



Atwood Mobile Products LLC

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Literature number 31970
*hydro flame*TM
AFS Series Furnaces Models
AFSAD12
AFSD12, AFSD16, AFSD20
Technical Installation Manual

English, French (et Canada)

Effective 8/15

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

This furnace design is 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.

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.

A qualified Service Technician Service Center or gas supplier must perform installation and service.



WARNING

Installation of this appliance must be in accordance with the written instructions provided in this manual. No agent, representative or employee of Atwood or other person has the authority to change, modify or waive any provision of the instructions contained in this manual.



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 owner's manual provided with this appliance. A qualified installer, service agency or the gas supplier must perform installation and service.



FOR YOUR SAFETY

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



WARNING

Be sure the furnace and all ignition systems are "off" during any type of refueling and while vehicle is in motion or being towed.




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 or intake or exhaust vents 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 installation materials from degrading air and flue exhaust systems.
- Protect furnace electrical components from water.
- Compartments must be closed when in operation.
- Should the gas supply fail to shut off during operation or overheating occurs, shut the gas valve off to the furnace before shutting off electrical supply.
- DO NOT use this furnace if any part has been under water.
- DO NOT use petroleum or citrus type cleaner on plastic parts, as damage may occur.


 **CAUTION**
PERSONAL INJURY

All sheet metal edges are sharp care should be taken when handling or brushing up against them.


 **WARNING**
CARBON MONOXIDE POISONING

Properly seal 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.

 **WARNING**
CARBON MONOXIDE POISONING

- Furnace must be installed and vented according 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.

 **WARNING**
CARBON MONOXIDE POISONING

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

More information and installation information can be found on top of furnace and inside front.

Contents

MODEL NOMENCLATURE2

MODEL SPECIFICATIONS2

DIMENSION2

INSTALLATION AND SAFETY CODES.....2

INSTALLATION CODES Error! Bookmark not defined.

GENERAL FURNACE INSTALLATIONS.....2

CLEARANCE TO COMBUSTIBLES3

REQUIRED DUCTING3

DISCHARGE AND DUCTING.....3

FLEXIBLE DUCTING SYSTEMS.....4

AIR FLOW CHECK.....4

FURNACE INSTALLATION.....4

SIDEWALL CUTOUT.....4

WALL CUTOUTS4

SMALL VENT INSTALLATION4

STANDARD DOOR INSTALLATION5

INTERIOR GRILL5

PROPANE GAS CONNECTION.....6

ELECTRICAL CONNECTIONS6

POWER SUPPLY6

CONDUCTOR SIZING.....6

THERMOSTAT INSTALLATION7

OPERATING INSTRUCTIONS7

TO SHUT DOWN UNIT 7

IGNITION CONTROL DIAGNOSTIC CODES 7

WIRING AND LADDER DIAGRAM 8

MODEL NOMENCLATURE

AF	S	D	20	1	1	1	A
Atwood Furnace	Cabinet Size	Voltage	Input Btu/hr	Gas Type	Style	Valve	Model Rev
	S=small SA=small low amp	D=12 VDC	12K 16K 18K	1=LP	1=Door 2=LD (small vent) 3=door w/ rear gas fitting 4=door w/pigtail 5=door w/pigtail & rear gas fitting	1= single stage	A

MODEL SPECIFICATIONS

Model #	AFSD12	AFSD16	AFSD20	AFSAD12
Type of Gas	LP Propane	LP Propane	LP Propane	LP Propane
BTU Input	12,000	16,000	18,000	12,000
BTU Output	9,120	12,160	13,680	9,120
Duct Static Pressure	0.10"WC	0.10"WC	0.10"WC	0.10"WC 0"WC front
12 Volt Amperage (AMPS)	3.4*	3.4*	4.8*	2.4*
Power Supply (Volt DC)	12	12	12	12
Watts	41	41	56	34
Minimum Return Air	35 in ²	35 in ²	35 in ²	35 in ²

- (WC = WATER COLUMN)
- * 15 AMP DECATATED CIRCUIT for furnace

DIMENSION

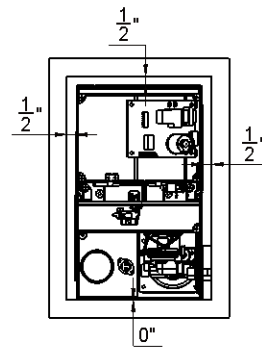
Approx. Dim.	Height	Width	Depth	Weight
Casing	7"	12"	20"	Furnace 21 lbs. Boxed 24 lbs.
Vent (LD)	5-1/2"	5-1/2"	1-1/6"	
Door	9-3/4"	14-3/4"	1/2"	
Interior Grill	12-1/2"	8-1/2"	1/2"	
Trim Ring	10-1/8"	14-1/8"	1/8"	

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:
- ANSI/NFPA 1192 Recreational Vehicles Code and ANSI/RVIA LV Low Voltage Systems in Conversion and Recreational Vehicles
- CSA Z240.4, Gas-Equipped Recreational Vehicles and Mobile Housing
- National Fuel Gas Code ANSI Z223.1 and/or CAN/CGA B149
- This furnace must be installed in accordance with the manufacturer's instructions and the manufactured Home Construction and Safety Standard, Title 24 CFR, part 3280, or when such 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 M92 Canadian Standard for Mobile Homes."
- ANSI A 255.1 and/or CAN/CSA-Z240.6.2 MH Series, Mobile Homes
- Ground National Electrical Code ANSI/NFPA 70 and/or CSA C22.1, Part 1
- Park Trailers ANSI 1195

