18–CH51D1–1A–EN

# Installer's Guide

## Side Vent Kit for Downflow Condensing Furnaces

**BAYVENT500A**

**ALL phases of this installation must comply with NATIONAL, STATE AND LOCAL CODES**

**IMPORTANT —** This Document is **customer property** and is to remain with this unit.
Please return to service information pack upon completion of work.

### SAFETY SECTION

Safety signal words are used to designate a degree or level of seriousness associated with a particular hazard. The signal words for safety markings are **WARNING** and **CAUTION**.

a. **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
b. **CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It is also used to alert against unsafe practices and hazards involving only property damage.

**⚠ WARNING**

**SAFETY HAZARD**
**THIS INFORMATION IS INTENDED FOR USE BY INDIVIDUALS POSSESSING ADEQUATE BACKGROUNDS OF ELECTRICAL AND MECHANICAL EXPERIENCE. ANY ATTEMPT TO REPAIR A CENTRAL AIR CONDITIONING PRODUCT MAY RESULT IN PERSONAL INJURY AND OR PROPERTY DAMAGE. THE MANUFACTURER OR SELLER CANNOT BE RESPONSIBLE FOR THE INTERPRETATION OF THIS INFORMATION, NOR CAN IT ASSUME ANY LIABILITY IN CONNECTION WITH ITS USE.**

**⚠ WARNING**

**CARBON MONOXIDE HAZARD**
**DO NOT REPLACE ANY OF THE FACTORY SUPPLIED VENTING COMPONENTS WITH FIELD FABRICATED PARTS. FAILURE TO FOLLOW THIS WARNING COULD RESULT IN DAMAGED VENTS, DAMAGED COMPONENTS, CARBON MONOXIDE POISONING, OR DEATH.**

**⚠ WARNING**

**CARBON MONOXIDE HAZARD**
**FURNACE MUST BE VENTED PROPERLY.**
**FAILURE TO FOLLOW THIS WARNING COULD RESULT IN CARBON MONOXIDE, FIRE OR SMOKE THAT CAN CAUSE SERIOUS PERSONAL INJURY, DEATH OR PROPERTY DAMAGE.**

**⚠ WARNING**

**CARBON MONOXIDE POISONING HAZARD**
**CARBON MONOXIDE, FIRE OR SMOKE CAN CAUSE SERIOUS BODILY INJURY, DEATH, AND/ OR PROPERTY DAMAGE.**

**⚠ WARNING**

**SAFETY HAZARD**
**FOLLOW WARNINGS, CAUTIONS, AND GUIDELINES FOR VENTING LOCATED IN THE FURNACE INSTALLER'S GUIDE.**
**FAILURE TO FOLLOW THIS WARNING COULD RESULT IN PROPERTY DAMAGE, SERIOUS PERSONAL INJURY, OR DEATH.**

**⚠ WARNING**

**FIRE OR EXPLOSION HAZARD**
**FAILURE TO FOLLOW THE SAFETY WARNINGS EXACTLY COULD RESULT IN SERIOUS PERSONAL INJURY, PROPERTY DAMAGE, OR DEATH. IMPROPER SERVICING COULD RESULT IN DANGEROUS OPERATION, SERIOUS PERSONAL INJURY , PROPERTY DAMAGE, OR DEATH.**

**⚠ CAUTION**

**Sharp Edge Hazard. Be careful of sharp edges on equipment or any cuts made on sheet metal while installing or servicing. Personal injury may result.**

## ⚠ WARNING

**CARBON MONOXIDE POISONING HAZARD**

**Failure to follow the steps outlined below for each appliance connected to the venting system being placed into operation could result in carbon monoxide poisoning or death.**

The following steps shall be followed for each appliance connected to the venting system being placed into operation, while all other appliances connected to the venting system are not in operation:

