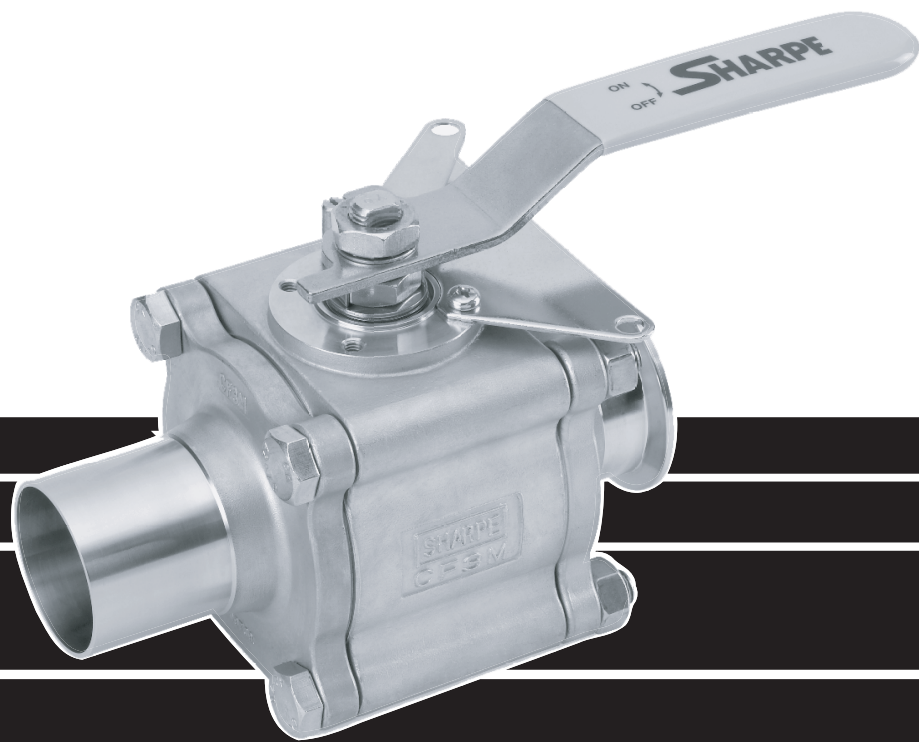


SHARPE[®] VALVES



**SERIES 88
HIGH PURITY TUBE FULL PORT
3 PIECE BALL VALVES**

SERIES 88

STANDARD FEATURES

ASME / BPE-2002

5% or Less Ferrite Content

Low Sulphur

**All Wetted Parts Polish To
14-18 Ra, 240 Grit**

**FDA Compliant Material
Hygienic Seating Design**

Extended Butt Weld Ends

Tube Full Port Design (TFP)

3-Piece Design

Integral Mounting Pad

Lockable Handle

Variety of Aseptic End Connections

High Cycle Stem Design

Encapsulated Body Bolts

Traceability

Handles

ADVANTAGES

Designed specifically for the demanding process requirements found in the pharmaceutical, biotech, cosmetic, food and other industries where aseptic conditions are required.

Content of less than 5% to prevent rouging. Less than 1% ferrite available as an option. (BPE 2002)

All welded end parts made from 316L stainless steel supplied with sulphur content of 0.005 - 0.017% assuring the integrity of the orbital welding. (BPE 2002)

Significantly reduces friction between valve and media. Crevice-free smooth surface helps eliminate areas where contaminants can proliferate. (BPE 2002)

TFM[®] seat provides a bubble-tight bidirectional shut off. Encapsulated PTFE body seal eliminates entrapment area between valve body and valve-end. Optional TFE or TFM cavity fillers eliminate the dead space between the ball and valve body. (BPE 2002)

Meets table DT-4 minimal length for automatic welding. (BPE 2002)

Tube full-port maintains unrestricted flow of media.

In-line serviceable swing out center section allows easy access to internal valve components without disturbing alignment of tubing. Functions as both valve and union.

Actuation centering lip feature assures precise alignment of bracket, stem and coupler. Actuators may be retrofit on existing 88 Series valves without disruption of line integrity. Allows for secondary containment unit to be added when required.