GENERAL FURNACE INSTALLATIONS

- All models can be installed in either a horizontal or vertical position. Horizontal installs must have the gas line positioned on top, vertical installs must have vent located at the floor and gas line on the right side.
- Always install furnace exhaust system 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 opening.
- DO NOT install furnace in an area where wires, pipes or other objects will interfere with installation or removal for servicing 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 requirements.
- DO NOT use petroleum or citrus base cleaner on plastic parts, as damage may occur.
- NOTE: The exhaust temperature of this furnace could discolor or warp some materials. You should verify that the material used on coach door, panel, or covers will not discolor, warp or burn from the exhaust temperature whenever placed directly in front of vent.
- CAUTION: Due to the differences in vinyl siding materials this appliance should not be installed without first consulting with the manufacturer of the siding or cutting the siding away from the area around the appliance vent.
- A gas-fired furnace for installation in a residential garage must be installed so the burner(s) and the ignition source are located not less than 18 in (457mm) above the floor and the furnace must be located and protected to avoid physical damage by vehicles.
- DO NOT use petroleum or citrus type cleaner on plastic parts, as damage may occur.

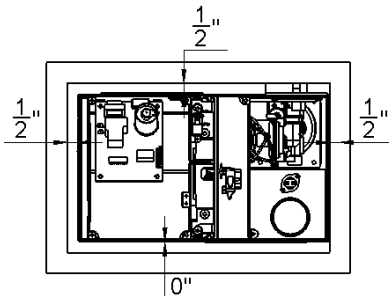


- Spacing of 1/4" to ducting within 3 feet of furnace must be provided unless UL listed wire bound vinyl ducts are used. All ducting material must be rated for continuous use at minimum of 200°F.
- Clearances are specifically for plywood or similar building materials surrounding the furnace (i.e. Furnace 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 76% minimum; actual efficiency rating may be higher.
- Return air is supplied through openings in and around the furnace. All return air passages must be kept clear for furnace to function properly.
- The total unobstructed return air opening size must not be less than specified in these instructions. Failure to meet minimum return air requirements nullifies furnace warranty.
- To install without the additional 16 in² cutout on the blower side, supply blower side of unit with 2" clearance full height length and width of the unit.

CLEARANCE TO COMBUSTIBLES

Floorboards, walls & similar combustible building materials must maintain clearances given and must be provided the full length and width of the unit. Spacing is given based on the installed position of the furnace.

Clearances	Top	Sides	Rear	Bottom (to screw heads)	Blower (side cabinet opening)
Vertical or Horizontal	1/2"	1/2"	1/2"	0"	16 sq. in.



REQUIRED DUCTING

All ducts in the table are four-inch ducts except for front discharge as noted. Two-inch ducts cannot be used in place of one four. A front discharge system using a five-inch duct requires no other ducts maximum length 12".

Optional five-inch to four-inch adapter ducting can be purchased to allow four-inch duct in addition (1) four-inch or (2) two-inch ducts must also be used when using four-inch front option. Front duct must not exceed 12".

FOR OPTIMAL PERFORMANCE:

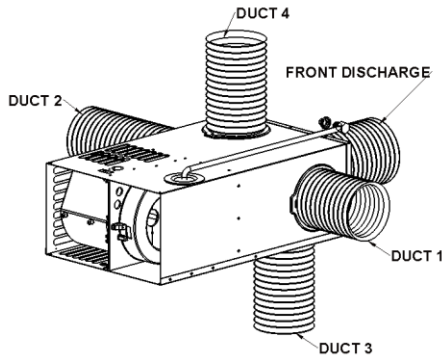
Use the following ducting recommendations. Top Duct is used only in addition to these requirements and is not allowed to be used until these requirements are met. Additional ducting when added will reduce the airflow through the ducting and improper ducting could cause poor heating and or cycling on high temperature limit.

- **Horizontal or Vertical 4" Ducting;** when using 4" ducting one duct from each side must be used. Unless the front discharge is used with either the 5" duct and grill or optional 4" ducting.
- **'No Bottom Discharge system allowed'**.

DISCHARGE AND DUCTING

Model	Required Discharge Area			
AFSA (12)	FRONT GRILL or 15 in ²			
AFS (12) (16) (20)	24 in ²			
	Models			
	AFSD12	AFSD16	AFSD20	AFSAD12
Side Ducts	2	2	2	X
Front with Side Ducting	1	1	1	X
Front Only 5" duct	1	1	1	1
Front Only 4"	2	2	2	X

*Note the table is for minimum requirements and should in most cases allow the unit to operate correctly. If unit burner cycles on and off on high temperature limit extra ducting can be used to help correct this condition due to restriction or bends in duct work.



- Proper duct installation is critical to proper operation of the furnace. When installing ducts, materials must be rated for continuous use at 200°F.
- Each 4-inch duct opening provides 12 in² of discharge area. The minimum for this furnace is 24 in². If closeable registers or 2" ducts are used additional ductwork or a front grill system is required.
- Ducting in 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 for optimum performance.
- Do NOT install heat register's closer than 24" to return air system.

