

Primary characteristics

NAF-Ceramic is a ball valve all-lined with ceramic. It is primarily intended for control but has a sealing class as for a shut-off valve.

The valve has

- internally all-lined with ceramic for erosive and abrasive media.
- an easy-to-service arrangement, due to the off-center joint face of the valve body, which allows for easy replacement of the ball and seals, without the need for removing the stem and actuator.
- a floating ball that seals in both directions of flow and at low differential pressures.
- sturdy, blowout-proof rigidly journalled stem and a drive arrangement between the ball and stem that transmits torque evenly.
- stem seal with maintenance-free O-ring seals.
- the NAF standard for mounting the actuator, which simplifies installation and results in a compact valve/actuator unit.

CE-marked according to Pressure Equipment Directive (PED 97/23/EG) module H, category III.

Applications

NAF-Ceramic can be used both as control and shut-off valve for difficult applications with erosive and abrasive media.

The valve represents a concrete result of our product philosophy which is focused on functionality, high quality and low life cycle costs, and is based on concentrating our range to a limited number of valve types, but all of them suitable for a wide variety of applications.



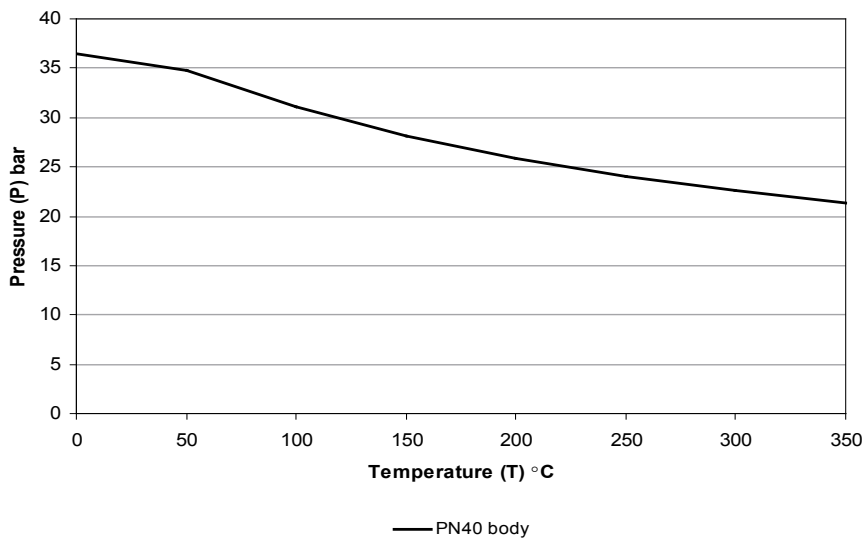
Technical specification

| | |
|-----------------------|---|
| Material: | Stainless steel/ Ceramic |
| Dimensions: | DN 25—100 (1"—4") |
| Pressure class: | PN 40 ANSI Class 300 |
| Face-to-face lengths: | PN 40: EN 558-1 series 4 (SSG 1043) ANSI 300: ANSI B 16.10 Class 300 short |
| Valve design: | ANSI B16.34 and EN 12 516 |
| Connections: | Flanges acc. to DIN or ANSI B 16.5 |
| Temperature range: | -30 - 200°C, see diagram on page 2. |
| Test pressure: | Open valve 1,5xPN Closed valve 1,1xPN |
| Sealing class: | Testing medium is water. IEC 534-4 Class V ANSI / FCI70-2 |

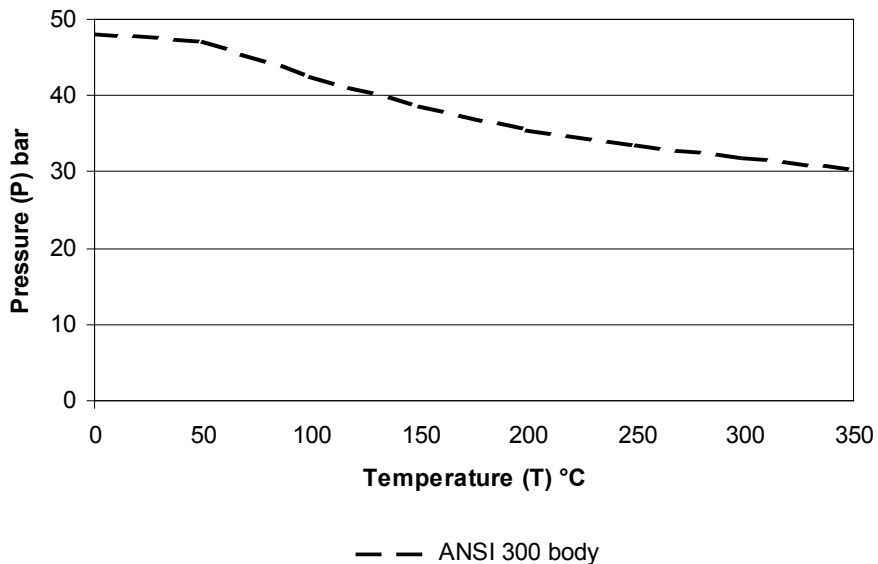
Working pressure, differential pressure and temperature

