

VALTORC

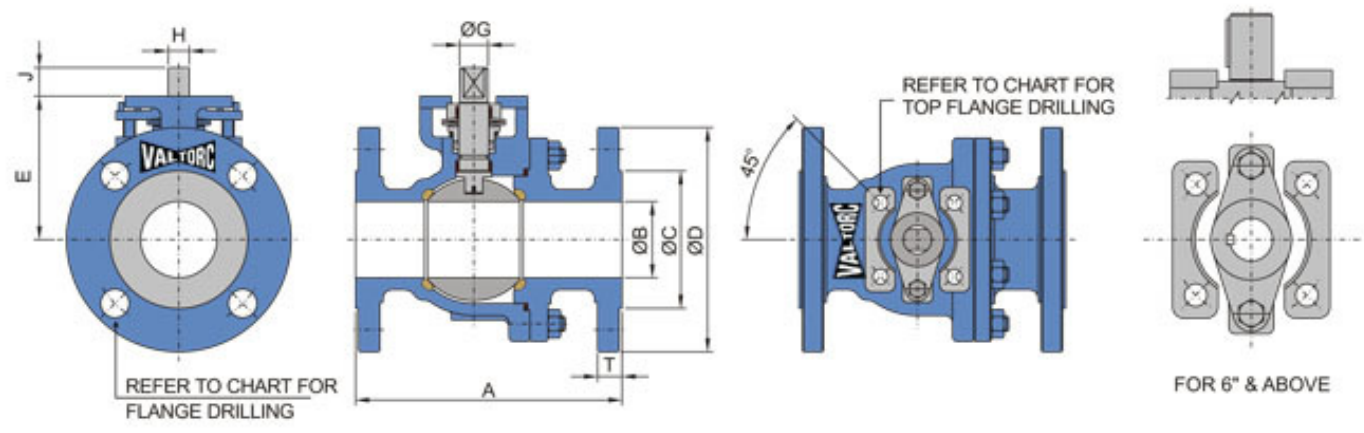
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INDUSTRIAL PROCESS BALL VALVES

SERIES 320



Engineering (Full Bore)