All Sharpe Series 88 Valves meet OSHA standards with locking device. Prevents valves from being opened or closed accidentally.

Standard ends are Tri Clamp[®] (CE) or buttweld end extensions (BTE) for orbital welders. Optional end connections for Flush Bottom tank pads, socket weld tube, short buttweld, buttweld tube of Cherry Burrell I, S, Q line, and KF.

Live loaded, bottom entry, blowout proof anti-static stem features packing that extends valve cycle life over conventional ball valves and is the best choice for actuation.

Heavy duty stainless steel bolting is protected from outside environment and is ideal for washdowns.

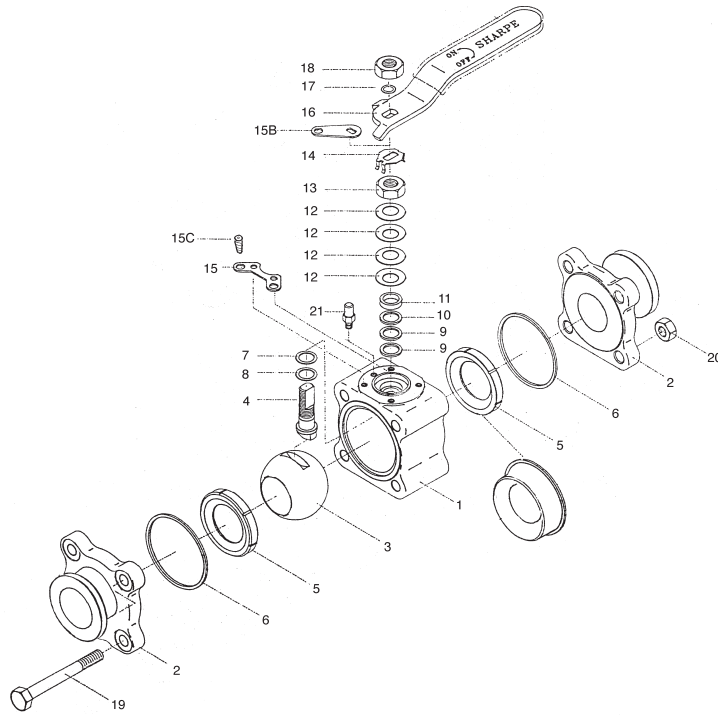
Heat numbers are provided for all wetted parts, body, stem, ball, and ends. CMTR's (Certified Mill Test Reports).

Variety of options including oval, extended, spring return, fusible link.

SERIES 88

VALVE PARTS AND IDENTIFICATION

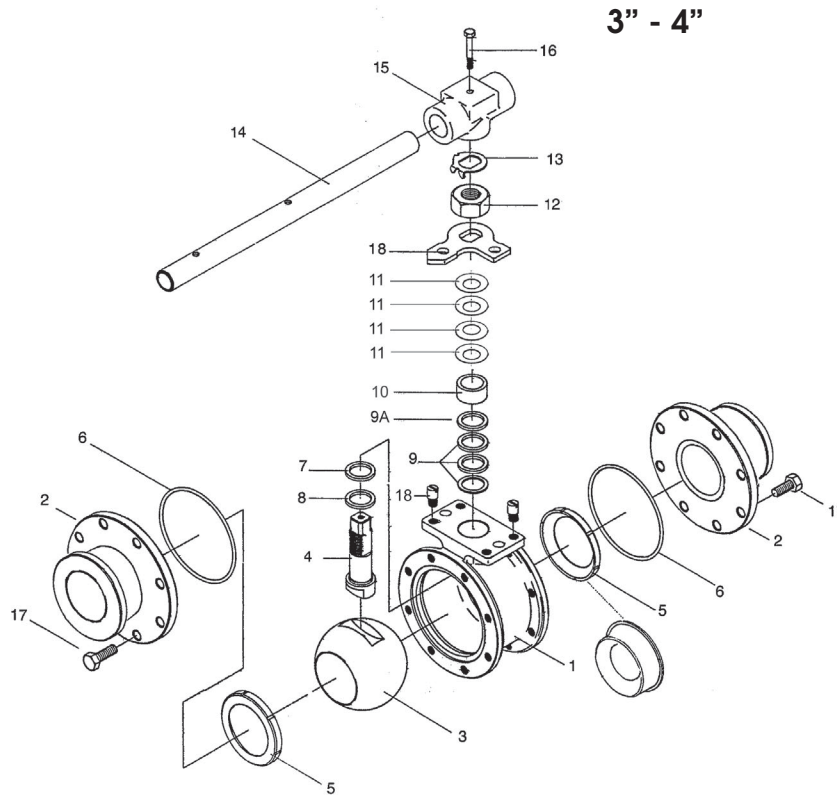
1/4" - 2-1/2"



