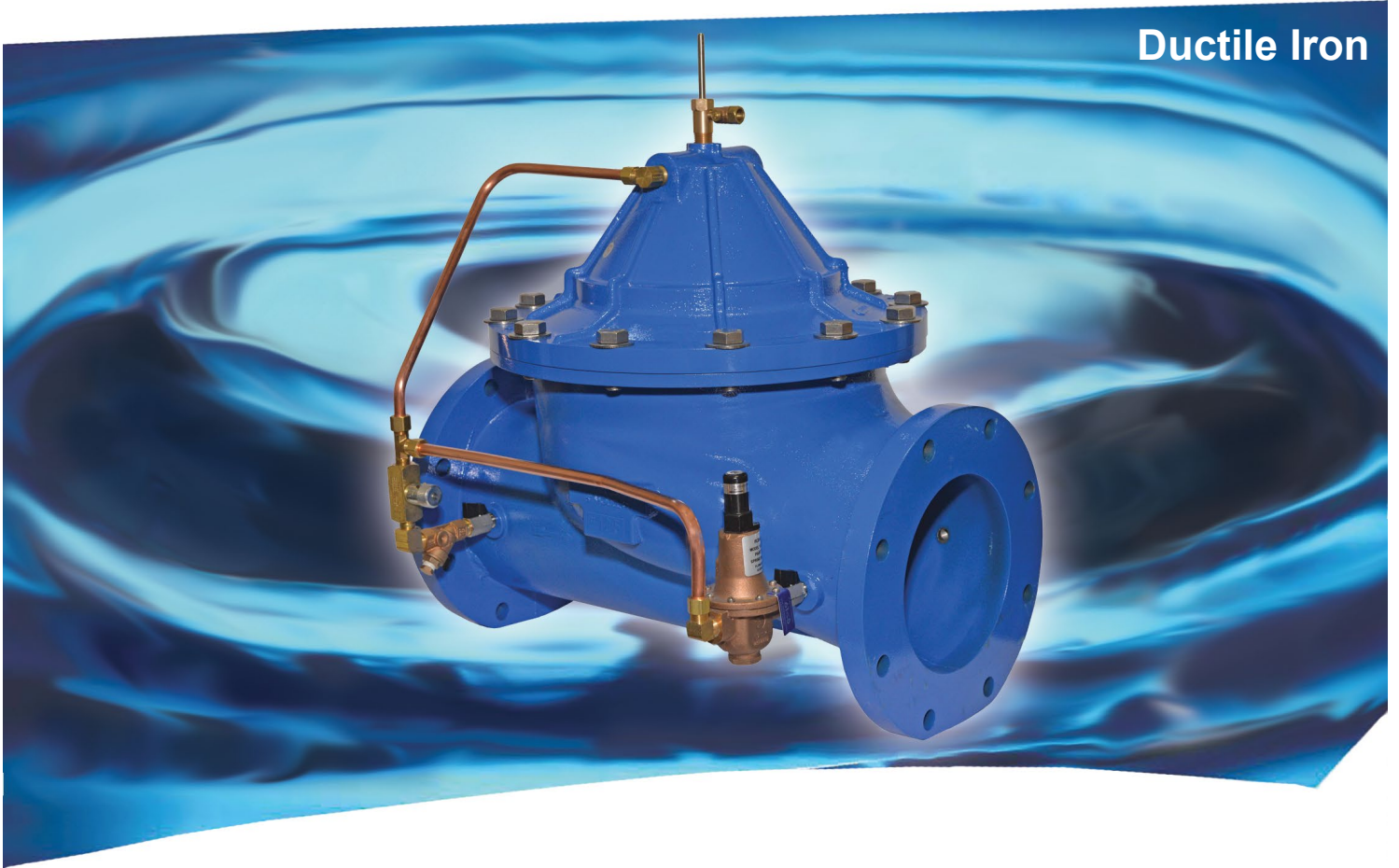


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FLOMATIC® VALVES

Ductile Iron



Automatic Hydraulic Control Valves

Pressure Reducing Valves SERIES C100/CF100



Flomatic Valves

High Quality Valves Built to Last...

