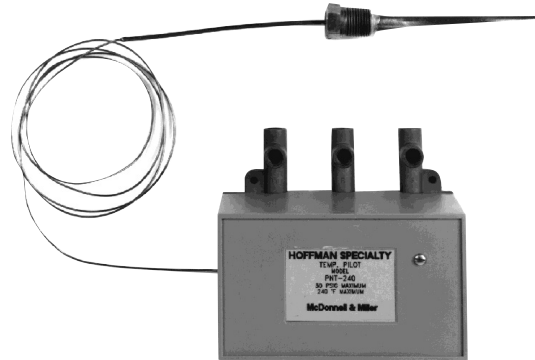




Hoffman Specialty® Pneumatic Temperature Pilot Model 240PNT, Series 2000

Application

For proportional temperature control of pneumatic valves and actuators to maintain air or liquid temperatures in duct, plenum chambers, liquid lines, tanks, etc. May also be used as a low limit thermostat.



Specifications

Thermostat	Proportional two pipe type. Thermostats are ambient compensated.
Sensing Element	Remote liquid-filled copper
Control Dial Range	-20 to 240°F (-29 to 115°C). Shipped as -20 to 120°F, reverse side of dial 100 to 240°.
Throttling Range	Adjustable 3 to 35°F/10 psi (2 to 19°C/69 kPa) change in output, factory set at 5°F (3°C).
Output Air Signal	0.5 psig (3.4 kPa) to supply air pressure - 0.5 (-3.4 kPa).
Action	Reverse Acting (RA)-Decrease output pressure on temperature rise.
Ambient Limits: Shipping	-40 to 150°F (-40 to 65°C). 0 to 98% R.H., non-condensing.
Case Operating	40 to 150°F (4 to 65°C). 10 to 98% R.H., non-condensing
Bulb	310°F (154°C) maximum
Supply Air Pressure	Clean, oil free, dry air required
Nominal Minimum Maximum	20 psig (138 kPa) 15 psig (103 kPa) 30 psig (207 kPa)
Air Connections	1/8" FNPT for main, branches and AL-362 gauges (not included)
Air Consumption for Sizing Air Compressor	0.008 scfm (3.8 ml/s)
Air Capacity for Sizing Air Mains	16 scim (4.4 ml/s)
Mounting	Upright position on a wall or vertical flat surface
Bulb Dimensions	3/8" x 4 5/8" (9.5mm x 117mm)
Capillary Length	6' (1.8 m)
Case Dimensions	5 13/16" high x 6 3/16" wide x 4" deep (148mm x 157mm x 102mm)

ACCESSORIES	
AT-206	3/8" x 4 1/2" with 1/2" MNPT copper bulb well

MAINTENANCE PARTS	
AT-520-011	Relay repair kit
AT-528	Pilot restrictor kit
DYDK-99-011	Thermal element for Model 240 PNT

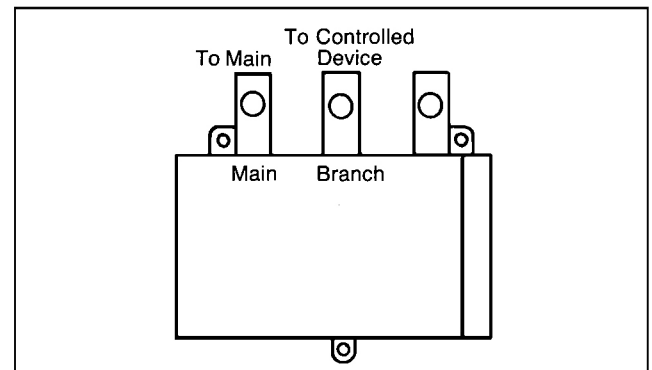


Figure 1. Piping Connections

Pre-Installation

INSPECTION

Visually inspect the carton for damage. If damaged, notify the appropriate carrier immediately. Visually inspect the device for obvious defects. Return damaged or defective products.

REQUIRED INSTALLATION ITEMS

- Tools (not provided):
Appropriate drill, drill bits and screwdriver for mounting screws.
Needle nose pliers or $\frac{3}{16}$ " open-ended wrench to hold dial shaft.
- Appropriate accessories
- Mounting screws and appropriate fittings (not provided)

Installation

CAUTION: INSTALLER MUST BE QUALIFIED, EXPERIENCED TECHNICIAN.



MAKE ALL CONNECTIONS IN ACCORDANCE WITH THE JOB PIPING DIAGRAMS, LOCAL AND NATIONAL CODES.
AVOID LOCATIONS NEAR STEAM OR HOT WATER COILS OR PIPES, OR WHEREVER RADIANT HEAT WILL AFFECT THE BULB OR CAPILLARY TUBE.

