



## PUMP CONTROL VALVE with PRESSURE REDUCING FEATURE

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### Mustang Series

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M113-29 or M6113-29 (Globe)  
M1113-29 or M61113-29 (Angle)

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#### Operation

The Watts ACV Pump Control Valve with Pressure Reducing Feature is designed to minimize the surges associated with the starting and stopping of pumps. The valve slowly opens and closes as required to control pumping related surges, and throttles to maintain a maximum downstream pressure during the pumping cycle. The pump starts and stops against a closed valve.

**Pump Start Up:** When the pump is signaled to start, the 3-Way Solenoid is energized, directing pressure into the cover chamber of the 3-way Accelerator Pilot. The Accelerator Pilot allows the main valve cover chamber to be vented downstream, causing the valve to open at a controlled rate, gradually admitting pumping pressure into the distribution system. The rate of opening is controlled by the adjustable opening speed control, which restricts the speed of fluid and pressure evacuating the main valve cover chamber.

**Pressure Reducing Feature:** During the pumping cycle, the valve acts as a Pressure Reducing Control Valve. Throttling (Pressure Reducing) action is controlled by a normally open, pressure reducing pilot designed to: 1) Open (allowing fluid out of the main valve cover chamber) when downstream pressure is below the adjustable setpoint, and 2) Close (allowing fluid to fill the main valve cover chamber through the integral orifice of the Accelerator Pilot) when downstream pressure is above the adjustable setpoint. A decrease in downstream pressure causes the valve to modulate toward an open position, raising downstream pressure. An increase in downstream pressure causes the valve to modulate toward a closed position, lowering downstream pressure.

**Pump Shutdown:** When the pump is signaled to turn off, the 3-Way Solenoid is de-energized, venting the cover chamber of the 3-way Accelerator Pilot. The Accelerator Pilot allows the main valve cover chamber to be connected to upstream pressure, causing the valve to close at a controlled rate. The valve slowly begins to close while the pump continues to operate. The closing rate of the valve is controlled by the adjustable closing speed control, which restricts the speed of fluid and pressure entering the main valve cover chamber. When the valve reaches the closed position, the limit switch is actuated, turning the pump off.

**Hydraulic Check Feature:** When the pump is turned off and downstream pressure is greater than upstream pressure, downstream pressure is admitted to the main valve cover chamber through a check valve in the pilot control system, closing the valve, preventing reversal of flow.

**Manual Operation:** Engaging the Solenoid Manual operator simulates power to the solenoid, manually opening the main valve. Disengaging the Solenoid Manual operator returns the valve to the closed position.

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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 inlet 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 gauges to monitor valve inlet and outlet pressure.
- Connect Solenoid and Limit Switch to appropriate pump control panel locations and power source in compliance with local electrical codes.

### Other Watts ACV Pump Control Valves

M113-21 / M6113-21	Pump Control Valve
M113-19 / M6113-19	Pump Control Valve with Backpressure Feature
M113-41 / M6113-41	Pump Control Valve with Rate-of-Flow Feature
M513-5 / M6513-5	Pump Control Valve
M513-AK / M6513-AK	Pump Control Valve with High Capacity Pilot System
M513-6 / M6513-6	Deep Well Pump Control Valve
M513-14 / M6513-14	Deep Well Pump Control Valve with Pressure Relief Feature