INSTALLATION AND OPERATING INSTRUCTIONS

Warm Morning

MODELS

LSC10S, LSC20S & LSC30S

HORIZONTAL DIRECT VENT WALL FURNACES

IMPORTANT

The Outside Air Intake Box is an integral part of this unit and must be used in the installation. Pay particular attention to bold face instruction (Step 3C) on Page 3.

DANGER

FAILURE TO FOLLOW THESE INSTRUCTIONS CAREFULLY AND WITHOUT ERROR, OR FAILURE TO HEED ANY AND ALL WARNINGS IN THESE INSTRUCTIONS CAN RESULT IN AN EXPLOSION, FIRE OR THE PRODUCTION OF CARBON MONOXIDE GAS WHICH CAN CAUSE PROPERTY DAMAGE, BODILY INJURY OR DEATH.

WARNING: 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.

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

— WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instuctions.
- If you cannot reach your gas supplier, call the fire department.

— Installation and service must be performed by a qualified installer, service agency or the gas supplier.

"WARNING: IF NOT INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, THIS PRODUCT COULD EXPOSE YOU TO SUBSTANCES IN FUEL OR FROM FUEL COMBUSTION WHICH CAN CAUSE DEATH OR SERIOUS ILLNESS AND WHICH ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM. ALSO, OPERATION, INSTALLATION AND SERVICING OF THIS PRODUCT COULD EXPOSE YOU TO AIRBORN PARTICLES OF GLASS WOOL FIBERS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER THROUGH INHALATION."

DUE TO HIGH TEMPERATURES, THE FURNACE SHOULD BE LOCATED OUT OF TRAFFIC AND AWAY FROM FURNITURE AND DRAPERIES.

CHILDREN AND ADULTS SHOULD BE ALERTED TO THE HAZARD OF HIGH SURFACE TEMPERATURE AND SHOULD BE KEPT AWAY TO AVOID BURNS OR CLOTHING IGNITION.

YOUNG CHILDREN SHOULD BE CAREFULLY SUPERVISED WHEN THEY ARE IN THE SOME ROOM WITH THE FURNACE.

ANY SAFETY SCREEN OR GUARD REMOVED FOR SERVICING AN APPLIANCE MUST BE REPLACED PRIOR TO OPERATING THE APPLIANCE.

DO NOT PLACE CLOTHING OR OTHER FLAMMABLE MATERIAL ON OR NEAR THE FURNACE.

INSTALLATION AND REPAIR SHOULD BE DONE BY A QUALIFIED SERVICE PERSON. THE CLEANED FURNACE 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 FURNACE BE KEPT CLEAN.

WARNING: ANY CHANGE TO THE FURNACE OR ITS CONTROLS CAN BE DANGEROUS.

GENERAL INFORMATION

IMPORTANT! The installer should leave these instructions with the owner and the owner should retain them for future reference.
Label part number 049277, enclosed with this manual, must be affixed in a conspicious location adjacent to the furnace.

1. Models and Equipment

The serial number plate on the unit indicates the model number, B.T.U. input rating, and the type of gas for which it has been equipped at the factory. Do not use this unit with any type of gas other than the type indicted on the serial number plate!

2. Input Ratings

The B.T.U. input ratings of these direct-vent units are as follows:

Model	*B.T.U. Input/Hr.*
LSC10S	10,000
LSC20S	20,000
LSC30S	30,000

The above models are designed certified by American Gas Association Laboratories for use with Natural and L.P. Gases when equipped with orifices of the proper size, at the input ratings shown.
NOTE: IF THE UNIT IS TO BE INSTALLED AT AN ALTITUDE ABOVE 2,000 FEET, THE INPUT RATING SHOULD BE REDUCED 4% FOR EACH 1,000 FEET ABOVE SEA LEVEL.

3. Controls

All models are factory equipped with an automatic gas valve that combines in one assembly; a manual gas valve, 100% safety shut-off valve, pilot filter, thermostat and an internal pressure regulator.

4. Wall Thickness

All models may be installed in walls ranging from 5 to 15" thick. All of the above models are initially equipped with vent boxes for walls 5 to 10" thick. 10 to 15" wall kits are available from your dealer or Warm Morning.
While a wall less than 5" thick may be built out to the required minimum thickness installation of any of the Warm Morning DIRECT VENT units in a wall over the designated thickness outlined above must not be attempted.

5. Types of Gas

The serial number plate attached to the bottom of control compartments indicates the model number, input and type of gas for which this unit is equipped. All Warm Morning products are shipped form the factory with correct orifice sizes and equipment for only the type of gas specified on the serial number and rating plate.

WARNING: DO NOT USE ANY OTHER TYPE OF GAS THAN THAT SHOWN ON THIS PLATE!

INSTALLATION

This appliance must be installed in accordance with local codes, if any; if not, follow ANSI Z223.1-1988 in the United States and the current Installation Code CAN1-B149 in Canada.

1. Location of Unit

Warm Morning Direct Vent Units are designed for installation only on an outside wall of a room. The vent assembly must be installed outdoors to provide adequate combustion and ventilation air. They may be positioned so that the bottom of the cabinet is either above or flush with the floor. (A few inches of clearance between the bottom of the cabinet and the floor will provide better access to the controls and permit easier servicing of the burner.)

Certified clearances from combustible construction that must be maintained are as follows: (all clearances are measured from outer casing *except for* VENT CAP which is measured from center line of cap to nearest building or obstruction.)

	Clearance Inches
Left Side	0
Right Side	12
Top	40
Bottom	0
Rear	0
Vent Cap	12

The minimum clearance to the floor is measured from the top surface of carpeting or tile.

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

Locate the unit, if possible, so that the hole cut for the air intake and flue outlet assembly is exactly centered between two wall studs 16 inches apart. The combustion chamber mounting holes are located at the top and bottom of the vertical channels behind the combustion chamber and are 16" apart to match standard wall stud spacing.

NOTE: LOCATE THE UNIT SO AS TO PROVIDE AT LEAST 18 INCHES OF CLEARANCE BETWEEN THE BOTTOM OF THE EXTERIOR VENT CAP AND THE SURFACE OF THE GROUND. ADDITIONALLY, IT'S BEST TO LOCATE DIRECT VENT HEATERS SO THAT THE OUTSIDE VENT CAP IS AT LEAST SIX FEET FROM A CORNER, WALL OR OVERHANG. THIS VENTING AREA MUST BE KEPT CLEAR AND FREE FROM COMBUSTIBLE MATERIALS AND THE FLOW OF COMBUSTION AND VENTILATION AIR MUST MOT BE OBSTRUCTED.

