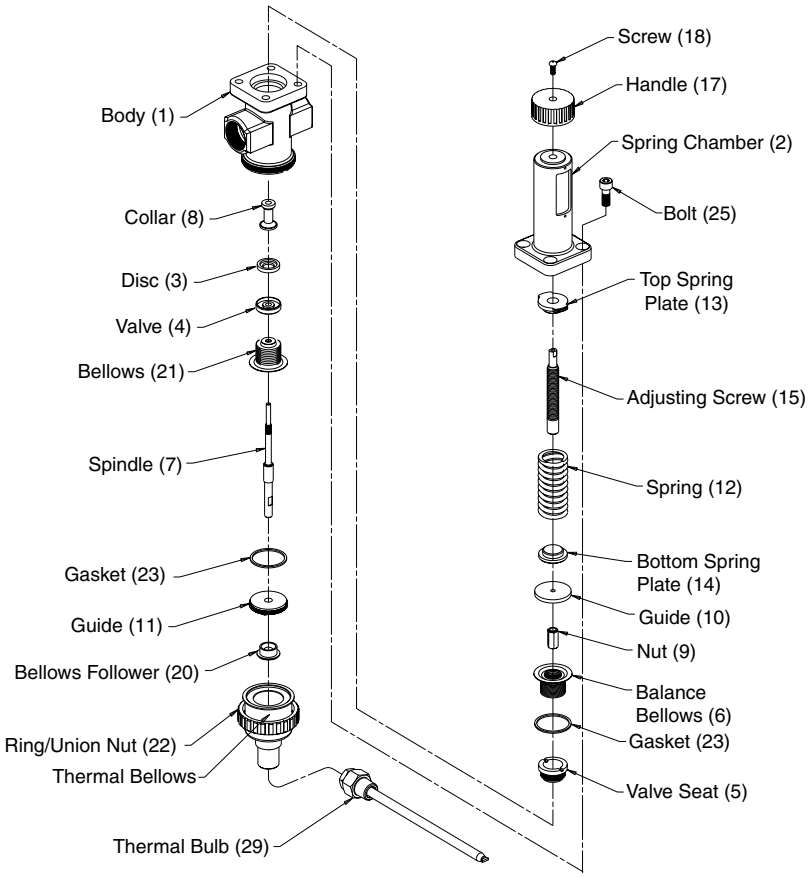
OB-30/31

OB-30 Direct Acting (Heating)
OB-31 Reverse Acting (Cooling)
Installation, Operation and Maintenance



OB-30 Heating valve is shown
OB-31 Cooling valve has valve and seat reversed to open as temperature increases.

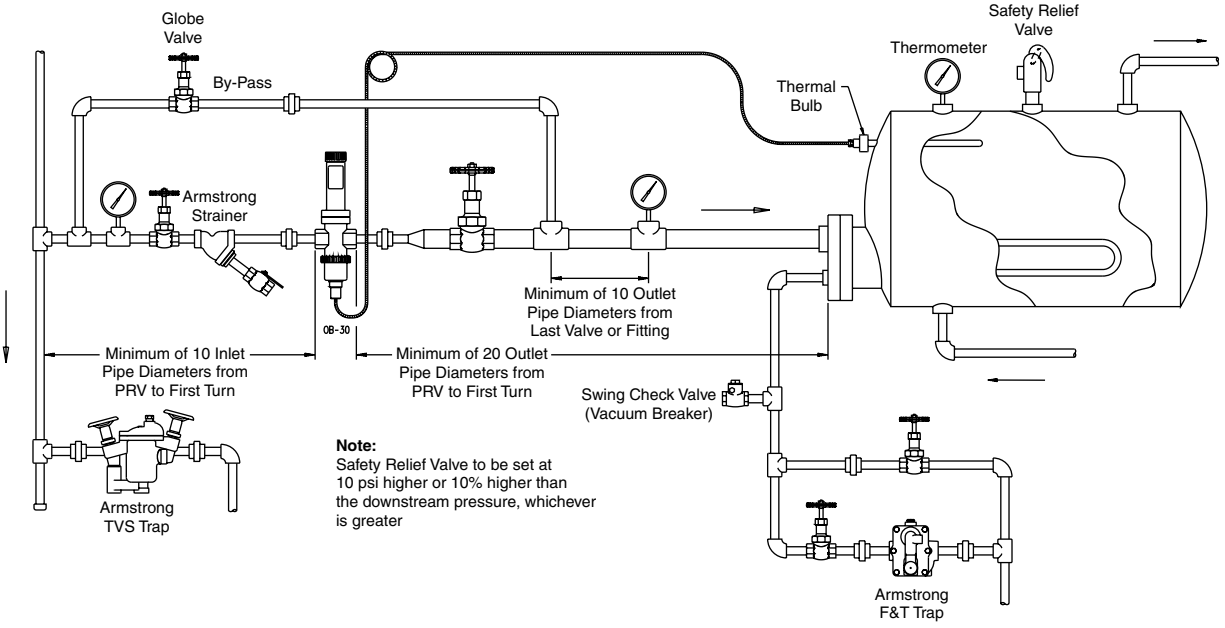
Installation Instruction

A. Installation of Body:

1. Do not lose thermal bellows follower (20).
2. When possible, install the handle portion of body in the “up” position.
3. Align flow direction with direction of arrow cast into body.
4. Be sure to install 60 mesh strainer at valve inlet. If your standard piping practice permits, place by-pass line around regulator.

