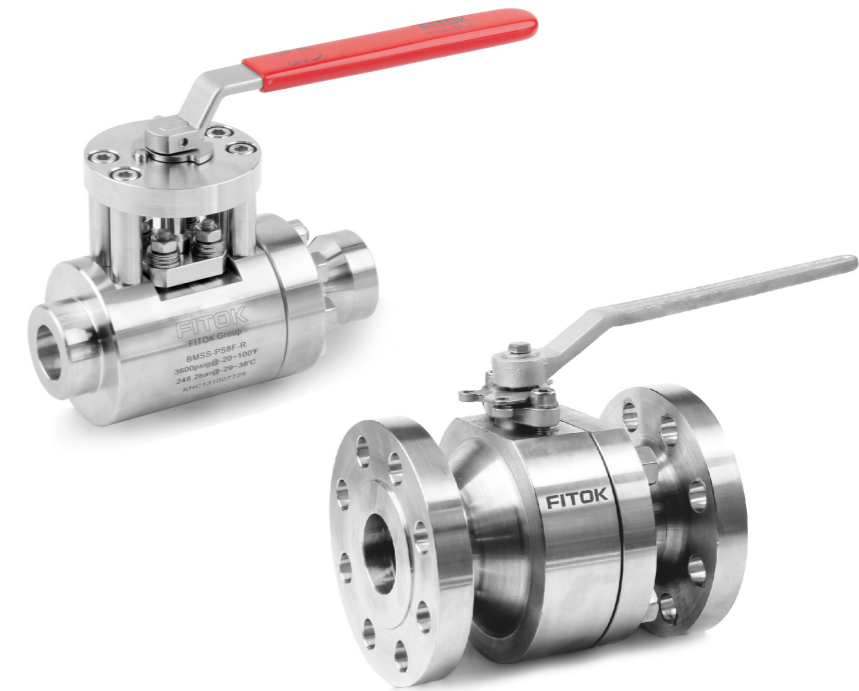


Two-Piece Forged Metal-Seated Ball Valves

BM Series



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GS0420409

FITOK
Valves and Fittings

www.fitokgroup.com

TWO-PIECE FORGED Metal-Seated Ball Valves

BM Series

- Size: 1/2 ~ 4" (15 ~ 100 mm)
- Classes: 150 ~ 4500

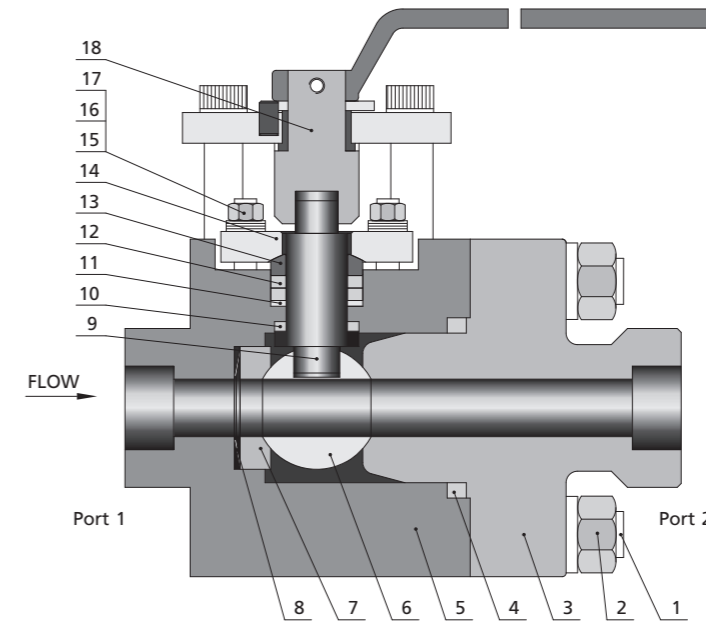
Specifications

- Design: ASME B16.34
- Testing: ASME B16.34 and API 598
- Marking: MSS-SP-25
- Socket weld ends: ASME B16.11
- Butt weld ends: ASME B16.25
- Flanged: ASME B16.5