The maximum working pressure and temperature in the body depends on pressure class according to respectively flange standards. For EN1092-1:2001 see diagram below. The differential pressure when the valve is closed is max 25 bar, and the temperature dependence is shown in the diagram on page 3. The stem gland with EPDM O-ring can be used for temperatures up to 200°C. For higher temperatures, consult NAF. The ceramic parts must not be exposed to thermal shocks.

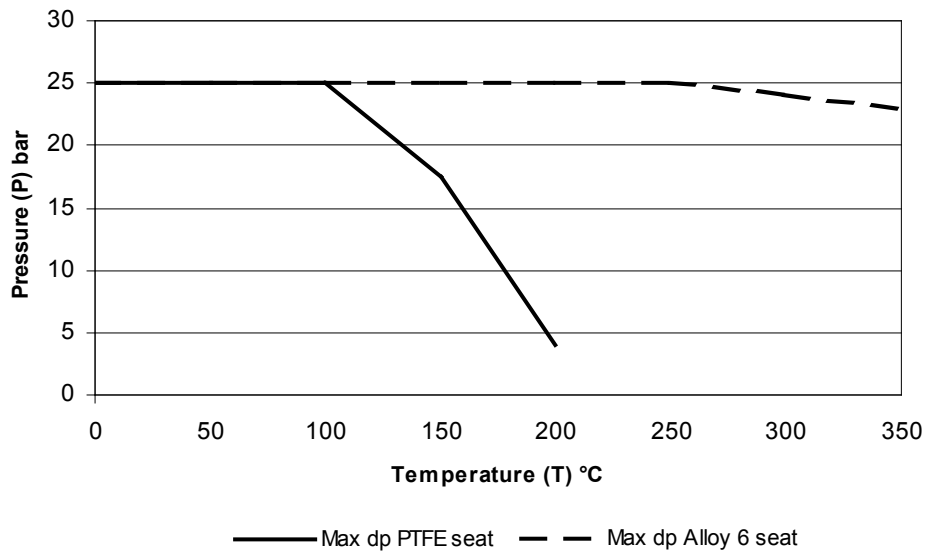
Max working pressure PN valve



Max working pressure ANSI valve



Max dP



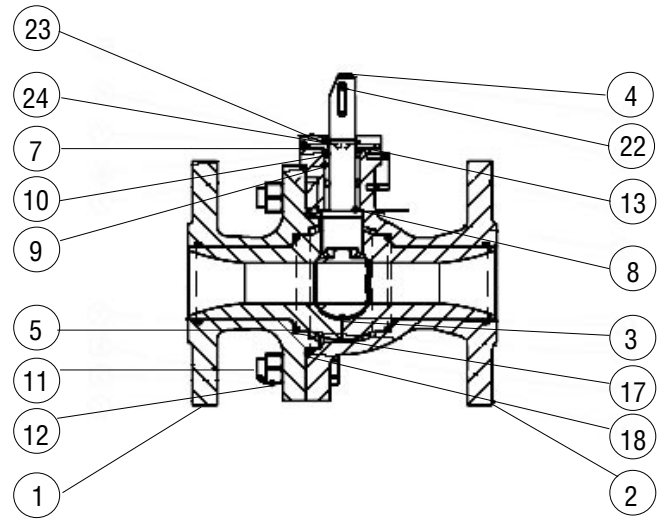
Flow capacities and characteristics (Table 1)

