

Installation Instructions


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

SAFETY CONSIDERATIONS

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause death, personal injury, or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing.

Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Have a fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions include in literature and attached to the unit. Consult local building codes, the current editions of the National Fuel Gas Code (NFGC) NFPA 54/ANSI Z223.1 and the National Electrical Code (NEC) NFPA 70.

In Canada, refer to the current editions of the National Standards of Canada CAN/CSA-B149.1 and .2 Natural Gas and Propane Installation Codes, and Canadian Electrical Code CSA C22.1.

Recognize safety information. This is the safety-alert symbol . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words **DANGER**, **WARNING**, and **CAUTION**. These words are used with the safety-alert symbol. **DANGER** identifies the most serious hazards which **will** result in severe personal injury or death. **WARNING** signifies hazards which **could** result in personal injury or death. **CAUTION** is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. **NOTE** is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.



WARNING

FIRE, EXPLOSION, ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury, death and/or property damage.

The ability to properly perform maintenance on this equipment requires certain knowledge, mechanical skills, tools, and equipment. If you do not possess these, do not attempt to perform any maintenance on this equipment other than those procedures recommended in the Owner's Manual.



WARNING

FIRE, EXPLOSION, ELECTRICAL SHOCK AND CARBON MONOXIDE POISONING HAZARD

Failure to follow this warning could result in personal injury, death and/or property damage.

Improper installation, adjustment, alteration, service, maintenance, or use can cause carbon monoxide poisoning, explosion, fire, electrical shock, other conditions, which could result in personal injury or death. Consult your distributor or branch for information or assistance. The qualified installer or agency must use only factory-authorized kits or accessories when servicing this product.



WARNING

ELECTRICAL SHOCK, FIRE OR EXPLOSION HAZARD

Failure to follow this warning could result in personal injury or death, or property damage.

Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position and install a lockout tag. There may be more than one disconnect switch. Lock out and tag switch with a suitable warning label. Verify proper operation after servicing.



CAUTION

CUT HAZARD

Failure to follow this caution may result in personal injury.

Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing, safety glasses and gloves when handling parts, and servicing furnaces.

INTRODUCTION

This instruction covers the blower housing installation on 35 in. (889 mm) tall condensing gas furnaces. The blower housing should be replaced when there is visible damage to the blower housing.

DESCRIPTION AND USAGE

The blower housing replacement kit can be utilized to restore units having blower assemblies that require repair. This kit contains the following items: Blower housing assembly with cut-off plate and a loose parts bag with screws. See Table 1 for kit contents.

A replacement motor and blower wheel are NOT included in this kit and must be ordered separately.

Table 1 – Kit Contents

| QUANTITY | DESCRIPTION |
|----------|-------------------------|
| 1 | Blower Cut-off |
| 1 | Blower Housing Assembly |
| 1 Bag | Screws |

INSTALLATION

Unit Shut Down

⚠ WARNING

ELECTRICAL SHOCK AND FIRE HAZARD

Failure to follow this warning could result in personal injury, death, and/or property damage.

Turn off the gas and electrical supplies to the furnace and install lockout tag before performing any maintenance or service. Follow the operating instructions on the label attached to the furnace.

⚠ WARNING

ELECTRICAL SHOCK, FIRE OR EXPLOSION HAZARD

Failure to follow this warning could result in personal injury or death, or property damage.

Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position and install a lockout tag. There may be more than one disconnect switch. Check accessories and cooling unit for additional electrical supplies that must be shut off during furnace servicing. Lock out and tag switch with a suitable warning label. Verify proper operation after servicing.

1. Set room thermostat to lowest setting or “OFF.”
2. Disconnect power at external disconnect, fuse or circuit breaker.
3. Turn off gas at external shut-off or gas meter.
4. Remove outer doors and set aside.
5. Turn electric switch on gas valve to OFF.

Vent Pipe Removal

NOTE: If the vent and/or the combustion air pipes are installed through the blower compartment, it will be necessary to remove the vent pipes. Follow the steps below to remove the vent and combustion air pipe.

1. Support the vent and combustion air pipe as close to the furnace as possible to prevent damage to the vent system.
2. Loosen the upper clamp around the vent and combustion air pipe supports external to the furnace. See Fig. 1 and Fig. 2.
3. Raise each pipe up separately to determine if the vent and combustion air pipes are coupled to the pipes internal to the furnace at this point.
4. If the pipes are coupled at this point, lift the pipes out of the vent and combustion air pipe supports and move the pipes out of the way. Secure the pipes if necessary. Otherwise, it will be necessary to cut the pipes at a point external to the furnace casing.
5. After disconnecting or cutting the vent and combustion air pipes, loosen both clamps at the vent and combustion air pipe grommets attached to the blower shelf of the furnace. See Fig. 1 and 3.

