Installing Your Furnace

The following steps are needed for proper installation and safe operation of your furnace. If you have any doubts as to any requirements, always consult your local Heating or Plumbing Inspector, Building Department or Gas Utility Company regarding regulations, codes, or ordinances which apply to the installation of a vented wall furnace. Obtain professional help where needed.

The CHECK AND ADJUSTMENTS on page 21 are vital to the proper and safe operation of the furnace. Be sure they are done.

IMPORTANT

For satisfactory and trouble-free operation, be sure to:

1. Locate the furnace properly within the space to be heated.
2. Install the furnace in accordance with local codes or ordinances and instructions provided. In the absence of local codes or ordinances, install the furnace to conform with the current edition of the National Fuel Gas Code, NFPA 54, ANSI Z223.1/Canadian Installation Code, CAN/CGA B149.
3. Maintain minimum clearance: Floor 0 inches or ceiling 4 inches, side wall 4 inches. For exception to minimum side wall clearance, as shown on Page 8, Figs. 4, 5, 6 & 7.
4. Provide for adequate combustion air around vent cap on outside, see Fig. 2 and adequate air circulation around cabinet inside the open room.

Locating Wall Furnace & Thermostat

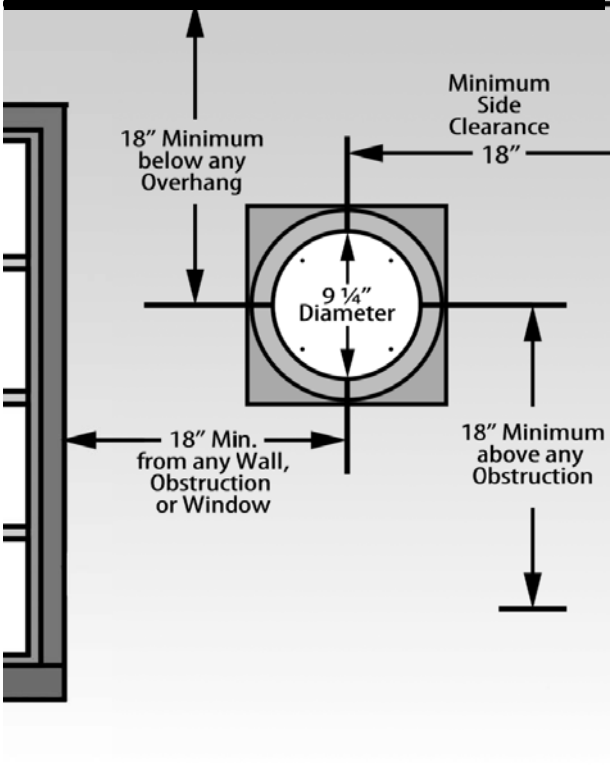
Consider the following points before attempting to install the furnace:

1. This is a direct-vent wall furnace. It must be installed on an OUTSIDE WALL for proper venting of flue gases (Fig. 2).
   a. Wall furnace can be surface mounted on an outside wall. (Surface Mount)
   b. Ideally, the wall should be on the least windy side of the dwelling, as strong gusts may extinguish the pilot.

c. Furnace may be installed flush against a wall or recessed up to 10" maximum. Wall thickness from back surface of furnace to outside of wall can be 3/4" minimum to 8 ½" maximum. See Page 8, Fig. 3.

With standard furnace discharge outlet, do not install closer than 4" to intersecting wall. See Page 8, Fig. 4.

FIGURE 2 Minimum Clearances



Studs must be spaced on 16-inch centers or stud space will have to be framed in. See Page 9 and 10, Recessed Mounting.

2. The top of the furnace must be at least 4-inches from the ceiling.
3. Check the clearances needed from the furnace and vent (Page 7, Fig. 2 and Page 8, Fig. 4). You must place the furnace where you will have no less than the clearances shown. See Page 8, Fig. 5, 6 & 7.
4. When using optional kits 6703 or 6704, maintain the clearances as shown on Page 8, Fig. 5, 6 & 7.
5. When using optional kit 6701, maintain clearance as shown on Page 8, Fig. 4. Use only optional outlet and grille kits available from manufacturer.
6. The outside vent cap must be at least 18-inches away from any window or other building opening (Fig. 2).
7. The furnace will not work if anything stops free entry of fresh air into the vent, or free flow of flue gases from it. Be sure the center of the vent cap is at least 18-inches above ground level or shrubs are as shown in Fig. 2. Make sure shrubs are kept trimmed. It must also be at least 18 inches from any overhang.
8. Try to place the furnace near the center of the space to be heated for good air circulation. Do not put it behind a door or draperies. Do not put in a closet, alcove, hallway or other confined space.
9. Be sure that gas piping and electrical wiring can be brought to the furnace. See sections on gas piping and electrical wiring for your type of furnace mounting.
10. The bottom of the furnace must rest directly on a wood or concrete floor. If the floor is other than wood or concrete, such as carpet or sheet vinyl flooring, there must be a piece of wood or sheet metal under the furnace that is at least the same size as the bottom of the furnace.

WARNING: If vinyl siding is used on exterior wall surface, heat from the vent cap could cause distortion/discoloration. Shield to protect the siding. Check with manufacturer for additional options.

Installing Your Furnace

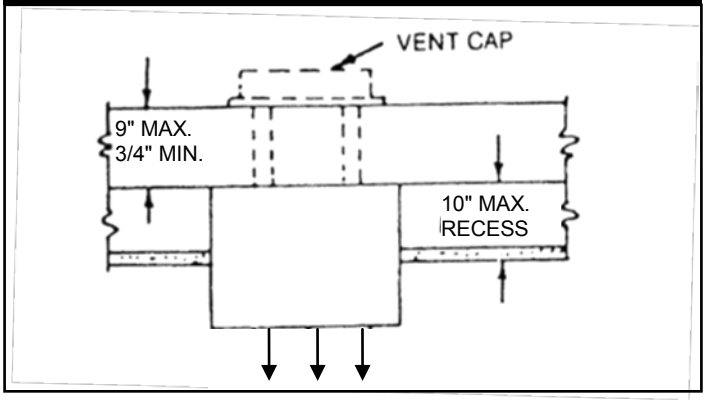
11. Be sure to provide adequate clearance and service access. The front of the furnace must face the open room.

