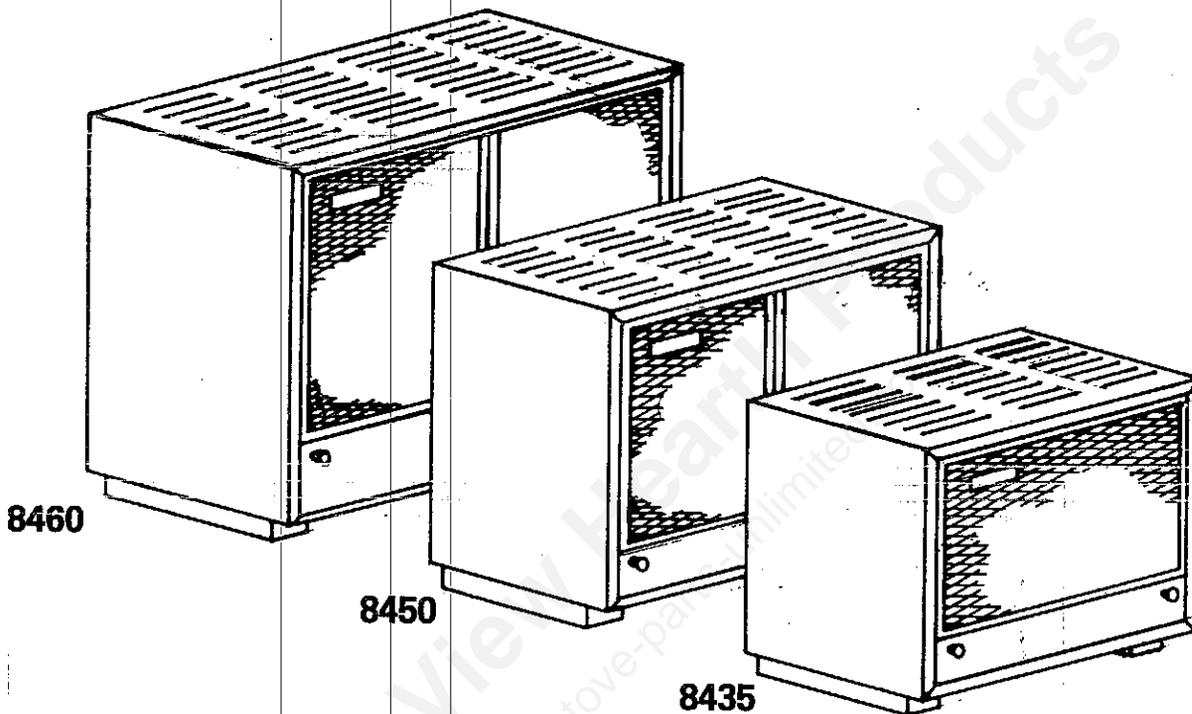


Lawson VENTED GAS HEATERS

owner's manual

INSTRUCTIONS FOR INSTALLING AND OPERATING — WITH REPAIR PARTS LIST



FOR USE WITH NATURAL AND LP GASES

THIS MANUAL WILL HELP YOU TO OBTAIN EFFICIENT, DEPENDABLE SERVICE FROM THE HEATER, AND ENABLE YOU TO ORDER REPAIR PARTS CORRECTLY. KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.

CAUTION: READ RULES CAREFULLY FOR SAFE OPERATION AND INSTRUCTION.

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

FOR YOUR SAFETY
If You Smell Gas:

1. Open Windows
2. Don't touch electrical switches
3. Extinguish any open flame
4. Immediately call your gas supplier

Lawson Division

UNITED STATES STOVE COMPANY, CHATTANOOGA, TENNESSEE 37406

FORM 85480 1/85

IMPORTANT – THE FOLLOWING INFORMATION IS FOR YOUR PROTECTION AND SAFE OPERATION OF THIS HEATER:

1. Due to high temperatures, the heater should be located out of traffic and away from furniture and draperies.
2. Children and adults should be alerted to the hazard of high surface temperatures and should be kept away to avoid burns or clothing ignition.
3. Young children should be carefully supervised when they are in the same room with the heater.
4. Do not place clothing or other flammable material on or near heater.
5. Installation and repair should be done by a qualified service person. The heater should be inspected before use and at least annually by a professional service person. More frequent cleaning may be required due to excessive lint from some carpeting, bedding material, etc. It is imperative that control compartments, burners, and circulating air passageways of the heater be kept clean.
6. Any safety screen or guard removed for servicing the heater must be replaced prior to operating the heater.

This heater should be electrically grounded when equipped with the optional fan assembly, in accordance with the National Electrical Code, ANSI/NFPA No. 70-1981 edition.

The installation must conform to local codes, or in the absence of local codes, the installation must conform with the National Fuel Gas Code, ANS Z2223. 1-1980 edition.

IMPORTANT

GAS PRESSURES: ALL VALUES ARE INCHES W.C.

	Min. Inlet	Max. Inlet	Burner Pressure
NATURAL	4½	7	3½
LP	11	14	10

NOTE: Pressure Regulators and Gas Inlet Pressure must be adjusted by the installer to give the pressure at the burner orifice shown above.

WARNING ELECTRICAL GROUNDING INSTRUCTIONS

This assembly is equipped with a three-prong (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. **DO NOT** cut or remove the grounding prong from this plug.

Your New Gas Home Heater

GENERAL INFORMATION

Your attractive new home heater incorporates many important new features to give you an economical and highly efficient heating unit.

The design of this heater has been certified by the American Gas Association as a vented heater and must be connected to an approved chimney flue outlet. The American Gas Association certification is your assurance that the design of your heater has complied with basic standards for safe operation, durable construction, and acceptable performance of gas-fired room heater.

Safe and satisfactory operation of a gas-fired room heater depends to a great extent upon its proper installation. When using natural gas, have your local gas company make the installation and when using LP gas, have your LP dealer make the installation to assure compliance with local municipal building codes.