All dimensions in mm

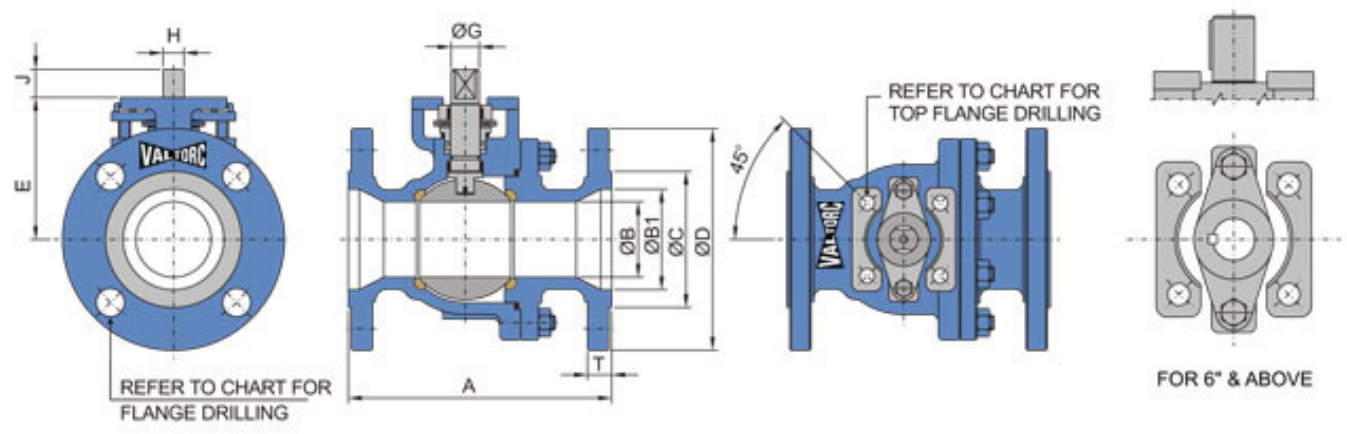
Full Bore Class 150

| Valve Size Inch | DN | A | T | ØB | ØC | ØD | ØG | Flange Drilling | | | H | J | E | Key Size | Top Flange Drilling | | | Weight Kg |
|--------------------|-----|-----|------|-----|-----|-----|----|-----------------|--------|------|----|----|-------|----------|---------------------|--------|------|--------------|
| | | | | | | | | BC | Hole Ø | Nos. | | | | | BC1 | Hole Ø | Nos. | |
| 1/2" | 15 | 108 | 10 | 15 | 35 | 90 | 10 | 60.3 | 16 | 4 | 6 | 6 | 43 | - | 42 | 6 | 4 | 2.3 |
| 3/4" | 20 | 117 | 10.9 | 20 | 43 | 100 | 12 | 69.9 | 16 | 4 | 8 | 6 | 50 | - | 42 | 6 | 4 | 2.8 |
| 1" | 25 | 127 | 11.6 | 25 | 51 | 110 | 16 | 79.4 | 16 | 4 | 11 | 8 | 65 | - | 50 | 7 | 4 | 3.8 |
| 1-1/2" | 40 | 165 | 14.7 | 38 | 73 | 125 | 16 | 98.4 | 16 | 4 | 11 | 9 | 78.5 | - | 50 | 7 | 4 | 6.3 |
| 2" | 50 | 178 | 16.3 | 51 | 92 | 150 | 19 | 120.7 | 19 | 4 | 14 | 19 | 96 | - | 70 | 10 | 4 | 10.5 |
| 2-1/2" | 65 | 190 | 17.9 | 62 | 105 | 180 | 19 | 139.7 | 19 | 4 | 14 | 25 | 100 | - | 70 | 10 | 4 | 16.5 |
| 3" | 80 | 203 | 19.5 | 76 | 127 | 190 | 30 | 152.4 | 19 | 4 | 22 | 25 | 144.5 | - | 102 | 12 | 4 | 20.5 |
| 4" | 100 | 229 | 24.3 | 102 | 157 | 230 | 30 | 190.5 | 19 | 8 | 22 | 25 | 165 | - | 102 | 12 | 4 | 38.5 |
| 6" | 150 | 267 | 25.9 | 150 | 216 | 280 | 35 | 241.3 | 22.2 | 8 | - | 43 | 228 | 8x10 | 125 | 14 | 4 | 92.5 |
| 8" | 200 | 457 | 29 | 202 | 270 | 345 | 45 | 298.5 | 22.2 | 8 | - | 45 | 296.5 | 9x14 | 140 | 18 | 4 | 152 |
| 10" | 250 | 533 | 30.6 | 252 | 324 | 405 | 50 | 362 | 25.4 | 12 | - | 67 | 352 | 9x14 | 165 | 22 | 4 | 252 |
| 12" | 300 | 610 | 32.2 | 305 | 381 | 485 | 70 | 431.8 | 25.4 | 12 | - | 84 | 464 | 12x20 | 254 | 18 | 8 | 384 |

