KGAET0101ETK

Vent/Exhaust Pipe External Trap Kit

Installation Instructions

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

This symbol → indicates a change since the last issue.

SAFETY CONSIDERATIONS

Installation and servicing heating equipment can be hazardous due to gas and electrical components. Only trained and qualified personnel should install, repair, or service heating equipment.

Untrained personnel can perform basic maintenance functions such as cleaning and replacing air filters. All other operations must be performed by trained service personnel. When working on heating equipment, observe precautions in the literature, on tags, and on labels attached to or shipped with the unit and other safety precautions that may apply.

Follow all safety codes. In the United States, follow all safety codes including the National Fuel Gas Code (NFGC) NFPA No. 54-1999 ANSI Z223.1-1999. In Canada, refer to the National Standard of Canada, Natural Gas and Propane Installation Codes (NSCNGPIC), CAN/CGA-B149.1 and .2-M05.

Wear safety glasses, protective clothing, and work gloves. Have a fire extinguisher available during start-up, adjustment procedures, and service calls.

Recognize safety information. This is the safety-alert symbol ⚠. When you see this symbol on the furnace 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 OR EXPLOSION HAZARD

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

Turn off gas and electrical supplies to unit before beginning any installation or modification. Follow operating instructions on label attached to furnace.

INTRODUCTION

This instruction covers installation of the vent/exhaust pipe external trap kit P/N KGAET0101ETK in all fixed-capacity, multipoise condensing gas furnaces (i.e. 58MXA, 58MXB, 58MCA, 58MCB, 58MSA, 350MAV, 350AAV, 340AAV, 340MAV, 345MAV, 351DAS, PG9MAA and PG9MAB) and 2-stage, 2-speed condensing gas furnaces (i.e. 352MAV, 352AAV, 58MTA, and 58MTB).

⚠ WARNING

CARBON MONOXIDE POISONING HAZARD

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

Do not use this kit with variable-speed furnaces. Variable-speed inducer pressure could force water out of this trap and permit vent gas to leak into living space.

DESCRIPTION AND USAGE

Use this vent/exhaust pipe external trap kit to reduce gurgle noise concerns and/or to improve condensate draining in vent/exhaust pipe.

This vent/exhaust pipe external trap kit contains the following items:

Condensate trap	1
Tee vent fitting (2-in. PVC)	1
Bushing vent fitting (2 X 1-1/2-in. PVC)	1
Adapter fitting (1-1/2 male X 1-1/2 female)	1

INSTALLATION

These instructions are written assuming kit is installed after furnace and vent system have been installed and is operational. Kit components and alternate methods of condensate plumbing are shown in Fig. 1. If installing kit during initial installation, install as shown in Fig. 2 through 9.

NOTE: This kit is designed for use with 2-in. PVC vent/exhaust pipe applications. Additional pipe diameters are usable when field-supplied PVC fittings are used with condensate trap and bushing supplied in kit.

