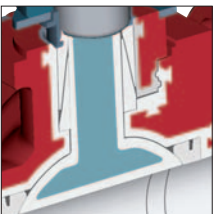
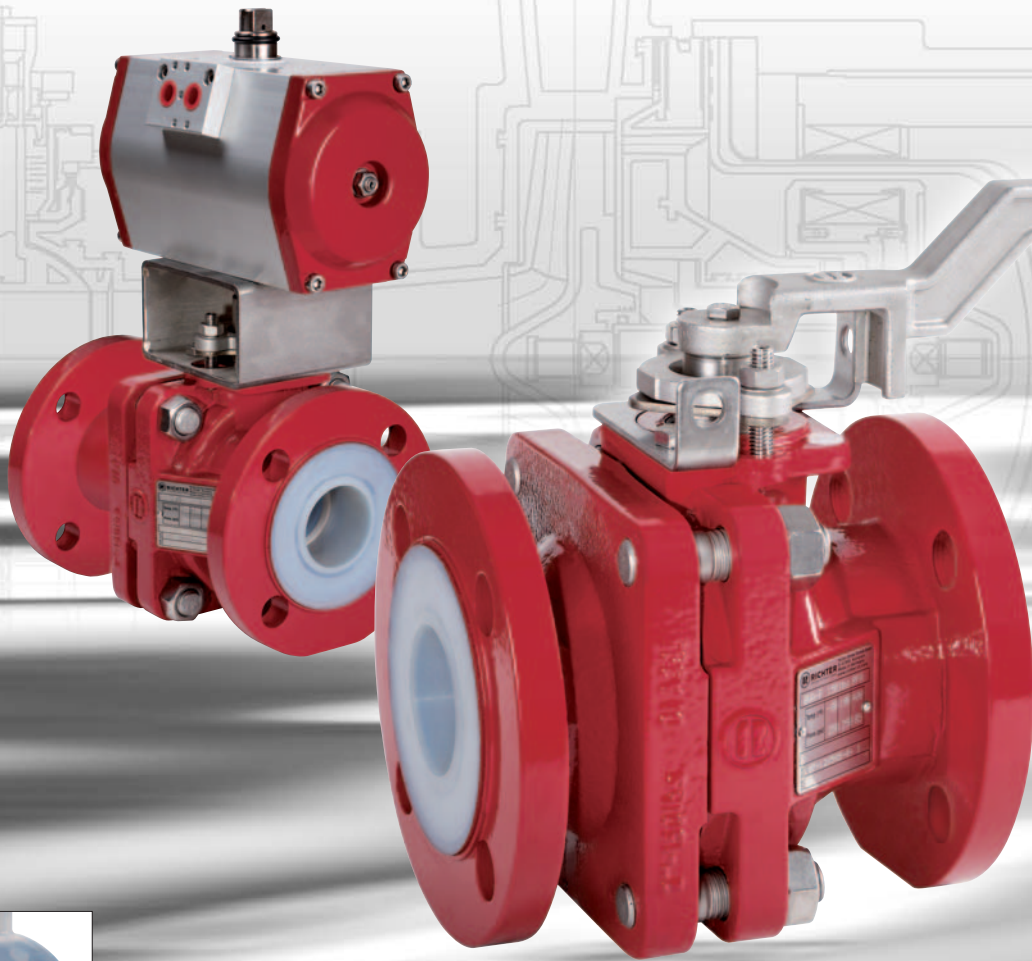


Richter Lined Standard ASME and ISO Ball Valves



- Lining virgin PFA
- One-piece ball/stem design, Al₂O₃ ball option
- Maintenance-free stem seal
- Low torque, high flow rate

Lined Standard ASME/ANSI and ISO/DIN Ball Valves

Fields of application

The design of the ball valves series BVA and BVI is based on more than 30 years of application experience with lined ball valves. They provide an excellent ratio of economic and operational performance in a wide variety of process applications.

The Richter ball valves BVA and BVI are designed

- as shut-off and automated valves for corrosive and hazardous media,
- where stainless steel, special metals, PVDF etc. are not sufficiently corrosion-resistant,
- as alternative to valves made of exotic special metals and
- serve as reliable alternative to lined plug valves due to higher flow rates, much lower torques and minimum maintenance.