1. Seal any unused openings in the venting system.
2. Inspect the venting system for proper size and horizontal pitch, as required in the National Fuel Gas Code, ANSI Z223.1/NFPA 54 or the CSA B149.1 *Natural Gas and Propane Installation Code* and these instructions. Determine that there is no blockage or restriction, leakage, corrosion and other deficiencies which could cause an unsafe condition.
3. As far as practical, close all building doors and windows and all doors between the space in which the appliance(s) connected to the venting system are located and other deficiencies which could cause an unsafe condition.
4. Close fireplace dampers.
5. Turn on clothes dryers and any appliance not connected to the venting system. Turn on any exhaust fans, such as range hoods and bathroom exhausts, so they are operating at maximum speed. Do not operate a summer exhaust fan.
6. Follow the lighting instructions. Place the appliance being inspected into operation. Adjust the thermostat so appliance is operating continuously.
7. Test for spillage from draft hood equipped appliances at the draft hood relief opening after 5 minutes of main burner operation. Use the flame of a match or candle.
8. If improper venting is observed during any of the above tests, the venting system must be corrected in accordance with the National Fuel Gas Code, ANSI Z221.1/NFPA 54 and/or CSA B149.1 *Natural Gas and Propane Installation Code*.
9. After it has been determined that each appliance connected to the venting system properly vents when tested as outlined above, return doors, windows, exhaust fans, fireplace dampers and any other gas-fired burning appliance to their previous conditions of use.

The following warning complies with State of California law, Proposition 65.

## ⚠ WARNING

**Hazardous Gases!**

**Exposure to fuel substances or by-products of incomplete fuel combustion is believed by the state of California to cause cancer, birth defects, or other reproductive harm.**

NOTE: On 90% Downflow Furnaces, the intake and exhaust (flue) are located on top. A field supplied transition is needed between the furnace and the air cleaner. The transition must be long enough to avoid any interference between the intake and exhaust pipe routing and the door of the air cleaner. The door and internal components must be removable for servicing. **By using this optional BAYVENT500A Side Vent kit, there is no need to install a transition between the furnace and air cleaner.**

***IMPORTANT:***

*These furnaces may be installed as Direct Vent (sealed combustion) or as Non-Direct vent. The furnaces are shipped* ***DIRECT VENT*** *with sealed combustion.*

*For* ***DIRECT VENT APPLICATION:*** *The furnaces must be vented to the exterior of the house and combustion air MUST come through the inlet air pipe FROM OUTSIDE AIR.*

*For* ***NON-DIRECT VENT APPLICATION:*** *The furnace must be vented to the exterior of the house, but combustion air may enter from the surrounding area as long as combustion air requirements are met. (See AIR FOR COMBUSTION AND VENTILATION)*

**90%+ FURNACES MUST BE VENTED TO THE OUTDOORS.**

THESE FURNACES ARE INDUCED DRAFT VENTED AND MUST **NOT** BE CONNECTED TO ANY VENT SERVING ANOTHER APPLIANCE. PLEASE NOTE THAT THESE FURNACES USE **POSITIVE-PRESSURE** VENT SYSTEMS.

Proper venting is essential to obtain maximum efficiency from a condensing furnace. Proper installation of the vent system is necessary to assure drainage of the condensate and prevent deterioration of the vent system.

These condensing furnaces are certified with a minimum of 0" clearance from combustible materials with CPVC/PVC vent pipe.

Inspect the venting system for proper size and horizontal pitch, as required in the National Fuel Gas Code, ANSI Z223.1/NFPA 54 or the CAN/CGA B149 Installation Codes and the furnace Installer's Guide. Determine that there is no blockage or restriction, leakage, corrosion and other deficiencies which could cause an unsafe condition.

## GENERAL INSTALLATION INSTRUCTIONS

The manufacturer assumes no responsibility for equipment installed in violation of any code or regulation.
It is recommended that Manual J of the Air Conditioning Contractors Association (ACCA) or A.R.I. 230 be followed in estimating heating requirements.
**Material in this kit has been inspected at the factory and released to the transportation agency without known damage. Inspect exterior of carton for evidence of rough handling in shipment. Unpack carefully after moving equipment to approximate location. If damage to contents is found, report the damage immediately to the delivering agency.**

## VENT LENGTH TABLE INFORMATION

Follow the tables and information provided in the furnace Installer's Guide or the Allowable Vent Length label on the furnace for the maximum vent lengths and pipe diameters. **The maximum equivalent length will have to be reduced an additional 5 feet for the use of this kit.** For maximum vent length, use proper vent pipe diameter size.

