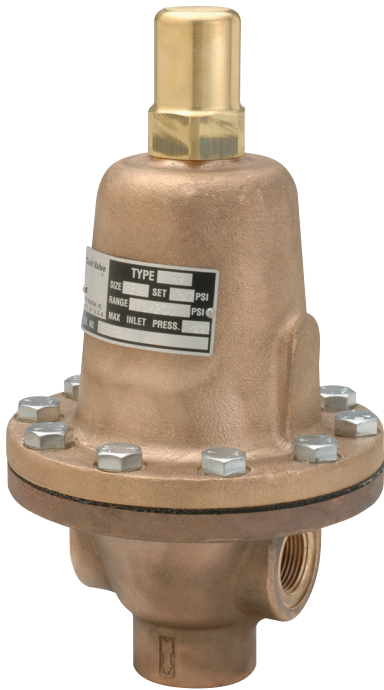


CASH VALVE FR SERIES BACK PRESSURE VALVES

Diaphragm actuated valves designed for either continuous or intermittent operation.



Description

Cash Valve FR Series back pressure valves are diaphragm actuated and are designed for either continuous or intermittent operation, limiting the desired maximum pressure in a system by relieving into a lower pressure line or area. When properly sized, 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. FR Series valves are not emergency safety devices but are continuously operating pieces of equipment. The unique full floating seating arrangement incorporated in both the full size FR, FR-6, and FR-10 models and the miniature version FRM, FRM-2, and FRM-C models provides for smooth even control in response to pressure changes.

FR, FR-6, FR-10 Diaphragm Type Back Pressure Valves

Cash Valve's Type FR, FR-6, and FR-10 are fully automatic back pressure valves designed to dependably maintain a pre-determined pressure on the inlet regardless of variations in pressure at the outlet. Excess pressure is relieved into a lower pressure line. Performance is virtually unaffected by pressure variations in the

return line. FR Series valves are not emergency devices, but are continuously operating valves which provide accurate, repetitive, pressure control.

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

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

- Type FR-10: 0-250 psi; 450°F*
- Type FR: 0-400 psi; 200-600°F*
- Type FR-6: 200-600 psi; 200-600°F*

* Minimum temperature for carbon steel is -20°F.

The Type FR-10 is for more economical, lower pressure applications and is fitted with an iron body and spring chamber.

All FR Series valves incorporate a "floating ring" seating arrangement (see Features) which provides tight closure and practically frictionless performance.

Application

Cash Valve's Types FRM, FRM-2, and FRM-C function as automatic pressure limiting regulators, maintaining a desired maximum pressure in a system or vessel by relieving excess pressure. The FRM Series valves are small and compact, yet are highly efficient, making them suitable for numerous applications that call for a small accurate back pressure regulator.

FRM Series back pressure valves are intended for service on liquids, air and gases that are not corrosive to bronze.

Type FRM-C is a soft-seated version of Type FRM. The Type FRM-2 is designed with larger physical dimensions and internal seat opening providing greater capacity. Type FRM-2 is also suitable for fuel oils and lube oils.

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. Cash Valve's FR Series back pressure valves feature a "floating ring," which provides good closure and practically frictionless performance.

