MG1E Series: R410A and A2L Compatible

INSTALLATION INSTRUCTIONS

Downflow, Direct Vent (Sealed Combustion) Forced Air Gas Furnaces

For installation in:

- **Manufactured Homes**
- **Recreational Vehicles, Park Models, & Manufactured Buildings**
- **Modular Homes / Buildings**



⚠ WARNING / AVERTISSEMENT

FIRE OR EXPLOSION HAZARD

- **Failure to follow safety warnings exactly could result in serious injury, death or property damage.**
- **Installation and service must be performed by a qualified installer, service agency or the gas supplier.**
- **Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.**

RISQUE D'INCENDIE OU D'EXPLOSION

- Le non-respect des avertissements de sécurité pourrait entraîner des blessures graves ou des dommages matériels importants.
- L'installation et l'entretien doivent être effectués par un installateur qualifié, un organisme de service ou le fournisseur de gaz.
- N'entreposez pas ni n'utilisez de l'essence ni d'autres vapeurs ou liquides inflammables dans le voisinage de cet appareil, ni de tout autre appareil.

WHAT TO DO IF YOU SMELL GAS

- **Do not try to light any appliance.**
- **Do not touch any electrical switch; do not use any phone in your building.**
- **Leave the building immediately.**
- **Immediately call your gas supplier from a neighbors phone. Follow the gas suppliers instructions.**
- **If you cannot reach your gas supplier, call the fire department.**

QUE FAIRE S'IL Y A UNE ODEUR DE GAZ

- N'essayez d'allumer aucun appareil.
- Ne touchez à aucun interrupteur électrique; n'utilisez aucun téléphone dans le bâtiment.
- Évacuez l'immeuble immédiatement.
- Appelez immédiatement le fournisseur de gaz en employant le téléphone d'un voisin. Respectez les instructions du fournisseur de gaz.

DO NOT DESTROY. PLEASE READ CAREFULLY & KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.

⚠ CAUTION

HUD Manufactured Home Construction and Safety Standards (3280.714) prohibit the use of noncertified air conditioning or heat pump equipment with this furnace. It is strongly recommended that manufactured housing air conditioning components from Nordyne be selected to provide a matched system specifically designed to meet these requirements.

The cutting, splicing or modifying of any internal electrical wiring may void product warranties and create a hazardous condition. Failure to comply with these standards could also provide inadequate heating or cooling performance and cause structural damage to a manufactured home.

Reference: HUD Manufactured Home Construction and Safety Standards 3280.714.

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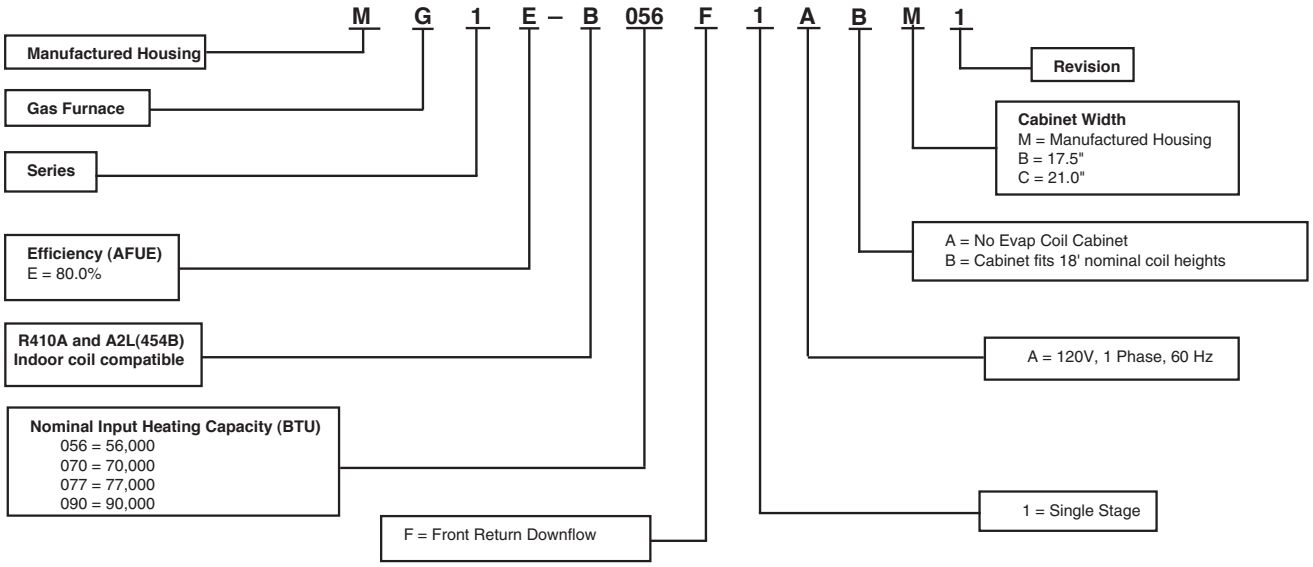
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IMPORTANT SAFETY INFORMATION

Safety markings are used frequently throughout this manual to designate a degree or level of seriousness and should not be ignored. **WARNING** indicates a potentially hazardous situation that if not avoided, could result in personal injury or death. **CAUTION** indicates a potentially hazardous situation that if not avoided, may result in minor or moderate injury or property damage.

⚠ WARNING:

The safety information listed below must be followed during the installation, service, and operation of this furnace. Failure to follow safety recommendations could result in possible damage to the equipment, serious personal injury or death.

⚠ AVERTISSEMENT :

Les renseignements de sécurité indiqués ci-dessous doivent être respectés pendant l'installation, l'entretien et le fonctionnement de cette fournaise. Le non-respect des recommandations de sécurité peut causer des dommages à l'équipement ou des blessures graves, voire mortelles.

⚠ AVERTISSEMENT :

N'installez pas cette fournaise si l'une de ses pièces a été immergée dans de l'eau. Une fournaise endommagée par une inondation est extrêmement dangereuse. Toute tentative d'utiliser la fournaise peut entraîner un incendie ou une explosion. Il faut communiquer avec un organisme de service qualifié pour l'inspection de la fournaise et le remplacement de toutes pièces électriques ou parties du système de commande qui ont été mouillées ou immergées.

⚠ CAUTION:

Operating gas furnaces in construction environments can cause a variety of problems within the furnace and may significantly reduce the life or the performance of the furnace. Therefore operating the furnace during construction is not permitted and will void the warranty.

REQUIREMENTS & CODES

- This furnace must be installed in accordance with these instructions, all applicable local building codes and the current revision of the National Fuel Gas Code (NFPA54/ANSI Z223.1) or the Natural Gas and Propane Installation Code, CAN/CSA B149.1.
- Use only with type of gas approved for this furnace. Refer to the furnace rating plate.
- Install this furnace in accordance to the minimum clearances to combustible materials listed in Table 1.
- Provide adequate combustion and ventilation air to the furnace space as specified on page 4. Do not block or obstruct air openings on the furnace, air openings to the area where the furnace is installed, or the space around the furnace.
- Combustion products must be discharged outdoors. Connect this furnace to an approved vent system, as specified on page 4.
- Never test for gas leaks with an open flame. Use a commercially available soap solution to check all connections. See page 4.
- This furnace is designed to operate with a maximum external pressure rise of 0.3 inches of water column. **NOTE 1:** The static pressure measurement should not include the coil (if applicable). Consult the rating plate for the proper circulating air flow and temperature rise. **NOTE 2:** It is important that the duct system be designed to handle the desired flow rate and external pressure rise. An improperly designed duct system can result in nuisance shutdowns, and comfort or noise issues.
- When supply ducts carry air circulated by the furnace to areas outside the space containing the furnace, the return air shall also be handled through the front door of the furnace. Make sure there is sufficient return air through the door. See return air connections page 4.
- Additional information listed below is for reference purposes only and does not necessarily have jurisdiction over local or state codes. Always consult with local authorities before installing any gas appliance.

Combustion & Ventilation Air

- US: National Fuel Gas Code (NFGC), Air for Combustion and Ventilation
- CANADA: Natural Gas and Propane Installation Codes (NSCNGPIC), Venting Systems and Air Supply for Appliances

Duct Systems

- US and CANADA: Air Conditioning Contractors Association (ACCA) Manual D, Sheet Metal and Air Conditioning Contractors National Association (SMACNA), or American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Fundamentals Handbook

Electrical Connections

- US: National Electrical Code (NEC) ANSI/NFPA 70
- CANADA: Canadian Electrical Code CSA C22.1

Gas Piping & Gas Pipe Pressure Testing

- US: NFGC and National Plumbing Codes
- CANADA: NSCNGPIC

General Installation

- US: Current edition of the NFGC and the NFPA 90B. For copies, contact the National Fire Protection Association Inc., Batterymarch Park, Quincy, MA 02269; or American Gas Association, 400 N. Capitol, N.W., Washington DC 20001 or www.NFPA.org
- CANADA: NSCNGPIC. For a copy, contact Standard Sales, CSA International, 178 Rexdale Boulevard, Etobicoke (Toronto), Ontario, M9W 1R3 Canada

Safety

- US: (NFGC) NFPA 54/ANSI Z223.1 and the Installation Standards, Warm Air Heating and Air Conditioning Systems ANSI/NFPA 90B.
- Federal Manufactured Home Constructions & Safety Standard (H.U.D. Title 24, Part 3280.707[a][2])
- The Standard for Manufactured Home Installations (Manufactured Home Sites, Communities, and Set-Ups) ANSI A225.1 and/or CAN/CSA-2240 MH Series).
- American National Standard (ANSI-119.2/NFPA-501C) for all recreational vehicle installations.
- CANADA: CAN/CSA-B149.1 and .2–M00 National Standard of Canada. (NSCNGPIC)

- The Commonwealth of Massachusetts requires compliance with regulation 248 CMR 4.00 and 5.00 for installation of through – the – wall vented gas appliances as follows:

1. For direct-vent appliances, mechanical-vent heating appliances or domestic hot water equipment, where the bottom of the vent terminal and the air intake is installed below four feet above grade the following requirements must be satisfied:
   a.) A carbon monoxide (CO) detector and alarm shall be placed on each floor level where there are bedrooms. The detector shall comply with NFPA 720 and be mounted in the living area outside the bedroom(s).
   b.) A (CO) detector shall be located in the room that houses the appliance or equipment and shall:
   - Be powered by the same electrical circuit as the appliance or equipment. Only one service switch shall power the appliance and the (CO) detector;
   - Have battery back-up power;
   - Meet ANSI/UL 2034 Standards and comply with NFPA 720; and Approved and listed by a Nationally Recognized Testing Laboratory as recognized under 527 CMR.

   c.) A Product-approved vent terminal must be used, and if applicable, a product-approved air intake must be used. Installation shall be in strict compliance with the manufacturer's instructions. A copy of the installation instructions shall remain with the appliance or equipment at the completion of the installation.
   d.) A metal or plastic identification plate shall be mounted at the exterior of the building, 4 feet directly above the location of vent terminal. The plate shall be of sufficient size, easily read from a distance of eight feet away, and read "Gas Vent Directly Below".

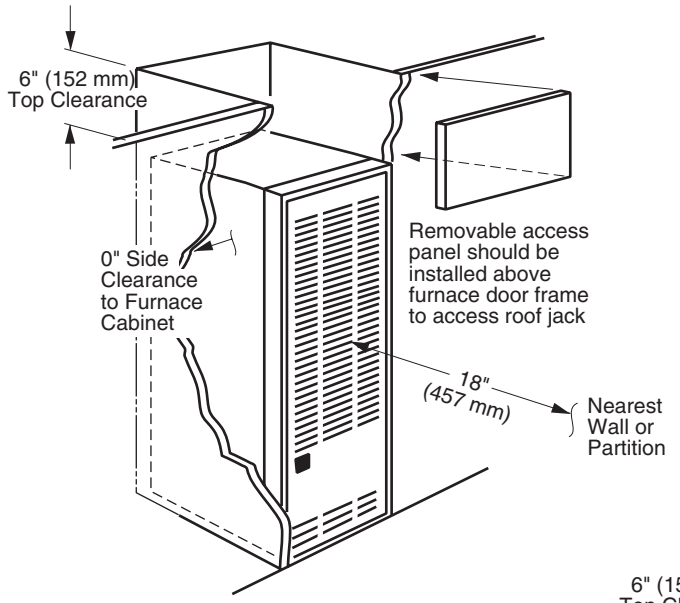


Figure 1. Alcove Installation

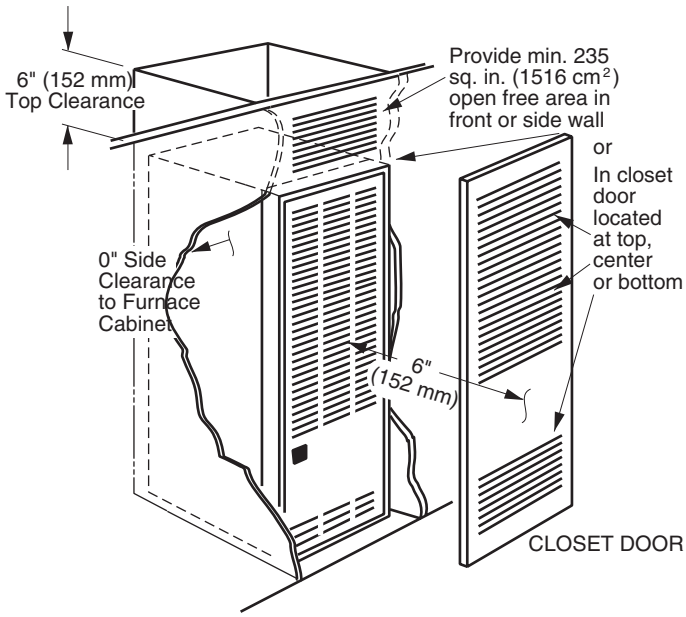


Figure 2. Closet Installation

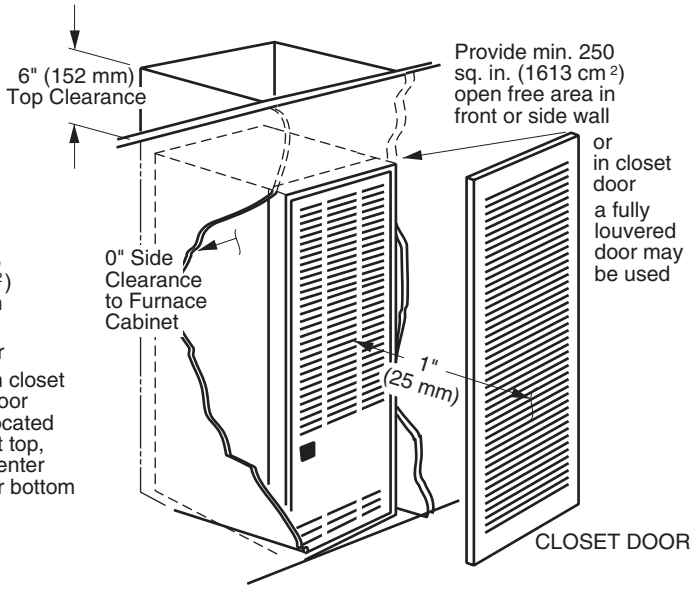


Figure 3. Special 1" Clearance

GENERAL INFORMATION

⚠ CAUTION:

- **Do Not alter or modify this furnace or any of its components.**
- **Never attempt to repair damaged or inoperable components. This may cause unsafe operation, explosion, fire and/or asphyxiation.**
- **If furnace malfunctions or does not operate properly, contact a qualified service agency or gas utility for assistance.**

Minimum Clearances

This heating appliance must be installed with clearances not less than the minimums listed in Table 1. This furnace must be installed with ample clearance for easy access to the air filter, blower assembly, burner assembly, controls, and vent connections. See Figure 1, Figure 2, and Figure 3.

- The dimensions of the room or alcove must be able to accommodate the overall size of the furnace and the installation clearances listed in Table 1 and in Figure 4.
- Alcove installations: minimum 18" clearance at front of furnace shall be provided for future servicing. A removable access panel should be installed between top of the furnace door frame and the ceiling.

