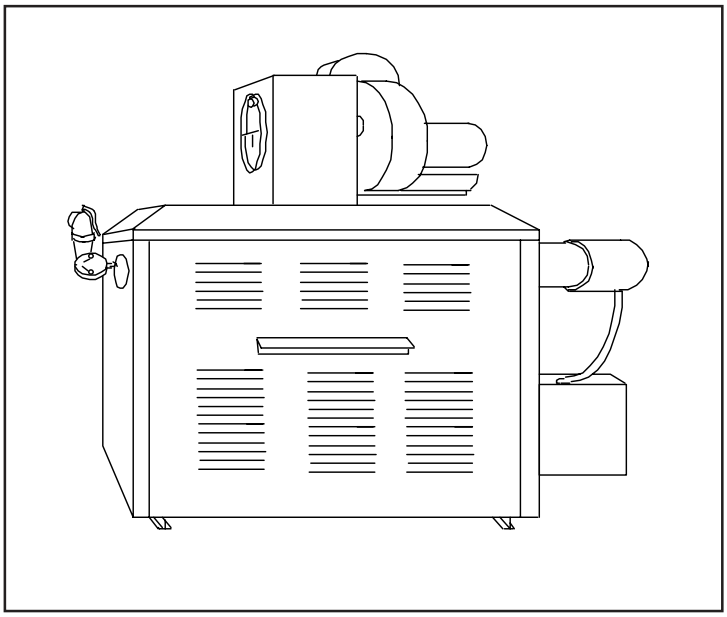
CATALOG NO. 2000.54E
Effective: 06-01-03
Replaces: 06-01-97

INSTALLATION AND OPERATING INSTRUCTIONS

Models 0514-4001
Type D

INDUCED DRAFT ASSEMBLY



FOR YOUR SAFETY
Do not store or use gasoline or other flammable vapors and liquids or other combustible materials in the vicinity of this or any other appliance. To do so may result in an explosion or fire.

WARNING: Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Refer to this manual. Installation and service must be performed by a qualified installer, service agency or the gas supplier.

FOR YOUR SAFETY
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.
*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.

This manual should be maintained in legible condition and kept adjacent to the heater or kept in a safe place for future reference.

Raypak®
A Rheem® Company

PN 240608

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RECEIVING EQUIPMENT

On receipt of your equipment it is suggested that you visually check for external damage to the carton. If the carton is damaged, it is suggested that a note be made on the Bill of Lading when signing for equipment. Remove the complete assembly from the carton and if it is damaged report the damage to the carrier immediately. Be sure that you receive the number of packages indicated on the Bill of Lading. Claims for shortages and damages must be filed with the carrier by consignee.

Purchased parts are subject to replacement only under the manufacturer's warranty. Debits for defective replacement parts will not be accepted and defective parts will be replaced in kind only per our standard warranties.

When ordering parts, you must specify Model and Serial Number of the unit. When ordering under warranty conditions, you must also specify date of Installation.

Raypak recommends that this manual be reviewed thoroughly before installing the Type D Assembly. If there are any questions which this manual does not answer, please contact your local Raypak Representative.

THIS MANUAL SHOULD BE MAINTAINED IN LEGIBLE CONDITION AND KEPT ADJACENT TO THE BOILER.

GENERAL SPECIFICATIONS

The Type D Assembly is certified by the Canadian Standard Association (CSA) and conforms to the American National Standard **ANSI Z21.13 - 1991** standard for hot water boiler, and to the CanadianStandard Association (CSA) **CGA 3.3-1976.** Industrial and Commercial Gas Fired Vertical Flue Boiler.

The Type D Assembly is a fan-assisted combustion system designed for application to Raypak Models H, WH, N and P sizes 514 through 4001. When installed as directed, the unit is capable of operating in applications such as through the wall venting and reduced horizontal and vertical vent pipe sizes in new and existing installations.

The Type D Assembly includes a blower with a 115 volt 60 Hz 1 PH motor, a plenum complete with a draft control device, a draft proving switch and a motor relay with post-purge capability. When provided for field mounting, the assembly is equipped with a wire harness.