## AIR FOR COMBUSTION AND VENTILATION

If the furnace is installed in a Non-Direct Vent capacity, then the adequate flow of combustion and ventilating air must not be obstructed from reaching the furnace. Air openings provided for combustion air must be kept free of obstructions which restrict the flow of air. Airflow restrictions affect the efficiency and safe operation of the furnace. Keep this in mind should you choose to remodel or change the area which contains your furnace. Furnaces must have a free flow of air for proper performance.
Provisions for combustion and ventilation air shall be made in accordance with latest edition of Section 5.3, Air for Combustion and Ventilation, of the National Fuel Gas Code, ANSI Z223.1 — CAN/CGA B149.1 or applicable provisions of the local building codes. Special conditions created by mechanical exhausting of air and fireplaces must be considered to avoid unsatisfactory furnace operation.

### OUTSIDE AIR IS RECOMMENDED

The use of indoor air for most applications is acceptable, **unless there is the presence of corrosive chemicals or contamination.** Certain types of installation will **require** the use of outside air for combustion.
The following types of installations will **require** use of OUTDOOR AIR for combustion, due to chemical exposures:
* Commercial buildings
* Buildings with indoor pools
* Furnaces installed in “confined” laundry rooms
* Furnaces installed in “confined” hobby or craft rooms
* Furnaces installed near chemical storage areas.

Exposure to the following substances in the combustion air supply will also require OUTDOOR AIR for combustion:
* Permanent wave solutions
* Chlorinated waxes and cleaners
* Chlorine based swimming pool chemicals
* Water softening chemicals
* Deicing salts or chemicals
* Carbon Tetrachloride
* Halogen type refrigerants
* Cleaning solvents (such as perchloroethylene)
* Printing inks, paint removers, varnish, etc.
* Hydrochloric acid
* Cements and glues
* Antistatic fabric softeners for clothes dryers
* Masonry acid washing materials

Furnace locations may be in a “**confined space**” or an “**unconfined space**”. See the furnace Installer's Guide for the definitions of these spaces.

## ⚠ WARNING

**SAFETY HAZARD**
**FOLLOW WARNINGS, CAUTIONS, AND GUIDELINES FOR VENTING LOCATED IN THE FURNACE INSTALL–ER'S GUIDE.**
**FAILURE TO FOLLOW THIS WARNING COULD RE–SULT IN PROPERTY DAMAGE, SERIOUS PERSONAL INJURY, OR DEATH.**

## VENT FITTING MATERIAL – PLASTIC

Gas and liquid tight single wall vent fittings, designed for resistance to corrosive flue condensate, MUST be used throughout.
Listed in the table on page 5 are materials that meet these requirements. The materials listed are various grades of PVC, CPVC, and ABS plastic.
PIPE JOINTS: All joints must be fastened and sealed to prevent escape of combustion products into the building. These materials are acceptable for U.S. applications only.

***NOTE:***
***It is recommended that the first joints from the furnace be connected and sealed with high temperature red RTV. This will enable the pipes to be removed later without cutting. Be sure to properly support these joints.***

## BONDING OF PVC AND CPVC

Commercially available solvent cement for PVC and CPVC must be used to join the PVC and/or CPVC pipe fittings. Follow instructions on container carefully for U.S. applications only.

For U.S. applications only:
Pipe and Fittings – ASTM D1785, D2466, D2661, & D2665
PVC Primer and Solvent Cement – ASTM D2564.
Procedure for Cementing Joints Ref – ASTM D2855

1. Cut pipe square, remove ragged edges and burrs. Chamfer end of pipe, then clean fitting socket and pipe joint area of all dirt, grease, moisture or chips.
2. After checking pipe and socket for proper fit, wipe socket and pipe with cleaner-primer. Apply a liberal coat of primer to inside surface of socket and outside of pipe.

DO NOT ALLOW PRIMER TO DRY BEFORE APPLY-ING CEMENT.

3. Apply a thin coat of cement evenly in the socket. Quickly apply a heavy coat of cement to the pipe end and insert pipe into fitting with a slight twisting movement until it bottoms out.
4. Hold the pipe in the fitting for 30 seconds to prevent tapered socket from pushing the pipe out of the fitting.
5. Wipe all excess cement from the joint with a rag. Allow 15 minutes before handling. Cure time varies according to fit, temperature and humidity.