| PART NO. | PART | QTY. | MATERIAL |
|----------|-------------------|------|--|
| 1 | Body | 1 | 316L ASTM 351 CF3M Alloy 20 ASTM A351 CN7M Hastelloy C ASTM A494 TYPE CW-12MW |
| 2 | Pipe Ends | 2 | 316L (BE) ASTM A351 CF3M 316L (CE) ASTM 351 CF3M 316L (BTE) ASTM A351 CF3M 316L (CEP) ASTM 479 CF3M 316L (BTEP) ASTM A270 CF3M Alloy 20 (BE) ASTM A351 CN7M Alloy 20 (CE) ASTM A351 CN7M Alloy 20 (BTE) ASTM A351 CN7M Hastelloy C (BE) ASTM A494 TYPE CW-12MW Hastelloy C (CE) ASTM A494 TYPE CW-12MW Hastelloy C (BTE) ASTM A494 TYPE CW-12MW |
| 3 | Ball | 1 | 316L / Alloy 20 / Hastelloy C |
| 4 | Stem | 1 | 316L / Alloy 20 / Hastelloy C |
| 5 | Valve Seat | 2 | TFM / TFE / RTFE / PEEK / NOVA Cavity Filler TFE / Cavity Filler TFM |
| 6 | Valve Seal | 2 | TFM |
| 7 | Thrust Bearing | 1 | TFM |
| 8 | Thrust Bearing | 1 | TFM |
| 9 | Stem Packing | 2 | TFM |
| 10 | Seal Protector | 1 | TFM / PEEK |
| 11 | Gland Packing | 1 | Stainless Steel 304 |
| 12 | Belleville Washer | 4 | Stainless Steel 301 |

| PART NO. | PART | QTY. | MATERIAL |
|----------|-----------------------|------|--------------------------|
| 13 | Packing Nut | 1 | Stainless Steel 304 |
| 14 | Lock Tab | 1 | Stainless Steel 304 |
| 15 | Lower Lock Latch | 1 | Stainless Steel 304 |
| 15B | Upper Lock Latch Bolt | 1 | Stainless Steel 304 |
| 15C | Latch Bolt | 1 | Stainless Steel 304 |
| 16 | Handle | 1 | Stainless Steel 304 |
| 17 | Lock Washer | 1 | Stainless Steel 304 |
| 18 | Handle Nut | 1 | Stainless Steel 304 |
| 19 | Body Bolts | 4 | Stainless Steel 304 |
| 20 | Nuts | 4 | Stainless Steel 316 |
| 21 | Stop Pin | 1 | Stainless Steel 304 |