NOTE: THE EFFICIENCY RATING OF THE APPLIANCE IS A PRODUCT THERMAL EFFICIENCY RATING DETERMINED UNDER CONTINUOUS OPERATING CONDITIONS AND WAS DETERMINED INDEPENDENTLY OF ANY INSTALLED SYSTEM.

2. Installing Inside Unit

If heater is delivered in its original shipping carton, carefully unpack - being sure to remove all literature and parts from accessory packages before discarding the carton. Carefully withdraw outside sections of air intake and flue outlet assembly from combustion chamber section.

CAUTION: BE CERTAIN THAT ALL PACKING MATERIAL IS REMOVED FROM INSIDE THE OUTER CASING.

A. Remove packing material located between base of cabinet and bottom of combustion chamber.

B. Remove and discard the 2 cabinet mounting shipping straps. Located at top and rear of cabinet, each strap is held in place with 2 sheet metal screws.

C. Remove the 2 sheet metal screws holding cabinet to vertical channels on combustion chamber mounting assembly.

D. Carefully lift cabinet up and off combustion chamber mounting assembly.

Installation procedure follows: (Steps (a) through (f) occur indoors, step (g) outdoors and step (h) again indoors.)

a. Carefully determine locations of wall studs to which unit is to be fastened. If exact stud locations cannot be determined by "tapping" wall, it may be necessary to drive a small nail through plaster or sheet rock to "confirm" stud positions. *Be sure that no electrical wiring is in wall where cutting will be done!*

b. Position and smooth out full-size paper template on wall where unit is to be installed, with mounting hole locations directly over wall studs. Use carpenter's level to make certain template itself is exactly level, and fasten template to wall with tape or thumb tacks, Recheck level and position of template (Figure 1).

c. Drill all holes shown on the template using sizes of drill bits specified. Also drill four small holes at corners of square outline showing locations of flue outlet opening.

NOTE: IF GAS SUPPLY LINE IS TO BE RUN UP THROUGH FLOOR, *DO NOT* DRILL GAS SUPPLY LINES IN WALL - USE ALTERNATE DRILLING SHOWN FOR FLOOR CONNECTION.

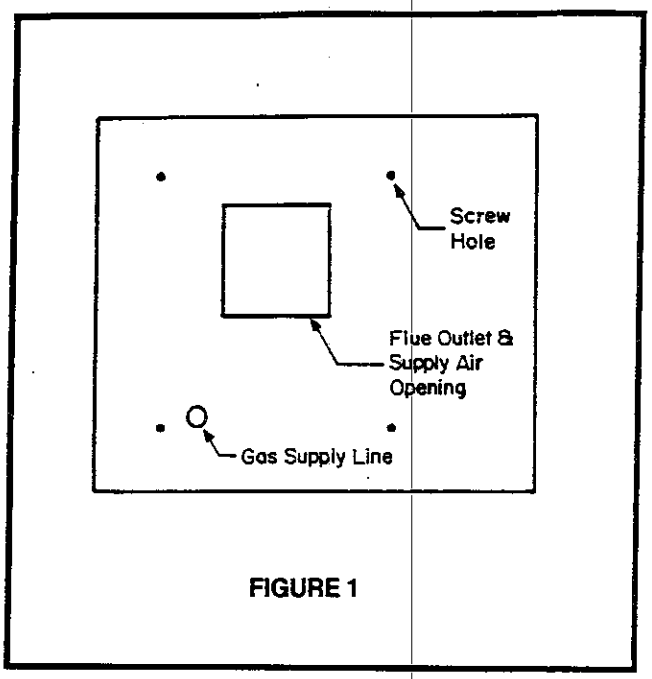


FIGURE 1

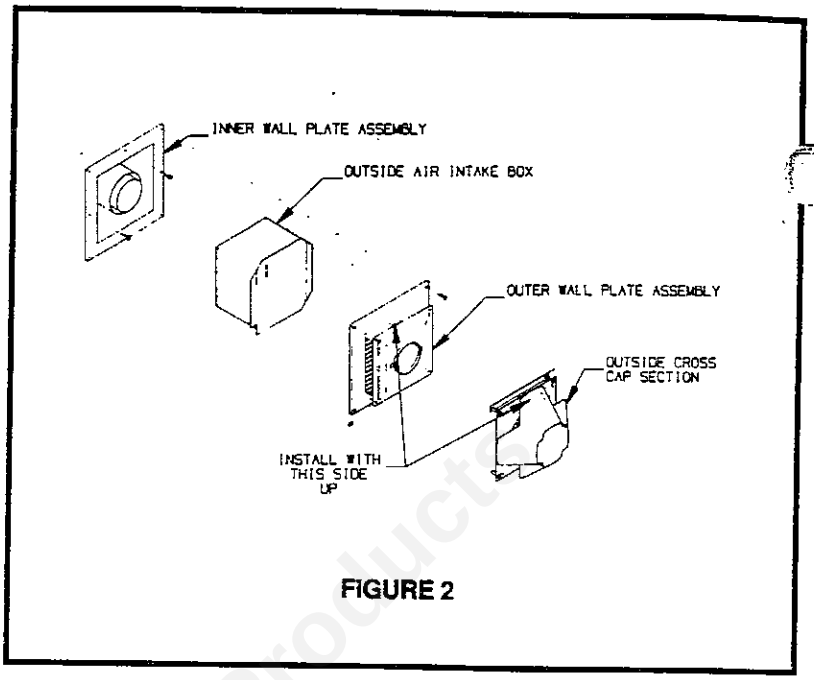


FIGURE 2

d. Remove template from wall and with pencil draw straight lines between four drill holes that mark outline for square flue outlet opening.

e. Using power saw or small hand saw, cut along guide lines to make square opening in inside wall. *Do not cut hole larger than guide lines, as clearance for fit has already been allowed.*

f. From inside, drill four holes through outside wall of house in *exact alignment* with corners of square hole in inside wall, to serve as guide for cutting hole in outside wall. Use machinist's square or carpenter's level to make certain holes are in direct alignment.

g. Draw square on outside wall, using four holes drilled from inside as guide. With power saw or hand saw, cut corresponding square opening in outer wall.

h. With the square opening cut completely through the wall, the next step is to install the combustion chamber assembly on the inside wall. Position combustion chamber so that the inner flue assembly attached to the inner casing extends through the opening in the wall and the four mounting holes are lined up with the corresponding screw holes drilled in the wall. Secure in place with four screws (or expansion bolts). Before tightening screws, place carpenter's level at top of mounting channels to make certain unit is absolutely level.

