

Honeywell

T8600A,B,C,D
CHRONOTHERM III
FUEL SAVER THERMOSTATS

APPLICATION

These thermostats provide 24 Vac energy saving control for a conventional heating or heating/cooling system as indicated in Table 1, and are powered through the heating or cooling system controls.

These models include two status lights; one is lit during

the thermostat ON cycle, and the other during the LEAVE and SLEEP time periods.

Heat and cool anticipation is fixed in all models; no adjustment is necessary. Cycle rates are adjustable for heating. Current draw must be between 0.08 and 1.2 A.

TABLE 1—THERMOSTAT MODELS

| Thermostat | Stages | | Switching | | Application |
|------------|--------|------|--------------------|---------|--|
| | Heat | Cool | System | Fan | |
| T8600A | 1 | — | — | — | Gas, oil, or electric with independently controlled fan. |
| T8600B | 1 | — | HEAT-OFF | | |
| T8600C | 1 | 1 | HEAT-OFF-COOL | | |
| T8600D | 1 | 1 | HEAT-OFF-COOL-AUTO | | |
| T8600C | 1 | 1 | HEAT-OFF-COOL | ON-AUTO | Electric heat with thermostat-controlled fan. |

These thermostats will replace most heating or heating/cooling system thermostats, and are designed to be part of a Honeywell control system. They can be used with other control systems, but an isolating relay may be needed in the thermostat control circuit. See table 2 and Figs. 8 and 18.

IMPORTANT

If your system needs an isolating relay and one is not installed, no hazard will exist, but the system won't operate correctly. The thermostat will not be damaged unless you connect it directly to 120 Vac.

SYSTEM COMPATIBILITY

| Manufacturer | Model Number | Compatible | Solution |
|--|--------------|------------|----------|
| ELECTRIC | | | |
| Honeywell R841C | | yes | |
| Klixon 51172 | | yes | |
| GAS SYSTEMS | | | |
| Direct Spark Ignition | | | |
| Honeywell S825C, S87C, S87A | | yes | |
| Honeywell S825D, S87D | | yes | |
| Honeywell S87B, S89A | | yes | |
| Ferwal 05-162426 | | no | R8405C |
| Ferwal 05-21 | | no | R8405C |
| Intermittent Pilot (non 100% shutoff) | | | |
| Honeywell S86A, E | | yes | |
| Honeywell S86C, G | | yes | |
| Honeywell S86D, H, S860C | | yes | |
| Robertshaw SP 710-929 | | yes | |
| Robertshaw SP 730-929 | | yes | |
| Robertshaw SP 712 series | | yes | |
| White-Rodgers 36C84/50A22 | | yes | |
| Johnson (Penn Baso) G60RHL | | no | R8405C |
| Johnson (Penn Baso) CSA42A/Y79 | | no | R8405C |
| Johnson (Penn Baso) CSA42A | | yes | |
| Oil Systems | | | |
| Interrupted Ignition | | | |
| Honeywell R8404A | | yes | |
| Honeywell R8185E | | yes | |
| Robertshaw SJ4001-2001 | | no | R8405C |
| White-Rodgers 669-430 | | yes | |
| Constant Ignition | | | |
| Honeywell R8184G | | yes | |
| Robertshaw SJ4007-204 | | no | R8405C |
| White-Rodgers 668-430 | | yes | |
| VENT DAMPERS | | | |
| Honeywell D80B,D | | yes | |
| Robertshaw AVD-E-780-90 | | no | R8405C |
| Johnson (Penn Baso) M15AC-1 | | yes | |
| Flair SPG 5-21 | | yes | |
| ZONE CONTROL | | | |
| Hot Water Valves | | | |
| Honeywell V8043F | | yes | |
| Flair VJ100 | | no | R8239A |
| Electro Zone RB-4 | | no | R8405C |

Form Number 69-0339

Honeywell Ltd. 1987

INSTALLATION

WHEN INSTALLING THIS PRODUCT . . .

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.
5. Allow thermostat to warm to room temperature before operating.

CAUTION

1. Disconnect power supply to prevent electrical shock or equipment damage.
2. Push excess wire back into the hole, and plug hole with nonhardening caulk, putty, or insulation to prevent drafts from affecting thermostat operation.

