

Diaphragm actuated valves designed for either continuous or intermittent operation which provide accurate, repetitive pressure control.



#### **GENERAL APPLICATION**

For use on practically all fluids and gases except steam, these valves are especially suited for all grades of oils, including Bunker 'C', and may be used in centrifugal, regenerative turbine, reciprocating or rotary pump bypass valve applications.

#### **TECHNICAL DATA**

Materials: Sizes: Connections: Pressure range:

Temperature range:

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Bronze, cast iron, stainless steel (optional) 1/8" to 2" (3.2 to 50 mm) Threaded NPTF 0 to 600 psig (0 to 41.4 barg) -320 to 600°F [-195 to 316°C]

# FEATURES

- Protect against periodic high pressure, control dependably at adjusted pressures and shut tight.
- Maintain a pre-determined pressure on the inlet regardless of variations in pressure at the outlet.
- Unique full 'floating ring' seating arrangement provides smooth, even control in response to pressure changes.
- Globe type body with two side inlets and a bottom outlet, suitable for angle or in-line installation.
- Types FR and FR-6 fitted with a closing cap to discourage unauthorized tampering.
- Optional differential pressure control modification enables a constantly held difference between reference and valve inlet pressures.
- Type FR-6 incorporates a diaphragm ring above the diaphragm for higher back pressure ranges.
- Rugged, simple design enables easy on-line maintenance and repair.
- Optional cryogenic service construction available for handling cold fluids to -320°F [-195°C].

#### **TYPES FR, FR-6, FR-10 MODELS OVERVIEW**

When sized correctly, these valves will both open and close at predetermined points to provide accurate functional control for the continuous protection of pumps, process piping systems and similar equipment. They are not emergency devices, but are continuously operating valves which provide accurate, repetitive pressure control.

Sizes:  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1", 1 $\frac{1}{4}$ ", 1 $\frac{1}{2}$ " and 2" (15, 19, 25, 32, 38 and 50 mm).

FR Series valves are available in various pressure control and temperature ranges and are designated as follows:

- Type FR has a bronze body as standard, is suitable for pressures of 0-400 psig (0-27.6 barg) and maximum temperatures 200-600°F (93-316°C)\*.
- Type FR-6 incorporates a diaphragm ring mounted above the diaphragm to accommodate higher back pressure ranges: 200-600 psig [13.8-41 barg]; 200-600°F [93-316°C]\*.
- The Type FR-10 is for more economical, lower pressure applications and is fitted with an iron body and spring chamber: 0-250 psig (0-17.2 barg); 450°F (232°C)\*
- \* Minimum temperature for carbon steel is -20°F (-29°C).

#### OPERATION

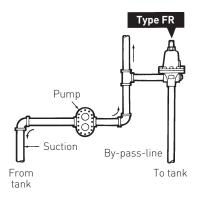
In a typical installation, inlet pressure enters from the side of the valve and registers under the diaphragm. When pressure rises above the set point of the valve, the diaphragm moves upward - away from the seat - allowing flow to pass through the bottom port. When inlet pressure drops below the setting of the valve, the diaphragm moves downward to the closed position.

#### UNIQUE 'FLOATING RING' SEATING DESIGN

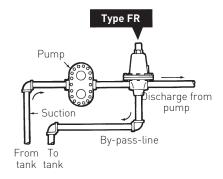
The valves' 'floating ring' principle compensates completely for unavoidable misalignment, producing perfect seat contact, free to move laterally in any direction to find its own correct alignment with the spherical seat disc.

It is thoroughly tested and proven to give far superior performance than ordinary valves using pistons and cylinders where good seat alignment is next to impossible. The diaphragm and seat disc are fastened together securely resulting in positive and rapid seat movement in response to all pressure changes.

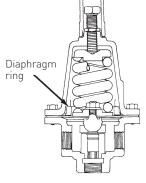




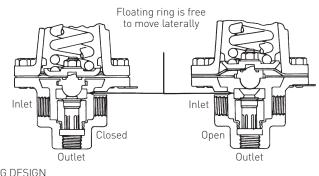
ANGLE VALVE INSTALLATION



IN-LINE INSTALLATION (BOTTOM BY-PASS)



TYPE FR-6 INTERIOR VIEW



FLOATING RING DESIGN

# TYPES FR, FR-6, FR-10 CONSTRUCTION/SPECIFICATIONS

Series FR back pressure valves incorporate an iron or bronze body (iron standard on Type FR-10; carbon steel or stainless steel may be fitted to Types FR and FR-6 on special order) with threaded connections, bronze, Monel, stainless steel or NBR diaphragm; brass or stainless steel body seat, with a renewable stainless seat disc and seat ring.

#### TYPE - FR, FR-6

		D	imensio	าร		Shipping w	y weight (lbs.)		
Valve size	Α	В	С	D	E	Iron	Bronze		
1/2"*	43/4"	63/4"	15/8"	17/16"	27/8"	8	91/2		
3/4"	55/8"	8"	2"	111/16"	23/8"	13	1 4 3 / 4		
1"	61/2"	105/16"	21/4"	21/8"	41/4"	201/4	231/2		
11⁄4"	61/2"	107/16"	23/8"	21/8"	41/4"	211/2	241/2		
11/2"	71/2"	103/4"	25/8"	21/2"	5"	29	33		
2"	71/2"	11"	3"	21/2"	5"	311/2	351/2		

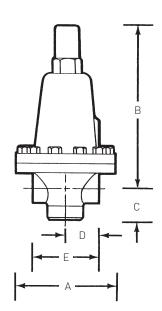
Maximum operation temperature: 600°F

Important: all FR, FR-6 and FR-10 versions are furnished with a travel stop that prevents diaphragms from extending beyond their limit.

\* 1/2" FR only UL approved in iron body and metal diaphragm up to 150 psi.

#### TYPE - FR-10

		D	imensio	าร		
Valve size	Α	В	С	D	E	Shipping weight (lbs.)
1/2"	43/4"	6%/16"	15/8"	17/16"	27/8"	7
3/4"	55/8"	71/2"	2"	111/16"	3¾"	111/2
1"	61/2"	81/2"	21/4"	21/8"	41/4"	181⁄4
11/4"	61/2"	85/8"	23/8"	21/8"	41/4"	191/2
11/2"	71/2"	10"	25/8"	21/2"	5"	27
2"	71/2"	101/4"	3"	21/2"	5"	291/2



TYPE FR

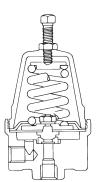
Maximum operation temperature: 450°F

# **TYPES FRM, FRM-2 MODELS OVERVIEW**

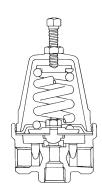
Types FRM and FRM-2 function as automatic pressure limiting regulators, maintaining a desired maximum pressure in a system or vessel by relieving excess pressure. They are small and compact, yet are highly efficient, making them suitable for numerous applications that call for a small accurate back pressure regulator for service on liquids, air and gases not corrosive to bronze.

- Furnished with either neoprene diaphragm or metal diaphragms in three body styles.
- Maximum temperature: with neoprene diaphragm: 180°F (82°C). with metal diaphragm: 500°F (260°C).
- Sizes: 1/8", 1/4", 3/8" and 1/2" (3.2, 7, 10.5 and 15 mm).
- Type FRM-2 is designed with larger physical dimensions and internal seat opening providing greater capacity. It is also suitable for fuel oils and lube oils and is available in stainless steel body with system exposed internal parts for service with corrosive or harsh fluids.
- Types FRM and FRM-2 incorporate the same superior 'floating ring' design as the larger Type FR to provide smooth, even pressure control.
- Optional cryogenic service construction is offered for the FRM and FRM-2 to enable them to be used for oxygen service suitable for temperatures to -320°F (-129°C).
- All versions fitted with adjusting screw as standard. Also available with T-handle and with bushing for mounting the valve to a control panel, on special order.
- All valves are furnished with a travel stop that prevents diaphragms from extending beyond their limit.





