

ISO 9001, 14001 Approved Company
**FAR-INFRARED HEATER
USER'S MANUAL**

FIR1300, FIR-X2, FIR-X2 (230V)



- Thank you for purchasing Far-Infrared Heater FIR1300, FIR-X2, FIR-X2 (230V)
For safety, please carefully read the User's Manual and fully understand each function before using it correctly. After reading the manual, please do not throw away it and store it in a safe and well-visible place.
- Even without any faults in the product, please conduct regular inspection for once a year so you can use the product safely and longer.

Shizuoka Seiki Co.,Ltd.

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Warnings for Safety

Sign explanation

		Warning sign for dangers that may cause death or injury.
		Warning sign for dangers that may cause damage in the product and property or injury.
		This is a prohibition sign. In the middle of the sign will be diagram of detailed activities that must be banned. (Left sign means "Do Not Disassemble")
		This is a forced or directions sign. In the middle of the sign will be diagram of detailed activities that must be followed. (Left sign means "Please unplug the plug from power")

Warnings for Safety



Power/Installation place

★ Following information is prepared for user's safety and loss in property.
★ Please read the following carefully to use the product properly.

• As the heater will be extremely hot when it is used, do not let any child get close to the heater and touch or hang on the heater.

<p>Do not use damaged or loosed plug and socket.</p> <p>► There are risks of electric shock and fire.</p>	<p>Do not pull out the cord line to unplug or touch the plug with wet hands.</p> <p>► There are risks of electric shock and fire.</p>	<p>When the heater is not used for a long time (when you sleep and leave the site), please unplug.</p> <p>► It can cause fire due to electrical short from insulation aging.</p>
<p>Please use it at the socket of 120V, 230V for FIR-X2(230V) that is grounded properly.</p> <p>► There are chances of damage and electric shock.</p>	<p>Do not plug many power lines at the same time.</p> <p>► It may cause overheat and fire.</p>	<p>Do not connect or touch the plug with wet hands.</p> <p>► There are causes of electric shock.</p>
<p>Do not install the heater in unstable place and spaces with lots of dust and moisture.</p> <p>► If the heater falls down, it may cause fire or burn.</p>	<p>Since it is dangerous to cover or place the heater improperly, do not connect timer, programmer, or other equipments to automatically control the power.</p> <p>► There are risks of fire.</p>	

Warnings for Safety



warning

Special Warnings

- ★ Following information is prepared for user's safety and loss in property
- ★ Please read the following carefully to use the product properly.

- When the heater is used inside a building, please connect stovepipe to the outside of building, and install air ventilation opening before usage.
- Stovepipe should be made with stainless steel, total length less than 4m and curves can be made up to 2 times.



Do not touch the heater during combustion or immediately after when the heater is off.

- It may cause burn.



Do not let infants, toddlers or children play around the heater. Install separate safety net to keep out of reach of children.

- Child may fall down and get burnt.



Never move the heater during combustion. Please move the heater when it is perfectly cooled down.

- It may cause fire or burn.



When the heater makes strange sound or smoke, immediately unplug the power and inquire to the service center.

- There are risks of electric shock and fire.



Do not cover the heater with inflammable clothes or towels.

- There are risks of fire.



Do not use the heater right under the power outlet.

- There are risks of fire.



warning

Special Warnings

- ★ Following information is prepared for user's safety and loss in property.
- ★ Please read the following carefully to use the product properly.

- This product has purpose of heating only. When the heater breaks down and starts fire due to wrong usage of the heater with other purposes such as cooking and drying, we do not take any responsibilities.



Ventilate the room once or twice in every hour when the heater is on.

- This can be reason for indoor air pollution or oxygen deficiency.



Do not repair, disassemble and remodel the heater.

- There are risks of fire, electric shock and injury due to wrong operation, and if it is remodelled voluntarily, the company do not take any responsibilities for accidents or breakdowns.



Do not place other inflammables such as chemicals and combustible materials nearby the heater. (Do not use explosiveness such as hair spray, benzene and propane gas or combustibles such as sofa, chair or curtain)

- There are risks of explosion and fire.



During refuelling, do not let the fuel flow around the heater. If it leaks around the heater, please close the fuel filler cap, and wipe off the fuel immediately.



Do not use fuels with high volatility such as gasoline, benzene and thinner. Please use high quality and clean fuel

- There are risks of breakdown and fire.