FLEXIBLE DUCTING SYSTEMS

- Follow ducting configuration given
- Avoid sharp bends, deep sags or crushed ducts.
- Stretch all ducts thoroughly and run them directly to outlets, keeping number of angles of bends to a minimum.
- Remove knockout plate from desired outlets. If a knockout is removed accidentally cover plates can be purchased.
- Unused knockouts MUST be covered.
- Attach a duct adapter by inserting flange over casing hole, locking the tab into casing slot and turning adapter 90°
- Attach and secure four-inch flexible duct to adapter(s)
- Run duct(s) to desired location within RV, secure to register(s)

AIR FLOW CHECK

- Appliance is tested to a temperature rise as specified on the Rating Plate. After installation of the furnace and duct system is completed, adjustment to obtain a temperature rise should be made.
- The table below is a reference to maintain maximum operation of the appliance when checking temperature rise is not possible.
- Airflow measurements made at each register, the total reading should not be less than what is shown in the table below for each BTU size.
- If readings are below the table values airflow can be improved by adding ducts or by reducing restrictions in the system.

AFSA12	AFS12	AFS16	AFS20
Not Required	1650 FPM	1650 FPM	1800 FPM

*total FPM= feet per minute

FURNACE INSTALLATION

- Remove furnace from box
- Remove vent assembly supplied with furnace

- DO NOT mix assemblies with other units, each model has a specific vent baffle size to operate correctly, see sticker on vent assembly.
- Remove knockouts in locations that will be used and install adapters.
- The furnace should always be installed level (front to back, side to side) to prevent water build up into the interior of the vent area.
- Units can be installed with or without the interior grill. If grill is not used a minimum of 35 in² of free return air must be provided.
- If units are installed using the small outside vent system, access to the inside of the coach must be provided directly in front of the unit to remove for servicing suggested opening size 12-1/2" wide by 8-3/8" height.
- Secure unit with two brackets and screws provided at the rear of the unit through holes provided.
- Attach flexible ducting over duct adapters and secure.
- Run ducting to locations keeping bends and excess ducting to a minimum and secure to registers.
- Connect wiring to furnace see wiring connection section.
- Connect gas line see gas connection section.

SIDEWALL CUTOUT

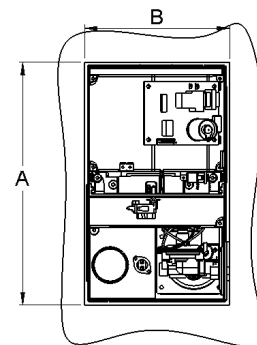
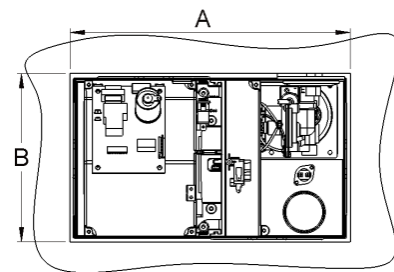
Maximum exterior wall thickness 0" to 2-1/2". Optional vent kit can be purchased to extend the vent to a 3" wall thickness only on small vent installations.

WALL CUTOUTS

Standard Door square corners for proper sealing.

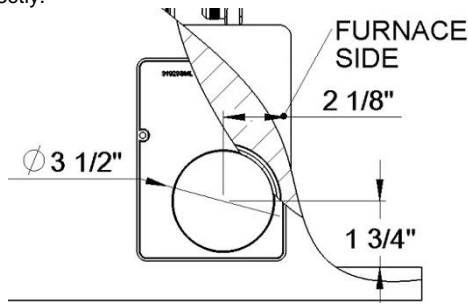
Venting Option	A	B	D
Small Vent (exterior)	-	-	3-1/2" Dia. Max
Standard Door (exterior)	12-1/2" Max	7-1/2" Max	
Front Grill (interior cabinet)	11-0" Max	7-1/4" Max	
Front Grill Trim Ring (interior cabinet)	12-1/2" Max	8-3/4" Max	

- DO NOT oversize hole – over sizing can result in water leakage.
- Zero clearance around air intake cutout for best sealing condition.



SMALL VENT INSTALLATION

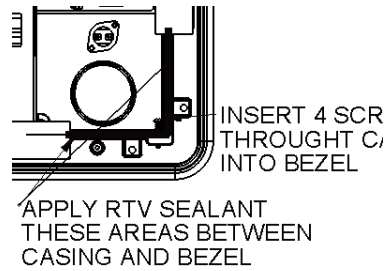
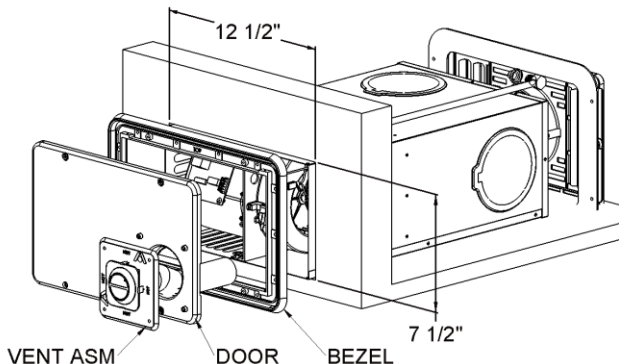
- To prevent moisture from entering inside of coach wall, apply RTV type sealant to the back of the vent panel extension before installing through wall into furnace.
- Vents are designed to allow water drainage when installed correctly.



