



hydro flame corporation

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EXCALIBUR 8500-II SERIES

OWNERS MANUAL

IMPORTANT

**READ ALL INSTRUCTIONS
BEFORE OPERATING THE FURNACE**

**TO THE INSTALLER: AFFIX DOCUMENTS
ADJACENT TO THE FURNACE**

**TO THE CONSUMER: KEEP DOCUMENTS
AVAILABLE FOR FUTURE REFERENCE**



This furnace design has been certified by Underwriters Laboratories and the Canadian Gas Association for installation in recreational vehicles. These installation instructions are to be followed to insure safe operation of the furnace. Failure to install the furnace according to the installation instructions contained herein nullifies the furnace warranty.



FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

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.

WARNING:

Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Refer to this manual for assistance, or for additional information, consult a qualified installer, service agency or gas supplier.

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LIT #36810

TABLE OF CONTENTS

	<u>PAGE</u>
OPERATING INSTRUCTIONS	1
LIGHTING INSTRUCTIONS	1
SHUT DOWN INSTRUCTIONS	1
SEQUENCE OF OPERATION	2
PROPANE GAS SYSTEM SAFETY	2
 ANNUAL PREVENTIVE MAINTENANCE INSPECTION	 3
 SPECIFICATIONS	 4
 INSTALLATION INSTRUCTIONS	 5
CRITICAL INSTALLATION INFORMATION	5
FURNACE INSTALLATION	5
HORIZONTAL INSTALLATION OPTION	5
VERTICAL INSTALLATION OPTION	6
RECESS BEZEL INSTALLATION OPTION	6
THERMOSTAT INSTALLATION	7
HEAT ANTICIPATOR	7
DUCTING OPTIONS	8
FOUR-INCH FLEXIBLE DUCTING	8
BOTTOM OR TOP DISCHARGE	8
EXTENSION BOX SYSTEM	9
FLEX ADAPTER PLATE	9
PROPANE GAS CONNECTION	10
PROPANE GAS SYSTEM PRESSURE TEST	10
ELECTRICAL CONNECTION	11
DOOR INSTALLATION	12
HORIZONTAL AND VERTICAL DOOR OPTION	12
RECESS BEZEL DOOR OPTION	13
STATIC PRESSURE TEST	14
 REPLACEMENT PARTS	 15
REPLACEMENT PARTS DRAWING	16
 LIGHTING INSTRUCTIONS	 17

OPERATING INSTRUCTIONS

FOR YOUR SAFETY, READ THESE INSTRUCTIONS BEFORE OPERATING THE FURNACE.

WARNING!

WHEN FIRST FIRED, THE FURNACE MAY CIRCULATE FUMES CAUSED BY THE HEATING OF MATERIALS USED IN THE FURNACE MANUFACTURING PROCESS. THESE FUMES MAY CAUSE PHYSICAL IRRITATION IN SOME PERSONS. THE FIRST HEATING OF SOME BUILDING MATERIALS IN THE COACH CAN GIVE OFF FUMES THAT CAN BE FATAL TO BIRDS OR OTHER SMALL ANIMALS AND MAY BE HARMFUL TO HUMANS. OPEN ALL WINDOWS AND DOORS WHEN FIRING THE FURNACE FOR THE FIRST TIME UNTIL THE FUMES HAVE FULLY DISSIPATED TO THE OUTSIDE.

Before operating, smell all around the appliance area for gas. Be sure to smell next to the floor because propane is heavier than air and will settle on the floor.

FOR YOUR SAFETY IF YOU SMELL GAS:

1. DO NOT TOUCH ANY ELECTRIC SWITCH.
2. TURN OFF MAIN GAS SUPPLY.
3. EXTINGUISH ANY OPEN FLAME.
4. OPEN WINDOWS AND DOORS.
5. DO NOT TRY TO LIGHT ANY APPLIANCE.
6. DO NOT USE ANY PHONE IN YOUR BUILDING.
7. IMMEDIATELY CALL YOUR GAS SUPPLIER FROM A NEIGHBOR'S PHONE. FOLLOW THE GAS SUPPLIER'S INSTRUCTIONS.
8. IF YOU CANNOT REACH YOUR GAS SUPPLIER, CALL THE FIRE DEPARTMENT OR OTHER EMERGENCY SERVICES.

Do not use this appliance if any part has been submerged under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control that has been submerged under water.

Do not operate this furnace while the vehicle is in motion.

Should the furnace overheat, or the gas supply fail to shut down, turn off the main gas valve to the appliance prior to cutting off the electrical supply.

LIGHTING INSTRUCTIONS

Read all safety related information before operating the furnace. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand. This furnace will operate at an elevation of 0 to 10,000 feet.

1. Set the thermostat to the lowest setting or turn the thermostat to the "OFF" position.
2. Wait five (5) minutes to clear out any propane gas. If after 5 minutes you smell gas, STOP! Follow the safety information above. If you do not smell gas, go to the next step.
3. Set the thermostat to desired temperature setting and turn the thermostat to the "ON" position. Allow 40 to 60 seconds for the furnace to begin operating. (It may be necessary to set an RV thermostat to a higher setting than that in a home to achieve a comparable level of comfort. Opening an exterior door or window of an RV results in the rapid loss of interior heat.)

If the furnace does not light, repeat steps 1-3. If the furnace does not ignite after three attempts, turn the thermostat to "OFF" and call a qualified service technician or your gas supplier.

SHUT DOWN INSTRUCTIONS

Set the thermostat to lowest setting and turn the thermostat to the "OFF" position.
See supplemental lighting instructions on page 17.

SEQUENCE OF OPERATION

The thermostat controls the operating circuit to the furnace by reacting to room temperature. When room temperature is below the thermostat set point, the contact closes to allow current to flow to the relay.

The circuit breaker limits amperage draw of the motor.

The relay allows current to pass to the motor by closing a switch within the relay. A heater coil within the relay actuates a bimetal disc which closes the relay circuit.

Current flows to the motor to operate the blower. One end of the motor shaft is for the circulating air wheel and the other side is for the combustion air wheel.

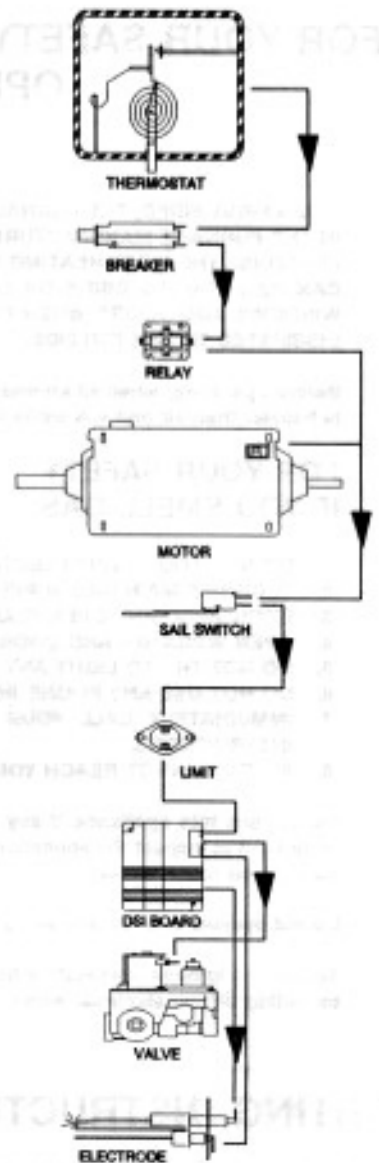
Circulating air blows against the sail switch and closes the contacts, completing the circuit. The sail switch is a safety device that insures air flow before ignition.

