

**INSTRUCTIONS  
FOR  
INSTALLATION AND OPERATION**

**No. RT-711 Series  
(Formerly 98711)**

*"Instantrol"*  
**Temperature Regulator Assembly**

**Note to Installer:** After installing the regulator, give this instruction folder to operating personnel or see that it is filed for future reference.

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**INSTRUCTION MANUAL NUMBER**

**P-2066**

**NOTES:**

## PRELIMINARY STEPS

1. Unpack carefully.
2. Inspect for parts which may have become loose or broken in transit.
3. Record serial number and model number for future reference.
4. Before installing, read instructions.

## SECTION I — INSTALLATION

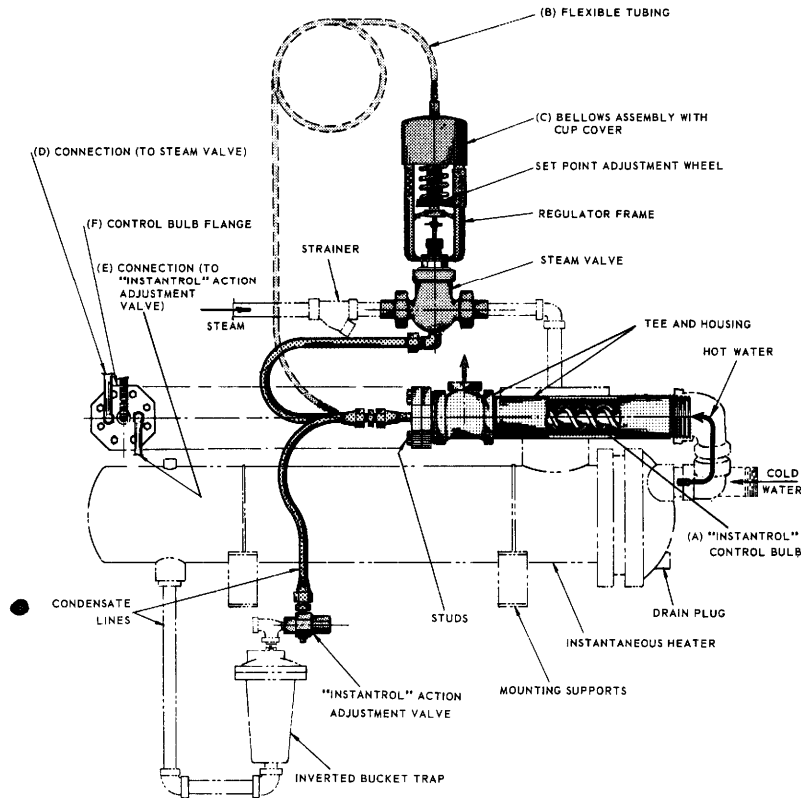


Fig. 1 Typical Installation

### A. BULB HOUSING

Remove the 8 studs from bulb flange which hold bulb to bulb housing. Remove bulb housing and install horizontally into existing plumbing, making certain to locate so that capillary will reach. The bulb housing should be placed as close as possible to the heat exchange discharge.

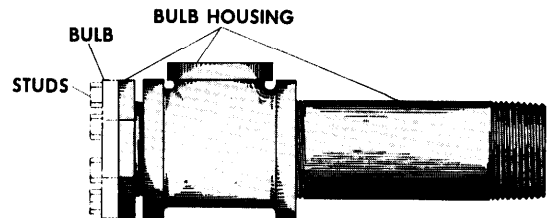


Fig. 2 Bulb Housing

### B. TEMPERATURE REGULATOR

When making the installation, do not remove the valve from the regulator unless absolutely necessary.

The regulator should be installed as close as possible to the heater to be controlled and a pipeline strainer should be placed just ahead of the valve. If the steam pressure fluctuates, or is above 40 psi, a steam regulator, such as Fulton Syphon I-1073, should be installed

upstream of the temperature regulator. The best control will be achieved by using the lowest steam pressure which will handle the heating load. Install valve so flow is in direction of arrow on valve body.

### C. BULB

Install bulb in housing (A). The "UP" mark on bulb must be observed!

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### D. CAPILLARY TUBING

The flexible tubing connecting the bulb and valve must not be cut, kinked, mashed or unduly twisted. It may be bent on a 3½" radius or larger. Tubing may be fastened in a permanent fashion to a rigid location but not fastened to steam pipes or other locations where subject to extreme temperatures. A small loop of tubing next to the regulator head is recommended to absorb vibrations occurring in pipeline.

### E. "INSTANTROL ACTION" ADJUSTMENT VALVE

Connect the outlet of the "instantrol action" adjustment valve to the discharge side of heat exchanger steam trap or exhaust separately if desired.

NOTE: An inverted bucket, float or float and

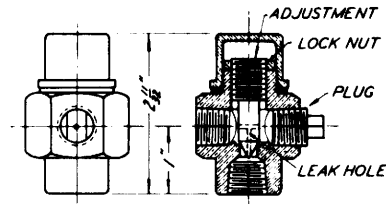


Fig. 3 Instantrol Action Adjustment Valve

thermostatic type trap should be used on the heat exchanger. Thermostatic traps should be avoided.

