LASER CLEAN HEATING SYSTEM/VENTED HEATER INSTALLATION AND OPERATION INSTRUCTIONS



LASER CLEAN VENTED MODEL Laser 73

IMPORTANT

READ AND UNDERSTAND INSTRUCTIONS BEFORE INSTALLING OR USING HEATER. RETAIN INSTRUCTIONS FOR FUTURE REFERENCE. CHECK LOCAL CODES FOR PERMITTED USE.

CONTENTS

SECTION A:	SECTION F:
Specifications ······ 2	Routine Maintenance ····· 11
Safety Features	SECTION G:
SECTION B:	Troubleshooting······ 13
Safety Tips for Operation ····· 4	SECTION H:
SECTION C:	Long Term Storage····· 15
Fuel Guide ······ 5	SECTION I:
SECTION D:	Installation
Operating Controls and Part Names	Tools Needed for Installation 16
SECTION E:	Standard Installation Parts ······ 16
Operation	Safety Tips for Installation 18
Before Ignition ····· 8	Installation of Heater and Flue Pipe 19
Operation ····· 8	SECTION J:
Turning Heater Off ······ 11	Fueling ······ 25

SECTION A: SPECIFICATIONS

Model:	Laser 73
Heater Efficiency:	92% (1)
Heat Rating:	High - 10.3 kW (35,000 BTU) Med - 7.3 kW (25,000 BTU) Low - 3.6 kW (12,500 BTU)
Fuel Consumption:	High - 1.08 L/h Med - 0.76 L/h Low - 0.38 L/h
Fuel System:	External tank (2)
Fuel Type:	Paraffin only
Dimensions (W × H × D): (Includes drip tray)	760 × 427 × 700 mm
Weight:	34 kg
Vent Pipe Hole:	70 ~ 80 mm
Maximum Length of Vent Pipe System:	3m, 3 bends or less
Electrical Rating:	230 Volts AC, 50 Hz Preheat — 280W Burning — 84W

(1) Heat and vaporized water are produced by the combustion process of this paraffin heater. This rating does not take into account heat loss due to condensation of water vapor.

(2) External tank to be purchased from local suppliers.

SAFETY FEATURES

Your Laser 73 is equipped with the following safety features. Please familiarize yourself with these features. When your heater is extinguished due to a safety mechanism, be sure to identify and correct the problem.



1. Flame Sensor

Heater will automatically stop all operations if ignition fails or if flame fails during combustion, in order to prevent fuel overflow. Error code will be displayed on the digital indicator.

2. Fuel Strainer

Special strainer catches any dirt or impurities present in the fuel before it is sent to the burner.

3. Overheat Protector

Automatically stops all operations if heater cabinet reaches abnormally high temperature due to motor malfunction or abnormal combustion, in order to prevent fire.

4. Power Failure Recovery System

If power fails during heater operation, heater will turn off. When power resumes, heater will automatically reignite to maintain the selected room temperature.

5. Fully Vented System

Flue pipe system provides outside air for combustion and vents all combustion products to the outdoors.

CAUTION: Heater and vent pipe system must be properly installed before operation. Please follow instructions under "Installation", Section I.

- 1. Never use any fuel other than clear paraffin. NEVER USE GASOLINE. Use of gasoline can lead to uncontrollable flames, resulting in destructive fire.
- Due to high surface temperatures, keep heater away from children, furniture 2. and clothing while in operation (See Page 19).

3. To prevent abnormal operation and prolong heater life, be sure to perform routine maintenance (See Pages 11-12).

4. Never store or transport paraffin in other than a metal or plastic container that is (1) acceptable for paraffin, (2) non-red in color, and (3) clearly marked, "PARAFFIN". Never store paraffin in the living space.









SECTION C: FUEL GUIDE

The Laser 73 is designed for use with clear paraffin only. Use of low-quality paraffin will cause burner performance to drop, leading to abnormal combustion and reduced heater life.