- Closet installations must use a louvered door having a minimum free area of 235 in^2 when located 6” from furnace or 390 in^2 for 5 ton MG1 furnaces. For special clearance between 1” - 6”, requirements are a louvered door with a minimum of 250 in^2 free area, with the openings in the closet door in line with the louvered openings in the furnace door. A fully louvered closet door may be used. See Circulating Air Requirements section (page 7).
- The furnace must be kept free and clear of insulating material. Examine the furnace area when the furnace is installed or when insulation is added. Insulating material may be combustible.

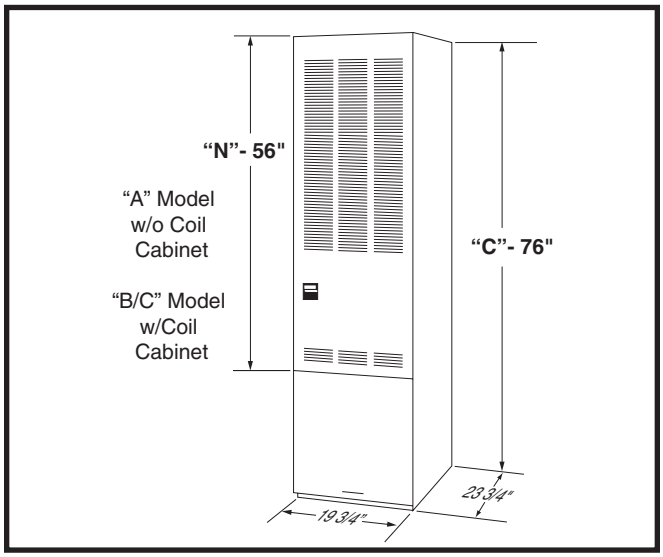


Figure 4. Overall Dimensions

ALL MODELS	CLOSET	ALCOVE
Front	6”	18”
Back	0”	0”
Sides	0”	0”
Roof Jack	0”	0”
Top	6”	6”
Top and Sides of Duct	0”	0”
Bottom of Duct	—	—
A Cabinet (w/ coil box)	0”	0”
A Cabinet (w/o coil box)	1/4”	1/4”
B Cabinet	0”	0”

Table 1. Minimum Clearances

Applications

MG1 series gas furnaces are classified as a Category I (Catégorie I) appliance and listed as a direct vent (sealed combustion), downflow heating appliance for manufactured (mobile) homes and recreational vehicles. The furnace must be located so that venting can be properly achieved.

Air conditioning may be added to structures with MG1 series furnaces using air conditioning or conventional units. This Installation Instruction manual includes special requirements for incorporation of air conditioning equipment to the MG1 furnaces.

Unit Location

- The furnace shall be appropriately located to the supply and return air distribution system. Sides and back of the furnace may be enclosed by wall framing. See Minimum Clearances section.
- The furnace installation is only intended for free air return through the furnace door louvers. DO NOT connect a ducted return air system directly to the furnace. Improper installation may create a hazard and damage equipment, as well as void all warranties.
- Furnace may be installed on combustible flooring when using manufacturer approved duct connectors. See page 6.
- When installed in a residential garage, the furnace must be positioned so the burners and the source of the ignition are located no less than 18 inches above the floor and protected from physical damage by vehicles.

A2L Indoor Coil

C85 Loose Coils

C85 Loose Coils have been evaluated for the safe use of A2L refrigerants, to meet requirements by Nordyne and the standards in UL 60335-2-40. Due to the nature of the flammability of A2L refrigerants, modifications have been made to mitigate refrigerant leaks from a C85 coil in an MG1E furnace. Nordyne has added an A2L sensor on all C85 coils located in the front plate. See Figure 5. See the C85 wiring diagrams and installation instructions for the installation of an C85 coil in an MG1E furnace.

Coils from other Manufacturers

If coils are used by other manufacturers, follow the coil manufacturer guidelines for installation and wiring.

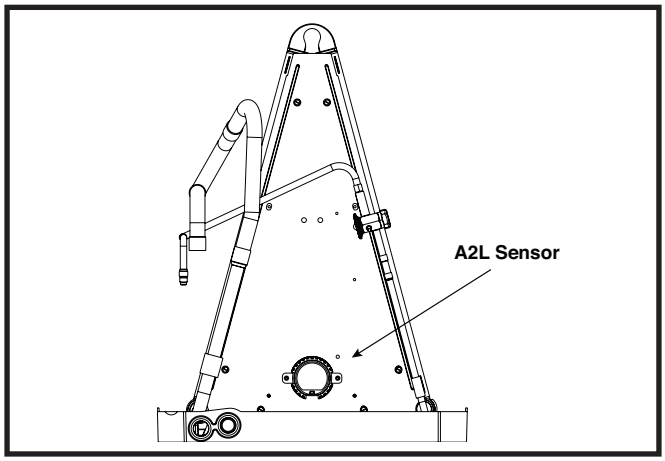


Figure 5. A2L Sensor Location

CIRCULATING AIR REQUIREMENTS

⚠ WARNING:

Do not allow combustion products to enter the circulating air supply. Failure to prevent the circulation of combustion products into the living space can create potentially hazardous conditions including carbon monoxide poisoning that could result in personal injury or death.

The surface that the furnace is mounted on must provide sound physical support of the furnace with no gaps, cracks or sagging between the furnace and the floor or platform.

Circulating air ductwork must not be connected to any other heat producing device such as a fireplace insert, stove, etc. This may result in fire, explosion, carbon monoxide poisoning, personal injury, or property damage.

Return Air

U.S.A. home manufacturers shall comply with all of the following conditions to have acceptable return air systems for closet installed forced air heating appliances:

- The return air opening into the closet shall not be less than specified in the appliance's listing.
- The cross-sectional area of the return duct system leading into the closet, when located in the floor or ceiling shall not be less than 235 in^2.

⚠ CAUTION:

HAZARD OF ASPHYXIATION: Do not cover or restrict return air opening.

- Means shall be provided that prevent inadvertent closure of flat objects placed over the return air opening located in the floor of the closet (versus the vertical front or side wall).
- The total free area of openings in the floor or ceiling registers serving the return air duct system must be at least 235 in^2. At least one register should be located where it is not likely to be covered by carpeting, boxes and other objects.
- Materials located in the return duct system must have a flame spread classification of 200 or less. This includes a closet door if the furnace is in a closet.
- Noncombustible pans having 1" upturned flanges are located beneath openings in a floor duct system.
- Wiring materials located in the return duct system shall conform to Articles 300-22 of the National Electrical Code (ANSI C1/NFPA-70).
- Gas piping is not run in or through the return duct system.

⚠ CAUTION:

HAZARD OF ASPHYXIATION: Negative pressure inside the closet, with closet door closed and the furnace blower operating on high speed, shall be no more negative than minus 0.05 inch water column.

- Test the negative pressure in the closet with the air-circulating fan operating at high speed and the closet closed. The negative pressure is to be no more negative than minus 0.05 inch water column.
- Air conditioning systems may require more duct register and open louver area to obtain necessary airflow.

Supply Air

For proper air distribution, the supply duct system must be designed so that the static pressure measured external to the furnace does not exceed the listed static pressure rating shown on the furnace rating plate.

Location, size, and number of registers should be selected on the basis of best air distribution and floor plan of the home. **The supply air must be delivered to the conditioned space by duct(s) secured to the furnace casing, running full size and without interruption.** Three typical distribution systems are shown in Figure 6

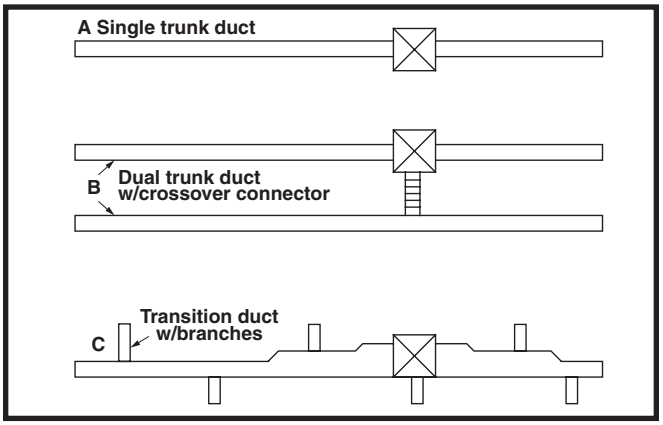


Figure 6. Typical Supply Duct System

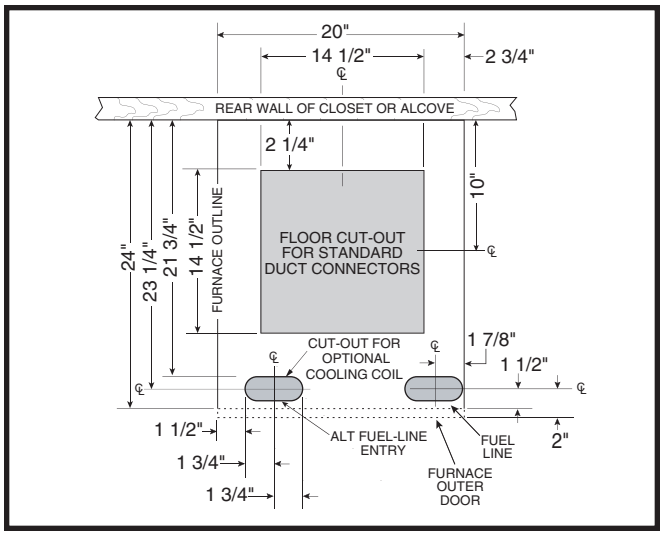


Figure 7. Cut-Out Dimensions for Standard Duct Connectors

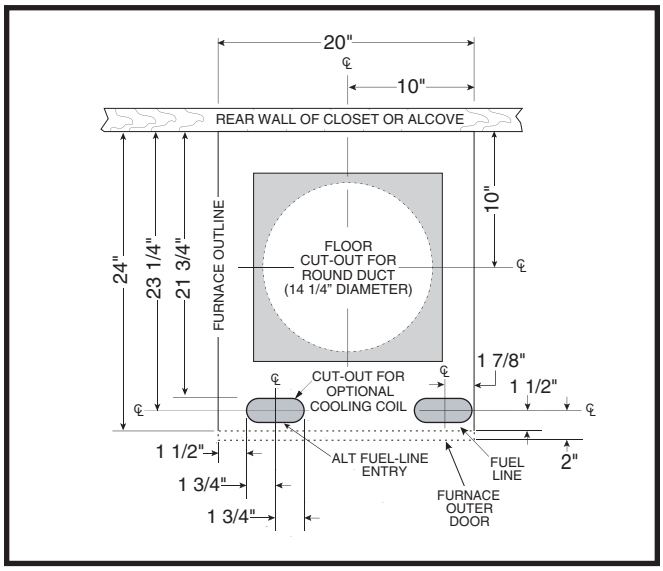


Figure 8. Cut-Out Dimensions for Round Duct Connectors

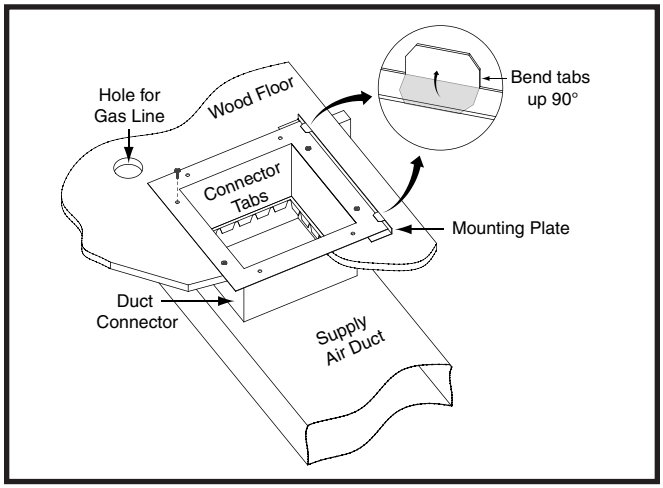


Figure 9. Standard Duct Connector Installed

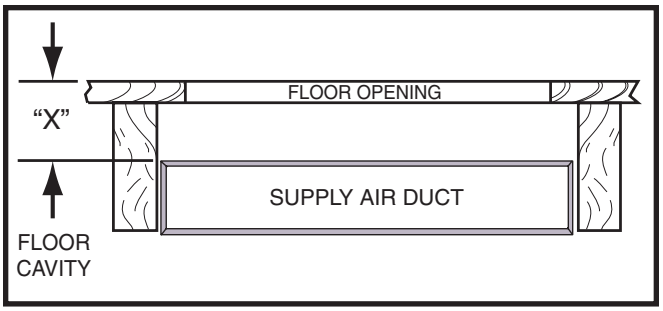


Figure 10. Floor Cavity

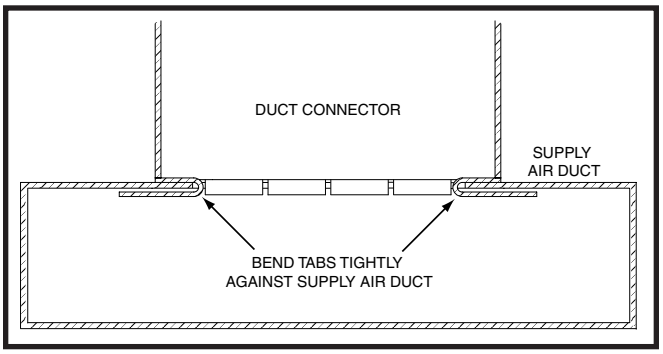


Figure 11. Duct Connector Tabs

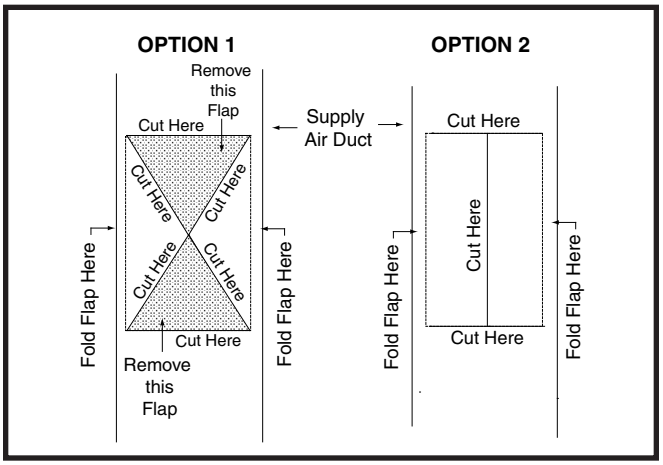


Figure 12. Narrow Air Duct Openings

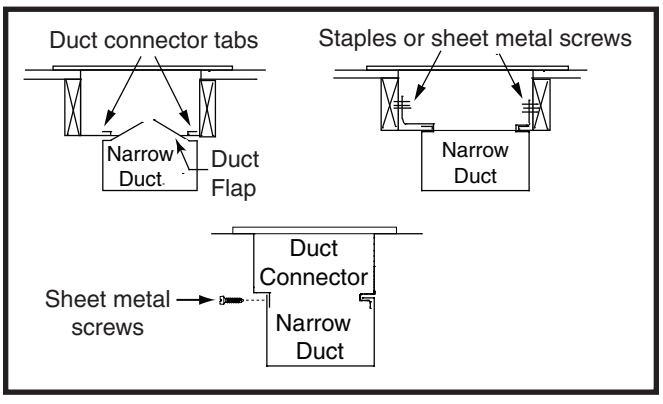


Figure 13. Narrow Ducts

FURNACE INSTALLATION

NOTE: These Installation procedures are suggested for typical furnace installations. Since each installation is different, the sequence of instructions may differ from the actual installation. Only qualified HVAC technicians should install this furnace.

The installer must be familiar with and comply with all codes and regulations applicable to the installation of these heating appliances and related equipment. In the absence of local codes, the installation must be in accordance with the current provisions of one or more of the following standards.

