

Globe Valves

Bellows-type Globe Valves to DIN/EN

BOA-H



Main applications

- Hot-water heating systems
- Air-conditioning systems
- Boiler feed applications
- Boiler recirculation
- Chemical industry
- Process engineering
- Heat recovery systems
- Sugar industry

Fluids handled

- High-temperature hot water
- Saturated steam
- Thermal oil
- Liquids and gases not chemically or mechanically aggressive to the valve materials.
- Other fluids on request.

Operating data

Operating properties

| Characteristic | Value | |
|-----------------------------------|-------------|---------------------------|
| | EN-GJL-250 | EN-GJS-400-18-LT |
| Nominal pressure | PN 16 | PN 16/25 |
| Nominal size | DN 15 - 300 | DN 15 - 350 ¹⁾ |
| Max. permissible pressure [bar] | 16 | 25 |
| Min. permissible temperature [°C] | ≥ -10 | ≥ -10 |
| Max. permissible temperature [°C] | ≤ +300 | ≤ +350 |

¹⁾ PN 25: DN 15-150

Selection as per pressure/temperature ratings (⇒ Page 5)

Valve body materials

Straight-way valve

Overview of available materials

| Material | Material number | Temperature limit |
|------------------|-----------------|-------------------|
| EN-GJL-250 | 5.1301 | ≤ 300 °C |
| EN-GJS-400-18-LT | 5.3103 | ≤ 350 °C |

Angle valve

Overview of available materials

| Material | Material number | Temperature limit |
|------------|-----------------|-------------------|
| EN-GJL-250 | 5.1301 | ≤ 300 °C |

Design details

Design

- Straight-way or angle pattern with horizontal seat
- Throttling plug ≤ DN 100
- On/off disc ≥ DN 125
- All nominal sizes with position indicator, locking device and travel stop
- Compact bonnet
- Maintenance-free bellows-type stem seal with back-up gland
- Non-rising handwheel
- Flanges to DIN EN 1092-2 Type 21
- Exterior coating: blue, RAL 5002

Variants

- V-port plug (seat-guided throttling plug for maximum requirements) for DN 15 to 300
- Valve disc with PTFE ring (≤ 200 °C, throttling plug for DN 15 to 100, on/off disc for DN 125 to 200)
- Lead-sealable cap (prevents unauthorised actuation) as assembly set
- Balanced plug ≥ DN 200
- High-temperature resistant paint (grey aluminium)
- Either one or two limit switch(es) as assembly kit for globe valves of DN 15 to 150 made of EN-GJS-400-18-LT
- Oil-free and grease-free: lubricated exclusively by mineral oil free lubricants approved by the German Federal Office for Materials Testing (Bundesanstalt für Materialforschung und -prüfung, BAM)
- Other flange designs
- Low-temperature steel bolts for temperatures down to -30 °C (EN-GJS-400-18-LT only) up to 0.75 x PN (max.)
- Certification to customer specification

Product benefits

- High operating comfort at no extra charge: position indicator with travel stop and locking device outside the insulation. Valve disc position can be checked at any time.
- Optimum start-up and throttling due to standard throttling plug up to DN 100 (seat-guided V-port plug optionally available for all valve sizes to meet maximum throttling requirements).
- When the valve is fully open, the bellows is confined within the valve body, protected from pressure surges.
- Little heat loss during operation due to short and even bonnet suitable for easy and inexpensive insulation.
- Added protection against fatigue fracture: The bellows is welded to the stem, so no vibrations are transmitted from the valve disc.
- Back-up gland packing provides additional safety in case of defective bellows.
- Colour coding for identification of valve design during replacement work. The disc type and seat/disc interface material can be verified without removing the insulation.
- Space-saving non-rising handwheel.
- Reduced maintenance costs due to replaceable valve disc. Instead of replacing the complete upper section, only the valve disc is replaced if necessary.

Product information

Product information as per Regulation No. 1907/2006 (REACH)

For information as per chemicals Regulation (EC) No 1907/2006 (REACH), see https://www.ksb.com/ksb-de/konzern/Unternehmerische_Verantwortung/reach/

Product information as per Pressure Equipment Directive 2014/68/EU (PED)

The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 2014/68/EU (PED) for fluids in Groups 1 and 2.

Pressure/temperature ratings

Test pressure and operating pressure

| PN | Material | Shell test | Leak test (seat) | Permissible operating pressure [bar] ²⁾³⁾ | | | | | | | |
|----|------------------|--|---|--|------|------|------|------|------|------|------|
| | | With water | | [°C] | | | | | | | |
| | | Tests P10 and P11 to DIN EN 12266-1 [bar] | Test P12, leakage rate A to DIN EN 12266-1 [bar] | -10 to +120 | 150 | 180 | 200 | 230 | 250 | 300 | 350 |
| 16 | EN-GJL-250 | 24 | 17,6 | 16 | 14,4 | 13,4 | 12,8 | 11,8 | 11,2 | 9,6 | - |
| | EN-GJS-400-18-LT | 24 | 17,6 | 16 | 15,5 | - | 14,7 | - | 13,9 | 12,8 | 11,2 |
| 25 | EN-GJS-400-18-LT | 37,5 | 27,5 | 25 | 24,3 | - | 23 | - | 21,8 | 20 | 17,5 |

Product information as per Directive 2014/34/EU (ATEX)

The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 2014/34/EU.