TYPE FRM-2 SIDE INLET - BOTTOM OUTLET



TYPE FRM-2 TWO SIDE INLET - BOTTOM OUTLET

# **TYPES FRM, FRM-2 CONSTRUCTION/SPECIFICATIONS**

FRM Series are diaphragm-type miniature back pressure valves fitted with forged bronze bodies, bronze or aluminum (Type FRM only) spring chambers and neoprene or phosphor bronze diaphragms.

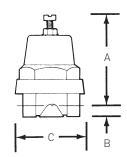
# FRM, FRM-2 DIAPHRAGM TYPE MINIATURE BACK PRESSURE VALVES

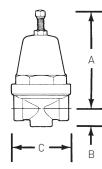
			Valve connections		tions
Туре	Valve size	Relief press. range (psi)	S.IS.O.	S.IB.O.	2S.IB.O.
FRM	1/8"	0-175	×	×	[1]
FRM	1/4"	0-175	×	×	×
FRM	3/8"	0-175	×	×	
FRM-2*	1/4"	0-250	×	×	×
FRM-2*	3/8"	0-250	×	×	×
FRM-2*	1/2"	0-250	×	×	×

#### NOTES

- 1. FRM only
- Abbreviations used above are to be read as follows: S.I. = Side Inlet; 2S.I. = Two Side Inlets; S.O. = Side Outlet; B.O. = Bottom Outlet
- \* The Type FRM-2 is UL approved in all sizes and body styles with metal diaphragms up to 150 psi.

		Dimensions		s	
Туре	Valve size	Α	В	С	Shipping weight (lbs.)
FRM	1/8" x 1/8"	3¾"	1/2"	21/4"	11/8
FRM	1/4" x 1/4"	3¾"	1/2"	21/4"	11/8
FRM	3/8" x 3/8"	3¾"	1/2"	21/4"	11/8
FRM-2	1/4" x 1/4"	41/2"	3/4"	211/16"	21/2
FRM-2	3/8" x 3/8"	41/2"	3/4"	211/16"	21/2
FRM-2	1/2" x 1/2"	41/2"	11/8"	27/8"	31/2



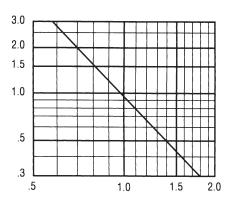


TYPE FRM-2

TYPE FRM

### CAPACITY INFORMATION

The capacity charts for water are based on the specific gravity reading of water. If a liquid with a specific gravity other than that of water is being used in the system, it is necessary to apply a correction factor. For example, if a fluid to be used has a specific gravity reading of 1.5 and the given flow is 40 gpm: Refer to the specific gravity graph and find 1.5 on the vertical axis then read across to the diagonal intersect to obtain a S.G. factor of .8. Divide the given flow [40 gpm] by the .8 factor and obtain 50 gpm, the corrected flow for the fluid being used. Refer to the capacity charts to determine the correct valve size that should be used at the desired set pressure and at the corrected flow.



#### TYPE FR, FR-6, FR-10 WATER CAPACITY (gpm)

						Inlet	size ½"		
Туре	s		Set pressure*		Rubber diaphragm			Metal diaphragm	
FR	FR-6	FR-10	(psig)	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise
Х		Х	10**	2.0	4.0	6.0	1.0	1.5	3.0
Х		Х	15	2.2	4.2	6.5	1.2	2.0	3.5
Х		Х	20	2.5	4.5	7.5	1.4	2.5	4.0
Х		Х	30	3.0	5.0	9.0	1.7	3.0	5.0
Х		Х	40	3.5	6.0	9.7	2.0	3.5	6.0
Х		Х	50	3.7	6.5	10.5	2.2	4.0	7.0
Х		Х	75	4.5	7.5	13.0	2.6	5.0	8.0
Х		Х	100	5.0	9.5	16.0	3.0	6.0	10.0
Х		Х	150	7.0	11.5	19.0	3.5	8.0	13.0
Х	Х	Х	200	8.0	15.0	22.0	4.5	10.0	17.0
Х	Х		300	12.0	19.0	25.0	7.5	15.0	22.0
Х	Х		400	18.0	24.0	25.0	12.0	23.0	25.0
	Х		600	21.0	25.0	25.0	16.0	25.0	25.0

### TYPE FR, FR-6, FR-10 WATER CAPACITY (gpm) (CONTINUED)

				Inlet size ¼"						
Туре	s		Set pressure*		Rubber diaphragm			Metal diaphragm		
FR	FR-6	FR-10	(psig)	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	
Х		Х	10**	3.0	6.0	8.0	1.8	3.5	5.5	
Х		Х	15	3.2	6.2	8.5	2.0	4.5	6.5	
Х		Х	20	3.5	6.7	10.0	2.5	5.0	7.5	
Х		Х	30	4.0	7.2	11.5	3.0	6.0	9.5	
Х		Х	40	4.5	8.5	12.5	3.5	7.0	11.0	
Х		Х	50	4.7	9.5	14.5	4.0	8.0	12.0	
Х		Х	75	5.5	11.5	17.0	5.0	10.0	14.0	
Х		Х	100	6.0	14.0	21.0	6.0	11.0	16.0	
Х		Х	150	9.0	18.0	25.0	7.0	15.0	20.0	
Х	Х	Х	200	11.0	21.5	30.0	9.0	17.0	24.0	
Х	Х		300	16.0	26.5	30.0	13.0	20.0	28.0	
Х	Х		400	23.0	30.0	30.0	17.0	28.0	30.0	
	Х		600	30.0	30.0	30.0	20.0	30.0	30.0	

### TYPE FR, FR-6, FR-10 WATER CAPACITY (gpm) (CONTINUED)

				Inlet size 1"					
Туре	S		Set pressure*		Rubber diaphragm			Metal diaphragm	
FR	FR-6	FR-10	(psig)	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise
Х		Х	10**	4.0	8.0	14.0	2.5	5.5	7.8
Х		Х	15	5.0	10.0	17.0	3.0	6.5	9.5
Х		Х	20	6.0	12.0	20.0	3.5	7.5	11.0
Х		Х	30	7.5	14.0	23.0	4.0	9.0	13.0
Х		Х	40	9.0	16.0	26.0	5.0	10.5	15.0
Х		Х	50	10.0	18.0	30.0	5.5	12.0	17.0
Х		Х	75	12.0	20.0	38.0	6.5	14.5	20.0
Х		Х	100	14.5	27.0	46.0	7.5	17.0	24.0
Х		Х	150	17.0	33.0	54.0	9.0	21.0	30.0
Х	Х	Х	200	22.5	41.0	54.0	11.0	24.0	33.0
Х	Х		300	27.0	54.0	54.0	15.0	29.0	42.0
Х	Х		400	34.0	54.0	54.0	20.0	34.0	54.0
	Х		600	54.0	54.0	54.0	24.0	50.0	54.0

# NOTES

\* Set pressures are based upon valve discharge into an atmospheric pressure return line. If return line pressure is significantly higher than atmospheric pressure, then consult factory for capacity information.