Purchase only paraffin in non-red cans reserved exclusively for paraffin and marked accordingly with the word "PARAFFIN". Always store your paraffin in a separate area from where you store gasoline for your power equipment to avoid accidental use of gasoline in your heater.

What to Buy . . .

ALWAYS :	Clear Paraffin.
ALWAYS :	Paraffin free of contaminants, water or cloudiness.
NEVER :	Gasoline, alcohol, white gas, camp stove fuel or additives.
NEVER :	Yellow or sour-smelling fuel.

How to Store It . . .

- ALWAYS: Store in a clean container, non-red in color, clearly marked PARAFFIN.
- ALWAYS: Store away from direct sunlight, heat sources or extreme temperature changes.
- NEVER : In a glass container, or one that has been used for other fuels.
- NEVER : For longer than six months. Begin each heating season with fresh paraffin; discard at the end of season.
- NEVER : In the living space.

Why It is Important . . .

Pure, clean paraffin is essential for safe and efficient heater operation. Poor quality or contaminated paraffin can cause:

- Excess tar deposits on burner and flue pipe
- Incomplete combustion
- Reduced heater life

Use of a highly volatile flammable fuel such as gasoline can produce uncontrollable flames, creating a severe fire hazard.











SECTION D: OPERATING CONTROLS AND PART NAMES

Before using heater, familiarize yourself with the following operating controls and part names.



1.	ON/OFF switch:		Main s heater	swi beg	tch which turns heater on and off. When switched on, gins operation and combustion starts after preheat period.
2.	Auto switch:		The sv have b	vito eer	ch turns automatic operation modes on and off which n programmed into timer.
3.	Temperature selectors:		"NORN select o	ЛА des	L" and "SET-BACK" temperature selectors allow user to ired temperature during manual or automatic operation.
4.	Timer & clock set:		Timer a	anc s.	d clock set modes can be set by pressing hour or minute
5.	Timer selector:		Clock, set can	clo be	ck set, "SET-BACK" mode, start time set and end time selected by this switch.
6.	Digital indicator:		Display	/s (clock, set temperature, room temperature and error code.
7.	Burning mode lamp:		Indicat combu	es sti	whether heater is operating at high, medium or low on.
8.	ON/OFF lamp:		Lights prepur	wh ge	en heater is in operation and flashes when heater is in or postpurge.
9.	Auto lamp:		Lights	wh	en automatic operation is in use.
10.	Normal temperature lamp		Lights automa	wl atio	nen heater runs with manual or "NORMAL" mode of coperation.
11.	Set-back temperature lam	o:	Lights operat	wl ion	nen heater runs with "SET-BACK" mode of automatic .
12.	Circulating fan:		Three-s high co umcap mainta	spe om aci ini	eed motor supplies high-capacity warm air flow during bustion for heating room up quickly, and low or medi- ty warm air flow during low or medium combustion for ng comfortable room temperature.
13.	Room temperature sensor	:	Consta heater	ntl so	y senses room temperature and supplies information to that desired room temperature can be maintained.
14.	Power supply cord:		For use	e in	230V AC electrical outlets only.
15.	Plumb bob:		Allows	us	er to check if heater is positioned evenly.
INDICATOR LAMPS					
ON/	OFF lamp	Fla Lit	shing	-	Pre-heating, pre-purging and post-purging mode Heater in operation
AU	ГО lamp	Fla Lit	shing	-	Power loss of more than 10 seconds Heater in operation at auto mode
LOV	V lamp	Lit		-	Heater in operation at low combustion
MEI	D lamp	Fla Lit	shing	-	Pre-purging mode (without flame) Heater in operation at medium combustion
HIG	H lamp	Lit		-	Heater in operation at high combustion
NO	RMAL lamp	Lit		-	Heater in operation at normal mode

- Heater in operation at set-back mode

SET-BACK lamp

Lit

BEFORE IGNITION

1. Open the Valve(s)

Open the valve(s) of the external fuel tank.

