



STAR LINE[®] FORGED STEEL BALL VALVE

STARLINE S.p.A.
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APPROVAL CERTIFICATE No. 911234

FORGED STEEL VALVES

FOR GAS TRANSPORTATION, DISTRIBUTION AND STORAGE



CONSTRUCTION

: API 6D ■ ASME/ANSI B16.34 FOR 2" AND LARGER SIZE
: BS5351 ■ ASME/ANSI B16.34 FOR 1/1/2" AND SMALLER SIZE

FIRE TEST APPROVED MARKING

: BS6755 PART 2: 1987 - API607 FOURTH EDITION MAY 1993 - API6FA: MAY 1985 (REAFFIRMED MAY 1990)
: MSS SP25

SIZE

: 1/4" ÷ 4" FULL BORE

SIZE

: 1/2" ÷ 6 RED BORE

MATERIALS

: ASTM A105 - LF2 - 316 - 316L - 304L - F44 - F51 AND SPECIAL MATERIALS. NACE LAST EDITION

CLASS

: ASME/ANSI 150 UP TO 1500 Lbs.

TEST CERTIFICATE

: DIN 50.049/3.1 B UNLESS OTHERWISE REQUIRED

TEMPERATURES

: -200°C UP TO + 350°C.

APPROVALS



6D-0233

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STARLINE IBERICA S.A.

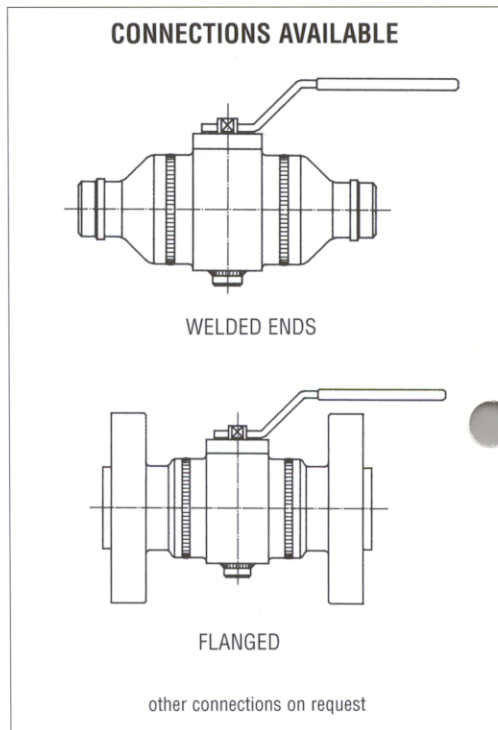
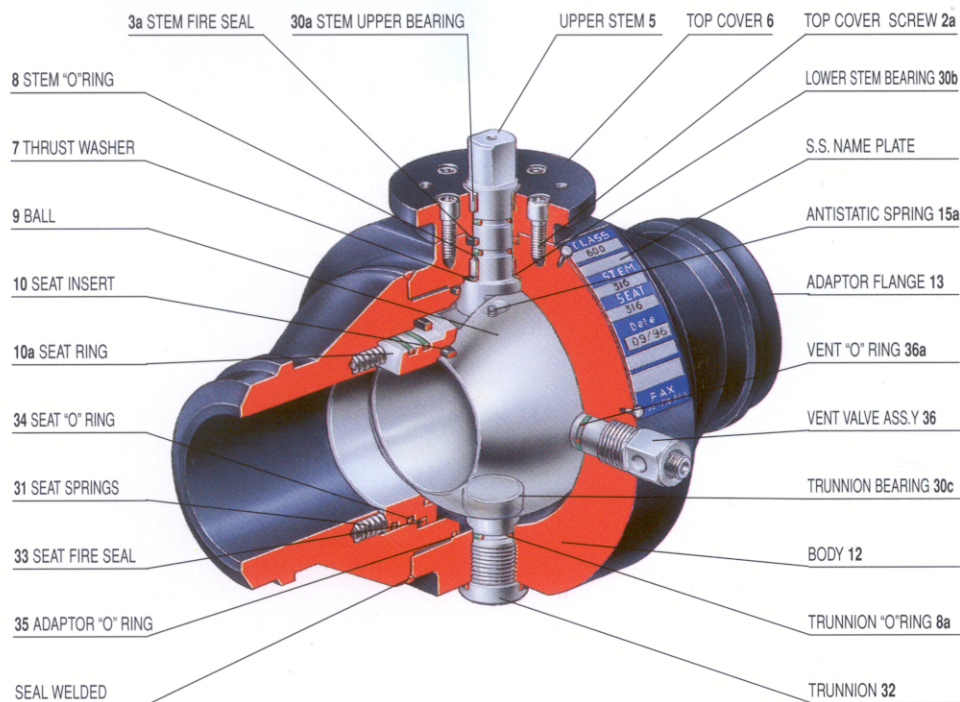
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STARLINE VALVES OY