FLOMATIC® SERIES C100/CF100

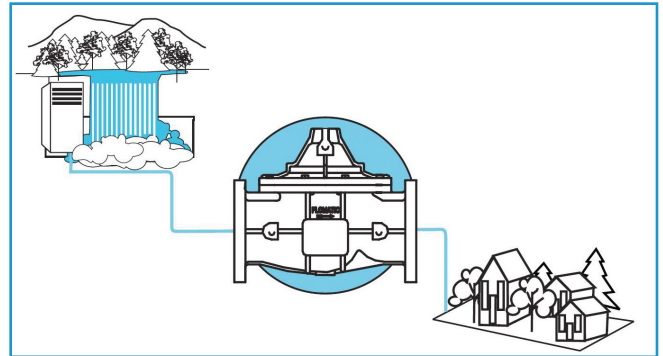
PRESSURE REDUCING VALVES

for Water Systems - Municipal, Industrial and Irrigation

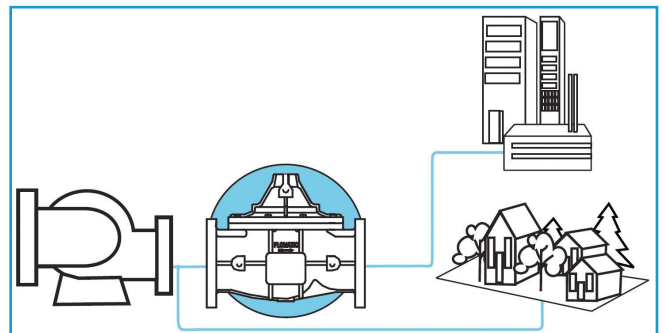
The Pressure Reducing Valve is used to reduce an undesired high upstream (inlet) pressure to a constant lower downstream (outlet) operating pressure regardless of varying upstream (inlet) pressure and flow rates. This series is also available in a reduced cavitation model CF, which has a smaller valve seat port.

TYPICAL APPLICATIONS

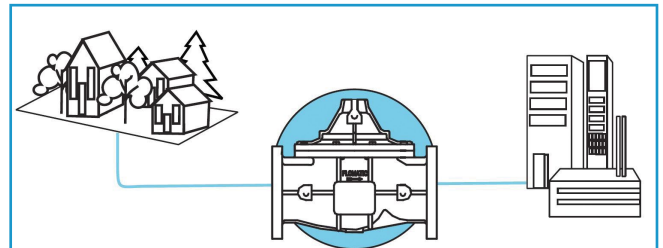
1. Reduce pressure to a distribution system when supplying by gravity from a source with a relatively high elevation.



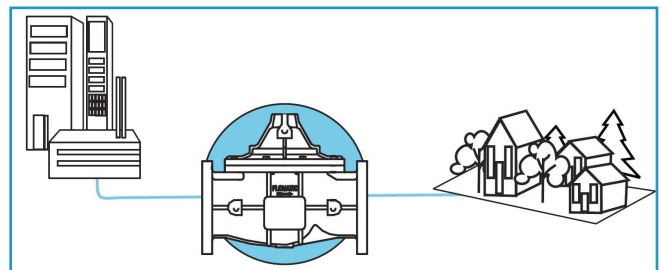
2. Reduce pressure to a low pressure zone when the source is a high lift pump.



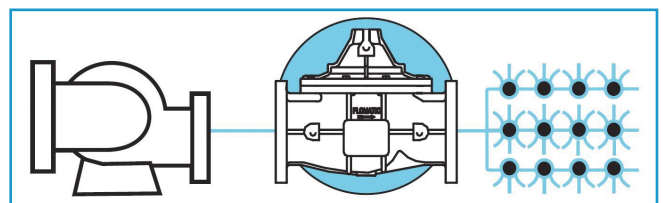
3. Reduce pressure to a lower constant, pressure within an industrial facility when the municipal supply is the sole source or when supplying emergency water to a plant which loses its primary source.



4. Reduce pressure to a low pressure zone when a high pressure zone is the sole source or when makeup water is required to supplement the normal supply to the low pressure zone.



