



Atwood Mobile Products LLC

1120 North Main Street • Elkhart, IN 46514

USA : 800-546-8759 Canada & USA : 800-825-4328

Internet: <http://www.atwoodmobile.com>



Literature number 30090

hydro flame™

8500-IV Series Furnaces

**Models 8516, 8520, 8525, 8531, 8535
8516-LD, 8520-LD, 8525-LD, 8531-LD,
8535-LD**

**1522, 2334, 1522-LD, 2334-LD
Technical Installation Manual**

Effective 10/10

English, Français (et Canada)

This instruction manual is for use by an authorized service technician to install an Atwood – *hydro flame*™ furnace. Should you require further information, contact your dealer or nearest Atwood Mobile Products Service Center.

This furnace design has been certified for installation in recreation vehicles as a MSP Category III furnace. Follow this installation instruction to insure safe operation of the furnace. Failure to install furnace according to this installation instruction nullifies the furnace warranty.



WARNING

Avoid possible injury or death

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

TO THE INSTALLER: LEAVE THIS MANUAL WITH THE APPLIANCE.

TO THE CONSUMER: RETAIN THIS MANUAL FOR FUTURE REFERENCE.

SAFETY ALERT SYMBOLS

Safety Symbols alerting you to potential personal safety hazards obey all safety messages following these symbols



WARNING

Avoid possible injury or death



CAUTION

Avoid possible injury and/or property damage



WARNING FIRE OR EXPLOSION

If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

FOR YOUR SAFETY

WHAT TO DO IF YOU SMELL GAS:

- Extinguish any open flame.
- Evacuate all persons from the vehicle.
- Shut off the gas supply at the gas container or source.
- Do not touch any electrical switch, or use any phone or radio in the vehicle.
- Do not start the vehicle's engine or electric generator.
- Contact the nearest gas supplier or qualified service technician for repairs.
- If you cannot reach a gas supplier or qualified service technician, contact the nearest fire department.
- Do not turn on the gas supply until the gas leak(s) has been repaired.

Installation and service must be performed by a qualified Service Technician, Service Center or gas supplier.

INDEX

SPECIFICATIONS	2
MODELS	2
DIMENSIONS	2
WEIGHT	2
MINIMUM CLEARANCE TO COMBUSTIBLES:	2
INSTALLATION AND SAFETY CODES	2
GENERAL FURNACE LOCATION	2
DOOR SIDEWALL CUTOUT	3
DOOR INSTALLATION	3
LD VENT SIDE WALL CUTOUT	4
LD VENT INSTALLATION	4
VERTICAL INSTALLATION CAULKING AREAS	4
DUCTING OPTIONS	4
REQUIRED MINIMUM DISCHARGE	4
FLEXIBLE DUCTING SYSTEMS	5
HARD DUCTING FLOOR SYSTEMS	5
HORIZONTAL OR VERTICAL DISCHARGE	5
EXTENSION BOX DISCHARGE	5
FLEX ADAPTER PLATE	5
PROPANE GAS CONNECTION	6
ELECTRICAL CONNECTIONS	6
CONDUCTOR SIZING TABLE	6
POWER SUPPLY	6
THERMOSTAT INSTALLATION	6
OPERATING INSTRUCTIONS	7
To Shut Down	7
SYSTEM CHECKS	7
PROPANE GAS PRESSURE TEST	7
STATIC PRESSURE TEST	7
IGNITION CONTROL DIAGNOSTIC CODES	7
STANDARD 3 TRIES FOR IGNITION CONTROLS	7
2-STAGE 3 TRIES FOR IGNITION CONTROLS	7
WIRING DIAGRAMS	9
85-IV WIRING & LADDER DIAGRAM	9
85-IV-LD WIRING & LADDER DIAGRAM	9
1522, 2334 LD WIRING & LADDER DIAGRAM	10
1522, 2334 WIRING & LADDER DIAGRAM	10
Parts Drawing	11
Parts List	12-15

SPECIFICATIONS MODELS

Models	8516-IV	8520-IV	8525-IV	8531-IV	8535-IV
	8516-LD	8520-LD	8525-LD	8531-LD	8535-LD
BTU Input	16,000	20,000	25,000	30,000	34,000
Duct Static Pressure	.20" WC	.10" WC	.10" WC	.10" WC	.10" WC
Amperage (AMPS)	4.6	4.6	7.6	7.6	9.8
Watts	55	55	91	91	118
Power Supply (Volt DC)	12	12	12	12	12
Recommended Return Air	80 in ²	80 in ²	80 in ²	80 in ²	80 in ²
Minimum Return Air	65 in ²	65 in ²	65 in ²	65 in ²	65 in ²

Models #	1522		2334	
	Low	High	Low	High
BTU Input	15,000	22,000	23,000	34,000
Duct Static Pressure	.10" W.C.	.10" W.C.	.10" W.C.	.10" W.C.
Amperage (AMPS)	4.8	10.2	6.5	13.2
Watts	58	122	79	158
Power Supply (Volt DC)	12	12	12	12
Recommended Return Air	80 in ²	80 in ²	80 in ²	80 in ²
Minimum Return Air	65 in ²	65 in ²	65 in ²	65 in ²

* (WC = WATER COLUMN)

DIMENSIONS

All Models	Width	Height	Depth
Casing	16-1/2"	7-3/8"	18"
Door	19-1/4"	9-1/4"	1/4"
Vent LD	5"	5-3/8"	

WEIGHT

	Standard	2-Stage
Furnace	30 lbs	31 lbs
Boxed	32 lbs	33 lbs

MINIMUM CLEARANCE TO COMBUSTIBLES:

Floorboards, walls & similar combustible building materials must be provided the full length and width of unit.

Horizontal Top and Sides 1/2"	Rear 1"	Bottom 3/16"
Vertical Top and Sides 1/2"	Rear 1"	Bottom 0" (slide plate end)

Spacing of 1/4" to ducting within 3 feet of furnace must be provided unless UL listed wire bound vinyl ducts are used. All ducting material used to be rated for continuous use at minimum of 200 °F.

- Clearances are specifically for plywood or similar building materials surrounding the furnace (i.e. Furnace should not be located under furniture or in a closet space where clothing or other material could be located).
- Furnace efficiency rating is a thermal rating determined under continuous operating conditions, independent of any installation. Efficiency rate is given at 77% minimum; actual efficiency rating may be higher.
- Return air is supplied through openings in furnace casing. All return air passages must be kept clear for furnace to function properly. Refer to Minimum clearance to floorboards, walls & similar combustible building material. The total unobstructed return air opening size(s) must not be less than specified in specification –

minimum return air. Failure to meet minimum return air requirements nullifies furnace warranty.

- When furnaces are installed to minimum clearances, an additional 16 in² of return air must be provided to blower side of furnace, or a 2" clearance the full length and height on blower slide must be maintained.

WARNING CARBON MONOXIDE POISONING

- Furnace must be installed and vented to these instructions.
- Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage.
- Improper installation location may cause furnace to produce negative pressure, affecting combustion air or venting of other appliances.

CRITICAL INSTALLATION WARNINGS

- DO NOT install furnace on material that restricts return air, like carpet or any soft material such as vinyl.
- DO NOT install furnace where clearance to combustibles cannot be maintained.
- DO NOT modify furnace in any way.
- DO NOT alter furnace for a positive grounding system.
- DO NOT hi pot furnace unless electronic ignition system (circuit board) has been disconnected.
- DO NOT use battery charger to supply power to DC model furnace even when testing.
- DO NOT use 120-volt AC current with DC models.
- DO NOT use furnace cabinet area as a storage compartment.
- DO NOT vent furnace with venting system serving another appliance.
- DO NOT vent furnace to an outside enclosed porch area.
- DO NOT use for temporary heating of buildings or structures under construction.
- Protect building materials from degrading from flue gas exhaust.
- Protect furnace electrical components from water.
- Compartments must be closed when operating unit.

INSTALLATION AND SAFETY CODES

USA and Canada – follow all applicable state and local codes – in the absence of local codes or regulations, refer to current standards of:

- Recreation Vehicles ANSI A119.2/NFPA 501C
- National Fuel Gas Code ANSI Z223.1 and/or CAN/CGA B149 Installation Codes
- Federal Mobile Home Construction & Safety Standard, Title 24 CFR, part 3280, or when this Standard is not applicable, the Standard for Manufactured Home Installations (Manufactured Home Sites, Communities and Set-Ups), ANSI A255.1 and/or CAN/CSA-Z240 MH Series, Mobile Homes.
- Ground National Electrical Code ANSI/NFPA No. 70 and/or CSA C22.1
- Park Trailers ANSI 119.5

GENERAL FURNACE LOCATION

- Install furnace through an exterior wall.
- DO NOT install furnace near tilt-out rooms, slide-outs, doors or other projection that could obstruct furnace exhaust.

