

## MODEL 106-F-IV

### Modulating Float Valve Schematic A0399C (Sizes 1/2" to 2") Installation, Operating and Maintenance Instructions

#### DESCRIPTION:

Model 106-F-IV is a pilot operated modulating float valve. The valve admits flow into a tank or reservoir in proportion to the flow out. Main Valve (1) is installed in the supply line into the tank or reservoir; Float Pilot (3) is installed in the reservoir at the required high water level.

#### DESCRIPTION OF OPERATION:

Main Valve (1) is operated by modulating the pressure in the bonnet (above the diaphragm). When inlet pressure is applied to the bonnet, the Main Valve closes; venting the bonnet opens the Main Valve. Refer to 106/206-PG "Description of Operation".

Bonnet pressure is controlled by a pilot system consisting of Closing Speed Control (2) and Float Pilot (3) (refer to schematic A0399C). Closing Speed Control (2) restricts the flow into the bonnet. When Float Pilot (3) is open, the bonnet pressure is reduced and the Main Valve opens. When Float Pilot (3) is closed, the full inlet pressure is directed into the bonnet and the Main Valve closes. Usually the flow required is less than full capacity and the Float Pilot modulates the bonnet pressure to keep the Main Valve partially open.

**NOTE:** With any manufactured product there is a risk of malfunction in service, whether by operating conditions such as a plugged strainer or normal wear and tear. Singer Valve recommends regular maintenance with frequency to suit the importance to customer's application. We draw attention to our warranty which limits our responsibility to defects in workmanship and materials only. See Singer Valve Inc. Warranty IOM 613 attached and forming part of this Instruction and Operating Manual.

#### INSTALLATION:

**MAIN VALVE:** See 106/206-PG "Installation".

#### PILOT VALVE:

1. Check the end connection of the Float Pilot. Roberts R400 pilot has a 3/8" MALE N.P.T. end connection, Model 35 has 1/4" FEMALE N.P.T. end and Model 34 has 1/2" FEMALE N.P.T. ends. Roberts R400 and Model 35 require a horizontal fitting about 4" above the water level. Model 34 has a vertical float rod. See drawing and description of the Float Pilot in this manual.

2. Install the Float Pilot in a convenient location. The float should be located in a place where the surface is relatively undisturbed since turbulence on the surface of the liquid can cause the Main Valve to pulsate and interfere with accurate control.
3. Connect Float Pilot (3) to the Main Valve as shown on the schematic. Use 1/2" or larger copper tubing.
4. Check operation of float:
  - Float must move in a vertical plane.
  - Make sure that the float does not go close to or past vertical in its lowest position.

#### ADJUSTING PROCEDURE:

1. Set Closing Speed Control (2) one-half turn open.
2. Open upstream isolating valve (and downstream, if used). Allow the tank to fill to desired high level. Adjust Float Pilot (3) to close the Main Valve at this point.
3. Lower and raise the level and observe the control action. If action is ON-OFF with very small level changes, open Closing Speed Control (2) further until desired control is attained. If level drops excessively and Main Valve does not open wide, close Closing Speed Control (2) until desired modulating control is attained. Do not close the Closing Speed Control tight as this renders the valve inoperative.

#### SERVICE SUGGESTIONS:

In addition to service suggestions listed under 106/206-PG "Service Suggestions", use the following list:

#### FAILS TO OPEN FULLY:

Insufficient inlet pressure. / Increase pressure or contact your SINGER Rep. for modifications for low pressure service.

Closing Speed Control (2) too much open. / Adjust to proper setting.

Obstruction in Float Pilot (3), piping or insufficient pilot line size./ Clear or replace.

