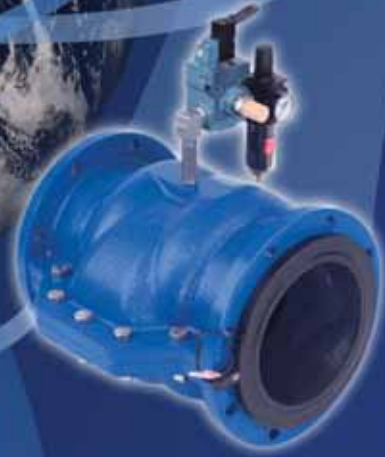




**World Class Performance
in Abrasive, Scaling and
Corrosive Slurries, Sludge,
Liquids, and Bulk Solids**



RF VALVE® aiRFlex®



RF Valves' mission is to solve valve problems. We achieve this by providing valves that offer the lowest cost of ownership and operation, highest reliability and minimum maintenance.

Simple and rugged patented construction throughout sets RF valves apart in the most severe service and process control applications.



RF Manual Valves



RF Pneumatic Valves

On/Off and Control Valves

The RF Family of Elastomer Tubes

-- RF's patented non-stretch tube design features expansion arches that flex rather than stretch when closing. This gives RF valves remarkable wear resistance and cycle life superiority over conventional pinch valves. In addition, the tube arches and positive opening tags ensure tube stability under low or fluctuating line pressures and vacuum conditions. Full port and reduced port tubes permit precise throttling control.

--RF tubes are available in a wide range of wear- and chemical-resistant elastomers. KEVLAR® reinforcing cords add unsurpassed performance under high loads and temperatures, and VITON® withstands even the most chemically corrosive process conditions.

Wear-Sensing Monitor

--A patented SMART Valve™ Wear Monitoring Sensor is available and molded between the inner thick wear resistant elastomer and the outer reinforcing cords of each tube. If the inner lining wears sufficiently to disturb the sensor wire, it will trigger a signal that can be displayed at the valve or looped into a DCS. This provides for the first time a reliable tool to tell when a tube needs replacement, thus reducing downtime, outage costs and unexpected valve failures.



World Class Performance



RF Electric Valves



RF Control Valves



aiRFlex Pinch Valves

1" - 60" ID, full port, Standard ASME/ANSI B16.10, DIN 3205 F5/F15, and ISO 5752 face-to-face dimensions, working pressures 15 to 600 psi, temperatures -50° to 230° F, pH 1-13

Fugitive Emission Control

Fugitive Emission Control RF valves are built without valve stems, packings, and seals that can leak. Their seamless elastomer tube design, incorporating the wear sensor wire inside, offers two levels of protection. A third level of emission containment is provided by the sealed body feature.

Note: HON Rule Method 21 emission monitoring occurs inside a sealed valve body isolated from weather and harsh external operating environments, automating compliance process.

Technical Advantages

- Standard full- or reduced-port designs, centerline closure and Class VI shut-off provide outstanding elastomer wear life as well as precise, repeatable linear flow control.
- The self-cleaning, flexing action of the elastomer tubes prevents build-up of scaling deposits and thus guarantees that the valve will not jam or seize, even in high solids.
- High pressure molded elastomer tube insert outperforms more expensive 316, stellite, or alloy ball, plug, globe, diaphragm and conventional pinch valves in abrasive, scaling or corrosive services.
- Interchangeable with most standard ASME or DIN face-to-face dimensions for ball, plug, butterfly, globe and diaphragm valves. Versatile retrofit valve for plant upgrade and modernization projects.
- Elastomer tube is the only wear part in contact with process stream. Tube replacement, when required, is accomplished in-line without complicated tools, components, or specialized skills; maintenance costs are reduced up to 70 percent
- Seamless flange-to-flange tube construction and sealed body design eliminates valve stem, packings, or seals that can leak.



Control Valve Performance

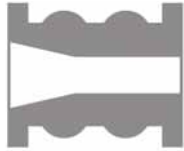
- Because of their unique design characteristics, RF Control Valves[®] are recommended when...
- ...abrasion and corrosion result in high maintenance,
 - ...turbulent flow causes valves or pipes to wear,
 - ...scaling causes valves to seize, and...
 - ...fibers or other materials have a tendency to plug the valves.



Full Port

The inherently high Cv values of RF Control Valves ensure superior cost-vs.-capacity ratios. Control performance is also enhanced, as each valve is uniquely characterized to flow requirements with either full- or reduced-port designs, thus reducing the turbulence and cavitation found in other valve designs.

