

C-LOK

C-LOK Instrument Valve Co.,Ltd.

Bellows-sealed Valves



Contents

01 Bellows-sealed Valve S1 Series



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Bellows-sealed Valve S1 Series

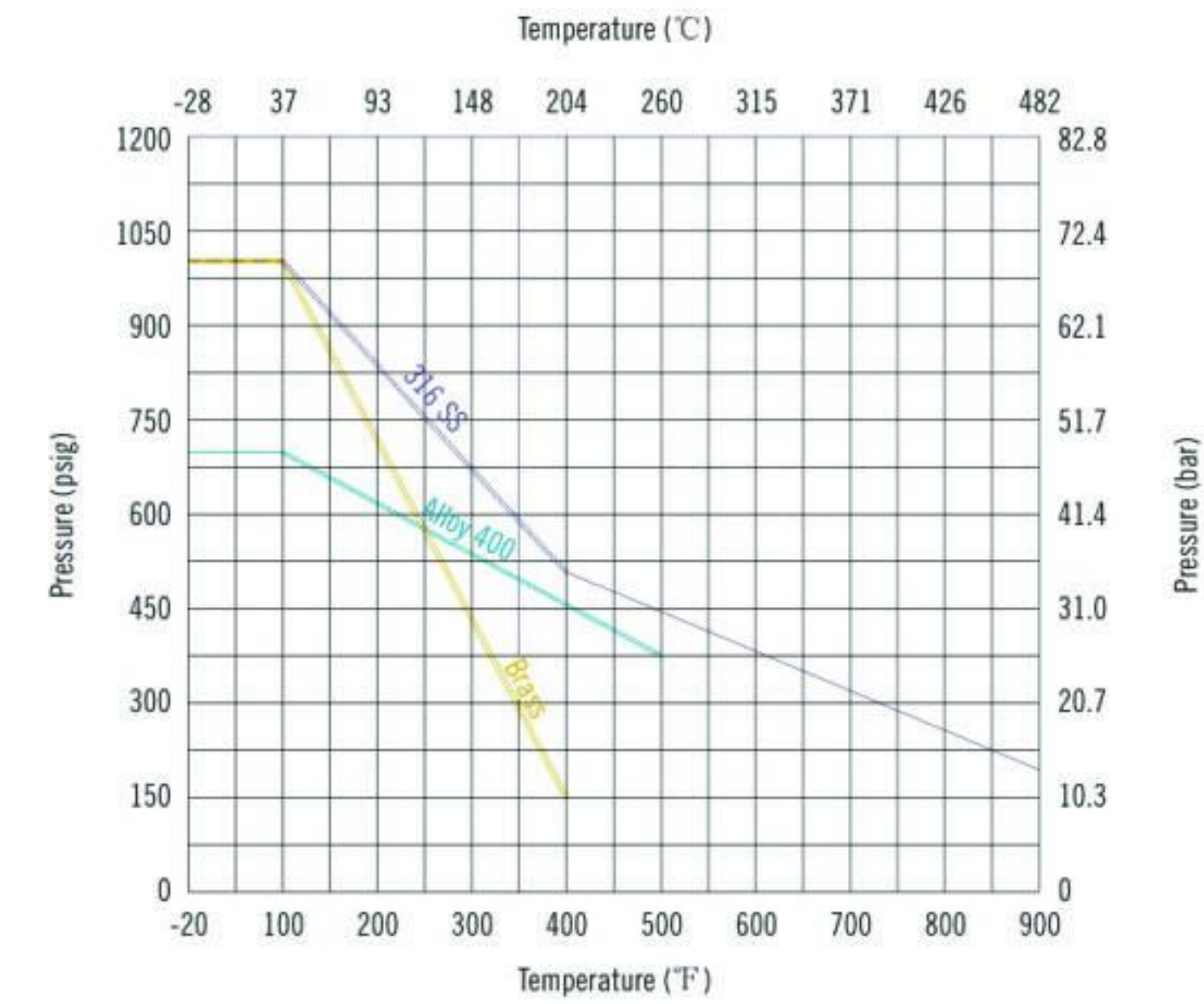
Features

S1 Series

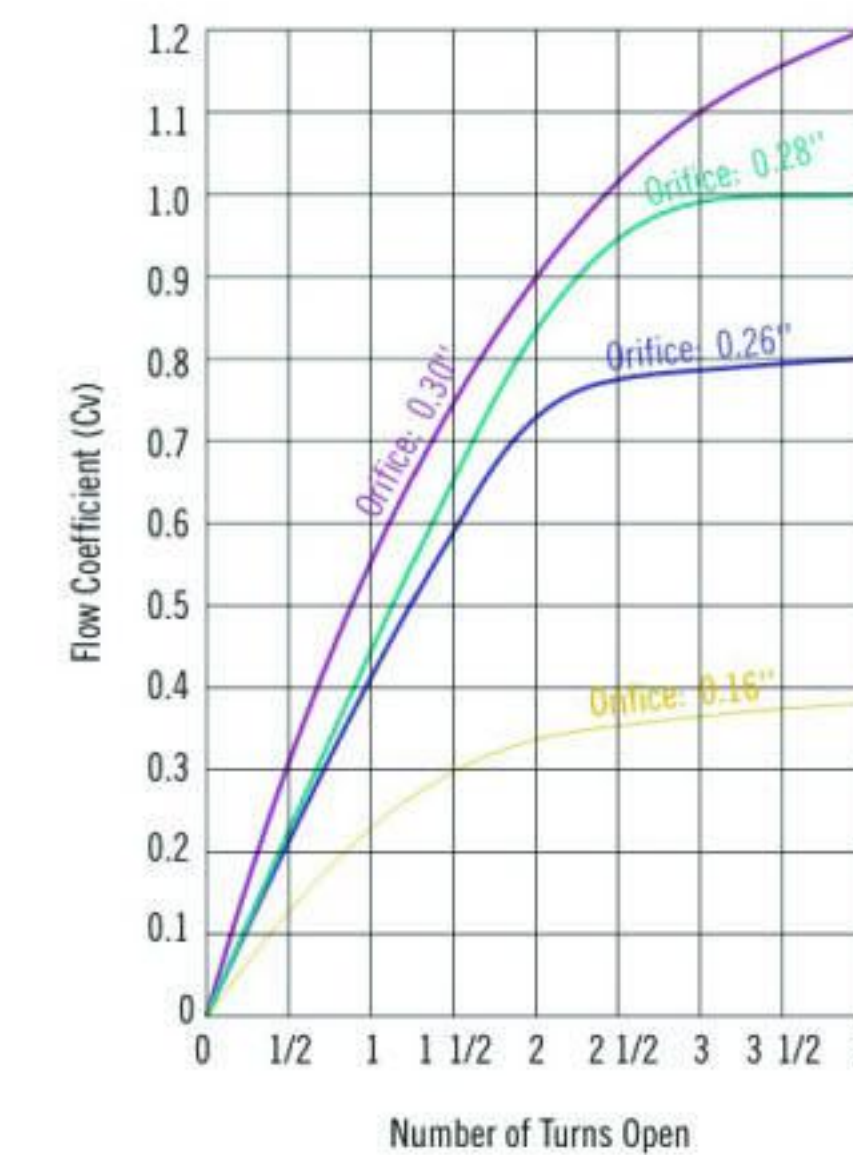
- Maximum working pressure: 1000 psig (68.9 bar)
- Working temperature: -20°F to 900°F (-28°C to 482°C)
- Variety of connections
- 316SS, brass and monel body materials
- Hydraulic-formed multilayer bellows for longer cycle life
- Galling resistant seat area by nonrotating stem tip
- Externally pressurized bellows design for maximum strength
- Strictly controlled bellows stroke to improve safety and cycle life
- Replaceable bellows and stem assembly
- Regulating, conical and spherical stem tips available
- Panel and bottom mounting
- Every bellows-sealed valve is factory tested with helium for 5 s to a maximum leak rate of 4×10^{-3} std cm³/s at the seat, envelope, and all seals.