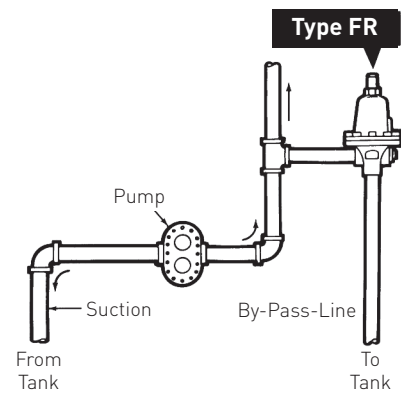
CASH VALVE FR SERIES

BACK PRESSURE VALVES

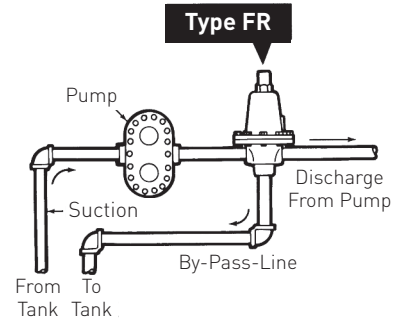
Features: FR and FR-6

- Sizes: 1/2", 3/4", 1", 1 1/4", 1 1/2", and 2"
- FR Series valves protect against periodic high pressure, control dependably at adjusted pressures, and shut tight. These valves afford unusually close regulation, repeatability of opening pressure and close reseating pressures.
- Angle valve or in-line valve installation: Series FR valves have a globe type body and are fitted with two side inlets and a bottom outlet. Installation may be made either as an angle valve, with one inlet plugged, or in line with the pump. All Series FR valves discharge at the bottom of the valve.
- Closing Cap: Types FR and FR-6 are fitted with a closing cap over the top adjusting screw to discourage unauthorized tampering with the set pressure.
- Unique "Floating Ring" design: A special feature of FR Series Back Pressure Valves, not found in the ordinary valve, is Cash Valve's unique "floating ring" seating arrangement. The "floating ring" principle completely compensates 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. 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 securely together resulting in positive and rapid seat movement in response to all pressure changes.
- Optional Differential Pressure Control: With slight factory modification, Type FR Series valves may be used as a differential pressure regulator; to hold constant a pressure difference between the reference pressure and the valve inlet pressure. Contact the factory for details.
- Type FR-6 incorporates a diaphragm ring mounted above the diaphragm to accommodate higher back pressure ranges. Refer to the FR-6 interior view shown on the page 2.

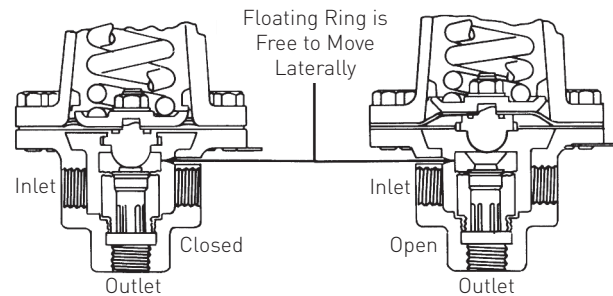
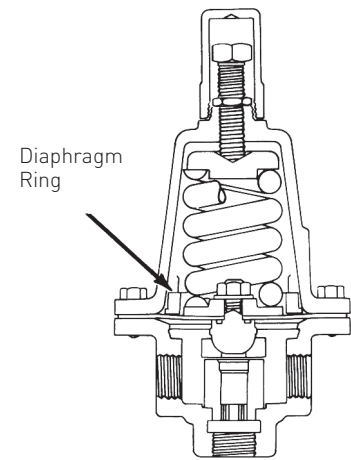
- Simplicity of Design: The rugged but simple design incorporated in each FR Series back pressure valve lends itself to easy maintenance and repair. Disassembly is a simple matter when replacing diaphragms, pressure springs or ball seat and ring. All major repairs can be made without removing the valve from the line.
- Optional Cryogenic Service: Approved construction is offered in the FR Series for handling cold fluids to -320°F. Write for Data Sheet CAVMC-0514 for more details.



Angle Valve Installation



In-line Installation (Bottom By-Pass)



Floating Ring Design

CASH VALVE FR SERIES

BACK PRESSURE VALVES

Construction/Specifications

Cash Valve 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 BUNA-N diaphragm; brass or stainless steel body seat, with a renewable stainless seat disc and seat ring.

