

REMOTE FLAME SENSOR KIT — (62-24044-71)

INSTALLATION INSTRUCTIONS

NOTES:

- 1) THESE INSTRUCTIONS ARE INTENDED FOR A QUALIFIED SERVICE PERSON AND MUST BE READ BEFORE STARTING TO INSTALL THE KIT.
- 2) THIS KIT IS “ONLY” FOR HOT SURFACE IGNITION UNITS
- 3) FOR UNITS THAT HAVE OR NEED THE SENSOR CONNECTED DIRECTLY TO PIN #7 ON THE CONTROL BOARD AND REQUIRE (2) ORANGE WIRES, PLEASE REFER TO THE LAST (2) PAGES OF THESE INSTRUCTIONS. ALL OTHER UNITS USE THE FIRST (6) PAGES. THE CONTROL BOARDS THAT UTILIZE PIN #7 OR HAVE DIRECT FLAME SENSE ARE THE FOLLOWING:

62-24044-01 — H/W S9201E-2001
62-24044-81 — H/W S9201E-2001
62-24044-91 — H/W S9201E-2001
62-24045-01 — UTEC 1012-832
62-24046-01 — H/W S9201E-1029
62-24084-01 — UTEC 1012-920

62-24084-02 — UTEC 1012-920A
62-24084-71 — UTEC 1012-920
62-24084-82 — UTEC 1012-920A
62-24084-91 — UTEC 1012-920
62-24084-92 — UTEC 1012-920A

WARNING: FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN IMPROPER INSTALLATION, ADJUSTMENT, SERVICE OR MAINTENANCE POSSIBLY CAUSING FIRE, ELECTRICAL SHOCK, PERSONAL INJURY OR PROPERTY DAMAGE.

The remote flame sense kit consists of the following components. The tools below are needed to install the kit on the 34” furnace and any other hot surface ignition furnace with a “ribbon burner.”

RECOMMENDED TOOLS

1 Digital Voltmeter
1 Standard Plier
1 1/4” Ratchet
1 1/4” Socket
1 Electric Drill
1 1/2” Drill Bit
1 1/4” Nut Driver
1 Flame Sensing
Switch Box
(AS-21820-02)

KIT COMPONENTS

1 Inshot Burner Bracket	(AE-57974-01)
1 Ribbon Burner Bracket	(AE-57973-01)
1 Threaded U-Bolt	(63-23550-01)
3 Sheet Metal Screws	(63-22153-01)
2 Wing Nuts	(63-23550-03)
2 Lock Washers	(63-23550-02)
1 Remote Sensor	(62-23543-01)
1 Wire Splice	(45-23548-01)
1 Remote Sensor Wire	(AS-58493-02)
1 Sensor Connection Label	(90-23652-01)
1 “NOTICE” Label	(92-22205-18)
1 Wire Strain Relief	(45-17055-06)
2 Orange Wires	(See Note)
4 Plastic Ties	(64-17606-03)

NOTE: If orange wires only are needed, order 62-24044-71.

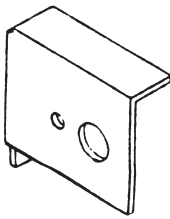
WARNING: THIS IS A SAFETY DEVICE AND ALL CONTROLS SHOULD BE CHECKED AFTER THE REPAIR IS MADE. THE FURNACE SHOULD ALSO BE RUN THROUGH A NORMAL CYCLE BEFORE LEAVING THE JOB SITE. CAUTION SHOULD BE TAKEN TO FOLLOW THESE INSTRUCTIONS. IF INSTRUCTIONS ARE NOT UNDERSTOOD, CONTACT YOUR LOCAL DISTRIBUTOR OR SERVICE REPRESENTATIVE.

34" LOW PROFILE FURNACE WITH "INSHOT" BURNERS

1. Turn Off Electrical Power To The Furnace Before Installing The Sensor Mounting Bracket, Sensor, Or Splicing Into The Igniter Wiring.
2. Remove all necessary covers and panels to gain access to the burners.

