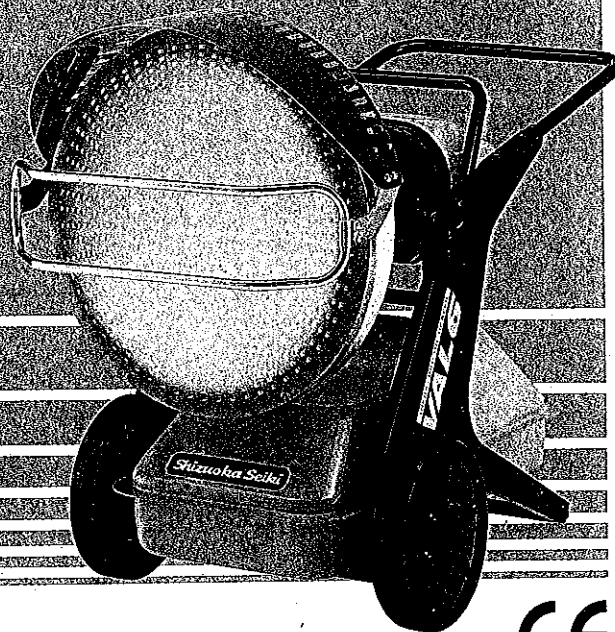


INFRA-RED OIL HEATER
CHAUFFAGE INFRAROUGE AU FIOUL
INFRAROT-ÖLHEIZER
OLIEGESTOOKTE INFRAROODVERWARMING
CALEFACTOR DE PETRÓLEO POR INFRARROJOS

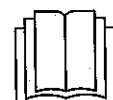
VAL6 EPX

Owner's Manual
Manuel d'utilisation
Betriebsanleitung
Handleiding
Manual del usuario



⚠ IMPORTANT

- This Owner's Manual provides important information on proper handling, operation, and maintenance. FAILURE TO FOLLOW THE INSTRUCTIONS, PRECAUTIONS, OR SAFETY TIPS IN THIS MANUAL AUTOMATICALLY VOIDS ALL WARRANTIES, EXPRESS OR IMPLIED.
- FAILURE TO COMPLY WITH THE INSTRUCTIONS, PRECAUTIONS, AND SAFETY TIPS IN THIS MANUAL CAN RESULT IN DEATH, SERIOUS BODILY INJURY AND PROPERTY LOSS OR DAMAGE FROM HAZARDS OF FIRE, EXPLOSION, BURN, ASPHYXIATION, CARBON MONOXIDE POISONING, AND / OR ELECTRICAL SHOCK.
- Read and thoroughly understand this Owner's Manual before using the heater in any way, including unpacking, assembling, fueling, inspecting, lighting, operating, adjusting, turning off, cooling down, moving, or storing the heater.
- Please keep this Manual for the user's need and reference.
- Do not allow anyone who has not read and understood this Owner's Manual to assemble, inspect, light, operate, adjust, turn off, cool down, refuel, move, or store the heater.
- The requirements of local authorities having jurisdiction shall be followed.
- The installation of the unit shall be in accordance with the regulations of the authorities having jurisdiction.



⚠ IMPORTANT

- Ce mode d'emploi contient des informations importantes sur les façons adéquates de manipuler, de faire fonctionner et d'entretenir l'appareil. TOUTE INOBSERVATION DES INSTRUCTIONS, AVERTISSEMENTS OU CONSEILS DE SÉCURITÉ FOURNIS DANS CE GUIDE ENTRAÎNE AUTOMATIQUÉMENT L'ANNULATION DE TOUTE GARANTIE, EXPRESSE OU IMPLICITE.
- L'INOBSERVATION DES INSTRUCTIONS, AVERTISSEMENTS ET CONSEILS DE SÉCURITÉ DE CE MODE D'EMPLOI PEUT ENTRAÎNER LA MORT, DES ATTEINTES CORPORELLES GRAVES, DES DÉGÂTS MATÉRIELS DUS AUX RISQUES D'INCENDIE, D'EXPLOSION, DE BRÛLURE, D'ASPHYXIE, D'EMPOISONNEMENT AU MONOXYDE DE CARBONE ET / OU DE DÉCHARGE ÉLECTRIQUE.
- Vous devez lire et comprendre intégralement ce mode d'emploi avant de commencer à utiliser le radiateur et notamment de le déballer, de le monter, de l'alimenter en carburant, de l'inspecter, de l'allumer, de le faire fonctionner, de le régler, de l'éteindre, de le laisser refroidir, de le déplacer ou de le stocker.
- Veillez à conserver ce mode d'emploi en lieu sûr pour qu'il soit disponible en cas de besoin.
- Ne laissez personne n'ayant pas lu et compris ce mode d'emploi monter, inspecter, allumer, faire fonctionner, régler, éteindre, laisser refroidir, remplir, déplacer ou stocker le radiateur.
- Respectez la réglementation en vigueur pour ce type d'appareil.
- En particulier, l'installation de l'appareil doit être effectuée dans le respect de la réglementation en vigueur.



English

Français

Deutsch

Nederlands

Español

ASSEMBLY INSTRUCTION

The unit is packaged without having the safety guard, the visor and the handle. Prior to assembly, check the heater and supplied parts for possible shipping damage.

If any damage is found, do not proceed further and immediately notify the dealer from whom you purchased the heater.

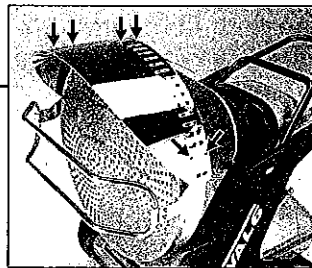
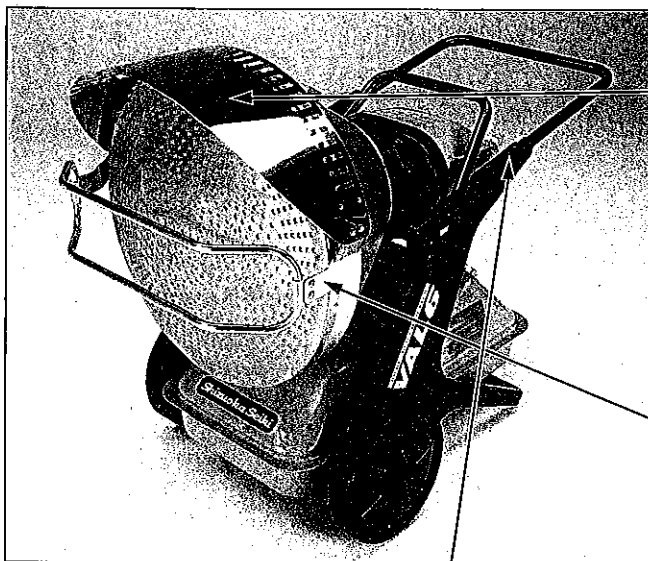
Be sure to assemble the safety guard, the visor and the handle before the unit is used.