Features

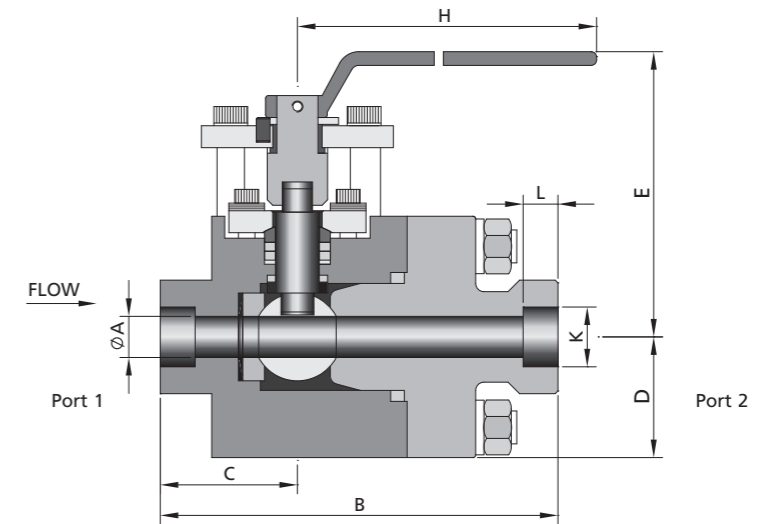
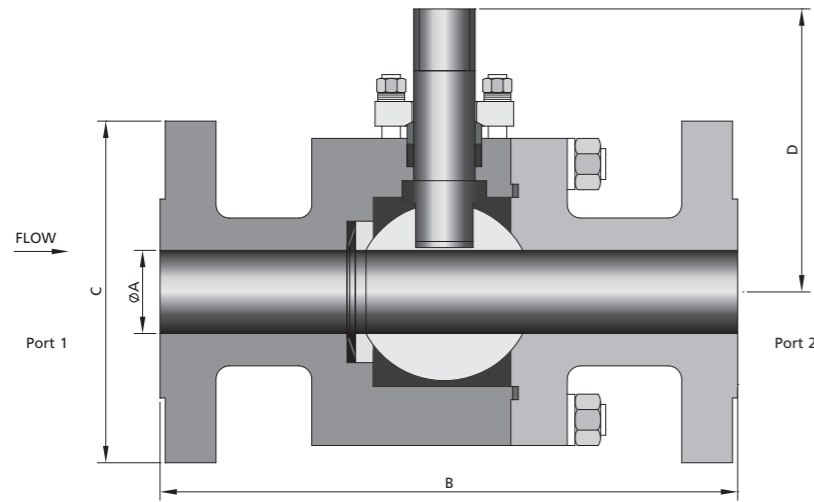
- Two-piece forged body designs
- Ball and seats mate-lapped for 100% contact ensures absolute shutoff
- Free floating ball design provides seat wear compensation
- The ball is forced to load into the seat by a high-strength Belleville spring
- The ball and seat are in full constant contact, isolating the body cavity from flow to prevent build-up of solids
- Mate-lapped ball and seat of same material and coating to match thermal expansion rates
- Advanced HVOF custom trim coating technology with hardness in excess of 900Hv
- An advanced packing chamber design and live-loading provide long lasting, maintenancefree, stem packing tightness.
- Flow arrow forged into mounting flange visible above insulation
- Low operating torque
- Blowout-proof stem
- Positive handle stop