B. Installation of Thermal Bulb Sensor:

1. The thermal bulb sensor can be installed in any position. Care should be taken to install the bulb so that it will be in full contact with the heated or cooled liquid.
2. Do not bend armored capillary sharply. Improper regulation could occur.
3. Install thermometer into fluid close to thermal bulb sensor.
4. If a thermal well is used make sure that a heat transfer compound is applied to sensor before installation into the thermal well.



C. Assembly

1. You should receive two (2) boxes – one (1) valve body and one (1) capillary system.
2. Once body is installed insert thermal bellows follower (20), which was packaged with the body, inside the thermal bulb (29) with the flat side down toward the thermal bulb (29). Turn the adjusting handle (17) counterclockwise to relieve spring tension. Attach capillary system to valve body and tighten union nut (22).

Note: If you have misplaced the bellows follower (20) please contact the factory. Without this component the bellows may be damaged or erratic control could result.

D. Start-Up and Adjusting Procedures

1. Close inlet and outlet valves to the temperature regulator and open the by-pass line to clean the system.
2. Turn handle (17) and align the indicator with the required temperature position on the scale, (see chart below). Temperature will rise when turning clockwise (R) and temperature will fall when handle is turned counterclockwise (L) for a heating application.

Number on Dial	Thermal System Range °F				
	32 - 95	77 - 158	104 - 212	140 - 266	158 - 302
0	14	57	83	—	—
1	41	86	117	136	153
2	68	115	151	178	196
3	88	144	187	221	246
4	107	172	225	270	324

3. Slowly and completely open the inlet and outlet valves.
4. Allow a stabilization time with the system and re-adjust according to fluid temperature reading on the thermometer.

Please use chart under start-up and adjusting procedures as a reference point only. Adjustment should be made according to actual liquid temperature as read on the thermometer. Note that the may vary slightly according to the thermal bulb position, ambient temperature, and equipment conditions, etc.

D. Maintenance Inspection:

1. Troubleshooting Hints – Many of the problems that occur with temperature regulators are due to dirt holding the main valve open or closed. Also, make sure that the thermometer sensing the fluid temperature is operating properly.

Disassembly

Before disassembly, make sure the inlet and outlet valves to the regulator are closed. Also, be sure that the pressure has been relieved.

1. Turn handle (17) counterclockwise until tension is relieved from spring.
2. Loosen union nut (22) and remove capillary system from valve body. Make sure that the thermal bellows follower (20) is not lost.
3. Loosen bolts (25) and remove spring chamber (2). During this operation make sure the spring plates (14 & 13) and regulator spring (12) are not lost.
4. Remove guides (10) and (11).
5. Loosen nuts (9) located at the top of the spindle (7) with socket wrench (size 10mm hex). All inner parts, excluding valve seat (5) can be removed.
6. For assembly procedure, follow reverse order.
7. During tightening of gasket (23), tighten guide (11) on the bottom of the body with the spring chamber (2) removed.

Troubleshooting

Problem	Cause	Solution
Temperature does not rise.	Improper adjustment.	Re-adjust according to regulating methods.
	Faulty steam trap draining equipment.	Check trap and correct problem.
	Inadequate pressure to eliminate condensate.	Re-pipe system.
	Thermal bellows receiver (20) was not installed.	Install thermal bellows receiver.
	No transfer medium applied to sensor.	Apply heat transfer paste to sensor before installation in well.
Temperature rises excessively.	Improper adjustment.	Re-adjust according to regulating methods.
	Dirt or scale in valve (4) and or valve seat (5) or flawed valve and seat. Also, check collar (8) for defect.	Disassemble and clean valve. In case of flawed valve and seat - replace.
	Broken capillary system.	Replace capillary system.
Large variation between thermometer and temperature regulator setting.	Thermal pipe and/or thermometer are installed in wrong location.	Relocate sensor in path of fluid so entire sensor is submerged and/or relocate thermometer close to sensor.
	Inlet pressure is too high.	Lower inlet pressure. On low load applications, the lower the inlet pressure the more stable the control will be. Reduce inlet pressure.
Leakage from valve body.	Torn gasket.	Tighten bolts or replace gasket.
	Ruptured balance bellows (6).	Disassemble and replace bellows assembly.