2. Start the Fuel flow

If using heater for the first time, or after heater has been out of fuel, press the red reset button once for a period of one second in order to send fuel to the fuel sump.

Note: Make sure there is no fuel leakage from the fuel line or joints. Also make sure fuel tank is not too high. See installation instructions.

3. Plug in the Heater

Plug heater into a 230V AC electrical outlet. Note: Do not connect to an outlet shared with other appliances.

4. Set Clock

Important: Clock on the heater always must be set to current time.

- A. Position timer selector to "CLOCK SET".
- B. Press "HOUR" and "MINUTE" button of TIMER/CLOCK SET to correct time.
- Important: Check for the AM or PM indicators, to insure the correct time.
- Note: "HOUR" or "MINUTE" button will change the time every one (1) unit. Holding the button continuously will cause the time to change rapidly.
- Note: In the event of a power failure over ten (10) seconds, all clock and timer settings are cancelled. Digital indicator will flash "PM 12:00" when heater is off, or "AUTO" lamp will flash when heater is on and in automatic operation, after is power is restored. However, no indications when heater is in manual operation. At this point, you need to reset all time and set-back functions.
- C. Position timer selector to "CLOCK/TEMP (NORMAL POSITION)" after clock setting is completed. Current time will be shown on digital indicator.

OPERATION

Operation of Laser Heater can be controlled manually by the user - "MANUAL" operation (NORMAL mode only) or run automatically by the programming - "AUTOMATIC" operation (NORMAL mode and SET-BACK mode).

MANUAL OPERATION

"MANUAL" operation means that the set-back will not be in use but in "NORMAL" mode.

Operation of the heater is under the direct control of the user ("AUTO" switch is off). Heat output will, however, be automatically adjusted in accordance with the room temperature registered by the temperature sensor.





1. Select Manual Operation

Press the "AUTO" switch to "OFF" position.

2. Turn Heater ON

- A. Push in ON/OFF switch to "ON" position. The current room temperature and the set temperature will be shown on the digital indicator. ON/OFF lamp will start to flash and then blower motor and ignition will start.
 - Note: Heater will not start when room temperature is higher than the desired temperature setting.
- B. Burning mode lamp "MED" will start to flash after approx. 3 9 minutes and ignition will take place. (*) After ignition, burning mode lamp "MED" will change from flashing to continuous. And, after 10 seconds, burning mode lamp will turn to "LOW" and heater will start "LOW" burning mode. Circulation fan will turn on after approx. 3 minutes.

Note: (*) Pre -heating depends on the room temperature.

Room temperature: below 1°C - 9 minutes 1°C - 16°C - 6 minutes over 16°C - 3 minutes

C. Heater will operate at "LOW" or "MED" burning mode for approx. 6 minutes after ignition, regardless of temperature control setting. Heater will not go into "HIGH" burning mode while the prepurging is in effect. After this period, output can be adjusted as desired by using the "NORMAL" temperature selector as directed in following instructions.

3. Adjusting Room Temperature

- A. Slide "NORMAL" temperature selector to set the room temperature desired. The temperature control should be set at the position you find most comfortable.
 - Note: Desired temperature setting will be displayed on the digital indicator when you set the room temperature.
 - Note: The scale on temperature selector is just for your reference. The figures on the digital indicator and on the scale may not match exactly; This is normal.
- B. Burning mode will be regulated automatically in accordance with the room temperature registered by the room temperature sensor. Heater will be operated at "HIGH" burning mode until room temperature reaches the selected temperature level.
- C. When room temperature reaches the selected setting, heater will automatically shift to "MED" or "LOW" burning mode to maintain the desired temperature. When room temperature exceeds the selected setting by approx. 2°C, the heater will automatically shut off. As room temperature drops, the heater will automatically re-start to maintain the desired temperature.