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STARLINE WELDED BALL VALVES FOR GAS TRANSPORTATION, DISTRIBUTION AND STORAGE

Forged steel three pieces seal welded construction ball valves - trunnion mounted spring energized seats, soft insert seats self relieving in case of body overpressure. Block and bleed facility, anti blow-out stem design, antistatic device. Designed in conformity to last edition of API 6D - BS 5351 - ASME/B16.34. Fire safe to API 6FA - API 607 - BS 6755.

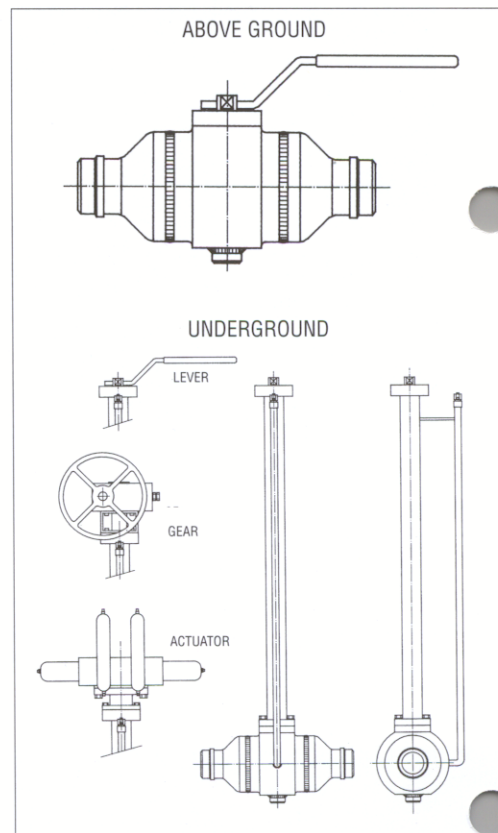


note: On gas services valves may used either UNDERGROUND OR ABOVE GROUND

| PART. No. | DESCRIPTION | A105/316 | LF2/316 |
|-----------|--------------------|--------------------------------------|--------------------------------------|
| 1 | LEVER | C.S. Galvanized/Plastic cover | C.S. Galvanized/Plastic cover |
| 1a | LEVER BOLT | C.S. Zinc plated | C.S. Zinc plated |
| 2a | TOP COVER SCERW | ASTM A193 B7/Zinc plated | ASTM A320 L7M |
| 3a | STEM FIRE SEAL | Graphite | Graphite |
| 5 | UPPER STEM | ASI 316 | ASI 316 |
| 6 | TOP COVER | A105 | ASTM A350 LF2 |
| 7 | THRUST WASHER | DU-DRY OR TYPE S | DU-DRY OR TYPE S |
| 8a | TRUNNION "O" RING | NBR | VITON |
| 8b | STEM "O" RING | | |
| 9 | BALL | ASTM A182 F316 | ASTM A182 F316 |
| 10 | INSERT SEAT | T-R-S-LOW PR/N-D-P-E HIGH PR | T-R-S-LOW PR/N-D-P-E HIGH PR |
| 10a | SEAT RING | ASI 316 | ASI 316 |
| 12 | BODY | ASTM A105 | ASTM A350 LF2 |
| 13 | ADAPTOR FLANGE | ASTM A105 | ASTM A350 LF2 |
| 14 | STOP PIN | Stainless Steel | Stainless Steel |
| 15a | ANTISTATIC SRING | S.S. 316 | S.S. 316 |
| 15b | | | |
| 17 | STOP LEVER WASHER | Stainless Steel only for bigger size | Stainless Steel only for bigger size |
| 30a | STEM UPPER BEARING | DU-DRY | DU-DRY |
| 30b | LOWER STEM BEARING | | |
| 30c | TRUNNION BEARING | | |
| 31 | SEAT SPRINGS | INCONEL X-750 | INCONEL X-750 |
| 32 | TRUNNION | AISI 316 | AISI 316 |
| 33 | SEAT FIRE SEAL | GRAPHITE | GRAPHITE |
| 34 | SEAT "O" RING | NBR | VITON |
| 35 | ADAPTOR "O" RING | NBR | VITON |
| 36 | VENT VALVE/BLEEDER | AISI 316 | AISI 316 |
| 36a | VENT "O" RING | NBR | VITON |
| NP | NAME PLATE | S.S. 316 | S.S. 316 |

