Non-Programmable Thermostats

Installation, Start-Up, and Operating Instructions

NOTE: Read the entire instruction manual before starting the installation.

This symbol → indicates a change since the last issue.

SAFETY CONSIDERATIONS

Read and follow manufacturer instructions carefully. Follow all local electrical codes during installation. All wiring must conform to local and national electrical codes. Improper wiring or installation may damage thermostat.

Recognize safety information. This is the safety-alert symbol ⚠ . When you see this symbol on the equipment and in the instruction manual, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies a hazard which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **would** result in minor personal injury or product and property damage.

INTRODUCTION

Carrier thermostats are wall-mounted, low-voltage thermostats which maintain room temperature by controlling the operation of a heating and air conditioning system. Separate heating and cooling setpoints, plus auto changeover provide maximum comfort and flexibility. Batteries are not required; temperature and mode settings are preserved with the power off.

INSTALLATION CONSIDERATIONS

Power

Note that all thermostat models require no batteries and are not "power stealing". They do require 24vac (both R and C terminals) to be connected for proper operation. Thermostat will not operate without these 2 connections.

Models

There are 3 different models. The 9th and 10th letters of the part number indicate the model. These 2 letters also appear on the package and on the circuit board. Be sure to have the proper thermostat for the intended application. Models are:

AC — 1-stage cool, 1-stage heat for AC systems only.
HP — 1-stage cool, 2-stage heat for either HP, or AC with 2-stage heat.
2S — 2-stage cool, 2-stage heat for 2-speed AC systems, or 2-stage cool, 3-stage heat for 2-speed HP systems.
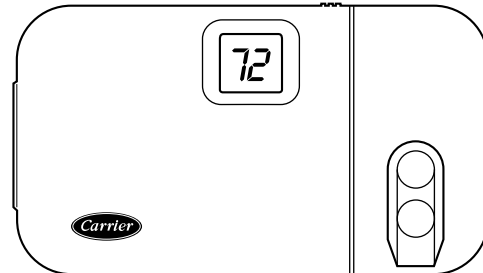
Use each only for its intended purpose. See Table 1.

INSTALLATION

Step 1—Thermostat Location

Thermostat should be mounted:

- Approximately 5 ft (1.5m) from floor.
- Close to or in a frequently used room, preferably on an inside partitioning wall.
- On a section of wall without pipes or duct work.

HEIGHT (IN.)	WIDTH (IN.)	DEPTH (IN.)
3-1/2	5-3/4	1-3/8

Fig. 1—Carrier Non-Programmable Thermostat

Thermostat should NOT be mounted:

- Close to a window, on an outside wall, or next to a door leading to the outside.
- Exposed to direct light and heat from a lamp, sun, fireplace, or other temperature-radiating object which may cause a false reading.
- Close to or in direct airflow from supply registers and return-air grilles.
- In areas with poor air circulation, such as behind a door or in an alcove.

Step 2—Select Model and Jumper

AC Model (1-stage cool, 1-stage heat) is to be used for single-stage heating and/or cooling applications only. It CANNOT be used with optional outdoor temperature sensor. (See Table 1 and Fig. 2, 3, 4, 14, and 19.)

HP Model (1-stage cool, 2-stage heat) can be used with a single-speed heat pump (HP), or an air conditioner (AC) with a 2-stage furnace or fan coil. A resistor (R19) serves as a HP/AC selector jumper. This thermostat comes configured from the factory as a heat pump thermostat. Leave R19 installed for HP operation. Cut and discard for AC operation. When AC operation is selected, the O/W2 terminal is converted from a reversing valve output (O) to a second-stage heat output (W2). This output can be used to control 2-stage furnaces or 2-stage electric heat in fan coils. (See Table 1 and Fig. 5, 6, 7, 15, 17, and 21.)

2S Model is for 2-speed compressor HP and AC systems only. Output Y1 controls compressor low speed and output Y/Y2 controls compressor high speed. Jumper resistor R19 serves as HP/AC selector exactly as described above for HP model. (See Table 1 and Fig. 8 through 13, 16, and 18.)

Table 1—Model Selection and Wiring Diagram Chart

OUTDOOR UNIT	AIR CONDITIONER		HEAT PUMP	
	1 Speed	2 Speed	1 Speed	2 Speed
1-Stage Furnace	Model AC See Fig. 2		Model 2S See Fig. 8	Requires Dual Fuel Thermostat	Model 2S See Fig. 11
2-Stage Furnace	Model AC See Fig. 3	Model HP See Fig. 5	Model 2S See Fig. 9	Requires Dual Fuel Thermostat	Model 2S See Fig. 12
Typical Fan Coil	Model AC See Fig. 4	Model HP See Fig. 6	Model 2S See Fig. 10	Model HP See Fig. 7	Model 2S See Fig. 13
Variable-Speed Fan Coil (FK4C, FV4A, 40FKA)	Model AC See Fig. 14	Model HP See Fig. 15	Model 2S See Fig. 16	Model HP See Fig. 17	Model 2S See Fig. 18

Step 3—Install Thermostat

> ### ⚠ WARNING
>
> Before installing thermostat, turn off all power to unit. There may be more than 1 power disconnect. Electrical shock can cause personal injury or death.

1. Turn OFF all power to unit.

2. If an existing thermostat is being replaced:

   a. Remove existing thermostat from wall.

   b. Disconnect wires from existing thermostat, 1 at a time. Be careful not to allow wires to fall back into the wall.

   c. As each wire is disconnected, record wire color and terminal marking.

   d. Discard or recycle old thermostat.

NOTE: Mercury is a hazardous waste and MUST be disposed of properly.

3. Open thermostat rear door (mounting base) to expose mounting holes. The base can be removed to simplify mounting. Snap apart carefully at hinge to separate mounting base from remainder of thermostat.

4. Route thermostat wires through large hole in mounting base. Level mounting base against wall (for aesthetic value only—thermostat need not be leveled for proper operation) and mark wall through 2 mounting holes.

5. Drill two 3/16-in. mounting holes in wall where marked.

6. Secure mounting base to wall with 2 anchors and screws provided, (additional anchoring holes available for more secure mounting if needed) making sure all wires extend through hole in mounting base.

7. Adjust length and routing of each wire to reach proper terminal and connector block on mounting base with 1/4 in. of extra wire. Strip only 1/4 in. of insulation from each wire to prevent adjacent wires from shorting together when connected.

8. Match and connect equipment wires to proper terminals of the connector blocks. (See Table 1 and Fig. 2 through 24.) Both R and C must be connected for proper thermostat operation.

> ### ⚠ CAUTION
>
> Improper wiring or installation may damage the thermostat. Check to make sure wiring is correct before proceeding with installation or turning on unit.

9. Push any excess wire into wall and against mounting base. Seal hole in wall to prevent air leaks. Leaks can affect operation.

10. Snap hinge back together.

11. Close thermostat assembly making sure pins on back of circuit board align with sockets in connector.

12. Turn ON power to unit.

→ On power up, LCD readout will display AC, HP, A2, or H2 depending on the thermostat model and jumper status. See "Power On Check" under "Operational Information" on page 11 for explanation.

→ **Step 4—Set Thermostat Configuration**

Configuration options, like the R19 configuration jumper are intended to be selected at installation and are normally not modified by the homeowner. These options are not discussed in the Homeowner's Guide and therefore must be made as part of the installation. A special procedure allows entry into the configuration mode. The thermostat will automatically exit this mode if no button is pressed for 3 minutes. While in the configuration mode, up to 8 option choices can be made:

Option 01:"Anticipator" adjustment

Option 02: Clean filter timer adjustment

Option 03: Fahrenheit or Celsius operation

Option 04: Enable fan (G) on with any heat (W)

Option 07: Enable zoning

Option 08: Auxiliary heat lockout temperature adjustment

Option 13: Room temperature offset adjustment

Option 15: Enable AUTO mode

An explanation for each of these and how to enter the configuration mode follows.