# TYPE FR, FR-6, FR-10 WATER CAPACITY (gpm) (CONTINUED)

					Inlet size 11/4"					
Туре	S		Set pressure*		Rubber diaphragm			Metal diaphragm		
FR	FR-6	FR-10	(psig)	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	
Х		Х	10**	5.0	11.5	18.0	3.0	6.5	9.5	
Х		Х	15	6.0	12.5	20.0	3.8	8.0	11.5	
Х		Х	20	7.0	14.0	23.0	4.5	9.0	13.5	
Х		Х	30	8.0	16.0	27.0	5.5	11.5	16.5	
Х		Х	40	10.0	18.0	31.0	6.3	13.2	19.0	
Х		Х	50	11.0	20.0	34.0	7.0	14.7	21.5	
Х		Х	75	13.0	24.0	42.0	8.5	18.0	26.0	
Х		Х	100	16.0	32.0	50.0	9.8	21.0	30.0	
Х		Х	150	20.0	44.0	66.0	12.0	25.5	40.0	
Х	Х	Х	200	25.0	55.0	80.0	14.0	29.5	53.0	
Х	Х		300	34.0	70.0	80.0	17.0	36.0	80.0	
Х	Х		400	42.0	80.0	80.0	22.0	48.0	80.0	
	Х		600	65.0	80.0	80.0	44.0	80.0	80.0	

### TYPE FR, FR-6, FR-10 WATER CAPACITY (gpm) (CONTINUED)

					Inlet size 1½"						
Туре	S		Set pressure*		Rubber diaphragm			Metal diaphragm			
FR	FR-6	FR-10	(psig)	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise		
Х		Х	10**	6.0	13.0	20.0	4.2	7.8	11.8		
Х		Х	15	7.0	14.0	23.0	5.0	9.5	14.2		
Х		Х	20	8.0	15.0	27.0	6.0	11.0	16.5		
Х		Х	30	9.0	18.0	30.0	7.2	13.5	20.0		
Х		Х	40	11.0	20.0	34.0	8.5	15.5	23.5		
Х		Х	50	13.0	23.0	40.0	9.5	17.3	26.0		
Х		Х	75	15.0	32.0	49.0	11.5	21.0	36.0		
Х		Х	100	18.0	40.0	60.0	13.2	24.5	48.0		
Х		Х	150	22.0	54.0	77.0	16.2	30.0	62.0		
Х	Х	Х	200	27.0	70.0	93.0	19.0	40.0	80.0		
Х	Х		300	39.0	95.0	110.0	23.0	53.0	100.0		
Х	Х		400	50.0	120.0	120.0	26.0	66.0	120.0		
	Х		600	80.0	120.0	120.0	50.0	80.0	120.0		

### TYPE FR, FR-6, FR-10 WATER CAPACITY (gpm) (CONTINUED)

				Inlet size 2"						
Туре	s		Set pressure*		Rubber diaphragm			Metal diaphragm		
FR	FR-6	FR-10	(psig)	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	
Х		Х	10**	7	15	23	4.3	9.4	14.5	
Х		Х	15	8	16	26	5.2	11.5	17.5	
Х		Х	20	9	17	30	6.3	13.0	20.0	
Х		Х	30	10	20	34	7.5	16.0	25.0	
Х		Х	40	13	22	44	9.0	19.0	29.0	
Х		Х	50	15	26	58	10.0	21.0	35.0	
Х		Х	75	17	40	80	12.0	25.0	55.0	
Х		Х	100	20	48	92	13.5	30.0	65.0	
Х		Х	150	25	66	118	16.5	44.0	83.0	
Х	Х	Х	200	30	82	144	19.5	56.0	102.0	
Х	Х		300	43	110	200	24.0	80.0	130.0	
Х	Х		400	61	130	200	34.0	100.0	156.0	
	Х		600	108	162	200	64.0	136.0	200.0	

### NOTES

\* Set pressures are based upon valve discharge into an atmospheric pressure return line. If return line pressure is significantly higher than atmospheric pressure, then consult factory for capacity information.

\*\* For set pressures less than 10 psi consult the factory.

## TYPE FR, FR-6, FR-10 AIR CAPACITY (SCFM)

						Inlet	size ½"		
Туре	s		Set pressure*		Rubber diaphragm		Metal diaphragm		
FR	FR-6	FR-10	(psig)	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise
Х		Х	10**	7	15	22	3	7	10
Х		Х	15	8	17	30	4	9	14
Х		Х	20	10	19	38	5	10	16
Х		Х	30	13	24	48	7	13	20
Х		Х	40	16	34	56	8	17	25
Х		Х	50	19	44	72	10	19	34
Х		Х	75	30	56	90	11	23	44
Х		Х	100	40	74	108	12	32	60
Х		Х	150	60	104	150	14	46	84
Х	Х	Х	200	92	140	200	16	60	120
Х	Х		300	140	210	300	22	90	160
Х	Х		400	180	280	400	35	120	240
	Х		600	280	420	600	50	180	320

# TYPE FR, FR-6, FR-10 AIR CAPACITY (SCFM) (CONTINUED)

				Inlet size ¾"						
Туре	S		Set pressure*		Rubber diaphragm			Metal diaphragm		
FR	FR-6	FR-10	(psig)	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	
Х		Х	10**	10	24	30	6	12	19	
Х		Х	15	15	30	48	8	15	24	
Х		Х	20	20	38	62	10	18	32	
Х		Х	30	25	48	80	12	22	42	
Х		Х	40	31	62	120	15	25	50	
Х		Х	50	38	74	150	20	30	58	
Х		Х	75	48	86	225	25	36	63	
Х		Х	100	60	96	300	32	50	80	
Х		Х	150	86	144	440	40	72	120	
Х	Х	Х	200	128	180	600	46	100	160	
Х	Х		300	190	270	850	54	145	240	
Х	Х		400	240	360	1200	65	200	320	
	Х		600	380	540	1700	80	290	480	

### TYPE FR, FR-6, FR-10 AIR CAPACITY (SCFM) (CONTINUED)

				Inlet size 1"						
Туре	S		Set pressure*	Rubber diaphragm			Metal diaphragm			
FR	FR-6	FR-10	(psig)	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	
Х		Х	10**	15	32	45	9	18	29	
Х		Х	15	30	50	72	12	23	38	
Х		Х	20	40	65	94	14	27	46	
Х		Х	30	50	85	120	17	34	58	
Х		Х	40	60	98	480	20	38	68	
Х		Х	50	72	110	230	27	45	80	
Х		Х	75	90	124	340	35	54	95	
Х		Х	100	112	140	450	42	75	120	
Х		Х	150	140	210	680	50	108	180	
Х	Х	Х	200	168	280	900	56	150	240	
Х	Х		300	240	420	1250	66	215	360	
Х	Х		400	320	560	1800	77	300	480	
	Х		600	480	820	2500	98	430	720	

# NOTES

\* Set pressures are based upon valve discharge into an atmospheric pressure return line. If return line pressure is significantly higher than atmospheric pressure, then consult factory for capacity information.

