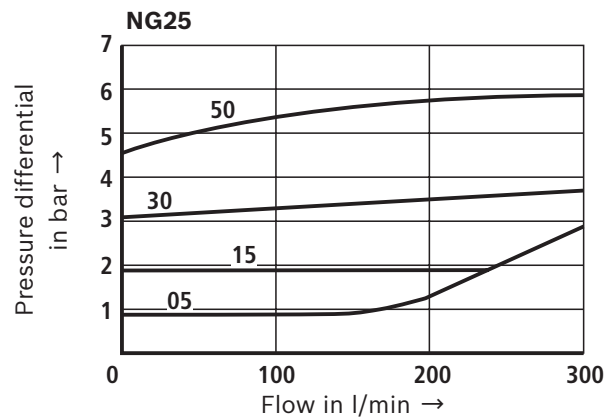
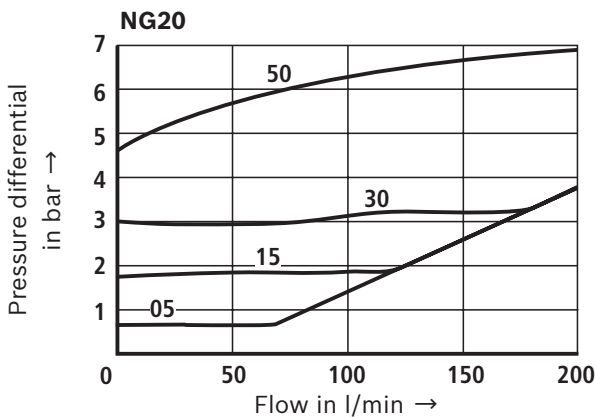
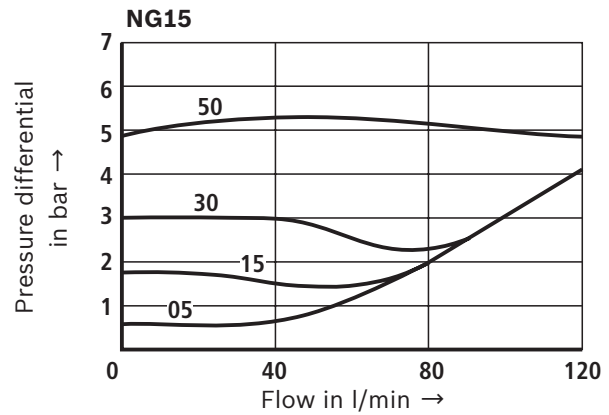
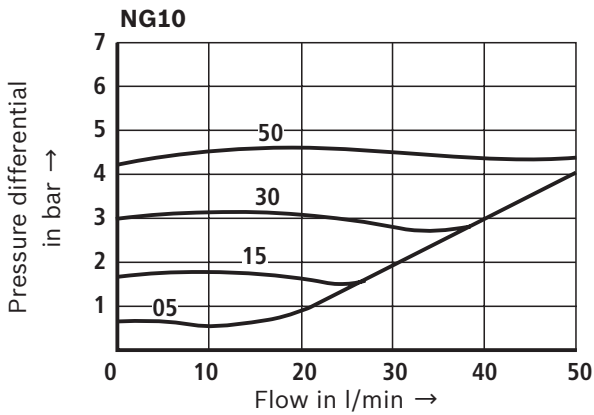
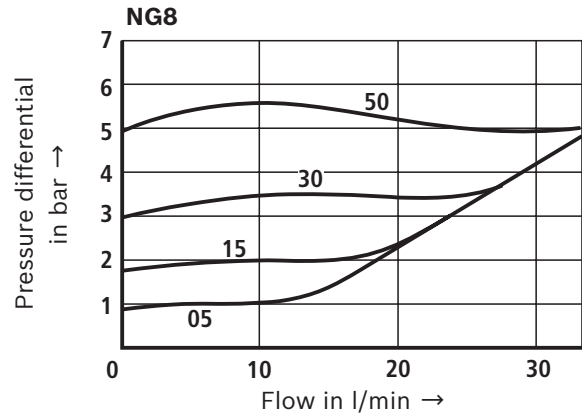
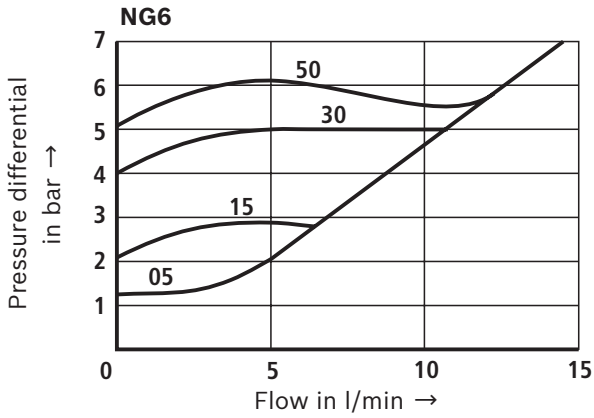
**Characteristic curves:** Version "KE"  
(measured with HLP46,  $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$ )