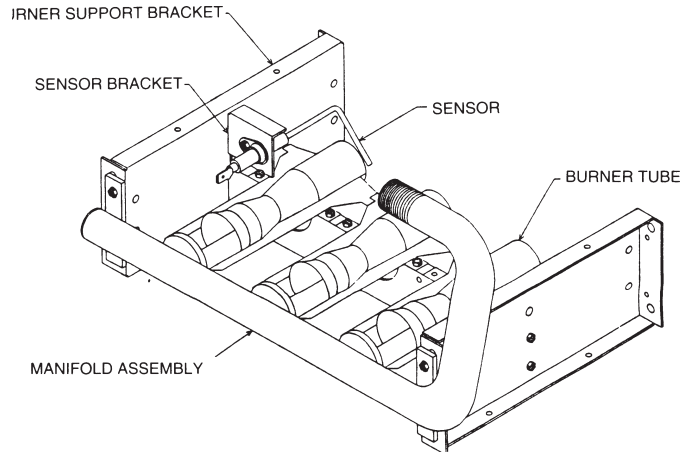
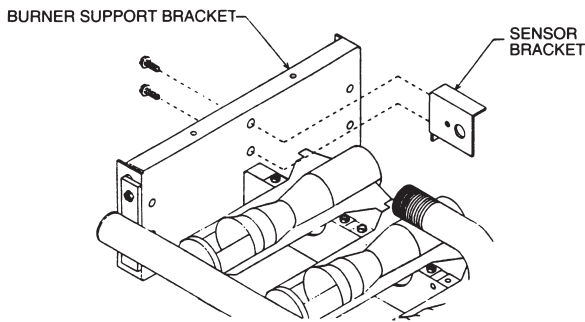
NOTE: THIS KIT IS DESIGNED TO BE INSTALLED WITH THE BURNERS AND GAS ASSEMBLY IN PLACE.

3. The 34" Low Profile furnace uses "inshot" bracket (AE-57974-01) with two holes on the front, see bracket below.



**Inshot Burner Bracket
AE-57974-01**

4. The sensor bracket mounts to the burner as shown below. Position the bracket on the appropriate side of the burner support and align the two holes. Note: The flat flange on the bracket must be AWAY FROM THE BURNERS.
5. Insert the screws through the holes in the burner bracket and tighten with a ratchet wrench and 1/4" socket. See the figure below.



34" Furnace Burner Assembly

6. Insert the sensor (62-23543-01) through the hole in the bracket. Use a 1/4" nut driver to anchor the sensor with one of the sheet metal screws provided. The sensor rod should pass diagonally in front of the burner, as shown. See the figure above.

WARNING: DON'T ALLOW THE SENSOR ROD TO TOUCH ANY FURNACE COMPONENT.

7. Attach the remote sensor "NOTICE" label (Part No. 92-22205-18) in a prominent location on the outside of the burner compartment door.
8. Attach the sensor connection label (Part No. 92-23652-01) near the existing wiring diagram on the furnace.
9. NOW, go to the SENSOR SPLICING INSTRUCTIONS ON PAGE 5 for additional instructions to complete the installation of this kit.

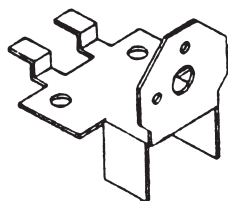
FURNACES WITH RIBBON BURNERS AND HOT SURFACE IGNITION

1. Turn Off Electrical Power To The Furnace Before Installing The Sensor Mounting Bracket, Sensor, Or Splicing Into The Igniter Wiring.
2. Remove all necessary covers and panels to gain access to the burners.

NOTE: THIS KIT IS DESIGNED TO BE INSTALLED WITH THE BURNERS AND GAS ASSEMBLY IN PLACE

WARNING: DON'T ATTEMPT TO MOUNT THE SENSOR ON THE SAME BURNER AS THE HOT SURFACE IGNITER!!!

