



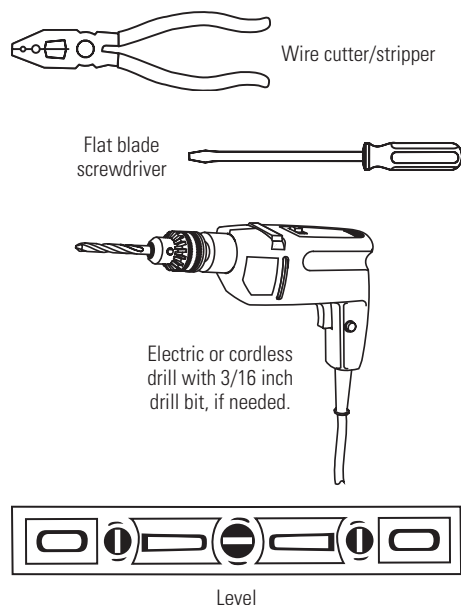
Model 8244 Installation and Operation Manual

Non-Programmable Thermostat

Failure to follow and read all instructions carefully before installing or operating this control could cause personal injury and/or property damage. If you have any questions, please call Research Products Corporation at (800) 334-6011.

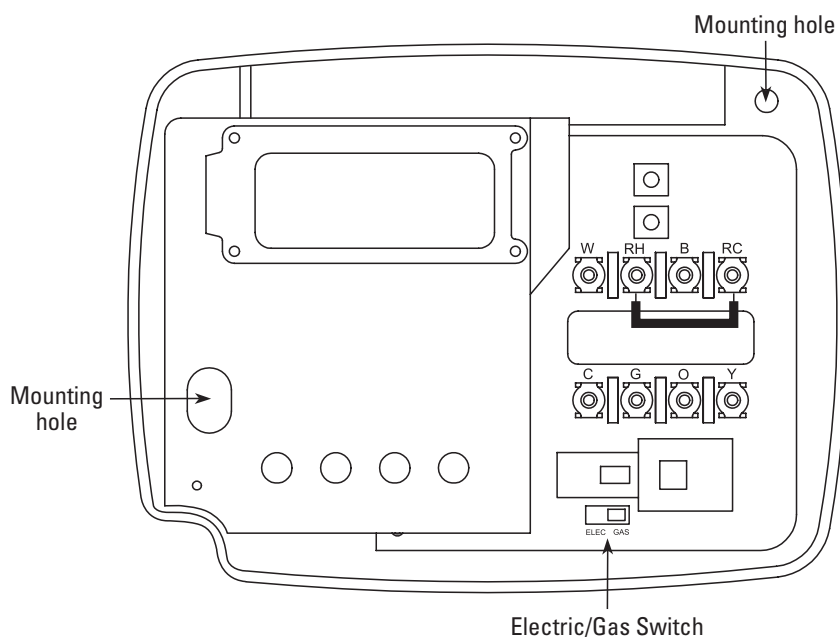
PREPARATIONS

Assemble tools required as shown below.



THERMOSTAT DETAILS

FIGURE 1 – Thermostat Base



THERMOSTAT APPLICATIONS

Description	
Standard Heat Only Gas or Oil Fired Systems (24 volt)*	Yes
Electronic Ignition Heat Only Two Wire Systems (24 volt)*	Yes
Electronic Ignition Heat Only Gas or Oil Fired Systems (24 volt)*	Yes
Standard Heat/Cool Systems (24 volt)*	Yes
Heat/Cool Systems Electric Heat (24 volt)*	Yes
Heat Only Electric Heat Systems (24 volt)*	Yes
Cool Only Systems (24 volt)*	Yes
Heat Pump Systems (No Aux or Emergency Heat)*	Yes

Description	
Hot Water Zone Heat Only Systems	No
Hot Water Zone Heat Only (Three Wire) Systems	No
Line Voltage Heating or Baseboard 110/240 Volt Systems	No
Millivolt Systems Floor or Wall Furnaces	No
12 VDC Mobile Home Application	No
Multi-stage Systems	No
Systems Exceeding 30VAC, 1.5 Amp	No

*Requires common wire for 24VAC at the thermostat

MOUNTING AND WIRING

WARNING

120 volts may cause serious injury from electrical shock. Disconnect electrical power to the furnace & air conditioner before starting installation. This thermostat is not a 120 volt (line voltage) device.