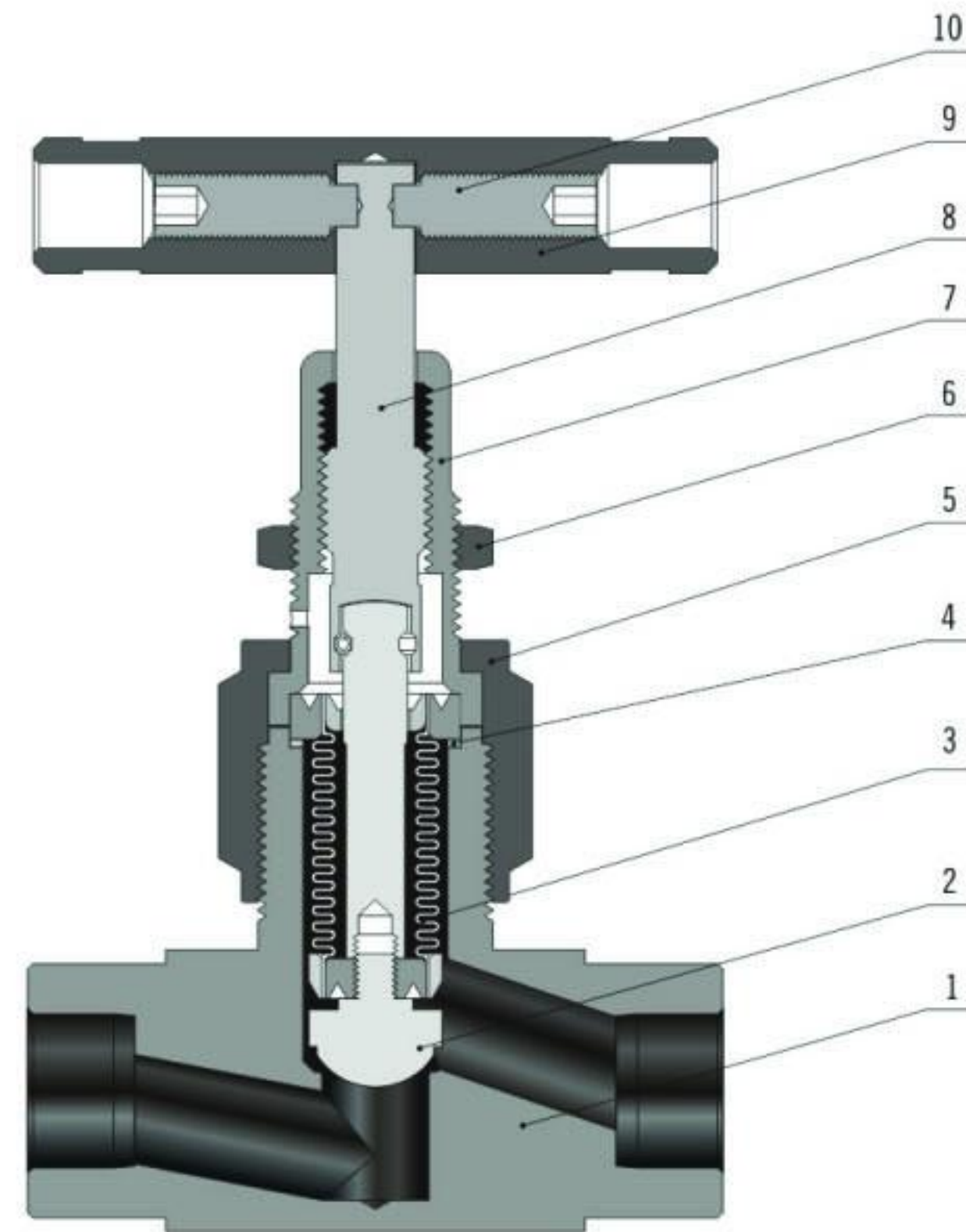
Pressure vs. Temperature



Flow Coefficient vs. Turns Open



Standard Materials of Construction

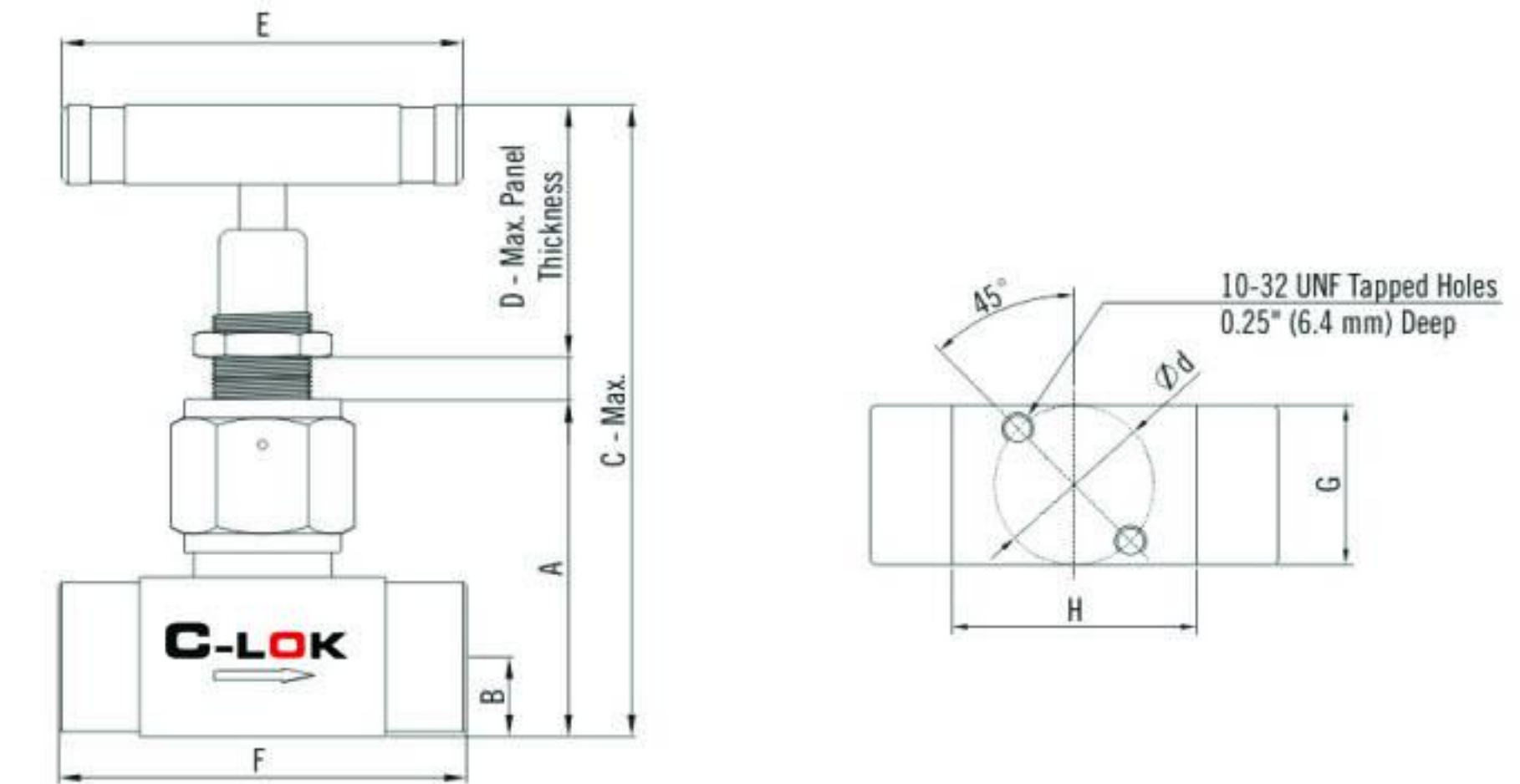


Tip Types



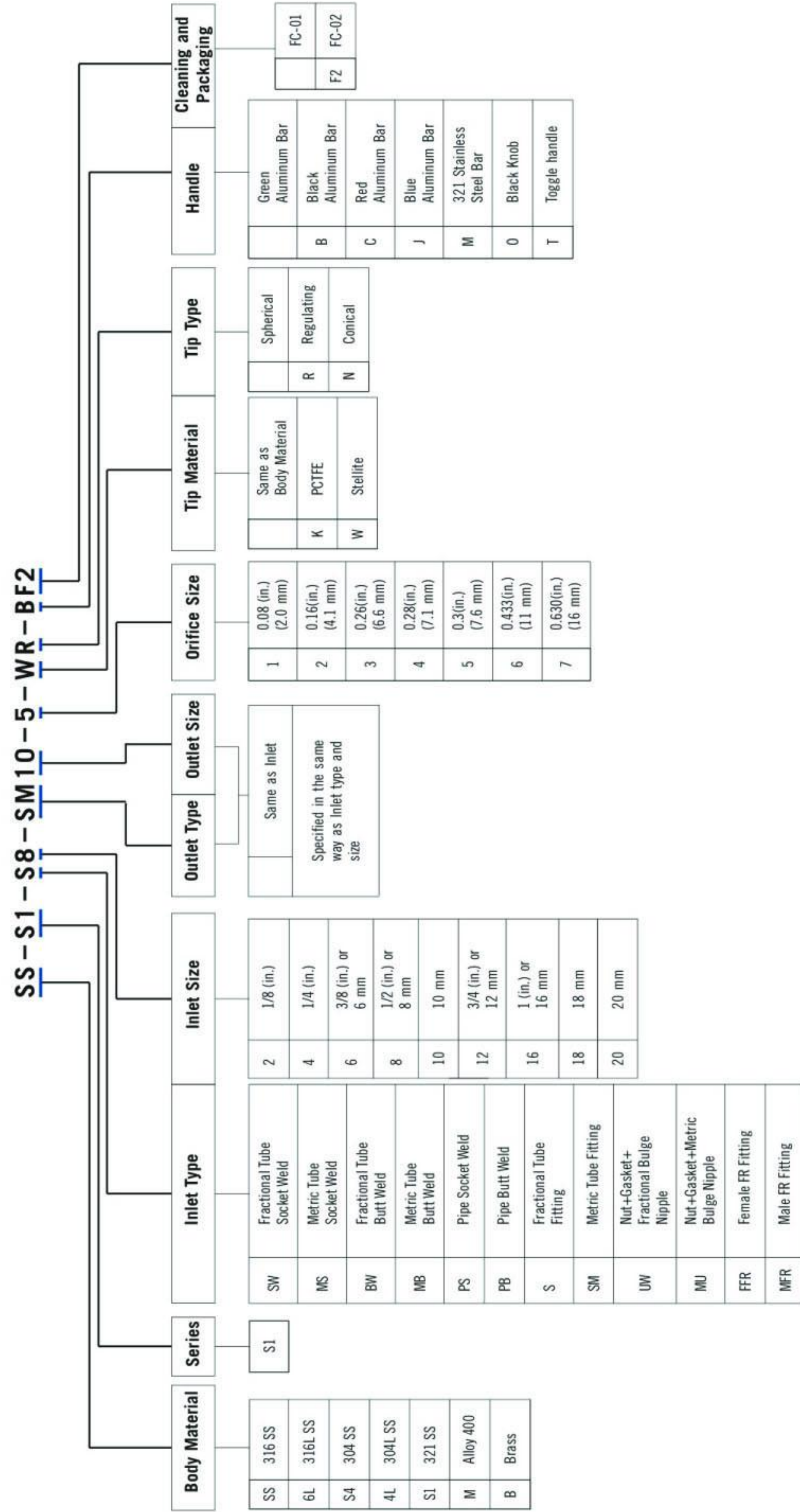
| Component | | Valve Body Material Grade/ASTM Specification | | |
|---------------------|-----------------|--|-------------------------|----------------------------------|
| | | 316 SS | Brass | Alloy 400 |
| 1 | Body | 316 SS/A479 | Brass/B16 | Alloy 400/B164 |
| 2 | Stem Tip | 316 SS/A479 (regulating) | | Alloy k-500/AMS4676 (regulating) |
| | | PTFE/D1430 (conical) | | PTFE/D1430 (conical) |
| | | Weld Stellite (regulating or spherical) | | — |
| 3a | Bellow | 321 SS/A269 (316L SS/A269 optional) | | Alloy 400/B165 |
| 3b | Stem | 316 SS/A479 (316L SS optional) | | Alloy 400/B164 |
| 3c | Weld Ring | 316 SS/A479 (316L SS optional) | | Alloy 400/B164 |
| 4 | Gasket | Silver-plated 316 SS/A580 | | Silver-plated Alloy 400/AMS4730 |
| | | PTFE-coated- 316 SS/A580 | | PTFE-coated Alloy 400/AMS4730 |
| 5 | Bonnet Nut | Silver-plated 316 SS/A479 | Silver-plated Brass/B16 | Silver-plated 316SS/A479 |
| 6 | Panel Mount Nut | 17-4PH powered metal | Brass/B16 | 17-4PH powered metal |
| 7 | Bonnet | 316 SS/A479 | Brass/B16 | 316 SS/A479 |
| 8 | Actuator | 416 SS/A582 | 416 SS/A582 | 416 SS/A582 |
| 9 | Handle | Green anodized aluminum 2024-T4/B211 (stainless steel and phenolic optional) | | |
| 10 | Set Screw | Alloy Steel/ANSI 18.3 | | |
| Wetted Lubricant | | Fluorinated-based (Spherical Tip) | | |
| Nonwetted Lubricant | | Molybdenum disulfide | | |