5. Reduce pressure to the nozzles of an irrigating system when the source is a high pressure booster pump.



FLOMATIC Pressure Reducing Valve

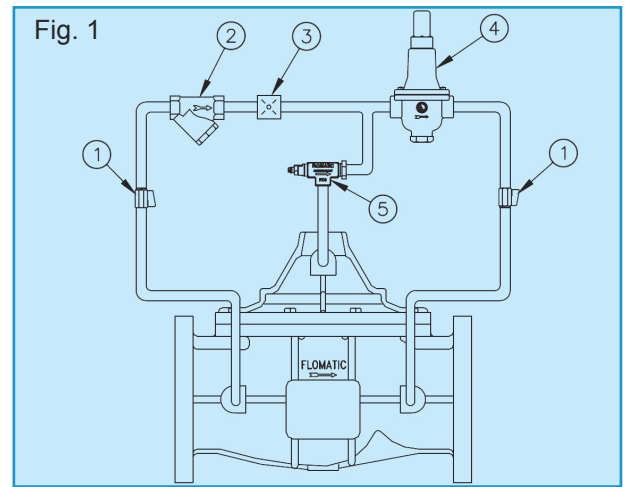
Model No. C101/CF101

Principal of Operations

The Model No. C101/CF101 Pressure Reducing Valve controls and maintains a preset, reduced downstream (outlet) pressure by causing the main valve to throttle and sustain the desired reduced pressure regardless of variations in demand and upstream (inlet) pressure.

The throttled position of the main valve is controlled by an adjustable pilot valve (Fig. 1 #4) operating in conjunction with an orifice (Fig.1 #3).

The pilot valve senses the downstream (outlet) pressure and reacts immediately to reposition the valve as the outlet pressure tends to increase or decrease with varying demand. The change in throttled position of the pilot valve causes the main valve to reposition and throttle to maintain the preset outlet pressure.



- | | |
|----------------------------------|--------------------|
| 1. Isolation Valve | 4. PRP Pilot Valve |
| 2. Y Strainer | 5. Flow Control |
| 3. Orifice (restriction fitting) | |

Fig. 2 - Single Valve installed horizontal with a manual service by-pass

shows a service bypass or set up for easy servicing of valve.

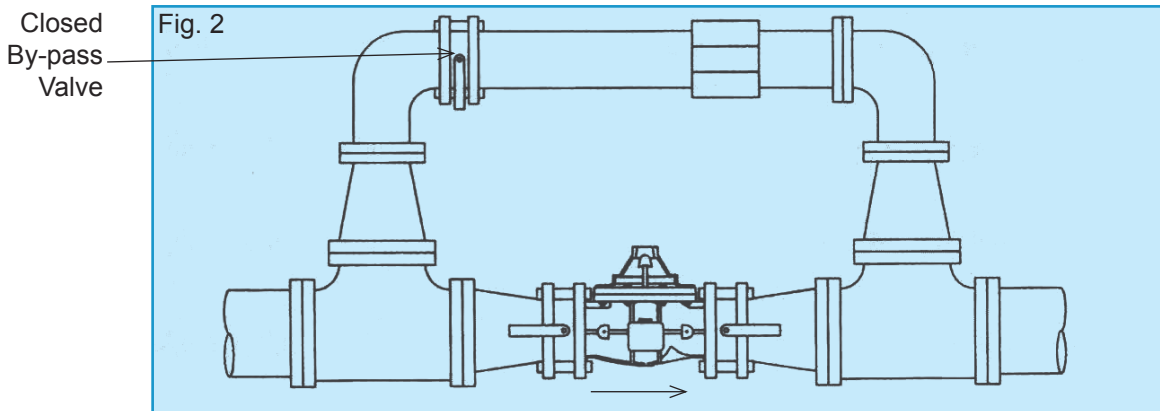
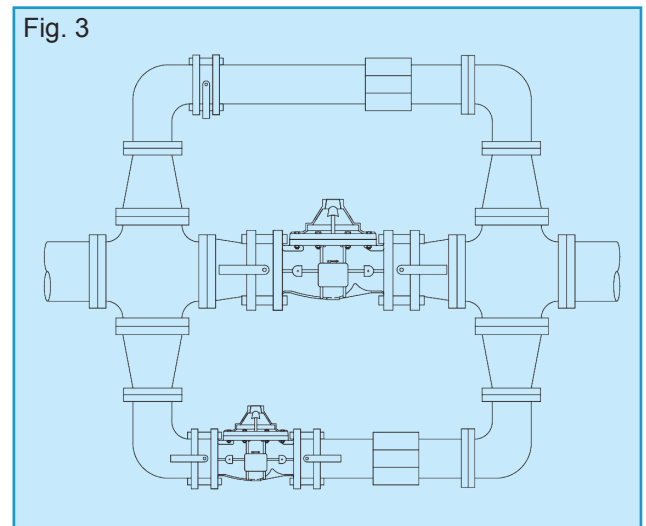


Fig. 3- Dual Valve Installation with service by-pass

Fig. 3 - A dual or compound valve installation is recommended when the normal and low flow requirements are considerably lower than peak or fire flows. The by-pass valve is set 5 psi higher than the main valve. Under low flow conditions the main PRP closes and the bypass stays open. Thus controlling the pressure at low flows.

