FR, FR-6 BACK PRESSURE OR ECONOMIZER SERVICE

Construction

Threaded ends; 3-way, 2 side inlets-bottom outlet; bronze body, spring chamber and diaphragms; brass body seat; stainless steel seat disc, seat ring and pressure spring; PTFE O-ring and diaphragm gasket; stainless steel bolts; pressure-tight closing cap. All parts are commercially cleaned for cryogenic service. Also available with BSP threads.

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 pressure of 0 to 400 psig (0 to 27.6 barg) and maximum temperatures 200°F to 600°F (93°C to 316°C)*.
- Type FR-6 incorporates a diaphragm ring mounted above the diaphragm to accomodate higher back pressure ranges: 200 to 600 psig (13.8-41 barg); 200°F to 600°F (93°C to 316°C)*.

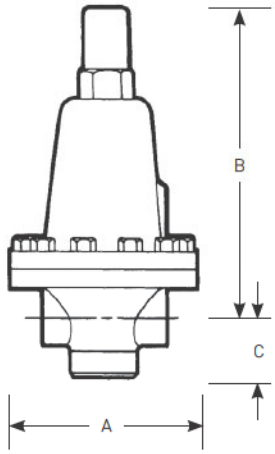
Note: Also available in stainless steel and special construction for hi-purity systems. Contact your sales representative.

Temperature rating: +150°F to -320°F (339K to 78K)

MAXIMUM INITIAL PRESSURE

Type	psi	kg/cm²
FR	250	17.58
FR-½"	400	28.12
FR-¾"	265	18.64
FR-1"-2"	250	17.58
FR-6	400	28.12
	600	42.18 on ½"

Maximum set pressure: See below. For higher pressures, contact your sales representative.



DIMENSIONS

Size		Dimensions A		B		C		Shipping weight	
in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	lbs	(kgs)
½	(15)	4¾	(120.65)	6¾	(171.45)	1⅝	(41.28)	9½	(4.27)
¾	(20)	5⅝	(142.88)	8	(203.20)	2	(50.80)	14¾	(6.64)
1	(25)	6½	(165.1)	10⁵⁄₁₆	(261.94)	2¼	(57.15)	23½	(10.58)
1¼	(32)	6½	(165.1)	10⅞	(276.23)	2⅜	(60.33)	24½	(11.03)
1½	(40)	7½	(190.5)	10¾	(273.05)	2⅝	(66.68)	33	(14.85)
2	(50)	7½	(190.5)	11	(279.40)	2⅝	(66.68)	35½	(15.98)

PRESSURE RANGES

Valve size		Maximum working ranges	
inches	(mm)	psi	(kg/sq cm)
½	(15)	0-20	(0-1.41)
		10-50	(0.70-3.52)
		40-90	(2.81-6.33)
		75-200	(5.27-14.06)
		100-400	(7.03-28.12)
		300-600	(21.09-42.18)
¾	(20)	0-10	(0-.70)
		10-70	(0.70-4.92)
		50-175	(3.52-12.30)
		100-265	(7.03-18.63)
		200-400*	(14.06-28.12*)
1	(25)	0-15	(0-1.06)
		20-75	(1.41-5.27)
		40-200	(2.81-14.06)
		50-250	(3.51-17.58)
		200-400*	(14.06-28.12*)

Valve size		Maximum working ranges	
inches	(mm)	psi	(kg/sq cm)
1¼	(15)	0-15	(0-1.06)
		20-85	(1.41-5.98)
		40-125	(2.81-8.79)
		50-250	(3.52-17.58)
		200-400*	(14.06-28.12)*
1½	(40)	0-15	(0-1.06)
		10-55	(0.70-3.87)
		30-100	(2.11-7.03)
		40-160	(2.81-11.25)
		100-250	(7.03-17.58)
		200-400*	(14.06-28.12)*
2	(50)	0-15	(0-1.06)
		10-55	(0.70-3.87)
		30-100	(2.11-7.03)
		40-160	(2.81-11.25)
		100-250	(7.03-17.58)
		200-400*	(14.06-28.12)*

*** Note:** requires special diaphragm ring and pressure plate.

FR SERIES SELECTION GUIDE

Example	FR-	Z	A	W	S	S	Z	Z	B	H	01	–	E	1
Model														
FR- FR														
FR6 FR-6														
Material of construction														
Z Bronze (FR, FR-6)														
G 316 SST (FR, FR-6)														
Valve size														
C ½"														
D ¾"														
E 1"														
F 1¼"														
G 1½"														
H 2"														
Service														
C Cryogenic service														
Body/connection style														
S 2 side inlets/bottom outlet - w/ NPT connections														
Spring chamber style														
S Standard														
C w/ pressure screw cap														
D w/ differential connection														
V Vented														
W Vent in wall / no cap														
Spring chamber material														
Z Bronze														
G 316 Stainless steel														
Diaphragm material														
Z Bronze (cryo)														
G 316 Stainless steel (cryo)														
Body seat material														
E 303 Stainless steel														
G 316 Stainless steel														
Z Brass														
Pressure screw style														
S Standard														
Variation														
04 303 Stainless steel trim w/ Teflon O-ring and teflon diaphragm gasket (ball seat, seat ring)														
14 316 Stainless steel trim w/ Teflon O-ring and teflon diaphragm gasket (ball seat, seat ring)														
Design revision														
(-) Indicates original design														
Spring material														
E Stainless steel														
Spring range														
Refer to tables below														

STANDARD SPRING RANGES (psig)

Spring Material	Type	Size	1	2	3	4	5	6
SST	FR	½"	0 - 20	10 - 50	40 - 90	75 - 200	100 - 300	100 - 400
		¾"	0 - 10	0 - 15	10 - 70	50 - 175	100 - 265	- - - -
		1"	0 - 15	10 - 35	20 - 75	40 - 200	50 - 250	- - - -
		1¼"	0 - 15	10 - 30	20 - 85	40 - 125	50 - 250	- - - -
		1½", 2"	0 - 15	5 - 20	10 - 55	30 - 100	40 - 160	100 - 250
	FR-6	½"	200 - 600	- - - -	- - - -	- - - -	- - - -	- - - -
		¾", 1",1¼",1½", 2"	200 - 400	- - - -	- - - -	- - - -	- - - -	- - - -