Dimension



| Basic Ordering Number | Connection Type and Size | | Orifice in. (mm) | Cv | Dimension, in. (mm) | | | | | | | | |
|-----------------------|--------------------------|----------------|------------------|------|---------------------|-------------|--------------|------------|-------------|-------------|-------------|-------------|-------------|
| | Inlet | Outlet | | | A | B | C | D | E | F | G | H | Φd |
| -S1-S4-2- | 1/4" OD | 1/4" OD | 0.16 (4.1) | 0.36 | 1.45 (36.8) | 0.56 (14.2) | 3.64 (92.5) | 0.38 (9.7) | 1.88 (47.8) | 2.46 (62.5) | 1.00 (25.4) | 1.06 (26.9) | 1.00 (25.4) |
| -S1-S6-3- | 3/8" OD | 3/8" OD | 0.26 (6.6) | 0.80 | 1.57 (39.9) | 0.50 (12.7) | 4.19 (106.0) | 0.38 (9.7) | 2.50 (63.5) | 3.09 (78.5) | 1.13 (28.7) | 1.57 (39.9) | 1.00 (25.4) |
| -S1-S8-5- | 1/2" OD | 1/2" OD | 0.30 (7.6) | 1.20 | 1.57 (39.9) | 0.50 (12.7) | 4.19 (106.0) | 0.38 (9.7) | 2.50 (63.5) | 3.30 (83.8) | 1.13 (28.7) | 1.57 (39.9) | 1.00 (25.4) |
| -S1-SM6-2- | 6 mm | 6 mm | 0.16 (4.1) | 0.36 | 1.45 (36.8) | 0.56 (14.2) | 3.64 (92.5) | 0.38 (9.7) | 1.88 (47.8) | 2.46 (62.5) | 1.00 (25.4) | 1.06 (26.9) | 1.00 (25.4) |
| -S1-SM10-4- | 10 mm | 10 mm | 0.28 (7.1) | 1.00 | 1.57 (39.9) | 0.50 (12.7) | 4.19 (106.0) | 0.38 (9.7) | 2.50 (63.5) | 3.11 (79.0) | 1.13 (28.7) | 1.57 (39.9) | 1.00 (25.4) |
| -S1-SM12-5- | 12 mm | 12 mm | 0.30 (7.6) | 1.20 | 1.57 (39.9) | 0.50 (12.7) | 4.19 (106.0) | 0.38 (9.7) | 2.50 (63.5) | 3.30 (83.8) | 1.13 (28.7) | 1.57 (39.9) | 1.00 (25.4) |
| -S1-SW4-2- | 1/4" SW | 1/4" SW | 0.16 (4.1) | 0.36 | 1.45 (36.8) | 0.56 (14.2) | 3.64 (92.5) | 0.38 (9.7) | 1.88 (47.8) | 1.68 (42.7) | 1.00 (25.4) | 1.00 (25.4) | 1.00 (25.4) |
| -S1-SW6-4- | 3/8" SW | 3/8" SW | 0.28 (7.1) | 1.00 | 1.57 (39.9) | 0.50 (12.7) | 4.19 (106.0) | 0.38 (9.7) | 2.50 (63.5) | 2.27 (57.7) | 1.13 (28.7) | 1.52 (38.6) | 1.00 (25.4) |
| -S1-SW8-5- | 1/2" SW | 1/2" SW | 0.30 (7.6) | 1.20 | 1.57 (39.9) | 0.50 (12.7) | 4.19 (106.0) | 0.38 (9.7) | 2.50 (63.5) | 2.27 (57.7) | 1.13 (28.7) | 1.52 (38.6) | 1.00 (25.4) |
| -S1-BW4-2- | 1/4" BW | 1/4" BW | 0.16 (4.1) | 0.36 | 1.45 (36.8) | 0.56 (14.2) | 3.64 (92.5) | 0.38 (9.7) | 1.88 (47.8) | 1.68 (42.7) | 1.00 (25.4) | 1.00 (25.4) | 1.00 (25.4) |
| -S1-BW6-4- | 3/8" BW | 3/8" BW | 0.28 (7.1) | 1.00 | 1.57 (39.9) | 0.50 (12.7) | 4.19 (106.0) | 0.38 (9.7) | 2.50 (63.5) | 2.27 (57.7) | 1.13 (28.7) | 1.52 (38.6) | 1.00 (25.4) |
| -S1-BW8-5- | 1/2" BW | 1/2" BW | 0.30 (7.6) | 1.20 | 1.57 (39.9) | 0.50 (12.7) | 4.19 (106.0) | 0.38 (9.7) | 2.50 (63.5) | 2.27 (57.7) | 1.13 (28.7) | 1.52 (38.6) | 1.00 (25.4) |
| -S1-FFR4-2- | 1/4" Female FR | 1/4" Female FR | 0.16 (4.1) | 0.36 | 1.45 (36.8) | 0.56 (14.2) | 3.64 (92.5) | 0.38 (9.7) | 1.88 (47.8) | 2.76 (70.1) | 1.00 (25.4) | 1.00 (25.4) | 1.00 (25.4) |
| -S1-FFR8-5- | 1/2" Female FR | 1/2" Female FR | 0.30 (7.6) | 1.20 | 1.57 (39.9) | 0.50 (12.7) | 4.19 (106.0) | 0.38 (9.7) | 2.50 (63.5) | 3.09 (78.5) | 1.13 (28.7) | 1.52 (38.6) | 1.00 (25.4) |
| -S1-MFR4-2- | 1/4" Male FR | 1/4" Male FR | 0.16 (4.1) | 0.36 | 1.45 (36.8) | 0.44 (11.2) | 3.64 (92.5) | 0.38 (9.7) | 1.88 (47.8) | 2.24 (56.9) | 1.00 (25.4) | 1.00 (25.4) | 1.00 (25.4) |
| -S1-MFR8-5- | 1/2" Male FR | 1/2" Male FR | 0.30 (7.6) | 1.20 | 1.57 (39.9) | 0.44 (11.2) | 4.19 (106.0) | 0.38 (9.7) | 2.50 (63.5) | 3.00 (76.2) | 1.13 (28.7) | 1.52 (38.6) | 1.00 (25.4) |