Benefits

1. Reduces single valve maintenance costs and minimizes noise, both of which would result from a single large (oversized) valve operating at lower flows.
2. Maintains a more stable pressure by eliminating or minimizing upstream (inlet) and downstream (outlet) pressure fluctuations resulting from hunting action caused by a single large valve at low flows.
3. Insures a continuous supply of reduced pressure water when one of the reducing valves is being serviced.

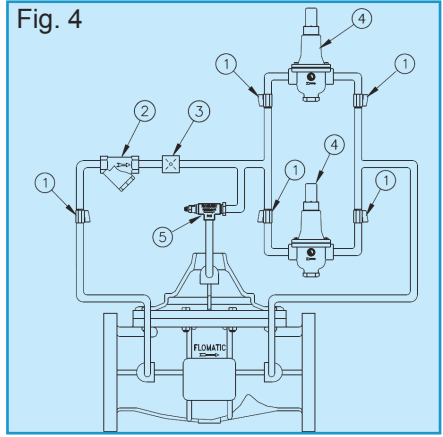


FLOMATIC Pressure Reducing Valve with “Dual Pilots”

Model No. C102/CF102

The **Model No. C102/CF102** is the same as the Model No. C101 with the addition of a second pressure reducing pilot valve. This second pilot permits uninterrupted flow while servicing one of the pilots as well as the ability to easily change to a different reduced pressure setting. Switching from one pilot to the other may be done manually or electrically.

- | | |
|----------------------------------|--------------------|
| 1. Isolation Valve | 4. PRP Pilot Valve |
| 2. Y Strainer | 5. Flow Control |
| 3. Orifice (restriction fitting) | |

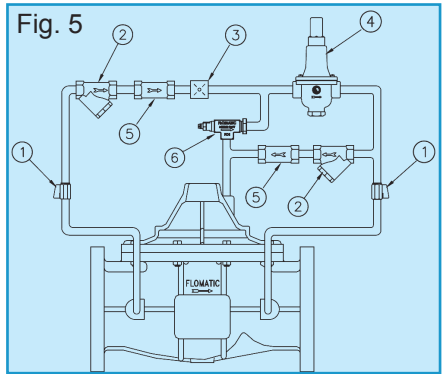


FLOMATIC Pressure Reducing and Check Valve

Model No. C103/CF103

The **Model No. C103/CF103** Pressure Reducing and Check Valve provides pressure reduction plus a check valve feature which causes the valve to close when the downstream (outlet) pressure is greater than the upstream (inlet) pressure.

- | | |
|----------------------------------|--------------------|
| 1. Isolation Valve | 4. PRP Pilot Valve |
| 2. Y Strainer | 5. Check Valve |
| 3. Orifice (restriction fitting) | 6. Flow Control |

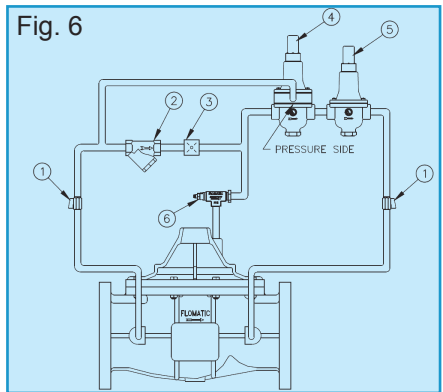


FLOMATIC Pressure Reducing and Back Pressure Sustaining Valve

Model No. C104/CF104

The **Model No. C104/CF104** Pressure Reducing and Back Pressure Valve provides pressure reduction plus back pressure control which sustains a minimum upstream (inlet) pressure. After the upstream (inlet) pressure is safely achieved the pressure reducing feature maintains a preset downstream pressure.