UNPACKING HEATER

Your heater was packed in a scientifically designed carton to protect it from damage in transit. If any damage is noticed after opening the carton, report it immediately to the dealer or the transportation company.

NOTE: After removing the heater from the carton, remove the shipping tape that secures the manifold to the manifold bracket at the back near the gas control valve.

VENTILATION

CAUTION: IT IS NECESSARY TO HAVE SUFFICIENT OUTSIDE AIR IN THE ROOM IN WHICH THE HEATER IS LOCATED.

All heating appliances which operate with an open flame consume part of the oxygen in the air. If the room is not adequately ventilated while heater is in use, there will not be enough oxygen in the air for the heater to operate efficiently. An odor of gas and insufficient heat will result.

In homes which are loosely constructed, sufficient air will come through the leaky door and window frames.

In homes which are tightly constructed with storm window and doors, or exhaust fans pull air from the house, outside air must be supplied directly into the room.

Fresh air opening for combustion must be provided into the room. That opening must have one square inch of free opening per 1,000 BTU input per hour.

MODEL NO.	SQ. IN.
8435	35
8450	50
8460	60

If this heater is operated for long periods of time, the room must be ventilated by partially opening windows or outside doors to admit fresh air. The doors to connecting rooms should also be opened. That opening can be from a ventilated attic, in the floor and foundation wall, or through an outside wall. If in the floor, the same size opening is required in the foundation wall.

installation

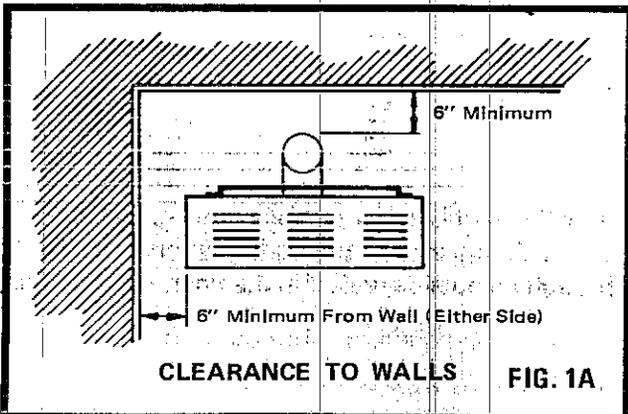
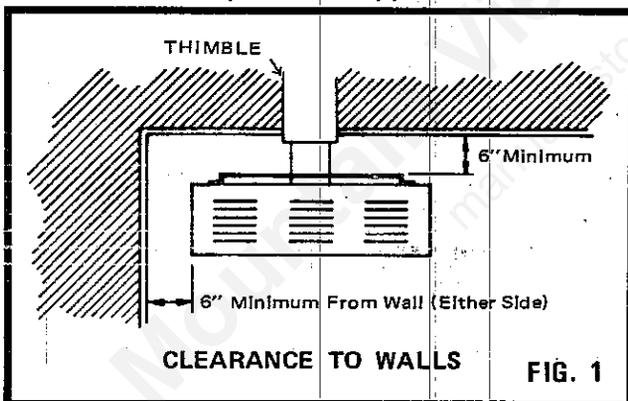
PLACING THE HEATER

Place the heater as nearly as possible in the center of the space to be heated. Provide adequate clearance around the heater to allow cool room air to flow through the heater to be heated and for servicing. If the heater is to serve two or more rooms, the doors between the rooms should remain open. The installation of grilles or wall registers above doorways between rooms is highly recommended to provide even distribution of heat. This is especially important if the ceiling is high and the doorways low. Place the heater fairly close to the chimney flue opening to avoid long horizontal runs of vent pipe and the use of more than two pipe elbows.

Do not install it in an alcove or locations where curtains or drapes can come in contact with it. Do not locate behind doors or where it can be knocked over.

CAUTION: Place the heater so that sides and back are at least 6" from the wall or combustible materials such as draperies if the unit has a horizontal exiting flue pipe (Fig. 1). If the heater has a vertical exiting flue pipe, a minimum of 6" from the rear of flue pipe to combustible materials is required (Fig. 1A).

If the heater is installed directly on carpeting, tile, or other combustible material other than a wood flooring the appliance shall be installed on a metal or wood panel extending the full width and depth of the appliance.



THE GAS PIPING

Use new black iron or steel pipe only. Galvanized pipe should not be used.

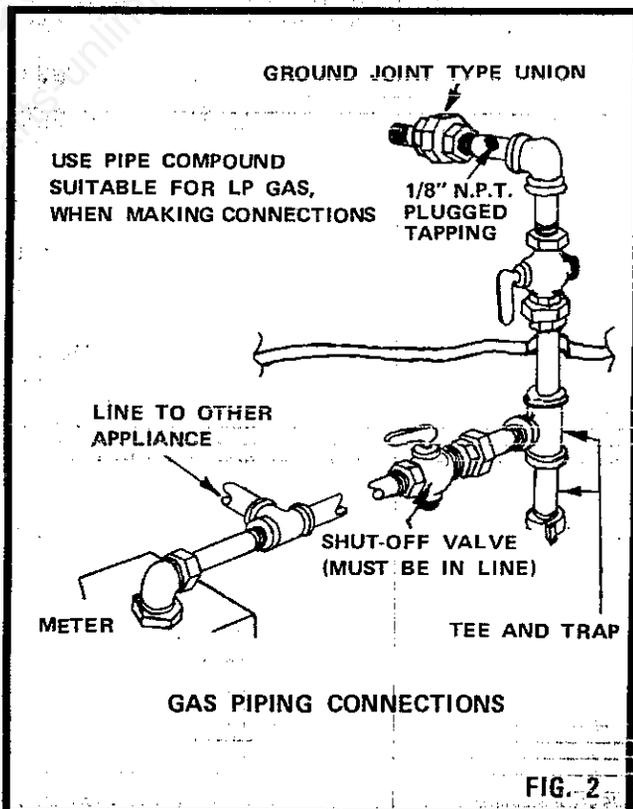
It is important that the heater is connected to the correct size pipe. Use 1/2" pipe size from meter to heater. Immediately upstream from the gas supply connection to the heater, there must be an 1/8" N.P.T. plugged tapping accessible for test gauge connection. If heater is more than 20 feet from meter, use 3/4" pipe with a reducer. Piping that is too small will reduce the gas pressure and limit the B.T.U. input per hour of the heater.

