

## T22 Series Line Voltage Thermostats With Selector Switch

### Application

The T22 line voltage thermostats control heating, cooling, or year 'round air conditioning units in commercial, industrial or residential installations. Typical uses are for unit heaters,

fan coils, blast coils, refrigeration storage rooms, electric heat, duct furnaces, greenhouses, etc. Models are available with SPST or SPDT contact action for standard duty (nominal 1/4 hp) or heavy duty (nominal 1 hp) applications.



Fig. 1 -- A T22 Thermostat with system selector knob. Attractive styling with self contained selector functions. No subbase required.

### Specifications

<b>Type Number</b>	<b>T22AAA</b>	SPST Heating, "OFF-AUTO" Selector Switch With High Temperature Stop
	<b>T22ABC</b>	SPST Heating, "AUTO-OFF-FAN" Selector Switch
	<b>T22BBC</b>	SPST Medium Duty Heating, "AUTO-OFF-FAN" Selector Switch
	<b>T22CBC</b>	SPST Heavy Duty Heating, "AUTO-OFF-FAN" Selector Switch
	<b>T22JAA</b>	SPST Cooling, "OFF-AUTO" Selector Switch With High Temperature Stop
	<b>T22JCC</b>	SPST Cooling, "AUTO-OFF-FAN" Selector Switch
	<b>T22SDA</b>	SPDT Heating and Cooling, "OFF-AUTO" Selector Switch for System Only
	<b>T22SEB</b>	SPDT Heating and Cooling, "HEAT-OFF-COOL" Selector Switch, Where Same Device is Used for Heating and Cooling
	<b>T22SFB</b>	SPDT Heating and Cooling, "HEAT-OFF-COOL" Selector Switch, for Separate Heating and Cooling Loads
	<b>T22TFB</b>	SPDT Heavy Duty Heating and Cooling, "HEAT-OFF-COOL" Selector Switch, for Separate Heating and Cooling Loads
<b>Range</b>	<b>Thermostat</b>	40 to 90°F (5 to 30°C)
	<b>Thermometer</b>	50 to 90°F (10 to 30°C)
<b>Differential</b>	<b>Mechanical</b>	Approximately 0.7°F* (0.4C*)
	<b>Operating</b>	See Figs. 4 and 5.
<b>Sensing Element</b>	Liquid Filled for Positive Trouble Free Operation	
<b>Switch</b>	Sealed Dust Protected Pennswitch	
<b>Finish</b>	<b>Base and Cover</b>	Baked "Tawny Silver" Enamel
	<b>Faceplate</b>	Dark Brown and Light Brown, Aluminum Letter and Markings
<b>Thermometer</b>	Bimetal Type for Accuracy and Clarity, May be Field Adjusted	
<b>Material</b>	<b>Base</b>	.050" (1.27 mm) Cold Rolled Steel
	<b>Cover</b>	.025" (0.64 mm) Cold Rolled Steel
<b>Mounting</b>	Two Cross Key Hole Slots in Base of Case for Mounting to a Standard or Vertical Outlet Box	
<b>Wiring Connections</b>	Screw Type Terminals, Terminal Identification Molded in the Block	
<b>Shipping Weight</b>	<b>Individual Pack</b>	1.3 lb (0.6 kg)
	<b>Overpack of 20 Units</b>	27.5 lb (13 kg)

These thermostats are also suitable for low voltage applications. Thermostats are available with a variety of integral selector switches (not separate subbases -- see Specifications).

All Series T22 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 (safety, limit controls) or systems (alarm, supervisory systems) that protect against, or warn of, control failure.



Fig. 2 -- Interior of a T22 with selector switch.



**Fig. 3 -- A T22 Thermostat with concealed adjustment.**

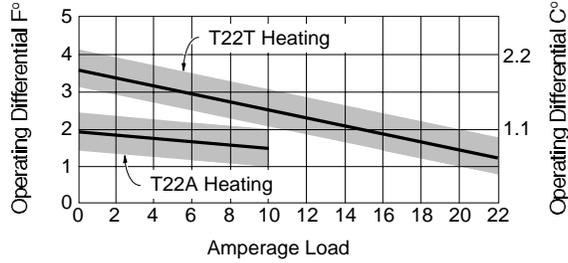
For line voltage thermostats less selector switches, refer to the T26 literature (LIT-125645).

**Features**

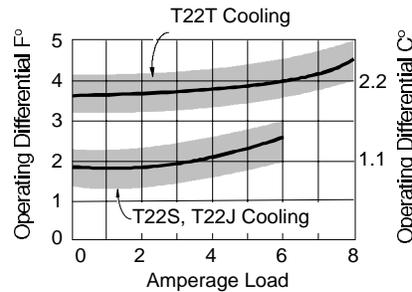
- Sensitive liquid charge element and efficient leverage provides close differential without anticipators.
- Thermostats have concealed, adjustable, high temperature stop. (See Fig. 2.)
- Choice of built-in selector switches -- and wide selection of circuitry. Requires no "add-on" subbases.
- Snap-acting contacts in a sealed dust protected enclosure.
- Close differential without need for anticipator.
- Bimetal thermometer is standard. Easily calibrated.