Bellows-sealed Valve S1 Series



1. Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M20: 1.5 mm

2. Standard thread pitch should be ignored in the ordering number, others should be specified.

3. Cleaning and Packaging
FC-01: Standard cleaning and packaging for general industrial procedures.
FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement as stated in ASTM G93 Level C.

Bellows-sealed Valve S2 Series

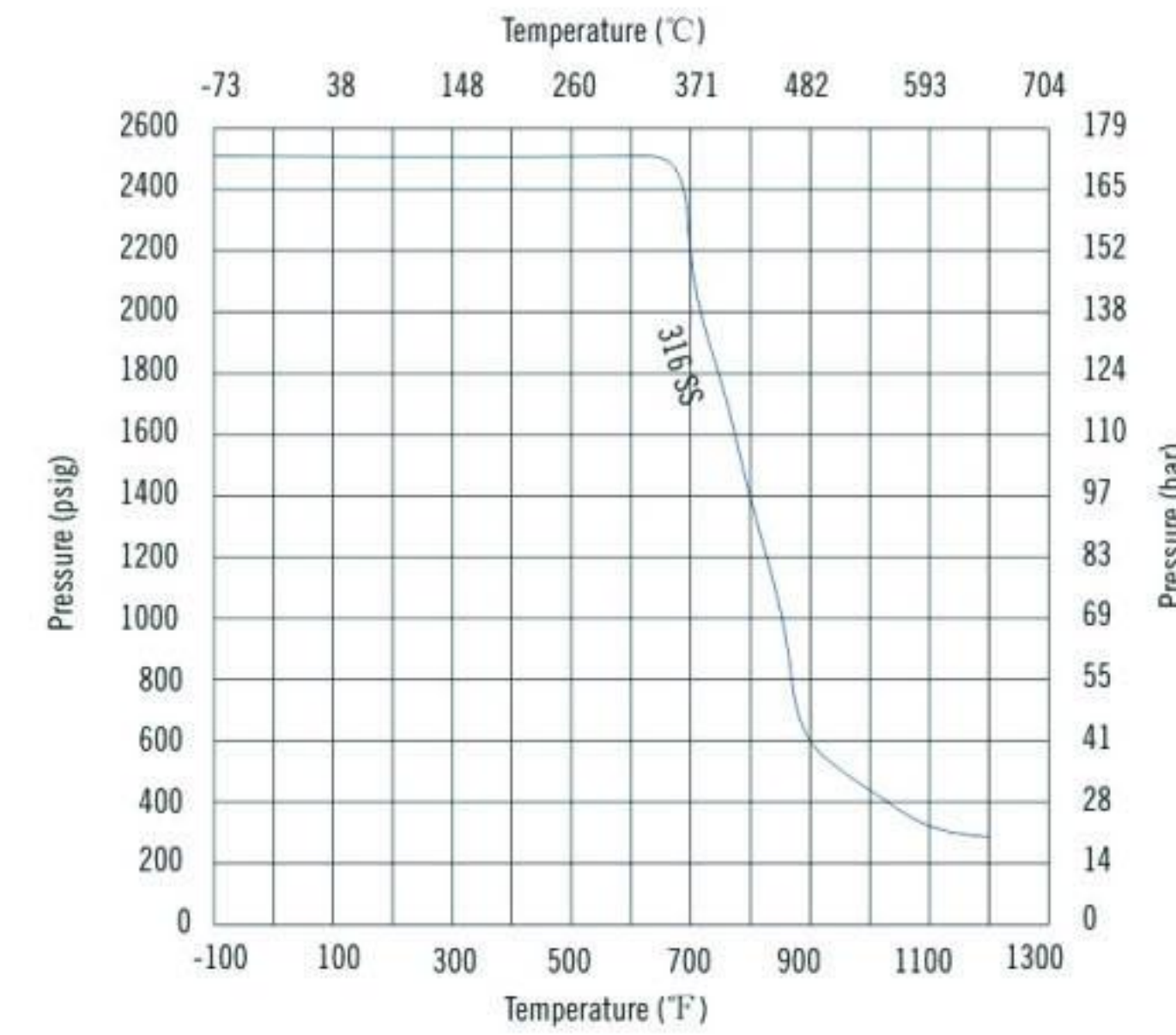
Features

S2 Series

- Working pressure up to 2500 psig (172 bar)
- Working temperatures from -20°F to 1200°F (-28°C to 649°C)
- Wide variety options of end connections
- 316 SS body materials
- Upper packing provides secondary containment system above the bellows
- Hydraulic-formed multilayer bellows enhanced cycle life
- Nonrotating stem tip eliminates galling within the seat area
- Strictly controlled bellows stroke to improve safety and cycle life
- Replaceable bellows and stem assembly
- Regulating, conical, and spherical stem tips available
- Panel, bottom, and side mounting available
- Double lock-pins enable steady and durable fastening of the handle.
- Optional handle colors are available
- Every bellows-sealed valve is factory tested with helium to a maximum leak rate of 4×10^{-5} std cm³/s at the seat, envelope and all seals

