
Stainless Series

S116-52 or S6116-52 (Globe)
S1116-52 or S61116-52 (Angle)**Operation**

The Watts ACV Combination Surge Anticipator and Pressure Relief Control Valve is designed to minimizing the effects of water hammer and pressure surges resulting from: 1) Normal pump starting and stopping operations or 2) Mechanical or electrical power failure situations. The valve senses hydraulic pressure changes directly from the pump station discharge header, and opens to relieve pipeline surges when pump station discharge header pressure **falls below** the adjustable spring setting of the low pressure opening pilot OR **exceeds** the adjustable spring setting of the high pressure relief pilot. These two pressure conditions occur during normal pump starting and stopping operations or when an active pumping cycle is interrupted by electrical or mechanical failure.

High Pressure Relief Operation: When discharge header pressure exceeds the adjustable setpoint, the high pressure relief pilot opens, venting main valve cover pressure downstream, causing the valve to quickly open and dissipate the high pressure surge. When discharge header pressure falls below the adjustable setpoint, the high pressure relief pilot closes, allowing pressure to fill the main valve cover chamber, slowly closing the valve. This condition occurs during normal pump starting and stopping operations.

Low Pressure Opening Operation (Surge Anticipation): When discharge header pressure falls below the adjustable setpoint, the low pressure pilot opens and the drain pilot closes, “storing” main valve cover pressure in the hydraulic accumulator. The main valve opens at an adjustable rate in anticipation of the returning high pressure wave. This condition occurs during a mechanical or electrical power failure situation.

Valve Closing: When discharge header pressure recovers above the adjustable setpoint, the low pressure pilot closes, allowing header pressure to fill the main valve cover chamber. The main valve closes at an adjustable rate to avoid creating additional pressure surges. The accumulator drain pilot opens, releasing the “stored” main valve cover pressure.

If discharge header pressure does not “recover” above the low pressure opening setpoint, the “stored” pressure in the hydraulic accumulator allows the main valve to close, avoiding system siphonage or draining the pumping system.



PRESSURE RELIEF and SURGE ANTICIPATOR VALVE

01/05

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Installation Guidelines

- Prior to installation, flush line to remove debris.
- Install valve horizontally “in line” (cover facing up), so flow arrow matches flow through the line. Avoid installing valves 6” and larger vertically. Consult factory **prior** to ordering if installation is other than described.
- Install upstream and outlet isolation valves. **NOTE:** When using butterfly valves, insure disc does not contact control valve. Damage or improper valve seating may occur.
- Provide adequate clearance for valve servicing and maintenance.
- Install pressure gauge to monitor discharge header pressure.
- Connect sensing line to main discharge header using 3/4” diameter minimum tubing / piping.

Other Watts ACV Pressure Relief / Backpressure or Sustaining Control Valves

S116 / S6116	Pressure Relief / Backpressure or Sustaining Valve
S116-5 / S6116-5	Backpressure / Sustaining Valve with Hydraulic Check Feature
S116-31 / S6116-31	Pressure Sustaining Valve with Solenoid (On-Off) Feature
S116-32 / S6116-32	Pressure Sustaining Valve with Solenoid (On-Off) and Check Features