

Rate Of Flow Control Valve



Note: Shown with optional orifice housing

Singer model -RF rate of flow control valve employs the basic Singer model 106-PG or 206-PG main valve.

The RF pilot valve (model 160-RF) senses the pressure differential across the specially sized orifice plate. When the pressure differential is less than the set point, the valve opens, allowing flow to meet predetermined demand.

At the desired maximum set point, the pilot reacts to small changes in sensing pressure and controls the main valve position by modulating the pressure above the diaphragm.

When the pressure drop across the orifice exceeds the set point, the valve closes slightly, limiting the flow to the pre-set maximum.

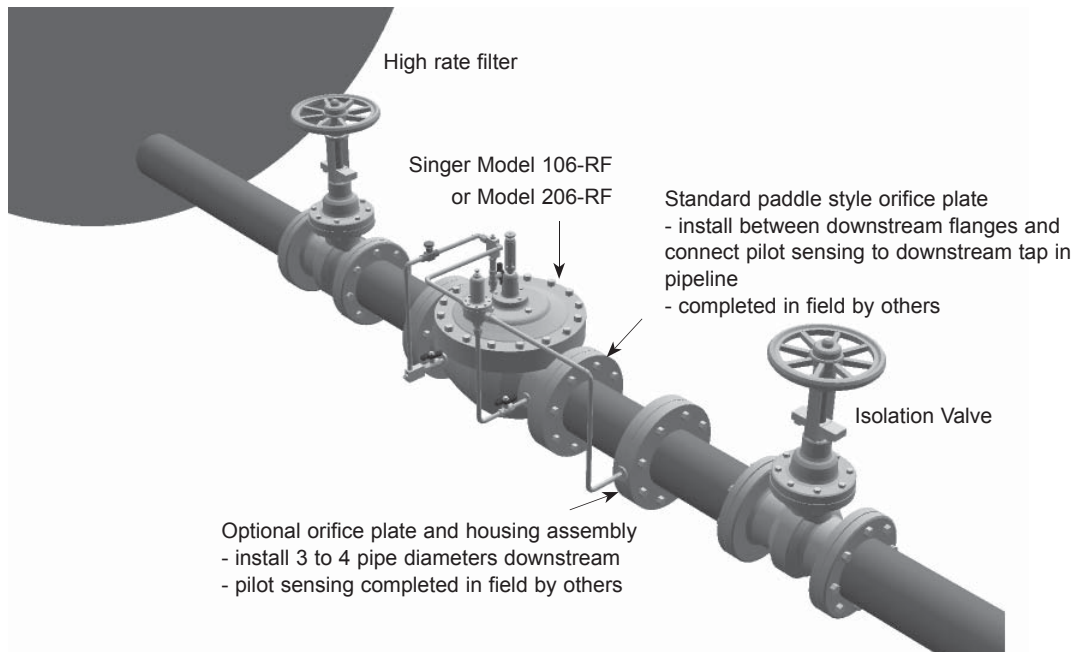
The orifice is usually sized to generate a pressure differential of 3 to 5 psi (.2 to .35 bar) at the desired flow. Adjusting the pilot setting permits the maximum flow to be changed in the field above or below the original point.

- ACCURATELY LIMITS FLOW TO A PRE-SET MAXIMUM
- EASILY ADJUSTABLE FLOW LIMIT
- ORIFICE PLATE INCLUDED (PADDLE TYPE STANDARD)
- ORIFICE PLATE HOUSING OPTIONAL

When Ordering Please Specify:

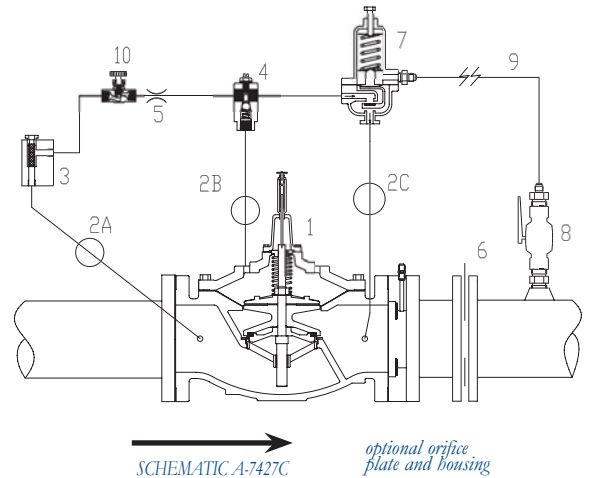
1. Catalog Model # 2. Full Port (106) or Reduced Port (206) (See Main Valves) 3. Globe or Angle Pattern 4. End Connections
5. Valve Size 6. Flow Set Point or Range

Typical Application:



Rate of Flow Control Valve:

1. Main Valve - 106-PG or 206-PG with X107 position indicator
2. Isolation Valves - A,B,C - standard
3. Strainer - 40 mesh - standard on all sizes
4. Model 26 Flow Stabilizer
(sizes 8" 106, 10" 206 and smaller is included)
5. Fixed Restriction
6. Orifice Plate - paddle style - fits inside bolt pattern
7. Model 160-RF Rate of Flow Pilot - standard spring range 2 to 20 psi (.138 to 1.38 bar) -specify for 25 to 50 psi (1.72 to 3.4 bar)
8. 1/2" (15mm) Ball valve and Flare fittings - for downstream connection of sensing line to header - field install
9. 3/8" (9.5mm) Sensing Tubing - supply and installation by others
10. OPTIONAL: Closing Speed Control - model 852-B
11. OPTIONAL: Orifice Plate and Housing Assembly
Standard materials for pilot system components are:
- ASTM B62 bronze or ASTM B-16 brass



When the Optional Orifice Plate and Housing Assembly (item 11) is included, the overall laying length of the valve assembly increases. Add 1-1/4" (32mm) to the published "A" dimension for the valve model and size. The assembly is provided with a full face gasket, but bolts, nuts and washers are to be provided by others.

106-RF	Flow Capacity (See 106-PG in Main Valve Section for other Valve Data)									
Size (inches)	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	
Size (mm)	15mm	19mm	25mm	32mm	40mm	50mm	65mm	80mm	100mm	
Maximum Continuous (USGPM)	12	19	49	93	125	210	300	460	800	
Maximum Continuous (L/s)	0.76	1.20	3.09	5.87	7.89	13.25	18.93	29	50	

206-RF	Flow Capacity (See 206-PG in Main Valve Section for other Valve Data)									
Size (inches)	3"	4"	6"	8"	10"	12"	16"	18"	20"	
Size (mm)	80mm	100mm	150mm	200mm	250mm	300mm	400mm	450mm	500mm	
Maximum Continuous (USGPM)	300	580	1025	2300	4100	6400	9230	16500	16500	
Maximum Continuous (L/s)	19	37	65	145	259	404	582	1041	1041	

106-RF	Flow Capacity (See 106-PG in Main Valve Section for other Valve Data)									
Size (inches)	6"	8"	10"	12"	14"	16"	20"	24"	36"	
Size (mm)	150mm	200mm	250mm	300mm	350mm	400mm	500mm	600mm	900mm	
Maximum Continuous (USGPM)	1800	3100	4900	7000	8500	11000	22500	25000	55470	
Maximum Continuous (L/s)	114	196	309	442	536	694	1420	1577	3500	

206-RF	Flow Capacity (See 206-PG in Main Valve Section for other Valve Data)				
Size (inches)	24"	28"	30"	32"	36"
Size (mm)	600mm	700mm	750mm	800mm	900mm
Maximum Continuous (USGPM)	16500	33600	33650	33700	33800
Maximum Continuous (L/s)	1041	2120	2123	2126	2132

Main Valve Dimensions
 106-PG Page 20
 206-PG Page 29
 Anti-Cav Page 82

Flow Control

Selection Summary:

1. Determine the flow range and limit (setting) for the application - standard range 2:1 - maximum to minimum.
2. Determine the pressure drop available to provide control at the flow limit - valve plus orifice losses.
3. For the most positive control, the orifice is sized in combination with the valve to use the full pressure drop available at the maximum flow setting.
4. To calculate the pressure drop across the orifice, use the formula $P = 3 \text{ psi } (Q_{\text{max}}/Q_{\text{min}})^2$. 3 psi (.2 bar) is a standard minimum but 2 psi (.13 bar) is acceptable if necessary. With the orifice plate designed for a 2:1 flow adjustment range, the orifice loss would then range from 3 to 12 psi (.2 to .8 bar).
5. Use the performance curves (see Technical & Sizing Section) and/or the chart below, to determine the valve size with sufficient capacity, with the pressure drop available. (Consult with the factory for precise orifice plate calculations). Other supplementary functions are available, consult with the factory.

Specifications:

The valve shall be a Singer Valve model 106 (206) -RF, size "____", ANSI Class 150 (ANSI 300, ANSI flanges drilled to ISO PN 10 / 16/ 25 or 40) pressure rating/ flange standard, globe (angle), style valve. The Model 160-RF Rate Of Flow Pilot shall have a flow set point, preset at factory to "____" USGPM (Liters/ Second). Assembly shall be according to Schematic A-7427C.

- The valve maintains a constant flow rate by sensing the pressure differential across the specially sized orifice plate (Orifice housings are provided as an option only). The flow rate is adjustable by changing the pilot's setting (differential across orifice). When the pressure differential is less than the set point the valve opens allowing flow to meet predetermined demand. When the pressure drop across the orifice exceeds the set point, the valve closes slightly, limit flow to the pre-set maximum.

Refer to "Main Valve" section, 106-PG (or 206-PG) for detailed information pertaining to valve sizes and materials, selection criteria and specifications.

Refer to "Main Valve Option" section, Model x107 Position Indicator for detailed information pertaining to materials and specifications.

Refer to "Pilot and Accessories" section, Model 160-RF Rate Of Flow Pilot and Model 26 Flow Stabilizer for detailed information pertaining to materials and specifications. Orifice Plate sizing and specification information is available from the factory.