



FAR INFRARED RAYS HEATER

USER'S MANUAL

MODEL: **DSO-90, DSO-120, DSO-150, DSO-180, DSO-210, DSO-250, DSO-350**

- Thank you for purchasing HIPERS Far Infrared Rays heater. Please read this user's manual carefully before you operate this heater.
- It is recommended you to put this manual on where the user can find easily.
- It is obligatory that the user read "Notice for Safety" carefully before using, and should be aware of this notice whenever using this heater.
- This heater is designed for your country only. If you use it in another country you have to check the electricity first, and if the electricity condition is same you can use it.
- Warranty card is enveloped in this manual.
- The contents (features & specifications) in this manual are subject to be changed without notice.



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NOTICE FOR SAFETY

This is for protecting the user's safety, and preventing any property damage, please read carefully and follow the instruction on this manual.

- It is classified as "Warning", and "Caution" by the contents.

WARNING: In case of misuse, it may cause a serious wounds or death.

CAUTION: In case of misuse, it may cause a slight injury or property damage.

Meaning of symbol



Forbidden



Obligatory

WARNING



Use AC 220/230V(50Hz) power supply only, otherwise.
(It may cause a fire or an electric shock.)



In case of cleaning you must take out the plug from the outlet, wait until the heated furnace is cooled down sufficiently.
(Otherwise, it may cause an electric shock or a burn)



It is dangerous to turn OFF this heater by taking out the power plug.
(It may cause a malfunction or electrical shock. Please turn OFF using RUN/STOP button.)



Do not use a damaged power cord or plug, and a loose outlet.
(It may cause short, fire, a shock.)



Do not take out the plug with holding the cord or by the wet hands.
(It may cause a fire or an electric shock)



Do not extend the power cord with connecting another cable in the middle.
(It may cause a fire or an electric shock)



Use the proper form of fuse. Otherwise
(It may cause malfunctioning or a fire.)



Put a plug into the outlet tightly after removing any dirt on the plug.
(It may cause emitting smoke or a fire by electrical short.)



Put a plug into the outlet tightly with Earth(-) only.
(It may cause an electric shock)



Do not fold the power cord hardly, or put a heavy material on it.
(It may be damaged on the covering material which might cause a fire, or an electric shock.)



Do not place any inflammable material near the heater including curtain, carpet, paper, match, clothes, etc.
(It is exposed to danger of fire.)



Do not place or use any inflammable near the heater including fuel, gas, thinner, benzene, spray, solvents, volatile organic compounds, etc.
(It is exposed to danger of fire or explosion.)

※ Place this manual noticeably near the heater so that, if necessary, the user can always find it easily.

NOTICE FOR SAFETY

WARNING



You must ventilate well while you are using the heater, and do not use it in the stuffy area where the ventilation is not possible.
(You need to ventilate with fresh air 1~2 times per hour)
(In case of incomplete combustion due to the lack of oxygen carbon monoxide can be increased to cause an accident from poisoning.)



It is dangerous to use this heater for a long time in the closed room or in case there are children or the old and the weak.
(It is recommended that the user open the windows to let fresh air in the room if the room is stuffy.)



It is dangerous to put your hands or any other thing into the grill or furnace, or to apply a considerable shock or force to the heater.
(It is exposed to fire, burn, or electric shock)



Do not place any inflammable vinyl or plastic goods on top of heater, or cover the heater grill with clothes.
(It is exposed to fire or burn.)



Do not place any electrical item or heavy material on top of heater.
(It may cause malfunctioning or electrical shock, or if the heavy material is fallen user can be injured)



Do not touch any of the heated material such as grill, furnace, etc.
- While the heater is operating or just after extinguishing the grill and furnace are hot, so do not touch any of those parts (Especially pay attention more to keep children away from the hot materials)
- It may cause a burn.



Do not move or transport during operation.
(It may cause a fire or a burn)
(In case of moving this heater you must turn OFF take out power plug before you move it)



It is recommended not to use this heater in the highly elevated areas.
(Do not use this heater in the areas where is higher than 1,500m from the sea level.)
(You need frequent ventilation in the areas of 700 ~ 1,500m from the sea level.)
(Due to the lack of oxygen, carbon monoxide can be increased to cause an accident from poisoning.)