# TYPE FR, FR-6, FR-10 AIR CAPACITY (SCFM) (CONTINUED)

						Inlet s	size 1¼"		
Туре	S		Set pressure*	Rubber diaphragm			Metal diaphragm		
FR	FR-6	FR-10	(psig)	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise
Х		Х	10**	22	40	60	11	22	35
Х		Х	15	38	60	90	15	29	56
Х		Х	20	48	80	134	22	35	76
Х		Х	30	60	128	172	28	45	90
Х		Х	40	72	148	190	32	60	96
Х		Х	50	82	166	250	36	66	102
Х		Х	75	106	185	375	42	78	120
Х		Х	100	130	225	500	50	96	180
Х		Х	150	160	275	750	58	120	240
Х	Х	Х	200	200	350	1000	64	160	360
Х	Х		300	300	500	1450	82	250	480
Х	Х		400	400	700	1950	120	350	700
	Х		600	600	1000	2850	160	500	950

#### TYPE FR, FR-6, FR-10 AIR CAPACITY (SCFM) (CONTINUED)

				Inlet size 11/2"							
Туре	s		Set pressure*	Rubber diaphragm			Metal diaphragm				
FR	FR-6	FR-10	(psig)	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise		
Х		Х	10**	40	74	75	20	30	55		
Х		Х	15	55	98	120	25	42	68		
Х		Х	20	72	124	192	32	58	100		
Х		Х	30	92	158	250	38	68	120		
Х		Х	40	112	175	280	42	85	140		
Х		Х	50	134	200	320	47	95	150		
Х		Х	75	155	225	450	55	115	165		
Х		Х	100	180	280	640	64	135	240		
Х		Х	150	210	380	900	80	180	320		
Х	Х	Х	200	260	500	1250	100	250	480		
Х	Х		300	400	700	1750	150	320	640		
Х	Х		400	520	1000	2400	200	500	950		
	Х		600	800	1400	3450	300	650	1250		

### TYPE FR, FR-6, FR-10 AIR CAPACITY (SCFM) (CONTINUED)

				Inlet size 2"						
Туре	s		Set pressure*	Rubber diaphragm		Metal diaphragm				
FR	FR-6	FR-10	(psig)	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	
Х		Х	10**	64	112	144	32	48	80	
Х		Х	15	88	144	208	40	64	104	
Х		Х	20	112	184	296	48	88	150	
Х		Х	30	136	224	384	55	104	172	
Х		Х	40	152	248	424	62	120	200	
Х		Х	50	170	280	488	70	144	215	
Х		Х	75	190	312	650	82	168	240	
Х		Х	100	240	410	850	92	200	320	
Х		Х	150	300	550	1100	120	272	475	
Х	Х	Х	200	400	750	1700	152	352	640	
Х	Х		300	624	1050	2100	220	480	950	
Х	Х		400	800	1500	3150	300	700	1250	
	Х		600	1200	2100	4000	400	960	1750	

#### NOTES

\* Set pressures are based upon valve discharge into an atmospheric pressure return line. If return line pressure is significantly higher than atmospheric pressure, then consult factory for capacity information.

# TYPE FRM WATER CAPACITY (GPM)

		Inlet	Inlet size ¼"			
Set pressure*	Rubber d	iaphragm	Metal di	aphragm	Rubber diaphragm	
(psig)	10% Rise	20% Rise	10% Rise	20% Rise	10% Rise	20% Rise
10**	0.2	0.7	0.1	0.5	0.2	0.7
25	0.5	1.2	0.5	1.0	0.5	1.2
50	1.2	2.5	0.7	1.7	1.2	2.5
100	2.1	3.0	1.4	3.0	2.1	3.5
150	2.5	3.0	1.5	3.0	2.5	4.8

#### TYPE FRM WATER CAPACITY (GPM) (CONTINUED)

	Inlet s	size ¼"	Inlet size ¾"					
Set pressure*	Metal di	aphragm	Rubber d	Rubber diaphragm		aphragm		
(psig)	10% Rise	10% Rise 20% Rise		20% Rise	10% Rise	20% Rise		
10**	0.1	0.5	0.2	0.7	0.1	0.5		
25	0.5	1.0	0.5	1.2	0.5	1.0		
50	0.7	1.7	1.2	2.5	0.7	1.7		
100	1.4	3.0	2.1	3.5	1.4	3.0		
150	1.5	4.0	2.5	4.8	1.5	4.0		

# TYPE FRM AIR CAPACITY (SCFM)

		Inlet	Inlet size ¼"			
Set pressure*	Rubber diaphragm		Metal di	Metal diaphragm		iaphragm
(psig)	10% Rise	20% Rise	10% Rise	20% Rise	10% Rise	20% Rise
10**	0.5	1.5	0.3	0.9	0.5	1.5
25	2.1	6.5	1.2	4.0	2.1	6.5
50	5.0	16.0	2.6	9.5	5.0	16.0
100	12.0	25.0	6.5	15.0	12.0	25.0
150	16.0	35.0	11.5	25.0	16.0	35.0

#### TYPE FRM AIR CAPACITY (SCFM) (CONTINUED)

	Inlet s	size ¼"	Inlet size ¾"					
Set pressure*	Metal di	aphragm	Rubber d	Rubber diaphragm		aphragm		
(psig)	10% Rise	10% Rise 20% Rise		20% Rise	10% Rise	20% Rise		
10**	0.3	0.9	0.5	1.5	0.3	0.9		
25	1.2	4.0	2.1	6.5	1.2	4.0		
50	2.6	9.5	5.0	16.0	2.6	9.5		
100	6.5	15.0	12.0	25.0	6.5	15.0		
150	11.5	25.0	16.0	35.0	11.5	25.0		

#### NOTES

\* Set pressures are based upon valve discharge into an atmospheric pressure return line. If return line pressure is significantly higher than atmospheric pressure, then consult factory for capacity information.

\*\* For set pressures less than 10 psi consult the factory.

# **TYPE FRM-2 WATER CAPACITY (GPM)**

		Inlet	Inlet size ¾"			
Set pressure*	Rubber d	Rubber diaphragm		Metal diaphragm		iaphragm
(psig)	10% Rise	10% Rise 20% Rise		20% Rise	10% Rise	20% Rise
10**	0.5	1.0	0.3	0.7	0.5	1.0
25	0.7	1.7	0.7	1.2	0.7	1.7
50	1.5	3.5	1.0	2.0	1.5	3.5
100	2.7	5.0	2.0	4.0	2.7	5.0
150	3.7	7.5	2.5	5.5	3.7	7.5
200	4.5	8.5	3.0	6.5	4.5	8.5
250	5.5	10.0	4.0	8.0	5.5	10.0

# TYPE FRM-2 WATER CAPACITY (GPM) (CONTINUED)

	Inlet s	ize ¾"	Inlet size ½"					
Set pressure*	Metal diaphragm		Rubber d	iaphragm	Metal diaphragm			
(psig)	10% Rise	10% Rise 20% Rise		20% Rise	10% Rise	20% Rise		
10**	0.3	0.7	0.5	1.0	0.3	0.7		
25	0.7	1.2	0.7	1.7	0.7	1.2		
50	1.0	2.0	1.5	3.5	1.0	2.0		
100	2.0	4.0	2.7	5.0	2.0	4.0		
150	2.5	5.5	3.7	7.5	2.5	5.5		
200	3.0	6.5	4.5	8.5	3.0	6.5		
250	4.0	8.0	5.5	10.0	4.0	8.0		

# **TYPE FRM-2 AIR CAPACITY (SCFM)**

		Inlets	size ¼"		Inlet size ¾" Rubber diaphragm	
Set pressure*	Rubber d	iaphragm	Metal di	aphragm		
(psig)	10% Rise	10% Rise 20% Rise		20% Rise	10% Rise	20% Rise
10**	5.0	11.0	3.0	8.0	5.0	11.0
25	9.0	14.0	5.0	11.0	9.0	14.0
50	12.0	22.0	7.0	17.0	12.0	22.0
100	16.0	33.0	11.0	25.0	16.0	33.0
150	20.0	42.0	14.0	31.0	20.0	42.0
200	24.0	52.0	17.0	38.0	24.0	52.0
250	26.0	60.0	20.0	43.0	26.0	60.0

# TYPE FRM-2 AIR CAPACITY (SCFM) (CONTINUED)

	Inlet s	size ¾"	Inlet size ½"				
Set pressure*	Metal di	aphragm	Rubber d	iaphragm	Metal diaphragm		
(psig)	10% Rise	20% Rise	10% Rise	20% Rise	10% Rise	20% Rise	
10**	3.0	8.0	5.0	11.0	3.0	8.0	
25	5.0	11.0	9.0	14.0	5.0	11.0	
50	7.0	17.0	12.0	22.0	7.0	17.0	
100	11.0	25.0	16.0	33.0	11.0	25.0	
150	14.0	31.0	20.0	42.0	14.0	31.0	
200	17.0	38.0	24.0	52.0	17.0	38.0	
250	20.0	43.0	26.0	60.0	20.0	43.0	

#### NOTES

\* Set pressures are based upon valve discharge into an atmospheric pressure return line. If return line pressure is significantly higher than atmospheric pressure, then consult factory for capacity information.