LOCATION

Install thermostat and wallplate about 1.5 m [5 ft.] above the floor in an area with good air circulation at room temperature.

Do not install the thermostat where it may be affected by—

- drafts, or dead spots behind doors, in corners, or under cabinets.
- hot or cold air from ducts.
- radiant heat from sun or appliances.
- concealed pipes and chimneys.
- unheated (uncooled) areas behind the thermostat, such as an outside wall.

IF REPLACING AN EXISTING THERMOSTAT

Turn power to thermostat off at furnace or boiler. A two transformer system may require turning off two switches or disconnects. Remove any existing wallplate or sub-base from wall. Label each wire with, or write down, the letter or number on the wiring terminal as the wire is removed, to avoid miswiring later.

IF NEW INSTALLATION

Run cable to a hole at the selected wall location, and pull about 75 mm [3 in.] of wire through the opening. Color-coded, 18 gauge thermostat cable with at least one conductor for each wiring terminal is recommended.

MOUNTING WALLPLATE

Remove thermostat from wallplate (Fig. 1).

The wallplate does not require leveling for operation, but for appearance only. The wallplate mounts directly onto the wall with the screws included in the package. Use the wallplate as a template, and with a pencil, mark two mounting screw positions that fit application using two of the three mounting holes in the wallplate (Fig. 2). Use 8 mm [3/16 in.] bit to drill holes for anchors. Gently tap anchors into holes until they are flush to the wall surface. Thread wires through the center opening of the wallplate. Then, mount the wallplate using two screws provided. Gently tighten screws, level top surface of wallplate, then securely tighten screws.

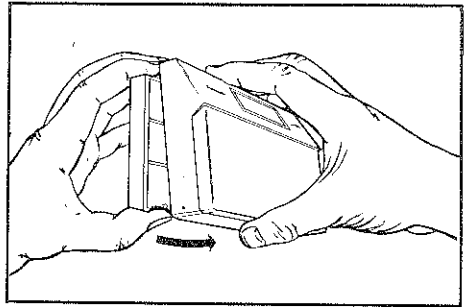


Fig. 1— Removing thermostat from wallplate.

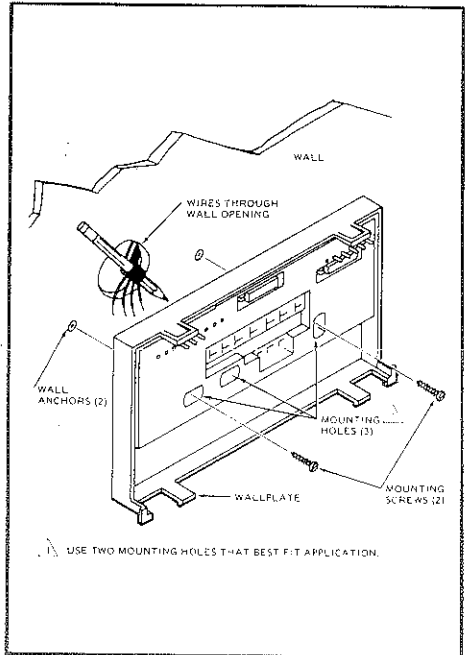


Fig. 2— Mounting wallplate on wall.

WIRING

All wiring must comply with local electrical codes and ordinances.

Disconnect power before wiring to prevent electrical shock or equipment damage.

The shape of the terminal barrier permits insertion of straight or conventional wraparound wiring connections. Either method is acceptable, although wraparound is usually more secure.

Refer to Figs. 5-18 for typical hookups of wallplate and thermostat. For single transformer system using wallplate with RC, R terminals, jumper RC and R as shown in Fig. 3.

NOTE: Keep all wiring restricted to ribbed area surrounding terminals (Fig. 4) to assure thermostat/wallplate contact.

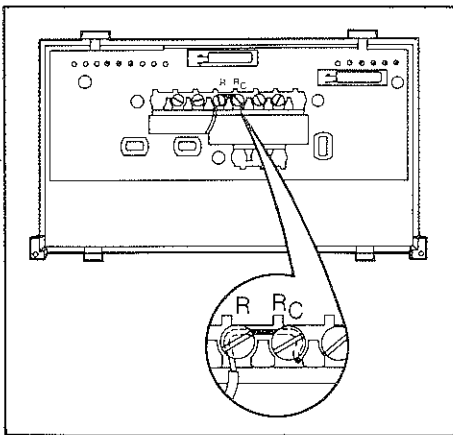


Fig. 3—Jumper RC and R for single transformer system. Strip wire 19 mm [3/4 in.].

