

Mark 96 Series

CRN Registration Number Available

Sanitary Pressure Regulators

The Mark 96 Sanitary Pressure Regulator is designed to regulate pressure in systems requiring the maintenance of sanitary conditions.

The Mark 96 operates by sensing pressure under the diaphragm on the downstream side of the seat. As the downstream pressure approaches the set point, the force caused by the pressure acting on the diaphragm overcomes the force of the range spring, and the plug begins to move up toward closed. This reduces the downstream pressure and maintains the set point. If the pressure underneath the diaphragm begins to fall, the spring forces the plug to move down towards open, to allow the set point to be maintained.

FEATURES

- **New!** Optional Gauge Port
- CRN Registration Number Available
- Soft seat capability for ANSI Class VI shutoff
- No guiding surfaces in the fluid below the diaphragm in the wetted area. ASME BPE compliant
- 100% 316L barstock body – no wetted parts made from castings
- Self-draining
- **Best Accuracy** (least droop -set point offset) in the industry. Ask your rep for a MK96 performance calculator demonstration
- Clean-in-Place, Steam-in-Place – dome lock pin to allow CIP/SIP
- Jorlon diaphragm: PTFE based material provides excellent chemical resistance and extremely long life in steam service. Far superior to other elastomer or metal diaphragm materials. *Ask your local Representative for cycle testing information.*

DOCUMENTATION

The following documentation is shipped with each order:

- Steriflow Unicert
 - Traceable Material Heat Number for body and ferrules
 - Certificate of Compliance to FDA and USP Class VI
- Certificate of Surface Finish
- Final Test Reports and Certificate of Origin available upon request at time of order



AVAILABLE FINISHES

Body

- **Standard:** 20 Ra μin (0,5 Ra μm) (ASME BPE SF5) mechanical finish and electropolish on inside wetted surfaces; 40 Ra μin (1 Ra μm) and electropolish on exterior.
- **Optional:** 20 Ra μin (0,5 Ra μm) SF5 mechanical finish and electropolish on external surfaces; 8 Ra μin (0,2 Ra μm) finish on internal or external finishes and electropolish (Better than SF4)

Spring Housing and Handle

- **Standard:** machine finished 316SST, electropolished
- **Optional:** 20 Ra μin (0,5 Ra μm) mechanical finish and electropolish on external surfaces (SF5). 8 Ra μin (0,2 Ra μm) finish on external surfaces on all sizes and electropolish. (Better than SF4)

Adjusting Screw

- **Standard:** 32Ra μin electropolished (Note: adjusting screw is a threaded part)
- **Optional:** 20 Ra μin (0,5 Ra μm) mechanical finish and electropolish finish (SF5)

APPLICATIONS

A wide variety of applications exist for the MK96 in the pharmaceutical, biotech, health-care, food & beverage and other industries.

SPECIFICATIONS – O-RING DIAPHRAGM

Sizes: 3/4" (DN20), 1" (DN25), 1-1/2" (DN40), 2" (DN50), 3" (DN80)

End Connections

- Quick disconnect fittings (*to match Tri-Clamp® fitting*)
- DIN/ISO sanitary connections

Body Connections: Mark 96 – Bolted – Standard for all sizes

Body & Trim Materials: 316L Stainless Steel (ASTM A479)

Seat Materials

- Standard hard seat – integral 316L SST seat
- Optional soft seat
 - Jorlon (for Cv 1.5, 1" size and above) (FDA & USP Class VI) for steam and hot fluid service to 338°F (170°C)
 - Teflon (for Cv 2.5, 1" size and above) to 252°F (122°C) continuous or 275°F (135°C) intermittent [not to exceed 15 min. in a one hour period] FDA, USP Class VI
 - PEEK (3/4" and above) (FDA & USP Class VI) for steam and hot fluid service to 350° (177°C)

Note: consult factory for how to order PEEK soft seat materials

Spring Housing Materials

- CF8M cast SST (3/4" – 1")
- Fabricated 316L SST (1-1/2" – 3")

Diaphragm Materials

- 316L SST
- EPDM/Nylon (to 275°F, 135°C), FDA only
- Jorlon (to 400°F, 204°C) – FDA, USP Class VI
- Ultra-thin Jorlon (to 400°F, 204°C), FDA, USP Class VI (for use with 3-8 range spring only)