Product features

- PFA-lined one-piece ball/stem unit, optional Al₂O₃ ceramic ball
- Full ports of BVA sizes 1", 1.5" and 2" to ASME/ANSI as well as BVI DN 25 through DN 150 to ISO result in high flow rates, minimum pressure losses and a more efficient piping system.
- BVA sizes 3", 4" and 6" to ASME/ANSI with reduced port feature a compact design with smaller valve body envelope and lowest possible torque for economic actuation.
- Various product options, e.g. locking devices and gear operators

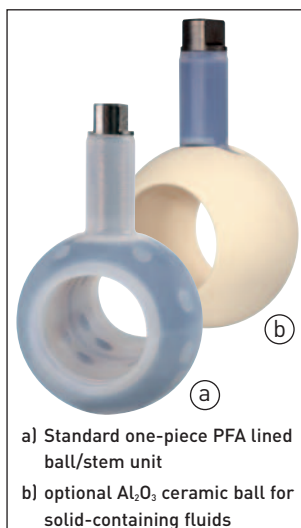
Type code

manual actuation remote actuation

- | | | |
|----------------------------|---------|----------|
| • ASME/ANSI ball valve | BVA/... | BVAP/... |
| • ISO/DIN ball valve | BVI/... | BVIP/... |
| • Lining PFA fluoroplastic | .../F | |

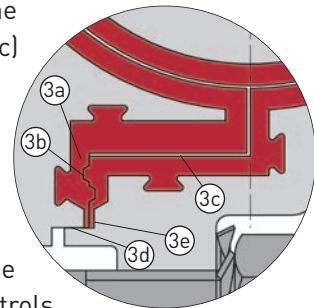
Efficient alternative to plug valves

- Plug valves provide some 2/3 of full port ball valve flow only, whereas full port ball valves allow for downsizing of pipeline system by at least 1 size. Reduced port ball valves provide flows equal to plug valves.
- Plug valves require 100-350% more torque, therefore in most cases larger actuator needed.
- The plug is seated in the body lining instead of seat rings. Wear and tear requires body or complete valve ("throw away valve") to be exchanged. No ceramic option.
- Plug valves have conventional packing-type stem sealing, not self-adjusting, not maintenance-free.
- Cavity volume underneath plug
- Plug core usually made of ductile iron unlike ball valves with SS ball core



Reliable body and seat sealing

- ① **3 mm (1/8") thick virgin PFA body lining**
 - High permeation resistance
 - Vacuum-proof anchored
 - Translucent, optimum quality assurance
- ② **Pressure-bearing body made of ductile cast iron EN-JS 1049 (0.7043)/ASTM A395, absorbs system and pipe forces.**
- ③ **Permanent body flange sealing**
 - Effective even under the most frequent thermal cycle conditions
 - Sealing zone (3a) with **full lining thickness**
 - **Labyrinth-like sealing (3b)** maximizes surface pressure.
 - **Body pieces position themselves properly** by means of the cup and cone shapes (3c) of each piece. **Metal centering (3d)** with-stands lateral and angular pipe forces.
 - **Almost metal-to-metal flange contact (3e)** in the circumference area controls the effects of temperature variations.