Standard Material of Construction



| Item | Component | Valve Material | | | |
|------|-----------------------|------------------------------|--------------|--------------|--------------|
| | | A105 | F22 | F91 | F316 |
| | | Material Grade/Specification | | | |
| 1 | Body stud | B8M/A193 | B8M/A193 | B8M/A193 | B8M/A193 |
| 2 | Body nut | 8M/A194 | 8M/A194 | 8M/A194 | 8M/A194 |
| 3 | End cap/Integral seat | A105/HOFV31 | F22/HOFV31 | F91/HOFV31 | F316/HOFV31 |
| 4 | Body gasket | Graphite | Graphite | Graphite | Graphite |
| 5 | Body | A105 | F22/A182 | F91/A182 | F316/A182 |
| 6 | Ball | F6a/HOFV31 | F6a/HOFV31 | F6a/HOFV31 | F316/HOFV32 |
| 7 | Seat | F22 Cl.3/HF | F22 Cl.3/HF | F22 Cl.3/HF | F316/HF |
| 8 | Belleville spring | Alloy X-750 | Alloy X-750 | Alloy X-750 | Alloy X-750 |
| 9 | Stem | S66286/A638 | S66286/A638 | S66286/A638 | S66286/A638 |
| 10 | Gland bearing | 431/HF | 431/HF | 431/HF | 431/HF |
| 11 | Gland gasket | 316 SS/A276 | 316 SS/A276 | 316 SS/A276 | 316 SS/A276 |
| 12 | Gland packing | Graphite | Graphite | Graphite | Graphite |
| 13 | Gland | F316 SS/A182 | F316 SS/A182 | F316 SS/A182 | F316 SS/A182 |
| 14 | Gland block | 316 SS/A276 | 316 SS/A276 | 316 SS/A276 | 316 SS/A276 |
| 15 | Gland bolt | B8M/A193 | B8M/A193 | B8M/A193 | B8M/A193 |
| 16 | Body nut | 8M/A194 | 8M/A194 | 8M/A194 | 8M/A194 |
| 17 | Gland load spring | 302 SS | 302 SS | 302 SS | 302 SS |
| 18 | Drive sleeve | 431/HF | 431/HF | 431/HF | 431/HF |

Contact the authorized representative or FITOK Group for valves of other materials.



Flanged Ends Dimensions and Weights

| Size NPS DN | A | | | B (RF) | | | C | | | D | | | Weight lb kg | | |
|-------------------|-------------|-------------|-------------|-------------|--------------|--------------|------------------|-------------|--------------|---------------|-------------|--------------|--------------------|-----------|------------|
| | Port | | | End to End | | | Outside Diameter | | | Center to Top | | | | | |
| | 150 | 300 | 600 | 150 | 300 | 600 | 150 | 300 | 600 | 150 | 300 | 600 | 150 | 300 | 600 |
| 1/2 15 | 0.63 16 | 0.63 16 | 0.63 16 | 4.25 108 | 5.50 140 | 6.50 165 | 3.50 89 | 3.75 95 | 3.75 95 | 2.00 51 | 2.00 51 | 2.00 51 | 18 8 | 22 10 | 31 14 |
| 3/4 20 | 0.63 16 | 0.63 16 | 0.63 16 | 4.62 117 | 6.00 152 | 7.50 191 | 3.88 99 | 4.62 117 | 4.62 117 | 2.00 51 | 2.00 51 | 2.00 51 | 20 9 | 27 12 | 42 19 |
| 1 25 | 1.06 27 | 1.06 27 | 1.06 27 | 5.00 127 | 6.50 165 | 8.50 216 | 4.25 108 | 4.88 124 | 2.90 74 | 2.90 74 | 2.90 74 | 2.90 74 | 31 14 | 42 19 | 56 25 |
| 1 1/2 40 | 1.5 38 | 1.5 38 | 1.5 38 | 6.50 165 | 7.50 191 | 9.50 241 | 6.00 152 | 6.50 165 | 6.50 165 | 2.90 74 | 2.90 74 | 2.90 74 | 38 17 | 49 22 | 67 30 |
| 2 50 | 2.13 54 | 2.13 54 | 2.13 54 | 7.00 178 | 8.50 216 | 11.50 292 | 7.50 191 | 8.25 210 | 8.25 210 | 5.00 127 | 5.00 127 | 5.00 127 | 62 28 | 69 31 | 89 40 |
| 3 80 | 3.06 78 | 3.06 78 | 3.06 78 | 8.00 203 | 11.12 282 | 14.00 356 | 7.25 184 | 7.25 184 | 7.25 184 | 7.25 184 | 7.25 184 | 7.25 184 | 99 45 | 118 54 | 152 69 |
| 4 100 | 4.06 103 | 4.06 103 | 4.06 103 | 9.00 229 | 12.0 305 | 17.00 432 | 9.00 229 | 10.0 254 | 10.75 273 | 9.00 229 | 12.0 305 | 17.00 432 | 134 61 | 176 80 | 256 116 |