SPECIAL NOTE: THE ABOVE INSTRUCTIONS WOULD APPLY TO THE INSTALLATION OF THE DIRECT-VENT UNIT IN A WALL WITH A SHINGLE, BATT-AND-BOARD, LAP-SIDING, OR ANY KIND OF WOOD EXTERIOR. IF HOUSE HAS BRICK-VENEER, STONE OR STUCCO SIDING, DRILLS AND SAWS SUITABLE FOR THESE MATERIALS WILL BE REQUIRED, AND MASONRY EXPANSION SCREWS OR BOLTS WILL BE NEEDED TO FASTEN THE EXTERIOR ASSEMBLY TO THE OUTER WALL.

CAUTION: SOME TYPES OF VINYL SIDING ARE SUBJECT TO DISTORTION AND DISCOLORING FROM HEAT AT THE EXTERIOR VENT CAP. AS A PRECAUTION, IT MAY BE NECESSARY TO APPLY A METAL SHEATHING AROUND THE OUTER DIMENSIONS OF THE VENT CAP. THIS SHOULD EXTEND 12 TO 18 INCHES OUT FROM THE SIDES AND TOP OF THE VENTING ASSEMBLY. (ANY LIGHT GAUGE METAL WOULD BE SUITABLE FOR THIS PURPOSE, SUCH AS ALUMINUM, GALVANIZED STEEL, ETC.)

3. Installing Outside Vent (Refer to Figure 2)

a. Before starting installation of exterior assembly, measure the thickness of the wall (distance from inside surface of interior wall to outside surface of exterior wall). If wall is less than 5 inches thick, install 2-inch wide frame around square opening on outside wall to build up thickness to 5 inches or more.

b. Apply a few drops of light oil to the surfaces of the inner wall plate assembly and slide it into the inner flue assembly protecting through the wall plate assembly and slide it into the inner flue assembly projecting through the wall. Push in until wall plate makes contact with the wall of house. If wall is at least 5 inches thick, plate should make firm contact on all four sides. Now withdraw outdoor unit box a few inches and apply caulking compound liberally to underside of wall plate. Then push the assembly into position, apply additional caulking compound around edges of wall plate if necessary, and fasten to wall securely with wood screws provided. Smooth caulking with putty knife to insure neat, leakproof fit.

c. It is very important that the Outside Air Intake Box (loose aluminum painted box with 7/8" flanges) is installed properly. The Air Intake Box is packed as a loose part in the vent box assembly in the carton and is sometimes mistaken for a box that might be for special wall thicknesses. However, without this box and its proper installation, the unit will not operate correctly.

To install, slide the Outside Air Intake Box into the corresponding box (black box welded to back of combustion chamber, until the 7/8" flange is flush against the Inner Wall Plate Assembly. To seal the Air Intake Box, reach in and press furnace cement under the formed edge at the end of the Air Intake Box. Note, be sure to use a sufficient amount of furnace cement at the corners for an effective seal.

d. the next section to be installed is the Outer Wall Plate Assembly. This assembly consists of a painted air intake section, perforated on sides and bottom. With solid side up, install Outer Wall Plate Assembly on the Inner Wall Plate, making certain that the flanges of the porcelain enameled plate fit over and around the wall plate.

e. With Outer Wall Plate Assembly in position, take a measurement from the back surface of the combustion chamber next to the flue outlet collar to the outside edge of the extended flue pipe opening in the Outer Wall Plate Assembly. (Flue pipe fits over flue collar on back of combustion chamber). Be sure this measurement is exact. Cut the smaller flue-pipe to this measurement, *trimming surplus off uncrimped end.*.

f. Models LSC20 and LSC30 are also equipped with an outer insulating pipe. Cut this pipe so that it is exactly 1/2 inch shorter than the flue-pipe.

g. When the flue-pipe and outer insulating pipe have been cut to proper lengths, remove the Outer Wall Plate Assembly and fit the uncrimped end of the flue-pipe over and around the collar on the back of the combustion chamber, shoving pipe in until it completely covers the flue collar. (Before installing flue pipe apply a liberal coat of furnace cement to inside of uncrimped end of flue pipe to insure a good seal at this connection. Slide insulating pipe over flue pipe (LSC20 & 30 only).

CAUTION: BEFORE PROCEEDING WITH THE FINAL STEPS, MAKE CERTAIN THAT THE INNER WALL PLATE, AIR INTAKE BOX, FLUE PIPE AND INSULATING PIPE (LSC20 & LSC30) HAVE ALL BEEN INSTALLED IN ACCORDANCE WITH THE PROCEEDING INSTRUCTIONS 'A' THROUGH 'G'.

h. With both sections of pipe in position, slide the Outer Wall Plate Assembly into place so that the crimped end of the flue-pipe fits inside *but does not extend beyond* the extruded round opening in the porcelain enameled outer section. This opening is equipped with "tabs" to prevent the flue pipe from protruding into the venting area.

CAUTION: BE SURE SOLID PORTION OF THE OUTER WALL PLATE IS UP, WITH PERFORATIONS TO SIDES AND DOWN! SECURE OUTER WALL PLATE WITH FOUR 10/24 BOLTS PROVIDED.

i. The final step is to install the outside cross cap section and vent baffle (LSC20, LSC30) to the outside of Outer Wall Plate. With ends of bolts in corresponding holes, fasten securely with nuts provided. This cap is marked with a decal "INSTALL WITH THIS SIDE UP".

4. Gas Supply

To secure best performances and full input capacity, the gas supply line to the unit must be of adequate size. *A main shut-off valve and union (ground joint type or flanged joint having packing resistant to the action of LP Gases) must be installed between the heater controls and the gas meter.* Do not put any unnecessary strain on the manifold or control valve with pipe wrench.

A 1/8 inch N.P.T. plugged tapping accessible for test gage connection should be installed immediately upstream of the gas supply connection to the appliance.

