



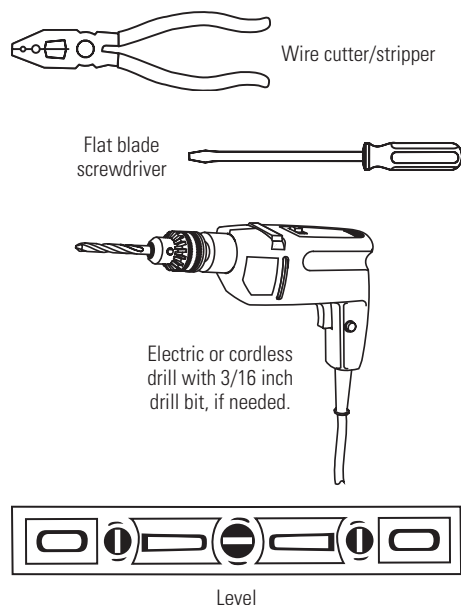
Model 8246 Installation and Operation Manual

Non-Programmable Heat Pump 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.

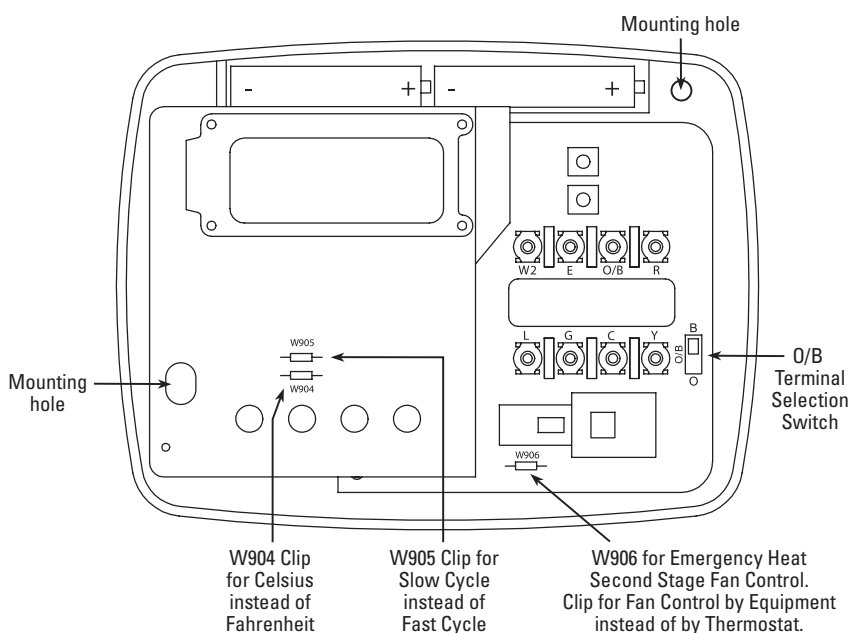
PREPARATIONS

Assemble tools required as shown below.



THERMOSTAT DETAILS

FIGURE 1 – Thermostat Base



THERMOSTAT APPLICATIONS

Description	
Heat Pump (No Aux or Emergency Heat)	Yes
Heat Pump (with Aux or Emergency Heat)	Yes
Standard Heat & Cooling Systems	No
Standard Heat Only Systems	No
Millivolt Heat Only Systems – Floor or Wall Furnaces	No

Description	
Standard Central Air Conditioning	No
Gas or Oil Heat	No
Electric Furnace	No
Hydronic (Hot Water) Zone Heat – 2 Wires	No
Hydronic (Hot Water) Zone Heat – 3 Wires	No

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.

ELECTRIC/GAS JUMPER (FAN OPTION)

If your emergency or auxiliary system will energize the blower, then jumper W906 on the thermostat base must be cut (see **Figure 1**).

If your emergency or auxiliary heat system requires that the thermostat energize the fan circuit, do not cut jumper W906.

If you are unsure of your application, contact a qualified service person.

