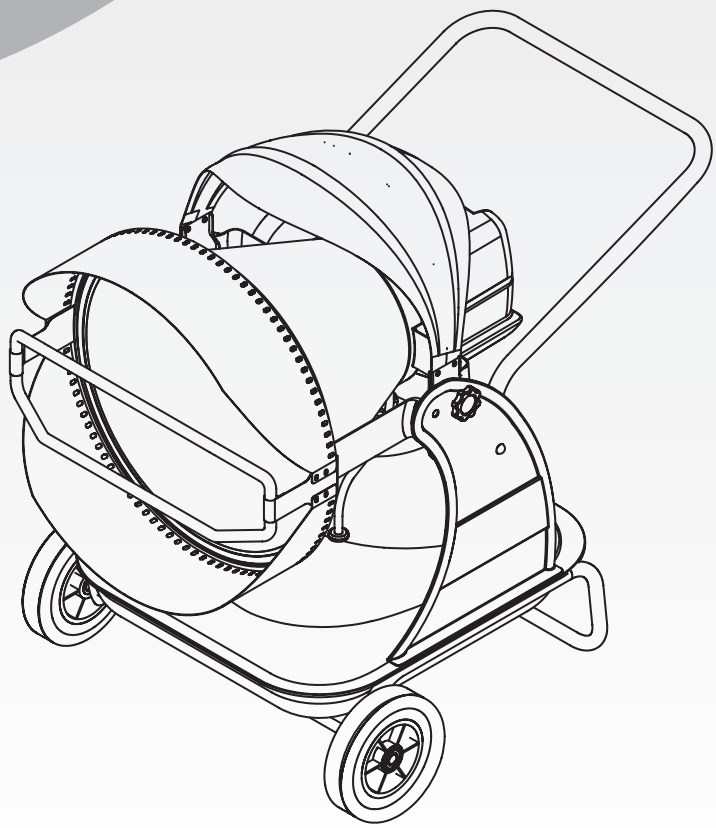
Tiger King

SF-2

Manual



Important guidelines

Read and have thorough knowledge of the instruction and gist etc of this manual without fail prior to disassembly, assembly and starting of this instrument. Serious problem caused by inappropriate use of this heater can be happened. Besides, keep this manual without fail as long as this instrument is used.

Danger warning

Be sure to comply with the instruction and warning etc of the manual provided along with this heater! If not, it could lead to serious injury, property damage and even death from combustion gas or explosion, fire etc. Make only the person who follow and had thorough knowledge of this manual use or disassemble this heater.
Should you need information other than the manufacturing instruction or sticker, label contents of this heater, inquire to manufacturer.

Contents

Warning phrase ---- 2
Product drawing ---- 3
Product features ---- 3
Information about safety ---- 4
Operating principle ---- 4
Parts in Parking, Assembling ---- 5
Electric circuit diagram ---- 5
Using fuel ---- 6
Ventilation ---- 6
Operating method ---- 6
Maintenance ---- 6, 7
Long term storing ---- 7
Emergency measure gist ---- 7
Parts disassembly ---- 8
Parts list ---- 8
Repair warranty ---- **rear side**

Warning:

Keep safety distance from the combustibles like construction materials such as wood etc in accordance with the guide of this manual due to problem of fire, poisonous gas, and explosion danger upon burning. Moreover, do not use in a place where there are gasoline, solvent, thinner for painting, inflammable dust and object that contained any kind of dangerous chemical substance.

