

# Models 106-RPS-L&H / 206-RPS-L&H Surge Anticipating Relief Valve



106-RPS-L&H Globe

## KEY FEATURES

- Protects against power failure surges or pressure waves caused by velocity changes
- Quick opening relief
- Easily adjustable pressure setting
- No electrical services required

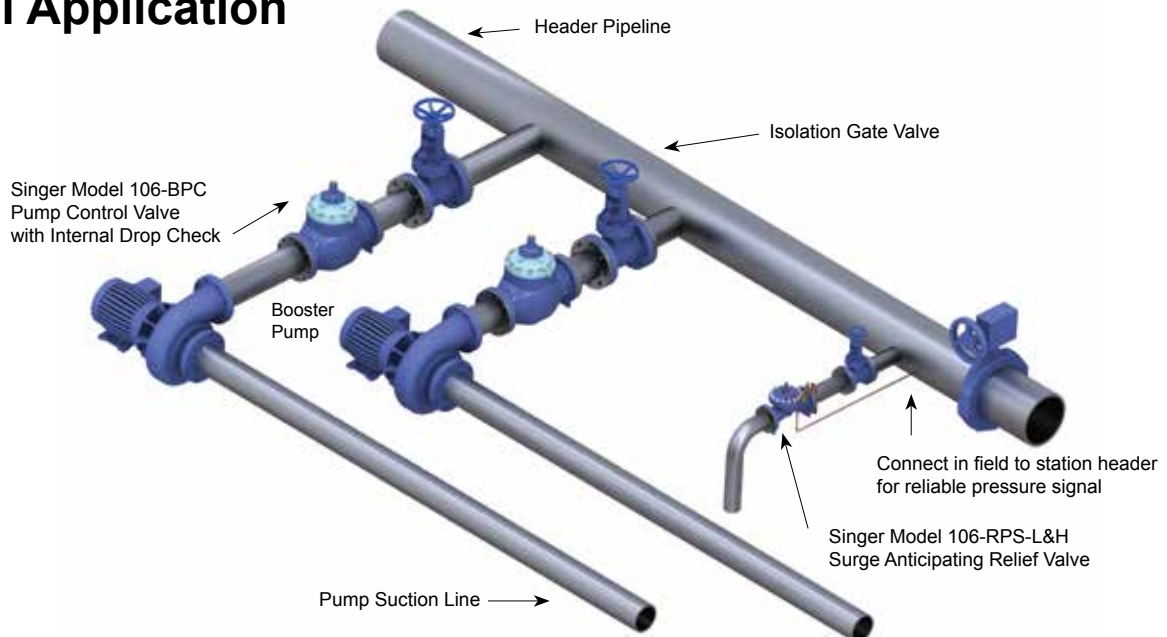
## Product Overview

The 106-RPS-L&H and 206-RPS-L&H anticipating surge relief valves are based on the 106-PG or 206-PG main valve.

The valve is mounted in a tee, downstream of the pump check valve(s). It is designed to anticipate surges to avoid the severe water hammer often associated with power failure surges.

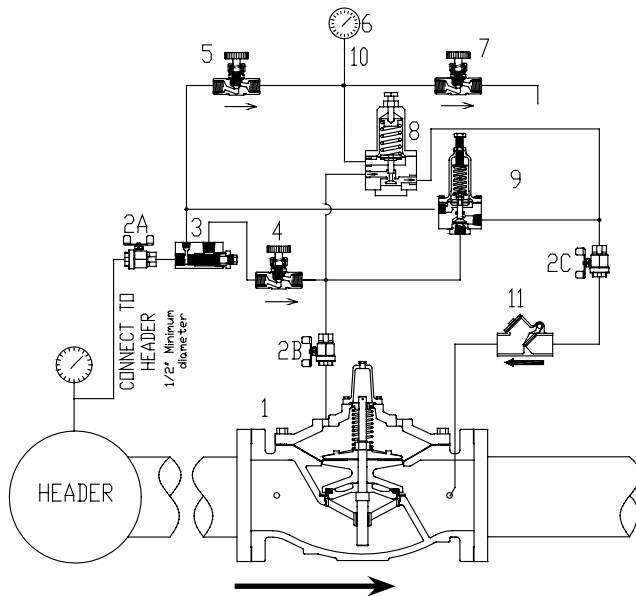
The RPS-L&H pilot system is comprised of two pilots, the 81-RP and the 82-PR. Both pilots sense pressure through a connection to the header pipe. The 81-RP high pressure pilot opens the valve to relieve excess pressure. The model 82-PR low pressure pilot opens quickly on below normal pressures prior to the return of a surge wave, initiating the opening of the main valve in anticipation of the high pressure wave's arrival.