When ball valves are to be installed below ground on buried pipelines or where not easily accessible, operators can be remote mounted by means of suitable stem extension. Drain lines and grease injectors (if required) will be piped up to the top of the extension for an easier access.

The distance between valve centreline and operator handwheel must be specified

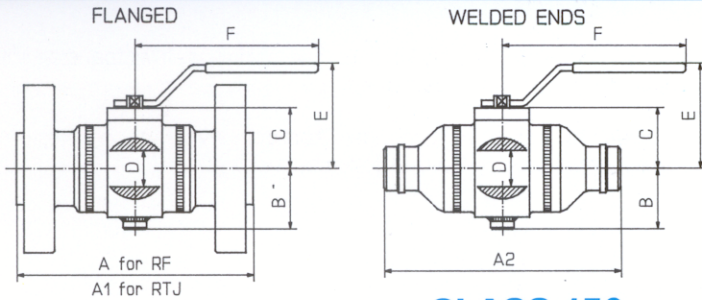


VALVE PROTECTION

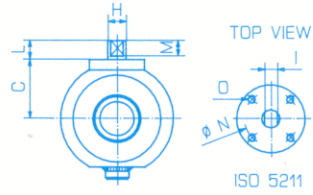
Valves for above ground service are usually supplied as a standard with phosphating treatment. Valves for underground service are supplied with a 400 microns epoxy paint. Alternative paintings to Customer's spec. are available on request.

VALVE CERTIFICATION

Valves are supplied with EN 10204/3.1B certification as a standard. On request we are in the position to supply EN 10204/3 1C certification with Third Party Inspection.



MANUAL GEAR OPERATION OR AUTOMATION



CLASS 150

| VALVE SIZE | | DIMENSIONS in mm | | | | | | | | WEIGHT KG | | |
|-----------------|-----------|------------------|-------|-----|-----|-----|-------|-----|-----|-----------|-----|------|
| INCH | mm | A | A1 | A2 | B | C | D | E | F | RF | RTJ | BW |
| 1/2" x 1/2" | 15 x 15 | 140 | 152 | 165 | 40 | 40 | 12.7 | 95 | 193 | 4 | 4.5 | 3 |
| 3/4" x 3/4" | 20 x 20 | 152 | 165 | 191 | 48 | 48 | 19 | 110 | 225 | 6.5 | 7 | 6 |
| 1" x 1" | 25 x 25 | 165 | 178 | 216 | 61 | 61 | 25.4 | 115 | 225 | 9 | 10 | 9 |
| 1 1/2" x 1 1/2" | 32 x 32 | — | — | — | — | — | — | — | — | — | — | — |
| 1 1/2" x 1 1/2" | 40 x 40 | 191 | 203 | 241 | 75 | 72 | 38 | 145 | 365 | 15 | 16 | 12.5 |
| 2" x 2" | 50 x 50 | 216 | 232 | 292 | 88 | 88 | 51 | 160 | 365 | 22 | 26 | 22 |
| 3" x 3" | 80 x 80 | 283 | 298 | 356 | 120 | 120 | 76 | 195 | 470 | 57 | 60 | 48 |
| 4" x 4" | 100 x 100 | 305 | 320.5 | 432 | 160 | 160 | 101.6 | 250 | 600 | 110 | 112 | 110 |