Improper installation may cause serious injury from electrical shock. This product must be installed by a qualified heating & air conditioning contractor in accordance with NEC Standards and applicable local and state codes.

Do not use on circuits exceeding specified voltage. Higher voltage will damage control and could cause shock or fire hazard.

Do not short out terminals on gas valve or primary control to test. Short or incorrect wiring will damage thermostat and could cause personal injury and/or property damage.

Thermostat installation and all components of the system shall conform to Class II circuits per NEC code.

CAUTION

Take care when securing and routing wires so they do not short to adjacent terminals or rear of thermostat. Personal injury and/or property damage may occur.

Terminal Cross Reference Chart

New Thermostat Terminal Designation	Other Manufacturers' Terminal Designation			
RH	4	RH	M	* R
RC	R	R	V	—
G	G	G	F	G
W	W	W	H	W
Y	Y	Y	C	Y
C	C	C	X	C

*Factory installed jumper wire between the **RH** and **RC** terminals must remain in place.

ELECTRIC HEAT OR SINGLE-STAGE HEAT PUMP SYSTEMS

This thermostat is configured from the factory to operate a heat/cool, fossil fuel (gas, oil, etc.), forced air system. It is configured correctly for any system that DOES NOT require the thermostat to energize the fan on a call for heat. If your system is an electric or heat-pump system that REQUIRES the thermostat to turn on the fan on a call for heat, locate the **ELECTRIC/GAS** switch (see **Figure 1**) and switch it to the **ELECTRIC** position. This will allow the thermostat to energize the fan immediately on a call for heat. If you are unsure if the heating/cooling system requires the thermostat to control the fan, contact a qualified heating and air conditioning service person.

HYDRONIC (HOT WATER OR STEAM) HEATING SYSTEMS

This thermostat is set to operate properly with a forced-air heating system. If you have a hydronic heating system (a system that heats with hot water or steam), you must set the thermostat to operate properly with your system by changing the first option in the configuration menu to SL (see Configuration Menu, page 5).

CHOOSE A LOCATION TO MOUNT THE THERMOSTAT

MOUNT THE THERMOSTAT...

- Approximately 5 feet above the floor. Refer to local codes for compliance with the Americans with Disabilities Act (ADA).
- On an interior wall in a frequently occupied space where the temperature is most representative of the zone being controlled by the thermostat.
- At least 18 inches away from an outside wall.

DO NOT MOUNT THE THERMOSTAT...

- Behind doors, in corners or other dead air spaces.
- In direct sunlight, near lamps or other sources of heat.
- On an outside wall or any wall exposed to an unconditioned space (a garage for example).
- In the airflow path of a supply register, in stairways or near outside doors.
- On a wall where concealed pipes or ductwork will affect the thermostat temperature accuracy.
- Near sources of electrical interference, such as arcing switch contacts.

ATTACH THERMOSTAT BASE TO WALL

1. Remove the packing material from the thermostat. Gently pull the cover straight off the base. Forcing or prying on the thermostat will cause damage to the unit. Loss of internal programs may result from static discharge to thermostat circuit board. Please touch a grounded metal object before handling the thermostat. If necessary, move the **ELECTRIC/GAS** switch (see **ELECTRIC HEAT** on page 2).
2. Connect wires beneath terminal screws on base using appropriate wiring schematic (see **Figures 2 through 7**).
3. Place base over wire access hole in wall, level for appearance, and mark mounting hole locations on wall using base as a template.
4. Move base out of the way. Drill mounting holes with 3/16 inch drill bit.
5. Fasten base loosely to wall using two mounting screws as shown in **Figure 1**. Place a level against bottom of base, adjust until level, and then tighten screws. (Leveling is for appearance only and will not affect thermostat operation.) If you are using existing mounting holes, or if holes drilled are too large and do not allow you to tighten base snugly, use plastic screw anchors to secure sub-base.