NOTE: If the grommets at the blower deck are damaged during disassembly, replace the grommets. Do not operate the furnace without grommets that seal the vent and combustion air pipes at the blower deck.

⚠ WARNING

CARBON MONOXIDE POISONING HAZARD

Failure to follow this warning could result in personal injury or death.

To route the vent pipe and combustion air pipe through the furnace, the manufacturer supplied kit must be used. Failure to properly seal the blower compartment from the furnace vestibule could result in the circulation of carbon monoxide throughout the structure. The vent pipe and combustion air pipe must be a continuous pipe while passing through the blower compartment. Seals supplied in this kit must be installed per the instructions provided. Follow all procedures outlined in these instructions.

6. Loosen clamp for the vent pipe at vent elbow on the inducer assembly. See Fig. 3.
7. Remove remaining vent pipe and combustion air pipes through the furnace casing and set aside. If the vent and combustion air pipe are glued to the plastic adapters external to the furnace, remove the screws that secure the adapters to the furnace casing to remove the pipes. See Fig. 1 and 2.

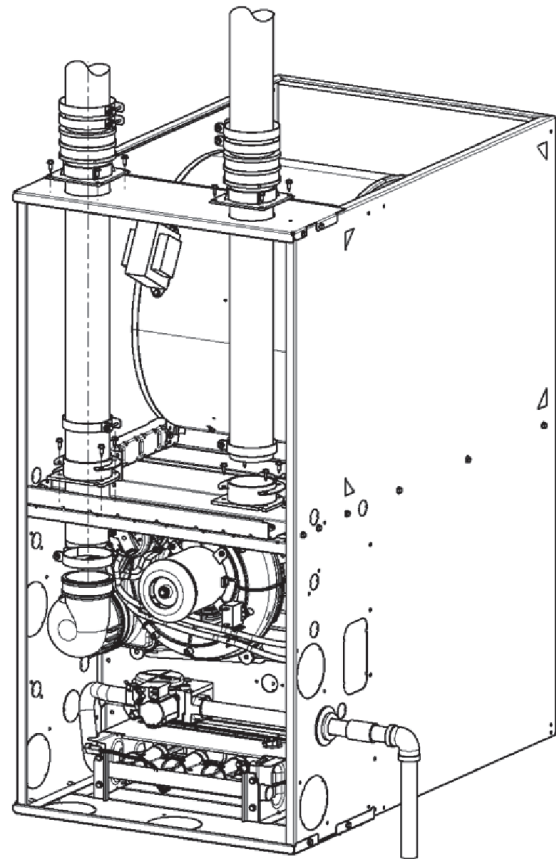


Fig. 1 - Vent/Combustion Air Pipes Through Blower Compartment (Downflow Configuration)

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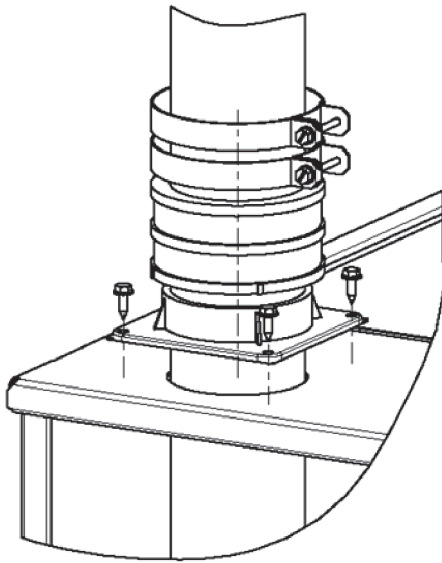


Fig. 2 - Detail of External Pipe Support

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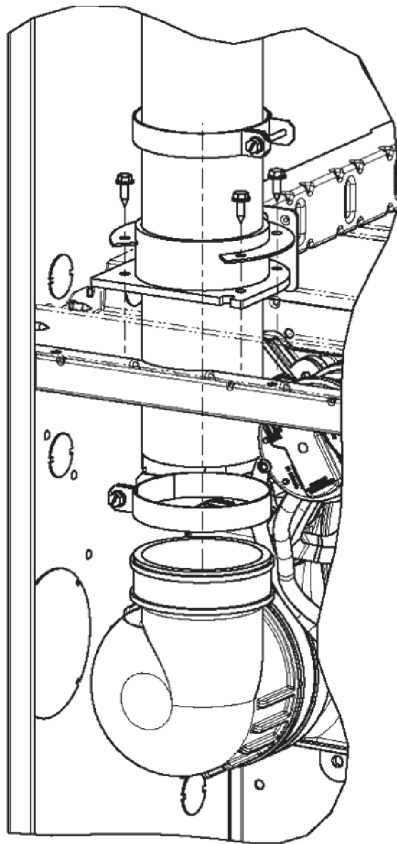