- Locate furnace near midpoint of coach for single furnace applications.
- Installation must provide accessibility if any repairs are necessary to the furnace. Failure to meet this requirement will create additional labor costs that will be the responsibility of the installer.
- DO NOT install vent in areas where projection or door openings come within 6" of vent tube opening.
- DO NOT install furnace in an area where wires, pipes or other objects will interfere with installation or operation of furnace.
- DO NOT install furnace on material that restricts return air, such as directly on carpet, or soft material (like vinyl). If you must install furnace on carpet or soft material, install furnace on cleats, or on a wood or metal panel extending the full width and depth of furnace plus minimum clearance to combustibles.
- DO NOT use petroleum or citrus type cleaner on plastic parts, as damage may occur.

CAUTION
Personal Injury

DO NOT allow furnace tabs to protrude through sidewall cutout opening during installation process until door is installed and tabs are bent over. Take care when handling or brushing against all sheet metal edges to avoid personal injury.

WARNING
CARBON MONOXIDE POISONING

Properly seal door/vent assembly to prevent carbon monoxide from entering coach.

- DO NOT draw combustion air from living area.
- DO NOT vent exhaust air into the living area or an enclosed porch.

DOOR SIDEWALL CUTOUT

* Recommended exterior wall thickness 0" to 1-1/2" - 2-1/2" maximum.

	A	B	C
Side Wall Opening	17"	7-1/2"	19"

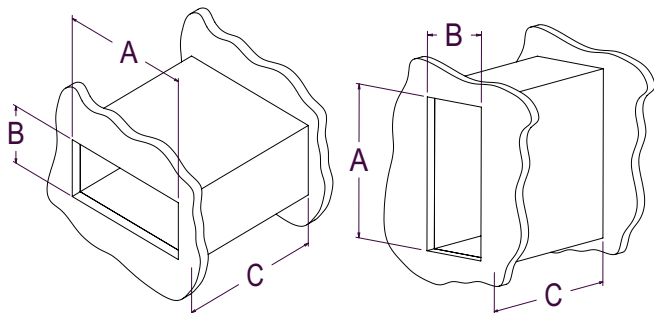


Figure 1

DO NOT oversize hole – over sizing can result in water leakage.

WARNING
CARBON MONOXIDE POSIONING

Properly seal door to prevent carbon monoxide from entering coach.

WARNING
CARBON MONOXIDE POSIONING

Properly adjust draft cap to prevent carbon monoxide from entering coach.

DOOR INSTALLATION

- Standard Door or Deluxe Door may be used alone or with optional Recessed Bezel. See instructions supplied with bezel for cutout hole and mounting instructions.
- The furnace must always be installed level (front to back, side to side) to prevent water intrusion into the interior.
- To prevent moisture from entering inside of coach, apply RTV type sealant.
- The door bezel must fit tightly, to prevent water leakage.
- Doors are designed to allow water drainage in either horizontal or vertical installations. Proper location of Vent Assembly is important for proper exhausting of fumes and proper function of furnace.
- With wing nut (C) loosen on draft cap assembly, close door (A) and pull draft cap assembly (D) forward until it pushes against the screen (B).
- Open door and tighten wing nut. Close door and check to insure draft cap is against door screen.

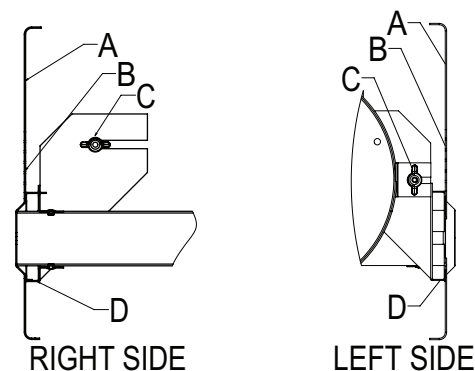


Figure 2

1. Pull furnace forward until mounting tabs protrude through exterior wall.
2. The edge of control box must be flush with coach's outer skin (VERTICAL installation - gas connection must be on bottom).
3. Apply RTV type sealant to entire back flange of bezel creating a watertight seal.
4. Secure by inserting door bezel onto furnace tabs through notches on door bezel.
5. The gas inlet plug and slide plate must be installed in the closed position and door bezel flange inside of slide plate. Insert six mounting tabs through slots provided in door bezel. Bezel must be tight against casing and cutting into RTV sealant.
6. Bend tabs flush with door bezel, aligning holes in tabs with slots in door bezel.
7. Install 12 mounting screws. DO NOT deform bezel.
8. The door bezel must fit tightly against sidewall to prevent water leakage.
9. Fill tab slots with caulking after securing with screws.
10. Remove excess sealant from around door bezel and visually inspect door bezel to make sure it is completely sealed.
11. Secure mounting legs to floor for horizontal installation. For vertical units use vertical mounting bracket and self-tapping screws to hold furnace to floor (tabs on control box can be used to secure furnace). For Vertical Kit Part No. see parts list.
12. Fasten door with fasteners provided.

LD VENT SIDE WALL CUTOUT

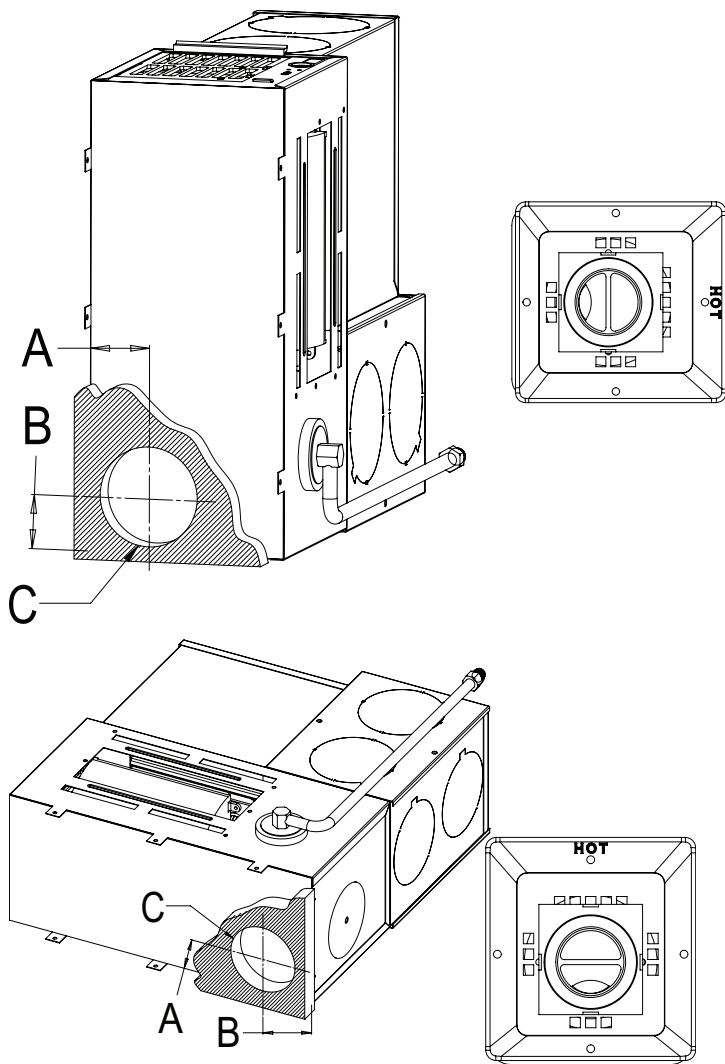


Figure 3

	A	B	C
Side Wall Cutout	2-3/8"	1-1/2"	3-1/2" Diameter hole

* Recommended wall thickness 0" to 2-1/2"
DO NOT oversize hole – over sizing can result in water leakage.

LD VENT INSTALLATION

1. Locate vent hole cutout as called out.
2. Drill 3-1/2" diameter hole through sidewall of coach.
3. Remove vent and vent ring from furnace.
4. Insert furnace from backside of wall, lining up hole in wall with hole for vent in furnace.
5. Apply sealant to back of vent ring and vent cap base.
6. Install vent assembly with HOT at top on horizontal installations and HOT on right side for vertical installations. Vent ring must slip inside combustion air intake tube. Secure to wall with four (4) screws not provided.
7. Vent assembly must maintain minimum overlap of 1-1/4" on exhaust tube and 1/2" minimum on combustion air tube. DO NOT exceed maximum wall thickness.
8. Secure furnace to floor with two (2) screws, through legs on back of casing. For vertical units use vertical mounting bracket and self-tapping screws to hold furnace to floor (tabs on control box can be used to secure furnace). For Vertical Kit Part No. see parts list.