The self-cleaning, flexing elastomer action loosens deposits (Fig. 2, opp page) and eliminates most problems associated with stiction, overshoot, and conventional control valve irregularities.

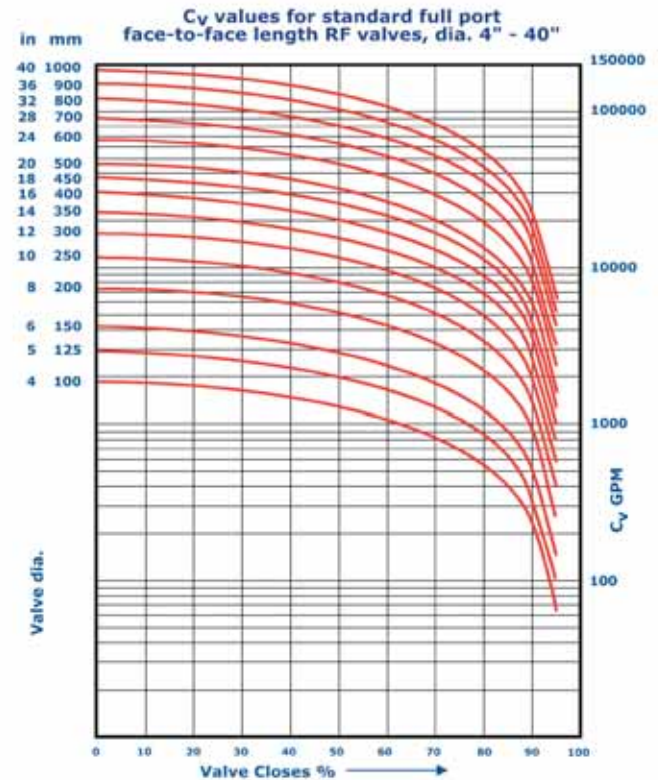
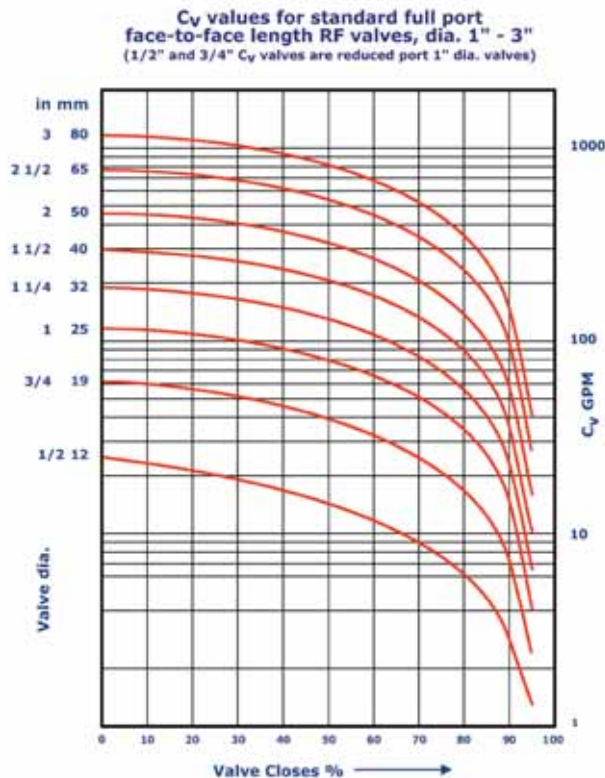
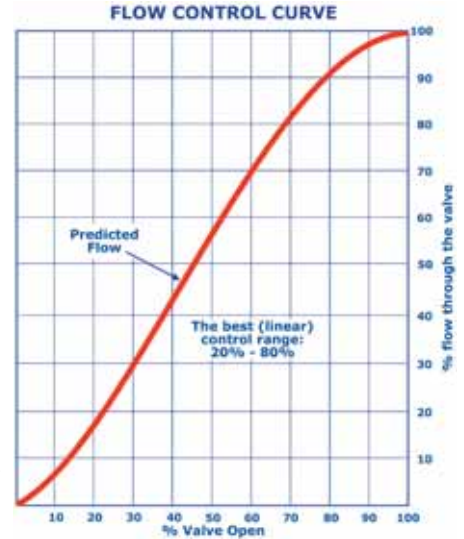


Reduced Port

When zero-leakage shut-off is a must, RF Control Valves[®] outperform most others, even against abrasive and scaling-prone slurries and liquids.