When a vertical gas supply installation is used, a condensate trap must be installed in supply line adjacent to connection.

For the purpose of input adjustment the *minimum* gas supply pressure for Natural Gas is 4.5" water column and 11.0" water column for L.P. gas. The *maximum* gas supply pressure for Natural Gas is 7.0" water column and for L.P. gas is 13" water column.

Check gas pipe connections for leaks, using a soapy solution. CAUTION: DO NOT CHECK FOR LEAKS WITH LIGHTED MATCH!

The unit and its individual shutoff 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 unit must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psig.

CAUTION: USERS OF L.P. GAS:

a. Piping and fittings used in connecting unit must be of type approved for use with L.P. gas and should be suitable for working pressure of not less than 124 lbs. per square inch.

b. Use pipe thread compound specifically approved for use with L.P. gas. Under no circumstances should ordinary pipe dope be used on connections for L.P. gas.

5. Pressure Regulator (Integral)

a. Pressure regulator is furnished as standard equipment. It is pre-set for 3.5 inches of water column pressure for Natural Gas and 10.0 inches for Liquefied Petroleum gases.

b. Manifold pressure can be obtained at the end of the orifice fitting. By removing cap of the orifice fitting and securing a manometer at this point, the pressure can be read. Operating pressures are 3-1/2" for Natural Gas and 10" for Liquefied Petroleum.

6. Cabinet & Reach Rod Installation

When the installation of the combustion chamber and venting assembly is completed, the outer cabinet should be put in place and the reach rod for the control installed on models LSC20 and LSC30. Carefully lift the cabinet up and over combustion chambers and allow it to slide down so that the back flanges are against the wall and the rear vertical channels on the combustion chamber fit into slots on the underside of the cabinet top. Correctly positioned, the cabinet should be level and rest against the wall at the top and on both sides.

With the cabinet in place and the lower panel door removed, opened on model LSC10, align the two holes in the rear flange outside casing bottom with the holes in the vertical channels. Install two sheet metal screws through the bottom into the vertical channel and tighten securely. Close the bottom door on model LSC10. For models LSC20 and LSC30, turn the control knob clockwise to OFF. The knob will click between PILOT and OFF. Insert the reach rod through the ring on the cabinet top, align the rod with the adaptor on the control valve, set the top knob so that the indicator points to OFF, then secure the rod to the control adaptor with the cotter pin provided.

7. Adjusting Pilot

The pilot flame should cover 3/8 inch to 1/2 inch of the thermocouple tip. If it doesn't, the pilot flame may be adjusted as follows:

a. Remove the pilot valve cap on the gas valve.

b. With a small screwdriver, turn the pilot adjustment screw clockwise to decrease the size of the flame or counterclockwise to increase the size of the flame.

c. Replace the pilot valve cap, being careful not to dislodge or damage gasket and tighten securely.

8. Adjusting Burner Flame

The primary air shutter on the main burner should be adjusted at the time the heater is installed and the burner flame should be checked periodically thereafter. This adjustment in made with the Pilot Access door open.

a. With pilot lit, turn knob to "Hi". Allow main burner to operate for 15 minutes.

b. The main burner flames should appear as distinct blue cones, darker on the inside and lighter on the outside, with no yellow-tipping or "lifting" from the ports. Closing of the pilot access door will cause the burner flames to "soften" so it is usually advisable to adjust for a slightly harder flame than normal when pilot door is open. With pilot access door closed, both the pilot and main burner may be observed through small "view-port" in door.

c. If burner flames show need for correction, adjust air shutter as follows:

CONDITION	CORRECTION
a. Yellow tip on flame	Increase air shutter opening
b. Smoky or lazy flame	Increase air shutter opening
c. Flame jumping or lifting from burner	Decrease air shutter opening
d. Delayed ignition	Decrease air shutter opening
e. Odor	Decrease air shutter opening

FOR YOUR SAFETY READ BEFORE LIGHTING

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

A. THIS APPLIANCE HAS A PILOT WHICH MUST BE LIGHTED BY HAND. WHEN LIGHTING THE PILOT, FOLLOW THESE INSTRUCTIONS EXACTLY.

B. BEFORE LIGHTING, SMELL ALL AROUND THE APPLIANCE AREA FOR GAS. BE SURE TO SMELL NEXT TO THE FLOOR BECAUSE SOME GAS IS HEAVIER THAN AIR AND WILL SETTLE ON THE FLOOR.

WHAT TO DO IF YOU SMELL GAS:

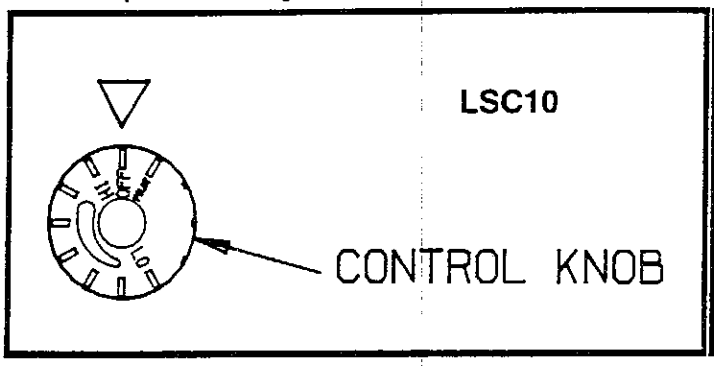
- DO NOT TRY TO LIGHT ANY APPLIANCE.
- DO NOT TOUCH ANY ELECTRIC SWITCH; DO NOT USE ANY PHONE IN YOUR BUILDING.
- IMMEDIATELY CALL YOUR GAS SUPPLIER FROM A NEIGHBORS PHONE. FOLLOW THE GAS SUPPLIER'S INSTRUCTIONS.
- IF YOU CANNOT REACH YOUR GAS SUPPLIER, CALL THE FIRE DEPARTMENT.