| DN/ Bore | K _v at an opening angle of | | | | | | | | | | | | | | | |
|-------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° | 55° | 60° | 65° | 70° | 75° | 80° | 85° | 90° |
| 25/15 | 0,5 | 0,6 | 0,9 | 1,0 | 1,2 | 1,5 | 1,9 | 2,3 | 2,8 | 3,4 | 4,0 | 4,8 | 6,3 | 7,7 | 9,2 | 11 |
| 40/25 | 1,5 | 1,7 | 2,5 | 2,9 | 3,5 | 4,4 | 5,4 | 6,6 | 8,2 | 9,8 | 12 | 14 | 18 | 22 | 27 | 32 |
| 50/32 | 2,8 | 3,1 | 4,6 | 5,4 | 6,4 | 8,2 | 10 | 12 | 15 | 18 | 21 | 26 | 34 | 41 | 50 | 59 |
| 80/50 | 6,1 | 6,8 | 10 | 12 | 14 | 18 | 22 | 27 | 33 | 40 | 47 | 57 | 74 | 91 | 109 | 130 |
| 100/65 | 11 | 12 | 18 | 21 | 25 | 31 | 38 | 47 | 58 | 70 | 82 | 99 | 130 | 159 | 191 | 227 |

$C_v = 1,16 \times K_v$

Material specification (Table 2)

| Item | Qty | Part | Material |
|------|-----|---------------|-----------------|
| 1 | 1 | Body | EN1.4408 / CF8M |
| 2 | 1 | Body | EN1.4408 / CF8M |
| 3 | 1 | Ball | Zirconium oxide |
| 4 | 1 | Stem assembly | EN1.4460 |
| 5 | 2 | Lining | Aluminium oxide |
| 7 | 1 | Washer | 2343-02 |
| 8 | 1 | Washer | 8176-05 |
| 9 | 2 | Bushing | 8176-06 |
| 10 | 2 | O-ring | EPDM |
| 11 | 6 | Screw | A4 |
| 12 | 6 | Nut | A4 |
| 13 | 1 | Washer | 8176-01 |
| 17 | 2 | Seal ring | 8176-01 |
| 18 | 1 | Seal ring | PTFE |
| 22 | 1 | Key | A4 |
| 23 | 1 | Backing ring | Spring steel |
| 24 | 1 | Washer | Spring steel |



Operating torque in Nm (Table 3)

| DN | Differential pressure bar | | | | |
|-----|---------------------------|----|----|-----|-----|
| | 5 | 10 | 16 | 20 | 25 |
| 25 | 8 | 10 | 12 | 15 | 18 |
| 40 | 15 | 20 | 23 | 30 | 35 |
| 50 | 18 | 25 | 32 | 38 | 45 |
| 80 | 25 | 36 | 48 | 60 | 70 |
| 100 | 36 | 60 | 85 | 105 | 130 |

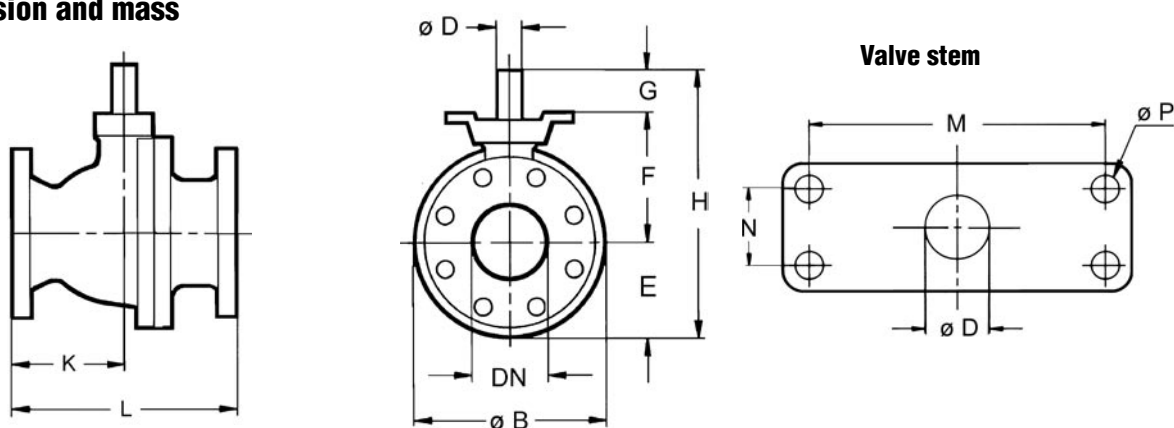
Operating torque

The minimum design differential pressure for selecting the actuator is 5 bar.