Certifications

Overview

| Label | Effective in: | Comment |
|-------|---------------|----------------------------------|
| | Worldwide | Approved for marine applications |
| | Worldwide | Approved for marine applications |

Related documents

Information/documents

| Document | Reference number |
|--|------------------|
| Flow characteristics | 7150.4 |
| Operating manual | 0570.8 |
| Assembly instructions "Accessories Set: Lead-sealable Handwheel Cap" | 0570.811 |
| Installation instructions "Limit switch set" | 0570.812 |
| Typical tender for BOA-H JL | 7150.521 |
| Typical tender for BOA-H JS PN 16 | 7150.522 |
| Typical tender for BOA-H JS PN 25 | 7150.523 |

Purchase order specifications

Please specify the following information in all enquiries or purchase orders:

- Type
- Nominal pressure
- Nominal size
- Material
- Variants
- Reference number

7150.1/21-EN

² Intermediate temperatures can be derived by linear interpolation.

³ Static load

Materials

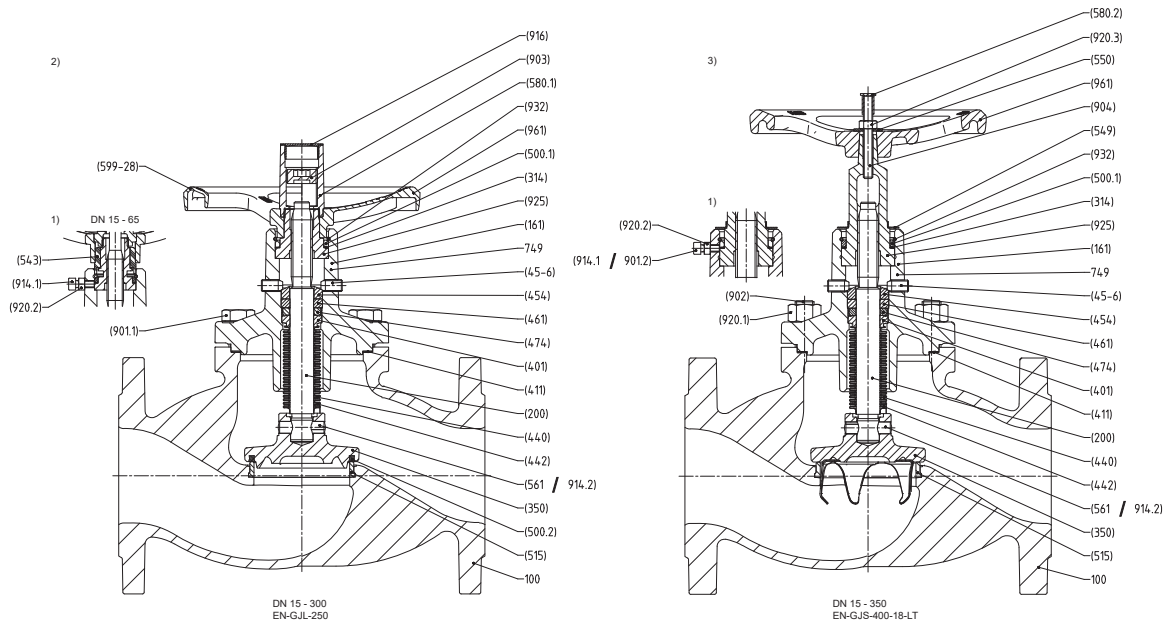


Fig. 1: Sectional drawings; 1) shown rotated by 90°; 2) variant with PTFE ring on valve disc; 3) variant with V-port plug

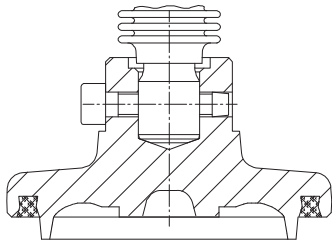
Parts list

| Part No. | Description | Material | Variant | Note |
|-------------------|---|---------------------------|------------------------------|--------------|
| 100 ⁴⁾ | Body assembly, complete | | | |
| 100 | Body | EN-GJL-250 (5.1301) | EN-GJL-250 | - |
| | | EN-GJS-400-18-LT (5.3103) | EN-GJS-400-18-LT | - |
| 411 ⁴⁾ | Joint ring | CrNi steel/graphite 1 F | - | - |
| 515 | Seat ring | 1.4104+A+SH | - | DN 15 - 25 |
| | | 1.4301 | - | DN 32 - 350 |
| 901.1 | Hexagon head bolt | 8.8 | EN-GJL-250 | - |
| 902 | Stud | C35E+QT | EN-GJS-400-18-LT | - |
| 920.1 | Hexagon nut | C35E+N | EN-GJS-400-18-LT | - |
| 749 ⁴⁾ | Bonnet assembly, complete | | | |
| 161 | Body bonnet | EN-GJL-250 (5.1301) | EN-GJL-250 | - |
| | | EN-GJS-400-18-LT (5.3103) | EN-GJS-400-18-LT | - |
| 350 | Throttling plug | 1.4104+QT650 | Basic design | DN 15 - 40 |
| | V-port plug | 1.4104+QT650 | Variant with V-port plug | DN 15 - 40 |
| 350 ⁴⁾ | Valve disc assembly, complete with grooved pin | | | |
| 350 | Throttling plug | 1.4021+QT800 | Basic design | DN 50 - 100 |
| | On/off disc | 1.4021+QT800 | Basic design | DN 125 - 350 |
| | Balanced plug | 1.4021+QT800 | Variant with balanced plug | DN 200 - 350 |
| | Throttling plug / PTFE | 1.4021+QT800 | Variant with PTFE valve disc | DN 50 - 100 |
| | On/off disc / PTFE | 1.4021+QT800 | Variant with PTFE valve disc | DN 125 - 200 |