FIGURE 2 – Typical wiring diagram for heat only, 4-wire, single transformer systems

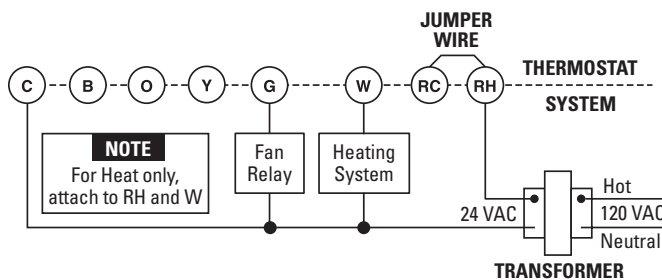


FIGURE 3 – Typical wiring diagram for cool only, 4-wire, single transformer systems

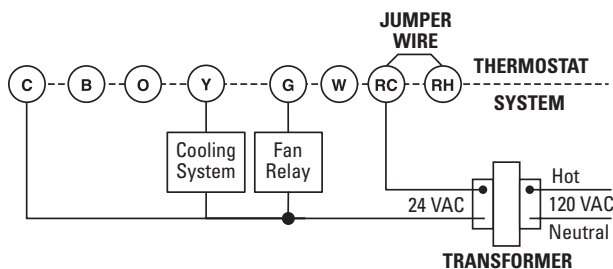
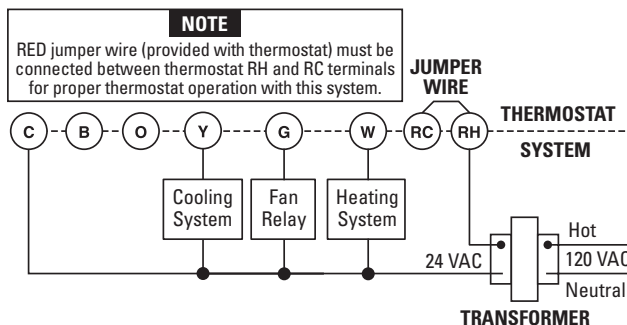


FIGURE 4 – Typical wiring diagram for heat/cool, 5-wire, single transformer systems



6. Wire the thermostat. **IMPORTANT! ENSURE THE POWER AT THE HVAC EQUIPMENT IS OFF.**

- a. Make sure the fan switch is set to Auto and the Mode switch is set to Off.
- b. Strip 3" of cable insulation.
- c. Strip 3/8" of insulation from each wire. Do not cut into the wire when stripping insulation, as this can lead to eventual control failure.
- d. Secure the wires to the thermostat terminal strip according to the wiring diagram for the model being installed (see **Figures 2 through 7**). Use a flat screw driver with a 1/8" tip (terminal screw driver). Use color coding where possible (i.e. red wire to R terminal, white wire to W terminal, etc.).
- e. Slide excess cable back into the wire entry wall opening and fill the hole with insulation. Failure to seal the hole can cause drafts to enter the thermostat and affect temperature sensing accuracy.