Sizing of control valves

We have a user friendly valve calculation program which can be ordered through your NAF representative. The program is based on calculating formula according to the standards IEC 60534 and ISA S75.01.

Dimension and mass

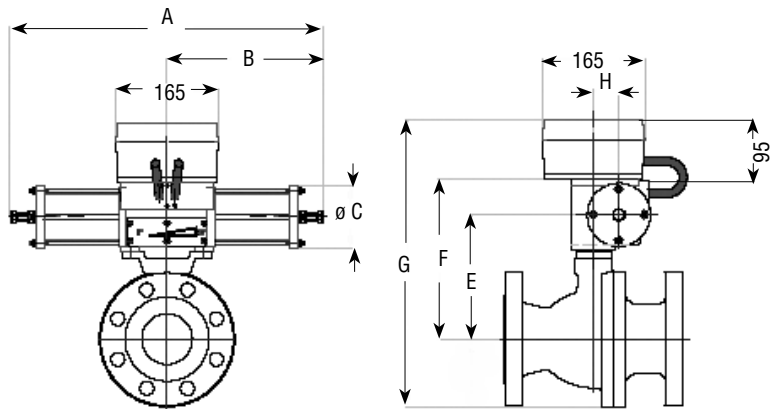


(Table 4)

| Valve DN | B | D | E | F | G | H | K PN40 | L PN40 |
|----------|-----|----|-----|-----|----|-----|--------|--------|
| 25 1" | 124 | 16 | 62 | 83 | 38 | 183 | 66 | 165 |
| 40 - | 150 | 16 | 75 | 91 | 38 | 204 | 95 | 190 |
| 50 2" | 165 | 20 | 83 | 106 | 43 | 232 | 108 | 216 |
| 80 3" | 214 | 25 | 107 | 137 | 50 | 284 | 142 | 283 |
| 100 4" | 244 | 25 | 122 | 152 | 50 | 324 | 153 | 305 |

(Table 5)

| Valve DN | K | L | M | N | P | Mass kg | |
|----------|----------|-----|-----|----|----|---------|----------|
| | ANSI 300 | | | | | PN 40 | ANSI 300 |
| 25 1" | 66 | 165 | 115 | 30 | 11 | 9 | 10 |
| 40 - | - | - | 115 | 30 | 11 | 11 | - |
| 50 2" | 108 | 216 | 115 | 30 | 11 | 14 | 14 |
| 80 3" | 142 | 283 | 115 | 30 | 11 | 27 | 30 |
| 100 4" | 153 | 305 | 115 | 30 | 11 | 36 | 43 |



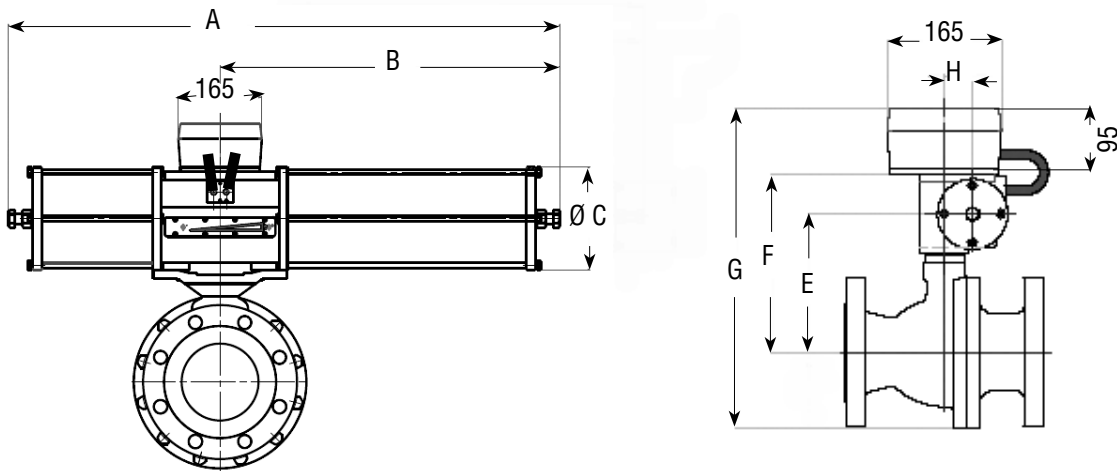
NAF 791290

NAF-Ceramic with pneumatic actuator (Table 6)