**Pressure differential  $\Delta p$  dependent on the flow  $q_v$  at cracking pressure**

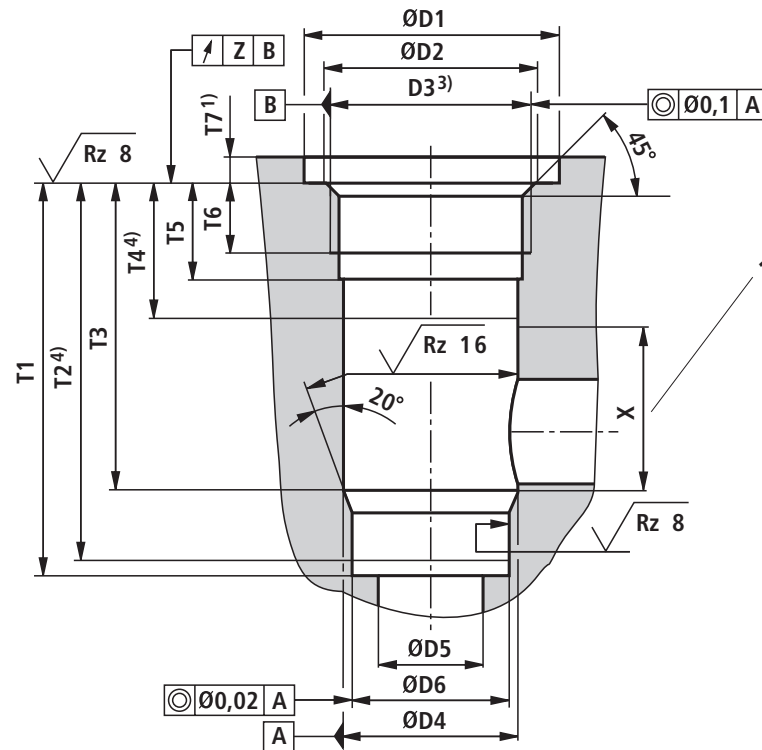


**Characteristic curves:** Version "KD"  
(measured with HLP46,  $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$ )

Pressure differential  $\Delta p$  dependent on the flow  $q_v$  at cracking pressure