Follow the instruction below to assemble the above safety components in the correct order.

Observation

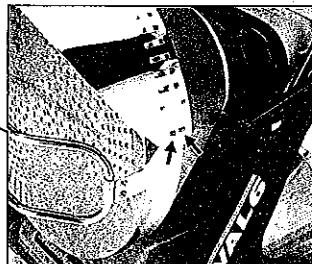
Before assembling, make sure 14 screws, and 3 kinds of parts (Visor×1, Safety Guard×1, and Handle×1) are included in package.

English



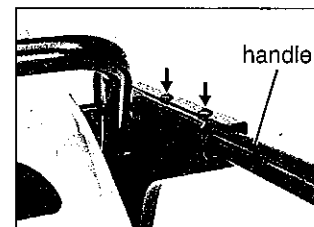
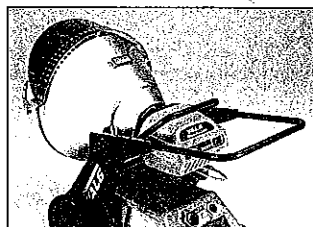
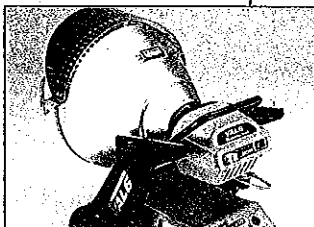
No.1

The visor must be fastened with 6 screws provided



No.2

The safety guard must be fastened with 2 screws provided on both side



No.3

Set the handle in proper position and fasten them with 2 screws. Make sure to fix on both side.

⚠ CAUTION

To help prevent accidents, never use the unit without the safety guard.

Thank you for having bought our Infrared Oil Heater "VAL6".

1 Special precautions

◆ This Manual explains necessary precautions that must be strictly followed for proper and safe operation. Precautions are divided into 3 categories **⚠ Danger**, **⚠ Warning**, and **⚠ Caution**. Please read and understand well the details and meanings of each category.




⚠ DANGER "DANGER" means that failure to follow the given precaution (s) may lead to death, serious injury and/or major fire.

⚠ WARNING "WARNING" means that failure to follow the given precaution (s) may likely result in death, serious injury, fire and/or possible explosion.

⚠ CAUTION "CAUTION" means that failure to follow the given precaution (s) may result in serious injury and/or property damage.

* Depending upon the circumstances, even the category of "CAUTION" can lead to grave damage to persons and/or property. Caution and recommendation listed in each category are equally important for safe operation, so be sure to follow the precautions in all 3 categories.

■ Following signs, used throughout this Manual, are defined as follows:

	Prohibited (This indicates "actions that are strictly forbidden".)
	Mandatory (This indicates "actions or instructions" that must be carried out.)
	Caution (This indicates "actions" that require careful attention)

⚠ Important Notice

⚠ WARNING

- When operating or servicing this heater, please follow all instructions described in this Manual.
- When replacing parts, use only the genuine parts made or approved by the manufacturer of the heater. Please note that we shall not be held responsible or liable for any damage or accident that results from using any unapproved or non-genuine parts.
- We shall not be held liable or responsible for any damage or accident that results from disobeying or not properly carrying out any instructions in this Manual, or from the improper modification or operation of the heater.
- The State of California requires the following warning:

⚠ WARNING: COMBUSTION BY-PRODUCTS PRODUCED WHEN USING THIS PRODUCT CONTAIN CARBON MONOXIDE, A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS (OR OTHER REPRODUCTIVE HARM).





1. As we cannot predict every possible situation of danger while operating this heater, the contents described in this Manual could not fully foresee a whole range of possible dangers. So, when operating or doing daily inspection (to this heater), please pay full attention not only to the contents of this Manual and the Labels on the heater itself, and also be constantly alert for factors that might affect the safe operation of the heater. Do not hesitate to stop operation and contact your dealer if you have any questions about any matter not discussed in this Manual.
2. If you have any question or want to know more detailed information about the heater, please contact your dealer.
3. If any irregular or missing page(s) is found in this Manual, please contact your dealer and we will exchange it with a new one.
4. Please keep the set of Standard Parts supplied with the heater.
5. The operator of the heater is responsible for warning anyone who works around the heater or comes near the heater of the dangers of the heater and the safety precautions that must thereby be taken pursuant to this Manual.









⚠ Purpose of this Owner's Manual

This Manual aims to supply the user with detailed information on how to properly use, operate and service this VAL6 Heater.

To Help Ensure Safe Operation, Comply with the Following Precautions
















* It is important that the safety precautions listed below are understood and followed prior to first operation of the heater. These precautions must also be followed thereafter.

 DANGER			
1	Use of gasoline prohibited	Never use gasoline, for any purpose, for example, for cleaning or as fuel, in connection with, or around, operation or storage of the heater, as a fire and/or explosion may result.	
2	Use of flammables prohibited	Never use or store the heater where thinner, gasoline, liquid propane gas, or other highly flammable vapors, etc., are present, because these may lead to explosion or fire.	
3	Ventilation required	Never use the heater in poorly ventilated areas. Poor ventilation allows a build-up of carbon monoxide produced by the heater, especially if there is also inadequate combustion. CARBON MONOXIDE is a colorless and odorless poisonous gas that may lead to death or other injury. Always provide a fresh supply of outside or circulating air whenever the heater is used. Some people are more affected by carbon monoxide than others, including pregnant women, persons with heart disease, lung disease, anemia, and/or under the influence of alcohol. High altitude also creates a higher danger of susceptibility to carbon monoxide. Danger signs that a person may be suffering from carbon monoxide poisoning include, headache, dizziness, burning eyes and nose, nausea, and dry mouth or sore throat. If any of these symptoms occur, immediately seek medical attention, ventilate the area, and turn the heater off. This heater requires approximately at least 2,800 cm ² (3.06 ft ²) opening per unit when it is used indoor.	