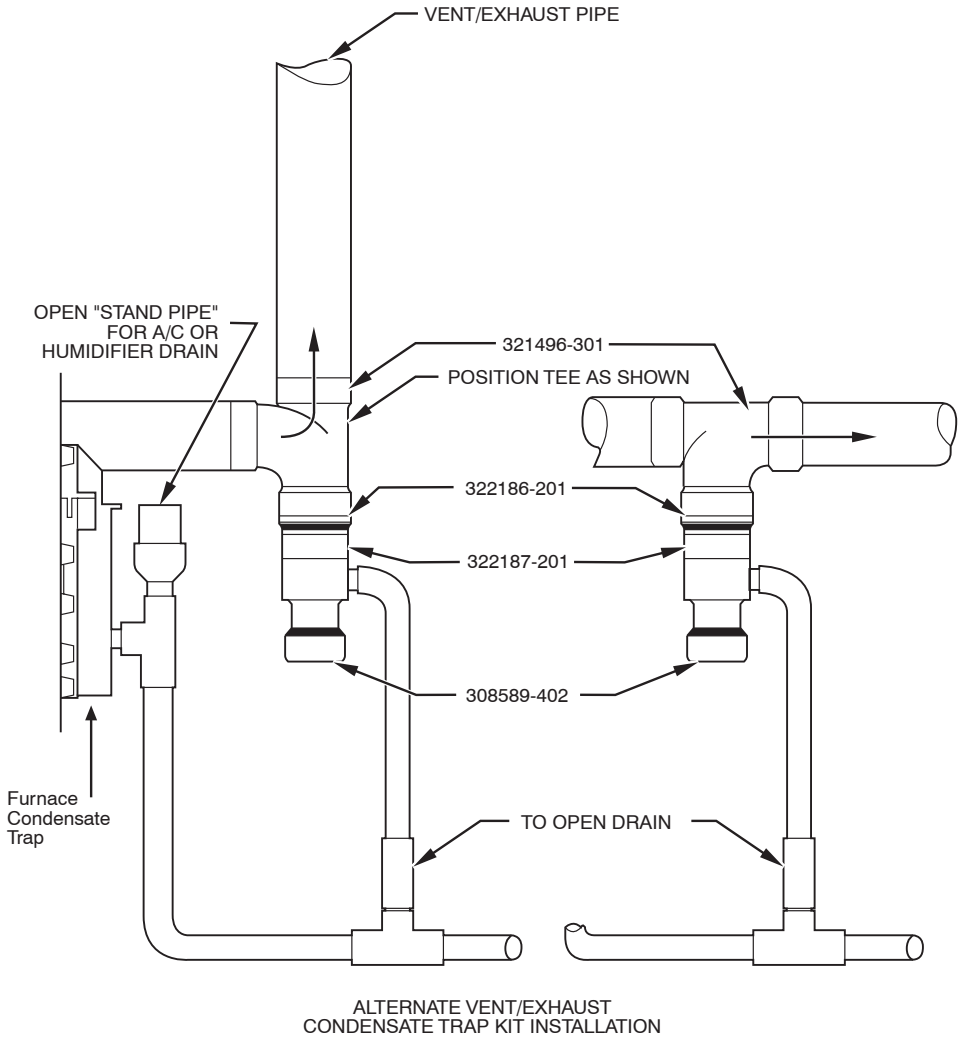

Fig. 1 – Condensate Trap Plumbing Options for Vent Above Floor

Drain pipe and fittings must conform to ANSI standards and ASTM D1785 or D2846. CPVC or PVC cement and primer must conform to ASTM D2564 or F493. In Canada, use CSA or ULC certified schedule 40 CPVC or PVC drain pipe, fittings and cement. Acceptable plastic pipe, fittings,and cement materials provided in Table 1.

⚠ WARNING

FIRE HAZARD

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

Solvent cements are combustible. Keep away from heat, sparks, and open flame. Use only in well ventilated areas. Avoid breathing in vapor or allowing contact with skin or eyes.

NOTE: Slope combustion-air and vent pipes a minimum of 1/4 in. per linear ft with no sags between hangers.

⚠ CAUTION

UNIT OPERATIONAL HAZARD

Failure to follow this caution may result in intermittent unit operation.

This kit is intended to be located at the lowest point in the vent system and no more than 24 in. horizontally from where the vent exits the furnace to achieve proper drainage.

1. Determine the best location for kit components. They should be installed as close to furnace as possible. See Fig. 2, 3, 4, 5, 6, 7, 8, and 9 for examples.
2. Cut existing section of 2-in. PVC vent/exhaust pipe exiting furnace casing. (See Fig. 10.)
3. Dry fit tee-vent fitting (supplied in kit) on vent/exhaust pipe exiting furnace.

NOTE: Position tee-vent fitting such that curved portion is as shown in Fig. 1 to ensure proper vent/exhaust pipe draining.