Never refuel the heater when it is used. Please put in the fuel when the heater is turned off.

- There are risks of fire.



Warnings for Safety



warning

Special Warnings

★ Following information is prepared for user's safety and loss in property.

★ Please read the following carefully to use the product properly.

- When the heater is used outdoor, install the heater at the place that is independent of influence by rain and wind. Also, put on the brake for the wheel, so it would not move easily.
- When the heater is used in an altitude higher than 1000m(3000 ft) above sea level, some adjustments will be required. Please contact the store you have purchased the heater about the adjustment. The heater, if not duly adjusted, may cause a fire.



Please maintain the safety distance.

- Install the heater 2.5m from materials that can be burnt easily such as curtain, wood or plywood and 2.5 m from top as well.



Do not use at the place, where it is exposed to rain, strong wind or raindrops.

- It may cause abnormal combustion or influent insulation of electrical parts.
- There are risks of electric shock and fire.



When the power cable is damaged (when it is disconnected or sheath is peeled off) please exchange it with the manufacturing company or repair center.

- It may start fire or electric shock as the power cable is damaged.



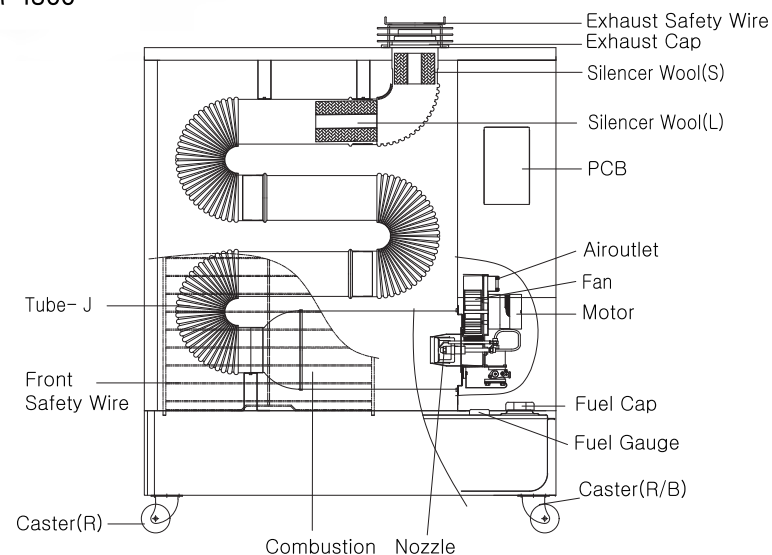
Do not leave the heater unattended while it is in operation or cooling down so that unexpected problems, such as fire, can be dealt with immediately.