The RF Valve[®] and aiRFlex[®] are offered with a wide variety of positioners for modulating control and operating under most protocols, such as Hart, Foundation Fieldbus, Profibus and others.

The RF Valve[®] and aiRFlex[®] are offered with a wide variety of positioners for modulating control and operating under most protocols, such as Hart, Foundation Fieldbus, Profibus and others.



World Class Performance



PATENTED NO-STRETCH TUBE FOLDS

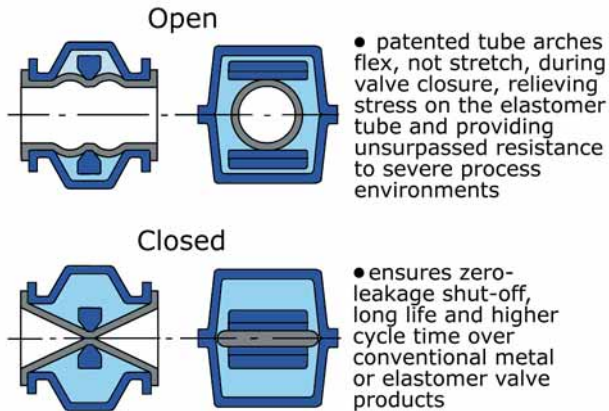


Figure 1

- Replaceable elastomer tube will not jam or seize; eliminates "throw away" valves (Figure 2).
- Smart Valve™ monitoring system reduces maintenance costs and unscheduled outages (Figure 3).
- Elastomer tube, when worn, is quickly replaced in line without special tools (Figure 4).