Valve Size	Spring Adjustment Ranges (in psi)											
	Type FR						Type FR-6	Type FR-10				
1/2"*	0-25	5-50	30-100	75-175	150-400		200-600	0-25	5-50	30-100	75-175	100-250
3/4"	0-10	10-50	20-110	30-200	100-250 150-400		200-600	0-10	10-50	20-110	30-150	100-250
1"	0-20	20-90	40-125	50-230	175-380 300-400		200-600	0-20	20-90	40-125	50-250	
1 1/4"	0-15	20-85	40-125	50-230	175-380 300-400		200-600	0-20	20-90	40-125	50-250	
1 1/2", 2"	0-10	10-55	30-100	40-200	125-300 200-400		200-600	0-10	10-55	30-100	40-200	125-250

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

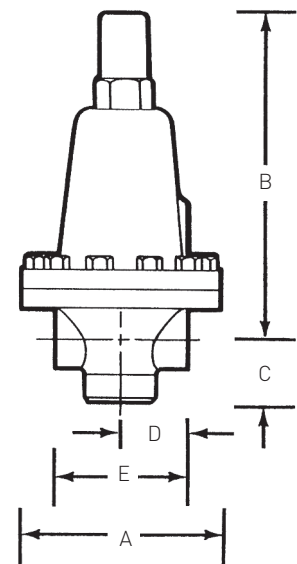
* 1/2" FR only UL approved in iron body and metal diaphragm up to 150 psi.

Type	Valve Size	Dimensions					Shipping Weight (lbs.)	
		A	B	C	D	E	Iron	Bronze
FR, FR-6	1/2"	4 3/4"	6 3/4"	1 5/8"	1 7/16"	2 7/8"	8	9 1/2
	3/4"	5 5/8"	8"	2"	1 11/16"	2 3/8"	13	14 3/4
	1"	6 1/2"	10 5/16"	2 1/4"	2 1/8"	4 1/4"	20 1/4	23 1/2
	1 1/4"	6 1/2"	10 7/16"	2 3/8"	2 1/8"	4 1/4"	21 1/2	24 1/2
	1 1/2"	7 1/2"	10 3/4"	2 5/8"	2 1/2"	5"	29	33
	2"	7 1/2"	11"	3"	2 1/2"	5"	31 1/2	35 1/2

Maximum Operation Temperature: 600°F

Type	Valve Size	Dimensions					Shipping Weight (lbs.)	
		A	B	C	D	E	Iron	Bronze
FR-10	1/2"	4 3/4"	6 9/16"	1 5/8"	1 7/16"	2 7/8"	7	
	3/4"	5 5/8"	7 1/2"	2"	1 11/16"	3 3/8"	11 1/2	
	1"	6 1/2"	8 1/2"	2 1/4"	2 1/8"	4 1/4"	18 1/4	
	1 1/4"	6 1/2"	8 5/8"	2 3/8"	2 1/8"	4 1/4"	19 1/2	
	1 1/2"	7 1/2"	10"	2 5/8"	2 1/2"	5"	27	
	2"	7 1/2"	10 1/4"	3"	2 1/2"	5"	29 1/2	

Maximum Operation Temperature: 450°F



Type FR



Type FRM

Type FRM-2

FRM, FRM-2, FRM-C Diaphragm Type Miniature Back Pressure Valves

Type	Valve Size	Relief Press. Range (psi)	Valve Connections		
			S.I.-S.O.	S.I.-B.O.	2S.I.-B.O.
FRM and FRM-C	1/8"	0-175	X	X	FRM Only
	1/4"	0-175	X	X	X
	3/8"	0-175	X	X	
FRM-2*	1/4"	0-250	X	X	X
	3/8"	0-250	X	X	X
	1/2"	0-250	X	X	X

Note: 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

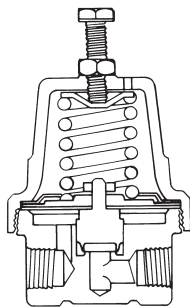
* The Type FRM-2 is UL Approved in all sizes and body styles with metal diaphragms up to 150 psi.

