



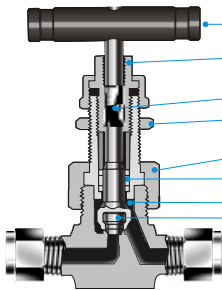
V16 Series Severe Service Union Bonnet Valves

Pressure Rating up to 6000psig

Catalog No. V16-2
Sept. 2004

Features

- Pressure up to 6000 psig (413 bar) @ 37C (100F).
- High Temperatures up to 300C (572F) with standard PTFE packing; up to 649C (1200F) with Grafoil packing.
- Standard S316 stainless steel, optional Alloy 20, and Alloy C276 construction.
- Valve stem back seating against the beveled edge of bonnet ensures safety in severe service, this also prevents max. leakage thru. bonnet when a packing fails.
- Standard non-rotating stem tip and stem packing below the threads design.

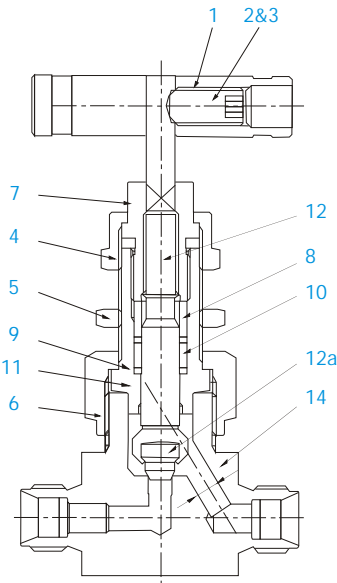


- **Handle-** standard S316 bar handle, optional knob, and Aluminum Bar Handle.
- **External Packing Bolt-** allows packing adjustment without the valve disassembly.
- **Roll threaded and hard chrome plated stem-** is for long valve life.
- **Panel Mounting Nut-** is standard and permits valve to panel or actuator.
- **Union Nut-** prevents accidental disassembly of the valve in service..
- **Stem Packing below the threads-** prevents media contamination and thread lubricant washout.
- **Back Seating Stem-** is blow-out proof design in severe service.
- **Non-Rotating Stem Tip at Closure-** is for maximum metal seat life and positive seal.

Materials of Construction

| Component | Valve Body Materials | | |
|---------------------|---|---------------|------------|
| | S316 | Alloy 20 | Alloy C276 |
| | Material Grade/ASTM Specification | | |
| 1. Handle | S316/A276 | | |
| 2. Handle pin | Molybdenum disulfide coated S316/A276 | | |
| 3. Set Screw | Nickel cadmium-plated steel | | |
| 4. Cap nut | S316/A276 or A479 | | |
| 5. Panel nut | S316/A276 | | |
| 6. Union nut | S316/A276 | | |
| 7. Packing bolt | S316/A276 | | |
| 8. Gland | S316/A276 | Alloy 20/B473 | C276/B574 |
| 9. Packing supports | Glass-filled PTFE. It differs from optional packing | | |
| 10. Packing | PTFE/D1710, optional PEEK & Grafoil | | |
| 11. Bonnet | S316/A479 | Alloy 20/B473 | C276/B574 |
| 12. Globe Stem | Hard Chrome-plated S316/A276 | Alloy 20/B473 | C276/B574 |
| 12a. Globe Stem tip | S316/S17400 | Alloy 20/B473 | C276/B574 |
| 13. Regulating Stem | Hard Chrome-plated S316/A276 | Alloy 20/B473 | C276/B574 |
| 14. Body | F316/A182 | Alloy 20/B473 | C276/B574 |

Note: 1. wetted parts and lubricants are listed in blue.
2. Nickel anti-seize lubricant for PTFE packed valves, Molybdenum disulfide lubricant for PEEK packed valves, and Fluorinated tungsten disulfide-based lubricant for Grafoil packed valves.