Thermostat Mounting

Mount the thermostat in an upright position on a wall or vertical flat surface that does not vibrate.

Three (3) mounting holes $\frac{3}{16}$ " (5 mm) provided on case.

Bulb Mounting

LIQUID LINE AND TANK FOR MODEL 240

Description	Mtg Fitting	Insertion Size
Copper Bulb Well	$\frac{1}{2}$ " MNPT	$\frac{1}{2}$ " dia. OD $4\frac{1}{2}$ " long

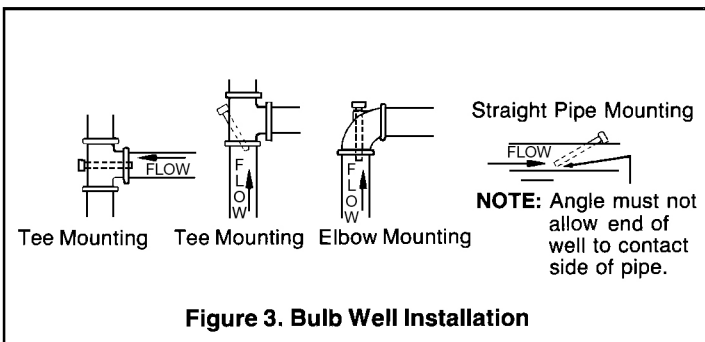


Figure 3. Bulb Well Installation

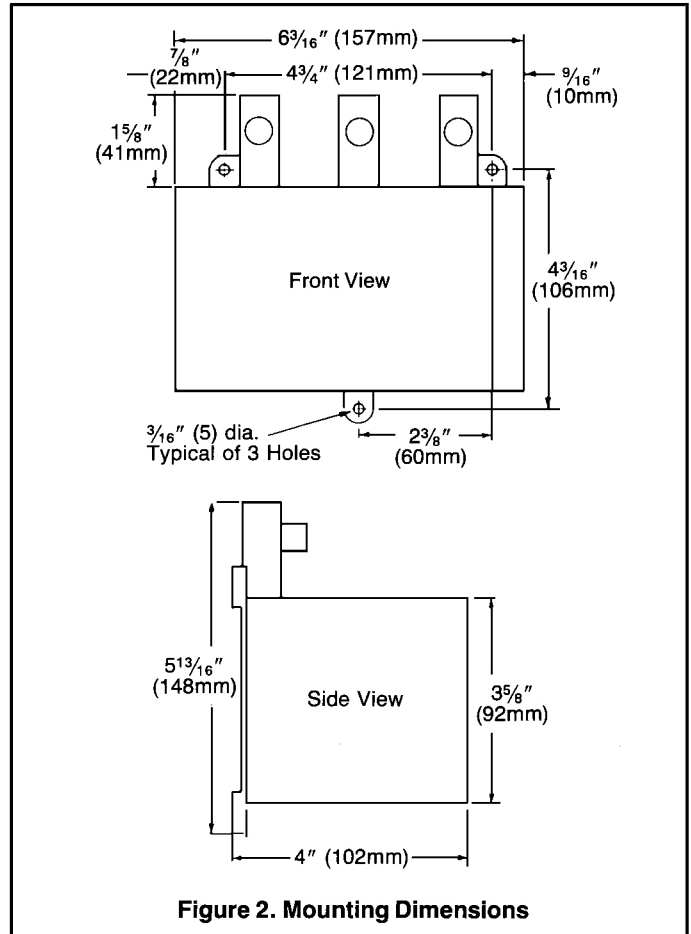


Figure 2. Mounting Dimensions

APPLICATION LIMITATIONS AT 250°F
FLUID TEMPERATURE (MAX. 350°F)

Description	Max. Recommended Velocity (FPS)	Max. Recommended Static Pressure (psig)
Bulb Well	11	250

INSTALLATION OF MODEL 240 BULB INTO BULB WELL

1. Install Model 240 bulb well into $\frac{1}{2}$ " FNPT opening.
2. Place packing (included with bulb well) over bulb support section and insert bulb into well.
3. Push packing into nut on well using a screwdriver.

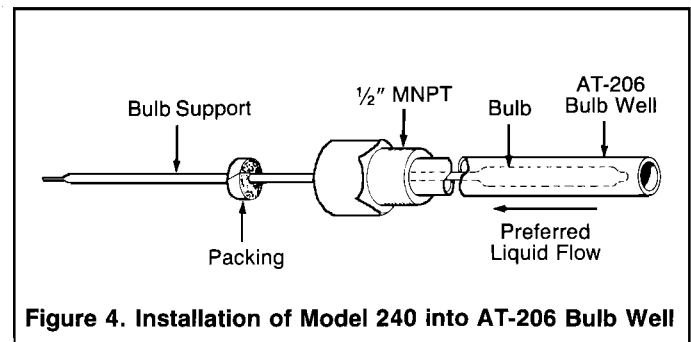


Figure 4. Installation of Model 240 into AT-206 Bulb Well

Adjustments

Thermostats are shipped from the factory calibrated to provide an 8 psig control line pressure when the control point is equal to the setpoint.

