

Installation and Venting Instructions

Chimney Adapter Kits for
78% AFUE Hot Surface Ignition
Category I Fan-Assisted
Furnaces

KGACA01014FC
KGACA01015FC

KEEP THESE INSTRUCTIONS WITH THE FURNACE

→ **NOTE:** Read the entire instruction manual before starting the installation. This symbol → indicates a change since the last issue.

⚠ CAUTION: Furnaces that are A.G.A. and C.G.A. design-certified for use with these kits are identified with labels on top of the furnaces.

The Chimney Adapter Kits are for use **ONLY** with furnaces having Chimney Adapter kit numbers marked on the clearance to combustible construction labels.

These kits are permitted to be used with only the following furnace models. (See Table 1.) Do not use this kit with any other furnace models.

→ **Table 1—Kit Usage**

KIT PART NO.	FURNACE USED WITH			
	58YAV070-08	58YAV070-12	58YAV091-14	58YAV111-16
KGACA01014FC	393AAV024070	393AAV036070	393AAV042091	393AAV048111
	58YAV136-20	58YAV155-20	—	—
KGACA01015FC	393AAV060135	393AAV060155	—	—

SAFETY CONSIDERATIONS

Installing and servicing heating equipment can be hazardous due to fuel gas, vent gas, and electrical components. Improper installation, adjustment, alterations, accessories, service, maintenance, or use can cause explosion, fire, electrical shock, asphyxiation, or other conditions which may cause personal injury, death, or property damage. Only trained and qualified personnel should install, repair, or service heating equipment.

Wear safety glasses, protective clothing, and work gloves. Have a fire extinguisher available during start-up and adjustment procedures and service calls. Read these instructions thoroughly. Follow all warnings or cautions included in literature and attached to equipment.

Follow all safety codes including local building codes, National Fuel Gas Code (NFPA) ANSI Z223.1-1996/NFPA 54-1996 in the United States and National Standard of Canada for Natural Gas and Propane Installation Codes (NSCNGPIC) CAN/CGA-B149.1 and .2-M95 in Canada.

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 a hazard which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **would** result in minor personal injury or product and property damage.

→ INTRODUCTION

If a clay tile-lined masonry chimney is being used and it is exposed to the outdoors below the roof line, relining might be required.

- U.S.A.—Refer to Sections 11.2.9 and 11.3.18 of the NFPA or the authority having jurisdiction to determine whether relining is required. If relining is required, use a listed metal liner, Type-B vent, or a listed alternative venting design.
- Canada—A 78% AFUE, hot surface ignition, Category I, fan-assisted furnace is permitted to be vented into a clay tile-lined masonry chimney that is exposed to the outdoors below the roof line, provided:

1. Vent connector is Type-B double-wall, and
2. The furnace is common vented with at least 1 draft hood-equipped appliance, and
3. The combined appliance input rating is less than the maximum capacity given in Table A, and
4. Input rating of each space heating appliance is greater than minimum input rating given in Table B for local winter design temperature, and
5. The authority having jurisdiction approves.

If all of these conditions cannot be met, an alternative venting design is required, such as this listed chimney adapter kit with a furnace listed for use with the kit, a listed chimney lining system, or a Type-B common vent.

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Exterior Masonry Chimney, FAN + NAT Installations with Type-B Double-Wall Vent Connectors

Table A—Combined Appliance Maximum Input Rating in Thousands of Btu per Hr

VENT HEIGHT (FT)	INTERNAL AREA OF CHIMNEY (SQ IN.)							
	12	19	28	38	50	63	78	113
6	74	119	178	257	351	458	582	853
8	80	130	193	279	384	501	636	937
10	84	138	207	299	409	538	686	1010
15	NR	152	233	334	467	611	781	1156
20	NR	NR	250	368	508	668	858	1286
30	NR	NR	NR	404	564	747	969	1473
50	NR	NR	NR	NR	NR	831	1089	1692
100	NR	NR	NR	NR	NR	NR	NR	1921