Technical Data

Ratings are for valves with standard PTFE packing. Please refer to valve ratings with optional packing on Page 3.

| Valve Material | Stem Designator | Temperature Rating | Pressure Rating @ -53 to 37C (-63 to 100F) |
|------------------|----------------------------|---------------------------|--|
| S316, Alloy C276 | Globe: -G Regulating:-R | -53 to 232C (-65 to 449F) | 6000 psig (413 bar) |
| Alloy 20 | | -53 to 232C (-65 to 449F) | 5000 psig (344 bar) |

Packing Adjustment and Actuation Torque

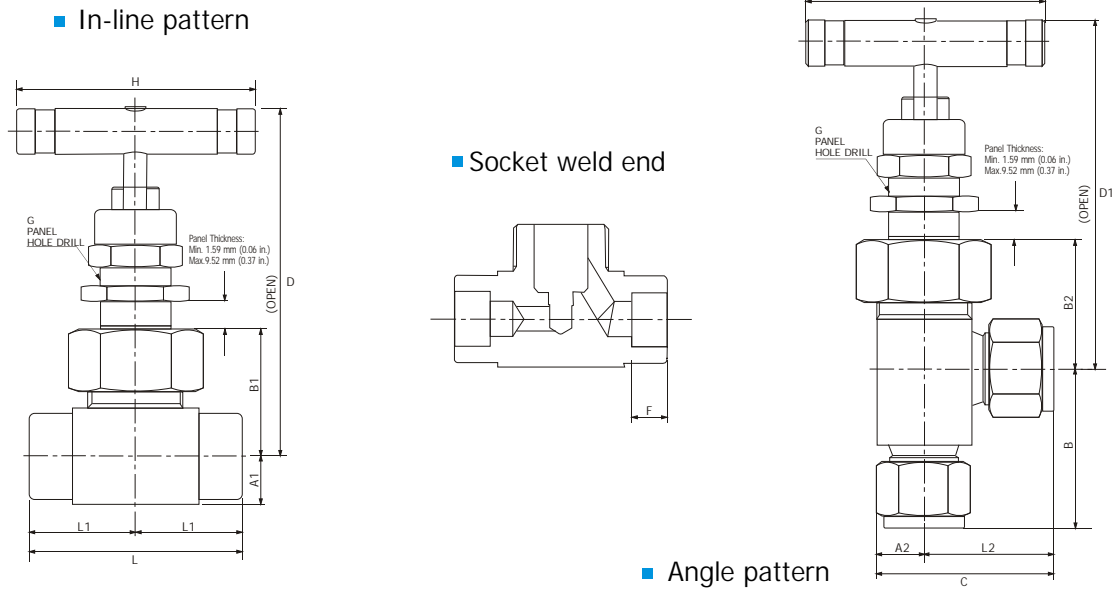
- Extreme temperature fluctuations while valve in service may require packing adjustment.
- Valves that have not been actuated for a period of time may have a higher initial actuation torque.

Factory Test

- Every valve is tested with the nitrogen @ 1000 psig (68 bar) for leakage at the seat to a maximum allowable leak rate of 0.1 scc/min. The packing is tested for no detectable leakage. Optional hydrostatic shell test with additional cost is performed with pure water at 1.5 times the working pressure.

| | | | |
|-----------------------------|---|---------------------------------------|---|
| Quality System Approval | DK-Lok Tube Fitting Certification Listing | D-Pro Valve Certification Listing | V16 Series www.dklok.com www.dklokusa.com |
|-----------------------------|---|---------------------------------------|---|