FIGURE 5 – Typical wiring diagram for heat/cool, 6-wire, two transformer systems

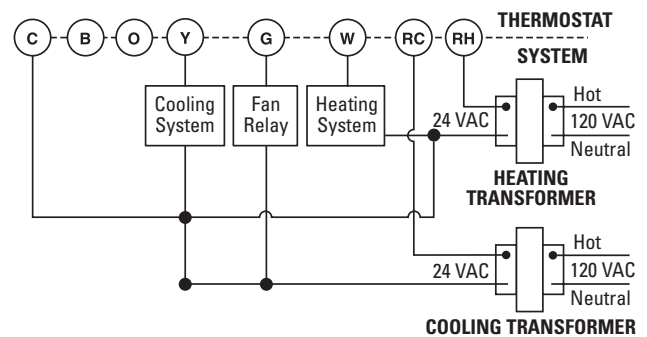


FIGURE 6 – Typical wiring diagram for heat pump with reversing valve energized in COOL

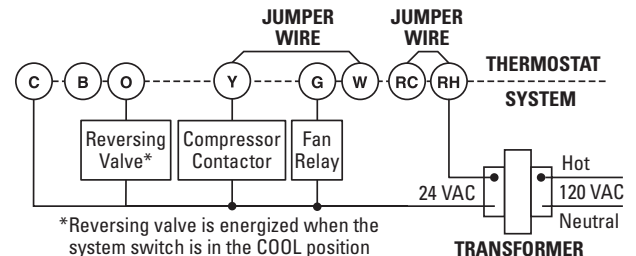
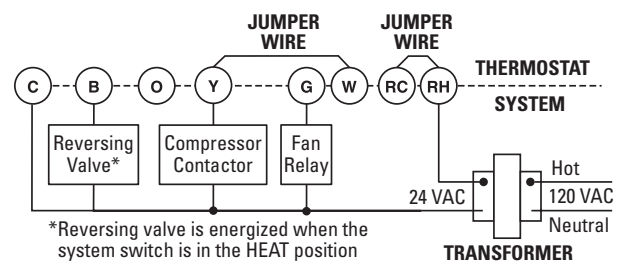


FIGURE 7 – Typical wiring diagram for heat pump with reversing valve energized in HEAT



CHECK THERMOSTAT OPERATION

NOTE: To prevent static discharge problems, touch side of thermostat to release static build-up before touching any keys.

If at any time during testing your system does not operate properly, contact a qualified service person.

FAN OPERATION

If your system **does not** have a **G** terminal connection, skip to **Heating System**.

1. Turn on power to the system.
2. Move fan switch to **ON** position. The blower should begin to operate.
3. Move fan switch to **AUTO** position. The blower should stop immediately.

COOLING SYSTEM

⚠ CAUTION

To prevent compressor and/or property damage, if the outdoor temperature is below 50°F, DO NOT operate the cooling system.

This thermostat has a time delay between cooling cycles to allow the head pressure in the compressor to stabilize. If the temperature is adjusted to call for cool within 5 minutes of the last cycle the **Snowflake icon** (❄) will blink indicating the thermostat is locked out. After 3 to 5 minutes, the compressor will start and the **Snowflake icon** (❄) will stop flashing. This helps prevent the compressor from cycling too quickly and is normal operation for the thermostat.

1. Move SYSTEM switch to **COOL** position.
2. Press  to adjust thermostat setting below room temperature. The blower should come on immediately on high speed, followed by cold air circulation.
3. Press  to adjust temperature setting above room temperature. The cooling system should stop operating.

HEATING SYSTEM

1. Move SYSTEM switch to **HEAT** position. If the heating system has a standing pilot, be sure to light it.
2. Press  to adjust thermostat setting above room temperature. The heating system should begin to operate.
3. Press  to adjust temperature setting below room temperature. The heating system should stop operating.

⚠ CAUTION

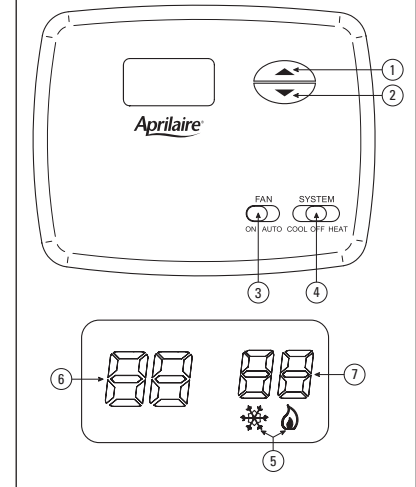
Do not set to OFF mode during periods when freezing temperatures could occur.