Table B—Minimum Allowable Input Rating of Space-Heating Appliance in Thousands of Btu per Hr

VENT HEIGHT (FT)	INTERNAL AREA OF CHIMNEY (SQ IN.)							
	12	19	28	38	50	63	78	113
17 to 26°F	Local 99% Winter Design Temperature: 17 to 26°F*							
	6	0	55	99	141	182	215	259
	8	52	74	111	154	197	226	264
	10	NR	90	125	169	214	245	278
	15	NR	NR	167	212	263	296	331
	20	NR	NR	212	258	316	352	387
	30	NR	NR	NR	362	429	470	507
	50	NR	NR	NR	NR	NR	723	766
	100	NR	NR	NR	NR	NR	NR	1669
5 to 16°F	Local 99% Winter Design Temperature: 5 to 16°F*							
	6	NR	78	121	166	214	252	301
	8	NR	94	135	182	230	269	312
	10	NR	111	149	198	250	289	331
	15	NR	NR	193	247	305	346	393
	20	NR	NR	NR	293	360	408	450
	30	NR	NR	NR	377	450	531	580
	50	NR	NR	NR	NR	NR	797	853
	100	NR	NR	NR	NR	NR	NR	1833
-10 to 4°F	Local 99% Winter Design Temperature: -10 to 4°F*							
	6	NR	NR	145	196	249	296	349
	8	NR	NR	159	213	269	320	371
	10	NR	NR	175	231	292	339	397
	15	NR	NR	NR	283	351	404	457
	20	NR	NR	NR	333	408	468	528
	30	NR	NR	NR	NR	NR	603	667
	50	NR	NR	NR	NR	NR	NR	955
	100	NR	NR	NR	NR	NR	NR	NR
-11°F or lower	Local 99% Winter Design Temperature: -11°F or Lower*							
	Not recommended for any vent configuration							

* The 99% winter design temperatures are found in the 1993 *ASHRAE Fundamentals Handbook*, Chapter 24, Tables 1 and 2.

Each listed kit and furnace combination is permitted to be vented into a clay tile-lined exterior masonry chimney without relining the chimney. The furnaces and kit combinations are A.G.A. and C.G.A. design-certified as alternative venting designs.

⚠ CAUTION: Furnaces that are A.G.A. and C.G.A. design-certified for use with chimney adapter kits for exterior tile-lined chimneys are identified with labels on top of the furnaces stating that chimney adapters are permitted to be used. The chimney adapters are for use with ONLY furnaces having a chimney adapter kit number marked on the clearance-to-combustible-construction label.

VENTING REQUIREMENTS

If an alternative venting design is required, this chimney adapter kit is permitted as follows.

1. The chimney construction shall be in good condition and shall conform to the Standard for Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances ANSI/NFPA 211 in the U.S.A. and to a Provincial or Territorial Building Code in Canada (in its absence, the National Building Code of Canada). See the inspection chart on page 4.
2. The 99% winter design temperature shall not be lower than -10°F (-23°C). Winter design temperatures for some U.S.A. and Canadian cities are provided in the *American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Fundamentals Handbook* in the Weather Data chapter. Fig. G-19 in the NFGC (Appendix G) also provides winter design temperatures for some locations.
3. Furnace's Clearance-to-Combustible Construction label is marked with chimney adapter kit number permitted to be used with the furnace.
4. An operational draft hood-equipped water heater shall be common vented with the furnace. Additional draft hood-equipped appliances are permitted to be common vented with the furnace.
5. Type-B double-wall metal vent shall be used exclusively for the furnace and water heater vent connectors (each with up to 4 elbows).
6. The furnace vent connector shall be the same size as the chimney adapter outlet.
7. The water heater vent connector shall be 4-in. diameter with no more than 6 ft of lateral (horizontal connector length), with water heater draft hood outlet sizes of 3- and 4-in. diameter. Use a 3 X 4-in. vent increaser with a 3-in. draft hood outlet.
8. The water heater gas input shall not exceed 40,000 Btuh for vent connector rise less than 2 ft, and shall not exceed 52,000 Btuh for rise 2 ft or more. These rise requirements are based on the NFGC and NSCNGPIC. Other inputs versus rises for 4-in. connectors are permitted by using the 4-in. NAT-Max column in NFGC Table 11-8 in the U.S.A. or in NSCNGPIC Appendix B Table 7 in Canada.
9. Appliance application and operation has a significant impact on successful chimney performance. Follow the furnace Installation Instructions in general and, in particular, the APPLIANCE APPLICATION REQUIREMENTS in the VENT TABLES section.