Ordering Information and Table of Dimensions



| Basic Ordering Number | End Connections | | Orifice mm (in.) | Cv | Dimensions mm (inch) | | | | | | | | | | | | | |
|-----------------------|-----------------|------------------------|------------------|------------|----------------------|------------|------------|------------|------------|------------|------------|--------------|------------|------------|--------------|------------|------------|-----------|
| | Inlet | Outlet | | | L | L1 | L2 | B | C | B1 | B2 | A1 | A2 | H | G | D | D1 | F |
| V16A- | F-2N- | 1/8 Female NPT | 4.0 (0.156) | 0.35 | 50.8(2.00) | 25.4(1.00) | 22.6(0.89) | 25.4(1.00) | 32.3(1.27) | 27.7(1.09) | 32.5(1.28) | 9.7(0.38) | 9.7(0.38) | 44.4(1.75) | 15.1(19/32) | 77.2(3.04) | 82.0(3.23) | - |
| | F-4N- | 1/4 Female NPT | | | 52.3(2.06) | 26.2(1.03) | 22.6(0.89) | 25.4(1.00) | 32.3(1.27) | 27.7(1.09) | 32.5(1.28) | 9.9(0.39) | 9.7(0.38) | 44.4(1.75) | 15.1(19/32) | 77.2(3.04) | 82.0(3.23) | - |
| | M-4N- | 1/4 Male NPT | | | 50.8(2.00) | 25.4(1.00) | 25.4(1.00) | 25.4(1.00) | 35.1(1.38) | 27.7(1.09) | 27.7(1.09) | 9.7(0.38) | 9.7(0.38) | 44.4(1.75) | 15.1(19/32) | 77.2(3.04) | 77.2(3.04) | - |
| | MF-4N- | 1/4 Male to Female NPT | | | 51.6(2.03) | 26.2(1.03) | 22.6(0.89) | 25.4(1.00) | 32.3(1.27) | 27.7(1.09) | 32.5(1.28) | 9.9(0.39) | 9.7(0.38) | 44.4(1.75) | 15.1(19/32) | 77.2(3.04) | 82.0(3.23) | - |
| | D-6M- | 6mm Dk-Lok | | | 61.0(2.40) | 30.5(1.20) | 29.5(1.16) | 37.6(1.48) | 39.1(1.54) | 27.7(1.09) | 27.7(1.09) | 9.7(0.38) | 9.7(0.38) | 44.4(1.75) | 15.1(19/32) | 77.2(3.04) | 77.2(3.04) | - |
| | D-4T- | 1/4 Dk-Lok | | | 61.0(2.40) | 30.5(1.20) | 29.5(1.16) | 37.6(1.48) | 39.1(1.54) | 27.7(1.09) | 27.7(1.09) | 9.7(0.38) | 9.7(0.38) | 44.4(1.75) | 15.1(19/32) | 77.2(3.04) | 77.2(3.04) | - |
| | SW-4T- | 1/4 TSW | | | 46.2(1.82) | 23.1(0.91) | 22.4(0.88) | 30.2(1.19) | 31.8(1.25) | 27.7(1.09) | 27.7(1.09) | 9.7(0.38) | 9.7(0.38) | 44.4(1.75) | 15.1(19/32) | 77.2(3.04) | 77.2(3.04) | 7.1(0.28) |
| | D-8M- | 8 mm Dk-Lok | | | 61.0(2.40) | 30.5(1.20) | - | - | - | 27.7(1.09) | - | 9.7(0.38) | - | 44.4(1.75) | 15.1(19/32) | 77.2(3.04) | - | - |
| V16B- | F-4N- | 1/4 Female NPT | 6.4 (0.25) | 0.86 | 57.2(2.25) | 28.4(1.12) | 25.4(1.00) | 28.4(1.12) | 38.1(1.50) | 34.0(1.34) | 37.3(1.47) | 12.7(0.50) | 12.7(0.50) | 63.5(2.50) | 19.8(25/32) | 94.0(3.70) | 97.0(3.82) | - |
| | F-6N- | 3/8 Female NPT | | | 57.2(2.25) | 28.4(1.12) | 25.4(1.00) | 28.4(1.12) | 38.1(1.50) | 34.0(1.34) | 37.3(1.47) | 12.7(0.50) | 12.7(0.50) | 63.5(2.50) | 19.8(25/32) | 94.0(3.70) | 97.0(3.82) | - |
| | D-10M- | 10mm Dk-Lok | | | 72.4(2.85) | 36.1(1.42) | 33.0(1.30) | 39.4(1.55) | 45.7(1.80) | 34.0(1.34) | 34.3(1.35) | 12.7(0.50) | 12.7(0.50) | 63.5(2.50) | 19.8(25/32) | 93.7(3.69) | 94.2(3.71) | - |
| | D-6T- | 3/8 Dk-Lok | | | 71.9(2.83) | 35.8(1.41) | 32.8(1.29) | 42.2(1.66) | 45.5(1.79) | 34.0(1.34) | 31.0(1.22) | 12.7(0.50) | 12.7(0.50) | 63.5(2.50) | 19.8(25/32) | 94.0(3.70) | 90.7(3.57) | - |
| | D-12M- | 12mm Dk-Lok | | | 77.2(3.04) | 38.6(1.52) | 35.6(1.40) | 41.9(1.65) | 48.3(1.90) | 34.0(1.34) | 34.0(1.34) | 12.7(0.50) | 12.7(0.50) | 63.5(2.50) | 19.8(25/32) | 94.0(3.70) | 94.0(3.70) | - |
