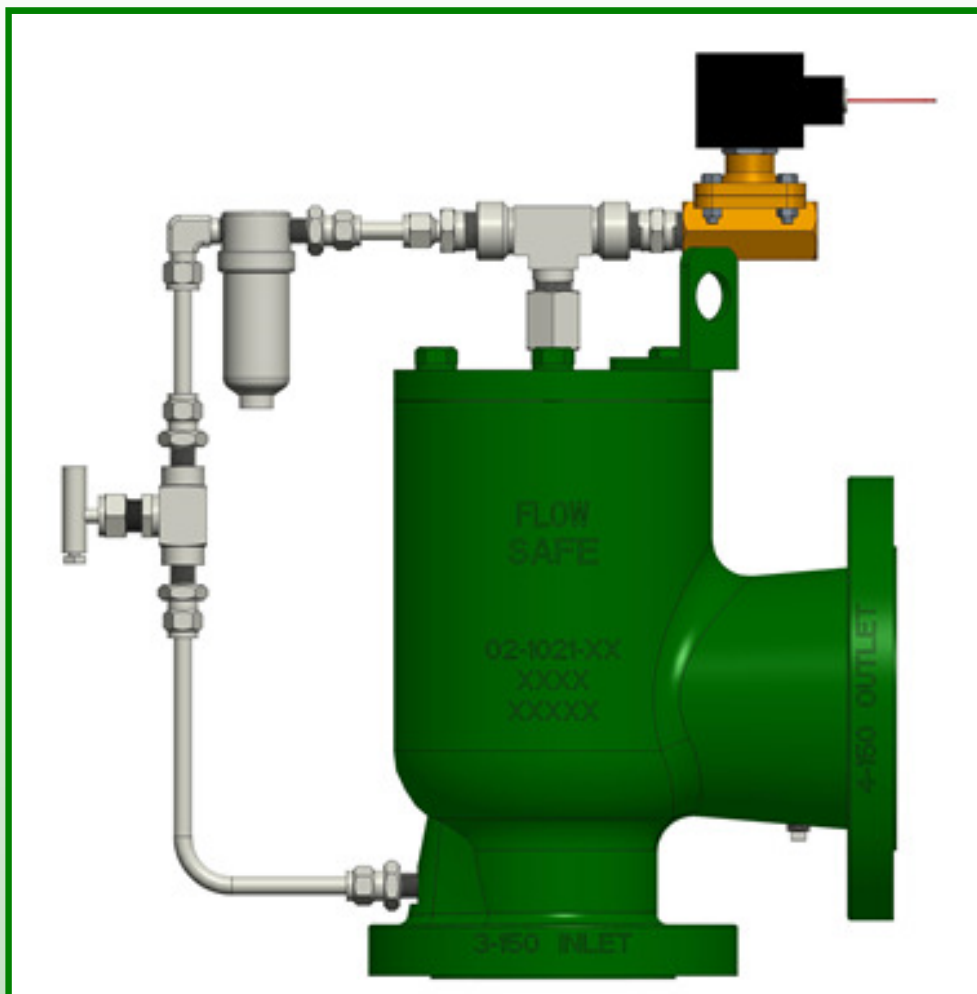


*“THE NEXT GENERATION”*



**FLOW SAFE**

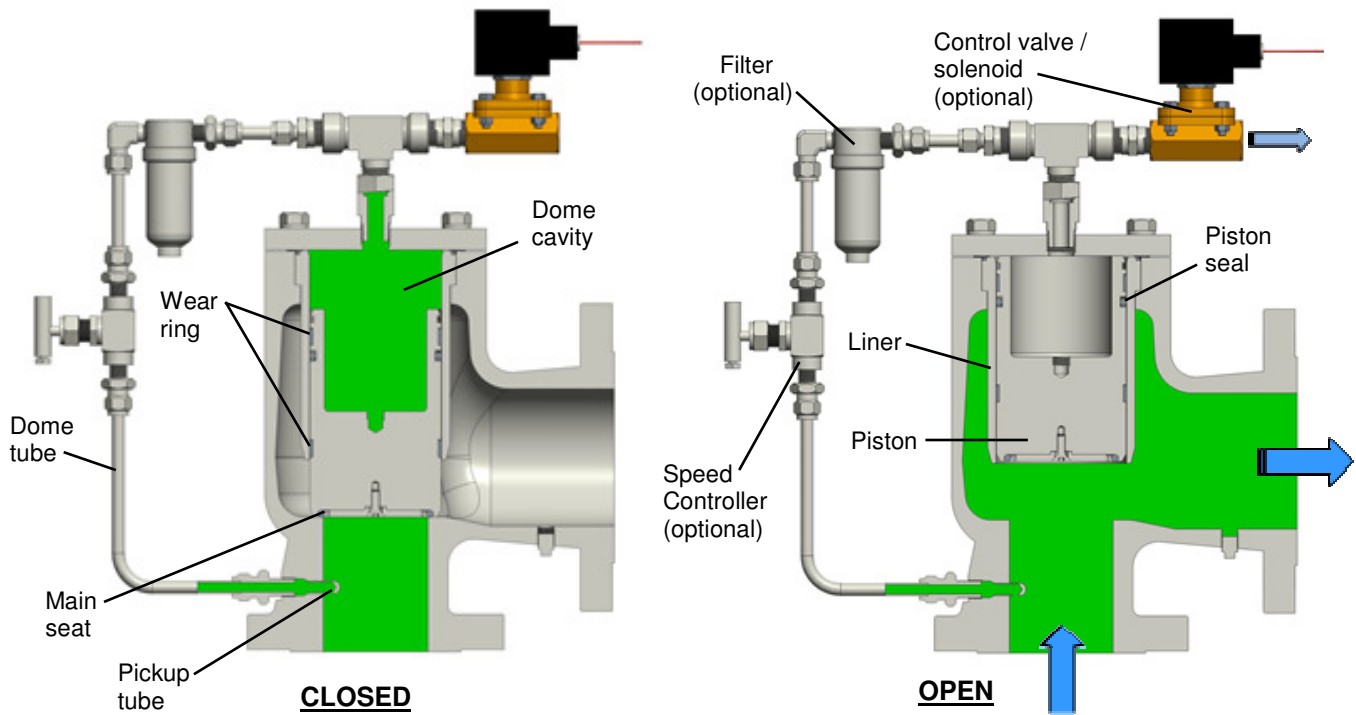
*High Performance Safety Relief Valves*



## **F70U Series** *Unloader Valves*

# APPLICATION / OPERATION

F70U Series



The F70U Unloader valve provides a means to control flow for a variety of process flow applications, gas or liquid. It is designed to be repeatedly cycled at full pressure throughout its acceptable range of temperatures.

The F70U Unloader “Workhorse” is ideal for batch processing where rugged, high-cycle service and minimum maintenance are required. It is most commonly used for compressor and blower unloading applications.

These pressure loading / vent valves are particularly advantageous in installations that require:

- Minimum size and weight
- High cycling rate
- Long service life
- Emergency shutdown (ESD)
- Minimal installation and maintenance cost
- Ability to handle large flow rates
- Bubble-tight seating and reseating
- Explosion-proof controls

System pressure is routed from below the valve through the pickup tube to the dome cavity of the valve. Dome pressure, acting on a differential area between the top and bottom of the piston, creates a downward force on the seat and provides shutoff.

The control valve can be electric or pneumatic, remotely or locally operated. Both 2-way and 3-way solenoid valves are used, depending on the specific application. An optional speed controller valve can be used to modulate the speed of the closing stroke of the valve.