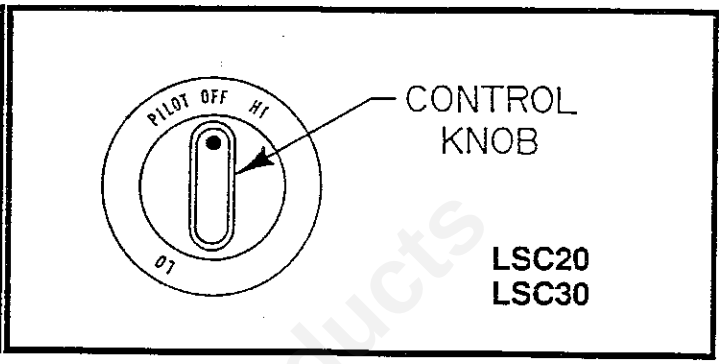
C. USE ONLY YOUR HAND TO PUSH IN OR TURN THE GAS KNOB. NEVER USE TOOLS. IF THE KNOB WILL NOT PUSH IN OR TURN BY HAND, DON'T TRY TO REPAIR IT. CALL A QUALIFIED SERVICE TECHNICIAN. FORCE OR ATTEMPTED REPAIR MAY RESULT IN A FIRE OR EXPLOSION.

D. DO NOT USE THIS APPLIANCE IF ANY PART HAS BEEN UNDER WATER. IMMEDIATELY CALL A QUALIFIED SERVICE TECHNICIAN TO INSPECT THE APPLIANCE AND TO REPLACE ANY PART OF THE CONTROL SYSTEM AND ANY GAS CONTROL WHICH HAS BEEN UNDER WATER.

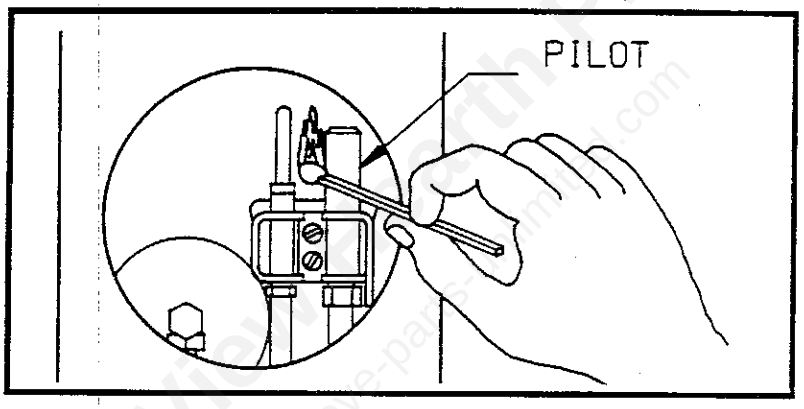
LIGHTING INSTRUCTIONS

1. STOP! Read the safety information on the first label.
2. Turn the control knob clockwise ↷ to "Off". The knob will click between Pilot and Off. This control has a lockout feature. If the pilot is burning when the control is turned to Off, the knob will lock until the Pilot Valve closes.





3. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information on the first label. If you don't smell gas, go to the next step.
4. Remove the wingnut and washer then open the pilot access door. Locate the pilot as illustrated.



5. Turn the knob counterclockwise ↶ to pilot (against A stop - *do not* push the knob in as you turn).
6. Position yourself so the pilot can be seen. Push the control knob in fully and hold it in. Immediately light the pilot with a match. Continue to hold the knob in and close the pilot access door. Hold the knob in about one minute after the pilot lights. Release the knob and it will pop back out. The pilot should remain lit. If it goes out, repeat steps 2 through 6.
   - If the knob does not pop up when released, stop and immediately call your service technician or gas supplier.
   - If the pilot will not stay lit after several tries, turn the gas control knob clockwise ↷ to "Off" then call your service technician or gas supplier.
7. Turn the knob counterclockwise ↶ to "High". Adjust the knob between Hi and Lo as desired.

TO TURN OFF GAS TO APPLIANCE

1. Turn knob clockwise ↷ to "Off". Knob will click between pilot and off.
2. If the heater is equipped with optional blower, turn off all electrical power to the heater if service is to be performed.

IMPORTANT: Because the LSC series of Direct-Vent units is designed so that all air for combustion is obtained from the outside atmosphere and all flue gases are discharged to the outside atmosphere, any excessive leak in the system will cause improper pilot and main burner operation.

Should there be an indication of pilot and/or main burner flames being extinguished or unstable, the following steps should be taken:

1. Recheck installation of outside vent assembly, following instructions outlined in this booklet.
2. Make certain pilot light access door is closed tightly. (Check for good impression of combustion chamber opening on pilot access door gasket.)
3. Check control pan to see if wing nuts and washers have been tightened so that the pan has been drawn up, as much as possible, to bottom of combustion chamber.

CARE & MAINTENANCE

1. Care of Finish

The finish on the cabinet of LSC direct-vent units is made of painted steel. With proper care it will last for several years. To protect the finish, observe these precautions:

a. Clean surface when the unit is cool.

b. To remove soil that cannot be dusted or wiped off with a dry cloth, use a damp cloth or wash with mild soap and water, drying thoroughly afterward.

c. Do not apply varnish, plastic coatings or furniture polish!

2. Cleaning Inside of Unit

The surface of the combustion chamber and the top baffles will accumulate a layer of dust and need occasional cleaning because of the large amount of air that passes through the heater while it is operating.

These surfaces should be cleaned only when the heater is cool. First, carefully remove the outer cabinet. Dust may be brushed or vacuumed off the heat chamber surfaces and baffles and the cabinet carefully put back in place.

3. Main Burner and Pilot

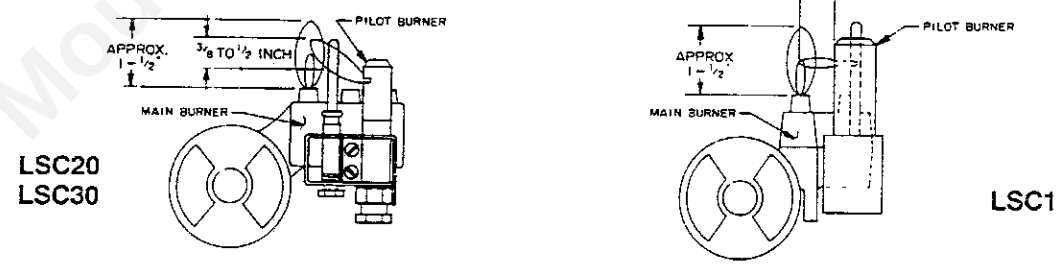
At least annually, before each heating season, and more often in areas where dust or dirt may have been drawn into the air intake of the furnace vent, a visual check of the main burner and pilot flame should be made. Refer to Figure 3 for proper flame pattern illustration.