**Installation bore: Angle valve "KE" for plug screw acc. to ZN 10001**  
(dimensions in mm)



1 Range for outlet bore

| NG | Plug screws – Material no. ²) |            |                      | $p_N$<br>in bar | ØD1 | ØD2  | D3        | ØD4H8 | ØD5 | ØD6H7 |
|----|-------------------------------|------------|----------------------|-----------------|-----|------|-----------|-------|-----|-------|
|    | NBR                           | FKM        | $M_A \pm 10\%$ in Nm |                 |     |      |           |       |     |       |
| 8  | R913011602                    | R913011610 | 55                   | 420             | 23  | 17.1 | G3/8 ³)   | 14    | 8   | 13    |
| 10 | R913011603                    | R913011611 | 80                   | 420             | 28  | 21.4 | G1/2 ³)   | 18    | 10  | 17    |
| 15 | R913011604                    | R913011612 | 135                  | 420             | 33  | 26.8 | G3/4 ³)   | 24    | 15  | 22    |
| 20 | R913011605                    | R913011613 | 225                  | 420             | 41  | 33.8 | G1 ³)     | 30    | 20  | 28    |
| 25 | R913011606                    | R913011614 | 360                  | 250             | 51  | 42.5 | G1 1/4 ³) | 38    | 25  | 36    |
| 30 | R913011607                    | R913011615 | 400                  | 250             | 56  | 48.5 | G1 1/2 ³) | 44    | 30  | 42    |

| NG | $T1^{+0.1}$ | T2   | T3   | T4 | T5   | T6 | $T7^{+0.5}$ | $T8^{+0.2}$ | X  | Z    |
|----|-------------|------|------|----|------|----|-------------|-------------|----|------|
| 8  | 48.5        | 47.5 | 38.5 | 20 | 15   | 12 | 6           | –           | 18 | 0.05 |
| 10 | 53.5        | 52.5 | 43.5 | 24 | 18   | 14 | 6           | –           | 19 | 0.05 |
| 15 | 62          | 60.5 | 50   | 26 | 20.5 | 16 | 6           | –           | 24 | 0.05 |
| 20 | 71.5        | 70   | 56.5 | 26 | 20.5 | 16 | 7           | –           | 30 | 0.05 |
| 25 | 90.5        | 88   | 72.5 | 28 | 22   | 16 | 7           | –           | 43 | 0.1  |
| 30 | 99.5        | 96.5 | 79.5 | 31 | 22   | 16 | 7           | –           | 48 | 0.1  |

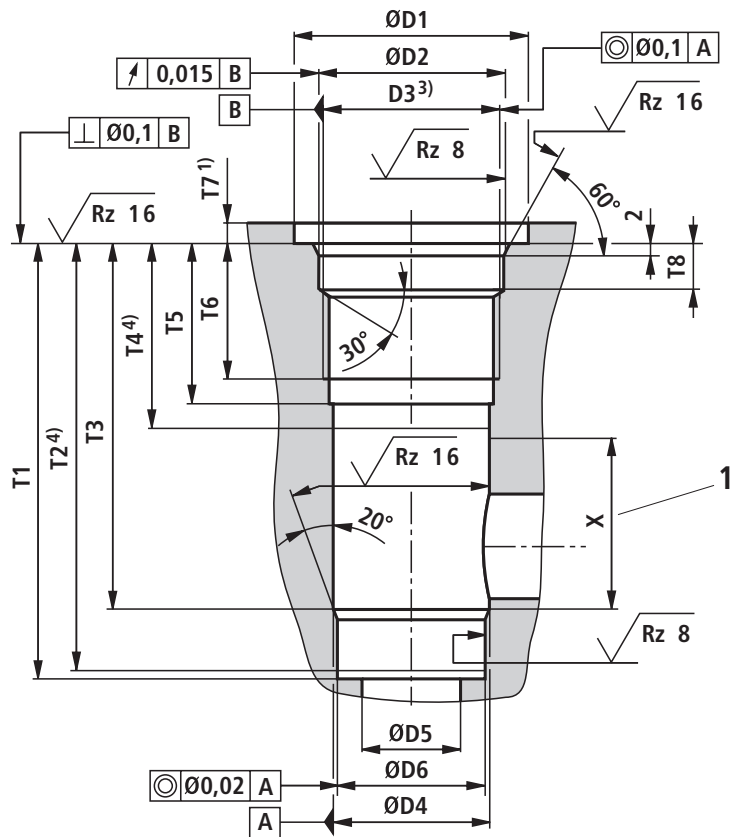
1) Dimensions for countersinking the screw head. For lower installation of the installation kit, dimension T7 has to be extended accordingly.

2) Separate order. Oiling of plug screws prior to installation is recommended.