Table 1—Approved Combustion-Air and Vent Pipe, Fitting and Cement Materials

SPECIFICATION (MARKED ON MATERIAL)	MATERIAL	PIPE	FITTINGS	SOLVENT CEMENT AND PRIMERS	DESCRIPTION
D1527	ABS	Pipe	--	--	Schedule-40
D1785	PVC	Pipe	--	--	Schedule-40
D2235	For ABS	--	--	Solvent Cement	For ABS
D2241	PVC	Pipe	--	--	SDR-21 & SDR-26
D2466	PVC	--	Fittings	--	Schedule-40
D2468	ABS	--	Fittings	--	Schedule-40
D2564	For PVC	--	--	Solvent Cement	For PVC
D2661	ABS	Pipe	Fittings	--	DWV at Schedule-40 IPS sizes
D2665	PVC	Pipe	Fittings	--	DWV
F438	CPVC	--	Fittings	--	Schedule-40
F441	CPVC	Pipe	--	--	Schedule-40
F442	CPVC	Pipe	--	--	SDR
F493	For CPVC	--	--	Solvent Cement	For CPVC
F628	ABS	Pipe	--	--	Cellular Core DWV at Schedule-40 IPS sizes
F656	For PVC	--	--	Primer	For PVC
F891	PVC	Pipe	--	--	Cellular Core Schedule-40 & DWV

4. Cut existing section of vent/exhaust pipe to attach to outlet connection on tee-vent fitting.
5. Dry fit vertical section of vent/exhaust pipe to tee-vent fitting outlet connection.
6. Cement tee-vent fitting in place.
7. Cement bushing (supplied in kit) in bottom tee-vent fitting connection.
8. Position condensate trap (supplied in kit) in bushing such that drain connection is positioned for suitable field drain attachment.
9. Cement condensate trap in place.
10. Attach drain tube to condensate drain connection using field-supplied components.

NOTE: Condensate trap drain connection is 5/8-in. OD, suitable for attachment of 1/2-in. CPVC or 5/8-in. ID plastic tubing.

11. Terminate drain tube in an open drain.
12. Prime vent/exhaust pipe condensate trap. This can be accomplished by 1 of the following methods:
    a. Pour water into the vent/exhaust pipe termination.
    b. Raise condensate trap drain tube above drain tube connection and pour water into drain tube.
13. Prime condensate trap at furnace with water.

⚠ CAUTION

UNIT OPERATIONAL HAZARD

Failure to follow this caution may result in intermittent unit operation.

Condensate trap at furnace must be PRIMED or proper draining may not occur. The condensate trap has 2 internal chambers which can ONLY be primed by pouring water into the inducer drain side of condensate trap.

14. When condensate pump is required, select a pump which is approved for condensing furnace applications. To avoid condensate spillage, select a pump with an overflow switch. Furnace condensate is mildly acidic, typically in the pH range of 3.2 to 4.5. Due to the corrosive nature of this condensate, a condensate pH neutralizing filter may be desired. Check with local authorities to determine if a pH neutralizer is required.

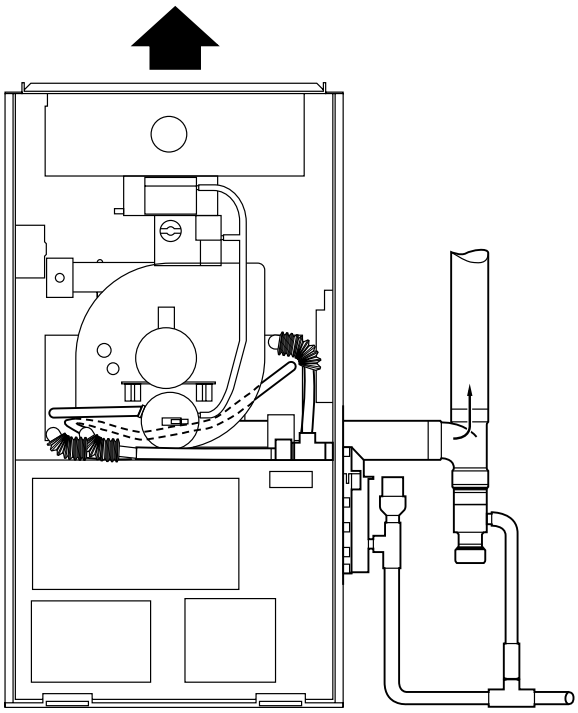

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Fig. 2 – Upflow Furnace Right–Side Outlet with External Condensate Trap and Trap Kit for Vent Above Floor

⚠ WARNING

CARBON MONOXIDE POISONING HAZARD AND UNIT DAMAGE HAZARD

Failure to follow this warning could result in personal injury, death and unit damage.