### F. TUBE CONNECTIONS

Install the 3/8" tubing lines; one from steam valve connection fitting to either side of bulb coil; the other from the other side of bulb coil to the "instantrol action" adjustment valve.

## SECTION II — DESCRIPTION and OPERATION

The "Instantrol" temperature regulator consists of the temperature regulator with a stainless steel trimmed "MA" valve with Instantrol supply connection fitting, the "Instantrol" control bulb and housing, the "Instantrol Action" adjustment valve, and necessary connecting tubing and fittings.

This regulator controls only within the temperature range stamped on its nameplate and may be adjusted to operate at any point within that range; however, the best control is achieved with the setpoint in the upper third of the range.

## SECTION III — START-UP

### A. TEMPERATURE

After the regulator is properly installed, turn on water and steam. If set point is specified on order, regulator is factory set at this setting; if not, regulator is set at mid-point of range.

After placing the regulator in service, allow sufficient time to reach stable operation then observe temperature. If not correct, change the temperature setting in manner directed.

To RAISE temperature setting, turn adjustment wheel to RIGHT (See arrow "A") (Fig. 4).

To LOWER temperature setting, turn adjustment wheel to LEFT (See arrow "B") (Fig. 4).

Make new settings as necessary until desired temperature is obtained but allow sufficient time between changes.

The regulator has an arbitrary scale plate to indicate the position of the adjustment. This feature is helpful in resetting the adjustment when frequent changes are necessary. Scale plate graduations are not in degrees of temperature.

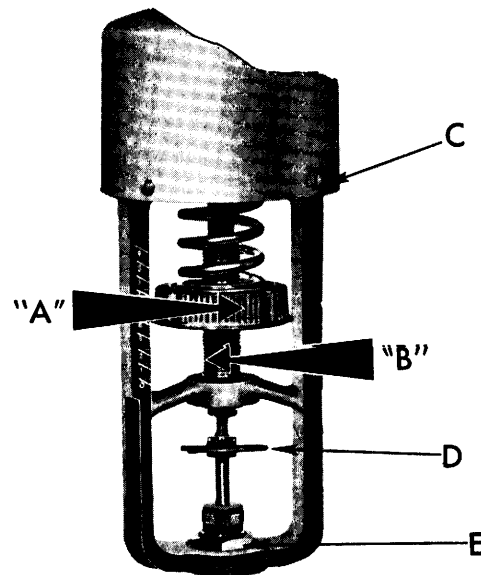


Fig. 4

## B. "INSTANTROL ACTION" ADJUSTMENT VALVE

If the regulator cycles after it has been properly set, adjust as follows:

With high steam pressure or light loads, turn "Instantrol Action" adjustment valve counterclockwise a few degrees at a time until cycling is eliminated.

With low steam pressure or heavy loads,

turn "Instantrol Action" adjustment valve clockwise a few degrees at a time. Never make total adjustment more than 3/4 turn.

After the valve is adjusted for proper operation, the adjustment can be locked by tightening a jam nut as shown in Fig. 3. A small passage or leak hole is provided in the poppet so that the flow cannot be shut off entirely and thus render the anticipating coil around the bulb inoperative.

## SECTION IV — MAINTENANCE

This regulator, if properly installed and used, should require very little attention or maintenance; however, every piece of mechanical equipment deserves some care.

### A. PACKING

Valve stem packing nut should be kept tight but care must be taken to prevent stem binding. If valve stem packing must be replaced, follow steps below. (See Fig. 5).

1. Remove lock pin.
2. Remove lock nut and separate control from valve.
3. Remove packing nut and packing gland.
4. Remove bonnet from valve.
5. Remove packing, spring plate and spring.
6. Clean our packing box with a clean rag or soft paper.
7. Wipe off stem with clean rag. DO NOT attempt to polish. If stem is scratched or nicked around packing area, it should be replaced.
8. Replace bonnet on valve.
9. Carefully place new packing in packing box. If chevron packing is not available, in an emergency, repack with a good grade of graphited string packing. Put a small amount of good packing

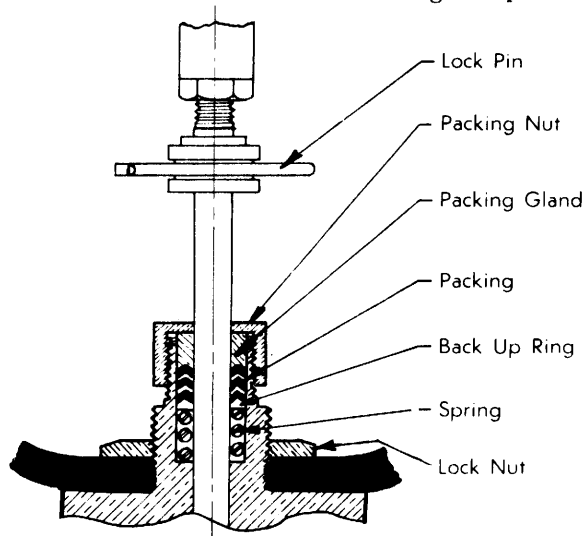


Fig. 5 Valve Packing

lubricant in the stuffing box while re-packing. This packing, however, should be replaced with teflon chevron packing as soon as possible.