| VALVE SIZE | | DIMENSIONS in mm | | | | | ISO 5211 |
|------------|-----|------------------|-----|-----|-----|-----|----------|
| H | I | L | M | N | O | | |
| 12 | 7.5 | 6.5 | 6.5 | 42 | M5 | F04 | |
| 15 | 9 | 8.5 | 7.5 | 50 | M6 | F05 | |
| 15 | 9 | 10 | 9 | 50 | M6 | F05 | |
| — | — | — | — | — | — | — | |
| 22 | 16 | 19 | 16 | 70 | M8 | F07 | |
| 22 | 16 | 19 | 16 | 70 | M8 | F07 | |
| 24 | 18 | 24 | 22 | 70 | M8 | F07 | |
| 40 | 30 | 32 | 29 | 102 | M10 | F10 | |

| VALVE SIZE | | DIMENSIONS in mm | | | | | | | | WEIGHT KG | | |
|-------------|-----------|------------------|-------|-----|-----|-----|-------|-----|-----|-----------|-----|------|
| INCH | mm | A | A1 | A2 | B | C | D | E | F | RF | RTJ | BW |
| 3/4" x 1/2" | 20 x 15 | 152 | 165 | 191 | 40 | 40 | 12.7 | 95 | 193 | 5.5 | 6 | 3.5 |
| 1" x 3/4" | 25 x 20 | 165 | 178 | 216 | 48 | 48 | 19 | 110 | 225 | 7 | 7.5 | 6.5 |
| 1 1/4" x 1" | 32 x 25 | 178 | 191 | 229 | 61 | 61 | 25.4 | 115 | 225 | 11 | 12 | 9.5 |
| 1 1/2" x 1" | 40 x 25 | 191 | 203 | 241 | 61 | 61 | 25.4 | 115 | 225 | 13 | 14 | 9.5 |
| 2" x 1 1/2" | 50 x 40 | 216 | 232 | 292 | 75 | 72 | 38 | 145 | 365 | 21 | 22 | 13.5 |
| 3" x 2" | 80 x 50 | 283 | 298 | 356 | 88 | 88 | 51 | 160 | 365 | 32 | 34 | 24 |
| 4" x 3" | 100 x 80 | 305 | 320.5 | 432 | 120 | 120 | 76 | 195 | 470 | 78 | 82 | 55 |
| 6" x 4" | 150 x 100 | 403 | 419 | 559 | 160 | 160 | 101.6 | 250 | 600 | 120 | 124 | 112 |

| VALVE SIZE | | DIMENSIONS in mm | | | | | ISO 5211 |
|------------|-----|------------------|-----|-----|-----|-----|----------|
| H | I | L | M | N | O | | |
| 12 | 7.5 | 6.5 | 6.5 | 42 | M5 | F04 | |
| 15 | 9 | 8.5 | 7.5 | 50 | M6 | F05 | |
| 15 | 9 | 10 | 9 | 50 | M6 | F05 | |
| 15 | 9 | 10 | 9 | 50 | M6 | F05 | |
| 22 | 16 | 19 | 16 | 70 | M8 | F07 | |
| 22 | 16 | 19 | 16 | 70 | M8 | F07 | |
| 24 | 18 | 24 | 22 | 70 | M8 | F07 | |
| 40 | 30 | 32 | 29 | 102 | M10 | F10 | |