VERTICAL INSTALLATION CAULKING AREAS

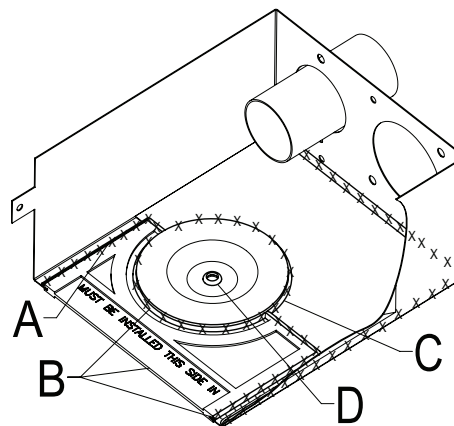


Figure 4

You Must Caulk- all areas shown.

- Around entire red gas inlet plug "C".
- Around entire black slide plate edges where it mates with sheet metal "B".
- Around entire gas line where it enters gas inlet plug "D".
- Along welded joints "A" of two bottom corners of sheet metal casing and where door flange covers slide plate.

DUCTING OPTIONS

REQUIRED MINIMUM DISCHARGE

Models	Required Discharge Area
8516, 8520	24 in ²
8525, 8531	36 in ²
8535	48 in ²
1522	36 in ²
2334	48 in ²
All Models using top or bottom discharge options	48 in ²
All vertical installations	48 in ²

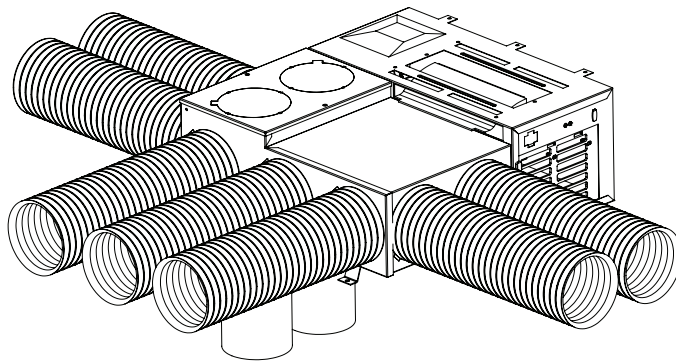


Figure 5

- Proper duct installation is critical to operation of furnace. When installing ducts, use materials rated for continuous use at 200 °F.
- See minimum clearance to floorboards, walls & similar combustible building materials.
- Each 4-inch duct opening provides 12 in² of discharge area. Provide an extra 12 in² of non-closeable duct discharge area for each closeable register used.
- Use of 2" ducting does not count toward achieving minimum discharge requirements. Ducting into dead air space with no return air, such as holding tank areas, does not count toward achieving minimum discharge requirements.
- Adjust ducting installation to obtain air rise of 100 °F-130 °F.

- Horizontally installed furnaces – using side duct options – must have a minimum of one duct from both left and right side of casing.

FLEXIBLE DUCTING SYSTEMS

When designing flexible duct systems:

- Avoid sharp bends or crushed ducts.
 - Stretch all ducts and run them directly to outlets, keeping quantity and angles of bends to a minimum.
- Remove knockout plates from desired outlets.
 - Attach a duct adapter to each opening by inserting flange over casing, locking the tab into casing slot and turning adapter 90°.
 - Attach and secure four-inch flexible ducts to adapters.
 - Run ducts to desired location within RV, secure to registers.
 - Additional ducting may be needed to maintain correct static pressure.

HARD DUCTING FLOOR SYSTEMS

When designing hard ducting systems:

- Undersized ducting will cause high temperature limiting.
- Oversized ducting will cause inadequate air flow from registers.
- When hard ducting is 1-1/2" in depth, an additional flex duct may be needed to maintain installation duct static requirements.
- DO NOT install floor registers within 2 feet of return air openings. See ducting option from casing top and bottom areas. These options can be with flex ducting or by hard ducting installations. Hard ducting can be sealed using an optional gasket and plenum plate kits. See parts list.

HORIZONTAL OR VERTICAL DISCHARGE

Floor cutout dimensions			
A	B	C	D
8-1/2"	9-1/2"	6-1/4"	1/4"

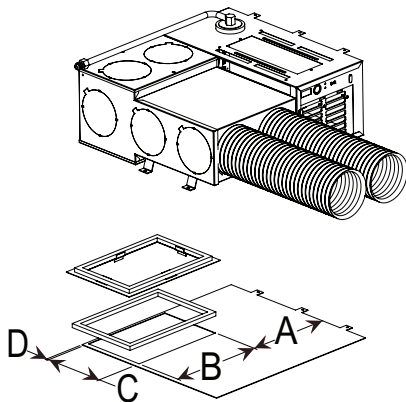


Figure 6

- Units can be installed as bottom/top or vertical bottom discharge systems.
- Remove bottom / top discharge or side cover plate, these ducting options must be connected to a ducting system.
 - Insure sealing of all joints when use of a gasket and plenum plate for hard ducting configurations.
 - Other methods of sealing furnace to the floor are acceptable as long as clearances and seals meet requirements of clearances and temperature.
 - Fasten plenum plate over floor cutout. If a gasket and plenum plate is not used seal furnace to hard duct system making sure seal is airtight.
 - Position gasket on plenum over hole opening.
 - Set furnace on gasket; make sure gasket remains in position.
 - Additional ducting can be used to maintain correct static pressure or as desired.

EXTENSION BOX DISCHARGE

Floor cutout dimensions				
A	B	C	D	E
18"	1/2"	5"	16"	1/4"

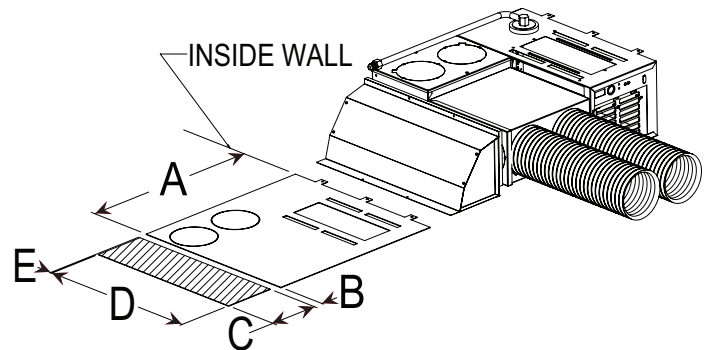


Figure 7

- A plenum plate may be used for top or bottom discharge installation.
 - A casing extension box adds 6" of depth to furnace casing. To order see parts list.
- Remove three knockouts from rear of furnace.
 - Place extension box with foam gasket against furnace, making sure the three openings are enclosed within extension box. With extension box held in place, secure with two 1/2" sheet metal screws not provided.
 - Fasten plenum plate over cutout.
 - Position gasket on plenum plate.
 - Set furnace on gasket; make sure gasket remains in position.
 - Fasten extension box to floor with 1/4" sheet metal screws or staples.
 - Additional ducting can be used to maintain correct static pressure or as desired.

FLEX ADAPTER PLATE

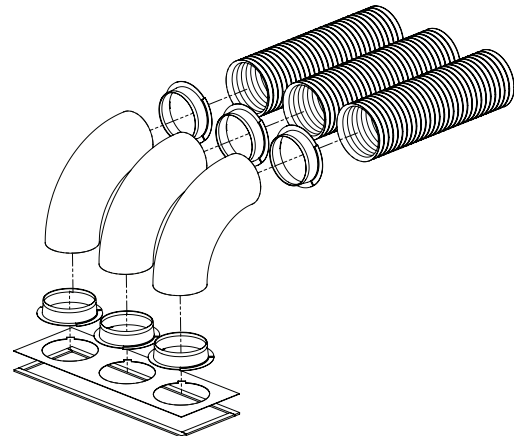


Figure 8

- A flex adapter may be used to provide more flexibility for alignment of discharge opening on hard duct systems. This system can be used on all models installed horizontally or vertically providing ducting from rear of furnace without using side ducts. Use of a flexible mounting plate kit is available. See parts list.
- Remove three knockouts from rear of furnace.
 - Install duct adapters in each opening.
 - Place flex adapter plate with foam tape against hard ducting making sure openings line up.

4. With plate held in place, fasten plate to ducting using screws or staples as need to keep it flat.
5. Install three duct adapters into flex adapter plate.
6. Attach flexible ducting from furnace to flex adapter plate and secure ducting in place on both ends.
7. Additional ducting can be used to maintain correct static pressure or as desired.

PROPANE GAS CONNECTION

1. Connect gas line to brass fitting located on right side of furnace.
2. Some models will have fittings at the rear or right side outside of the casing.
3. 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.
4. Use two wrenches to hold brass fitting and flare nut when tightening gas line to brass fitting. DO NOT twist valve assembly.