The F70U utilizes an elastomeric O-ring as the main seat to achieve tight closure. A dynamic piston seal guards against leakage from the dome cavity to the discharge. Wear rings on the piston help to provide smooth and consistent operation, particularly for high-cycle conditions.

# FLOW CAPACITIES

# F70U Series

SCFM @ 60 °F, Z=1.0, MW=29 (Zero overpressure)

**AIR**

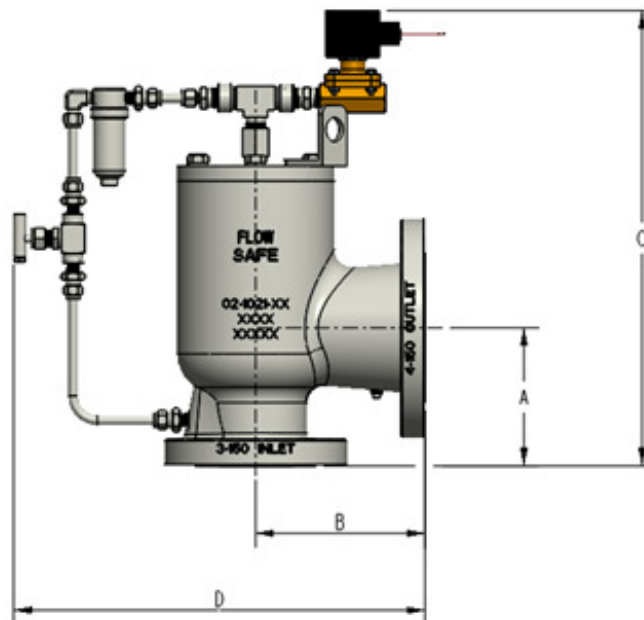
Valve Size:	1-1/2 x 2	2 x 3	3 x 4	4 x 6	6 x 8	8 x 10	10 x 12	12 x 16
Orifice Area (in <sup>2</sup> ):	1.770	3.365	7.402	11.43	26.06	45.66	71.85	111.87
5 psig	395	752	1655	2556	5828	10212	16070	25022
10 psig	586	1115	2453	4091	9327	16342	25716	40040
20 psig	905	1700	3740	6541	14914	26131	41120	64023
30 psig	1232	2260	4971	8426	19212	33662	52971	82476
40 psig	1508	2766	6084	10312	23511	41194	64823	100929
50 psig	1783	3271	7196	12197	27809	48725	76674	119381
60 psig	2059	3777	8309	14082	32108	56257	88526	137834
70 psig	2335	4283	9421	15968	36406	63789	100377	156287
80 psig	2611	4788	10534	17853	40705	71320	112229	174739
90 psig	2886	5294	11646	19738	45004	78852	124080	193192
100 psig	3162	5800	12759	21624	49302	86383	135932	211645
125 psig	3871	7100	15618	26470	60351	105742	166394	259075
150 psig	4564	8370	18413	31207	71151	124666	196172	305440
175 psig	5257	9641	21208	35944	81952	143589	225950	351804
200 psig	5949	10912	24003	40681	92752	162513	255728	398168
250 psig	7335	13453	29593	50156	114353	200360	315285	490896

