



# ON/OFF AND CONTROL VALVES

MANUAL | PNEUMATIC | ELECTRIC | CONTROL



## 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.



Manual Valves

Pneumatic Valves

Electric Valves

Control 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

## GENERAL ACCESSORIES:

- » 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

## TECHNICAL ADVANTAGES:

- » Standard full- or reduced-port designs, centerline closure and Class VI shutoff 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.

## 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.

## 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.

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,

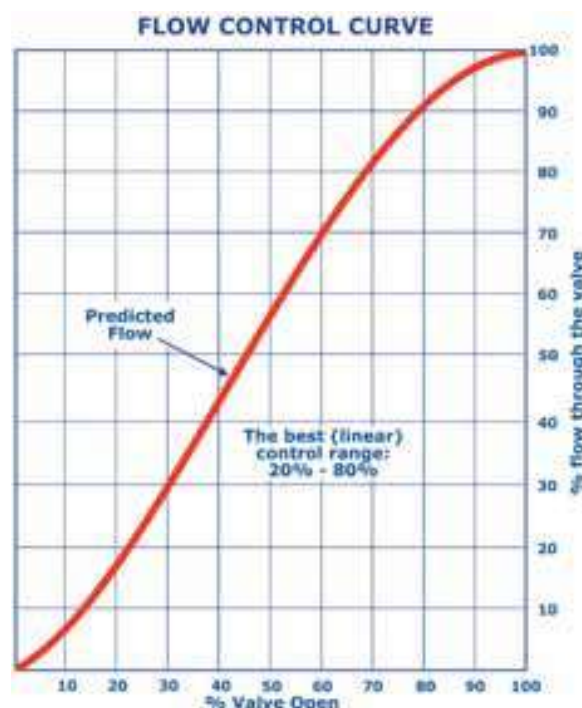
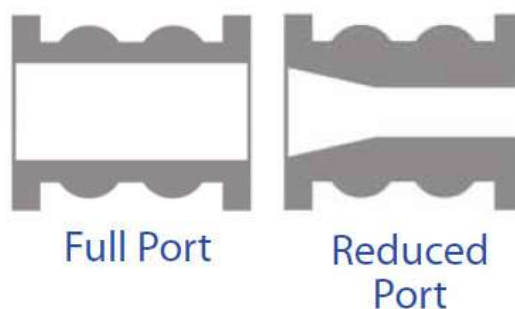
thus reducing the turbulence and cavitation found in other valve designs.

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.

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

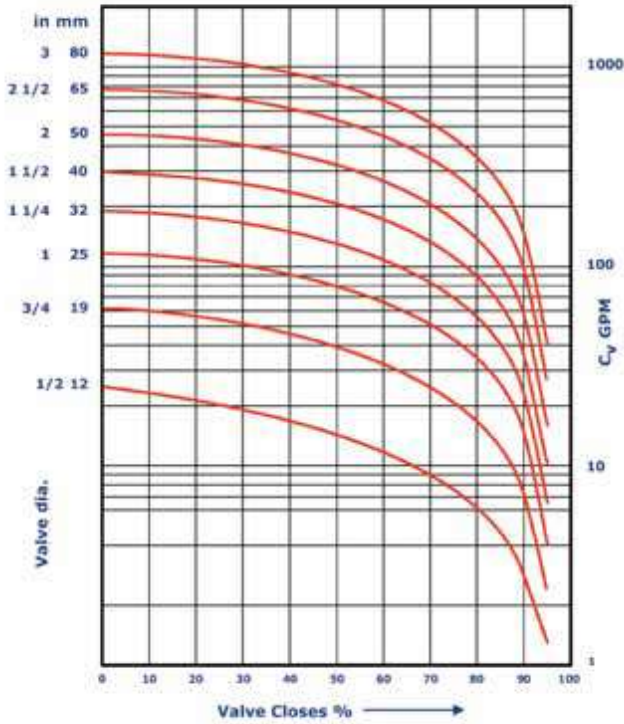
The RF Valve® and aiRFlex® are offered with a wide variety of positioners for modulating control and operating under most protocols, such as Hart, Foundation Fieldbus, Profibus and others.

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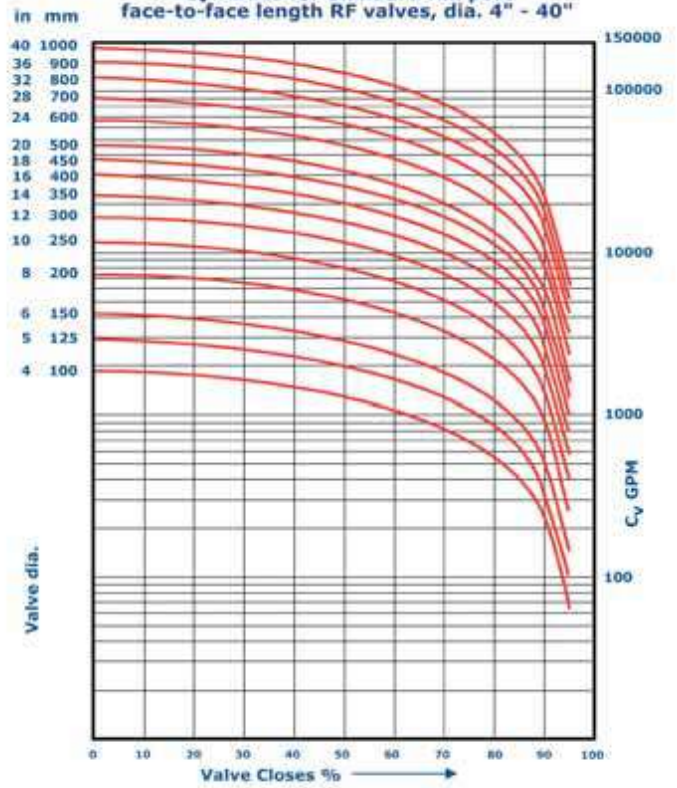