Attach the gas line to the control valve. It is recommended that a pipe union be placed in line at this point for convenience of servicing or removing heater.

The installation of the piping must be done by a qualified and experienced gas mechanic. We recommend that the gas company install the piping and test the entire system after the installation.

Gas piping should be supported by hangers or suitable clamps.

When using a compound in making connections, apply it lightly to the male threads only. Any excess could be forced into the pipe and result in clogged valves. The compound must be of the type that will not deteriorate with LP gas.



All connections to the LP bulk storage tank must be made only by your licensed LP dealer. Your licensed LP dealer should check the complete unit and all connections from the bulk storage tank to the heater at the time he makes the gas hookup.

GAS SUPPLY — IMPORTANT: Check the identification plate on the back of the heater to make sure your heater is equipped properly for the type of gas you will be using.

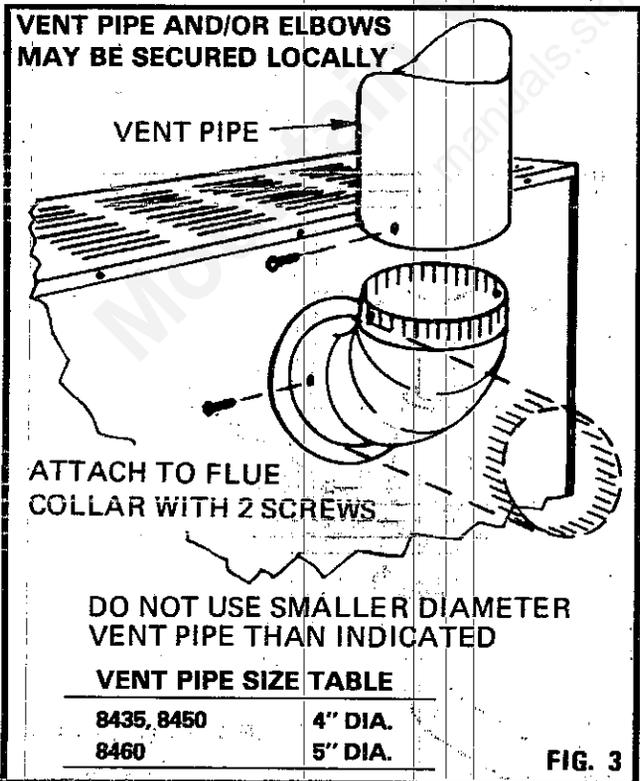
GAS CONNECTION — Connect the heater to gas line in accordance with local codes. Your heater is equipped with either an automatic control or manual shut-off valve having a 1/2 inch inlet. Gas supply piping to this point should be 3/4 inch black iron pipe or equivalent which should be reduced down to 1/2 inch at the control. If your heater is equipped with a control it contains a main shut-off valve as an integral part of the control. However, some local codes require an additional main shut-off valve which shuts off the gas before it reaches the heater control. We recommend the use of this additional valve for convenience in disconnecting the heater for cleaning or other reasons (Fig. 2).

CAUTION

This appliance and its individual shut-off valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig. The appliance must be isolated from the gas supply piping system by closing its individual manual shut-off valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psig.

Connect Flue Pipe

The flue collar for your heater is built in at the



factory. No extra assembly or installation is required. The flue pipe must be connected to the flue collar. **NEVER LIGHT OR USE THE HEATER UNLESS IT IS CONNECTED TO FLUE OUTLET.**

Connect pipe to flue collar, drill holes and attach securely with sheet metal screw and extend to chimney or flue. Horizontal runs of flue pipe must be pitched upwards from heater at least 1/2 inch per foot of flue pipe (Fig. 3).

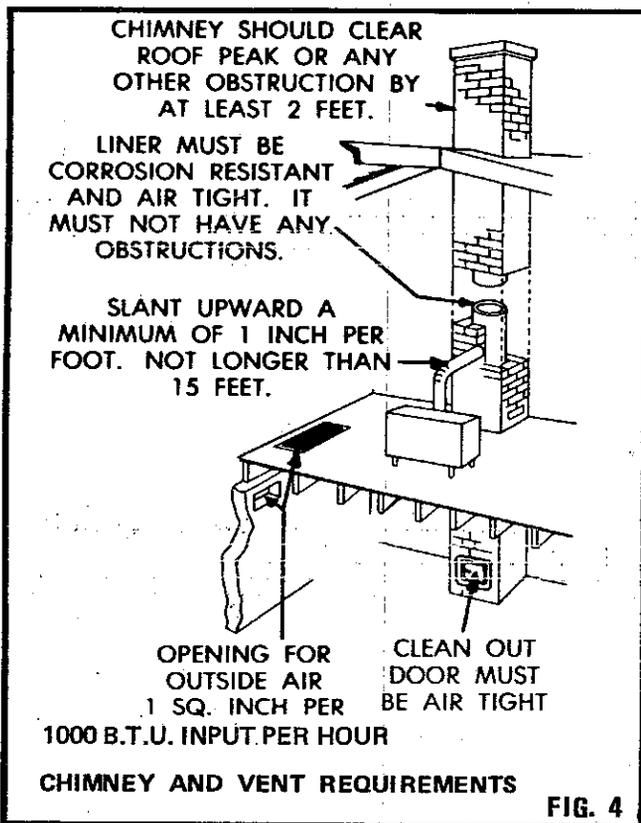
Chimney

It is very important that the flue or the chimney to which the heater is vented should be in good condition and free from obstructions and have an adequate up-draft to carry off by-products of combustion. Loose brick, broken mortar or accumulation of soot should be removed from chimney before heater is installed. Consult a chimney cleaner or mason before connecting the heater to the chimney (Fig. 4). **DO NOT CONNECT** this heater to a chimney serving a solid fuel burning appliance.