°F OR °C SELECTION

The factory default setting for temperature display is Fahrenheit. If you want the temperature in Celsius, clip jumper W904.

FAST OR SLOW CYCLE SELECTION

The factory default setting is fast cycle, which cycles 1st stage with a temperature swing of approximately 1.2°F and 2nd stage with 0.75°F. If you prefer slow cycle, clip jumper W905. The 1st stage and 2nd stage temperature swing will become 1.5°F and 1.2°F respectively.

O/B TERMINAL SELECTION SWITCH

The O/B switch on this thermostat is factory set to the “B” position. This will accommodate the majority of heat pump applications which require the changeover relay to be energized in HEAT. If the heat pump being installed with this thermostat requires an “O” terminal to energize the changeover relay in COOL, the O/B switch must be moved to the “O” position.

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.

BATTERY LOCATION

This thermostat does not require batteries to operate. The 2 “AAA” alkaline batteries are for the thermostat to remember the configuration menu selections if AC voltage is lost. If the display shows BATT when AC power is not present, the batteries are low and should be replaced with fresh “AAA” Energizer® alkaline batteries. To replace the batteries, install the batteries along the top of the base (see **Figure 1**). The batteries must be installed with the positive (+) ends to the right.

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.
2. Connect wires beneath terminal screws on base using appropriate wiring schematic (see **Figures 2 through 4**).
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.
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 4**). 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 2 – Typical wiring diagram for single transformer systems

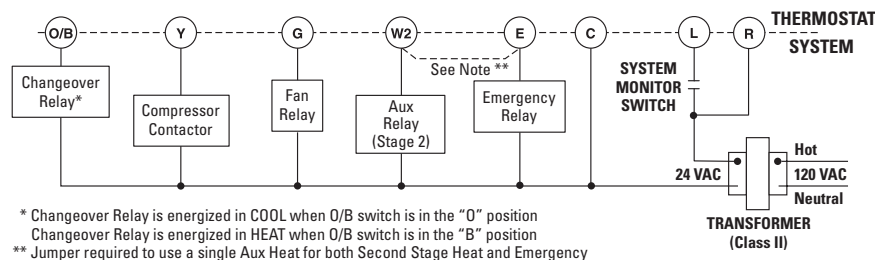


FIGURE 3 – Typical wiring diagram for two transformer systems with NO safety circuits

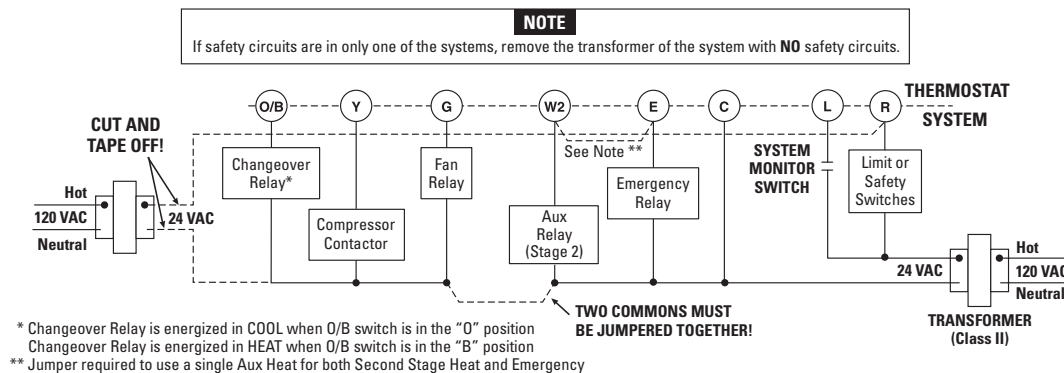
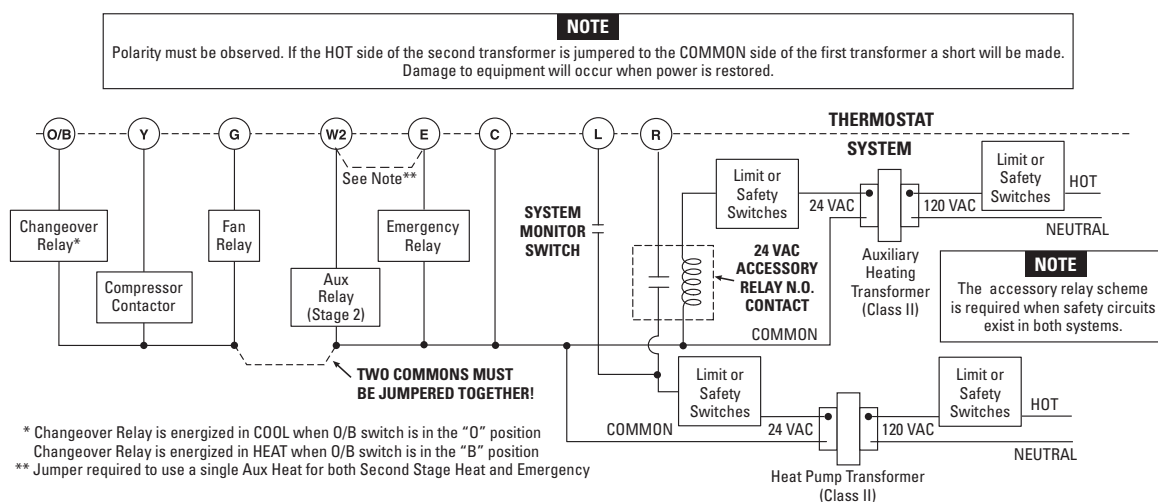