***NOTE:***
***Follow venting instructions carefully when using PVC/CPVC cement.***

***IMPORTANT:***
***All joints must be water tight. Flue condensate is somewhat acidic, and leaks can cause equipment damage.***

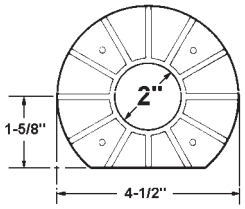
## ⚠ CAUTION

***IMPORTANT:***
***This product is NOT certified to be installed in Canada.***

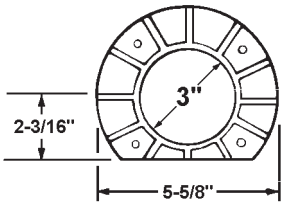
Connection of the pipe and collar of the combustion air inlet should just be a friction fit. It is recommended that the inlet air joint be sealed with RTV type sealant to allow the joint to be separated for possible future service. The inlet and vent pipes must be properly supported throughout the entire length.

Connection of the vent pipe to the vent collar should also be accomplished using RTV type sealant. This type sealant provides a connection which remains flexible and can be separated in the future if service needs require the removal of the Vent Pipe for service or clearance.
The vent length in the furnace Installer's Guide shows the required vent lengths for installations at various altitudes. Optional high altitude kits are available for installations above 5000 feet.

PVC VENT FITTING MATERIAL These fittings are available from your Gas Furnace Distributors for U.S. applications only.




WALL MOUNT FLANGE
BAY69X148
KIT02282



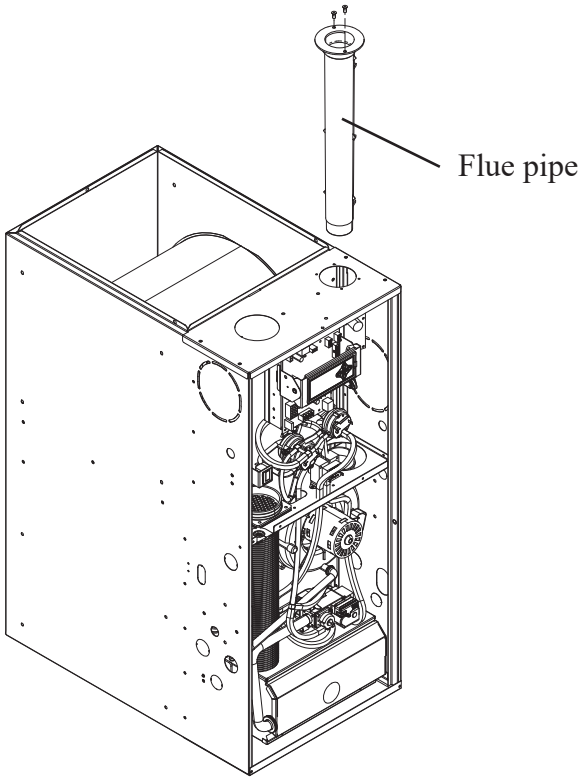

WALL MOUNT FLANGE
BAY69X147
KIT02281

| PLASTIC PIPE DESIGNATIONS | | | |
|---|---|---|---|
| PVC | | | |
| ASTM STANDARD | PIPE TYPE | ALLOWABLE TEMPERATURE | MARKING |
| F891 | CELLULAR CORE | *158 | ASTM F891 |
| D2665 | DWV PIPE | **158 | ASTM D2665 |
| D1785 | SCH 40, 80, 120 | **158 | ASTM D1785 |
| D2241 | SDR SERIES | **158 | ASTM D2241 |
| CPVC | | | |
| ASTM STANDARD | PIPE TYPE | ALLOWABLE TEMPERATURE | MARKING |
| D2846 | CPVC 41 | **212 | ASTM D2846 |
| F441 | SCH 40, 80 | **212 | ASTM F441 |
| F442 | SDR SERIES | **212 | ASTM F442 |
| ABS | | | |
| ASTM STANDARD | PIPE TYPE | ALLOWABLE TEMPERATURE | MARKING |
| D2661 | SCH 40 DWV | ***180 | ASTM D2661 |
| F628 | SCH 40 DWV CELLULAR CORE | ***180 | ASTM F628 |

* - Allowable temperatures based on classifications covered in ASTM D4396 [Deflection Temps Under Load (264 PSI)]
** - Allowable temperatures based on classifications covered in ASTM D1784 [Deflection Temps Under Load (264 PSI)]
*** - Allowable temperatures based on classifications covered in ASTM D3965 [Deflection Temps Under Load (264 PSI)]

