JOHNSON CONTROLS

T25 Type Two-Stage Room Thermostat Low or Line Voltage--Also for Automatic Changeover of Heating and Cooling

Application

T25 thermostats are for line or low voltage service requiring accurate control of two operating functions. Choice of functions include:

- control of two stages of heating, such as two-rate unit heaters or duct furnaces, commercial heat pumps, etc.
- control of two-stages of cooling, such as two-stage compressors, dual compressor units, etc.
- automatic changeover control of heating and cooling on three and four pipe fan coil installations and similar applications; automatic changeover from heating to cooling for unit operation

All Series T25 thermostats are designed for use *only* as operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add devices or systems that protect against, or warn of, a control failure.

Typical uses are for compressor control, fan coils, etc. Two SPDT switches permit independent control circuits. Each switch may be wired to make or break the control circuit on rise in temperature. A removable jumper across the "common" terminals is supplied as standard.

Features

- Contact units are dependable, dusttight, field proven Pennswitches.
- A sensitive liquid charged element and an efficient lever mechanism provides close operating differential without anticipators.

Fig. 1 -- T25 Two-Stage Thermostat.

- A bimetal thermometer is standard.
- A semi-concealed high temperature stop, which can be set in the field, is built-in feature of the thermostat.
- Attractive style matches other Johnson Controls thermostats and humidistats.

General Description

T25 thermostats have pleasing, contemporary styling that is adaptable to any decor. The thermometer is a dependable easy reading, bimetal pointer type.

The liquid charged sensing element is formed to achieve maximum sensitivity to surrounding air temperature changes. (See Fig. 2.) Coupled with a highly efficient diaphragm and lever mechanism, the element actuates totally enclosed Pennswitch contact units to provide a low operating differential and dependable switching action without the necessity of either heating or cooling anticipators.

Specifications

Product		T25A Two-Stage Thermostat
Action		SPDT
Contact Units		Two Enclosed, Dusttight Pennswitches
Cover		Cold Rolled Steel with "Tawny Silver" Finish
Differential (Mechanical)	**Each Stage**	0.7°F (0.4°C) Approximately
	Between Stages	3°F (1.7°C) Non-Adjustable
Faceplate		Dark Brown and Light Brown with Aluminum Numbers and Graduation Marks
Mounting		With Adapter Plate for Wall or Electrical Box Mounting, Vertical Mounting Only
Range	**Thermostat**	40 to 90°F (5 to 30°C)
	Thermometer	50 to 90°F (10 to 30°C)
Sensing Element		Liquid Charged. No Leveling Required
Shipping Weight	**Individual Pack**	1.5 lbs. (0.7 kg)
	Overpack of 20 Units	32 lbs. (14.5 kg)
Terminals		Screw Type. Color Coded—Red is Common, Red Closes to Yellow on Temperature Rise, Red Closes to Blue on Temperature Drop
Thermometer		Bimetal

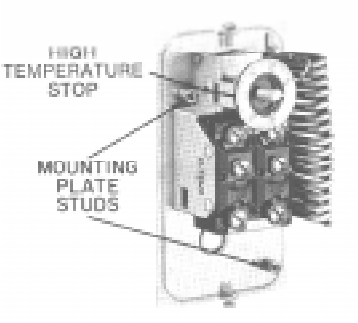


Fig. 2 -- Interior of T25. Note high temperature stop and convenient wiring terminals.

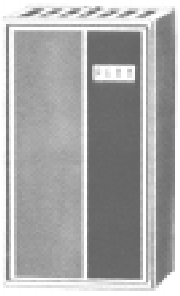


Fig. 3 -- T25 with concealed adjustment.

Elimination of anticipators makes every thermostat a "stock" control, which may be used on single or two-stage heating and/or cooling over a wide range of current loads, at voltages up to 277 V.A.C.

Thermostats are available with concealed adjustments. All thermostats have Allen-head cover screws to discourage unauthorized tampering.