| | D-8T- | 1/2 Dk-Lok | | | 77.2(3.04) | 38.6(1.52) | 35.6(1.40) | 41.9(1.65) | 48.3(1.90) | 34.0(1.34) | 34.0(1.34) | 12.7(0.50) | 12.7(0.50) | 63.5(2.50) | 19.8(25/32) | 94.0(3.70) | 94.0(3.70) | - |
| | SW-4P- | 1/4 PSW | | | 57.2(2.25) | 28.4(1.12) | 25.4(1.00) | 28.4(1.12) | 38.1(1.50) | 34.0(1.34) | 37.3(1.47) | 12.7(0.50) | 12.7(0.50) | 63.5(2.50) | 19.8(25/32) | 94.0(3.70) | 97.0(3.82) | 9.7(0.38) |
| | SW-6T- | 3/8 TSW | | | 57.2(2.25) | 28.4(1.12) | 25.4(1.00) | 31.8(1.25) | 38.1(1.50) | 34.0(1.34) | 34.0(1.34) | 12.7(0.50) | 12.7(0.50) | 63.5(2.50) | 19.8(25/32) | 94.0(3.70) | 94.0(3.70) | 7.9(0.31) |
| SW-8T- | 1/2 TSW | 57.2(2.25) | 28.4(1.12) | 25.4(1.00) | 25.4(1.00) | 38.1(1.50) | 34.0(1.34) | 35.6(1.40) | 12.7(0.50) | 12.7(0.50) | 63.5(2.50) | 19.8(25/32) | 94.0(3.70) | 95.5(3.76) | 9.7(0.38) | | | |
| V16C- | F-8N- | 1/2 Female NPT | 11.1 (0.437) | 2.20 | 79.2(3.12) | 39.6(1.56) | 33.3(1.31) | 39.6(1.56) | 50.8(2.00) | 46.2(1.82) | 50.8(2.00) | 15.7(0.62) | 17.5(0.69) | 88.9(3.50) | 26.2(1-1/32) | 121(4.78) | 126(4.97) | - |
| | F-12N- | 3/4 Female NPT | | | 82.6(3.25) | 41.1(1.62) | - | - | - | 48.5(1.91) | - | 19.8(0.78) | - | 88.9(3.50) | 26.2(1-1/32) | 124(4.88) | - | - |
| | F-16N- | 1" Female NPT | | | 91.9(3.62) | 46.0(1.81) | - | - | - | 54.1(2.13) | - | 25.4(1.00) | - | 88.9(3.50) | 26.2(1-1/32) | 129(5.10) | - | - |
| | MF-8N- | 1/2 Male to Female NPT | | | 79.2(3.12) | 39.6(1.56) | 33.3(1.31) | 39.6(1.56) | 50.8(2.00) | 46.2(1.82) | 50.8(2.00) | 15.7(0.62) | 17.5(0.69) | 88.9(3.50) | 26.2(1-1/32) | 121(4.78) | 126(4.97) | - |
| | MF-12N- | 3/4 Male to Female NPT | | | 82.6(3.25) | 41.1(1.62) | - | - | - | 48.5(1.91) | - | 19.8(0.78) | - | 88.9(3.50) | 26.2(1-1/32) | 124(4.88) | - | - |
| | MF-16N- | 1" Male to Female NPT | | | 91.9(3.62) | 46.0(1.81) | - | - | - | 54.1(2.13) | - | 25.4(1.00) | - | 88.9(3.50) | 26.2(1-1/32) | 129(5.10) | - | - |
| | D-12M- | Dk-Lok 12mm | | | 99.6(3.92) | 49.8(1.96) | 42.7(1.68) | 52.8(2.08) | 60.2(2.37) | 46.2(1.82) | 47.8(1.88) | 15.7(0.62) | 17.5(0.69) | 88.9(3.50) | 26.2(1-1/32) | 121(4.78) | 123(4.85) | - |
| | D-8T- | 1/2 Dk-Lok | | | 99.6(3.92) | 49.8(1.96) | 42.7(1.68) | 52.8(2.08) | 60.2(2.37) | 46.2(1.82) | 47.8(1.88) | 15.7(0.62) | 17.5(0.69) | 88.9(3.50) | 26.2(1-1/32) | 121(4.78) | 123(4.85) | - |
| | D-12T- | 3/4 Dk-Lok | | | 99.6(3.92) | 49.8(1.96) | 42.7(1.68) | 52.8(2.08) | 60.2(2.37) | 46.2(1.82) | 47.8(1.88) | 15.7(0.62) | 17.5(0.69) | 88.9(3.50) | 26.2(1-1/32) | 121(4.78) | 123(4.85) | - |
| | D-16T- | 1 Dk-Lok | | | 104(4.09) | 51.8(2.04) | - | - | - | 47.8(1.88) | - | 17.5(0.69) | - | 88.9(3.50) | 26.2(1-1/32) | 121(4.78) | 123(4.85) | - |
| | SW-8P- | 1/2 PSW | | | 79.2(3.12) | 39.6(1.56) | 33.3(1.31) | 39.6(1.56) | 50.8(2.00) | 47.8(1.88) | 50.8(2.00) | 17.5(0.69) | 17.5(0.69) | 88.9(3.50) | 26.2(1-1/32) | 123(4.85) | 126(4.97) | 9.7(0.38) |
| | SW-8T- | 1/2 TSW | | | 79.2(3.12) | 39.6(1.56) | 33.3(1.31) | 42.9(1.69) | 50.8(2.00) | 46.2(1.82) | 47.8(1.88) | 15.7(0.62) | 17.5(0.69) | 88.9(3.50) | 26.2(1-1/32) | 121(4.78) | 123(4.85) | 9.7(0.38) |
| SW-12T- | 3/4 TSW | 79.2(3.12) | 39.6(1.56) | - | - | - | 46.2(1.82) | - | 15.7(0.62) | - | 88.9(3.50) | 26.2(1-1/32) | 121(4.78) | - | 11.2(0.44) | | | |