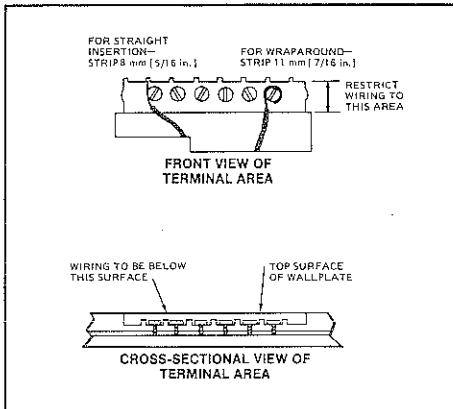


Fig. 4—Keep wiring restricted to ribbed area surrounding terminals.

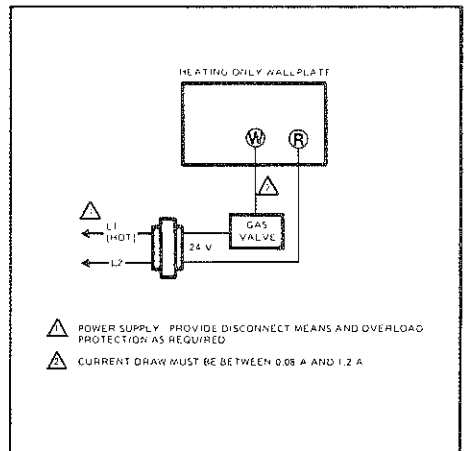


Fig. 5—T8600A,B heating-only circuit in a continuous pilot gas system.

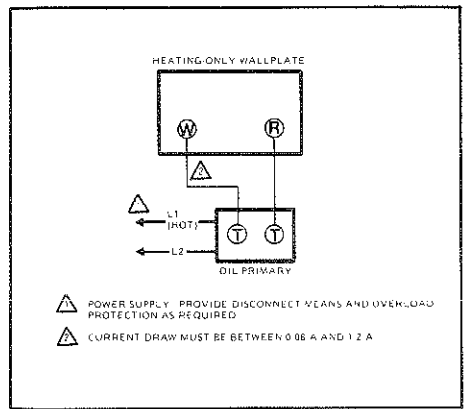


Fig. 6—T8600A,B heating-only circuit in an oil system.

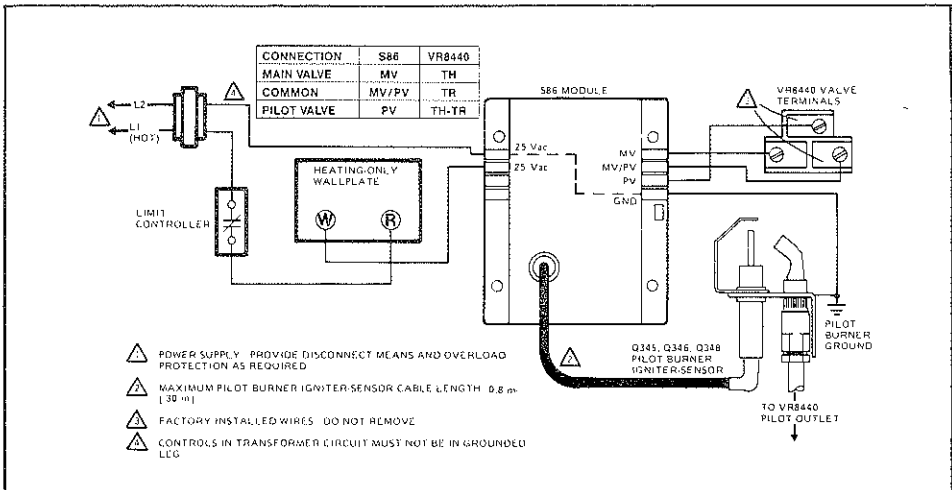


Fig. 7—T8600A,B heating-only circuit in a Honeywell Intermittent Pilot gas burning ignition system.