## Typical Application



# Models 106-RPS-L&H / 206-RPS-L&H Surge Anticipating Relief Valve

## Schematic Drawing



Schematic A-0400C

Note: Schematic shown is for 2 in / 50 mm to 6 in / 150 mm

1. Main Valve - 106-PG or 206-PG
2. Isolation Valve (2A, 2B, 2C), standard all sizes
3. Strainer - 40 mesh screen
4. Closing Speed Control - model 852-B
5. Test Needle Valve - normal position fully open
6. Pressure Gauge - 1/4 in / 6.35 mm, NPT - By Others
7. Test Needle Valve - normal position fully closed
8. Model 82-PR - Low Surge pilot  
- Specify for 7 to 50 / 0.48 to 3.5 bar, 45 to 200 psi / 3.1 to 13.8 bar or 100 to 300 psi / 6.9 to 20.7 bar
9. Model 81-RP - High Surge Pressure pilot  
- specify for 5 to 50 psi / 0.35 to 3.5 bar, 10 to 80 psi / 0.7 to 5.5 bar, 100 to 300 psi / 6.9 to 20.7 bar.
10. Pipe Plug for Gauge Connection
11. Swing Check Valve - 1/2 in / 15 mm

## Standard Materials

Standard materials for pilot system components are:

- ASTM B-62 bronze or ASTM B-16 brass
- AISI 303 / 316 stainless steel trim

## Specifications

- The valve shall be a Singer Valve model 106-RPS-L&H / 206-RPS-L&H, 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. The Model 82-PR Low Surge 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-0400C, 6 in / 150 mm and smaller (A-0401C, 8 in / 200 mm and larger).
- The valve is closed when line pressure is between the set-points of the two pilots. The valve opens initially when line pressure drops below the setting of the low-pressure pilot to anticipate surges associated with a pump stopping. The valve will also continue to react and remain open when the return high-pressure wave is above the setting of the high-pressure pilot or will open when inlet pressure exceeds a pre-determined set-point at which time the valve opens quickly.
- 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, see page 263, Model 81-RP Pressure Relief (Normally Closed Pilot) for detailed information pertaining to materials and specifications. Model 82-PR Low Surge Pressure Pilot specification information is available from Singer Valve only at this time.

# Models 106-RPS-L&H / 206-RPS-L&H

## Surge Anticipating Relief Valve

### 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. Over sizing may cause problems. Valve may not close if oversized.
3. Ensure that the recovered header pressure (static) exceeds the low pressure relief pilot setting, otherwise the valve will not close. As a guide, a setting at 60% of static pressure has been suitable.
4. Ensure the maximum working pressure rating of the valve and flanges exceeds the maximum operating pressure.
5. Select either a standard globe style body or the optional angle style body.
6. If the RPS-L&H is sized properly, a hydraulic travel limiter is unnecessary. Should an engineer insist that the travel limiter be included, then it will be offered as an option (add HFL to model number).
7. Should only be used on static pressures greater than 100 ft / 30 m

### 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 ranges

106-RPS-L&H	Flow Capacity 45 ft / s or 14 m / s (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
Momentary (USGPM)	-	-	-	-	-	470	670	1030	1800
Momentary (L/s)	-	-	-	-	-	30	42	65	114

106-RPS-L&H	Flow Capacity 45 ft / s or 14 m / s (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
Momentary (USGPM)	4000	7000	11000	16000	19000	25000	39000	56200	124700
Momentary (L/s)	252	442	694	1009	1199	1577	2461	3546	7868

206-RPS-L&H	Flow Capacity 45 ft / s or 14 m / s (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
Momentary (USGPM)	564	1236	2160	4800	8400	13200	19200	30000	30050
Momentary (L/s)	36	78	136	303	530	833	1211	1893	1896

206-RPS-L&H	Flow Capacity 45 ft / s or 14 m / s (See 106-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
Momentary (USGPM)	30100	39000	67440	67490	67540	67640	62000
Momentary (L/s)	1899	2461	4255	4258	4261	4268	3912