O-Ring Materials

- EPDM (to 275°F, 135°C) – FDA, USP Class VI
- Buna-N (to 225°F, 107°C) – FDA
- Viton (to 400°F, 204°C) – FDA, USP Class VI
- Silicone (to 400°F, 204°C) – FDA, USP Class VI
- Teflon-Encapsulated Viton (to 400°F, 204°C) – FDA, USP Class VI (1-1/2" - 3" only)
- Teflon-Encapsulated Silicone (to 400°F, 204°C) – FDA, USP Class VI

Shutoff: ANSI Class III hard seat or Class VI soft seat

Body Pressure Temperature Rating: (dependent upon construction)

| Valve Size | PSIG @ 100°F | PSIG @ 450°F |
|--------------------|----------------|----------------|
| 3/4" & 1" | 350 (24,1 bar) | 250 (17,2 bar) |
| 1-1/2" , 2" , & 3" | 200 (13,8 bar) | 200 (13,8 bar) |

Pressure on 1/2", 3/4" & 1" size limited to 225 psig (15,5 bar) @ 100°F and 200 psig (13,8 bar) @ 400°F if using Ultra-thin Jorlon diaphragm.

Note: for 1/2" size, refer to our Mark 96C datasheet

Set Point Spring Ranges

| Valve Size | Set Point Ranges, PSI (bar) |
|------------|--|
| 3/4" & 1" | 3-8* (0,2-0,5), 5-25 (0,37-1,7), 15-50 (1,0-3,4), 40-90 (2,7-6,2), or 75-135 (5,2-9,3) |
| 1-1/2" | 10-25 (0,7-1,7), 15-50 (1,0-3,4) or 35-100 (2,4-6,9) |
| 2" | 10-25 (0,7-1,7) or 15-60 (1,0-4,1) |
| 3" | 15-25 (1,0-1,7) or 15-60 (1,0-4,1) |

* Range available with elastomer or Ultra-thin Jorlon diaphragm only. Maximum pressure drop 40 psi.

Cv (Kv) Ratings:

| Valve Size | Available Cv (Kv) | Cv for Relief Valve Sizing |
|------------|---|----------------------------|
| 3/4"**** | 1.5 (1,3) | 3.8 (3,27) |
| 1"**** | 1.5, 2.5, 4.5, 5.5**, 6.1** (1,3; 2,2; 3,9; 4,7; 5,3) | 10.7 (9,2) |
| 1-1/2" | 4.5 or 10.0 (3,9 or 8,6) | 6.7 (5,76); 26.3 (22,6) |
| 2" | 10.0 or 19.0 (8,6 or 16,3) | 16.5 (14,2), 56.5 (48,6) |
| 3" | 10.0 or 23.0 (8,6 or 19,8) | 16.5 (14,2); 67.1 (57,7) |