12. Choose a location for the thermostat about 5-feet above the floor on an inside wall. The thermostat wire supplied with your furnace is 20-feet long, which should be enough to run up through the attic of a single-story home, so the thermostat can be a maximum of 16-feet from the furnace measure in a straight line, or about 8-feet from the furnace if the wire is run under the floor. Use heavier wire size if more than 20-feet of wire is required. The thermostat should be sensing average room temperature. Avoid the following:

HOT SPOTS:	COLDSPOTS:
Concealed pipes or ducts	Concealed pipes or ducts
Fireplaces	Stairwells – drafts
Registers	Doors – drafts
TV sets	Unheated rooms on the
Radios	other side of the wall
Lamps	DEAD SPOTS
Direct sunlight	Behind doors
Kitchen	Corners, and alcoves

13. After picking a location that meets the requirements, inspect the wall, floor and outside areas. Make sure there are no pipes, wiring, or anything else that would interfere with furnace, vent, or thermostat installation. If required, move them or pick a new location.

FIGURE 3 Recessed Installation Clearance



RECESSED INSTALLATION CLEARANCE NOTE: A portion of the furnace that is recessed into a wall up to 10" maximum recess may have (0) zero inch clearance to combustibles. (See Fig. 3). All other clearances for the unrecessed portion must be observed. 3/4-inch to 5-inch outer wall will require thin wall collar accessory Kit 9307.

FIGURE 4

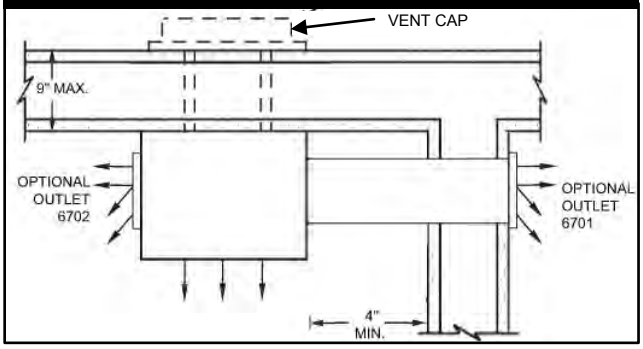


FIGURE 5

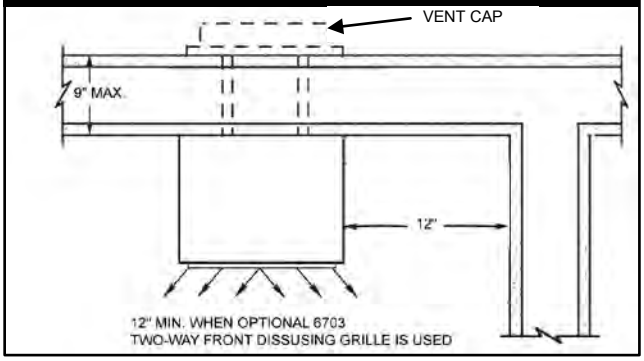


FIGURE 6

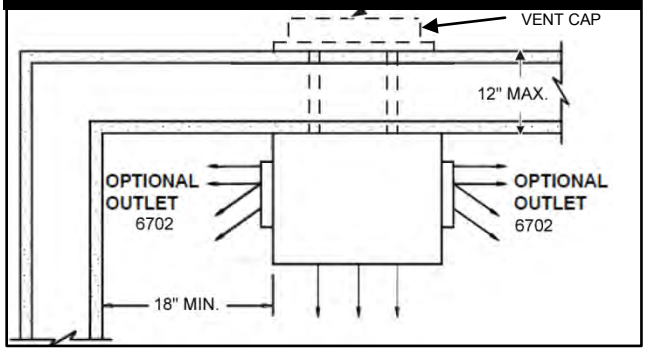
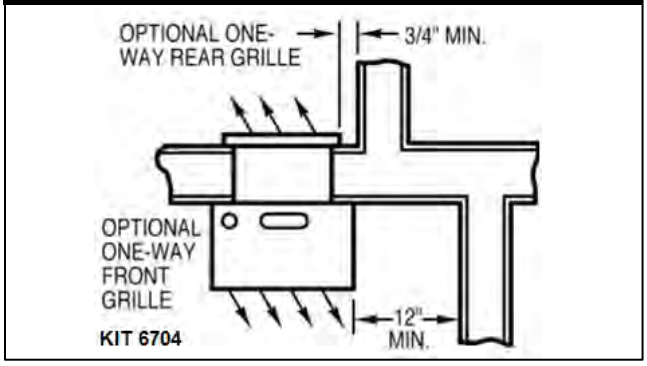


FIGURE 7



Installing Your Furnace

Recessed Mount Installation

FIND THE STUDS

Use a stud locator or small finishing nails. Repeatedly drive and remove a nail into the wall in the area of the stud until you find it. Then find one side. Leave the nail there. Drive another nail just on the other side of the same stud.

Inside edge of the other stud should be about 14½-inches from the one found. Drive finishing nail on inside edge of this stud.

NOTE: If studs are not on 16-inch centers, see section “Close off Stud Space”, below.

CUT WALL OPENING

1. Lay out the required opening to be cut in inside wall (Fig. 8). Mark center of the vent hole on wall. Using a window, door or wall corner for reference, measure to find where vent will be on outside wall. Check to be sure clearances (Page 7, Fig. 2, and Page 8, Fig. 4, 5, 6 and 7) will be right.
2. Drill a ¼-inch hole through vent hole center to the outside wall to mark vent location.
3. Make the required cutout in inside wall. (Fig. 8).
4. Using the hole drilled through to the outside wall as the center, cut a 9¼-inch diameter hole for the vent. It may be better to work from outside, especially when breaking through brick, stone or tile. (See Fig. 8).
5. In new stud wall construction, install blocks as shown in Figure 7 and install plaster grounds around inside of wall opening.
6. The vertical height of the opening shown is 3-inches greater than height of furnace to allow space for connection of wiring after furnace is installed.

NOTE: Vertical measurements are from finished floor. (Fig. 7).

