Models 106-RF / 206-RF
Rate of Flow Control Valve

106-RF Globe

KEY FEATURES

- Accurately limits flow to a pre-set maximum
- Easily adjustable flow limit
- Paddle-style orifice plate included
- Optional orifice plate housing

Product Overview

The 106-RF and 206-RF rate of flow control valves are based on the 106-PG or 206-PG main valves. The valve is ideal for limiting the flow to a pre-determined maximum (via maintaining a continuous pressure differential across an orifice).

When the pressure differential is less than the set-point, the valve opens, allowing flow to meet pre-determined 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 / 0.2 to 0.35 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.

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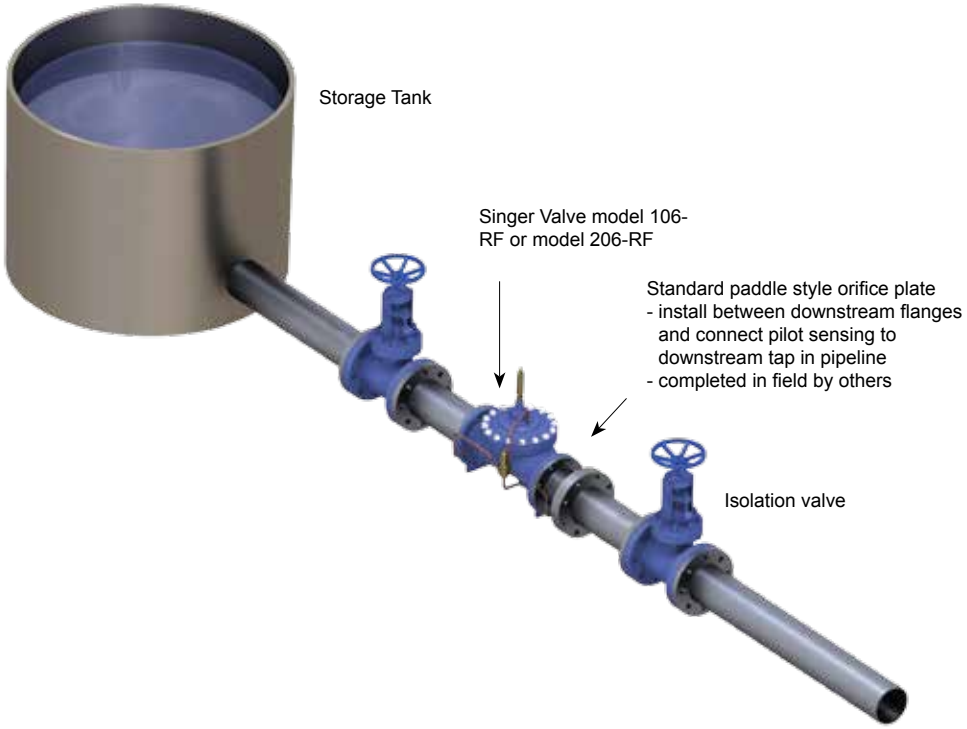
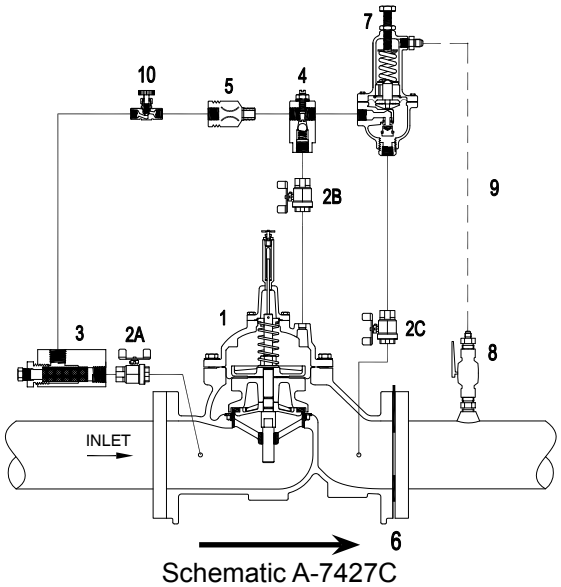
Typical Application



Schematic Drawing



Schematic A-7427C

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 in / 32 mm 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.