**General Description**

The cover and faceplate design makes the thermostat adaptable to any decor. The thermostats have a sturdy steel cover with "tawny silver" finish. The faceplates are dark brown and light brown with aluminum numbers and graduation marks. The liquid charged sensing element is formed to achieve maximum sensitivity to ambient air temperature changes. (See Fig. 2.)



**Fig. 4 -- Heating operating differential for T22A (lower graph line). Upper graph line illustrates differential for heating side of T22T.**



**Fig. 5 -- Cooling operating differential for T22S, T22J is shown on lower graph line. Upper graph line illustrates differential for cooling side of T22T.**

**Electrical Ratings**

**T22A, T22J, T22S**

Motor Ratings	120 V	208V	240V
AC Full Load Amp	6.0	3.4	3.0
AC Locked Rotor Amp	36.0	20.4	18.0
Pilot Duty — 125 VA, 24 to 277 VAC			

**T22BBC**

Motor Ratings	120V	208V	240V
AC Full Load Amp	10.0	6.9	6.0
AC Locked Rotor Amp	60.0	41.4	36.0
Pilot Duty — 125 VA, 24 to 277 VAC			

**T22C**

Motor Ratings	120V	208V	240V
AC Full Load Amp	16.0	9.2	8.0
AC Locked Rotor Amp	96.0	55.2	48.0
Pilot Duty — 125 VA, 120 to 240 VAC			

**T22T**

Motor Ratings	120V		208V		240V	
	Heating	Cooling	Heating	Cooling	Heating	Cooling
AC Full Load Amp	16.0	8.0	9.2	8.0	8.0	8.0
AC Locked Rotor Amp	96.0	48.0	55.2	48.0	48.0	48.0
Pilot Duty — 125 VA, 120 to 240 VAC						

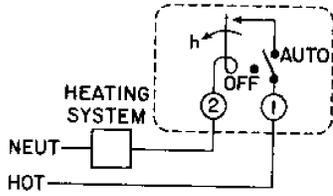


Fig. 6 – T22AAA (OFF-AUTO selector) on heating system.

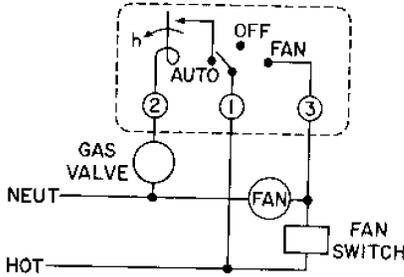


Fig. 7– T22ABC, T22BBC, or T22CBC (AUTO-OFF-FAN selector) on gas-fired unit heater.

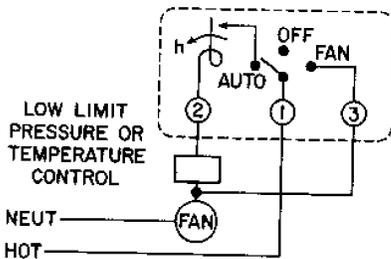


Fig. 8– T22ABC, T22BBC, OR T22CBC (AUTO-OFF-FAN selector) on steam or hot water coil unit.

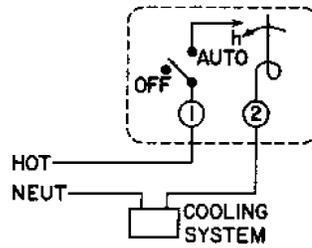


Fig. 9 – T22JAA (OFF-AUTO selector) on cooling system.

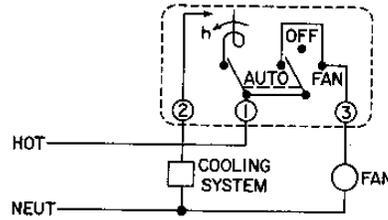


Fig. 10 – T22JCC (AUTO-OFF-FAN selector) on cooling system.

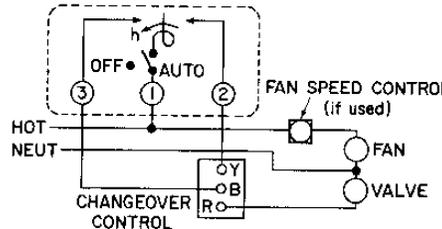


Fig. 11 – T22SDA (OFF-AUTO selector) on fan-coil unit with cycling valve, continuous fan. Terminal markings shown for A19CAC changeover control.

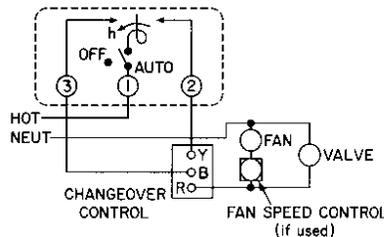


Fig. 12 – T22SDA (OFF-AUTO selector) on fan-coil unit with cycling fan and valve. Terminal markings shown for A19CAC changeover control.