Main Valve faulty. / Refer to 106/206-PG instructions

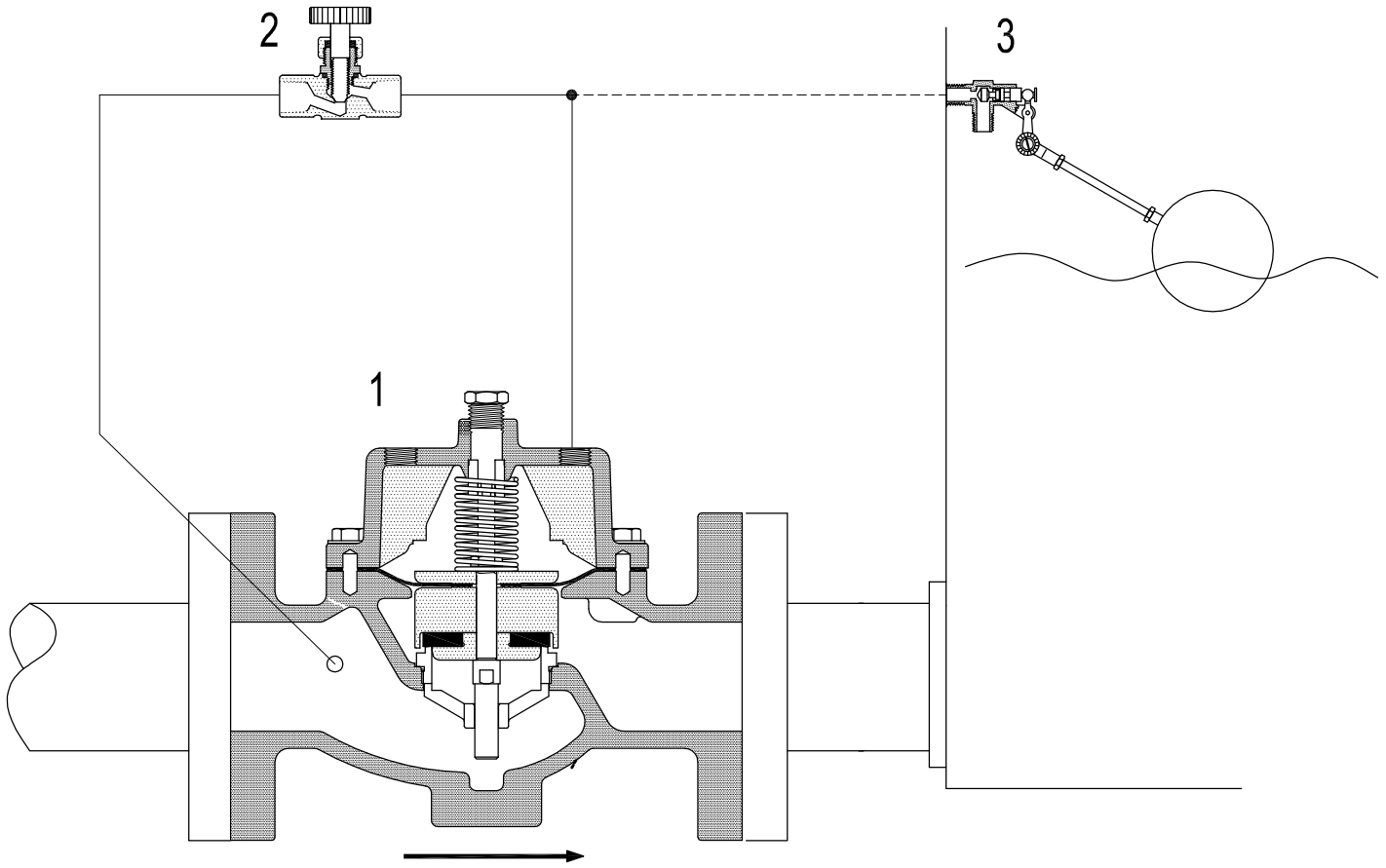
#### FAILS TO CLOSE.

Float Pilot (3) does not close./ Check pilot operation.

Closing Speed Control (2) closed./ Open as required.