Fig. 3 - Detail of Pipe Support and Vent Elbow

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⚠ CAUTION

CUT HAZARD

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Remove Blower Assembly

1. Remove the two screws that attach the blower assembly to the blower deck.
2. Grasp the blower assembly and pull forward to slide blower out of blower compartment.
3. If the furnace is installed in the downflow position, raise the blower up slightly to prevent the blower assembly from catching on the blower deck.

Disassemble Blower Assembly

⚠ CAUTION

UNIT OPERATION HAZARD

Failure to follow this caution may result in unit damage or improper operation.

Label all wires prior to disconnection when servicing controls.

⚠ PRUDENCE

D'EQUIPEMENT D'OPERATION

Toute erreur de câblage peut être une source de danger et de panne.

Lors des opérations d'entretien des commandes, étiqueter tous les fils avant de les déconnecter.

1. Mark the location of the blower motor wires or connectors to aid in re-assembly.
2. Remove the blower motor wires from the terminals on the furnace control board and the ground lead for the blower motor attached to the blower housing.

NOTE: Refer to Fig. 4 for the steps shown below.

3. If present, disconnect the power choke from the blower motor and blower motor harness.
4. Remove the screws that attach the power choke to the blower housing and set aside.
5. Remove the two screws that secure control box bracket to the blower housing and set the bracket aside.
6. Remove the screws that secure the blower cut-off to the blower housing.
7. Remove the blower cut-off and set aside.
8. Loosen the blower wheel set screw until wheel spins freely on motor shaft.
9. Remove the bolts that attach the blower motor mounting arms to the blower housing.
10. Remove the blower motor.
11. Remove the blower wheel from the housing.
12. Remove the mounting arm brackets or any other remaining baffles attached to the blower housing. See Detail A of Fig. 5.

Assemble Blower Assembly

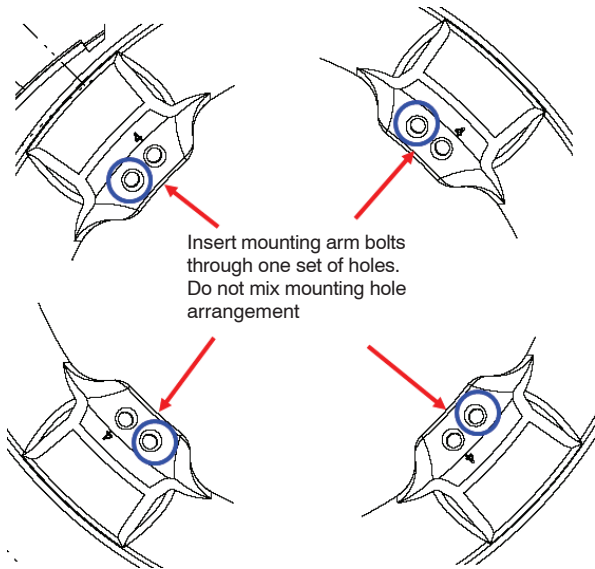
NOTE: Refer to Fig. 4 for the steps shown below:

1. Insert the blower wheel into the blower housing.
2. Insert the blower motor into the hub on the blower wheel.

3. There are two sets of holes in the blower housing for each motor mounting arm. Select the same hole location for each motor mounting arm. Insert the bolts that attach the blower motor mounting arms to the blower housing and torque the mounting bolts 40 lb-in +/- 10 lb-in.

NOTE: If the tabs are bent while fitting in either hole and one leg is in the first and the rest in the second, or vice versa, the motor mounting arms get stressed, flex and can fail.

4. Align the set screw of the blower wheel on the flat side of the motor shaft.
5. Center the wheel in the blower assembly and tighten the blower wheel set screw 160 lb-in. +/- 20 lb-in.
6. Attach the power choke to the blower housing.
7. When present, reconnect the power choke to the blower motor and blower motor harness.
8. Attach the blower motor wires to the terminals on the furnace control board and the ground lead for the blower motor attached to the blower housing.
9. Align the blower cut-off to the blower housing and secure with the screws.
10. Attach the mounting arm brackets and any remaining baffles attached to the blower housing. See Detail A of Fig. 5.
11. Attach control box bracket to the blower housing.