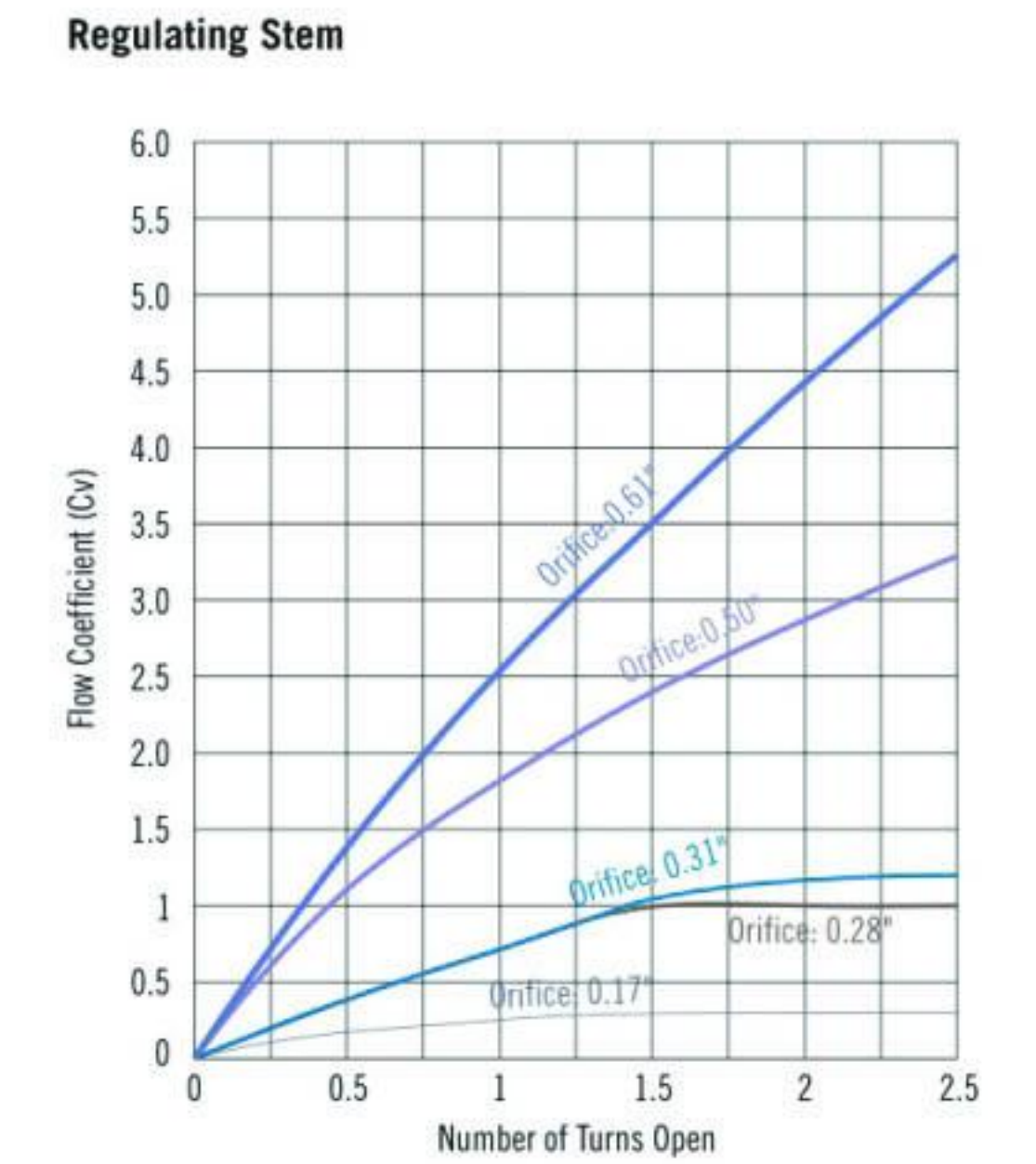


Pressure vs. Temperature

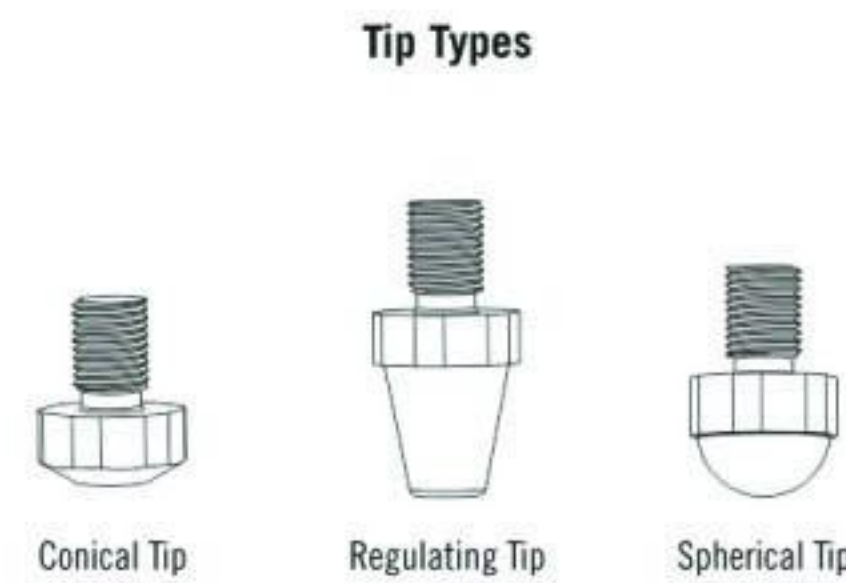
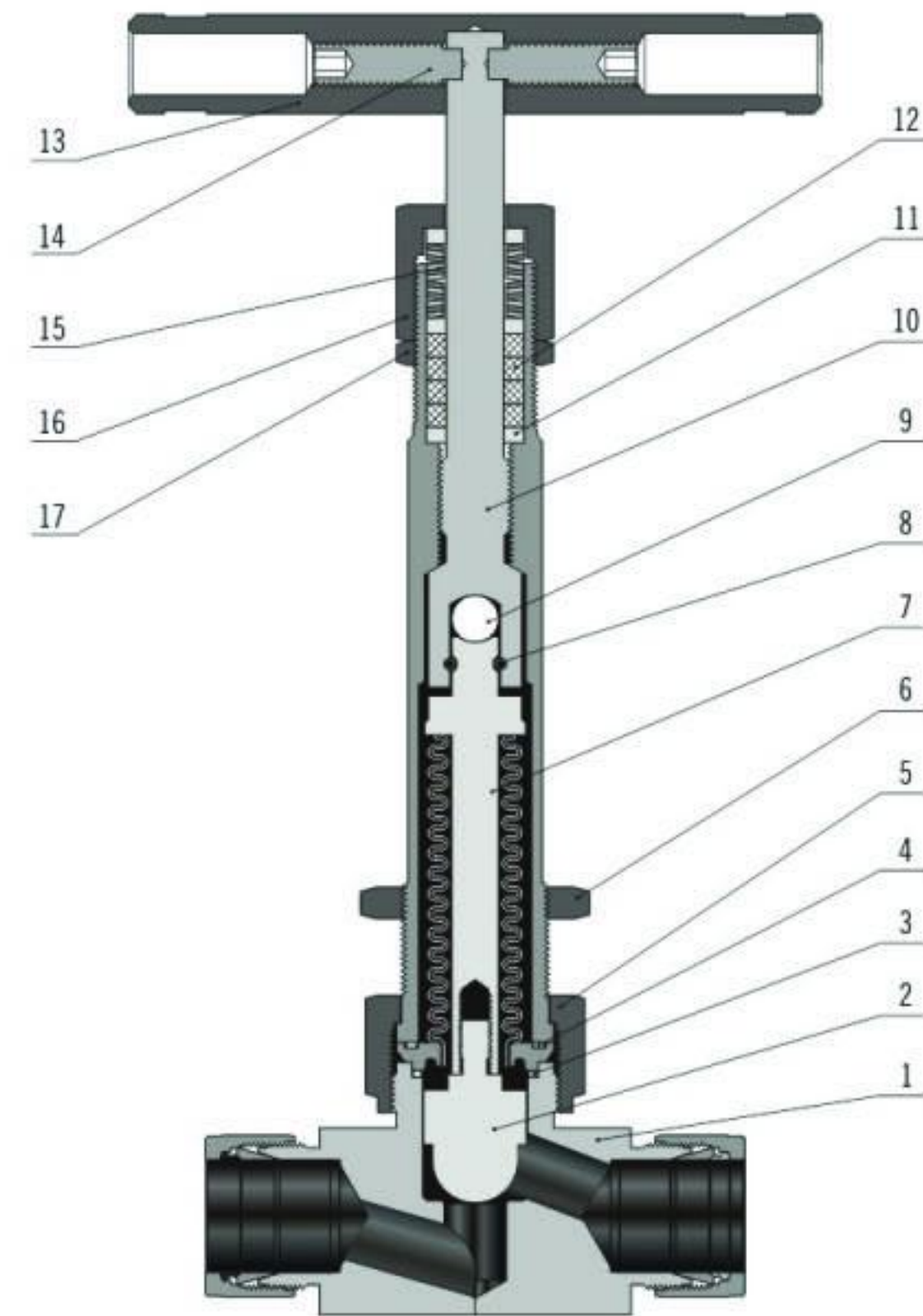