Full Bore Class 300

| Valve Size Inch | DN | A | T | ØB | ØC | ØD | ØG | Flange Drilling | | | H | J | E | Key Size | Top Flange Drilling | | | Weight Kg |
|--------------------|-----|-----|------|-----|-----|-----|----|-----------------|--------|------|----|----|-------|----------|---------------------|--------|------|--------------|
| | | | | | | | | BC | Hole Ø | Nos. | | | | | BC1 | Hole Ø | Nos. | |
| 1/2" | 15 | 140 | 14.7 | 15 | 35 | 95 | 10 | 66.7 | 16 | 4 | 6 | 6 | 43 | - | 42 | 6 | 4 | 3 |
| 3/4" | 20 | 152 | 16.3 | 20 | 43 | 115 | 12 | 82.6 | 19 | 4 | 8 | 6 | 50 | - | 42 | 6 | 4 | 4 |
| 1" | 25 | 165 | 17.9 | 25 | 51 | 125 | 16 | 88.9 | 19 | 4 | 11 | 8 | 65 | - | 50 | 7 | 4 | 5.5 |
| 1-1/2" | 40 | 190 | 21.1 | 38 | 73 | 155 | 16 | 114.3 | 22.2 | 4 | 11 | 9 | 78.5 | - | 50 | 7 | 4 | 10 |
| 2" | 50 | 216 | 22.7 | 51 | 92 | 165 | 19 | 127 | 19 | 8 | 14 | 19 | 96 | - | 70 | 10 | 4 | 15.5 |
| 2-1/2" | 65 | 241 | 25.9 | 62 | 105 | 190 | 19 | 149.2 | 22.2 | 8 | 14 | 25 | 100 | - | 70 | 10 | 4 | 25.5 |
| 3" | 80 | 282 | 29.0 | 76 | 127 | 210 | 30 | 168.3 | 22.2 | 8 | 22 | 25 | 144.5 | - | 102 | 12 | 4 | 32.5 |
| 4" | 100 | 305 | 32.2 | 102 | 157 | 255 | 30 | 200.0 | 22.2 | 8 | 22 | 25 | 165 | - | 102 | 12 | 4 | 52.5 |
| 6" | 150 | 403 | 37.0 | 150 | 216 | 320 | 35 | 269.9 | 22.2 | 12 | - | 43 | 228 | 8x10 | 125 | 14 | 4 | 116 |
| 8" | 200 | 502 | 41.7 | 202 | 270 | 380 | 45 | 330.2 | 25.4 | 12 | - | 45 | 296.5 | 9x14 | 140 | 18 | 4 | 186 |
| 10" | 250 | 568 | 48.1 | 252 | 324 | 445 | 50 | 387.4 | 28.5 | 16 | - | 67 | 352 | 9x14 | 165 | 22 | 4 | 325 |
| 12" | 300 | 648 | 51.3 | 305 | 381 | 520 | 70 | 450.8 | 31.8 | 16 | - | 84 | 464 | 12x20 | 254 | 18 | 8 | 552 |

Engineering (Reduced Bore)