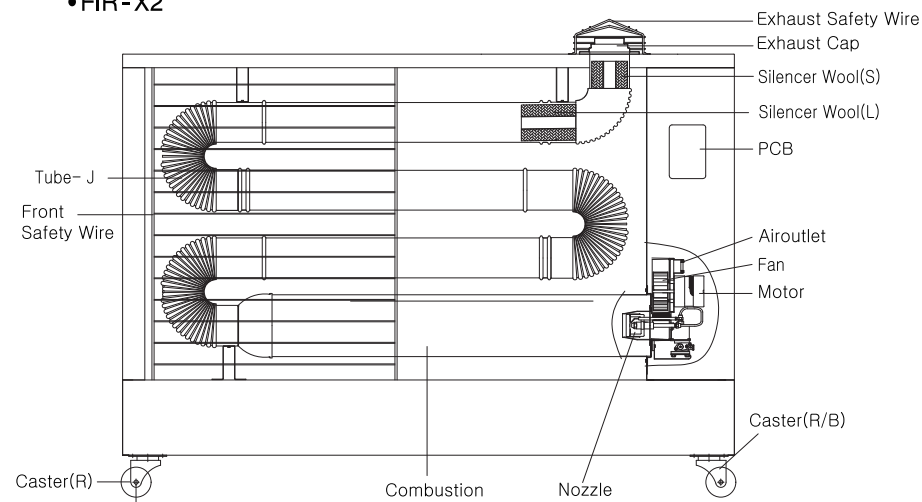
Name of Each Part

<FRONT>

• FIR-1300

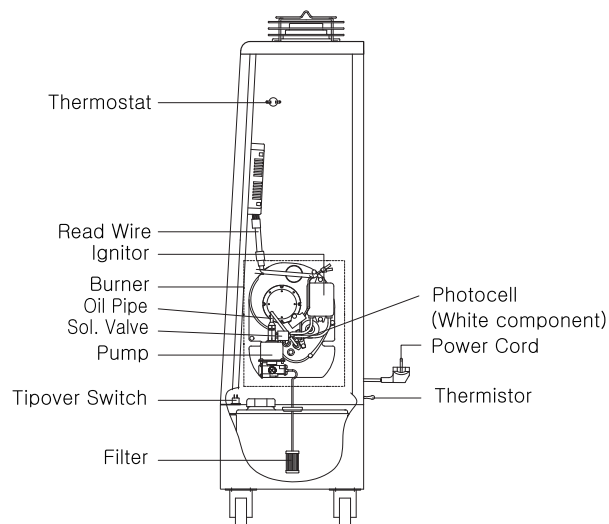


• FIR-X2

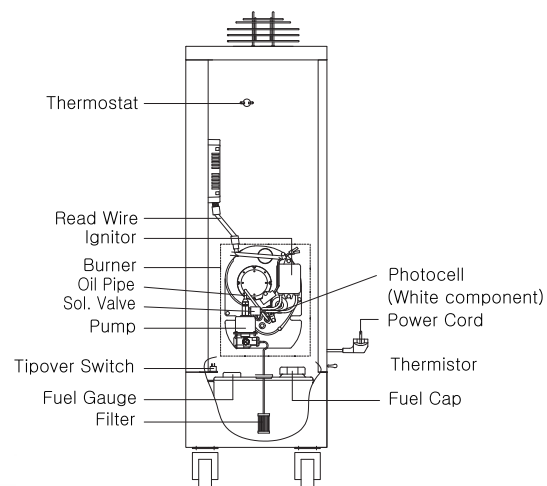


Name of Each Part

•FIR-1300



•FIR-X2



far-infrared heater

► Fuelling

1) Fuelling Step

- ① Open the fuel inlet cap for the fuel tank.
- ② Carefully put in the fuel, trying not to leak the fuel.
- At this time, fill in the fuel until the flow-meter reaches "F."
- ③ Tightly close the inlet cap.
- ④ Check if fuel has leaked around fuel tank or each part of the heater.
If it is leaked, clean it.



2) Warnings of ignition for the first time

- ① When the heater is used for the first time, fuel that is used during the manufacturing process and other substances can combust, so please ignite at the outside of the building.
- When the heater is used for the first time, it might have some smell due to above reasons. As you use it for a while, smell will be gone.
(Takes about 1~2 hours)
As it is not a breakdown, do not worry and continue to use the heater.

⚠ Warnings for fuelling



Please fuel at the place with flat and balanced floor.



Never refuel the heater when it is used. Refuel it when the power is turn off and the fire is completely out.



Do not put too much fuel until it overflows. Fuel until the flow-meter reaches "F."
► It may cause fire.



Do not put low-quality fuel. Always use high-quality and clean fuel.
► It may cause breakdown.



► Fuel usage



Never use low-quality kerosene

Any breakdowns due to usage of low-quality kerosene cannot get free service even under the warranty period.

►► These are low-quality kerosene!!

- If it has sour smell, or changed color into yellow.
- Kerosene that is used last year or exposed to direct sunlight for a long time.
- Fuels other than kerosene (such as gasoline and diesel) or if it is mixed with combustion improver or deodorizer.
- When the lid of storage unit is opened or other foreign substances such as water or dust.

►► How to distinguish low-quality kerosene



- ① In a clear glass cup, fill in kerosene for up to middle, then put white paper at the back.
- ② If kerosene has layers or changed its color to yellow, it means "low-quality kerosene," and if it does not have layers or clear as water, it is "clean kerosene."