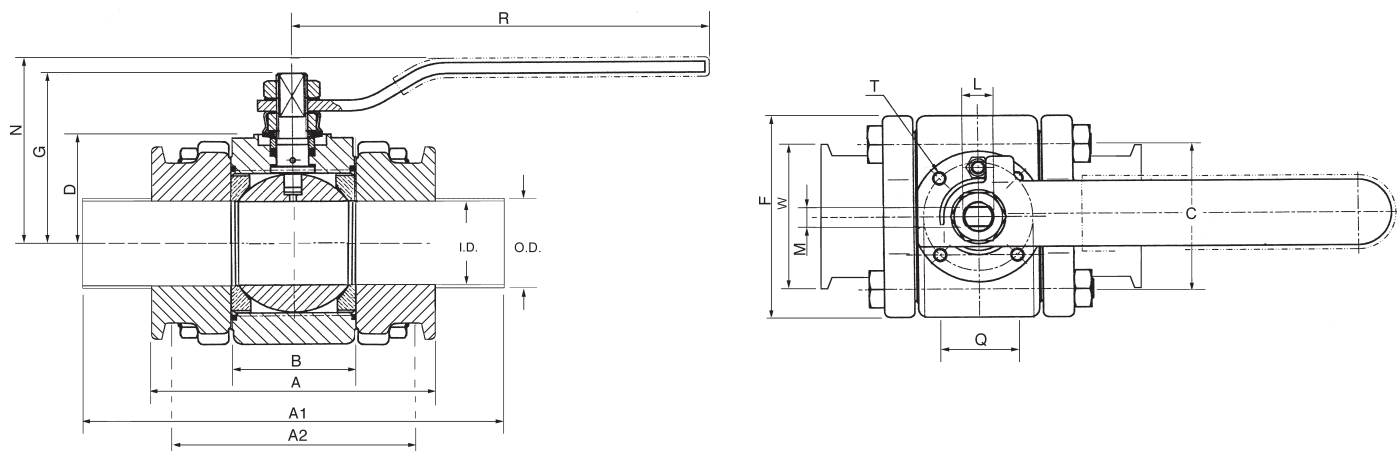
SERIES 88 VALVE PARTS AND IDENTIFICATION



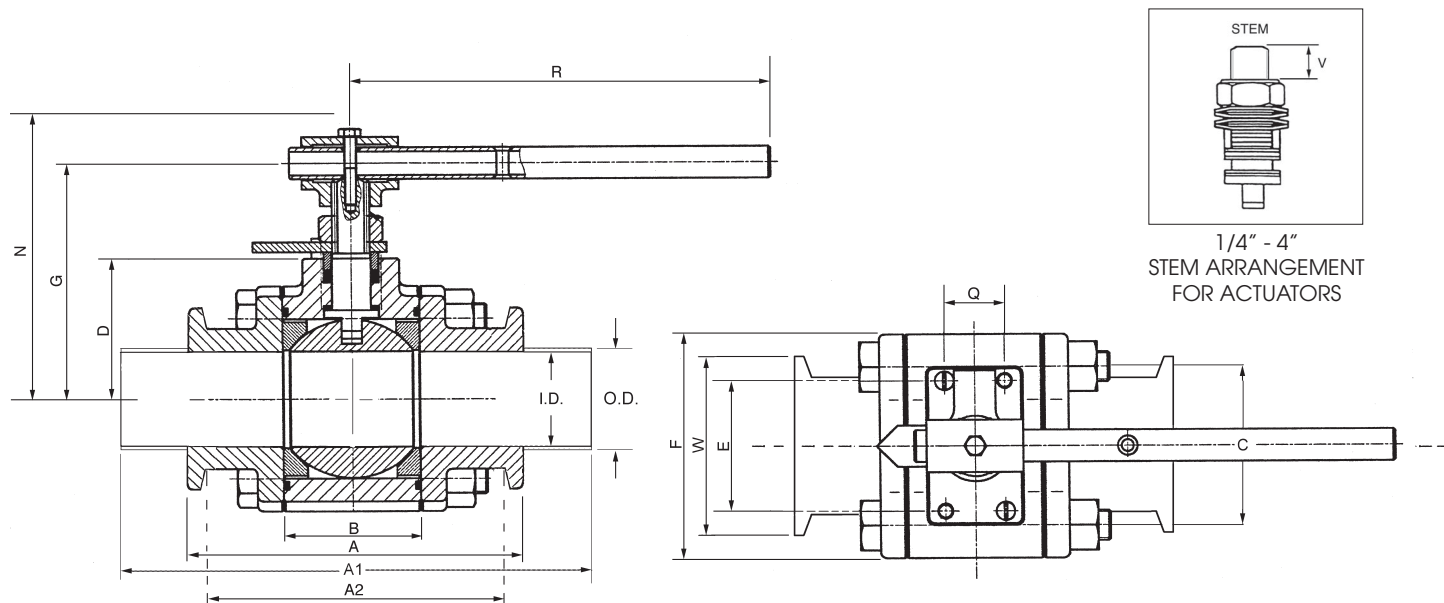
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| 2 | Pipe Ends | 2 | 316L (BE) ASTM A351 CF3M 316L (CE) ASTM 351 CF3M 316L (BTE) ASTM A351 CF3M 316L (CEP) ASTM 479 CF3M 316L (BTEP) ASTM A270 CF3M Alloy 20 (BE) ASTM A351 CN7M Alloy 20 (CE) ASTM A351 CN7M Alloy 20 (BTE) ASTM A351 CN7M Hastelloy C (BE) ASTM A494 TYPE CW-12MW Hastelloy C (CE) ASTM A494 TYPE CW-12MW Hastelloy C (BTE) ASTM A494 TYPE CW-12MW |
| 3 | Ball | 1 | 316L / Alloy 20 / Hastelloy C |
| 4 | Stem | 1 | 316L / Alloy 20 / Hastelloy C |
| 5 | Valve Seat | 2 | TFM / TFE / RTFE / PEEK / NOVA Cavity Filler TFE / Cavity Filler TFM |
| 6 | Valve Seal | 2 | TFM |
| 7 | Thrust Bearing | 1 | TFM |
| 8 | Thrust Bearing | 1 | TFM |
| 9 | Stem Packing | 3 | TFM |
| 9A | Gland Washer | 1 | Stainless Steel 304 |
| 10 | Gland Packing | 1 | Stainless Steel 304 |
| 11 | Belleville Washer | 4 | Stainless Steel 301 |