Do not use this heater for another purpose other than heating.
(Do not use this heater for drying clothes because it may cause a fire.)
(Do not use this heater for keeping pet animal or plants warm)



Pay attention to avoiding water into the heater during cleaning.
(It may cause a fire or electric shock)



Do not operate this heater while you are sleeping.
(Due to no ventilation while you are sleeping the room easily get stuffy, and lack of oxygen.)



Do not use this heater on the unstable places.
(Do not use this heater on an inclined surface or a shaking support.)
(This heater may fall down, which cause a fire or malfunction.)

※ Place this manual noticeably near the heater so that, if necessary, the user can always find it easily.

NOTICE FOR SAFETY

CAUTION



In case of storing this heater, be sure that you store it in the dry places indoor instead of hot and humid environment.
(Otherwise, it gets rusty or goes into trouble)



You must take out the plug from the outlet, if there is a flash of lightening or thunder or you don't use it for a long time.
(Otherwise, it is exposed to the danger of electrical shock, short circuit or a fire.)



If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or similarly qualified person in order to avoid a hazard.



Call your local after sales service agent in case the power cord is damaged.
(Otherwise, it is exposed to the danger of electrical shock, short circuit or a fire.)



Do not put this heater on unstable surface of ground such as inclined or bumpy.
(The heater may not work properly.)



Do not shower water to the heater directly, nor use benzene, thinner, alcohol for cleaning.
(Otherwise, it is exposed to the danger of electrical shock, short circuit or a fire.)



Do not put an excessive physical shock to the remote controller, nor disassemble it arbitrarily.
(it arbitrarily.)



Do not operate this heater in the place where it gets wet by the humid such as bathroom.
(It may cause an electrical short circuit or an electrical shock accident)

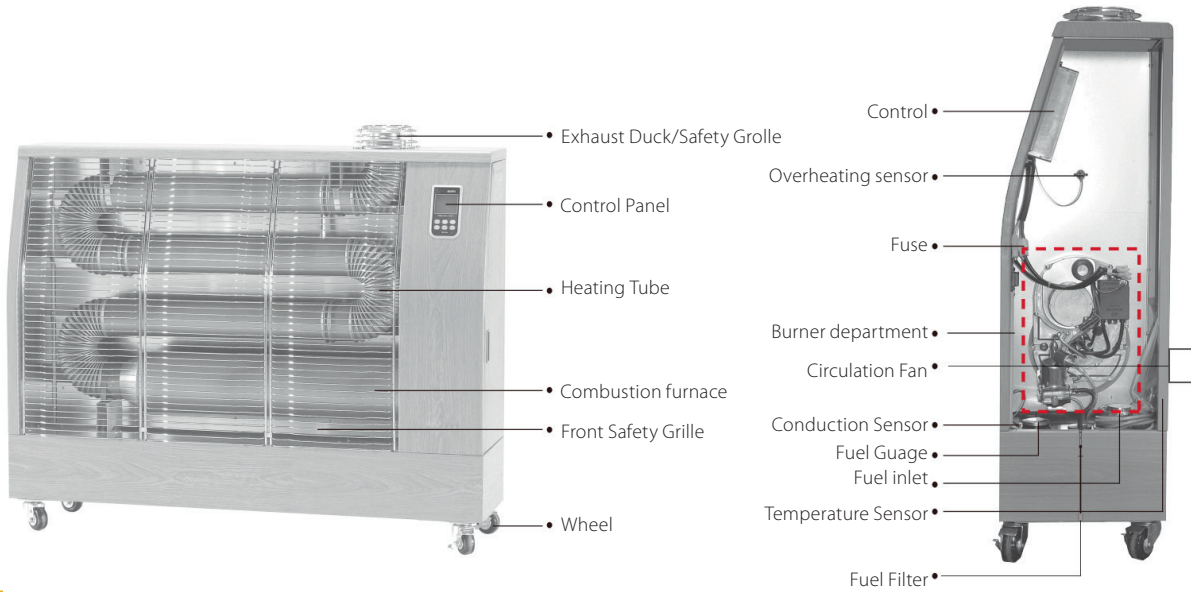
TIPS BEFORE INSTALLATION ...