10. Replace packing gland.
11. Replace packing nut and tighten.
12. Connect valve to control and tighten lock nut.
13. Insert lock pin.

### B. THERMOSTATIC ELEMENT

The thermostatic element consists of bulb, flexible tubing, and bellows assembly. This unit contains the thermostatic charge. In event this charge is lost as result of damage or otherwise, thermostatic unit must be purchased as, and installed as, a complete unit. It is not repairable in the field and must be returned to the factory for repairs or replacement parts.

**CAUTION** - Never remove or install thermostatic unit when temperature of bulb is above lowest temperature of the range stated on nameplate.

To remove thermostatic element follow steps listed below:

1. Remove regulator bulb from its location by removing 8 studs from bulb flange.
2. If room temperature is above lowest temperature of range stated on anemplate, place bulb in bucket of water, ice or dry ice.
3. Turn adjusting wheel to left (see arrow "B" Fig. 4) until wheel is all the way down.
4. Remove screws "C" (Fig. 4) and lift off element.
5. To install thermostatic element, reverse the above operations.

### C. REMOVING OR INSTALLING VALVE

1. Remove lock pin "D" (Fig. 4). (Do not disturb lock nut connecting regulator stem to connector).
2. Remove lock nut "E" (Fig. 4) and lift regulator frame off valve body.
3. Remove valve from line.
4. To install valve, reverse the above operations.

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#### **D. REFACING VALVE SEAT**

Under certain conditions the valve seat may be lapped with the valve poppet. However, this should be done only by an experienced person. If the valve poppet or insert is badly scored, it should be replaced.

If possible, the valve should be returned, freight or express charges prepaid, to the factory for any needed repair or parts.

If valve is to be lapped, remove regulator from valve (see REMOVING VALVE), remove bonnet, and place a small amount of (extremely fine) grinding compound or a graphited paste made by mixing fine flecks of graphite with engine oil. Apply this to the valve insert face. In lapping, every effort should be made to avoid scoring or grooving the contact faces. Wipe poppet and insert thoroughly with a clean rag after each operation.

Use light pressure in lapping even to the extent of holding up part of the weight of the poppet as it is rotated. Frequently lift off poppet to check surface.

Heavy pressures cause the grains to become embedded in the material and will produce deep grooves or scores.

When seating face of poppet is smooth, groove or lapping scores in seating face of insert, if not too deep, does not particularly harm or in some cases seems to assist in getting a quick seat. Wipe away all compound from the valve poppet and inserts.

IF VALVE IS TO BE TAKEN APART TO REPLACE PARTS, SPECIAL INSTRUCTIONS SHOULD BE REQUESTED FROM THE FACTORY FOR THE PARTICULAR VALVE INVOLVED.

## **SECTION V — TROUBLE SHOOTING**

This regulator is supplied to operate at setpoints within the temperature range stated on the nameplate and the valve has been ground to close tight against line pressure specified on your order. If the regulator does not function properly immediately after completing the installation, and you are unable to correct the trouble, write to the factory and outline your difficulties.

If the regulator has been operating satisfactorily for some time and trouble develops, the following information may be of assistance:

#### **A. HEATING**

If no heat or inadequate heat is obtained with highest temperature setting, make sure that hand valves ahead of the regulating valve are open and that steam of sufficient pressure is passing to the regulator valve. Blow, or otherwise clean the line strainers. Clean all traps and see that they are in working order. If the return line to the trap is cool, the steam coils may be clogged.

In all cases, the packing nut should be tight but not binding. Valve stem must be free to move up and down without undue friction.

The usual cause for overheating is the collection of scale or other foreign matter on the valve seat. Such matter may hold the poppet off seat and in time cause the seat or

poppet to become scored. To inspect seats and poppet, remove valve bonnet in same manner as directed under heading Refacing Valve Seat. Slightly scored seats or poppets may be reground, but if too badly damaged, valve should be returned to the factory for repairs or else a new valve ordered.

Overheating may be caused by failure of thermostatic unit. See Thermostatic Element below.

#### **B. THERMOSTATIC UNIT**

Failure of the thermostatic unit is indicated by failure of the regulator to respond to temperature changes affecting the bulb. With such failure the valve stem would be up and valve open and the stem would fail to move downward on a temperature rise at the bulb.

To test thermostatic unit, remove bulb from its location and observe valve stroke by removing bulb from its location and placing the bulb in a suitable vessel where it can be quickly heated with hot water or steam and cooled with cold water or crushed ice. If thermostat does not readily respond, it has lost its thermostatic charge and a new unit must be installed or damaged one repaired.

NOTE - When writing to the factory be sure to give serial number and other information appearing on the nameplate.

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