CLASS 300

| VALVE SIZE | | DIMENSIONS in mm | | | | | | | | WEIGHT KG | | |
|-----------------|-----------|------------------|-------|-----|-----|-----|-------|-----|-----|-----------|-----|------|
| INCH | mm | A | A1 | A2 | B | C | D | E | F | RF | RTJ | BW |
| 1/2" x 1/2" | 15 x 15 | 140 | 152 | 165 | 40 | 40 | 12.7 | 95 | 193 | 3.5 | 4 | 3 |
| 3/4" x 3/4" | 20 x 20 | 152 | 165 | 191 | 48 | 48 | 19 | 110 | 225 | 6 | 6.5 | 6 |
| 1" x 1" | 25 x 25 | 165 | 178 | 216 | 61 | 61 | 25.4 | 115 | 225 | 8.5 | 9.5 | 9 |
| 1 1/4" x 1 1/4" | 32 x 32 | — | — | — | — | — | — | — | — | — | — | — |
| 1 1/2" x 1 1/2" | 40 x 40 | 191 | 203 | 241 | 75 | 72 | 38 | 145 | 365 | 14 | 15 | 12.5 |
| 2" x 2" | 50 x 50 | 216 | 232 | 292 | 88 | 88 | 51 | 160 | 365 | 21 | 25 | 22 |
| 3" x 3" | 80 x 80 | 283 | 298 | 356 | 120 | 120 | 76 | 195 | 470 | 55 | 57 | 48 |
| 4" x 4" | 100 x 100 | 305 | 320.5 | 432 | 160 | 160 | 101.6 | 250 | 600 | 105 | 108 | 110 |

| VALVE SIZE | | DIMENSIONS in mm | | | | | ISO 5211 |
|------------|-----|------------------|-----|-----|-----|-----|----------|
| H | I | L | M | N | O | | |
| 12 | 7.5 | 6.5 | 6.5 | 42 | M5 | F04 | |
| 15 | 9 | 8.5 | 7.5 | 50 | M6 | F05 | |
| 15 | 9 | 10 | 9 | 50 | M6 | F05 | |
| — | — | — | — | — | — | — | |
| 22 | 16 | 19 | 16 | 70 | M8 | F07 | |
| 22 | 16 | 19 | 16 | 70 | M8 | F07 | |
| 24 | 18 | 24 | 22 | 70 | M8 | F07 | |
| 40 | 30 | 32 | 29 | 102 | M10 | F10 | |

| VALVE SIZE | | DIMENSIONS in mm | | | | | | | | WEIGHT KG | | |
|-------------|-----------|------------------|-------|-----|-----|-----|-------|-----|-----|-----------|-----|------|
| INCH | mm | A | A1 | A2 | B | C | D | E | F | RF | RTJ | BW |
| 3/4" x 1/2" | 20 x 15 | 152 | 165 | 191 | 40 | 40 | 12.7 | 95 | 193 | 5 | 5.5 | 3.5 |
| 1" x 3/4" | 25 x 20 | 165 | 178 | 216 | 48 | 48 | 19 | 110 | 225 | 6.5 | 7 | 6.5 |
| 1 1/4" x 1" | 32 x 25 | 178 | 191 | 229 | 61 | 61 | 25.4 | 115 | 225 | 10 | 11 | 9.5 |
| 1 1/2" x 1" | 40 x 25 | 191 | 203 | 241 | 61 | 61 | 25.4 | 115 | 225 | 12 | 13 | 9.5 |
| 2" x 1 1/2" | 50 x 40 | 216 | 232 | 292 | 75 | 72 | 38 | 145 | 365 | 20 | 21 | 13.5 |
| 3" x 2" | 80 x 50 | 283 | 298 | 356 | 88 | 88 | 51 | 160 | 365 | 30 | 32 | 24 |
| 4" x 3" | 100 x 80 | 305 | 320.5 | 432 | 120 | 120 | 76 | 195 | 470 | 75 | 78 | 55 |
| 6" x 4" | 150 x 100 | 403 | 419 | 559 | 160 | 160 | 101.6 | 250 | 600 | 115 | 118 | 112 |

| VALVE SIZE | | DIMENSIONS in mm | | | | | ISO 5211 |
|------------|-----|------------------|-----|-----|-----|-----|----------|
| H | I | L | M | N | O | | |
| 12 | 7.5 | 6.5 | 6.5 | 42 | M5 | F04 | |
| 15 | 9 | 8.5 | 7.5 | 50 | M6 | F05 | |
| 15 | 9 | 10 | 9 | 50 | M6 | F05 | |
| 15 | 9 | 10 | 9 | 50 | M6 | F05 | |
| 22 | 16 | 19 | 16 | 70 | M8 | F07 | |
| 22 | 16 | 19 | 16 | 70 | M8 | F07 | |
| 24 | 18 | 24 | 22 | 70 | M8 | F07 | |
| 40 | 30 | 32 | 29 | 102 | M10 | F10 | |