 WARNING			
1	Keep aerosol containers away from the heater	Never place sealed, pressurized containers (such as aerosol cans) near the heater as exposure to heat from the heater may build up pressure in the container and cause it to explode with deadly force.	
2	Never use the heater where flammable dusts are present	Never operate the heater where highly flammable dusts (of wood, paper, textile, etc.) are present. Dusts, after sucked and heated by the heater, will be blown out "sparked" and cause a fire.	
3	Be careful of hot surfaces on and around the heater	Portions of the heater (both while the heater is in operation and for 30 minutes or more after the heater is turned off), are hot to the touch and may burn the skin and/or ignite clothing and other combustible materials. Avoid touching the burner and nearby areas while the heater is in operation and for at least 30 minutes after it is turned off. Also do not move or service the heater while it is operating or hot.	
4	Do not service the heater while burning	Do not service or handle the heater while burning, in operation, hot or plugged-in to avoid any injury and/or trouble.	
5	Modification of the heater prohibited	Never modify the heater by any means. Any modification may increase the chance of burns, fires, explosions, or other problems before, during, and after operation of the heater.	
6	Be careful of electrical shock	To avoid electrical shock, never use the heater where exposed to rain, snow or high humidity. If the heater or any part of it becomes immersed in water, immediately contact a qualified service agency to inspect the heater and determine if anything needs to be replaced prior to further operation. Make sure the power plug is disconnected from the electrical outlet, before starting daily inspection and maintenance.	
7	Never use the heater for any residential application	This heater is for industrial use only. Never use the heater for any residential application at all time. Wrong use of this heater can result in potential death, serious injury, fire and/or possible explosion.	

English

To Help Ensure Safe Operation, Comply with the Following Precautions

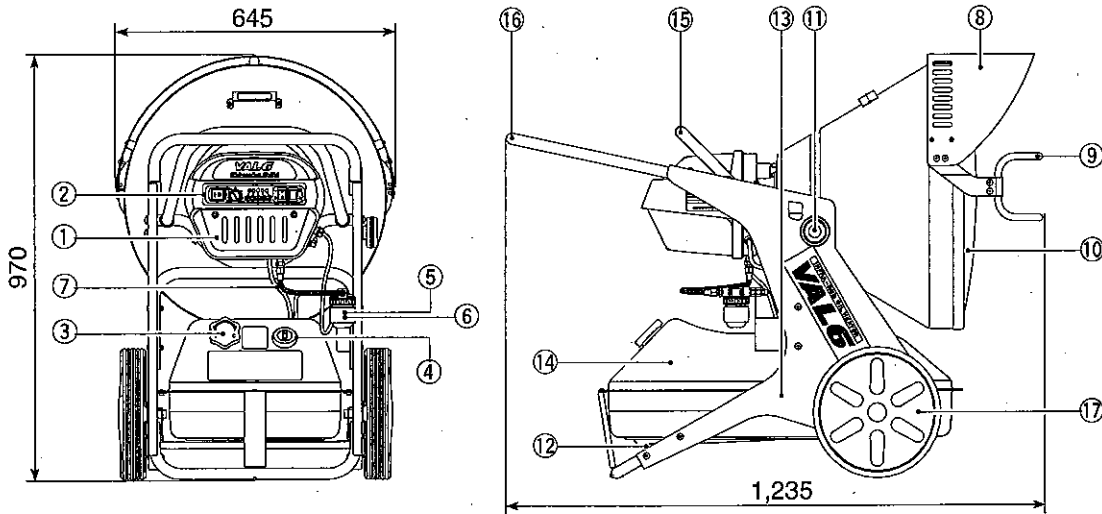
 CAUTION			
1	Keep flammable materials away from the heater	To avoid a fire, please keep all flammables more than 3m (10ft.) away from the front of the radiation disk, and more than 2m (6.56ft.) away from all sides (left/right and top/rear) of the heater.	
2	Do not block the heater	To avoid a fire, never place any object within 1.5 meter (4.92 feet) from (the front of) the radiation disk.	
3	Do not try to ignite the heater more than 3 times in a row	If the heater does not ignite the first time, do not try to ignite more than two more times in a row thereafter because a fire may result. If the heater does not ignite after the third attempt, stop trying and consult your dealer prior to further operation of the heater.	
4	Do not operate the heater unattended	Do not leave the heater unattended while it is in operation or cooling down so that unexpected problems, such as fire, can be dealt with immediately.	
5	Placing the heater on combustible matter or flooring is prohibited	The heater is for use on non combustible matter or flooring only unless the shielding mat, part #503002-05001 is used. Materials of shielding mat : glass cloth and aluminum film Dimension of shielding mat : 1200 x 1200 x (3.5) mm (L x W x H)	
6	Operation of the heater when either the heater or the operator is wet is prohibited	Do not use the heater where it is exposed to water, e.g. rain or snow, and do not operate the heater with wet hands or if it becomes wet. Water contact may cause an electric shock or other danger or malfunction.	
7	Do not use the heater in high altitudes	When the heater is used in an altitude higher than 1000m (3000 ft) above sea level, some adjustments will be required. Please contact your dealer about the adjustments. The heater, if not duly adjusted, may cause a fire.	
8	Stop using the heater when anything irregular is found	If a burning smell or smoke occurs during operation of the heater, immediately turn off the heater and consult your dealer. Further operation may result in a fire or other hazard.	
9	Do not move the heater while in operation	Moving the heater while it is on or otherwise in operation is prohibited. Movement may result in a fire, especially if the heater is overturned or unbalanced.	
10	Turn the heater off before unplugging it	Before taking the electric plug out of the outlet, please make sure the operating lamp is OFF.	
11	Turn off while refueling	Never refill the fuel tank when the heater is on or it is still hot. Refueling while the heater is still operating or hot may cause a "flash back" of flames to the fuel container or other hazard, causing serious injury and/or property damage. For the same reason, refueling should only be done outdoors and away from any open flame. In addition, spilling fuel on a carpet while refueling or otherwise creates an additional fire hazard.	
12	Use only the correct voltage	Only electrical voltage and frequency specified on the model plate must be used, to avoid a fire, electrical shock and/or damage.	
13	Ground the heater before operation	Prior to operation, confirm that the heater is properly connected to a grounded power cord and outlet. Attempting to use or operating the heater without proper grounding may result in dangerous electrical shock.	
14	Do not pull out the power plug by pulling on the power cord	When disconnecting the power cord, always pull out the plug, never the cord, to unplug the cord. To pull out the cord may damage the cord itself and result in fire through electrical shock or short circuit.	