- Federal Manufactured Home Constructions & Safety Standard (H.U.D. Title 24, Part 3280.707[a][2])
- American National Standard (ANSI-119.2/NFPA-501C) for all recreational vehicle installations.
- American National Standard (ANSI-Z223.1/NFPA-54) and/or CAN/CSA B149 for all gas-fired furnace models.
- American National Standard (ANSI-Z95.1/NFPA-31) and/or CSA B139 for all oil-fired furnace models.
- American National Standard (ANSI-C1/NFPA-70) and/or CSA 22.1 Canadian Electric Code Part 1 for all electrical field wiring.
- Units have been certified under standards UL 307A & B, UL727-1999, ANSI Z21.47/CSA 2.3, and CSA B140.10.

General Information

- The furnace must be leveled at installation and attached to a properly installed duct system. **Do not use the back of the furnace for return air.** See page 7 for circulating requirements.
- The furnace must be installed so that all electrical components are protected from water
- The dimensions of the room or alcove must be able to accommodate the overall size of the furnace and the installation clearances listed in Table 1 and Figure 1.
- The furnace must be installed upstream from a refrigeration system.
- MG1 series gas furnaces are certified for use on wood flooring or supports, but must be installed on top of a duct connector. This factory supplied accessory must be installed in the floor cavity and attached to the supply air duct before the furnace is installed.

IF FLOOR CAVITY "X" IS:	DUCT CONNECTOR TYPE & PART NUMBER	
	STANDARD DUCT	ROUND DUCT
7/8" / (22)	901987A	904008
2" / (51)	901988A	N/A
4-1/4" / (108)	901989A	904010
6-1/4" / (159)	901990A	904011
8-1/4" / (210)	901991A	904012
10-1/4" / (260)	901992A	904013
12-1/4" / (311)	901993A	904014

NOTE: Dimensions shown as Inches / (Millimeter)

Table 2. Duct Connector Sizes

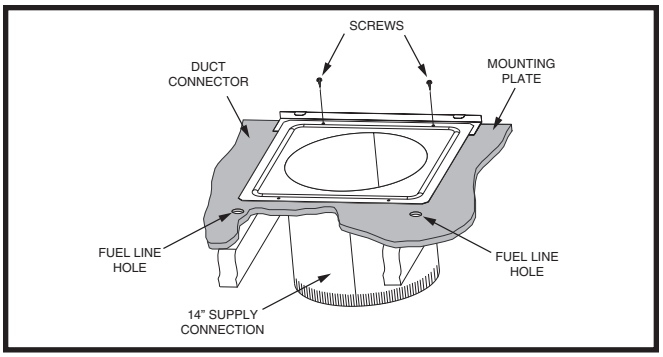


Figure 14. Round Duct Connector Installed

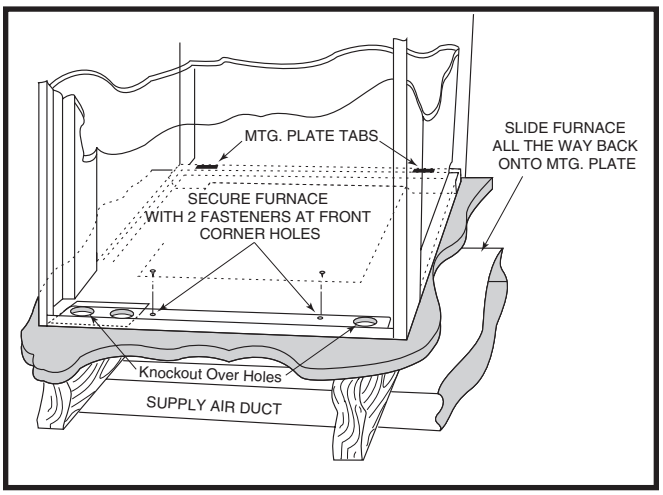


Figure 15. "A" & "B" Cabinet Furnaces

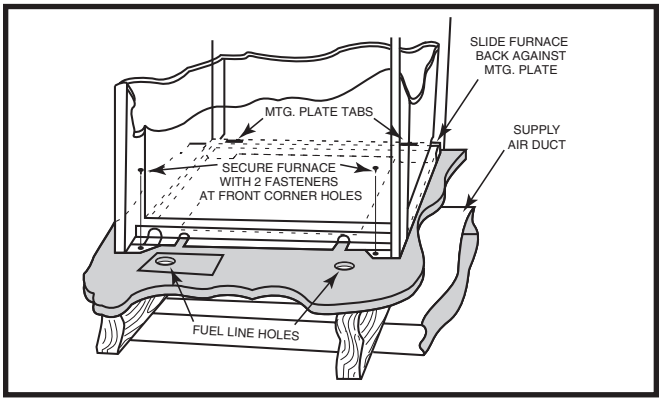


Figure 16. "A" Cabinet Furnace on Coil Cabinet

Locating & Cutting Duct Openings

Floor cut-outs and fuel line holes must be carefully located to avoid misalignment of the furnace, and vent piping. To locate standard ducts see Figure 7. For round ducts, see Figure 8.

1. Measure 10" from the rear wall or alcove and mark the centerline of the cut-out on the floor.
2. Using the centerline as a starting point, draw the rest of the duct cut-out to the dimensions shown in Figure 7 or Figure 8.
3. Cut out the floor opening 1/16" larger than the actual cutout drawn. This will allow some clearance when installing the duct connector.

4. Measure from the top of the floor down to the top of the supply air duct to obtain the depth of the floor cavity. **NOTE:** The depth of the floor cavity shown as "X" in Figure 10 will determine the correct duct connector.
5. Determine which duct connector to use from Table 2.
6. Measure and drill gas hole and cut out for cooling coil (if applicable). See Figure 7 or Figure 8.

Standard Duct Connector Installation

The standard duct connector is designed for use on ducts 12" in width. Ducts narrower than 12" may not allow sufficient clearances for this type of installation. See Alternate Attachment Method section below.

1. Center the duct connector in the floor opening with bottom tabs resting on top of the supply air duct.
2. Mark the cut-out area on the supply air duct by tracing around the connector tabs of the duct connector. See Figure 9.
3. Remove the duct connector and cut out the marked area of the supply air duct 1/4" larger the actual cutout drawn.
4. Install the duct connector back in the floor opening with the bottom tabs extending into the supply air duct.
5. Install the optional mounting plate under the back side of the duct connector as shown in Figure 9. Align the screw holes in both components.
6. Secure the duct connector and the mounting plate to the wood floor with appropriate size screws.
7. Bend the connector tabs on the bottom of the duct connector upwards and as tight as possible against the supply air duct.
8. Bend both tabs up 90° on the mounting plate. See Figure 11.
9. Seal all connections with industrial grade sealing tape or liquid sealant. See HUD Code 3280.715 for acceptable standards for tape and sealants.

   NOTE: Requirements for sealing ductwork vary from region to region. Consult with local codes for requirements specific to your area.

Alternate Attachment Method

The standard duct connector is designed for use on ducts 12" in width. However if there is insufficient clearance to bend the duct connector tabs, this alternate attachment method may be used.

1. Score and cut the top of the supply air duct as indicated in Option 1 or Option 2. See Figure 12. **NOTE:** If Option 1 is selected, cut out the metal from the shaded area.
2. Fold the two flaps (Options 1 or 2) up to form the opening for the duct connector.
3. Install the duct connector with the bottom tabs extending into the supply air duct.
4. Bend the tabs on the bottom of the duct connector upwards and as tight as possible against the supply air duct. See Figure 13.
5. Form the flaps (Options 1 or 2) up against the duct connector as tight as possible.
6. Secure the duct connector flaps to the supply air duct with staples (3 minimum) or if a 2x block/joist is not provided, use sheet metal screws (2 minimum).

   NOTE: The duct connector tabs may be attached to the air duct with sheet metal screws or other suitable fasteners as long as the duct connector and the air duct are securely attached.
7. Seal all connections with industrial grade sealing tape or liquid sealant.

   NOTE: Requirements for sealing ductwork vary from region to region. Consult with local codes for requirements specific to your area.

Round Duct Connector Installation

1. Apply a bead of caulking, mastic, or other approved sealant around bottom side of connector.
2. Install and center the duct connector in the floor opening.
3. Install the mounting plate under the back side of the duct connector. See Figure 14. **NOTE:** Align the screw holes in both components.
4. Secure the duct connector and the mounting plate to the wood floor with appropriate size screws.
5. Connect the round supply duct to the underside of the duct connector and secure them with field supplied sheet metal screws.
6. Seal all connections with industrial grade sealing tape or liquid sealant.

   NOTE: Requirements for sealing ductwork vary from region to region. Consult with local codes for requirements specific to your area.

Installing the Furnace

Sides and back of the furnace may be enclosed by wall framing such as in a closet or alcove. The dimensions of the room or alcove must be able to accommodate the overall size of the furnace shown in Figure 4 and the installation clearances outlined on page 6. The furnace shall be appropriately connected to the supply distribution system as shown in Figure 15 & Figure 16.

1. Remove furnace outer door(s) and bottom fuel line knockout.
2. Place furnace onto duct connector and center with floor opening.
3. Slide onto mounting plate. (Bottom rear slots on furnace should engage with mounting plate tabs.)
4. Secure front with one (1) fastener at each corner. See Figure 15 & Figure 16.

   NOTE: Additional fasteners may be used at rear, sides or through door frame, as desired, to secure furnace to closet or alcove framing.

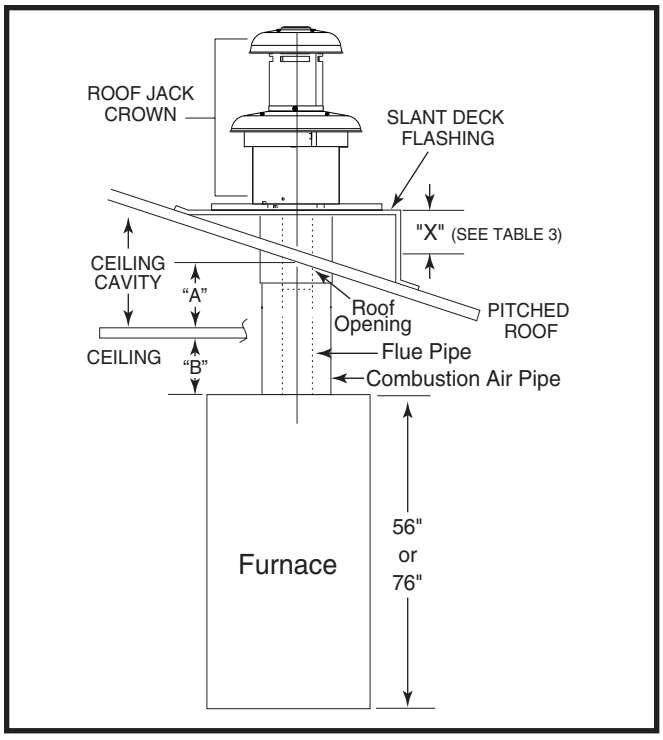


Figure 17. Ceiling Cavity Depth

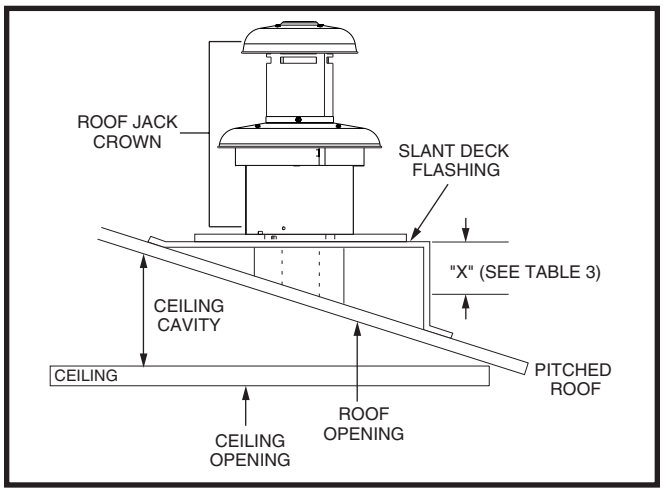


Figure 18. Example of Flat Jack with Flashing

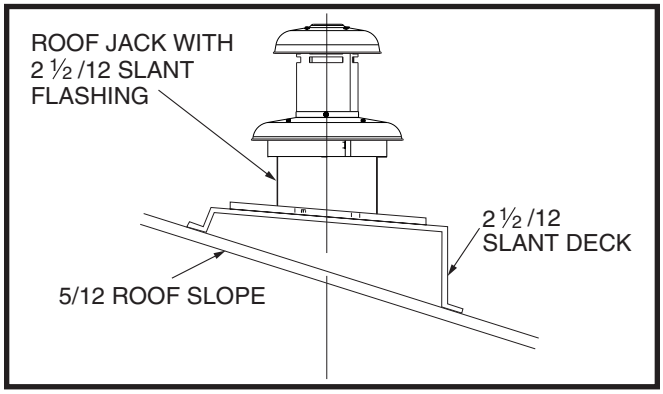


Figure 19. Example of 2½ / 12 Slant Jack with Flashing

MODEL NUMBER	APPROX. LENGTH BELOW FLASHING
(F,S)AW1523-(0,2,4)(A,S)	15" - 23"
(F,S)AW2135-(0,2,4)(A,S)	21" - 35"
(F,S)AW2747-(0,2,4)(A,S)	27" - 47"
(F,S)AW3563-(0,2,4)(A,S)	35" - 63"
(F,S)AW5195-(0,2,4)(A,S)	51" - 95"

NOTE: Not all models are available. Check with your local distributor for available models.

S AW 27 47 - 2 S

- S: F = FLAT FLASHING; S = SLANT FLASHING
- AW: AW= ALL WEATHER
- 27: MIN. ADJ. LENGTH
- 47: MAX. ADJ. LENGTH
- 2: FLASHING PITCH/12" RISE 0=FLAT 2=2.5/12 4=4/12
- S: FLUE STEEL TYPE A= ALUMINIZED S=STAINLESS

Table 3. Roof Jack Assemblies

ROOF JACK SERIES	IF ROOF PITCH IS:	SLANT DECK FLASHING NUMBER	"X"
"F Series	2" in 12"	903893 (2.5/12)	2-1/8"
	2-1/2" in 12"	903893 (2.5/12)	2-1/2"
	3" in 12"	903894 (3/12)	2-7/8"
	3-1/2" in 12"	903894 (3/12)	3-1/4"
	4" in 12"	903895 (4/12)	3-5/8"
"S" Series (2.5 / 12 Pitch only)	4-1/2" in 12"	903895 (2.5/12)	2-1/8"
	5" in 12"	903895 (2.5/12)	2-1/2"
	5-1/2" in 12"	903894 (3/12)	2-7/8"
	6" in 12"	903894 (3/12)	3-1/4"
	6-1/2" in 12"	903895 (4/12)	3-5/8"

Optional deck flashings for flat and 2.5/12 pitch roof jacks. 4/12 pitch roof jacks not applicable.