3. These furnaces use ribbon bracket (AE-57973-01) with legs, see bracket below.



**Ribbon Burner Bracket
AE-57973-01**

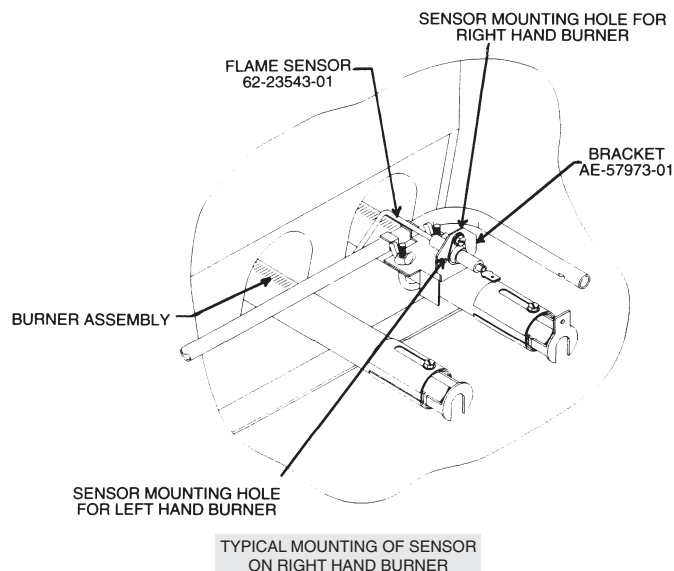
4. This bracket mounts on the end burner, opposite the hot surface igniter. Position the bracket so the legs straddle the burner.

NOTE: Let the two “z” tabs on the bracket rest on top and against the pilot carryover tube.

5. Push the “U-bolt” up from the bottom of the burner through the holes in the bracket and secure with lock washers and wing nuts provided.
6. Insert the sensor (62-23543-01) through the hole in the bracket. Use a 1/4” nut driver to anchor the sensor with one of the sheet metal screws provided. The sensor rod should point down diagonally and toward the adjacent burner.

WARNING: DON'T ALLOW THE SENSOR ROD TO TOUCH ANY FURNACE COMPONENT.

7. Align the screw hole on the sensor mount with the appropriate screw hole in the sensor bracket. Use a 1/4” nut driver to anchor the sensor with one of the sheet metal screws provided. See figure below.



Furnace Burner Assembly

8. Attach the remote sense “NOTICE” label (Part No. 92-22205-18) in a prominent location on the outside of the burner compartment door.
9. Attach the sensor connection label (Part No. 90-23652-01) near the existing wiring diagram on the furnace.
10. NOW, go to the SENSOR SPLICING INSTRUCTIONS ON PAGE 5 for additional instructions to complete the installation of this kit.

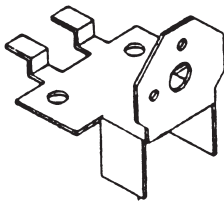
90 PLUS FURNACES WITH RIBBON BURNERS AND HOT SURFACE IGNITION

1. Turn Off Electrical Power To The Furnace Before Installing The Sensor Mounting Bracket, Sensor, Or Splicing Into The Igniter Wiring.
2. Remove the top cover on the compartment to gain access to the burners.

NOTE: THIS KIT IS DESIGNED TO BE INSTALLED WITH THE BURNERS AND GAS ASSEMBLY IN PLACE.

WARNING: DON'T ATTEMPT TO MOUNT THE SENSOR ON THE SAME BURNER AS THE HOT SURFACE IGNITER!!!

3. These furnaces use ribbon bracket (AE-57973-01) with legs, see bracket below.



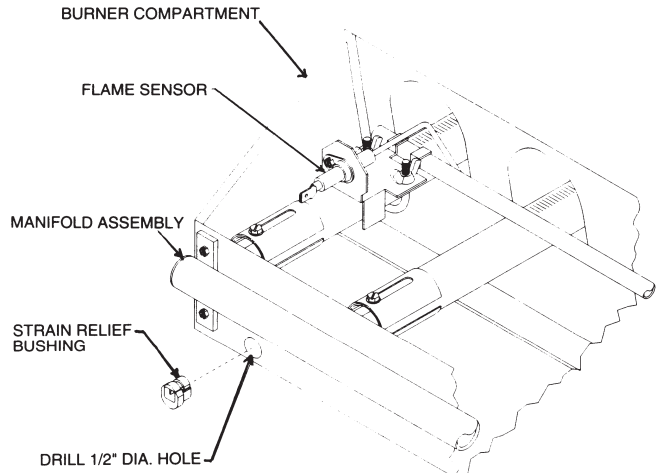
**Ribbon Burner Bracket
AE-57973-01**

4. This bracket mounts on the end burner, opposite the hot surface igniter. Position the bracket so the legs straddle the burner.

NOTE: Let the two “z” tabs on the bracket rest on top and against the pilot carryover tube.

