

SINGER MODEL 106/206-A-Type 3

Altitude Valve, Two-Way Flow with Differential Control Schematic A-0414D
Installation, Operating and Maintenance Instructions

DESCRIPTION:

Model 106/206-A Type 3 controls water level in elevated tanks, stand pipes and storage reservoirs. The valve senses the hydrostatic head of the reservoir to close on high water level. When the supply pressure drops a preset amount below the high water level, the valve opens for return flow.

DESCRIPTION OF OPERATION:

When the bonnet (top of diaphragm) is vented to atmosphere, Main Valve (1) opens fully. When the inlet pressure is directed to the bonnet, the Main Valve closes. Refer to 106/206-PG 'Description of Operation'.

When the reservoir head is high enough to overcome the spring force of Altitude Pilot (12), Pilot (12) connects port 'K' to port 'X'. This connects the inlet pressure of Main Valve (1) to its bonnet and closes the Main Valve. Closing speed is determined by the setting of Closing Speed Control (5).

Differential Relief Pilot (6) senses the pressure (head) difference between the reservoir and the supply. When the supply pressure drops enough to open Differential Relief Pilot (6), Pilot (6) opens and drops the sensing pressure of Altitude Pilot (12). Pilot (12) opens port 'K' to drain (port 'E') and opens Main Valve (1) to allow flow from the reservoir to the system.

INSTALLATION:

1. Refer to 106/206-PG 'Installation'.
2. Note the arrow cast on the side of Main Valve (1). Install the valve with the arrow pointing **TOWARDS THE RESERVOIR**.
3. Connect pilot sensing line to reservoir as shown on schematic A-0414D. For best control, the sensing line should be connected directly to the reservoir. If this is inconvenient, it may be possible to connect to the pipe between the valve and the reservoir.
4. Connect pilot exhaust to drain. It is recommended that the pilot exhaust be connected in a manner that makes the flow visible. This helps in adjusting the pilot.
5. **PRESSURIZE THE VALVE SLOWLY** and vent air from the bonnet of the Main Valve by using the valve on top of the Position Indicator.

ADJUSTING PROCEDURE:

1. Open sensing line Isolating Valve (8) and pilot Isolating Valves (2) and (13).
2. **PRESSURIZE THE VALVE SLOWLY** and vent air from the bonnet of the Main Valve by using the valve on top of the position indicator. Open main line isolating valves to let the valve fill the reservoir. Observe the altitude gauge and note the level where the valve closes.
3. To increase reservoir level, turn adjusting nut clockwise. To decrease reservoir level, turn adjusting nut counterclockwise.
4. To adjust Differential Relief Pilot (6), turn the adjusting screw clockwise for increased differential. This differential pressure setting determines how much below the reservoir level the supply head must drop before the Main Valve opens.
5. Adjust Closing Speed Control (5) to prevent closing surges.

SERVICE SUGGESTIONS:

In addition to service suggestions listed under individual components, the following points should be considered:

PROBLEM: VALVE FAILS TO CLOSE ON HIGH WATER LEVEL.