CLASS 600

| VALVE SIZE | | DIMENSIONS in mm | | | | | | | | WEIGHT KG | | |
|-----------------|-----------|------------------|-------|-----|-----|-----|-------|-----|-----|-----------|------|------|
| INCH | mm | A | A1 | A2 | B | C | D | E | F | RF | RTJ | BW |
| 1/2" x 1/2" | 15 x 15 | 165 | 163.5 | 165 | 40 | 40 | 12.7 | 95 | 193 | 4.5 | 4.5 | 3 |
| 3/4" x 3/4" | 20 x 20 | 191 | 191 | 191 | 48 | 48 | 19 | 110 | 225 | 7 | 7 | 6 |
| 1" x 1" | 25 x 25 | 216 | 216 | 216 | 61 | 61 | 25.4 | 115 | 225 | 10 | 10 | 9 |
| 1 1/4" x 1 1/4" | 32 x 32 | — | — | — | — | — | — | — | — | — | — | — |
| 1 1/2" x 1 1/2" | 40 x 40 | 241 | 241 | 241 | 75 | 72 | 38 | 145 | 365 | 16 | 16 | 12.5 |
| 2" x 2" | 50 x 50 | 292 | 295 | 292 | 88 | 88 | 51 | 160 | 365 | 26 | 26.5 | 22 |
| 3" x 3" | 80 x 80 | 356 | 359 | 356 | 120 | 120 | 76 | 195 | 470 | 53 | 54 | 48 |
| 4" x 4" | 100 x 100 | 432 | 435 | 432 | 160 | 160 | 101.6 | 250 | 600 | 120 | 122 | 110 |

| VALVE SIZE | | DIMENSIONS in mm | | | | | ISO 5211 |
|------------|-----|------------------|-----|-----|-----|-----|----------|
| H | I | L | M | N | O | | |
| 12 | 7.5 | 6.5 | 6.5 | 42 | M5 | F04 | |
| 15 | 9 | 8.5 | 7.5 | 50 | M6 | F05 | |
| 15 | 9 | 10 | 9 | 50 | M6 | F05 | |
| — | — | — | — | — | — | — | |
| 22 | 16 | 19 | 16 | 70 | M8 | F07 | |
| 22 | 16 | 19 | 16 | 70 | M8 | F07 | |
| 24 | 18 | 24 | 22 | 70 | M8 | F07 | |
| 40 | 30 | 32 | 29 | 102 | M10 | F10 | |

| VALVE SIZE | | DIMENSIONS in mm | | | | | | | | WEIGHT KG | | |
|-------------|-----------|------------------|-----|-----|-----|-----|-------|-----|-----|-----------|------|------|
| INCH | mm | A | A1 | A2 | B | C | D | E | F | RF | RTJ | BW |
| 3/4" x 1/2" | 20 x 15 | 191 | 191 | 191 | 40 | 40 | 12.7 | 95 | 193 | 5.5 | 5.5 | 3.5 |
| 1" x 3/4" | 25 x 20 | 216 | 216 | 216 | 48 | 48 | 19 | 110 | 225 | 8 | 8 | 6.5 |
| 1 1/4" x 1" | 32 x 25 | 229 | 229 | 229 | 61 | 61 | 25.4 | 115 | 225 | 12 | 12 | 9.5 |
| 1 1/2" x 1" | 40 x 25 | 241 | 241 | 241 | 61 | 61 | 25.4 | 115 | 225 | 15 | 15 | 9.5 |
| 2" x 1 1/2" | 50 x 40 | 292 | 295 | 292 | 75 | 72 | 38 | 145 | 365 | 25 | 25.5 | 13.5 |
| 3" x 2" | 80 x 50 | 356 | 359 | 356 | 88 | 88 | 51 | 160 | 365 | 35 | 36 | 24 |
| 4" x 3" | 100 x 80 | 432 | 435 | 432 | 120 | 120 | 76 | 195 | 470 | 65 | 67 | 55 |
| 6" x 4" | 150 x 100 | 559 | 562 | 559 | 160 | 160 | 101.6 | 250 | 600 | 160 | 165 | 112 |