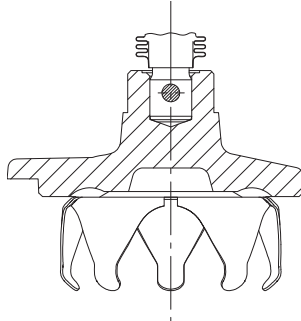
⁴ Spare part

| Part No. | | Description | Material | Variant | Note |
|----------|----------------------------|---|--|------------------------------|--------------|
| | 350 | V-port plug | 1.4021+QT800 / 1.4301 | Variant with V-port plug | DN 50 - 350 |
| | 500.2 ⁴⁾ | Ring | PTFE | Variant with PTFE valve disc | DN 15 - 200 |
| | 561 | Grooved pin | 45 H+A2A | - | DN 50 - 300 |
| | 411 ⁴⁾ | Joint ring | CrNi steel/graphite 1 F | - | - |
| | 440 | Bellows assembly | | | |
| | 200 | Stem | Stainless steel, min. 13 % chrome (Cr) | - | - |
| | 401 | Weld ring | 1.4021+QT800 | - | - |
| | 442 | Bellows | 1.4541 | - | - |
| | 45-6 | Stuffing box screw | 45 H | - | - |
| | 454 | Stuffing box ring | 46S20+C | - | - |
| | 461 | Gland packing | GH1,4-IA | - | - |
| | 474 | Thrust ring | 1.4104 | - | - |
| | 549 | Collar bush | DC01-B | EN-GJS-400-18-LT | DN 15 - 150 |
| | 550 | Disc | ST A2A | EN-GJS-400-18-LT | DN 15 - 150 |
| | 580.1 | Cap | 1.4027 | EN-GJL-250 | DN 200 - 300 |
| | 580.2 | Protective cap | TPE | EN-GJS-400-18-LT | - |
| | 599-28⁴⁾ | Handwheel spare parts kit assembly, material variant: EN-GJL-250 | | | |
| | 543 ⁴⁾ | Spacer bush | - | EN-GJL-250 | DN 15 - 65 |
| | 580.1⁴⁾ | Cap assembly incl. travel stop, material variant: EN-GJL-250 | | | |
| | 580.1 | Cap | PA 66-GF 35 | EN-GJL-250 | DN 15 - 150 |
| | 903 | Screw plug | ST+GAL ZN | EN-GJL-250 | DN 15 - 150 |
| | 916 | Plug | PE-LD | EN-GJL-250 | DN 15 - 150 |
| | 961 ⁴⁾ | Handwheel | AC-46200F-D | EN-GJL-250 | DN 15 - 150 |
| | 900.1 | Screw | 1.4021+QT 800 | EN-GJL-250 | DN 200 - 300 |
| | 904 | Grub screw | 45 H+A2A | EN-GJS-400-18-LT | - |
| | 914.1 | Locking device assembly, material variant: EN-GJL-250 | | | |
| | 914.1 | Hexagon socket head cap screw | 8.8+A2A | EN-GJL-250 | DN 50 - 300 |
| | 920.2 | Hexagon nut | 8 +A2A | EN-GJL-250 | - |
| | 914.2 | Hexagon socket head cap screw | 8.8+A2A | EN-GJL-250 | DN 15 - 40 |
| | 914.1 | Locking device assembly, material variant: EN-GJS-400-18-LT | | | |
| | 901.2 | Hexagon head bolt | 8.8 | EN-GJS-400-18-LT | DN 125 - 350 |
| | 914.1 | Hexagon socket head cap screw | 8.8+A2A | EN-GJS-400-18-LT | DN 15 - 100 |
| | 920.2 | Hexagon nut | 8 +A2A | EN-GJS-400-18-LT | - |
| | 916 | Plug | PE-LD | EN-GJL-250 | DN 200 - 300 |
| | 920.2 | Hexagon nut | 8+A2A | EN-GJS-400-18-LT | - |
| | 925 | Stem nut assembly | | | |
| | 314 | Thrust bearing | Steel/PTFE | - | - |
| | 500.1 | Ring | ST+GAL ZN | - | - |
| | 925 | Stem nut | 46S20+C | - | - |
| | 932 | Circlip | 1.4310 | - | - |
| | 961 ⁴⁾ | Handwheel | EN-GJL-250 | - | DN 200 - 350 |
| | 961 ⁴⁾ | Handwheel | EN-GJL-200 | EN-GJS-400-18-LT | DN 15 - 350 |