Socket Weld Ends Dimensions and Weights

| Size NPS DN | A | | B | | C | | D | | E | | H | | K | L | Weight lb kg | |
|-------------------|------------|------------|-------------|-------------|---------------|------------|------------------|--------------|---------------|-------------|------------------|-------------|----------------|------------|------------------------|-------------------------|
| | Port | | End to End | | Center to End | | Center to Bottom | | Center to Top | | Center to Handle | | | | Socket Weld Bore | Socket Weld Depth |
| | 900-2500 | 4500 | 900-2500 | 4500 | 900-2500 | 4500 | 900-2500 | 4500 | 900-2500 | 4500 | 900-2500 | 4500 | 900-2500 | 4500 | | |
| 1/2 15 | 0.63 16 | 0.63 16 | 5.88 149 | 8.00 203 | 2.75 70 | 2.75 70 | 1.75 44.5 | 1.75 44.5 | 5.88 149 | 5.88 149 | 15.0 381 | 15.0 381 | 0.855 21.72 | 0.38 10 | 19 8.5 | 20 9.0 |
| 3/4 20 | 0.63 16 | 0.63 16 | 5.88 149 | 8.00 203 | 2.75 70 | 2.75 70 | 1.75 44.5 | 1.75 44.5 | 5.88 149 | 5.88 149 | 15.0 381 | 15.0 381 | 1.065 27.05 | 0.50 13 | 21 9.5 | 22 10.0 |
| 1 25 | 0.63 16 | 0.63 16 | 8.00 203 | 8.00 203 | 2.75 70 | 2.75 70 | 1.75 44.5 | 1.75 44.5 | 5.88 149 | 5.88 149 | 15.0 381 | 15.0 381 | 1.330 33.78 | 0.50 13 | 23 10.5 | 24 11.0 |
| 1 1/4 32 | 0.63 16 | 0.63 16 | 8.00 203 | 8.00 203 | 2.75 70 | 2.75 70 | 1.75 44.5 | 1.75 44.5 | 5.88 149 | 5.88 149 | 15.0 381 | 15.0 381 | 1.675 42.55 | 0.50 13 | 22 10.0 | 24 11.0 |
| 1 1/2 40 | 0.63 16 | 0.63 16 | 8.00 203 | 9.56 243 | 2.75 70 | 3.25 83 | 1.75 44.5 | 2.25 57 | 5.88 149 | 5.88 149 | 15.0 381 | 15.0 381 | 1.915 48.64 | 0.50 13 | 23 10.5 | 41 18.5 |
| 2 50 | 1.06 27 | 0.63 16 | 10.0 254 | 9.56 243 | 3.8 97 | 3.25 83 | 2.13 54 | 2.25 57 | 6.50 165 | 5.88 149 | 15.0 381 | 15.0 381 | 2.406 61.11 | 0.63 16 | 35 16.0 | 40 18.2 |

Butt Weld Ends Dimensions and Weights

| Size NPS DN | A | | B | | C | | D | | E | | H | | Weight lb kg | |
|-------------------|------------|------------|--------------|--------------|---------------|------------|------------------|--------------|---------------|-------------|------------------|-------------|--------------------|------------|
| | Port | | End to End | | Center to End | | Center to Bottom | | Center to Top | | Center to Handle | | | |
| | 900-2500 | 4500 | 900-2500 | 4500 | 900-2500 | 4500 | 900-2500 | 4500 | 900-2500 | 4500 | 900-2500 | 4500 | 900-2800 | 4500 |
| 1/2 15 | 0.63 16 | 0.63 16 | 6.00 152 | 8.00 203 | 2.75 70 | 2.75 70 | 1.75 44.5 | 1.75 44.5 | 5.88 149 | 5.88 149 | 15.0 381 | 15.0 381 | 19 8.5 | 20 9.0 |
| 3/4 20 | 0.63 16 | 0.63 16 | 6.00 152 | 8.00 203 | 2.75 70 | 2.75 70 | 1.75 44.5 | 1.75 44.5 | 5.88 149 | 5.88 149 | 15.0 381 | 15.0 381 | 21 9.5 | 22 10.0 |
| 1 25 | 0.63 16 | 0.63 16 | 8.00 203 | 8.00 203 | 2.75 70 | 2.75 70 | 1.75 44.5 | 1.75 44.5 | 5.88 149 | 5.88 149 | 15.0 381 | 15.0 381 | 23 10.5 | 24 11.0 |
| 1 1/4 32 | 0.63 16 | 0.63 16 | 8.00 203 | 8.00 203 | 2.75 70 | 2.75 70 | 1.75 44.5 | 1.75 44.5 | 5.88 149 | 5.88 149 | 15.0 381 | 15.0 381 | 22 10.0 | 24 11.0 |
| 1 1/2 40 | 0.63 16 | 0.63 16 | 8.00 203 | 8.00 203 | 2.75 70 | 3.25 83 | 1.75 44.5 | 2.25 57 | 5.88 149 | 5.88 149 | 15.0 381 | 15.0 381 | 23 10.5 | 41 18.5 |
| 2 50 | 1.06 27 | 0.63 16 | 8.00 203 | 8.00 203 | 3.8 97 | 3.25 83 | 2.13 54 | 2.25 57 | 6.50 165 | 5.88 149 | 15.0 381 | 15.0 381 | 32 14.5 | 42 19.0 |
| 2 1/2 65 | 1.06 27 | 1.06 27 | 10.0 254 | 11.13 283 | 4.0 102 | 3.8 97 | 3.00 76 | 3.00 76 | 6.50 165 | — | 15.0 381 | — | 34 15.5 | 53 24.0 |
| 3 80 | 1.5 38 | 1.06 27 | 11.25 286 | 11.13 283 | 4.0 102 | 3.8 97 | 3.00 76 | 3.00 76 | — | — | — | — | 82 37.2 | 55 25.0 |
| 4 100 | 1.5 38 | 1.06 27 | 11.25 286 | 11.13 283 | 4.0 102 | 3.8 97 | 3.00 76 | 3.00 76 | — | — | — | — | 85 38.5 | 53 24.0 |