All dimensions shown are for reference only and are subject to change. Dimensions with Dk-Lok nuts are in finger-tight position. Non-rotating globe pattern stem providing repetitive leak tight shut-off is standard. Patterns: To order Angle Pattern, use A as a suffix to the basic ordering number. Please refer to the ordering information.

Class Ratings

Material groups, Class ratings, and Temperatures are based on ASME codes. The class rating and the pressure rating represent two different design data. Please contact Dk-Lok distributor for further details. Valve minimum wall thickness and additional thickness are determined by ASME codes.

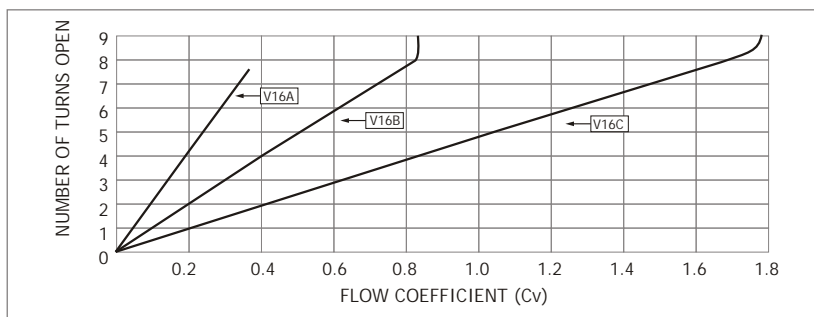
| ASME Class | 2500 | | |
|------------------------|------------------------------|------------|------------|
| Material Group | 2.2 | 3.1 | 3.8 |
| Material Name | S316 | Alloy 20 | C276 |
| Temperature | Working pressure, psig (bar) | | |
| -53 to 38(-65 to 100F) | 6000 (413) | 5000 (344) | 6000 (413) |
| 93C(200F) | 5160 (355) | 4350 (299) | 6000 (413) |
| 148C(300F) | 4660 (321) | 4080 (281) | 6070 (418) |
| 204C(400F) | 4280 (294) | 4080 (281) | 5880 (405) |
| 260C(500F) | 3980 (274) | 4080 (281) | 5540 (381) |
| 315C(600F) | 3760 (259) | 4080 (281) | 5040 (347) |
| 343C(650F) | 3700 (254) | 4080 (281) | 4950 (347) |

Valve ratings with Dk-Lok® end connections

Valve ratings may be limited to the maximum working pressure of pipe ends and tubing connected.

For valve rating with Dk-Lok Tube Fitting end connections, please refer to Dk-Lok catalog providing suggested working pressures for various tubing ODs, materials and wall thicknesses.

Flow Data @ 38°C (100°F) for valves with regulating stem



Non-Rotating Globe Stem Flow Data

Non-rotating globe stem is designed for use in a fully open or fully closed position. Please refer to Cv of Globe Stem in the ordering information and Table of dimensions table on Page 2.

Cv reduction

Valve flow may be reduced by the restriction of pipe and tubing connected.