- | | |
|----------------------------------|--------------------|
| 1. Isolation Valve | 4. BPP Pilot Valve |
| 2. Y Strainer | 5. PRP Pilot Valve |
| 3. Orifice (restriction fitting) | 6. Flow Control |



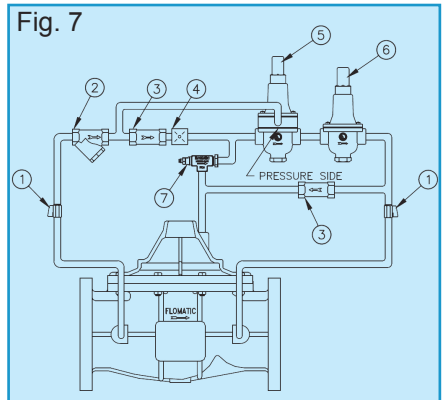
FLOMATIC Pressure Reducing, Back Pressure Sustaining and Check Valve

Model No. C104-C/CF104-C

The **Model No. C104-C/CF104-C** Pressure Reducing, Back Pressure and Check Valve combines the control features of Model No. C103/CF103 and C104/CF104.

This valve provides a reduced downstream pressure, sustains a minimum upstream pressure and closes to prevent reverse flow if the downstream pressure becomes greater than the upstream pressure.

- | | |
|----------------------------------|--------------------|
| 1. Isolation Valve | 5. BPP Pilot Valve |
| 2. Y Strainer | 6. PRP Pilot Valve |
| 3. Check Valve | 7. Flow Control |
| 4. Orifice (restriction fitting) | |



FLOMATIC Pressure Reducing and Back Pressure Sustaining Valve with Solenoid Override

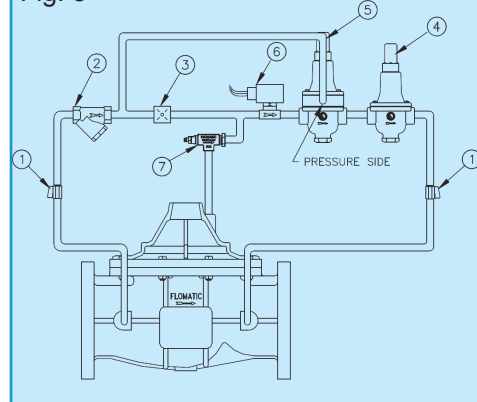
Model No. C104-S/CF104-S

The **Model No. C104-S/CF104-S** Pressure Reducing and Back Pressure Valve with solenoid override provides downstream pressure reduction and upstream back pressure control when a two-way, normally open solenoid pilot is de-energized (or when a two-way normally closed solenoid pilot is energized).

Energizing the normally open solenoid pilot or de-energizing the normally closed solenoid pilot closes the valve.

- | | |
|----------------------------------|--------------------|
| 1. Isolation Valve | 5. BPP Pilot Valve |
| 2. Y Strainer | 6. Solenoid Valve |
| 3. Orifice (restriction fitting) | 7. Flow Control |
| 4. PRP Pilot Valve | |

Fig. 8



FLOMATIC Pressure Reducing Valve with Solenoid Override

Model No. C105/CF105, C106/CF106 and C107/CF107

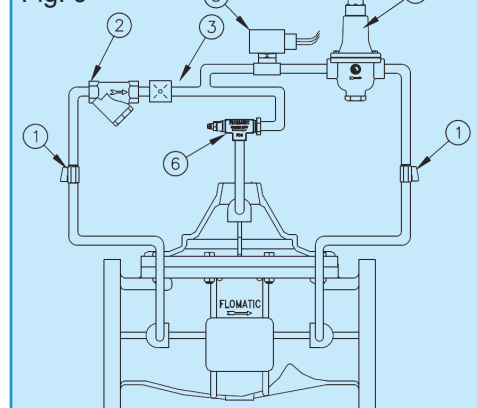
The **Model No. C105/CF105** permits flow and provides pressure reduction when the two-way, normally open solenoid control is de-energized. Energizing the solenoid control closes the valve.

The **Model No. C106/CF106** permits flow and provides pressure reduction when the two-way, normally closed solenoid control is energized. De-energizing the solenoid control closes the valve.

The **Model No. C107/CF107** provides pressure reduction when the three-way solenoid control is de-energized. Energizing the solenoid control causes the valve to open wide.