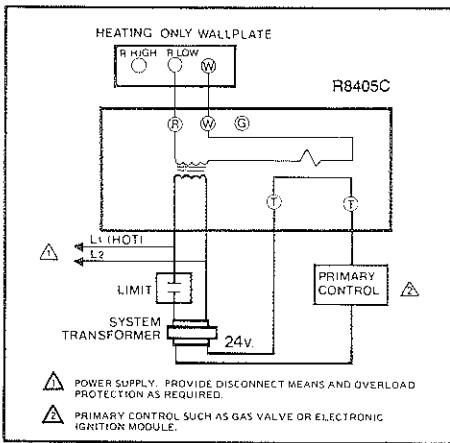


Fig. 8—T8600A,B heating-only circuit using an isolating relay. See Table 2 for usage.

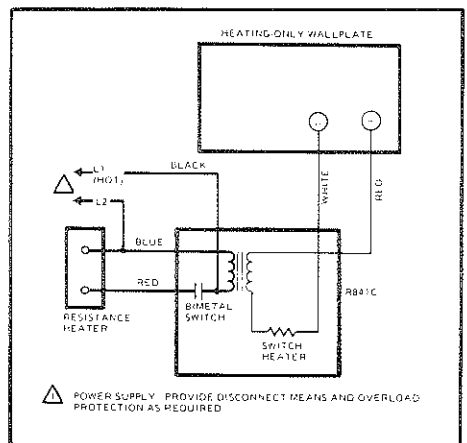


Fig. 9—T8600A,B heating-only circuit in an electric baseboard or ceiling cable system.

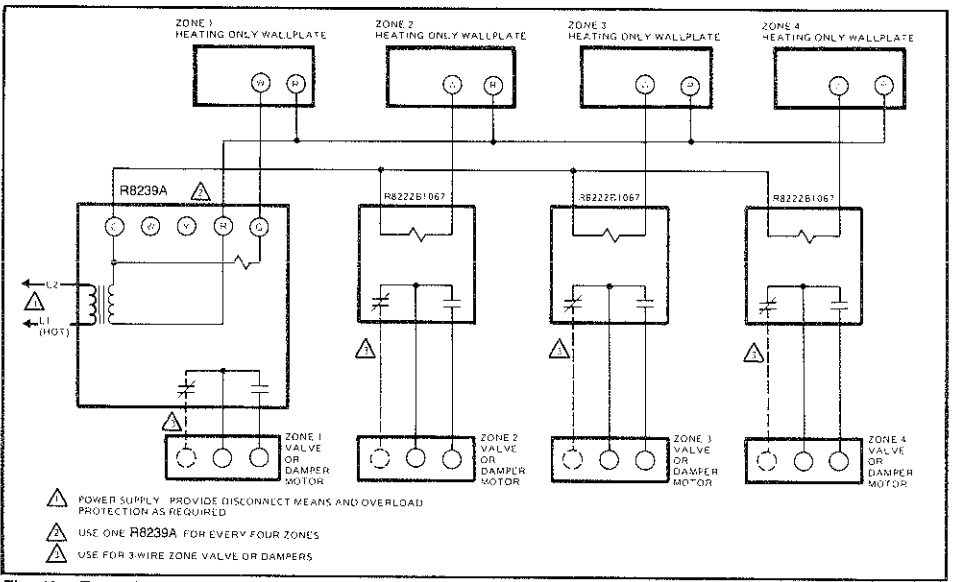


Fig. 10—T8600A,B circuit for controlling 2- or 3-wire zone valves or dampers. Heating or cooling equipment is operated by an end switch on the zone valve or motor, or by a thermostat in a master zone.

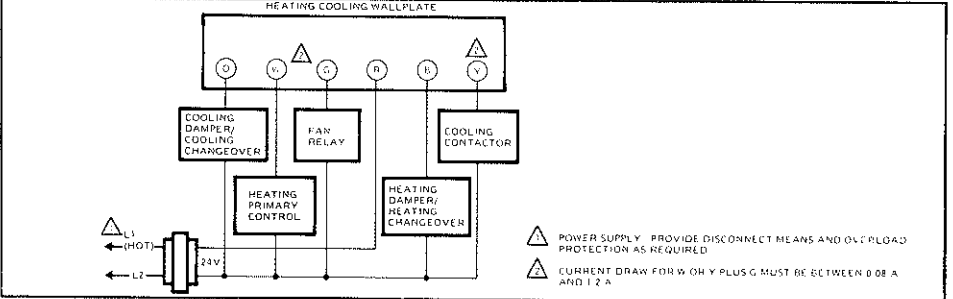


Fig. 11—T8600C heating/cooling circuit in a single transformer system with gas heat/electric cooling, and electric heat/electric cooling, changeover terminals (O,B). Thermostat and electric heat/electric cooling controls fan in cooling only (typical multispeed fan applications).