NOTE: See Fig. 1 while reviewing the following requirements.

10. The minimum chimney size shall be installed in accordance with NAT+NAT columns for common vent capacity in NFGC Table 11-8 in the U.S.A., or the NSCNGPIC Appendix B Table 7 in Canada. Table 2 was extracted from these codes.

High altitude: Although appliance input shall be derated starting at 2000 ft altitude, use sea level input at all altitudes in Table 2.

**Table 2
Common Vent Capacity**

Vent Height H (Ft)	MINIMUM "NAT+NAT" INTERNAL AREA OF MASONRY CHIMNEY FLUE, SQUARE INCHES					
	28	38	50	63	78	113
	Combined Appliance Maximum Input Rating in Thousands of Btu per Hour					
	NAT +NAT	NAT +NAT	NAT +NAT	NAT +NAT	NAT +NAT	NAT +NAT
6	NR	103	143	188	246	NR
8	NR	119	163	218	278	408
10	NR	131	177	236	302	454
15	106	152	212	283	365	546
20	122	172	243	325	419	648
30	137	198	278	381	496	749
35	NR	NR	291	401	524	792

NR—Not Recommended.

11. Furnace vent connector rise shall not exceed 3 ft.
12. The furnace vent connector lateral length, clay tile liner size, and chimney height shall conform to the requirements of Table 3.

Table 3

FURNACE MODEL SIZES	CHIMNEY ADAPTER KIT NUMBER	FURNACE TYPE-B VENT CONNECTOR LATERAL MAXIMUM LENGTH (FT)	CHIMNEY CLAY TILE LINER MAXIMUM NOMINAL SIZE OR INSIDE AREA (IN. OR IN. ²)	CHIMNEY HEIGHT MAXIMUM (FT)
024070 / 070-08	KGACA01014FC	9	8 X 8 or 42.7	30
036070 / 070-12	KGACA01014FC	9	8 X 8 or 42.7	30
	KGACA01014FC	9	8 x 12 or 63.6	25
042091 / 091-14	KGACA01014FC	9	8 X 12 or 63.6	35
048111 / 111-16	KGACA01014FC	9	8 X 12 or 63.6	35
060135 / 136-20	KGACA01015FC	10	12 X 12 or 83.3	35
060155 / 155-20	KGACA01015FC	10	12 X 12 or 83.3	35