200°F (93°C) max. with PCTFE stem tip (soft tip).

Flow Coefficient vs. Turns Open



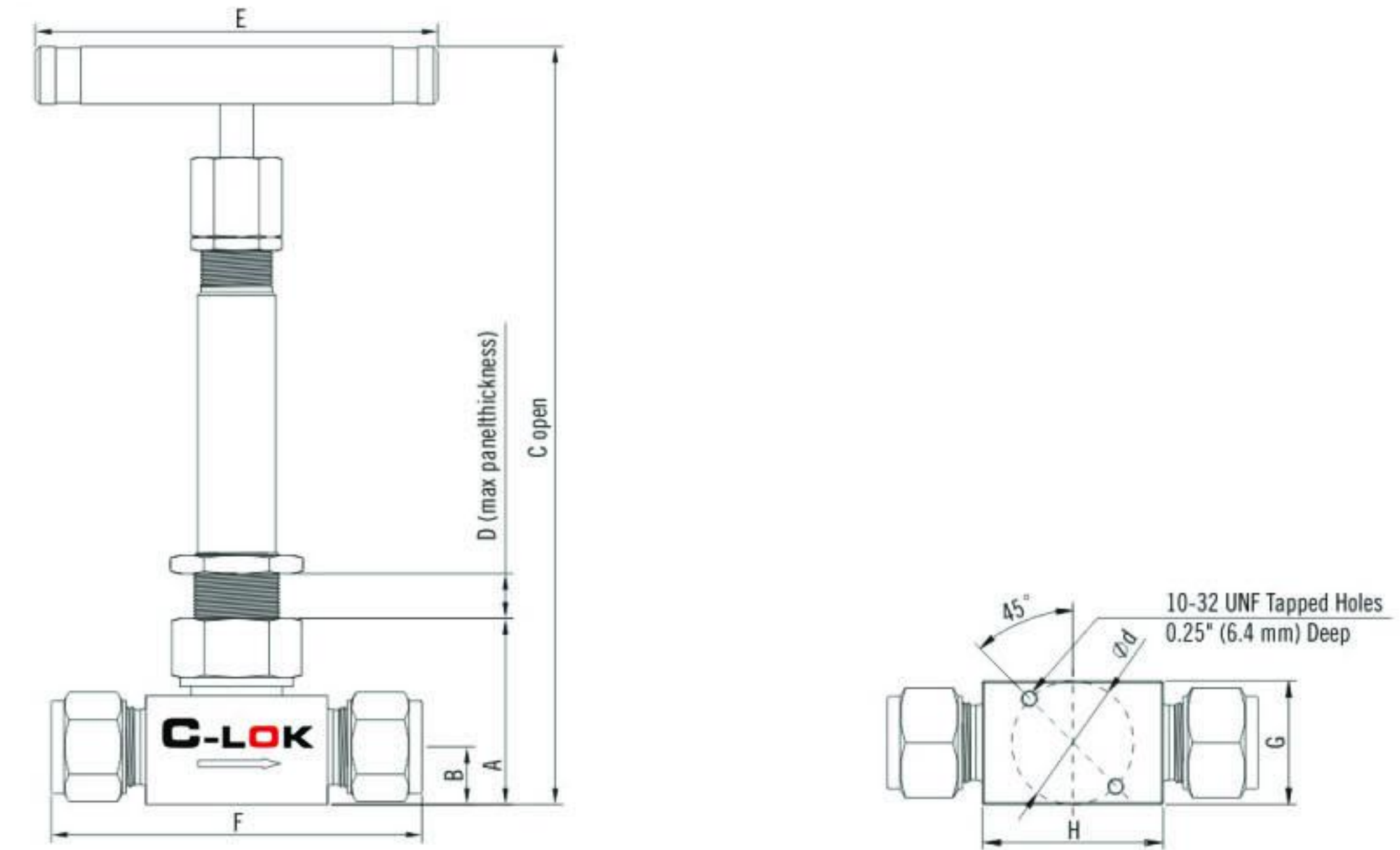
Standard Materials of Construction



| Component | | Valve Body Material Grade/ASTM Specification |
|---------------|-----------------|--|
| 316 SS | | |
| 1 | Body | 316 SS/A479 |
| 2 | Stem Tip | 316 SS/A479 (regulating) |
| | | PCTFE/D1430 (conical) |
| | | Weld Stellite (regulating or spherical) |
| 3 | Gasket | Silver-plated 316 SS/A580 |
| 4 | Gasket | PTFE-coated 316 SS/A580 |
| 5 | Bonnet Nut | Silver-plated B16 SS/A479 |
| 6 | Panel Mount Nut | 17-4PH powdered metal |
| 7a | Bellows | 321 SS/A269 (316L SS/A269 optional) |
| 7b | Stem | 316 SS/A479 (316L SS optional) |
| 7c | Weld Ring | 316 SS/A479 (316L SS optional) |
| 8 | Pin | 416 SS |
| 9 | Ball Bearing | 440C SS |
| 10 | Actuator | 416 SS/A582 |
| 11 | Spacer | 316 SS/A240 |
| 12 | Packing | PTFE or Graphite |
| 13 | Handle | Green anodized aluminum 2024-T4/B211 (stainless steel and phenolic optional) |
| 14 | Set Screws | Alloy Steel/ANSI 18.3 |
| 15 | Packing Springs | S17700/A693 |
| 16 | Packing Nut | 316 SS/A276 |
| 17 | Jam Nut | 316 SS/A276 |