To Help Ensure Safe Operation, Comply with the Following Precautions

 CAUTION			
15	Do not damage the power cord	Do not place excessive force on the cord by bending, pulling, twisting, pinching or remodeling. Also, do not place any heavy objects on the heater, etc. that may damage it, to avoid a fire and electric shock.	
16	Use gloves	When cleaning the heater, use gloves, to avoid any injury to hand or fingers. Use of gloves while operating and moving the heater is also recommended.	
17	Make sure the flame is extinguished and the power off before leaving the heater unattended	After shutting off the heater, make sure that the flame is extinguished and the power disconnected before leaving the heater unattended. It is also not safe to leave the heater unattended while it is cooling off or to leave it in any area where children are present or may come upon it.	
18	Do not dispose of the heater illegally	When you dispose of the heater, please do not dispose of it illegally and consult your local authorities or specialists on how to properly dispose of it.	
19	Do not use the heater in the following places or conditions	<p>To prevent accident or injury, do not use the heater in the following places or under the following conditions:</p> <ul style="list-style-type: none"> • On vibrating, trembling, or unstable flooring • On ladders, scaffolds, or sawhorses • On any floor that is slanted, sloped, or not level • On stairs or anywhere where it might block access to emergency exits • Near unstable or stacked materials • In windy, humid, or dusty areas, and areas where metal particles are present. • In areas where the flow of people or vehicles is impeded or obstructed <p>Always use caution in determining where to place the heater for use or storage and take into account both present and potential future dangers.</p>	
20	Do not operate in extreme temperatures	Make sure that the heater operates at temperatures between -20° and 40°C (-4° and 104°F). If the heater operates at more than 40°C (104°F), the heater will overheat and result in fire.	
21	Provide the Owner's Manual to the new owner	If the heater is sold or given to a new owner, make sure that this Owner's Manual is transferred to the new owner along with the heater.	
22	Do not use fuel of low quality	Do not use fuel of low quality such as discarded oil or fuel mixed with water.	
23	Be careful when moving or storing the heater	When the heater is moved or stored, it must be in a level position to avoid a leakage of fuel.	
24	Keep away from children	The heater should not be used, cooled, or stored where children could have access to it. The heater must not be ignited, operated, maintained, attended to, or otherwise used in any way by children.	
25	Children or the handicapped are not to operate this heater	This heater is not to be operated by children or physically handicapped or person without proper knowledge and experience unless they have been given proper supervision or instruction.	
26	Never look directly straight into the radiation disk	While the heater is in operation, avoid looking straight into the radiation disk. It may cause eye injury.	

2

Names of components

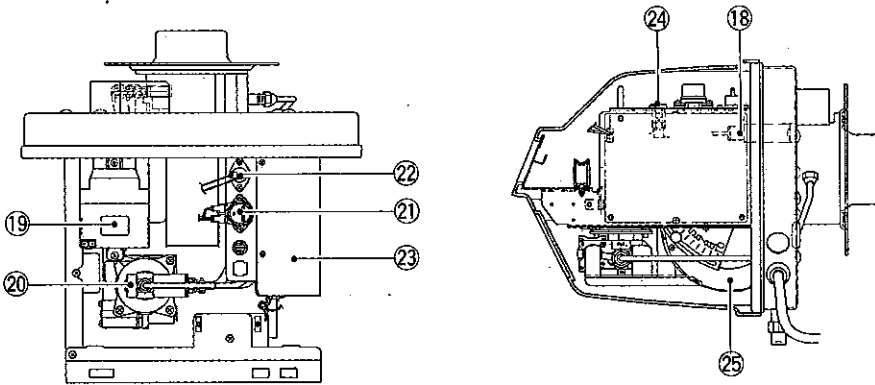


- ① Burner Cover
- ② Switch Section
- ③ Fuel Cap
- ④ Fuel Gauge
- ⑤ Fuel Filter
- ⑥ Strainer Heater

- ⑦ Fuel Suction and Return Hoses
- ⑧ Visor
- ⑨ Safety Guard
- ⑩ Radiation Disk
- ⑪ Knob Bolt
- ⑫ Drain Bolt

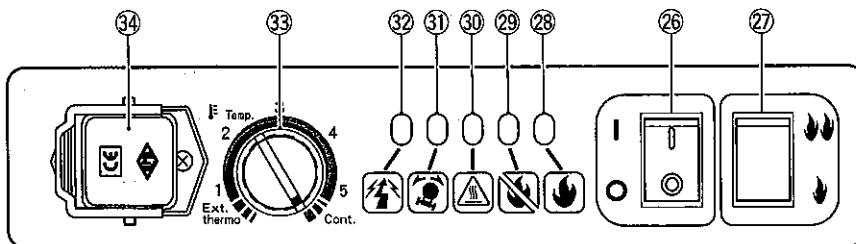
- ⑬ Tank Legs
- ⑭ Fuel Tank
- ⑮ Burner Handle
- ⑯ Transport Handle
- ⑰ Wheel

◆ Burner Section



- ⑱ Flame Monitor (Flame Eye)
- ⑲ Ignition Transformer
- ⑳ Fuel Pump
- ㉑ Tip-over Sensor
- ㉒ Overheat Sensor
- ㉓ Circuit Board
- ㉔ Fuse
- ㉕ Air Intake Motor

◆ Switch Section



- ⑳ Operating Switch
This ignites or extinguishes the flame.
- ㉑ Change-over Switch
This changes over combustion in two step combustion.
- ㉒ Operation Lamp
- ㉓ Misfire Lamp

- ⑳ Overheat Lamp
- ㉑ Tip-over Lamp
- ㉒ Overvoltage Lamp
- ㉓ Internal Thermostat Knob
- ㉔ External Thermostat Connector

◆ Description of indication lamps

① Normal operation					○/☆
② Misfire				☆	
③ Overheated			☆		
④ Tilted		☆			
⑤ Overvoltage detected	☆				
⑥ Power shutdown	○	○	○	○	○
⑦ Misfire 5 times in a row	☆	☆	☆	☆	
⑧ Low voltage detected	○				○
⑨ Abnormal fan speed	☆	☆	☆		

○=lighting
☆=blinking

- ① Normal operation** When the heater is operating properly, an Operation lamp (green) lights. In cooling operation, the operation lamp blinks for about three (3) minutes.
- ② Misfire** When the heater does not ignite or the flame is extinguished during operation, the Misfire lamp (red) blinks and cooling operation starts for about three (3) minutes. Switch off the heater after it stops completely. In order to identify the causes, please refer to page 17.
- ③ Overheated** When the heater overheats, it shuts down automatically and the cooling operation starts with blinking the Overheat lamp for about three (3) minutes. Switch off the heater after it stops completely. Then make sure the ambient temperature is under 40°C (104F).
- ④ Tip-over** When the heater topples to the ground or gets a high impact, it shuts down automatically and the cooling operation starts with blinking the Tip-over lamp for about three (3) minutes. Switch off the heater after it stops completely. Then make sure the heater is on the level.
- ⑤ Overvoltage** When the heater detects extremely high-voltage, it shuts down automatically and the Overvoltage lamp blinks. Switch off the heater after it stops completely. Then make sure the applied voltage is standard.
- ⑥ Power shut down** When the power supply is restored after it shuts down during operation because of blackout or other reason, in order to avoid a fire the heater can not restart automatically even if the operation switch still remains "ON". Moreover, all of five (5) lamps light to indicate that the heater stops because the power supply shuts down suddenly. In order to operate the heater again, turn the switch off and on.
- ⑦ Misfire 5 times in a row** When the heater does not ignite with five (5) consecutive tries, the heater shall be beyond switch control to avoid unexpected accident such as a fire and 4 lamps (Misfire, Overheat, Tip-over and Overvoltage) blink. For more information, refer to page 11.
- ⑧ Low voltage detected** If the heater detects lower voltage which is less than 90% of standard voltage (230V/120V) during operation, the Overvoltage lamp lights. When this phenomenon appears, immediately stop the heater and make sure the applied voltage is standard. Moreover, if its voltage is less than 75% of standard voltage (230V/120V), the heater extinguishes the flame and start cooling operation with blinking Misfire lamp and Operation lamp for three (3) minutes.
- ⑨ Abnormal fan speed** When the air intake motor does not rotate, or rotate slower than standard value, it shuts down automatically and 3 lamps (Overheat, Tip-over and Overvoltage) blinks. When this phenomenon appears, immediately stop the heater and please contact your dealer.