SIZE	MBH		H/W	WH	NH	MIN CONN DIA(")	ASSY. NO.
	INPUT	OUTPUT					
514	512	419	X	X	X	7	065128
624	627	514	X	X	X	7	065129
724	726	595	X	X	X	7	065130
824	825	677	X	X	X	8	065131
962	962	789	X	X	X	8	065351
1125	1125	922	X	X	X	8	065352
1223	1223	1002	X	X	X	8	065353
1336	1336	1096	X	X	X	10	065354
1468	1467	1203	X	X	X	10	065355
1631	1630	1337	X	X	X	10	065356
1826	1826	1497	X	X	X	10	065357
2100	2100	1722	X	X		14	005627
2500	2499	2047	X	X		14	005627
3001	3000	2460	X	X		16	005629
3500	3500	2870	X	X		16	005630
4001	4000	3280	X	X		18	005631

INSTALLATION REQUIREMENTS

The equipment must be installed in accordance with local codes, or in the absence of local codes with the latest edition of the National Fuel Gas Code, **ANSI Z223.1,** the National Electrical Code, **ANSI/NFPA 70.** In Canada, Installations must conform to correct **CAN/CGA B149.1 or 2** and to the latest Canadian Electrical **CODE PART 1.**

The equipment shall be installed in accordance with those installation regulations in force in the local area where the installation is to be made. These shall be carefully followed in all cases. Authorities having jurisdiction shall be consulted before installations are made.

MOUNTING ASSEMBLY

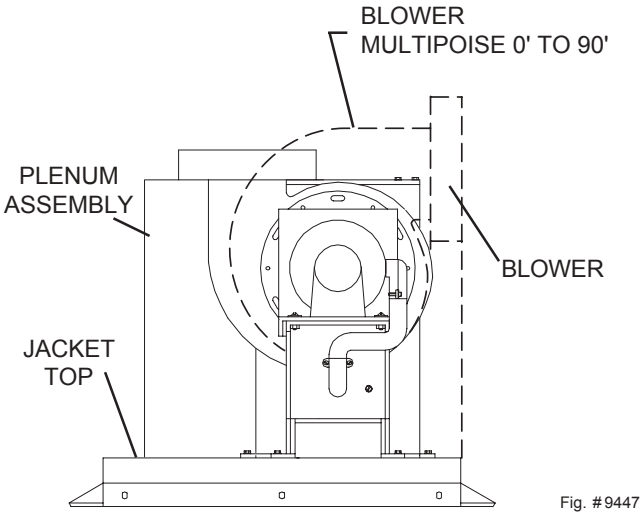


Fig. #9447

Models 514-1826

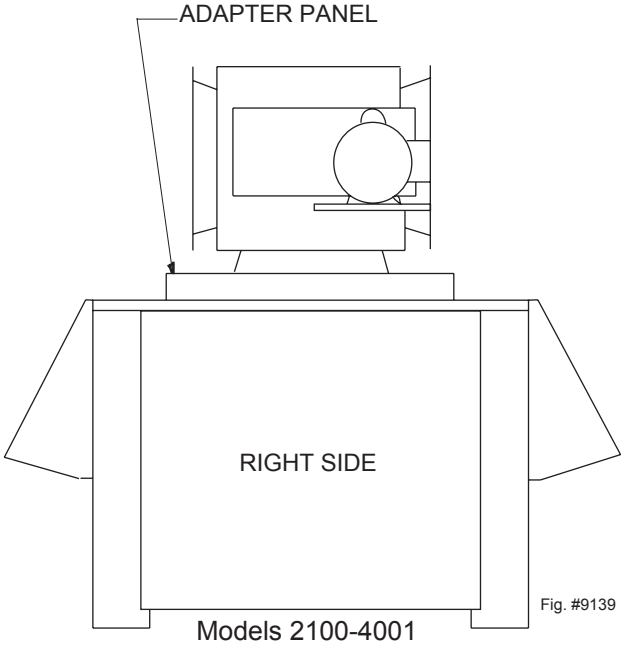


Fig. #9139

Models 2100-4001

ALL SITES:

1. The standard indoor jacket top and flue collector for the particular appliance size are used.

2. Install the baffle assembly supplied in the flue outlet. The baffle must be installed with the mounting arms positioned at the sides of the opening parallel to the sides of the unit.

3. Mount the plenum assembly on the jacket top using the silicone sealant and screws provided. Use a #28 drill (.1405 DIA) to drill the eight (8) holes needed for the mounting screws. The assembly should be positioned to the rear of the unit.

