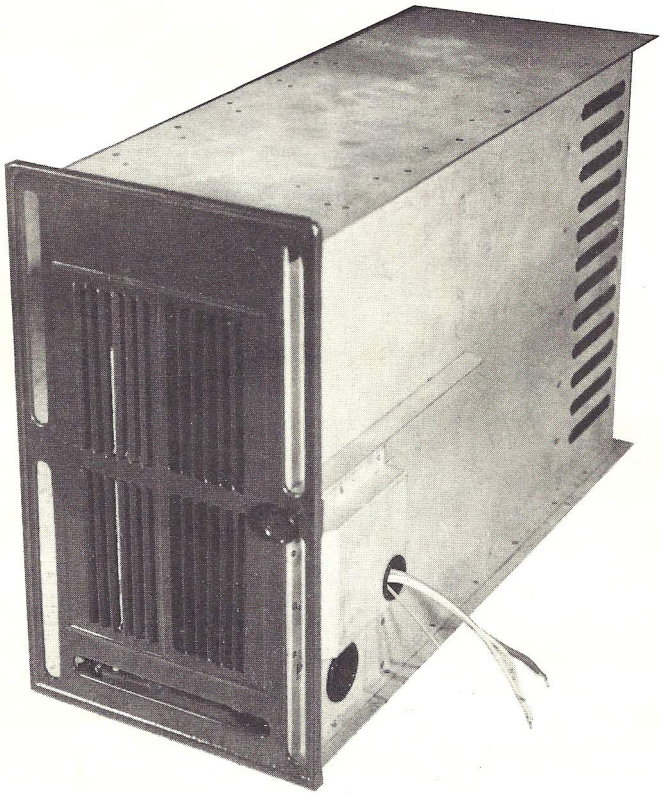
Coleman® RV

RECREATIONAL VEHICLE

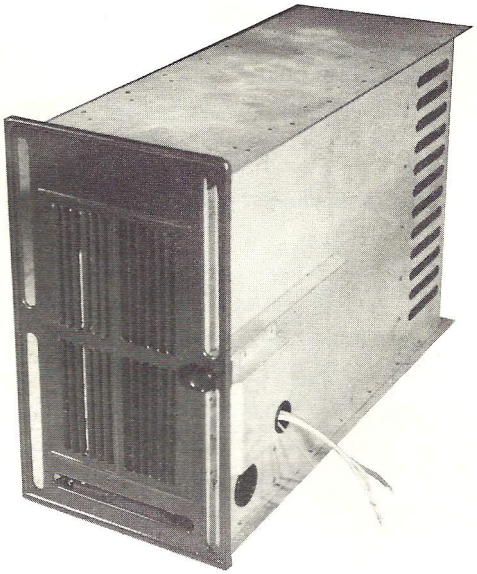
ST-200 FURNACE



RECREATIONAL VEHICLE FURNACE

OPERATION and MAINTENANCE INSTRUCTIONS

MODEL 4312



MODEL NO.	TYPE	RATING AT SEA LEVEL BTUH*		GAS CONN. SIZE	VOLTS	AMPS
		INPUT	OUTPUT			
4312-719 4312-729	MATCH PIEZO	12,000	9,000	⅜ SAE	12VDC	1.5
4312-819	MATCH				115VAC OR	.3
4312-829	PIEZO				12VDC	1.5

GENERAL

You should take a few minutes to become familiar with your Coleman furnace. Be sure you know how to operate the appliance and what to do if difficulties are encountered on a camping trip.

Your furnace is designed to convert LP fuel into usable heat in the vehicle. Your furnace will operate automatically and safely. The LP fuel is converted to heat at the burner and heats up the metal heat exchanger. The circulating blower delivers this heat into the home through the direct discharge grille.

The furnace includes a fan switch for automatic blower operation. It is normal at the end of an operational cycle for the blower to cycle on once or twice to extract all the heat possible fom the heat exchanger. In mild weather, the pilot flame alone may be sufficient to trigger on the fan switch. To correct, adjust the pilot flame.