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Fig. 4 - Blower Mounting Locations

Install the Blower Assembly

1. Align the blower assembly with the rails in the blower deck and push backward to slide the blower into the blower compartment.
2. If the furnace is installed in the downflow position, raise the blower up slightly to prevent the blower assembly from catching on the blower deck.
3. Install the two screws that attach the blower assembly to the blower deck.

Vent Pipe Installation

1. Insert the vent and combustion air pipes through the furnace casing and through the grommets mounted to the blower deck.
2. Insert the vent pipe into the outlet of the vent elbow.
3. Install the screws for the vent pipe adapter external to the furnace casing.

4. Tighten the clamp for the vent pipe at vent elbow on the inducer assembly 15 lb-in.
5. Tighten the clamp around the grommet on the blower deck for the vent pipe.
6. Install the screws for the combustion air pipe adapter external to the furnace casing.
7. Tighten the clamp around the grommet on the blower deck for the combustion air pipe.

NOTE: If the grommets at the blower deck are damaged during disassembly, replace the grommets. Do not operate the furnace without grommets that seal the vent and combustion air pipes at the blower deck.



WARNING

CARBON MONOXIDE POISONING HAZARD

Failure to follow this warning could result in personal injury or death.

To route the vent pipe and combustion air pipe through the furnace, the manufacturer supplied kit must be used. Failure to properly seal the blower compartment from the furnace vestibule could result in the circulation of carbon monoxide throughout the structure. The vent pipe and combustion air pipe must be a continuous pipe while passing through the blower compartment. Seals supplied in this kit must be installed per the instructions provided. Follow all procedures outlined in these instructions.

8. Align the remaining vent pipe system to the vent pipe support on the vent pipe adapter external to the furnace.
9. Tighten the clamp on the vent pipe support 15 lb-in.
10. Align the remaining combustion air pipe system to the combustion air pipe support on the adapter external to the furnace.
11. Tighten the clamp on the combustion air pipe support 15 lb-in.
12. If the pipes were cut external to the furnace, prime and solvent cement the pipes as required for the type of material used.

Unit Checkout



WARNING

FIRE OR EXPLOSION HAZARD

Failure to follow this warning could result in personal injury, death, and/or property damage.

Never purge a gas line into a combustion chamber. 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.



WARNING

RISQUE D'EXPLOSION ET D'INCENDIE

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

Ne jamais utiliser une flamme nue pour vérifier la présence des fuites de gaz. Pour la vérification de tous les joints, utiliser plutôt une solution savonneuse commerciale fabriquée spécifiquement pour la détection des fuites de gaz. Un incendie ou une explosion peut entraîner des dommages matériels, des blessures ou la mort.

1. Set thermostat to "OFF."

2. Turn on power at external disconnect, fuse or circuit breaker.
3. Turn on gas at external shut-off or gas meter.
4. Check for gas leaks with a commercially available soap solution made specifically for the detection of leaks to check all connections.
5. Manually close blower door switch.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury, or death.

Blower door switch opens 115-v power to furnace control. No component operation can occur unless switch is closed. Exercise caution to avoid electrical shock from exposed electrical components when manually closing this switch for service purposes.

6. Initiate component test through circuit board by referring to “**Component Test**” on status code label on blower access door for complete test sequence information.
7. If any status codes are flashed, refer to status code label on unit blower door.
8. Turn thermostat fan switch to “ON”, “Continuous” or jumper R to G terminals at furnace control board.
9. Check for air leakage around cell panel. It may be necessary to remove heat exchanger assembly and top gasket between cell panel and furnace casing top plate. Re-install and re-check for blower air leaks.
10. Remove jumper(s) or set thermostat fan to “Auto” or “OFF.”
11. Release blower door switch.
12. Install blower access door.
13. Set thermostat to call for heat.
14. Allow unit to initiate a complete call for heat cycle.
15. Check for air leakage around collector box. A whistling noise may indicate air leak in collector box seal.

NOTE: If there is a severe air leak in the collector box seal, pressure switch may not close or will re-open, resulting in no ignition or erratic burner operation.