Description of other Safety Devices

⑱ Flame Monitor	This automatically extinguishes the flame when ignition fails or flame goes out during the operation. This monitor, when it detects any irregularity before ignition, automatically extinguishes the flame. Operating condition: Misfire lamp is lit and Post-Purge continues for three (3) minutes.
⑳ Electric Overload System (Fuse)	This shuts off the power supply when excessive electric current passes through, due to irregular trouble of the devices. Operating condition: The whole operation stops.
㉑ Strainer Heater (Fuel Pre-heater)	This Strainer Heater warms the fuel up to prevent its viscosity from rising. This starts to operate at the time of plugged-in.

3 How to use

3-1. Preparation for operation



DANGER

- Never use highly flammable fuel like gasoline, to avoid fire.
- Never contaminate or mix fuels. For example, never contaminate kerosene with gasoline by using a gasoline container to carry kerosene. Even a small amount of gasoline, or other volatile fuels, in kerosene is hazardous. Store kerosene only in containers specifically labeled and approved for kerosene and do not use the container for any other fuels or chemicals.



CAUTION

- Please refuel only while the heater is turned off and completely extinguished.
- Use only the electric power (voltage and frequency) specified on the model plate of the heater to operate the heater. Using electrical power different from the specifications may result in fire, electrical shock, and/or damage.
- Please confirm the ground/earth cable is properly connected, to prevent electrical shock.
- When disconnecting the electric power cord, be sure to always pull the plug out by itself. Do not pull out the plug by pulling on the power cord. Also, do not allow or cause excessive force to be exerted on the cord at any time to avoid damaging it and causing a fire or shock hazard. The heater should not be operated with the power cord in a taut or tightened position to further avoid damage to the cord, accidental unplugging of the electricity, and fire and/or shock.

Refueling

Observations

- Please use "kerosene" or "Fuel-Oil no heavier than No.2 (Diesel)" and do not use poor quality or foul fuel, to help avoid ignition, operating, and other problems.

- 1 Remove the fuel cap and insert a suction pump into the fuel tank.
- 2 Watch the fuel gauge while refueling. When the gauge reaches the maximum level, stop refueling.

- 3 Wipe off any fuel that has spilled onto the fuel tank or elsewhere. Replace the fuel cap and tighten it securely. Do not operate the heater with a loose fuel cap or without a fuel cap.

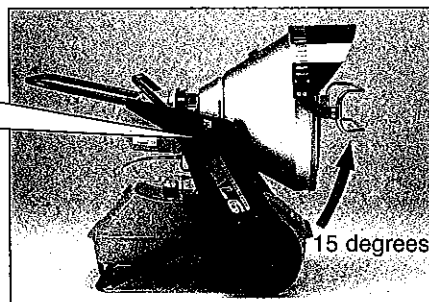
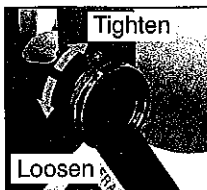
Adjust the angle of the main unit



CAUTION

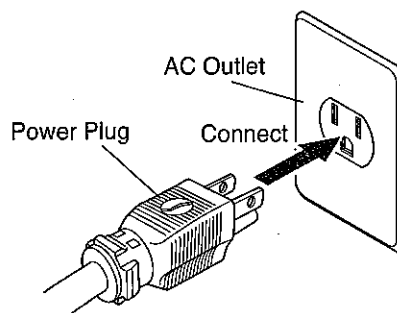
- Do not adjust the angle of the main unit while the heater is plugged in, operating, or hot to avoid severe burns and electric shock.

Prior to operation, loosen the knob bolt to move and set the main heater unit at the desired angle, and tighten the knob bolt firmly. The vertical angle of the radiation disk is adjustable up to 15 degrees.



■ Connecting the Power Supply

- 1 Make sure that the operating switch is "OFF", then plug the power plug into the AC power outlet.
- 2 Make sure a grounded power pin or connection is used.



CAUTION

- In order to indicate the circuit board is normal, all of the 5 lamps (operation, misfire, overheat, tip-over, overvoltage) light for one(1) second right after plugging the heater into the AC power outlet.

3-2. Operating procedures



CAUTION

- If you detect smoke or a burning smell coming from the heater, turn the heater off immediately to help prevent a fire, contact your dealer and the heater inspected before further operation.
- More than three consecutive attempts to ignite the heater may cause a fire. If the heater does not ignite after three consecutive attempts, stop trying and contact your dealer for an inspection of the heater.
- When using the heater, be careful so that the floor surface (in front of it) may not get overheated.
- Do not operate the heater, while fuel tank is dirty and foul, to prevent poor ignition or improper burning.

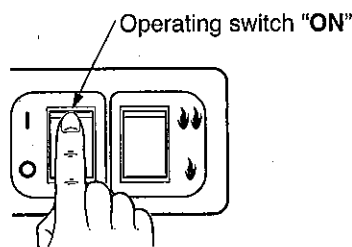
English

■ Ignition Procedures

Observations

- To make sure the heater is ignited, please do not leave the heater until you confirm that it is burning and otherwise functioning properly.

- 1 Use the fuel gauge to check if the fuel is sufficiently filled up in the tank.
- 2 Turn "ON" the operating switch, and the operation lamp will light and the heater will ignite in about 5 seconds.



CAUTION

- When the operation lamp lights but the heater doesn't work after turning "ON" the operating switch, the internal thermostat is in operation. In this case, set an internal thermostat knob to "Count." position. The heater will start.

If ignition fails, try again as follows

- 1 Stop the operation completely. Wait for the operation lamp to turn off. After the operation lamp has turned off, try step 2 above again.