Obstruction in pilot piping./ Remove obstruction

Faulty Main Valve./ Refer to 106/206-PG Instructions



- 1. Main Valve - Model 106-PG.
- 2. Closing Speed Control.
- 3. Float Pilot - Roberts R400.

----- connected in field

Pilot Operated Modulating Float Valve.  
 Sizes: 1/2" - 2".

 <b>SINGER VALVE</b> <i>Result-Based Solutions. Globally.™</i>	
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<small>Drawn By:</small> <b>Kari Oksanen</b>	<small>Approved By:</small> <b>Kari Oksanen</b>
<small>Date:</small> September 3, 2004	<small>Drawing:</small> <b>A-0399C</b>
<b>Model 106-F-IV</b>	

## MODEL 106/206-F-Type 4 Modulating Float Valve

Schematic A0608D (Sizes 2-1/2" to 24" 106 / 4" to 36" 206)  
Installation, Operating and Maintenance Instructions

### DESCRIPTION:

Model 106/206-F-IV is a pilot operated modulating float valve. The Main Valve (106-PG OR 206-PG with Internal Needle Stem Valve) is installed in the supply line to the reservoir. The Float Pilot is installed above the reservoir and connected to the main valve by a pilot line. The Float Pilot (Robert 400R, Model 34 or Model 35) positions the Main Valve to keep the flow into the reservoir equal to flow out.

Unless otherwise specified, the valve is built for maximum temperature of 100°F (40°C).

### DESCRIPTION OF OPERATION:

Main Valve (1) is normally open when pressure is applied to the valve inlet. When this same pressure is applied to the Main Valve bonnet, the Main Valve closes tight because the area of the diaphragm is greater than the seat area. Pressure above the diaphragm determines the position of the Main Valve - whether it is open, closed or in an intermediate position.

The bonnet pressure is controlled by the Float Pilot (5) and the Internal Needle Stem Valve (INSV) in the Main Valve.

Refer to INSV Drawing.

The INSV and the Float Pilot are designed to position the Main Valve in proportion to the reservoir level.