5. Push the “U-bolt” up from the bottom of the burner through the holes in the bracket and secure with lock washers and wing nuts provided.
6. Insert the sensor (62-23543-01) through the hole in the bracket. The sensor rod should point down diagonally and toward the adjacent burner.

7. Align the screw hole on the sensor mount with the appropriate screw hole in the sensor bracket. Use a 1/4” nut driver to anchor the sensor with one of the sheet metal screws provided. **Don't allow the sensor to touch any furnace component.** See figure below.



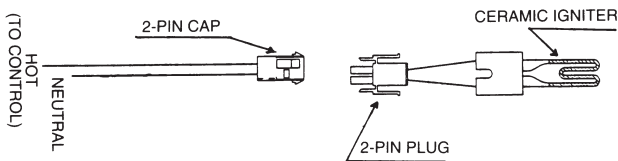
Furnace Burner Assembly

8. Attach the remote sense “NOTICE” label (Part No. 92-22205-18) in a prominent location on the outside of the burner compartment door.
9. Attach the sensor connection label (Part No. 90-23652-01) near the existing wiring diagram on the furnace.
10. Drill a 1/2” hole through the front of the bottom burner compartment cover below the gas manifold. To prevent overdrilling the 1/2” hole, it is suggested that a 1/8” pilot hole be drilled first. See burner assembly above.
11. Insert female 1/4” connector and wire through 1/2” dia. hole and attach to male 1/4” connector of sensor. Install strain relief bushing to secure wire.
12. NOW, go to the SENSOR SPLICING INSTRUCTIONS ON PAGE 5 for additional instructions to complete the installation of this kit.

SENSOR SPLICING INSTRUCTION

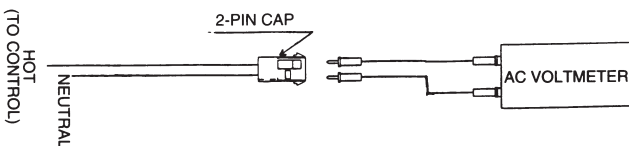
FIRST IDENTIFY THE HOT SURFACE IGNITER NEUTRAL WIRE!!!!!!

1. **WARNING:** Turn off the main electrical power to the furnace before beginning this part of the installation. Failure to do so may cause electrical shock or severe personal injury.
2. **Caution:** Be sure the hot surface igniter is cool before disconnecting it.
3. Disconnect the hot surface igniter from the wiring module at the 2-pin molex plug. See figure below.

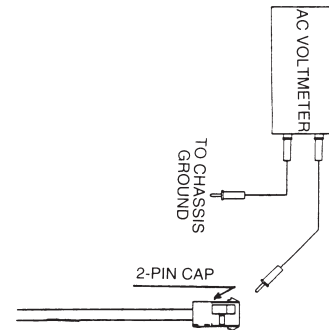


4. Verify that a good furnace chassis ground connection exists between the furnace and the main electrical service box.
5. DO NOT USE WIRE COLOR TO IDENTIFY THE NEUTRAL WIRE. Use an AC volt meter to identify the grounded neutral wire connecting the control module to the igniter molex junction plug as follows.

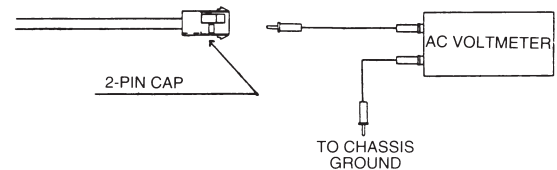
- A. Turn on the main electrical power to the furnace and call for heat at the room thermostat (or jumper R to W at the furnace control box).
- B. During the 34 second igniter warm-up period, measure the voltage at the molex 2-pin igniter cap. It should be 110-120 volts. See the figure below.



- C. During the 34 second igniter warm-up period, measure the voltage from one of the two pins in the molex cap to a chassis ground. See the figure below.



- D. While still during the 34 second igniter warm-up period, measure the voltage from the other pin to a chassis ground. See the figure below.



- E. During the 34 second igniter warm-up period, the wire measuring 115 volts to ground is the hot wire. The “grounded-neutral” wire should measure less than 2.0 volt to ground. The wire connecting to the 2-pin cap measuring less than 2.0 volt to ground is the neutral wire.