Valve Ratings with optional Stem Packing

Valves with optional packing may affect the valve rating depending on the valve material. Please see the table below for the rating of valves with optional packing materials. To order valves with factory-assembled optional packing, use the packing material designator from the table below as a suffix. Please refer to ordering information on Page 4.

PEEK PVX (polyetheretherketon) packing is coming with PEEK packing supports. PEEK packing is not for use with normally open or normally closed pneumatic actuating valves.

Grafoil (Flexible Graphite) is a high temperature packing material that requires a load on the material to generate a seal. Grafoil packing is not for use with pneumatic actuating valves.

| Stem Packing Material | Packing Material Designator | Valve Material | Temperature Rating | Pressure rating @ max. Temperature* psig (bar) |
|-----------------------|-----------------------------|----------------|----------------------------|---|
| Standard PTFE | -PE | S316 | -53 to 232C (-65 to 449F) | 3980 (274) |
| | | Alloy 20 | -53 to 232C (-65 to 449F) | 4080 (281) |
| | | Alloy C276 | -53 to 232C (-65 to 449F) | 5540 (381) |
| Optional PEEK | -PK | S316 | -53 to 300C (-65 to 572F) | 3760 (259) |
| | | Alloy 20 | -53 to 300C (-65 to 572F) | 4080 (281) |
| | | Alloy C276 | -53 to 300C (-65 to 572F) | 5040 (347) |
| Optional Grafoil | -GF | S316 | -53 to 648C (-65 to 1200F) | 1545 (106) |
| | | Alloy 20 | -53 to 423C (-65 to 793F) | 4080 (281) |
| | | Alloy C276 | -53 to 648C (-65 to 1200F) | 1545 (106) |

*Pressure at the maximum temperature information is based on ASME B16 code.

Grafoil rating information: In air, Grafoil upper use temperature is 523C (973F), in steam, Grafoil can go up to the maximum temperature 648C (1200F).

Sour Gas Valves

Cracking of low or high strength materials in the presence of hydrogen sulfide and water in combination with a tensile stress is called sulfide stress cracking (SCC). For use valves in sour gas, materials for wetted components are selected to NACE MR0175. To order, use designator -SG as a suffix to the basic ordering number. Sour Gas valves are available for valves with male & female pipe end connections. Please refer to ordering information below.



Actuators

Pneumatic Air Acuator and Mounting Bracket are available. For details, please contact the authorized Dk-Lok® distributor in your region.

Optional Handles

S316 bar handles are standard. Optional anodized black aluminum bar handles and black colored plastic knob are available. To order valves with factory-assembled optional handle, use the packing material designator below as a suffix. Please refer to ordering information below

AH: Black Aluminum Bar Handle, BK: Black Color Plastic Handle.

| Valve Series | Handle Ordering Number for Field Assembly | | |
|--------------|---|---------------------------|--------------------------|
| | Standard S316 Bar Handle | Black Aluminum Bar Handle | Black Color Plastic Knob |
| V16A | V16A-BH | V16A-AH | V16A-BK |
| V16B | V16B-BH | V16B-AH | V16B-BK |
| V16C | V16C-BH | V16C-AH | V16C-BK |

Ordering Information

Select the desired valve basic ordering number, pattern, options and body material.

| V16B-D-6T- | A | | -R | | -S | |
|--|--|--|--|------------------------------------|---|-------------|
| V16C-MF-12N- | | -GF | | -AH | -SG | -L20 |
| Body Pattern Designator | Packing Material Designator | Stem Designator | Handle Designator | Sour Gas Designator | Valve material Designator | |
| ·Nil: In-line Pattern ·A: Angle Pattern | ·Nil: PTFE ·PK: PEEK ·GF: Grafoil* | ·Nil: Globe Pattern ·R: Regulating Stem | ·Nil: S316 bar handle ·AH: Black Aluminum Bar Handle ·BK: Black Color Plastic Knob | ·Nil: no Sour Gas ·SG: Sour Gas | ·S: S316 ·L20: Alloy 20 ·HC: Alloy C276 | |

We reserve the right to change specifications stated in this catalog for our continuing program of improvement.

Safe Valve Selection

The selection of a valve for any application or system design must be considered to ensure safe performance. Valve function, valve rating, material compatibility, proper installation, operation and maintenance remain the sole responsibility of the system designer and the user. Dk Tech accepts no liability for any improper selection, installation, operation or maintenance.

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