To enter the configuration mode:

Press and hold the FAN button for approximately 10 sec until room temperature disappears and display reads "01". You are now in the configuration mode.

NOTE: If the FAN button is pressed again or if no button is pressed for 3 min, the thermostat will exit the configuration mode and return to normal operation. To re-enter the configuration mode, the FAN button must be pressed and held for 10 sec again.

While in configuration mode:

The display is used to show both the option number and the selection choice within that option.

OPTION 1—ANTICIPATOR ADJUSTMENT

This adjustment controls the sensitivity and cycle rate of the thermostat. Higher numbers decrease the sensitivity and slow the cycle rate. Lower numbers increase sensitivity and increase cycle rate. However, a limiting feature will not allow more than 4 equipment cycles per hr, regardless of setting. Values can range from 1 to 9. Factory default setting is 3. This default selection will provide optimum performance in nearly all installations. Try it first. Do not change setting unless there is evidence of need to do so.

Unlike conventional anticipators, this setting is not to be determined by current draw. There is no need to measure, know, or

compensate for current. There is also no droop with this thermostat, regardless of anticipator setting. This adjustment controls only sensitivity and cycle rate up to the maximum of 4 cycles per hr.

TO ADJUST:

1. Enter configuration mode (if not already there).

2. Use up and down buttons to display 01. This selects Option 1. The SET icon should be off.

3. Press MODE button once. The SET icon will come on. The display now shows Option 1 setting.

4. Use up and down buttons to move between the available Option 1 values of 01 to 09. Factory default is 03.

5. Press MODE button again to return to Option 1 indication of 01. The SET icon will now be off.

6. Use up and down buttons to select another Option, or press FAN button to exit configuration mode.

OPTION 2—CLEAN FILTER TIMER

This option selects the number of hours of blower operation (heating, cooling, or fan) before FILTER icon is displayed. With OF selected, the icon will never come on, disabling this feature. Time selection can be from 400 to 3600 hours by selecting numbers 01 through 09. (Time is 400 X number selected.) Factory default is 2 (800 hours). Recommended selections are: disposable filter 800 hr, media filter 1200 to 1600 hr, or electronic air cleaner 1600 to 2400 hr of blower operation.

TO ADJUST:

1. Enter configuration mode (if not already there).

2. Use up and down buttons to display 02. This selects Option 2. The SET icon should be off.

3. Press MODE button once. The SET icon will come on. The display now shows Option 2 setting.

4. Use up and down buttons to move between the available Option 2 values of OF and 01 through 09. Factory default is 02.

5. Press MODE button again to return to Option 2 indication of 02. The SET icon will now be off.

6. Use up and down buttons to select another Option, or press FAN button to exit configuration mode.

OPTION 3—FAHRENHEIT/CELSIUS SELECTION

This option selects Fahrenheit or Celsius operation.

TO SELECT:

1. Enter configuration mode (if not already there).

2. Use up and down buttons to display 03. This selects Option 3. The SET icon should be off.

3. Press MODE button once. The SET icon will come on. The display now shows Option 3 setting.

4. Use up and down buttons to move between the available Option 3 choices of F (Fahrenheit) or C (Celsius). Factory default is F.

5. Press MODE button again to return to Option 3 indication of 03. The SET icon will now be off.

6. Use up and down buttons to select another Option, or press FAN button to exit configuration mode.

OPTION 4—G (FAN) ON WITH ANY W (HEAT)

This selection determines whether the G (fan) output is to be ON or OFF when any W (furnace or strip heat) output is ON. Most furnaces and fan coils manage their own blowers and do not require a separate G signal. For these applications, select OFF.

Some auxiliary heaters require a separate G signal to turn on the blower. In this case, select ON. Factory default is OFF.

TO SELECT:

1. Enter configuration mode (if not already there).

2. Use up and down buttons to display 04. This selects Option 4. The SET icon should be off.

3. Press MODE button once. The SET icon will come on. The display now shows Option 4 setting.

4. Use up and down buttons to move between available Option 4 choices of ON or OF. Factory default is OF.

5. Press MODE button again to return to Option 4 indication of 04. The SET icon will now be off.

6. Use up and down buttons to select another Option, or press FAN button to exit configuration mode.

OPTION 7—ZONING ON/OFF SELECTION

This selection enables or defeats the 15 minute cycle timer, the 15 minute staging timer, and the 5 minute compressor timeguard. (See "Operational Information" on page 11 for details.) These timers MUST be enabled (zoning OFF) for normal operation and disabled (zoning ON) for zoning applications. In zoning applications, the zone control center performs these timing functions. Factory default is OF.

TO SELECT:

1. Enter configuration mode (if not already there).

2. Use up and down buttons to display 07. This selects Option 4. The SET icon should be off.

3. Press MODE button once. The SET icon will come on. The display now shows Option 7 setting.

4. Use up and down buttons to move between available Option 7 choices of ON or OF.

5. Press MODE button again to return to Option 7 indication of 07. The SET icon will now be off.

6. Use up and down buttons to select another Option, or press FAN button to exit configuration mode.

OPTION 8—HIGH AMBIENT AUXILIARY HEAT LOCKOUT

Present in HP and 2S models only when configured as a heat pump. Outdoor temperature sensor must be attached. This selection allows lockout of any electric heat (W output) when outdoor temperature is above a selected temperature. Temperatures of 5° to 55°F (or equivalent values in C) can be selected. Feature can be disabled by selecting OFF. Emergency heat (EHEAT mode) always overrides this feature.

TO SELECT or ADJUST:

1. Enter configuration mode (if not already there).

2. Use up and down buttons to display 08. This selects Option 8. The SET icon should be off.

3. Press MODE button once. The SET icon will come on. The display now shows Option 8 setting.

4. Use up and down buttons to move between available Option 8 choices of OF, or 5 through 55 in 5° steps.

5. Press MODE button again to return to Option 8 indication of 08. The SET icon will now be off.

6. Use up and down buttons to select another Option, or press FAN button to exit configuration mode.

OPTION 13—ROOM TEMPERATURE OFFSET

This option allows calibration (or deliberate miscalibration) of room temperature sensor. There are various reasons why the homeowner may want to have displayed temperature adjusted to a

higher or lower value. The selected number is the number of degrees, plus or minus, which will be added to the actual temperature. The number can range between -5 and +5. Factory default is 0. This adjusted value will be used as actual temperature for both display and control action. For example, if 2 is selected, 72°F actual will read 74°F. If set point is 72, the room will control to an actual value of 70 which will be displayed and acted upon as if it were 72. The effect is that a positive number selection will make the room temperature lower and vice versa. This thermostat is factory calibrated within an accurancy of plus or minus 1°F, so this adjustment will provide the best accuracy when set to 0.

TO SELECT:

1. Enter configuration mode (if not already there).

2. Use up and down buttons to display 13. This selects Option 13. The SET icon should be off.

3. Press MODE button once. The SET icon will come on. The display now shows Option 13 setting.

4. Use up and down buttons to move between available Option 14 choices of -5 through +5 in 1° steps.

5. Press MODE button again to return to Option 13 indication of 13. The SET icon will now be off.

6. Use up and down buttons to select another Option, or press FAN button to exit configuration mode.

OPTION 15—AUTO MODE ON/OFF SELECTION

This options allows the installer to enable or disable AUTO mode (automatic changeover between heat and cool). When disabled, AUTO icon does not appear when successive presses of MODE button are used to move between OFF, HEAT, and EHEAT (in heat pump systems). Factory default is ON (AUTO mode enabled).