T25 thermostats have a concealed high temperature stop with adjustments in 2°F (1.1°C) increments between 68°F (20°C) and 80°F (27°C). This feature prevents unauthorized people from setting the thermostat for temperatures above a pre-determined maximum.

Operating Temperature Differential

The operating temperature differential of any room thermostat depends on: the current flowing through the thermostat (amperage load); the velocity of air over the thermostat; the rate of temperature change to which the thermostat is subjected; and, whether the thermostat is operating heating or cooling equipment.

Graphs (Fig. 4, 5) show the operating temperature differentials of these thermostats under various electrical load conditions.

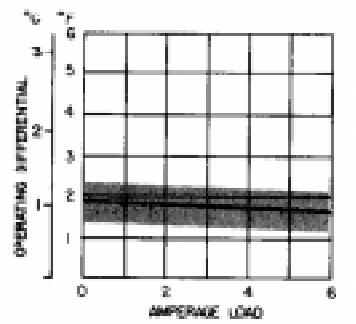


Fig. 4 -- Heating operating differential for T25.

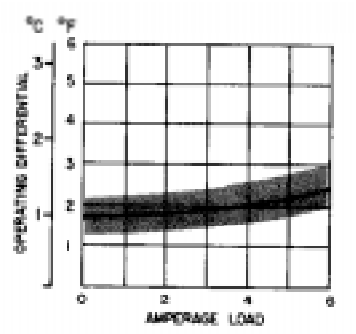


Fig. 5 -- Cooling operating differential for T25.

The air velocity was 25 feet per minute, (.1 m/sec) and the rate of temperature change was 6°F (3.3°C) per hour. Higher air velocities and/or lower rates of temperature change result in lower operating differentials. (See Figs. 4 and 5.)

Optional Constructions

Celsius Dial and Thermometer

Supplied, when specified, at no extra charge. Thermostat range of 5 to 30°C. Thermometer scale 10 to 30°C.

Brand Nameplates

Available on quantity orders. Check with Customer Service.

Thermostat Guards

Plastic, wire or cast aluminum guards are available at extra cost. See GRD Series in the *Johnson Controls Product Catalog*.

Ordering Information

To order, specify:

1. T25A for thermostat with knob adjustment.
2. Specify optional construction details, as required:
   a. Concealed dial and adjustment model.
   b. Celsius dial and thermometer.
   c. Brand named.

Electrical Ratings

Motor Ratings	120 V.	208 V.	240 V.	277 V.
A. C. Full Load Amps.	6.0	3.5	3.0	—
A. C. Locked Rotor Amps.	36.0	21.0	18.0	—
Non-Inductive Amps.	10.0	9.2	8.0	7.2
Pliot Duty — 125 VA.	24 to 277 V. A.C.			

NOTE: When used as a two circuit switch, the total connected load must not exceed 2000 VA.

Repairs and Replacement

Field repairs must not be made except for replacement of the knob, faceplate, and cover. For a replacement thermostat or parts, contact the nearest Johnson Controls wholesaler.

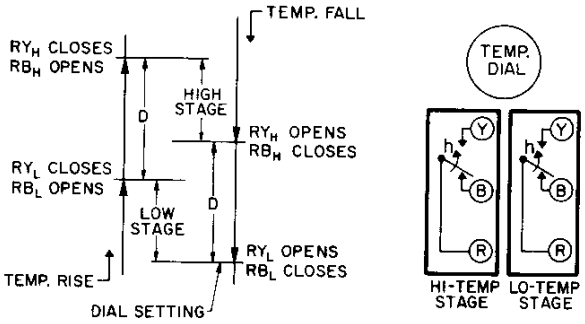


Fig. 6—Switching action of the two-stage control is illustrated in the sketch above. RB$_H$, RY$_H$ indicates HI-TEMP; RB$_L$, RY$_L$ indicates LO-TEMP. "D" represents the differential between stages.