The limit switch is a safety device that protects the furnace from overheating. The contacts in the limit switch open at a given temperature setting, shutting off power to the direct spark ignition (DSI) system that controls the gas valve.

As power is applied to the DSI board, the system does the following:

1. A timing circuit allows the blower to purge the chamber.
2. The board supplies current to the gas valve and causes it to open.
3. As the valve opens, the board sends a high voltage spark to the electrode at the burner. The board detects the presence of a flame. If the flame is not sensed after 6 seconds, the board will lock out, shutting off power to the valve.
4. If the system does not ignite and the thermostat remains closed, the blower will remain on until the thermostat is reset manually.

When the thermostat senses the desired room air temperature, the contacts open, removing power from the ignition system and shutting off the gas valve. The blower runs until the heater coil in the relay cools and opens the circuit, shutting off current to the motor.



PROPANE GAS SYSTEM SAFETY

This furnace is designed to use propane gas only. **DO NOT** attempt to convert to natural gas. The furnace is designed to operate at 11.0 inches Water Column. The measurement should be taken with at least 50 percent of all gas appliances operating in the RV.

WARNING!

**AN OVERFILLED GAS BOTTLE IS DANGEROUS.
GAS BOTTLES SHOULD BE FILLED BY QUALIFIED GAS SUPPLIERS ONLY.**

Liquid gas from an overfilled bottle can be forced through the pressure regulator. This high pressure gas could escape and result in a fire or explosion. To prevent this, please read and adhere to the tank manufacturer's operating instructions located on your tank.

ANNUAL PREVENTATIVE MAINTENANCE INSPECTION

The following preventive maintenance and safety checks should be performed by a qualified RV technician once a year, or more, depending on the use of the furnace. FAILURE TO PROPERLY MAINTAIN THE FURNACE MAY VOID THE FURNACE WARRANTY AND CAN RESULT IN UNSAFE FURNACE OPERATION. PREVENTIVE MAINTENANCE IS NOT COVERED UNDER WARRANTY.

GAS PRESSURE

Using a U-tube water manometer, with the furnace and at least 50 percent of the appliances operating, the pressure should be 11 inches W.C. Improper gas pressure can cause the furnace to work inconsistently and create unbalanced combustion.

VOLTAGE

Voltage should be between 10 and 13.5 VDC at the furnace during operation. The power at the furnace needs to be checked with each of the following power sources when applicable: generator, battery, and converter. Low voltage can cause the furnace to overheat and cycle. High voltage can cause unbalanced combustion, and excessive motor wear.

DUCTING

The heat ducts should be clean and clear of obstructions. Check for proper duct connection. Any ducts disconnected from the furnace or outlets must be reattached.

RETURN AIR

The return air passage should be clean and clear of obstructions and meet the minimum square inches as specified in the installation instructions. Make sure combustibles are not stored in the furnace compartment.

COMBUSTION CHAMBER

Check the chamber for internal obstructions, such as wasp or bird nests. The life of the combustion chamber is a function of the amount of time that the furnace has operated. Therefore, it is essential to inspect the chamber for cracks and holes. Have the chamber replaced if it has any cracks or holes - this condition is not field repairable.

GASKETS

Inspect all gaskets for tight seals. Do not reuse gaskets - always replace with new. Worn seals may allow carbon monoxide to enter the living area and cause illness or death.

GAS SUPPLY SYSTEM

Perform a pressure-drop test according to current ANSI standards, to insure that there are no gas leaks.

AIR WHEEL

The air wheel should be clean and clear of obstructions. Starting the furnace with something in the blower will damage the wheel, making replacement necessary.

WIRE CONNECTIONS

Check the furnace for loose or disconnected wires.

DOOR SCREEN

Check the door screen for damage or clogged openings. See door installation section for proper installation of door assembly. Clean with warm soapy water.

CONTROL COMPARTMENT

Clean the control compartment.

MOTOR

The motor is lubricated and permanently sealed. It requires no oiling.

SPECIFICATIONS

MODEL NUMBER	8516-II	8520-II	8525-II	8531-II	8535-II
INPUT BTU/HR	16,000	20,000	25,000	31,000	35,000
OUTPUT BTU/HR	12,800	16,000	20,000	24,800	28,000
DUCT STATIC PRESSURE*	0.10 W.C.	0.10 W.C.	0.10 W.C.	0.10 W.C.	0.10 W.C.
CASING STATIC PRESSURE*	0.30 W.C.	0.30 W.C.	0.30 W.C.	0.30 W.C.	0.30 W.C.
12 VOLT AMPERAGE	4.4 amps	4.4 amps	5.6 amps	8.2 amps	8.2 amps
POWER SUPPLY	12 volt D.C.	12 volt D.C.	12 volt D.C.	12 volt D.C.	12 volt D.C.
MINIMUM RETURN AIR	56 sq.in.	56 sq.in.	56 sq.in.	56 sq.in.	56 sq.in.

*W.C. = Water Column

FURNACE DIMENSIONS	WIDTH	HEIGHT	DEPTH
CASING	16-1/2"	7"	18"
DOOR	19-1/4"	9-1/4"	1/4"
RECESS BEZEL (OPTIONAL)	20-9/16"	11-1/2"	

FURNACE WEIGHT	30 pounds
SHIPPING WEIGHT	32 pounds

CLEARANCE TO COMBUSTIBLES

3/16 inches to casing; 0 inches to casing spacers (screw heads).

1/4 inches to ducting within 3 feet of furnace. U.L. Listed wire-bound vinyl ducts require 0 inches clearance.

1 inch to rear of furnace.

INSTALLATION INSTRUCTIONS

WARNING!

THIS FURNACE MUST BE INSTALLED AND VENTED ACCORDING TO THESE INSTRUCTIONS. IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE INJURY OR PROPERTY DAMAGE. FOR ASSISTANCE OR ADDITIONAL INFORMATION, CONSULT A QUALIFIED INSTALLER, SERVICE AGENCY, OR GAS SUPPLIER.

NEGATIVE PRESSURE PRODUCED BY THE FURNACE CAN AFFECT THE COMBUSTION AIR OR VENTING OF OTHER APPLIANCES IF NOT INSTALLED IN THE PROPER LOCATION.

CRITICAL INSTALLATION INFORMATION

1. Do not install the furnace on material that restricts return air, such as carpet, or any soft material, such as vinyl.
2. Do not install furnace where clearance to combustibles cannot be maintained.
3. Do not modify the furnace in any way.
4. Do not alter the furnace for a positive grounding system.
5. Do not HI-POT this furnace unless the electronic ignition system has been disconnected.
6. Do not use a battery charger to supply power to the furnace.
7. Do not use 120 volt AC current with this furnace.
8. Do not use the furnace cabinet area as a storage compartment.