TO SELECT:

1. Enter configuration mode (if not already there).

2. Use up and down buttons to display 15. This selects Option 15. The SET icon should be off.

3. Press MODE button once. The SET icon will come on. The display now shows Option 15 setting.

4. Use up and down buttons to move between available Option 15 choices of ON or OF.

5. Press MODE button again to return to Option 15 indication of 15. The SET icon will now be off.

6. Use up and down buttons to select another Option, or press FAN button to exit configuration mode.

Step 5—Check Thermostat Operation

FAN OPERATION

1. Press FAN button, starting fan operation. FAN icon turns on.

2. Press FAN button again, stopping fan operation. FAN icon turns off. (Some fan coils have 90 sec fan off delay, so fan may not stop immediately.)

HEATING OPERATION

1. Press and release MODE button until HEAT icon appears. This selects heating mode.

2. Press and release up button until set point is at least 5° above room temperature. Within a few seconds, HEAT ON icon will either stay on or flash. Flashing indicates a heat demand exists, but the cycle timer or timeguard timer is delaying heat turn on. (See "Operational Information" on page 11 for timer explanation.) To defeat timer, simultaneously press FAN and up buttons. Heating will come on within a few seconds and HEAT ON icon will stay on. Lowering set point to below room temperature will turn off heating and remove HEAT ON icon within a few seconds.

COOLING OPERATION

1. Press and release MODE button until COOL icon appears. This selects cooling mode.

2. Press and release down button until set point is at least 5° below room temperature. Within a few seconds, COOL ON icon will either stay on or flash. Flashing indicates a cooling demand exists, but cycle timer or timeguard timer is delaying cooling turn on. (See "Operational Information" on page 11 for timer explanation.) To defeat timer, simultaneously press FAN and up buttons. Cooling will come on within a few seconds and COOL ON icon will stay on. Raising set point to above room temperature will turn off cooling and remove COOL ON icon within a few seconds.

OUTDOOR TEMPERATURE

If system is equipped with an outdoor temperature sensor, check its operation by pressing the up and down buttons together. Outdoor temperature will be displayed for about 5 sec. If "--" is displayed, the outdoor temperature sensor is absent or not properly connected.

Step 6—Checklist

1. Run equipment through several heating and cooling cycles to ensure proper operation.

2. If equipment is to be left in operation, set point and operating mode must be properly selected.

3. Put away tools and instruments, and clean up debris.

4. Review Homeowner's Guide with owner.

5. Leave literature packet with owner.

Table 2—Non-Programmable Thermostat Quick Reference

TSTAT Model	Outdoor Unit	R-19 Jumper	24v Hot	Common	Fan	Heat Stage 1	Heat Stage 2	Heat Stage 3	Cool Stage 1	Cool Stage 2	Reversing Valve
											THERMOSTAT OUTPUT
AC01-B	AC	N/A	R	C	G	W/W1	N/A	N/A	Y/Y2	N/A	N/A
HP01-B	HP	Uncut	R	C	G	Y/Y2	W/W1	N/A	Y/Y2	N/A	O/W2
HP01-B	AC	Cut	R	C	G	W/W1	O/W2	N/A	Y/Y2	N/A	N/A
2S01-B	2-Speed AC	Cut	R	C	G	W/W1	O/W2	N/A	Y1	Y/Y2	N/A
2S01-B	2-Speed HP	Uncut	R	C	G	Y1	Y/Y2	W/W1	Y1	Y/Y2	O/W2

Model Numbers: TSTATCCNAC01-B, TSTATCCNHP01-B, TSTATCCN2S01-B
Note: AC = Air Conditioner, HP = Heat Pump, 2S = 2-Speed, N/A = Not Applicable
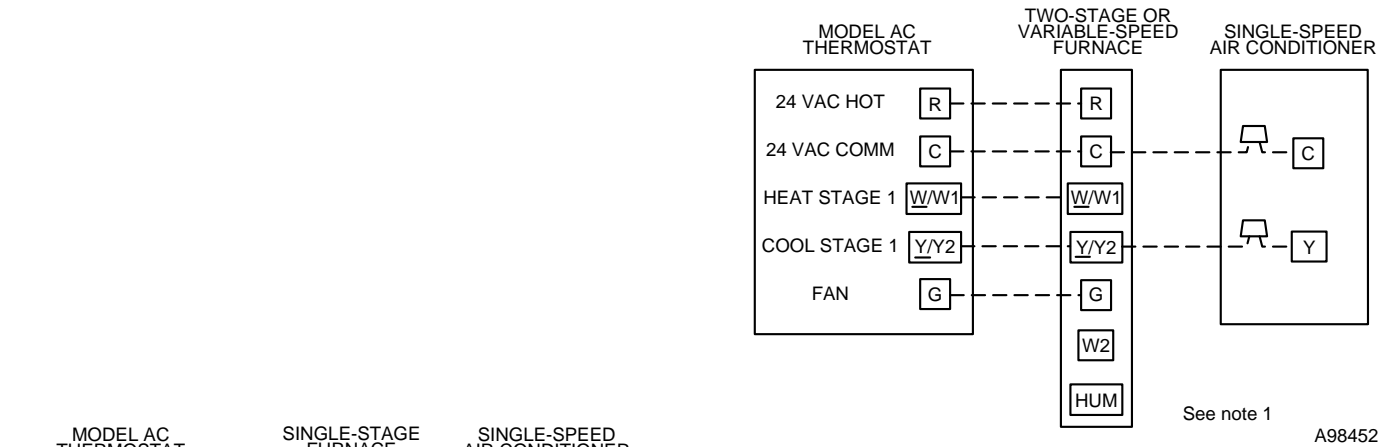
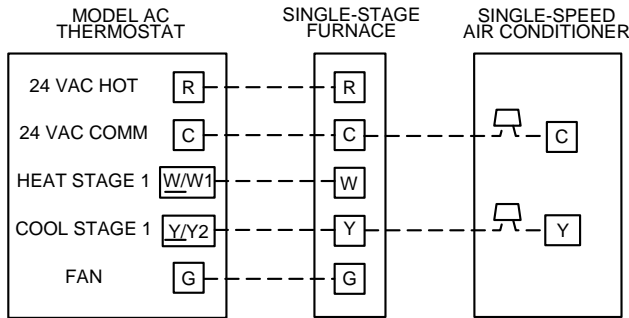**Fig. 3—Single-Speed Air Conditioner with 2-Stage or Variable-Speed Furnace**
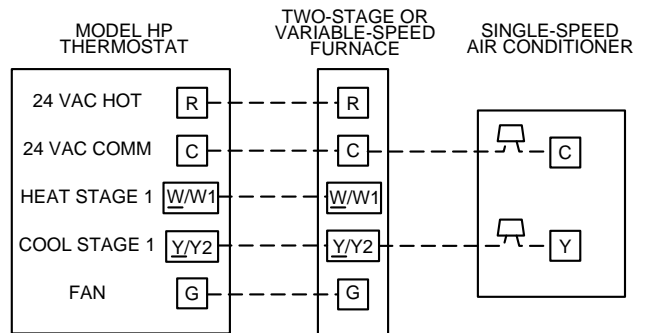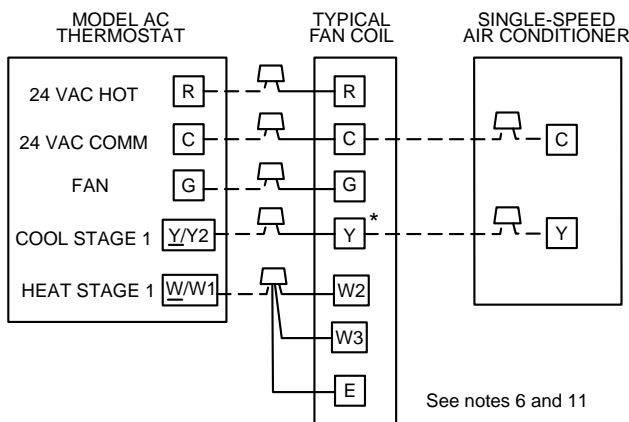