■ Limitation of consecutive operating try

If the heater does not ignite with five (5) consecutive tries, the heater shall be beyond switch control to avoid unexpected accident such as a fire.

In such case, stop trying any more and contact your dealer, or solve the problems.

*To reset this safety system, disconnect the power plug and plug it in again.



WARNING

- Never inspect or service the heater while it is burning, in operation, hot or plugged-in to avoid any injury and/or trouble.

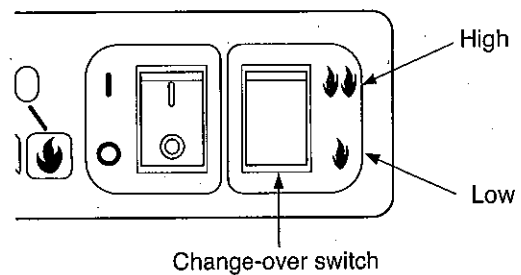


CAUTION

- Before starting any inspection or service, to avoid electric shock, please make sure the heater is shut down and that the power cord is disconnected.
- When servicing the heater, please wear gloves to prevent possible injury.

■ Changing combustion speed

The heater has two-step combustion and it can be changed by change-over switch.



■ Shut-Down Operation



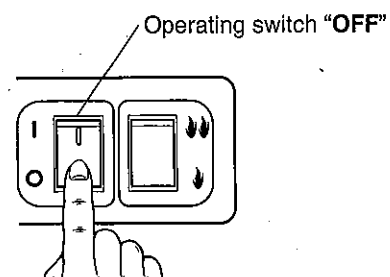
CAUTION

- After the operation is shut down, please make sure that the flame is completely extinguished before leaving the heater unattended or moving or storing it.

Observations

- Before you disconnect the power plug from the AC outlet, please make sure that the air intake motor is stopped.
- Never disconnect the power plug while the heater is operating, it will cause nozzle to be clogged.

Turn "OFF" the operating switch, and the heater flame will be extinguished, then the cooling operation will also automatically stop after about three (3) minutes, and finally the operation lamp will turn off.

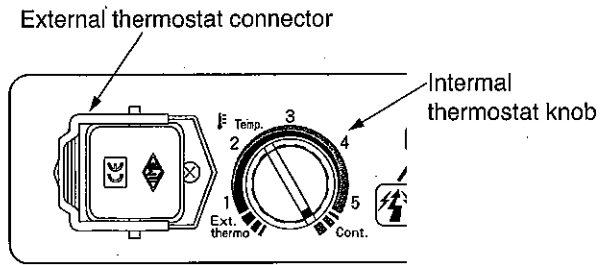


3-3. How to use Internal thermostat

By adjustment of internal thermostat knob, preset temperature can be varied

Once the ambient temperature reaches the preset temperature, the heater will extinguish the flame and start cooling operation of automatic stop sequence.

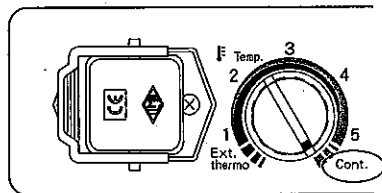
When the ambient temperature goes below the preset temperature, the heater restarts. This sequence is repeated as long as the operating switch remains on.



CAUTION

- The internal thermostat of this heater should be used as a guide. In case that a precise temperature is required as preset temperature, please use the external thermostat.

In order for continuous operation, set an internal thermostat knob on "Cont." position.



CAUTION

- When the ambient temperature reaches about 40°C/104°F, the heater starts automatic stop sequence even though the Internal thermostat knob is on "Cont." position.
- When the operation lamp lights but the heater doesn't work, the heater is in the waiting state which is controlled by the thermostat.

■ Preset temperature of Internal thermostat

Position	preset temperature	
	°C	°F
Ext. thermostat	0	32
1	7	45
2	14	57
3	21	70
4	28	82
5	35	95
Cont.	42	108

The preset temperature of the internal thermostat may have margin depending on the ambient environment of the heater.

■ Location of temperature sensor for Internal thermostat

The temperature sensor for Internal thermostat is located in lower right in the burner.



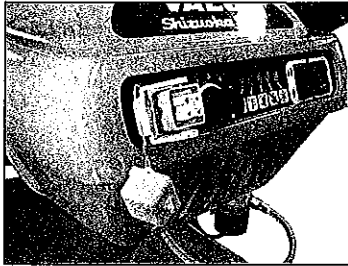
temperature sensor for Internal thermostat

English

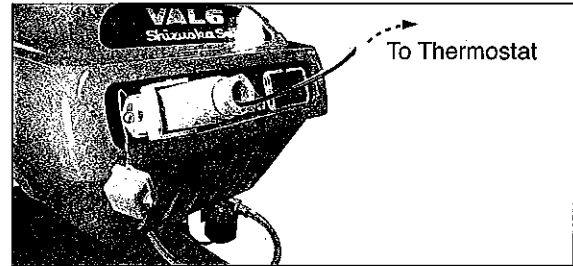
3-4. How to use External thermostat

Connect External thermostat

1 Take the cap off the attachment plug.

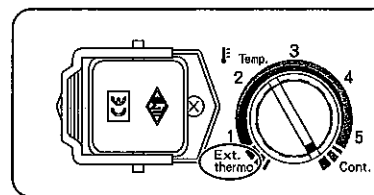


2 Insert the thermostat plug.



Using an External thermostat

Therefore, in order to activate the External thermostat, an internal thermostat knob **MUST** be set on "Ext. thermo" position.



CAUTION

- When the heater is controlled by the internal / external thermostat or a timer, the heater could turn itself on at any time, thus extra care must be taken to ensure that the heater is not accidentally turned on without someone nearby who can immediately attend to any problems when the heater is ignited, operating, and cooling off.

3-5. Operation with Portable Generator



WARNING

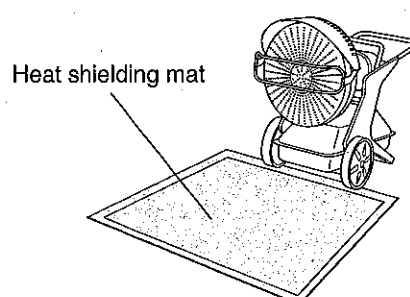
- Before operating the heater from a portable generator, please confirm that the generator has been properly connected to the ground earth. To operate the generator without proper grounding may result in electrical shock. Please refer to the owner's manual supplied by the generator's manufacturer.

The heater operates within the voltage range of 207Volts to 253Volts for 230V spec./ 108Volts to 132Volts for 120V spec. Before plugging the heater into the generator, the output voltage of generator should be verified.

If the voltage does not measure in this range, the heater should not be plugged into the generator.