TROUBLE-FREE OPERATION

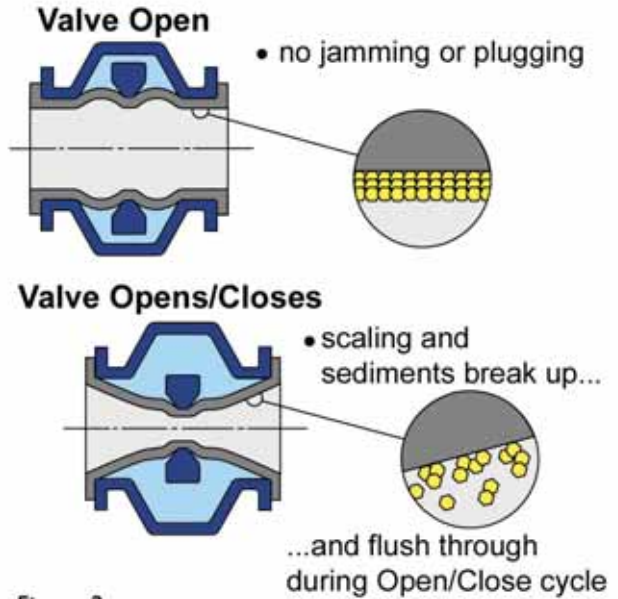


Figure 2

SMART VALVE™ MONITORING SYSTEM

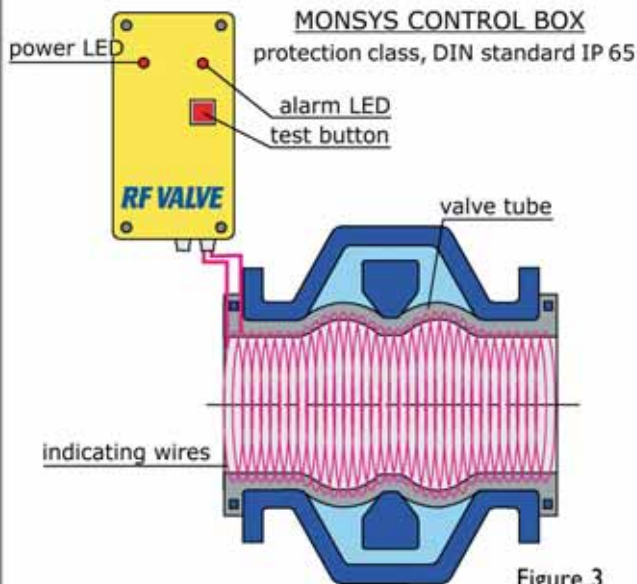


Figure 3

QUICK AND SIMPLE TUBE CHANGE

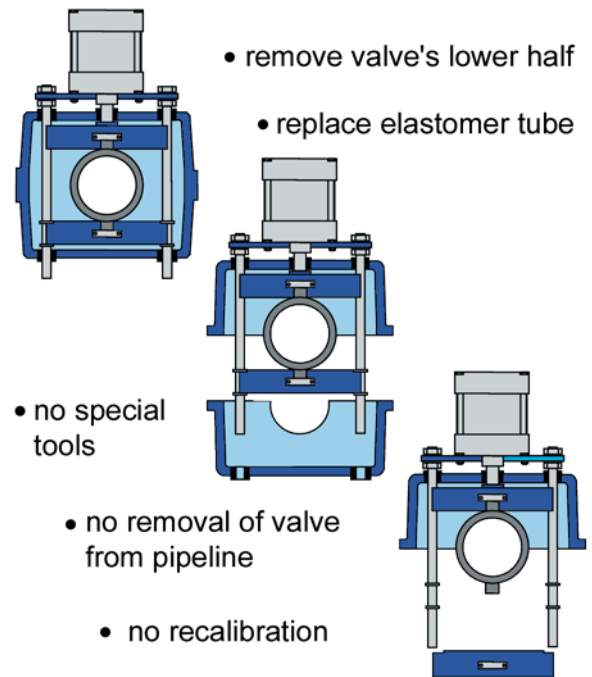


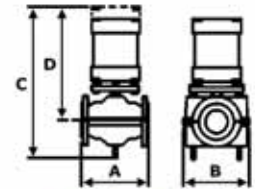
Figure 4



RF VALVE

ASME/ANSI Standard Valves

Dimensions = inches
Weight = lbs
Pressure = psig



PNEUMATIC

Specifications

RF Valve specifications are given at right; aiRFlex specifications are shown below.

aiRFlex®

Patented tube folds prevent tube from stretching when air is introduced between valve body and tube to close the valve. The folds and reinforcing cords insure full opening when actuating air is exhausted.



1" to 60" ID, full port, on/off and control services, standard ASME/ANSI B16.10 face-to-face dimensions, temperatures up to 210 degrees F, pH 1-13, working pressure 30 psi below available plant air with minimum 60 psi plant air needed to close the valve.

| Valve ID ins. | A F-F ins. | B Wid. ins. | C Ht. ins. | Weight lbs. | |
|---------------|------------|-------------|------------|-------------|------------|
| | | | | Cast Iron | Cast Alum. |
| 1 | 5 | 5 | 4.2 | 6 | 3.5 |
| 1.5 | 6.5 | 5.9 | 5 | 11 | 5 |
| 2 | 7 | 8.1 | 6.5 | 17 | 7 |
| 3 | 8 | 10.1 | 7.9 | 27 | 14 |
| 4 | 9 | 11.6 | 9 | 37 | 17 |
| 5 | 10 | 12.3 | 10 | 52 | 24 |
| 6 | 10.5 | 15.2 | 11.2 | 66 | 43 |
| 8 | 18 | 18.3 | 13.4 | 152 | 77 |
| 10 | 21 | 24.3 | 16 | | 155 |
| 12 | 24 | 28.2 | 19 | | 205 |
| 14 | 27 | 27.9 | 26.8 | | 284 |

Sizes larger than 14" ID are available upon request.

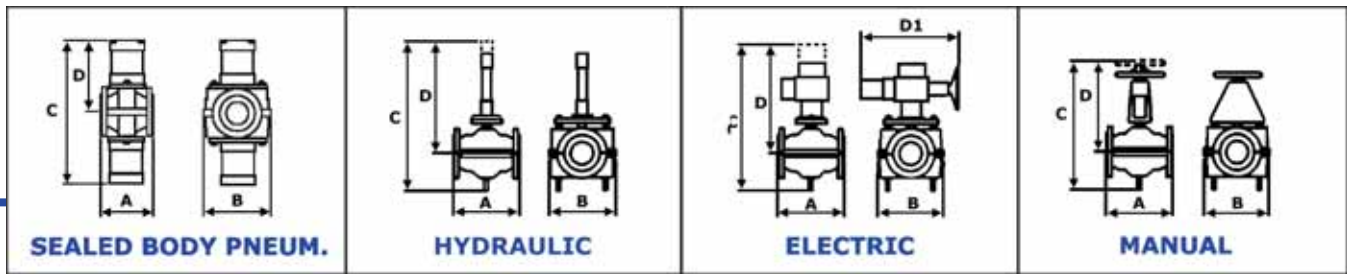
General Accessories

RF Valves' complete line of valve accessories ensures optimum field performance:

- On/off limit switches
- Fail Close systems
- Air operated hydraulic power packs
- Manual overrides
- Positive opening tags
- Hand wheel lockout
- SMART Valve™ Monsys Alarm Box
- Positioners: 3-15 psi and 4-20 mA
- Solenoid and air valves

| Actuator, Line Pressure | | | P15 | P90 | P150 |
|-------------------------|------------|---|---------|--------|--------|
| DN | Weight | | 20 | 20 | 20 |
| 1 | A = 5 | C | 16 1/8 | 16 1/8 | 16 1/2 |
| | B = 7 1/8 | D | 12 3/8 | 12 3/8 | 12 3/4 |
| | Weight | | 22 | 22 | 24 |
| 1 1/4 | A = 5 1/2 | C | 17 | 17 | 17 3/8 |
| | B = 7 5/8 | D | 13 | 13 | 13 1/4 |
| | Weight | | 26 | 26 | 31 |
| 1 1/2 | A = 6 1/2 | C | 17 | 18 3/8 | 18 3/8 |
| | B = 8 1/8 | D | 12 5/8 | 13 7/8 | 13 7/8 |
| | Weight | | 44 | 44 | 46 |
| 2 | A = 7 | C | 19 3/4 | 19 3/4 | 20 1/8 |
| | B = 9 1/2 | D | 14 1/4 | 14 1/4 | 15 1/2 |
| | Weight | | 55 | 57 | 62 |
| 2 1/2 | A = 7 1/2 | C | 17 3/4 | 21 5/8 | 21 5/8 |
| | B = 9 1/2 | D | 15 3/8 | 15 3/4 | 15 3/4 |
| | Weight | | 60 | 66 | 73 |
| 3 | A = 8 | C | 23 1/4 | 23 5/8 | 26 1/4 |
| | B = 11 1/8 | D | 16 7/8 | 16 7/8 | 18 1/2 |
| | Weight | | 84 | 93 | 99 |
| 4 | A = 9 | C | 27 3/8 | 28 3/4 | 28 3/4 |
| | B = 12 1/2 | D | 19 1/4 | 20 1/2 | 20 1/2 |
| | Weight | | 121 | 132 | 150 |
| 5 | A = 10 | C | 30 1/2 | 31 3/4 | 31 7/8 |
| | B = 13 1/2 | D | 21 1/4 | 22 5/8 | 22 3/4 |
| | Weight | | 168 | 185 | 203 |
| 6 | A = 10 1/2 | C | 35 1/2 | 35 5/8 | 41 3/8 |
| | B = 15 3/4 | D | 23 5/8 | 26 1/2 | 31 1/8 |
| | Weight | | 348 | 381 | 458 |
| 8 | A = 18 | C | 43 3/8 | 47 5/8 | 58 1/8 |
| long | B = 20 3/8 | D | 29 3/4 | 34 1/4 | 4 5/8 |
| | Weight | | 373 | 494 | 637 |
| 10 | A = 21 | C | 49 1/4 | 65 3/4 | 74 1/2 |
| | B = 22 | D | 33 7/8 | 50 7/8 | 59 1/8 |
| | Weight | | 787 | 820 | |
| 12 | A = 24 | C | 56 3/4 | 83 1/2 | |
| | B = 28 3/8 | D | 38 5/8 | 65 3/4 | |
| | Weight | | 1169 | | |
| 14 | A = 27 | C | 63 3/4 | | |
| | B = 33 1/8 | D | 43 3/8 | | |
| | Weight | | 1257 | | |
| 16 | A = 30 | C | 70 7/8 | | |
| | B = 42 1/2 | D | 48 | | |
| | Weight | | 1433 | | |
| 18 | A = 34 | C | 78 | | |
| | B = 46 1/2 | D | 52 1/2 | | |
| | Weight | | 1532 | | |
| 20 | A = 36 | C | 85 1/2 | | |
| | B = 50 3/8 | D | 57 1/8 | | |
| | Weight | | 2062 | | |
| 24 | A = 42 | C | 130 3/4 | | |
| | B = 53 1/8 | D | 97 5/8 | | |

The weights and dimensions in this table are only approximate and may change with different actuators or accessories. Please contact RF Valves, Inc. if more detailed information is needed.