►► How to store kerosene



- ① Tightly close the lid and store in area without high temperature, inflammables or dust.
- ② Store in the area without raindrops or direct sunlight.
- ③ Store in the area with shadow and cool temperature.

far-infrared heater

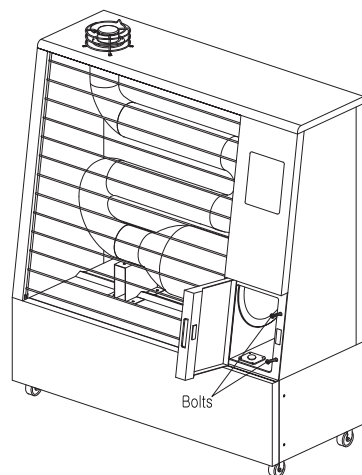
► How to use correctly



- ◆ Put a plug into the outlet.
 - The current temp. and setting temp. both are displayed during operation.
 - In order to be operated, the setting temperature should be higher than current temperature.
- ◆ Power On
 - In case of initial usage after the installment, please air flow-out in according to the method on 12 page.
- ◆ Select temperature or time control mode.
 - Time control lamp is lighten when select it. Every 30min. Operation and 30Min Pause
The repetition time can be set from 5 min. to 25 min. (Only every 5 minutes.)
ex) Repetition time 15 means, every 15min. Operation and 15min. Pause
Every 1 min. is shortened as time goes on
ex) Time is shortened every 1 min. when the set time is 10 min. (10→9→8.....1)
Time is shortened every 1 min. when the set time is 20 min. (20→19→18.....1)
 - Temperature control lamp is lighten when select it.
You can set the desired temperature between "32-104°F (0-40°C)" by pressing "+/-" button.
When the setting temp. is higher than current temp. it starts operation, and the setting temp. is less than current temp. the operation is stop
- ◆ To select whether off timer mode is operated or not. () At that time, off timer lamp is light
 - Set Temp. / Time indicates the reserved time.
 - By pushing '+/-' button, time is changed every an hour. It can be set in 24 hours totally.
 - Set Temp. or Set Time indicates again after 2 seconds
 - Remain time indicates by flickering 10 times every 5 min.
ex) Off Timer is indicated when set the off timer for 5 hours. (5→4→3hr55→50...5min)
 - During the operation if you push Off Timer button, Off timer function is cancelled.
- ◆ In case of light on
 - Heater will be turn off after 1 min., with alarm. Fill it up with Kerosene or Diesel in case of fuel leakage.
- ◆ In case of light on
 - Please refer to page 17.
- ◆ Air Flow Function (Apply to models which has Air Flow function)
 - Heater which has air flow function will light on
 - Fan is operated after power on 1 min.
 - Fan cannot be stoppes randomly.

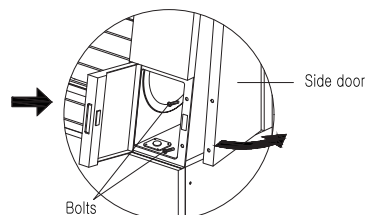
► The method to flow-out air

Way to flow-out air



- Flow-out air is required for following case.
1) When the product is used for the first time, when ignition fails.
2) When it is used for the first time every year, when ignition fails.

- How to open front door
If you need to flow-out air from electronic pump, loosen the bolts as shown below.
When you open the door as shown in the picture, there is a electronic pump.

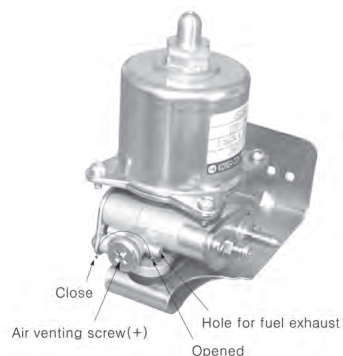


- Way to flow-out air from the electronic pump

- In case that Electric pump so noisy and burner no ignition, main cause of the problem is air flow into the electric pump and not distribute oil. If oil is all consumed without remaining in the tank, air can be flow into inside electric pump.

[The method to flow-out air]

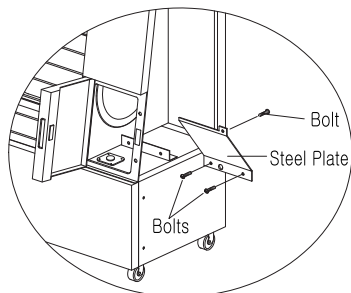
- Turn the air venting screw (+) in anticlockwise for 2~3 times.
- Press on Power button once.
- Bubble (fuel) will come out from the air hole. (After 10 seconds)
- When the ignition is on, turn the screw (+) in clockwise. If it does not work, try again. (When it does not work after 4 times, contact the service center)
- If it does not work for the first time, try above steps from 1~3 for about 3 times. (When it does not work after 3 times, contact the service center)