After completing installation, vent pipe must be installed and fully seated against inducer housing internal stop. Coupling clamp screw(s) must be tightened to 30 in./-lb of torque to prevent disassembly of vent from furnace, and to prevent vent gas and condensate leakage.

⚠ WARNING

CARBON MONOXIDE POISONING HAZARD

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

Failure to use a properly constructed trap or NOT priming trap before operating furnace may allow positive pressure flue gases to enter the structure through drain tube. Flue gases contain carbon monoxide which is tasteless and odorless.

FOR VENT LOCATED IN UNHEATED SPACE

Step 1.—Condensate Drain Protection

Freezing condensate in condensate trap and drain line may cause cracks, and possible water damage may occur (See Table 2). If freeze protection is required, use condensate freeze protection accessory or equivalent 3 to 6 watt per ft. at 120v and 40°F self-regulating, shielded, and waterproof heat tape. See Installation Instructions supplied with accessory or heat tape manufacturer's recommendations.

1. Fold heat tape in half and wrap on itself 3 times.
2. Locate heat tape between sides of condensate trap back.
3. Use wire ties to secure heat tape in place. Wire can be positioned in notches of condensate trap sides.
4. Wrap field drain pipe with remaining heat tape, approximately 1 wrap per ft.
5. When using field-supplied heat tape, follow heat tape manufacturer's instructions for all other installation guidelines.

Caution should be taken to prevent condensate trap and drain line from freezing. Ambient temperatures below 32°F (0°C) may freeze drain pipe and prohibit draining.

⚠ CAUTION

UNIT OPERATIONAL HAZARD

Failure to follow this caution may result in intermittent unit operation.

Unit must not be installed, operated, and then turned off and left in an unoccupied structure during cold weather when temperature drops to 32°F and below unless drain trap and drain line have adequate freeze protection. See Service and Maintenance Instructions for winterizing procedure.

Step 2.—Application

The furnace, A/C, and humidifier drains may be combined and drained together. The A/C drain must have an external, field-supplied trap prior to the furnace drain connection. All drain connections (furnace, A/C, or humidifier) must be terminated into an open or vented drain as close to the respective equipment as possible to prevent siphoning of the equipment's drain.

Outdoor draining of the furnace is permissible if allowed by local codes.

⚠ CAUTION

PERSONAL INJURY HAZARD

Caution should be taken to prevent draining where slippery conditions may cause personal injuries.

Excessive condensate draining may cause saturated soil conditions which may result in damage to plants.

Condensate is not to be drained onto crawlspace floor from furnace or external trap. Installations must comply with regulations of local building, heating, plumbing, or other codes in effect in area where installation is made.

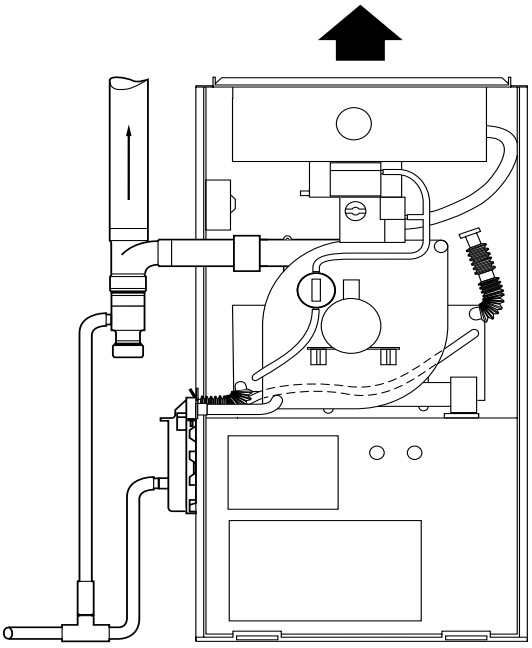

Fig. 3 – Upflow Furnace Left–Side Outlet with External Condensate Trap and Trap Kit for Vent Above Floor