| SEALED BODY PNEUM. | | | HYDRAULIC | | | ELECTRIC | | | MANUAL | | |
|--------------------|--------|---------|-----------|---------|---------|----------|--------|---------|--------|--------|--------|
| P15 | P90 | P150 | H15 | H90 | H150 | E15 | E90 | E150 | M15 | M90 | M150 |
| 26 | 26 | 29 | 26 | 26 | 26 | 55 | 55 | 55 | 20 | 20 | 20 |
| 19 1/4 | 19 1/4 | 19 7/8 | 16 7/8 | 16 7/8 | 16 7/8 | 20 7/8 | 20 7/8 | 20 7/8 | 15 1/8 | 15 1/8 | 15 1/8 |
| 9 5/8 | 9 5/8 | 7/8 | 13 1/8 | 13 1/8 | 13 1/8 | 16 7/8 | 16 7/8 | 16 7/8 | 10 7/8 | 10 7/8 | 10 7/8 |
| 26 | 26 | 31 | 29 | 29 | 29 | 51 | 51 | 51 | 22 | 22 | 22 |
| 20 1/8 | 20 1/8 | 20 3/4 | 17 3/4 | 17 3/4 | 17 3/4 | 21 5/8 | 21 5/8 | 21 5/8 | 16 | 16 | 16 |
| 10 | 10 | 10 3/8 | 13 5/8 | 13 5/8 | 13 5/8 | 17 3/8 | 17 3/8 | 17 3/8 | 11 | 11 | 11 |
| 31 | 31 | 35 | 31 | 31 | 31 | 55 | 55 | 55 | 26 | 26 | 26 |
| 21 1/8 | 21 3/4 | 21 3/4 | 18 1/2 | 18 1/2 | 18 1/2 | 22 1/2 | 22 1/2 | 22 1/2 | 16 7/8 | 16 7/8 | 16 7/8 |
| 10 1/2 | 10 7/8 | 10 7/8 | 13 3/4 | 13 3/4 | 13 3/4 | 17 7/8 | 17 7/8 | 17 7/8 | 12 3/4 | 12 3/4 | 12 3/4 |
| 55 | 55 | 60 | 35 | 35 | 35 | 71 | 71 | 71 | 44 | 44 | 44 |
| 22 7/8 | 22 7/8 | 23 1/2 | 20 1/8 | 20 1/8 | 20 1/2 | 23 | 23 | 23 | 17 7/8 | 17 7/8 | 17 7/8 |
| 11 1/2 | 11 1/2 | 11 3/4 | 13 3/8 | 13 3/8 | 13 3/4 | 16 | 16 | 16 | 12 3/4 | 12 3/4 | 12 3/4 |
| 68 | 73 | 82 | 55 | 55 | 55 | 86 | 86 | 88 | 55 | 55 | 55 |
| 24 1/4 | 24 3/4 | 24 3/4 | 22 5/8 | 23 1/4 | 23 | 25 1/4 | 25 1/4 | 25 1/4 | 19 1/8 | 19 1/8 | 19 1/8 |
| 12 1/8 | 12 3/8 | 12 3/8 | 15 3/8 | 15 3/4 | 15 3/4 | 17 1/2 | 17 1/2 | 17 1/2 | 13 5/8 | 13 5/8 | 13 5/8 |
| 73 | 79 | 95 | 66 | 66 | 66 | 95 | 95 | 95 | 66 | 66 | 66 |
| 26 | 26 3/8 | 29 1/8 | 24 3/4 | 25 1/4 | 26 3/4 | 26 3/4 | 26 3/4 | 26 3/4 | 20 1/4 | 20 1/4 | 20 1/4 |
| 13 | 13 1/8 | 14 1/2 | 16 7/8 | 17 3/8 | 18 7/8 | 18 1/2 | 18 1/2 | 18 1/2 | 14 1/8 | 14 1/8 | 14 1/8 |
| 88 | 99 | 110 | 79 | 79 | 88 | 95 | 95 | 95 | 84 | 84 | 84 |
| 30 3/8 | 33 1/8 | 33 1/8 | 28 3/8 | 29 7/8 | 26 3/8 | 23 | 23 | 23 | 26 3/4 | 26 3/4 | 26 3/4 |
| 15 1/8 | 16 1/2 | 16 1/2 | 18 7/8 | 20 1/2 | 20 1/2 | 19 1/4 | 19 1/4 | 19 1/4 | 18 7/8 | 18 7/8 | 18 7/8 |
| 128 | 128 | 161 | 143 | 143 | 154 | 115 | 119 | 123 | 132 | 132 | 132 |
| 32 5/8 | 35 | 35 7/8 | 31 1/8 | 33 1/8 | 33 1/8 | 31 3/8 | 31 3/8 | 31 3/8 | 29 3/8 | 29 3/8 | 29 3/8 |