(Electronic Pump)

How to disassemble the burner partition plate

- As shown in the picture next to, you can disassemble the burner part by loosening three bolts.



far-infrared heater

► Daily check-up

⚠ Warning

- Check-up and cleaning must be done after stopping "combustion" of the heater.
- Check if fuel leaks from any place near the fuel tank.
- Check if combustion furnace or heating tube is corroded and damaged.
- If heat-reflecting board is dusted, clean it perfectly.
- Check if the heater makes soot from the exhaust pipe.
- Burner is adjusted to be suitable for function of the heater. User should not control it voluntarily. If it is controlled voluntarily, please inquire to the store you have purchased the heater.

⚠ Warning

- External part of the heater should be done after unplugging the cable and when it is completely cooled down. It should be cleaned with cloths soaked in neutral detergent or dried cloths.
- Pouring water to the heater for cleaning can cause electric accidents or break down of the heater.

► Regular inspection and fire extinguisher placement

■ Regular Inspection

- Combustion furnace and heating tube (heat exchanger): once a year, check for soot and then clean it (when it is polluted).
- Combustion furnace and reflection board: once a year, check for corrosion and pollution and then clean it (when it is corroded too much, exchange it).
- Fuel filter (Inside the tank): once a year, check for pollution with naked eyes and then exchange it.

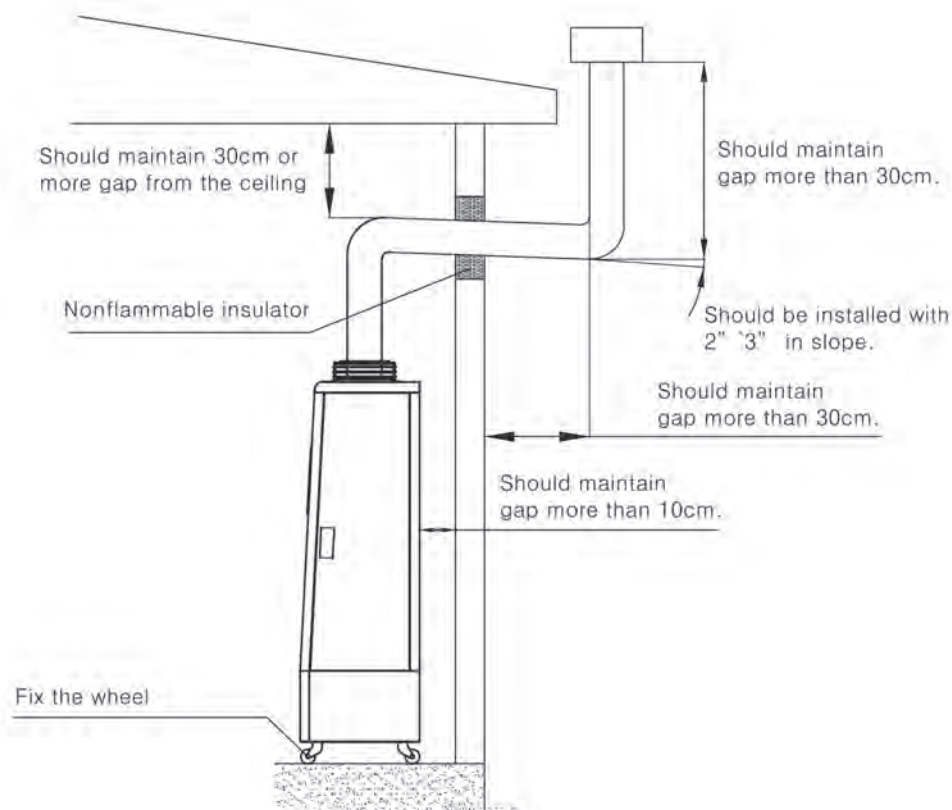
■ Fire Extinguisher Placement



- Please place fire extinguisher where there is inflammable, and check its contents frequently.
- For emergency, place fire extinguisher to use it usefully in emergencies.
- It is the most effective extinguishing tool for initial fire fighting.
- Fire extinguisher should be stored in a place, where it can easily found.