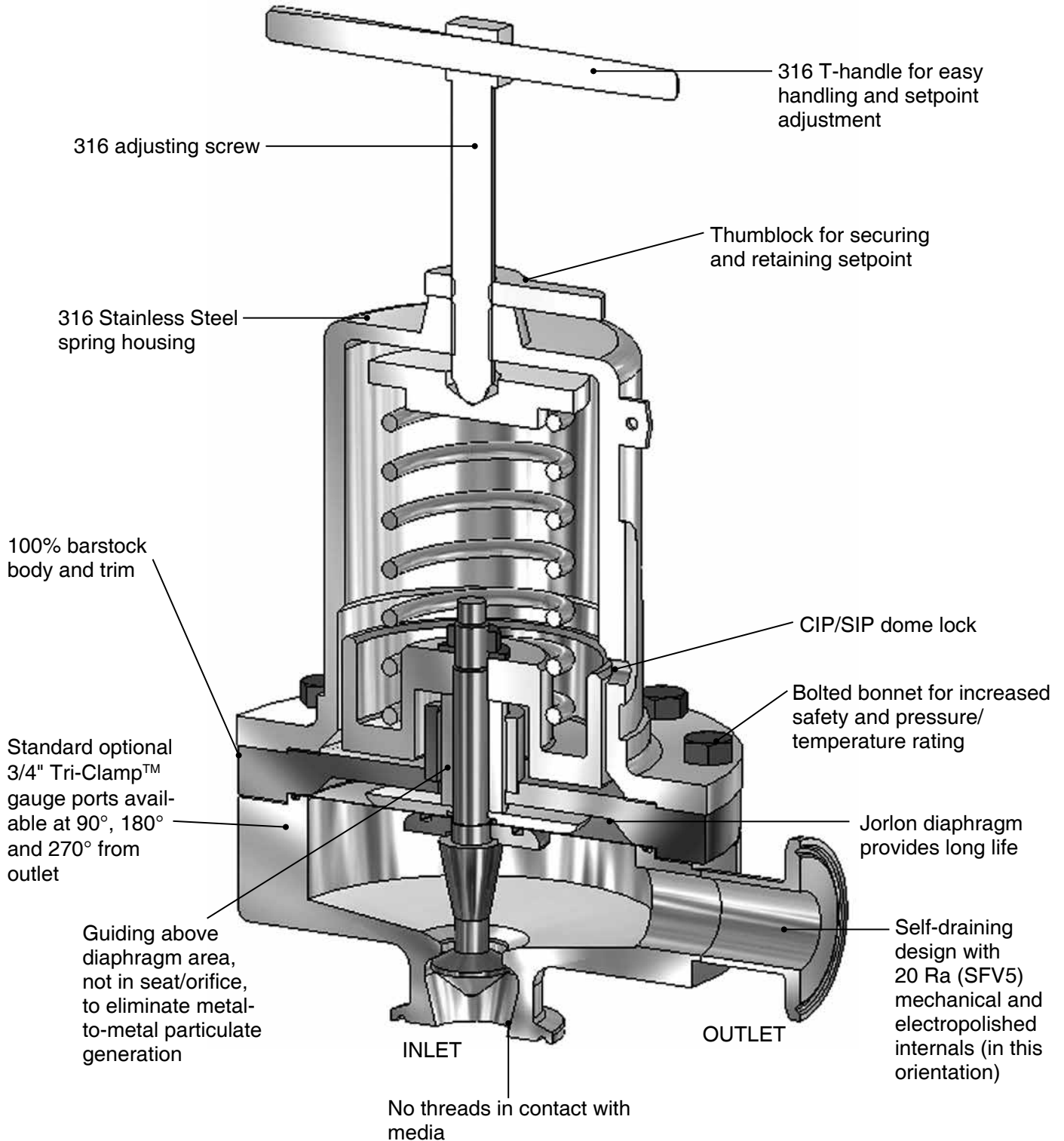
** Not available with metal diaphragms, Jorlon and other elastomers acceptable

*** Cv's limited when using the 3-8 range spring

Maximum Allowable Pressure Differential: 200 psi (3-8 spring range has a max of 40 psi)

Note: Steriflow does not recommend using metal seated trim on any service where the flow will be deadheaded downstream of the pressure reducing regulator. Use an appropriate Teflon, Jorlon or Peek soft seat for the trim instead.

FEATURES & BENEFITS



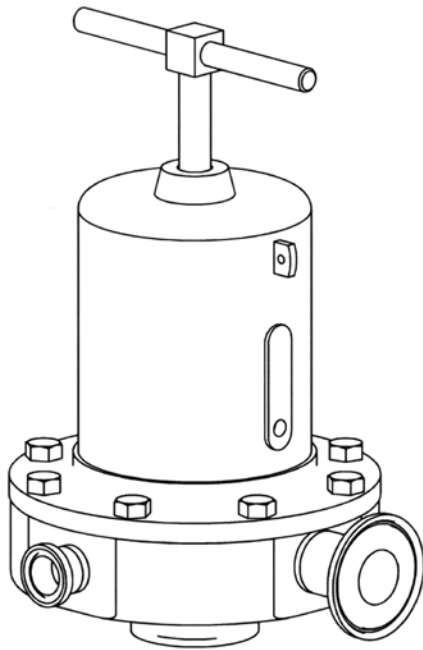
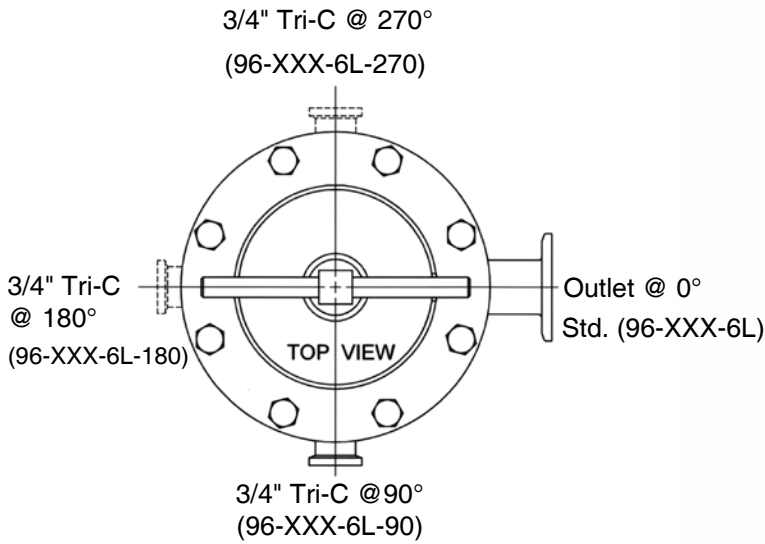
MARK 96 SERIES SANITARY PRESSURE REGULATORS