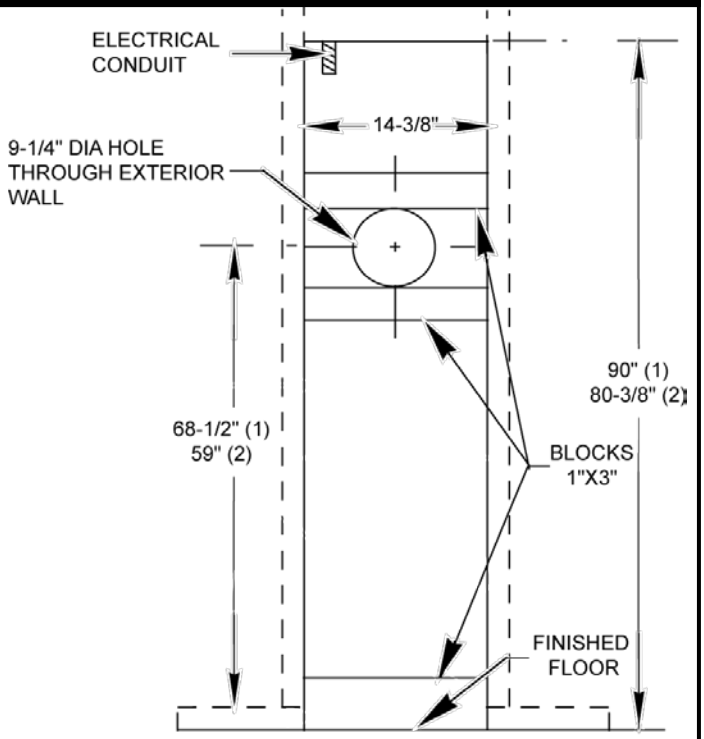
CLOSE OFF STUD SPACE (If Required)

If studs are not on 16-inch centers, cut the hole for the furnace next to an existing stud and frame in the other side using a 2"x 4" and spacer blocks as required. As shown on Page 9, Fig. 9.

If the distance from the top of the cutout to the ceiling wall plate is more than 18-inches, it is recommended that it be closed off.

Nail a 2"x 4" long enough to go between the studs at the top of the opening to close off the stud space.

FIGURE 8 Wall Opening for Recessed Mount



(1) MODELS 5507332, 5507331, **6007732, AND 6007731**
(2) MODELS 4007332, 4007331, 4007732, AND 4007731

FIGURE 9 Close Off Stud Space

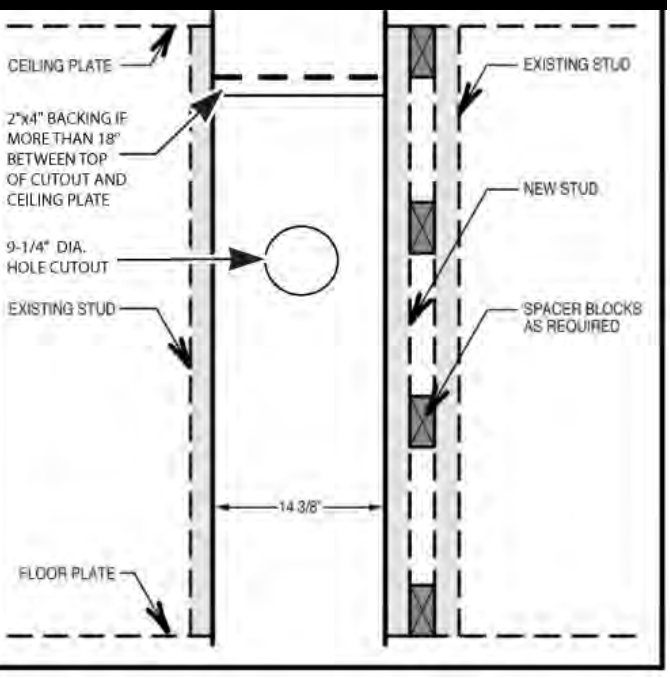
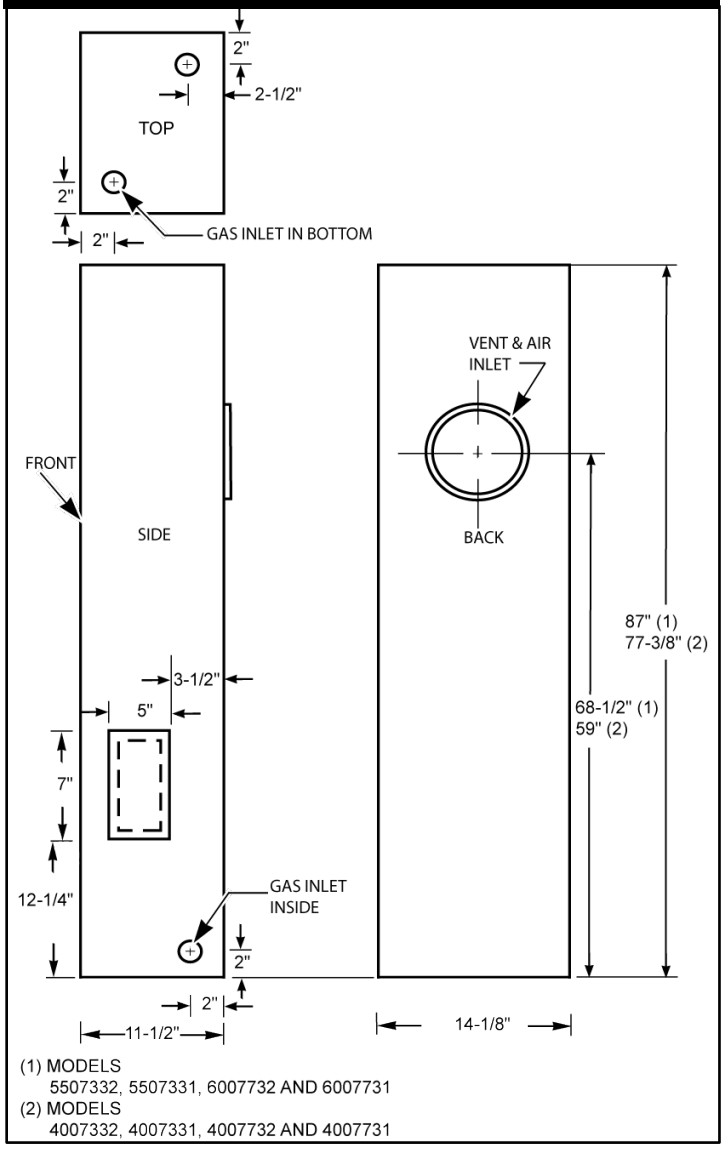


FIGURE 10 Gas & Electrical Openings



GAS AND ELECTRICAL SUPPLY OPENINGS

Holes must be drilled for the gas line and electrical supply. Holes must be located from each side of furnace as shown in Fig. 10.