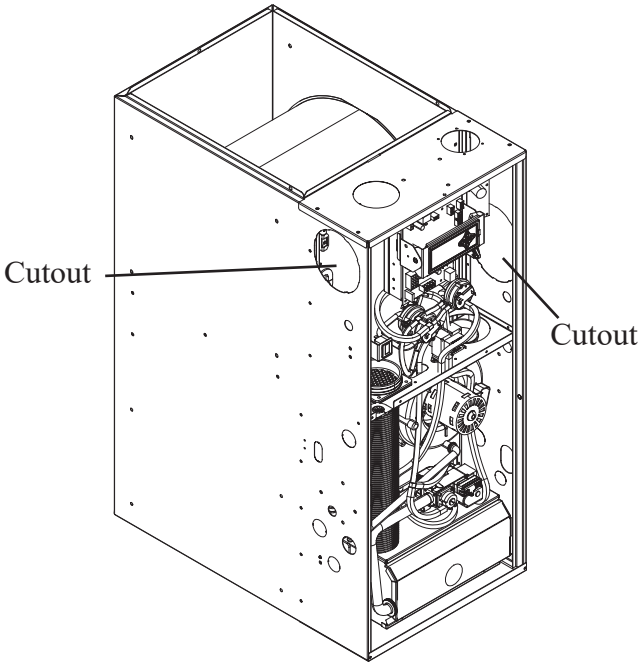
**SIDE VENT KIT INSTALLATION INSTRUC–TIONS**

1. Remove the furnace doors.
2. Remove existing flue pipe. There are two screws on the top cabinet that need to be removed. Pull the flue from the opening in the top of the cabinet. Some models may require the removal of two clamps and a rubber boot that seals the flue pipe to the inducer.