# SELECTION INFORMATION

Maximum										
temperature		Body m	aterial			Body seat		Seat ring and disc		
°F	Iron	Bronze	Steel	316 S. St.	Brass	303 S. St	316 S. St.	303 S. St.	316 S. St.	
200	×				×			×		
450	×				×			×		
450	×					×		×		
450	×				×	×		×		
200		×			×			×		
450		×						×		
450		×			×	×		×		
-320		×				×		×		
600			×			×		×		
200				×			×		×	
600				×			×		×	
200				×		×		×		
600				×		×		×		

## SELECTION INFORMATION (CONTINUED)

Maximum									
temperature		Diapl	hragm		0-1	ring	Diaph. gasket		
°F	NBR	Bronze	316 S. St.	Monel®	NBR	PTFE	Hl temp.	PTFE	
200	×				×				
450		×				×	×		
450			×			×	×		
450				×		×	×		
200	×				×				
450		×				×	×		
450				×		×	×		
-320		×				×		×	
600				×	*	*	×		
200	×				×				
600				×	*	*	×		
200	×				×				
600			×		*	*	×		

\* Special gasket furnished in lieu of O-ring for 600°F.

# APPLICATIONS

The charts show maximum temperature limits for various bodies and component part materials which are available as standard. Marked squares show how the valve will be trimmed internally to meet particular temperature requirements. Many combinations for specific service are possible. When in doubt, consult the factory.