3-6. Use of the Heat Shielding Mat

To avoid unexpected fire or trouble, NEVER use the heater on combustible flooring unless the heat shielding mat, which is available as an option, is used.



4 Inspection



WARNING

- Never inspect or service the heater while it is burning, in operation, hot or plugged-in to avoid any injury and/or trouble.



CAUTION

- Before starting any inspection or service, to avoid electric shock, please make sure the heater is shut down and that the power cord is disconnected.
- When cleaning the heater, please wear gloves to prevent possible injury.

Observations

- Prior to each operation check the heater for signs of damage. Do not operate a damaged heater. Have it inspected and repaired by a qualified service agency.
- Prior to each operation check the heater for signs of fuel leakage. Do not operate a heater with fuel leakage. Have it inspected and repaired by a qualified service agency.

English

4-1. Daily inspection

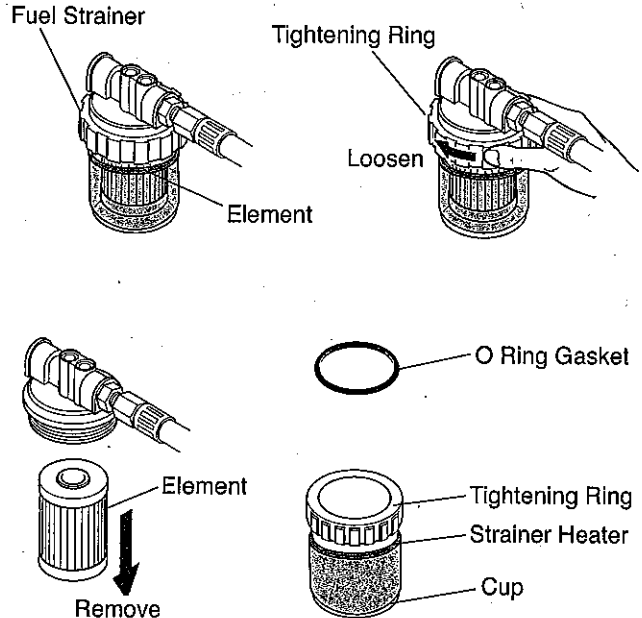
■ Inspection of the filter and drainage of water from the fuel tank

Checking the filter element

- 1 Check whether or not the filter element is dirty or fouled.
- 2 In case the filter element is dirty or clogged, please replace it with a new one, and bind the cup firmly with the tightening ring.
- 3 If water has collected in the cup, discard the water. Also, water in the cup means there is water in the tank as well. Follow the instructions on page 14 and drain the water from the fuel tank.

Observations

- Do not operate the heater without the filter element.



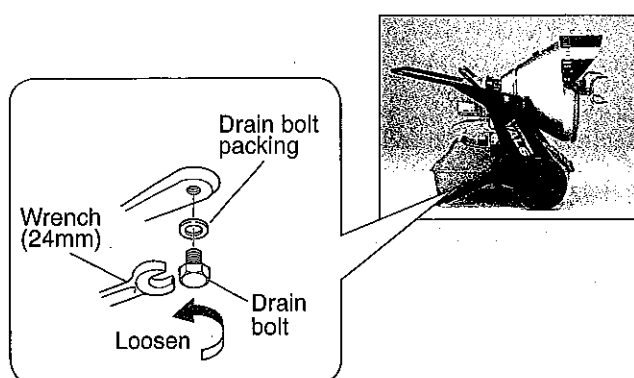
Drainage of water from the fuel tank

- 1** Remove the fuel cap and insert a suction pump into the tank.
- 2** Remove as much fuel as possible (with the suction pump). Be sure that the fuel being removed is put only into a can or other container approved in your area for holding flammable liquids such as kerosene and No.1 Fuel Oil.
- 3** Tighten the fuel cap firmly.
- 4** Prepare an empty container of about 3 liters (0.7gallons) capacity: to hold kerosene and water remaining in the fuel tank, place the container under the drain bolt (of the fuel tank).
- 5** Next, use a 24mm wrench to remove the drain bolt and tilt the fuel tank until the fuel is completely drained out of the tank. (At the same time, be careful not to lose the drain bolt packing.)

6 Restore the drain bolt packing and tighten the drain bolt firmly so that fuel can not leak out (of the fuel tank).

7 Wipe off kerosene or water spilled over the tank and the surrounding area.

8 Be sure to dispose of in a safe manner as approved in your local area the kerosene, etc, placed in the empty container and the materials used to clean up any spilled kerosene, etc. Safely clean and/or dispose of the empty container as also approved in your local area.



■ Inspection and cleaning of the flame monitor

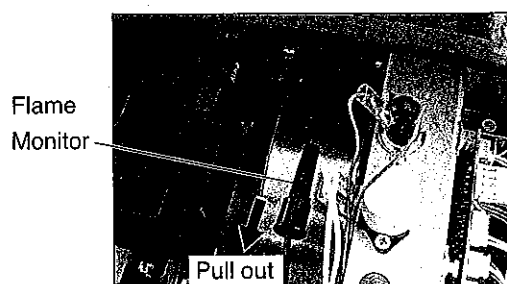
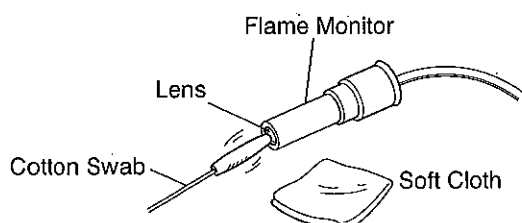
Observations

- When removing the flame monitor, hold it by its main assembly; do not pull out the cord.

- 1** Unscrew two screws of burner cover and remove the burner cover. Pull out the flame monitor and check whether or not its lens is dirty/foul.
- 2** If the lens is dirty/foul, clean the surface of the lens with a soft cotton swab or cloth until it is clear. Do not use any cleansers of any type, e. g., glass cleaner, to clean the lens.
- 3** Replace the flame monitor. Then securely replace the burner cover using the provided screws.



Burner cover



■ Inspection of “dirt/dust” on the main unit

1 Check whether or not dirt/dust is on and around the heater.

2 If dirt or dust is found, remove it with a vacuum cleaner or a soft, non-abrasive, cloth. Do not use any cleansers of any type, especially spray cleansers, as they may leave a residue or infiltrate the operating mechanism of the heater and cause a fire, clog or otherwise damage the heater.

4-2. Periodic inspection.

The heater must be checked periodically, and especially after periods of sustained or heavy use, for safe and proper operation, and for service maintenance. Have your dealer inspection of the heater no less than twice a year.

English

5 How to store the heater

CAUTION

- If the heater is stored or not used for an extended period of time, empty the fuel tank to help prevent fuel leakage and other possible fire dangers.