3) Pipe thread "G..." according to ISO 228/1

4) Depth of fit

**Installation bore:** Angle valve "KE" for plug screw acc. to RN 143.28 – up to 315 bar  
(dimensions in mm)



1 Range for outlet bore

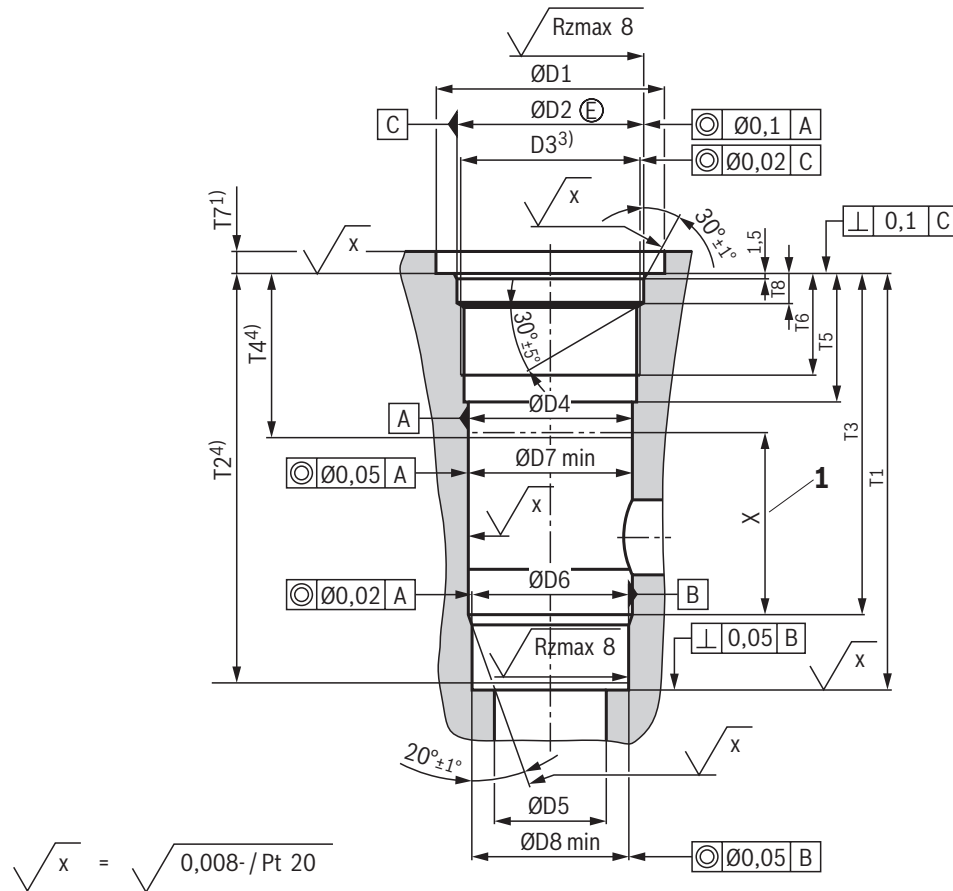
| Plug screws – Material no. <sup>2)</sup> |            |            |                      | $p_N$<br>in bar | $\varnothing D1$ | $\varnothing D2H8$ | $D3$                    | $\varnothing D4H8$ | $\varnothing D5$ | $\varnothing D6H7$ |
|------------------------------------------|------------|------------|----------------------|-----------------|------------------|--------------------|-------------------------|--------------------|------------------|--------------------|
| NG                                       | NBR        | FKM        | $M_A \pm 10\%$ in Nm |                 |                  |                    |                         |                    |                  |                    |
| 25                                       | R900323609 | R900301957 | 300                  | 315             | 56+0.5           | 44                 | M42 x 1.5 <sup>3)</sup> | 38                 | 25               | 36                 |
| 30                                       | R900323610 | R900301958 | 325                  | 315             | 62+0.5           | 50                 | M48 x 1.5 <sup>3)</sup> | 44                 | 30               | 42                 |

| NG | $T1^{+0.1}$ | T2    | T3   | T4 | T5 | T6 | $T7^{+0.5}$ | $T8^{+0.2}$ | X  | Z |
|----|-------------|-------|------|----|----|----|-------------|-------------|----|---|
| 25 | 106.5       | 104   | 88.5 | 45 | 39 | 33 | 5           | 12          | 43 | – |
| 30 | 115.5       | 112.5 | 95.5 | 48 | 39 | 33 | 5           | 12          | 48 | – |