odd         Since is first in the isote is the isote isot	am	ple:				FR-	Z	Α	W	т	С	Z	z	В	S	01	 D
6       FA-6         1       FA-10         2       FA-10         3       FA-1		•				FK*	2	A	**		U	2	2	0	3	01	U
1 FR-10   FR-10 Image: Set of the set of																	
FIP UNITIES INTERCALL STATES INTERCAL																	
Bronce If also STIFER, FR:00   Versize   M* B   M* B   M* G   M* Monet*   Brance M   M* Monet*	2-	FR															
Image: Part of the state   We state   State   State   State   We state   State   We state		rial of construction															
view view view   view view <t< td=""><td></td><td>Bronze (FR, FR-6)</td><td>G</td><td>316 SS<sup>-</sup></td><td>T (FR, I</td><td>R-6)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>		Bronze (FR, FR-6)	G	316 SS <sup>-</sup>	T (FR, I	R-6)											
No. F 1%   Wate /arr cervice Wate /arr cervice   Wate /arr cervice Wate /arr cervice   Vate /arr cervice Wate /arr cervice   Vate /arr cervice Scientes/bottom outlet - wRNPT connections (Standard)   2 side intelx/bottom outlet - wRNPT connections (Standard)   3 side intelx/bottom outlet - wRNPT connections (Standard)   Wate /arr cervice   Wa		Iron (FR, FR-10)															
Note 0   1° 0    1° 0 </td <td>lve</td> <td>size</td> <td></td>	lve	size															
i'' i''   ville ville   ville ville <td></td> <td>1/2"</td> <td>F</td> <td>11⁄4</td> <td></td>		1/2"	F	11⁄4													
<pre>invice with a marking with with with a marking with a marking with a marking</pre>		3/4"	G	11/2"													
Water/nin service   Water/nin service   Water/nin service   Water/nin service   Water/nin service   Value   Standard   Standard   Wipressure screw cap and differential connection (lower pressure plate)   Wipressure screw cap and inverse differential connection (lower pressure plate)   Wipressure screw cap and inverse differential connection (lower pressure plate)   Wipressure screw cap and inverse differential connection (lower pressure plate)   Wipressure screw cap and inverse differential connection (lower pressure plate)   Wipressure screw cap and inverse differential connection (lower pressure plate)   Wipressure screw cap and dime (load connection (lower pressure plate)   Wipressure screw cap and dime (load connection (lower pressure plate)   Wipressure screw cap and dime (load connection (lower pressure plate)   Wipressure screw cap and dime (load connection (lower pressure plate)   Wipressure screw cap and dime (load connection (lower pressure plate)   Wipressure screw cap and dime (load connection (lower pressure plate)   Wipressure screw cap and dime (load connection (lower pressure plate)   Wipressure screw cap and dime (load connection (lower pressure plate)   Brane N M   Brane N M </td <td></td> <td>1"</td> <td>н</td> <td>2"</td> <td></td>		1"	н	2"													
sdy/⊂meetion style 2 side inlets/hottom outlet - w/NPT connections [Standard] 3 side inlets/hottom outlet - w/NPT connections [Standard] 3 side inlets/hottom outlet - w/NPT connections [Standard] 3 side inlets/hottom outlet - w/NPT connections [Standard] W/Pressure screw cap and differential connection Vented W/Pressure screw cap and differential connection [lower pressure plate] W/Pressure screw cap and inverse differential connection [lower pressure plate] W/Pressure screw cap and inverse differential connection [lower pressure plate] W/Pressure screw cap and inverse differential connection [lower pressure plate] W/Pressure screw cap and inverse differential connection [lower pressure plate] W/Pressure screw cap and inverse differential connection [lower pressure plate] W/Pressure screw cap and inverse differential connection [lower pressure plate] W/Pressure screw cap and inverse differential connection [lower pressure plate] W/Pressure screw cap and inverse differential connection [lower pressure plate] Branze	ervi	ce															
2 side inlets/bation outlet - w/NPT connections [Standard] 2 side inlets/bation outlet - w/RPT connections [Standard] 2 side inlets/bation outlet - w/RPT connections [Standard] 3 side inlets/bation outlet - w/RPT connections [Standard] 3 standard W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) W/pressure screw cap and differential connection (lower pressure plate) Subalices stell (Pri More Preson) V toton * Torn * United * Torn * One * One * One * One * One		Water/air service															
2 side indets/bottom outlet - w/BSPT connections [Special] 1 side indet/bottom outlet - w/NPT connections [standard body with one side plugged] 1 side indet/bottom outlet - w/NPT connections [standard body with one side plugged] W/pressure screw cap and differential connection [lower pressure plate] W/pressure screw cap and differential connection [lower pressure plate] W/pressure screw cap and dome load connection [lower pressure plate] W/pressure screw cap and dome load connection [lower pressure plate] W/pressure screw cap and dome load connection [lower pressure plate] W/pressure screw cap and dome load connection [lower pressure plate] W/pressure screw cap and dome load connection [lower pressure plate] W/pressure screw cap and dome load connection [lower pressure plate] Bronze Bronze [R and FR-6 only] B una-N M B una-N M B una-N W T Buna-N W/ Tetton Orly 316 Stainless steel [FR and FR-6 only] B una-N W/ Tetton Orly 316 Stainless steel [FR and FR-6 only] B una-N W/ Tetton Orly 316 Stainless steel [FR and FR-6 only] 316 Stainless steel [FR and FR-6 only] 316 Stainless steel [Fr and FR-6 only] 317 Stainless steel [Fr and FR-6 only] 318 Stainless steel [Fr and FR-6 only] 318 Stainless steel [Fr and FR-6 only] 319 Stainless steel [Fr and FR-6 only] 310 Stainless steel [Fr and FR-6 only] 310 Stainless steel [Fr and FR-6 only] 311 Stainless steel [Fr and FR-6 only] 312 Stainless steel [Fr and FR-6 only] 313 Stainless steel [Fr and FR-6 only] 314 Stainless steel [Fr and FR-6 only] 315 Stainless steel [Fr and FR-6 only] 316 Stainless steel [Fr and FR-6 only] 317 Stainless steel [Fr and FR-6 only] 318 Stainless steel [Fr and FR-6 only] 318 Stainless steel [Fr and FR-6 only] 319 Stainless steel [Fr and FR-6 only] 310 Stainless steel [Fr and FR-6 only] 310 Stainless steel [Fr and FR-6 only] 311 Stainless steel [Fr and FR-6 only] 312 Stainless steel [Fr and FR-6 only] 313 Stainless steel [Fr and FR-6 only] 314 Stainless steel [Fr and FR-6 only] 315 Stainless steel [Fr a	ody/	connection style															
<pre>n side inter/battom outlet - w/NPT connections (standard body with one side plugged) irrig chamber style Standard W/pressure screw cap and inverse differential connection (lower pressure plate) W/pressure screw cap and inverse differential connection (lower pressure plate) W/pressure screw cap and inverse differential connection (lower pressure plate) W/pressure screw cap and inverse differential connection (lower pressure plate) W/pressure screw cap and inverse differential connection (lower pressure plate) W/pressure screw cap and inverse differential connection (lower pressure plate) W/pressure screw cap and inverse differential connection (lower pressure plate) W/pressure screw cap and inverse differential connection (lower pressure plate) W/pressure screw cap and inverse differential connection (lower pressure plate) W/pressure screw cap and inverse differential connection (lower pressure plate) W/pressure screw cap and inverse differential connection (lower pressure plate) W/pressure screw cap and inverse differential connection (lower pressure plate) W/pressure screw cap and inverse differential connection (lower pressure plate) Bronze</pre>		2 side inlets/bottom ou	itlet - w	/NPT con	nectior	ns (Standard)											
<pre>string chamber style Standard Wpressure screw cap and interential connection (lower pressure plate) Wpressure screw cap and interest differential connection (lower pressure plate) Wpressure screw cap and interest differential connection (lower pressure plate) Wpressure screw cap and onne toad connection (no pressure spring) String chamber material Bronze G G G Bronze G G G Bronze G G G G G G G G G G G G G G G G G G G</pre>		2 side inlets/bottom ou	itlet - w	/BSPT co	nnectio	ons (Special)											
Standard   W/pressure screw cap and differential connection   Vented   W/pressure screw cap and differential connection (lower pressure plate)   W/pressure screw cap and dome load connection (no pressure spring)   vring chamber material   Bronze   Bronze </td <td></td> <td>1 side inlet/bottom out</td> <td>let - w/</td> <td>NPT conn</td> <td>ection</td> <td>s (standard body w</td> <td>ith one</td> <td>side plu</td> <td>ugged)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		1 side inlet/bottom out	let - w/	NPT conn	ection	s (standard body w	ith one	side plu	ugged)								
W/pressure screw cap and differential connection   Vented   W/pressure screw cap and dome load connection (lower pressure plate)   W/pressure screw cap and dome load connection (no pressure spring)   Virpessure screw cap and dome load connection (no pressure spring)   Virpessure screw cap and dome load connection (no pressure spring)   Virpessure screw cap and dome load connection (no pressure spring)   Virpessure screw cap and dome load connection (no pressure spring)   Virpessure screw cap and dome load connection (no pressure spring)   Virpessure screw cap and dome load connection (no pressure spring)   Virpessure screw cap and dome load connection (no pressure spring)   Virpessure screw cap and dome load connection (no pressure spring)   Virpessure screw cap and dome load connection (no pressure spring)   Virpessure screw cap and dome load connection (no pressure spring)   Virpessure screw cap and dome load connection (no pressure spring)   Virpessure screw cap and dome load connection (no pressure spring)   Virpessure screw cap and screw (FRA don)   Virpessure screw cap and connection (Pressure spring)   Virpessure screw cap and action (FRA don)   Virpessure screw cap and action diaphragm spring)   Virpessure screw cap and action diaphragm spring)   Virpessure screw cap and action diaphragm spring (Pressure screw strew	orin	• •															
W/pressure screw cap and differential connection   Verted   W/pressure screw cap and dome load connection (lower pressure plate)   W/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw cap and dome load connection (no pressure spring)   V/pressure screw style   Standard (303 Stainless steet trim (lelastomer diaphragm sonk)   V/pressure screw style   V/pressure screw style		Standard															
Vented   Worressure screw cap and inverse differention (lower pressure spring)   Worressure screw cap and inverse differention (lower pressure spring)   Prive   Prive   Prive   Bronze   O   316 Stainless steet   Worressure screw cap and time to a connection (lower pressure spring)   Worressure screw cap and time to a connection (lower spring)   Prive   Worressure screw cap and time to a connection (lower spring)   Worressure screw cap and time to a connection (lower spring)   Worressure screw cap and time to a connection (lower spring)   Worressure screw cap and time to a connection (lower spring)   Worressure screw cap and time to a connection (lower spring)   Jappa - N   Worressure screw cap and time to a connection (lower spring)   Jappa - N   Worressure screw cap and time to a connection (lower spring)   Jappa - N   Worressure screw cap and time to a connection (lower spring)   Jappa - N   Worressure screw cap and time to a connection (lower spring)   Jappa - N   Morressure screw cap and time time to a connection (lower spring)   Jappa - N   V   Vision Stainless steel trim (leastoner disphragm gasket (metal diaphragms only)   Jappa - N   Vision Stainless steel trim (leastoner disphragm gasket (metal diaphragms only)   Jappa - N   Vision Stainless steel trim (leastoner disphragm gasket (metal diaphragms only)   Jappa - N   Vision Stainless steel trim (leastoner disphragm gasket (		W/pressure screw cap															
Wpressure screw cap and inverse differential connection (lower pressure plate)   Wpressure screw cap and orwer screw (ap and orwer is pring)   wing Sumber material   Bronze   Bronze [FR and FR-6 only]   Bronze [FR and FR-6 only] <tr< td=""><td></td><td></td><td>and dif</td><td>ferential</td><td>connec</td><td>tion</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr<>			and dif	ferential	connec	tion											
W/pressure screw cap and dome load connection (no pressure spring)   pring Lamber material   Bronze   Bronze   aph-zam   Ama-N   Ama-N   Ama-N   Ama-N   Ama-N   Ama-N   Bronze (FR and FR-6 only)   Stanters steel (FR and FR-6 only)   Ama-N   Ama-N   Ama-N   Ama-N   Ama-N   Bronze (FR and FR-6 only)   Ama-N   Ama-N   Ama-N   Ama-N   Bronze (FR and FR-6 only)   Ama-N   Ama-N   Ama-N   Ama-N   Ama-N   Bronze (FR and FR-6 only)   Ama-N   Ama-N   Ama-N   Ama-N   Ama-N   Ama-N   Bronze (FR and FR-6 only)   Ama-N   Ama-N<		Vented															