The furnace must be installed in accordance with local codes and regulations. In the absence of local codes or regulations, refer to:

U.S.A:

1. Standard for Recreational Vehicles ANSI A119.2 - 1990
2. National Fuel Gas Code ANSI Z223.1 - 1988
3. Ground in accordance with National Electrical Code ANSI/NFPA No. 70 1984

Canada:

1. Standard CSA Z240.4 Gas Equipped Recreational Vehicles and Mobile Housing.
2. CSA Standard Z240.6.1 and Z240.6.2 - Electrical Requirements for Recreational Vehicles.

FURNACE INSTALLATION

Select a location to install the furnace through an outside wall. Do not install the furnace near tilt-out rooms, slide-outs, doors or other projections which could obstruct furnace exhaust. On single furnace applications, locate the furnace near the midpoint of the coach. Keep the furnace away from wires, pipes, or other objects that may interfere with the installation or operation of the furnace. Do not install the furnace on material that restricts return air, such as carpet, or any soft material, such as vinyl. If installed on carpet or soft material, install the furnace on cleats, or on a wood or metal panel extending the full width and depth of the furnace plus the minimum clearances to combustibles.

Provide the furnace with at least 56 square inches of unrestricted return air from the interior of the coach. Failure to provide the minimum return air requirements nullifies the furnace warranty. If the furnace is installed in an enclosure with zero clearance, cut an opening in the enclosure to meet return air requirements.

WARNING!
COMBUSTION AIR MUST NOT BE DRAWN FROM THE LIVING AREA.

HORIZONTAL INSTALLATION OPTION

(Read and follow the previous instructions and warnings under Installation before proceeding with these instructions.)
MAXIMUM WALL THICKNESS 2-1/2 INCHES, 1-1/2 INCHES RECOMMENDED (See figure #2 *)

1. Cut a 17 inches wide by 7-1/2 inches high opening through the exterior wall. Do not over-size the hole; over-sizing can result in water leakage. (See Figure #1.)
2. Insert the furnace so that the edge of the control box is flush with the coach's outer skin, with the mounting tabs protruding. A tight fit is important to prevent water leakage. (See Figure #2.)

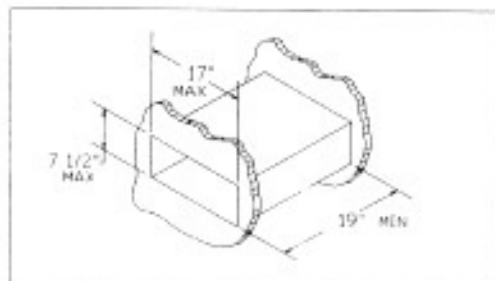


Figure #1

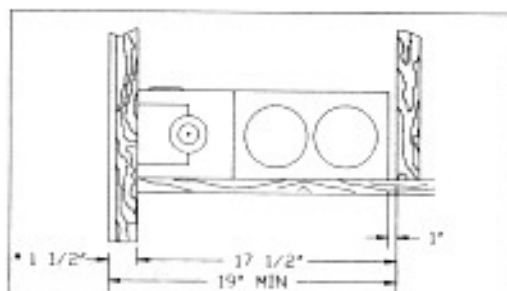


Figure #2

VERTICAL INSTALLATION OPTION

(Read and follow the instructions and warnings under Installation before proceeding with these instructions.)
 MAXIMUM WALL THICKNESS 0 TO 2-1/2 INCHES, 1-1/2 INCHES RECOMMENDED (See figure #4 *)

1. Cut a 7-1/2 inches wide by 17 inches high opening through the exterior wall. Do not over-size the hole; over-sizing can result in water leakage. (See Figure #3.)
2. Insert the furnace so that the gas connection is on the bottom and the edge of the control box is flush with the coach's outer skin, with the mounting tabs protruding. A tight fit is important to prevent water leakage. (See Figure #4.)
3. To prevent moisture from entering the inside of the coach, apply RTV sealant to the following areas (See Figure #5)
 - a. along the welded joints of the two bottom corners;
 - b. around the black slide plate where it joins the metal casing;
 - c. around the red gas inlet plug where the slide plate and the casing bottom intersect;
 - d. around the gas line where it enters the gas inlet plug.

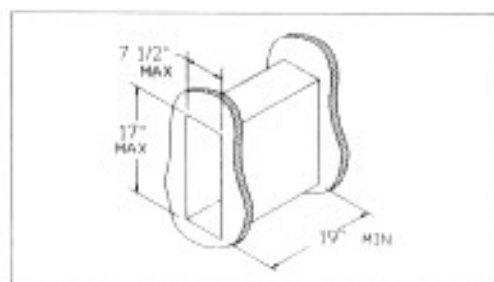


Figure #3

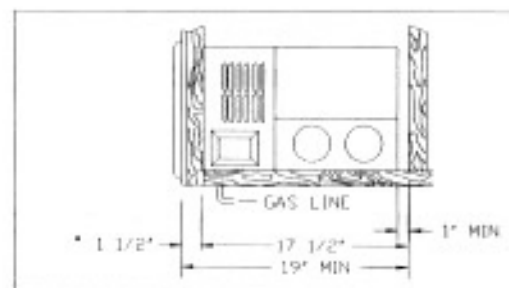


Figure #4

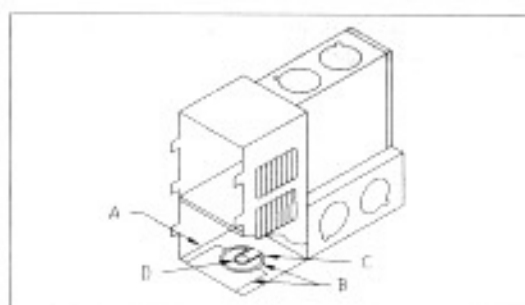


Figure #5

RECESS BEZEL INSTALLATION OPTION

(Read and follow the instructions and warnings under Installation before proceeding with these instructions.)

1. Cut a 19-1/2 inches wide by 9-7/8 inches high opening, with rounded corners, through the exterior wall. Do not over-size the hole; over-sizing can result in water leakage. (See Figure #6.)
2. Insert the furnace so that the edge of the control box is flush with the recess pan, with mounting tabs protruding. A tight fit is important to prevent water leakage.

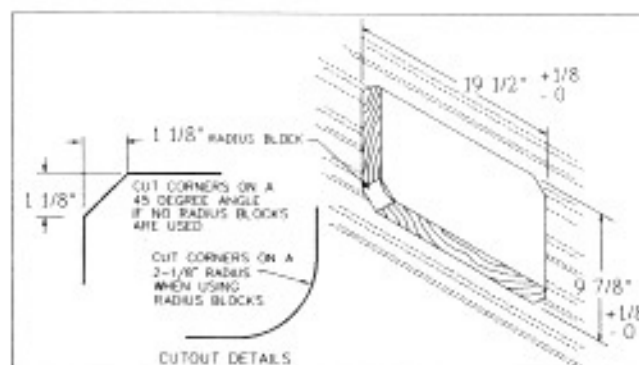


Figure #6

THERMOSTAT INSTALLATION

The thermostat is very sensitive. **HANDLE WITH CARE AT ALL TIMES.**

1. Select a location for the thermostat. Whenever possible, the thermostat should be positioned 48 to 54 inches above the floor on an inside wall away from areas of abnormal heat or cold.
2. Run two wires from the furnace to the thermostat location using 22-18 gauge stranded wire.
3. Connect the two wires from the furnace to the back of the thermostat. (See Figure #7.)
4. With the cover removed from the thermostat, mount the base of the thermostat to the wall. (See Figure #9.)
5. Turn the thermostat off and snap the cover on, making sure not to pinch the contact wire. (See Figure #8.)