| PART NO. | PART | QTY. | MATERIAL |
|----------|-----------------------|------|---------------------|
| 12 | Packing Nut | 1 | Stainless Steel 304 |
| 13 | Lock Tab | 1 | Stainless Steel 304 |
| 14 | Wrench | 1 | Stainless Steel 304 |
| 15 | Wrench Block | 1 | Stainless Steel 304 |
| 16 | Hex Head Bolt | 1 | Stainless Steel 304 |
| 17 | Body Connector Nut | 16 | Stainless Steel 304 |
| 18 | Stop Pin | 2 | Stainless Steel 304 |

SERIES 88 VALVE DIMENSIONS



| SIZE | A TR | A1 | A2 | B | C | D | E | F | G | L | M | N | Q | R | T | W | V | O.D. | I.D. |
|--------|------|------|------|------|------|------|------|------|------|---------------|-----|------|------|------|----|-------|-----|------|------|
| 1/4" | 3.50 | 5.50 | 2.50 | .97 | 1.25 | 1.14 | 1.00 | 1.79 | 1.81 | 3/8" -24 UNF | .22 | 2.14 | 1.00 | 4.88 | M5 | 0.992 | .46 | .25 | .13 |
| 3/8" | 3.50 | 5.50 | 2.50 | .97 | 1.25 | 1.14 | 1.00 | 1.79 | 1.81 | 3/8" -24 UNF | .22 | 2.14 | 1.00 | 4.88 | M5 | 0.992 | .46 | .38 | .25 |
| 1/2" | 3.50 | 5.50 | 2.50 | .97 | 1.25 | 1.14 | 1.00 | 1.79 | 1.81 | 3/8" -24 UNF | .22 | 2.14 | 1.00 | 4.88 | M5 | 0.992 | .46 | .50 | .37 |
| 3/4" | 4.00 | 6.00 | 3.03 | 1.05 | 1.50 | 1.20 | 1.00 | 1.86 | 1.85 | 3/8" -24 UNF | .22 | 2.43 | 1.00 | 4.51 | M5 | 0.992 | .40 | .75 | .62 |
| 1" | 4.50 | 6.50 | 3.54 | 1.54 | 1.75 | 1.67 | 1.17 | 2.36 | 2.36 | 7/16" -20 UNF | .30 | 2.95 | 1.17 | 5.79 | M5 | 1.984 | .39 | 1.00 | .87 |
| 1-1/4" | 4.50 | 6.50 | 4.12 | 1.74 | 2.00 | 1.71 | 1.17 | 2.63 | 2.52 | 7/16" -20 UNF | .30 | 3.12 | 1.17 | 5.79 | M5 | 1.984 | .39 | 1.25 | 1.12 |
| 1-1/2" | 5.50 | 7.50 | 4.52 | 2.13 | 2.25 | 1.96 | 1.39 | 3.24 | 3.07 | 9/16" -18 UNF | .34 | 3.50 | 1.39 | 6.78 | M6 | 1.984 | .56 | 1.50 | 1.37 |
| 2" | 6.24 | 8.00 | 5.28 | 2.65 | 2.62 | 2.30 | 1.39 | 3.93 | 3.43 | 9/16" -18 UNF | .35 | 3.83 | 1.39 | 6.78 | M6 | 2.527 | .57 | 2.00 | 1.87 |