Fig. 2—Single-Speed Air Conditioner with Single-Stage Furnace

Fig 4—Single-Speed Air Conditioner with Typical Fan Coil

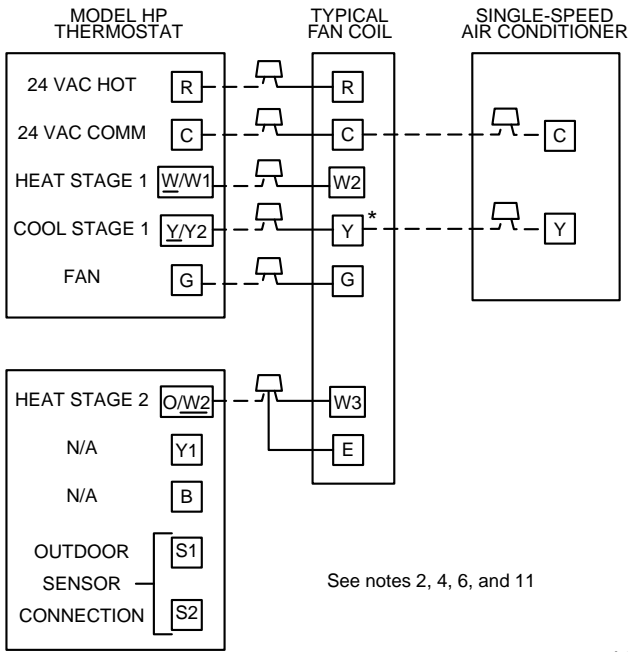**Fig. 5—Single-Speed Air Conditioner with 2-Stage or Variable-Speed Furnace**

5

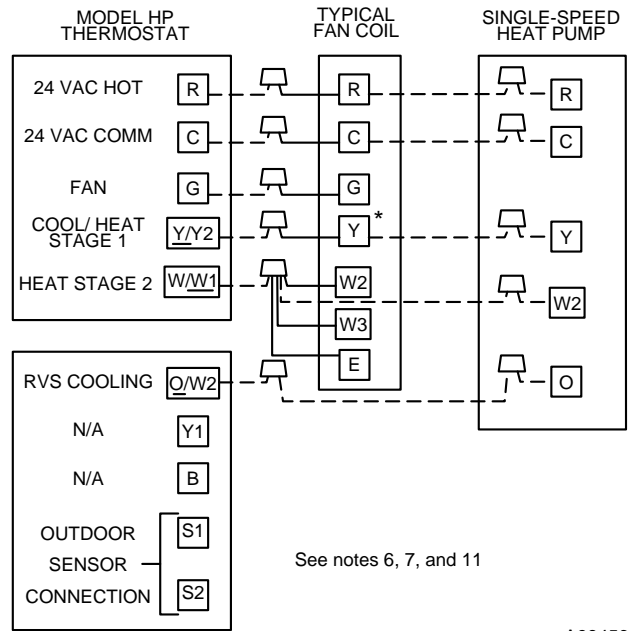**MODEL HP THERMOSTAT** — **TYPICAL FAN COIL** — **SINGLE-SPEED AIR CONDITIONER**

24 VAC HOT — R — R
24 VAC COMM — C — C — C
HEAT STAGE 1 — W/W1 — W2
COOL STAGE 1 — Y/Y2 — Y * — Y
FAN — G — G

HEAT STAGE 2 — O/W2 — W3
N/A — Y1 — E
N/A — B
OUTDOOR SENSOR CONNECTION — S1 / S2

See notes 2, 4, 6, and 11

A98455

→ **Fig. 6—Single-Speed Air Conditioner with Typical Fan Coil**

MODEL HP THERMOSTAT — **TYPICAL FAN COIL** — **SINGLE-SPEED HEAT PUMP**

24 VAC HOT — R — R — R
24 VAC COMM — C — C — C
FAN — G — G
COOL/ HEAT STAGE 1 — Y/Y2 — Y * — Y
HEAT STAGE 2 — W/W1 — W2 — W2
— W3
RVS COOLING — O/W2 — E — O
N/A — Y1
N/A — B
OUTDOOR SENSOR CONNECTION — S1 / S2

See notes 6, 7, and 11

A98456

→ **Fig. 7—Single-Speed Heat Pump with Typical Fan Coil**

MODEL 2S THERMOSTAT — **SINGLE-STAGE FURNACE** — **TWO-SPEED AIR CONDITIONER**

24 VAC HOT — R — R — R
24 VAC COMM — C — C — C
HEAT STAGE 1 — W/W1 — W
COOL STAGE 2 — Y/Y2 — Y — Y2
FAN — G — G

N/A — O/W2
COOL STAGE 1 — Y1 — Y1
N/A — B
OUTDOOR SENSOR CONNECTION — S1 / S2

See notes 2, 5, and 8

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→ **Fig. 8—Two-Speed Air Conditioner with Single-Stage Furnace**

MODEL 2S THERMOSTAT — **TWO-STAGE OR VARIABLE-SPEED FURNACE** — **TWO-SPEED AIR CONDITIONER**

24 VAC HOT — R — R — R
24 VAC COMM — C — C — C
HEAT STAGE 1 — W/W1 — W/W1
COOL STAGE 2 — Y/Y2 — Y/Y2 — Y2
FAN — G — G

HEAT STAGE 2 — O/W2 — W2
COOL STAGE 1 — Y1 — Y1 * — Y1
N/A — B — HUM
OUTDOOR SENSOR CONNECTION — S1 / S2

See notes 2, 3, 6, and 8

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→ **Fig. 9—Two-Speed Air Conditioner with 2-Stage or Variable-Speed Furnace**