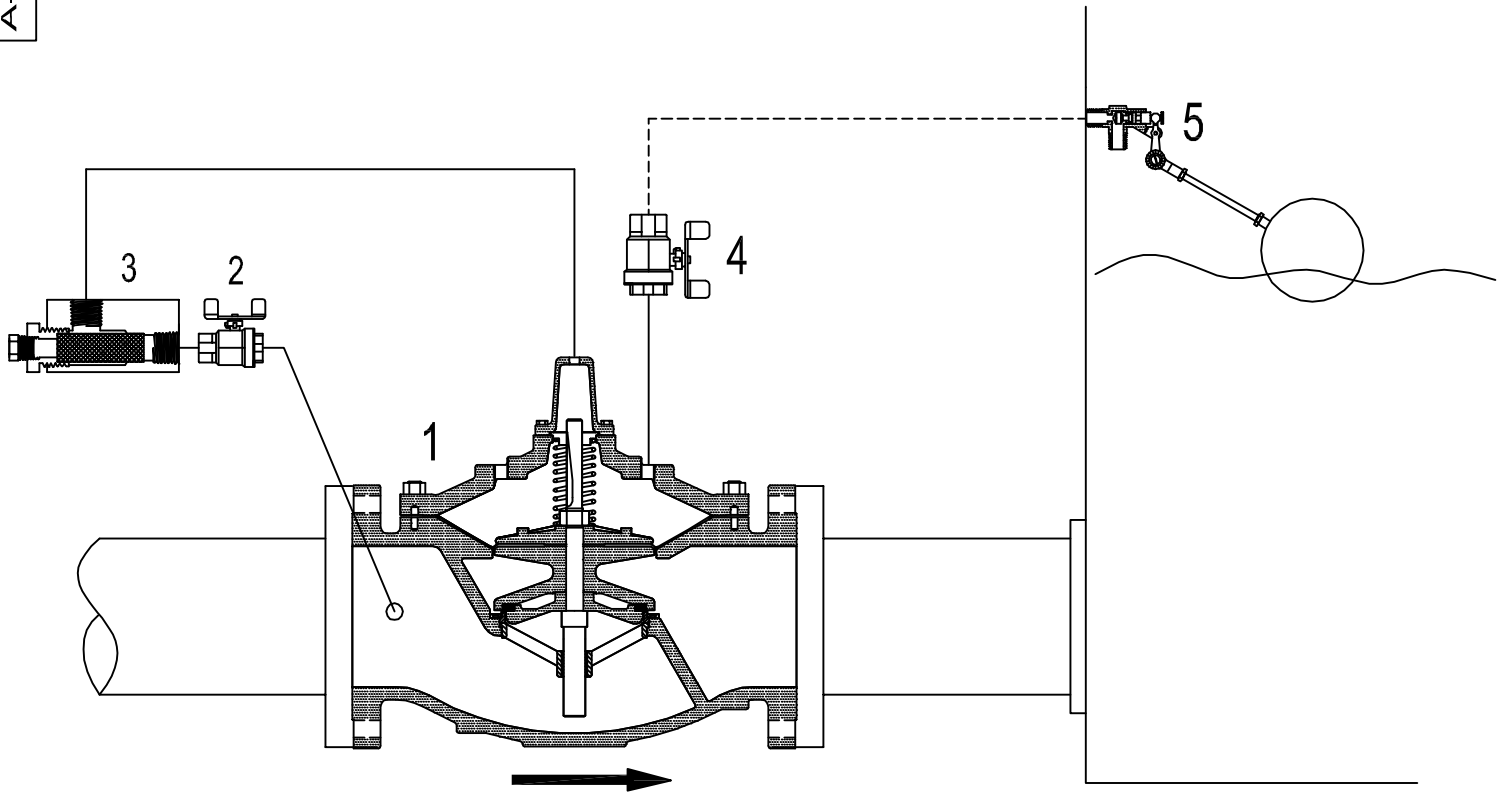
### INSTALLATION:

**Main Valve:** See 106/206-PG "Installation".

### PILOT VALVE:

1. Check the end connection of the float pilot. Roberts R400 has a 3/8" MALE N.P.T. end connection, Model 35 has 1/4" FEMALE N.P.T. end and Model 34 has 1/2" FEMALE N.P.T. ends. Roberts R400 and Model 35 require a horizontal fitting about 4" above the water level. Model 34 has a vertical float rod. See drawing and description of the Float Pilot in this manual.
2. Install Float Pilot (5) in a convenient location. The float should be located in a place where the surface is relatively undisturbed since turbulence on the surface of the liquid can cause the Main Valve to pulsate and interfere with accurate control.
3. Connect Float Pilot (5) to the Main Valve as shown on Schematic A-0608D. Use 1/2" or larger copper tubing.
4. Check operation of float:
  - Float must move in a vertical plane.
  - Make sure that the float does not go close to or past vertical in its lowest position.

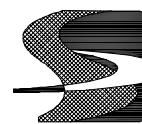
**Pilot Piping:** Use 1/2" I.D. copper up to 50 ft., 3/4" I.D. copper up to 100 ft.



1. Main Valve - Model 106/206-PG c/w INSV stem valve.
2. Isolating Valve.
3. Strainer - 40 mesh - J0098A.
4. Isolating Valve .
5. Float Pilot - Model R400 c/w Plastic Float.  
(Model 34 Float Pilot with vertical float rod OPTIONAL).

----- connected in field

Pilot Operated Modulating Float Valve.  
( 2 1/2" to 24" 106 / 4" to 36" 206).



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Drawn By:

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Approved By:

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Date:

March 23, 2005

Drawing:

A-0608D

Model 106 or 206-F-Type 4