

# SINGER MODEL 106/206-DW DEEP WELL PUMP CONTROL VALVE

## Schematic A-7514B

### DESCRIPTION:

Singer Model 106/206-DW is a deep well pump control valve designed to eliminate starting and stopping surges of deep well pumps.

The main valve is a single seated, hydraulically operated, diaphragm actuated, globe or angle pattern valve. The main valve is controlled by a solenoid pilot valve, utilizing line pressure for operation. The valve has a limit switch, which shuts down the pump when the pumping cycle is completed.

### DESCRIPTION OF OPERATION:

Model 106/206-DW is installed in a tee between the pump discharge and the 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.

The valve is wide open when the pump is off. When the pump is started, the solenoid valve is energized and the 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.

On shutdown the solenoid valve is de-energized and the valve opens slowly. Opening speed is adjustable. While the valve is opening, the limit switch 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 check valve. (See schematic). **NOTE REGARDING SIZE AND CAPACITY OF THIS CONNECTION:** Use

3/8" copper tube up to 10 ft of distance, 1/2" copper tube for longer runs. All fittings and drilled holes must be full nominal size for reliable operation.

3. Connect the solenoid (7) and limit switch (9) to the electrical system. Check solenoid valve 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. See 'Suggested Wiring Diagram'.

### ADJUSTING PROCEDURE:

1. Close opening speed control (8) and closing control (2).
2. Start the pump.
3. Open the closing speed control (2) slowly until desired closing speed is achieved.
4. Turn the pump switch to off position. The pump should continue to run.
5. Open the opening speed control (8) slowly until desired opening speed is achieved.
6. When the valve is almost fully open, the limit switch (9) should stop the pump. If the pump does not stop, adjust the limit switch.
7. 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:

The limit switch (9) should be adjusted to shut the pump off as soon as the main line check valve closes.

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.