CASH VALVE FR SERIES

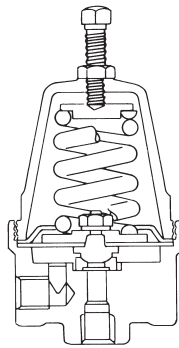
BACK PRESSURE VALVES

Features – FRM, FRM-C, FRM-2

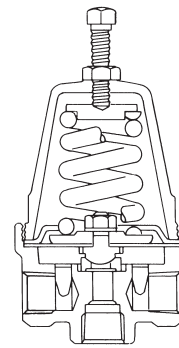
- Small and compact; available in 1/8", 1/4", 3/8" and 1/2" sizes.
- Types FRM and FRM-2 incorporate the same superior "floating ring" design as used in the larger Type FR to provide smooth, even pressure control. See page 5 for full description.
- Furnished with either neoprene diaphragm or metal diaphragms in three body styles. (Type FRM-C fitted with metal diaphragms only.)
- Maximum Temperature:
 - with neoprene diaphragm: 180°F.
 - with metal diaphragm: 500°F.
- Type FRM-2 is available in stainless steel body and system exposed internal parts for service with corrosive or harsh fluids. For additional information consult the factory.
- Optional Cryogenic Service: Approved construction is offered for the FRM and FRM-2 to enable it to be used for oxygen service suitable for temperatures to -320°F. For details write for Data Sheet CAVMC-0514.
- All versions fitted with adjusting screw standard. Also available with T-handle and, on special order, with bushing for mounting the valve to a control panel.
- All FRM, FRM-2, and FRM-C versions are furnished with a travel stop that prevents diaphragms from extending beyond their limit.



Type FRM-C
Side Inlet - Side Outlet



Type FRM-2
Side Inlet - Bottom Outlet



Type FRM-2
Two Side Inlet - Bottom Outlet

Construction/Specifications

FRM Series back pressure valves are fitted with forged bronze bodies, bronze or aluminum (Type FRM only) spring chambers and neoprene or phosphor

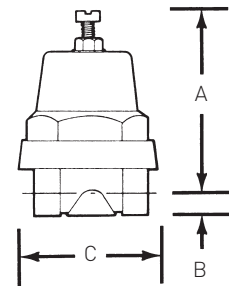
bronze diaphragms (metal diaphragms only in FRM-C). Monel® diaphragms not available on FRM's.

Type FRM, FRM-C Spring Adjustment Ranges (in psi)						
0-2	2-15	2-30	10-50	40-90	40-125	75-175

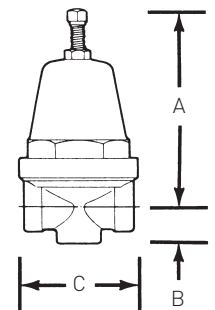
Type FRM-2 Spring Adjustment Ranges (in psi)					
0-30	20-50	40-80	75-150	100-250	200-400

Note: The type FRM-2 is UL approved in all sizes and body styles with metal diaphragms up to 150 psig.

Type	Valve Size	Dimensions			Ship. Wt. (lbs.)
		A	B	C	
FRM and FRM-C	1/8" x 1/8"	33/8"	1/2"	21/4"	11/8
FRM and FRM-C	1/4" x 1/4"	33/8"	1/2"	21/4"	11/8
FRM and FRM-C	3/8" x 3/8"	33/8"	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



Type FRM-2

CASH VALVE FR SERIES

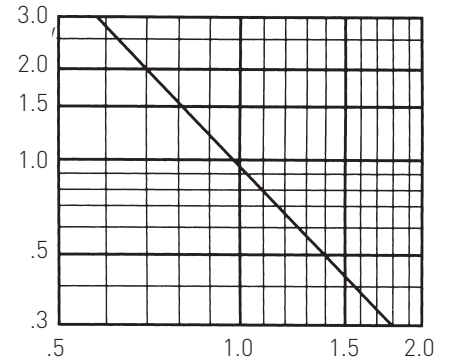
BACK PRESSURE VALVES

Capacity Information

Capacity charts (water and air) for Types FRM, FRM-2 and FRM-C are shown on page 8.