FIGURE 4 – Typical wiring diagram for two transformer systems with safety circuits in BOTH systems



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.

CAUTION

Do not allow the compressor to run unless the compressor oil heaters have been operational for 6 hours and the system has not been operational for at least 5 minutes.

HEATING SYSTEM

1. Move SYSTEM switch to **HEAT** position. If the auxiliary heating system has a standing pilot, be sure to light it.
2. Press  to adjust thermostat setting to 1° above room temperature. The heat pump system should begin to operate. However, if the **Flame icon** (🔥) and **Snowflake icon** (❄️) are flashing, the compressor lockout feature is operating (see Configuration menu, item 2.)
3. Adjust temperature setting to 4° above room temperature. The auxiliary heat system should begin to operate and the **Flame icon** (🔥) will be flashing.
4. Press  to adjust thermostat setting below room temperature. The heating system should stop operating.

CAUTION

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

EMERGENCY SYSTEM

EMER bypasses the Heat Pump to use the heat source wired to terminal E on the thermostat. EMER is typically used when compressor operation is not desired, or you prefer back-up heat only.

1. Move SYSTEM switch to **EMER** position. EMER will flash on the display.
2. Press  to adjust thermostat setting above room temperature. The Aux heating system will begin to operate. The **Flame icon** (🔥) will display flashing to indicate that the Aux system is operating.
3. Press  to adjust the thermostat below room temperature. The Aux heating system should stop operating.

CAUTION

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

COOLING SYSTEM

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.

THE THERMOSTAT BUTTONS AND SWITCHES

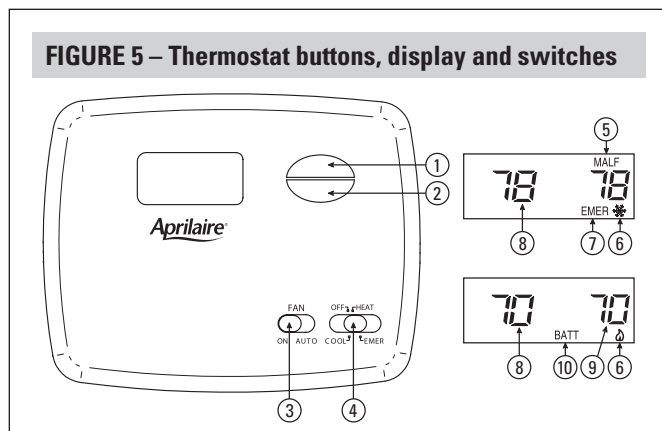
Before you begin using your thermostat, you should be familiar with its features and with the display and the location and operation of the thermostat buttons (see **Figure 5**). Your thermostat consists of two parts: the **thermostat cover** and the **base**. To remove the cover, gently pull it straight 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, EMER**).