1. Locate the furnace vent cutout location.
2. Drill 3-1/2" diameter hole through sidewall of coach. Installer MUST protect the furnace and components from construction tools and debris during installation.
3. Insert furnace from inside of coach, lining up hole in wall with vent in furnace.
4. Install vent assembly, vent panel extension must be inserted into air intake tube. Secure vent to wall with 4 screws provided.
5. Vent can extend a maximum of 2-1/2" to allow for different wall thickness. Vent assembly must maintain overlaps of 1-1/4" on exhaust tube and 1/2" on air tube. DO NOT exceed maximum wall thickness.
6. Secure furnace to floor with legs and screws (equivalent type screws can also be used) through holes provided at back of casing. For vertical units casing legs can be positioned by using alternate holes for placement to secure furnace.

STANDARD DOOR INSTALLATION

- To prevent moisture from entering the coach, apply RTV type sealant to total back of bezel trim ring before installing.
- The door bezel must fit tightly to sidewall to prevent water leakage.
- Door design allows water drainage in either horizontal or vertical installations.
- **NOTE:** RTV type sealant must be applied to the bezel and casing at the bottom right side to prevent possible water wicking into the coach. See drawing for areas that must be sealed once bezel is in place.
- Insert vent assembly through door making sure tube goes into the chamber tube. Proper overlap of the vent tube must be a minimum of 1-1/2" for proper function and exhausting of furnace.



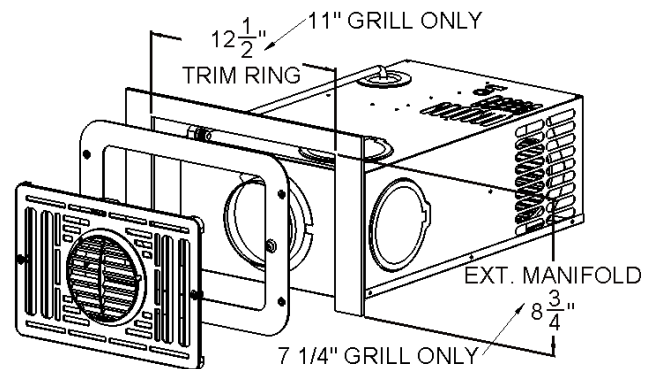
Use of foil tape as alternate sealing method is acceptable

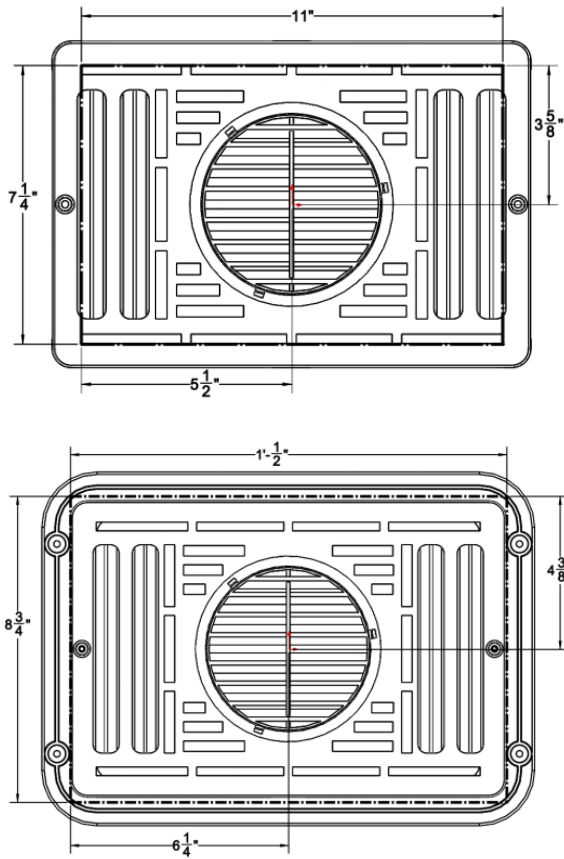


1. Locate where furnace will be installed and cut a hole opening as shown through the side wall where unit will be installed. Furnace and components MUST be protected from construction tools and debris during installation.
2. Apply RTV type sealant to entire back flange of bezel creating a complete seal
3. Pull furnace forward through cutout about 1" inch, slip bezel (note word TOP on bezel) around casing until flush with front edge of the casing.
4. Secure bezel to furnace casing with 4 screws provided or equivalent type screws.
5. Push furnace and bezel back tight against wall, secure with 14 screws, and remove excess caulking.
6. When installing bezel DO NOT deform bezel if cutout hole is too large as this will cause water-sealing issues.
7. Connect the gas line to the valve see section on gas connection.
8. Secure furnace to floor with mounting legs and screws provided or equivalent type screws.
9. Connect the electrical wiring see wiring section.
10. Fasten door and vent with 8 screws provided or equivalent type screws.

INTERIOR GRILL

- **Non Service Install:** To install grill cut an 11" x 7-1/4" hole into the cabinet for non-removable furnace installation using Kit. This kit also supplies the required return air grill.
- **Service Install:** To install grill as an access for removal of furnace cut a 12-1/2" x 8-3/4" hole into the cabinet from the floor up. This installation requires Kit. This kit also supplies the required return air grill.
- **Optional 4" Front Duct:** To install with optional 4" duct an adapter is required to allow connection of 5" hole to standard 4" duct and standard round register. See required ducting section for requirements.
- Discharge air from the round grill louver can be directed 360° by rotating louver.