pri ng material materi material material material material material material materi		W/pressure screw cap	and inv	verse diffe	rential	connection (lower	- pressu	ure plate	e)								
Iron         isplr-zym material         Buna-N       M       Monet*         Broze [FR and FR-6 only]       V       Viton* [FR10 only]         316 Stainless steel (FR and FR-6 only]       V       Buna-N w/ Teflon diaphragm liner         obj seet material       303 Stainless steel       Z       Brass         316 Stainless steel       T       T       T-handle         reserverserve		W/pressure screw cap	and do	me load c	onnec	ion (no pressure s	spring)										
Iron   ispl-ray material   Buna-N   Buna-N   Witan* (FR and FR-6 only)   V   Vitan* (FR 10 only)   316 Stainless steel (FR and FR-6 only)   V   Buna-N w/Teflon diaphragm liner   Stainless steel (FR and FR-6 only) V W Buna-N w/Teflon diaphragm liner Stainless steel (FR and FR-6 only) V Stainless steel (FR and FR-6 only) V Buna-N w/Teflon diaphragm liner Stainless steel (FR and FR-6 only) V Stainless steel (FR and FR-6 only) Stainless (FR-10 on	prin	g chamber material															
iap irrage material       W       Monel®         Buna-N       W       Monel®         Branze [FR and FR-6 only]       V       Viton® (FR10 only)         316 Stainless steet [FR and FR-6 only]       V       Won® (FR10 only)         316 Stainless steet [FR and FR-6 only]       V       Buna-N       w/Teflon diaphragm liner         obj seat material       303 Stainless steet       Z       Brass       Brass         316 Stainless steet       T       T-handle       Viton® (FR10 only)         standard       T       T-handle       Viton® (Fr20 only)       Viton® (Fr20 only)         303 Stainless steet trim w/Teflon O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)       Viton® (FR10 only)       Viton® (FR10 only)         303 Stainless steet trim w/Teflon O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)       Viton® O-Ring & Aramid fiber diaphragm gasket (metal diaphragms only)         316 Stainless steet trim w/Teflon O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)       Viton® O-Ring & Aramid fiber diaphragm gasket (metal diaphragms only)         316 Stainless steet trim w/Teflon O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)       Viton® O-Ring & Aramid fiber diaphragm gasket (metal diaphragms only)         316 Stainless steet trim w/Teflon O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)       Viton® O-Ring & Aramid fiber diaphragm gasket (metal diaphra		Bronze	G	316 Sta	inless	steel											
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<ul> <li>303 Stainless steel trim w/Teflon 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>303 Stainless steel trim w/Teflon 0-ring and Teflon diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)</li> <li>303 Stainless Steel Trim w/ Viton® 0-Ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim w/Buna-N 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim w/Teflon 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim w/Teflon 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim w/Teflon 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim w/Teflon 0-ring and Teflon diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim w/Teflon 0-ring and Teflon diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim w/Teflon 0-ring and Teflon diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)</li> <li>316 Stainless Steel Trim w/Viton® 0-ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)</li> <li>316 Stainless Steel Trim w/Viton® 0-ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)</li> <li>316 Stainless Steel Trim w/Viton® 0-ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>Nitralloy trim (elastomer diaphragms only)</li> <li>Nitralloy trim (elastomer diaphragms only)</li> <li>Indicates original design</li> <li>Indicates original design</li> <li>Carbon steel (water/air)</li> <li><b>E</b> Stainless steel (optional)</li> </ul>						1 5 ,						.)					
<ul> <li>303 Stainless steel trim w/Teflon O-ring and Teflon diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)</li> <li>303 Stainless Steel Trim w/ Viton® O-Ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim (elastomer diaphragms only)</li> <li>316 Stainless steel trim w/Buna-N O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim w/Teflon O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim w/Teflon O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim w/Teflon O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim w/Teflon O-ring and Teflon diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim w/Teflon O-ring and Teflon diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel Trim w/Viton® O-ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)</li> <li>316 Stainless Steel Trim w/Viton® O-ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)</li> <li>316 Stainless Steel Trim w/Viton® O-ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>Nitralloy trim (elastomer diaphragms only)</li> <li>Nitralloy trim (elastomer diaphragms only)</li> <li>Nitralloy trim w/Buna-N O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>Nitralloy trim w/Buna-N O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>Nitralloy trim w/Buna-N O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>Indicates original design</li> <li>Indicates original design</li> <li>Carbon steel (water/air)</li> <li>E Stainless steel (optional)</li> </ul>					-		•	•			-	<b>/</b> ]					
of gasket) of gasket)   5 303 Stainless Steel Trim w/ Viton® O-Ring & Aramid fiber diaphragm gasket (metal diaphragms only)   1 316 Stainless steel trim (elastomer diaphragms only)   2 316 Stainless steel trim w/Buna-N O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)   3 316 Stainless steel trim w/Teflon O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)   4 316 Stainless steel trim w/Teflon O-ring and Teflon diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)   5 316 Stainless Steel Trim w/Viton® O-ring & Aramid fiber diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)   5 316 Stainless Steel Trim w/Viton® O-ring & Aramid fiber diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)   5 316 Stainless Steel Trim w/Viton® O-ring & Aramid fiber diaphragm gasket (metal diaphragms only)   1 Nitralloy trim (elastomer diaphragms only)   2 Nitralloy trim (viton® O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)   1 Nitralloy trim (viton® O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)   2 Nitralloy trim (viton® O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)   2 Nitralloy trim (viton® O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)   esign revision												1 b =	flor "	nh	lie - C	pla - :	
<ul> <li>5 30<sup>3</sup> Stainless Steel Trim w/ Viton<sup>®</sup> O-Ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim (elastomer diaphragms only)</li> <li>316 Stainless steel trim w/Buna-N O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim w/Teflon O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim w/Teflon O-ring and Teflon diaphragm gasket (metal diaphragms only)</li> <li>316 Stainless steel trim w/Teflon O-ring and Teflon diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)</li> <li>316 Stainless Steel Trim w/Viton<sup>®</sup> O-ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)</li> <li>316 Stainless Steel Trim w/Viton<sup>®</sup> O-ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)</li> <li>316 Stainless Steel Trim w/Viton<sup>®</sup> O-ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)</li> <li>316 Stainless Steel Trim w/Viton<sup>®</sup> O-ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>Nitralloy trim (elastomer diaphragms only)</li> <li>Nitralloy trim (elastomer diaphragms only)</li> <li>Nitralloy trim w/Buna-N O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>Nitralloy trim w/Buna-N O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>Nitralloy trim w/Buna-N O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>Nitralloy trim w/Buna-N O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>Indicates original design</li> <li>Indicates original design</li> <li>Indicates (water/air)</li> <li>Indicates steel (water/air)</li> <li>Indicates steel (water/air)</li> <li>Indicates steel (water/air)</li> <li>Indicates steel (water/air)</li> </ul>	4		iw/iet	เขท บ-ททดู	yand I	enon diaphragm g	asket (	metat d	apnragi	ns only	JIFK-IL	nas le	nion dia	pnragm	uner in	ріасе	
1       316 Stainless steel trim (elastomer diaphragms only)         2       316 Stainless steel trim w/Buna-N 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)         3       316 Stainless steel trim w/Teflon 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)         3       316 Stainless steel trim w/Teflon 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)         4       316 Stainless steel trim w/Teflon 0-ring and Teflon diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)         5       316 Stainless Steel Trim w/Viton® 0-ring & Aramid fiber diaphragm gasket (metal diaphragms only)         1       Nitralloy trim (elastomer diaphragms only)         2       Nitralloy trim (elastomer diaphragms only)         3       Indicates original design         pring material       Carbon steel (water/air)         E       Stainless steel (optional)	5	*	m w/ Vi	ton® 0-Ri	ng & A	ramid fiber diaphr	agm qa	sket (m	etal dia	hragm	s only)						
<ul> <li>2 316 Stainless steel trim w/Buna-N 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>3 316 Stainless steel trim w/Teflon 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>3 316 Stainless steel trim w/Teflon 0-ring and Teflon diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)</li> <li>5 316 Stainless Steel Trim w/Viton® 0-ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>1 Nitralloy trim (elastomer diaphragms only)</li> <li>2 Nitralloy trim w/Buna-N 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>esign revision</li> <li>Indicates original design</li> </ul>							5 5-			5.	<i>.</i> ,						
<ul> <li>3 316 Stainless steel trim w/Teflon 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>4 316 Stainless steel trim w/Teflon 0-ring and Teflon diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)</li> <li>5 316 Stainless Steel Trim w/Viton® 0-ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>7 Nitralloy trim (elastomer diaphragms only)</li> <li>2 Nitralloy trim w/Buna-N 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>esign revision</li> <li>-) Indicates original design</li> <li>pring material</li> <li>Carbon steel (water/air)</li> <li>E Stainless steel (optional)</li> </ul>						-	hragm	qasket (	metal d	iaphraɑ	ms onlv	/)					
<ul> <li>4 316 Stainless steel trim w/Teflon 0-ring and Teflon diaphragm gasket (metal diaphragms only) (FR-10 has Teflon diaphragm liner in place of gasket)</li> <li>5 316 Stainless Steel Trim w/Viton® 0-ring &amp; Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>1 Nitralloy trim (elastomer diaphragms only)</li> <li>2 Nitralloy trim w/Buna-N 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)</li> <li>resign revision</li> <li>-) Indicates original design</li> <li>pring material</li> </ul>					9		9	-		, ,							
5       316 Stainless Steel Trim w/Viton® 0-ring & Aramid fiber diaphragm gasket (metal diaphragms only)         1       Nitralloy trim (elastomer diaphragms only)         2       Nitralloy trim w/Buna-N 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)         esign revision         )       Indicates original design         pring material       Carbon steel (water/air)       E       Stainless steel (optional)		316 Stainless steel trir										) has Te	flon dia	phragm	liner in	place	
Nitralloy trim (elastomer diaphragms only)         Nitralloy trim w/Buna-N 0-ring and Aramid fiber diaphragm gasket (metal diaphragms only)         esign revision         Indicates original design         oring material         Carbon steel (water/air)         E       Stainless steel (optional)	i		m w/Vit	on® 0-rin	g & Ara	amid fiber diaphra	gm gas	ket (me	tal diap	nragms	only)						
2       Nitralloy trim w/Buna-N O-ring and Aramid fiber diaphragm gasket (metal diaphragms only)         esign revision       )         1       Indicates original design         oring material       Carbon steel (water/air)       E         Stainless steel (optional)       Stainless steel (optional)					-				1	5							
esign revision ) Indicates original design pring material Carbon steel (water/air) E Stainless steel (optional)				•	-	er diaphragm gas	sket (me	etal diar	hragms	only)							
pring material     Carbon steel (water/air)     E     Stainless steel (optional)				-					5	ý.							
pring material     Carbon steel (water/air)     E     Stainless steel (optional)	)	Indicates original desig	jn														
•	prin	g material															
pring range		Carbon steel (water/ai	-)		Е	Stainless steel (	optiona	il)									
efer to tables on the next page		g range															