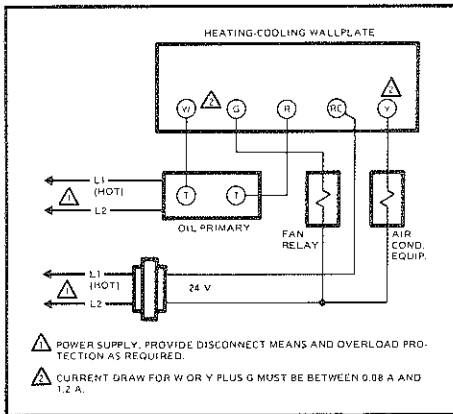


Fig. 17— T8600C,D heating/cooling circuit in an oil heating and electric cooling system. Heating transformer is in oil primary, RC and R terminals.

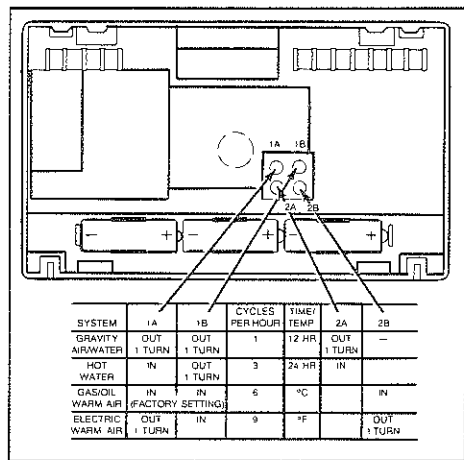


Fig. 19— Cycle rate adjustment.

B. TIME/TEMPERATURE CONVERSION

The display readout can be converted from a 12/24 hour clock or °C/°F using the procedure in Fig. 19.

INSTALLING BATTERIES

Three AAA alkaline batteries are provided as backup to prevent program loss in case of power outage. Batteries are included with thermostat. Install batteries in back of thermostat as shown in Fig. 20.

Without battery backup, the program will remain about 30 seconds in event of power loss. When batteries are first installed, the display will flash 1:00 PM and 0 °.

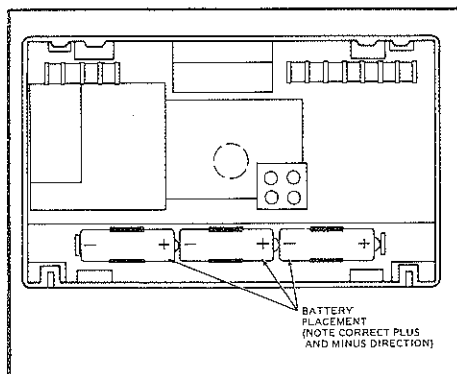


Fig. 20— Battery placement.

MOUNTING THE THERMOSTAT

Hang the thermostat on the tabs at the top of the base (Fig. 21a). Swing down and press on lower edge until thermostat snaps in place (Fig. 21b). Open cover, and tighten the captive mounting screws (Fig. 21c).

SETTING DAY AND TIME

Set present day and time.

Press **SET** (with **DAY/TIME** indicator).

Press **TIME** **▲** or **▼** to set the current time.

Press **SET** (with **DAY/TIME** indicator).

Press **DAY** **▲** to set the current day. Each press of the **DAY** key advances the display one day.

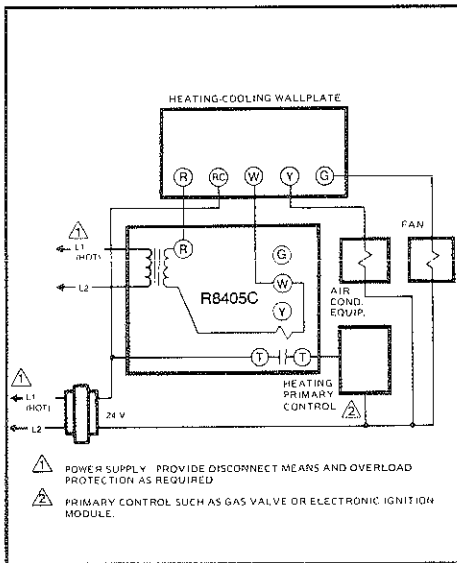


Fig. 18— T8600C,D heating/cooling circuit using an isolating switching center.