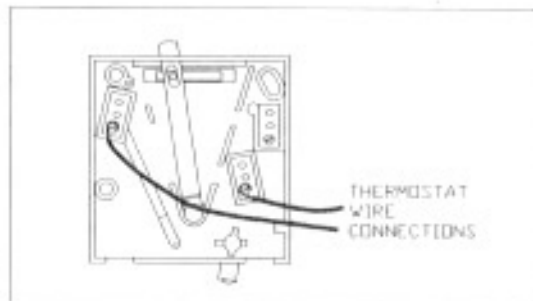


Figure #7

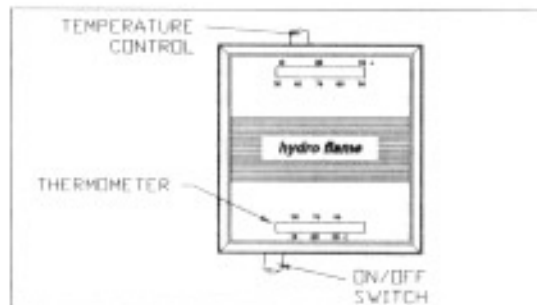


Figure #8

HEAT ANTICIPATOR

The heat anticipator is located on the base plate of the thermostat behind the cover. (See Figure #9.) Its purpose is to provide flexibility to the heating cycles of the furnace. The heat anticipator is factory set at the highest setting. If a change is desired, as a starting point, set the heat anticipator to the valve amperage.

- To increase the heating cycle time, adjust the anticipator by moving the contact arm to a larger number value.
- To shorten the heating cycle time, adjust the anticipator by moving the contact arm to a smaller number value.

HEAT ANTICIPATOR ADJUSTMENTS ARE NOT COVERED UNDER WARRANTY.

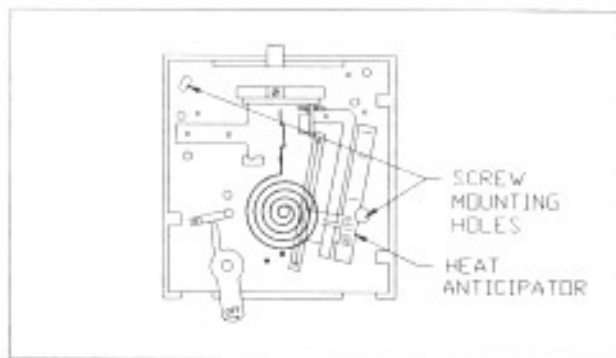


Figure #9

DUCTING OPTIONS

Proper duct installation is critical to the operation of this furnace. When ducts are longer than 9 inches, air temperature at register openings should not exceed 200° F. When four-inch ducts or metal boots less than 9 inches in length are used, temperatures should not exceed 250° F. Ducting systems can include any combination of discharge openings, as long as static pressure and minimum discharge area requirements are met at all times. (See Figure #10.)

Recommended discharge requirements, when static pressure measurements cannot be made (SEE: Static Pressure Test)

Models 8516-II, 8520-II, 8525-II (side discharge only)	24 square inches
Models 8531-II, 8535-II (side discharge only)	36 square inches
All models top or bottom discharge	48 square inches

Each four inch round duct opening provides 12 square inches of discharge area. Provide an extra 12 square inches of discharge area for each closeable register used. When using flexible ducts, avoid sharp bends or crushed ducts. Stretch all ducts and run them directly to outlets, keeping bends to a minimum.

FOUR-INCH FLEXIBLE DUCTING

1. Remove the cover plates from the desired openings.
2. Attach a duct adapter to each opening by inserting the flange over the casing, locking the tab into the casing slot and turning the adapter 90 degrees.
3. Attach and secure the flexible ducts to the adapters. (See Figure #11.)
4. Run ducts to desired location within the coach and secure to registers.

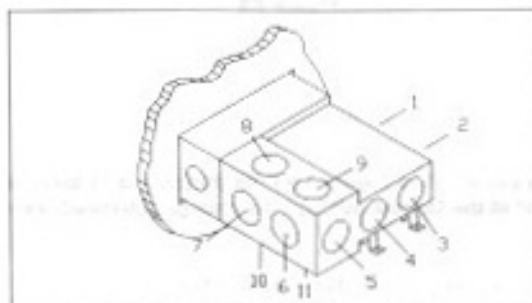


Figure #10

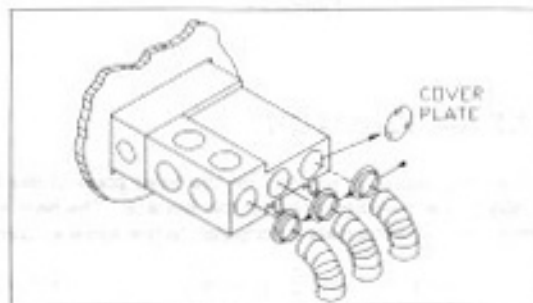


Figure #11

BOTTOM OR TOP DISCHARGE

1. Remove the top or bottom discharge cover plate and the rectangular casing knockouts. This ducting option must be connected to a hard ducting system. (If a cutout is required, see Figure #13 for dimensions.) If only half of the rectangular knockout is used, additional side ducts must be used to meet the minimum discharge requirement of 48 square inches. A gasket and plenum plate kit are available when attaching the furnace to the plenum. (See Figure #12.)
2. Fasten the plenum plate over the cutout. (See Figure #12.) If a gasket and plenum plate are not used, seal the furnace to the hard ducting system, making sure the seal is air-tight, and continue at step 5.
3. Position the gasket on the plenum plate.
4. Set the furnace onto the gasket, making sure the gasket remains in position.
5. Fasten the furnace to the floor using the legs provided. Other methods of fastening are acceptable. (See Figure #12.)

HARD DUCTING SYSTEMS MUST BE DESIGNED CORRECTLY FOR THE FURNACE TO OPERATE PROPERLY. UNDERSIZED DUCTING WILL CAUSE LIMITING, WHEREAS OVERSIZED DUCTING WILL CAUSE INADEQUATE AIR FLOW FROM THE REGISTERS.

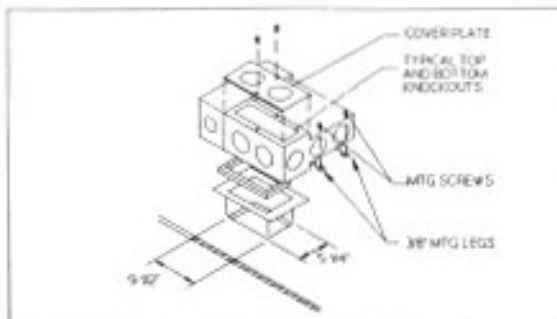


Figure #12

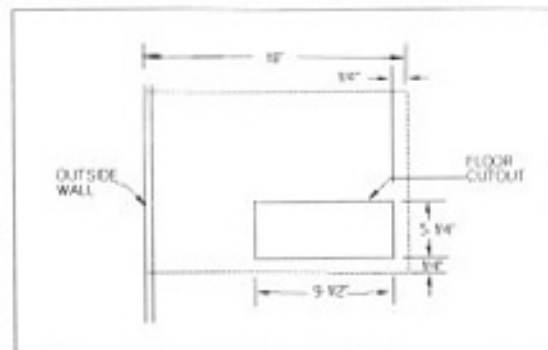


Figure #13

EXTENSION BOX SYSTEM

For top or bottom discharge, a casing extension adapter can be used when the furnace does not reach the hard ducting or plenum. A casing extension box adds 5 inches of depth to the furnace. (See Figure #14.)

