

# Robertshaw

CONTROLS COMPANY

## INSTALLATION DATA

# TX400

### HEATING/COOLING 24 VOLT THERMOSTAT (CM260)

#### DESCRIPTION

The TX400 is a low voltage wall mounted room temperature controller. The heart of the TX400 thermostat is a SPDT sealed-in-glass switch, hermetically sealed to protect from dust and moisture. This switch does not require the critical leveling necessary with other types of thermostats. A positive action of the switch is obtained by a magnet mounted on the temperature sensing coiled bimetal.

The basic TX400 can be used as a heating only, cooling only, or zone system thermostat depending on how the subbase is wired (see schematic diagrams below).

The TX400, when employed with the DA490 Series, covers all types of heating and cooling systems. See the DA490 Series for switching arrangements and schematics.

A decorative wall plate is included with all models. It can be used to cover old thermostat mounting marks or to mount the thermostat on an electrical conduit box.

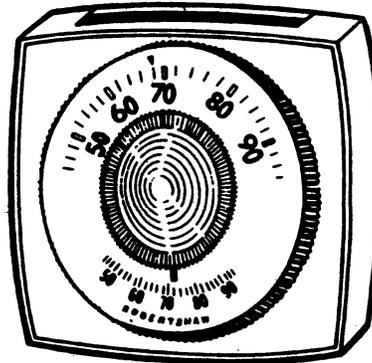
#### HOME OWNER NOTE:

##### Temperature Selection:

To select a desired temperature after the thermostat has been installed, turn the dial until the red index point indicates the desired temperature. The actual room temperature can be noted on the scale on the lower portion of the dial. Design features have made it easy to find the setting you require for comfort and to read the instrument for reference. Remember that the difference between comfort and discomfort is usually no more than 1 or 2 degrees. Make only small adjustments to meet changing conditions.

#### MODEL INFORMATION\*

USE COMPLETE MODEL NUMBER WHEN ORDERING



#### SPECIFICATIONS

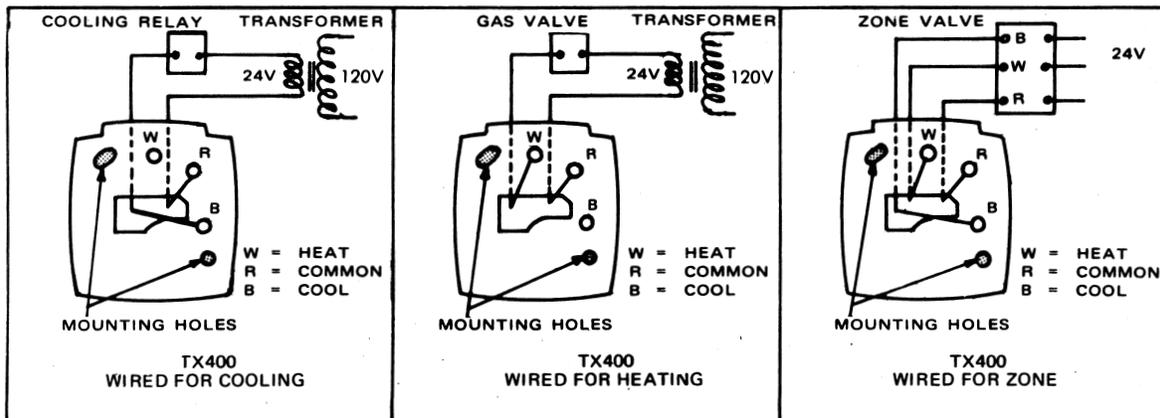
Electrical . . . . . Low Voltage, 30 VAC, 1.5 Amps. Max.  
 Switch - (SPDT)  
   Heating . . . . . Opens on Temperature Rise  
   Cooling . . . . . Closes on Temperature Rise  
 Adjustable Heat Anticipation . . . . . See Model Information Chart  
 Fixed Cooling Anticipation . . . . . See Model Information Chart  
 Setting Range . . . . . See Model Information Chart  
 Thermometer Range . . . . . 44° - 96°F  
 Differential . . . . . 20°F (Dial)  
 Dimensions . . . . . 3-1/4" Wide, 3-5/8" High, 1-1/2" Deep  
 Finish . . . . . Beige

MODEL NUMBER	DIAL TEMPERATURE SETTING RANGE	ADJUSTABLE HEAT ANTICIPATION	FIXED COOLING ANTICIPATION	APPLICATION
TX400-400	48°-85°F	.18 to 1.0 Amps	STD	HEAT/COOL/ZONE
TX400-401†	48°-85°F	.18 to 1.0 Amps	SPECIAL	GAS AIR CONDITIONING ONLY
TX400-402	48°-85°F	.5 to 1.5 Amps	STD	HEAT/COOL/ZONE
TX400-403	39°-75°F	.18 to 1.0 Amps	STD	HEAT/COOL/ZONE
RX400-404	48°-85°F	2.0 Amps Fixed	STD	ELECTRIC HEAT/COOLING

† For gas air conditioning systems.

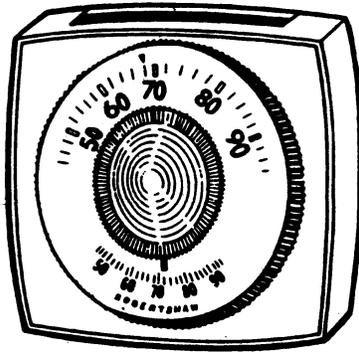
\*SEE DA490 SERIES SUBBASES FOR SWITCHING SUBBASE REQUIREMENTS.

SCHEMATIC DIAGRAMS SHOWING BASIC TX400 THERMOSTAT WIRED FOR EITHER HEATING, COOLING, OR ZONE SYSTEM.