| Valve DN | Max. dP bar at supply of | | | NAF-No | Dimension in mm | | | | | | | | Mass kg 1) |
|--------------------------------------|--------------------------|-------|-------|-------------|-----------------|-----|-----|-----|-----|-----|-----------------|----|------------|
| | 4 bar | 5 bar | 6 bar | | A | B | C | D | E | F | G ²⁾ | H | |
| Double acting acc. to Fk74.59 | | | | | | | | | | | | | |
| 25 | 25 | 25 | 25 | 791390-0216 | 370 | 185 | 80 | 62 | 133 | 185 | 342 | 31 | 15 |
| 40 | 25 | 25 | 25 | -0216 | 370 | 185 | 80 | 75 | 141 | 193 | 363 | 31 | 17 |
| 50 | 25 | 25 | 25 | -0220 | 370 | 185 | 80 | 83 | 156 | 208 | 385 | 31 | 20 |
| 80 | 25 | 25 | 25 | -0225 | 370 | 185 | 80 | 107 | 187 | 239 | 441 | 31 | 33 |
| 100 | 15 | 19 | 25 | -0225 | 370 | 185 | 80 | 122 | 202 | 264 | 471 | 31 | 42 |
| 100 | 25 | 25 | 25 | 791290-1225 | 490 | 245 | 100 | 122 | 207 | 264 | 481 | 40 | 44 |

1) Valid for actuator and valve in PN 40

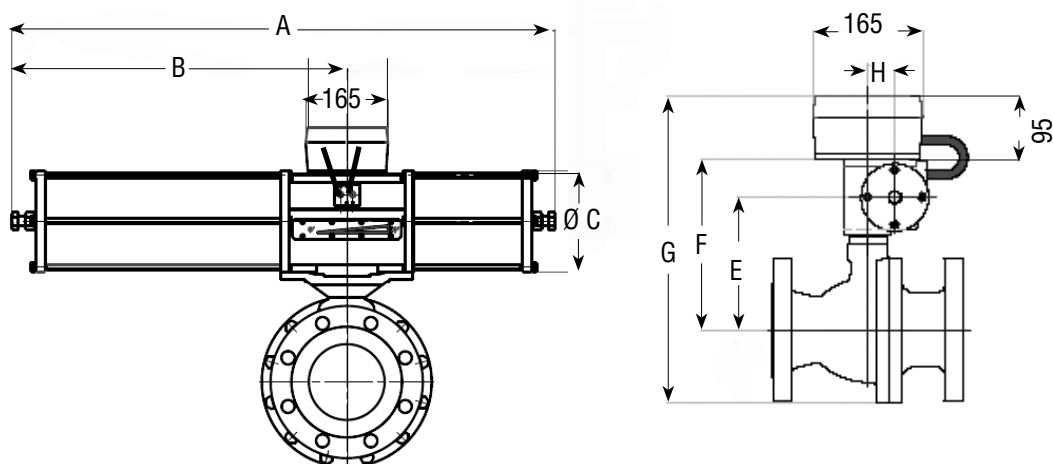
2) Incl NAF positioner



NAF 791292

(Table 7)

| Valve DN | Max dP bar at supply of | | | NAF-No | Dimension in mm | | | | | | | | Mass kg ¹⁾ |
|--|-------------------------|-------|-------|-------------|-----------------|-----|-----|-----|-----|-----|-----------------|----|-----------------------|
| | 4 bar | 5 bar | 6 bar | | A | B | C | D | E | F | G ²⁾ | H | |
| Single acting Spring, closes acc. to Fk 74.59 | | | | | | | | | | | | | |
| 25 | 20 | 25 | 25 | 791392-0216 | 455 | 270 | 80 | 62 | 133 | 185 | 342 | 31 | 16 |
| 40 | 20 | 25 | 25 | -0216 | 455 | 270 | 80 | 75 | 141 | 193 | 363 | 31 | 18 |
| 40 | 25 | 25 | 25 | 791292-1216 | 635 | 390 | 100 | 75 | 146 | 203 | 373 | 40 | 22 |
| 50 | 15 | 25 | 25 | 791392-0220 | 455 | 270 | 80 | 83 | 156 | 208 | 385 | 31 | 21 |
| 50 | 25 | 25 | 25 | 791292-1220 | 635 | 390 | 100 | 83 | 161 | 218 | 395 | 40 | 25 |
| 80 | 25 | 25 | 25 | -1225 | 635 | 390 | 100 | 107 | 192 | 249 | 451 | 40 | 38 |
| 100 | 13 | 25 | 25 | -1225 | 635 | 390 | 100 | 122 | 207 | 264 | 481 | 40 | 47 |
| 100 | 25 | 25 | 25 | -2225 | 890 | 540 | 145 | 122 | 227 | 300 | 517 | 63 | 61 |