1. Remove the three knockouts from the rear of the furnace.
2. Place the extension box with the foam tape against the furnace, making sure the three knockouts are enclosed within the extension box. With the box held in place, secure with two 1/2-inch sheet metal screws. (See Figure #14.) If a cutout into the hard ducting is required, see Figure #15 for proper sizing and location.
3. Fasten the plenum plate over the cutout.
4. Position the gasket on the plenum plate.
5. Set the furnace onto the gasket, making sure the gasket remains in position.
6. Fasten the extension box to the floor.

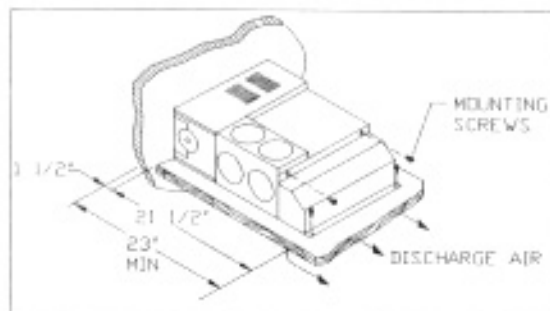


Figure #14

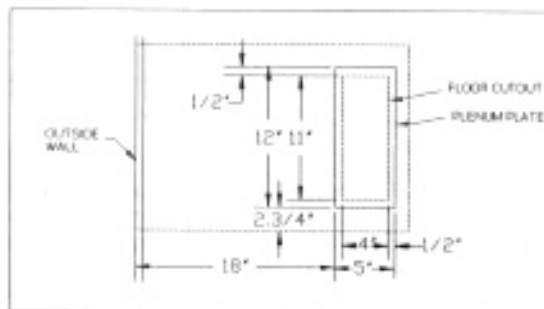


Figure #15

FLEX ADAPTER PLATE

A flex adapter plate can be used when the hard ducting does not align with the discharge openings.

1. Remove the three knockouts from the rear of the furnace
2. Install duct adapters in each opening.
3. Place the flex adapter plate with the foam tape against the hard ducting, making sure the three knockouts are enclosed within the duct opening.
4. With the plate held in place, fasten the plate to the ducting. (See Figure #16.)
5. Install three duct adapters into the flex adapter plate.
6. Attach flexible ducting from the furnace to the flex adapter plate.

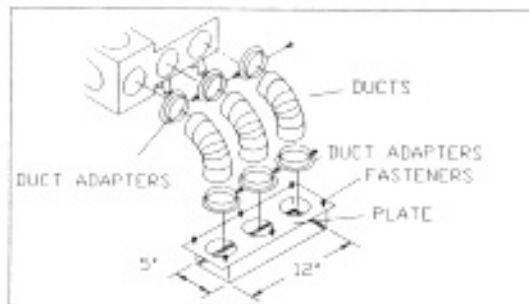


Figure #16

PROPANE GAS CONNECTION

Connect the gas line to the manifold on the right side of the furnace. (See Figure #17.) Be sure all male pipe threads other than flare fittings are treated with a sealing compound resistant to the action of propane (LP) gas. **DO NOT put sealing compound on flare fittings.**

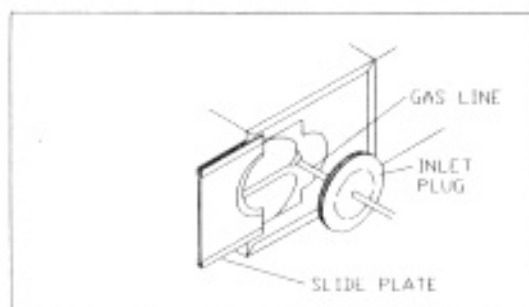


Figure #17

1. Remove the black slide plate and red gas inlet plug from the furnace.
2. Insert the gas line through the gas inlet plug. (Do not cut gas inlet plug.)
3. Attach the gas line to the manifold, using two wrenches to hold the manifold and flare nut when tightening the connection. **DO NOT** twist the valve assembly.
4. Slide the inlet plug along the gas line and insert it into the control box.
5. Slide the slide plate into the control box and over the gas inlet plug.

PROPANE GAS SYSTEM PRESSURE TEST

WARNING!

NEVER CHECK FOR GAS LEAKS WITH AN OPEN FLAME.

The furnace and its individual shut-off valve (if so equipped) must be disconnected from the gas supply piping system during any pressure testing of the system at test pressures more than 1/2 PSI.

Before furnace is connected, piping systems shall be proven by test to be leak-free by maintaining air pressure of at least 6 inches of mercury (1.49 Kpa) or 3 PSI (20.7 Kpa) for at least 10 minutes and performed according to the ANSI A119.2/NFPA 501C Recreational Vehicles Standard 1990 section 2-4.18.1.

After furnace is connected, the entire piping system shall be pressurized to not less than 10 inches (2.5 Kpa) nor more than 14 inches (3.5 Kpa) water column. Test the gas connections for leakage with either soapy water or bubble solution, according to ANSI A119.2/NFPA 501C Recreational Vehicles Standard 1990 section 2-4.18.2.

For information about gas piping, refer to Federal Mobile Home Construction & Safety Standard, part 280, ANSI/NFPA 54 or ANSI/NFPA 501C-1982 and all applicable state and local codes.

ELECTRICAL CONNECTION

This furnace is designed for negative ground 12 volts D.C. only. Do not attempt to alter the furnace for a positive ground system or connect the furnace directly to 120 volts A.C. - damage to furnace components may occur.

Use a minimum of 18-12 gauge wire to minimize voltage drop. All electrical wiring must comply with NFPA 70 Article 551.

1. Connect the red wire to the positive side of the power supply. (See Figure #18.)
2. Connect the yellow wire to the grounded side of the power supply.
3. Connect the two blue wires to the thermostat leads using 22-18 gauge stranded wire.