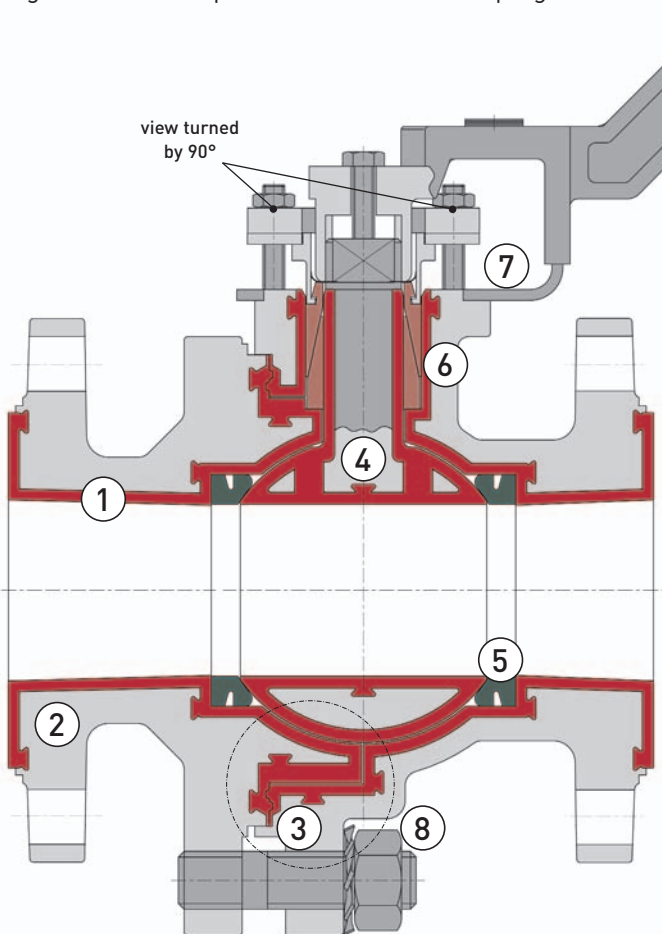
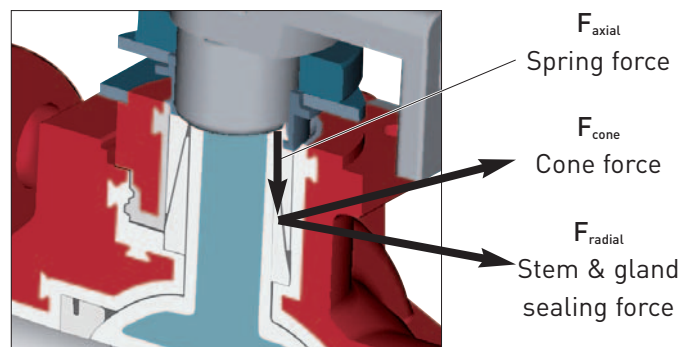
- ④ **One-piece ball/stem design**
 - Stainless steel core
 - Eliminates individual plastic lined mating parts for higher pressure/temperature ratings and optimises operational safety.
 - Al₂O₃ (99,7%) ceramic ball option
- ⑤ **Energised PTFE seat rings** provide a permanent spring load onto the ball and ensure of gas-tight sealing.
- ⑥ **Time-tested maintenance-free stem seal**
 - Outstanding long-life seal performance
 - Gas-tight to EN 12266, leakage rate A
 - Spring gland follower ensures of tightness even with changing conditions.
 - Visual inspection of sealing load
 - Manually adjustable from outside
- ⑦ **Universal ISO 5211 mounting dimensions**
- ⑧ **External corrosion protection**
Body epoxy coated. Packing gland, lever, lever stop, nuts and bolts stainless steel. Optional ASTM A193/B7M bolting.

Innovative cone shape stem seal design

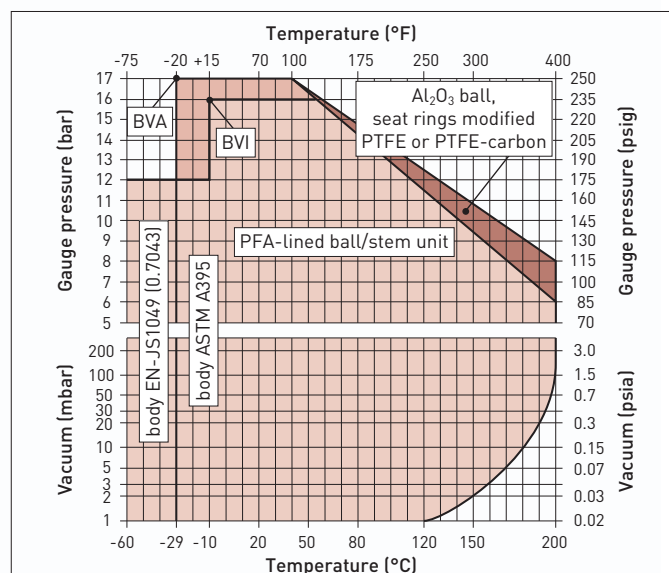
The PTFE packing insert translates a low axial thrust into a higher radial sealing force by means of the law of cone. The packing gland is designed with a diameter as small as possible. The result: outstanding stem seal performance under the most challenging conditions, permanent preload controlled manual adjustability at any time.

An added benefit is the ability to monitor the live loaded condition of the stem seal simply by inspecting the "gap" between the packing followers, thus lending this design to the user's preventive maintenance program.