If excessive yellow tipping flames are noted, the main burners and pilot should be removed and cleaned with a brush and blown out with an air hose.

to remove burner, remove the screws securing cabinet to wall and lift outward and up to remove from the unit. Next, remove the wingnuts holding the control pan to the combustion chamber and lower burner for cleaning. To reinstall, simply reverse the procedure.

After the burner has been cleaned and installed, refer to Section 8 under "C. OPERATION" for proper air adjustments. Also see Figure 3 for proper pilot-burner flame pattern.

FIGURE 3 **MAIN BURNER and PILOT ASSEMBLY**



4. Venting System

The outside vent should be inspected annually, before each heating season, for damage. If the outside vent is hit with enough force to move or distort any portion of it, the joint connections and seals must be inspected.

If any blockage (leaves, debris, etc.) is found on or around the outside vent, remove it before operating the furnace.

If any damage or other than surface corrosion is noted, the vent cap or vent pipes must be replaced.

To inspect and/or reseal the joints in the vent system refer to Section 3, Installing Outside Vent, and dismantle the system in reverse order. WARNING: WHEN A CONNECTION SEALED WITH FURNACE CEMENT IS BROKEN FOR ANY REASON, ALL THE OLD CEMENT MUST BE REMOVED AND FRESH CEMENT APPLIED AS THE PARTS ARE RECONNECTED.

5. Summertime Maintenance

During the Summer, the inner surfaces of the outdoor sections of the air intake and flue outlet assembly may gather dust, insects, cobwebs, or even wasps' nests. It would be advisable, therefore, to protect the exposed section with a polyethylene bag or dust cover during seasons of non-use. The outside spacer section and air intake assembly may be removed, if necessary, for cleaning.

6. Repair and Service

If and when your LSC direct-vent unit needs service or a new part, consult the dealer from whom it was purchased or write directly to Warm Morning giving this information:

a. Description of operating problem or necessary replacement part. (See parts list for description and proper name).
b. Model number and seriel number of unit.
c. Type of gas used.
d. Date unit was installed.
e. Name and address of dealer from whom unit was purchased.

CAUTION: To insure safety and good performance, all adjustments, servicing and replacement of parts should be handled by your Warm Morning Dealer.

SERVICE GUIDE TO LSC 10S, 20S & 30S DIRECT VENT HEATERS

Direct vent gas heaters must be installed with extreme care and with close attention to the installation instructions received with the heater. Since this type of heater operates with sealed combustion, any air leakage at critical locations will upset the balance of air pressure that is essential to efficient and trouble-free performance.

An imbalance of pressure between air intake for combustion and release of flue gases may cause frequent pilot (and burner) outage, a "floating" and unstable burner flame, a lowering of heat output and possibly the release of gas fumes into the room.

The following is a "check list" of possible irregularities in installation or assembly that can cause difficulties:

Indoor Check Points

1. Is the control pan securely bolted to the bottom of the combustion chamber for an airtight seal? If the control pan was removed from the combustion chamber for any reason during installation, be sure that it has been replaced properly to prevent air leakage between the pan and combustion chamber.

2. Is the pilot door securely closed and sealed? At the same time, check the pilot observation glass assembly in the pilot door to be sure there is no crack or air leakage around the glass or bolt holes.

Outdoor Check Points

3. Has the smallest diameter flue pipe been cut to the proper length and installed correctly? Make certain the flue pipe does not extend beyond the extruded collar of the round opening in the outside panel of the air intake assembly. There are two tabs welded on the collar to prevent this, but occasionally the tabs may be bent or broken by the installer, allowing the flue pipe to extend as much as 2" beyond the collar into the cross vent cap assembly, thus restricting flue draft. If the flue pipe is cut too short, flue products can be drawn into the combustion chamber as combustion air and result in an outage.

4. Is the flue pipe attached securely to the combustion chamber? The uncrimped end of the flue pipe fits over the round collar on the back of the combustion chamber. This must fit tight and be sealed with furnace cement.

5. Is the air intake box installed properly? Make certain the air intake box is in place and furnace cement has been used for a tight seal under the formed edge at the end of the air intake box. This part (Step C on page 3) is frequently left out by installers.

6. Is the solid side of the perforated air intake section facing up? If not, remove air intake assembly and re-install.

7. Have the joints between the underside of the wall plate on the outdoor unit box and the outside wall of the house been thoroughly caulked? There must be enough caulking between the four flanges of the box and the wall to provide a definite seal.

8. Is the cross vent cap installed with the baffle plate on the top side? If not, remove this section and re-install properly.