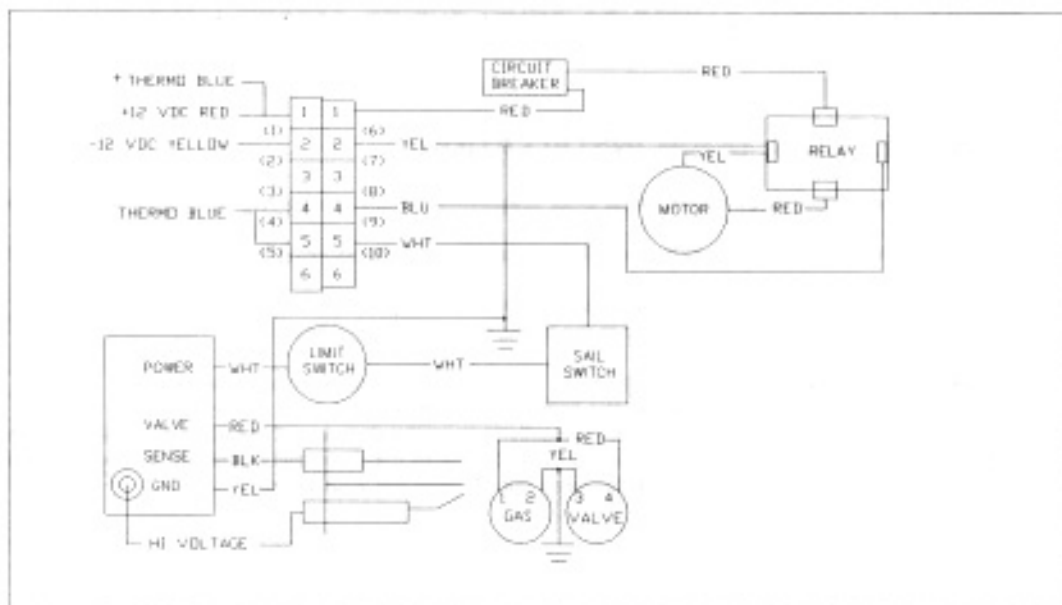


Figure #18

If the furnace power supply is from a converter equipped with a charging port, for best results, wire the converter to the furnace parallel with the battery. This is recommended in order to provide consistent voltage to the furnace and to filter power surges and A.C. spikes. (See Figure #19.)

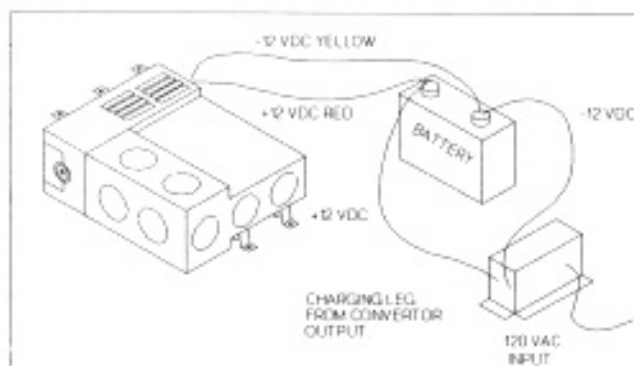


Figure #19

DOOR INSTALLATION

Special care should be taken to seal the door assembly to prevent water or combustion products from leaking into the coach. Assure a water tight seal around all mounting flanges and openings. Use caulking or sealant to fill all voids created during the installation of these parts. Caulk the entire back flange of the door bezel. Fill tab slots with caulking after bending the tabs over and securing with screws.

WARNING!

FAILURE TO PROPERLY SEAL THE DOOR AND ADJUST THE DRAFT CAP CAN RESULT IN SERIOUS ILLNESS OR DEATH DUE TO CARBON MONOXIDE ENTERING THE COACH.

HORIZONTAL AND VERTICAL DOOR INSTALLATION

(Read and follow the instructions and warnings above under Door Installation before proceeding with these instructions.)

1. Apply caulking to the entire mounting surface of the door bezel, making sure the caulking is tight against the inner flange of the bezel. (See Figure #20.)
2. Make sure that the red inlet plug and the black slide plate are in the closed position and the bezel flange is inside the casing. Insert the six mounting tabs through the slots provided in the bezel, making sure the bezel is tight against the casing and cutting into the caulking on the bezel.
3. Bend the tabs flush with the door bezel, aligning the holes in the tabs with the slots in the door bezel.
4. Install 12 mounting screws, taking care not to deform the bezel. (See Figure #21.)
5. Remove excess caulking from around the door bezel and visually inspect the door bezel to make sure it is completely sealed.
6. With the wing nut loose on the draft cap assembly (see Figure #22), close the door and adjust the draft cap so that the bezel touches the door screen. Open the door and tighten the wing nut. Fasten the door closed.

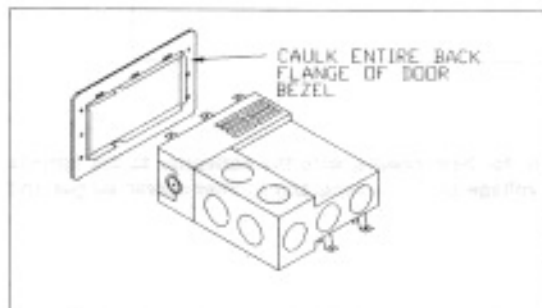


Figure #20

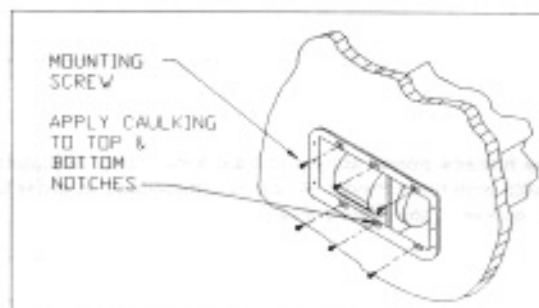


Figure #21

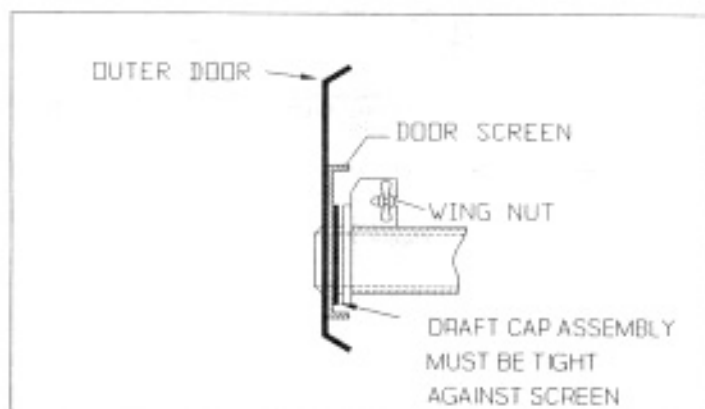


Figure #22

RECESS BEZEL DOOR OPTION

(Read and follow the instructions and warnings under Door Installation before proceeding with these instructions.)

1. Position and secure the mounting brackets to wood framing on each side of the opening, allowing 5/16 inches from the bracket face to the outside of the coach. (See figure #24.)
2. Insert the recess bezel and door bezel so that furnace tabs go through the notches on the door bezel. Caulk the entire back flange of the recess bezel and caulk the entire back flange of the door bezel before securing to the mounting brackets.
3. Fasten the recess bezel and door bezel to the brackets with 3 screws on each side. Do not deform recess bezel or door bezel. (See Figure 25.)
4. Bend the tabs over and secure with 6 screws. Fill tab slots with caulking after installing furnace.