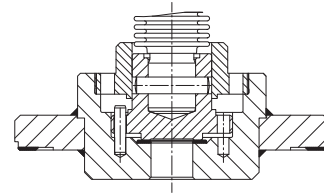
Variants



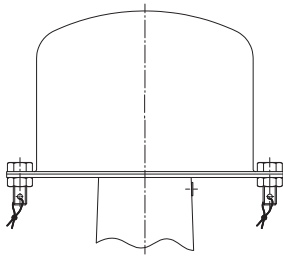
Throttling plug with PTFE gasket,
DN 15 - 100



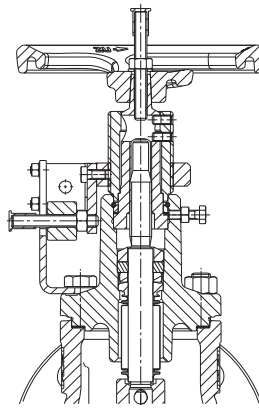
V-port plug



Balanced plug from DN 200



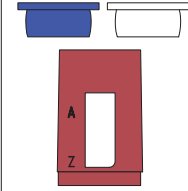

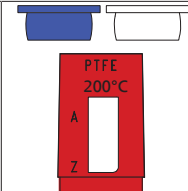
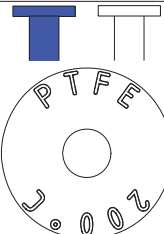

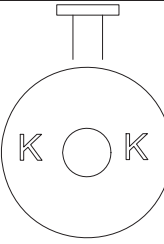

Lead-sealable cap (prevents
unauthorised actuation) as assembly
set



Limit switch

Fig. 2: Sectional drawings of variants

Colour coding system

| Body made of EN-GJL-250 | | | Body made of EN-GJS-400-18-LT | | |
|-------------------------------------|---|--|-------------------------------------|---|--|
| Metal-seated valve disc | | | Metal-seated valve disc | | |
| Blue plug Design: on/off disc |  | White plug Design: throttling plug | Blue plug Design: on/off disc |  | White plug Design: throttling plug |
| | Cap colour: purple red up to DN 150 | | | | |
| Valve disc with PTFE gasket | | | Valve disc with PTFE gasket | | |
| Blue plug Design: on/off disc |  | White plug Design: throttling plug | Blue plug Design: on/off disc |  | White plug Design: throttling plug |
| | Cap colour: vermilion up to DN 150 | | | Sheet metal disc | |
| V-port plug (DN 15 - 300) | | | V-port plug (DN 15 - 150) | | |
| Tag on handwheel |  | | |  | White plug |
| | | | | Sheet metal disc | |
| | | | V-port plug (DN 200 - 350) | | |
| | | | Tag on handwheel |  | |

Dimensions and weights

Dimensions and weights PN 16, EN-GJL-250

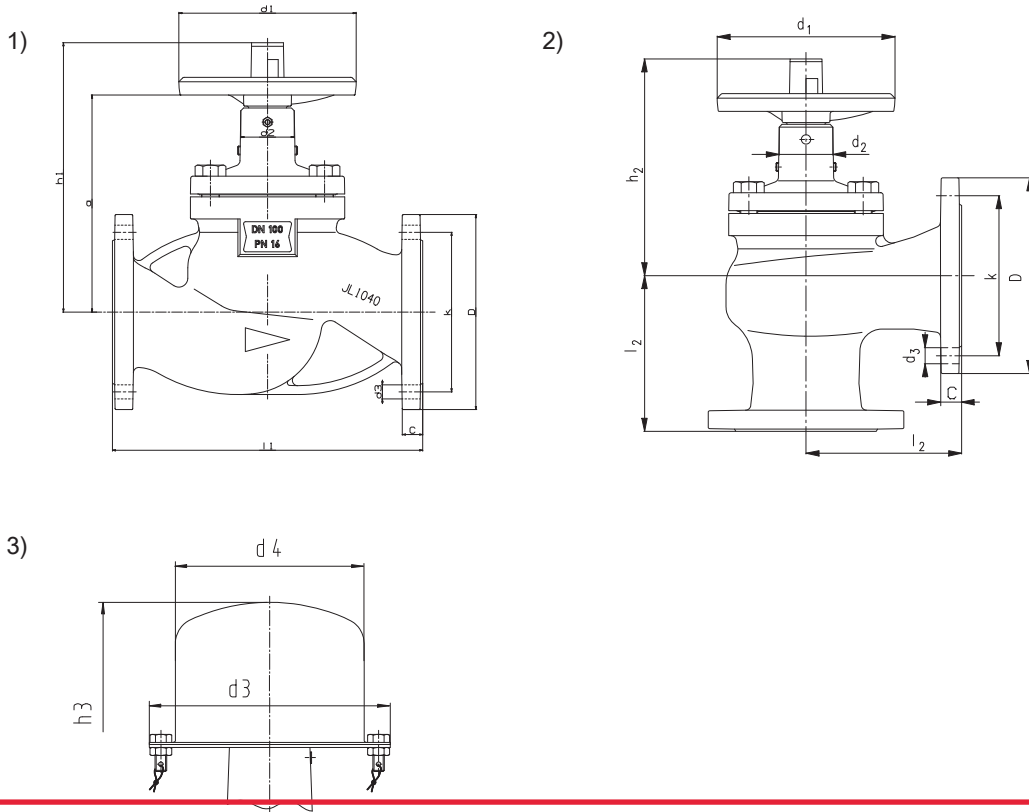


Fig. 3: 1) Straight-way valve; 2) Angle valve; 3) Lead-sealable cap (prevents unauthorised actuation) as assembly set