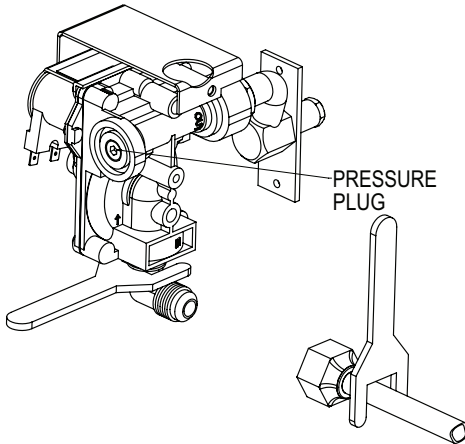


Figure 9

- A 1/8" N.P.T. plug is accessible for test gauge connection on gas valve assembly for pressure testing.
- A 3/8" flared fitting connection is provided at gas control valve inlet for gas supply connection to furnace. The gas supply line of the furnace must be of adequate size to provide 11" W.C. gas pressure. This pressure must be maintained under maximum flow conditions with all gas appliances in operation.
- Remove slide plate and gas inlet plug from furnace.
- Insert gas line through gas inlet plug (DO NOT CUT).
- Connect gas line through gas inlet plug inside furnace casing immediately ahead of gas control valve.

ELECTRICAL CONNECTIONS

⚠ WARNING INJURY OR PROPERTY DAMAGE

- Label all wires before disconnecting for servicing. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.
- Disconnect electrical power before servicing.

CONDUCTOR SIZING TABLE

– Maximum 10% Voltage Drop – (12VDC)
Current draw (AMPS)

Amps	3	4	5	6	7	8	9	10	15
Gage	Max. Length of SAE conductor (in feet) from source to device								
18	57	43	34	29	25	21	19	17	11
16	87	65	52	43	37	33	29	26	17

⚠ CAUTION PROPERTY DAMAGE

This connection is for low-voltage battery or direct current only.
Do not connect to 120 or 240 volts AC.

- This furnace is designed for negative ground 12 volts DC only. DO NOT attempt to alter furnace for a positive ground system or connect the furnace directly to 120 volts AC. Damage to furnace components will occur and warranty will be voided.
 - Use a minimum of 18 GA wire to minimize voltage drop. Furnace must be installed so electrical components are protected from water. To make electrical connections see wiring diagrams.
 - For best furnace performance when power supply is from a converter equipped with a charging port, wire converter to furnace parallel with battery. This provides consistent voltage to furnace, increasing component life, filtering power surges and AC spikes.
 - Some models are shipped with a field harness connections with 12" wire leads on a terminal block.
 - All units are supplied with a power switch which when turned off during servicing will remove power through furnace wiring. Switch must be in the ON position for furnace to operate.
 - The direct high voltage spark ignition generates a radio frequency that could cause interference with other microprocessor-based equipment. Locate equipment at least five feet (5') from furnace location. If this distance cannot be maintained a shielded high voltage lead can be ordered. See parts list.
1. Route wiring to left side of furnace.
 2. Connect red wire to positive side of power supply.
 3. Connect black wire to grounded side of power supply.
 4. Connect blue wire marked positive thermostat to + side wire of thermostat using 22-18 GA stranded wire.
 5. Connect other blue wire to the other thermostat lead-using minimum 22-18 GA stranded wire.

POWER SUPPLY

Atwood Mobile Products highly recommends the use of an electronic (solid state) converter with clean power output. This will assure the life of the electronic controls and motor life could be extended beyond typical linear converter applications.

THERMOSTAT INSTALLATION

- Thermostats are not supplied. To purchase a thermostat rated for 12VDC or 24VAC, Minimum 1 AMP rating, they can be ordered through Atwood. See parts list.
- Be sure all electrical power has been disconnected from the air conditioner, furnace, and the power supply.
- The thermostats are very sensitive. HANDLE WITH CARE AT ALL TIMES.
- Pick a dry area where air circulation is good.
- Do not install the thermostat where there are unusual heating conditions: such as direct sunlight, heat producing appliances (television, radio, wall lamp, etc.) or a furnace or air conditioner output registers.
- Locate thermostat 48" to 54" above main living area floor on an INTERIOR wall when possible.
- EXTERIOR wall location must have a 3/4" spacer between thermostat and exterior wall.
- Follow manufacture's installation instructions provided with thermostat.

OPERATING INSTRUCTIONS

WARNING **FIRE OR EXPLOSION**

Do not operate furnace while vehicle is in motion or being towed.

- During initial firing of this furnace, a burn-off of excess oils remaining from manufacturing process may cause smoking or fumes for 5-10 minutes.
- NOTE: if furnace should lock out, the blower will go off in 3 minutes and remain off until unit is reset by reactivating the thermostat.

STOP! Read Users Information Manual supplied with furnace.

1. Turn the manual valve (if so equipped) or the valve at the outside LP tank to the "OFF" position DO NOT force. NOTE: This furnace is equipped with a valve shut-off switch with switch in "OFF" position. Gas will not flow to burner nor will the furnace operate. Turn switch to "ON" position.
2. Set thermostat above room temperature to begin blower operation. A slight delay will occur before the blower comes on. Allow blower to run for 1 minute for combustion chamber purge cycle. If blower does not come on go to shut down and contact your dealer or a local recreational vehicle service agency.
3. After 1 minute, the blower may not be running at this time, move thermostat lever below room temperature. Wait approximately 2 minutes for blower to go off.
4. Open manual shut-off valve (if so equipped) or the valve at the outside LP tank. Correct operation characteristics depend on the valve being positioned fully open. Never attempt to operate with a valve partially closed. Turn shut-off switch to "ON" position.
5. Set thermostat lever to desired setting. If set above room temperature, blower will come on.
6. Allow 30 seconds for main burner to light after blower comes on. This furnace is equipped with an ignition device which automatically lights the burner. DO NOT try to light the burner by hand.
7. If burner does not light, repeat Steps 1 through 5.
8. If after three (3) attempts with no ignition, go to shut down and contact your dealer or a local recreational vehicle service agency. Do not continue to cycle furnace through thermostat in an attempt to get ignition.

To Shut Down

1. Set the thermostat to lowest setting, move lever to "OFF" position.
2. Turn manual shut off valve (if so equipped) to the "OFF" position. Do not force.

SYSTEM CHECKS

WARNING **FIRE OR EXPLOSION**

Never check for leaks with an open flame. Turn on the gas and apply soapy water to all joints to see if bubbles are formed.

PROPANE GAS PRESSURE TEST

The furnace and any individual shut-off valve must be disconnected from gas supply piping system during any pressure testing of system at test pressures of more than 1/2" PSI.

Before furnace is connected, piping systems must be tested to be leak free. The test must maintain air pressure of a least 6" of mercury or 3" PSI for at least 10 minutes.

The entire piping system must be maintained within a range of 10 to 14" WC when all appliances are in operation. Test gas connections for leakage with a leak test solution.

STATIC PRESSURE TEST

- Special tools required to take casing static pressures.

Please refer to Engineering addendum when installing the furnace. This will provide you with allowable maximum case static pressures with each possible variation of duct configurations. The addendum is available from you Atwood Field Service Representative or by calling Atwood Service.

Reducing the number of duct turns and stretching the ducts will increase airflow and reduce static pressure. Adding ducts or increasing the discharge (hard duct) system will also reduce static pressure. You must follow the manufacture's recommendations and specifications for optimum performance and proper operation.

IGNITION CONTROL DIAGNOSTIC CODES

The following charts give the diagnostic codes given by the ignition control when faults are present.

- A soft lockout is a condition that is timed and will make additional attempts to correct the problem. A hard lockout requires resetting of the thermostat or turning the power switch off, then back on.

STANDARD 3 TRIES FOR IGNITION CONTROLS

DIAGNOSTIC CHART		
FAULT	LED INDICATION	LOCKOUT
Internal Circuit Board Failure	Steady On, No Flashing	Hard
Limit Switch/Airflow Problems	1-Flash With 3-Second Pause	Soft
Flame Sense Fault	2-Flashes With 3-Second Pause	Hard
Ignition Lockout Fault	3-Flashes With 3-Second Pause	Soft

2-STAGE 3 TRIES FOR IGNITION CONTROLS

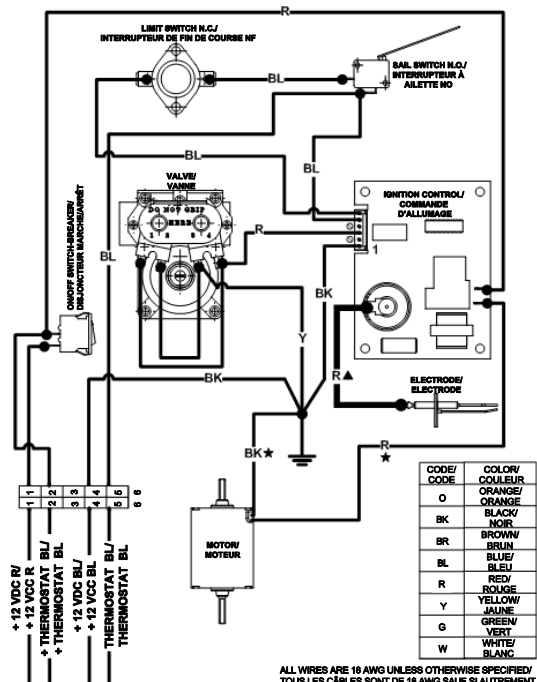
Note: (on LD models control is not visible)

DIAGNOSTIC CHART		
FAULT	LED INDICATION	LOCKOUT
Low Input voltage	1-Flash with 3 second pause	Soft
Ignition failure	2-Flash With 3-Second Pause	Soft
Open high limit	3-Flashes With 3-Second Pause	Soft
Stuck Sail Switch	4-Flashes With 3-Second Pause	Hard
Ignition fault	5-Flashes with 3-second pause	Hard

THIS PAGE INTENTIONALLY LEFT BLANK.