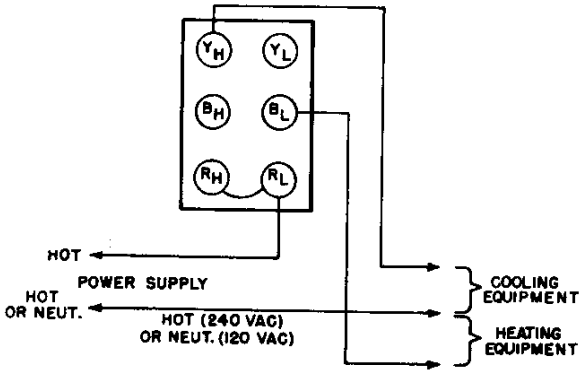


Fig. 7—Typical wiring for 1 stage heating and 1 stage cooling.

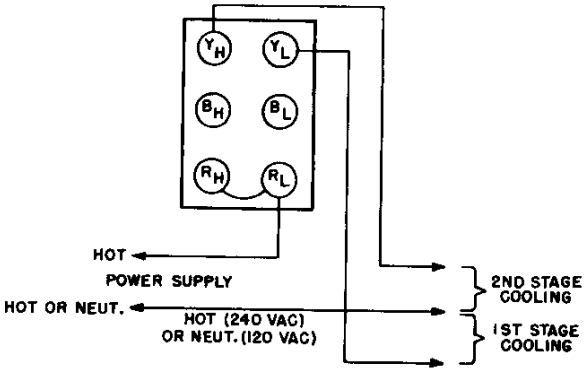


Fig. 8—Typical wiring for 2 stages of cooling.

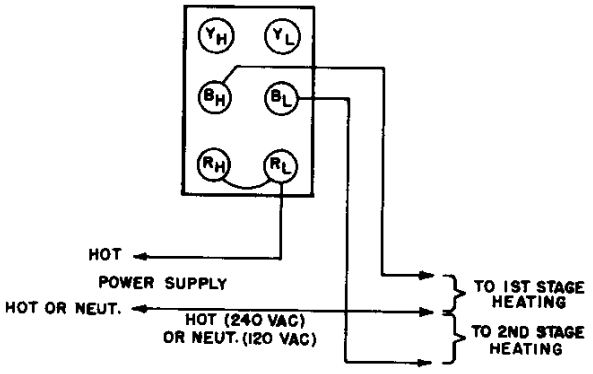


Fig. 9—Typical wiring for 2 stages of heating.

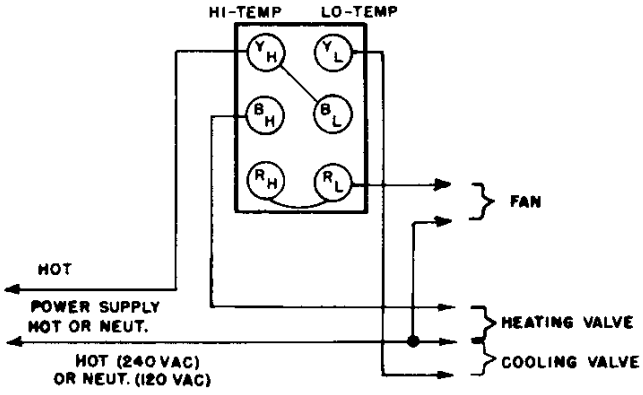


Fig. 10—Typical wiring for fully automatic heating and cooling service; wired for simultaneous cycling of valve and fan. Cooling will operate at higher temperature than heating even though connections are to opposite stages.