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#### 4 5 6 Туре Spring material Size 1 2 3 75-175 1/2" 0-25 25-45 5-50 150-400 30-100 3/4" 0-10 5-20 10-50 20-110 30-200 100-250 150-400 Steel 1" 0-20 10-35 20-90 40-125 50-230 175-380 300-400 11/4" 0-15 10-30 20-85 50-230 175-380 300-400 11/2", 2" 0-10 5-20 10-55 30-100 125-300 200-400 40-200 FR 1/2" 0-20 10-50 40-90 75-200 100-300 100-400 3/4" 0-10 0-15 10-70 50-175 100-265 1" SST 0-15 10-35 20-75 40-200 50-250 11/4" 0-15 10-30 20-85 40-125 50-250 11/2", 2" 0-15 5-20 10-55 30-100 40-160 100-250

#### **STANDARD SPRING RANGES (PSIG)**

#### **STANDARD SPRING RANGES (PSIG)**

Туре	Spring material	Size	1	2	3	4	5
		1/2"	0-25	5-50	30-100	75-175	100-250
	Steel	3/4"	0-10	10-50	20-110	30-150	100-250
	Steet	1", 11⁄4"	0-20	20-90	40-125	50-250	
FR-10		11⁄2", 2"	0-10	10-55	30-100	40-200	125-250
FR-IU		1/2"	0-20	10-50	40-90	75-200	100-250
	SST	3/4"	0-10	10-70	50-175	100-250	
	551	1", 11⁄4"	0-15	10-75	40-200	50-250	
		11⁄2", 2"	0-15	10-55	30-100	40-160	100-250

# **STANDARD SPRING RANGES (PSIG)**

Туре	Spring material	Size	1
	Steel	All sizes	200-600
FR-6	SST	1/2"	200-600
	551	<sup>3</sup> /4", 1", 11/4", 11/2", 2"	200-400

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xample:			FRM-	Α	W	Z	S	Z	S	В	F	02	-	D
odel														
RM- FRM														
<b>RM2</b> FRM-2														
ize														
1⁄4" (All)														
3⁄8" (All)														
1/2" (FRM-2)														
ervice														
/ Water/air/oil/gas (F	RM and	FRM-2)												
laterial of construction														
Brass	G	316 SST (FRM and	FRM-2)											
ody/connection style														
Side inlet/side outle	t (All) N	IPT												
2 side inlets/bottom	outlet	(FRM and FRM-2) NP	Т											
Side inlet/bottom ou	itlet (FF	RM and FRM-2) NPT												
pring chamber material														
. Aluminum spring cl	namber	(FRM)												
Brass spring chaml	er													
Chrome-plated														
pring chamber style														
Standard	С	Cap (FRM-2)	W	Without v	ent hole									
iaphragm material														
Buna-N	Ν	Neoprene	v	Viton®										
316 Stainless steel	Z	Bronze												
ressure screw style														
Fillister (FRM only)	н	Hex	Q	Square h	ead (Stee	el for W/	A service	only)						
ariation														
1 Standard (303 Stain	less ste	el trim) (elastomer di	aphragms	only)										
2 303 Stainless steel	rim w//	Aramid fiber diaphrag	m gasket (	metal dia	phragms	only)								
<b>3</b> 303 Stainless steel	rim w/	Teflon diaphragm gas	ket (metal	diaphragi	ms only)									
5 303 Stainless steel	rim w/ı	nylon inserted locknu	t											
1 316 Stainless steel	rim (el	astomer diaphragms	only)											
2 316 Stainless steel	rim w//	Aramid fiber diaphrag	m gasket (	metal dia	phragms	only)								
3 316 Stainless steel	rim w/	Teflon diaphragm gas	ket (metal	diaphrag	ms only)									
1 Monel® trim (elasto	mer dia	phragms only)												
2 Monel® trim w/Aran	nid fiber	r diaphragm gasket (r	netal diaph	ragms or	ly)									
		iragm gasket (metal d												
1 Brass body w/SST b	ody sea	at												
2 Remote sensing														
L UL approved														
esign revision														
•) Original design														
pring material														
Carbon steel (indus	rial or	final line gas service (	only)											
		-												
Stainless steel (FRM	1-2)													

Refer to table on below

# **STANDARD SPRING RANGES (PSIG)**

Spring material	Model	1	2	3	4	5	6	7	8	9
Steel	FR	1-2	2-15	2-30	10-50	40-90	40-125	75-175		
SST	FR	2-25	15-65	40-100	50-150	75-175	100-250	200-400	200-600	300-600
551	FRM2	0-30	20-50	40-80	75-150	100-275	200-400	300-600		

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