<sup>1)</sup> Dimensions for countersinking the screw head. For lower installation of the installation kit, dimension T7 has to be extended accordingly.  
<sup>2)</sup> Separate order, to be replaced in case of maintenance.  
<sup>3)</sup> Metric ISO fine thread according to DIN 13  
<sup>4)</sup> Depth of fit

**Installation bore:** Angle valve "KE" for plug screws acc. to RN 143.28 – up to 420 bar  
(dimensions in mm)



1 Range for outlet bore

| Plug screws – Material no. <sup>2)</sup> |            |            |                      | $p_N$<br>in bar | ØD1    | ØD2H8 | D3    | ØD4H8 | ØD5 | ØD6H7 | ØD7   | ØD8   |
|------------------------------------------|------------|------------|----------------------|-----------------|--------|-------|-------|-------|-----|-------|-------|-------|
| NG                                       | NBR        | FKM        | $M_A \pm 10\%$ in Nm |                 |        |       |       |       |     |       |       |       |
| 25                                       | R901465279 | R901465283 | 300                  | 420             | 51+0.5 | 44    | M42x2 | 38    | 25  | 36    | 37.58 | 35.58 |
| 30                                       | R901465276 | R901465270 | 325                  | 420             | 61+0.5 | 50    | M48x2 | 44    | 30  | 42    | 43.58 | 41.58 |

| NG | T1 <sup>+0.1</sup> | T3   | T2 min | T4 min | T5 | T6 | T7 <sup>+0.5</sup> | T8 <sup>+0.2</sup> | X  |
|----|--------------------|------|--------|--------|----|----|--------------------|--------------------|----|
| 25 | 101.5              | 93.5 | 100    | 40     | 34 | 27 | 6                  | 7.8                | 43 |
| 30 | 110.5              | 90.5 | 108.5  | 43     | 34 | 27 | 6                  | 7.8                | 48 |

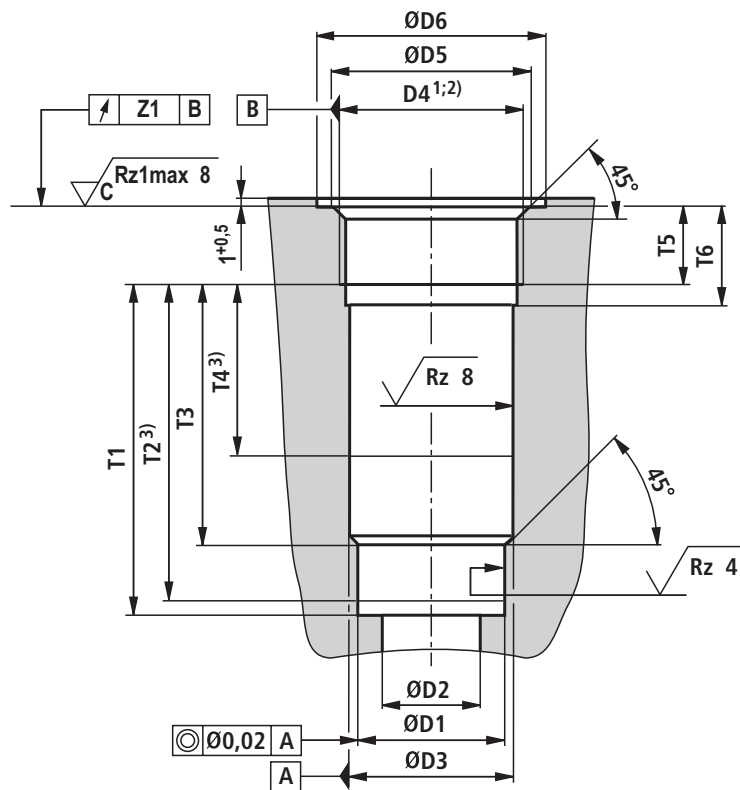
<sup>1)</sup> Dimensions for countersinking the screw head. For lower installation of the installation kit, dimension T7 has to be extended accordingly.