4. Connect the wire harness to the appliance junction box. Wiring is completed to meet the enclosed wiring diagram.

BOILER SIZES 2100 THROUGH 4001

The Type D Assembly for sizes 2100 through 4001 is installed directly on the top panel above the built-in draft hood. The adaptor plate is anchored to the top using the silicone sealant and the screws provided.

VENTING

The Type D assemblies are capable of being used with various vent pipe diameters. This versatility is based on using transition pieces or adaptors from the fan outlet to the vent pipe diameter. It is suggested that whenever there is a change in size that a smooth transition piece be used.

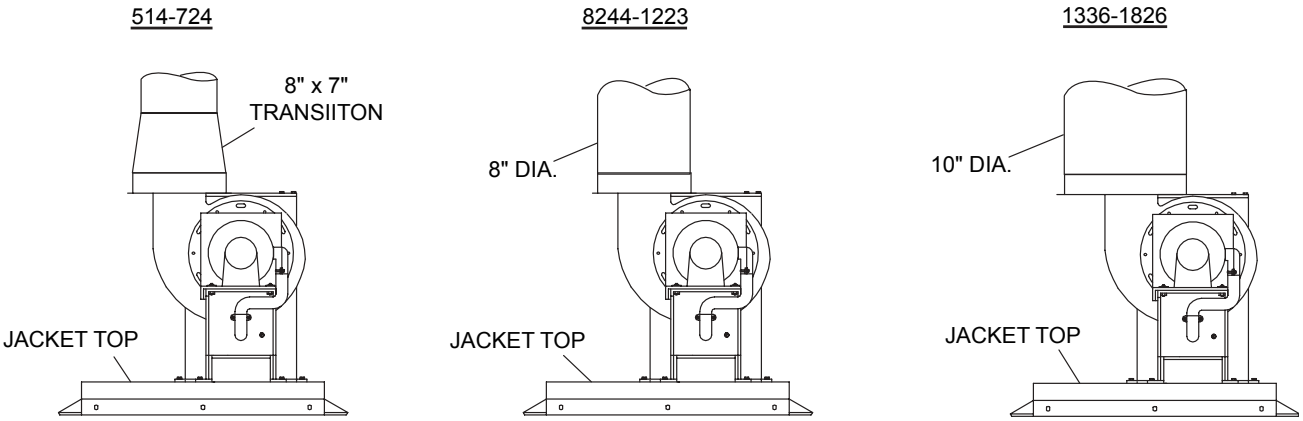


Fig. # 9448

The Raypak Type D induced draft assembly operates with a positive vent static pressure and with a vent gas temperature that avoids excessive condensate production in the vent, and as such it is listed as a **CATEGORY III** appliance.

Exception: When a Type D assembly is connected to a vertical vent of sufficient height to generate a negative draft in the system. Consult sizing guide or factory.

The Type D assembly is suitable for through the wall venting, and for connection to smaller size vent pipes and breeching other than the standard atmospheric appliance.

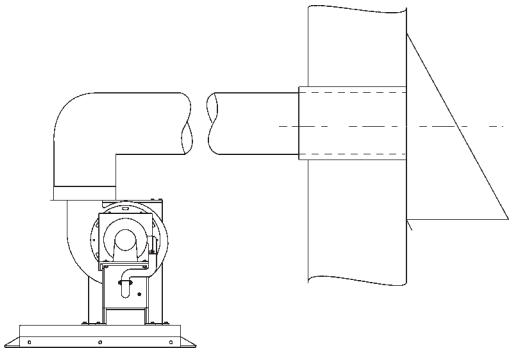


Fig. # 9453

WIRING

The type D assembly includes a wire harness which provides quick connections with the respective controls in the appliance control box. The harness is of sufficient length to fit the unit for which it is sized.

Reference the wiring diagram supplied with each appliance for actual connections.