Dimensions and weights

| PN | DN | a | d ₁ | d ₂ | h ₁ | h ₂ | l ₁ | l ₂ | Flange | | | | [kg] | | Capped valve | | | |
|-----|-----|-----|----------------|----------------|----------------|----------------|----------------|----------------|--------|------|---------|--------------------|-------|-------|----------------|----------------|----------------|------|
| | | | | | | | | | C | D | k | n × d ₃ | | | d ₃ | d ₄ | h ₃ | |
| | | | | | | | | | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
| 16 | 15 | 137 | 125 | 47 | 175 | 150 | 130 | 90 | 14 | 95 | 65 | 4 × 14 | 3,1 | 3,2 | 166 | 130 | 204 | 179 |
| | 20 | 140 | 125 | 47 | 178 | 153 | 150 | 95 | 16 | 105 | 75 | 4 × 14 | 4 | 4 | 166 | 130 | 207 | 182 |
| | 25 | 146 | 125 | 47 | 184 | 151 | 160 | 100 | 16 | 115 | 85 | 4 × 14 | 4,7 | 4,8 | 166 | 130 | 213 | 180 |
| | 32 | 161 | 125 | 47 | 205 | 170 | 180 | 105 | 18 | 140 | 100 | 4 × 19 | 7,3 | 7,5 | 166 | 130 | 228 | 193 |
| | 40 | 166 | 125 | 47 | 210 | 172 | 200 | 115 | 18 | 150 | 110 | 4 × 19 | 7,7 | 7,7 | 166 | 130 | 233 | 208 |
| | 50 | 190 | 160 | 51 | 235 | 198 | 230 | 125 | 20 | 165 | 125 | 4 × 19 | 10,2 | 9,6 | 210 | 170 | 298 | 260 |
| | 65 | 201 | 160 | 51 | 246 | 198 | 290 | 145 | 20 | 185 | 145 | 4 × 19 | 17 | 16,3 | 210 | 170 | 309 | 272 |
| | 80 | 223 | 200 | 60 | 282 | 226 | 310 | 155 | 22 | 200 | 160 | 8 × 19 | 22 | 21,8 | 270 | 220 | 390 | 342 |
| | 100 | 245 | 200 | 60 | 304 | 244 | 350 | 175 | 24 | 220 | 180 | 8 × 19 | 32 | 30,8 | 270 | 220 | 412 | 356 |
| | 125 | 310 | 250 | 86 | 390 | 316 | 400 | 200 | 26 | 250 | 210 | 8 × 19 | 54 | 48,3 | 390 | 340 | 479 | 405 |
| | 150 | 328 | 250 | 86 | 408 | 320 | 480 | 225 | 26 | 285 | 240 | 8 × 23 | 70,5 | 65,7 | 390 | 340 | 497 | 409 |
| | 200 | 440 | 400 | 100 | 570 | 468 | 600 | 275 | 30 | 340 | 295 | 12 × 23 | 130 | 114,2 | - | - | - | - |
| 250 | 476 | 400 | 100 | 606 | 480 | 730 | 325 | 32 | 405 | 355 | 12 × 28 | 230 | 180,5 | - | - | - | - | |
| 300 | 530 | 400 | 93 | 660 | 510 | 850 | 375 | 32 | 460 | 410 | 12 × 28 | 328 | 267,5 | - | - | - | - | |

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Mating dimensions as per standard

Face-to-face lengths: Straight-way valve: DIN EN 558/1, ISO 5752
Angle valve: DIN EN 558/8, ISO 5752

Flanges: DIN EN 1092-2, flange type 21 for EN-GJL-250
DIN EN 1092-2, flange type 21-2 for EN-GJS-400-18-LT

Flange facing: DIN EN 1092-2, type B

Other flange designs

- Undrilled, DN 200 - 300 drilled to PN 10, drilled to PN 6 (DIN EN 1092-2); tongue (type C), groove (type D), spigot (type E), recess (type F) at both ends (to DIN EN 1092-1)
- Other flange designs on request