NOTE: lb/hr = 4.59 x SCFM

# DIMENSIONS

Inlet Connection	Outlet Connection	Orifice area, in <sup>2</sup> (mm <sup>2</sup> )	Dimensions, in (mm) <sup>1</sup>				Approx. weight, lb (kg)
			A	B	C, approx.	D, approx.	
1-1/2" FNPT	2" FNPT	1.770 (1142)	2.75 (70)	3.00 (76)	11.0 (279)	8.0 (203)	15 (7)
2"-150#	3"-150#	3.365 (2171)	4.56 (116)	5.30 (135)	14.5 (368)	12.0 (305)	60 (27)
3"-150#	4"-150#	7.402 (4775)	5.70 (145)	7.00 (178)	17.5 (445)	14.5 (368)	85 (39)
4"-150#	6"-150#	11.43 (7374)	7.75 (197)	8.25 (210)	18.5 (470)	17.0 (432)	170 (77)
6"-150#	8"-150#	26.06 (16813)	9.44 (240)	9.50 (241)	22.5 (572)	19.0 (483)	270 (122)
8"-150#	10"-150#	45.66 (29458)	10.88 (276)	11.00 (279)	26.0 (660)	23.0 (584)	460 (209)
10"-150#	12"-150#	71.85 (46354)	11.63 (295)	13.00 (330)	28.0 (711)	28.0 (711)	775 (351)
12"-150#	16"-150#	111.87 (72174)	11.92 (303)	15.56 (395)	34.0 (864)	31.0 (787)	1100 (500)

<sup>1</sup> Contact Flow Safe for submittal drawing whenever specific dimensions are needed for construction.



# SPECIFICATIONS

Unloading / vent pressure range	5 to 285 psig (0.34 to 19.6 barg) <sup>1, 2</sup>
Temperature range	-20 °F (-29 °C) to 275 °F (135 °C) / 400 °F (204 °C) with Viton
Main valve body material	Carbon steel (WCB) / Aluminum for 1-1/2" x 2"
Main valve piston material	Aluminum
Main valve liner material	Carbon steel (plated)
Seat and liner seal material	Nitrile (Buna-N), Viton, or as requested
Piston seal material	Teflon V-seal with SS spring
Wear ring material	Graphite-filled PTFE
Tubing / fitting material	316 SS
Bolting material	CS main cap bolts; 304 or 316 SS retainer bolts

Other materials available upon request  
 Various solenoid or pneumatic valves available (contact factory)

# PART NUMBERING

U 7 0 5 0 - 0 3 R F 1 - 0 4 R F 1 - C S - A L - B B A F

Inlet size:

- 15 = 1-1/2"
- 02 = 2"
- 03 = 3"
- 04 = 4"
- 06 = 6"
- 08 = 8"
- 10 = 10"
- 12 = 12"

Inlet connection type:

- FN = Female NPT
- RF = RF flange (ASME B16.5)

Inlet rating:

- 0 = Threaded
- 1 = ASME 150#

Options:

- A = N.O. solenoid valve
- B = N.C. solenoid valve
- X = Speed controller
- F = Filter
- Q = ESD dump valve

Liner Seals:

- B = Buna-N
- E = EPR / EPDM
- V = Viton ('A')
- Y = HNBR

MV Seat: O-ring material from 'Seals' above

Trim material: AL = Aluminum  
SS = 316 SS

Body material:  
CS = Carbon steel  
AL = Aluminum

Outlet size / connection type / rating: See "Inlet size", plus  
16 = 16"



**YOUR AUTHORIZED REPRESENTATIVE**

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