THE DISPLAY

- ⑤ Indicates a malfunction with the system.
- ⑥ **Flame icon** (🔥) is displayed when the SYSTEM switch is in the HEAT position. **Flame icon** (🔥) is displayed flashing when 2nd-stage heat (Aux or Emergency) is energized. **Snowflake icon** (❄️) is displayed (non-flashing) when the SYSTEM switch is in the COOL position. **Snowflake** and **Flame icons** are displayed (flashing) if the thermostat is in lockout mode to prevent the compressor from cycling too quickly.
- ⑦ **EMER** is displayed flashing when the system switch is in EMER position.
- ⑧ Displays current temperature.
- ⑨ Displays currently programmed set temperature (this is blank when SYSTEM switch is in the OFF position).
- ⑩ "BATT" is displayed when 2 "AAA" batteries are low and should be replaced.

FIGURE 5 – Thermostat buttons, display and switches



CONFIGURATION MENU

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

1. To enter the configuration menu, with SYSTEM switch in OFF position, hold and for at least two seconds.
2. **Select Fast or Slow Cycling** – In the run mode, if the setpoint temperature is manually raised by 3°F (2°C) or more above the actual temperature with the TEMPERATURE UP key, and the fast second stage feature is enabled (FA on), the second stage will energize immediately. With FA off, second stage will not energize until the setpoint temperature is 1°F or more beyond actual temperature for more than ten minutes.
3. **Select Compressor Lockout CL OFF or ON** – Selecting CL 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 and heating 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 lockout feature is already present in their system. When the thermostat compressor time delay occurs it will flash the **Snowflake** and **Flame icons** for about five minutes.

4. **Select Temperature Display Adjustment 3 LO to 3 HI** – Allows you to adjust the room temperature display up to 3° 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. The current or adjusted room temperature will be displayed on the left side of the display.
5. To exit the configuration menu, move the SYSTEM switch from the OFF position.

CONFIGURATION MENU

Step	Press Button(s)	Displayed (Factory Default)	Press or to select:
1	Set SYSTEM switch to OFF		
2	and for at least 2 seconds	FA (ON)	OFF
3	and momentarily	CL (OFF)	ON
4	and momentarily	0 HI (0)	3 LO to 3 HI
5	Move SYSTEM switch from OFF	Return to normal operation	

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 1.0 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

RESET OPERATION

If a voltage spike or static discharge blanks out the display or causes erratic thermostat operation you can reset the thermostat by pressing and at the same time when system is switched from “OFF” to “HEAT” position. This also resets the factory defaults. If the thermostat has power, has been reset and still does not function correctly, contact your heating/cooling service person or place of purchase.

BATTERIES

For optimum performance, we recommend replacing batteries once a year with fresh “AAA” Energizer® alkaline batteries.

TROUBLESHOOTING (CONTINUED)

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, try the reset operation listed on page 5. If the thermostat does not click after being reset 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. Try resetting the thermostat as described on page 5. 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 (Air Conditioning) Cycles Too Fast or Too Slow (narrow or wide temperature swing)	The location of the thermostat and/or the size of the Heating (Cooling) 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, clip Jumper W-905 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 clipping W-905 contact a local service person for additional suggestions.
Thermostat Setting and Thermostat Thermometer Disagree	Thermostat thermometer setting requires adjustment.	The thermometer can be adjusted +/- 3 degrees. See Select Temperature Display Adjustment (#3 in the Configuration Menu section).
Blank Display and/or Keypad Not Responding	Voltage spike or static discharge.	Use the Reset Operation listed on page 5.

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.