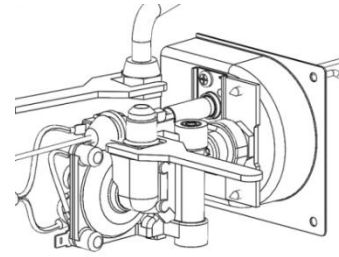
1. Locate cabinet cutout location and cut hole per type of installation being used.
2. Install adapter by removing the large knockout from the rear of the casing and attach the 5" duct adapter or optional 5" to 4" inch adapter.
3. Fasten 5" duct to the adapter and to the back of the interior grill and secure.
4. On installations with 1" or less space between 5" adapter and grill, the grill can be inserting directly into the adapter to complete the connection.
5. Secure grill to cabinet by fastening with screws.

**⚠ WARNING
FIRE OR EXPLOSION**

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

**PROPANE GAS CONNECTION
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 .5 PSI.
- Before furnace is connected, piping systems are to be tested to be leak free. The test must maintain air pressure of at least 6" of mercury or 3 PSI for at least 10 minutes.
- The entire piping system is to be adjusted to and maintain a pressure of 10" to 13" W.C. when all appliances are in operation.
- Test gas connections for leakage with soapy water or a leak detect solution.
- If local codes allow the use of a flexible gas appliance connector, always use a new listed connector. Do not use a connector which has previously serviced another gas appliance.



1. Connect gas line to the fitting located on the valve through hole in top of casing or if supplied with an extended manifold at the rear of the furnace.
2. 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
3. Remove grommet plug from furnace. After inserting gas line through gas plug and connecting to valve re-install gas plug this is a required air seal.
4. Insert gas line through grommet plug (DO NOT CUT GROMMET).
5. Connect gas line inside furnace casing immediately ahead of gas control valve or at the rear when extended manifold is supplied.
6. Use two wrenches to hold brass fitting and flare nut when tightening gas line to brass fitting. DO NOT twist valve assembly. DO NOT twist valve assembly, torque fitting to 20-22 ft. lbs.

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.

**⚠ CAUTION
PROPERTY DAMAGE**

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

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:
- ANSI/NFPA 1192 Recreational Vehicles Code and ANSI/RVIA LV Low Voltage Systems in Conversion and Recreational Vehicles

POWER SUPPLY

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

CONDUCTOR SIZING

Table 1
OVERCURRENT PROTECTION (No Wire Bundling Restrictions)

Wire Size	Ampacity	Wire Type
20	3	Stranded only
18	6	Stranded only
16	8	Stranded only
14	15	Stranded only
12	20	Stranded only
10	30	Stranded only
8	40	Stranded only
6	55	Stranded only
4	75	Stranded only
2	100	Stranded only

Table 2

OVERCURRENT PROTECTION

*Not More Than Seven Wires Per Harness

**Not More Than Three Wires Per Harness

AWG OR SAE Conductor Size (Gage)	Maximum Ampacity at Conductor Insulation Temperature Rating of 90°	Maximum Ampacity at Conductor Insulation Temperature Rating of: 105° C/125° C
20*	5	7.5
18*	7.5	10
16*	10	15
14*	17.5	20
12*	22.5	25
10**	40	50
8**	55	70
6**	75	100
4**	95	120
2**	130	150
1**	150	
1/0**	170	
2/0**	195	
3/0**	225	
4/0**	260	

- 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 to 120 volts AC. Damage to furnace components will occur and warranty will be voided.
- Use the minimum wire size shown in the table above to minimize voltage drop. Furnace must be installed so electrical components are protected from water and other installation debris. 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.
- All units are supplied with a power switch that is to be turned off during servicing, removing power to the furnace wiring. Switch must be in the ON position for furnace to operate.

Route wiring to the furnace.

Furnace	Power Supply
Red Wire +12 Volt DC	+12 Volt DC
Black Wire -12 Volt DC	-12 Volts (Ground)
Blue Thermostat +12VDC	+12 Volts (Thermostat)
Blue Thermostat	-12 Volts (Thermostat)

- Wiring for thermostat using 22 AWG minimum stranded wire.
- All wiring must be installed so the electrical components and connections are protected from water.
- If a unit is supplied with a connector block on the field connections the mating parts should be used.

Furnace Connector	Field Connector
AMP 1-480705-0	AMP 1-480704-0
Furnace Terminals	Field Terminals
AMP 7708496	AMP 770020-1

THERMOSTAT INSTALLATION

- Purchase a thermostat rated for 12 VDC or 24 VAC, Minimum 1 AMP rating.
 - Be sure all electrical power to the furnace is disconnected.
 - The thermostats are very sensitive, HANDLE WITH CARE AT ALL TIMES.
1. Pick a dry area where air circulation is good.
 2. 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

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 90 seconds 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 or stops before ignition cycle, shut down unit and contact your dealer or a local recreational vehicle service agency.
3. After 1 minute, move thermostat lever below room temperature. Blower will remain on. 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.
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 that automatically lights the burner. DO NOT try to light the burner by hand.
7. If burner does not light, repeat Steps 1 through six.
8. If after three (3) attempts with no ignition, shut down the unit 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 UNIT