- | | |
|----------------------------------|--------------------|
| 1. Isolation Valve | 4. PRP Pilot Valve |
| 2. Y Strainer | 5. Solenoid Valve |
| 3. Orifice (restriction fitting) | 6. Flow Control |

Fig. 9



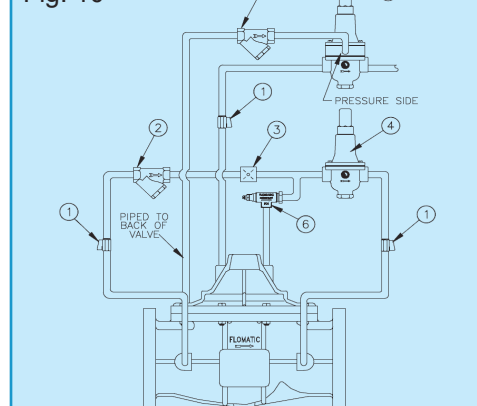
FLOMATIC Pressure Reducing Valve with Open Wide Control

Model No. C108/CF108

The **Model No. C108/CF108** normally provides pressure reduction. However, if the upstream (inlet) pressure drops to a preset lower value, a secondary hydraulic control pilot is actuated to cause the valve to open wide for maximum flow.

- | | |
|----------------------------------|-------------------------|
| 1. Isolation Valve | 4. PRP Pilot Valve |
| 2. Y Strainer | 5. Under Pressure Pilot |
| 3. Orifice (restriction fitting) | 6. Flow Control |

Fig. 10



NOTE:

1. If a check feature is desired for Model No. C105/CF105, C106/CF106, C107/CF107 or C108/CF108, add the suffix "C" to the Model Number.
2. If a solenoid override is desired for Model No. C103/CF103 or C108/CF108, add the suffix "SNC" or "SNO" to the Model Number.

Information Required with Valve Order

- | | | |
|-----------------------------|------------------------------|-----------------------------------|
| 1. Size | 4. Paint Specification | 7. Maximum and Minimum Flow Rates |
| 2. Model Number | 5. Inlet Pressure | 8. Electrical Data, if applicable |
| 3. Connection Specification | 6. Outlet (Reduced) Pressure | 9. Optional Equipment |