All dimensions in mm

Reduced Bore Class 150

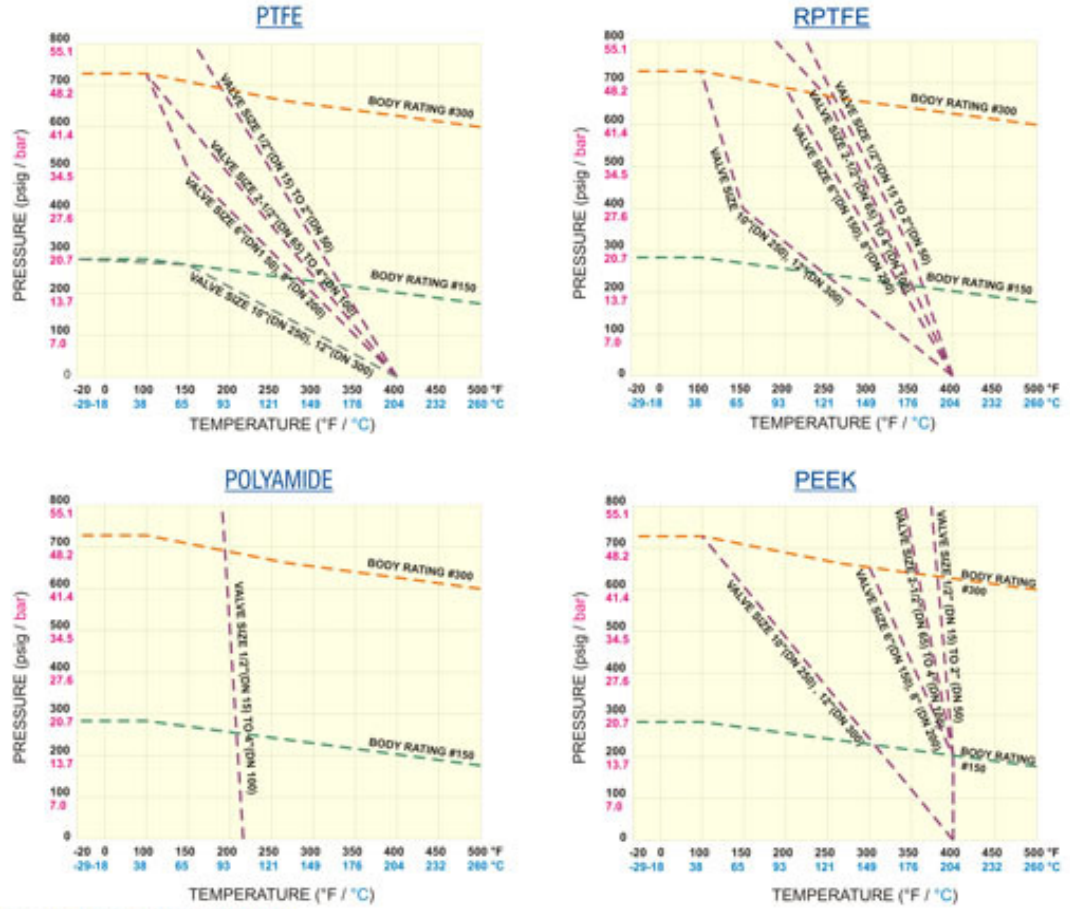
| Valve Size | | A | T | ØB1 | ØB | ØC | ØD | ØG | Flange Drilling | | | H | J | E | Key Size | Top Flange Drilling | | | Weight Kg |
|------------|-----|-----|------|-----|-----|-----|-----|----|-----------------|--------|------|----|----|-------|----------|---------------------|--------|------|-----------|
| Inch | DN | | | | | | | | BC | Hole Ø | Nos. | | | | | BC1 | Hole Ø | Nos. | |
| 1/2" | 15 | 108 | 10 | 15 | 10 | 35 | 90 | 10 | 60.3 | 16 | 4 | 6 | 6 | 43 | - | 42 | 6 | 4 | 1.5 |
| 3/4" | 20 | 117 | 10.9 | 20 | 15 | 43 | 100 | 10 | 69.9 | 16 | 4 | 6 | 6 | 43 | - | 42 | 6 | 4 | 2.5 |
| 1" | 25 | 127 | 11.6 | 25 | 20 | 51 | 110 | 12 | 79.4 | 16 | 4 | 8 | 6 | 50 | - | 42 | 6 | 4 | 3 |
| 1-1/2" | 40 | 165 | 14.7 | 38 | 25 | 73 | 125 | 16 | 98.4 | 16 | 4 | 11 | 8 | 65 | - | 50 | 7 | 4 | 8.2 |
| 2" | 50 | 178 | 16.3 | 51 | 38 | 92 | 150 | 19 | 120.7 | 16 | 4 | 11 | 9 | 78.5 | - | 50 | 7 | 4 | 14 |
| 2-1/2" | 65 | 190 | 17.9 | 62 | 51 | 105 | 180 | 19 | 139.7 | 19 | 4 | 14 | 19 | 96 | - | 70 | 10 | 4 | 18 |
| 3" | 80 | 203 | 19.5 | 76 | 62 | 127 | 190 | 19 | 152.4 | 19 | 4 | 14 | 25 | 100 | - | 70 | 10 | 4 | 28.5 |
| 4" | 100 | 229 | 24.3 | 102 | 76 | 157 | 230 | 30 | 190.5 | 19 | 8 | 22 | 25 | 144.5 | - | 102 | 12 | 4 | 44.5 |
| 6" | 150 | 267 | 25.9 | 150 | 102 | 216 | 280 | 30 | 241.3 | 22.2 | 8 | 22 | 25 | 165 | - | 102 | 12 | 4 | 80 |
| 8" | 200 | 457 | 29 | 202 | 150 | 270 | 345 | 35 | 298.5 | 22.2 | 8 | - | 43 | 228 | 8x10 | 125 | 14 | 4 | 146 |
| 10" | 250 | 533 | 30.6 | 252 | 202 | 324 | 405 | 45 | 362 | 25.4 | 12 | - | 45 | 296.5 | 9x14 | 140 | 18 | 4 | 326 |
| 12" | 300 | 610 | 32.2 | 305 | 252 | 381 | 485 | 50 | 431.8 | 25.4 | 12 | - | 67 | 352 | 9x14 | 165 | 22 | 4 | 350 |