Note: The capacity charts for water are based on the specific gravity reading of water. If a liquid other than water is being used in the system, it is necessary to correct for liquids having a specific gravity reading other than that of water. For example, assume that 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 chart 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



Type FR, FR-6, FR-10 Water Capacity (gpm)

Types FR FR-6 FR-10	Set Press. (psig) †	Inlet Sizes																	
		1/2"						3/4"						1"					
		Rubber Diaphragm			Metal Diaphragm			Rubber Diaphragm			Metal Diaphragm			Rubber Diaphragm			Metal Diaphragm		
		10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise
X X	10*	2.0	4.0	6.0	1.0	1.5	3.0	3.0	6.0	8.0	1.8	3.5	5.5	4.0	8.0	14.0	2.5	5.5	7.8
X X	15	2.2	4.2	6.5	1.2	2.0	3.5	3.2	6.2	8.5	2.0	4.5	6.5	5.0	10.0	17.0	3.0	6.5	9.5
X X	20	2.5	4.5	7.5	1.4	2.5	4.0	3.5	6.7	10.0	2.5	5.0	7.5	6.0	12.0	20.0	3.5	7.5	11.0
X X	30	3.0	5.0	9.0	1.7	3.0	5.0	4.0	7.2	11.5	3.0	6.0	9.5	7.5	14.0	23.0	4.0	9.0	13.0
X X	40	3.5	6.0	9.7	2.0	3.5	6.0	4.5	8.5	12.5	3.5	7.0	11.0	9.0	16.0	26.0	5.0	10.5	15.0
X X	50	3.7	6.5	10.5	2.2	4.0	7.0	4.7	9.5	14.5	4.0	8.0	12.0	10.0	18.0	30.0	5.5	12.0	17.0
X X	75	4.5	7.5	13.0	2.6	5.0	8.0	5.5	11.5	17.0	5.0	10.0	14.0	12.0	20.0	38.0	6.5	14.5	20.0
X X	100	5.0	9.5	16.0	3.0	6.0	10.0	6.0	14.0	21.0	6.0	11.0	16.0	14.5	27.0	46.0	7.5	17.0	24.0
X X	150	7.0	11.5	19.0	3.5	8.0	13.0	9.0	18.0	25.0	7.0	15.0	20.0	17.0	33.0	54.0	9.0	21.0	30.0
X X X	200	8.0	15.0	22.0	4.5	10.0	17.0	11.0	21.5	30.0	9.0	17.0	24.0	22.5	41.0	54.0	11.0	24.0	33.0
X X	300	12.0	19.0	25.0	7.5	15.0	22.0	16.0	26.5	30.0	13.0	20.0	28.0	27.0	54.0	54.0	15.0	29.0	42.0
X X	400	18.0	24.0	25.0	12.0	23.0	25.0	23.0	30.0	30.0	17.0	28.0	30.0	34.0	54.0	54.0	20.0	34.0	54.0
X	600	21.0	25.0	25.0	16.0	25.0	25.0	30.0	30.0	30.0	20.0	30.0	30.0	54.0	54.0	54.0	24.0	50.0	54.0

Type FR, FR-6, FR-10 Water Capacity (gpm)