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

IGNITION CONTROL DIAGNOSTIC CODES

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

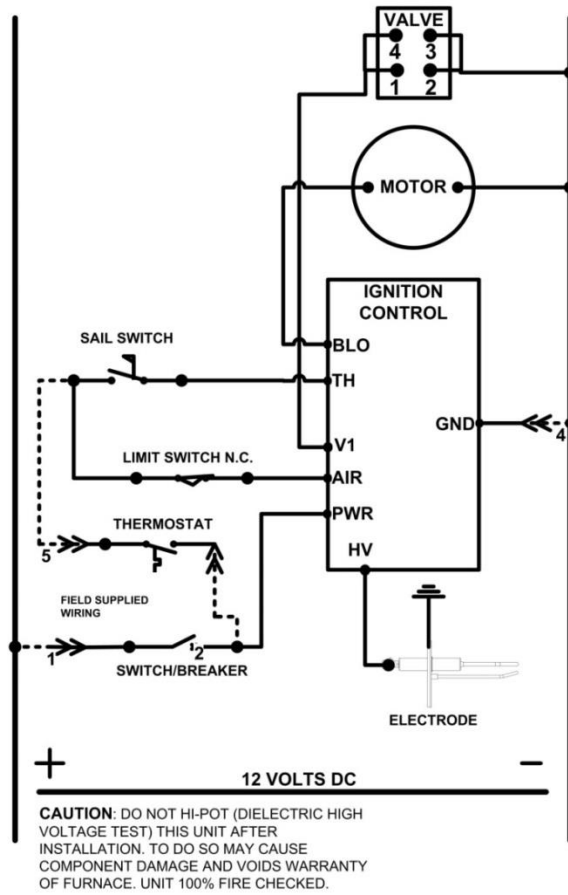
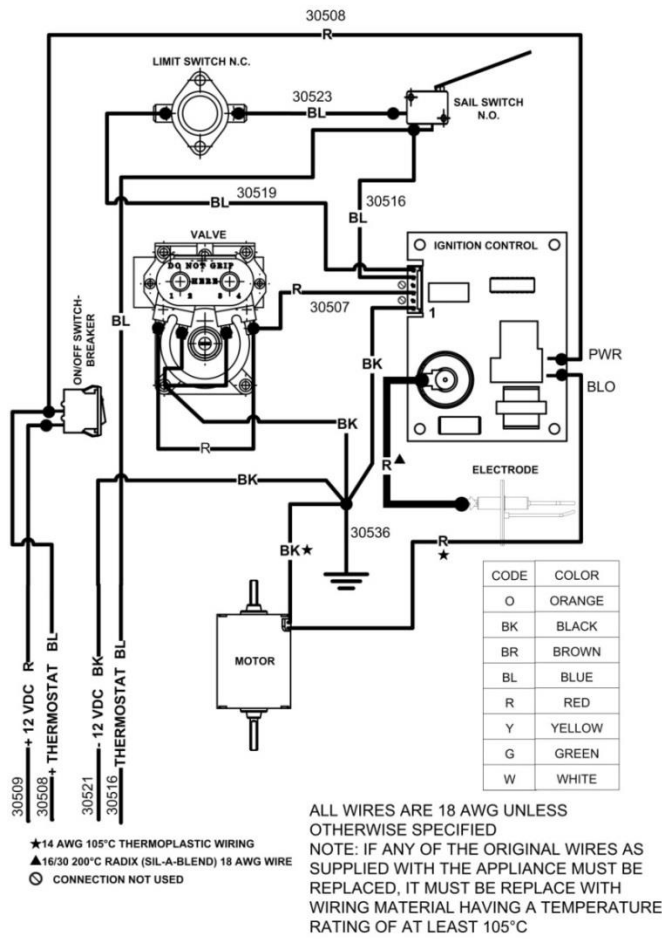
- A soft lockout is a timed condition that will make additional attempts to correct the problem. A hard lockout requires resetting of the thermostat or turning the power switch off, then back on.