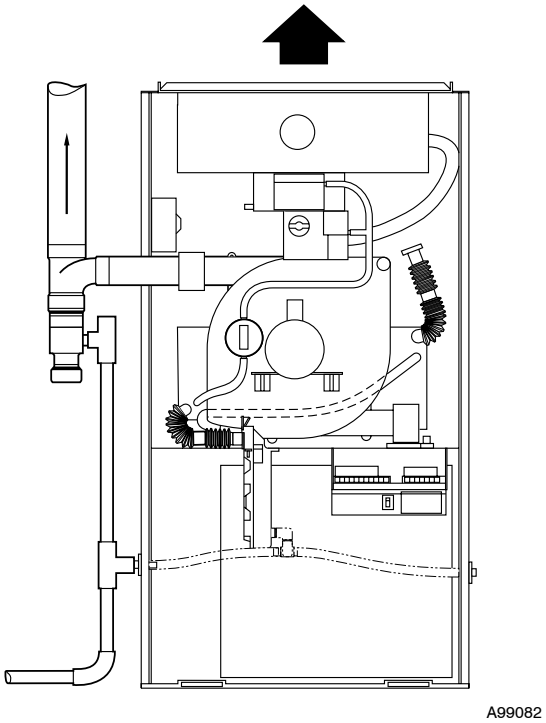

Fig. 4 – Upflow Furnace Left–Side Outlet with Blower Compartment Condensate Trap Location and Trap Kit for Vent Above Floor

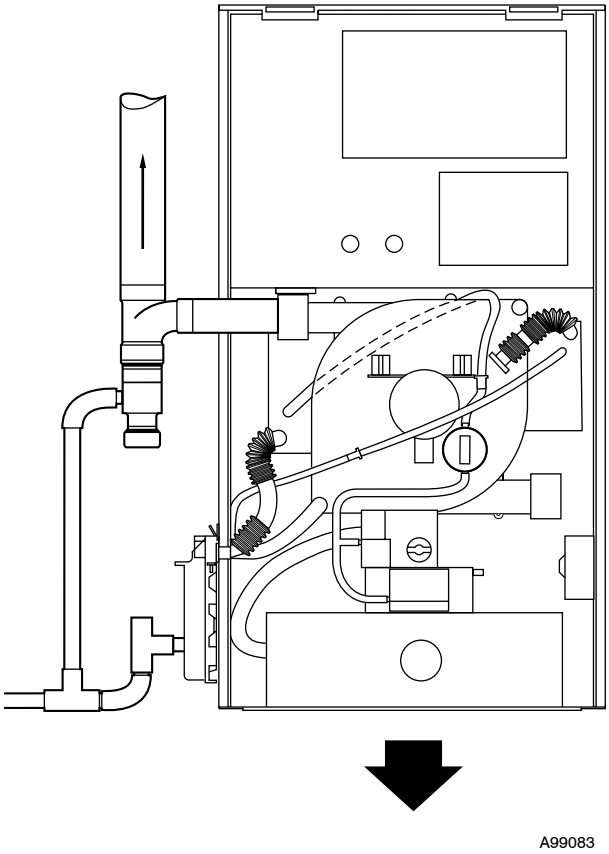

Fig. 5 – Downflow Furnace Left–Side Outlet with External Condensate Trap and Trap Kit for Vent Above Floor