Types FR FR-6 FR-10	Set Press. (psig) †	Inlet Sizes																	
		1 1/4"						1 1/2"						2"					
		Rubber Diaphragm			Metal Diaphragm			Rubber Diaphragm			Metal Diaphragm			Rubber Diaphragm			Metal Diaphragm		
		10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise
X X	10*	5.0	11.5	18.0	3.0	6.5	9.5	6.0	13.0	20.0	4.2	7.8	11.8	7	15	23	4.3	9.4	14.5
X X	15	6.0	12.5	20.0	3.8	8.0	11.5	7.0	14.0	23.0	5.0	9.5	14.2	8	16	26	5.2	11.5	17.5
X X	20	7.0	14.0	23.0	4.5	9.0	13.5	8.0	15.0	27.0	6.0	11.0	16.5	9	17	30	6.3	13.0	20.0
X X	30	8.0	16.0	27.0	5.5	11.5	16.5	9.0	18.0	30.0	7.2	13.5	20.0	10	20	34	7.5	16.0	25.0
X X	40	10.0	18.0	31.0	6.3	13.2	19.0	11.0	20.0	34.0	8.5	15.5	23.5	13	22	44	9.0	19.0	29.0
X X	50	11.0	20.0	34.0	7.0	14.7	21.5	13.0	23.0	40.0	9.5	17.3	26.0	15	26	58	10.0	21.0	35.0
X X	75	13.0	24.0	42.0	8.5	18.0	26.0	15.0	32.0	49.0	11.5	21.0	36.0	17	40	80	12.0	25.0	55.0
X X	100	16.0	32.0	50.0	9.8	21.0	30.0	18.0	40.0	60.0	13.2	24.5	48.0	20	48	92	13.5	30.0	65.0
X X	150	20.0	44.0	66.0	12.0	25.5	40.0	22.0	54.0	77.0	16.2	30.0	62.0	25	66	118	16.5	44.0	83.0
X X X	200	25.0	55.0	80.0	14.0	29.5	53.0	27.0	70.0	93.0	19.0	40.0	80.0	30	82	144	19.5	56.0	102.0
X X	300	34.0	70.0	80.0	17.0	36.0	80.0	39.0	95.0	110.0	23.0	53.0	100.0	43	110	200	24.0	80.0	130.0
X X	400	42.0	80.0	80.0	22.0	48.0	80.0	50.0	120.0	120.0	26.0	66.0	120.0	61	130	200	34.0	100.0	156.0
X	600	65.0	80.0	80.0	44.0	80.0	80.0	80.0	120.0	120.0	50.0	80.0	120.0	108	162	200	64.0	136.0	200.0

† 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.

CASH VALVE FR SERIES

BACK PRESSURE VALVES

Capacity Information (Continued)

Type FR, FR-6, FR-10 Air Capacity (SCFM)																				
Types	Set Press. (psig) †	Inlet Sizes																		
		1/2"						3/4"						1"						
		Rubber Diaphragm			Metal Diaphragm			Rubber Diaphragm			Metal Diaphragm			Rubber Diaphragm			Metal Diaphragm			
FR	FR-6	FR-10	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise
X	X	10*	7	15	22	3	7	10	10	24	30	6	12	19	15	32	45	9	18	29
X	X	15	8	17	30	4	9	14	15	30	48	8	15	24	30	50	72	12	23	38
X	X	20	10	19	38	5	10	16	20	38	62	10	18	32	40	65	94	14	27	46
X	X	30	13	24	48	7	13	20	25	48	80	12	22	42	50	85	120	17	34	58
X	X	40	16	34	56	8	17	25	31	62	120	15	25	50	60	98	180	20	38	68
X	X	50	19	44	72	10	19	34	38	74	150	20	30	58	72	110	230	27	45	80
X	X	75	30	56	90	11	23	44	48	86	225	25	36	63	90	124	340	35	54	95
X	X	100	40	74	108	12	32	60	60	96	300	32	50	80	112	140	450	42	75	120
X	X	150	60	104	150	14	46	84	86	144	440	40	72	120	140	210	680	50	108	180
X	X	200	92	140	200	16	60	120	128	180	600	46	100	160	168	280	900	56	150	240
X	X	300	140	210	300	22	90	160	190	270	850	54	145	240	240	420	1250	66	215	360
X	X	400	180	280	400	35	120	240	240	360	1200	65	200	320	320	560	1800	77	300	480
	X	600	280	420	600	50	180	320	380	540	1700	80	290	480	480	820	2500	98	430	720