Table 4. Slant Deck Flashings

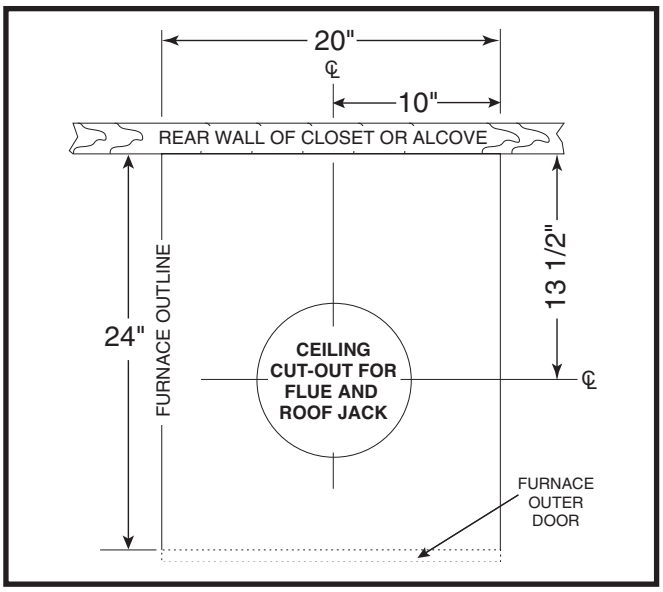


Figure 20. Cut-Out Dimensions for Flue & Roof Jack

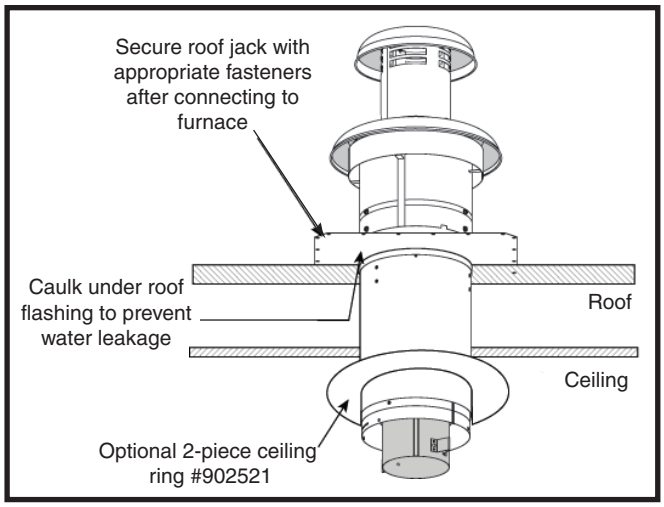


Figure 21. Flat Roof

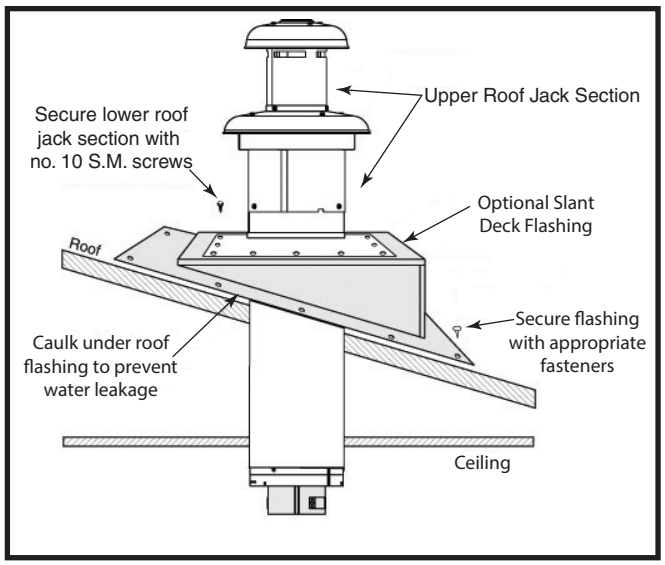


Figure 22. Pitched Roof

ROOF JACK INSTALLATION

Required ceiling and roof cut-out openings must be carefully located to avoid misalignment of the furnace and Roof Jack. **NOTE:** Install only roof jack assemblies listed in Table 3 on this heating appliance.

Roof Jack Selection

1. Determine depth of ceiling cavity from center of roof opening to center of ceiling opening noted as "Dimension A" in Figure 17.
2. Determine ceiling height and subtract height of furnace noted as "Dimension B" in Figure 17.
3. Add dimensions "A" & "B" (and X from Table 4 if slant deck flashing is used). The total length of [A] + [B] + [X] must be within the minimum and maximum range of the roof jack listed in Table 3.

Application Notes

- FAW, FAWT, SAW and SAWT series roof jacks with a 5" diameter inner vent pipe may be used with all models of MG1 Series gas furnaces.

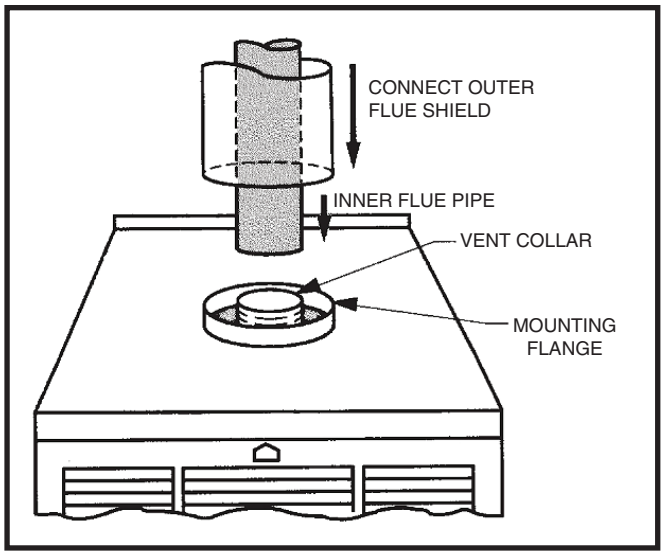


Figure 23. Combustion Air Pipe Connection

F = Flat Flashing: flexes from 0/12 to 1/12 roof slope. See Figure 18.
S = Slant Flashing: 2.5/12 Slope flexes from 1/12 to 4/12 roof slope, 4/12 flexes from 3/12 to 5/12. See Figure 19.

- MG1 furnaces may be used with roof jack systems and extension accessories as tall as 170" (except MG1-056 models, which are limited to 120"). An internal roof jack extension (p/n 901935 - 10", p/n 903107 - 18") can be used to increase roof jack height. All connections inside the home must be made below the ceiling.
- This furnace must never be connected to a chimney flue servicing a fireplace or other appliance designed to burn solid fuel.
- If the roof jack crown is covered or blocked with snow, the furnace will not operate properly. If the home is located in regions where snow accumulation exceeds 7" (HUD snowload zones) use an external roof jack extension (p/n 901937). A maximum of 2 extensions per roof jacks can be used. Extensions are optional accessories and may be purchased through your distributor.

Locating & Cutting Roof / Ceiling Openings

IMPORTANT NOTE:

Do not allow debris to fall into the furnace. This could cause unsafe operation and void the furnace warranty. Use the top cap that comes with the furnace packaging (or alternate protector) to prevent debris from falling into the furnace before the final roof jack connection is made.

NOTE: Refer to the installation instructions provided with optional air conditioning packages when installing furnaces with optional cooling coil cabinet or with optional C* series indoor coils.

1. Locate center of Roof Jack opening, measure 13 1/2" from the rear wall of closet or alcove along the center line of furnace and floor opening. See Figure 20.
2. Cut ceiling and roof holes:
   - Ceiling = 8 3/4" (222 mm) diameter
   - Roof = 9 3/8" (238 mm) diameter

Installing The Roof Jack

1. Apply caulking compound on underside of roof flashing to form a continuous strip at least 3/8" wide around the underside of the perimeter of the flashing. For flat roof, see Figure 21 or see Figure 22 if roof is pitched.
2. Connect roof jack assembly to the furnace. Insert telescoping roof jack assembly through the opening cut on the roof.
3. Connect inner flue pipe to vent collar of the furnace. See Figure 23.
4. Connect combustion air pipe to furnace collar with sheet metal screw. See Figure 23.

NOTES:

- It is recommended that the connection of the combustion air pipe to the furnace be made before the flashing is secured to the roof to maintain alignment of roof jack and furnace connections.
- For replacement furnaces, be sure the inner flue pipe connects over the furnace vent collar. **DO NOT use a smaller diameter inner flue pipe which could slide inside the furnace vent collar and restrict the flow of furnace flue products.**

5. Attach roof flashing. If necessary, shift roof flashing slightly in the roof opening so that assembly is in alignment with furnace.

   NOTE: If flashing is mounted on 12 degree angle, it may be necessary to adjust the angle to match the roof pitch; (1/12 - 4/12 maximum).

6. Press down firmly on roof flashing (over caulking) to make the seal with roof water tight.
7. Secure flashing with appropriate fasteners. **NOTE:** For added protection against leaks, coat the exposed flashing plate and fasteners with approved roofing compound.

   NOTE: Upper roof jack crown to be stored in a prominent location inside manufactured home until on-site installation.

Installing Transit-Mode Venting System

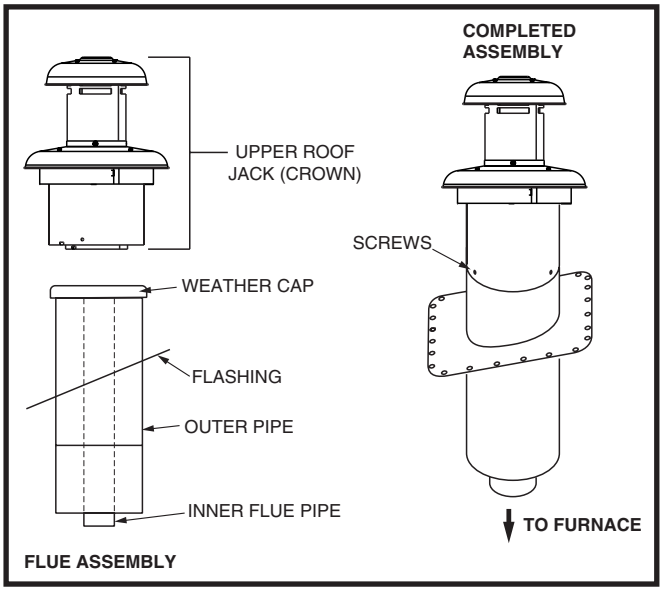


Figure 24. Roof Jack Crown

(Before Home is Moved to Site)

NOTE: For transit purposes, the transit kit (P/N 903838) should be installed before home is moved to site.

1. Furnace must be installed in accordance to furnace installation manual.
2. Select appropriate roof jack from Table 3.
3. Roof jack (less upper roof jack crown), with weather cap to be installed as described in Installing The Roof Jack section.
4. Install the four warning tags (factory supplied) on these items:
   - Weather cap
   - Fuel line connection point
   - Furnace flame observation door
   - Furnace wall thermostat

Removing the Transit-Mode Venting System (After home is moved to site)

⚠ WARNING:

Failure to properly secure the flue pipe to the furnace may result in fire, explosion or asphyxiation when operating the furnace.

1. Transit-mode weather cap to be removed and upper roof jack crown installed. **Do not discard the screws**. See Figure 24.
2. Place upper roof jack (crown) on the flue pipe assembly.

   NOTE: Make sure inside flue pipe attaches over inner flue pipe and outer Roof Jack pipe fits over outer pipe.

3. Secure in place using three sheet metal screws (#10 x 1/2") removed in step 1. Do not use the same holes which secured the rain cap in place.
4. Remove and discard all 4 venting system warning tags.

ELECTRICAL INFORMATION

⚠ WARNING:

ELECTRICAL SHOCK, FIRE OR EXPLOSION HAZARD

Failure to follow safety warnings exactly could result in serious injury, death or property damage.

Improper servicing could result in dangerous operation, serious injury, death or property damage.

- **Before servicing, disconnect all electrical power to furnace.**
- **When servicing controls, label all wires prior to disconnecting. Reconnect wires correctly.**
- **Verify proper operation after servicing.**

⚠ AVERTISSEMENT:

RISQUE DE DÉCHARGE ÉLECTRIQUE, D'INCENDIE OU D'EXPLOSION

Le non-respect des avertissements de sécurité pourrait entraîner des blessures graves ou des dommages matériels importants.

Un entretien inapproprié peut provoquer un fonctionnement dangereux, des blessures graves, la mort ou des dommages matériels.

- **Avant toute intervention, coupez l'alimentation électrique de la fournaise.**
- **Pour l'entretien des commandes, étiquetez tous les fils avant de les débrancher. Rebranchez les fils correctement.**
- **Vérifiez le bon fonctionnement après l'intervention.**

Line Voltage Wiring

⚠ WARNING:

To avoid electric shock, personal injury, or death, turn off the electric power at the disconnect or the main service panel before making any electrical connections.

- Electrical connections must be in compliance with all applicable local codes with the current revision of the National Electric Code (ANSI/NFPA 70).
- For Canadian installations the electrical connections and grounding shall comply with the current Canadian Electrical Code (CSA C22.1 and/or local codes).

It is recommended that 120VAC line voltage be supplied to the furnace from a dedicated branch circuit containing the correct fuse or circuit breaker for the furnace as listed in Table 5.

IMPORTANT NOTE:

Refer to the wiring diagram inside the control box cover or Figure 33 and Figure 34 for the wiring of your particular unit. Any other wiring methods must be acceptable to authority having jurisdiction.

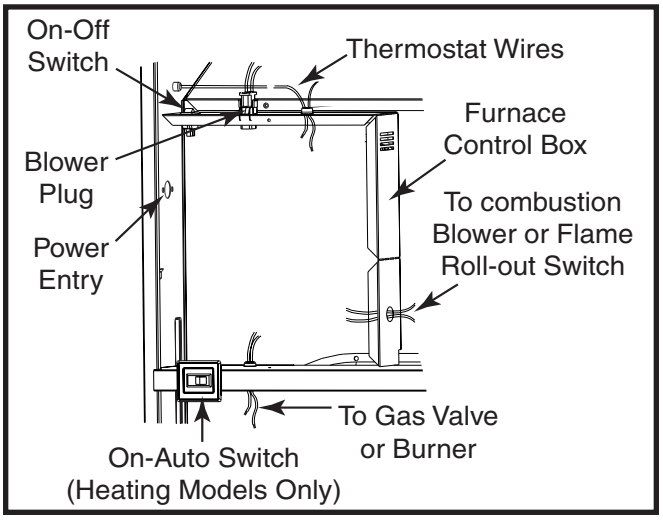


Figure 25. Control Panel (All Models)

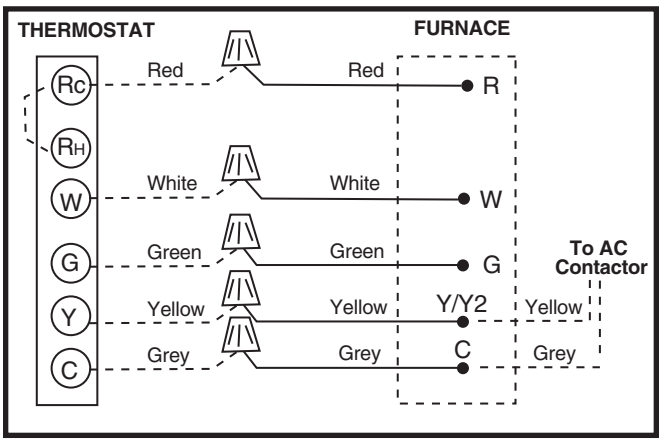


Figure 26. Thermostat Wiring for Nordyne Channel Control Board

FURNACE MODEL NUMBER-	FURNACE INPUT (BTUH)	CABINET WIDTH (IN.)	NOMINAL ELECTRICAL SUPPLY	MINIMUM OPERATING VOLTAGE	MAXIMUM OPERATING VOLTAGE	MAXIMUM FURNACE AMPERES	MAXIMUM FUSE OR CIRCUIT BREAKER AMPS*	MINIMUM CIRCUIT AMPACITY[1]
MG1E-B056	56,000	19 3/4	120-1-60	103	127	9.4	15	11.8
MG1E-B070	70,000	19 3/4	120-1-60	103	127	9.4	15	11.8
MG1E-B077	77,000	19 3/4	120-1-60	103	127	9.4	15	11.8
MG1E-B090	85,000	19 3/4	120-1-60	103	127	9.4	15	11.8

NOTE: Minimum wire gauge and maximum fuse/circuit breaker amperage are based on MCA and MOP calculations. This furnace is approved for installation with a 15 amp fuse/circuit breaker however. Wire sizing must adhere to current version of the NEC and/or applicable local codes depending upon the overcurrent protection.

* Non-time-delay fuses or circuit breakers are required.

THERMOSTAT WIRE GAUGE	RECOMMENDED THERMOSTAT WIRE LENGTH (TOTAL LENGTH)	
	2 - WIRE - HEATING	4 OR 5 WIRE - COOLING
24	55 ft.	25 ft.
22	90 ft.	45 ft.
20	140 ft.	70 ft.
18	225 ft.	110 ft.

Total wire length includes wire from furnace to the thermostat, from thermostat to outdoor unit, & from outdoor unit back to the furnace.

Table 5. Voltage Specifications & Thermostat Wire Gauge

⚠ CAUTION:

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

IMPORTANT NOTE:

Proper line voltage polarity must be maintained in order for the control system to operate correctly. Verify the incoming neutral line is connected to the white wire and the incoming "hot" line is connected to the black wire. The furnace will not operate unless the polarity and ground are properly connected as shown in Figure 26.