Stem seal design



Pressure/temperature range



Body EN-JS1049 (0.7043)/PFA:

-60 °C [-75 °F] to +200 °C (400 °F);
max. 16 bar (235 psi) acc. to AD 2000

Body ASTM A395/PFA:

-29 °C [-20 °F] to +200 °C (400 °F);
max. 17.2 bar (250 psi) acc. to ASME B16.42

For low temperature applications observe local rules!

A special material is used for the metal core of the ball/stem in case of operating temperatures below -10 °C (15 °F).

Flow rates

| Valve size | | K_v (m ³ /h) | C_v (US gpm) |
|-------------|---------------|------------------------------|-------------------|
| BVI (mm) | BVA (inch) | | |
| DN 25 | 1" | 60 | 70 |
| DN 40 | 1 1/2" | 190 | 221 |
| DN 50 | 2" & 3" | 280 | 326 |
| DN 80 | 4" | 587 | 684 |
| DN 100 | 6" | 1250 | 1456 |
| DN 150 | - | 2800 | 3262 |

conversion:

$$C_v = K_{v100} \cdot 1,165 \text{ (US gpm)}$$

$$K_{v100} \cdot 0,971 \text{ (Imp. gpm)}$$

Operating torques PFA-lined ball/stem unit

| Δp bar (psi) | | | | | | | | | |
|----------------------|--------|--------|--------|----------|--------|------------|--------|-----------|--------|
| 3 (45) | | 6 (85) | | 10 (145) | | 17.2 (250) | | max. adm. | |
| Nm | in-lbs | Nm | in-lbs | Nm | in-lbs | Nm | in-lbs | Nm | in-lbs |
| 8 | 71 | 8 | 71 | 8 | 71 | 10 | 89 | 70 | 620 |
| 15 | 133 | 15 | 133 | 15 | 133 | 20 | 177 | 225 | 1990 |
| 20 | 177 | 20 | 177 | 20 | 177 | 25 | 221 | 225 | 1990 |
| 50 | 443 | 50 | 443 | 62 | 549 | 83 | 735 | 500 | 4425 |
| 80 | 708 | 80 | 708 | 92 | 814 | 120 | 1062 | 500 | 4425 |
| 200 | 1770 | 230 | 2036 | 270 | 2390 | 315 | 2788 | 2200 | 19470 |

Torques measured with water 20 °C (68 °F). Depending on the medium, e.g. gases or viscous resp. crystallizing liquids, the torques could increase.

Operating torques Al₂O₃ ceramic ball

| Δp psi (bar) | | | | | | | | | |
|----------------------|--------|--------|--------|----------|--------|------------|--------|-----------|--------|
| 3 (45) | | 6 (85) | | 10 (145) | | 17.2 (250) | | max. adm. | |
| Nm | in-lbs | Nm | in-lbs | Nm | in-lbs | Nm | in-lbs | Nm | in-lbs |
| 10 | 89 | 10 | 89 | 10 | 89 | 12 | 106 | 32 | 283 |
| 20 | 177 | 20 | 177 | 20 | 177 | 25 | 221 | 80 | 708 |
| 25 | 221 | 25 | 221 | 25 | 221 | 30 | 266 | 120 | 1062 |
| 60 | 531 | 60 | 531 | 72 | 637 | 95 | 841 | 250 | 2215 |
| 90 | 797 | 130 | 1151 | 150 | 1328 | 200 | 1770 | 350 | 3098 |
| 350 | 3098 | 400 | 3540 | 580 | 5133 | 770 | 6815 | 1200 | 10620 |

Dimensions and weights BVA (ASME/ANSI):