Your furnace also includes several safeties. The gas valve and pilot system are linked to provide positive shut off of the LP gas if the pilot should go out.

The furnace also includes an over-temperature safety (limit) switch which will shut down the burner temporarily if overheating occurs for any reason.

SYSTEM INSPECTION

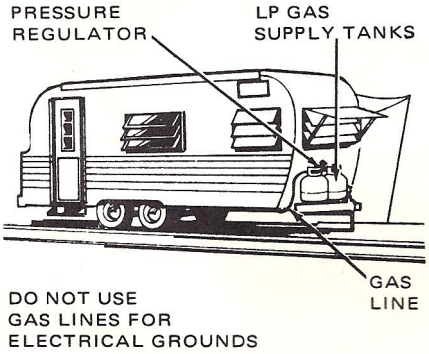
Every new furnace not providing satisfactory service should be inspected for proper installation and operation by a qualified Coleman serviceman.

FUEL SPECIFICATIONS

LP gas is used but butane gas should not be used whenever the outside temperature is expected to be below 32°F. Butane gas will not vaporize at temperatures below 32°F. Propane gas will vaporize down to approximately −44°F.

NOTE

Canadian approval is for use with propane gas only.



Check fuel supply line to make sure it is of adequate size, at least 3/8" tubing or 1/2" pipe.

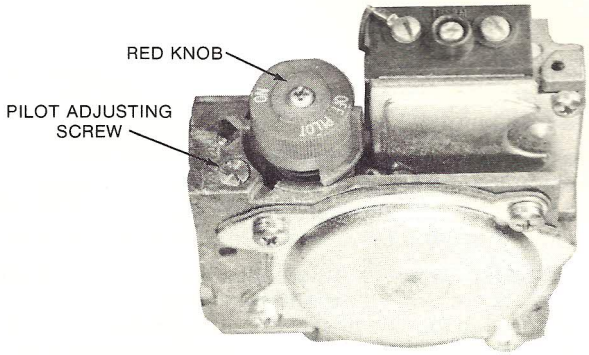


Figure 1

LIGHTING INSTRUCTIONS

1. Turn on gas at outside L.P. tank.
2. Turn wall thermostat to "OFF".
3. If 115 VAC set power switch on front of electrical box to desired power supply (set to "ON" position with 12 VDC Models).
4. Depress red knob and turn to "OFF" position, wait five minutes.

5. Turn red knob to pilot position, if equipped with igniter depress red knob and light pilot by depressing igniter. Several strokes may be required before pilot lights.
6. If match light model, remove observation window and light with match using lighter rod provided continuing to depress red knob, be sure to replace observation window.
7. Continue to hold in red knob for one minute or until pilot remains lit after red knob is released.
8. Turn red knob to ON position.
9. Replace front panel.
10. Set wall thermostat to desired temperature.

FOR COMPLETE SHUTDOWN

1. Depress red knob and turn to OFF position.
2. Set system switch to OFF.

NOTE

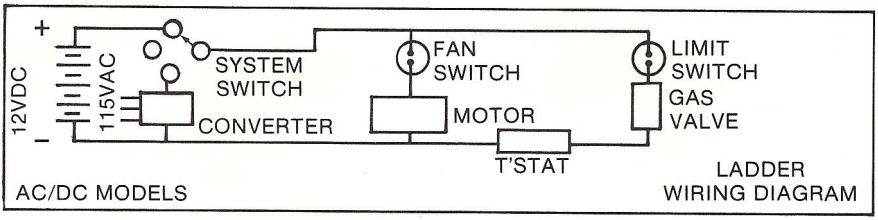
1. *In the interest of gas conservation, it is recommended that on extended pilot operation only, the pilot be turned off.*
2. *It may be possible air will get in gas line in changing bottles, therefore, it will take longer to light pilot.*