<sup>2)</sup> Separate order, to be replaced in case of maintenance.

<sup>3)</sup> Metric ISO fine thread according to DIN 13

<sup>4)</sup> Depth of fit

**Installation bore:** Straight-through valve "KD"  
(dimensions in mm)



| NG | ØD1H7 | ØD2 | ØD3H8 | D4 <sup>1)</sup> | ØD5±0.1 <sup>1)</sup> | D4 <sup>2)</sup> | ØD5±0.1 <sup>2)</sup> | ØD6 |
|----|-------|-----|-------|------------------|-----------------------|------------------|-----------------------|-----|
| 6  | 10    | 6   | 11    | G1/4             | 13.6                  | M14 x 1.5        | 14.4                  | 25  |
| 8  | 13    | 8   | 14    | G3/8             | 17.1                  | M18 x 1.5        | 18.4                  | 28  |
| 10 | 17    | 10  | 18    | G1/2             | 21.4                  | M22 x 1.5        | 22.4                  | 34  |
| 15 | 22    | 15  | 24    | G3/4             | 26.8                  | M27 x 2          | 27.4                  | 42  |
| 20 | 28    | 20  | 30    | G1               | 33.8                  | M33 x 2          | 33.5                  | 47  |
| 25 | 36    | 25  | 38    | G1 1/4           | 42.5                  | M42 x 2          | 42.5                  | 58  |
| 30 | 42    | 30  | 44    | G1 1/2           | 48.5                  | M48 x 2          | 48.5                  | 65  |

| NG | T1 <sub>-0.1</sub> | T2   | T3   | T4 | T5 | T6 | Z1  | Poppet stroke |
|----|--------------------|------|------|----|----|----|-----|---------------|
| 6  | 29.8               | 27.8 | 21.8 | 19 | 12 | 16 | 0.1 | 4             |
| 8  | 32.8               | 30.8 | 22.8 | 18 | 12 | 16 | 0.1 | 4             |
| 10 | 38.8               | 36.8 | 28.8 | 21 | 14 | 19 | 0.1 | 4             |
| 15 | 48.4               | 46.4 | 36.4 | 27 | 16 | 21 | 0.2 | 5             |
| 20 | 59                 | 57   | 44   | 29 | 18 | 24 | 0.2 | 5             |
| 25 | 73                 | 71   | 55   | 39 | 20 | 26 | 0.2 | 7             |
| 30 | 83                 | 81   | 63   | 42 | 22 | 28 | 0.2 | 7             |

1) Pipe thread "G..." according to ISO 228/1  
2) Metric ISO fine thread according to DIN 13  
3) Depth of fit

## Further information

- ▶ Hydraulic fluids on mineral oil basis
- ▶ Environmentally compatible hydraulic fluids
- ▶ Flame-resistant, water-free hydraulic fluids
- ▶ Flame-resistant hydraulic fluids - containing water (HFAE, HFAS, HFB, HFC)
- ▶ Reliability characteristics according to EN ISO 13849
- ▶ Hydraulic valves for industrial applications
- ▶ Selection of filters
- ▶ Information on available spare parts

Data sheet 90220

Data sheet 90221

Data sheet 90222

Data sheet 90223

Data sheet 08012 and 90294

Operating instructions 07600-B

[www.boschrexroth.com/filter](http://www.boschrexroth.com/filter)

[www.boschrexroth.com/spc](http://www.boschrexroth.com/spc)

## Notes

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