JOHNSON CONTROLS

24-3930-16, Rev. B

T-4003 Submaster Room Thermostat

The T-4003 Submaster Room Thermostat is designed to provide individual space temperature control in all types of heating and cooling applications. The set point of the T-4003 can be readjusted from a remote gradual switch or in reference to a temperature change signaled by a master thermostat. An increase in master pressure will result in a proportional increase in set point.

Specifications	
Models	T-4003-8008; DIR with Direct Readjustment
	T-4003-8010; REV with Reverse Readjustment
Supply Pressure	91 to 175 kPa (13 to 25 PSIG); Nominal 140 kPa (20 PSIG) Air Supply Must Be Clean, Dry, and Oil Free
Range of Remote Readjustment	Adjustable from .01 to .16°C/kPa (.15 to 2.0°F/PSI); Factory Set at Approximately .04°C/kPa (0.5°F/PSI)
Sensitivity	Fixed at 32 kPa/°C (2.5 PSI/°F)
Air Consumption	5.5 mL/s (20 SCIM)
Output Flow Capacity	109 mL/s (400 SCIM)
Ambient Temp Limits	-29 to 54°C
Air Connections	Barbed Fittings for 5/32 in. O.D. Polytubing

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

Factory Calibration

The T-4003 is factory calibrated to send a 56 ± 7 kPa (8 ± 1 PSIG) output signal when the room temperature is at the setting on the dial and the remote pressure is set at 0 kPa (0 PSIG). The element (and dial) is calibrated using a 140 kPa (20 PSIG) supply. (Dial at 20°C).

Mounting

Note: When handling the unit, leave the front of the blisterpack on to protect the instrument until mounting is complete.

Room thermostats can be connected directly with 5/32 in. O.D. polytubing to barbed fittings on the back of the unit. The fittings are designated "S" for supply, "O" for output, and "3" for readjustment. If the installation was roughed in with 1/4 in. polytubing, use short lengths of black 5/32 in. tubing as couplers to make the connection. Secure the thermostat tight against the mounting bracket with the hex head screws on the corners of the unit.

If the installation was roughed in with a plastic terminal connector on the mounting bracket, simply fit the barbed fittings into the terminal connector and secure the

thermostat tight against the mounting bracket with the hex head screws on the corners of the unit.

If the thermostat is to be installed on an old T-4000 copper tube pipehead, install three 13 mm long, 5/32 in. pieces of polytubing on the fittings. Install the thermostat over the pipehead and secure the unit tight against the mounting bracket.

Note: The following Range of Remote Readjustment, Set Point Adjustment, and Operational Checkout procedures have been written with respect to factory calibration.

Range of Remote Readjustment

The range of remote readjustment is adjustable from .01 to .16°C/kPa (.15 to 2.0°F/PSI) and is factory set at approximately .04°C/kPa (0.5°F/PSI). The range can be readjusted as follows:

1. Insert a hypodermic needle test probe and gage into the test port fitting and note the output pressure.
2. Move the range of readjustment slider toward the control port to decrease or away from the control port to increase the range of readjustment. Readjust the slider screw to the pressure noted in Step 1 above.
3. Set the master pressure (remote adjustment) to 28 kPa (4 PSIG).
4. Turn the set point dial to 26°C and turn the calibration screw to obtain a 21 kPa (3 PSIG) output pressure.
5. Set the master pressure (remote readjustment) to 98 kPa (14 PSIG).

   Note: 98 kPa (14 PSIG) - 28 kPa (4 PSIG) = 70 kPa (10 PSIG).
6. Turn the set point dial until the output pressure returns to 21 kPa (3 PSIG).
7. The change in dial setting divided by the change in pressure is the actual range of readjustment. If this is not the desired range, repeat Steps 2 through 6 until the desired range is obtained.

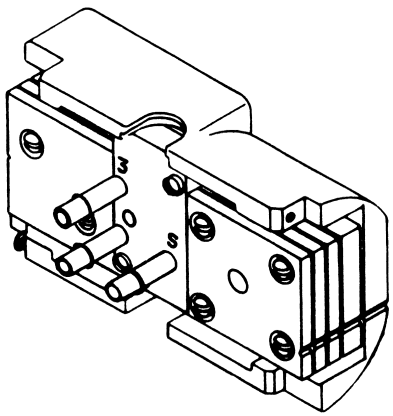

Fig. 1: Back View of Instrument

Set Point Dial Adjustments for Remote Reset Applications (See Fig. 2)

1. Furnish 140 kPa (20 PSIG) supply pressure to the instrument.
2. Set the master pressure (remote readjustment) to half of the supply pressure (70 kPa [10 PSIG] in this example).
3. Note the temperature at the element.
4. Turn the set point dial to the temperature noted in Step 3.
5. Turn the calibration screw to provide an output pressure equal to the mid spring range of the controlled device.
6. Turn the set point dial to the desired temperature.

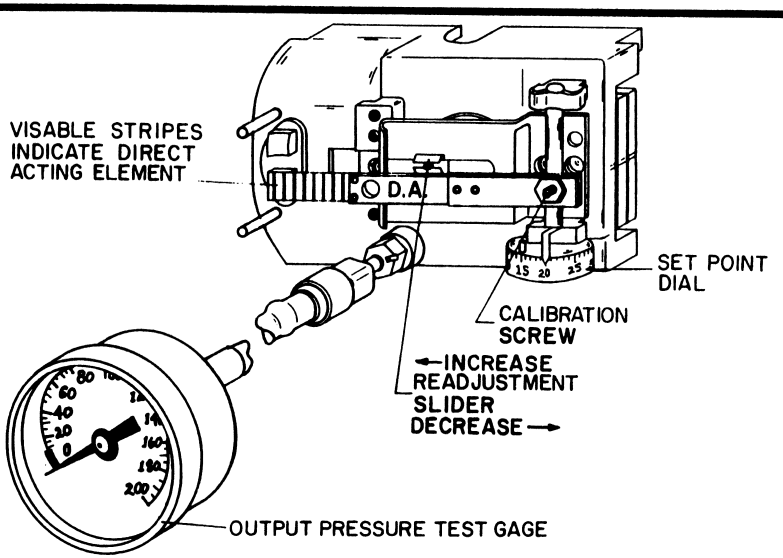

Fig. 2: T-4003 Adjustments

Set Point Dial Adjustments for Master-Submaster Applications

1. Draw a chart which corresponds to your specific application.

   Example:
   Master Pressure Readjustment Range: 0 to 140 kPa (0 to 20 PSIG)
   Temperature Reset Range: 13 to 29°C
   Readjustment Setting: .12°C/kPa (1.5°F/PSI)

2. Note the master pressure reading.
3. Note the temperature at the element.
4. Turn the set point dial to the temperature noted in Step 3.
5. Turn the calibration screw to provide an output pressure equal to the mid spring range of the controlled device.
6. Turn the set point dial to the desired master pressure set point.

Operational Checkout

1. Furnish 140 kPa (20 PSIG) supply pressure and 70 kPa (10 PSIG) master pressure to the instrument.
2. Slowly increase the dial setting.
3. Check for a gradual decrease in output pressure.
4. Slowly decrease the dial setting.
5. Check for a gradual increase in output pressure.
6. If a pressure buildup and drop is not observed as mentioned above, refer to the Repair Information section.
7. Increase the master pressure 7 kPa (1 PSIG), output pressure should decrease; decrease the master pressure 7 kPa (1 PSIG), output pressure should increase.

Repair Information

If the T-4003 fails to operate within its specifications, refer to the Repair Parts Manual for appropriate repair parts.

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