Reduced Bore Class 300

| Valve Size | | A | T | ØB1 | ØB | ØC | ØD | ØG | Flange Drilling | | | H | J | E | Key Size | Top Flange Drilling | | | Weight Kg |
|------------|-----|-----|------|-----|-----|-----|-----|----|-----------------|--------|------|----|----|-------|----------|---------------------|--------|------|-----------|
| Inch | DN | | | | | | | | BC | Hole Ø | Nos. | | | | | BC1 | Hole Ø | Nos. | |
| 1/2" | 15 | 140 | 14.7 | 15 | 10 | 35 | 95 | 10 | 66.7 | 16 | 4 | 6 | 6 | 43 | - | 42 | 6 | 4 | 2.0 |
| 3/4" | 20 | 152 | 16.3 | 20 | 15 | 43 | 115 | 10 | 82.6 | 19 | 4 | 6 | 6 | 43 | - | 42 | 6 | 4 | 3.5 |
| 1" | 25 | 165 | 17.9 | 25 | 20 | 51 | 125 | 12 | 88.9 | 19 | 4 | 8 | 6 | 50 | - | 42 | 6 | 4 | 4.5 |
| 1-1/2" | 40 | 190 | 21.1 | 38 | 25 | 73 | 155 | 16 | 114.3 | 22.2 | 4 | 11 | 8 | 65 | - | 50 | 7 | 4 | 8.7 |
| 2" | 50 | 216 | 22.7 | 51 | 38 | 92 | 165 | 16 | 127 | 19 | 8 | 11 | 9 | 78.5 | - | 50 | 7 | 4 | 12 |
| 2-1/2" | 65 | 241 | 25.9 | 62 | 51 | 105 | 190 | 19 | 149.2 | 22.2 | 8 | 14 | 19 | 96 | - | 70 | 10 | 4 | 21 |
| 3" | 80 | 282 | 29.0 | 76 | 62 | 127 | 210 | 19 | 168.3 | 22.2 | 8 | 14 | 25 | 100 | - | 70 | 10 | 4 | 23 |
| 4" | 100 | 305 | 32.2 | 102 | 76 | 157 | 255 | 30 | 200.0 | 22.2 | 8 | 22 | 25 | 144.5 | - | 102 | 12 | 4 | 38.5 |
| 6" | 150 | 403 | 37.0 | 150 | 102 | 216 | 320 | 30 | 269.9 | 22.2 | 12 | 22 | 25 | 165 | - | 102 | 12 | 4 | 88 |
| 8" | 200 | 502 | 41.7 | 202 | 150 | 270 | 380 | 35 | 330.2 | 25.4 | 12 | - | 43 | 228 | 8x10 | 125 | 14 | 4 | 143.5 |
| 10" | 250 | 568 | 48.1 | 252 | 202 | 324 | 445 | 45 | 387.4 | 28.5 | 16 | - | 45 | 296.5 | 9x14 | 140 | 18 | 4 | 198 |
| 12" | 300 | 648 | 51.3 | 305 | 252 | 381 | 520 | 50 | 450.8 | 31.8 | 16 | - | 67 | 352 | 9x14 | 165 | 22 | 4 | 417 |

Engineering

Pressure - Temperature data for various seat polymers



Flow Coefficient "Cv" (USGPM)