WARNING: IF THE NEUTRAL WIRE DOES NOT MEASURE LESS THAN 2.0 VOLTS TO GROUND, THE FURNACE GROUNDING SYSTEM MAY BE INADEQUATE AND NEEDS MODIFICATION. Have a licensed electrician determine if modifications are needed.

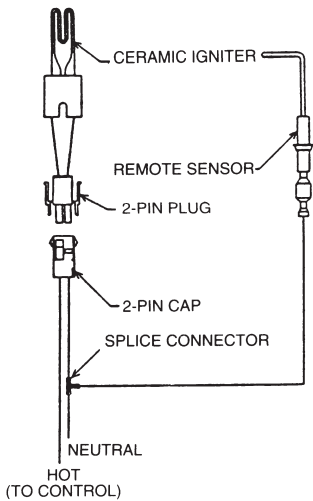
NEXT SPLICE THE SENSOR WIRE ONTO THE IGNITER NEUTRAL WIRE.

6. **WARNING: TURN OFF THE MAIN ELECTRICAL POWER TO THE FURNACE. FAILURE TO DO SO CAN CAUSE ELECTRICAL SHOCK, SEVERE PERSONAL INJURY OR PROPERTY DAMAGE.**

7. Attach the WIRE SPLICE to the neutral wire between the control module and the 2-pin molex cap (within the length of the sensor wire). When you are satisfied that the splice is properly positioned, then snap the plastic wire splice closed using a pair of pliers. This pierces the wire insulation and makes electrical contact with the conductor inside. **NOTE: DO NOT MAKE THIS CONNECTION DIRECTLY TO THE 5" IGNITER LEAD.**

8. Attach the male end of the sensor wire provided in the kit to the splice. Attach the other end of this wire to the sensor. [Please note, this connection has been made previously per 90 Plus instructions.] Keep the wire clear of any sharp metal edges or hot surfaces. Use the wire tie to secure the wire in the proper position. See the figure below.

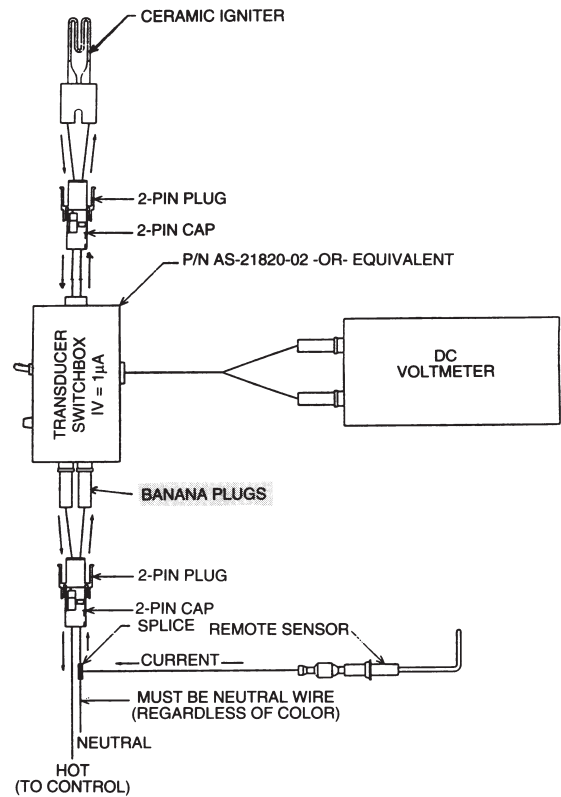
9. Measure the flame-sense current signal using the transducer switch box assembly (Part No. AS-21820-02). If negative flame current readings are observed, reverse the banana plugs at the transducer switch-box.



The flame-sense current signal should be at or above the corresponding minimum acceptable DC microamp values to prevent the control from shutting down. See table and figure below.

Control	Value
Robertshaw HS780	1.5
Honeywell S89	1.5
Honeywell S890	1.5
Honeywell S9201	1.5
UTEC 1012-823	1.5
UTEC 1012-830	1.0
UTEC 1012-831	1.0

If the readings fall below these values, another problem may exist.



10. Test the furnace through at least one operating cycle to ensure all components operate properly.

11. Replace all compartment covers and leave the furnace in its normal operating condition.

NOTE: On 90 Plus furnaces, it will be necessary to remove the burner holddown above the sensor before replacing the burner cover.

INSTALLATION INSTRUCTIONS FOR UNITS WITH CONTROL BOARDS SHOWN ON (PAGE 1) UTILIZING PIN #7.