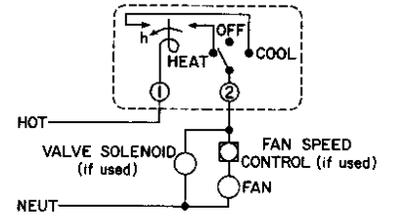


Fig. 13 – T22SEB (HEAT-OFF-COOL selector) on fan-coil unit with cycling fan and valve.

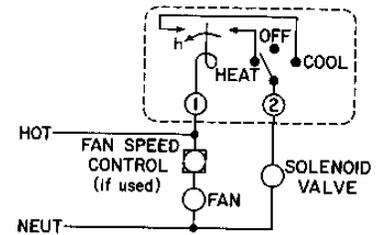


Fig. 14 – T22SEB (HEAT-OFF-COOL selector) on fan-coil unit with cycling valve, continuous fan.

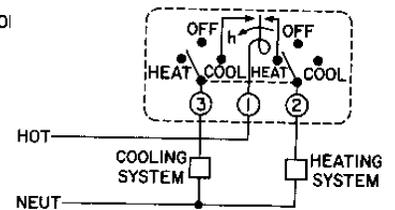


Fig. 15 – T22SFB or T22TFB (HEAT-OFF-COOL selector) on heating-cooling system.

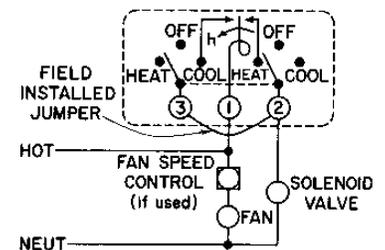


Fig. 16 – T22SFB and T22TFB (HEAT-OFF-COOL selector) can be used to control fan-coil units with cycling valve and continuous fan. Field install a jumper between terminals 2 and 3 as shown.

Coupled with a highly efficient diaphragm and leverage mechanism, the element operates a totally enclosed Pennswich contact unit for close differential and dependable switching action without the use of "heat or cool" anticipators.

Elimination of anticipators increases versatility of these thermostats, allowing them to be used on heating and/or cooling over a wide range of current loads, either on 120 V or 240 V systems.

All types are available on special order with concealed adjustments (temperature setting and selector switch). All thermostats are equipped with Allen head cover screws.

These thermostats have a concealed high temperature stop with adjustments in 2F° (1.1C°) increments between 68 and 80°F (20 and 27°C).

### Operating Differential

The operating temperature differential of any self-contained 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.

The graphs in Figs. 4 and 5 show the operating temperature differentials of these thermostats under various load conditions. The air velocity was 25 feet per minute (.127 m/sec) and the rate of temperature change was 6F° (3.3C°) per hour. For air velocities greater than 25 feet per minute and/or for rates of temperature change less than 6F° per hour, the operating differentials will be less than shown in Figs. 4 and 5.

### Optional Constructions

#### Concealed Adjustment

Models are available with solid cover which conceals dial.

### Brand Nameplates

Available on quantity orders. Contact Customer Service.

### Celsius Dial and Thermometer

May be supplied if ordered, at no extra charge.

### Thermostat Guards

Plastic, wire or cast aluminum guards available at extra cost. See the Johnson Controls Product Catalog.

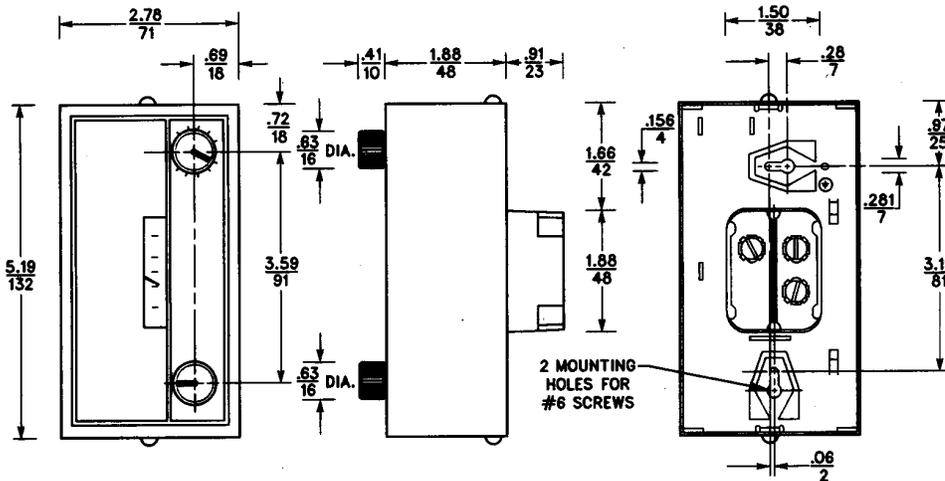
### Ordering Information

To order, specify:

1. Type number.
2. Any optional constructions, if required (quantity orders only).

### Repairs and Replacement

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



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

**JOHNSON  
CONTROLS**

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