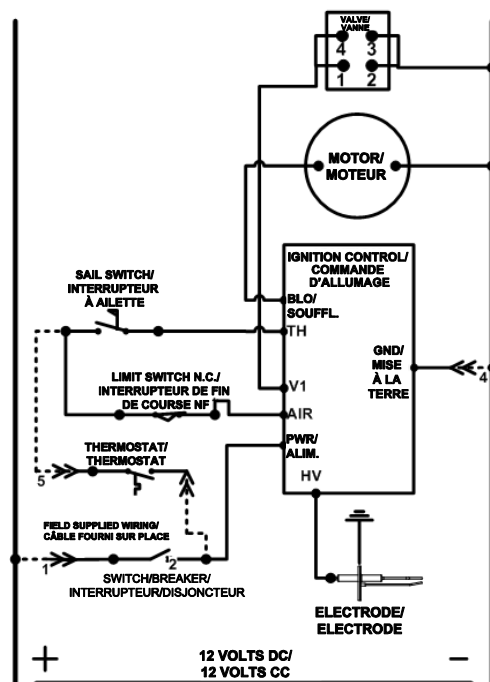
CETTE PAGE EST INTENTIONNELLEMENT VIDE.

WIRING DIAGRAMS/DIAGRAMMES DE CÂBLAGE



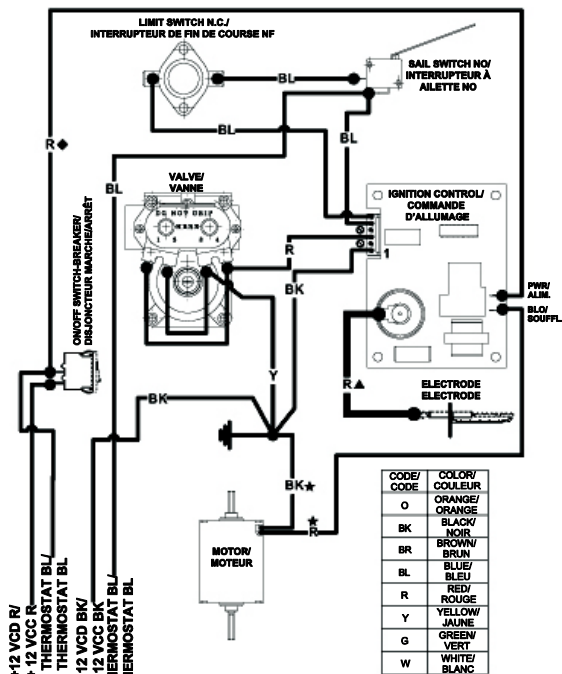
ALL WIRES ARE 18 AWG UNLESS OTHERWISE SPECIFIED/
TOUS LES CÂBLES SONT DE 18 AWG SAUF SI AUTREMENT SPÉCIFIÉ

NOTE: IF ANY OF THE ORIGINAL WIRES AS SUPPLIED WITH THE APPLIANCE MUST BE REPLACED, IT MUST BE REPLACED WITH WIRING MATERIAL HAVING A TEMPERATURE RATING OF AT LEAST 105°C/
REMARQUE: SI L'UN DES CÂBLES ORIGINAUX TELS QUE FOURNIS AVEC L'APPAREIL DOIT ÊTRE REMPLACÉ, IL DOIT L'ÊTRE AVEC UN MATÉRIEL DE CÂBLAGE AYANT UNE TEMPÉRATURE NOMINALE D'AU MOINS 105°C



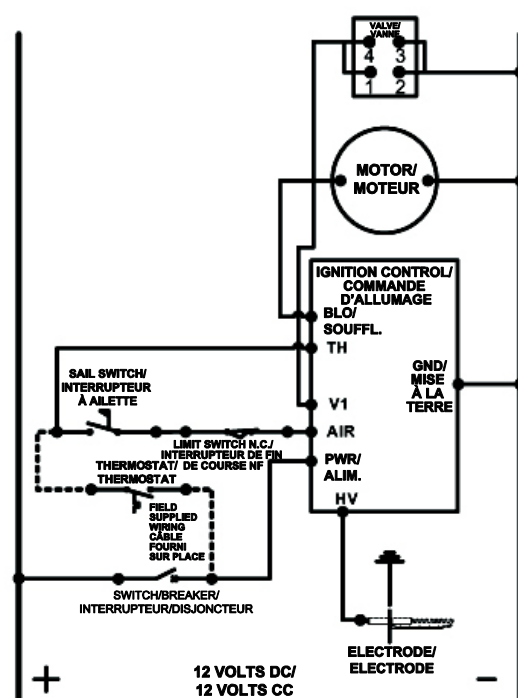
CAUTION: DO NOT HI-POT (DIELECTRIC HIGH VOLTAGE TEST) THIS UNIT AFTER INSTALLATION. TO DO SO MAY CAUSE COMPONENT DAMAGE AND VOIDS WARRANTY OF FURNACE. UNIT 100% FIRE CHECKED./
MISE EN GARDE: NE PAS FAIRE UN ESSAI DIÉLECTRIQUE (TEST À HAUTE TENSION) SUR CET APPAREIL APRÈS L'INSTALLATION. CECI POURRAIT ENTRAÎNER L'ENDOMMAGEMENT DES COMPOSANTS ET ANNULER LA GARANTIE DE L'APPAREIL DE LA FOURNAISE. APPAREIL AYANT SUBI UNE VÉRIFICATION PRÉVENTIVE CONTRE L'INCENDIE À 100%.

85-IV WIRING AND LADDER DIAGRAMS DIAGRAMMES EN ESCALIER ET CÂBLAGE 85-IV



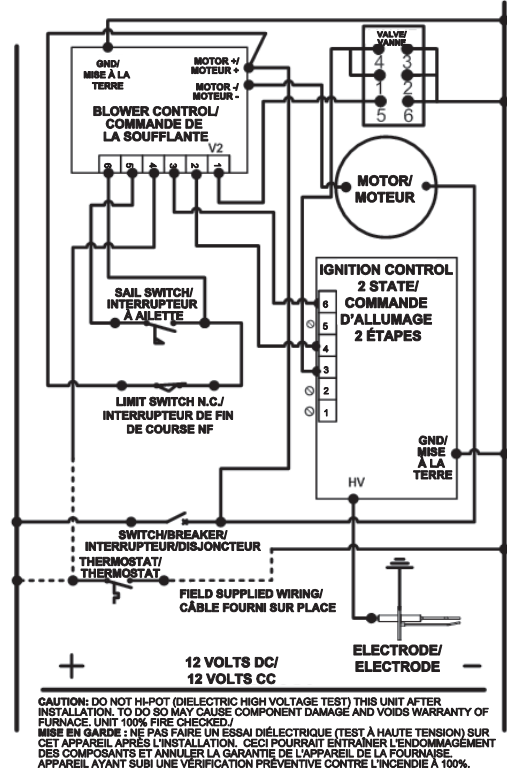
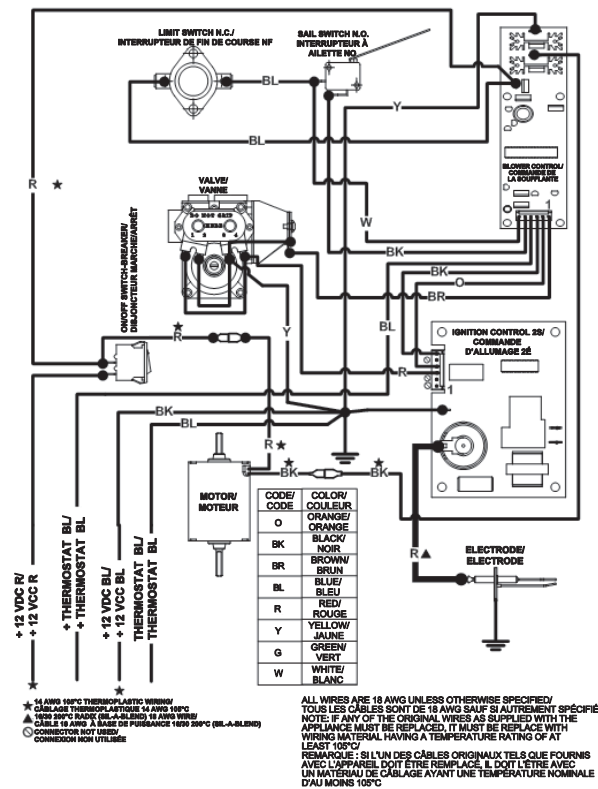
ALL WIRES ARE 18 AWG UNLESS OTHERWISE SPECIFIED/
TOUS LES CÂBLES SONT DE 18 AWG SAUF SI AUTREMENT SPÉCIFIÉ