ADJUSTMENTS

A. CYCLE RATE

MOST APPLICATIONS WILL NOT REQUIRE A CHANGE IN CYCLE RATE

The room air temperature will vary slightly from the comfort temperature setting with the cycling of the furnace or air conditioner. The equipment cycles off and on as room temperature approaches the set point.

The cycle rate of this thermostat is set for heating at 6 cycles per hour and for cooling at 3 cycles per hour as shipped from the factory. The cooling cycle rate cannot be adjusted. The heating cycle rate can be adjusted by turning one or both cycle rate adjustment screws located on the back of the thermostat. See Fig. 19. The screws should only be backed out about 1 full turn.

NOTE: When 24 V is first applied to power unit, display will flash 1:00 PM and 0° for 5 minutes, or until **HELP PROGRAM** is pressed. After that time, display will show clock running and 0°.

If the display will not come on,

- check mounting of thermostat to wallplate. If loose or misaligned, remove thermostat and reinstall on the wallplate, making sure it is firmly attached.
- check to see that heat or cool system power is on.
- check voltage between R and W or RC (R) and Y; should be 24 to 30 Vac.

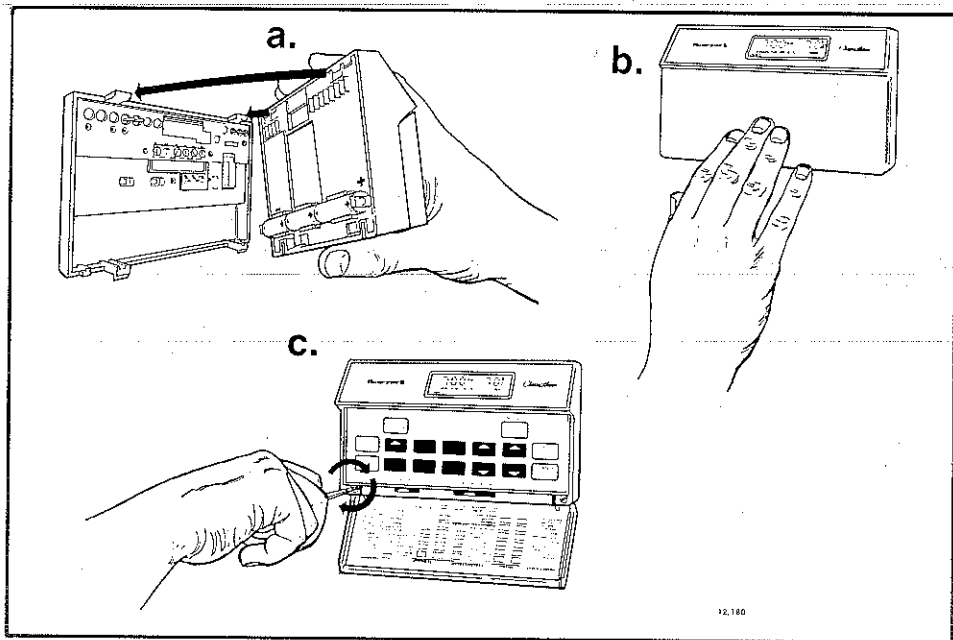


Fig. 21— Mounting thermostat on wallplate.

CHECKOUT

HEATING

Move the system switch to HEAT or AUTO and the fan switch to AUTO. Press WARMER key until the setting is about 6 C [10 F] above room temperature. Heating should start and the fan should run (may be a short delay on forced air systems). Press COOLER key until the setting is about 6 C [10 F] below room temperature. The heating equipment should shut off.

NOTE: On an AUTO changeover thermostat, the cooling temperature must be set at least 2 C [3 F] above the heating temperature, or display will flash.

COOLING

CAUTION

Do not operate cooling if outdoor temperature is below 10 C [50 F]. Refer to manufacturer's recommendations.