| SIZE | A TR | A1 | A2 | B | C | D | E | F | G | L | M | N | Q | R | T | W | V | O.D. | I.D. |
|--------|------|-------|------|------|------|------|------|------|------|-----------|-----|------|------|-------|-----|-------|------|------|------|
| 2-1/2" | 6.74 | 10.00 | 5.78 | 3.20 | 3.35 | 3.25 | 2.52 | 4.87 | 4.88 | M20 - P25 | .55 | 5.94 | 1.26 | 8.73 | M8 | 3.047 | .83 | 2.50 | 2.37 |
| 3" | 6.75 | 10.00 | 5.81 | 3.96 | 5.50 | 4.28 | 3.27 | 6.69 | 6.02 | 1.14 UNF | .75 | 7.68 | 1.74 | 13.74 | M10 | 3.579 | .98 | 3.00 | 2.87 |
| 4" | 8.24 | 11.00 | 7.06 | 4.75 | 6.97 | 4.81 | 3.37 | 7.99 | 6.61 | 1.14 UNF | .75 | 8.27 | 1.74 | 13.74 | M10 | 4.681 | 1.12 | .00 | 3.83 |

APPLICATION DATA

Note 1:

All products contact plastics and elastomers comply with USP Biological reactivity test #87 & #88 Class VI Plastics and FDA CFR 21 Part 177.

Note 2:

Valve pressure ratings will depend on the type of clamp or end connection supplied. Clamp end limitations take precedence over valve body ratings.

Note 3:

Standard valves can be used in vacuum service under favorable conditions, to 0.020 mm Hg (0.020 Torr or 20 microns). Valves have been tested at pressures less than 0.020 Torr with resulting leak rate of 1×10^{-9} atm cm^3s^{-1} .

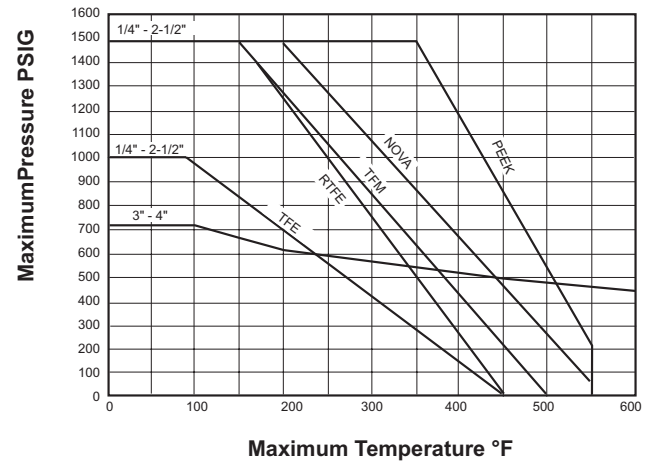
Note 4:

BTE End Sizes: 1/4" thru 3" .065 wall - 4" .083 wall
Stainless Steel 316L Sulfur content
.005 to .017%

Note 5:

All 88 Series Valves are cleaned and assembled without lubrication. Ends are then capped and valve vacuum sealed in plastic bags before shipping.