NOTE: IF ANY OF THE ORIGINAL WIRES AS SUPPLIED WITH THE APPLIANCE MUST BE REPLACED, IT MUST BE REPLACED WITH WIRING MATERIAL HAVING A TEMPERATURE RATING OF AT LEAST 105°C/
REMARQUE: SI L'UN DES CÂBLES ORIGINAUX TELS QUE FOURNIS AVEC L'APPAREIL DOIT ÊTRE REMPLACÉ, IL DOIT L'ÊTRE AVEC UN MATÉRIEL DE CÂBLAGE AYANT UNE TEMPÉRATURE NOMINALE D'AU MOINS 105°C

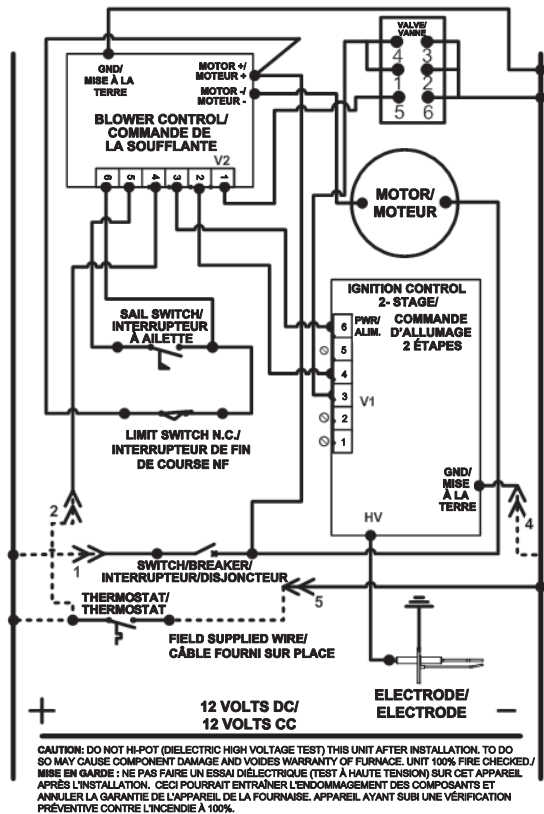
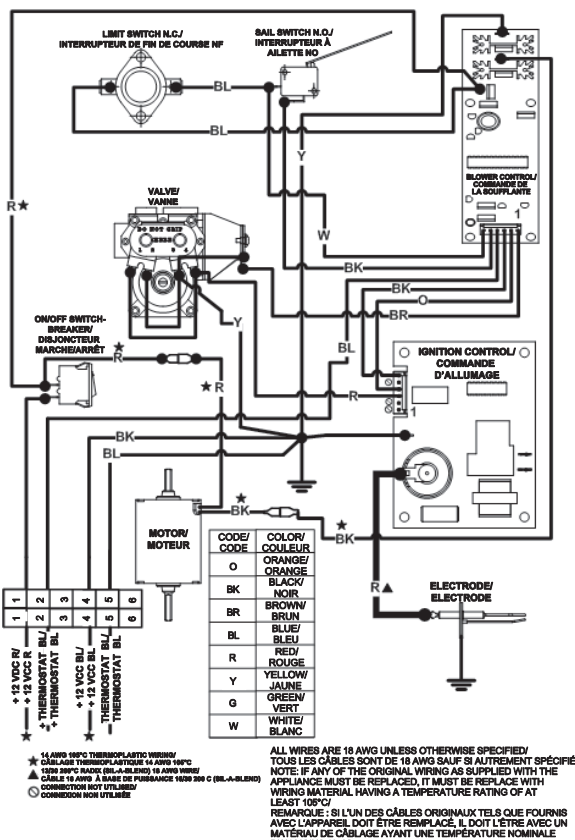


CAUTION: DO NOT HI-POT (DIELECTRIC HIGH VOLTAGE TEST) THIS UNIT AFTER INSTALLATION. TO DO SO MAY CAUSE COMPONENT DAMAGE AND VOIDS WARRANTY OF FURNACE. UNIT 100% FIRE CHECKED./
MISE EN GARDE: NE PAS FAIRE UN ESSAI DIÉLECTRIQUE (TEST À HAUTE TENSION) SUR CET APPAREIL APRÈS L'INSTALLATION. CECI POURRAIT ENTRAÎNER L'ENDOMMAGEMENT DES COMPOSANTS ET ANNULER LA GARANTIE DE L'APPAREIL DE LA FOURNAISE. APPAREIL AYANT SUBI UNE VÉRIFICATION PRÉVENTIVE CONTRE L'INCENDIE À 100%.