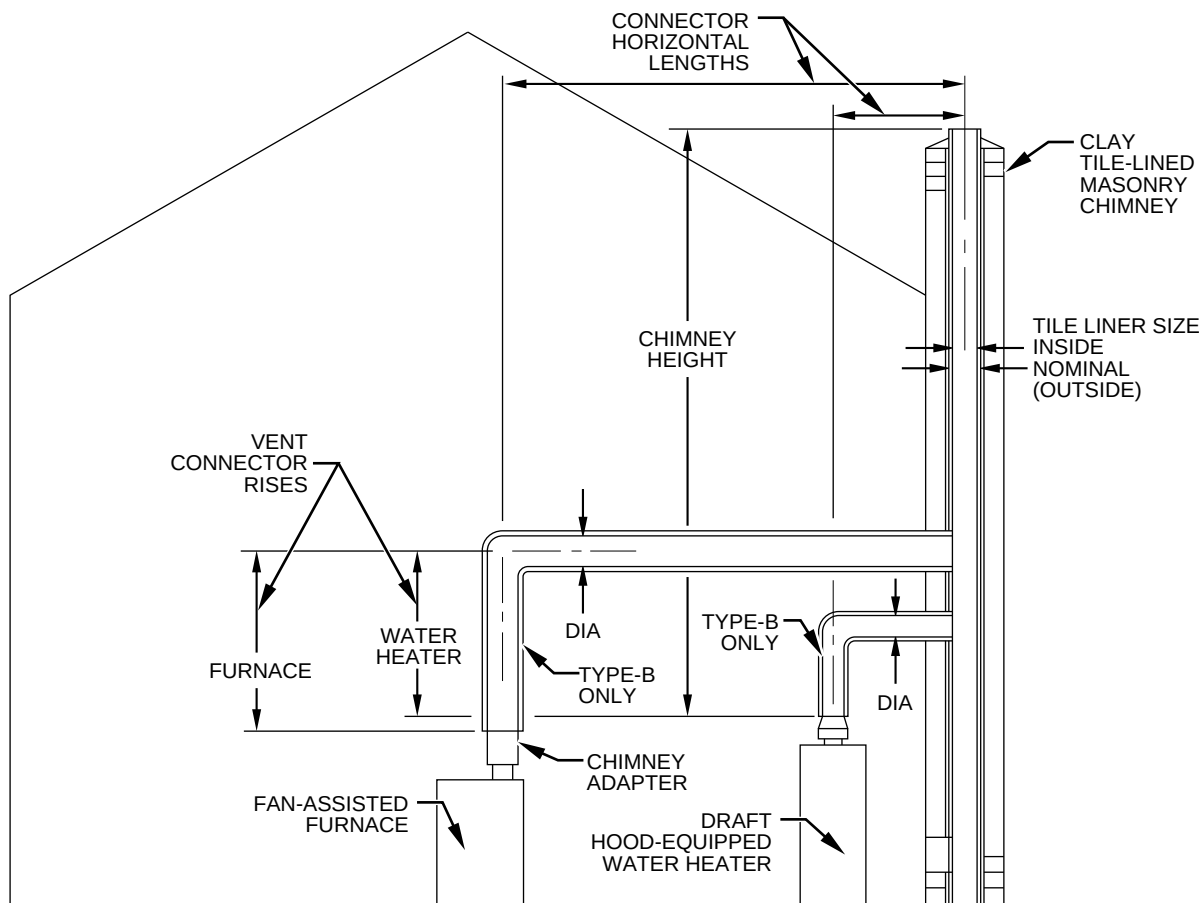
See the furnace for the Minimum Clearance-to-Combustible Construction label, which includes minimum clearance to the chimney adapter.

This kit is permitted to be used in any building which does not have equipment which can depressurize the space surrounding the furnace by more than 0.02 IWC (5Pa) below the outdoor pressure. See the NFGC, NSCNGPIC, or authority having jurisdiction for all other venting requirements.

CHIMNEY INSPECTION CHART

For additional requirements refer to the National Fuel Gas Code NFPA 54/ANSI Z223.1 and ANSI/NFPA 211 Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances in the U.S.A. or to the Canadian Installation Codes CAN/CGA-B149.1 and .2 in Canada.





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Fig.1—Furnace and Water Heater Vent Connectors, Chimney Adapter, and Chimney