If the home does not have a chimney, an approved Type B gas vent chimney package can be used.

If a metal vent pipe passes through a combustible partition, it must pass through a double metal thimble 2" larger than the vent pipe.

N O T E The draft hood of the heater must be in the same atmospheric pressure zone as the combustion air inlet to the appliance.



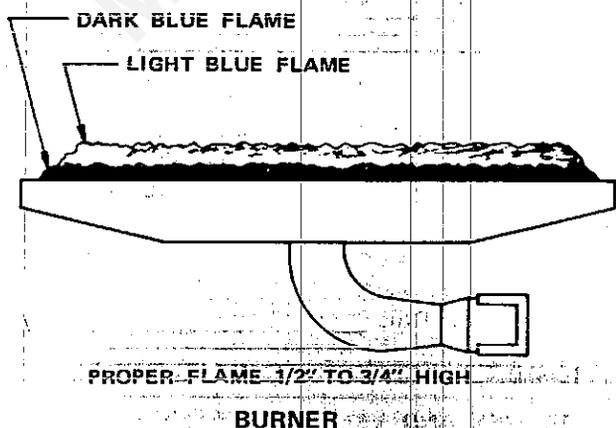
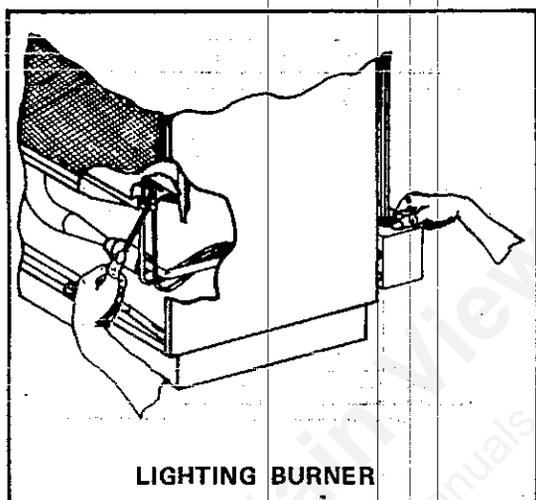
adjustments and operation

Odor When First Lighted

The special enamels used on your heater may give off some smoke and odor when you first light your heater. This will disappear in a very short time.

Whenever working on heater, gas must be turned off at shut-off valve.

NOTE: Check pilot and main burner flames once a year.



Test for Leaks

All gas piping and connections must be tested for leaks after the installation is completed.

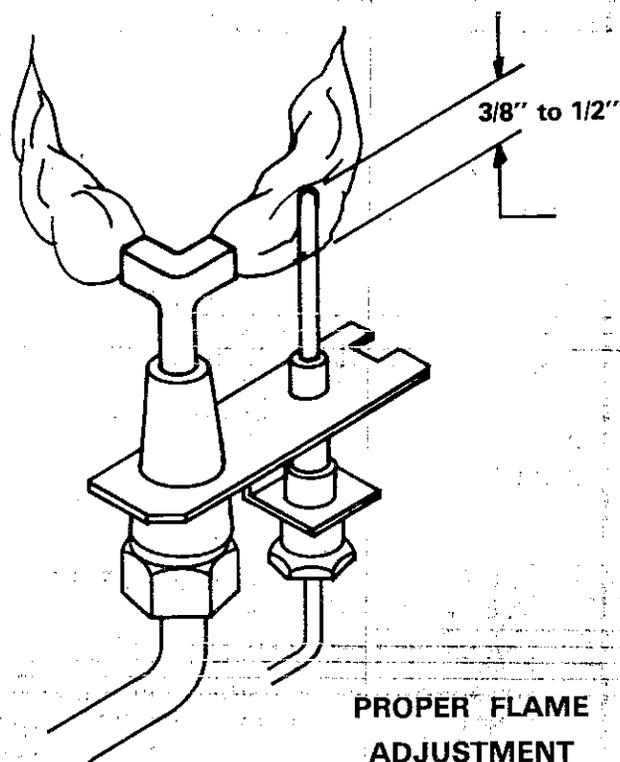
Be sure the heater is turned off.

Apply soap suds solution to all connections and joints and if bubbles appear, leaks can be detected and corrected.

Do not use a match or open flame of any kind to test for leaks.

Never operate the heater with leaky connections.

CAUTION: Always wait 5 minutes before relighting.



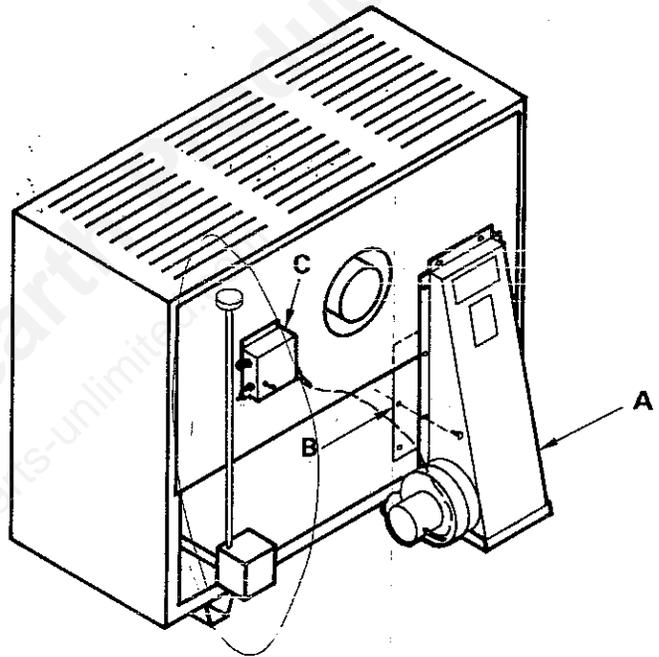
MODEL F36 BLOWER KIT

Optional Blower Kit For Gas Heater

Models 8450, 8460

Installation Instructions

1. Remove duct hole cover from cabinet back (panel).
2. Attach blower inlet duct (A) to cabinet back with (6) sheet metal screws.
3. Attach duct hole cover (B) to lower part of inlet duct on the inside of cabinet back (panel) and cabinet bottom flange with (2) sheet metal screws.
4. Attach the control box (C) on the left hand side of the cabinet back with (2) sheet metal screws. The conduit clamp may be attached to the cabinet back below the flue with (1) sheet metal screw.