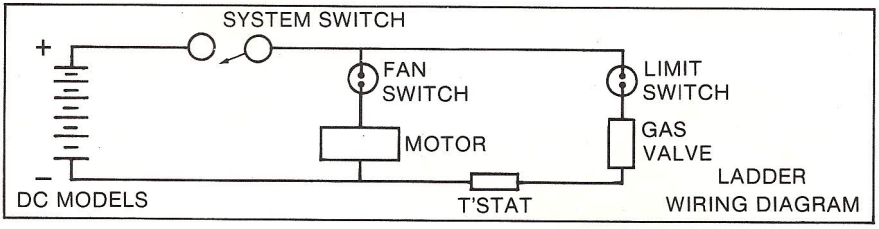
SEQUENCE OF OPERATION

The furnace system is designed to operate from a 12V DC power source. The sequence of operation is as follows:

1. Immediately upon turning and depressing red knob on control valve to pilot, a mechanical gas valve is opened thereby introducing gas to the pilot burner. A mechanical device prevents the flow of gas to the main burner solenoid as long as the red button is depressed.
2. After lighting of the pilot, the pilot in turn heats a sensing element located at the pilot burner.
3. After being sufficiently heated, the heat sensing element serves the purpose of automatically "holding open" the mechanical gas valve.
4. The red knob is then released and turned to "ON". Gas flow now is introduced up to the main solenoid valve.
5. Furnace operation is controlled automatically by the thermostat. If the pilot is extinguished for any reason, the gas valve safety will drop out rendering the furnace inoperative until a pilot of flame is again lighted.

LADDER WIRING DIAGRAM





FURNACE ADJUSTMENTS

Since the pilot and main burner adjustment are preset at the factory, such field adjustments normally are not required. However, if some adjustment is necessary, proceed as follows:

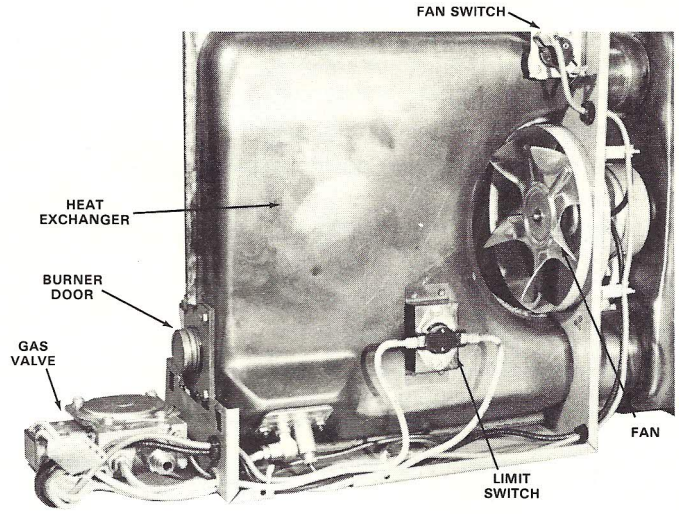
1. Pilot Adjustment — Observe the pilot flame through the observation window. The pilot flame should be soft blue. The pilot flame may be adjusted by removing the cap screw and rotating the small screw on the side of the gas valve counter-clockwise for more flame or clockwise for less flame.
2. Main Burner Adjustment — Primary air adjustment is factory set and cannot be adjusted. Slight yellow tipping of the burner flame is satisfactory.

MAINTENANCE FOR AC/DC MODELS

WARNING

THIS APPLIANCE HAS TWO SOURCES OF SUPPLY 115 VAC AND 12 VDC. BE SURE BOTH SOURCES ARE SHUT OFF BEFORE SERVICING.

The working parts of the furnace, called the heat unit assembly, have been mounted on a sliding tray which can be removed from the outer casing for servicing.



To keep your furnace in top operating condition, the following maintenance is suggested before lighting the pilot prior to each heating season.