**C<sub>v</sub> values for standard full port face-to-face length RF valves, dia. 1" - 3"**  
 (1/2" and 3/4" C<sub>v</sub> valves are reduced port 1" dia. valves)



**C<sub>v</sub> values for standard full port face-to-face length RF valves, dia. 4" - 40"**



**PATENTED NO-STRETCH TUBE FOLDS**

**Open**

- patented tube arches flex, not stretch, during valve closure, relieving stress on the elastomer tube and providing unsurpassed resistance to severe process environments

**Closed**

- ensures zero-leakage shut-off, long life and higher cycle time over conventional metal or elastomer valve products

Figure 1

**TROUBLE-FREE OPERATION**

**Valve Open**

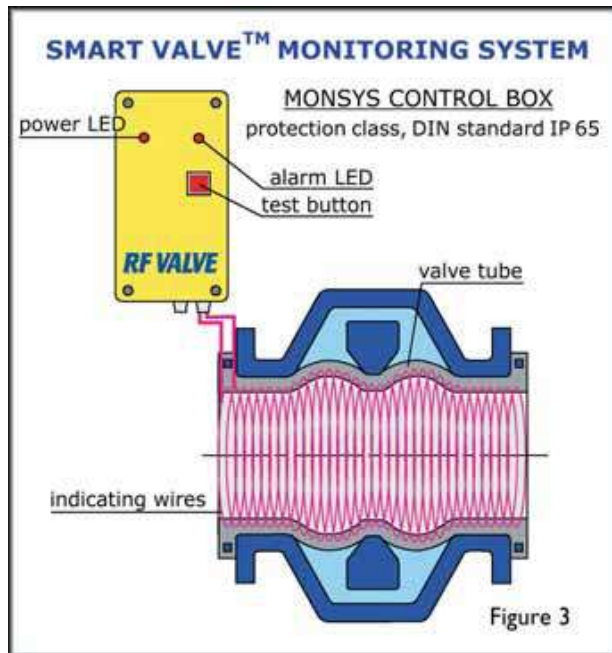
- no jamming or plugging

**Valve Opens/Closes**

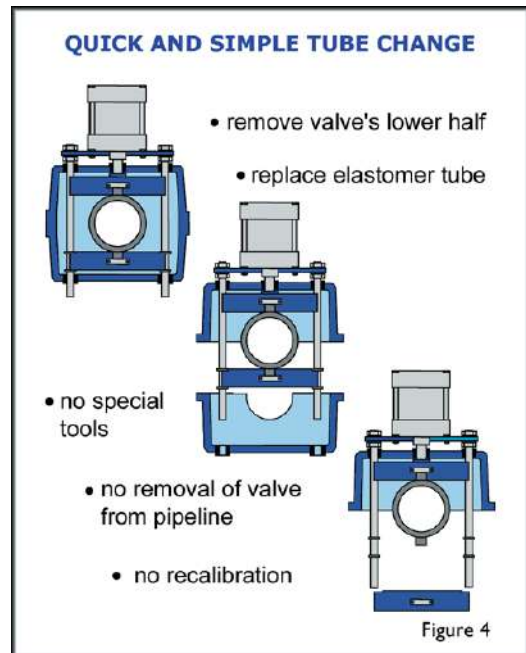
- scaling and sediments break up...
- ...and flush through during Open/Close cycle

Figure 2

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).

## 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 <sup>(1)</sup>	NR	PGR	IIR	NBR	N	FPM	CSM	EPDM
				Buna-N	Neoprene	Viton®	Hypalon®	Nordel®
Properties								
Temperature of application:								
- Maximum °F	180	210	280	250	225	250*	260	250*
- Contin. Operating Temp. <sup>+</sup>	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 (TiO<sub>2</sub> filled) are available in N and EPDM