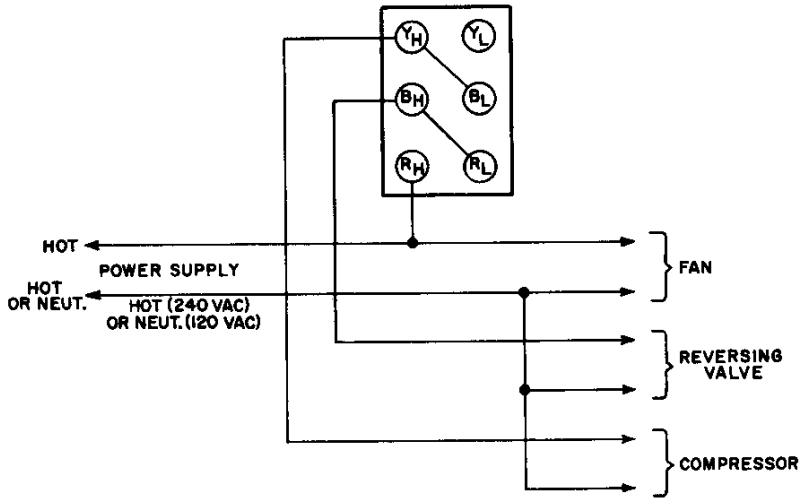
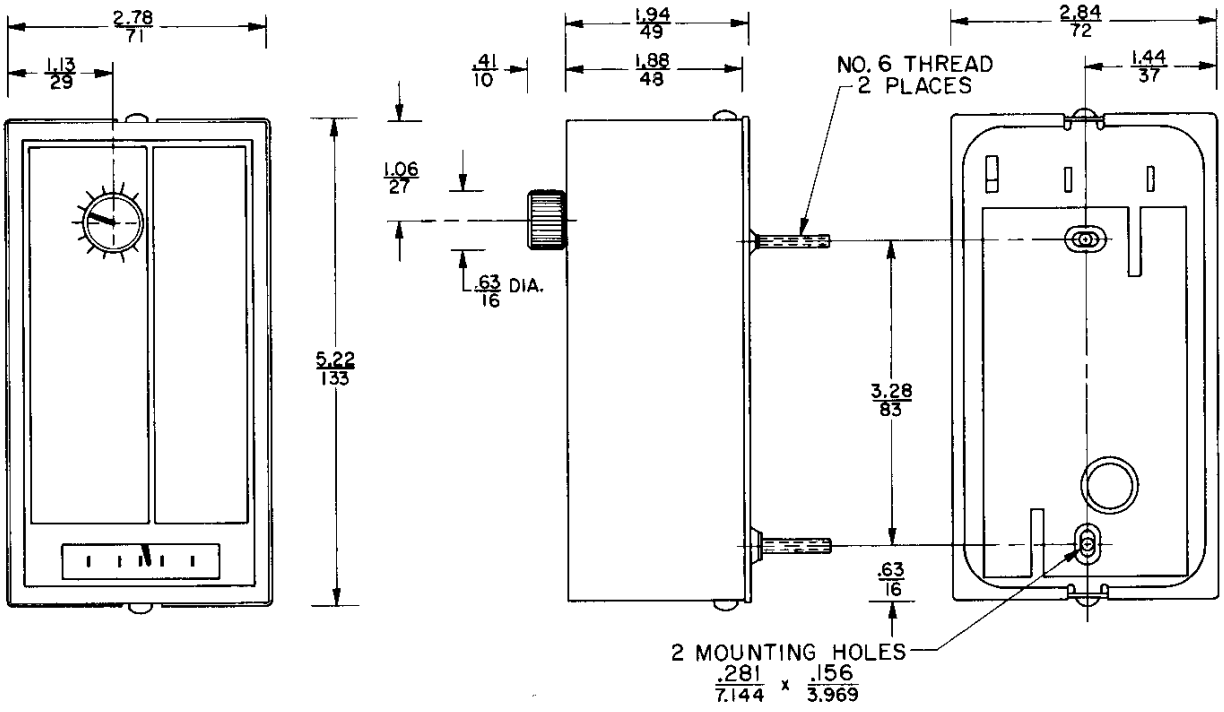


Fig. 11—Typical heat pump wiring for combination heating and cooling, continuous fan.



T25A Dimensions in. / mm

Performance specifications appearing herein are nominal and are subject to accepted manufacturing tolerances and application variables.

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