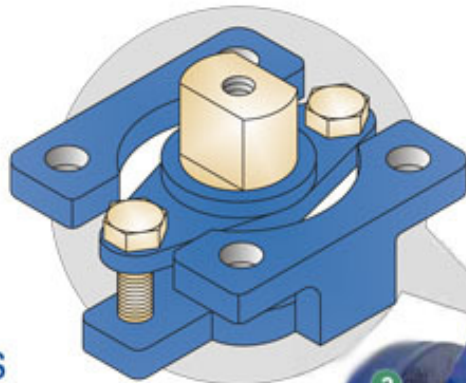
| Valve Size | Inch | 1/2" | 3/4" | 1" | 1-1/2" | 2" | 2-1/2" | 3" | 4" | 6" | 8" | 10" | 12" |
|------------------------|------|------|------|----|--------|-----|--------|------|------|------|-------|-------|-------|
| | DN | 15 | 20 | 25 | 40 | 50 | 65 | 80 | 100 | 150 | 200 | 250 | 300 |
| Full Bore Class 150 | | 19 | 40 | 79 | 208 | 434 | 793 | 1158 | 2355 | 5095 | 10055 | 18705 | 25155 |
| Full Bore Class 300 | | 17 | 36 | 69 | 195 | 395 | 705 | 981 | 2042 | 5042 | 9605 | 16205 | 24405 |
| Reduced Bore Class 150 | | 10 | 15 | 32 | 90 | 126 | 351 | 319 | 589 | 1273 | 2011 | 3741 | 4192 |
| Reduced Bore Class 300 | | 9 | 13 | 28 | 85 | 115 | 312 | 270 | 510 | 1008 | 1600 | 3241 | 4067 |

For "Kv" Values multiply the above values by 0.8675

Torque(Nm)

| Torque Full Bore Class 150 (Nm) | | | | | | | | | | | | | |
|---------------------------------|------|------|------|----|--------|----|--------|-----|-----|-----|-----|------|------|
| Valve Size | Inch | 1/2" | 3/4" | 1" | 1-1/2" | 2" | 2-1/2" | 3" | 4" | 6" | 8" | 10" | 12" |
| | DN | 15 | 20 | 25 | 40 | 50 | 65 | 80 | 100 | 150 | 200 | 250 | 300 |
| Δ P = 20 Bar | | 04 | 06 | 10 | 20 | 25 | 40 | 65 | 110 | 330 | 750 | 1175 | 1900 |
| Torque Full Bore Class 300 (Nm) | | | | | | | | | | | | | |
| Δ P = 50 Bar | | 06 | 08 | 15 | 32 | 40 | 60 | 100 | 170 | 500 | 900 | 2000 | 3000 |

- Note:
- Above stem torques are for clean fluids. For slurries and high viscosity fluids, add suitable safety margins for sizing of actuators or contact factory.
 - To determine torques for reduced bore, please refer to torque values of the next smaller size. For example : 2" 150 reduced bore torque equals 1-1/2" full bore torque (20 Nm).



Features

1. Top Flange

Top Flange is designed as per EN ISO 5211 for direct mounting of actuators and gear operators. Top flange design provides easy access for adjustment of gland bolts when the valve is mounted with actuators.

2. Adjustable Packing Gland

Packing gland bolts are easily accessible to adjust packing with the actuator in place.

3. Valve Design

Design generally conforms to ASME B 16.34-2004 / API 6D / BS EN ISO 17292 (BS 5351); class 150 & class 300; DIN EN 12516.

4. End-to-End Dimensions

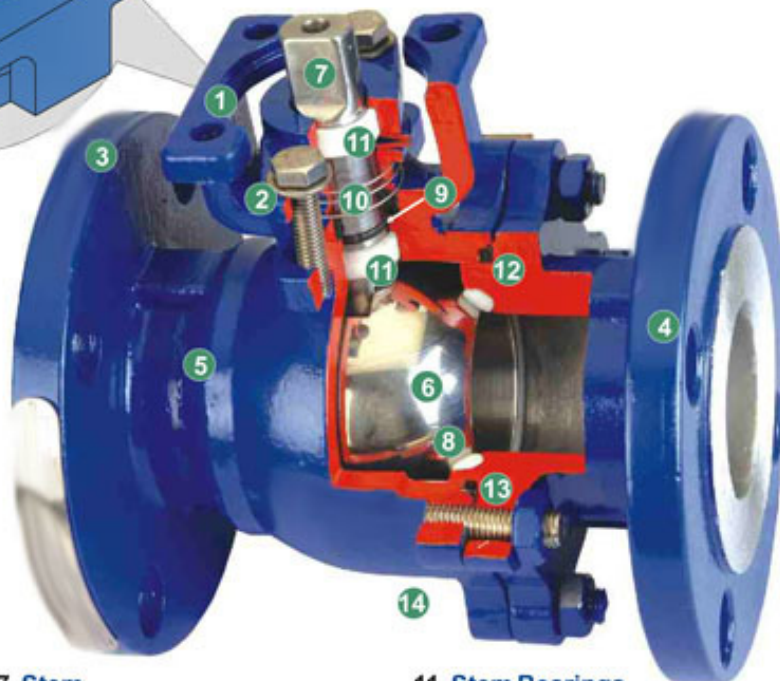
Valve end-to-end dimensions as per ASME B 16.10 / API 6D.