AUTOMATIC OPERATION

"AUTOMATIC" operation is established by programming the time/temperature settings for specific time, "SET-BACK" mode operation will be programmed in a 24-hour period. It is designed for energy efficiency by using a lower temperature setting, generally at night. **Ex.**



1. Set Start Time of "SET-BACK" Mode.

A. Slide the timer selector to "START SET-BACK".

B. Press "HOUR" and "MINUTE" button of TIMER/CLOCK SET to set desired start time.

- Note: When setting "SET-BACK" time, the "MINUTE" button will advance time by ten (10) units. (Ex. 10:00, 10:10, 10:20, etc.)
- C. Start time of "SET-BACK" mode will be shown on digital indicator. (Ex. PM 10:00)

2. Set End Time of "SET-BACK" Mode.

With the timer selector slide switch in the "END SET-BACK" position, program the end time as described above. (Ex. AM 6:00)

Important: Always return timer selector to "CLOCK/TEMP (NORMAL POSITION)" after settings.

3. Set Room Temperature.

Slide "NORMAL" temperature selector and "SET-BACK" temperature selector at the position you desire. (Ex. "NORMAL" $- 25^{\circ}$ C, "SET-BACK" $- 15^{\circ}$ C)

Note: The temperature setting currently being used is displayed on the digital indicator. To view and set the Set-Back temperature setting, press the "MINUTE" button for more than three (3) seconds. The display will go back to the Normal temperature setting after ten (10) seconds.

4. Push in AUTO switch to "ON" position.

5. Turn Power ON.

Press ON/OFF switch to "ON" position. ON/OFF lamp will start to flash and AUTO switch lamp will light. And then blower motor and ignition will start.

Note: SET-BACK OPERATION IRREGULAITIES: If a heater is switched "OFF"; if the "AUTOMATIC" operation is switched off; or there is a power interruption while the unit is operating in the "SET-BACK" mode, the "SET-BACK" mode may be temporarily disabled until the next Start Set-Back time.

TURNING HEATER OFF

Press ON/OFF switch to "OFF" position. (AUTO lamp and temperature lamp will go out. Burning mode lamp will flash until flame disappears.) Circulation fan and blower motors continue to run for approx. three (3) minutes to cool down the heater. Make sure ON/OFF lamp goes out when the fan stops.

- Note: If ON/OFF switch is pressed to "ON" position during the cool down period, the heater will automatically re-start at the end of cool down period.
- Note: Disconnect the heater plug from the electrical outlet after the power lamp has turned off if the heater will go unused for a prolonged period. The plug should also be disconnected during electrical storms.
- Note: Heater may also be shut down by lowering the setting on the temp. selector thermostat(s) because heater goes into "OFF" cycle.

MANUAL COMBUSTION

Important: This feature is for testing purpose only!

This heater also can be kept burning at desired combustion mode (High, Medium or Low) manually, regardless of room temperature.

- 1. Press the "HOUR" button and "MINUTE" button at the same time for more than three (3) seconds when ON/OFF switch is "ON".
- 2. P1, P2 or P3 will be displayed on the Digital Indicator;
 - P1 = Low mode
 - P2 = Medium mode
 - P3 = High mode

Then select desired combustion mode by pressing "MINUTE" or "HOUR" button. "MINUTE" button changes combustion mode to higher, "HOUR" button changes combustion mode to lower.

3. To clear, press the "HOUR" button and "MINUTE" button at the same time for more than three (3) seconds until normal temperature display returns.

SECTION F: ROUTINE MAINTENANCE

CAUTION: Be sure to unplug heater before performing any checks or cleaning.

CAUTION: Allow heater to cool completely before cleaning or maintenance.

FOR OPTIMUM HEATER PERFORMANCE, THE PARTS SHOWN BELOW SHOULD BE CLEANED REGULARLY:







- Clean Louvers (ONCE A WEEK) Dust and stains should be wiped off louvers with a damp cloth.
- 2. Clean Circulation Fan Cover (ONCE A WEEK) Remove only dust or pet hair from the cover on the back of the heater.
- Check for Paraffin Leaks (REGULARLY) Make it a habit to check for any sign of paraffin leakage along the fuel line and at all joints. Paraffin leaks may lead to risk of fire.
- 4. Check Flue Pipe Area (ONCE A WEEK)

Check the flue pipe joint to make sure connection is firm. Use a vacuum cleaner to remove any dust or pet hair.