For installation of A-size Cabinet furnaces, allow sufficient slack in the wiring if an optional cooling coil cabinet is added at a later time. **Use of copper conductors is recommended.**

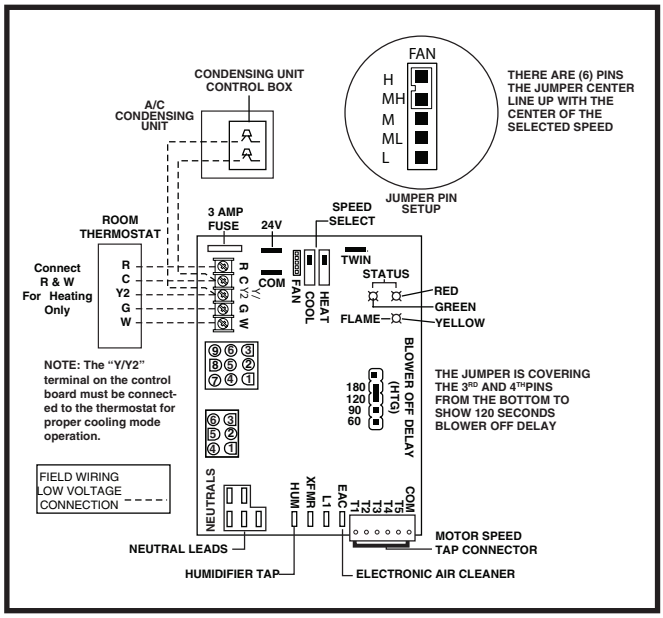


Figure 27. Nordyne Channel Control Board

Connecting Power Supply Wires

1. Remove the furnace control panel cover.
2. Route wires (120 VAC) through the strain relief on the left side of the furnace control box. See Figure 25.
3. Connect the **hot** wire to the **black** pigtail lead, and the **neutral** wire to the **white** pigtail lead. Secure all connections with suitable wire nuts.
4. Connect the **ground** wire to the grounding screw.
5. Reinstall the control panel cover and secure with the original mounting screws.

Low Voltage Wiring

- The furnace is designed to be controlled by a 24 VAC thermostat. The thermostat's wiring must comply with the current provisions of the NEC (ANSI/NFPA 70) and with applicable local codes having jurisdiction.
- The thermostat must be installed according to the instructions supplied by the thermostat manufacturer. Low voltage connections (24 VAC) from the thermostat are wired to the terminal strip on the integrated control in the furnace.
- The thermostat should be mounted about 5 feet above the floor on an inside wall. DO NOT install the thermostat on an outside wall or any other location where its operation may be adversely affected by radiant heat from fireplaces, sunlight, or lighting fixtures, and convective heat from warm air registers or electrical appliances. Refer to the thermostat manufacturer's instruction sheet for detailed mounting information.
- The nominal anticipator setting is 0.4. Refer to the thermostat literature for additional information.
- Best practice is to use five-wire conductor thermostat wire for 24 volt low-voltage circuit (2-wire is required for furnace only; 5-wire for heating and optional cooling systems). Refer to Table 6 for thermostat wire information.
- Figure 27 contains the proper connections for heating only (two-wire) and heating/cooling (five-wire) applications.

Connecting Thermostat Wires

1. Insert 24 volt wires through the plastic grommet just above the control panel.
2. Connect the thermostat wires to the furnace low voltage pigtails (dependent on the installation application). See Figure 26. **NOTE:** If AC is installed with the furnace, a Y connection is required to be made at the furnace. See Figure 33 and Figure 34.
3. Connect low-voltage circuit to the wall thermostat.
4. A hole may be made in the furnace cabinet to ease thermostat wiring. Make sure that the wiring is protected from the sharp edge of the added hole.

Verifying Anticipator Setting

After the furnace is installed, check the thermostat anticipator against the nominal setting of 0.4.

1. Connect the milliamp meter in series with one of the gas valve's low voltage terminals.
2. Energize the gas valve.
3. Read the value of the milliamps.
4. Adjust the heat anticipator of the thermostat to the value on the milliamp meter. If the heat anticipator is set too high, the furnace may delay turning on. If set too low, the furnace may cycle frequently and not provide comfort to the homeowner.

Grounding

⚠ WARNING:

To minimize personal injury, the furnace cabinet must have an uninterrupted or unbroken electrical ground. The controls used in this furnace require an earth ground to operate properly. Acceptable methods include electrical wire or conduit approved for ground service. Do not use gas piping as an electrical ground!

FUEL SUPPLY & PIPING

⚠ WARNING:

FIRE OR EXPLOSION HAZARD

- **Failure to follow safety warnings exactly could result in serious injury, death or property damage.**
- **Installation and service must be performed by a qualified installer, service agency or the gas supplier.**
- **Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.**

WHAT TO DO IF YOU SMELL GAS

- **Do not try to light any appliance.**
- **Do not touch any electrical switch; do not use any phone in your building.**
- **Leave the building immediately.**
- **Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the fire department.**

⚠ AVERTISSEMENT :

RISQUE D'INCENDIE OU D'EXPLOSION

- **Le non-respect des avertissements de sécurité pourrait entraîner des blessures graves ou des dommages matériels importants.**
- **L'installation et l'entretien doivent être effectués par un installateur qualifié, un organisme de service ou le fournisseur de gaz.**
- **N'entreposez pas ni n'utilisez de l'essence ni d'autres vapeurs ou liquides inflammables dans le voisinage de cet appareil, ni de tout autre appareil.**

QUE FAIRE S'IL Y A UNE ODEUR DE GAZ

- **N'essayez d'allumer aucun appareil.**
- **Ne touchez à aucun interrupteur électrique; n'utilisez aucun téléphone dans le bâtiment.**
- **Évacuez l'immeuble immédiatement.**
- **Appelez immédiatement votre fournisseur de gaz à l'aide du téléphone d'un voisin. Respectez les instructions du fournisseur de gaz.**
- **Si personne ne répond, appelez le service des incendies.**

⚠ WARNING:

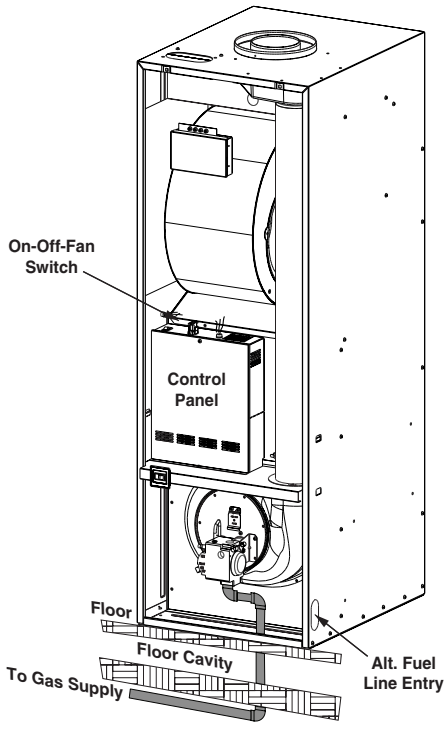
All piping must conform with local building codes, or in the absence of local codes, with the most recent edition of the National Fuel Gas Code ANSI Z223.1 or (CAN/CSA B149.1). Failure to follow all safety warnings could result in serious injury, death or property damage.

This furnace may be installed with left, right, or bottom gas entry. When connecting the gas supply, provide clearance between the gas supply line and the entry hole in the furnace casing to avoid unwanted noise and/or damage to the furnace. Typical gas service hookup for this furnace is shown in Figure 28.

Table 9 lists gas flow capacities for standard pipe sizes as a function of length in typical applications based on nominal pressure drop in the line.

IMPORTANT NOTES:

- **Some local regulations require the installation of a manual main shut-off valve and ground joint union external to the furnace. See Figure 28. The shut-off valve should be readily accessible for service and/or emergency use. Consult the local utility or gas supplier for additional requirements regarding placement of the manual main gas shut-off.**
- **Per ANSI 21.47, A 1/8-inch NPT plugged tapping, accessible for test gauge connection, must be installed immediately upstream of the gas supply connection to the furnace external to the cabinet. If local codes allow the use of a flexible gas appliance connector, always use a new listed connector. Do not use a connector that has previously serviced another gas appliance.**
- **Gas piping must never run in or through air ducts, chimneys, gas vents, or elevator shafts.**
- **Compounds used on threaded joints of gas piping must be resistant to the actions of -liquefied petroleum gases.**



Some codes may require installation of a manual main shut-off valve and ground joint union external to the furnace. The shut-off valve should be readily accessible for service and/or emergency use. Consult the local utility or gas supplier for additional requirements regarding placement of the manual main gas shut-off.

Figure 28. Typical Gas Piping

- **The main gas valve and main power disconnect to the furnace must be properly labeled by the installer in case emergency shutdown is required.**
- **Flexible gas connectors are not recommended for this furnace but may be used if allowed by local jurisdiction. Only new flexible connectors may be used. DO NOT reuse old flexible gas connectors.**
- **A drip leg should be installed in the vertical pipe run to the unit.**
- **All piping shall be black iron pipe. Internally tinned copper tubing may be used for gas supply systems.**
- **Fuel line installations other than typical installations shown in Figure 28 must comply with the fuel piping provisions stated in the Federal Manufactured Home Standard (H.U.D. TITLE 24, PART 3280) and the National Fuel Gas Code (ANSI-Z223.1/NFPA-54).**
- **Shut-off valve must be designed and listed for use with liquid petroleum (L.P. gas).**
- **Plugged tappings (1/8" NPT) for test gauge connection are present on the gas valve. See Figure 29 and Figure 30 for locations.**

NOTE: Optional fuel inlet lines are available for all gas furnace models to permit the addition of a 1/2" F.P.T. shut-off valve above the floor.
The gas supply to your home will either be Natural Gas or L.P. Your furnace is factory equipped to operate on Natural Gas. If your gas supply is L.P., you must contact a qualified serviceman or gas supplier to convert the furnace. Instructions for conversion to propane are shown on page 17. Factory installed orifice sizes are listed in Table 6.

For natural gas operation, the maximum inlet pressure for the valve is 7" W.C and the minimum inlet pressure is 4.5" W.C. Pressure is reduced to 3 1/2" W.C. by the pressure regulator in the gas valve.

For LP gas, pressure to the gas valve must be more than 11" W.C. but not more than 13" W.C. Pressure is reduced to 10" W.C. by the pressure regulator in the gas valve.

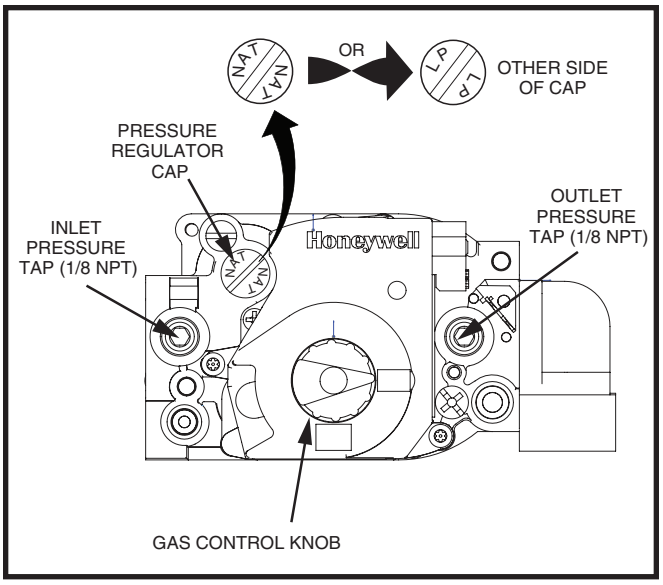


Figure 29. Honeywell/Resideo Gas Valve

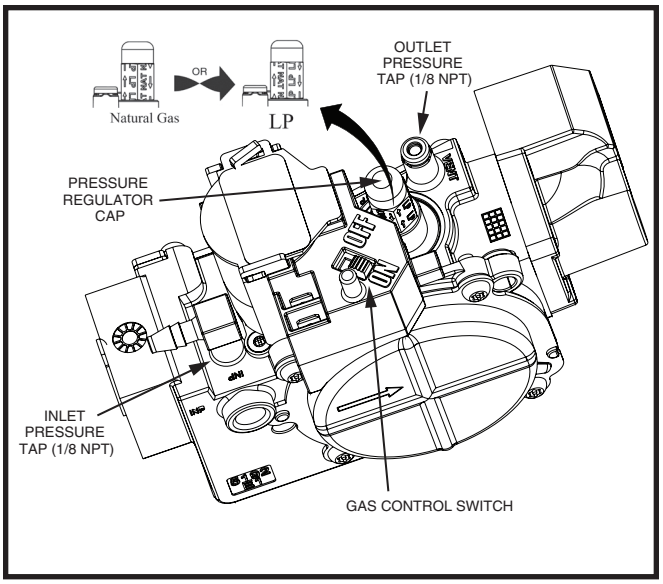


Figure 30. Copeland Gas Valve

FURNACE MODEL #	INPUT MBTU/H	OUTPUT MBTU/H	ORIFICE NO		E.S.P. IN WC	IGNITOR DIRECT	COMB. BLOWER	MOTOR HP	A/C READY TONS
			NAT.	LP					
MG1E-B056	56	45	29	45	0.3	Y	Y	3/4	4
MG1E-B070	70	57	24	42	0.3	Y	Y	3/4	4
MG1E-B077	77	62	21	40	0.3	Y	Y	3/4	4
MG1E-B090	85	68	17	36	0.3	Y	Y	3/4	4

NOTES:
- Electrical Supply: 120 volts, 60HZ, 1 Ph. Fuse or Breaker - 15 amps
- Temperature Rise: 45° F to 75° F
- High Altitude for US and Canadian installations: See High Altitude section on page 17.
- Thermostat Circuit: 24 volts, 60HZ, 30 vac
- Normal Anticipator Setting: 0.4
- Manifold Pressure for Natural Gas: 3.5" w.c.
- Manifold Pressure for LP Gas: 10" w.c.

Table 6. MG1 Furnace Specifications - Factory Settings

Leak Check

⚠ WARNING:

FIRE OR EXPLOSION HAZARD

Failure to follow safety warnings exactly could result in serious injury, death or property damage.

Never test for gas leaks with an open flame. Use a commercially available soap solution made specifically for the detection of leaks to check all connections. A fire or explosion may result causing property damage, personal injury or loss of life.

⚠ AVERTISSEMENT :

RISQUE D'INCENDIE OU D'EXPLOSION

Le non-respect des avertissements de sécurité pourrait entraîner des blessures graves ou des dommages matériels importants.

N'effectuez jamais d'essai d'étanchéité des gaz avec une flamme nue. Utilisez une solution savonneuse offerte sur le marché conçue spécialement pour la détection des fuites pour vérifier tous les raccordements. Un incendie ou une explosion pourrait survenir et causer des dommages matériels, des blessures ou des pertes de vie.

After the gas piping to the furnace is complete, all connections must be tested for gas leaks. This includes all fittings, pipe connections at the main gas valve, emergency shutoff valve, and flexible gas connectors (if applicable). The soap and water solution can be applied on each joint or union using a small paintbrush. If any bubbling is observed, the connection is not sealed adequately and must be retightened. Repeat the tightening and soap check process until bubbling ceases.

⚠ CAUTION:

When pressure testing gas supply lines at pressures greater than 1/2 psig (14 inch W.C.), the gas supply piping system must be disconnected from the furnace to prevent damage to the gas control valve. If the test pressure is less than or equal to 1/2 psig (14 inch W.C.), close the manual shut-off valve

Flue Gas Sampling

It may be necessary to take flue gas sampling in order to check the performance after furnace installation. A flue gas sample may be taken from the heat exchanger, which is located behind the hole of the top-front of blower compartment.

1. Turn off all electric power to the appliance.
2. Remove the black plastic cap located above the blower. Do not discard cap.
3. Drill a hole through the top of the blower compartment. **NOTE:** Hole diameter should be same size as sampling tube.
4. Insert sampling tube through the drilled hole and into the heat exchanger.
5. After a complete check and adjustment of furnace performance, seal the drilled hole with a screw larger than the hole. **NOTE:** Seal the screw threads with silicon sealant - rated at least 500° F.
6. Plug the outside hole with the plastic cap removed in step 3.