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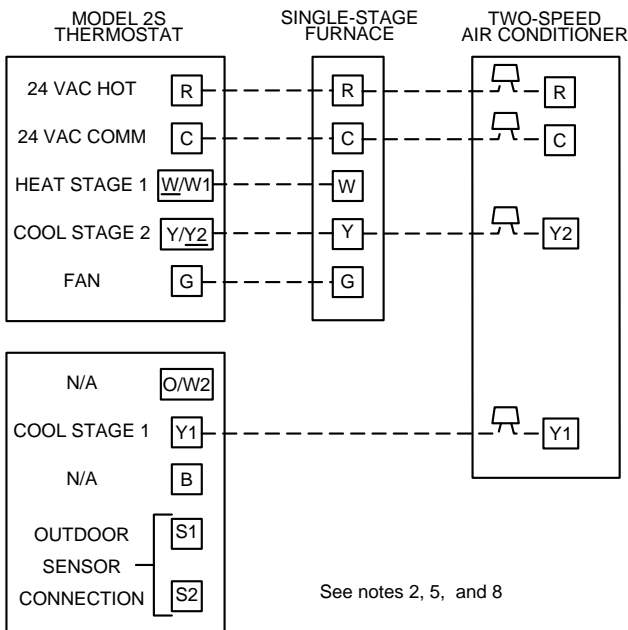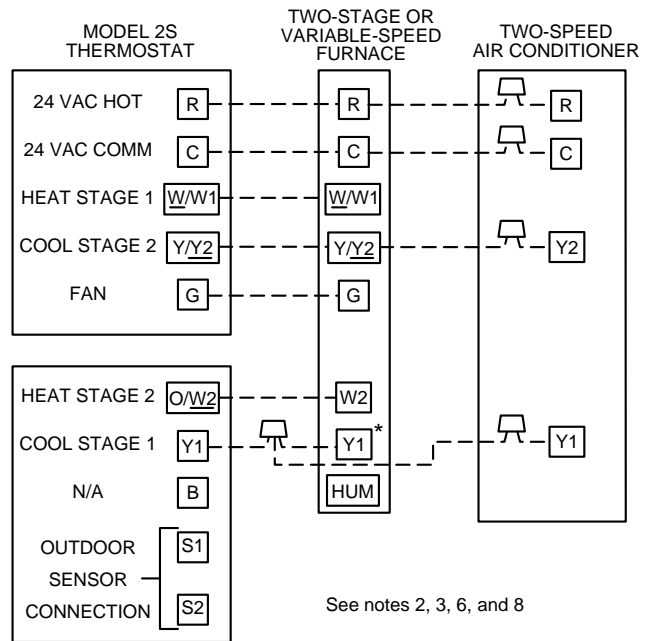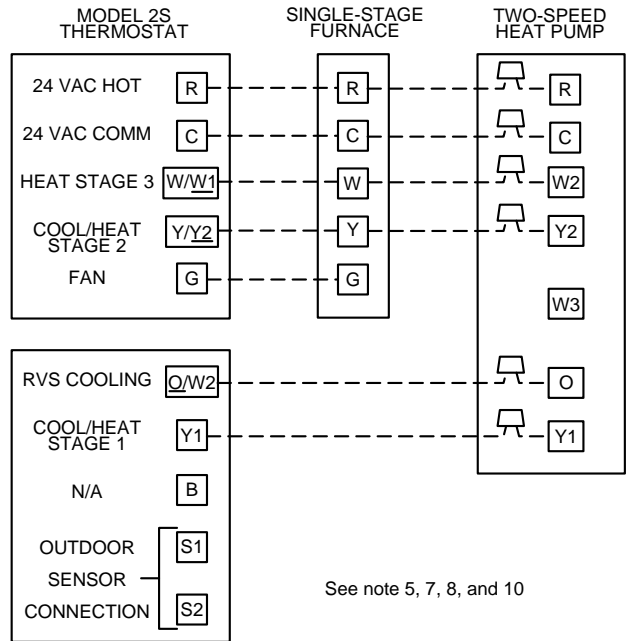**Fig. 10—Two-Speed Air Conditioner with Typical Fan Coil**

MODEL 2S THERMOSTAT — TYPICAL FAN COIL — TWO-SPEED AIR CONDITIONER

24 VAC HOT — R — R — R
24 VAC COMM — C — C — C
HEAT STAGE 1 — W/W1 — W2
COOL STAGE 2 — Y/Y2 — Y * — Y2
FAN — G — G

HEAT STAGE 2 — O/W2 — W3
COOL STAGE 1 — Y1 — E
N/A — B — Y1

OUTDOOR SENSOR CONNECTION — S1 — S2

See notes 2, 4, 5, 6, 8, and 11

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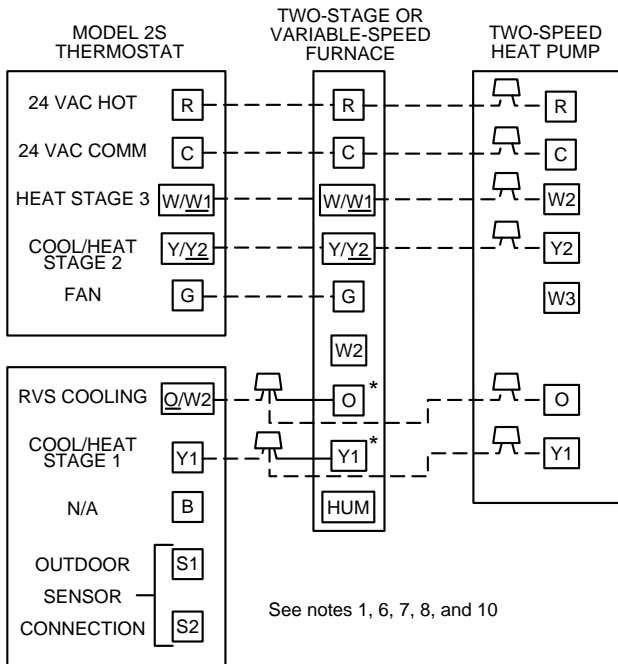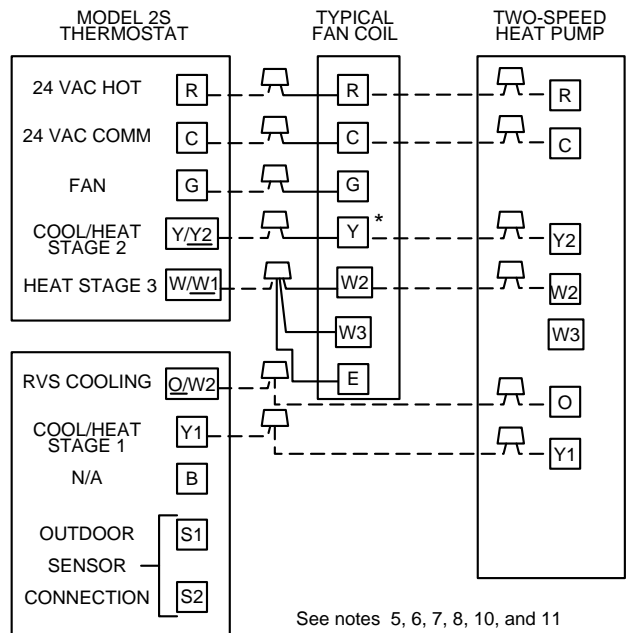
→ **Fig. 10—Two-Speed Air Conditioner with Typical Fan Coil**

Fig. 11—Two-Speed Heat Pump with Single-Stage Furnace

MODEL 2S THERMOSTAT — SINGLE-STAGE FURNACE — TWO-SPEED HEAT PUMP

24 VAC HOT — R — R — R
24 VAC COMM — C — C — C
HEAT STAGE 3 — W/W1 — W — W2
COOL/HEAT STAGE 2 — Y/Y2 — Y — Y2
FAN — G — G — W3

RVS COOLING — O/W2 — O
COOL/HEAT STAGE 1 — Y1 — Y1
N/A — B

OUTDOOR SENSOR CONNECTION — S1 — S2

See note 5, 7, 8, and 10

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→ **Fig. 11—Two-Speed Heat Pump with Single-Stage Furnace**

Fig. 12—Two-Speed Heat Pump with 2-Stage or Variable-Speed Furnace

MODEL 2S THERMOSTAT — TWO-STAGE OR VARIABLE-SPEED FURNACE — TWO-SPEED HEAT PUMP

24 VAC HOT — R — R — R
24 VAC COMM — C — C — C
HEAT STAGE 3 — W/W1 — W/W1 — W2
COOL/HEAT STAGE 2 — Y/Y2 — Y/Y2 — Y2
FAN — G — G — W3
— W2

RVS COOLING — O/W2 — O *
COOL/HEAT STAGE 1 — Y1 — Y1 *
N/A — B — HUM
— O
— Y1

OUTDOOR SENSOR CONNECTION — S1 — S2

See notes 1, 6, 7, 8, and 10

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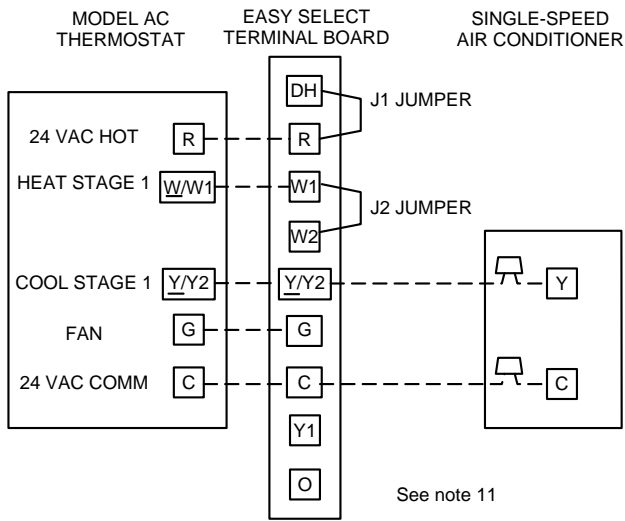
→ **Fig. 12—Two-Speed Heat Pump with 2-Stage or Variable-Speed Furnace**