Dimensions and weights PN 16 and PN 25, EN-GJS-400-18-LT

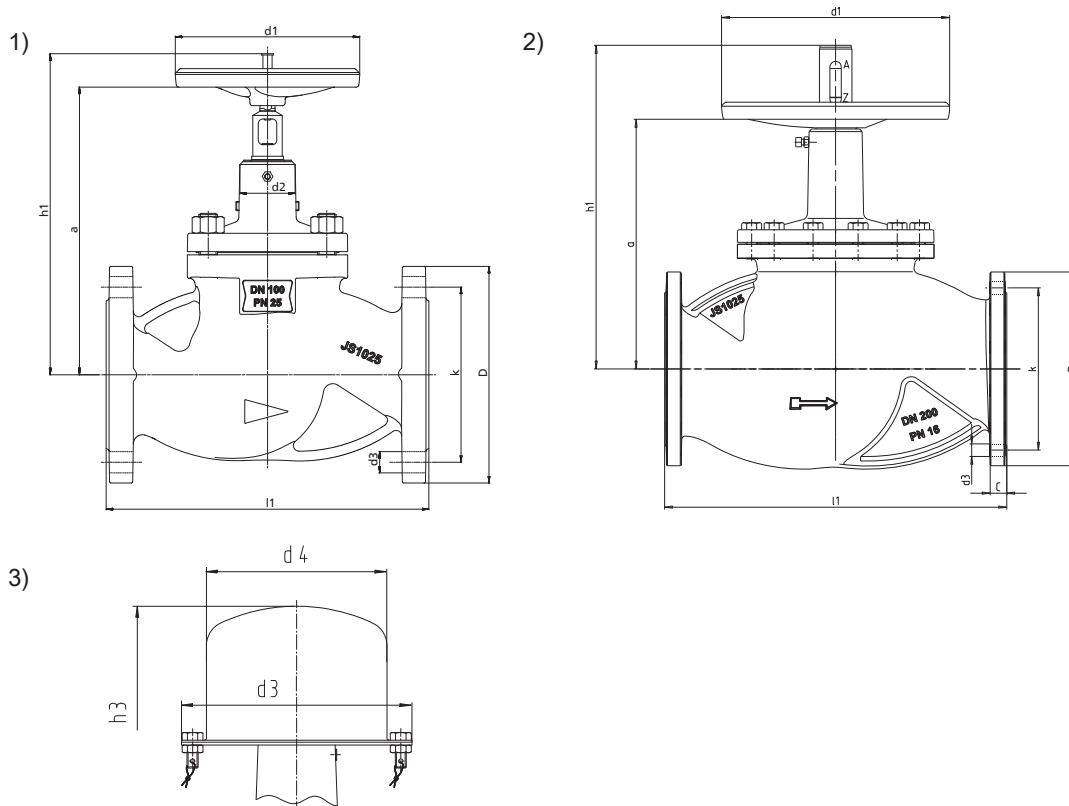


Fig. 4: 1) PN 16/25 up to DN 150; 2) PN 16 DN 200 - 350; 3) Lead-sealable cap (prevents unauthorised actuation) as assembly set

Dimensions and weights

| PN | DN | a | d ₁ | d ₂ | h ₁ | l ₁ | Flange | | | | [kg] | Capped valve | | |
|-----|-----|------|----------------|----------------|----------------|----------------|--------|------|--------|--------------------|------|----------------|----------------|----------------|
| | | | | | | | C | D | k | n × d ₃ | | d ₃ | d ₄ | h ₃ |
| | | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | | [mm] | [mm] | [mm] |
| 16 | 15 | 179 | 125 | 47 | 211 | 130 | 14 | 95 | 65 | 4 × 14 | 3,1 | 166 | 130 | 222 |
| | 20 | 182 | 125 | 47 | 214 | 150 | 16 | 105 | 75 | 4 × 14 | 4,1 | 166 | 130 | 225 |
| | 25 | 188 | 125 | 47 | 220 | 160 | 16 | 115 | 85 | 4 × 14 | 4,6 | 166 | 130 | 231 |
| | 32 | 203 | 125 | 47 | 238 | 180 | 18 | 140 | 100 | 4 × 19 | 8,1 | 166 | 130 | 246 |
| | 40 | 208 | 125 | 47 | 243 | 200 | 18 | 150 | 110 | 4 × 19 | 8,5 | 166 | 130 | 251 |
| | 50 | 240 | 160 | 51 | 266 | 230 | 20 | 165 | 125 | 4 × 19 | 11 | 210 | 170 | 298 |
| | 65 | 250 | 160 | 51 | 290 | 290 | 20 | 185 | 145 | 4 × 19 | 17 | 210 | 170 | 308 |
| | 80 | 290 | 200 | 60 | 324 | 310 | 22 | 200 | 160 | 8 × 19 | 21 | 270 | 220 | 391 |
| | 100 | 312 | 200 | 60 | 348 | 350 | 24 | 220 | 180 | 8 × 19 | 31 | 270 | 220 | 415 |
| 125 | 400 | 250 | 80 | 460 | 400 | 26 | 250 | 210 | 8 × 19 | 51 | 390 | 340 | 480 | |