CAPACITY Cv AT VARIOUS DROOP %

| Mark 96 | Set Pressure PSIG | 7 | | | | | Cv for Relief Valve Sizing |
|--|----------------------|-------|-------|-------|-------|-------|-------------------------------|
| | | 5% | 10% | 15% | 20% | 30% | |
| 3/4" 1.5 Cv 15 to 50 psi range | 15 | 0.10 | 0.20 | 0.31 | 0.42 | 0.65 | 3.8 |
| | 20 | 0.12 | 0.26 | 0.39 | 0.54 | 0.83 | |
| | 25 | 0.15 | 0.31 | 0.47 | 0.64 | 1.01 | |
| | 30 | 0.18 | 0.36 | 0.55 | 0.75 | 1.17 | |
| | 35 | 0.20 | 0.41 | 0.63 | 0.85 | 1.34 | |
| | 40 | 0.22 | 0.46 | 0.70 | 0.96 | 1.50 | |
| | 45 | 0.25 | 0.51 | 0.77 | 1.06 | 1.50 | |
| 1" 4.5 Cv 15 to 50 psi range | 15 | 0.30 | 0.61 | 0.93 | 1.26 | 1.95 | 10.7 |
| | 20 | 0.37 | 0.77 | 1.18 | 1.61 | 2.50 | |
| | 25 | 0.46 | 0.93 | 1.42 | 1.93 | 3.02 | |
| | 30 | 0.53 | 1.08 | 1.65 | 2.25 | 3.52 | |
| | 35 | 0.60 | 1.23 | 1.88 | 2.56 | 4.02 | |
| | 40 | 0.67 | 1.37 | 2.10 | 2.87 | 4.50 | |
| | 45 | 0.74 | 1.52 | 2.32 | 3.18 | 4.50 | |
| 1-1/2" 10 Cv 15 to 50 psi range | 15 | 0.59 | 1.20 | 1.85 | 2.54 | 4.05 | 26.3 |
| | 20 | 0.66 | 1.36 | 2.10 | 2.91 | 4.68 | |
| | 25 | 0.72 | 1.48 | 2.30 | 3.19 | 5.16 | |
| | 30 | 0.77 | 1.57 | 2.45 | 3.40 | 5.55 | |
| | 35 | 0.80 | 1.65 | 2.57 | 3.58 | 5.86 | |
| | 40 | 0.83 | 1.71 | 2.67 | 3.73 | 6.13 | |
| | 45 | 0.86 | 1.76 | 2.75 | 3.85 | 6.35 | |
| 2" 19 Cv 15 to 60 psi range | 15 | 1.89 | 3.85 | 5.84 | 7.87 | 12.02 | 56.5 |
| | 20 | 2.66 | 5.40 | 8.19 | 11.04 | 16.88 | |
| | 25 | 3.48 | 7.08 | 10.73 | 14.46 | 19.00 | |
| | 30 | 4.41 | 8.91 | 13.47 | 18.17 | 19.00 | |
| | 35 | 5.37 | 10.92 | 16.52 | 19.00 | | |
| | 40 | 6.45 | 13.16 | 19.00 | | | |
| | 45 | 7.77 | 15.68 | 19.00 | | | |
| 3" 23 Cv 15 to 60 psi range | 15 | 4.09 | 6.83 | 9.40 | 11.81 | 16.20 | 67.1 |
| | 20 | 5.03 | 8.56 | 11.81 | 14.79 | 20.10 | |
| | 25 | 6.31 | 10.99 | 15.23 | 19.11 | 23.00 | |
| | 30 | 7.29 | 12.73 | 17.60 | 21.98 | 23.00 | |
| | 35 | 8.24 | 14.42 | 19.85 | 23.00 | | |
| | 40 | 9.17 | 16.04 | 21.98 | 23.00 | | |
| | 45 | 10.09 | 17.60 | 23.00 | | | |
| | 50 | 10.99 | 19.11 | 23.00 | | | |
| 55 | 11.87 | 20.57 | 23.00 | | | | |
| 60 | 12.73 | 21.98 | 23.00 | | | | |