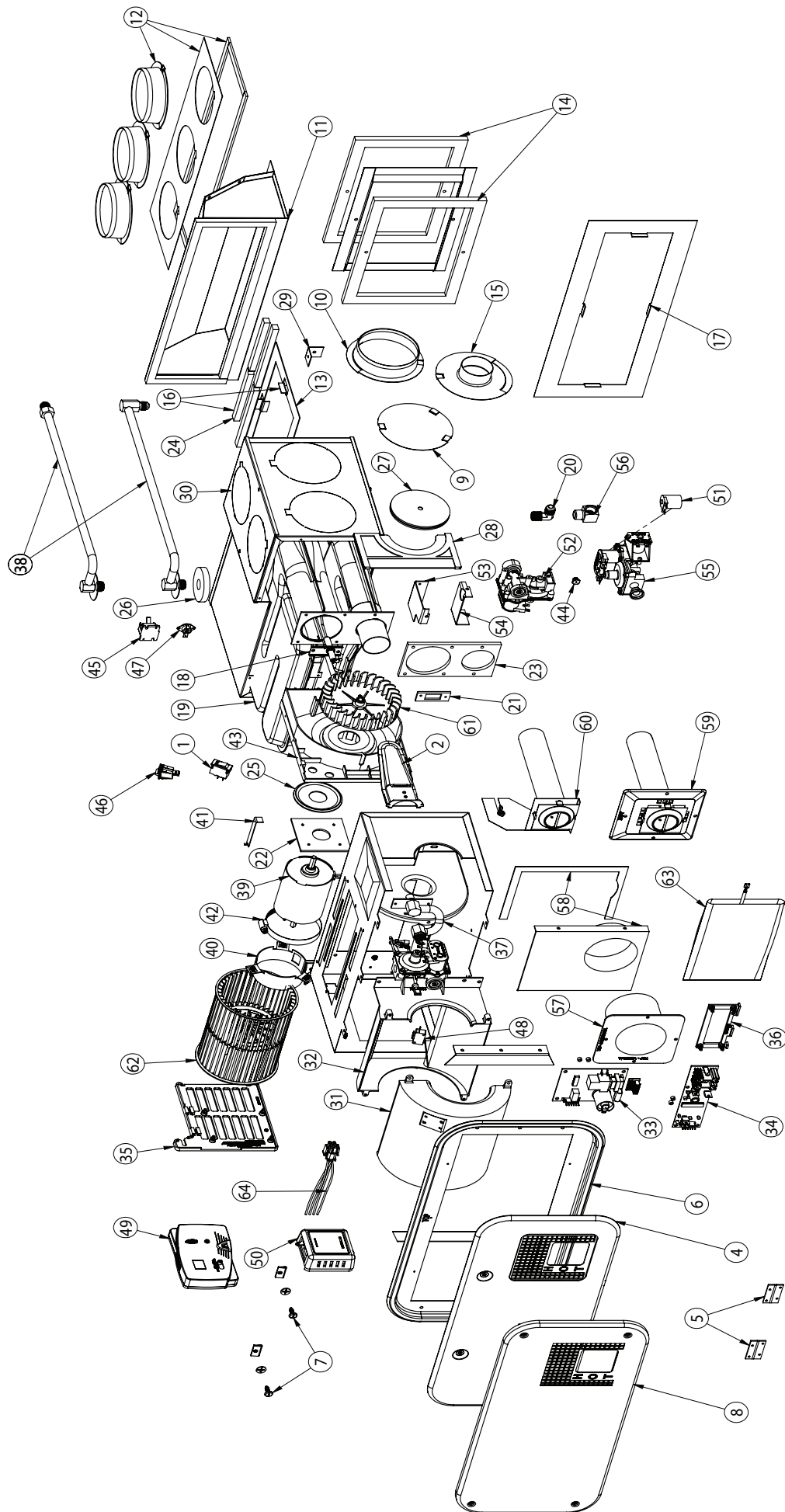
85-IV-LD WIRING AND LADDER DIAGRAMS DIAGRAMMES EN ESCALIER ET CÂBLAGE 85-IV-LD



1522, 2334 LD WIRING AND LADDER DIAGRAMS
DIAGRAMMES EN ESCALIER ET CÂBALAGE LD 1522, 2334



1522, 2334 WIRING AND LADDER DIAGRAMS
8935, 8940 DIAGRAMMES EN ESCALIER ET CÂBALAGE 1522, 2334



PARTS LIST/LISTE DES PIÈCES

Category Catégorie	Item Art.	P/N	Title Titre	8516_IV	8520_IV	8525_IV	8531_IV	8535_IV	8516_LD	8520_LD	8525_LD	8531_LD	8535_LD	1522	1522_LD	2334	2334_LD
Breaker, Circuit Disjoncteur	1	34012	CIRCUIT BREAKER/ON-OFF SWITCH DISJONCTEUR/INTERRUPTEUR MARCHE ARRÊT			X	X				X	X					
		34015	CIRCUIT BREAKER/ON-OFF SWITCH DISJONCTEUR/INTERRUPTEUR MARCHE ARRÊT													X	X
		34013	CIRCUIT BREAKER/ON-OFF SWITCH DISJONCTEUR/INTERRUPTEUR MARCHE ARRÊT					X					X	X	X		
		34011	CIRCUIT BREAKER/ON-OFF SWITCH DISJONCTEUR/INTERRUPTEUR MARCHE ARRÊT	X	X				X	X							
Burners Brûleurs	2	36043	ASSY, BURNER HEAD COMPLETE ENSEMB, TÊTE DE BRÛLEUR COMPLÈTE	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Doors Portes	4	33754	DOOR ASSY, DELUXE, 02 1-PK ENSEMB. PORTE, DELUXE 02 1-PK	X	X	X	X	X						X		X	
		33756	DOOR ASSY, DELUXE, 04 1-PK ENSEMB. PORTE, DELUXE 04 1-PK	X	X	X	X	X						X		X	
		35101	DOOR ASSY, DELUXE, 22 1-PK ENSEMB. PORTE, DELUXE 22 1-PK	X	X	X	X	X						X		X	
		35102	DOOR ASSY, DELUXE, 23 1-PK ENSEMB. PORTE, DELUXE 23 1-PK	X	X	X	X	X						X		X	
		35385	DOOR ASSY, DELUXE, 32 1-PK ENSEMB. PORTE, DELUXE 32 1-PK	X	X	X	X	X						X		X	
		34238	DOOR ASSY, DELUXE, 44 1-PK ENSEMB. PORTE, DELUXE 44 1-PK	X	X	X	X	X						X		X	
		33741	DOOR ASSY, DELUXE, 47 1-PK ENSEMB. PORTE, DELUXE 47 1-PK	X	X	X	X	X						X		X	
		36129	DOOR ASSY, DELUXE, 34 1-PK ENSEMB. PORTE, DELUXE 34 1-PK	X	X	X	X	X						X		X	
		37228	DOOR ASSY, DELUXE, 36 1-PK ENSEMB. PORTE, DELUXE 36 1-PK	X	X	X	X	X						X		X	
	5	33620	INNER, 85, DOOR HINGE CHARNIÈRE PORTE, 85, INTÉRIEURE	X	X	X	X	X						X		X	
	6	33854	85/89 RECESS PAN ASSY 02 1-PK ENSEMB. CUVETTE ENCASTRÉE 85/89 02 1-PK	X	X	X	X	X						X		X	
		35105	85/89 RECESS PAN ASSY 23 1-PK ENSEMB. CUVETTE ENCASTRÉE 85/89 23 1-PK	X	X	X	X	X						X		X	
		33856	85/89 RECESS PAN ASSY 04 1-PK ENSEMB. CUVETTE ENCASTRÉE 85/89 04 1-PK	X	X	X	X	X						X		X	
		35384	85/89 RECESS PAN ASSY 32 1-PK ENSEMB. CUVETTE ENCASTRÉE 85/89 32 1-PK	X	X	X	X	X						X		X	
		36130	85/89 RECESS PAN ASSY 34 1-PK ENSEMB. CUVETTE ENCASTRÉE 85/89 34 1-PK	X	X	X	X	X						X		X	
		33749	85/89 RECESS PAN ASSY 47 1-PK ENSEMB. CUVETTE ENCASTRÉE 85/89 47 1-PK	X	X	X	X	X						X		X	
		33801	85/89 RECESS PAN ASSY 48 1-PK ENSEMB. CUVETTE ENCASTRÉE 85/89 48 1-PK	X	X	X	X	X						X		X	
		35104	85/89 RECESS PAN ASSY 22 1-PK ENSEMB. CUVETTE ENCASTRÉE 85/89 22 1-PK	X	X	X	X	X						X		X	
	7	33847	ASSY, 85-II, DOOR LATCH, N/S ENSEMB. LOQUET PORTE, 85-II, N/S	X	X	X	X	X						X		X	
	8	37125	DOOR ASSY, STANDARD, 02 1-PK ENSEMB. PORTE, STANDARD, 02 1-PK	X	X	X	X	X						X		X	
		37126	DOOR ASSY, STANDARD, 04 1-PK ENSEMB. PORTE, STANDARD, 04 1-PK	X	X	X	X	X						X		X	
		37128	DOOR ASSY, STANDARD, 22 1-PK ENSEMB. PORTE, STANDARD, 22 1-PK	X	X	X	X	X						X		X	
		37129	DOOR ASSY, STANDARD, 23 1-PK ENSEMB. PORTE, STANDARD, 23 1-PK	X	X	X	X	X						X		X	
		37652	DOOR ASSY, STANDARD, 32 1-PK ENSEMB. PORTE, STANDARD, 32 1-PK	X	X	X	X	X						X		X	
		36942	DOOR ASSY, STANDARD, 34 1-PK ENSEMB. PORTE, STANDARD, 34 1-PK	X	X	X	X	X						X		X	
		37388	DOOR ASSY, STANDARD, 34F 1-PK ENSEMB. PORTE, STANDARD, 34F 1-PK	X	X	X	X	X						X		X	
		38102	DOOR ASSY, STANDARD, 40 1-PK ENSEMB. PORTE, STANDARD, 40 1-PK	X	X	X	X	X						X		X	
		34555	DOOR ASSY, STANDARD, 43 1-PK ENSEMB. PORTE, STANDARD, 43 1-PK	X	X	X	X	X						X		X	