Indoor Re-Check Points

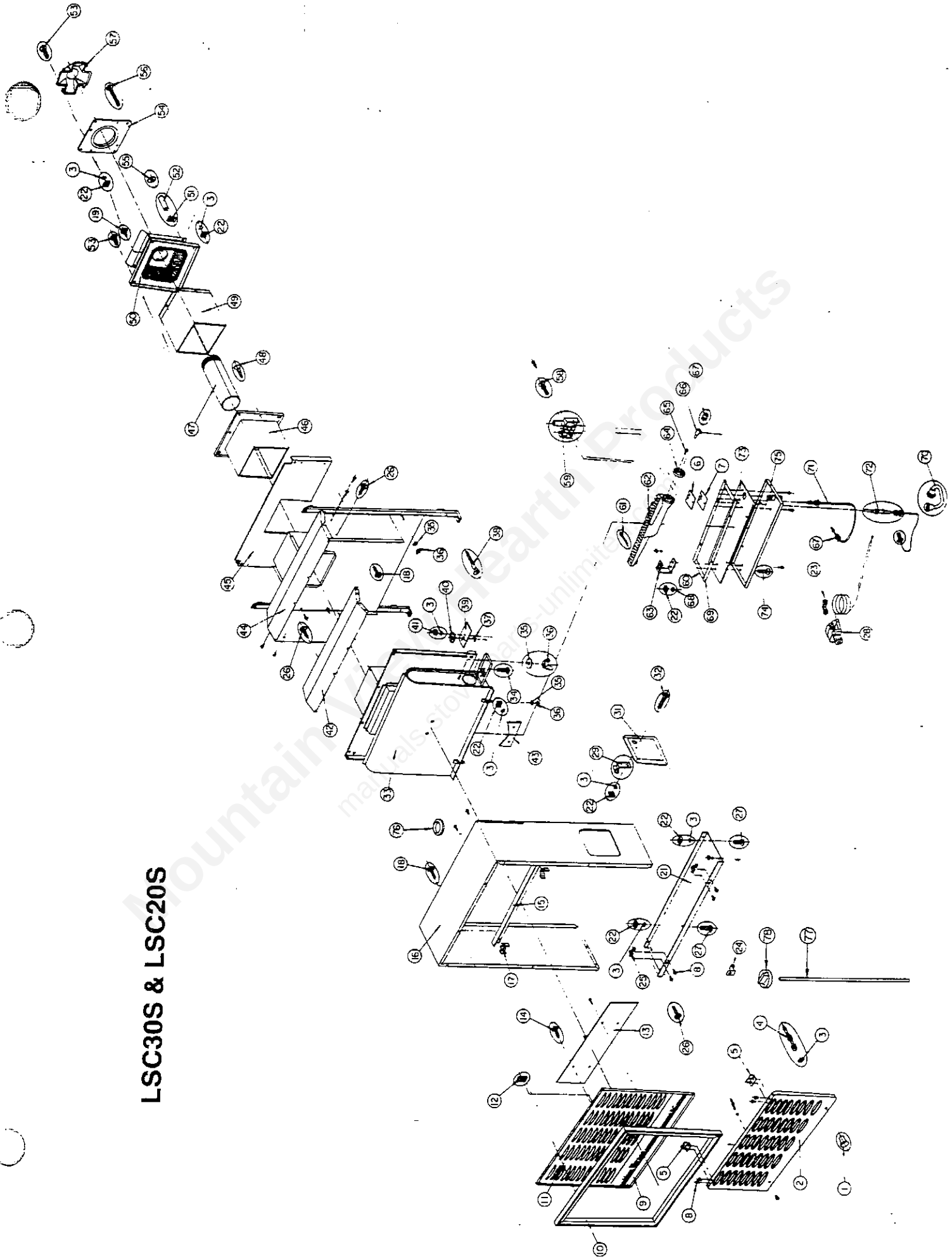
After any necessary corrections have been made outdoors, it is advisable to recheck the combustion chamber, pilot and burner operation. With the pilot accessory door closed, check the burner flames through the pilot window.

Burner adjustment for a direct vent gas heater is slightly different from that of conventional types of room heaters. For direct vent heaters, the air shutter should be adjusted with the pilot access door open to produce harder or sharper flame than normal because the burner flame will soften slightly when the pilot door is closed. Also, this adjustment should not be made until the burner has been operating for 15 minutes, to allow the burner temperature to reach operating level. It may be necessary to make several "trial and error" adjustments of the burner air shutter before an optimum burner flame adjustment is obtained.