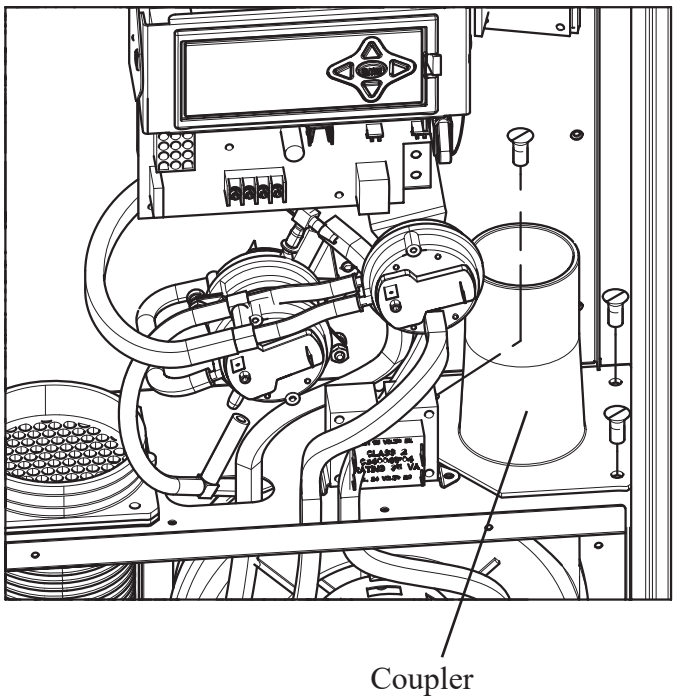



3. Cut out the two pre-punched knockouts. Make sure to remove any sharp burrs.

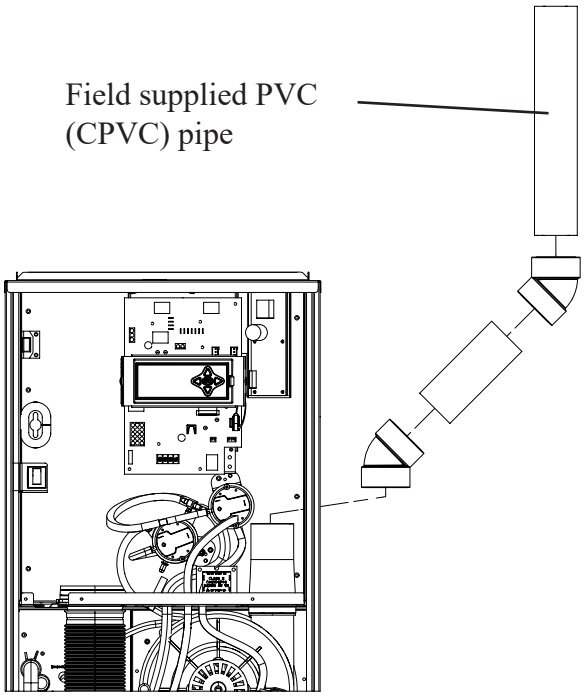
Direct Vent kit or Non-Direct Vent kit

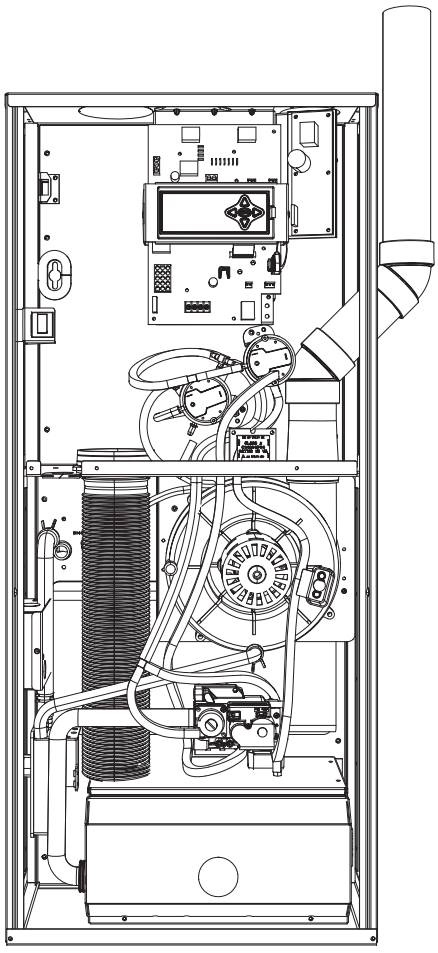


4. Apply high temperature red RTV around large opening in the flue vent coupler part and install over inducer outlet.
5. Install three field supplied sheet metal screws to secure coupler per the illustration.

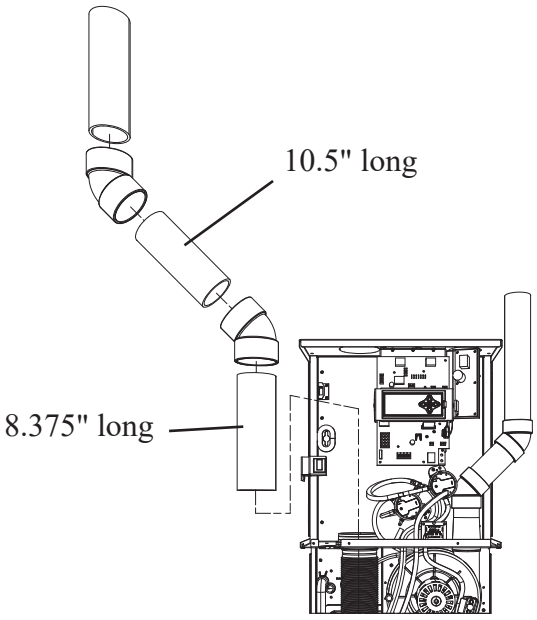



6. Install the three provided 2" diameter high temperature CPVC flue vent parts per the illustration. Use approved PVC primer and cement for the joints. All field supplied flue exhaust pipe must be PVC or CPVC. See vent length table for pipe sizes and maximuim vent length. A 2" diameter to 3" diameter couple can be added if needed for the venting.

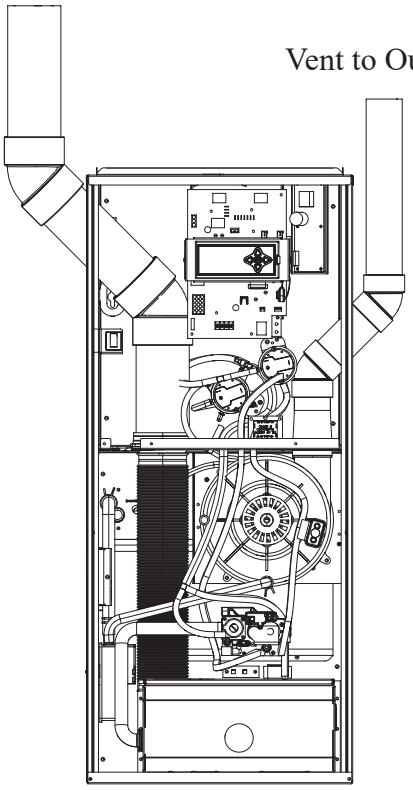


7. For Direct Vent furnace only, install a field supplied 3" diameter PVC or CPVC fresh air inlet per the illustration. Intake air must come from outside of the building. Use approved PCV primer and cement for the joints.