Decide whether the gas line will come through the floor or wall.

Drill a 1½ -inch hole in wall or floor as needed.

Gas line can be run at this time or done after furnace is mounted, see section GAS SUPPLY AND PIPING, on Page 18.

The electrical supply opening should be at the lower portion of the furnace, to match openings shown in Fig. 10. Mark ceiling wall plate and drill holes. If not practical to run wiring from the attic, drill holes through wall stud and run wires up through adjoining stud space from crawl space or basement.

Run the electrical supply with the ground wire and thermostat cable to the openings. Leave enough length to connect in the junction box after the furnace is installed. See section "Electrical Wiring," on page 19.

CAUTION: Do not run wire in any location where it might be damaged. Avoid splicing thermostat wire unless the spliced wires are properly cleaned, soldered, and taped.

Offset Wall Installation

To mount the wall furnace on an offset wall, the area behind the furnace must be made flush or flat.

Use lumber (2"x 4"s, 2"x 6"s etc.) to make the surface flush with other portion of wall.

Use sheet rock or paneling etc. to finish area.

Follow procedures under Surface Mount Installation.

Installing Your Furnace

Surface Mount Installation

FIND THE STUDS

1. Find two studs at spot where furnace is to be placed. Use a stud indicator or small finishing nails. Repeatedly drive and remove a nail into the wall in the area of the stud until you find it. Then find one side. Leave the nail there. Drive another nail just on the other side of the same stud.
2. Inside edge of the other stud should be about 14½-inches from the one found. Drive finishing nail on inside edge of this stud.

CUT VENT OPENINGS

1. Lay out and mark the center of the hole to be cut through the wall for the vent (Page 9, Fig. 8). Using a window, door, or wall corner for reference, measure to find where vent will be on outside wall. Check to be sure clearances are correct. (See Pages 7 & 8, Fig. 2, 4, 5, 6 & 7).
2. Drill a ¼-inch hole through vent hole center to the outside. Cut the 9¼-inch diameter hole through inside wall. Using the ¼-inch hole as the center, cut a matching hole in outside wall. It may be better to work from the outside, especially when breaking through brick, stone or tile.

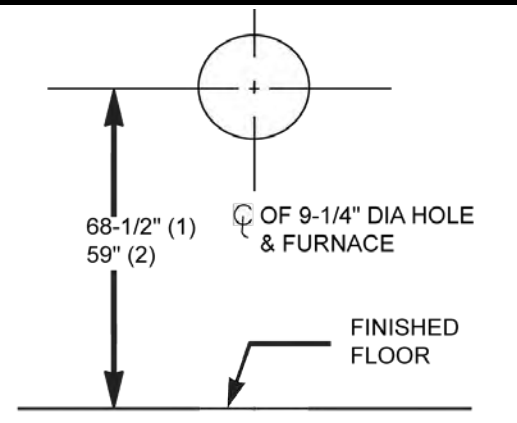
GAS AND ELECTRICAL SUPPLY OPENINGS

Holes must be drilled for the gas line and electrical supply. Holes must be located from each side of furnace as shown on Page 10, Fig. 10.

Drill a 1½-inch hole in floor or wall for gas line.

Gas line can be run at this time or done after furnace is mounted, see section: Gas Supply and Piping, Page. 18. Mark ceiling or wall to match wall furnace openings and drill a 1-inch hole for the power supply and a ½-inch hole for the thermostat cable. Run the electrical supply and ground wires to the opening. Leave enough length to connect in the junction box after the furnace is installed. See section "Electrical Wiring," Page 19.

FIGURE 11 Wall Opening (Surface Mount)



(1) MODELS
5507332, 5507331, 6007732, AND 6007731
(2) MODELS
4007332, 4007331, 4007732, AND 4007731

ROUGH-IN OPTIONAL SIDE OUTLET NO. 6701

Install plaster ground as shown in Figs. 12 & 13. Flanges of plaster ground extend the thickness of normal plaster. If “dry-wall” or other thin material, flanges must be trimmed off flush with wall surface.

Follow measurements given carefully, and note that when a side outlet is used, the furnace casing must be exactly 4 inches from surface of adjacent wall except minimum clearance may be ¾-inch when optional 1-way Diffusing Grille Kit 6704 is used.

FIGURE 12 Plaster Ground Installation

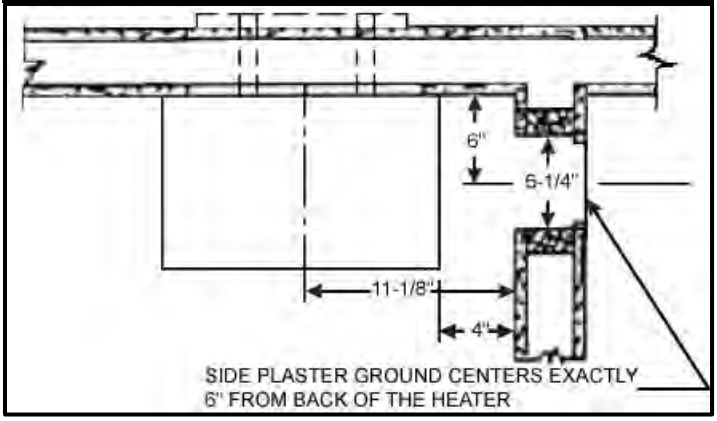
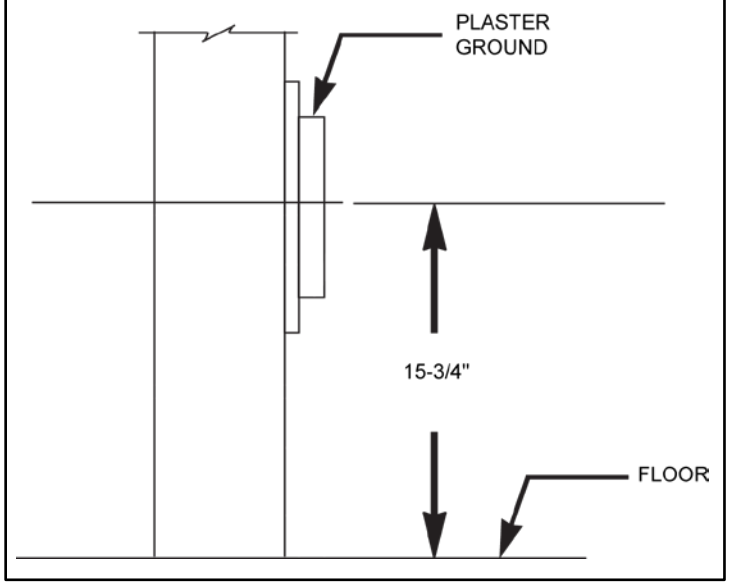