| 16 3/8 | 17 1/2 | 17 7/8 | 20 5/8 | 22 5/8 | 22 7/8 | 20 1/2 | 20 1/2 | 20 1/2 | 25 7/8 | 25 7/8 | 25 7/8 |
| 176 | 194 | 221 | 168 | 179 | 190 | 150 | 150 | 159 | 190 | 190 | 190 |
| 38 5/8 | 39 | 47 5/8 | 35 1/2 | 37 | 41 3/8 | 34 1/4 | 34 1/4 | 34 1/4 | 35 1/2 | 35 1/2 | 35 1/2 |
| 19 1/4 | 19 1/2 | 23 7/8 | 23 5/8 | 25 1/4 | 29 1/2 | 22 | 22 | 22 | 25 1/4 | 25 1/4 | 25 1/4 |
| 325 | 392 | 486 | 348 | 348 | 392 | 363 | 381 | 453 | 348 | 348 | 348 |
| 45 1/4 | 54 3/4 | 75 3/8 | 43 3/8 | 50 | 50 | 40 1/2 | 0 1/2 | 42 1/8 | 43 3/8 | 43 3/8 | 43 3/8 |
| 22 5/8 | 27 3/8 | 37 3/4 | 29 1/8 | 35 | 35 | 25 5/8 | 25 5/8 | 27 1/8 | 31 1/2 | 31 1/2 | 31 1/2 |
| 434 | 567 | 745 | 362 | 384 | 406 | 399 | 476 | 509 | 465 | 476 | 476 |
| 50 | 83 1/2 | 100 3/8 | 53 1/2 | 58 1/4 | 58 1/4 | 47 1/4 | 48 7/8 | 49 1/4 | 50 3/8 | 50 3/8 | 50 3/8 |
| 25 | 41 3/4 | 50 1/4 | 36 1/4 | 41 | 41 | 29 1/8 | 30 7/8 | 30 7/8 | 35 | 35 | 35 |
| 432 | 948 | | 666 | 688 | 721 | 613 | 679 | 767 | 591 | 591 | 657 |
| 56 3/8 | 111 | | 62 | 67 3/8 | 67 3/4 | 54 | 55 7/8 | 57 1/8 | 57 1/8 | 57 1/8 | 57 1/8 |
| 28 1/8 | 55 1/2 | | 41 3/4 | 46 1/2 | 46 7/8 | 32 5/8 | 34 5/8 | 35 1/2 | 39 3/4 | 39 3/4 | 39 3/4 |
| 917 | | | 787 | 820 | 942 | 922 | 1032 | 1473 | 789 | 789 | 878 |
| 62 3/4 | | | 70 1/8 | 75 5/8 | 76 | 60 1/4 | 62 1/4 | 63 3/8 | 63 | 63 3/4 | 63 3/4 |
| 31 3/8 | | | 47 | 52 | 52 3/8 | 36 1/4 | 37 7/8 | 39 | 44 1/2 | 45 1/4 | 45 1/4 |
| 1345 | | | 1169 | 1235 | 1422 | 1367 | 1521 | 2007 | 1125 | 1235 | 1389 |
| 69 1/8 | | | 78 3/8 | 83 7/8 | 84 5/8 | 68 1/8 | 69 1/4 | 70 1/8 | 77 1/8 | 78 | 78 |
| 34 1/2 | | | 52 3/4 | 57 1/2 | 57 7/8 | 41 3/8 | 42 1/2 | 42 1/2 | 51 3/8 | 52 | 52 |
| 1557 | | | 1283 | 1349 | 1570 | 1605 | 2112 | 2245 | 1252 | 1385 | 1715 |
| 75 3/8 | | | 91 3/4 | 92 1/2 | 92 7/8 | 74 7/8 | 76 3/8 | 78 | 83 7/8 | 84 5/8 | 84 5/8 |
| 37 3/4 | | | 63 | 63 | 63 5/8 | 44 7/8 | 46 1/8 | 47 5/8 | 57 1/2 | 58 1/4 | 58 1/4 |
| 1665 | | | 1466 | 1643 | 1907 | 1731 | 2194 | 2326 | 1488 | 1665 | 1996 |
| 81 3/4 | | | 100 3/8 | 100 3/4 | 101 1/2 | 81 1/2 | 82 3/4 | 84 5/8 | 91 3/4 | 92 1/2 | 92 1/2 |
| 40 7/8 | | | 68 1/2 | 68 1/2 | 69 1/4 | 48 1/2 | 49 5/8 | 51 1/8 | 62 | 63 | 63 |
| 2304 | | | 1797 | 1951 | 2084 | 1907 | 2547 | 3076 | 1797 | 2172 | |
| 155 1/2 | | | 117 3/4 | 118 1/8 | 118 7/8 | 94 1/2 | 97 1/2 | 100 3/8 | 68 7/8 | 69 1/4 | |
| 77 3/4 | | | 79 7/8 | 79 7/8 | 0 3/8 | 55 7/8 | 58 1/4 | 61 3/8 | 52 | 52 3/8 | |