5. Valve Body

Flanged, two-piece design in cast construction. Flanges are raised face and serrated and dimensions conform to ASME B 16.5 - 2003 class 150 / 300. Jacketing options of body available for heating or cooling of media. Carbon steel valve bodies are finished with two-coat zinc rich epoxy paint in.

6. Ball

Floating design, stainless steel ball with superior finish and sphericity ensures extended seat life and low operating torques. The combination of the balanced seat design and ball ensures consistent and dependable leak tightness.



7. Stem

Stem in stainless steel, heavy-duty construction with double "D" (sizes up to 4") and round and keyed (sizes 6" and above) configurations for positive engagement with all types of valve operators.

8. Seat

Seat is contoured to ensure that all stresses due to the line pressure are counterbalanced and that the extrusion of the seat into the body cavity due to sealing forces is eliminated. Seat design is fire-safe as per API 607/BS EN ISO 10497.

9. Stem Sealing

Double "V" stem packing in graphite is live loaded with the gland assembly to ensure positive and trouble free sealing. Online tightening of gland assembly can be done. Viton "o"-ring provides sealing against fugitive emissions.

10. Antistatic Devices

Antistatic devices at the ball-stem interface and body-stem interface.

11. Stem Bearings

Two heavy-duty reinforced Teflon® bearings located at the stem top and bottom. Side loads are absorbed by the two stem bearings, protecting the stem packing from undue stresses and deformation thus eliminating leakage.

12. Body Seal

Body joint sealing is by a reinforced graphite gasket to withstand high temperatures and is contained in a precision-machined groove for extended sealing life.

13. Body Stud and Nut

Body joint bolting is in ASTM A 193 B7 / ASTM A 194 2H material for carbon steel bodies and ASTM A 193 GR.B8/ASTM A 194 GR.8 material for stainless steel bodies.

14. Body Cavity Drain Plug

Body cavity drain plug facility is available upon request.

Materials of Construction

Body , End Connector & Gland Flange

- ▶ ASTM A216 WCB
- ▶ ASTM A351 CF8
- ▶ ASTM A351 CF8M
- ▶ ASTM A351 CF3
- ▶ ASTM A351 CF3M
- ▶ ASTM A352 LCB
- ▶ ASTM A217 CA15

Ball

- ▶ ASTM A351 CF8
- ▶ ASTM A351 CF8M
- ▶ ASTM A351 CF3
- ▶ ASTM A351 CF3M
- ▶ ASTM A217 CA15
- ▶ ASTM A182 SS316
- ▶ ASTM A182 SS304