Pressure - Temperature Ratings

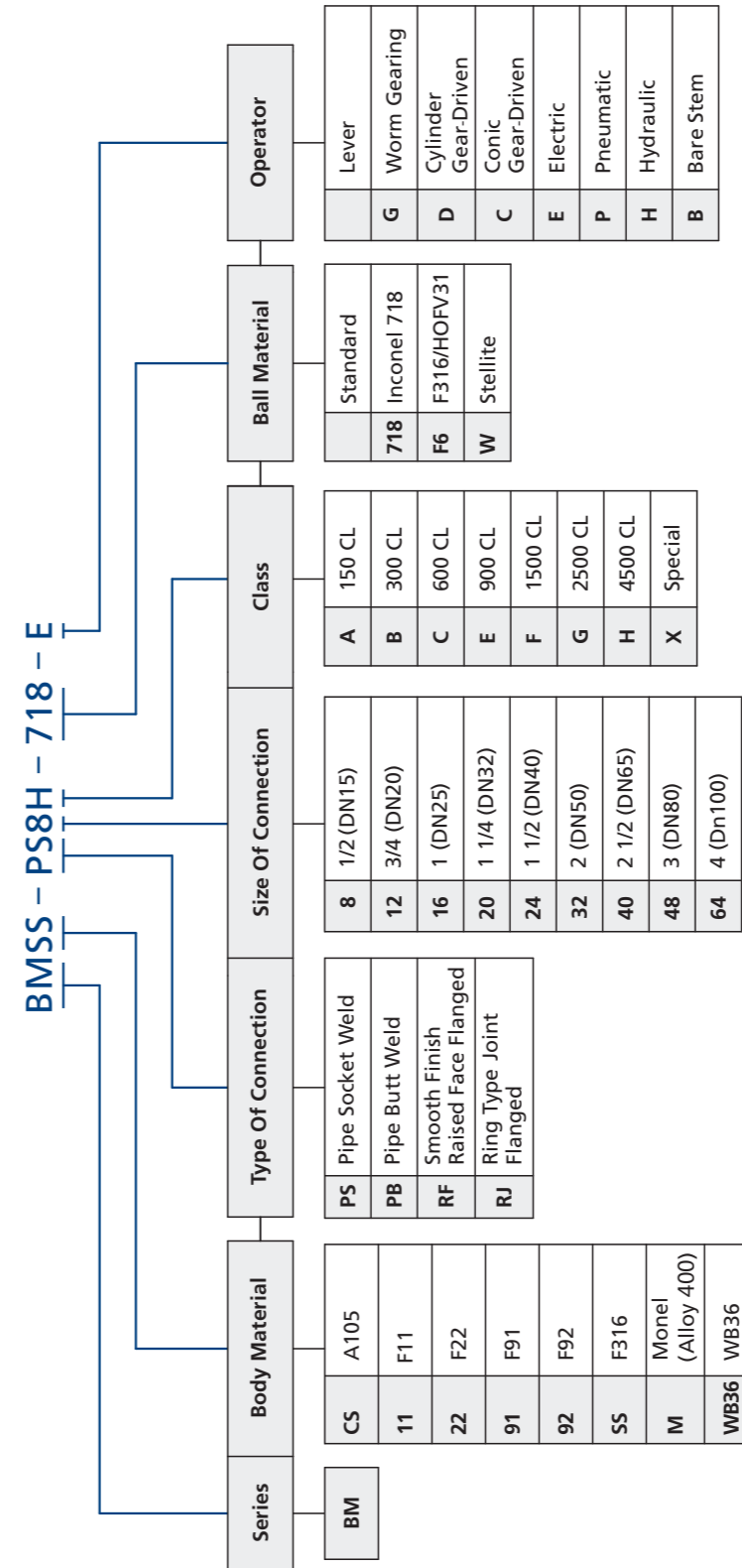
ANSI B16.34-Classes 150~4500

| Materials | A105&A350-LF2 | | | | | | | F22 | | | | | | |
|------------|---------------|-----|------|------|------|------|-------|------|-----|------|------|------|------|-------|
| | Class | 150 | 300 | 600 | 900 | 1500 | 2500 | 4500 | 150 | 300 | 600 | 900 | 1500 | 2500 |
| Temp. °F | psig | | | | | | | | | | | | | |
| -20 to 100 | 285 | 740 | 1480 | 2220 | 3705 | 6170 | 11110 | 290 | 750 | 1500 | 2250 | 3750 | 6250 | 11250 |
| 200 | 260 | 675 | 1350 | 2025 | 3375 | 5625 | 10120 | 260 | 750 | 1500 | 2250 | 3750 | 6250 | 11250 |
| 300 | 230 | 655 | 1315 | 1970 | 3280 | 5470 | 9845 | 230 | 730 | 1455 | 218 | 3640 | 6070 | 10925 |
| 400 | 200 | 635 | 1270 | 1900 | 3170 | 5280 | 9505 | 200 | 705 | 1410 | 2115 | 3530 | 5880 | 10585 |
| 500 | 170 | 600 | 1200 | 1795 | 2995 | 4990 | 8980 | 170 | 665 | 1330 | 1995 | 3325 | 5540 | 9965 |
| 600 | 140 | 550 | 1095 | 1640 | 2735 | 4560 | 8210 | 140 | 605 | 1210 | 1815 | 3025 | 5040 | 9070 |