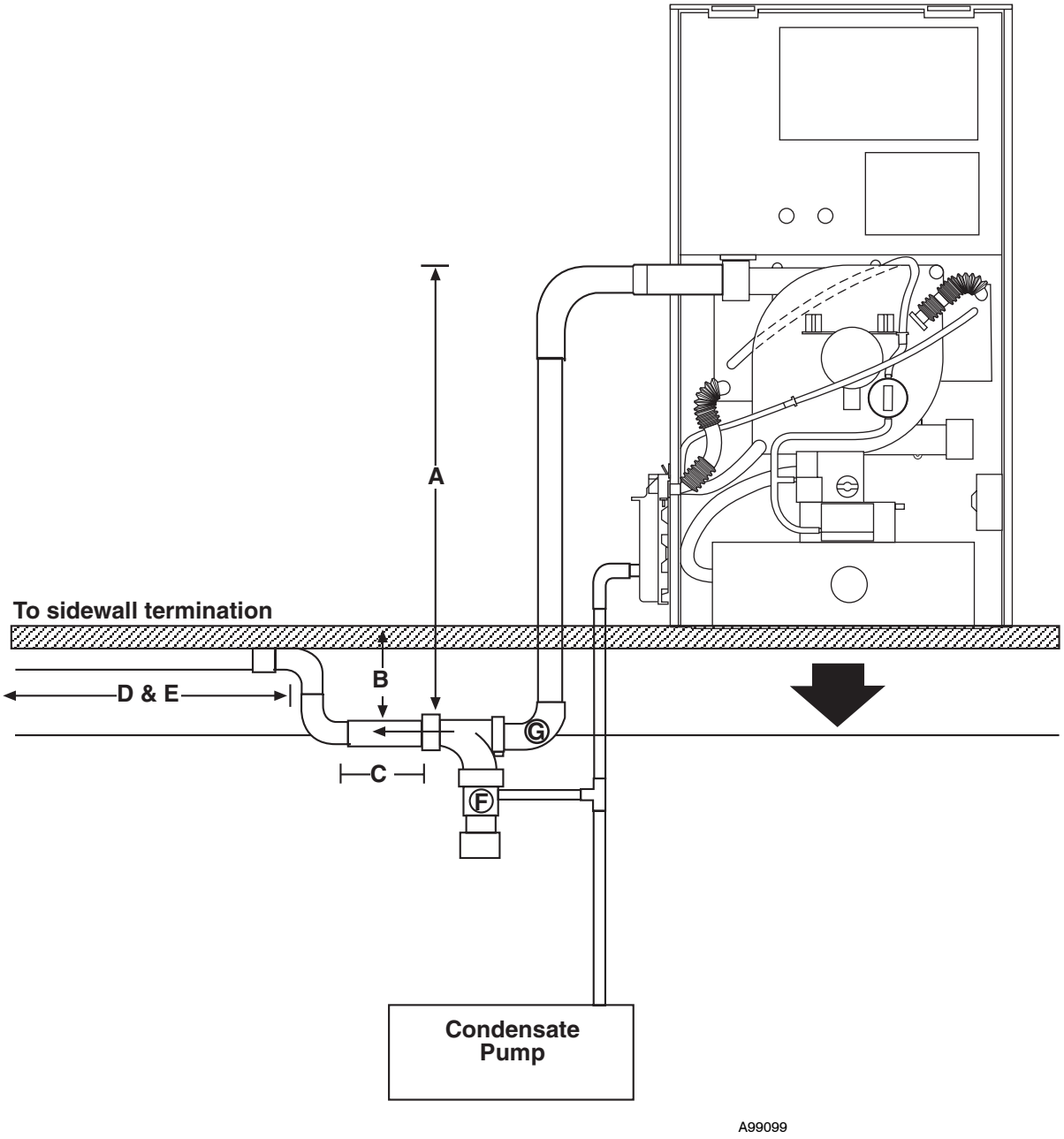

Fig. 6 – Vent Located Below Floor in Which Furnace is Located with Vent Between Floor Joists