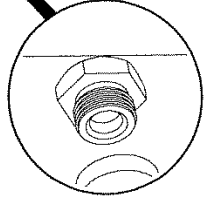
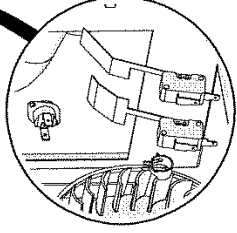
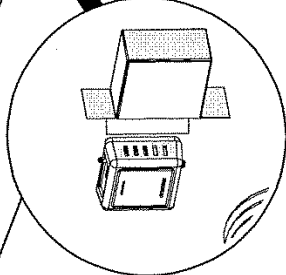
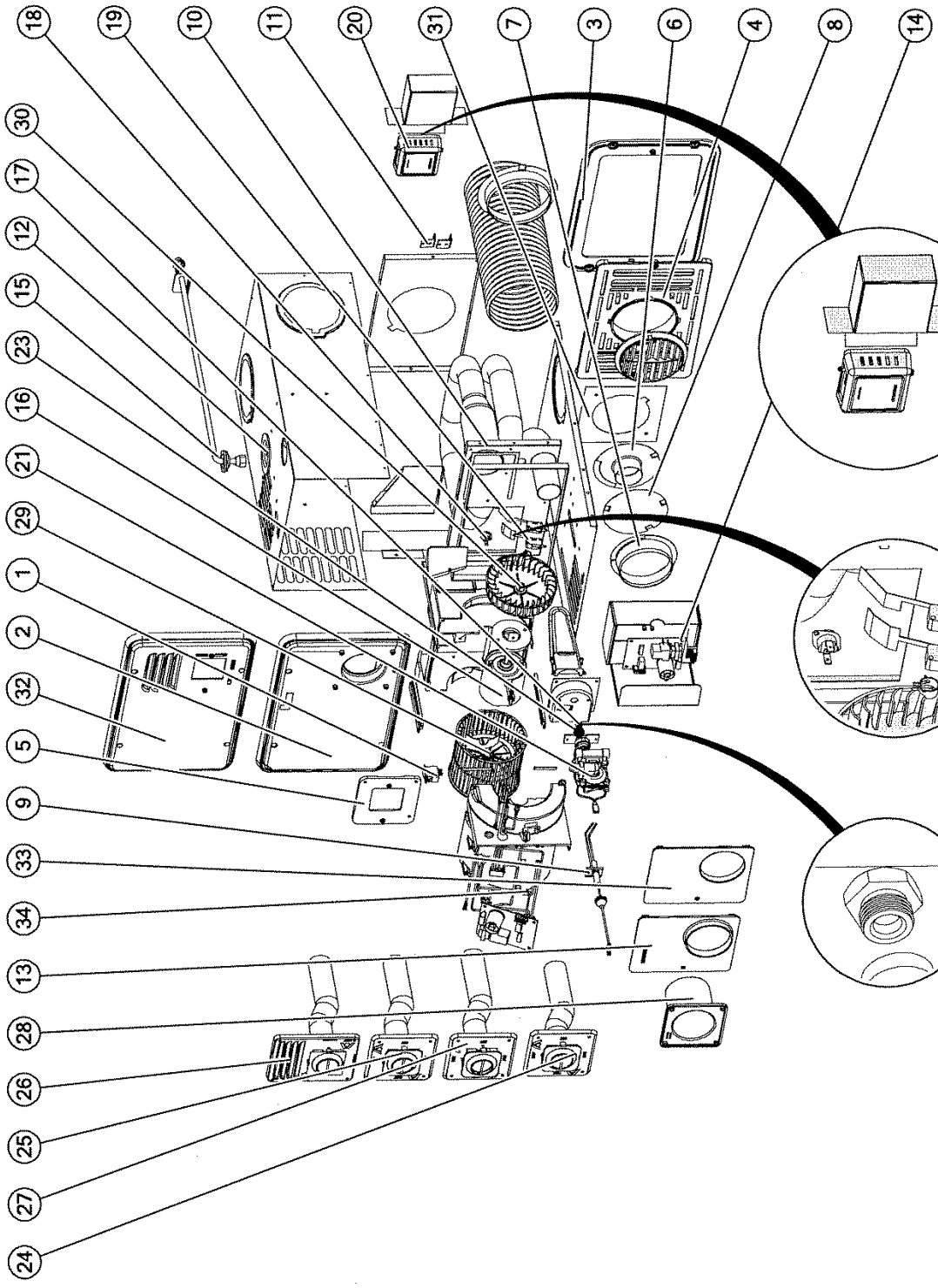
Standard 3 tries for Ignition Controls

DIAGNOSTICS 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 (1 hr. retry)

- EXTERIOR wall location MUST have a 3/4" spacer between thermostat and exterior wall.
- Follow manufacture's installation instructions provided with thermostat.

WIRING AND LADDER DIAGRAM





AFS Service Parts

Category	P/N	Description	NS= PART NOT SHOWN	AFSAD12111	AFSD12111	AFSD16111	AFSD20111	AFSDA12121	AFSD12121	AFSD16121	AFSD20121	AFSAD12131	AFSD12131	AFSD16131	AFSD20131	AFSAD12141	AFSD16141	AFSD20141	BALLOON	
Breaker, Circuit																				
	30322	KIT, BREAKER CIRCUIT 7AMP		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
	30320	KIT, BREAKER CIRUCIT 5AMP		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
Doors																				
	32343	KIT, DOOR ASM S #23 WHITE		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
	32344	KIT, DOOR ASM S #44 BLACK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
	30641	KIT, DOOR S #34 ARCTIC WHITE L		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	32
	31840	KIT, DOOR S #44 BLACK L		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	32
	30260	KIT, FRONT GRILL LD		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
	30259	KIT, FRONT GRILL OD		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	4
	31876	KIT, VENT ADAPTER DOOR		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5
Ducting																				
	36688	ADAPTER,DUCT,2 INCH		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	6
	31474	ADAPTER,DUCT,4 INCH		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	7
	31361	PLATE, DUCT COVER, 4 INCH		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	8
Electrode																				
	35100	KIT, ELECTRODE ASM SML		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9
Elements																				
	35711	KIT, HEAT EXCHANGER S		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
General Parts																				
	31244	KIT, CASING LEG		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	11
	35706	KIT, GAS LINE GROMMET		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	12
Igniton, Controls																				
	31501	KIT,UNIVERSAL IGNITION DC		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	14
	32353	KIT,UNIVERSAL IGNITION DC SMT		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	14
Manifold																				
	35712	KIT, MANIFOLD EXT ASM SML		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	15
	32349	KIT, MANIFOLD, INLET SML		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NS
Motors																				
	30758	KIT, MOTOR S12-16		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	16
	30760	KIT, MOTOR S20		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	16
	30778	KIT, MOTOR SA12		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16
Orifices																				
	31083	KIT, ORIFICE #56 LP		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17
	31086	KIT, ORIFICE #60 LP		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17
	30789	KIT, ORIFICE 1.25MM LP		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17
Switches, Limit																				
	31091	KIT, LIMIT SWITCH 190		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	18
Switches, Sail																				
	31093	KIT, SAIL SWITCH SM		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	19
	31094	KIT, SAIL SWITCH SML		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	19
Thermostats																				
	32300	THERMOSTAT,HEAT ONLY,BLACK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	20
	38452	THERMOSTAT,HEAT ONLY,BROWN		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	20