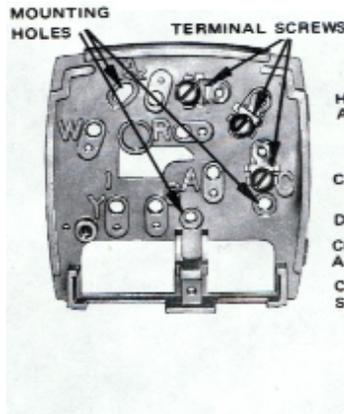


NOTE: A SUITABLE LIMIT CONTROL IS REQUIRED IN EITHER THE 24-VOLT OR 120-VOLT SIDE OF TRANSFORMER.

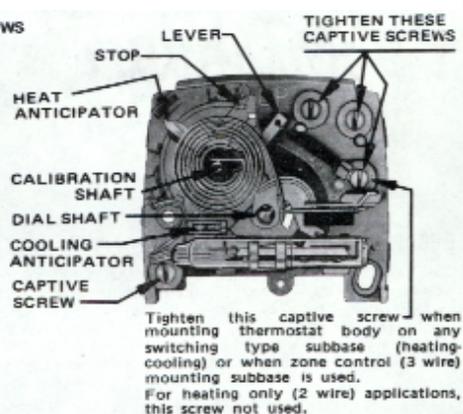
**FIGURE 1  
THERMOSTAT COVER FACE**



**FIGURE 2  
SUBBASE**



**FIGURE 3  
THERMOSTAT BODY**



**INSTALLATION INSTRUCTIONS**

The model TX400 room thermostat consists of three separable units - thermostat cover (Figure 1), subbase (Figure 2), and thermostat body (Figure 3).

1. Remove cover (friction fit) from thermostat body by gripping at top and bottom and lifting from subbase: use extreme care not to damage working parts.
2. Remove subbase from the thermostat body by loosening captive screws (see Figure 3).
3. Pull approximately 3 inches of wire through the wall and thread the wire through the center of the subbase.
4. Hold the subbase level and against the wall so that the old holes are covered. With a pencil, mark the wall where the screws will attach the subbase to the wall. Use designated mounting holes only. Now lay the subbase to one side. Drill the new mounting holes with a 3/32" drill bit.
5. Connect wires to applicable terminal screws (see schematic diagram).
6. Push excess wire back into wall and mount thermostat body on subbase with captive screws.
7. Replace thermostat cover being careful to align D-shaped dial shaft with matching shaped hole in hub of setting dial, then press cover carefully on the thermostat body.

NOTE: Some heating appliances are supplied with a time delay feature incorporated in the electrical circuit of the appliance controls.

If the appliance is so equipped, there may be a delay of as much as three minutes (depending on the device used) after the thermostat calls for heating before the appliance is actually in operation.

**LOCATION:**

When selecting the thermostat's location, consideration must be given to the following:

1. Locate approximately five feet above the floor in a place accessible for wiring and setting, preferably in a living room or an adjoining room.
2. Locate on an inside wall.
  - a. Do not locate where influenced by abnormal heat such as:
    1. In sunlight
    2. Close to a radio, TV, or lamps
    3. Over registers, radiators, or internal wall heat
  - b. Do not locate where influenced by abnormal cold such as:
    1. An outside wall or a wall separating an unheated room
    2. In drafts from stairwells or doors
    3. Close to windows
  - c. Do not locate where air circulation is poor such as:
    1. Behind open doors
    2. In corners or alcoves
    3. Over or close to furniture

NOTE: Location of thermostat in a high humidity, moist atmosphere environment will shorten its operational life.

**WIRING**

**WARNING**

**DO NOT SHORT GAS VALVE TERMINALS. THIS WILL DAMAGE WALL THERMOSTAT.**

**All wiring must conform to local codes and ordinances. For typical wiring of a forced air gas or oil fired installation, see wiring diagram.**

**WARNING**

**CALIBRATION**

The thermostat is accurately calibrated before leaving the factory and no further calibration should be necessary. If the thermostat appears to be out of calibration or for any reason fails to operate properly, a qualified serviceman should proceed as follows:

1. Allow the thermostat to stay in the OFF position for at least 10 minutes until the internal temperature is stabilized. During this time the thermostat must not be influenced by heat from the hands or any other heat source.
2. Turn the temperature selector dial to the actual room temperature.
3. Carefully remove the thermostat cover (noted under INSTALLATION).
4. With small crescent wrench hold dial shaft (Figure 3), being careful that shaft does not rotate from position it was in when cover was removed.
 

NOTE: Hold wrench at angle so that steel tool does not interfere with magnet travel.
5. Keeping hands and breath away from bimetal temperature sensing element (Figure 3), turn calibration shaft in center of bimetal coil with

screwdriver **counterclockwise** until lever arm touches stop (Figure 3). Continue to turn **counterclockwise until magnet is away from glass switch**, when pressure on screwdriver is released.

6. Slowly rotate calibration shaft clockwise **until magnet touches glass switch**.
7. Thermostat is in calibration. Replace thermostat cover.

NOTE: If magnet is away from glass switch when thermostat cover is removed, omit step 5 and proceed with steps 6 and 7.

**HEAT ANTICIPATION ADJUSTMENT**

Some heating installations require longer or shorter ON/OFF periods to maintain even temperatures. For average conditions, set the heat anticipator indicator (upper left of thermostat body) to match the current rating of the primary heating control. Move indicator approximately 1/2 division in direction indicated by the arrows on the thermostat for longer ON cycles, or move lever in opposite direction for shorter ON cycles. Allow at least 24 hours to determine if setting provides satisfactory operation before making any further adjustments.