PRESSURE TEMPERATURE CHART



STEAM RATINGS

| Valve Size | TFE | | TFM / RTFE | | NOVA | | PEEK | |
|----------------|------------------------|---------------------------|------------------------|---------------------------|------------------------|---------------------------|------------------------|---------------------------|
| | Working Steam Pressure | Corresponding Temperature | Working Steam Pressure | Corresponding Temperature | Working Steam Pressure | Corresponding Temperature | Working Steam Pressure | Corresponding Temperature |
| 1/4" thru 1/2" | 75 | 316°F | 150 | 366°F | 450 | 459°F | 500 | 470°F |
| 3/4" | 75 | 316°F | 150 | 366°F | 425 | 455°F | 500 | 470°F |
| 1" | 75 | 316°F | 150 | 366°F | 400 | 447°F | 500 | 470°F |
| 1-1/4" | 75 | 316°F | 150 | 366°F | 350 | 435°F | 500 | 470°F |
| 1-1/2" | 75 | 316°F | 150 | 366°F | 325 | 428°F | 500 | 470°F |
| 2" | 75 | 316°F | 150 | 366°F | 300 | 424°F | 500 | 470°F |
| 2-1/2 - 4" | 75 | 316°F | 150 | 366°F | 250 | 406°F | 300 | 424°F |

AVAILABLE OPTIONS

1% Ferrite

When specified, stainless steel body and end castings can be supplied with ferrite content of 1% maximum, estimated per ASTM A800.

Mechanical Polishing

Available to 320 Grit (10 Ra).
Improves machined surface by removing entrapment areas and adding a high luster appearance.

Electro-Polishing

Improves surface finish of mechanical polishing up to 50%.
Passivates surface for increased corrosion resistance.
Removes any entrapped contaminants.

Purge Ports

Available on bodies or ends.
These ports are suitable for CIP (clean in place) and SIP (sterilize in place) applications.

Diverter or Three Way Valves

Reduces the number of valves in flow systems.
Ideal for mixing or flow diversion applications.

Flush Bottom Tank Pads

Highly polished and made from 316L bar stock.
Tube full port assures quick unobstructed drainage.

Pneumatic or Electric Actuation

Sharpe's® offers a full line of automation packages for ON/OFF or proportional control applications.

Spring Return Handle

Self contained. Spring unit to bring valve to a predetermined position. (open or closed position)

**CONVERSION TABLE OF
SURFACE FINISHES**

| Surface Designation | Mechanically Polished | | | |
|---------------------|-----------------------|---------|------------|---------|
| | Ra Average | | Ra Max | |
| ASME | μ -in. | μ m | μ -in. | μ m |
| BPE | 15 | 0.375 | 20 | 0.500 |
| SFV1 | 15 | 0.375 | 20 | 0.500 |
| SFV2 | 20 | 0.500 | 25 | 0.625 |
| SFV3 | 25 | 0.625 | 30 | 0.750 |

CONVERSION TABLE CHART

| Standard Grit | R _a | | RMS | |
|---------------|----------------|---------|------------|---------|
| | μ -in. | μ m | μ -in. | μ m |
| 150 grit | 27-32 | .68-.80 | 30-35 | .76-.89 |
| 180 grit | 18-23 | .46-.58 | 20-25 | .51-.64 |
| 240 grit | 14-18 | .34-.36 | 15-20 | .38-.51 |
| 320 grit | 8-10 | .21-.25 | 9-11 | .23-.28 |

| Surface Designation | Mechanically Polished and Eletropolished | | | |
|---------------------|--|---------|------------|---------|
| | Ra Average | | Ra Max | |
| ASME | μ -in. | μ m | μ -in. | μ m |
| BPE | 10 | 0.250 | 15 | 0.375 |
| SFV4 | 10 | 0.250 | 15 | 0.375 |
| SFV5 | 15 | 0.375 | 20 | 0.500 |
| SFV6 | 20 | 0.500 | 25 | 0.625 |