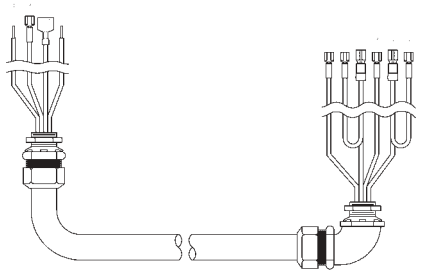


Fig.#9454

EXISTING APPLIANCE

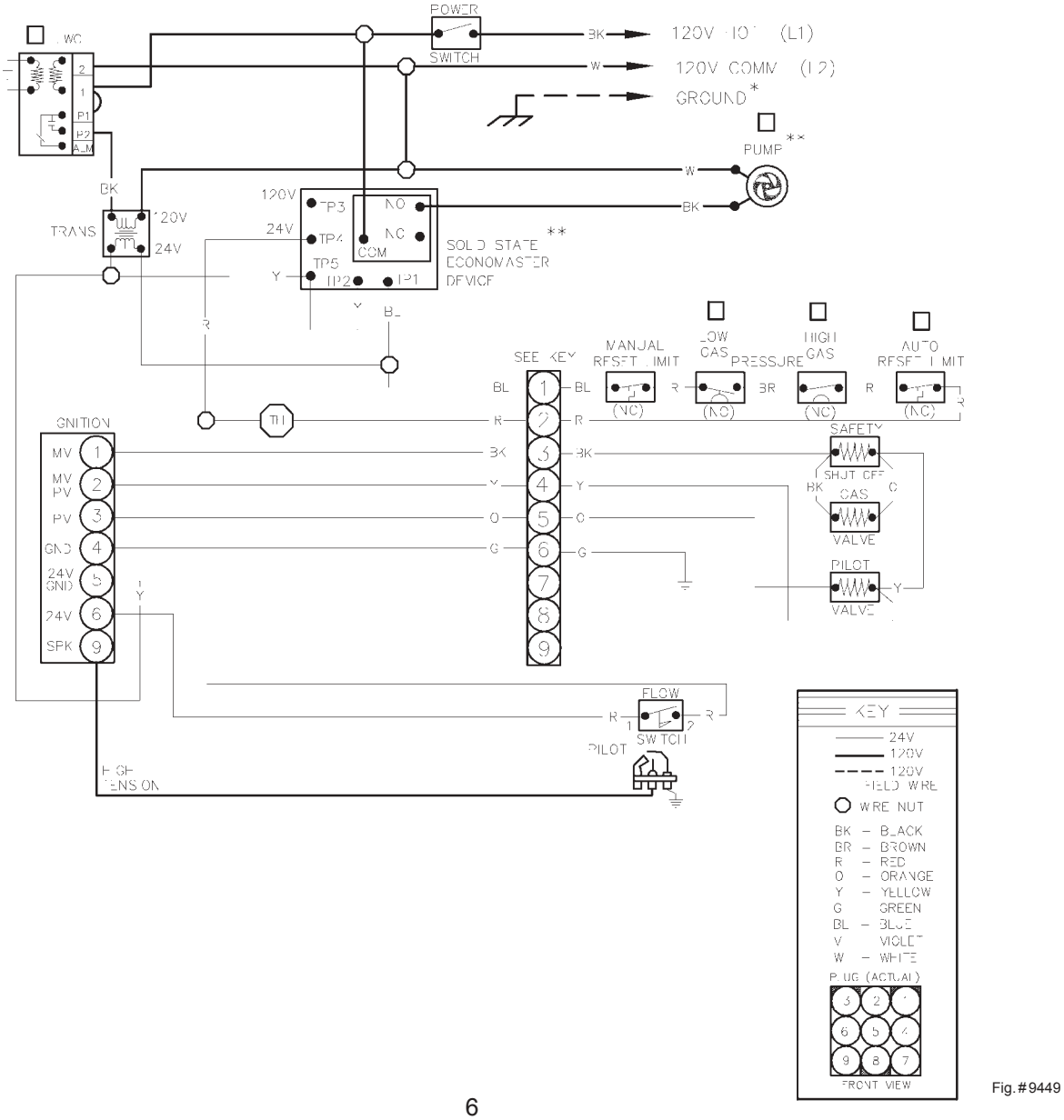
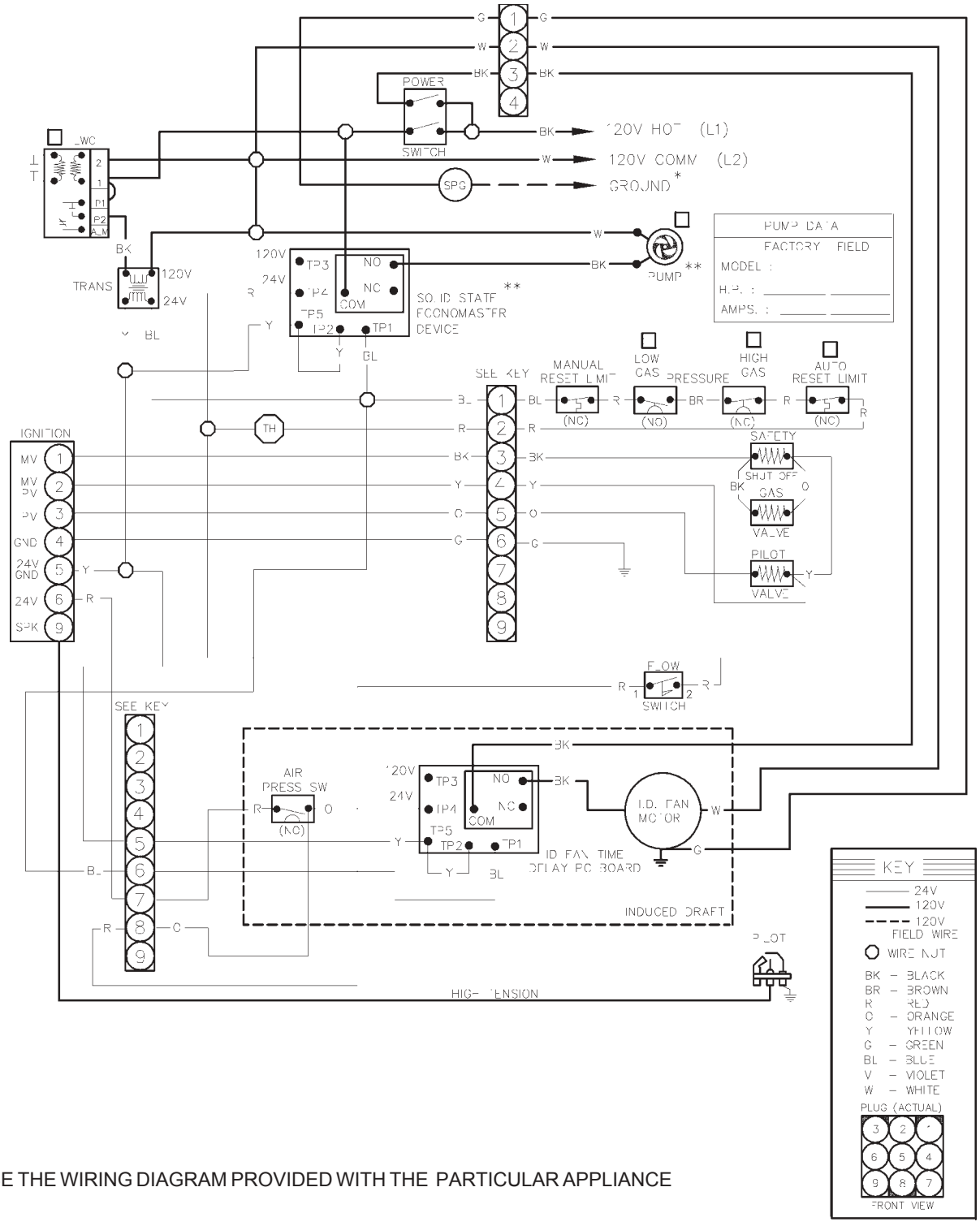