► Tips before installation

- The ground surface and surrounding should be plain and non-flammable, and solid. It may cause failure in case of use on inclined place due to imperfect combustion.
 - You need to have sufficient space surrounding the heater at least 1.5m from the wall and the left & right side, at least 1.5m distance from the ceiling and the front side without any obstacle.
 - After you fix the installation, lock the caster for avoiding unexpected movement.
 - It is required to install exhaust duct for indoor use. Especially, Over 3cm insulated material is required to apply for the duct.
 - Please use stainless duct.
- (Recommended Duct specification For FIR1300, FIR-X2 100mm ϕ (Diameter) x Max. 4 meter long—stainless duct Max. Length 4 m / Max. Bend 2 times.



[Example of standard stovepipe installment]

Item	Model	FIR-1300	FIR-X2	FIR-X2(230V)
FUEL		Kerosene or Diesel		
Fuel consumption(gal/h)		0.32	0.5	1.9 Liter/h
Heat Output (Btu/h)		52,000	69,000	17,400 kcal/h
Heating Area(Ft ²)		1,067	1,957	182 m ²
Usage		Heating		
Power		120V/60Hz		230V/50Hz
Power Consumption	During ignition	70W	80W	80W
	During combustion	50W	58W	58W
Size (WxDxH) (inch)		36.2 * 12.6 * 45.3	60.4 * 13.9 * 47.2	1534 * 353 * 1199(mm)
Fuel Tank Capacity		8 gal	12 gal	45 Liter
Stovepipe Diameter		3 (Inch) / 76 mm		
Fuel duration hours		21~22		
Safety Equipment		Flame detecting equipment, Overheat prevention equipment, Over-current shorting equipment, Motor overheat prevention equipment, Overturing safety equipment, Indoor temperature detect equipment, Motor rotation detect equipment		

► Check list before applying for After Service

When the front control panel displays as follows:

Displayed signals	Reasons of default	Check-ups and actions to take
E1: Ignite Failure	Burner does not ignite.	<ul style="list-style-type: none"> - Out of fuel - Oil pipe is filled with air (→ Ventilate air) - Phototube is polluted (→ Clean it)
E3: Temperature Sensor	Temperature sensor is broken down	<ul style="list-style-type: none"> - Temperature sensor connection terminal is disconnected. (→ Connect the terminal)
E4: Overheat Sensor	Overheat sensor is broken down	<ul style="list-style-type: none"> - Check for combustion trace due to flame inside the burner (→ Inquire for service) - Check if overheat controller wiring is disconnected. (→ Reconnect, then restart)
E5: Unbalanced	Heater is unbalanced	<ul style="list-style-type: none"> - Check if the heater is moving (It can happen if the heater is shaken → restart) - Conduction switch is disconnected (→ Connect the switch and restart)
E6	No fuel	<ul style="list-style-type: none"> - Refuel (→ Restart)
Hi	Temperature is more than "122°F (50°C)"	<ul style="list-style-type: none"> - Check if temperature sensor detector is placed inside (→ Put the sensor outside)

When E1 - E5/Fuel happen, reasons of error should be arranged before starting it again.
 Press "Power" button twice to restart the heater.
 Air ventilation procedure is clearly explained in page 12. Please refer to it.

If following errors are made and measures are taken but the heater does not work, inquire for the service.

Errors	Check list	Measures
All the lamps in front control panel are turned off.	<ul style="list-style-type: none"> - Power failure - Power cable is unplugged - Fuse is disconnected 	<ul style="list-style-type: none"> - Connect to power - Change the fuse
The heater turns on and off regularly.	<ul style="list-style-type: none"> - Operation setting is selected as "Time" 	<ul style="list-style-type: none"> - Select "Temperature"
Flow-meter does not work but the heater operates	<ul style="list-style-type: none"> - Flow-meter is disconnected. 	<ul style="list-style-type: none"> - Connect the line.
Smoky smell is made during initial operation	<ul style="list-style-type: none"> - The smell is made as the foreign substance in inside the gasket burns 	<ul style="list-style-type: none"> - No smell will be made 1-2 hours later
Fuel smell is too strong	<ul style="list-style-type: none"> - As the heater turns off after the operation, it might have some smell - Fuel is leaked during refuelling 	<ul style="list-style-type: none"> - Operate more than 15 minutes. - Clean out leaked fuel
Internal temperature displays higher than normal	<ul style="list-style-type: none"> - Check for location of temperature sensor at the back of the heater (If sensor is placed inside the heater). 	<ul style="list-style-type: none"> - Fix the sensor in the right place.

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