When you store the heater, please disconnect the power plug from the extension cord and/or the AC outlet and store the heater indoors where it is less humid.

Observations

- Do not store the fuel over summer months for use during next heater season. Using old fuel could damage the heater.

6 Troubleshooting

■ When you face problems with your heater, please refer to this checklist before consulting with your dealer.

In case satisfactory results do not result by referring to the table, or you have problems not described in this table, please contact your dealer. While consulting with him, please describe the problem you have, together with model name and serial number of your heater.

Phenomenon	Possible Cause	Remedy
The heater does not start. (The lamp does not light up.)	Power cord is not connected with an AC outlet. Power supply is cut off.	Please connect the power cord with an AC outlet, and check the power supply.
	Blown fuse	Replace fuse with a new one. (Please refer to page 18.)
The heater does not start. (The lamp is lit.)	Safety devices are working.	Please refer to page 7 and solve the problems, or consult with your dealer.
The heater does not ignite.	No fuel in the fuel tank.	Please pour fuel into the tank.
	There is water in the fuel tank.	Please clean up the tank and fill it with fresh/clean fuel.
	Fuel filter element is clogged.	Check the filter element and replace it with a new one.
	Nozzle is clogged	Replace nozzle with a new one. (Please refer to page 18.)
The flame goes out during the operation.	Wrong or foul fuel is used.	Please clean up the fuel tank and fill it with fresh/new fuel.
	Flame monitor is dirty.	Please clean up the Flame Monitor (Please refer to page 15).
	Fuel filter element is clogged.	Please check the filter element and replace it with a new one.

If the following phenomenon takes place, it is usually not a sign of trouble. Please check again before consulting with your dealer.

Phenomenon	Explanation
When used for the first time, smoke or smell comes out of the heater.	Because fuel is burning together with dusts, etc. This phenomenon will disappear after a short while.
At the time of ignition or shut-down of the heater, noise comes from the burner section.	Noise is caused by expansion or shrinkage of the burner section due to temperature's up and down. This is not irregular.

7 Exchange procedures



WARNING

- Never service the heater while it is burning, in operation, hot or plugged-in to avoid any injury and/or trouble.

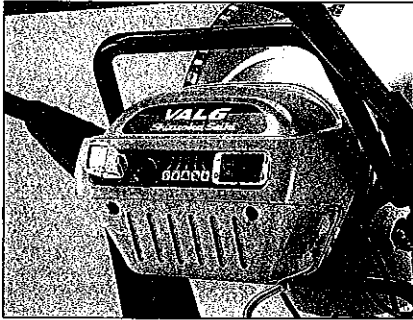


CAUTION

- Before starting any service, to avoid electric shock, please make sure the heater is shut down and that the power cord is disconnected.
- When servicing the heater, please wear gloves to prevent possible injury.

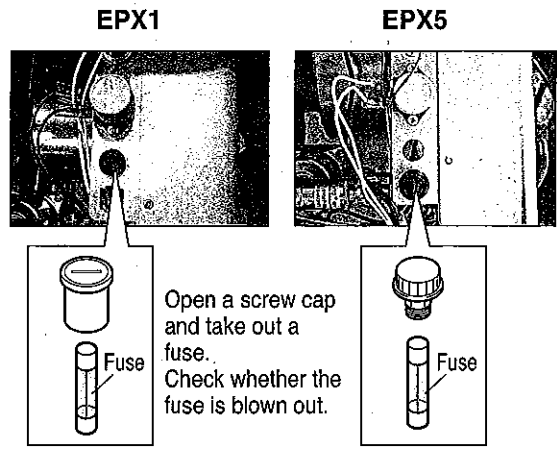
7-1. Fuse

- 1** Unscrew two screws of burner cover and remove the burner cover.
- 2** Unscrew the screw cap of fuse holder and take out the fuse.



Unscrew two screws and take the burner cover off

- 3** Replace with a new one.
- 4** Put the screw cap back into fuse holder.
- 5** Put the burner cover back with two screws removed.



Open a screw cap and take out a fuse. Check whether the fuse is blown out.

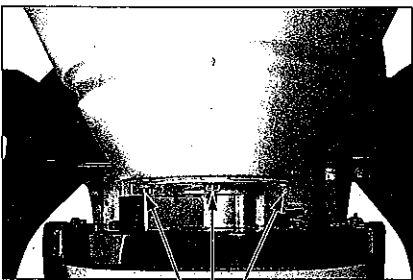
English

7-2. Nozzle

Observations

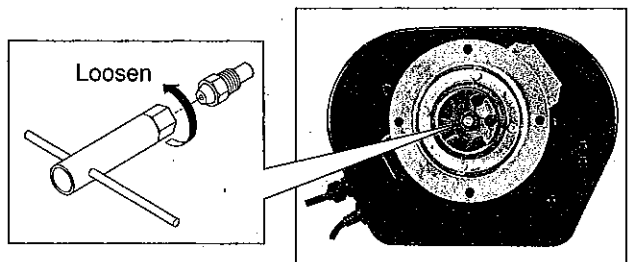
- Place the burner assembly taken out within the reach of two fuel hoses.

- 1** Remove three nuts from burner attachment bolts and take the burner assembly off.



Unscrew three nuts and take the burner unit off

- 2** Remove the nozzle using the nozzle wrench provided as standard parts. Replace with a new nozzle.



- 3** Tighten the nozzle using the nozzle wrench until the nozzle is fixed.
- 4** Put the burner assembly back with three nuts removed.

8

Specifications

Model		EPX1	EPX5	
Power Source		230V, 50Hz	120V, 60Hz	
Type		Radiated direct fired		
Heat Output	High	35,000kcal/hr	140,000BTU/hr	
	Low	25,000kcal/hr	100,000BTU/hr	
Fuel		Kerosene or Fuel-Oil no heavier than No.2 (Diesel)		
Tank Capacity		58Liters	15.4gallons	
Fuel Consumption	High	3.19kg/hr	1.02gallons/hr	
	Low	2.32kg/hr	0.75gallons/hr	
Nozzle Size		0.75gal/60°		
Continuous Operating Time	High	15 hours		
	Low	20 hours		
Power Consumption	in igniting		115W	120W
	in operation	High	92W	90W
		Low	86W	89W
Noise Level (in operation)	High	67 dB (A)		
	Low	63 dB (A)		
Fuse		1.6A	3.0A	
External Dimension (H x W x D)		970 x 645 x 1,235 mm	38.2 x 25.4 x 48.6 in	
Dry Weight		50kg	110lbs	
Accessories		<ul style="list-style-type: none"> • Filter element x 2 • Nozzle x 1 • Nozzle Wrench x 1 • Oil Seal x 2 		

Wiring Diagram