Category Catégorie	Item Art.	P/N	Title Titre	8516_IV	8520_IV	8525_IV	8531_IV	8535_IV	8516_LD	8520_LD	8525_LD	8531_LD	8535_LD	1522	1522_LD	2334	2334_LD
		34237	DOOR ASSY, STANDARD, 44 1-PK ENSEMB. PORTE, STANDARD, 44 1-PK	X	X	X	X	X						X		X	
		33755	DOOR ASSY, STANDARD, 47 1-PK ENSEMB. PORTE, STANDARD, 47 1-PK	X	X	X	X	X						X		X	
		33800	DOOR ASSY, STANDARD, 48 1-PK ENSEMB. PORTE, STANDARD, 48 1-PK	X	X	X	X	X						X		X	
Ducting Canalisation	9	31361	PLATE, DUCT COVER, 4 INCH PLAQUE, COUVERCLE DE CONDUIT, 4 POUCES	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	10	31474	ADAPTER, DUCT, 4 INCH ADAPTATEUR, CONDUIT, 4 POUCES	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	11	33150	ASSY, EXTENSION BOX ADAPTER ENSEMB., ADAPTATEUR DE BOITE DE RALLONGE	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		37878	ASSY, EXTENSION BOX ADAPTER ENSEMB., ADAPTATEUR DE BOITE DE RALLONGE	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	12	34438	KIT, FLEX ADAPTER PLATE TROUSSE, PLAQUE DE L'ADAPTATEUR FLEX	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	13	36277	BOTTOM PLENUM PLATE SMALL PETITE PLAQUE PLÉNUM INFÉRIEURE	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	15	36688	ADAPTER, DUCT, 2 INCH ADAPTATEUR, CONDUIT, 2 POUCES	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	16	37745	ASSY, ADAPTER PLATE 85 TOP/BOT ENSEMB. PLAQUE D'ADAPTATEUR 85 HAUT/BAS	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	17	37868	ASSY, PLATE ADAPTER EXT.BOX ENSEMB. BOITE DE RALL. ADAPTATEUR DE PLAQUE	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Electrode Électrode	18	34033	ELECTRODE, CHF8 ASSY W/LEAD ÉLECTRODE, ENSEMB. CHF8, AVEC PLOMB						X	X	X	X	X		X		X
		37057	ELECTRODE, CHF1 ASSY ÉLECTRODE, ENSEMB. CHF1	X	X	X	X	X						X		X	
Elements Éléments	19	34449	WELD, ELEMENT W/EXHAUST 16-25 ASSEMBLAGE, ÉLÉMENT AVEC ÉVACUATION 16-25						X	X	X				X		
		37958	WELD, ELEMENT W/EXHAUST 16-25 ASSEMBLAGE, ÉLÉMENT AVEC ÉVACUATION 16-25	X	X	X											
		34450	WELD, ELEMENT W/EXHAUST 31-35 ASSEMBLAGE, ÉLÉMENT AVEC ÉVACUATION 31-35									X	X				X
		37959	WELD, ELEMENT W/EXHAUST 31-35 ASSEMBLAGE, ÉLÉMENT AVEC ÉVACUATION 31-35				X	X								X	
Fittings, Pipe Tuyauteries, conduits	20	31043	ELBOW, MALE, 3/8 X 3/8 BRASS COUDE, MÂLE, 3/8 X 3/8 LAITON	X	X	X	X	X						X		X	
		31046	CONN, MALE, 3/8 X 3/8 CONN, MÂLE, 3/8 X 3/8						X	X	X	X	X				
Gasket Joint	23	37956	GASKET, EXHAUST WALL JOINT, PAROI D'ÉCHAPPEMENT	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	24	34551	FOAM TAPE, SOLIMIDE, 1/2 X 32 RUBAN MOUSSE, SOLIMIDE 1/2 X 32	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	25	37600	GASKET, MOTOR 85-IV JOINT, MOTEUR 85-IV	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	26	38304	GASKET, GAS LINE JOINT, CONDUITE DE GAZ						X	X	X	X	X		X		X
General Parts Pièces générales	27	37410	PLUG, 85/89, S/O GAS INLET PRISE, 85/89, S/O ENTRÉE DE GAZ	X	X	X	X	X						X		X	
	28	37411	PLATE, 85, SLIDE, S/O PLAQUE, 85, COULISSANTE, S/O	X	X	X	X	X						X		X	
	29	34512	KIT, VERTICAL MOUNTING TROUSSE, MONTAGE VERTICAL						X	X	X	X	X		X		X
	31	37605	HOUSING, BLOWER BACK 85-IV BOITIER, DOS SOUFFLANTE 85-IV	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	32	37606	HOUSING, BLOWER 85-IV BOITIER, SOUFFLANTE 85-IV	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Igniton, Controls Allumage, commandes	33	34696	KIT, DSI BOARD 2-STAGE REPLACE TROUSSE, REMPLACEMENT 2 ÉTAPES CARTE DSI											X	X	X	X
		31501	KIT, UNIVERSAL IGNITION DC TROUSSE, ALLUMAGE UNIVERSEL CC	X	X	X	X	X	X	X	X	X	X				
	34	34109	KIT, MOTOR SPEED CONTROL 2STAGE TROUSSE, CONTRÔLE DE VITESSE DU MOTEUR 2 ÉTAPES											X	X	X	X
	35	34541	BRACKET, DSI DC MOUNT, PLASTIC SUPPORT, MONTAGE CC DSI, PLASTIQUE	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Category Catégorie	Item Art.	P/N	Title Titre	8516_IV	8520_IV	8525_IV	8531_IV	8535_IV	8516_LD	8520_LD	8525_LD	8531_LD	8535_LD	1522	1522_LD	2334	2334_LD
	36	34543	BRACKET, DSI AUXILIARY, PLASTIC SUPPORT, DSI AUXILIAIRE, PLASTIQUE											X	X	X	X
Manifold Collecteur	37	37392	MANIFOLD, W/R 85/89-III COLLECTEUR, W/R 85/89-III	X	X	X	X	X						X		X	
		34405	MANIFOLD, OUTLET LD2 COLLECTEUR, PRISE LD2						X	X	X	X	X		X		X
	38	34406	MANIFOLD, EXTENDED 85 LD2 COLLECTEUR, RALLONGÉ 85 LD2						X	X	X	X	X		X		X
		34530	MANIFOLD, EXTENDED 85 LD2 COLLECTEUR, RALLONGÉ 85 LD2						X	X	X	X	X		X		X
Motors Moteurs	39	38554	MOTOR, 2 STAGE MOTEUR, 2 NIVEAUX											X	X		
		37964	MOTOR, 2 STAGE MOTEUR, 2 NIVEAUX													X	X
		37697	MOTOR, 8525-31 MOTEUR 8525-31			X	X				X	X					
		37698	MOTOR, 8535 MOTEUR 8535					X					X				
		37696	MOTOR, 8516-20 MOTEUR 8516-20	X	X				X	X							
	41	37604	BRACKET, MOTOR RETAINER SMALL SUPPORT, RETENUE DE MOTEUR, PETIT	X	X				X	X							
		37603	BRACKET, MOTOR RETAINER MEDIUM SUPPORT, RETENUE DE MOTEUR, MOYEN			X	X				X	X		X	X		
		37602	BRACKET, MOTOR RETAINER LARGE SUPPORT, RETENUE DE MOTEUR, MOYEN					X					X			X	X
	42	37646	CLAMP 1/2 INCH GENERAL PURPOSE BRIDE 1/2 POUCE USAGE GÉNÉRAL	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	43	37801	KIT, MOTOR WALL ASSY. TROUSSE, ENSEMB. MUR MOTEUR	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Orifices Orifices	44	31265	ORIFICE, #1.25MM, UKSD ORIFICE, #1.25MM, UKSD		X					X							
		31267	ORIFICE, #54, 0.0550 HOLE ORIFICE, TROU #54, 0.0550											X	X		
		32285	ORIFICE, #51, 0.0670 HOLE ORIFICE, TROU #51, 0.0670					X					X			X	X
		31257	ORIFICE, #56, 0.0465 HOLE ORIFICE, TROU #56, 0.0465	X					X								
		31280	ORIFICE, #52, 0.0635 HOLE ORIFICE, TROU #52, 0.0635				X					X					
		37580	ORIFICE, #1.45MM ORIFICE, #1.45MM			X					X			X	X		
Switches, Limit Interrupteurs fin de course	47	37022	SWITCH, LIMIT 36TXV11, L190 TOD INTERRUPTEUR FIN DE COURSE 36TXV11, L190 TOD	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Switches, Sail Interrupteurs à ailette	48	36680	SWITCH, SAIL, D40JRWAG INTERRUPTEUR À AILETTE, D40 JRWAG	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Thermostats Thermostats	49	38535	THERMOSTAT, 2 STAGE-DM/RVP WHT THERMOSTAT, 2 NIVEAUX DM/RVP BLNC											X	X	X	X
	50	38452	THERMOSTAT, HEAT ONLY, BROWN THERMOSTAT, CHALEUR SEULEMENT, BRUN	X	X	X	X	X	X	X	X	X	X				
		38453	THERMOSTAT, HEAT ONLY, WHITE THERMOSTAT, CHALEUR SEULEMENT, BLANC	X	X	X	X	X	X	X	X	X	X				
Valves Vannes	51	31000	COIL, DC 7U VALVE REPLACEMENT BOBINE, REMPLACEMENT VANNE CC 7 U	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	52	38604	VALVE, SIDE OUTLET, 12VDC COIL VANNE, PRISE LATÉRALE, BOBINE 12 VCC	X	X	X	X	X	X	X	X	X	X				
		31150	KIT, VALVE SIDE OUTLET, 12VDC TROUSSE, PRISE LATÉRALE VANNE, 12 VCC	X	X	X	X	X						X		X	
	54	38436	BRACKET, VALVE, 2 STAGE SUPPORT, VANNE, 2 NIVEAUX	X	X	X	X	X						X		X	
	55	38602	VALVE, 2 STAGE, 12VDC COILS VANNE, 2 NIVEAUX, BOBINES 12 VCC											X	X		
		38605	VALVE, 2 STAGE, 12VDC COILS VANNE, 2 NIVEAUX, BOBINES 12 VCC													X	X
Vent, Exhaust Évent, échappement	57	34410	INTAKE AIR ADAPTER LD2 ADAPTATEUR D'AIR D'ADMISSION LD2						X	X	X	X	X		X		X

[illegible]

THIS PAGE INTENTIONALLY LEFT BLANK.

CETTE PAGE EST INTENTIONNELLEMENT VIDE.