WEIGHT

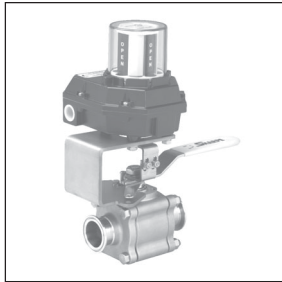
| SIZE | TRI CLAMP END | EXTENDED BUTT WELD END | SHORT BUTT WELD |
|--------|---------------|------------------------|-----------------|
| 1/4" | | 1.50 | 1.40 |
| 3/8" | | 1.50 | 1.40 |
| 1/2" | | 1.50 | 1.40 |
| 3/4" | | 2.00 | 1.85 |
| 1" | | 3.90 | 3.60 |
| 1-1/4" | | 6.00 | 5.70 |
| 1-1/2" | | 7.50 | 7.30 |
| 2" | | 12.10 | 11.70 |
| 2-1/2" | | 20.80 | 20.00 |
| 3" | | 32.70 | 30.80 |
| 4" | | 47.50 | 45.00 |

Cv FACTOR

| SIZE | PORT | Cv |
|--------|------|------|
| 1/4" | 0.37 | 1.5 |
| 3/8" | 0.37 | 3.2 |
| 1/2" | 0.37 | 8.1 |
| 3/4" | 0.63 | 28.6 |
| 1" | 0.87 | 67 |
| 1-1/4" | 1.12 | 110 |
| 1-1/2" | 1.37 | 192 |
| 2" | 1.87 | 434 |
| 2-1/2" | 2.37 | 779 |
| 3" | 2.87 | 1123 |
| 4" | 3.83 | 2054 |

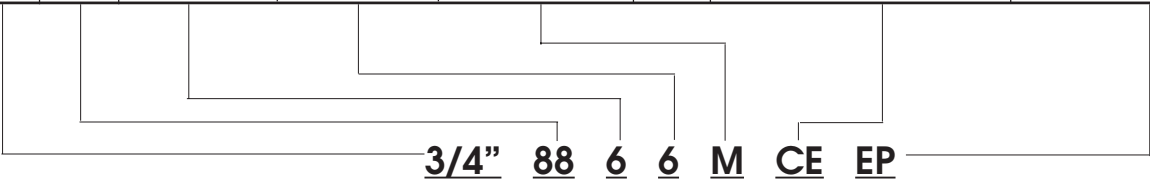
SHARPE® VALVES

Choose from our full line of high quality valves and actuators to meet your needs.



HOW TO ORDER

| VALVE SIZE | VALVE SERIES | BODY & ENDS | BALL & STEM | SEAT | SEAL | ENDS | OPTIONS |
|--|--------------|--|--|---|------|--|---|
| 1/4" 3/8" 1/2" 3/4" 1" 1-1/4" 1-1/2" 2" 2-1/2" 3" 4" | 88 | 6 - 316L 2 - Alloy 20 5 - Hasteloy C | 6 - 316L 2 - Alloy 20 5 - Hasteloy C | M = TFM N = Nova R = Reinforced TFE P = PEEK D = Delrin T = TFE (Virgin) C = TFE Cavity Fill F = TFM Cavity Fill | TFM | CE = Tri Clamp BTE = Butt weld Tube Extended BE = Butt weld (Short) SD = Socket Weld CEP = ASTM A479 Clamp BTEP = ASTM A270 Tube <u>CHERRY BURRELL</u> i = I Line S = S Line Q = Q Line | EP = Electro Polish 3 = 320 Grit A = 1% Ferrite PP1 = Purge Port on One End PP2 = Purge Port on Two Ends PP3 = Purge Port on Ends & Body PPB = Purge Port on Body VF = Purge with VCR Female C = Purge Port Compression VM = Purge Port VCR Male OT = Purge Port O.D. Tubing C = Purge Port with Clamp X = Oxygen Service OH = Oval Handle E = Extended Stem L = Lockable Extended Stem GO = Gear Operator SRH = Spring Return Handle Stem Packing For Steam SG = Peek Thrust Bearing and Peek Seal Protector TE = Threaded End (NPT) SW = Socket Weld (IPS) <u>Butt Weld End (IPS)</u> BW5 = Schedule 5 BW10 = Schedule 10 BW40 = Schedule 40 |



SHARPE® VALVES

A DIVISION OF 

Toll-Free 1-877-7SHARPE
Email: info@sharpevalves.com
www.sharpevalves.com

1260 Garnet Drive
Northlake, Illinois 60164 U.S.A.