Type FR, FR-6, FR-10 Air Capacity (SCFM)																				
Types	Set Press. (psig) †	Inlet Sizes																		
		1 1/4"						1 1/2"						2"						
		Rubber Diaphragm			Metal Diaphragm			Rubber Diaphragm			Metal Diaphragm			Rubber Diaphragm			Metal Diaphragm			
FR	FR-6	FR-10	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise	10% Rise	20% Rise	30% Rise
X	X	10*	22	40	60	11	22	35	40	74	75	20	30	55	64	112	144	32	48	80
X	X	15	38	60	90	15	29	56	55	98	120	25	42	68	88	144	208	40	64	104
X	X	20	48	80	134	22	35	76	72	124	192	32	58	100	112	184	296	48	88	150
X	X	30	60	128	172	28	45	90	92	158	250	38	68	120	136	224	384	55	104	172
X	X	40	72	148	190	32	60	96	112	175	280	42	85	140	152	248	424	62	120	200
X	X	50	82	166	250	36	66	102	134	200	320	47	95	150	170	280	488	70	144	215
X	X	75	106	185	375	42	78	120	155	225	450	55	115	165	190	312	650	82	168	240
X	X	100	130	225	500	50	96	180	180	280	640	64	135	240	240	410	850	92	200	320
X	X	150	160	275	750	58	120	240	210	380	900	80	180	320	300	550	1100	120	272	475
X	X	200	200	350	1000	64	160	360	260	500	1250	100	250	480	400	750	1700	152	352	640
X	X	300	300	500	1450	82	250	480	400	700	1750	150	320	640	624	1050	2100	220	480	950
X	X	400	400	700	1950	120	350	700	520	1000	2400	200	500	950	800	1500	3150	300	700	1250
	X	600	600	1000	2850	160	500	950	800	1400	3450	300	650	1250	1200	2100	4000	400	960	1750

† 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.

CASH VALVE FR SERIES

BACK PRESSURE VALVES

Capacity Information (Continued)

Type FRM, FRM-C Water Capacity (GPM)												
Set Pressure (psi) †	Inlet Sizes											
	1/8"				1/4"				3/8"			
	Rubber Diaphragm		Metal Diaphragm		Rubber Diaphragm		Metal Diaphragm		Rubber Diaphragm		Metal Diaphragm	
	10% Rise	20% Rise	10% Rise	20% Rise	10% Rise	20% Rise	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	0.1	0.5	0.2	0.7	0.1	0.5
25	0.5	1.2	0.5	1.0	0.5	1.2	0.5	1.0	0.5	1.2	0.5	1.0
50	1.2	2.5	0.7	1.7	1.2	2.5	0.7	1.7	1.2	2.5	0.7	1.7
100	2.1	3.0	1.4	3.0	2.1	3.5	1.4	3.0	2.1	3.5	1.4	3.0
150	2.5	3.0	1.5	3.0	2.5	4.8	1.5	4.0	2.5	4.8	1.5	4.0

Type FRM, FRM-C Air Capacity (SCFM)												
Set Pressure (psi) †	Inlet Sizes											
	1/8"				1/4"				3/8"			
	Rubber Diaphragm		Metal Diaphragm		Rubber Diaphragm		Metal Diaphragm		Rubber Diaphragm		Metal Diaphragm	
	10% Rise	20% Rise	10% Rise	20% Rise	10% Rise	20% Rise	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	0.3	0.9	0.5	1.5	0.3	0.9
25	2.1	6.5	1.2	4.0	2.1	6.5	1.2	4.0	2.1	6.5	1.2	4.0
50	5.0	16.0	2.6	9.5	5.0	16.0	2.6	9.5	5.0	16.0	2.6	9.5
100	12.0	25.0	6.5	15.0	12.0	25.0	6.5	15.0	12.0	25.0	6.5	15.0
150	16.0	35.0	11.5	25.0	16.0	35.0	11.5	25.0	16.0	35.0	11.5	25.0