Fig. 13—Two-Speed Heat Pump with Typical Fan Coil

MODEL 2S THERMOSTAT — TYPICAL FAN COIL — TWO-SPEED HEAT PUMP

24 VAC HOT — R — R — R
24 VAC COMM — C — C — C
FAN — G — G
COOL/HEAT STAGE 2 — Y/Y2 — Y * — Y2
HEAT STAGE 3 — W/W1 — W2 — W2
— W3 — W3

RVS COOLING — O/W2 — E — O
COOL/HEAT STAGE 1 — Y1 — Y1
N/A — B

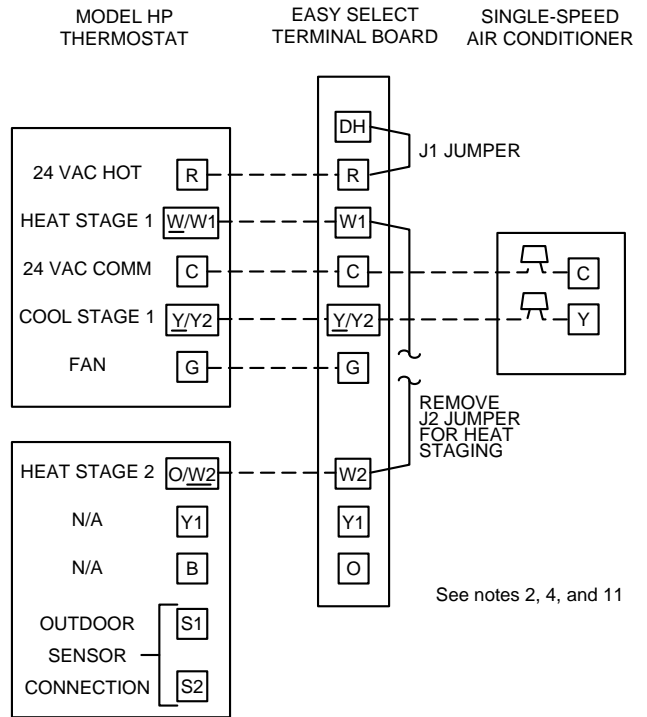OUTDOOR SENSOR CONNECTION — S1 — S2

See notes 5, 6, 7, 8, 10, and 11

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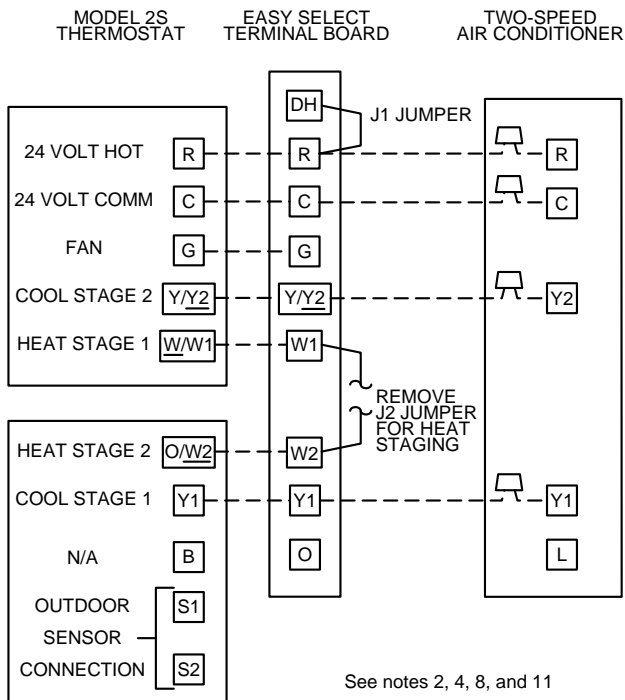→ **Fig. 13—Two-Speed Heat Pump with Typical Fan Coil**

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→ **Fig. 14—Single-Speed Air Conditioner with Variable-Speed (FK4C, FV4A, 40FKA) Fan Coil**
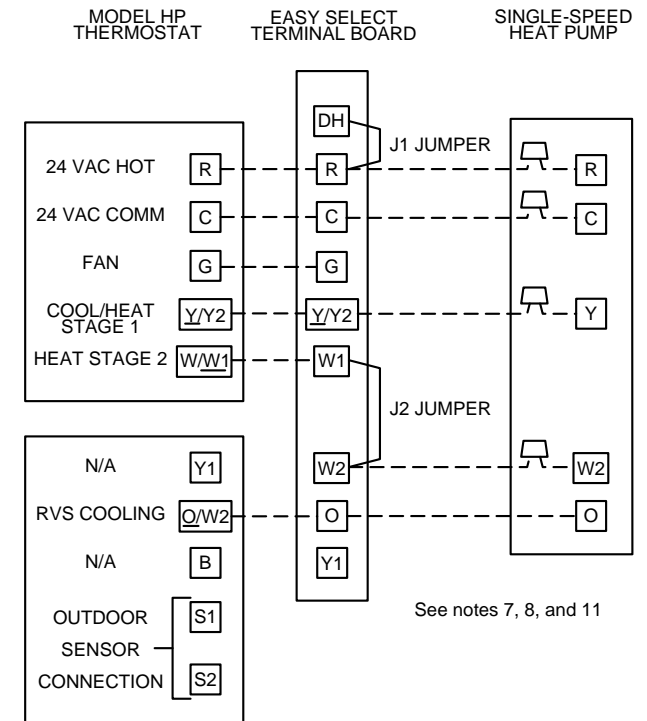
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→ **Fig. 15—Single-Speed Air Conditioner with Variable-Speed (FK4C, FV4A, 40FKA) Fan Coil**
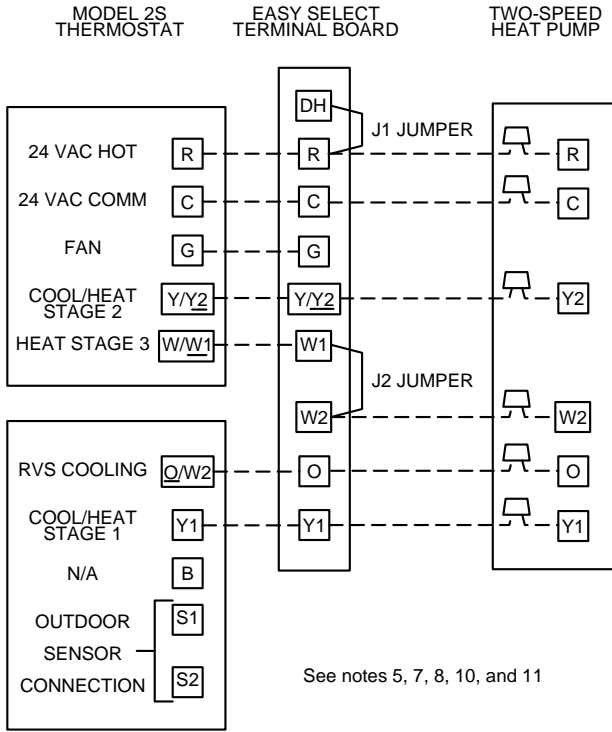
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→ **Fig. 16—Two-Speed Air Conditioner with Variable-Speed (FK4C, FV4A, 40FKA) Fan Coil**
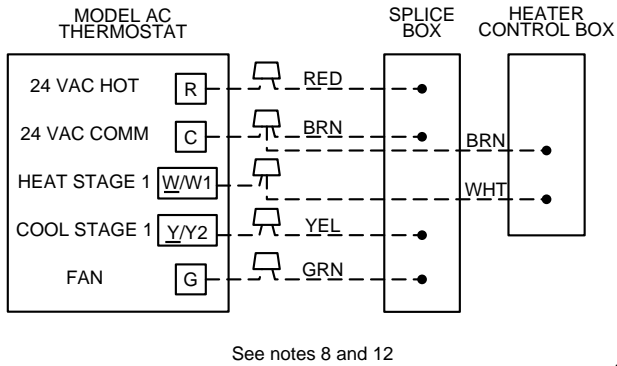
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→ **Fig. 17—Single-Speed Heat Pump with Variable-Speed (FK4C, FV4A, 40FKA) Fan Coil**
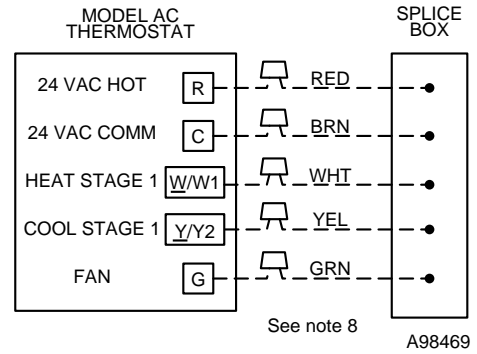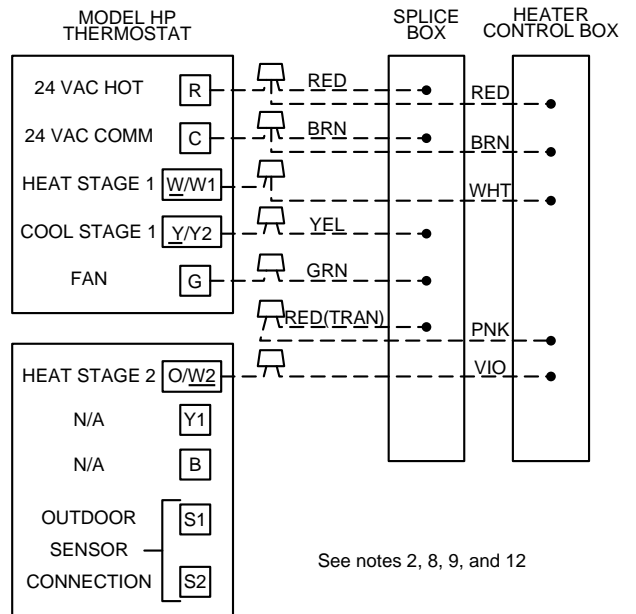
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8