High Altitude Conversion

⚠ WARNING:

The reduction of input rating necessary for high altitude installation may only be accomplished with factory supplied orifices. Do not attempt to drill out orifices in the field. Improperly drilled orifices may cause fire, explosion, carbon monoxide poisoning, personal injury or death.

High altitude conversion with this furnace depends on the installation altitude and the heating value of the gas. The installation of this furnace at altitudes above 2,000 feet must meet the requirements of the National Fuel Gas Code or local jurisdiction. In Canada, the requirements for high altitude are different and governed by CSA B149.1. Always consult your local code authority.

This furnace is shipped from the factory with orifices and gas regulator settings for natural gas operation at sea level altitudes. At 2,000 feet, the NFGC requires that this appliance be derated 4% for each 1000 feet of altitude. For example, the input needs to be reduced 8% at 2,000 feet, 12% at 3,000 feet and etc. This deration is in reference to the input rate and gas heating value at sea level.

To derate the furnace requires knowing the heating value of the gas at the installation site. Heating values at particular job sites vary for two reasons:

1. The chemical mixture of the gas varies from region to region and is expressed as the "sea level heating value".
2. The heating value varies by altitude. For this reason, especially in high altitude areas, the local gas utility specifies the heating value at the residence's gas meter as the "local value".

Installation Example

Elevation: ..... 5,000 feet
Type of Gas: ..... Natural Gas
Local Heating Value of Gas: 750

Determine which natural gas table to use. From Table 10, find 750 and follow down the column, stop at the 5,000 feet row. The heating value listed is LOW. Table 12 & 13 will be used to determine orifice size and verify manifold pressure.

For added flexibility, two tables have been provided for natural gas installations with high or low heating values at sea level. Table 12 & Table 13 contain the manifold pressure and orifice sizes to use at various altitudes. Table 11 (HIGH) is for natural gas installations with a heating value of more than 1,000 Btu per cubic foot and Table 12 (LOW) is for less than 1,000 Btu per cubic foot. To determine which table to use:

1. Consult the local utility for the local heating value at your installation site.
2. From Table 10, find your local heating value as supplied by the utility company. Follow down the column and stop at your altitude level.
3. If your sea level heating value is HIGH, use Table 11 or if it's LOW, use Table 12. See Example.

After changing the orifices, it is required that you measure the gas input rate. This may be accomplished in the usual way, by clocking the gas meter and using the local gas heating value. See Verifying Input Rate.

IMPORTANT NOTE:
Observe the action of the burners to make sure there is no yellowing, lifting or flashback of the flame.

Conversion to Propane (LP) Gas

⚠ WARNING:

This furnace was shipped from the factory equipped to operate on natural gas. Conversion to LP/propane gas must be performed by qualified service personnel using factory supplied conversion parts. Failure to use the proper conversion kit can cause fire, explosion, property damage, carbon monoxide poisoning, personal injury, or death.

⚠ WARNING:

Shut off the gas supply at the manual gas shutoff valve, before disconnecting the electrical power. A fire or explosion may result causing property damage, personal injury or loss of life. Failure to follow the safety warnings exactly could result in serious injury, death or property damage.

⚠ WARNING:

To avoid electric shock, personal injury, or death, turn off the electric power at the disconnect or the main service panel before making any electrical connections.

This furnace can be converted from factory-equipped natural gas to liquid propane gas. Conversion of this valve requires replacement of the burner orifice and flipping the regulator cap to the side marked LP. The orifice required for conversion is supplied with the furnace. See Figure 28.

For altitudes between 0 and 1,999 feet, use the factory supplied LP orifice as shown in Table 6.

Altitudes between 2,000 and 10,000 feet require the orifice to be changed. Table 13 lists the correct orifice size and manifold pressure at different altitudes.

Atmospheric & Direct Ignition Furnaces

1. Follow the instructions in "How to Shut Off Gas - Direct Ignition".
2. Disconnect the gas pipe union and the electrical wires connected to the gas valve.
3. Remove the gas valve assembly:
4. Remove screw(s) from gas valve bracket. Gas valve and spud may be removed. Orifice is located at the end of the spud.
5. Replace the main orifice with the L.P. gas orifice supplied in the envelope located by the gas valve. Verify the orifice size matches the nameplate or Table 6.
6. Unscrew the pressure regulator cap and check for the letters NAT or LP. See Figure 29 and Figure 30.
7. Invert the cap and tighten until snug.
8. Reassemble the burner assembly into the furnace.
9. Reconnect the gas piping and electrical wires to the gas valve.
10. Open the manual shut-off valve and follow the Operating Instructions.

Measuring the Supply Gas Pressure

To obtain an accurate pressure reading, turn off all gas appliances (i.e. Dryers, water heaters, stoves, etc.) at their ON/OFF control or individual gas valves.

1. Remove the inlet pressure plug from the INLET side of the gas valve with a 3/16 Allen wrench. See Figure 28.
2. Install a 1/8 NPT fitting, which is compatible with a manometer or similar pressure gauge.
3. Connect the manometer or pressure gauge to the inlet pressure tap.
4. Turn on all electrical power to the furnace.
5. Turn the main gas supply valve (on the outside of the unit) to the ON position.
6. Start the furnace by adjusting the thermostat to it's highest setting. Allow the furnace to run for 10 minutes.
7. Check the incoming gas line pressure. Propane gas furnaces must be between 11.0"-14.0" W.C. Natural gas installations must be between 4.5"-10.0" W.C. If the pressure is not between these specified ranges, contact your local gas supplier for adjustment.
8. Adjust the thermostat to it's lowest setting and allow the unit to cycle off.
9. Turn the main gas supply valve (on the outside of the unit) to the OFF position.
10. Turn off all electrical power to the furnace.
11. Disconnect the manometer or pressure gauge.
12. Remove the NPT fitting and reinstall the inlet pressure plug. **NOTE:** To prevent cross threading, hand tighten the plug first, then tighten with 3/16 Allen wrench.

Measuring the Manifold Pressure

The manifold pressure must be measured by installing a pressure gauge (Manometer, Magnehelic Meter, etc.) to the outlet end of the gas valve.

1. Remove the manifold pressure plug from the outlet side of the gas valve with a 3/16 Allen wrench. See Figure 28.
2. Install a 1/8 NPT fitting, which is compatible with a Manometer or similar pressure gauge.
3. Connect the manometer or pressure gauge to the pipe thread fitting.
4. Start the furnace by adjusting the thermostat 5 degrees above room temperature. Allow the furnace to operate for 3 minutes.
5. Measure the manifold pressure on the manometer or pressure gauge. Compare the measured value to the value in Table 11, Table 12 or Table 13.
6. Replace the cap so that the letters facing up represent the type of gas being used for the furnace. See Figure 28.
7. Adjust the thermostat to its lowest setting.
8. Turn off the main gas supply to the unit at the manual shut-off valve, which is located outside of the unit.
9. Turn off all of the electrical power to the furnace.
10. Disconnect the manometer or pressure gauge.
11. Remove the 1/8 NPT fitting and reinstall the manifold pressure plug. **NOTE:** To prevent cross threading, hand tighten the plug first then tighten with 3/16 Allen wrench.

STARTUP & ADJUSTMENTS

PLEASE READ ALL SAFETY INFORMATION BEFORE LIGHTING THE FURNACE

⚠ WARNING:

FIRE OR EXPLOSION HAZARD

- **Failure to follow safety warnings exactly could result in serious injury, death or property damage.**
- **Installation and service must be performed by a qualified installer, service agency or the gas supplier.**
- **Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.**

WHAT TO DO IF YOU SMELL GAS

- **Do not try to light any appliance.**
- **Do not touch any electrical switch; do not use any phone in your building.**
- **Leave the building immediately.**
- **Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the fire department.**

⚠ AVERTISSEMENT :

RISQUE D'INCENDIE OU D'EXPLOSION

- **Le non-respect des avertissements de sécurité pourrait entraîner des blessures graves ou des dommages matériels importants.**
- **L'installation et l'entretien doivent être effectués par un installateur qualifié, un organisme de service ou le fournisseur de gaz.**
- **N'entreposez pas ni n'utilisez de l'essence ni d'autres vapeurs ou liquides inflammables dans le voisinage de cet appareil, ni de tout autre appareil.**

QUE FAIRE S'IL Y A UNE ODEUR DE GAZ

- **N'essayez d'allumer aucun appareil.**
- **Ne touchez à aucun interrupteur électrique; n'utilisez aucun téléphone dans le bâtiment.**
- **Évacuez l'immeuble immédiatement.**
- **Appelez immédiatement votre fournisseur de gaz à l'aide du téléphone d'un voisin. Respectez les instructions du fournisseur de gaz.**
- **Si personne ne répond, appelez le service des incendies.**

⚠ WARNING:

Before placing the furnace in service, it must be checked to ensure it is equipped for the type of gas being used. The burner flame must be observed and adjusted if necessary. Failure to observe this caution may result in unsafe operation, explosion and/or fire, or asphyxiation. See the Gas Supply and Combustion Air sections.

- **The first operation of the furnace after any home setup must be performed by a qualified service technician.**
- BEFORE STARTUP: Smell all around the furnace for gas and next to the floor. Some gas is heavier than air and may settle on the floor.
- Do not use this furnace if any part has been under water. Immediately call a service technician to inspect the furnace and to replace any part of the gas valve or control system which has been under water.

⚠ WARNING:

Close the hinged fire door. If door is left open or spring is broken it may allow products of combustion into the living space by the furnace blower, resulting in possible asphyxiation.

⚠ WARNING:

Should overheating occur, or the gas supply fails to shut off, shut off the manual gas valve to the furnace before shutting off the electrical supply.

⚠ AVERTISSEMENT :

En cas de surchauffe, ou si l'alimentation de gaz omet de s'arrêter, fermez le robinet de gaz manuel à la fournaise avant de couper l'alimentation électrique.

Operating Instructions
Direct Ignition Furnaces

Direct ignition furnaces do not have a pilot. Ignition is accomplished by a hot surface ignitor. A circuit board takes care of all timing functions. After lighting, the circuit board uses the ignitor as a flame sensor, shutting off gas should the flame go out. There are no external relays or timing devices. **Do not try to light this furnace by hand. The circuit board is not field serviceable.**

1. Set the thermostat to the lowest setting.
2. Turn off all electric power to the appliance.
3. Remove the furnace door and turn off the gas valve. Push in and turn the gas control knob clockwise to **OFF**. See Figure 30.
4. Wait ten (10) minutes to clear out any gas. If you smell gas, **STOP!** and follow the Safety Information. If you do not smell gas, proceed to step 5.
5. Set the thermostat MODE the **ON** position.
6. Verify the jumper on the Nordyne Channel Board (for fan speed) on the control board. See Figure 27. Turn the gas valve ON.
7. Replace the furnace door.
8. Turn on all electric power to the appliance.
9. Change the thermostat mode to **HEAT** and the temperature selector to a desired temperature level. The igniter should light in approximately 75 seconds. If the appliance will not operate, see "How to Shut Off Gas - Direct Ignition" on page 21 and call your service technician or gas supplier.

NOTE: In the event of any flashback or explosion, immediately shut off the furnace and call your service technician.

How to Shut Off Gas - Direct Ignition Models

1. Set the thermostat to the lowest setting.
2. Turn off all electric power to the appliance before servicing unit.
3. Set the furnace On-Off Switch to **OFF**.
4. Turn gas control knob clockwise to **OFF** (Figure 30).
5. Replace the furnace door.

Verifying Input Rate

IMPORTANT NOTE:

The input rate must not exceed the rate shown on the furnace rating plate. At altitudes above 2,000 feet, it must not exceed that on the rating plate less 4% for each 1,000 feet.

The input rate must be verified for each installation to prevent over-firing of the furnace. To determine the exact input rate, perform the following procedures:

1. Shut off all other gas fired appliances.
2. Start the furnace and run it for at least 3 minutes.
3. Measure the time (in seconds) required for the gas meter to complete one revolution.
4. Convert the time per revolution to cubic feet of gas per hour using Table 9.
5. Multiply the gas flow rate in cubic ft per hr by the heating value of the gas in Btu per cubic ft to obtain the input rate in Btuh. See example.

Example:

- Time for 1 revolution of a gas meter with a 1 cubic ft dial = 40 seconds.
- From Table 8 read 90 cubic ft gas per hr.
- Local heating value of the gas (obtained from gas supplier) = 1,040 Btu per cubic ft.
- Input rate = 1,040 x 90 = 93,600 Btuh.

6. The manifold pressure must be verified for each installation by a qualified installer, service agency or the gas supplier.

Verifying & Adjusting Temperature Rise

Confirm the temperature rise through the furnace is within the limits specified on the furnace rating plate. Any temperature rise outside the specified limits could result in premature failure of the heat exchanger.

1. Place thermometers in the return and supply air stream as close to the furnace as possible. To avoid false readings, the thermometer on the supply air side must be shielded from direct radiation from the heat exchanger.
2. Adjust all registers and duct dampers to the desired position and run the furnace for 10 to 15 minutes in high fire before taking any temperature readings. The temperature rise is the difference between the supply and return air temperatures.

For typical duct systems, the temperature rise will fall within the limits specified on the rating plate with the blower speed at the factory recommended setting. If the measured temperature rise is outside the specified limits, it may be necessary to change the speed of the blower. **NOTE:** Lowering the blower speed increases the temperature rise and a higher blower speed will decrease the temperature rise.

The furnace is equipped with a multi-tap ECM motor. For alternate motor tap selections see Table 14 & Table 15.

Burner Adjustments

⚠ CAUTION:

- **Adjustment must be made only by a qualified technician. Improper air adjustment may cause unsafe operation, explosion and/or fire asphyxiation.**
- **If the input to the furnace is too great because of excessive gas pressure, wrong size nozzle or orifice, high altitude, etc., the burner flame will be sooty and can produce carbon monoxide, which could result in unsafe operation, explosion and/or fire or asphyxiation.**

GREEN LED	RED LED	YELLOW LED	INDICATION
ON	ON	OFF	System Idle – Normal Operation
OFF	OFF	OFF	No Power IFC Hardware Problem (Hard Lockout)
ALTERNATING FLASH		OFF	Lockout due to Failed Ignition (1 Hr. Soft Lockout)
		OFF	Lockout due to Pressure Switch Open (5 Min. Soft Lockout)
		OFF	Pressure Switch Open with Inducer On (After initial 80 seconds of trial when changing to 5 min soft lockout mode)
		FLASHING	Undesired Flame (1 Hr. Soft Lockout)
FLASHING	OFF	OFF	Limit Switch Open
FLASHING	ON	OFF	Pressure Switch Open with Inducer ON (Initial 80 seconds of trial) (Changes to Alternating Flash after 80 sec. and starts 5 Min. Soft lockout)
ON	FLASHING	OFF	Pressure Switch Closed with Inducer OFF
FLASH TOGETHER		OFF	115/120 VAC & Neutral reversed or No Ground (Hard Lockout)
OFF	FLASHING	OFF	Twinning Fault
FLAME SENSE STATUS			
ON	ON	ON	Good Flame Signal
ON	ON	FLASHING	Weak Flame Signal
ON	ON	OFF	No Flame Signal (during trial for ignition)

Table 7. Nordyne Channel Control Board Fault Conditions

Burner settings are made at the factory. However, these settings may change during shipping, handling, and installation. The following items should be checked and readjusted if necessary.

Gas Pressure

The gas pressure can be checked with a manometer at the pressure tap located on the top of the gas valve. Natural gas manifold pressure should be 3.5" W.C. and L.P. gas manifold pressure should be 10" W.C. Replace the gas pressure tap plug on the gas valve. See Figure 28.

