SINGER VALVE
Result-Based Solutions. Globally.

12850-87th Avenue
Surrey, BC. Canada. V3W 3H9
Ph: 604-594-5404
Fx: 604-594-8845
www.singervalve.com

SINGER MODEL 106/206-DW-RPS

Deep Well Pump Control and Pressure Sustaining Valve Schematic A-7528B
Installation, Operating and Maintenance Instructions

DESCRIPTION:

Singer Model 106/206-DW-RPS is a deep well pump control valve designed to eliminate starting and stopping surges of deep well pumps. During the pumping cycle the valve will also act as a relief/sustaining valve by relieving to atmosphere (clear well or reservoir).

Main Valve (1) is a single seated, hydraulically operated, diaphragm actuated, globe or angle pattern valve. The Main Valve is controlled by Solenoid Valve (7) and Pressure Sustaining Pilot (11), utilizing line pressure for operation. Limit Switch (9) shuts down the pump when the pumping cycle is completed.

DESCRIPTION OF OPERATION:

Model 106/206-DW-RPS is installed in a tee between the pump discharge and a check valve. The pump is started and stopped on an open valve. The discharge may be returned to the well or to an open drain.

Main Valve (1) is wide open when the pump is off. When the pump is started, Solenoid Valve (7) is energized and the Main Valve starts closing. The closing speed is adjustable. While the valve is open, it discharges air and the initial rush of sand and water from the pump column. The valve closes slowly; pump pressure increases gradually until the check valve opens, preventing starting surges. If the pump outlet pressure reaches the setpoint of Pressure Sustaining Pilot (11), Pilot (11) opens to prevent Main Valve (1) from closing further. Pilot (11) then modulates the Main Valve to keep the pump outlet pressure at or below the setpoint.

Pressure Sustaining Pilot (11) modulates Main Valve (1) by sensing the inlet pressure of the Main Valve. Refer to Schematic A-7528B. When the inlet pressure of the Main Valve drops, Pilot (11) closes. Pressure from the header through Solenoid Valve (7) and Opening Speed Control (8) closes the Main Valve. When the inlet pressure increases, Pilot (11) opens. This drops the pressure above the Main Valve diaphragm and allows the Main Valve inlet pressure to open the Main Valve.

On shutdown, Solenoid Valve (7) is de-energized and the Main Valve opens slowly. Opening speed is adjustable. While the valve is opening, Limit Switch (9) keeps the pump motor circuit closed to keep the pump running. As the valve opens, pump outlet pressure decreases gradually, the check valve closes slowly. Pump stopping surges are prevented. When the pump control valve is almost fully open, the limit switch stops the pump.

INSTALLATION:

1. See 106/206-PT "Installation".
2. **Connect the operating pressure connection (5) to the header, downstream of the pump check valve**. (See schematic A-7528B).
3. Connect Solenoid Valve (7) and Limit Switch (9) to the electrical system. Check solenoid name plate for correct pressure. Check side of coil for correct voltage. **Connections in the limit switch must be to common and normally closed terminals**.

ADJUSTING PROCEDURE:

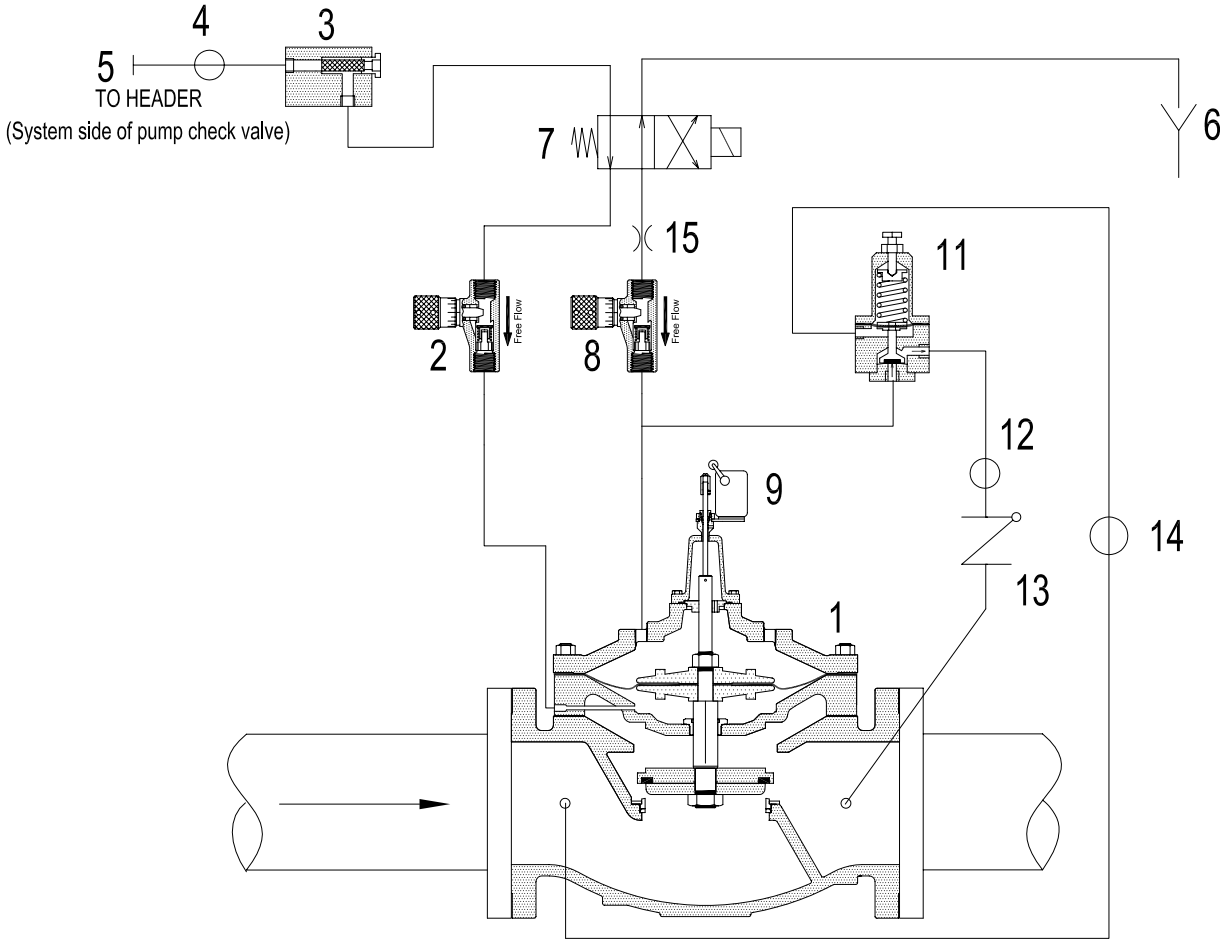
1. Close speed controls (2 & 8) .
2. Start the pump.
3. Open Closing Speed Control (2) slowly until desired closing speed is achieved.
4. Adjust Pilot (11). See 81-RP Instruction in this manual.
5. Turn pump switch to off position. The pump should continue to run.
6. Open Opening Speed Control (8) slowly until desired opening speed is achieved.
7. When the valve is almost fully open, Limit Switch (9) should stop the pump. If the pump does not stop, adjust the Limit Switch.
8. Excessively long opening and closing times should be avoided because this may affect the pump motor and may also cause plugging of the speed controls by any solids in the water.

FINAL ADJUSTMENT OF LIMIT SWITCH:

Limit Switch (9) should be adjusted to shut the pump off as soon as the main line check valve has closed.

The point at which the main line check valve closes can be determined by observing pressure gauges on the inlet and outlet sides of the check valve. The check valve is closed when the inlet pressure is lower than the outlet pressure. If pressure gauges have not been installed, it may be possible to determine when the check valve closes by listening for the check inner valve contacting the seat.

A-7528B



1. Main Valve - Model 106/206-PT.
2. Closing Speed Control.
3. Strainer - 40 mesh - J0098A.
4. Isolating Valve - NORMAL POSITION OPEN.
5. CONNECTION TO HEADER (System side of pump check valve).
6. Pilot exhaust to drain.
7. Solenoid Valve.
8. Opening Speed Control.
9. Limit Switch.
11. Pressure Sustaining Pilot - Model 81-RP.
12. Isolating Valve.
13. Swing Check Valve.
14. Isolating Valve.
15. Fixed Restriction.

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Deep Well Pump Control Valve.
with Pressure Sustaining Feature.

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www.singervalve.com 12850-87th Avenue. Surrey, B.C. V3W 3H9

Drawn By:	Approved By:
Kari Oksanen	Kari Oksanen
Date:	Drawing:
January 15, 2005	A-7528B

Model 106 or 206-DW-RPS