5. Clean Fuel Strainer (ONCE A MONTH)

The strainer of the fuel sump should be cleaned once a month and before storing heater at the end of each season.

- (a) Close the valve(s) of the separate fuel tank.
- (b) To catch the fuel which will drain out, set the oil catch below the strainer cover, with a small container under it.
- (c) Loosen the two screws from the strainer cover and remove.
- (d) Remove the strainer and wash with paraffin.
- (e) Return the strainer to its original position. Replace strainer cover and screw to secure.
- (f) Wipe away any spilled paraffin.
- (g) Open the valve(s) of separate fuel tank. Check for paraffin leakage.
- Note: At the end of each season unscrew the drain screw to remove all the remaining paraffin from the fuel sump. Be sure to follow the A and B procedure listed above.











SECTION G: TROUBLESHOOTING

NOTE BEFORE REQUESTING FOR REPAIR AND SERVICES

The following symptoms are normal during operation of the heater.

	CONDITION	REASON
arted d.	White smoke or smell at initial use after purchase.	Machine oil or dust burns of the surfaces of the burner or heat exchanger.
	Flames flashing for a few minutes after ignition.	The burner is cold and igniter is kept running for a while after ignition.
er is st guishe	Occasionally makes "cracking" noise when heater is ignited or extinguished.	Expansion and shrinkage of metal parts when they are heated or cooled.
When heat or extin	Warm air will not blow as soon as ignited.	To prevent uncomfortable cool air from coming out at the beginning, circulation fan start up is delayed.
	Audible chugging sound from fuel pump when started first time or after running out of fuel.	Air is in the pump. However, noise should stop within 1 minute.*
er is on.	"Ticking" noise.	Noise of fuel pump in operation. Normal.
n heat perati	Part of the heat chamber or the heat exchanger is heated to a cherry red color.	Normal.
Occasional yellow flickering in blue flame.		Normal.

*If sound from fuel pump does not decrease and heater shuts off, check:

- 1. Push red reset button on fuel sump. DO NOT hold down.
- 2. Insure that all valves are open and filter is clear.
- 3. Insure external fuel tank has fuel and filters are clean.

AUTOMATIC CLEANING SYSTEM

Heater will automatically clean igniter for ten (10) minutes every day at 2:00 a.m. and display "CL:10" on Digital Indicator if heater is running at that time.

MANUAL CLEANING SYSTEM

Heater will clean igniter for ten (10) minutes manually.

- 1. Press the "HOUR" button and "MINUTE" button at the same time for more than three (3) seconds when ON/OFF switch is "OFF".
- 2. Display will appear "CL:10" on Digital Indicator. Cleaning will begin and end without any additional input.
- Note: Cleaning igniter is important to prolong igniter life. It is recommended that the igniter be cleaned once a week.

Should problems arise during operation or ignition, use this chart to determine the cause and the proper steps to take. Be sure to unplug heater and allow to cool completely before taking corrective measures. In the event that heater should extinguish itself, without any action or your part, you should look to the digital indicator for any of the following error codes.