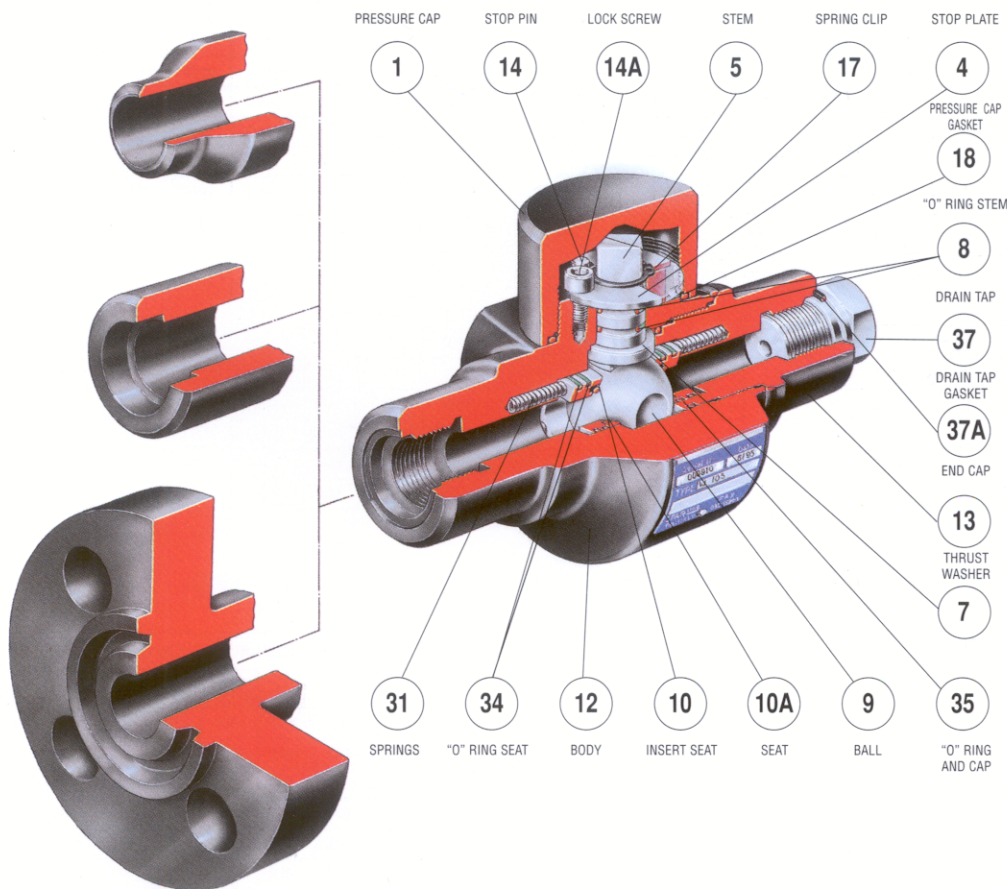
| VALVE SIZE | | DIMENSIONS in mm | | | | | ISO 5211 |
|------------|-----|------------------|-----|-----|-----|-----|----------|
| H | I | L | M | N | O | | |
| 12 | 7.5 | 6.5 | 6.5 | 42 | M5 | F04 | |
| 15 | 9 | 8.5 | 7.5 | 50 | M6 | F05 | |
| 15 | 9 | 10 | 9 | 50 | M6 | F05 | |
| 15 | 9 | 10 | 9 | 50 | M6 | F05 | |
| 22 | 16 | 19 | 16 | 70 | M8 | F07 | |
| 22 | 16 | 19 | 16 | 70 | M8 | F07 | |
| 24 | 18 | 24 | 22 | 70 | M8 | F07 | |
| 40 | 30 | 32 | 29 | 102 | M10 | F10 | |

STARLINE WELDED BALL VALVES FOR GAS STORAGE

One piece seal welded body, floating ball double block. Primary seal METAL, to METAL, secondary seal vulcanized Viton or NBR, pressure safe cover for the stem to prevent any leakage. For operation remove the cover.