Dimensions

Orifice: 0.17", 0.26", 0.31"



| Basic Ordering Number | End Connections | | Orifice in. (mm) | Cv | Dimensions, in. (mm) | | | | | | | | | |
|-----------------------|-----------------|----------------|------------------|------|----------------------|-------------|------------|------------|-------------|-------------|-------------|-------------|-------------|--|
| | Inlet Size | Outlet Size | | | A | B | C | D | E | F | G | H | Ød | |
| -S2-S4-2- | 1/4" OD | 1/4" OD | 0.172 (4.37) | 0.36 | 1.49 (37.8) | 0.56 (14.2) | 6.48 (165) | 0.38 (9.7) | 2.50 (63.5) | 2.46 (62.5) | 1.0 (25.4) | 1.06 (26.9) | 1.0 (25.4) | |
| -S2-S6-4- | 3/8" OD | 3/8" OD | 0.265 (6.73) | 0.85 | 1.61 (40.9) | 0.50 (12.7) | 6.59 (167) | 0.38 (9.7) | 2.50 (63.5) | 3.09 (78.5) | 1.13 (28.7) | 1.57 (39.9) | 1.13 (28.7) | |
| -S2-S8-5- | 1/2" OD | 1/2" OD | 0.312 (7.92) | 1.20 | 1.61 (40.9) | 0.50 (12.7) | 6.59 (167) | 0.38 (9.7) | 2.50 (63.5) | 3.30 (83.8) | 1.13 (28.7) | 1.57 (39.9) | 1.13 (28.7) | |
| -S2-SM6-2- | 6 mm | 6 mm | 0.172 (4.37) | 0.36 | 1.49 (37.8) | 0.56 (14.2) | 6.48 (165) | 0.38 (9.7) | 2.50 (63.5) | 2.46 (62.5) | 1.0 (25.4) | 1.06 (26.9) | 1.0 (25.4) | |
| -S2-SM10-4- | 10 mm | 10 mm | 0.28 (7.1) | 1.00 | 1.61 (40.9) | 0.50 (12.7) | 6.59 (167) | 0.38 (9.7) | 2.50 (63.5) | 3.11 (79.0) | 1.13 (28.7) | 1.57 (39.9) | 1.13 (28.7) | |
| -S2-SM12-4- | 12 mm | 12 mm | 0.28 (7.1) | 1.00 | 1.61 (40.9) | 0.50 (12.7) | 6.59 (167) | 0.38 (9.7) | 2.50 (63.5) | 3.30 (83.8) | 1.13 (28.7) | 1.57 (39.9) | 1.13 (28.7) | |
| -S2-SW4-2- | 1/4" SW | 1/4" SW | 0.156 (3.96) | 0.36 | 1.49 (37.8) | 0.56 (14.2) | 6.48 (165) | 0.38 (9.7) | 2.50 (63.5) | 1.68 (42.7) | 1.0 (25.4) | 1.0 (25.4) | 1.0 (25.4) | |
| -S2-SW6-4- | 3/8" SW | 3/8" SW | 0.28 (7.1) | 1.00 | 1.61 (40.9) | 0.50 (12.7) | 6.59 (167) | 0.38 (9.7) | 2.50 (63.5) | 2.27 (57.7) | 1.13 (28.7) | 1.52 (38.6) | 1.13 (28.7) | |
| -S2-SW8-5- | 1/2" SW | 1/2" SW | 0.312 (7.92) | 1.20 | 1.61 (40.9) | 0.50 (12.7) | 6.59 (167) | 0.38 (9.7) | 2.50 (63.5) | 2.27 (57.7) | 1.13 (28.7) | 1.52 (38.6) | 1.13 (28.7) | |
| -S2-BW4-2- | 1/4" BW | 1/4" BW | 0.156 (3.96) | 0.36 | 1.49 (37.8) | 0.56 (14.2) | 6.48 (165) | 0.38 (9.7) | 2.50 (63.5) | 1.68 (42.7) | 1.0 (25.4) | 1.0 (25.4) | 1.0 (25.4) | |
| -S2-BW6-4- | 3/8" BW | 3/8" BW | 0.28 (7.1) | 1.00 | 1.61 (40.9) | 0.50 (12.7) | 6.59 (167) | 0.38 (9.7) | 2.50 (63.5) | 2.27 (57.7) | 1.13 (28.7) | 1.52 (38.6) | 1.13 (28.7) | |
| -S2-BW8-5- | 1/2" BW | 1/2" BW | 0.312 (7.92) | 1.20 | 1.61 (40.9) | 0.50 (12.7) | 6.59 (167) | 0.38 (9.7) | 2.50 (63.5) | 2.27 (57.7) | 1.13 (28.7) | 1.52 (38.6) | 1.13 (28.7) | |
| -S2-FFR4-2- | 1/4" Female FR | 1/4" Female FR | 0.156 (3.96) | 0.36 | 1.49 (37.8) | 0.56 (14.2) | 6.48 (165) | 0.38 (9.7) | 2.50 (63.5) | 2.76 (70.1) | 1.0 (25.4) | 1.0 (25.4) | 1.0 (25.4) | |
| -S2-FFR8-5- | 1/2" Female FR | 1/2" Female FR | 0.3 (7.6) | 1.20 | 1.61 (40.9) | 0.50 (12.7) | 6.59 (167) | 0.38 (9.7) | 2.50 (63.5) | 2.98 (75.7) | 1.13 (28.7) | 1.52 (38.6) | 1.13 (28.7) | |
| -S2-MFR4-2- | 1/4" Male FR | 1/4" Male FR | 0.156 (3.96) | 0.36 | 1.49 (37.8) | 0.56 (14.2) | 6.48 (165) | 0.38 (9.7) | 2.50 (63.5) | 2.24 (56.9) | 1.0 (25.4) | 1.0 (25.4) | 1.0 (25.4) | |
| -S2-MFR8-5- | 1/2" Male FR | 1/2" Male FR | 0.3 (7.6) | 1.20 | 1.61 (40.9) | 0.50 (12.7) | 6.59 (167) | 0.38 (9.7) | 2.50 (63.5) | 3.00 (76.2) | 1.13 (28.7) | 1.52 (38.6) | 1.13 (28.7) | |