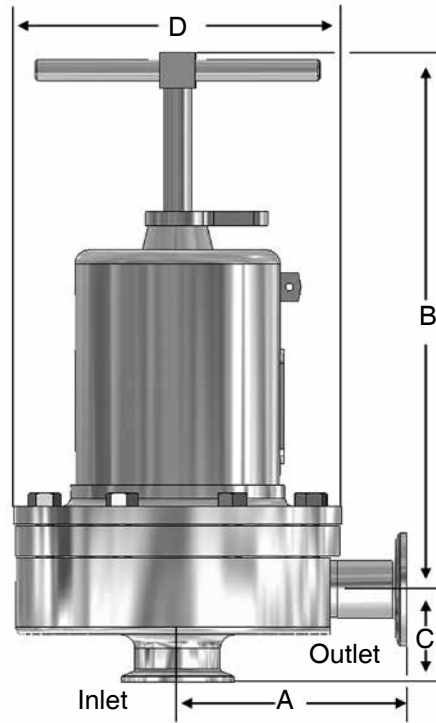
Note: for capacity Cv and performance at other conditions, please visit the Technical Library on our website at www.steriflowvalve.com

GUAGE PORT CONFIGURATION OPTIONS



Ex. (96-XXX-6L-90)

DIMENSIONS



| Valve Size | Dimensions (inches) | | | | Weight Lbs |
|------------|---------------------|-------|------|------|------------|
| | A | B | C | D | |
| 3/4" | 3.29 | 8.00 | 1.50 | 5.70 | 18 |
| 1" | 4.00 | 8.00 | 1.64 | 5.70 | 20 |
| 1-1/2" | 4.21 | 10.50 | 2.53 | 7.25 | 40/28.7* |
| 2" | 5.34 | 17.50 | 2.96 | 9.50 | 90/66** |
| 3" | 5.34 | 18.00 | 3.46 | 9.50 | 98 |

| Valve Size | Dimensions (mm) | | | | Weight Kgs |
|------------|-----------------|-----|------|-----|------------|
| | A | B | C | D | |
| DN20 | 84 | 203 | 38,1 | 145 | 8,1 |
| DN25 | 102 | 203 | 41,7 | 145 | 9,1 |
| DN40 | 107 | 267 | 64,3 | 184 | 18/13* |
| DN50 | 136 | 445 | 75,2 | 241 | 41/30** |
| DN80 | 136 | 457 | 87,9 | 241 | 44,4 |

Based on US tri-clamp ends. Consult factory for DIN and ISO tri-clamp end dimensions

* 40 lbs (18,1 kgs) std; 28.7 lbs (13 kgs) with aluminum spring housing

** 90 lbs (40,7 kgs) std; 66 lbs (33 kgs) with aluminum spring housing

SAMPLE SPECIFICATION

Stainless steel sanitary pressure regulator shall be made from ASME-SA479 barstock material, which includes body and all wetted metal parts. Regulator shall be activated by FDA approved, USP Class VI certified Jorlon diaphragm. Guiding of valve stem/plug shall be outside of the wetted, process areas of valve internal, above diaphragm. Regulator shall be free of threads within wetted, process areas of valve internal and shall be self draining when installed with inlet vertical and below valve assembly.

ORDERING SCHEMATIC

| Model | Size | Material | Body Configuration | / | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-------|------|----------|--------------------|---|---|---|---|---|---|---|----|----|----|
| | | | | | | | | | | | | | |

| Model | |
|-------|----------|
| 96 | Standard |

| Size | |
|------|--------|
| 075 | 3/4" |
| 100 | 1" |
| 150 | 1-1/2" |
| 200 | 2" |
| 300 | 3" |

| Material | |
|----------|------|
| 6L | 316L |

| Body Configuration | |
|--------------------|-------------------------------|
| | Leave blank for standard |
| 90 | 3/4" Tri-Clamp F/Gauge @ 90° |
| 180 | 3/4" Tri-Clamp F/Gauge @ 180° |
| 270 | 3/4" Tri-Clamp F/Gauge @ 270° |

| Body Finish | |
|-------------|---|
| A | 20Ra (SFV5) Interior/63RMS Exterior (Std) |
| B | 20Ra (SFV5) Interior/20Ra Exterior |
| C | 8Ra Interior/63RMS Exterior* |
| D | 20Ra (SFV5) Interior/8Ra Exterior |
| E | 8Ra Interior/8Ra Exterior* |
| F | 8Ra Interior/20Ra Exterior* |