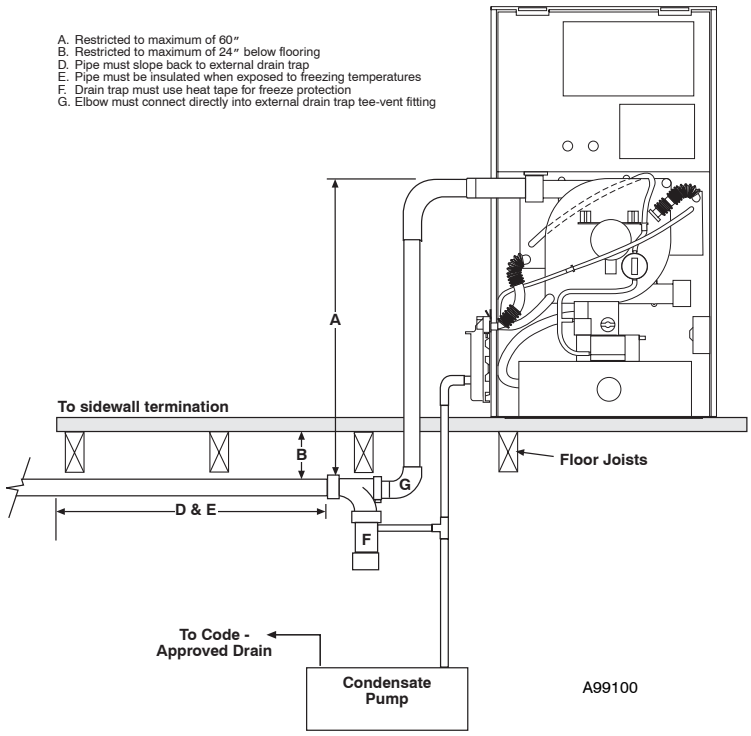

Fig. 7 – Vent Located Below Floor on Which Furnace is Located with Vent Below Floor Joists

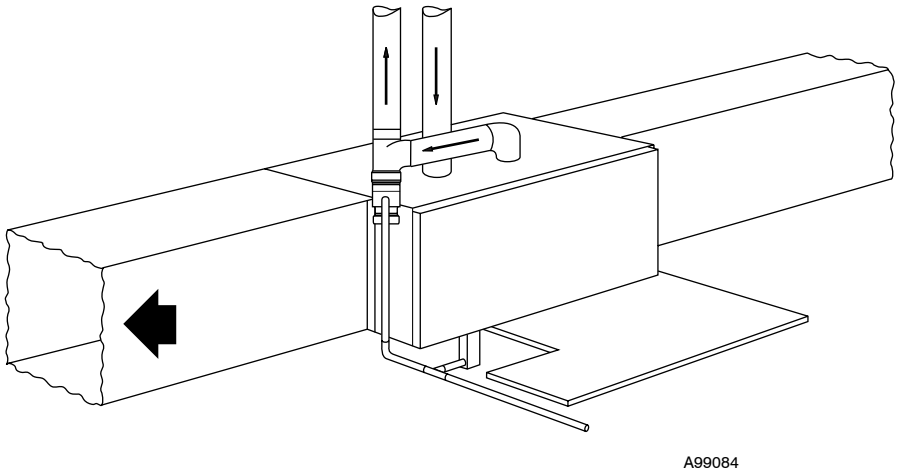

Fig. 8 – Horizontal Furnace External Trap with Condensate Trap Kit for Vent Above Floor