NOTE: As part of the system check-out, verify that the following conditions are not affecting the operation of the furnace:

- Short Cycling-Defective thermostat: Incorrect thermostat anticipator setting, dirty filter or over-sized furnace.
 - Under firing/low btu input: Set manifold pressure and verify firing rate as shown on rating plate by clocking the gas meter.
 - Over-firing/high btu input: Set manifold pressure and verify firing rate as shown on rating plate by clocking the gas meter.
 - Low temperature rise: Set unit for correct temperature rise range as shown on unit rating plate.
 - Contaminated combustion air: Remove contaminates or provide ample fresh air for combustion.
 - Excessive amounts of outside ventilation air: Return air temperature cannot be below 60 degrees F for extended periods of time.
 - Incorrect venting or termination: Recirculation of products of combustion into the combustion air pipe can damage the furnace. Verify proper venting and vent termination per installation instructions. For additional information, and a complete sequence of furnace operation, refer to furnace Installation, Start-Up and Operating Instructions.
16. After System Check-out is complete, set thermostat below room temperature.
 17. Verify that burner shuts down and blower completes selected off delay time.
 18. Verify furnace operates properly and set thermostat to desired room temperature.
 19. Re-install outer doors.

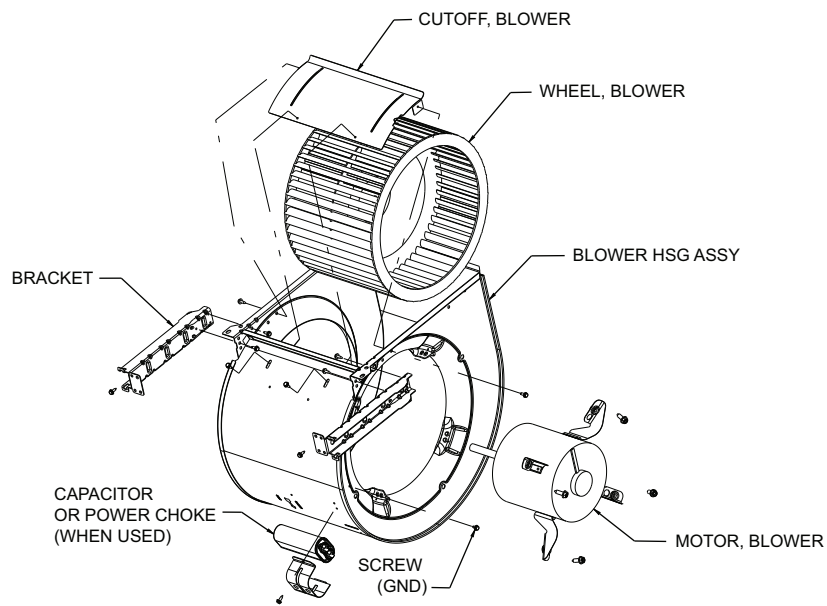
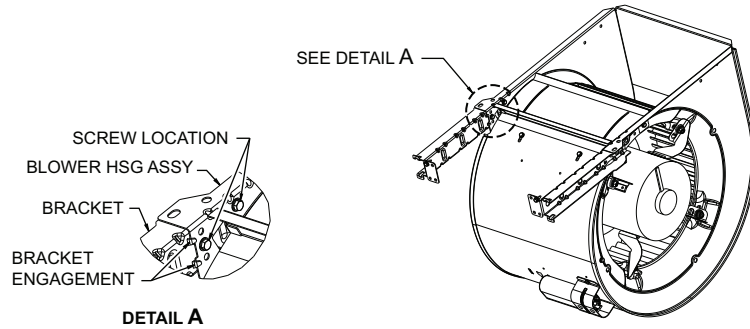
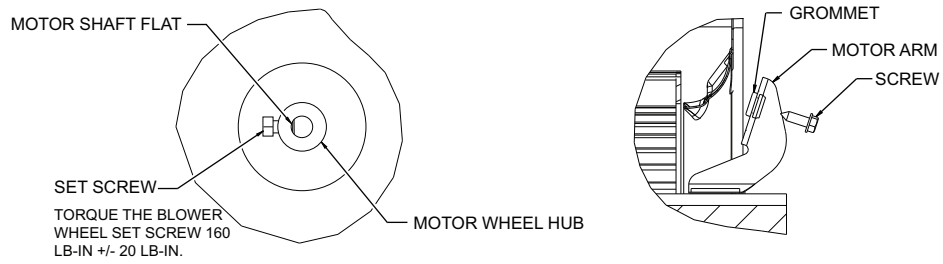


Fig. 5 - Blower Assembly

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