To make all adjustments, remove the cover by first loosening the cover screws. Squeeze slightly on the top and bottom and pull forward and down, unhooking the top first.

SETPOINT DIAL

The thermostat has a total dial range of -20° to $+240^{\circ}$ F. One side of the dial is marked -20 to 120 and the other 100 to 240 . If a setpoint higher than 120° is required, proceed as follows:

1. Rotate setpoint dial to 110°
2. Using a $\frac{3}{16}$ " open end wrench, hold hex shaft below setpoint dial.
3. Loosen screw that holds dial in place and remove.
4. Remove dial and turn over to the 100 to 240 side.
5. Start screw into dial post, before tightening line up dial at 110° , and tighten. Be sure to hold dial post with wrench when tightening screw tight.
6. Proceed with standard throttling range and calibration procedures.

THROTTLING RANGE

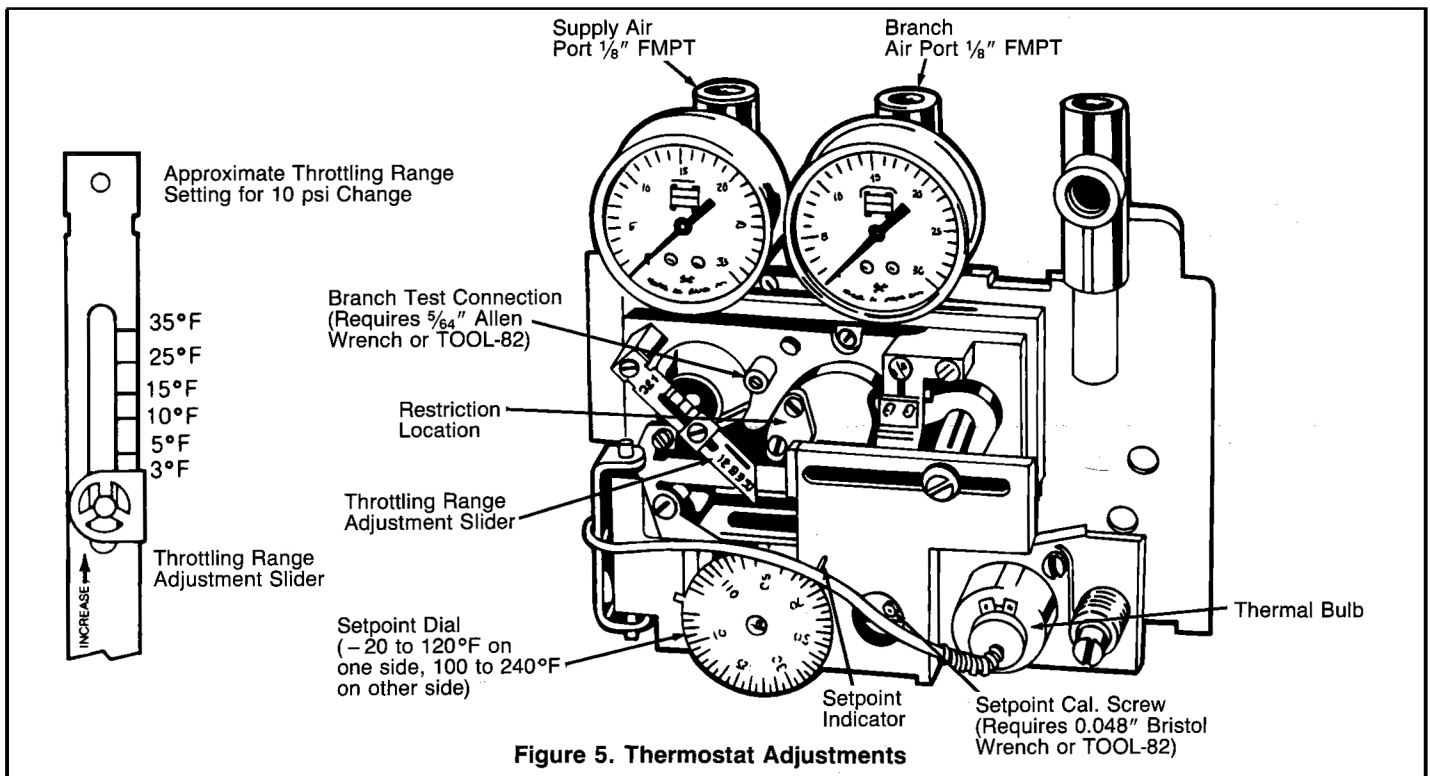
The throttling range should be set at the lowest value which will allow the thermostat to control the system without cycling under normal load conditions. The most satisfactory setting will vary with the type of control system. The throttling range is changed by sliding

the throttling range adjustment slider to its proper position. See Figure 5. Calibration of the thermostat should be checked after the throttling range has been changed. When making the throttling range adjustment, care should be taken to prevent excessive side forces on the feedback lever. In no case should the pivot point be raised when the adjustment is made.