Completely in accordance to spec. KN251-005.

Specifically designed as shut off drain and vent lines for larges valve sizes and as Gas Storage valves, these valves have passed a critical prototype testing simulating 50 years service life with raw gas, and sand.



LIST AND MATERIAL OF COMPONENTS

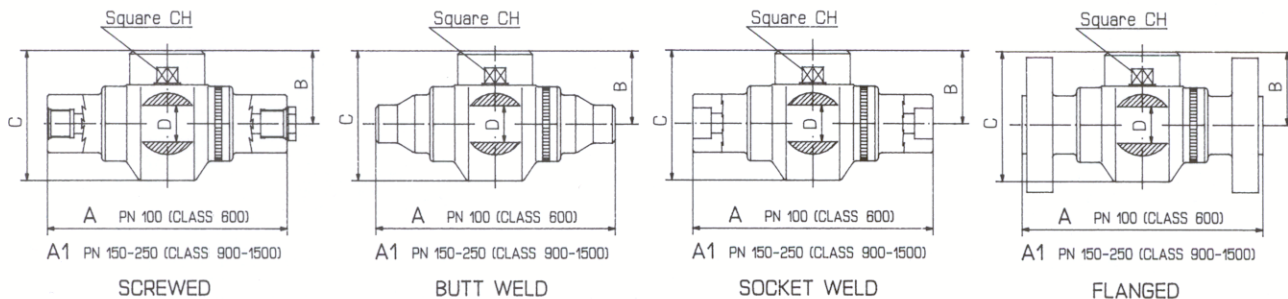
| PART NO. | UNIT Q.TY | PART NAME | MATERIAL |
|----------|-----------|---------------------|--------------------------|
| 1 | 1 | PRESSURE CAP | ASTM A105/C22.8 |
| 4 | 1 | STOP PLATE | S.S. 304 |
| 5 | 1 | STEM | AISI 420/1.4021 HARDENED |
| 7 | 1 | THRUST WASHER | REINF.PTFE |
| 8 | 1 | "O" RING STEM | VITON |
| 9 | 1 | BALL | AISI 420/1.4021 HARDENED |
| 10 | 2 | INSERT SEATS | VITON VULCANIZED |
| 10A | 2 | SEATS | AISI 420/1.4021 HARDENED |
| 12 | 1 | BODY | ASTM A105/C22.8 |
| 13 | 1 | END CAP | ASTM A105/C22.8 |
| 14 | 1 | STOP PIN | STEEL |
| 14A | 1 | LOCK SCREW | STAINLESS STEEL |
| 17 | 1 | SPRING CLIP | STEEL |
| 18 | 1 | PRESSURE CAP GASKET | VITON |
| 31 | 8+8 | SPRINGS | INCONEL X 750 |
| 34 | 2+2 | "O" RING SEAT | VITON |
| 35 | 1 | "O" RING END CAP | VITON |
| 37 | 1 | DRAIN TAP | S.S.304 |
| 37A | 1 | DRAIN TAP GASKET | SWEET IRON |

Valve range:

produced in the 3 typical sizes 1/2" - 1" - 2"
different combinations of end connections to suit any requirement

Class ratings:

all sizes are available in ASME class 600 Lbs (ISO PN 100) and ASME class 1500 Lbs (ISO PN250)



| SIZE | | DIMENSION | | | | | | WEIGHT KG | | | |
|------|----|-----------|-----|-----|-----|----|----|------------------------------|----------------------|--------------|----------------------|
| INCH | DN | A | A1 | B | C | D | CH | SREWED-BUTT WELD-SOCKET WELD | | FLANGED | |
| | | | | | | | | PN100 (600) | PN150-200 (900-1500) | PN 100 (600) | PN150-250 (900-1500) |
| 1/2" | 15 | 165 | 216 | 58 | 100 | 13 | 11 | 3.5 | 4 | 6 | 7 |
| 1" | 25 | 216 | 254 | 90 | 155 | 25 | 14 | 9 | 10 | 11 | 15 |
| 2" | 50 | 292 | 368 | 135 | 240 | 50 | 17 | 37 | 40 | 40 | 55 |