AFS Service Parts

Category	P/N	Description	NS= PART NOT SHOWN	AFSAD12111	AFSD12111	AFSD16111	AFSD20111	AFSDA12121	AFSD12121	AFSD16121	AFSD20121	AFSAD12131	AFSD12131	AFSD16131	AFSD20131	AFSAD12141	AFSD12141	AFSD16141	AFSD20141	BALLON
	38453	THERMOSTAT,HEAT ONLY,WHITE		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	20
Valves																				
	31096	KIT, 12 DC VALVE V1 SML		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	21
	31097	KIT, VALVE 12 VDC STR SML		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	23
	31098	KIT, VALVE 12VDC TOP SML		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	21
Vent, Exhaust																				
	31808	KIT, DOOR VENT ASM .750 V4		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	24
	31798	KIT, DOOR VENT ASM .830 V4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	24
	31777	KIT, DOOR VENT ASM .875 V4		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	24
	30579	KIT, LD VENT .688 V3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	26
	30580	KIT, LD VENT .750 V3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	26
	31266	KIT, LD VENT .750 V4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	25
	30936	KIT, LD VENT .750 V4 SW		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	27
	30581	KIT, LD VENT .830 V3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	26
	31269	KIT, LD VENT .830 V4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	25
	30718	KIT, LD VENT .830 V4 SMW		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	27
	31271	KIT, LD VENT .875 V4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	25
	30937	KIT, LD VENT .875 V4 MW		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	27
	30197	VENT COVER PANEL SM V2-W		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13
	30456	VENT COVER PANEL SM V3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13
	31923	VENT PANEL EXTENSION SM V1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NS
	30457	VENT PANEL EXTENSION SML V3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	33
	30611	VENT PANEL EXTENSION SML V4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	26
Wheels																				
	31113	KIT, BLOWER WHEEL S		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	28
	33128	KIT, COMBUSTION WHEEL		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	29
Wiring																				
	31114	KIT, DC WIRING HARNESS		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	34

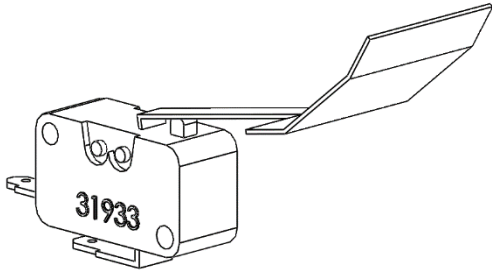


Figure 1 Large Paddle Kit 31933

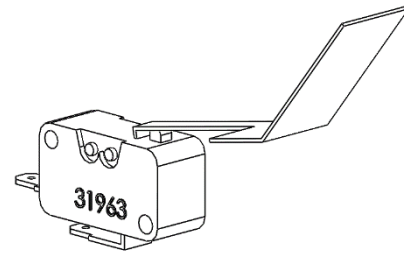


Figure 2 Small Paddle Kit 31963

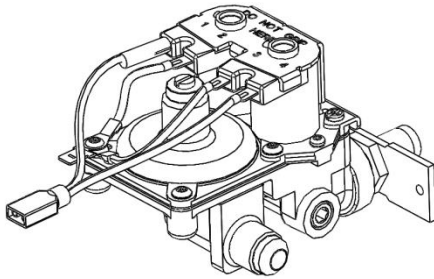


Figure 3 Valve Kit 31098

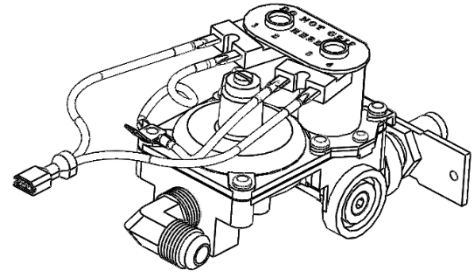


Figure 4 Valve Kit 31096

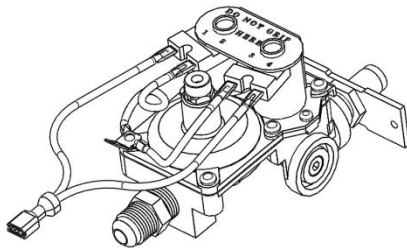


Figure 5 Valve Kit 31097

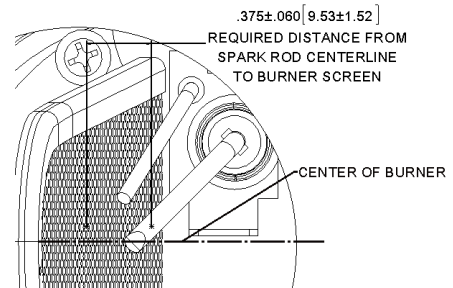


Figure 6 Electrode Adjustment