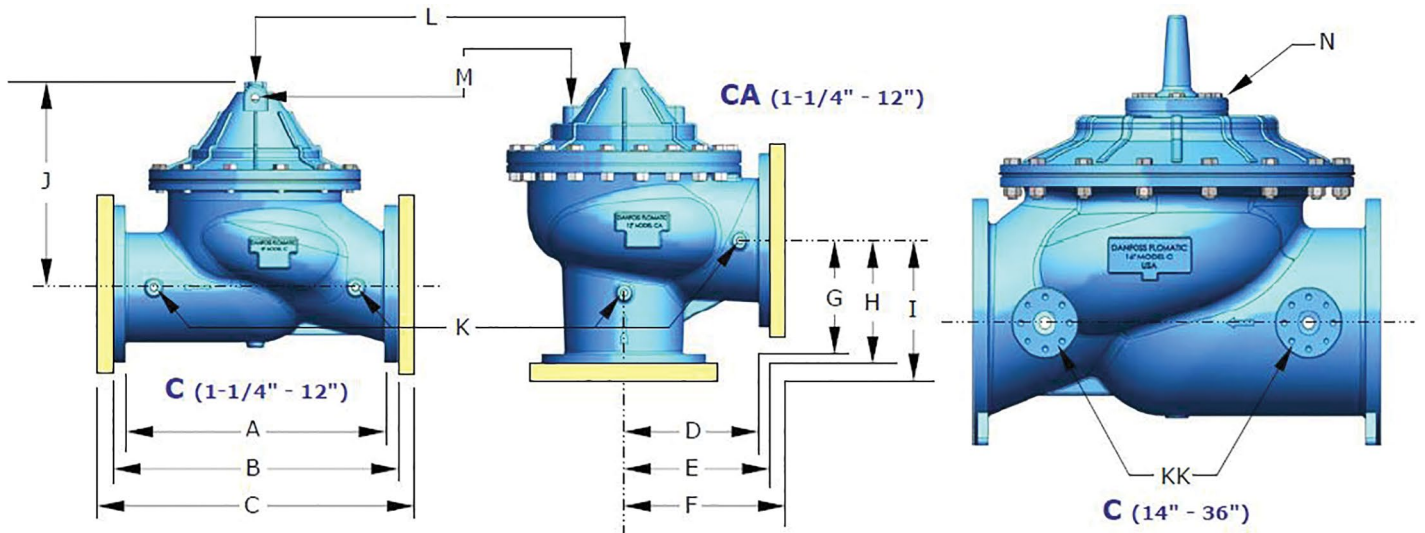
SIZING GUIDE for THROTTLING VALVES

In order to insure pressure control and avoid excessive noise and maintenance expense, extreme care must be taken when sizing the throttling valve for a specific application. Although both pressure conditions and flow (velocity) are contributing factor, field experience has determined that flow rate is the most critical factor and that proper valve sizing can be attained through consideration of the flow rate alone.

The maximum flow rates in the tables below for Model C (full ported valves) are based on a velocity of 15 ft per second, (fps) or 4.6 meter per second (m/s). The throttling valve is capable of handling larger flows for short periods of time; however, the increase in maximum flow should be limited to 25% of the above values. Minimum flow rates are based on 0.5 feet/second flow rate (0.15 meter per second, m/s). Valve should be selected to be opened between 20-80% for best efficiencies and service life. The flow values for Model CF (reduced ported valves) in the table below are less as they have smaller valve orifice or seat areas.

The tables below indicate the desired throttling valve size (inches) for designated maximum and minimum flow rates in gallons per minute (GPM):

Valve Body Type (Size)	Flow	1.5"	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"
Model C & CA Full Ported	Min	2.5	4	7	11	20	40	80	120	180	240	300	400	500	700	1,000	-
	Max	90	160	230	340	600	1,300	2,400	3,700	5,200	7,200	9,500	12,000	14,000	21,000	32,000	-
Model CF & CFA Reduced Ported	Min	-	-	-	7	11	30	40	80	120	180	240	300	400	500	700	900
	Max	-	-	-	160	340	600	1,300	2,400	3,700	5,200	7,200	9,500	12,000	14,000	21,000	32,000
Model CI Diaphragm	Min	-	2	2	2	5	8	25	-	-	-	-	-	-	-	-	-
	Max	-	110	132	132	264	1,020	1,790	-	-	-	-	-	-	-	-	-



VALVE SIZE (Inches)		1-1/4	1-1/2	2	2-1/2	3	4	6	8	10	12	14	16	18	20	24	30	36
A	Globe Grooved	8.50	8.50															
A	Globe Threaded	7.25	7.25	9.38														
B	Globe 150#		8.50	9.38	11.00	12.00	15.00	20.00	25.38	29.75	34.00	39.00	41.38	46.00	52.00	61.50	63.75	76.00
C	Globe 300#		9.13	10.00	11.63	13.25	15.38	21.00	26.38	31.13	35.50	40.50	43.50	47.63	53.63	63.24	65.50	76.00
D	Angle Threaded	3.25	3.25	4.75														
E	Angle 150#		4.00	4.75	5.50	6.00	7.50	10.00	12.75		17.00							
F	Angle 300#			5.00		6.38	7.81	10.50	13.25		17.75							
G	Angle Threaded	1.88	1.88	3.25														
H	Angle 150#		4.00	3.25	4.00	4.00	5.00	6.00	8.00		13.75							
I	Angle 300#			3.50		4.38	5.31	6.50	8.50		14.50							
J	Cover to Center	5.75	5.75	4.69	6.38	6.44	8.00	15.81	17.06	17.19	19.50	24.00	29.25	39.00	42.00	44.00	49.75	62.00
K	Body Tapping (NPT)	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1	1	1	1	1	1	1-1/2	2
KK	Body Flange (ANSI 300#)										1-1/4	2	2	2	2	2	4	4
L	Cover Center Port (NPT)	1/4	1/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	3/4	3/4	3/4	3/4	1-1/2	1-1/2
M	Cover Port Size (NPT)	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/4	3/4	3/4	3/4	1	1	1-1/2	1-1/2
N	Cover Flange (ANSI 300#)											3	4	4	6	8	10	12
LBS.	Approx. Ship Wt. (Pounds)	16	16	24	57	59	127	303	500	815	1,040	1,360	1,750	2,535	3,315	5,270	8,034	12,223

Cavitation

Other factors which must be considered when designing a pressure reducing valve station is cavitation. A large reduction in pressure (pressure differential) and a low downstream (reduced) pressure may result in damage to the valve by cavitation.