1. Make sure the safety in the place where you wish to use this heater.
 - The ground surface and surrounding should be plain and non-flammable, and solid.
 - You need to have sufficient space surrounding the heater at least 15cm from the wall and the left & right side, at least 1 m distance from the ceiling and the front side without any obstacle.
 - You need to use exhaust duct in case of operating in small spaces.
(Recommended Duct specification: 75mm \varnothing (Diameter) x 5meter long-aluminum duct)
(Be sure there must not be rain drops into the exhaust duct end.)
(You must ventilate frequently with fresh air by opening window or fan.)
 - You must put an extinguisher beside the heater.
 - There must not be direct sun light, excessive heat near the heater.
 - After you fix the installation, lock the caster for avoiding unexpected movement.
 - Do not use this heater near fabric curtain, carpet or plastic or vinyl curtain which may cover the heater in case of falling down by the wind or by any physical force, which may cause a fire.
 - The heater must not be located immediately below a socket-outlet.
 - Positioned so that the plug is accessible.
2. You must use Diesel or kerosene as fuel.
 - If you use other fuel, it may cause an excessive soot or trouble of malfunction.
 - In case of refueling make sure the heater is turned OFF.
 - To be made by the manufacturer or his service agent who should be contacted if there is an oil leakage.
 - Regulations concerning the disposal of oil when scrapping the appliance have to be followed.
3. The proper electricity is 220/230V, 50Hz. It will be applied and adjusted as per customer's request. You must supply power as per its requirement only once it is adjusted.

STRUCTURE & DESCRIPTION

STRUCTURE & DESCRIPTION FOR MODEL

※ This design may be changed for improvement of efficiency



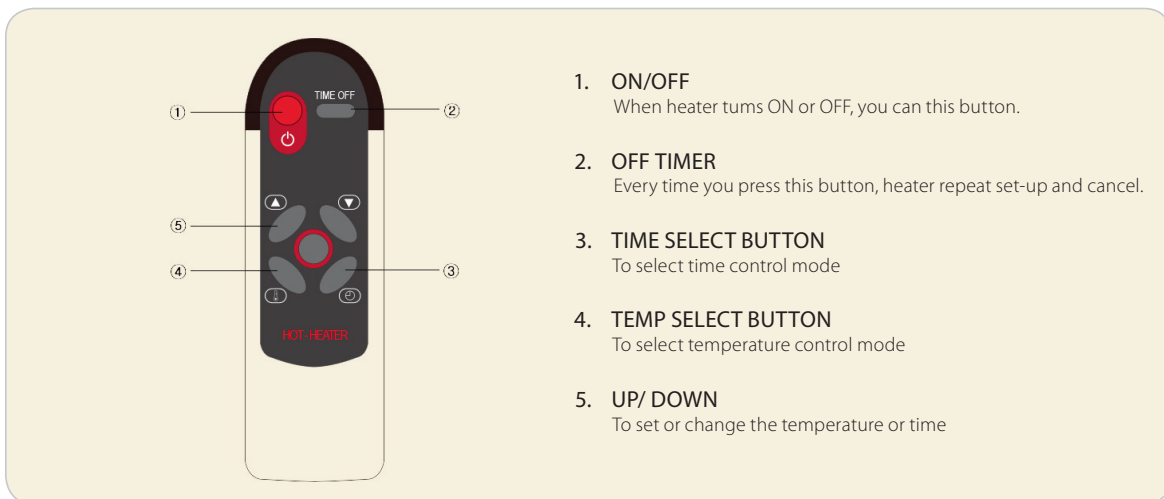
CAUTION

The control panel features an LED display at the top showing '17°C' and '33°C'. Below the display are several buttons: a power button, a fan icon button, a power button, a 'TIME OFF' button, and an up/down arrow button. A small dot at the bottom is labeled as an IR receiver. The panel also has 'Automatic control' and 'Fuel Gauge' text.

- LED DISPLAY**
It displays the status of temperature, time, operation, and error, etc.
- ON/OFF**
- TEMP SELECT BUTION**
To select temperature control mode
- TIME SELECT BUTION**
To select time control mode
- UP/DOWN**
To set or change the temperature or time
- IR RECEIVER FOR REMOTE CONTROLLER**
- OFF TIMER**
To select whether off timer mode is operated or not.