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

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<b>RF VALVE</b> <b>ASME/ANSI</b> <b>Standard Valves</b> <small>Dimensions = inches Weight = lbs Pressure = psig</small>		PNEUMATIC			SEALED BODY PNEUM.			HYDRAULIC			ELECTRIC			MANUAL		
		P15	P90	P150	P15	P90	P150	H15	H90	H150	E15	E90	E150	M15	M90	M150
1	A = 5	16 1/8	16 1/8	16 1/2	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
	B = 7 1/8	12 3/8	12 3/8	12 3/4	9 5/8	9 5/8	7 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
1 1/4	A = 5 1/2	17	17	17 3/8	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
	B = 7 5/8	13	13	13 1/4	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
1 1/2	A = 6 1/2	17	18 3/8	18 3/8	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
	B = 8 1/8	12 5/8	13 7/8	13 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
2	A = 7	19 3/4	19 3/4	20 1/8	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
	B = 9 1/2	14 1/4	14 1/4	15 1/2	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
2 1/2	A = 7 1/2	17 3/4	21 5/8	21 5/8	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
	B = 9 1/2	15 3/8	15 3/4	15 3/4	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
3	A = 8	23 1/4	23 5/8	26 1/4	26	26 3/8	29 1/8	24 3/4	25 1/4	26 3/4	26 3/4	26 3/4	20 1/4	20 1/4	20 1/4	
	B = 11 1/8	16 7/8	16 7/8	18 1/2	13	13 1/8	14 1/2	16 7/8	17 3/8	18 7/8	18 1/2	18 1/2	14 1/8	14 1/8	14 1/8	
4	A = 9	27 3/8	28 3/4	28 3/4	30 3/8	33 1/8	33 1/8	28 3/8	29 7/8	26 3/8	23	23	26 3/4	26 3/4	26 3/4	
	B = 12 1/2	19 1/4	20 1/2	20 1/2	15 1/8	16 1/2	16 1/2	18 7/8	20 1/2	20 1/2	19 1/4	19 1/4	18 7/8	18 7/8	18 7/8	
5	A = 10	30 1/2	31 3/4	31 7/8	32 5/8	35	35 7/8	31 1/8	33 1/8	33 1/8	31 3/8	31 3/8	29 3/8	29 3/8	29 3/8	
	B = 13 1/2	21 1/4	22 5/8	22 3/4	16 3/8	17 1/2	17 7/8	20 5/8	22 5/8	22 7/8	20 1/2	20 1/2	25 7/8	25 7/8	25 7/8	
6	A = 10 1/2	168	185	203	176	194	221	168	179	190	150	150	190	190	190	
	B = 15 3/4	23 5/8	26 1/2	31 1/8	19 1/4	19 1/2	23 7/8	23 5/8	25 1/4	29 1/2	22	22	25 1/4	25 1/4	25 1/4	
8	A = 18	43 3/8	47 5/8	58 1/8	45 1/4	54 3/4	75 3/8	43 3/8	50	50	40 1/2	42 1/8	43 3/8	43 3/8	43 3/8	
	B = 20 3/8	22 5/8	22 5/8	25 1/8	22 5/8	27 3/8	37 3/4	29 1/8	35	35	25 5/8	25 5/8	31 1/2	31 1/2	31 1/2	
10	A = 21	373	484	637	434	567	745	362	384	406	399	476	465	476	476	
	B = 22	49 1/4	65 3/4	74 1/2	50	83 1/2	100 3/8	53 1/2	58 1/4	58 1/4	47 1/4	48 7/8	50 3/8	50 3/8	50 3/8	
12	A = 24	787	820		432	948		666	688	721	613	679	591	591	591	
	B = 28 3/8	38 5/8	43 3/8	50 1/8	28 1/8	31 3/8	35 3/4	28 1/8	31 3/8	35 3/4	32 5/8	34 5/8	39 3/4	39 3/4	39 3/4	
14	A = 27	1169			917			787	820	942	922	1032	789	789	789	
	B = 33 1/8	63 3/4	63 3/4	70 7/8	62 3/4	63 3/4	76	70 1/8	75 5/8	76	60 1/4	62 1/4	63 3/8	63 3/4	63 3/4	
16	A = 30	1257			1345			1169	1235	1422	1367	1521	1125	1235	1389	
	B = 42 1/2	70 7/8	70 7/8	84 5/8	69 1/8	83 7/8	84 5/8	78 3/8	83 7/8	84 5/8	68 1/8	69 1/4	70 7/8	77 1/8	78	
18	A = 34	1433			1557			1283	1349	1570	1605	2112	2245	1385	1715	
	B = 46 1/2	78	78	92 1/2	75 3/8	78	92 1/2	74 7/8	76 3/8	78	74 7/8	76 3/8	78	83 7/8	84 5/8	
20	A = 36	1532			1665			1466	1643	1907	1731	2194	2326	1665	1986	
	B = 50 3/8	85 1/2	85 1/2	101 1/2	81 3/4	100 3/4	101 1/2	100 3/8	100 3/4	101 1/2	81 1/2	82 3/4	84 5/8	91 3/4	92 1/2	
24	A = 42	2062			2304			1797	1951	2084	1907	2547	3076	1797	2172	
	B = 53 1/8	130 3/4	130 3/4	155 1/2	117 3/4	118 1/8	118 7/8	117 3/4	118 1/8	118 7/8	94 1/2	97 1/2	100 3/8	68 7/8	69 1/4	

The weights and dimensions in this table are only approximate and may change with different actuators or accessories. Please contact us if more detailed information is needed. RF Valves offers standard centerline closure in order to maximize the useful life of each elastomer tube, both in On/Off and Modulating services.