operation

1. Plug the power supply cord into a 120 Volt A. C. outlet.
2. Turn heater on desired setting.
3. Turn the switch on the Blower Control Box to either ON position. In the ON/MANUAL position, the blower will run until you turn it off. In the ON/AUTOMATIC position, the blower will turn on when the heater reaches operating temperature and will turn off when the heater has cooled.

maintenance

OIL THE BLOWER MOTOR TWICE A YEAR WITH 2 DROPS OF S.A.E. 20 OIL.

repair parts

MODEL NO. F36

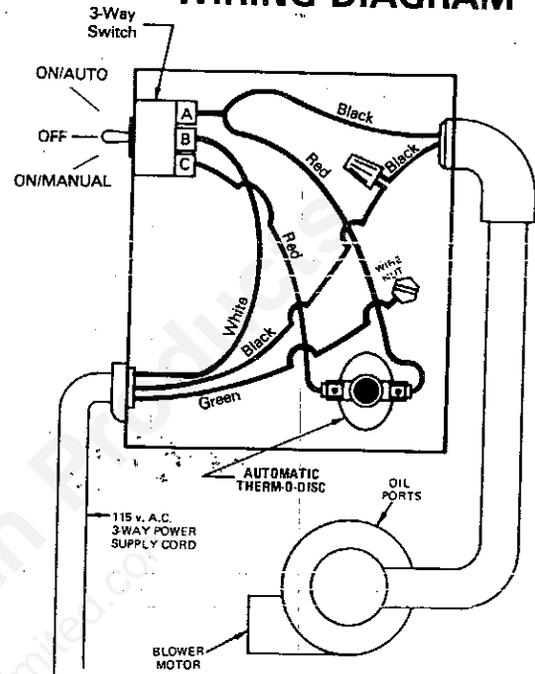
When Ordering Repair Parts Always Give The Following:

1. The Heater Model Number
2. The Blower Model Number: F36
3. The Part Number
4. The Part Description

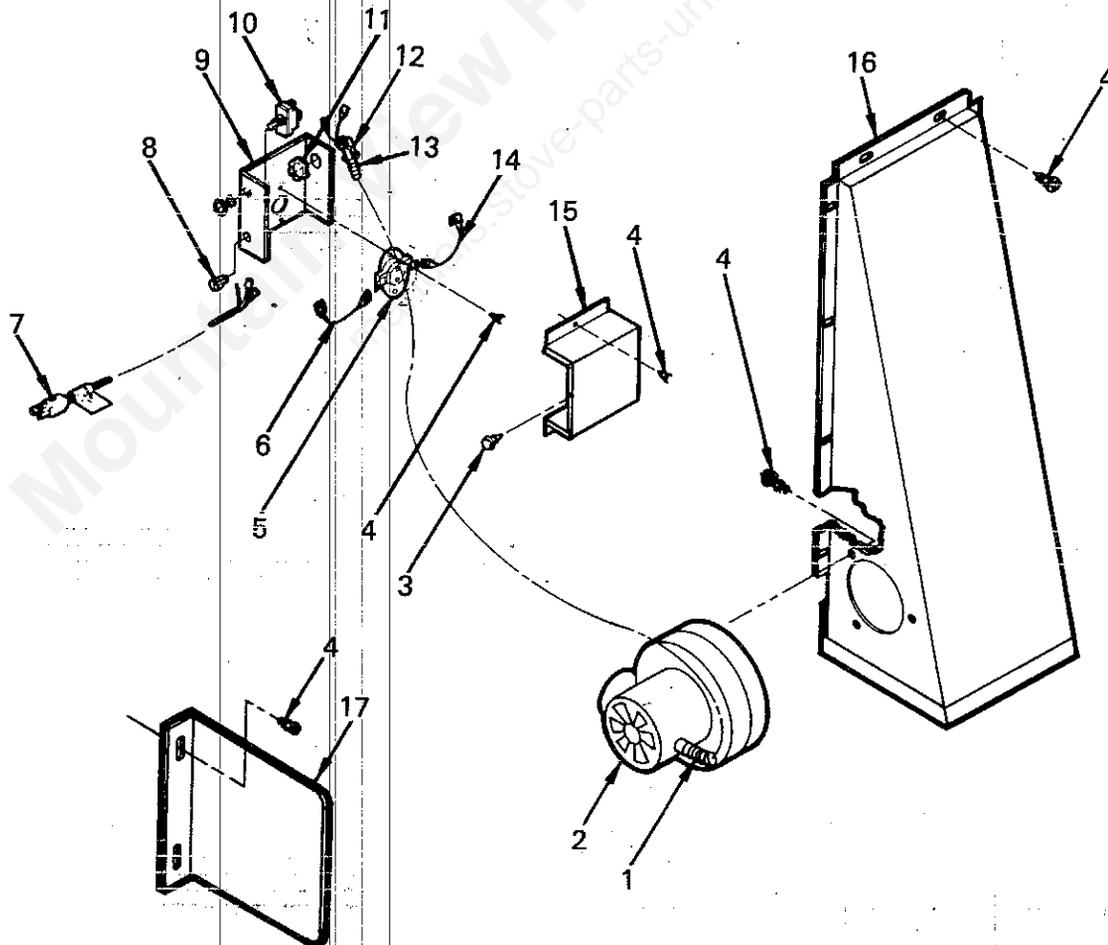
Key No.	Part No.	Description
1	21807	Conduit
2	80114	Blower
3	83222	Sheet Metal Screw - 10B x 3/8 Serrated Hex Washer (2 Req'd)
4	83245	Sheet Metal Screw No. 10A x 3/8 Serrated Hex Washer, Slotted (15 Req'd)
5	80100	Limit Auto Adj. Switch
6	80085	Jumper Wire
7	80108	Power Supply Cord
8	80109	Strain Relief Bushing
9	21973	Mounting Control Plate
10	80004	3-Way Toggle Switch
11	80069	Conduit Locknut
12	80062	Connector
13	83801	Anti-Short Bushing
14	80110	Jumper Wire (1" Piggy-Back)
15	21271	Control Box Cover
16	67791	Blower Duct Assembly
17	21272	Control Box Shield (optional)
*	85480	Owner's Manual