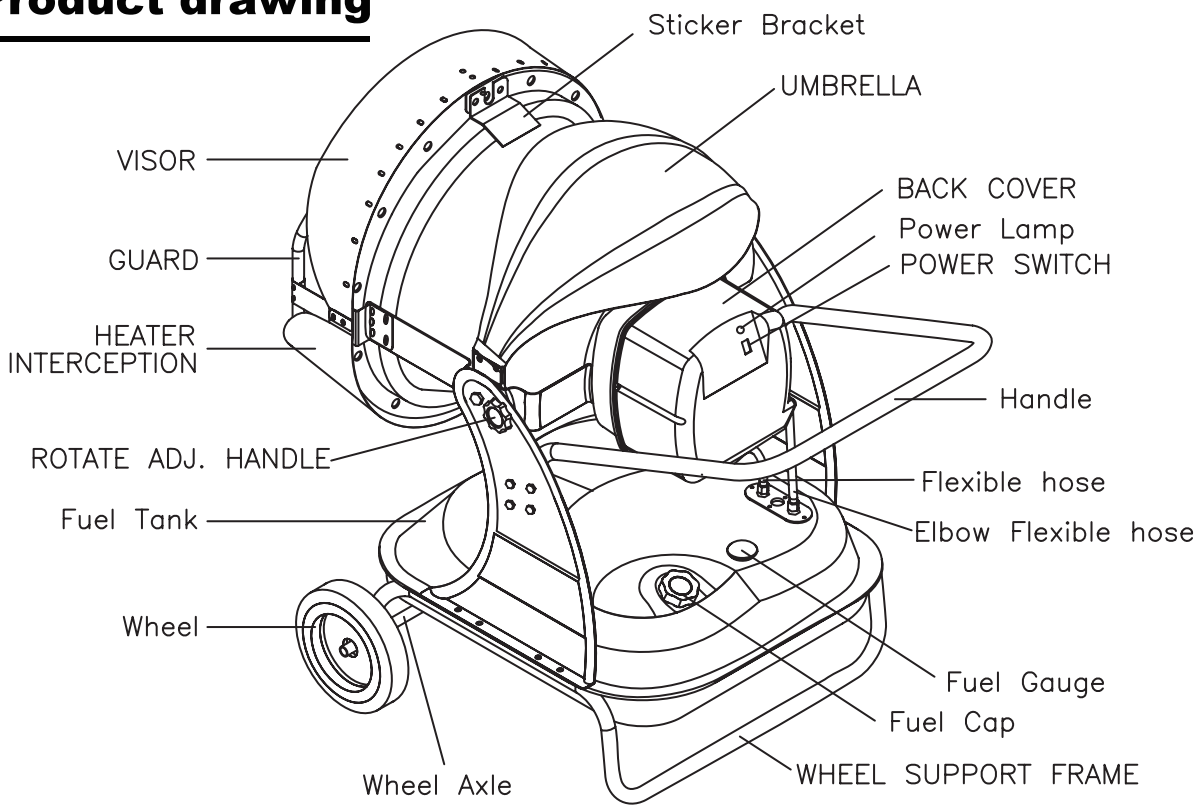
Warning:

When use this heater in a place where ventilating equipment is not prepared separately, ventilation is required for proper combustion and exhaustion. For this, refer to the ventilating gist of page 6.

Warning:

Use this heater after reading and knowing well the safety and operating gist in this manual. If does not follow the instruction and preventive measure etc in the manual provided along with this heater, death or serious injury and property damage etc caused by fire, explosion, combustion gas, suffocation or carbon monoxide etc can be happened. Make only the person who read this manual and had thorough knowledge of its contents use and repair. Do not use this instrument at home or inside of the truck

Product drawing

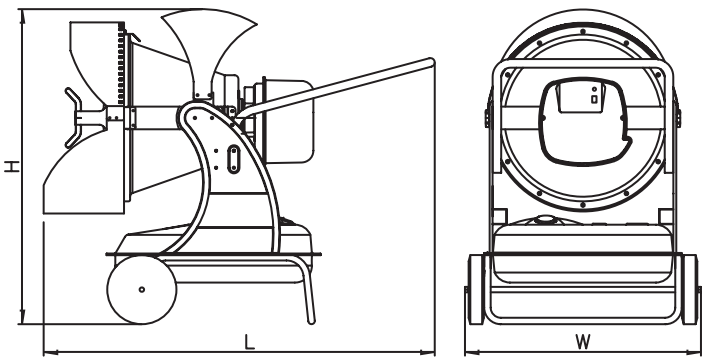


Picture 1. RADIANT HETER

Product features

Specifcation	
BTU / KW	25,000/23,400
Fuel consumption per hour(l/hr)	2.9/2.6
Tank capacity(liter)	40
Maximum operating time	13/14
Using area(CmM)	165
Overheating prevention circuit	Ok
Conductive switch	Ok
Dimension(LxWxH)(cm)	1155 X 696 X 930
Weight(Kg)	34

Picture 2.