To determine if cavitation will result from a desired reduction in pressure, refer to the Cavitation Curve in the Engineering Section. If the curve indicates that the parameters specified will cause cavitation, the required pressure reduction should be taken in two or more stages. For a two stage pressure reduction, the pressure reducing valves, installed in series, may be directly connected.

Benefits of the Pressure Reducing Valve

Reduces maintenance expense by minimizing pipeline breaks plus damage and normal wear to equipment. Reduces capital expense by permitting the use of pipe and equipment with a lower pressure rating. Conserves valuable potable water by delivering desired volume to user at a lower, adequate pressure. Conserves potable water by reducing the loss resulting from leakage.

GENERAL SPECIFICATIONS

The pressure reducing valve shall be diaphragm operated, single seated, pilot operated and shall maintain a constant reduced downstream pressure regardless of changes in upstream pressure or flow rates.

The valve shall be provided with ANSI 150# or ANSI 300# flat faced flanges, available for sizes 1 1/2" - 36" or NPT threaded connections available for 1 1/4" - 3" size. A visual position indicator is standard for 6" and larger to determine valve position. The controls shall be pre-piped and consist of an adjustable pilot valve, flow orifice, gauge cocks, Y strainer, isolation valves and an adjustable flow control for smooth operation.

The stem shall be guided above and below the valve seat to provide maximum stability and protect against distortion by turbulence and high velocities. Valve seating shall be rubber to metal for drop tight closure and all repairs shall be made without removal of the valve from the line. An air bleeder shall be provided to vent all air from above the diaphragm.

Materials of Construction

Body- Ductile Iron (ASTM A-536 65-45-12)	Paint (Interior and Exterior) - NSF® Fusion Epoxy coated
Trim - Unleaded Bronze (ASTM B-62), Ductile Iron (ASTM A536 65-45-12) or 316 SS	Stud Bolts - Stainless Steel, optional 316 SS
Stem - Stainless Steel, optional 316 SS	Pilot and Strainer - Bronze (ASTM B-62) or SS
Diaphragm and "O" Ring - Buna N, optional EPDM or Viton	Fittings - Low lead Brass (Commercial)
	Tubing - Copper, SS hard pipe or SS braided.

Each valve with its controls shall be factory tested and preset for anticipated field conditions and the main valve body shall receive a hydrostatic pressure test of 300 psi for Class 150 and 500 psi for Class 300.

The Pressure Reducing Valve (or Pressure Reducing and _____ Valve) shall be _____ inch size, Model No. _____ as manufactured by the Flomatic Corporation of Glens Falls, N.Y.

PRP Pilot Springs and Adjustment Ranges

<u>Range</u>	<u>Part No.</u>	<u>Color Spring:</u>
5 to 80 psi	152100A	Green
2 to 35 psi	152100C	Silver
25 to 125 psi	152100B	Blue/black
30 to 300 psi	152100D	Yellow

Optional Controls (available as an extra)

1. Single or dual limit switches - to indicate valve open or closed.
2. Additional isolation valves - to isolate pilot valve, strainer or orifice.
3. Oversized strainer (filter) with fine screen - for dirty water.
4. Motor operated pilot valve - to permit changing the reduced pressure setting from a remote location.
5. Feedback potentiometer - to indicate valve position (0 to 100% open).
6. Dual strainers - to avoid shutdown while cleaning or replacing screens.
7. Indicator Rod - 4" and smaller, (6" and larger standard).

Also Available from
FLOMATIC® VALVES



Enviro Check Valves



Ductile Iron Check Valves



Stainless Check Valves



Swing Check Valves



Butterfly Valves



Ball Check Valves

WARRANTY

LIMITED THREE YEAR WARRANTY: The Flomatic Corporation warrants that its Automatic Hydraulic Control Valves are free from defects in material and workmanship. Flomatic will replace any parts or components found to be defective within three years from date of shipment. This warranty will be void if the valve or its controls have been modified without factory authorization or if it is subjected to unusual operating conditions which were not described or specified at the time of purchase.

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