Models 106-RPS-RR / 206-RPS-RR
Surge Anticipating on Rate of Rise of Pressure Relief Valve

KEY FEATURES
- Protects against power failure surges or pressure waves caused by velocity changes
- Unaffected by header pressure and over sizing
- Quick opening relief
- Easily adjustable pressure setting
- No electrical services required

Product Overview
The 106-RPS-RR and 206-RPS-RR surge anticipating relief on rate of rise valves are based on the 106-PG or 206-PG main valve.

The valve is installed downstream of the pump check valve(s) and has two pilots, the 81-RP and the 81-RPD. Both pilots sense pressure through a connection to the header pipe. The 81-RP high pressure pilot acts as a standard relief pilot, opening on excessive pressure. The 81-RPD differential pilot responds to the pressure differential across its diaphragm. A pressure differential is created when there is a system pressure increase. The flow into the accumulator creates a pressure drop across the fixed restriction, which lowers the pressure in the connection between the fixed restriction and the pilot. The pilot senses the pressure difference between this lower pressure and the header pressure. This difference occurs at the initiation of the pressure surge, providing the time necessary for the valve to open in anticipation of the high pressure.

Typical Application
Long pipe lines and or low recovery pressure after the surge valve opens may not guarantee conventional surge valves will close. Since the RPS-RR is closing when the system pressure has stabilized, oversizing is not a problem.

Singer Model 106-BPC Pump Control valve with Internal Drop Check

Booster pump

Pump suction line

Header pipeline

Isolation gate valve

Connect in field to station header for reliable pressure signals

Singer Model 106-RPS-RR control valve

Surge anticipating on Rate of Rise of Pressure Relief valve
Models 106-RPS-RR / 206-RPS-RR
Surge Anticipating on Rate of Rise of Pressure Relief Valve

Schematic Drawing

1. Main Valve - 106-PG or 206-PG, complete with X107 Position Indicator
4. Strainer Flush Valve - Normal Position Closed
5. Flow Control - J0077A
6. Connection To Header
7. Isolating Valve - Normal Position Open
8. Strainer - 40 Mesh - J0098A
9. Pressure Gauge
10. Pressure Gauge
11. Bladder Accumulator - M1408A
12. Differential Pilot - Model 81-RPD - Normally Closed
13. Relief Pilot - Model 81-RP
14. Isolating Valve (14A, 14B) - Normal Position Open
15. Fixed Restriction - 1/16 in / 1.58 mm
16. Check Valve - J0040A

Note: Schematic shown is for 2 in / 50 mm to 6 in / 150 mm 106, and 3 in / 80 mm to 8 in / 200 mm 206

Selection Summary
1. Anticipating surge relief valves should be sized from information provided by an engineer’s surge analysis of the system.
2. In the absence of such information, as a general guide, a valve selected to pass 25% of the maximum normal flow when the valve is fully open, calculated with the static pressure as the pressure drop across the valve, has been successful in practice.
3. Ensure the maximum working pressure rating of the valve and flanges exceeds the maximum operating pressure.
4. Select either a standard globe style body or the optional angle style body.
5. Surge anticipating valves usually relieve to atmosphere which ensures high operating differential pressure and rapid response times. Momentary, “m”, service range up to 45 ft/s / 14 m/s is suitable for sizing selection. Other supplementary functions are available, consult with Singer Valve.

Specifications
- The valve shall be a Singer Valve model 106-RPS-RR / 206-RPS-RR, 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 81-RP Pressure Relief Pilot (Normally Closed Pilot) spring range shall be “___ to ___” psi / bar, with set-point preset at Singer Valve to “___” psi / bar. Assembly shall be according to Schematic A-7340F, 2 in / 50 mm to 6 in / 150 mm 106, and 3 in / 75 mm to 8 in / 200 mm 206 (for A-7340F1 [not shown], 8 in / 200 mm and larger 106).
Models 106-RPS-RR / 206-RPS-RR
Surge Anticipating on Rate of Rise of Pressure Relief Valve

- The valve will open rapidly on an over-pressure caused by sudden pump stop due to power failure or other means, and other causes of surges in the pipeline.
- The valve will also anticipate a surge by sensing a rapid increase in pressure as the surge wave returns and opens fully with no stroke limiters on the valve opening.
- The valve will begin slowly closing when the system pressure falls below the high pressure set-point of the valve piloting until it fully closes regardless of static pressure in the pipeline.
- 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 Pilot and Accessories section, Model 81 Pressure Relief Pilot (Normally Closed Pilot) and Model 81-RPD Differential Pressure Pilot for detailed information pertaining to materials and specifications.

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) or reduced port (206)
2. Pilot range
## Models 106-RPS-RR / 206-RPS-RR
### Surge Anticipating on Rate of Rise of Pressure Relief Valve

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### Flow Capacity 45 ft / s or 14 m / s

**106-RPS-RR**

*(See 106-PG in Main Valve section for other valve data)*

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### 206-RPS-RR

*(See 206-PG in Main Valve section for other valve data)*

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### Flow Capacity 45 ft / s or 14 m / s

**206-RPS-RR**

*(See 206-PG in Main Valve section for other valve data)*

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