Possible Cause / Remedy

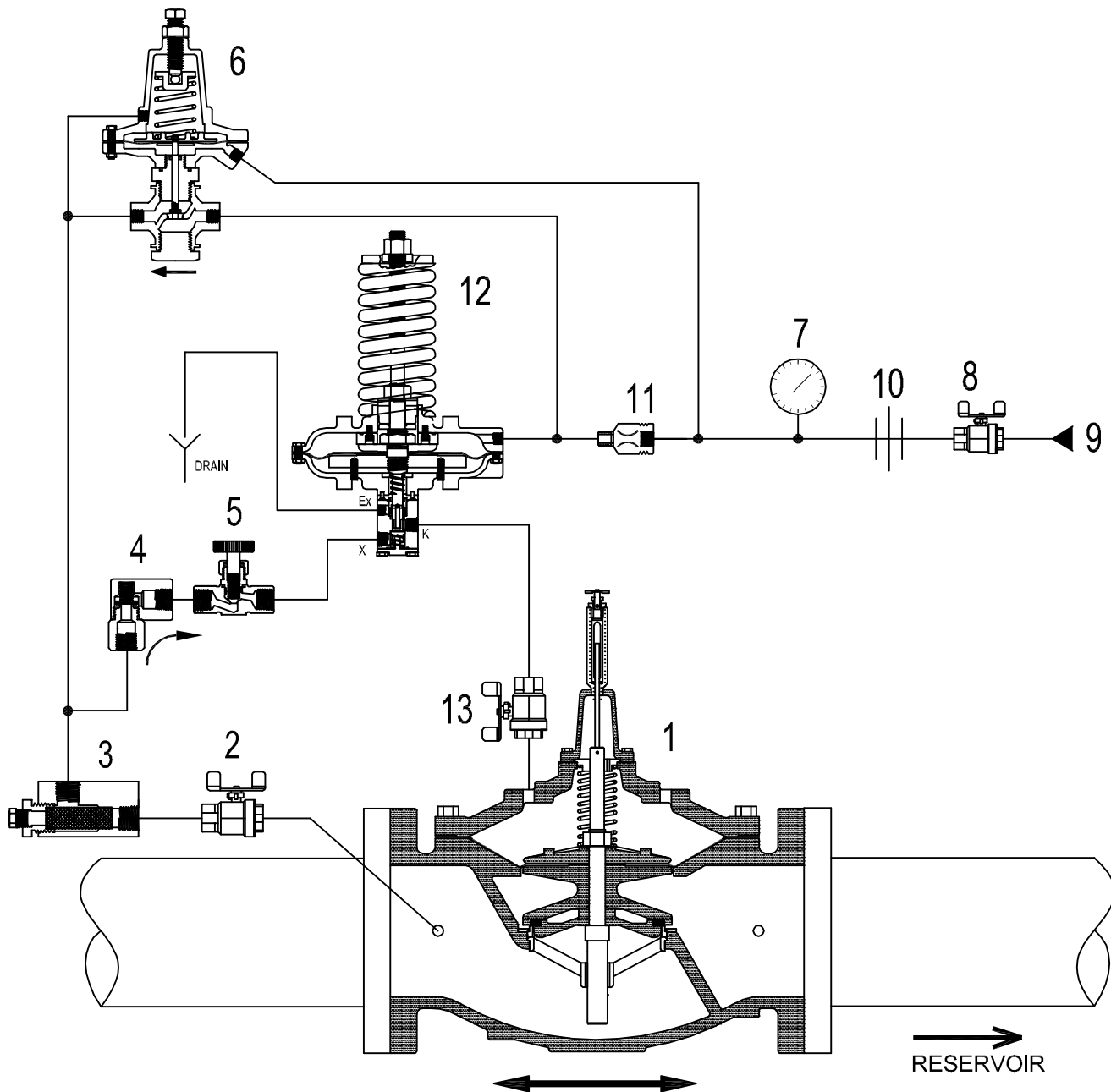
1. Altitude Pilot (12) set too high. / Lower setting. See 'Adjusting Procedure' above and 301-4 instructions.
2. Pilot Isolating Valve (2) or (13) closed. / Open Valve
3. Closing Speed Control (5) closed tight. / Open 1/2 turn or as required.
4. Pilot sensing (9) not connected. / Check connection and make sure that sensing line Isolating Valve (8) is open.

PROBLEM: VALVE FAILS TO OPEN.

1. Altitude Pilot (12) set too low. / Increase set-point. See 'Adjusting Procedure' above and 301-4 instructions.
2. Differential Relief Pilot (6) set too high. / Reduce setting.

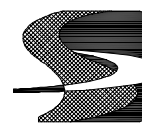
PROBLEM: VALVE OPENS TOO EARLY (NO DIFFERENTIAL CONTROL).

1. Differential Relief Pilot (6) set too low.
2. Differential Relief Pilot (6) or Check Valve (4) leaks.



1. Main Valve - Model 106/206-PG c/w X107 Position Indicator.
2. Isolating Valve.
3. Strainer - 40 mesh - J0098A.
4. Check Valve - Model 10.
5. Closing Speed Control - Model 852-B.
6. Differential Relief Pilot - Model 625-RPD.
7. Altitude Gauge.
8. Isolating Valve.
9. SENSING CONNECTION TO RESERVOIR.
10. Union.
11. Fixed Restriction 1/16".
12. Altitude Pilot - Model 301-4.
13. Isolating Valve

Two-Way Flow Altitude Valve
with Differential Control.



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Date:

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Drawing:

A-0414D

Model 106 or 206-A Type 3