NOTE: When cooling setting is changed, thermostat will wait up to 5 minutes before turning on the air conditioner. This is to protect the compressor.

Move the system switch to COOL or AUTO and the fan switch to AUTO. Press COOLER key until the setting is about 6 C [10 F] below room temperature. The cooling equipment and fan should start. Press WARMER key until the setting is about 6 C [10 F] above room temperature. The cooling equipment and fan should stop.

NOTE: On an AUTO changeover thermostat, the heating temperature must be set at least 2 C [3 F] below the cooling temperature, or display will flash.

FAN

Move the system switch to OFF, and the fan switch to ON. The fan should run continuously. When the fan switch is in the AUTO position, fan cycles with the heating or cooling system.

INSTALLER SELF TEST (optional)

NOTE: Thermostat must have ac power to perform self test.

Perform the following test as a check of all thermostat functions. If thermostat does not respond as indicated, thermostat must be replaced.

1. Press AHEAD and BACK keys at the same time. While holding keys down, all segments of the display should be on (see Fig. 22).

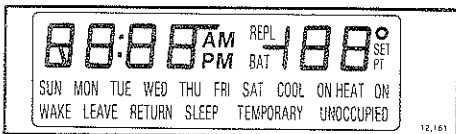


Fig. 22— All segments on display.

2. Set system switch to OFF, where applicable. Press AHEAD and BACK and PRESENT SETTING keys at the same time to enter self test.

3. Press each key as listed below, and look for responses listed, as key is held down and released.

| Press this key. | Look for this response. | |
|----------------------------|-------------------------|--|
| | Key Down | Key Released |
| PRESENT SETTING | 15 | see note a below |
| SKIP NEXT PERIOD | 07 | blank |
| CHANGE TO LAST PERIOD | 03 | blank |
| COOLER | 02 | blank |
| WARMER | 06 | blank |
| BACK | 04 | blank |
| AHEAD | 05 | blank |
| RETURN | 00 | blank |
| LEAVE | 01 | blank |
| SLEEP | 08 | blank |
| WAKE | 12 | see note b below |
| SET HEAT/COOL | 09 | blank |
| DAY | 13 | micro-processor mask number and revision number |
| HOLD | 10 | blank |
| SET PRESENT DAY/TIME | 14 | see note c below |
| RUN PROGRAM (first press) | 11 | colon flashes, followed by normal operating display one minute later |
| RUN PROGRAM (second press) | | Normal operating display. |

^a If the system switch is in COOL or AUTO, the cooling system and system LED come on when the key is released. Press and release again to turn cooling system and LED off. System LED operates only if cooling equipment is connected.

CAUTION

Do not operate cooling if outdoor temperature is below 10 C [50 F]. Refer to manufacturer's recommendations.

^b A four-digit code number will appear when the key is released. The four digits of the code represent the following options.

First Digit

- 0 1 cycle per hour
- 2 3 cycles per hour
- 4 9 cycles per hour
- 6 6 cycles per hour

Second Digit

- 0 12 hour, 1 stage heat, degrees F
- 1 12 hour, 1 stage heat, degrees C
- 4 24 hour, 1 stage heat, degrees F
- 5 24 hour, 1 stage heat, degrees C

Third Digit

- 0 heat/cool, system switch in OFF or AUTO
- 1 heat only, system switch in OFF
- 2 heat/cool, system switch in COOL
- 4 heat/cool, system switch in HEAT
- 5 heat only, system switch in HEAT, or no system switch

Fourth Digit

- 0 battery power, manual changeover thermostat
- 1 battery power, auto changeover thermostat
- 3 battery power, auto changeover thermostat, system switch in AUTO
- 4 ac power, manual changeover thermostat
- 5 ac power, auto changeover thermostat
- 7 ac power, auto changeover thermostat, system switch in AUTO

^c If the system switch is in HEAT, the heating system and system LED come on when the key is released. Press and release again to turn heating system and LED off. System LED operates only if heating equipment is connected.

ALLOW THERMOSTAT TO REACH ROOM TEMPERATURE BEFORE PROGRAMMING. THEN, REFER TO OWNER'S MANUAL FOR PROGRAMMING INSTRUCTIONS AND HOMEOWNER TROUBLESHOOTING.