FIGURE 13 Plaster Ground Installation

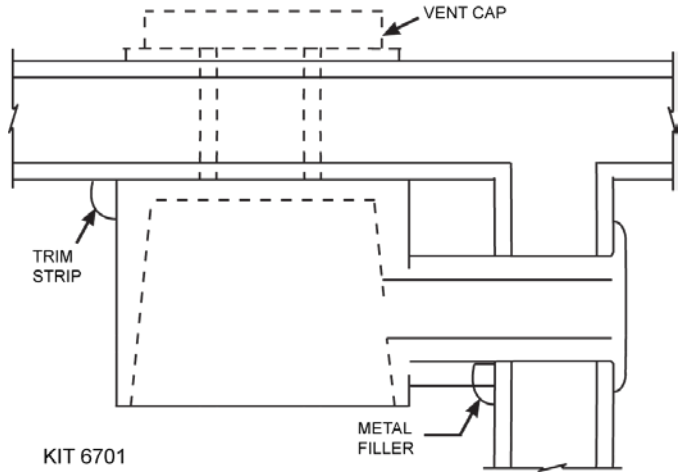


MOUNTING OPTIONAL SIDE OUTLET GRILLE KIT NO. 6701

Refer to Fig. 14.

1. Before setting furnace into position, cut 5"x 7" rectangular opening in furnace outer casing where marked. See Page 10, Fig. 10.
2. Place the outer boot against casing with inner flanges exactly on edges of cut hole, mark screw location, remove boot and drill #33 holes for the sheet metal screws.
3. Remove the knockout plate and knockouts for screws from the inner liner.
4. Secure 1"x 1" wood strip (not included with this kit) to the wall next to the side outlet as a backup for metal filler strips.
5. Fasten metal filler strips to the side of the furnace casing with the front surface exactly opposite the front of wood backup strip.
6. After the furnace is placed in position, place the outer boot through the plaster ground tight against the furnace casing. Then mark and cut off the outer end flush with the wall surface.
7. Press the inner boot against liner, mark and cut it off flush with the wall surface. Install the outer boot first, then the inner boot, fastening through all holes with the screws provided.

FIGURE 14 Mounting Grille Kit 6701



OPTIONAL 2-WAY DIFFUSING GRILLE KIT NO. 6703

Refer to Fig. 15.

CAUTION: For use only in conjunction with a front outlet when the furnace is spaced at least 12-inches from an intersecting wall (see Page 8, Fig. 5).

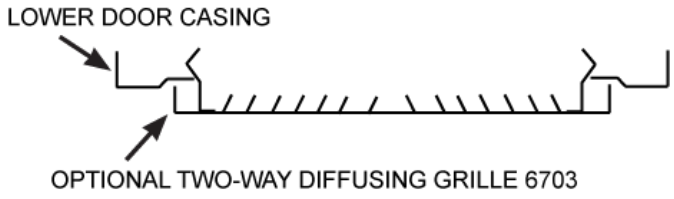
Metal clips on backside of the optional grille snap into the side louvers of the front warm air outlet. Adjust clips with pliers if necessary. Grille may also be attached with sheet metal screws.

1-WAY FRONT DIFFUSING GRILLE KIT NO. 6704

Follow instructions for 2-WAY FRONT DIFFUSING GRILLE 6703 ABOVE, except furnace clearance to an adjacent wall must be ¾-inch minimum.

CAUTION: Use only optional kits available from the manufacturer.

FIGURE 15 Two-Way Diffusing Grille 6703



Installing Your Furnace

Thermostat Installation

1. If an old thermostat is being replaced and is in a satisfactory location and the wiring appears to be in good condition, use existing wiring. If in doubt, use new wire.
2. If a new location is chosen or if this is a new installation, thermostat cable must first be run to the location selected. All wiring must agree with local codes and ordinances. These instructions cover bringing the wire down from the attic but it can be run from a basement or crawl space using similar methods.
3. Before drilling a hole in the wall at selected location, drive a small finishing nail through the ceiling in the corner of the wall and ceiling above the thermostat location. Pull the nail out and push a small stiff wire through the hole so it can be found in the attic. Drill a ½-inch hole through the ceiling wall plate.
4. Probe for obstructions in the partition. Then drill a ½-inch hole through wall at the selected location for thermostat.
5. From the attic, feed the thermostat cable or a stiff wire through wall until even with thermostat location.
6. Snag thermostat cable through the hole and pull the cable through the hole in wall so that 6-inches of cable protrudes.
7. Route cable to wall furnace.

MOUNTING THE THERMOSTAT

1. To remove thermostat cover, squeeze both sides and lift. Carefully remove and discard the packing tab protecting the switch contacts. See Fig 17.
2. Connect the thermostat wires to the terminal screws on the thermostat base. Make sure the wiring does not interfere with thermostat operation.
3. Push any excess wire back through the hole in the wall and plug the hole with insulation to prevent drafts from affecting thermostat operation.
4. Being sure to level the thermostat for best appearance, fasten the thermostat base to the wall through the mounting holes with the screws provided.
5. Replace the thermostat cover.