NAF 791294

(Table 8)

| Valve DN | Max dP bar at supply of | | | NAF-No | Dimension in mm | | | | | | | | Mass kg ¹⁾ |
|---|-------------------------|-------|-------|-------------|-----------------|-----|-----|-----|-----|-----|-----------------|----|-----------------------|
| | 4 bar | 5 bar | 6 bar | | A | B | C | D | E | F | G ²⁾ | H | |
| Single acting spring, opens acc. to Fk 74.59 | | | | | | | | | | | | | |
| 25 | 20 | 25 | 25 | 791394-0216 | 455 | 270 | 80 | 62 | 133 | 185 | 342 | 31 | 16 |
| 40 | - | 25 | 25 | -0216 | 455 | 270 | 80 | 75 | 141 | 193 | 363 | 31 | 18 |
| 40 | 25 | 25 | 25 | 791294-1216 | 635 | 390 | 100 | 75 | 146 | 203 | 373 | 40 | 22 |
| 50 | - | 20 | 25 | 791394-0220 | 455 | 270 | 80 | 83 | 156 | 208 | 385 | 31 | 21 |
| 50 | 20 | 25 | 25 | 791294-1220 | 635 | 390 | 100 | 83 | 161 | 218 | 395 | 40 | 25 |
| 80 | 12 | 25 | 25 | -1225 | 635 | 390 | 100 | 107 | 192 | 249 | 451 | 40 | 38 |
| 80 | 25 | 25 | 25 | -2225 | 890 | 540 | 145 | 107 | 212 | 285 | 496 | 63 | 52 |
| 100 | 5 | 19 | 22 | -1225 | 635 | 390 | 100 | 122 | 207 | 264 | 481 | 40 | 47 |
| 100 | 25 | 25 | 25 | -2225 | 890 | 540 | 145 | 122 | 227 | 300 | 517 | 63 | 61 |

1) Valid for actuator and valve in PN 40
2) Incl NAF positioner

Accessories

NAF's pneumatic actuators, see data sheet Fk74.59 can be equipped with a large number of accessories.

The following are included in NAF's standard programme and are suitable for direct mounting to NAF pneumatic actuators.

Valve positioner

Pneumatic and electro-pneumatic valve positioner, see data sheet Fk41.82. Intelligent valve positioner, see data sheet Fk41.85.

Solenoid valves

See data sheet Fk79.17.

Filter regulator

Can be delivered (part no. 79-SMC-AW20K-F02CE-C).

Electrical position indication

See data sheet Fk79.10.

Terminal box

The actuator can be equipped with a junction box (part No. 349 20930) of cast aluminium containing terminal blocks for connecting the solenoid valve and position sensors.

Product code NAF-Ceramic

Example:

| | | | | | | | | |
|-------------|-----------|----------|----------|----------|----------|---------------|------------|----------|
| | 88 | 8 | 6 | 9 | 8 | - 0100 | - 2 | 3 |
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

- 1. Valve type**
88 Ball valve
- 2. Material (Body)**
8 1.4408 / CF8M
- 3. Pressure class**
6 PN 40 (DN 25 — 100)¹⁾
7 ANSI Class 300 (Size 1" — 4")
- 4. Stem seal**
9 O-ring EPDM, max 200°C
- 5. Seals**
8 Internally all lined with Ceramic
- 6. Dimension**

| DIN | DN | ANSI | Size |
|-------------|-----|-------------|------|
| 0025 | 25 | 0001 | 1" |
| 0040 | 40 | - | |
| 0050 | 50 | 0002 | 2" |
| 0080 | 80 | 0003 | 3" |
| 0100 | 100 | 0004 | 4" |
- 7. Seat/lining**
2 Al O₂ Ceramic
- 8. Ball**
3 Zr O₂ Ceramic

1) DN 25—50 have the same flange dimensions in PN 10, 16, 25 and 40.
DN 80—100 have the same flange dimensions in PN 25 and 40.