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| PN | DN | a | d ₁ | d ₂ | h ₁ | l ₁ | Flange | | | | [kg] | Capped valve | | |
|----|-----|------|----------------|----------------|----------------|----------------|--------|-----|-----|--------------------|------|----------------|----------------|----------------|
| | | [mm] | [mm] | [mm] | [mm] | [mm] | C | D | k | n × d ₃ | | d ₃ | d ₄ | h ₃ |
| 16 | 150 | 418 | 250 | 80 | 479 | 480 | 26 | 285 | 240 | 8 × 23 | 68,5 | 390 | 340 | 499 |
| | 200 | 440 | 400 | 93 | 570 | 600 | 30 | 340 | 295 | 12 × 23 | 139 | - | - | - |
| | 250 | 476 | 400 | 93 | 606 | 730 | 32 | 405 | 355 | 12 × 28 | 239 | - | - | - |
| | 300 | 530 | 400 | 93 | 660 | 850 | 32 | 460 | 410 | 12 × 28 | 343 | - | - | - |
| | 350 | 530 | 400 | 93 | 660 | 980 | 36 | 520 | 470 | 16 × 28 | 390 | - | - | - |
| 25 | 15 | 179 | 125 | 47 | 211 | 130 | 14 | 95 | 65 | 4 × 14 | 3,1 | 166 | 130 | 222 |
| | 20 | 182 | 125 | 47 | 214 | 150 | 16 | 105 | 75 | 4 × 14 | 4,1 | 166 | 130 | 225 |
| | 25 | 188 | 125 | 47 | 220 | 160 | 16 | 115 | 85 | 4 × 14 | 4,6 | 166 | 130 | 231 |
| | 32 | 203 | 125 | 47 | 238 | 180 | 18 | 140 | 100 | 4 × 19 | 8,2 | 166 | 130 | 246 |
| | 40 | 208 | 125 | 47 | 243 | 200 | 18 | 150 | 110 | 4 × 19 | 8,5 | 166 | 130 | 251 |
| | 50 | 240 | 160 | 51 | 266 | 230 | 20 | 165 | 125 | 4 × 19 | 11 | 210 | 170 | 298 |
| | 65 | 250 | 160 | 51 | 290 | 290 | 20 | 185 | 145 | 8 × 19 | 17 | 210 | 170 | 308 |
| | 80 | 290 | 200 | 60 | 324 | 310 | 22 | 200 | 160 | 8 × 19 | 28,9 | 270 | 220 | 391 |
| | 100 | 312 | 200 | 60 | 348 | 350 | 24 | 235 | 190 | 8 × 23 | 40 | 270 | 220 | 415 |
| | 125 | 400 | 250 | 80 | 460 | 400 | 26 | 270 | 220 | 8 × 28 | 65 | 390 | 340 | 480 |
| | 150 | 418 | 250 | 80 | 479 | 480 | 26 | 300 | 250 | 8 × 28 | 89 | 390 | 340 | 499 |

Mating dimensions as per standard

- Face-to-face lengths: Straight-way valve: DIN EN 558/1, ISO 5752
Angle valve: DIN EN 558/8, ISO 5752
- Flanges: DIN EN 1092-2, flange type 21 for EN-GJL-250
DIN EN 1092-2, flange type 21-2 for EN-GJS-400-18-LT
- Flange facing: DIN EN 1092-2, type B

Other flange designs

- PN 16: undrilled, DN 200 - 300 drilled to PN 10, drilled to PN 6 (DIN EN 1092-2); tongue (type C), groove (type D), spigot (type E), recess (type F) at both ends (to DIN EN 1092-1)
- PN 25: undrilled (DIN EN 1092-2), drilled to ANSI Class 150; tongue (type C), groove (type D), spigot (type E), recess (type F) at both ends (to DIN EN 1092-1)
- Other flange designs on request

Installation information

Flow through globe valves should be in the direction of the embossed arrow on the valve body. An alternating direction of flow is permissible for valves with standard valve disc, but not for valves fitted with a balanced plug.

If the following differential pressures are exceeded on BOA-H globe valves from DN 200 upwards, a balanced plug design is required.

Differential pressures [bar]

| PN | DN | Δp |
|----|---------|------------------|
| 16 | 150 | - |
| 16 | 200 | 12 |
| 16 | 250 | 9 |
| 16 | 300/350 | 6 |
| 25 | 150 | 21 ⁵⁾ |

The balanced plug only takes effect if the pressure to be sealed lies above the plug. Therefore, flow through valves with balanced plug must be reversed (embossed flow direction arrow is reversed).

In steam pipelines the valve must not be installed with the stem pointing downwards (risk of steam hammer).

⁵⁾ No balanced plug available.

Chemical resistance chart

The information provided in this chemical resistance chart is based on experience, the Dechema lists as well as manufacturer information. Corrosion resistance is largely dependent on the operating conditions, temperatures and concentrations. Hydroabrasive wear in fluids containing solids is not covered in this list. The information provided in this list is for orientation only. Warranty claims may not be asserted on the basis of this list.

Symbols key

| Symbol | Description |
|--------|---|
| ✓ | The fluid handled is not normally aggressive toward the materials. |
| ✗ | The fluid handled is aggressive toward the materials. Valve cannot be used. |
| ○ | The materials and/or the valve can only be used under certain operating conditions. Please enquire accordingly, stating the operating conditions such as concentration, temperature, pH and composition of the fluid handled. |

Chemical resistance chart for water⁶⁾

| Fluids handled | A ⁷⁾ | B ⁸⁾ |
|--|-----------------|-----------------|
| Brackish water ⁹⁾ | ✗ | ✗ |
| Service water ⁹⁾ | ✓ | ✓ |
| Fire-fighting water | ✓ | ✓ |
| Chlorinated water (≤ 0.6 mg/kg) | ✓ | ✓ |
| Deionised water (demineralised water) ¹⁰⁾ | ○ | ○ |
| Distilled water ¹⁰⁾ | ○ | ○ |
| Boiler feed water | ✓ | ✓ |
| Hot water | ✓ | ✓ |
| High-temperature hot water | ✓ | ✓ |
| Condensate | ✓ | ✓ |
| Oil-free cooling water | ✓ | ✓ |
| Oil-containing cooling water | ✓ | ✓ |
| Ozonised water (≤ 0.5 mg/kg) | ✓ | ✓ |
| Pure water | ✓ | ✓ |
| Seawater | ✗ | ✗ |
| Scale-forming water ⁹⁾ | ○ | ○ |
| Raw water ⁹⁾ | ✓ | ✓ |
| Partly desalinated water ¹⁰⁾ | ○ | ○ |
| Fully desalinated water ¹⁰⁾ | ○ | ○ |
| Municipal waste water ⁹⁾¹¹⁾ | ✓ | ✓ |
| Industrial waste water ⁹⁾¹²⁾ | ✓ | ✓ |