face to face ASME/ANSI B16.10 short, flanges ASME (ANSI) B16.5 Cl. 150 ****

| BVA | ØPort | | L | | HL | | H | | D | | k | | nxd ₁ | | EN ISO 5211 | H1 | | H5 | | H2 | | Weight** approx. | | |
|-----|-------|------|-------|------|------|------|-------|------|------|-------|------|-------|------------------|--------|--------------------------------|-----|------|------|------|------|------|------------------|------|------|
| | DN | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | | mm | inch | mm | inch | mm | inch | kg | lbs | |
| 25 | 1" | 24.5 | 0.964 | 127 | 5.0 | 179 | 7.05 | 130 | 5.12 | 108 | 4.25 | 79.5 | 3.125 | 4x16 | 4x ⁵ / ₈ | F05 | 50 | 1.97 | 60 | 2.36 | 60 | 2.36 | 5 | 11 |
| 40 | 1½" | 38 | 1.496 | 165 | 6.5 | 260 | 10.24 | 155 | 6.1 | 127 | 5.0 | 98.5 | 3.875 | 4x16 | 4x ⁵ / ₈ | F07 | 77 | 3.03 | 94 | 3.70 | 60 | 2.36 | 10.8 | 24 |
| 50 | 2" | 47.5 | 1.87 | 178 | 7.0 | 260 | 10.24 | 155 | 6.1 | 152.5 | 6.0 | 120.5 | 4.75 | 4x19 | 4x ³ / ₄ | F07 | 80 | 3.15 | 97 | 3.82 | 60 | 2.36 | 13 | 28.5 |
| 80 | 3" | 47.5 | 1.87 | 203 | 8.0 | 260 | 10.24 | 155 | 6.1 | 190.5 | 7.5 | 152.5 | 6.0 | 4x19 | 4x ³ / ₄ | F07 | 80 | 3.15 | 97 | 3.82 | 60 | 2.36 | 17 | 37.5 |
| 100 | 4" | 78 | 3.07 | 229 | 9.0 | 313 | 12.32 | 180 | 7.09 | 229 | 9.0 | 190.5 | 7.5 | 8x19 | 8x ³ / ₄ | F10 | 118 | 4.64 | 140 | 5.51 | 80 | 3.15 | 36 | 79 |
| 150 | 6" | 96 | 3.78 | 267 | 10.5 | 313 | 12.32 | 195 | 7.68 | 279.5 | 11.0 | 241.5 | 9.5 | 8x22.5 | 8x ⁷ / ₈ | F10 | 134 | 5.27 | 156 | 6.14 | 80 | 3.15 | 53 | 117 |

Dimensions and weights BVI (ISO/DIN):

face to face ISO 5752-Series 1 (DIN 3202 F1), flanges ISO 7005-2 ***

| BVI | ØPort | | L | | HL | | H | | D | | k | | nxd ₁ | | EN ISO 5211 | H1 | | H5 | | H2 | | Weight** approx. | | |
|-----|-------|------|-------|------|-------|------|--------|------|-------|------|-------|------|------------------|------|-------------|-----|------|------|------|------|------|------------------|-----|-----|
| | DN | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | | mm | inch | mm | inch | mm | inch | kg | lbs | |
| 25 | 1" | 24.5 | 0.964 | 160 | 6.3 | 179 | 7.05 | 130 | 5.12 | 115 | 4.52 | 85 | 3.35 | 4x14 | 4x0.55 | F05 | 50 | 1.97 | 60 | 2.36 | 60 | 2.36 | 5.5 | 12 |
| 40 | 1½" | 38 | 1.496 | 200 | 7.87 | 260 | 10.24 | 155 | 6.1 | 150 | 5.9 | 110 | 4.33 | 4x18 | 4x0.71 | F07 | 77 | 3.03 | 94 | 3.70 | 60 | 2.36 | 12 | 26 |
| 50 | 2" | 47.5 | 1.87 | 230 | 9.05 | 260 | 10.24 | 155 | 6.1 | 165 | 6.5 | 125 | 4.92 | 4x18 | 4x0.71 | F07 | 80 | 3.15 | 97 | 3.82 | 60 | 2.36 | 14 | 31 |
| 80 | 3" | 78 | 3.07 | 310 | 12.2 | 313 | 12.32 | 180 | 7.09 | 200 | 7.87 | 160 | 6.3 | 8x18 | 8x0.71 | F10 | 118 | 4.64 | 140 | 5.51 | 80 | 3.15 | 30 | 66 |
| 100 | 4" | 96 | 3.78 | 350 | 13.78 | 313 | 12.32 | 195 | 7.68 | 220 | 8.66 | 180 | 7.09 | 8x18 | 8x0.71 | F10 | 134 | 5.27 | 156 | 6.14 | 80 | 3.15 | 46 | 102 |
| 150 | 6" | 145 | 5.71 | 480 | 18.9 | 515* | 20.27* | 265 | 10.43 | 285 | 11.22 | 240 | 9.45 | 8x22 | 8x0.87 | F12 | 184 | 7.24 | 215 | 8.46 | 100 | 3.94 | 86 | 190 |

* BVI size 150 mm (6"): with Δp > approx. 2 bar (29 psi) a worm gear is recommended instead of hand lever. Details on request.