THE THERMOSTAT BUTTONS AND SWITCHES

Before you begin using your thermostat, you should be familiar with its features and with the display and the location and operation of the thermostat buttons (see **Figure 8**). Your thermostat consists of two parts: the **thermostat cover** and the **base**. To remove the cover, gently pull it straight out from the base. To replace the cover, line up the cover with the base and press gently until the cover snaps onto the base.

- ① (Up arrow) Raises temperature setting.
- ② (Down arrow) Lowers temperature setting.
- ③ FAN switch (**ON, AUTO**).
- ④ SYSTEM switch (**COOL, OFF, HEAT**).

FIGURE 8 – Thermostat buttons, display and switches



THE DISPLAY

- ⑤ **Flame icon** (🔥) is displayed when the SYSTEM switch is in the **HEAT** position. **Snowflake icon** (❄) is displayed (non-flashing) when the SYSTEM switch is in the **COOL** position. **Snowflake icon** (❄) will be displayed (flashing) when the compressor is in lockout mode.
- ⑥ Displays current temperature.
- ⑦ Displays currently set temperature (this is blank when SYSTEM switch is in the **OFF** position).

OPERATING FEATURES

Now that you are familiar with the thermostat buttons and display, read the following information to learn about the many features of the thermostat.

- **SIMULTANEOUS HEATING/COOLING SETPOINT STORAGE** – You can enter both your heating and cooling setpoints at the same time. There is no need to re-enter the setpoint at the beginning of each season.
- **TEMPERATURE SETTING** – Press  or  until the display shows the temperature you want. The thermostat will keep the room temperature at the selected temperature.
- **°F/°C CONVERTIBILITY** – The factory default setting is Fahrenheit. If you need Celsius temperature to be displayed, go to menu mode and change the 6th option to C (see Configuration Menu, page 5).
- **TEMPERATURE DISPLAY ADJUSTMENT** – Your new thermostat has been accurately set in our factory. However, if you wish, you may adjust your new thermostat temperature display to match your old thermostat. This can be accomplished (within a $\pm 4^\circ$ range) by going into the menu mode (see Configuration Menu, page 5).

CONFIGURATION MENU

The configuration menu allows you to set certain thermostat operating characteristics to your system or personal requirements.

1. With SYSTEM switch in "OFF" mode, press  and  keys at the same time to enter the configuration menu. The display will show the initial item in the configuration menu.

The configuration menu table summarizes the configuration options. An explanation of each option follows.

2. **Select FA or SL (Fast or Slow) Heating Cycle Rate** – The FA setting is frequently used for gas, oil or electric heat. The SL setting produces a longer heating cycle which is normally for hot water or steam (hydronic) systems. Both settings produce very accurate temperature control and can be set to your personal preference. FA cycles the system just under 1°F and the SL setting cycles at approximately 1.5°F.
3. **Select Backlit Display** – The display backlight improves display contrast in low lighting conditions. Selecting Backlight ON will keep the light on continuously. Selecting Backlight OFF will keep the light off.
4. **Select Compressor Lockout LOC OFF or ON** – Selecting LOC ON will cause the thermostat to wait 5 minutes before turning on the compressor if the heating and cooling system loses power. It will also wait 5 minutes minimum between cooling cycles. This is intended to help protect the compressor from short cycling. Some newer compressors already have a time delay built in and do not require this feature. Your compressor manufacturer can tell you if the feature is already present in their system. When the compressor time delay occurs it will flash the **Snowflake icon** () for about five minutes then turn on the compressor.
5. **Select Temperature Display Adjustment 4 LO to 4 HI** – Allows you to adjust the room temperature display 4° higher or lower. Your thermostat was accurately calibrated at the factory but you have the option to change the display temperature to match other temperature measuring devices.
6. **Select °F or °C Readout** – Changes the display readout to Celsius or Fahrenheit as desired.