| 650 | 125 | 535 | 1075 | 1610 | 2685 | 4475 | 8055 | 125 | 590 | 1175 | 1765 | 2940 | 4905 | 8825 |
| 700 | 110 | 535 | 1065 | 1600 | 2665 | 4440 | 7990 | 110 | 570 | 1135 | 1705 | 2840 | 4730 | 8515 |
| 750 | 95 | 505 | 1010 | 1510 | 2520 | 4200 | 7560 | 95 | 505 | 1065 | 1595 | 2660 | 4430 | 7970 |
| 800 | 80 | 410 | 825 | 1235 | 2060 | 3430 | 6170 | 80 | 530 | 1015 | 1525 | 2540 | 4230 | 7610 |
| 850 | 65 | 270 | 535 | 805 | 1340 | 2230 | 4010 | 65 | 510 | 975 | 1460 | 2435 | 4060 | 7305 |
| 900 | — | — | — | — | — | — | — | 50 | 450 | 900 | 1350 | 2245 | 3745 | 6740 |
| 950 | — | — | — | — | — | — | — | 35 | 375 | 755 | 1130 | 1885 | 3145 | 5665 |
| 1000 | — | — | — | — | — | — | — | 20 | 260 | 520 | 780 | 1305 | 2170 | 3910 |
| 1050 | — | — | — | — | — | — | — | 20 | 175 | 350 | 525 | 875 | 1455 | 2625 |
| 1100 | — | — | — | — | — | — | — | 20 | 110 | 220 | 330 | 550 | 915 | 1645 |
| 1150 | — | — | — | — | — | — | — | — | 70 | 135 | 205 | 345 | 570 | 1030 |
| 1200 | — | — | — | — | — | — | — | — | 40 | 82 | 125 | 205 | 345 | 615 |