DISPLAY/LAMP	PROBLEM	CAUSE	SOLUTION
	POWER LAMP	Disconnected power plug	Plug into 230V AC outlet.
	FAILS TO TURN ON	Circuit board malfunction	Consult your dealer.
EE2	NO IGNITION*	Out of fuel	Check fuel gauge on fuel tank; refuel.
EE2		Fuel tank valve closed	Open valve by turning counterclockwise.
EE2		Air pocket in fuel line	Push reset button on the fuel sump,
			located right inside, once.
EE2		Clogged flue pipe	Clean flue pipe.
EE2		Clogged fuel strainer	Clean fuel strainer (See page 13).
EE2		lgniter, circuit board, flame	Consult your dealer.
		sensor or fuel pump malfunction	
EE8		Blower motor malfunction	Consult your dealer.
EE6	EXTINGUISHED	Air pocket in fuel line	Push reset button on the fuel sump,
	AFTER IGNITION		located right inside, once.
EE6		Out of fuel	Check fuel gauge on fuel tank; refuel.
EE6		High limit switch activated	Clean circulation fan cover, remove any
			obstructions.
EE6		Fuel flow obstruction	Consult your dealer.
EE6		Tank too high	Re-locate fuel tank.
EE6		Fuel sump valve malfunction	Consult your dealer.
EE6		Flame sensor malfunction	Consult your dealer
EE8		Blower motor malfunction	Consult your dealer.
	POOR COMBUSTION/	Soot buildup in flue pipe	Clean out any soot.
	NOISY COMBUSTION	Burner ring not properly seated	Consult your dealer.
		Altitude too high (See page 23.)	Consult your dealer.
5540	DOES NOT	Possibly excess fuel in burner	Consult your dealer.
EE10	EXTINGUISH	Flame sensor malfunction	Consult your dealer.
	ODOR	Leaking flue pipe	Tighten all flue pipe connections.
		Paraffin leakage	Tighten all fuel line joints. Wipe away any
			paraffin drippage.
		Faulty packing or gasket in	Consult your dealer.
		combustion area	
		Room temp is over 35°C.	
Hi		Incorrect location of room temp	Correct the location of the room temp
		sensor	sensor.
		Room temp is lower than -10°C.	
Lo		Room temp sensor malfunction or	Check room temp sensor.
		disconnected	
Low/Med/	DOES NOT	Possibly excess fuel in the burner or	Consult your dealer.
High lamps	EXTINGUISH	flame sensor	
flashing at		malfunction (miss detection)	
the same			
time			

WARNING: Error EE10: - Do not use the heater until the cause of EE10 has been rectified.

Any flame failure will also indicate "Error EE2". Press the Burner ON / OFF switch to OFF (to shut down the heater). Allow the heater to cool down (approx 10 to 20 minutes). Note that the recirculating air fan may operate & assist cooling. Try and identify the cause of the problem, (as in problem solutions above -- in particular EE2 Error Code Solutions). Restart the heater by pressing the Burner OFF/ ON switch to ON.

Note: If the heater fails three times, after checking all causes listed, DO NOT CONTINUE attempts to restart the heater. Switch the heater OFF and contact your supplier / serviceperson.

SECTION H: LONG TERM STORAGE

At the close of each heating season, or when you do not plan to use your heater for an extended period, the following procedures are recommended.

- 1. As the end of the season approaches, calculate your paraffin purchases so that you can use up all the paraffin you have on hand. When paraffin is stored for over six months, its quality may deteriorate. The use of such paraffin will have an unfavorable effect on heater operation.
- 2. If your heater needs any service or repair, now is the time to call your dealer and get it done before storage. That way your heater will be ready for immediate use when the next heating season begins.
- 3. If you plan to store your heater in place,
 - (a) Disconnect power supply.
 - (b) Close the main tank valve.
 - (c) Remove all paraffin from the fuel sump and clean the fuel strainer. (See page 12.)
 - (d) Wipe off any stains or dust on heater with a damp cloth, then wipe once again using a dry cloth.
 - (e) Cover heater completely with a large plastic bag to protect from dust.





SECTION I: INSTALLATION

TOOLS NEEDED FOR INSTALLATION

Tool Crosshead Screwdriver Electric Drill Hole Saw, 70 to 80cm diameter **Use** Installation of flue pipe, etc. Drilling hole in wall for flue pipe Making hole in wall for flue pipe

STANDARD INSTALLATION PARTS

The following standard installation parts are enclosed with heater. For alternate installation methods, you may need to purchase additional accessories which are available from your dealer.