Fig. 18

MODEL 2S THERMOSTAT | EASY SELECT TERMINAL BOARD | TWO-SPEED HEAT PUMP

DH

24 VAC HOT — R — R — J1 JUMPER — R
24 VAC COMM — C — C — C
FAN — G — G
COOL/HEAT STAGE 2 — Y/Y2 — Y/Y2 — Y2
HEAT STAGE 3 — W/W1 — W1

J2 JUMPER

W2 — W2
RVS COOLING — O/W2 — O — O
COOL/HEAT STAGE 1 — Y1 — Y1 — Y1
N/A — B
OUTDOOR SENSOR CONNECTION — S1 — S2

See notes 5, 7, 8, 10, and 11

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→ **Fig. 18—Two-Speed Heat Pump with Variable-Speed (FK4C, FV4A, 40FKA) Fan Coil**

Fig. 19

MODEL AC THERMOSTAT | SPLICE BOX

24 VAC HOT — R — RED
24 VAC COMM — C — BRN
HEAT STAGE 1 — W/W1 — WHT
COOL STAGE 1 — Y/Y2 — YEL
FAN — G — GRN

See note 8

A98469

→ **Fig. 19—Single-Speed Packaged Air Conditioner with Single-Stage Gas Furnace (48SS, SX)**

Fig. 20

MODEL AC THERMOSTAT | SPLICE BOX | HEATER CONTROL BOX

24 VAC HOT — R — RED
24 VAC COMM — C — BRN — BRN
HEAT STAGE 1 — W/W1 — WHT
COOL STAGE 1 — Y/Y2 — YEL
FAN — G — GRN

See notes 8 and 12

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→ **Fig. 20—Single-Speed Packaged Air Conditioner with Single-Speed Electric Heat (50SS, SX, ZP)**

Fig. 21

MODEL HP THERMOSTAT | SPLICE BOX | HEATER CONTROL BOX

24 VAC HOT — R — RED — RED
24 VAC COMM — C — BRN — BRN
HEAT STAGE 1 — W/W1 — WHT
COOL STAGE 1 — Y/Y2 — YEL
FAN — G — GRN

RED(TRAN) — PNK

HEAT STAGE 2 — O/W2 — VIO
N/A — Y1
N/A — B
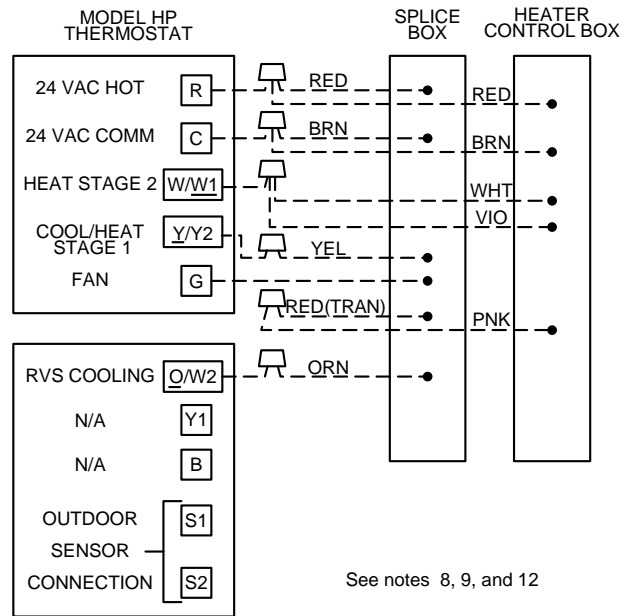OUTDOOR SENSOR CONNECTION — S1 — S2

See notes 2, 8, 9, and 12

A98471

→ **Fig. 21—Single-Speed Packaged Air Conditioner with 2-Stage Electric Heat (50SS, SX, ZP)**
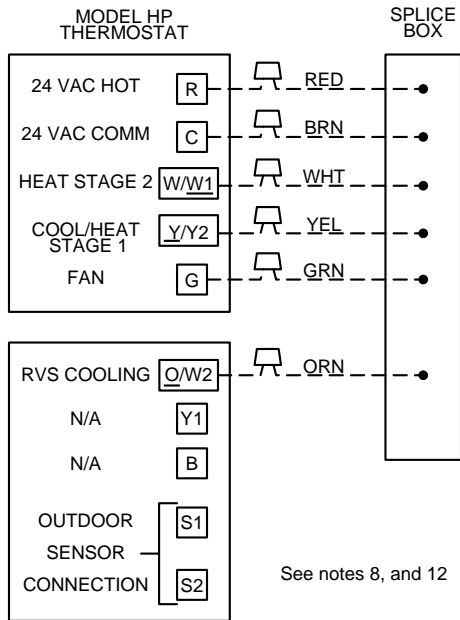
9
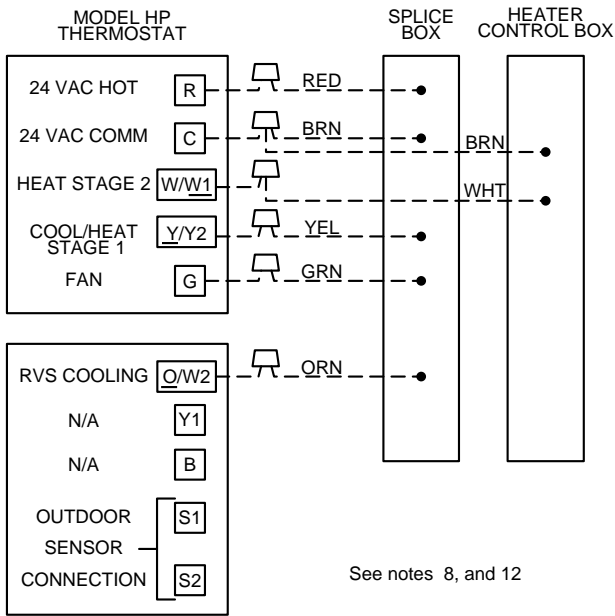
A98472