STRUCTURE & DESCRIPTION

REMOTE CONTROL



1. **ON/OFF**
When heater turns ON or OFF, you can this button.
2. **OFF TIMER**
Every time you press this button, heater repeat set-up and cancel.
3. **TIME SELECT BUTTON**
To select time control mode
4. **TEMP SELECT BUTTON**
To select temperature control mode
5. **UP/ DOWN**
To set or change the temperature or time

- ① Connect power cord of heater with outlet.
- ② When you connect power plug, current temperature is displayed.
- ③ When you press UP/DOWN button. the desired temperature is displayed.
- ④ You can set the desired temperature between "0-40°C" (1 °C per a press)



CAUTION

- When heater turns off, the moter (to cool heater) is operated.
- It is dangerous to turn OFF this heater by taking out the power plug. It may cause a malfunction or electrical shock. Please turn OFF using RUN/STOP button.
- If malfunction cause with power down, this case is in a consumer cost.

HOW TO USE

OPERATION & STOP

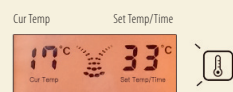
1. CONNECT POWER PLUG (You can see current temperature) THEN, PRESS ON/OFF BUTTON

(You can check "set tem/time"-the number of right side)

But, if this heater operate in case first use from purchase, turn Air Screw left around three times and then start with pressing "ON/OFF" switch. Heater will be turned ON with "beep" sound, and automatically operated. Fasten the air screw after 4 seconds. If "E1" error is displayed, press "ON/OFF" switch one more time.



2. SELECT THE DESIRED OPERATION TYPE USING "TEMP or TIME" BUTTON.



3. Set the time or temperature by pressing "Temp select button" or "Time select button".

- "Temperature": You can set the desired temperature between "0~40°C"
- "Time": Set the desired time limit between "10~25min" (5min per a press)



※ Tip

- In order to be operated, the setting temperature should be higher than current temperature.
- After power On, the default mode is temperature control mode.
- During the operation if you push On/Off button, the heater is stop and the off timer function is cancelled.

Circulation Fan operate in a minute after turning on heater and stop in two minutes after turning off heater. (This fan is for circulating heat and for cooling heater)

The model equipped "solenoid valve (by-pass device) makes the remaining oil returned to the oil tank. For 10sec. from the time of burner off, the solenoid valve is operation, which makes remaining oil returned to the oil tank, and by this device, the smell caused by unburned gas are remarkably shrunk.

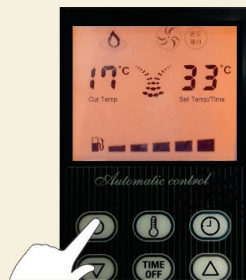
HOW TO USE

TEMPERATURE CONTROL

This mode enables the user set the desired temperature, and once it is fixed this heater works automatically with running and stop repeatedly to meet this temperature.

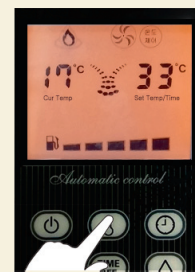
(If power ON and Heater starts operation, the temperature control mode will be operated as default.)

1. Push On/Off button.



2. By pusing Temperature button, please select Temperature control mode.

• At that time, Temperature control lamp is lighten.

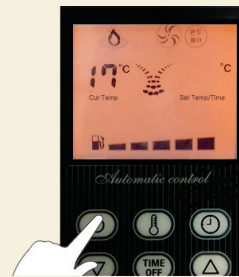


3. By pushing "▼▲" button, please select desire temperature.

- The setting range: 0~40 °C
- The default value: 25°C
- During the time you push ▼ or ▲, the setting temperature is increased/decreased very fast.
- The range of current temp display -9~50 °C



4. During operaton, the current temp. and setting temp. both are displayed, and if you push On/Off button and make the operation stop, only current temp. is shown.



5. When the setting temp. is higher 2 °C than current temp., it starts operation, and the setting temp. is less than 1 °C than current temp., the operation is stop.

- Current temp. < Setting temp. ... Opeartion (+2°C)
- Current temp. > Setting temp. ... Opeartion stop (-1°C)



※ Tip

- The current temp is less than -9°C(16° F), the dispaly of the temp. is 'LO', and more than 50°C(99° F) it dispalys as 'HI' (50°C is not same value as 99° F, actually 37°C is same value as 99° F)
- The setting temperature is increased/decreased 1 °C by pushing of (▼/▲) button, if you push the button more than for 2sec. the value is increased/decreased 1 °C in 0.2 sec.
- If you push ▼ and ▲ button for 5sec. simultaneously, the unit is converted from °C to °F or from °F to °C (The default unit is °C)