1. Clean the circulating air blower.
2. Clean the inside of the furnace casing.
3. Thoroughly clean the burner. Clean the slots, then using air pressure, blow through the slots to expel any contamination which might be present.
4. Check all piping joints and furnace controls with a soap solution to detect leaks. If bubbling is observed, a leak is indicated.

CAUTION

Never check for leaks with an open flame!

5. The control compartment shall be kept clean.

By following this outline your forced air furnace will give years of clean, quiet, and efficient service.

OPERATION AND SERVICE INSTRUCTIONS

Overload Protection

All furnaces are equipped with an automatic reset internal motor protector. If repeated resetting of the motor protector is experienced, it is recommended you contact your nearest authorized Coleman Recreational Vehicle Service Center for a checkout. (Consult the Service Center List packed in your customer envelope.)

Wiring

POLARITY must be observed when connecting a battery or external converter to the furnace. Connect the POSITIVE (+) post of battery or external converter to Red wire coming off the toggle switch. Secure with wire nut. Connect NEGATIVE (-) post of battery or external converter to the Blue wire. Secure all wires with wire nut.

Shutdown Instructions

Complete shutdown is recommended when your recreational vehicle is left unused for any appreciable time. For complete shutdown to be accomplished, the following instructions must be observed:

1. Turn main gas supply to the furnace OFF.
2. Turn toggle switch, supplying power to the furnace OFF. (See System Switch).
3. Turn thermostat to the OFF position.

System Switch

The system switch operation is as follows:

1. **12 VDC only model** - The system switch is a single pole single throw toggle switch and has two positions (ON and OFF). "On" is for 12 volt battery operation only OR at "Off" all power is off at the furnace.
2. **115 VAC/12 VDC model** - The system switch is a single pole double throw toggle switch and has three positions (12 VDC, OFF, 115 VAC).
   (a) **12 VDC** - This position of switch is for battery operation only.
   (b) **OFF** - This position of switch is implied and all power is off at furnace.
   (c) **115 VAC** - This position of switch is for converter operation and the furnace is operated on the 12 VDC power supplied from the furnace converter.

NOTE

For **Battery Conservation** *on vehicles using 12 Volt battery supply, it is suggested that the system switch be positioned to the "OFF" position when furnace is not in use.*

TROUBLE SHOOTING CHARTS

PROBLEM

FURNACE WILL NOT OPERATE

1. Make certain there is gas to the furnace. Turn all gas valves to "ON" positions.
2. Make certain the electrical power connections to furnace are made.
3. If operating on battery, be sure battery is fully charged (12 VDC).

PROBLEM

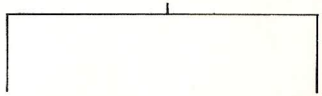
PILOT OUTAGE

1. Check gas supply.
2. Be certain observation cap (with gasket) is firmly secure.
3. Check vent terminal on outside of vehicle for flawless seal around vent itself and wall of vehicle.
4. Be certain 12 VDC electrical supply is operational in furnace.
5. Check pilot flame — if not easily seen and of a blue color, then adjust to proper size and color.

PROBLEM

INSUFFICIENT HEAT

1. Check for proper gas operating pressure.
2. Turn thermostat on and determine if main burner lights.



If burner does not light, check proper position of furnace electrical switch.

If main burner lights, and burner goes out without fan operation, check for faulty fan switch.

3. Disconnect the two leads at thermostat and tie together to determine if thermostat is defective.

PROBLEM

NOISY OPERATION

DETERMINE SOURCE OF NOISE DUE TO FOLLOWING CAUSES

1. Blower wheel loose on motor shaft.
2. Blower wheel loose in hub.
3. Entire blower assembly loose in mounting frame.
4. Blower wheel hits housing.
5. Noisy blower motor.
6. Determine if noise is present only on converter (or 115 VAC) operation. Check for faulty converter.

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