INSTALLATION OF CHIMNEY ADAPTER

1. Turn off gas supply at manual gas valve before turning off electric power supply to furnace.
2. Turn off electric power supply to furnace at disconnect switch.
3. Attach chimney adapter to furnace flue collar with 2 sheet metal screws (field-supplied) through two 1/8-in. holes at inlet (small end) of chimney adapter. See Fig. 2 or 3.
4. Remove locknut from fitting on free end of electrical conduit attached to chimney adapter. Route wire ends through 7/8-in. hole in front right top of furnace. Secure conduit to furnace with locknut.
5. See Fig. 4 and 5 for wiring connections. Find orange wire in furnace that connects draft safeguard switch (DSS) to pressure switch (PRS). Do NOT disconnect either wire from PRS. Disconnect insulated, female, 1/4-in. quick-connect terminal from DSS, and connect it to orange wire from blocked vent shutoff switch (BVSS) of the chimney adapter that has insulated, male, 1/4-in. quick-connect terminal; so that chimney adapter BVSS and PRS are connected in series.
6. Connect other chimney adapter BVSS orange wire to DSS terminal from which first orange wire was disconnected.
7. No other wire connection changes should be made for chimney adapter. When items 5. and 6. are complete, chimney adapter BVSS will be connected in series with DSS and PRS. Be certain that no terminals can be shorted to other circuits or to any grounded parts.
8. Refer to Fig. 1. Secure a Type-B draft hood connector to top of chimney adapter with 3 sheet metal screws (field-supplied). Install Type-B double-wall metal vent connector from draft hood connector to chimney flue opening in accordance with vent pipe manufacturer's Installation Instructions. The horizontal portion of venting system shall maintain a minimum of 1/4-in. upward slope per linear ft away from furnace, and shall be rigidly supported every 5 ft or less with hangers and straps to ensure that there will be no movement after installation. The connector shall conform to size, rise, and lateral requirements under Venting Requirements and Table 3 of these instructions. Do NOT use the NFGC or NSCNGPIC vent connector sizing requirements.
9. Complete installation of water heater Type-B double-wall metal vent connector in same manner as used for furnace connector, except that a chimney adapter is not required at Type-B draft hood connector for water heater.

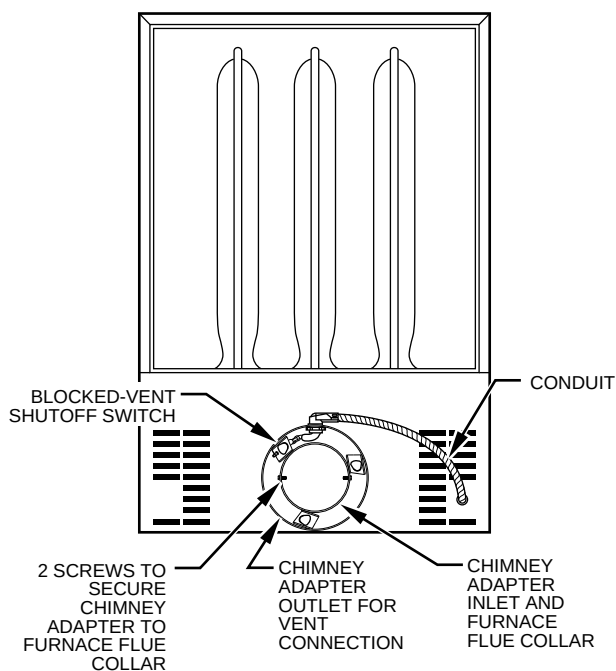
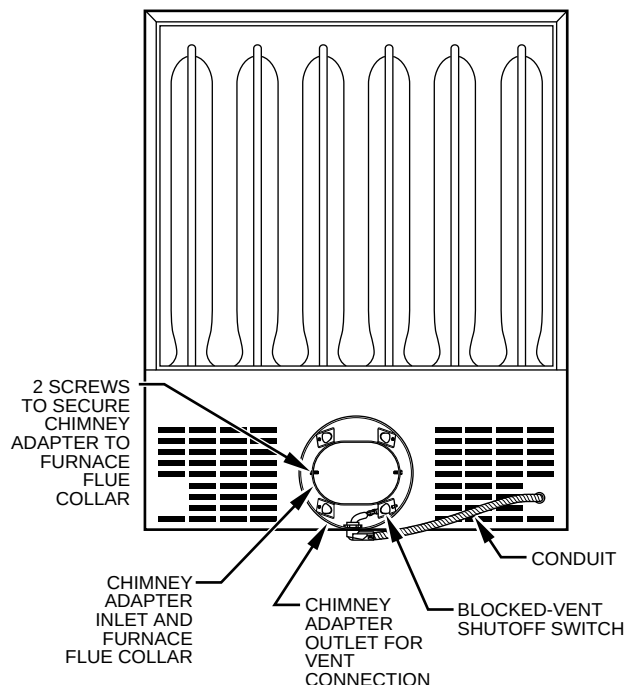