HOW TO USE

ITEMS TO CHECK BEFORE INFROMING OF TROUBLE

If the following error or trouble signs are displayed on the operation panel

Displayed messages	Discription of troubles	Items to check and required actions
E1. No ignition	The burner is misfired	- The lack of fuel - There is Air in the fuel tube (Air Discharge) - Phototube pollution (Cleaning)
E2. Phototube (Flame sensor)	Phototube troble Detraction of residual flame	- Unplugged Phototube (→plug), Phototube Trouble (→exchange) - If the heater is stopped just after ignition, there is residual flame (No damage → Re-operation)
E3. Temperature sensor	Temperature sensor trouble	- Check if the temperature sensor connector is loosened. (Firmly connect the connector if it is loosened)
E4. Overheat sensor	Product is overheated	- Check if there are any bump signs inside the burner. (Ask the survice) - Check if the overheat protector wire is disconnected (Operate the heater again after connecting the wire)
E5. Slope	Tile of heater	- Check if the heater is moved (Tilt may occur when the heater is shaken or moved. Operate the heater again) - Inversion switch wire is disconnected (Operate the heater again after connectong the wire)
E6. Lack of fuel	Lack of fuel	- Refuel (→ Re-operation)
Hi	Temperature is above 50 °C	- Check if the tempatature sensor is installed inside. (Install the sensor outside)

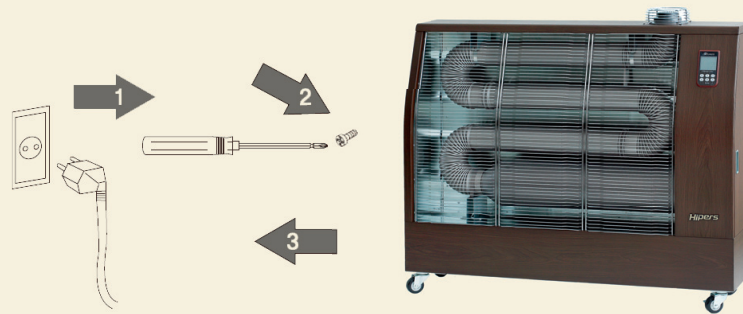
- If the troubles E1 - E6 occur, check the causes and take the required action. If you press the Power Button twice, you may restart the heater

If the troubles persist even after taking the actions as slanted in the below table, ask the survice

Troubles	Items to check	Required action
All lamps of operation panel are turned off	- Power failure - Power plug is unplugged - Fuse burns out	- Ühendage pistikupessa - Vahetage sulavkaitse välja
Lamp si repeatedly turned off and turned on	- Select the time (check the lamp)	- Seadistage temperatuur
The heather is operated as no indication of oil stuff	- Flowmeter wirning is unplugged	- Ühendage juhe
Something burning smells during the initial operation	- Foreign substances are burnt inside the gasket	- Põlemise lõhn kaob 1–2 tunni järel
The fuel smell is unusual	- There is amell when the heater is stoped as soon as starting - On oil supply, spilling fuel	- Laske 15 minutit töötada - Eemaldage lekkinud õli
Room temperature is higher than normal one	- Check if the location of temperature sensor (it may occur if the sensor is installed inside.)	- Fix the sensor at the correct posion

CLEANING & MAINTENANCE

CLEANING & MAINTENANCE



To pull out the front grille, please raise a little and pull it out (Assembly is opposition way.)

In case that you keep the heater for a long time and you want to maintain it in clean status, please power off and cool down the heater, and pull out the plug as the above picture and clean according to the following instruction.

- Please pull out the front grille by raising it and pull it out to the front.
- Please clean the heating reflection which is in the back side of heater and burner area.

(The burning pipe is coated by ceramic material so careful clean not to damage to the coating.)

※ DO NOT DISASSEMBLE THE BURNING PARTS.

- Please wipe out the front controller area with soft wool.
- After finishing of cleaning, please assemble the front grille to the heater

STORING

To store the heater, cool down the heater and plug out and wrap with plastic cover and keep in the well air-flowing place.

- You'd better consume all oil not to remain in.