| Materials | F91 | | | | | | | F316 | | | | | | |
|------------|-------|-----|------|------|------|------|-------|------|-----|------|------|------|------|-------|
| | Class | 150 | 300 | 600 | 900 | 1500 | 2500 | 4500 | 150 | 300 | 600 | 900 | 1500 | 2500 |
| Temp. °F | psig | | | | | | | | | | | | | |
| -20 to 100 | 290 | 750 | 1500 | 2250 | 3750 | 6250 | 11250 | 275 | 720 | 1440 | 2160 | 3600 | 6000 | 10800 |
| 200 | 260 | 750 | 1500 | 2250 | 3750 | 6250 | 11250 | 235 | 620 | 1240 | 1860 | 3095 | 5160 | 9290 |
| 300 | 230 | 730 | 1455 | 2185 | 3640 | 6070 | 10925 | 215 | 560 | 1120 | 1680 | 2795 | 4660 | 8390 |
| 400 | 200 | 705 | 1410 | 2115 | 3530 | 5880 | 10585 | 195 | 515 | 1025 | 1540 | 2570 | 4280 | 7705 |
| 500 | 170 | 665 | 1330 | 1995 | 3325 | 5540 | 9965 | 170 | 480 | 955 | 1435 | 2390 | 3980 | 7165 |
| 600 | 140 | 605 | 1210 | 1815 | 3025 | 5040 | 9070 | 140 | 450 | 900 | 1355 | 2255 | 3760 | 6770 |
| 650 | 125 | 590 | 1175 | 1765 | 2940 | 4905 | 8825 | 125 | 445 | 890 | 1330 | 2220 | 3700 | 6660 |
| 700 | 110 | 570 | 1135 | 1705 | 2840 | 4730 | 8515 | 110 | 430 | 870 | 1305 | 2170 | 3620 | 6515 |
| 750 | 95 | 530 | 1065 | 1595 | 2660 | 4430 | 7970 | 95 | 425 | 855 | 1280 | 2135 | 3560 | 6410 |
| 800 | 80 | 510 | 1015 | 1525 | 2540 | 4230 | 7610 | 80 | 420 | 845 | 1265 | 2110 | 3520 | 6335 |
| 850 | 65 | 485 | 975 | 1460 | 2435 | 4060 | 7305 | 65 | 420 | 835 | 1255 | 2090 | 3480 | 6265 |
| 900 | 50 | 450 | 900 | 1350 | 2245 | 3745 | 6740 | 50 | 415 | 830 | 1245 | 2075 | 3460 | 6230 |
| 950 | 35 | 385 | 775 | 1160 | 1930 | 3220 | 5795 | 35 | 385 | 775 | 1160 | 1930 | 3220 | 5795 |
| 1000 | 20 | 365 | 725 | 1090 | 1820 | 3030 | 5450 | 20 | 350 | 700 | 1050 | 1750 | 2915 | 5245 |
| 1050 | 20 | 360 | 720 | 1080 | 1800 | 3000 | 5400 | 20 | 345 | 685 | 1030 | 1720 | 2865 | 5155 |
| 1100 | 20 | 300 | 605 | 905 | 1510 | 2515 | 4525 | 20 | 305 | 610 | 915 | 1525 | 2545 | 4575 |
| 1150 | 20 | 225 | 445 | 970 | 1115 | 1855 | 3345 | 20 | 235 | 475 | 710 | 1185 | 1970 | 3550 |
| 1200 | 20 | 145 | 290 | 430 | 720 | 1200 | 2160 | 20 | 185 | 370 | 555 | 925 | 1545 | 2775 |
| 1250 | — | — | — | — | — | — | — | 20 | 145 | 295 | 440 | 735 | 1230 | 2210 |

1. A105 permissible but not recommended for prolonged usage above about 800 °F (425°C).
2. F22 permissible but not recommended for prolonged usage above about 1100°F (593°C).
3. Consult the factory for the curves of other materials

Part Number Description



Note: "Part Number Description" is used for composition rules of FITOK product model, Not suitable for specific product part number selection, not random combinations. If in doubt, please contact FITOK company or authorized agents.