Blower Configuration

There are 5 blower configurations for the fan, heating and cool speeds. The settings are L(LOW), ML(MEDIUM LOW), M(MEDIUM), MH(MEDIUM HIGH), and H(HIGH). Refer to the blower tables provided in this installation instruction for the correct settings. To change the HEAT and COOL setting, locate the speed selects on the control board. For HEAT and COOL, move the selector switch up or down to the desired setting. For the FAN speed, there is jumper that will need to be moved. For instance, covering the last 2 pins(H and MH) will give a H(HIGH) fan setting. See Figure 15 for more detail.

Heating Blower Off Delay

There are 4 heating blower off delay settings, 60, 90, 120, and 180 seconds. The factory setting is 120 seconds. These can be changed by moving a jumper on the control board. For instance, moving the jumper to the first 2 pins will give a 60 second heating blower off delay.

OPERATING SEQUENCE

Direct Ignition Furnaces

1. On a call for heat, the thermostat contacts close, supplying 24 VAC between terminals **C** and **W** of the control module.
2. When the inducer starts, the air pressure switch closes. differential pressure and energizes the gas valve.
3. After a 45 second purge, the control energizes the Hot Surface Ignitor (HSI) output for the appropriate warm-up time. After warm up, the gas valve opens. **NOTE:** The time for ignition is approximately 6 seconds, after which the gas valve either remains open if flame is sensed, or closes if flame is not sensed.
4. If flame is not sensed, the sequence repeats four more times before a lockout occurs. To reset, wait 30 seconds and then interrupt the 24 VAC power by turning the room thermostat below room temperature, then returning it to the original set point.
5. If flame does not establish on the 5th attempt (initial fire + 4 re-tries), the control de-energizes the gas valve, the green light flashes, while the red light is on, the yellow LED is off, and the furnace locks out heat operation for 1 hour. See Table 7.
6. If a flame is present, the control energizes the main blower on heat speed 30 - 45 seconds after the gas valve opens.

⚠ WARNING:

Should overheating occur or the gas supply fails to shut off, shut off the manual gas valve to the furnace before shutting off the electrical supply.

7. When call for heat is satisfied the thermostat contacts open, the gas valve shuts off gas flow and the combustion blower remains on for a 30 - 45 second post-purge period.
8. The main blower is de-energized after a 120 - 150 second blower off delay.

TROUBLESHOOTING

High Gas Bills

a. Verify the proper orifice is being used. See Table 6.
b. Check the return air system. Is it clear and free of blockage?
c. Check the furnace filter. Is it clean or need replacing?
d. Verify the home is insulated, windows and doors fit tightly, and there are no leaks in the heating duct system.
e. Check the room thermostat. Is the setting higher than necessary? Low humidity requires higher temperatures for the same level of comfort. Check for proper humidity level in the home.

Burner Motor won't Run - T-stat Calls for Heat

1. Check the electrical supply to the furnace.
2. Verify the furnace On-Off switch is in the ON position. See Figure 29 or Figure 30.
3. Defective thermostat circuit - white and red thermostat low voltage leads. If the combustion fan runs, check:
   - Thermostat connections
   - Thermostat
4. No voltage to control module - determine if 24 volts (or 120 volts) is available to the control module. If voltage is not available check for:
   - Blown fuse, defective transformer, circuit breaker, no electrical supply.
   - Limit switch open.
   - Loose connections.

Combustion Blower Runs, Ignitor Heats Up But No Flame

1. Defective pressure switch - check air tube and electrical connections.
2. Burner in purge mode - allow 75 seconds for flame establishing period.
3. Check for proper electrical connections at purge timer, control box, or gas valve.
4. Check for gas supply - gas line valve on, control lever on.
5. Check for blockage in combustion / vent pipe or heat exchanger.

120 VAC Is Available At AMP Plug - Ignitor Does Not Heat Up

1. Disconnect power to the furnace.
2. Disconnect AMP plug to the ignitor, and check ignitor resistance with an ohm meter. Set on RX1 scale.
3. Check for continuity from ignitor receptacle to burner.
4. Disconnect ignitor leads at AMP receptacle and check for 120 volts at the plug during ignition sequence.
5. Replace ignition control if 120 volts is not available at AMP plug during ignition sequence.

Main Flame Ignites - Burner Locks Out

- Ignition control is not properly grounded.
- Defective ignition control.
- Improper polarity of 120 volt power supply.
- Ignitor has hairline crack.
- Improper gas pressure or burner air adjustment is not allowing flame to contact ignitor tip for flame rectification.
- Misaligned ignitor does not allow flame to contact ignitor tip for flame rectification.

Burner Short Cycling - Thermostat Calls for Heat, Limit Switches Closed

- Check for polarity.
- Check ground.
- Check flue.
- Check combustion air.
- Check gas pressure.
- Check orifice.

24 Volts Supplied To Gas Valve During Ignition - No Main Gas Flow

- Gas valve may be defective. Replace if necessary.
- Gas piping may be plugged. Check for adequate gas supply to gas valve at union.

Burner Operates - Insufficient Heat

- Check thermostat for proper setting and location. Thermostat should not be located where it will be affected by another heat source.
- Check for clean filter and proper air flow.
- Check burner for proper gas firing rate.
- Be sure unit is not undersized for its thermal load.
- Check thermostat anticipator. The nominal setting is 0.4.

Burner Flame Without Motor Running

- Gas valve stuck open, check gas valve for proper operation (replace if necessary) and inspect heat exchanger.
- Check for 120 volts to the combustion blower motor; replace if necessary.
- If no power to combustion blower then check wiring and control module; replace if necessary.

Circulation Air Blower Will Not Operate Even Though The Burner Does Operate

- Check thermostat **G** connection to the motor.
- Check 120 Volts wiring to motor.
- Check for a defective motor.

FURNACE CONTROLS & FUNCTIONS

Furnace On / Off Switch: This switch turns electrical power to the furnace on and off. The switch must be set in the ON position for the furnace to operate. If blower operation is not desired, the furnace On-Off switch may be set in the Off position to cut the electrical power to the furnace. See Figure 28.

Limit Control: This furnace is protected by two high temperature safety limit switches. The auxiliary (upper) limit switch and the high temperature (lower) limit switch are automatic reset types. If either limit trips, the burner will shut off. If either limit switch trips off again soon after resetting, set the furnace On-Off switch to the Off position and call your authorized serviceman. See Figure 28.

Blower Off Delay: When the blower fan operates under cooling mode, there is a 40 second delay after the call for cooling (from the thermostat) is satisfied before the blower turns off.

Gas Valve: The gas valves for the gas furnaces are a 100% shut-off type and will fail safe, if for some reason the gas is turned off. The valve is a “slow-open” for MG1 models which means it opens to a low-fire position, and after a few seconds, “steps-open” to high-fire.

Summer Cooling : The unit is equipped to use a 4-wire thermostat. When using a 5-wire thermostat, RC and RH should be jumped (see instructions included with thermostat). **NOTE**: The MG1 furnace requires a **Y** connection to the furnace. See Figure 33 and Figure 34.

MAINTENANCE

Installer Information

All furnaces need periodic service at the beginning of each heating season. Call your qualified service contractor for these items:

- Remove the air circulator and clean all dust and lint from the unit with a stiff bristle brush.
- Inspect the combustion chamber blower compartment, flue collar and Roof Jack.
- Check the gas valve (if applicable) and fuel line connections for leaks.
- Make any adjustments necessary for good operation.

⚠ WARNING:

Use of furnace or air conditioning components that are not included in the certification of this appliance may create a hazard, invalidate the certification, and in many states, make installations illegal. Listed air conditioning components are specified on the furnace label.

OPTIONAL ACCESSORIES

Necessary when the furnace is used with packaged air conditioners

If an air conditioner is installed that does not use the furnace blower for air distribution and operates independently o the furnace, the thermostat system must have an interlock to prevent the furnace and air conditioner from operating at the same time. This interlock system usually contains either a “Heat-Cool” switch which must be turned to one of the positions to activate heat or cool operation, or a positive “OFF” switch on the cooling thermostat.

The furnace must also be equipped with an automatic damper to prevent cold air from being discharged up around the heat exchanger (p/n 901996 for furnaces without coil cavity, or p/n 901083 with coil cavity). See Figure 31 or Figure 32. Cold air may cause condensation inside the heat exchanger which can rust and lead to early failure.

Optional Add-On Air Conditioning

Whether split system or single package, an energy-saving air conditioner is available that has been designed specifically for manufactured housing applications and can best handle your home comfort needs. Ask your dealer or contractor about add-on central air conditioning systems.

Single package unit includes cooling coils, compressor, and vertical discharge fan. This type of unit connects with the existing home air duct system (an optional close-off damper is required with the furnace).

Split system unit with vertical discharge for quiet operation connects with cooling coil furnace (optional coil cavity required with “A” model furnaces).

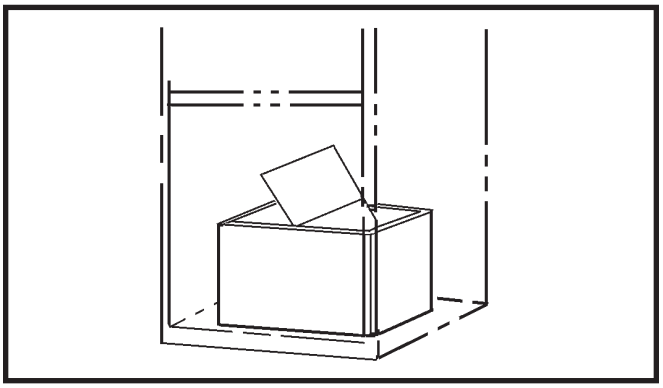


Figure 31. With Coil Cavity Damper

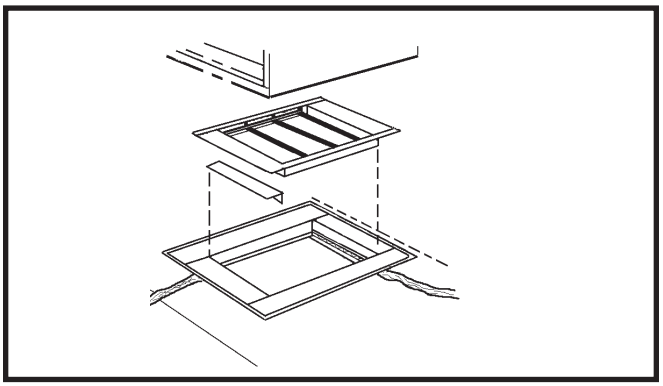


Figure 32. Without Coil Cavity Damper

FIGURES & TABLES

Gas Information

GAS FLOW RATES (CUBIC FEET PER HOUR)			
TIME FOR ONE REVOLUTION (SECONDS)	CUBIC FEET PER REVOLUTION OF GAS METER		
	1	5	10
10	360	1,800	3,600
12	300	1,500	3,000
14	257	1,286	2,571
16	225	1,125	2,250
18	200	1,000	2,000
20	180	900	1,800
22	164	818	1,636
24	150	750	1,500
26	138	692	1,385
28	129	643	1,286
30	120	600	1,200
32	113	563	1,125
34	106	529	1,059
36	100	500	1,000
38	95	474	947
40	90	450	900
42	86	429	857
44	82	409	818
46	78	391	783
48	75	375	750
50	72	360	720
52	69	346	692
54	67	333	667
56	64	321	643
58	62	310	621
60	60	300	600
62	58	290	581
64	56	281	563

GAS FLOW RATES (CUBIC FEET PER HOUR)			
TIME FOR ONE REVOLUTION (SECONDS)	CUBIC FEET PER REVOLUTION OF GAS METER		
	1	5	10
66	55	273	545
68	53	265	529
70	51	257	514
72	50	250	500
74	49	243	486
76	47	237	474
78	46	231	462
80	45	225	450
82	44	220	439
84	43	214	429
86	42	209	419
88	41	205	409
90	40	200	400
92	39	196	391
94	38	191	383
96	38	188	375
98	37	184	367
100	36	180	360
102	35	176	353
104	35	173	346
106	34	170	340
108	33	167	333
110	33	164	327
112	32	161	321
114	32	158	316
116	31	155	310
118	31	153	305
120	30	150	300

Table 8. Gas Flow Rates

CAPACITY OF BLACK IRON GAS PIPE (CU. FT. PER HOUR) FOR NATURAL GAS (SPECIFIC GRAVITY - 0.60)								
NOMINAL PIPE DIAMETER (IN.)	LENGTH OF PIPE RUN (FEET)							
	10	20	30	40	50	60	70	80
1/2	130	90	75	65	55	50	45	40
3/4	280	190	150	130	115	105	95	90
1	520	350	285	245	215	195	180	170
1 1/4	1,050	730	590	500	440	400	370	350
1 1/2	1,600	1,100	890	760	670	610		

$$\text{Cubic Feet Per Hour Required} = \frac{\text{Input To Furnace (Btu/hr)}}{\text{Heating Value of Gas (Btu/Cu. Ft.)}}$$

NOTE: The cubic feet per hour listed in the table above must be greater than the cubic feet per hour of gas flow required by the furnace. To determine the cubic feet per hour of gas flow required by the furnace, divide the input rate of the furnace by the heating value (from gas supplier) of the gas.

Table 9. Gas Pipe Capacities

LOCAL HEATING VALUES FOR NATURAL GAS									
ALTITUDE ABOVE SEA LEVEL	BTU PER CUBIC FOOT								
	650	700	750	800	850	900	950	1,000	1,050
2,000 FT	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH
3,000 FT	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH
4,000 FT	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH
5,000 FT	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH
6,000 FT	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	HIGH
7,000 FT	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	HIGH
8,000 FT	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
9,000 FT	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
10,000 FT	LOW	LOW	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH

Table 10. Natural Gas Heating Values

NATURAL GAS - HIGH HEATING VALUE					
ALTITUDE ABOVE SEA LEVEL	FURNACE MODELS				MANIFOLD PRESSURE IS 3.5 IN WC (GAS VALVE SETTINGFOR NAT. GAS)
	MG1-056	MG1-070	MG1-077	MG1-090	
0 to 1,999 FT	29	24	21	17	Factory Orifice Size
2,000 to 2,999 FT	29	26	23	18	Service Orifice Size
3,000 to 3,999 FT	30	26	24	19	Service Orifice Size
4,000 to 4,999 FT	30	27	25	20	Service Orifice Size
5,000 to 5,999 FT	30	28	26	21	Service Orifice Size
6,000 to 6,999 FT	30	28	27	22	Service Orifice Size
7,000 to 7,999 FT	31	29	27	23	Service Orifice Size
8,000 to 8,999 FT	31	29	28	24	Service Orifice Size
9,000 to 9,999 FT	32	30	29	25	Service Orifice Size

Table 11. High Altitude Deration Chart for Natural Gas - High Heating Value

NATURAL GAS - LOW HEATING VALUE					
ALTITUDE ABOVE SEA LEVEL	FURNACE MODELS				MANIFOLD PRESSURE IS 3.5 IN WC (GAS VALVE SETTINGFOR NAT. GAS)
	MG1-056	MG1-070	MG1-077	MG1-090	
0 to 1,999 FT	29	24	21	17	Factory Orifice Size
2,000 to 2,999 FT	29	24	20	17	Service Orifice Size
3,000 to 3,999 FT	29	25	21	18	Service Orifice Size
4,000 to 4,999 FT	29	26	22	19	Service Orifice Size
5,000 to 5,999 FT	30	27	23	20	Service Orifice Size
6,000 to 6,999 FT	30	27	24	21	Service Orifice Size
7,000 to 7,999 FT	30	28	25	22	Service Orifice Size
8,000 to 8,999 FT	31	29	26	23	Service Orifice Size
9,000 to 9,999 FT	31	29	27	24	Service Orifice Size

Table 12. High Altitude Deration Chart for Natural Gas - Low Heating Value

PROPANE GAS					
ALTITUDE ABOVE SEA LEVEL	FURNACE MODELS				MANIFOLD PRESSURE IS 10 IN WC (GAS VALVE SETTINGFOR LP GAS)
	MG1-056	MG1-070	MG1-077	MG1-090	
0 to 1,999 FT	45	42	40	36	Conversion Orifice Size
2,000 to 2,999 FT	47	42	41	37	Service Orifice Size
3,000 to 3,999 FT	47	43	42	38	Service Orifice Size
4,000 to 4,999 FT	47	43	42	39	Service Orifice Size
5,000 to 5,999 FT	48	44	43	40	Service Orifice Size
6,000 to 6,999 FT	48	44	43	41	Service Orifice Size
7,000 to 7,999 FT	49	44	43	42	Service Orifice Size
8,000 to 8,999 FT	49	45	44	42	Service Orifice Size
9,000 to 9,999 FT	50	46	45	43	Service Orifice Size

NOTES: Includes 4% Input Reduction for Each 1,000 Feet. Reference Sources: ANSI Z223.1, CSA B149.1, NFPA 54, National Fuel Gas Code.