* Not shown

WIRING DIAGRAM



IF ANY OF THIS ORIGINAL WIRING MUST BE REPLACED, IT SHOULD BE REPLACED BY WIRING HAVING EQUIVALENT INSULATION AND TEMPERATURE RATING (105°C).



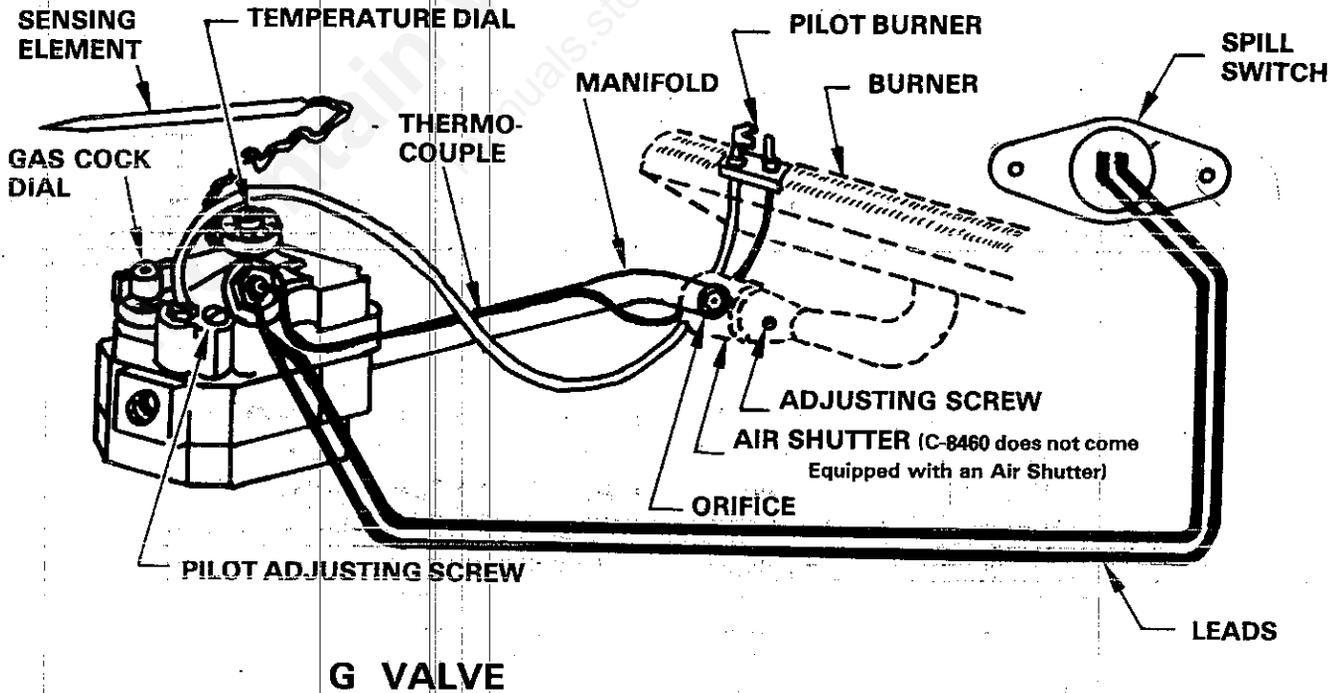
adjustments and operation

MODEL WITH COMBINATION THERMOSTAT-SAFETY VALVE MODEL NO. SUFFIX "G"

*Cust -
98.85*

COMPONENT		8435	8450	8460
Gas Valve	Nat.	81132	81132	81132
Gas Valve	LP.	81134	81134	81134
Manifold		86202	86202	86202
Pilot	Nat.	81133	81133	81133
Pilot	LP.	81135	81135	81135
Pilot Tube		21562	21562	21562
Thermocouple		81078	81078	81078
Control Knob		89141	89141	89141
Control Rod Brkt.		15330	15330	15330
Control Rod		21387 <i>21386</i>	21388	21388
Spill Switch		81136	81137	81138
Spill Switch Leads		81139	81139	81139

*89388
89394*



G VALVE

After connecting gas supply, CHECK FOR LEAKS. (See page 6).

LIGHTING INSTRUCTIONS — Gas control knob cannot be turned to "off" position without first depressing at "pilot" position, then turned to "off".

TO LIGHT PILOT — Depress slightly and turn gas control knob to "pilot" position, fully depress knob and hold. Light pilot after 30 seconds, release knob, pilot should remain lighted. If pilot fails to remain lighted, repeat operation. Pilot flame should be about 1 inch long, and should be blue in the center. A weaker flame means too little gas, and a noisy long flame indicates too much. Proper pilot flame may be secured by turning pilot adjustment screw, which is located under cap as indicated above. Always replace cap after adjustment. If pilot light goes out during normal operation, wait 5 minutes before relighting.