Fig.#9449

APPLIANCE WITH INSTALLED POWER VENT



USE THE WIRING DIAGRAM PROVIDED WITH THE PARTICULAR APPLIANCE

Fig. #9449.1

SEQUENCE OF OPERATION

On call for heat, the induced draft fan (and appliance pump) start. When the draft proving switch and the flow switch circuits close, the ignition system consisting of an electronic spark module, pilot gas system and flame sensor, are energized. When all safety circuits are proven, the automatic main gas valves will open and the unit will operate. When the operating limit circuit is satisfied, the unit will shut down and the fan will operate for a selected post-purge period.

START UP PROCEDURES

The water system, the gas system and the electrical system for the appliance should be completed and checked as per the appliance installation manual and associated documents.

TYPICAL S8600 IGNITION SYSTEM

1. Turn on power to the appliance with the manual main gas valve and pilot gas valve off. The electric power supply requirements are:
   - 1/3 HP fan Motor. 115 Volts, 60 Hz, 1 PH, 5.8 Amp fan motor for sizes 514 through 1336.
   - 1 HP, 115 volts 60 Hz, 1 PH, 12.6 Amp fan motor for sizes 1414 through 1826.
   - 1/2 HP, 115 volts, 60 Hz, 1 PH, 7.2 Amp fan motor for sizes 2100 and 2500.
   - 3/4 HP, 115 volts 60 Hz, 1 PH 10.7 Amp fan motor for sizes 3001 to 4001.
2. Check power connections.
3. Close appliance power switch.
4. Set operating control to call for heat.
   a. Fan motor starts, draft proving switch closes.
   b. Appliance pump starts, flow switch closes.
   c. Ignition module energized.
   d. Check for spark at gas pilot.
5. Turn operating control to end call for heat.
6. Wait a minimum of 60 seconds.
7. Open pilot gas valve.
   a. Repeat procedure outlined in #4 above.
8. After pilot gas is proven and main safety shut-off valve is energized.
   - Slowly open manual main gas shut-off valves.
   - Main burners will ignite.
9. Unit will operate until call for heat is satisfied.
10. Check draft at base of plenum.
    a. Draft should be (Minus) -0.005 to -0.01 in. W.C.
    b. Adjust barometric draft control until this reading is obtained.
11. Restart unit and visually check all components for proper operation.
12. Check all vent connections and joints for leakage. Correct if found.
13. To restart unit after a failure, follow the procedures outlined above and other subsequent or related sections outlined in the appliance manual.

EMERGENCY SHUTDOWN – SHUT OFF ALL POWER AND GAS, CALL GAS UTILITY.

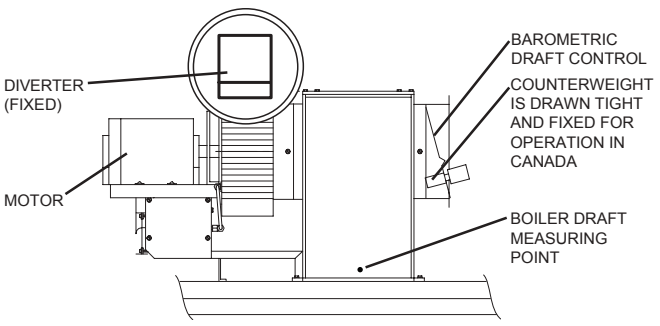


Fig. #9450

CONTROLS

BLOWER MOTOR CONTACTOR AND PURGE RELAY

The solid state control starts the blower motor and keeps it running for up to one minute after the call for heat is satisfied. This post purge period clears the combustion area of any residual gas buildup.

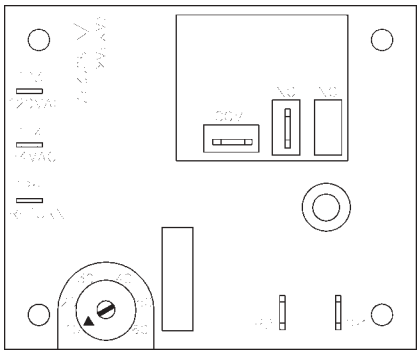


Fig. #9451

DRAFT PROVING SWITCH

The draft proving switch insures that the blower is operating. The switch is in the limit circuit and does not allow the ignition module to operate unless it is closed.

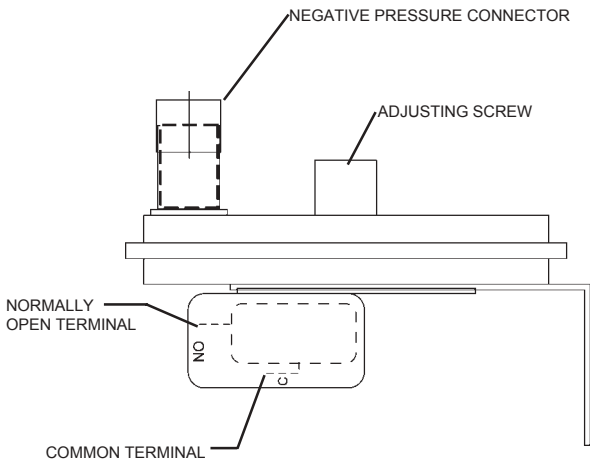


Fig. #9452

FIVE DIFFERENT POSITIONS OF DISCHARGE
SIZE 514 THROUGH 1826

A. ROTATE BLOWER HOUSING 90° CW OR CCW

1. Disconnect pressure tube from blower housing.
2. Remove (6) screws that mount motor to blower housing.
3. Remove (2) rear screws that mount motor to support bracket.
4. Slide out motor.
5. Remove (2) screws that mount blower housing to plenum collar.
6. Rotate blower housing 90° CW or CCW.
7. Reverse above procedure to re-assemble.