CAUTION

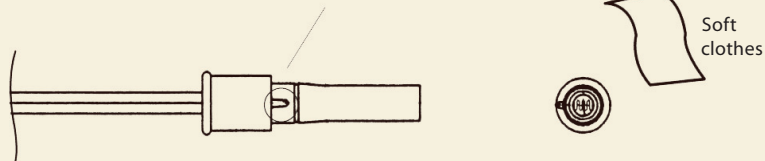
To keep heater in outdoor or humidity place is major cause of problem.

DAILY CHECK POINTS & ADJUSTMENT

DAILY CHECK POINTS

■ CLEAN OF FLAME SENSOR (CdS)

- If the detection part of CdS is contaminated by soot or other dirt, the performance can be lowered and it may cause a problem.
- Please take out CdS carefully which is placed in lower part of burner.
- Please clean the detection part of CdS by soft clothes.
- Please be sure CdS is fixed correctly.? (Mark "A" should be inserted fully.)



■ CLEAN OF COMPONENTS

- In case you need to change components, please contact us.
- In case repair or exchange of components, please contact the service center operated by our distributor or head office
- Do not try to repair this heater by non-licensed service personnel, because it may cause a worse condition, so please contact local service center, or distributor that is designated by our company.

DAILY CHECK POINTS & ADJUSTMENT

ADJUSTMENT

■ IN CASE OF SUDDEN STOP DURING OPERATION

- Please check if now is operating in the time control operation.? If so, the heater can be rest for 5min.
- Please check if now the setting temp. is less than the current temp.
- Please check if the heater is stop by pressing On/Off switch by remote controller or front controller.
- Please check if the heater is stop by sleep timer function.
- Please check if the heater is stop by auto-self-checking.

■ AIR FLOW-OUT

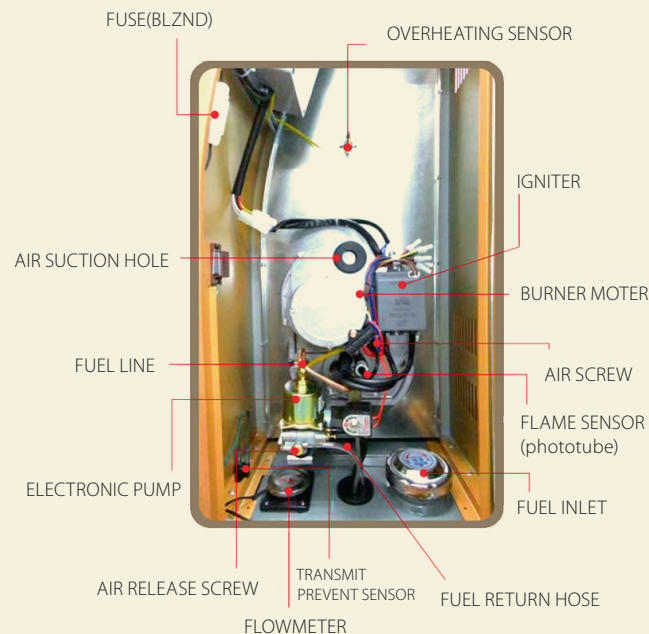
In case that Electric pump so noisy and burner no ignition, main cause of the problem is air flow into the electric pump and not distribute oil. If oil is all consumed without remaining in the tank, air can be flow into inside electric pump.

- The method to flow-out air

- ① Operate the heater
- ② When the electric pump operated, turn on the air outflow screw to counter-clockwise. And you wait till air flow out and oil start to come out.
- ③ When you see oil start to come out, turn off the air outflow screw to clockwise
(In case much air inside, please repeat same way 2~3times.)

■ DETAIL OF BURNER STRUCTURE

- When you contact service person with a problem, please refer the below detail structure of the burner.



TROUBLE SHOOTING

Please check below points before you think trouble has been occurred.



Is Power ON?



Is Fuel enough?



Is Flame sensor clean?