Intake from Outside




Direct Vent kit Only

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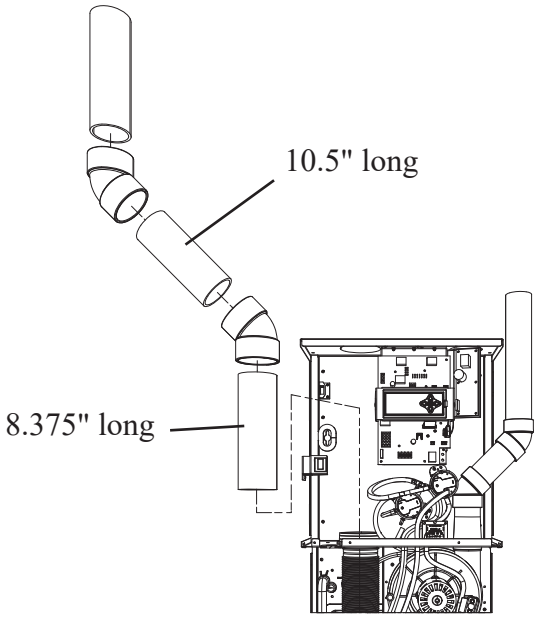
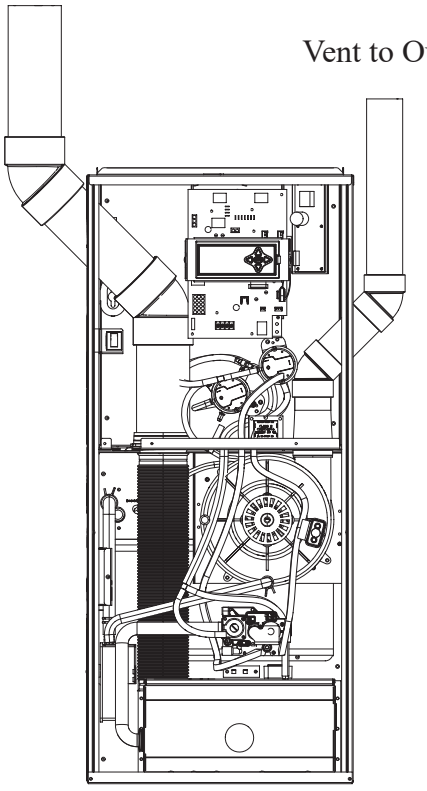
For Non-Direct Vent furnace only, install a field supplied 3" diameter PVC or CPVC fresh air inlet per the illustration. Intake air must come from outside of the furnace case. Use approved PCV primer and cement for the joints.