RF Valves offers standard centerline closure in order to maximize the useful life of each elastomer tube, both in On/Off and Modulating services.

ELASTOMER QUALITIES SELECTION

| Elastomer Type | Natural Rubber | Natural Pure Gum Rubber | Chloro-Butyl Rubber | Nitrile Rubber | Chloro-prene Rubber | Fluoro-Carbon Rubber | Chloro-Sulfonated Polyethylene | Ethylene Propylene |
|--|----------------|-------------------------|---------------------|----------------|---------------------|----------------------|--------------------------------|--------------------|
| Designation Tradename ⁽¹⁾ | NR | PGR | IIR | NBR Buna-N | N Neoprene | FPM Viton® | CSM Hypalon® | EPDM Nordel® |
| Properties | | | | | | | | |
| Temperature of application: | | | | | | | | |
| - Maximum °F | 180 | 210 | 280 | 250 | 225 | 250* | 260 | 250* |
| - Contin. Operating Temp. ⁺ | 150-160 | 105-175 | 240-250 | 215-220 | 215-220 | 215-220 | 215-220 | 215-220 |
| - Minimum °F | -65 | -60 | -60 | -40 | -40 | -5 | -40 | -60 |
| Elasticity | 5 | 5 | 2 | 3.4 | 3.4 | 2 | 3.4 | 3.4 |
| Resistance | | | | | | | | |
| - Weather & Ozone | 1..2 | 1..2 | 4 | 1..2 | 3..4 | 5 | 5 | 5 |
| - Acids | 2..3 | 2..4 | 4 | 3 | 3 | 3..4 | 4 | 3..4 |
| - Alkaline | 2..3 | 2..4 | 4 | 2..3 | 3 | 1..3 | 4 | 3..4 |
| - Hydrocarbons, aliphatic | 1 | 1 | 1 | 4 | 2..3 | 4 | 2..3 | 1 |
| - Hydrocarbons, aromatic | 1 | 1 | 1 | 3 | 1..2 | 4 | 1 | 1 |
| - Water | 5 | 5 | 3..4 | 5 | 3 | 4 | 3..4 | 5 |
| - Wear | 4..5 | 4..5 | 2..3 | 3..4 | 3..4 | 3 | 3 | 3 |
| - Flame | 1 | 1 | 1 | 1..2 | 3..4 | 4 | 3 | 1 |
| - Electrical | 4 | 3..4 | 4..5 | 1..2 | 3 | 3 | 3..4 | 4 |
| Gas Impermeability | 3 | 2..3 | 5 | 2..3 | 2..3 | 4 | 4 | 2..3 |

5 = Excellent, 4 = Very Good, 3 = Good, 2 = Fair, 1 = Not Recommended

*FPM HT and EPDM HT available for temperatures up to 250° F

Food Grade elastomers are available in NBR, N, and EPDM

White elastomers (TiO₂ filled) are available in N and EPDM

+Based on Nylon cords; Kevlar® cords are specified for temperatures over 220° F

Viton®, Nordel®, Hypalon® and Kevlar® are registered trademarks of E. I. du Pont de Nemours and Company or its affiliates



Be sure to visit our Website
<http://www.rfvalve.com> for
 latest industry updates.

We provide the world's most complete line of pinch valves in standard ASME/ANSI B16, DIN and ISO face-to-face dimensions from 1" to 60" ID!

With manufacturing facilities in the US and Finland — and with sales and support facilities in North and South America, Europe, Asia, the Middle East and Africa — RF Valves supplies the mining, industrial minerals, power generation, chemical, pulp & paper and waste treatment industries around the globe. Wherever your business is located, RF Valves is dedicated to providing you with the world's most complete line of pinch valves in standard ASME/ANSI B16, DIN and ISO face-to-face dimensions from 1" to 60" ID!



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