→ **Fig. 22—Single-Speed Packaged Heat Pump with Single-Stage Electric Heat (50HS, HX, ZH)**

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→ **Fig. 23—Single-speed Packaged Heat Pump with 2-Stage Electric Heat (50HS, HX, ZH)**

→ WIRING DIAGRAM NOTES:

1. Furnace must control its own second-stage heat operation via furnace control algorithm. Refer to indoor equipment Installation Instructions for proper setup.

2. Cut jumper R19 to convert thermostat to air conditioning operation.

3. As an option, lock the furnace into low-fire operation and let O/W2 control high-fire operation. Refer to indoor equipment Installation Instructions for proper setup.

4. O/W2 can control second-stage heat. Refer to indoor equipment Installation Instructions for proper setup.

5. Refer to outdoor equipment Installation Instructions for latent kit requirements.

6. Terminals marked with * may not be present on equipment.

7. O/W2 energizes reversing valve in cooling.

8. Refer to outdoor equipment Installation Instructions for proper setup.

9. Omit red and pink wires from diagram when wiring a 50ZP, ZH with 2-stage heaters.

10. Select the "ZONE" position on the 2-speed heat pump control board.

11. Refer to fan coil Installation Instructions for proper wiring.

12. Program thermostat to bring on G (fan) with any W (heat) selection. See section under "Set Thermostat Configuration."

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→ **Fig. 24—Single-Speed Packaged Heat Pump with Single-Stage Gas Furnace (48HX)**

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→ OPERATIONAL INFORMATION

Five-minute Compressor Timeguard

This timer prevents the compressor from starting unless it has been off for at least 5 minutes. It can be defeated for 1 cycle by simultaneously pressing the FAN mode button and the INCREASE TEMPERATURE button.

Fifteen-minute Cycle Timer

This timer prevents the start of a heating or cooling cycle until at least 15 minutes after the last start of the same cycle. Its function is to assure that equipment is not cycled more than 4 times per hr. This timer is defeated for 1 cycle when the desired temperature is manually changed. It can also be defeated for 1 cycle by simultaneously pressing the FAN mode button and the INCREASE TEMPERATURE button.

Fifteen-minute Staging Timer

In multistage heating or cooling, this timer prevents any higher stage from turning on until the preceding stage has been on for 15 minutes. This timer is defeated if the temperature error is greater than 5°F (usually due to a large change in desired temperature).

Three-minute Minimum On Time

In normal operation, when a stage turns on, it will not turn off for a minimum of 3 minutes.

Heat/Cool Set Points (Desired Temperatures)

A minimum difference of 2°F is enforced between heating and cooling set points. This is done by allowing one setting to "push" the other, to maintain this difference.

Auto Changeover

When the auto changeover mode is selected, a change from heat to cool (or vice versa) will not occur until an opposite mode demand has existed for 20 minutes. If the set point is changed, the 20 minute requirement is deleted. Auto mode may be disabled.

Emergency Heat Mode

When thermostat is configured as a heat pump and emergency heat mode is selected, all Y signals are locked out and W becomes energized upon a call for heat.

Heat On and Cool On Icons

When a heating or cooling demand exists, the HEAT ON or COOL ON icon will either remain on or flash. If flashing, the equipment is temporarily prevented from turning on by one of the timers (see above). While the icon remains on without flashing, the equipment is on.

Power On Check

When AC power is first applied, all segments of the display are turned on for a few sec. Following this, the temperature display indicates the model/configuration via the following 2 digit code:

AC—1-speed air conditioner, HP—1-speed heat pump, A2—2-speed air conditioner, H2—2-speed heat pump.

Error Codes

-- — If the thermostat cannot properly read room temperature, the display will indicate -- (2 dashes) and all outputs (except the fan if on) will turn off. This is to prevent operation of the equipment if the thermostat has failed.

E2 — If the AC line voltage drops below a minimum (brownout) level, all outputs are turned off and the display indicates E2. This condition will remain for 15 sec after proper line voltage is restored. If the AC line voltage disappears completely, the display will immediately go blank.

E3 — If the thermostat cannot properly read outdoor temperature, and it is needed for proper operation (Heat pump system and Option 8 is not set to OF), E3 will flash alternately with room temperature.

→ Thermostat Troubleshooting

SYMPTOM	WHAT TO CHECK
Blank LCD	Check for 24vac between R and C at terminal connections. Both R and C must be connected for proper operation.
"--" (2 dashes) on temperature display	Temperatrue sensor reading out of range. Check sensor for damage. If recycling power does not clear display, thermostat should be replaced.
"E2" on temperature display	Brownout condition or too low of voltage to thermostat. Double check wiring and check for 24vac between R and C. E2 will clear 15 sec after proper voltage is restored.
"E3" on temperature display	The outdoor temperature sensor is open, not connected, or shorted.
"FILTER" on temperature display	After the selected number of hour of blower operation "FILTER" will display on LCD. This is to remind the homeowner to "check" the filter. Press RESET FILTER button to clear display and reset timer to 0.
Cooling will not come on	Select COOL mode. Set desired temperature to 10°F below room temperature. Simultaneously press FAN and INCREASE TEMPERATURE buttons to defeat timers. Check for COOL ON icon and 24vac at Y (first-stage) terminal. If present, thermostat is OK and problem is with equipment or wiring. If not present, replace thermostat.
Heating will not come on	Select HEAT mode. Set desired temperature to 10°F above room temperature. Simultaneously press FAN and INCREASE TEMPERATURE buttons to defeat timers. Check for HEAT ON and 24vac at Y (first-stage) terminal (with heat pump) or W/W1 (with air conditioner) terminal. If present, thermostat is OK and problem is with equipment or wiring. If not present, replace thermostat.

NON-PROGRAMMABLE THERMOSTAT CONFIGURATION RECORD

Date _____

Owner/Operator _____ Thermostat Model No. _____

A) Hardware Configuration

_____ R19 Resistor located on Model HP and 2S only. (Uncut = Enable Heat Pump Operation, Cut = Air Conditioner Operation)

_____ No R19 Resistor present. (Model AC thermostat only)

B) Mode Settings

_____ Mode (Off, Heat, Cool, Auto, Eheat)
_____ Heating Set Point Value
_____ Cooling Set Point Value
_____ Fan (Auto or On)

C) Configuration Options

1 _____ Anticipator (1-9: factory default = 3)
2 _____ Clean Filter Timer (Off or 1-9: factory default = 2)
3 _____ Fahrenheit or Celsius (F or C: factory default = F)
4 _____ Fan On with W (Off or On: factory default = Off)
5-6 _____ N/A
7 _____ Zoning Selection (Off or On: factory default = Off)
8 _____ Auxiliary Heat Lockout (Off or 5-55 F: factory default = Off)
9-12 _____ N/A
13 _____ Room Temperature Offset (-5 to +5: factory default = 0)
14 _____ N/A
15 _____ Enable Auto Mode (Off or On: factory default = On)

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