1. Main Valve - 106-PG or 206-PG with X107 position indicator
2. Isolation Valves (2A, 2B, 2C) standard
3. Strainer - 40 mesh - standard on all sizes
4. Model 26 Flow Stabilizer
   - Standard on valves 8 in / 200 mm 106, 10" / 250 mm 206
5. Fixed Restriction
6. Orifice Plate - paddle style - fits inside bolt pattern
7. Model 160-RF Rate of Flow Pilot - specify for 2 to 20 psi / 0.138 to 1.38 bar; 25 to 50 psi / 1.72 to 3.4 bar
8. 1/2 in / 15 mm Ball valve and Flare fittings - for downstream connection of sensing line to header - field install
9. 3/8 in / 10 mm Sensing Tubing - supply and installation by others
10. Optional: Closing Speed Control - model 852-B
11. Optional: Orifice Plate and Housing Assembly (not shown)

Note: SRD shown is available for 6" 106-PG and larger.

Standard Materials

Standard materials for pilot system components are:

- ASTM B62 bronze or ASTM B-16 brass
- Stainless steel
- Copper

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 psi $(Q_{max}/Q_{min})^2$. 3 psi / 0.2 bar is a standard minimum but 2 psi / 0.138 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 / 0.2 to 0.8 bar.
5. Use the performance curves (see Technical & Sizing Information section, 275, and / or the chart above, to determine the valve size with sufficient capacity, with the pressure drop available. Consult with Singer Valve for precise orifice plate calculations.

Specifications

- The valve shall be a Singer Valve model 106-RF / 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 Singer Valve to "___" USGPM (Liters/ Second). Assembly shall be according to Schematic A-7427C.
- The valve maintains a relatively 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 pre-determined 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, see page 11, 106-PG (or 206-PG) for detailed information pertaining to valve sizes and materials, selection criteria and specifications.
- Refer to Main Valve Option section, see page 86, Model x107 Position Indicator for detailed information pertaining to materials and specifications.
- Refer to Pilot and Accessories section, see page 262, 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 Singer Valve.

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Ordering Instructions

Refer to page 293 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Full port (106) and reduced port (206)
2. Pilot range

106-RF	**Flow Coefficient** (See 106-PG in Main Valve section for other valve data)								
Size (inches)	1/2 in	3/4 in	1 in	1-1/4 in	1-1/2 in	2 in	2-1/2 in	3 in	4 in
Size (mm)	15 mm	19 mm	25 mm	32 mm	40 mm	50 mm	65 mm	80 mm	100 mm
Maximum Continuous (USGPM)	Not available in these sizes				125	210	300	460	800
Maximum Continuous (L/s)					8	13	19	29	50

206-RF	**Flow Coefficient Cv** (See 206-PG in Main Valve section for other valve data)								
Size (inches)	3 in	4 in	6 in	8 in	10 in	12 in	16 in	18 in	20 in
Size (mm)	80 mm	100 mm	150 mm	200 mm	250 mm	300 mm	400 mm	450 mm	500 mm
Maximum Continuous (USGPM)	300	580	1025	2300	4100	6400	9230	16500	16500
Maximum Continuous (L/s)	19	37	65	145	260	404	582	1040	1040

106-RF	**Flow Capacity** (See 106-PG in Main Valve section for other valve data)								
Size (inches)	6 in	8 in	10 in	12 in	14 in	16 in	20 in	24 in	36 in
Size (mm)	150 mm	200 mm	250 mm	300 mm	350 mm	400 mm	500 mm	600 mm	900 mm
Maximum Continuous (USGPM)	1800	3100	4900	7000	8500	11000	17500	25000	55470
Maximum Continuous (L/s)	114	196	309	442	536	694	1104	1577	3500

206-RF	**Flow Capacity** (See 206-PG in Main Valve section for other valve data)						
Size (inches)	24 x 16 in	24 x 20 in	28 in	30 in	32 in	36 in	40 in
Size (mm)	600 x 400 mm	600 x 500 mm	700 mm	750 mm	800 mm	900 mm	1000 mm
Maximum Continuous (USGPM)	16500	21700	33600	33650	33700	33800	62000
Maximum Continuous (L/s)	1040	1370	2120	2123	2126	2132	3912