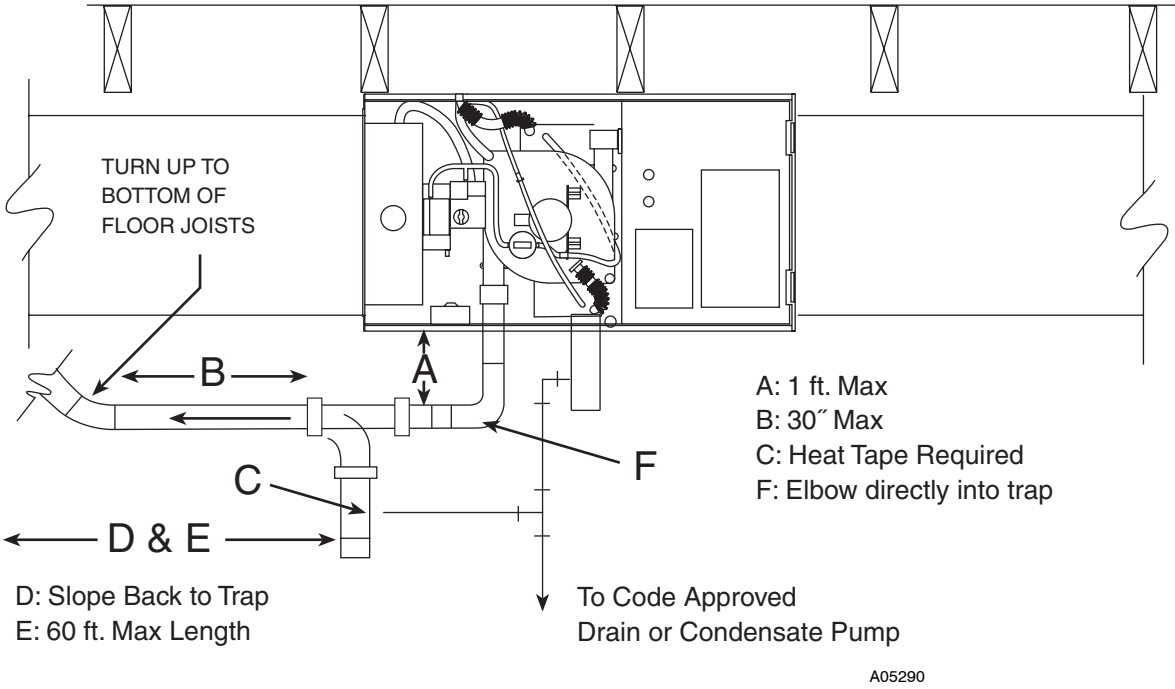

Fig. 9 – Horizontal Furnace with ETK Under Furnace

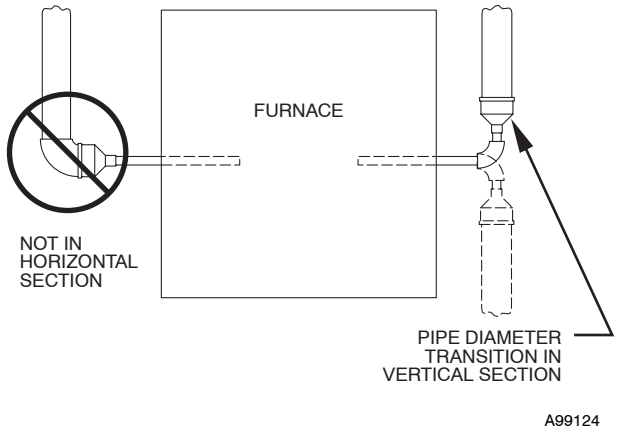

Fig. 10 – Combustion–Air and Vent Pipe Diameter Transition Location and Elbow Configuration

Table 2—Maximum Allowable Exposed Vent Pipe Length (FT) With and Without Insulation in Winter Design Temperature Ambient*

UNIT SIZE	WINTER DESIGN TEMPERATURE (°F)	MAX PIPE DIAMETER (IN.)	WITHOUT INSULATION		WITH 3/8-IN. OR THICKER INSULATION†	
			Fixed Capacity	2-Stage	Fixed Capacity	2-Stage
040	20	1.5	51	-	70	-
	0	1.5	28	-	70	-
	-20	1.5	16	-	70	-
	20	2	45	-	70	-
	0	2	22	-	70	-
	-20	2	10	-	58	-
060	20	2	65	44	70	70
	0	2	35	21	70	70
	-20	2	20	20	70	57
080	20	2	55	55	55	55
	0	2	48	30	55	55
	-20	2	30	16	55	55
	20	2.5	70	58	70	70
	0	2.5	47	29	70	70
	-20	2.5	28	14	70	67
100	20	2.5	40	40	40	40
	0	2.5	40	38	40	40
	-20	2.5	38	21	40	40
	20	3	70	63	70	70
	0	3	50	30	70	70
	-20	3	28	12	70	70
120	20	3	70	70	70	70
	0	3	61	38	70	70
	-20	3	37	19	70	70
	20	4	70	65	70	70
	0	4	48	26	70	70
	-20	4	23	5	70	65
140	20	3	60	-	60	-
	0	3	60	-	60	-
	-20	3	44	-	60	-
	20	4	70	-	70	-
	0	4	57	-	70	-
	-20	4	30	-	70	-

*Pipe length (ft) specified for maximum pipe lengths located in conditioned spaces. Pipes located in unconditioned space cannot exceed total allowable pipe length as specified in the furnace Installation Instructions. Insulation thickness based on R values of 3.5 (ft2·°F·hr.)/(Btu·in.).

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