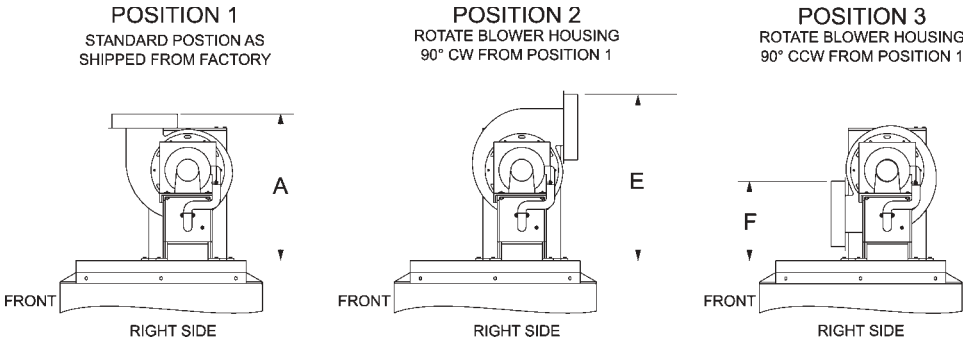
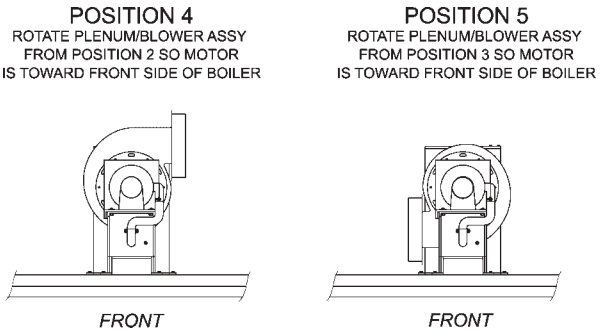


Fig. #9353.1

B. ROTATE PLENUM/BLOWER ASSEMBLY

1. Remove (8) screws that mount plenum/blower assembly to jacket top.
2. Rotate plenum/blower assembly from position 2 or 3 so motor is toward front side of unit.
3. Reverse step (1) to re-assemble.



ELECTRICAL RATINGS

MODEL SIZE	W/O PUMP	W/PUMP
514-1336	LESS THAN 10 AMPS @120 VOLTS	LESS THAN 16 AMPS 120 VOLTS
1468-1826	LESS THAN 18 AMPS @120 VOLTS	LESS THAN 24 AMPS @120 VOLTS

Fig. #9353.2

NOTE: Vent Terminal Should Be Installed With Motor Toward The Right Side Or Front Side Of The Appliance.