WARNING

TURN OFF ELECTRICAL POWER TO THE FURNACE BEFORE BEGINNING ANY MAINTENANCE. FAILURE TO DO SO CAN CAUSE ELECTRICAL SHOCK RESULTING IN SEVERE PERSONAL INJURY OR DEATH.

1. Remove all necessary covers and panels to gain access to the burners.

NOTE: THIS KIT IS DESIGNED TO BE INSTALLED WITH BURNERS AND GAS ASSEMBLY IN PLACE.

2. The 34" Low Profile furnace uses "inshot" bracket (AE-57974-01) with two holes on the front, see bracket below.

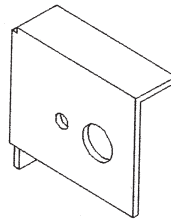


FIGURE 1

3. The sensor bracket mounts to the burner as shown in Figure 2. Position the bracket on the appropriate side of the burner support and align the two holes. NOTE: The flat flange on the bracket must be AWAY FROM THE BURNERS.

4. Insert the screws through the holes in the burner bracket and tighten with a ratchet wrench and 1/4 socket. See Figure 2.

5. Insert the sensor (62-23543-01) through the hole in the bracket. Use a 1/4" nut driver to anchor the sensor with one of the sheet metal screws provided. The sensor rod should pass diagonally in front of the burner, as shown. See Figure 3.

IMPORTANT: DO NOT ALLOW THE SENSOR ROD TO TOUCH ANY FURNACE COMPONENT.

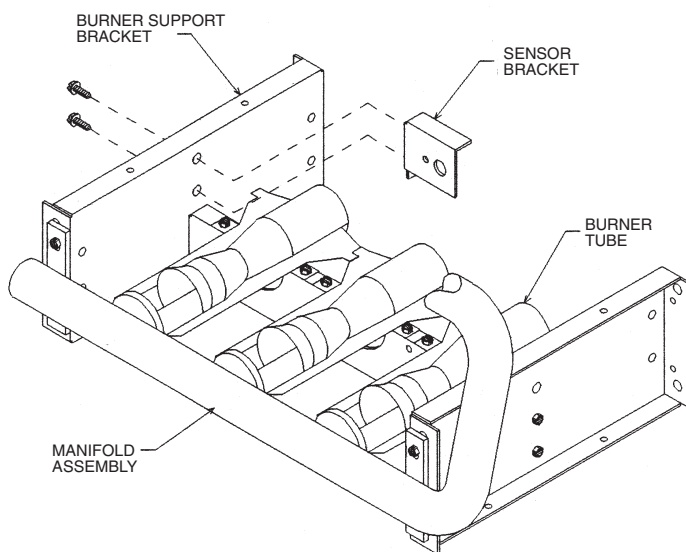


FIGURE 2

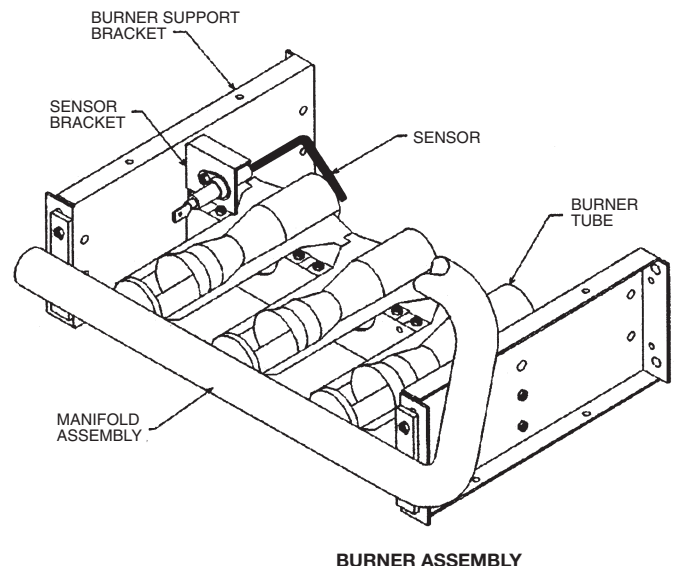


FIGURE 3

6. Insert the 19" orange wire in the corner socket between the red and blue wire. The quick connect end of this wire goes to the remote flame sensor. (See diagram below.)
7. Insert the ends of the 28" orange wire in the corner between red and blue wire of both plugs. (See diagram below.)
8. Stick the new wiring diagram label over the old wiring diagram located on the inside of the control box cover.
9. Stick the new troubleshooting guide over the old troubleshooting label located on the control box cover.