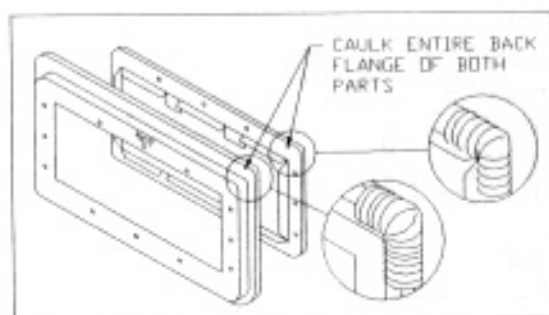


Figure #23

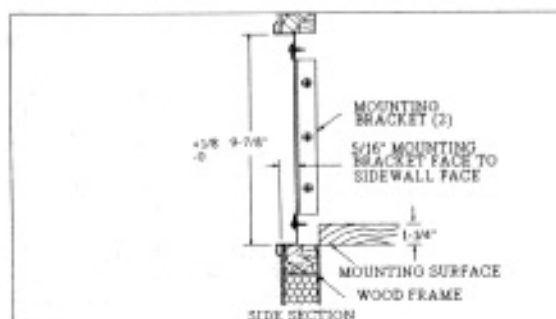


Figure #24

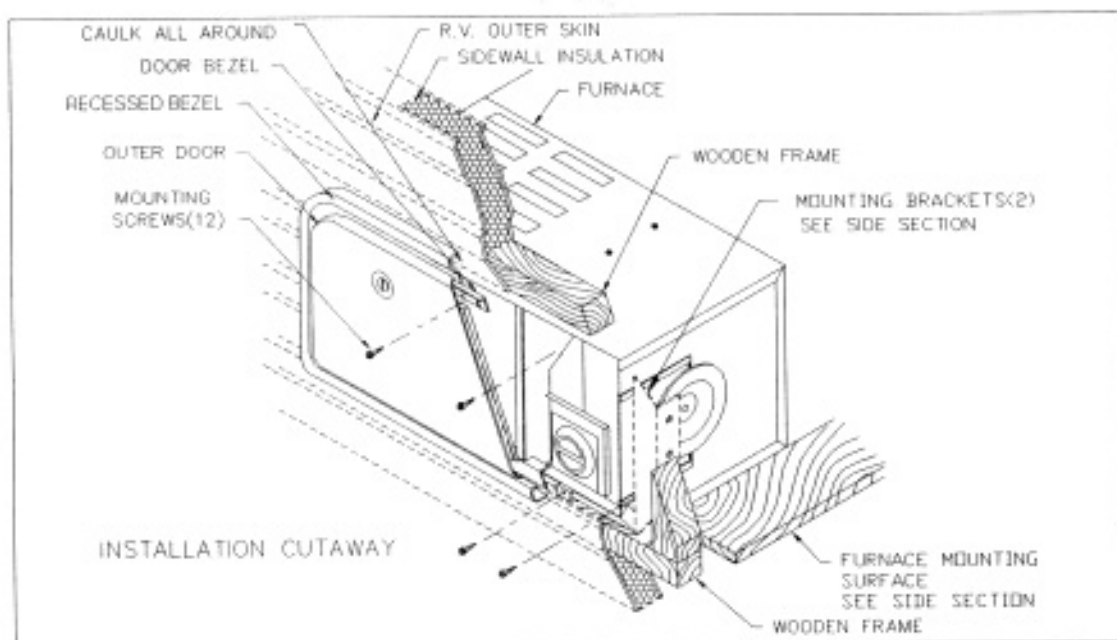


Figure #25

STATIC PRESSURE TEST

With the ducts attached and the furnace operating at 12 volts, the casing static pressure should not exceed 0.30 inches of Water Column. Voltage greater than 12 volts will cause higher static readings. Reducing the number of duct turns and stretching the ducts will increase air flow and reduce static pressure. Adding ducts or increasing discharge system (hard ducting) will also reduce static pressures.

1. With the door open, remove the DSI board and static pressure tap plug. (See Figure #26.)
2. Insert the static pressure tube into the hole and attach an incline manometer. With the plastic door closed, the pressure should read 0.30 inches of Water Column or less.
3. Remove the pressure tube and replace the static pressure tap plug and DSI board before closing the door.

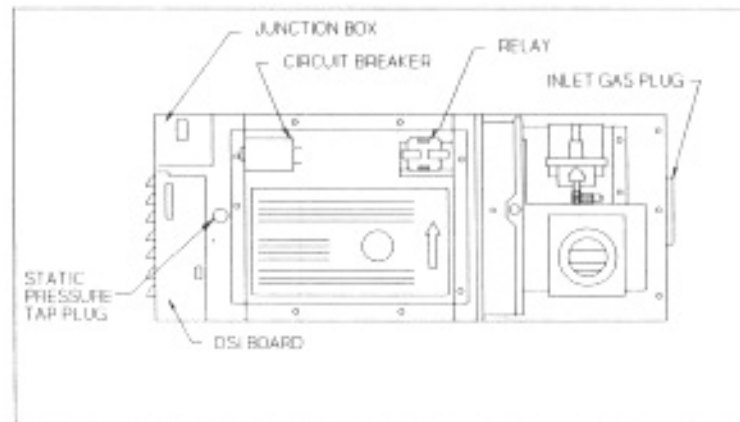


Figure #26

REPLACEMENT PARTS

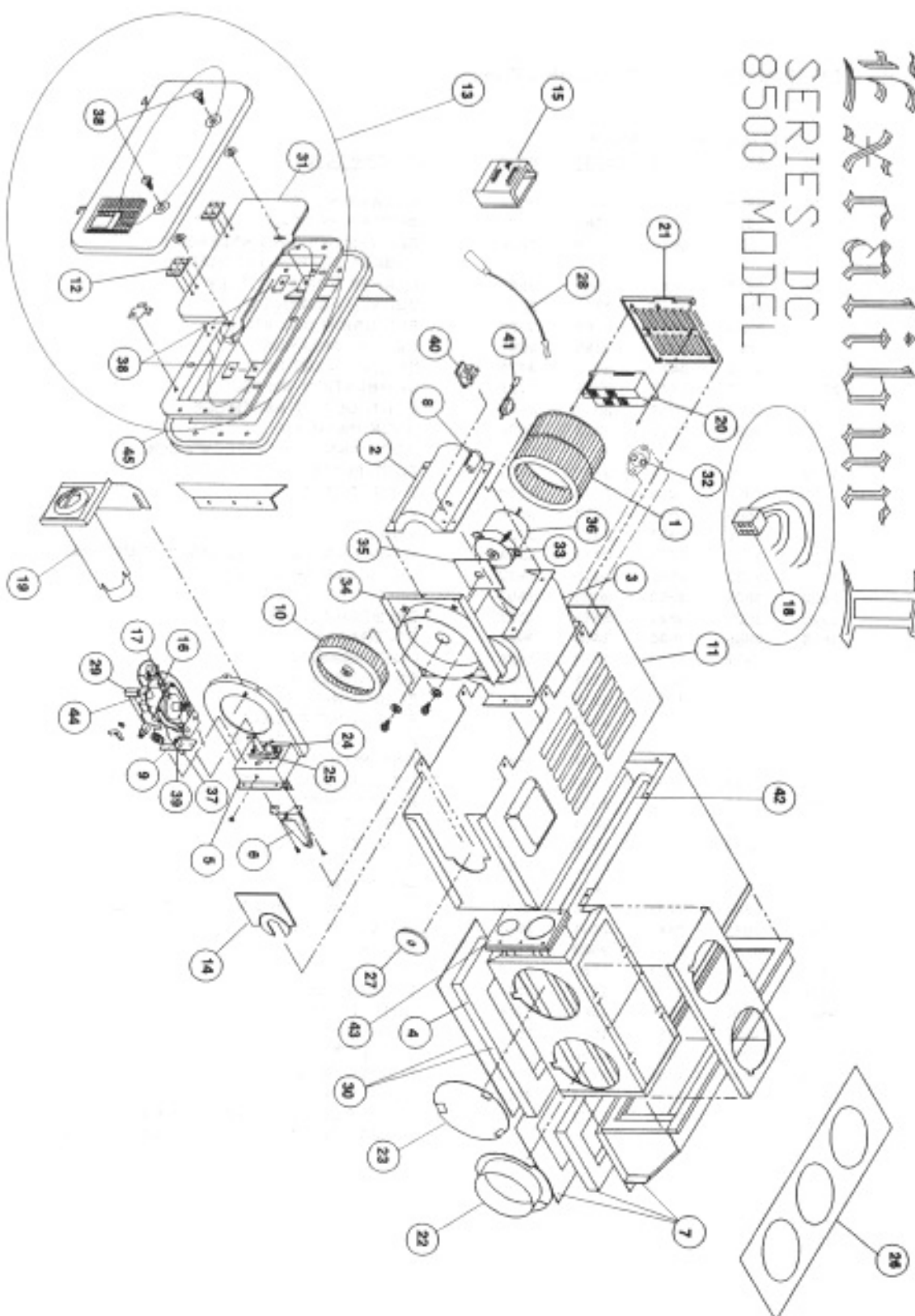
PLEASE USE ITEM NUMBER WHEN ORDERING PARTS