Stem

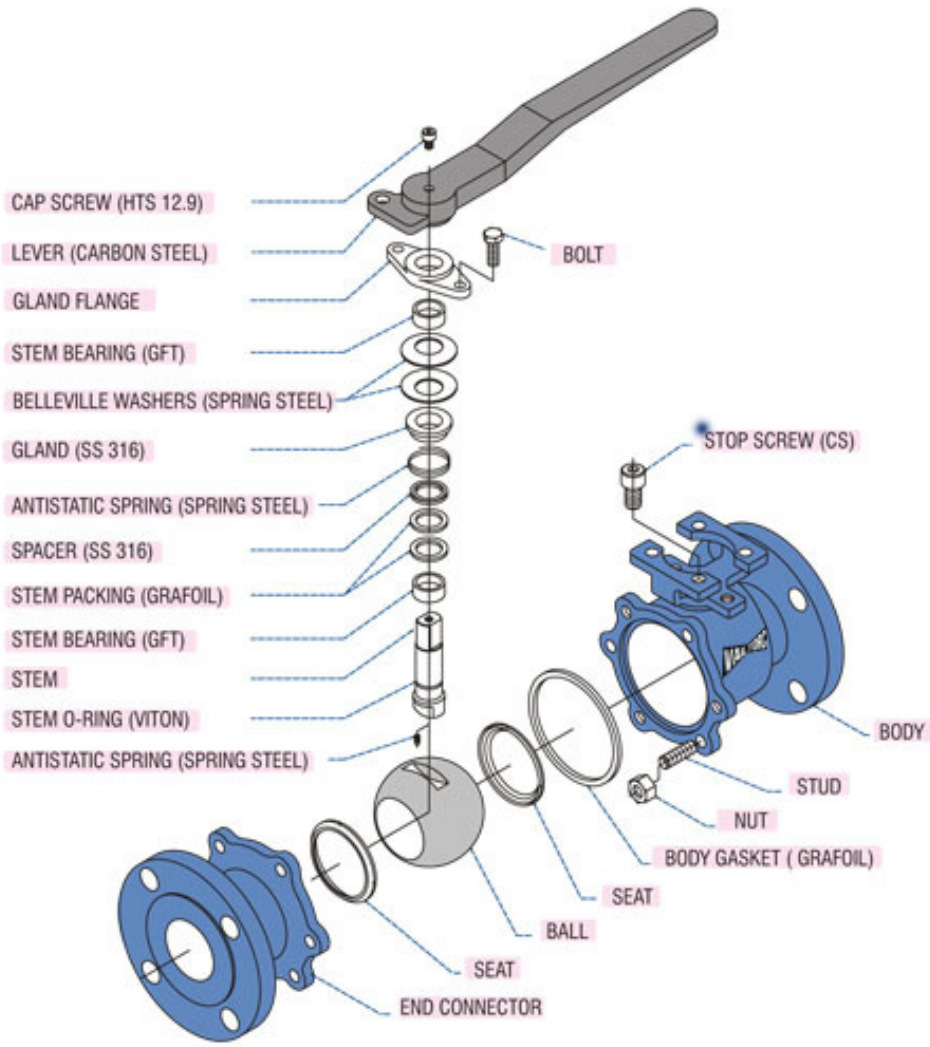
- ▶ ASTM A479 SS304
- ▶ ASTM A479 SS316
- ▶ ASTM A479 SS304L
- ▶ ASTM A479 SS316L
- ▶ ASTM A182 SS304
- ▶ ASTM A182 SS316
- ▶ ASTM A182 SS410

Seat

- ▶ RPTFE
- ▶ PTFE
- ▶ Polyamide
- ▶ PEEK

Studs & Nuts

- ▶ ASTM A 193 GR. B7/A194 GR. 2H
- ▶ ASTM A 193 GR. B7M/A194 GR. 2HM
- ▶ ASTM A193 GR. B8/A194 GR. 8
- ▶ ASTM A193 GR. B8M/A194 GR. 8M
- ▶ ASTM A320 GR. L7/A194 GR. 4



Operators



Valves up to size 6" class 150 full bore / 8" class 150 reduced bore and size 4" class 300 full bore / 6" class 300 reduced bore can be supplied with handles for manual operation. Pad locking arrangement is provided as an option to prevent unauthorized operation.

Valves from size 8" class 150 full bore and 6" class 300 reduced bore are available with direct mounted gear operators for manual operation. Gear operators can also be attached with chain-wheel operators for opening or closing valves located on pipelines at elevated locations in the plant.

All valves can be direct mounted with pneumatic actuators or electric actuators and accessories for complete automation options such as fail open/close and positioner controlled. Valves can be mounted with manual overrides.