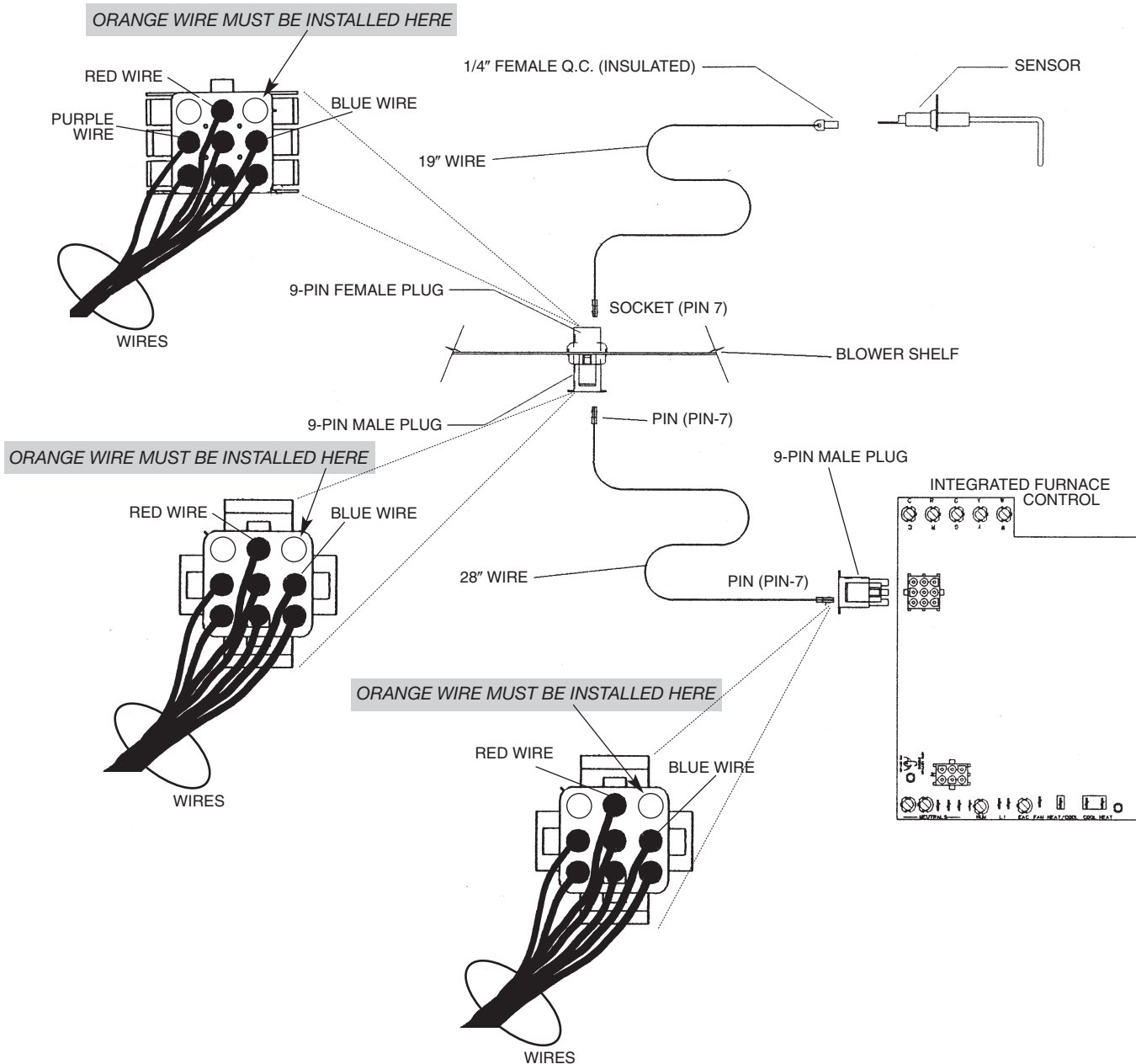


FIGURE 4. TYPICAL UPFLOW FURNACE