PARTS DRAWING NO.	ITEM NUMBERS BY MODEL					DESCRIPTION
	8516	8520	8525	8531	8535	
1	3619	3619	3618	3618	3618	BLOWER WHEEL
2	3580	3580	3580	3580	3580	BLOWER HOUSING COVER
3	3639	3639	3639	3639	3639	BLOWER HOUSING ASSEMBLY
4						GASKET BOTTOM DISCHARGE
5	3647	3647	3647	3647	3647	BURNER BOX ASSEMBLY
6	3842	3842	3842	2811	2811	BURNER ASSEMBLY
7	3165	3165	3165	3165	3165	EXTENSION BOX KIT
8	1028	1028	2331	3590	3590	CIRCUIT BREAKER
9	3475	3475	3475	3475	3475	REPLACEMENT COIL
10	2777	2777	2777	2777	2777	COMBUSTION WHEEL
11	3633	3633	3633	3633	3633	CONTROL BOX ASSEMBLY
12	3620	3620	3620	3620	3620	DOOR HINGE (2)
13						DOOR ASSEMBLY (SPECIFY COLOR)
14	3729	3729	3729	3729	3729	SLIDE PLATE
15	1030	1030	1030	1030	1030	THERMOSTAT
16	3586	3586	3586	3586	3586	VALVE BRACKET
17	3337	3337	3337	3337	3337	VALVE
18	4514	4514	4514	4514	4514	WIRING HARNESS ASSEMBLY COMPLETE
19	3650	3650	3650	3650	3650	DRAFT CAP ASSEMBLY
20	3802	3802	3802	3802	3802	DSI BOARD (05-30)
20	3521	3521	3521	3521	3521	DSI BOARD (05-15)
21	3686	3686	3686	3686	3686	DSI BRACKET
22	1474	1474	1474	1474	1474	DUCT ADAPTERS
23	1361	1361	1361	1361	1361	DUCT COVER PLATE
24	3902	3902	3902	3902	3902	ELECTRODE
25	3150	3150	3150	3150	3150	ELECTRODE GASKET
26	4438	4438	4438	4438	4438	FLEX ADAPTER PLATE
27	3567	3567	3567	3567	3567	GAS INLET PLUG
28	5193	5193	5193	5193	5193	HIGH TENSION LEAD
29	3565	3565	3565	3565	3565	INLET MANIFOLD
30	3654	3654	3654	3654	3654	BOTTOM PLENUM PLATE KIT
31	3579	3579	3579	3579	3579	INNER DOOR
32	5132	5132	5132	5132	5132	LIMIT SWITCH
33	2870	2870	2870	2870	2870	MOTOR BRACKET
34	3634	3634	3634	3634	3634	MOTOR MOUNTING WALL ASSEMBLY
35	2841	2841	2841	2841	2841	MOTOR GASKET
36	3219	3219	2774	3589	3589	MOTOR
37	1257	1265	1267	1280	2285	ORIFICE
38	3774	3774	3774	3774	3774	OUTER DOOR FASTENER (2)
39	3566	3566	3566	3566	3566	OUTLET MANIFOLD
40	1017	1017	1017	1017	1017	RELAY
41	5052	5052	5054	5050	5050	SAIL SWITCH
42	3645	3645	3645	3792	3792	ELEMENT ASSEMBLY
43	2926	2926	2926	2926	2926	EXHAUST WALL GASKET
44	2173	2173	2173	2173	2173	FEMALE STREET ELBOW, 3/8 X 3/8
45						RECESS PAN ASSEMBLY (SPECIFY COLOR)

REPLACEMENT PARTS DRAWING

Excalibur II

SERIES DC
8500 MODEL



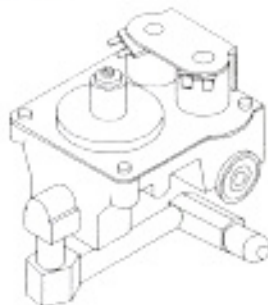
FOR YOUR SAFETY READ BEFORE OPERATING

WARNING: IF YOU DO NOT FOLLOW THESE INSTRUCTIONS EXACTLY, A FIRE OR EXPLOSION MAY RESULT CAUSING PROPERTY DAMAGE, PERSONAL INJURY OR LOSS OF LIFE.

- A. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
- B. **BEFORE OPERATING** smell around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.
- WHAT TO DO IF YOU SMELL GAS**
- * Do not try to light any appliance.
 - * Do not touch any electric switch; do not use any phone in your building.
 - * Immediately call your gas supplier from a neighbors phone. Follow the gas supplier's instructions.
 - * If you cannot reach your gas supplier, call the fire department.
- C. Never use tools. If the valve will not turn by hand, do not try to repair it, call a qualified technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.
- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

OPERATING INSTRUCTIONS

1. **STOP!** Read the safety information above on this label.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
5. Open control access panel by unscrewing two door fasteners on outside control access panel. Smell all around next to the floor for gas.
6. Turn gas valve knob to "OFF" position if so equipped.
7. Wait at least (5) minutes to clear out any gas. If you then smell gas, **STOP!** Follow instructions in item "B" of the safety information above on this label. If you don't smell gas, go to next step.
8. Turn gas valve knob to "ON" position, if so equipped.
9. Replace control access panel.
10. Turn on all electric power to the appliance.
11. Set thermostat to desired setting.
12. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.



TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to the lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.

Refer to Operating Instructions step #5 for access to the gas control.

Refer to Operating Instructions step #6 for shut off gas control.

Refer to Operating Instructions step #9 to replace access panel.

REV. 10/15/92



hydro flame corporation

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