FIGURE 16 Route Thermostat Cable

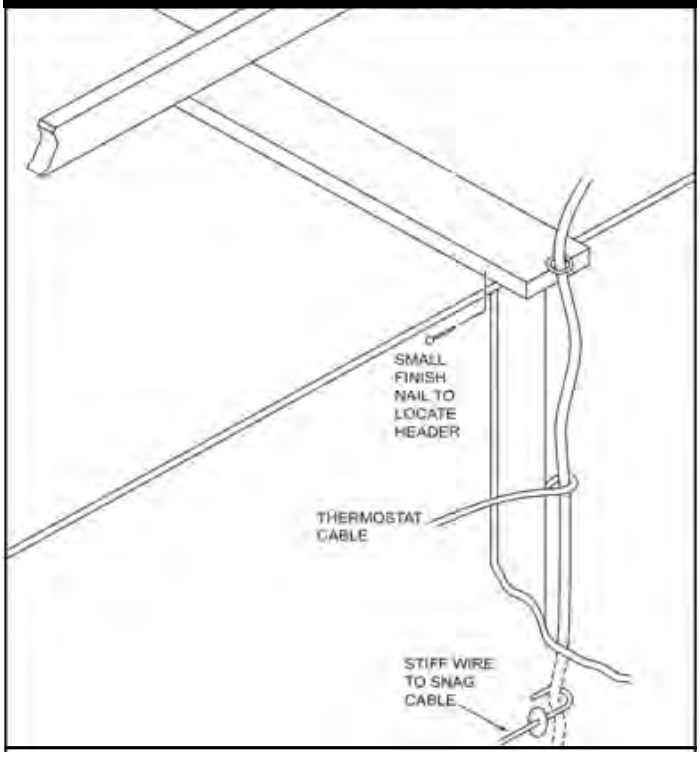
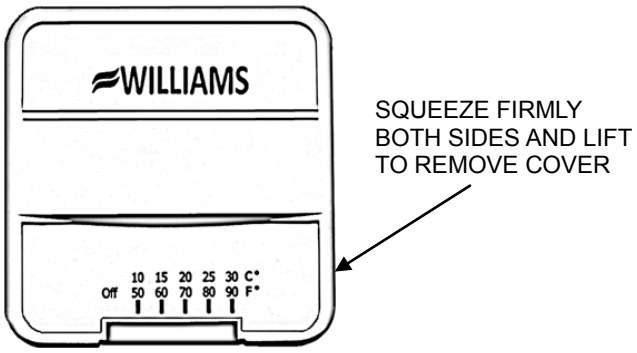


FIGURE 17 Thermostat



Installing Your Furnace

Vent Installation

WARNING: DANGER OF PROPERY DAMAGE, BODILY INJURY OR DEATH.

Proper vent installation is critical to the safe operation of the furnace. Therefore, carefully read and follow all the instructions given in this section.

The following instructions are for either surface or recess mounted wall furnace.

USE ONLY THE VENT ASSEMBLY SUPPLIED.

IMPORTANT: All joints in the inlet and vent tubes and all gaskets must be tight. Installation in any other manner voids the C.S.A. design certification and will affect the warranty.

Refer to Page 15, Fig. 19 for the name and location of the vent parts.

DETERMINE PROPER LENGTHS

IMPORTANT: To prevent harmful flue gases from entering the house, make sure NOT to trim air or vent tubes shorter than specified below.

Air inlet air tube 'A' and vent tube 'B' are supplied in lengths to handle wall thickness up to 8½-inches.

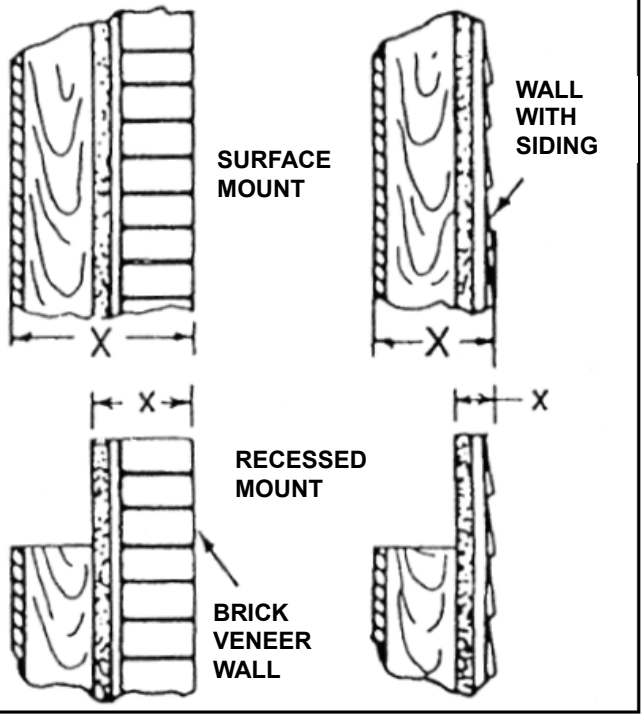
To find the correct vent and air tube length, measure exact distance 'X' between surface on which back of cabinet will rest (inside of recessed cavity or face of wall when freestanding) and the outside wall surface. See Page 14, Fig. 18 & Page 15, Fig. 19.

Inlet air tube 'A' – Add ⅞-inch to dimension 'X'. Mark on tube starting from end with collar and holes. Cut off evenly. File off any burrs resulting.

Vent tube 'B' – Add 2⅛-inches to dimension 'X'. Mark on tube starting from end with collar and holes. Cut off evenly. File off any burrs resulting.

CUT ONLY THE PLAIN END (WITHOUT THE FLANGE) OF THE TUBES. MAKE A SQUARE CUT TO THE EXACT LENGTH.

FIGURE 18 Wall Thickness



HELPFUL CUTTING HINT

To make a straight cut, measure from the end and mark tube in several places. Align a piece of tape with the marks and wrap it around the tube. Use the edge of the tape as a guide to help keep the cut straight.

ATTACHING TUBE TO FURNACE

The smaller diameter vent tube (Page 15, Fig. 19-"B") must be installed first.