TO LIGHT MAIN BURNER — If control is equipped with temperature control knob, turn to desired setting. Turn gas control knob to "on" position — main burner will ignite immediately. Loosen air shutter adjustment screw so that air shutter may be moved back and forth to adjust flame height. Allow heater to burn a few minutes to clear air from gas line. Burner should be warm when adjusted. Gas flame should be adjusted by moving air shutter so that a BLUE CONE 1/2" to 3/4" high appears over each hole in top of burner. A high, yellow flame will cause carbon deposits, or a flame which "lifts" or blows away from top of burner will cause noisy operation. Heater is now ready for use, and thermostat may be used to vary amount of gas used to obtain desired comfort level. If main gas supply fails or for some reason is interrupted, your heater will not operate until you repeat lighting instructions above. This is the protection you have with a 100% Safety Valve. To realize maximum comfort, set thermostat at medium, which is approximately 74 degrees. Allow heater to operate for an hour or so, then turn to either a lower or higher setting as you prefer. Heater will automatically maintain temperature desired. Do not attempt to repair or alter control. Call a qualified service man.

TO TURN GAS OFF AT MAIN BURNER — Turn gas control knob to "pilot" position. Pilot will remain lighted.

TO SHUT DOWN, TURN ALL GAS OFF — Turn gas control knob to "off" position. Gas control knob cannot be turned to off position without first depressing at pilot position, then turned to "off". Both main burner and pilot will go out.

This heater is equipped with a safety control system designed to protect against improper venting of combustion products. This heater must be properly connected to a venting system. This heater is equipped with a vent safety shutoff system.

WARNING

OPERATION OF THIS HEATER WHEN NOT CONNECTED TO A PROPERLY INSTALLED AND MAINTAINED VENTING SYSTEM OR TAMPERING WITH THE VENT SAFETY SHUT OFF SYSTEM CAN RESULT IN CARBON MONOXIDE (CO) POISONING AND POSSIBLE DEATH.

service hints and maintenance

MODEL	NORMAL HOURLY BTU INPUT RATING			
	ORIFICE DRILL SIZE	NATURAL GAS	ORIFICE DRILL SIZE	LP/GAS
8435	35	35,000	52	35,000
8450	29	50,000	47	50,000
8460	27	60,000	44	60,000

CLEANING INSTRUCTIONS

The heater should be cleaned twice a year. Clean the heater before the start of the heating season, then about the middle of the heating season. The heater needs to be kept free from combustible materials, gasoline, and other flammable vapors and liquids.

The venting system should be checked once a year, preferably before the start of the heating season. The flow of combustion and ventilation air should be kept free from any obstruction.

Below are shown various materials used in your heater and methods of cleaning each. Follow these suggestions, because it is possible to do serious damage by cleaning certain parts too vigorously.

SHEET STEEL — PLATED, PAINTED, OR ENAMELED — DO NOT SOAK, SCRATCH, SOAP, OR SAND. The substance may be cleaned by wiping with slightly moistened cloth. Dry cloth will do in most cases.

VALVES, FITTINGS, THERMOSTATS: Do not attempt to repair or alter. Call a qualified service man. Brush gently or wipe lightly only to remove surface deposits.

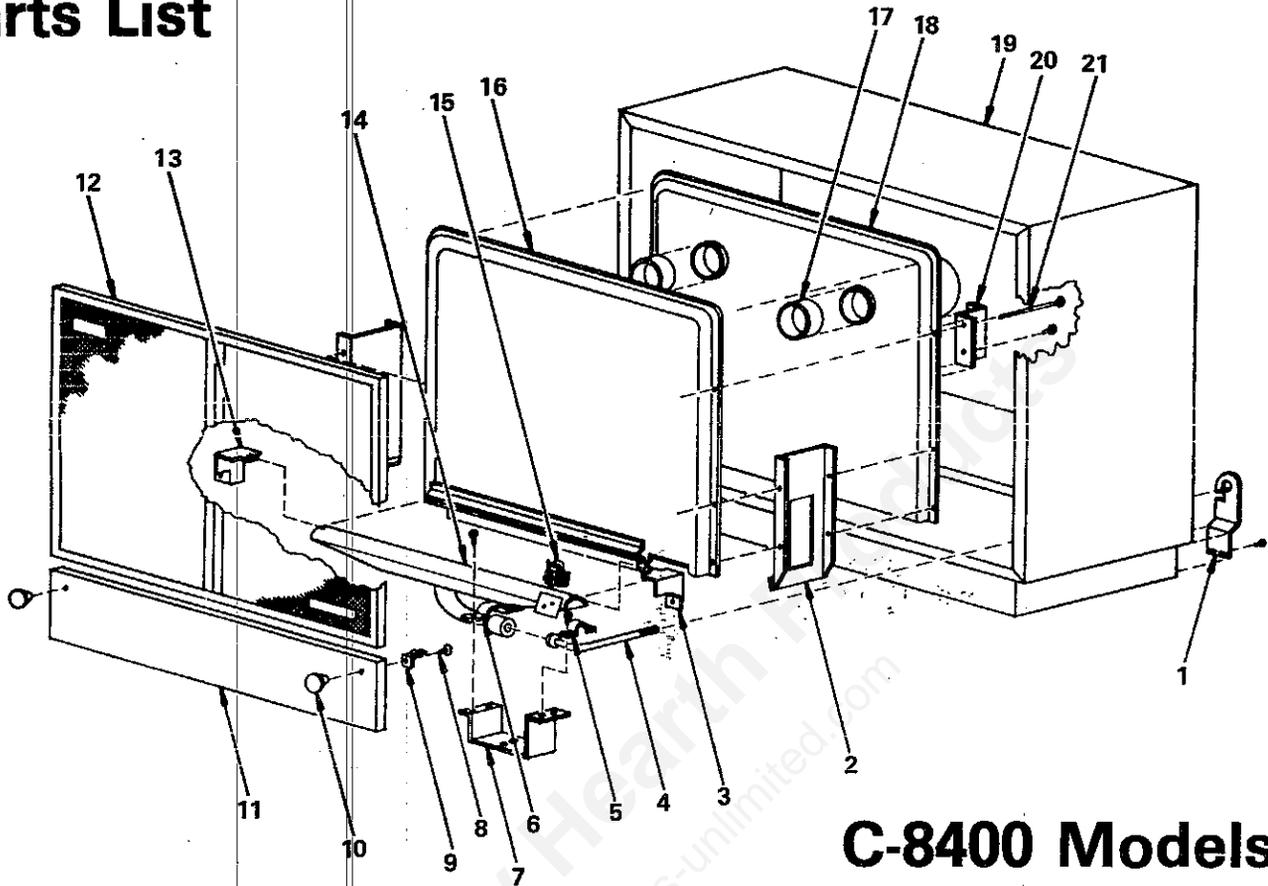
PROCEDURE TO CLEAN: (Refer to exploded view of parts in Parts List).