Chemical resistance chart for oils (aromatic content 5 mg/kg)

| Fluids handled | A ⁷⁾ | B ⁸⁾ |
|----------------|-----------------|-----------------|
| Vegetable oils | ✓ | ✓ |
| Mineral oils | ✓ | ✓ |
| Synthetic oils | ✓ | ✓ |
| Crude oil | ✓ | ✓ |

| Fluids handled | A ⁷⁾ | B ⁸⁾ |
|----------------------------------|------------------|-----------------|
| Petroleum | ✓ | ✓ |
| Light fuel oil | ✓ | ✓ |
| Linseed oil | ✓ | ✓ |
| Oil/water emulsion ⁹⁾ | ✓ | ✓ |
| Jet fuel | ○ ¹³⁾ | ✓ |
| Petrol | ○ ¹³⁾ | ✓ |
| Kerosene | ○ ¹³⁾ | ✓ |

Chemical resistance chart for refrigerants

| Fluids handled | A ⁷⁾ | B ⁸⁾ |
|---|-----------------|-----------------|
| Ammonium hydroxide (≤ 30 %, ≤ 25 °C) | ✓ | ✓ |
| Glycol (ethylene glycol) | ✓ | ✓ |
| Propylene glycol | ✓ | ✓ |
| Water/glycol mixture (20 % ≤ c ≤ 50 %, ≤ 90 °C) | ✓ | ✓ |
| Inorganic cooling brine, pH 7.5 | ✓ | ✓ |

Chemical resistance chart for thermal oils

| Fluids handled | A ⁷⁾ | B ⁸⁾ |
|----------------------------|-----------------|-----------------|
| Synthetic thermal oils | ✓ | ✓ |
| Mineral-based thermal oils | ✓ | ✓ |

Chemical resistance chart for acids

| Fluids handled | A ⁷⁾ | B ⁸⁾ |
|--|-----------------|-----------------|
| Hydrochloric acid | ✗ | ✗ |
| Sulphuric acid (pure, technical, concentrated) | ✗ | ✗ |
| Sulphurous acid | ✗ | ✗ |
| Fatty acid | ✗ | ✗ |
| Nitric acid | ✗ | ✗ |

Chemical resistance chart for cleaning agents

| Fluids handled | A ⁷⁾ | B ⁸⁾ |
|--|-----------------|-----------------|
| Lye for bottle rinsers (e.g. P3) ≤ 80 °C ⁹⁾ | ○ | ○ |
| Lye for metal cleaning ≤ 80 °C ⁹⁾ | ○ | ○ |

Chemical resistance chart for steam

| Fluids handled | A ⁷⁾ | B ⁸⁾ |
|-----------------|------------------|-----------------|
| Saturated steam | ○ ¹³⁾ | ✓ |

Chemical resistance chart for other fluids

| Fluids handled | A ⁷⁾ | B ⁸⁾ |
|------------------------------------|-----------------|-----------------|
| Sodium hydroxide (≤ 50 %, ≤ 50 °C) | ○ | ○ |
| Natural gas | ✓ | ✓ |
| Oil-containing compressed air | ✓ | ✓ |
| Dry chlorine (≤ 30 °C) | ○ | ✓ |
| Ammonia | ✓ | ✓ |
| Butane (liquefied gas) | ✓ | ✓ |

⁶⁾ General criteria for water to be handled by products made of non-alloyed materials: pH > 7; chlorides (Cl⁻) < 150 mg/kg; chlorine (Cl) < 0.6 mg/kg. Other factors to be considered: hardness, carbon dioxide content (CO₂), oxygen (O₂) and dissolved substances. Contact KSB if limits are exceeded!

⁷⁾ EN-GJL-250, Tmax. +300 °C

⁸⁾ EN-GJS-400-18-LT, Tmax. +350 °C

⁹⁾ Without solids

¹⁰⁾ Can only be used for installations and the respective water quality as specified in the VdTÜV 1466 or VDI 2035 guidelines. A pH ≥ 9.5 and an oxygen content of ≤ 0.02 mg/l are also recommended.

¹¹⁾ Biologically treated

¹²⁾ Non-corrosive, non-abrasive

¹³⁾ EN-GJS-400-18-LT is recommended for safety reasons (ductility).

| Fluids handled | A ⁷⁾ | B ⁸⁾ |
|-----------------------------------|-----------------|-----------------|
| Aqueous glycerine | ✓ | ✓ |
| Carbon dioxide (gas) | ✓ | ✓ |
| Carbon dioxide (aqueous solution) | ✗ | ✗ |