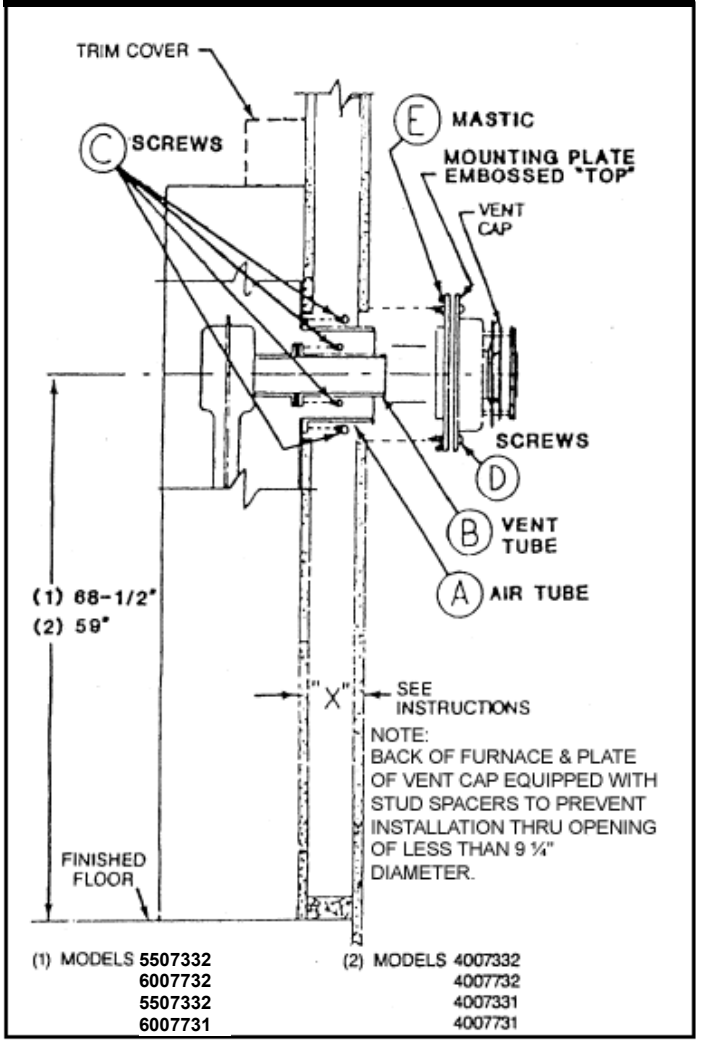
The easiest way to install the vent tubes and get the gaskets positioned properly is to have the furnace lying front down on a flat surface.

IMPORTANT: To prevent harmful flue gases from entering the house, make sure NOT to trim air or vent tubes shorter than specified below.

1. Attach vent tube (Page 15, Fig. 19-"B") and gasket to the back of the furnace heat exchanger with (8) #8 x ⅜-inch sheet metal screws provided.
2. Attach air tube (Page 15, Fig. 19-"A") and gasket to the back of the furnace casting with (8) #8 x ⅜-inch sheet metal screws provided.

NOTE: Each tube must overlap the collars of the vent cap a minimum of 1¼-inches, which is obtained when tubes are cut correctly as previously described.

FIGURE 19 Vent Installation



Trim

To conceal the space between the furnace and wall, use 4701 Trip Strip Package (not furnished with furnace), ¾-inch round or other wood trim.

TRIM COVER

Place the trim cover on top of the furnace. See Page 16, Fig. 20. Drill through the top casing flange and fasten each side with a sheet metal screw. This plate covers the space between the top of the furnace and wall opening after electrical connections are made.

MOUNT FURNACE THROUGH WALL

Mount the furnace through the wall using surface or recessed mounting instructions. See Pages 9 thru 12.

Refer to Fig. 19 for the following steps.

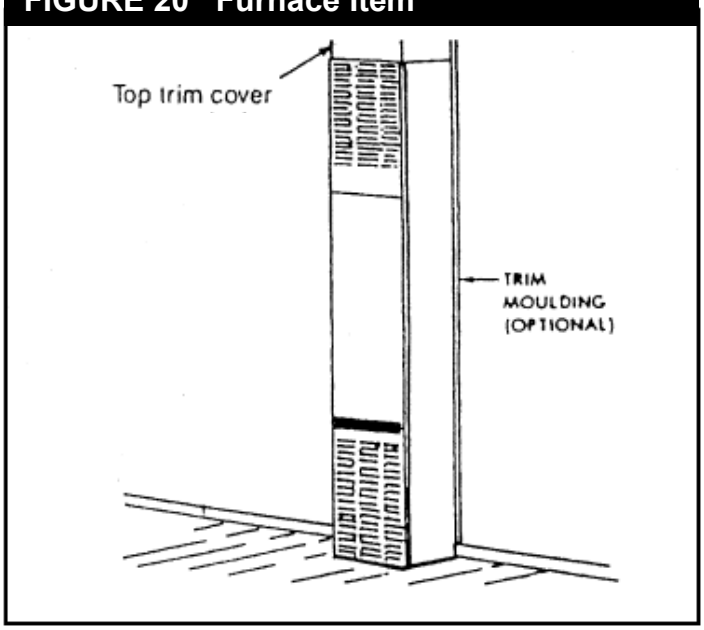
1. Check to see that the air tube protrudes through wall 7/8-inch min. to 1-inch max. for proper seal in vent cap.
2. Check to see that the vent tube protrudes past the air tube 1/8 inch min. to ¼- inch max. for proper seal in vent cap.
3. Apply a single strip of mastic ("E" provided in the vent cap carton) continuously around the outer edge of the vent cap mounting plate.
4. Holding the vent cap in an upright position (embossed "top" on the mounting plate towards the top of the furnace), push it into place until the stops are contacted. If the stops prevent the mounting plate from reaching the wall, refer back to "DETERMINE PROPER LENGTHS" Page 14.

NOTE: The smaller tube in the vent cap must slide over the vent “B”.

5. Fasten the vent cap mounting plate to the wall with (4) 1½-inch wood screws "D" provided.
6. On masonry construction, drill into the wall and use plugs or anchors. Additional sealant (silicone) may be required if the mounting surface is uneven.

Installing Your Furnace

FIGURE 20 Furnace Item



Mounting Your Furnace

To obtain adequate clearance for fastening the furnace or to install gas supply fittings, it may be necessary to remove the burner and control assembly as follows:

CAUTION: Be careful not to damage burner pan gasket when removing burner and control assembly.

1. Lay the furnace on its back for the following steps.

   Remove burner compartment door by pulling the door top out and up.

   MODELS: 4007332, 5507332

   4007331, 5507331

   a. Remove the screws holding the ignition control unit and the cover to the casing.
   b. Remove (3) screws 'A' holding the burner pan to the upper heating element support (Page 17, Fig. 22). Rotate the burner pan toward the front until the (3) pins 'B' disengage from the upper heating element support.
   c. Remove necessary wiring to free the control module from its mounting location. Mark or tag each wire removed for its exact reconnection (Page 17, Fig. 23).
   d. Remove the burner and control assembly from furnace.