1. Disconnect heater from gas supply, **MAKE SURE GAS IS TURNED OFF AT SOURCE.**
2. Open front access door.
3. Remove burner and controls.
4. Remove burner from other parts and clean as outlined in general instructions above.
5. Check pilot burner, if any, for lint, which may be removed easily with pin, wire, or other thin object. Then blow clear.
6. Gently scrape or sandpaper thermocouple at point where pilot flame touches it. **DO THIS ONLY IF THERMOCOUPLE SEEMS TO BE COVERED WITH A BLACK DEPOSIT.**
7. Clean Combustion Unit and interior of heater with vacuum cleaner, or if not accessible, use brush or rag to remove any deposit.
8. Clean all other parts as outlined in general instructions above.
9. Reassemble heater, connect, light, and readjust. Heater should continue satisfactory operation.

trouble chart

SYMPTOMS	CAUSES	CORRECTIONS
Burner Flame Lifts	Air Shutter incorrectly Adjusted Gas Pressure Too High	Re-Adjust Air Shutter Call Gas Co. to Re-Adjust
Burner Flame Goes Out	Too Much Air Valves Clogged Gas Supply Low or Off	Re-Adjust Air Shutter for Proper Flame Clean Valves Check Valves in Line
Burner Does Not Light	Gas Valves Closed Air In Line Pilot flame not heating the thermocouple Dirty thermocouple elect. connections Defective Thermocouple or Valve Temp. sensing bulb not in position	Open Them Continue to Relight Until all air is Exh. See Pilot Flame Troubles Clean all connections Replace Defective Part Re-position
Burner makes noise or Flame Flashes Back into Burner	Air Shutter Incorrectly Adjusted Damaged Burner or Orifice Wrong Size Orifice	Re-adjust Air Shutter Replace Replace With Correct Size
Reddish Color Flame	Gas Pressure Wrong Dust in Air Wrong Size Orifice	Call Gas Co. to re-adjust This Will Clean itself Up Replace with Correct Size
Flame Too High	Air Shutter incorrectly adjusted Gas Pressure Too High Wrong Size Orifice	Re-adjust Air Shutter Call Gas Co. to Re-adjust Replace With Correct Size
Flame Too Low or Yellow and Smokey	Air Shutter Incorrectly Adjusted Valves Clogged Wrong Size Orifice Gas Pressure Too Low	Re-adjust Air Shutter Clean Valves Replace with Correct Size Call Gas Co. to Re-adjust
PILOT FLAME TROUBLE		
Lazy, Yellow Flame Small Flame	Dirty Pilot Burner Low Gas Pressure Pilot Gas Adjustment closed too far	Clean Pilot Clean Orifice-Replace Pilot Gas Filter Turn pilot flow Adj. Counter Clockwise
Pilot Flame Not Heating Thermocouple	Wrong Pilot Orifice Lighting Door Open	Replace with Correct Size Close Door
<p>If the functioning of the heater is not satisfactory after performing the described operations and adjustments, call your Dealer.</p>		

Parts List



C-8400 Models

KEY	DESCRIPTION	QTY.	8435	8450	8460
1	Bracket, Manifold	1	21854	21854	21859
2	Leg, Heat Exchanger	2	21377	21377	21377
3	Brace, Burner (L. H.)	1	21852	21855	21857
4	Manifold	1	86202	86202	86202
5	Strap, Manifold	1	21847	21847	21847
6	Strap, Burner	1	21846	21846	21848
7	Support, Manifold/Burner	1	21854	21854	21854 21859
8	Screw, Machine No. 8 - 32 x 1/4 83033	2	83033	83033	83033
9	Clip, Spring - Cabinet Door	2	89072	89072	89072
10	Knob	2	89062	89062	89062
11	Door	1	22437	22435	22436
12	Front, Frame	1	68088	68091	68095
13	Brace, Burner (R. H.)	1	21853	21856	*21858
14	Burner	1	86219	86220	86221
15	Pilot - Natural	1	81133	81133	81133
-	Pilot, L. P.	1	81135	81135	81135
16	Combustion Chamber	1	67311	67312	67314
17	Collar, Heat Exchanger Natural	2	67316	21372	67317
-	Collar, Heat Exchanger L. P.	2	67316 21372	67312	21373
18	Radiator	1	67307	67308	67309
19	Body, Cabinet	1	68089	68090	68094
20	Bracket, Rear	2	21380	21380	21380
21	Boit, Tie - 1/2" - 30 - 6-1/2"	2	83138	83138	83138

* 8460 does not come equipped with an air shutter

owners manual

HOW TO ORDER REPAIR PARTS

THIS MANUAL WILL HELP YOU TO OBTAIN EFFICIENT, DEPENDABLE SERVICE FROM THE FURNACE, AND ENABLE YOU TO ORDER REPAIR PARTS CORRECTLY.

KEEP IN A SAFE PLACE FOR FUTURE REFERENCE:

WHEN WRITING, ALWAYS GIVE THE FULL MODEL NUMBER WHICH IS ON THE NAMEPLATE ATTACHED TO THE INSIDE OF THE CABINET DOOR.

WHEN ORDERING REPAIR PARTS, ALWAYS GIVE THE FOLLOWING INFORMATION AS SHOWN IN THIS LIST:

1. The PART NUMBER
2. The PART DESCRIPTION
3. The MODEL NUMBER:
4. The NAME of ITEM: **Vented Gas Heater**

UNITED STATES STOVE COMPANY
P. O. Box 5349
Chattanooga, Tennessee 37406 — (615) 698-3435

Lawson Division

LAWSON VENTED GAS HEATERS