* Handle and all external surfaces meet spec per above. The adjusting screw is a threaded part and cannot be polished beyond 20Ra

| 5 Body Cv (Kv) See chart on page 2 | | |
|------------------------------------|-----------|-----------|
| | Cv | Kv |
| A | 1.5 | 1,3 |
| D | 2.5 | 2,2 |
| H | 4.5 | 3,9 |
| K | 5.5 & 6.1 | 4,7 & 5,3 |
| M | 10.0 | 8,6 |
| N | 19.0 | 16,3 |
| P | 23.0 | 19,8 |

| 6 Trim Finish | |
|---------------|-----------------|
| A | 20Ra (Standard) |
| B | 8Ra |

| 7 Trim – Cv (Kv) & Seat | | | |
|-------------------------|-----------------------|---|-----------------------|
| A | 1.5 (1,3) Hard Seat | N | 5.5 (4,7) Jorlon Seat |
| 2 | 1.5 (1,3) Jorlon Seat | P | 10 (8,6) Hard Seat |
| B | 2.5 (2,2) Hard Seat | Q | 10 (8,6) Teflon Seat |
| C | 2.5 (2,2) Teflon Seat | R | 10 (8,6) Jorlon Seat |
| D | 2.5 (2,2) Jorlon Seat | S | 19 (16,3) Hard Seat |
| H | 4.5 (3,9) Hard Seat | T | 19 (16,3) Teflon Seat |
| J | 4.5 (3,9) Teflon Seat | U | 19 (16,3) Jorlon Seat |
| K | 4.5 (3,9) Jorlon Seat | V | 23 (19,8) Hard Seat |
| L | 5.5 (4,7) Hard Seat | W | 23 (19,8) Teflon Seat |
| M | 5.5 (4,7) Teflon Seat | X | 23 (19,8) Jorlon Seat |
| 7 | 6.1 (5,3) Hard Seat | | |

| 8 O-Ring/Diaphragm | |
|--------------------|--|
| BU | Buna-N/SST Diaphragm |
| EE | EPDM/EPDM Diaphragm |
| EP | EPDM/SST Diaphragm |
| SL | Silicone/SST Diaphragm |
| TS | Teflon Encaps. Silicone/SST Diaphragm (1-1/2" - 3" only) |
| TY | Teflon Encaps. Viton/Jorlon Diaphragm |
| TV | Teflon Encaps. Viton/SST Diaphragm |
| VT | Viton/SST Diaphragm |

| 9 Adjusting Screw Finish (Except Threads) | |
|---|-----------------------------|
| A | Electro-polished (Standard) |
| B | 20Ra (SFV5) |
| C | 8Ra |

| 10 Range PSI (Bar) see chart on page 2 | |
|--|----------------------|
| A | 3 - 8 (0,2 - 0,6)* |
| C | 5 - 25 (0,3 - 1,7) |
| E | 10 - 25 (0,7 - 1,7) |
| P | 15 - 25 (1,0 - 1,7) |
| H | 15 - 50 (1,0 - 3,4) |
| J | 15 - 60 (1,0 - 4,1) |
| M | 35 - 100 (2,4 - 6,9) |
| R | 40 - 90 (2,8 - 6,2) |
| T | 75 - 135 (5,2 - 9,3) |

* Must use EPDM or Ultra-thin Jorlon diaphragm

| 11 Diaphragm | |
|--------------|----------------------------------|
| 6L | SST (all exterior) |
| EP | EPDM (all exterior) |
| JL | Jorlon (all exterior) |
| UJ | Ultra-thin Jorlon (all exterior) |

| 12 Actuator Finish/Type | |
|-------------------------|------------------------------|
| AA | Standard |
| BA | 20Ra (SFV5) exterior |
| CA | 8Ra exterior |
| DA | Electro-polished for 2" & 3" |



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