Type FRM-2 Water Capacity (GPM)												
Set Pressure (psi) †	Inlet Sizes											
	1/4"				3/8"				1/2"			
	Rubber Diaphragm		Metal Diaphragm		Rubber Diaphragm		Metal Diaphragm		Rubber Diaphragm		Metal Diaphragm	
	10% Rise	20% Rise	10% Rise	20% Rise	10% Rise	20% Rise	10% Rise	20% Rise	10% Rise	20% Rise	10% Rise	20% Rise
10*	0.5	1.0	0.3	0.7	0.5	1.0	0.3	0.7	0.5	1.0	0.3	0.7
25	0.7	1.7	0.7	1.2	0.7	1.7	0.7	1.2	0.7	1.7	0.7	1.2
50	1.5	3.5	1.0	2.0	1.5	3.5	1.0	2.0	1.5	3.5	1.0	2.0
100	2.7	5.0	2.0	4.0	2.7	5.0	2.0	4.0	2.7	5.0	2.0	4.0
150	3.7	7.5	2.5	5.5	3.7	7.5	2.5	5.5	3.7	7.5	2.5	5.5
200	4.5	8.5	3.0	6.5	4.5	8.5	3.0	6.5	4.5	8.5	3.0	6.5
250	5.5	10.0	4.0	8.0	5.5	10.0	4.0	8.0	5.5	10.0	4.0	8.0

Type FRM-2 Air Capacity (SCFM)												
Set Pressure (psi) †	Inlet Sizes											
	1/4"				3/8"				1/2"			
	Rubber Diaphragm		Metal Diaphragm		Rubber Diaphragm		Metal Diaphragm		Rubber Diaphragm		Metal Diaphragm	
	10% Rise	20% Rise	10% Rise	20% Rise	10% Rise	20% Rise	10% Rise	20% Rise	10% Rise	20% Rise	10% Rise	20% Rise
10*	5.0	11.0	3.0	8.0	5.0	11.0	3.0	8.0	5.0	11.0	3.0	8.0
25	9.0	14.0	5.0	11.0	9.0	14.0	5.0	11.0	9.0	14.0	5.0	11.0
50	12.0	22.0	7.0	17.0	12.0	22.0	7.0	17.0	12.0	22.0	7.0	17.0
100	16.0	33.0	11.0	25.0	16.0	33.0	11.0	25.0	16.0	33.0	11.0	25.0
150	20.0	42.0	14.0	31.0	20.0	42.0	14.0	31.0	20.0	42.0	14.0	31.0
200	24.0	52.0	17.0	38.0	24.0	52.0	17.0	38.0	24.0	52.0	17.0	38.0
250	26.0	60.0	20.0	43.0	26.0	60.0	20.0	43.0	26.0	60.0	20.0	43.0

† 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.

CASH VALVE FR SERIES

BACK PRESSURE VALVES

Applications

The chart shows maximum temperature limits for various bodies and component part materials which are standardly available. Marked squares show how valve will be internally trimmed when temperature requirements so dictate. Many combinations for specific service are obviously possible. When in doubt, consult the factory.

How To Order

To order, specify Cash Valve type by specific series designation (i.e. Type FR or FR-6) and the valve body style (i.e. 2-way or 3-way, etc.), if applicable. Also state the following:

1. Valve size
2. Service (water, air, oil, etc.)
3. Inlet pressure range and set point
4. Outlet pressure (if any)
5. Maximum required flow rate
6. System operating temperature
7. Optional features, if any, as described for a specific valve.

Selection Information

Maximum Temperature °F.	Body Material				Body Seat			Seat Ring and Disc		Diaphragm				O-ring		Diaph. Gasket	
	Iron	Bronze	Steel	316 S. St.	Brass	303 S. St.	316 S. St.	303 S. St.	316 S. St.	BUNA-N	Bronze	316 S. St.	Monel®	BUNA-N	Teflon®	HI Temp.	Teflon®
200	X				X			X		X				X			
450	X				X			X			X				X	X	
450	X					X		X				X			X	X	
450	X				X	X		X					X		X	X	
200		X			X			X		X				X			
450		X						X		X					X	X	
450		X			X	X		X				X			X	X	
-320		X				X		X		X					X		X
600			X			X		X					X	*	*	X	
200				X			X		X	X				X			
600				X			X		X				X	*	*	X	
200				X		X		X		X				X			
600				X		X		X			X			*	*	X	

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



5500 WAYZATA BLVD # 800, MINNEAPOLIS, MN 55416 WWW.PENTAIR.COM/VALVES
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