Fig. 2—Chimney Adapter Secured to Furnace Flue Collar (Sizes up through 110,000 Btuh input)



NOTE: Conduit is located at front of chimney adapter to provide clearance to an evaporator coil casing when one is used.

Fig. 3—Chimney Adapter Secured to Furnace Flue Collar (Sizes of 132,000 and 154,000 Btuh input)

START-UP, ADJUSTMENT, AND SAFETY CHECK

1. Complete Start-Up, Adjustment, and Safety Check in furnace Installation Instructions. Adjust furnace air temperature rise to be near high end of air temperature rise range specified on furnace rating plate (without exceeding high end of rise range). A higher air temperature rise reduces chimney condensation. While doing furnace check, the following steps shall be performed with each appliance that is connected to common-vented chimney. Put each appliance in operation while other appliance(s) are not in operation.
 - a. Inspect venting system for blockage or restriction, leakage, corrosion, and other deficiencies which could cause an unsafe condition.
 - b. Insofar as practical, close all building doors and windows, and all doors between space in which appliances are located and other spaces of building. Turn on clothes dryers and any appliance not connected to this chimney flue. Turn on all exhaust fans such as range hoods and bathroom exhausts, so they will operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace dampers.
 - c. Follow operating instructions for each appliance being checked. Adjust each thermostat so appliance will operate continuously.
 - d. Test for vent gas spillage at water heater draft hood and at furnace chimney adapter relief openings after 5 minutes of main burner operation. Use the flame of a match or candle.
 - e. Operate ALL appliances that are common-vent connected to chimney flue, and again test for vent gas spillage.
 - f. If improper venting is observed during any of above tests (e.g., vent gas spillage at water heater draft hood or furnace chimney adapter, or leakage from vent system), the common-venting chimney system must be corrected.
 - g. After it has been determined that each appliance properly vents when tested as outlined above, return doors, windows, exhaust fans, fireplace dampers, and any other gas-burning appliances to their previous conditions of use.
2. Check chimney adapter BVSS. This test is required, in addition to the test of the DSS required by the furnace installation instructions. The purpose of the BVSS is to cause safe shutdown of furnace if furnace vent connector or chimney becomes blocked.
 - a. Disconnect power to furnace, and remove Type-B vent connector from chimney adapter. Be sure to allow time for vent pipe to cool down before handling pipe.
 - b. Place jumper wire across DSS terminals to electrically by-pass DSS so that if DSS opens, furnace does not shutdown until BVSS opens.
 - c. Restore power to furnace and set room thermostat 5°F above room temperature.
 - d. After normal start-up, allow furnace to operate for 2 minutes, then block chimney adapter outlet 100 percent. Furnace should shut off within 2 minutes.
 - e. REMOVE JUMPER WIRE FROM DRAFT SAFEGUARD SWITCH!
 - f. Remove blockage and reconnect Type-B vent connector to chimney adapter.
 - g. Wait 5 minutes, then reset BVSS and DSS.
3. With furnace blower operating, check for air leakage from supply-air plenum or coil casing that could interfere with blocked-vent shutoff switch operation. If air leaks are found they must be properly sealed.
4. Leave Installation Instructions for chimney adapter and for furnace near furnace.