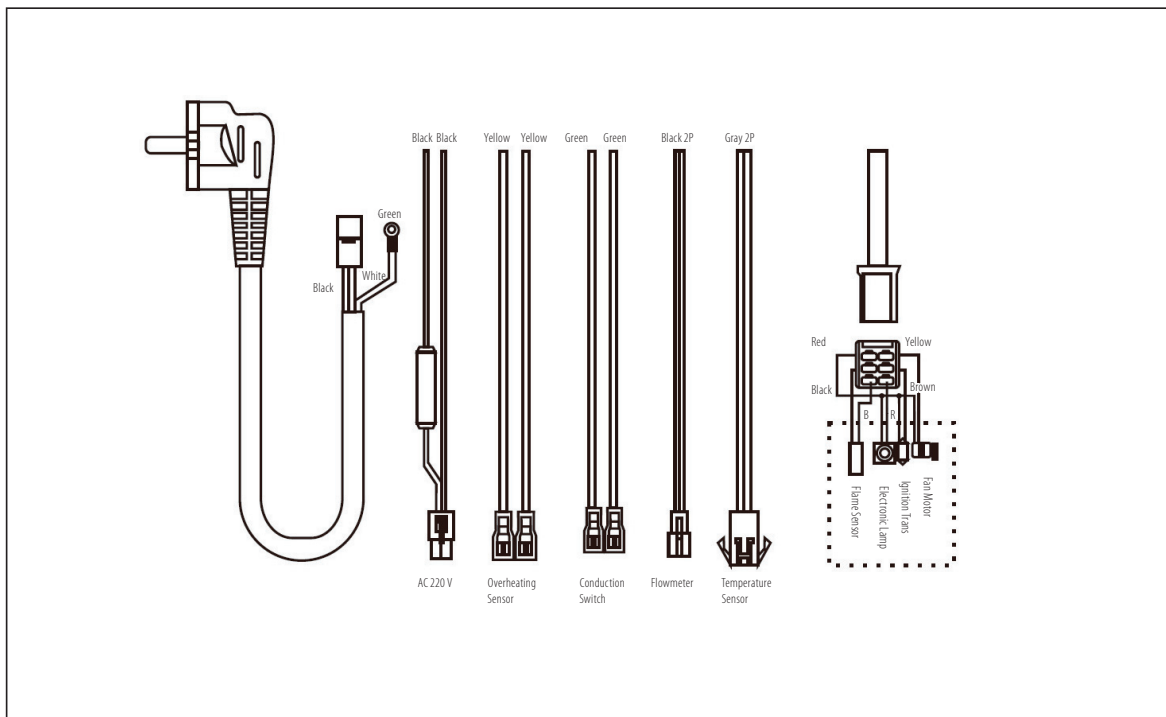
PROBLEM		CAUSE	SOLUTION
NO OPERATION	No Power supply?		Check the power supply is proper. (ex. 220/230V a.c. 50Hz)
	Check power plug is disconnected		Power plug into the outlet
	Is the Fuse short?		Replace fuse with new one (250V a.c. 3.15A)
NO FAN MOTOR OPERATED	"Lack of Fuel" light ON ?	Lack of Fuel	Fill it up with Kerosene or Diesel Do not mix or use together these two different fuel.
	Is set temp. lower than current temp.?		Set the temp as higher than current temp.
	Misfire lamp ON?	Air in the electric pump.	Remove the air in the electric pump. (Refer to page 19)
	Overheating Lamp ON?	Under operation of overheating prevention	Ventilate with fresh air in the room, and turn OFF the heater for a while (Refer to page 16)
	Inclination display lamp ON?	Ground surface is inclined or not plain	Replace the heater in plain ground (Refer to page 16)
	Can you see "Er2" on the display?	Error on Temperature sensor	Select Timer control operation from temperature control mode. (Refer to page 16)
NO IGNITION ON BURNER	Is fuel filter stuffy?	Filter is contaminated	Clean the filter with compressed air, or replace with new one. (Refer to page 18)
	Is air suction valve adjusted excessively or too small?		Call after sales service agent.
	Voltage is low?	In case of low voltage	Burner will not work properly, so use a booster to elevate voltage. (A/S)

TROUBLE SHOOTING

	PROBLEM	CAUSE	SOLUTION
IMMEDIATE STOP JUST AFTER IGNITION	"Lack of Fuel" light ON?	Running out of fuel	Fill up the fuel.
	Check if the fuel is Diesel or kerosene	It may cause less performance & trouble	Drain the existing fuel, and fill with Diesel or kerosene only.
	Water or any other impurities on fuel?	It may cause less performance & trouble	Replace the fuel with good quality one.
	Is flame sensor located well?	In different position, it causes an error.	Place the sensor in original location.
	Is flame sensor dirty?	Error because of soot or dirt	Call after sales service agent.
	Noise in fuel pump?	Excessive air in the pump and nozzle.	Remove the air in the electric pump.
EXCESSIVE SOOT IS GENERATED	Check if the fuel is Diesel or kerosene	It may cause less performance & trouble	Drain the existing fuel, and fill with Diesel or kerosene only.
	Water or any other impurities on fuel?	It may cause less performance & trouble	Replace the fuel with good quality one.
	Is air suction valve adjusted excessively or too small?	Error on Temperature sensor	Call after sales service agent.
	Is tube clogged?	Smoke may flow backward	Clean the tube by removing soot inside of tube, or replace with new one.
NOISE IN BURNER	Is Fuel filter stuffy?	Dirty filter with impurities and contamination.	Clean or replace with new one
	Noise in fuel pump?	Excessive air in the pump and nozzle.	Remove the air in the electric pump.