Table 13. High Altitude Deration Chart for Propane Gas

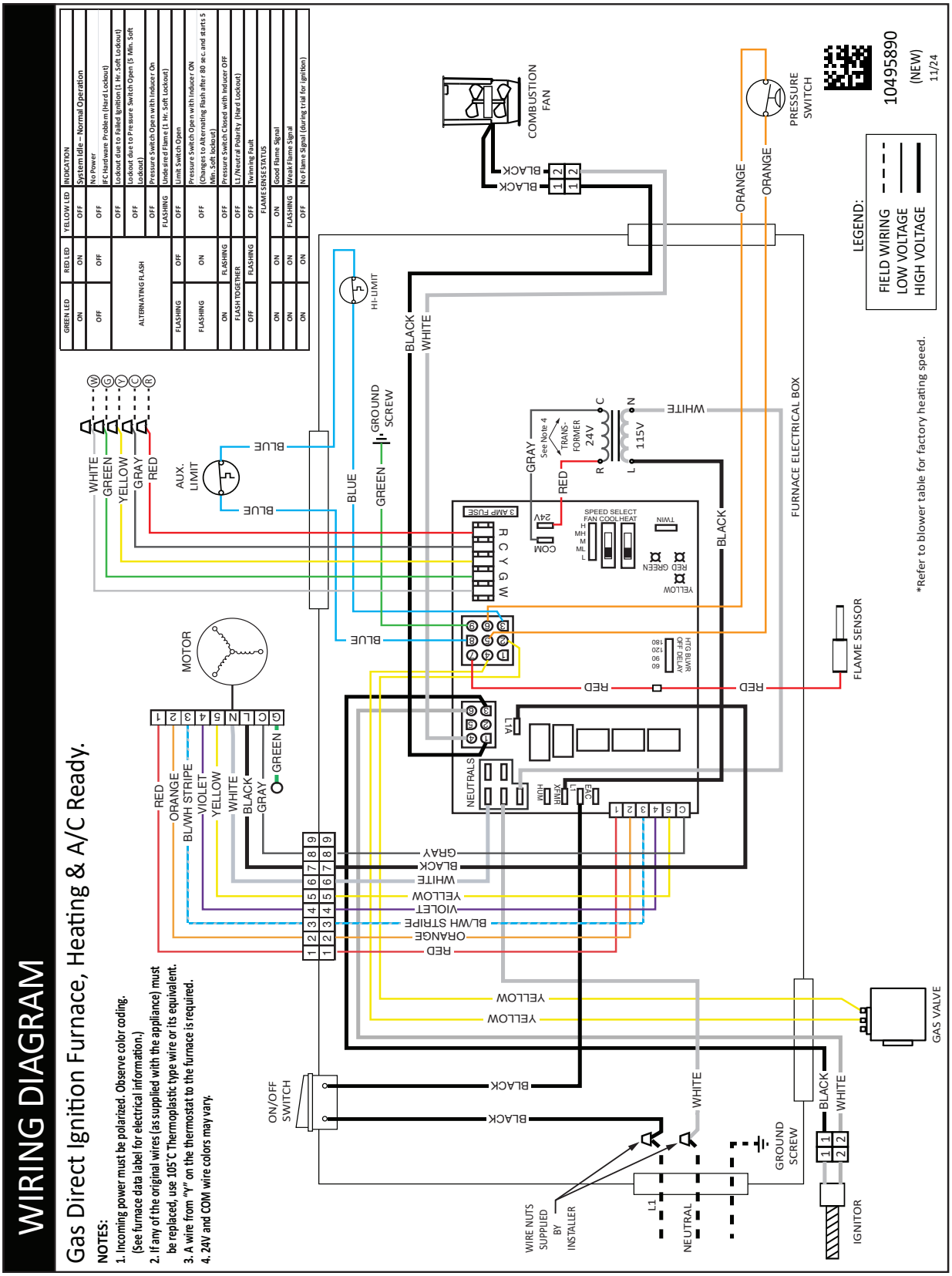


Figure 33. Nordyne Channel Control Board Wiring Diagram

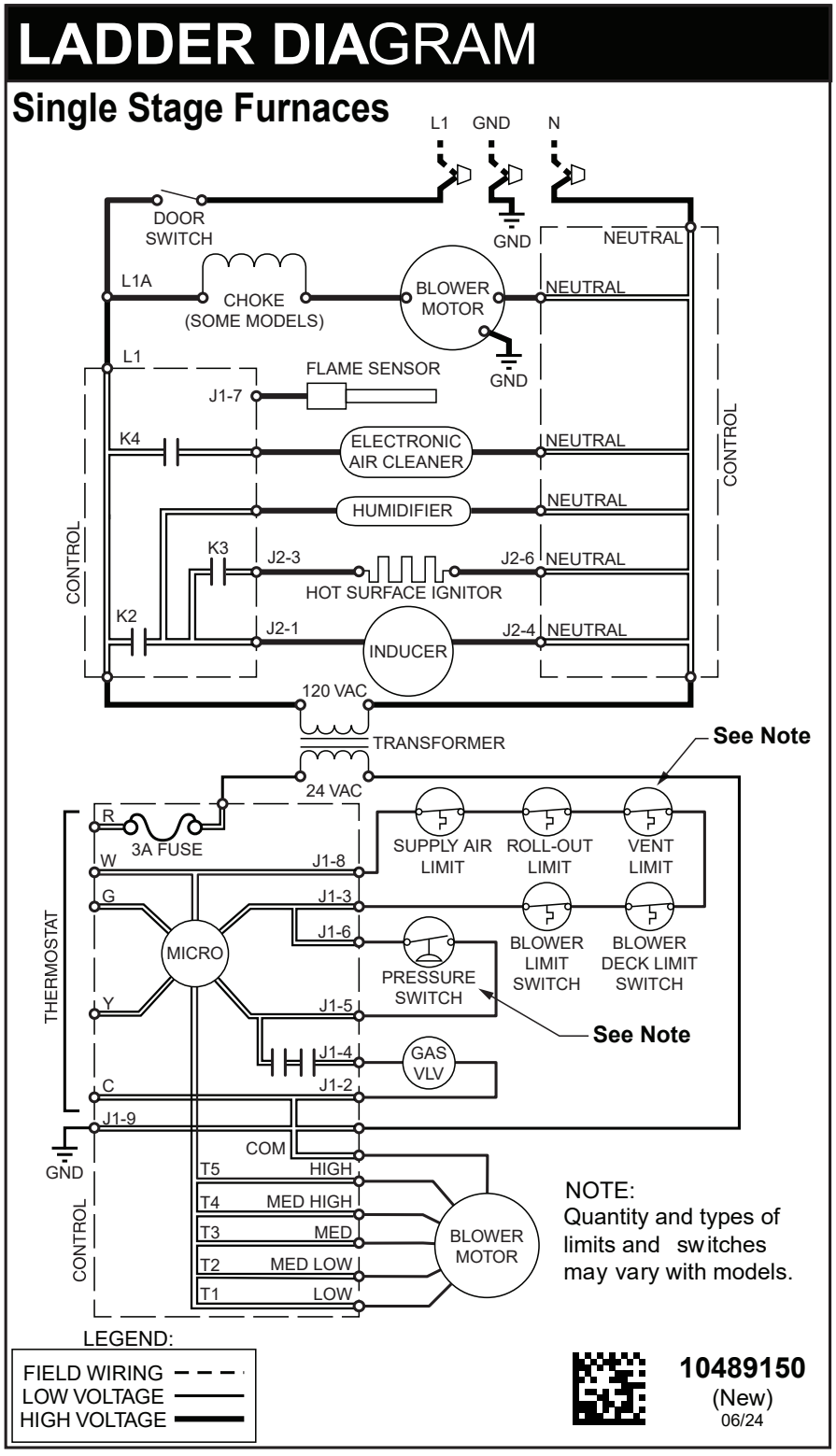


Figure 34. Nordyne Channel Ladder Diagram

Airflow Data

MG1E-B056											
MODEL NAME/ HEATING INPUT	MOTOR SPEED	EXTERNAL STATIC PRESSURE (IN. W.C.)									
		0.1		0.2		0.3		0.4		0.5	
		CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE
MG1E-B056F1A(A,B)M1 56,000 BTU/Hr	5 - High (H)										
	4 - Med High (MH)										
	3 - Med (M)*					928	45	876	47	829	50
	2 - Med Low (ML)	890	47	843	49	790	53	735	56	683	61
	1 - Low (L)	798	52	749	55	695	60	629	66		

MG1E-B070											
MODEL NAME/ HEATING INPUT	MOTOR SPEED	EXTERNAL STATIC PRESSURE (IN. W.C.)									
		0.1		0.2		0.3		0.4		0.5	
		CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE
MG1E-B070F1A(A,B)M1 70,000 BTU/Hr	5 - High (H)										
	4 - Med High (MH)										
	3 - Med (M)*	1,212	43	1,178	44	1,148	45	1,114	47	1,079	48
	2 - Med Low (ML)	931	56	886	59	836	62	782	66	732	71
	1 - Low (L)										

MG1E-B077											
MODEL NAME/ HEATING INPUT	MOTOR SPEED	EXTERNAL STATIC PRESSURE (IN. W.C.)									
		0.1		0.2		0.3		0.4		0.5	
		CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE
MG1E-B077F1A(A,B)M1 77,000 BTU/Hr	5 - High (H)										
	4 - Med High (MH)										
	3 - Med (M)*	1,212	47	1,178	48	1,148	50	1,114	51	1,079	53
	2 - Med Low (ML)	996	57	960	59	924	62	885	64	848	67
	1 - Low (L)										

MG1E-B090											
MODEL NAME/ HEATING INPUT	MOTOR SPEED	EXTERNAL STATIC PRESSURE (IN. W.C.)									
		0.1		0.2		0.3		0.4		0.5	
		CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE
MG1E-B090F1A(A,B)M1 85,000 BTU/Hr	5 - High (H)										
	4 - Med High (MH)										
	3 - Med (M)*	1,188	56	1,154	58	1,119	60	1,091	61	1,054	63
	2 - Med Low (ML)	1,015	66	978	68	956	70	917	73		
	1 - Low (L)										

NOTES:

1. Data is shown without filter.
2. Temperature rises in the table are approximate. Actual temperature rises may vary.
3. Individual cells shaded in gray indicate a temperature rise outside of the recommended range.
4. To comply with government mandated efficiency standards, speed settings shaded in gray are not allowed in HEAT mode.
5. The "*" denotes the factory heat setting. Refer to blower configuration section to adjust the blower speed on the control board.

Table 14. Heating Airflow (CFM) & Temperature Rise (°F)

MG1E-B056									
MODEL NAME/ HEATING INPUT	MOTOR SPEED	EXTERNAL STATIC PRESSURE (IN. W.C.)							
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
		CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM
MG1E-B056F1A(A,B)M1 56,000 BTU/Hr	5 - High (H)**	1,524	1,491	1,458	1,421	1,385	1,348	1,308	1,270
	4 - Med High (MH)	1,199	1,160	1,122	1,080	1,037	993	946	899
	3 - Med (M)	1,013	972	928	876	829	780	728	675
	2 - Med Low (ML)	890	843	790	735	683	615	566	510
	1 - Low (L)	798	749	695	629	442	369		

MG1E-B070									
MODEL NAME/ HEATING INPUT	MOTOR SPEED	EXTERNAL STATIC PRESSURE (IN. W.C.)							
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
		CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM
MG1E-B070F1A(A,B)M1 70,000 BTU/Hr	5 - High (H)**	1,573	1,541	1,511	1,479	1,452	1,419	1,388	1,358
	4 - Med High (MH)	1,387	1,353	1,321	1,289	1,254	1,216	1,183	1,148
	3 - Med (M)	1,212	1,178	1,148	1,114	1,079	1,036	1,005	964
	2 - Med Low (ML)	931	886	836	782	732	670	620	565
	1 - Low (L)	640	599	562	513	476	425		

MG1E-B077									
MODEL NAME/ HEATING INPUT	MOTOR SPEED	EXTERNAL STATIC PRESSURE (IN. W.C.)							
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
		CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM
MG1E-B077F1A(A,B)M1 77,000 BTU/Hr	5 - High (H)**	1,573	1,541	1,511	1,479	1,452	1,419	1,388	1,358
	4 - Med High (MH)	1,333	1,300	1,268	1,236	1,201	1,162	1,129	1,093
	3 - Med (M)	1,212	1,178	1,148	1,114	1,079	1,036	1,005	964
	2 - Med Low (ML)	996	960	924	885	848	814	772	734
	1 - Low (L)	683	642	599	540	498	451	386	

MG1E-B090									
MODEL NAME/ HEATING INPUT	MOTOR SPEED	EXTERNAL STATIC PRESSURE (IN. W.C.)							
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
		CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM
MG1E-B090F1A(A,B)M1 85,000 BTU/Hr	5 - High (H)**	1,590	1,555	1,521	1,493	1,458	1,426	1,397	1,371
	4 - Med High (MH)	1,337	1,306	1,274	1,243	1,210	1,182	1,142	1,104
	3 - Med (M)	1,188	1,154	1,119	1,091	1,054	1,023	984	941
	2 - Med Low (ML)	1,015	978	956	917	871	834	792	740
	1 - Low (L)	779	742	698	654	617	564	516	472

NOTES:

1. Data is shown without filter.
2. The "**" denotes the factory setting for cool setting. Refer to blower configuration section to adjust the blower speed on the control board.

Table 15. Cooling Airflow (CFM)

INSTALLATION CHECKLIST

INSTALLATION ADDRESS:		
CITY:	STATE:	
UNIT MODEL #		
UNIT SERIAL #		
Unit Installed Minimum clearances per Table 1?	YES	NO
INSTALLER NAME:		
CITY:	STATE:	
Has the owner's information been reviewed with the customer?	YES	NO
Has the Literature Package been left with the unit?	YES	NO

ATTENTION INSTALLERS:

It is your responsibility to know this product better than your customer. This includes being able to install the product according to strict safety guidelines and instructing the customer on how to operate and maintain the equipment for the life of the product. Safety should always be the deciding factor when installing this product and using common sense plays an important role as well. Pay attention to all safety warnings and any other special notes highlighted in the manual. Improper installation of the furnace or failure to follow safety warnings could result in serious injury, death, or property damage.

These instructions are primarily intended to assist qualified individuals experienced in the proper installation of this appliance. Some local codes require licensed installation/service personnel for this type of equipment. Please read all instructions carefully before starting the installation. Return these instructions to the customer's package for future reference.

ELECTRICAL SYSTEM		
Electrical connections tight?	YES	NO
Line voltage polarity correct?	YES	NO
Supply Voltage: _____ VOLTS		
Has the thermostat been calibrated?	YES	NO
Is the thermostat level?	YES	NO
Is the heat anticipator setting correct?	YES	NO

GAS SYSTEM		
Gas Type: (circle one)	Natural Gas	Propane
Gas pipe connections leak-tested?	YES	NO
Gas Line Pressure: ..... (in - W.C.)		
Installation Altitude:.....(FT.)		
Deration Percentage:.....(%)		
Furnace Input:.....(Btuh)		
Supply Air Temperature: .....(° F)		
Return Air Temperature: .....(° F)		
Temperature Rise: .....(° F)		

COMBUSTION AIR & VENTING SYSTEM		
Is there adequate fresh air supply for combustion & ventilation?	YES	NO
Vent free from restrictions?	YES	NO
Filter(s) secured in place?	YES	NO
Filter(s) clean?	YES	NO
Flue connections tight?	YES	NO
Is there proper draft?	YES	NO

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(Replaces 10495960)