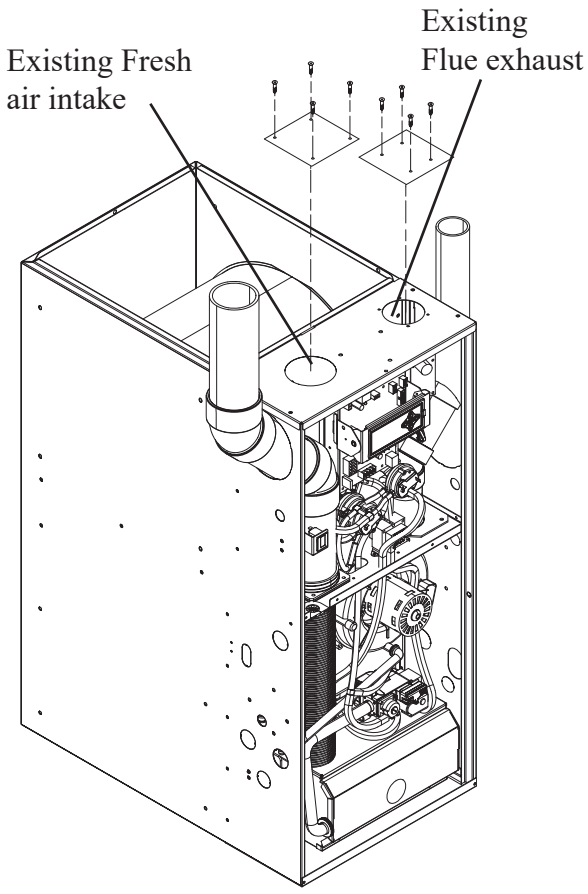



Intake from outside of case



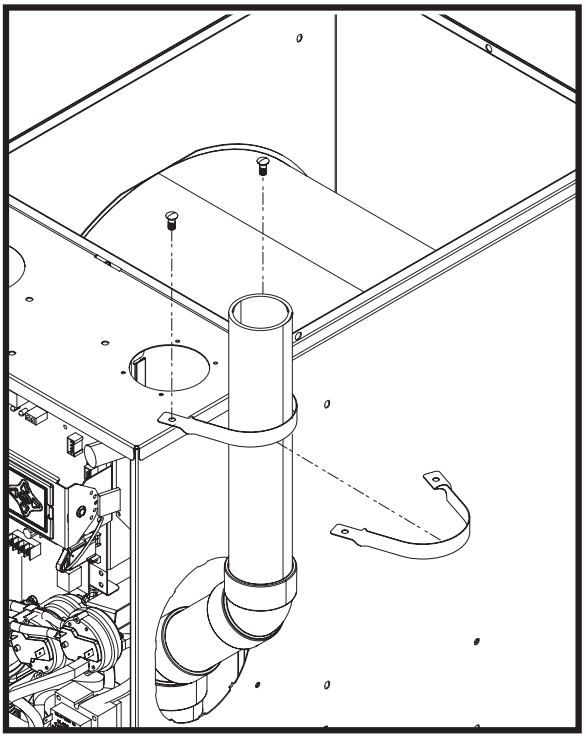
8. For the both the Direct Vent and Non-Direct Vent furnace, attach field supplied cover plates over the existing intake/vent holes in the case. For the intake side, drill holes and use field supplied self-tapping screws. For the exhaust vent side, either use the existing cabinet holes or drill new holes. If the existing holes are used, then field supplied regular sheet metal screws can be used. If new holes are drilled, use field supplied self-tapping screws.

Direct Vent or Non-Direct Vent kit




9. Install the kit-provided support bracket around the exhaust vent pipe using the existing two top cover screws. There is no need to drill additional holes.

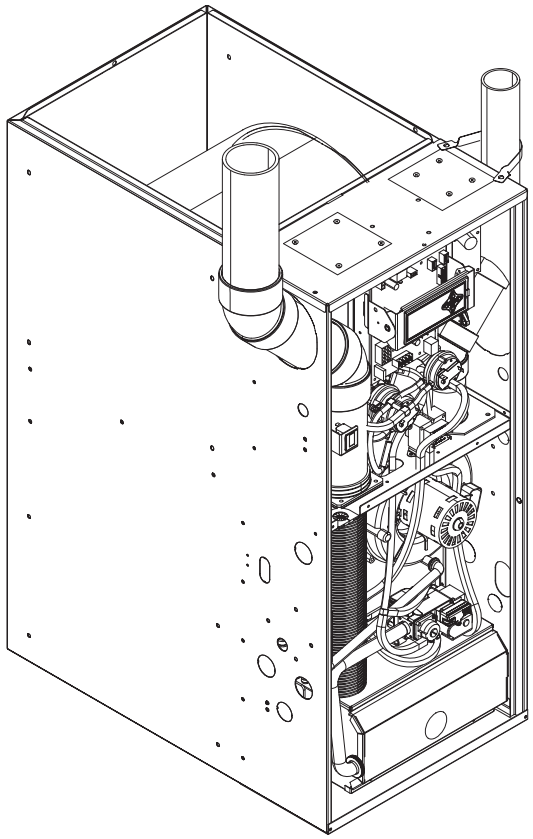
Use field supplied plumber's strap to support any other of the vent pipes as required.



The final installation of the Side Mount Vent Kit is shown in place for both the Direct Vent and Non-Direct Vent furnaces options.

10. Re-install doors.
11. Run check out procedure from furnace Installer's Guide to verify operation.

Direct Vent or Non-Direct Vent kit



About Trane and American Standard Heating and Air Conditioning
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