** manually operated, PFA lined ball/stem unit

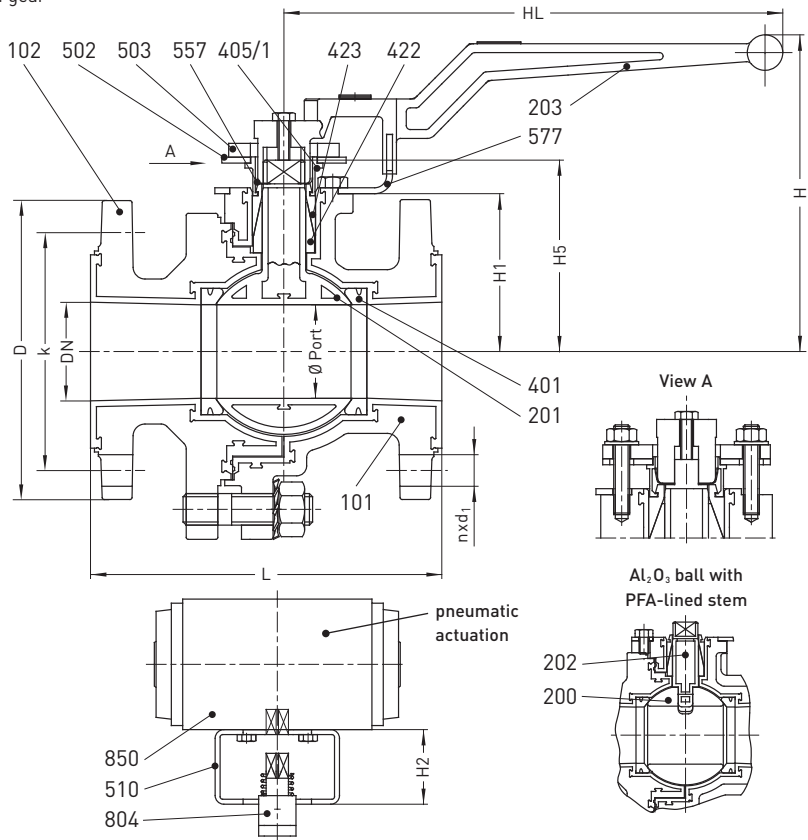
*** on request drilled to ASME (ANSI) B16.5 Cl. 150, JIS 10K

**** on request drilled to JIS 10K, ISO 7005-2

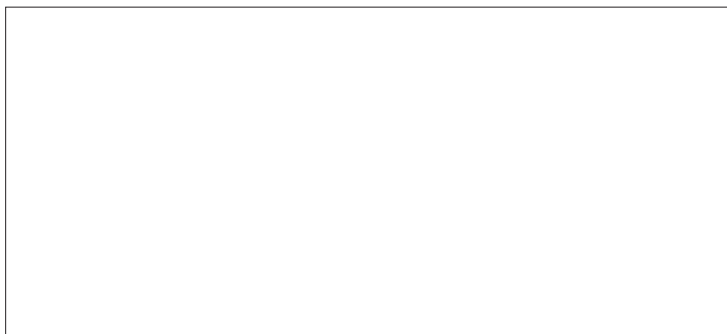
Components and materials

| Item | Designation | Material |
|---------|-------------------------|---|
| 101 | Main body | Ductile iron ASTM A395/EN-JS1049; PFA lined |
| 102 | Body end piece | Ductile iron ASTM A395/EN-JS1049; PFA lined |
| 200 | Ball | Al ₂ O ₃ |
| 201 | Ball/stem unit | Stainless steel, PFA lined |
| 202 | Stem | Stainless steel, PFA lined |
| 203 | Lever | Stainless steel |
| 401 | Seat rings | PTFE ¹⁾ |
| 405/1 | Thrust ring | Stainless steel |
| 422 | Base ring | Modified PTFE |
| 423 | Packing insert | PTFE |
| 502 | Spring gland follower | Stainless steel |
| 503 | Packing gland follower | Stainless steel |
| 510 | Bracket | Stainless steel |
| 557 | Grounding spring washer | Stainless steel |
| 577 | Lever stop | Stainless steel |
| 804 | Coupling | Stainless steel |
| 850 | Actuator | Customer to specify |
| w/o No. | Screws and nuts | Stainless steel |

¹⁾ Modified PTFE seat rings supplied with Al₂O₃ ceramic ball



Presented by:



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