CONFIGURATION MENU				
Step	Press Button(s)	Displayed (Factory Default)	Press  or  to select:	Comments
1	Set system switch to OFF			System switch must be OFF to configure thermostat
2	 and  *	 (FA)	SL	Select FA or SL (Fast or Slow) heating cycle rate
3	 and  *	-L (ON)	OFF	Select backlight ON or OFF
4	 and  *	OC (OFF)	ON	Select compressor lockout LOC OFF or ON
5	 and  *	0 HI (0)	4 LO to 4 HI	Select temperature display adjustment higher or lower
6	 and  *	(F)	C	Select temperature display to F or C
7	Move system switch from OFF to HEAT or COOL			Returns to normal operation

*Press  and  simultaneously to advance to next item.

CLEANING THE THERMOSTAT

If the surface of the thermostat becomes dirty it can be cleaned with plain water or a non-abrasive household cleaner including glass cleaner. When using any cleaner, be careful not to get any into the

interior of the thermostat. **Do not spray any liquid directly onto the thermostat.** Spray the cleaner onto a soft cloth and wipe the surface of the thermostat.

SPECIFICATIONS

ELECTRICAL DATA

Electrical Rating:

20 to 30 VAC 50/60 Hz.

0.05 to 1.2 Amps (Load per terminal)

1.5 Amps Maximum Total Load (All terminals combined)

THERMAL DATA

Setpoint Temperature Range:

45°F to 90°F (7°C to 32°C)

Operating Ambient Temperature Range:

32°F to 105°F

Operating Humidity Range:

0 to 90% RH (non-condensing)

Shipping Temperature Range:

-40°F to 150°F

TROUBLESHOOTING

Symptom	Possible Cause	Corrective Action
No Heat/No Cool/No Fan (common problems)	1. Blown fuse or tripped circuit breaker. 2. Furnace power switch to OFF. 3. Furnace blower compartment door or panel loose or not properly installed.	1. Replace fuse or reset breaker. 2. Turn switch to ON. 3. Replace door panel in proper position to engage safety interlock or door switch.
No Heat	1. Pilot light not lit. 2. System Switch not set to HEAT. 3. Loose connection to thermostat or system. 4. Furnace Lock-Out Condition. Heat may also be intermittent. 5. Heating system requires service or thermostat requires replacement.	1. Re-light pilot. 2. Set System Switch to HEAT and raise setpoint above room temperature. 3. Verify thermostat and system wires are securely attached. 4. Many furnaces have safety devices that shut down when a lock-out condition occurs. If the heat works intermittently, contact the furnace manufacturer or local service person for assistance. 5. Diagnostic: Set System Switch to HEAT and raise the setpoint above room temperature. Within a few seconds, the thermostat should make a soft click sound. This sound usually indicates the thermostat is operating properly. If the thermostat does not click on, contact your heating and cooling service person or place of purchase for a replacement. If the thermostat clicks, contact the furnace manufacturer or a service person to verify the heating is operating correctly.
No Cool	1. System Switch not set to COOL. 2. Loose connection to thermostat or system. 3. Cooling system requires service or thermostat requires replacement.	1. Set System Switch to COOL and lower setpoint below room temperature. 2. Verify thermostat and system wires are securely attached. 3. Same procedure as diagnostic for No Heat condition except set the thermostat to COOL and lower the setpoint below the room temperature. There may be up to a five minute delay before the thermostat clicks in Cooling.
Heat, Cool or Fan Runs Constantly	1. Possible short in wiring. 2. Possible short in thermostat. 3. Possible short in heat/cool/fan system. 4. Fan Switch set to Fan On.	1. – 4. Check each wire connection to verify they are not shorted or touching together. No bare wire should stick out from under terminal screws. If the condition persists, the manufacturer of your system or service person can instruct you on how to test the Heat/Cool system for correct operation. If the system operates correctly, replace the thermostat.
Furnace Cycles Too Fast or Too Slow (narrow or wide temperature swing)	The location of the thermostat and/or the size of the Heating System may be influencing the cycle rate.	Digital thermostats normally provide precise temperature control and may cycle faster than some older mechanical models. A faster cycle rate means the unit turns on and off more frequently but runs for a shorter time so there is no increase in energy use. If you would like to increase the cycle time, go to menu mode as mentioned in the instructions for Hydronic Heating Systems. It is not possible to shorten the cycle time. If an acceptable cycle rate is not achieved as received or by changing cycle time from FAST to SLOW on the menu mode, contact a local service person for additional suggestions.
Cooling Cycles Too Fast or Too Slow (narrow or wide temperature swing)	The location of the thermostat and/or the size of the Cooling System can influence the cycle rate.	The cycle rate for cooling is fixed and cannot be adjusted. Contact a local service person for suggestions.
Thermostat Setting and Thermostat Thermometer Disagree	Thermostat thermometer setting requires adjustment.	The thermometer can be adjusted +/- 4 degrees. See Select Temperature Display Adjustment (#5 in the Configuration Menu section).
Blank Display and/or Keypad Not Responding	1. Thermostat loss of power. 2. Voltage spike or static discharge.	1. Check possible blown fuse or tripped breaker. 2. Turn system power off. Wait for 5 minutes and turn the power on.