Drip Tray (1)	Wall Brackets (2 sets)
Pipe Holder (1)	Pipe Stopper (1)



SAFETY TIPS FOR INSTALLATION

Follow the safety tips below when planning the installation of your Laser 73.

- 1. Intake and exhaust flue pipe openings must be fully exposed to outside air. Do not vent into chimney, garage, basement under the floor, or into any enclosed area.
- 2. Do not install flue pipe in close proximity to other objects or materials (See page 19).
- 3. Before making a hole in your wall for the flue pipe, make sure the area is free of electrical wires, gas pipes and other obstacles.
- Do not install flue pipe where it will be exposed to heavy snow collected leaves 4. or strong drafts.

Must be

higher

Snow

For all prescribed heater installations, the flue pipe must always be installed

Important: In areas of heavy snow falls,

5.

6.

7.

extension kit ground surface clearance must be increased according to average snow falls.

Long

Do not install the flue pipe down from the heater.

greater than 3 m and 3 bends may be used.

insulating cloth cover.

in a horizontal position.

Important: In open area with strong wind, a wind break may be necessary.









Gas pipe









INSTALLATION OF HEATER AND FLUE PIPE

- IMPORTANT: Check and comply with all state and local codes that may apply to vented heaters before beginning installation.
- NOTE: This heater is designed to be used at altitudes up to 1000 m above sea level. For use at altitudes higher than 1000 m and up to 2000 m adjustments to the heater must be made. Consult your dealer.
- 1. Select heater location. Allow clearances as indicated below between heater and all other materials. (See Fig. 1)





2. Make sure that the outside area to where the flue pipe will reach is clear of any objects. (See Fig. 2 & 3)

NOTE: Flue pipe can be installed through any standard building materials. Section 2:

CAUTION! The standard flue pipe installation, as shown in Fig. 2, is for wall thickness from 10 cm to 23m ONLY.

Note: For wall thickness more than 23 cm, refer to page 18 for available flue pipe extensions. Note: The flue pipe can be installed through any standard building materials.



3. For standard installation, use the template enclosed with the heater to position the hole for the flue pipe. Tack or tape template to the wall at the desired position (See Fig. 4).



- NOTE: Heater should be installed on a sturdy floor that is level and flat.
- NOTE: The template can be adjusted for use of non-standard installations such as the use of extension pipe kits.
- 4. Cut the hole for the flue pipe from inside the room. Use a 70 to 80 cm diameter hole saw attached to an electric drill (See Fig. 5). The opening on the inside wall should be slightly higher than the outside opening (approximately 1/4") so that the flue pipe will slope slightly downward (approximately 2 degrees) after it is installed (See Fig. 6). This will enable the draining of condensed moisture from the flue pipe to the outside and prevent rain or snow entering from outside after installation.



NOTE: After the cutting of the hole is completed, remove the template from the wall.

- 5. Install the inner flue pipe.
 - a. In the case wall thickness 230~320mm.

From inside the room, insert the inner flue pipe through the hole. Make sure the arrow on the inner flue pipe is pointing up. Secure the inner flue pipe to the wall with the three wood screws. (See Fig. 7.)



b. In the case wall thickness 130~230mm.
Remove Intake joint and Exhaust joint from Outer flue pipe (See Fig. 8).



c. From outside, insert the outer flue pipe through the hole. Secure the outer flue pipe to the wall by turning it clockwise. This locks the two halves together (See fig. 9).

IMPORTANT: **Make sure the arrow on the outer flue pipe flange is pointing up.** Make sure to secure the outer flue pipe well. (A-part shown in Fig. 9)



/Outer flue pipe flange

6. Insert the bent joint to the exhaust opening of the flue pipe. Cut the inlet hose for desired length if necessary. Attach the L-shaped hose to each end of the inlet hose and attach the L-shaped hose to the intake opening of the flue pipe. Secure the L-shaped hose to the intake opening with the hose band. Plug the unused exhaust and intake opening with the caps provided with the heater. Make sure the caps fit tightly onto the opening (See Fig. 10).