THROTTLING RANGE ADJUSTMENT

If the throttling range of the thermostat as shipped is not satisfactory, proceed as follows:

1. Move slider to appropriate position desired (see Figure 5).
2. With instrument measuring a stable temperature, rotate setpoint dial CCW to low end of scale, then CW to that temperature "setpoint".
3. Adjust setpoint calibration screw until 3 psig is read on branch gauge.
4. Rotate setpoint dial CW toward upper end of scale until 13 psig is read on branch gauge.
5. Difference between setpoint dial readings in step 2 and 4 is the approximate mechanical throttling range of the thermostat. The thermal throttling range will be equal to or less than the mechanical throttling range.
6. If the throttling range in step 5 does not provide the control desired, move throttling range slider in appropriate direction and repeat steps 2 through 5 until desired control is obtained. If unable to obtain satisfactory control, check system for proper sizing of components being controlled and sensing element location.



NOTE: GAUGES ARE NOT INCLUDED. THEY ARE SHOWN FOR ILLUSTRATION ONLY.

Calibration

After the installation has been completed, the thermostat should be checked for calibration. As a nominal calibration, the controlled branch pressure should be 8 psig when the setpoint is equal to the bulb temperature, indicated by a thermometer located near the bulb. In some applications, a valve other than 8 psig will be required to get the desired control results. Change the 8 psig designation as used in the calibration procedure, should this be the case.

1. Using the branch gauges, or a separate test gauge connected to the branch test port*, rotate the dial in the appropriate direction. The branch pressure should raise to be the same as the supply pressure ± 1 psi.

NOTE: As shown in Figure 5, each thermostat is furnished with a branch test connection. If a test gauge is to be used at this connection, use a $\frac{5}{64}$ " Allen wrench to unscrew (counterclockwise) the test gauge.

2. Measure the temperature at the bulb. This must be a stable temperature.
3. Rotate the dial to this temperature.
4. Turn the setpoint calibration screw (see Figure 5) until a branch pressure of 8 psig ± 1 psi is read on the branch gauge.

NOTE: The hex nut on the adjusting screw is used to provide tension only and should not be loosened when making adjustments.

5. Turn the dial to the desired setpoint.
6. If separate test gauge is used, remove gauge, tighten test point screw and replace cover.
7. Observe operation of system for satisfactory control. If necessary, recalibrate after system has come in control and stabilized.

Field Service

Relay repair kit, pilot restrictor and thermal elements are available. See Maintenance Parts on page 1 for specific part numbers.

COMMERCIAL WARRANTY

Warranty. For goods sold to commercial buyers, Seller warrants the goods sold to Buyer hereunder (with the exception of membranes, seals, gaskets, elastomer materials, coatings and other "wear parts" or consumables all of which are not warranted except as otherwise provided in the quotation or sales form) will be (i) be built in accordance with the specifications referred to in the quotation or sales form, if such specifications are expressly made a part of this Agreement, and (ii) free from defects in material and workmanship for a period of one (1) year from the date of installation or two (2) years from the date of manufacture, whichever shall occur first, unless a longer period is specified in the product documentation (the "Warranty").

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Except as otherwise required by law, Seller shall, at its option and at no cost to Buyer, either repair or replace any product which fails to conform with the Warranty provided Buyer gives written notice to Seller of any defects in material or workmanship within ten (10) days of the date when any defects or non-conformance are first manifest. Under either repair or replacement option, Seller shall not be obligated to remove or pay for the removal of the defective product or install or pay for the installation of the replaced or repaired product and Buyer shall be responsible for all other costs, including, but not limited to, service costs, shipping fees and expenses. Seller shall have sole discretion as to the method or means of repair or replacement. Buyer's failure to comply with Seller's repair or replacement directions shall terminate Seller's obligations under this Warranty and render this Warranty void. Any parts repaired or replaced under the Warranty are warranted only for the balance of the warranty period on the parts that were repaired or replaced. The Warranty is conditioned on Buyer giving written notice to Seller of any defects in material or workmanship of warranted goods within ten (10) days of the date when any defects are first manifest.

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Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state.

To make a warranty claim, check first with the dealer from whom you purchased the product or call +1-847-966-3700 for the name and location of the nearest dealer providing warranty service.

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