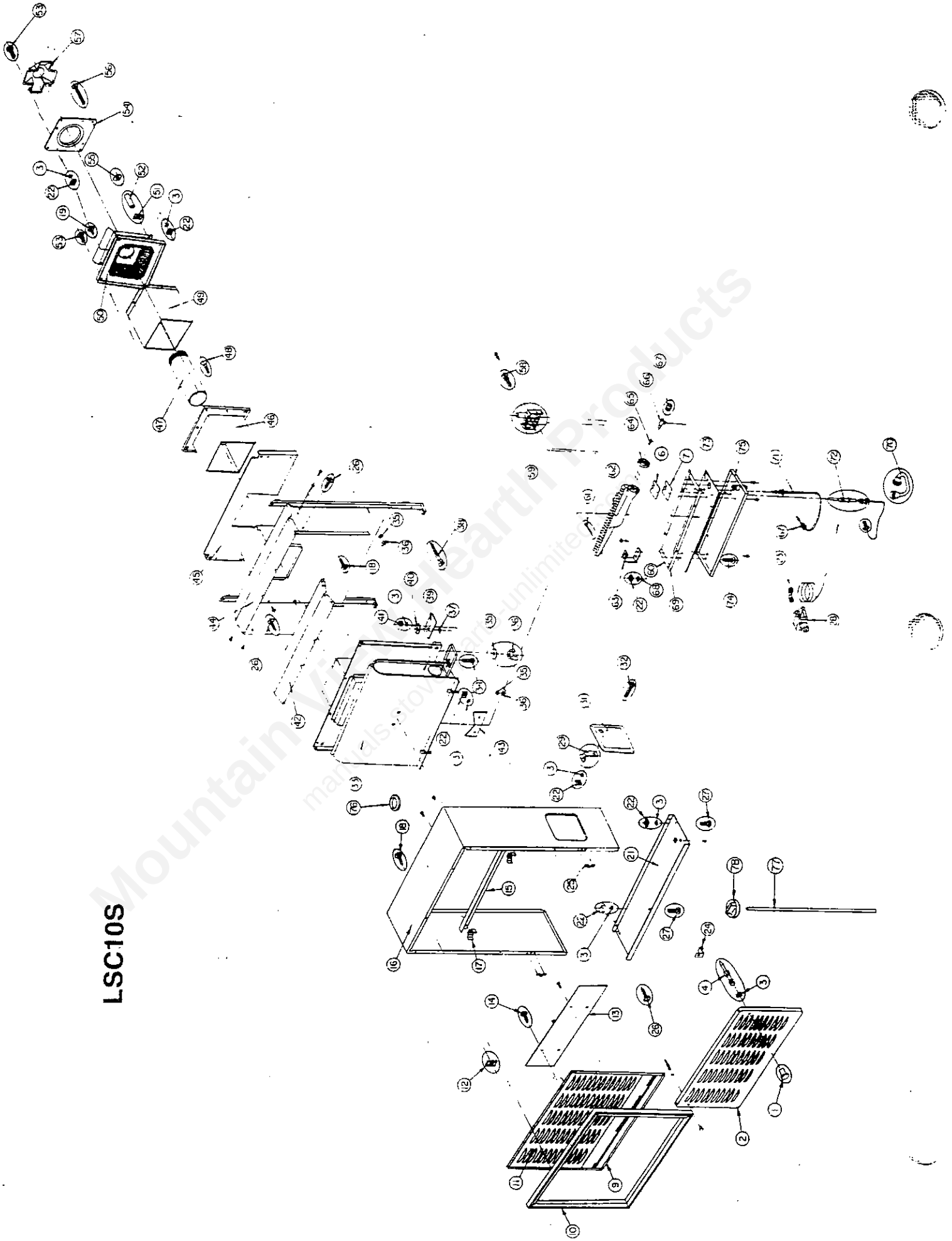
PARTS LIST FOR LSC10S, LSC20S & LSC30S

KEY NO.	PART NAME	QTY.	PART NUMBER		
			MODEL LSC10S	MODEL LSC20S	MODEL LSC30S
1	Knurled Knob	2	244	244	244
2	Lower Front Panel Assembly	1	051745	048387	048397
3	#10 Shakeproof Washer		HD485	HD485	HD485
4	Lower Door Strike	2	783540	783540	783540
5	Lower Front Panel Stop Assembly	2	692626P	692626P	692626P
6	Pilot Tube Retainer	1	733061	733061	733061
7	Pilot Tube Retainer Gasket	1	733067	733067	733067
8	Pop Rivet		SD42BS	SD42BS	SD42BS
9	Model Number Plate	1	880061-10	050084	050093
10	Front Panel Frame Assembly	1	880347P	880154P	880155P
11	Upper Front Panel	1	836852P	050087	050096
12	10-24 Speed Nut	4	HD212	HD212	HD212
13	Front Panel Radiation Shield	1	794228P	794262P	794216P
14	10x5/8 PH Truss Hd Type A		HD404	HD404	HD404
15	Casing Top Brace Assembly	1	692639P	682545P	682554P
16	Outer Cabinet Assembly	1	050081	880335P	880281P
17	Casing Hanger Assembly	2	682536P	682536P	682536P
18	10x5/8 PH Truss Hd Type A		HD404	HD404	HD404
19	8x1/4 PH Pn Hd Type A		HD446	HD446	HD446
20	Insulation Pipe Weld	1	N/A	804598	794265
21	Outside Casing BTM Assembly	1	051718	682546P	682556P
22	10-24 Square Nut		HD225	HD225	HD225
23	Adaptor Elbow Brs 90 DCG	1	038345	038345	038345
24	Spring Clip	1	C460670204	C460670204	C460670204
25	Lower Door Catch	2	C16630124	C16630124	C16630124
26	10x3/8 PH pn Hd Type A		HD433	HD433	HD433
27	10-24 x 3/8 PH Truss		HD306	HD306	HD306
28	Control Assembly Natural Gas	1	050078	050078	050078
28	Control Assemblyl L.P. Gas	1	050079	050079	050079
29	Spring Clip	1	M113	M113	M113
30	Vent Baffle Assembly Pntd	1	N/A	63290P	63290P
31	Side Door Assembly	1	880035P	880035P	880035P
32	10-24 x 1/2 PH Rossette Hd	1	HD343	HD343	HD343
33	Combustion Chamber Assembly	1	794233P	682567P	682570P
34	6-32 x 1/2 PH Pan Hd	4	HD320	HD320	HD320
35	5/16 ID x 3/4 OD Fltwh		HD510	HD510	HD510
36	1/4 - 20 Wing Nut 1" WS Frgd		HD219	HD219	HD219
37	Observation Glass	1	058584672	058584672	058584672
38	12x2-1/2 Sltd Flthd	4	HD464	HD464	HD464
39	Lighter Door Gasket	1	62179	62179	62179

KEY NO.	PART NAME	QTY.	PART NUMBER		
			MODEL LSC10S	MODEL LSC20S	MODEL LSC30S
40	Observation Washer Assembly	1	62177P	62177P	62177P
41	6-32 Hex Nuts	4	HD185	HD185	HD185
42	Combustion Chamber Inner Shield	1	682544P	682559P	682565P
43	Combustion Chamber Cast Plate	2	902126	902126	902126
44	Inner Casing Assembly	1	794231P	682551P	682537P
45	Wall Plate Assembly	1	682543P	682569P	682571P
46	Inner Wall Plate Assembly	1	794256P	794222P	794222P
47	Flue Pipe	1	3X1650	794145	815184
48	12 x 1-1/4 Flat Hd Wd Srw	4	HD463	HD463	HD463
49	Outer Air Intake Box Assembly	1	815062P	815183P	815183P
50	Outer Wall Plate Assembly	1	794257P	794264P	794223P
51	10-24 Speed Nut	4	HD212	HD212	HD212
52	DV Vent Spacers	4	32759	32759	32759
53	10-24 x 1-1/2 PH Truss Hd		HD312	HD312	HD312
54	Flue Cap Spacer Assembly	1	61127P	793809P	793809P
55	3/16 ID x 1/20 D Fibre WH	4	HD496	HD496	HD496
56	10-24x1/2 PH Truss Hd	4	HD295	HD295	HD295
57	Cros Vent Cap Pntd	1	050070	050083	050083
58	10-24x7/8 Sltd Rd Hd Cad	4	HD258	HD258	HD258
59	Pilot Burner Natural Gas	1	J998DDZ3221	J999DDZ3221	J999DDZ3221
59	Pilot Burner L.P. Gas	1	J998DDZ4211	J999DDZ4211	J999DDZ4211
60	Ceramic Tape	1	867874	793995	793995
61	Cotter Pin 3 1/16 x 1-1/4	1	867860	867860	867860
62	Burner Drilled	1	6186	815004	6188
63	Burner Support Assembly	1	62168P	62157P	61152P
64	Air Mixer	1	C7	C13	8B
65	10-24 x 3/8 PH Truss	1	HD306	HD306	HD306
66	Burner Fiting Natural Gas	1	496952	050092	050100
66	Burner Fitting L.P. Gas	1	496963	496955	050102
67	Fitting Compresion 1/4	2	033346	033346	033346
68	1/4 ID x 1/200 LK WH		HD532	HD532	HD532
69	Ceramic Tape	1	867909	793994	793996
70	Manifold Assembly	1	050071	051576	051576
71	Tubing 1/4 OD x 13 Alum	1	039555	039555	039555
72	Thermocouple	1	K15DA18	K15DA18	K15DA18
73	Control Pan Gasket	1	733074	733075	733076
74	10-24 x 1/2 PH Truss Hd Chrm		HD312	HD312	HD312
75	Control Pan Assembly Pntd	1	050075	051719	051720
76	Ring Printed	1	N/A	051614	051614
77	Rod	1	N/A	051721	051722
78	Knob	1	N/A	047138	047138



LSC30S & LSC20S



LSC10S

Warm Morning

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A Division of Martin Industries, Inc.
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