- NOTE: If the inlet hose is not smoothly inserted into the L-shaped hose, apply water or soap suds to the inlet hose.
- 7. Move the heater into position. Connect the bent joint to the exhaust outlet opening (upper opening) and attach the L-shaped hose to the intake inlet opening. Make sure all connections are tight (See Fig. 11).



Fig. 11

8. Secure the L-shaped hose to the intake inlet opening with the hose band. Secure the bent joint to the flue pipe with the pipe holder (If the extension pipe is used, also attach the pipe holder to the connection of the bent joint and the extension pipe). Secure the bent joint (or the extension pipe) to the exhaust outlet opening by sliding the pipe stopper in the exhaust opening bracket (See Fig. 12).



Fig. 12

9. Make sure the position of the heater is level by using the plumb bob located at the right side of the heater. The plumb bob weight should be within the circle. If the plumb bob weight is not within the circle, adjust the heater legs until the plumb bob weight is within the red circle (See Fig. 13 & 14).



Fig. 13

Fig. 14

- 10. A room temperature sensor is provided with a 2.5 m long extension wire. It is located on the rear of the cabinet. Make sure that the extension wire is not touching the exhaust pipe. The room temperature sensor can be installed either with the self adhesive tape on the back or with a wood screw provided with the sensor depending on the type of surface chosen for installation.
 - NOTE: Choose a location for the sensor that is not in the path of direct sunlight, drafts or the flow of warm air from the heater.
 - (a) Self Adhesive Tape

Peel off the protective tape on the back of the sensor and expose the adhesives. Place the sensor on the desired location on the wall and press down.



(b) Wood Screw Screw down the wood screw provided with the heater into the desired location on the wall. Hook the back of the room temperature sensor.



11. After installation is completed, secure heater to the wall with the wall brackets provided with the heater. Make sure the heater is parallel to the wall (See Fig. 15).



Fig. 15

- 12. Before ignition, recheck the following:
 - a. All connections are tight and firm.
 - b. The heater and the flue pipe areas are free of any materials.
 - c. The heater is level and parallel to the wall.

WARNING: Use only clear Paraffin. NEVER USE GASOLINE. Use of gasoline can lead to uncontrollable flames resulting in destructive fire.

Laser 73 FUEL SYSTEM OPTIONS

• Large Capacity External Tank

Tank must be purchased separately and installed by a qualified fuel supply technician.

EXTERNAL TANK INSTALLATION

NOTE: External tank installation must comply with locally applicable codes. Check with local building officials.

The following instructions should be followed for installation of a large capacity, gravity-fed external fuel tank.

- Installation height of tank's fuel outlet should be at least 40 cm above floor surface upon which heater rests.
- To avoid excess fuel pressure to heater, top of fuel tank should be no more than 2.5 m above floor surface upon which heater rests.
- Fuel tank should be located at least 2 m away from all heat sources.
- 5/16" OD copper tubing should be used for fuel line.
- To prevent air locks in fuel line, fuel line should be smooth with no U-shaped or sharp bends.
- Use of fuel filter in fuel line adjacent to tank is recommended, shut-off valves should also be installed on the fuel line and connected to the tank as shown below.
- NOTE: An additional shut-off valve installed next to the exterior wall will minimize fuel to be drained should heater have to be disconnected. If the valve is on interior side, a fusible link type is recommended.
- 1. Be sure all external tanks have an operating vent.
- 2. The use of a water trap filter is recommended. A model with a drain plug or petcock is preferred.
- 3. Be sure to observe the maximum and minimum tank heights as specified.
- NOTE: If the maximum height from the top of the fuel tank to the bottom of the heater exceeds 2.5 m, a fuel pressure reducing valve, preset at 2.5 psi, is required.