DIMENSIONS

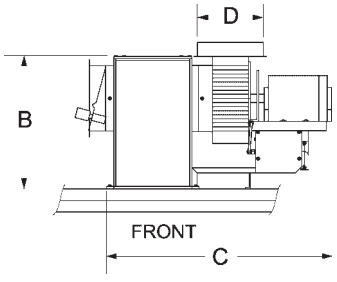


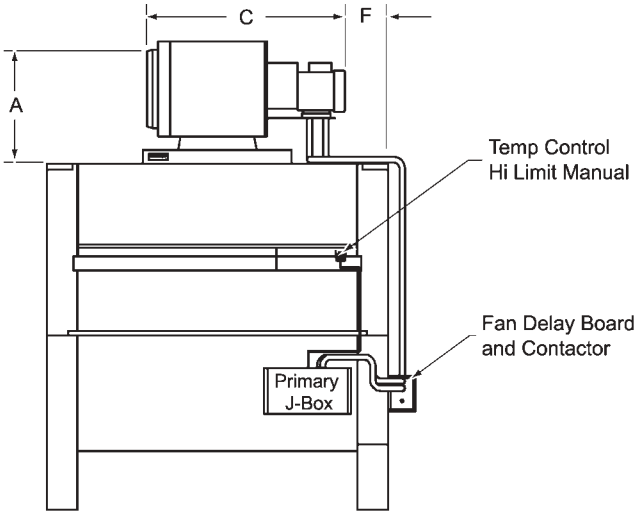
Fig. #9353.3

Model	MBTUH	"D"	Vertical Height (Feet)	Max Horiz (Feet)	"A"	"B"	"C"	"E"	"F"
514	512	8"*	20	40	17.88"	15.88"	20"	20.25"	9.75"
624	627	8"*	20	22	17.88"	15.88"	20"	20.25"	9.75"
724	726	8"*	20	13	17.88"	15.88"	20"	20.25"	9.75"
824	825	8"	20	22	17.88"	15.88"	20"	20.25"	9.75"
962	962	8"	20	12	19.44"	15.88"	20"	21.81"	11.31"
1125	1125	8"	20	5	19.44"	15.88"	20"	21.81"	11.31"
1223	1223	8"	20	4	19.44"	15.88"	20"	21.81"	11.31"
1336	1336	10"	20	21	21"	18.62"	42"	23.5"	12.5"
1468	1468	10"	20	15	21"	18.62"	42"	23.5"	12.5"
1631	1631	10"	20	10	21"	18.62"	42"	23.5"	12.5"
1826	1826	10"	20	5	21"	18.62"	42"	23.5"	12.5"

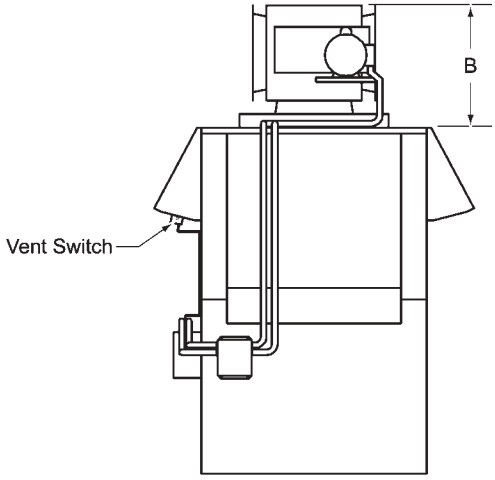
* May be reduced to 7 by using 8 x 7 transition. Transition is not provided by Raypak.

Fig. #9455

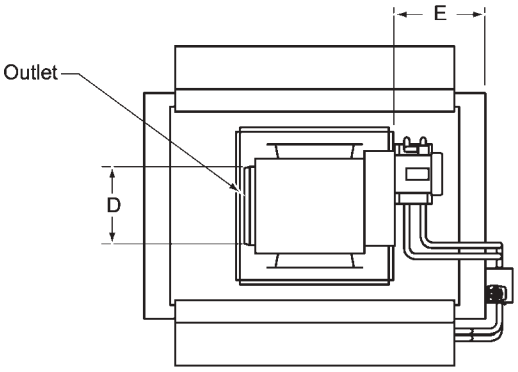
SERIES IV
SIZE 2100 THROUGH 4001



FRONT



RIGHT SIDE



TOP

Fig. #9456

ELECTRICAL RATINGS

MODEL SIZE	W/O PUMP	W/PUMP
2100-2500	LESS THAN 16 AMPS @120 VOLTS	120 VOLTS N/A SEPARATE POWER SUPPLY REQUIRED
3001-4001	LESS THAN 19 AMPS @120 VOLTS	6.2A @230V 3.1A @460V

Fig. #9457

Model	MBTUH	"D"	Vertical Height (Feet)	Max Horiz (Feet)	"A"	"B"	"C"	"E"	"F"
2100	2100	14"	20	60	16.88"	22.38"	33.5"	17.25"	7.68"
2500	2499	14"	20	60	16.88"	22.38"	33.5"	21.75"	12.18"
3001	3000	16"	20	60	24.25"	27.38"	44.75"	23.62"	10.12"
3500	3500	16"	20	60	24.25"	27.38"	44.75"	29.25"	15.75"
4001	4000	18"	20	60	24.25"	27.38"	44.75"	34.88"	21.38"

Fig. #9455.1

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