   MODELS: 4007732, 6007732

   4007731, 6007731

   a. Remove the manual spark igniter and bracket by removing the (2) screws and disconnecting the wire at the back of the igniter.
   b. Disconnect the two (2) slip-on connectors (24 volt wires) from the gas valve.
   c. Remove the (3) screws 'A' holding burner pan to the upper heating element support (Page 17, Fig. 22). Rotate the burner toward the front until the (3) pins 'B' disengage from the upper heating element support slots.
   d. Remove the burner and control assembly from furnace.

NOTE: Attach vent tubes BEFORE mounting the furnace. See Pages 14 & 15.

2. If furnace is recessed in the wall, clear the recess of all debris.
3. Be sure the gas is shut off at the meter.
4. Before placing the furnace in position, remove the gas piping stub if necessary to locate the furnace.
5. After installing the vent tubes, carefully move the furnace into position, being sure not to bend the vent tubes.

FASTEN FURNACE BOTTOM
(SURFACE AND RECESSED MOUNT)

NOTE: Fasteners are not furnished because of different requirements of various types of wall construction.

Fasten the furnace to the floor through the holes provided in the furnace bottom. If you have concrete flooring, use an alternate fastening method. See Page 17, Fig. 21.

If the burner and control assembly were removed, replace them by reversing steps 1a through 1d.

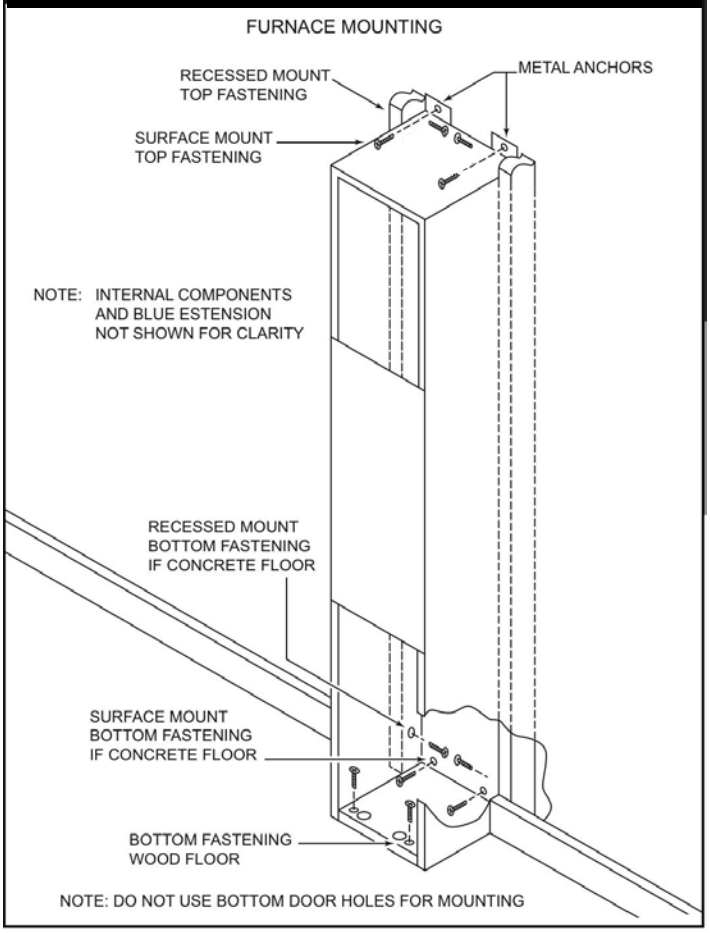
IMPORTANT: When replacing the burner and control assembly, be sure that pins "B" all enter the slots in the upper heating element support. To prevent damage to wiring, be careful not to pinch them between furnace components and route them away from the burner pan surface.

Installing Your Furnace

FASTEN FURNACE TOP (SURFACE MOUNTING)

Fasten the furnace top to wall using two (2) metal anchors (packed in plastic bag with thermostat) by placing them over the back flange of the furnace top and screwing them to the wall. Refer to Fig. 21.

FIGURE 21 Furnace Mounting



FASTEN FURNACE TOP (RECESSED MOUNTING)

Fasten the furnace top by drilling two (2) holes through the side flanges of the furnace top and securing it with two (2) screws or nails into the wall studs. Refer to Fig. 21.

FIGURE 22 Burner Pan

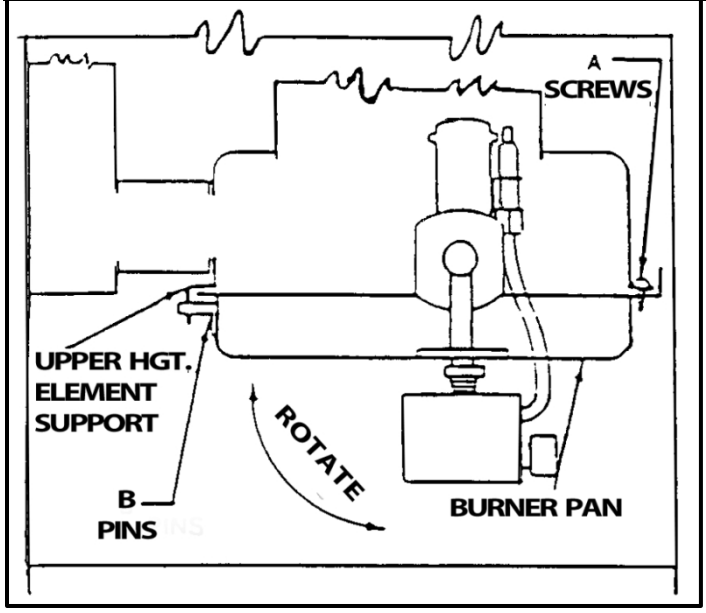
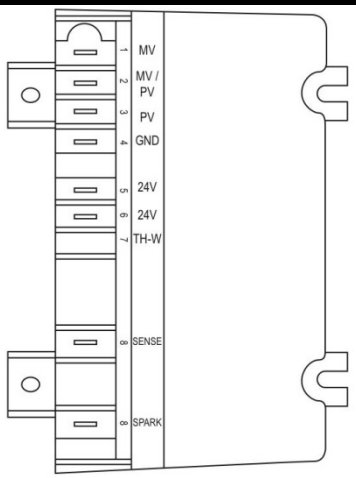


FIGURE 23 Ignition Control



WILLIAMS IGNITION CONTROL
PART NUMBER P321900

CAUTION: Be careful not to damage furnace components or wiring when drilling holes.