SPECIFICATION & ELECTRICAL WIRING DIAGRAM

Model	DSO-90	DSO-120	DSO-150	DSO-180	DSO-210	DSO-250	DSO-350
Fuel	Green Diesel	Green Diesel	Green Diesel	Green Diesel	Green Diesel	Green Diesel	Green Diesel
Heating Output (kcal/h)	9,000	12,000	15,000	18,000	21,000	25,000	35,000
Calorific power (kW)	10.4	14.0	17.4	20.9	24.4	29.0	40.7
Fuel Consumption (l/h)	1.0	1.2	1.5	1.9	2.1	2.3	3.8
Heating Area	36–53 m ²	55–88 m ²	66–133 m ²	86–196 m ²	135–237 m ²	166–280 m ²	231–330 m ²
Electric Power Consumption	50 W	50 W	50 W	65 W	65 W	115 W	120 W
Size (WxDxH)	740 x 320 x 1020	940 x 320 x 1020	1290 x 320 x 1020	1290 x 320 x 1190	1290 x 320 x 1190	1340 x 350 x 1510	1370 x 400 x 1800
Weight	42 kg	45 kg	60 kg	63 kg	63 kg	90 kg	116 kg
Used	Heating	Heating	Heating	Heating	Heating	Heating	Heating
Power Supply	220 V / 50 Hz AC	220 V / 50 Hz AC	220 V / 50 Hz AC	220 V / 50 Hz AC	220 V / 50 Hz AC	220 V / 50 Hz AC	230 V / 50 Hz AC
Tank Capacity	28 L	30 L	45 L	45 L	45 L	85 L	90 L
Diameter of Somke Pipe (in case of Using)	90 mm	100 mm	100 mm	100 mm	100 mm	100 mm	100 mm



WARRANTY CARD

This HIPERS far infrared rays heater gives you more reliable performance and comfortableness, and durability the more you use it, because it is produced under the strict quality assurance system including various inspection during production and after production and reliance test, etc.

In case you encounter any problem, please contact the local service agent, or a distributor.

If the problem is occurred due to the production failure, or natural malfunctioning, we will offer you free repair service under our warranty clause.

GENERAL

1. Warranty period is 36 months after purchasing date.
- If the problem is occurred by the mistake or misuse of the customer, we charge a repair cost even if it is within warranty period.
2. This warranty card is valid within your country.
3. Please keep this warranty card for better service in case of trouble.
4. Please contact your local distributor or after sales service agent.
5. Please fill out this form after purchase.

DESCRIPTION	HIPERS Far Infrared Rays Heater		
MODEL	DSO-90 / DSO-120 / DSO-150 / DSO-180 / DSO-210 / DSO-250 / DSO-350		
DATE OF PURCHASE		PRODUCT	
WARRANTY PERIOD	() Months	PRICE	€
DISTRIBUTOR	NAME OF COMPANY		
	TELEPHONE NO.		
CUSTOMER	NAME		
	ADDRESS		
	TELEPHONE NO.		

Official representative of Hipers in Scandinavia and Baltic states:



Veltron International OÜ (Velt Ekspert)

Tel.: +372 5648 8805

E-mail address: info@veltekspert.ee; hanno@soojuskiirgur.ee

Address: Pärnu mnt.139/11, Tallinn, Estonia

Manufacturer: Daesung Hione Co., Ltd
Made in Korea

Hipers

Official representative of Hipers in Scandinavia and Baltic states:

Veltron International OÜ (Velt Ekspert)

Tel.: +372 5648 8805

E-mail address: info@veltekspert.ee; hanno@soojuskiirgur.ee

Address: Pärnu mnt.139/11, Tallinn, Estonia