LIMITED WARRANTY

Your Research Products Corporation Aprilaire® Thermostat unit is expressly warranted for two (2) years from date of installation to be free from defects in materials and workmanship.

Research Products Corporation's exclusive obligation under this warranty shall be to supply, without charge, a replacement for any thermostat which is found to be defective within a two (2) year period and which is returned, together with the date of installation, no later than thirty (30) days after said two (2) year period by you to either your original supplier or to Research Products Corporation, Madison, Wisconsin 53701.

THIS WARRANTY SHALL NOT OBLIGATE RESEARCH PRODUCTS CORPORATION FOR ANY LABOR COSTS AND SHALL NOT APPLY TO DEFECTS IN WORKMANSHIP OR MATERIALS FURNISHED BY YOUR INSTALLER AS CONTRASTED TO DEFECTS IN THE THERMOSTAT ITSELF.

IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL BE LIMITED IN DURATION TO THE AFORESAID TWO YEAR PERIOD. RESEARCH PRODUCTS CORPORATION'S LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, OTHER THAN DAMAGES FOR PERSONAL INJURIES, RESULTING FROM ANY BREACH OF THE AFORESAID IMPLIED WARRANTIES OR THE ABOVE LIMITED WARRANTY IS EXPRESSLY EXCLUDED. THIS LIMITED WARRANTY IS VOID IF DEFECT(S) RESULT FROM FAILURE TO HAVE THIS THERMOSTAT INSTALLED BY A QUALIFIED HEATING AND AIR CONDITIONING CONTRACTOR. IF THE LIMITED WARRANTY IS VOID DUE TO FAILURE TO USE A QUALIFIED CONTRACTOR, ALL DISCLAIMERS OF IMPLIED WARRANTIES SHALL BE EFFECTIVE UPON INSTALLATION.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitations may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

WARRANTY REGISTRATION

Please... Take a few minutes to visit us online at www.aprilaire.com to register your Aprilaire product. If you do not have online access, please mail a postcard with your name, address, phone number, product or model purchased, date of purchase and dealer name to:

Research Products Corporation, P.O. BOX 1828, Madison, WI 53701

YOUR WARRANTY REGISTRATION INFORMATION WILL NOT BE SOLD OR SHARED OUTSIDE OF THIS COMPANY.