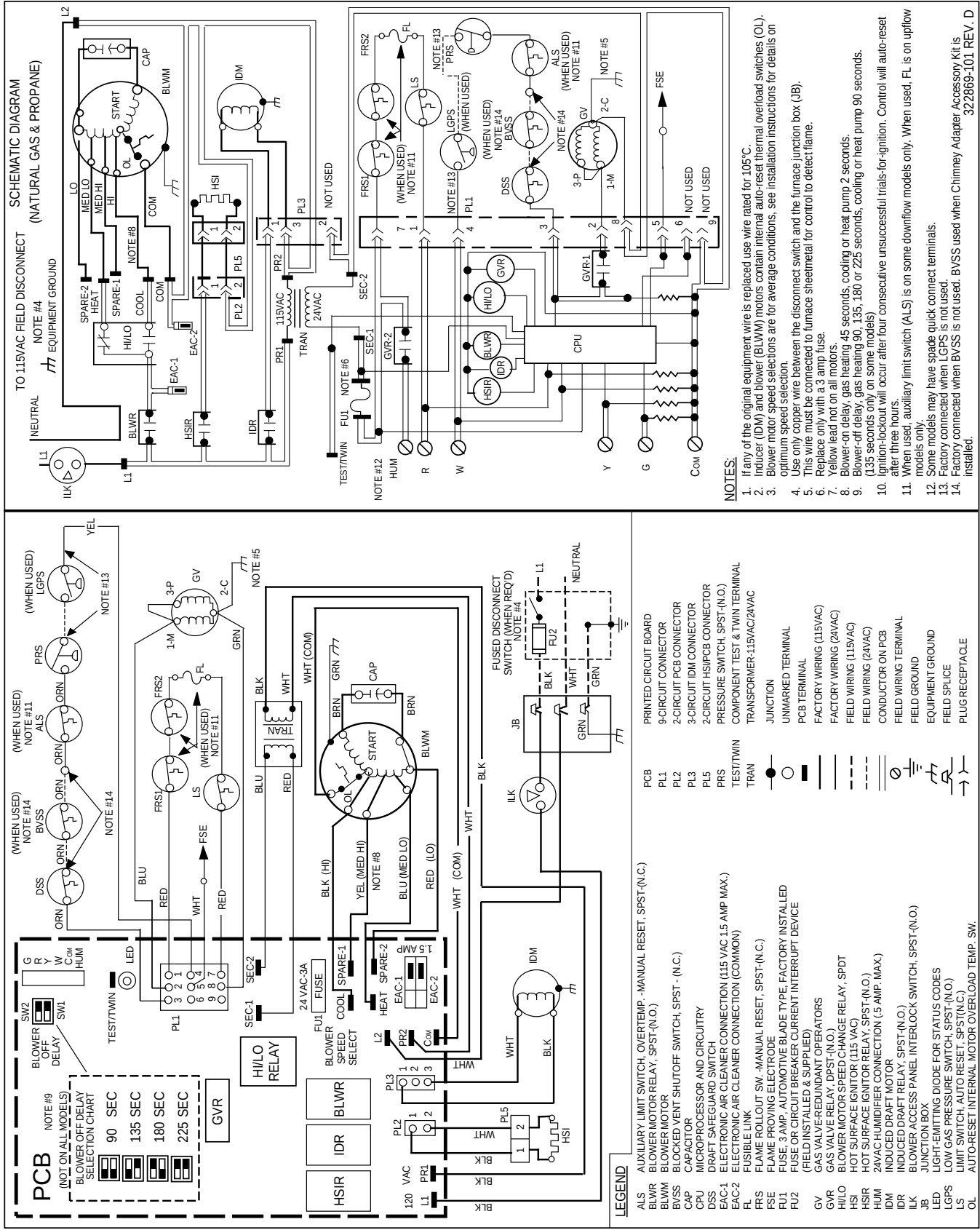
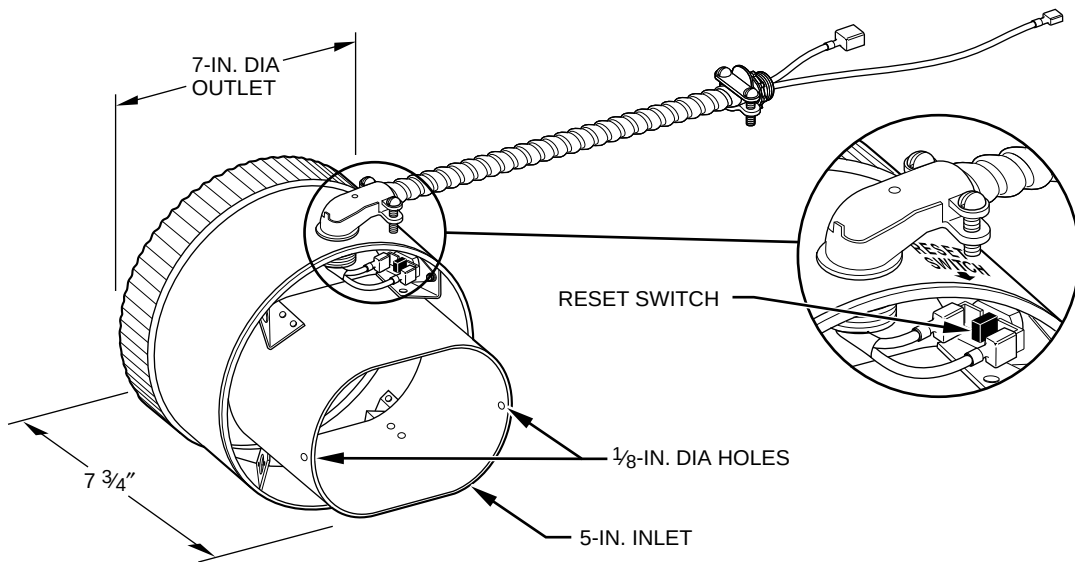
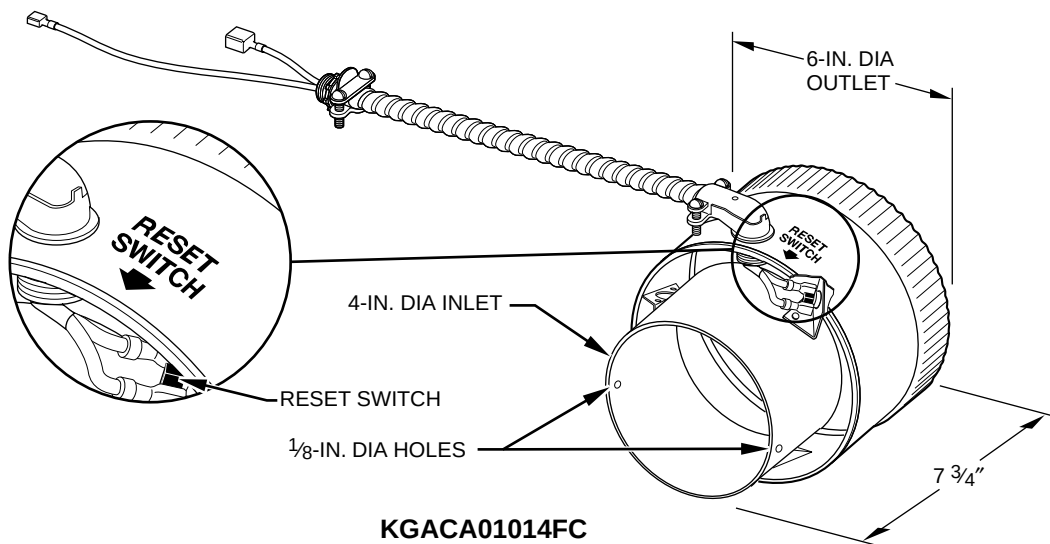


Fig. 4—Unit Wiring Diagram With Chimney Adapter



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Fig. 5—Chimney Adapters

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