Picture 3.

Information about safety

Danger | **Toxicity of carbon monoxide can be led to death!**

This heater is a Direct burning type heater that burn the kerosene/light oil then heat. This product is the one devised to temporarily use mostly at inferior work place and outdoor facility or inside of a construction place for execution, rebuilding and repair etc of a building. Direct heating type means that every substance burned at heater enter into the inside of the heating space directly. A little bit of carbon monoxide is generated from this product whose combustion rate is 98%. Ordinary person can endure against a little bit of carbon monoxide though; preventive measure should be taken by proper ventilation. If does not ventilate properly in compliance with this manual, it could lead to death. Early stage poisoning by carbon monoxide is similar to a bad cold. Inadequate ventilation shows symptoms such as "**headache, dizziness, tears, snivel, mouth drying and sore throat**" etc. If uses in a place where over 2 persons exist, this kind of safety measure, using gist and accident danger etc should be notified to everybody. Especially since those who are **pregnant woman, heart and lung disease patient, anemia patient, alcoholic** and acrophobia patient are more sensitively exposed to the carbon monoxide, attention should further be given.

When moving this Heater, Please use handle after turn off the Heater(Caution for Burn)

Comply with the following gist without fail.

- Check carefully whether the heater was shocked from the outside. Do not use the product shocked.
- Do not manipulate this product arbitrarily. Do not use the arbitrarily manipulated product either.
- Use the fuel of only kerosene or light oil. However, in case of light oil, movement may not be smooth in a specific environment.
- Never use the highly volatile fuel such as gasoline, naphtha, thinner and alcohol etc that have explosive danger.
- Primarily use outdoors, and in case that use indoors inevitably, make it ventilate well without fail.
- Open space of minimum 1㎡ per 23,000Kcal is required. (Refer to "ventilation" of page 6)
- Do not use at residential street.
- Do not use in a place where the product is exposed to water, rain and sprayed liquid.
- Avoid a place where the inflammables such as gasoline, thinner, volatile vapor or liquid stays.
  Minimum space distance: upper side: 1m, lateral side: 60cm, front side: 2m
- Use at a flat and stable place.
- Do not limit the absorption face and discharge face in any manner. This product cannot be used with duct (piping) work.
- Do not leave the place in a state the heater is turned on.
- Keep out of reach of children and animal.
- Handle the heated heater after wearing the gloves to avoid burn, but don't do that when the heater works.

Operating principle

Fuel supply method: Once pump the fuel to the solenoid pump by electric vibration in this heater so that push by pressure (9~6kg/cm) of high pressure to the nozzle through the duct, the nozzle by injection angle of uniform angle makes the fuel spray into minute particle within the combustion chamber.

Instantaneous ignition process: Once the home voltage current is flowed in the heater's transformer, igniter changes this into the current of the high voltage (16.5kv) and spark discharge of high pressure flies up at the terminal of the ignition plug. That spark oxidizes the fuel particle sprayed in the combustion chamber inside so that gets ignited. High pressure discharge continues for about 20 seconds then stop and combustion is continued until the fuel injection is stopped by hot air in the combustion chamber inside.

Cooling and ventilating process: Heater needs plenty amount of air (oxygen) when the fuel burns in the combustion chamber. Therefore get the air in the combustion chamber activated by the ventilating fan so that make proper combustion process. If the air that goes to the combustion chamber from this ventilating fan is excessive, blue flame is generated and ignition could be failed. On the contrary if it is too little, yellow flame is generated and smoking and smell gets severe owing to imperfect combustion. when you turn off the Heater, the fan will operate 3 minutes and stop for preventing overheating in combustion chamber

Electric circuit protection: Electric device of this heater mounted a fuse to protect against overvoltage. However this fuse cannot protect against instantaneous high voltage or thunderbolt etc. Despite the power supply is authorized, if the product is not activated at all; check the fuse in the PCB before everything else.

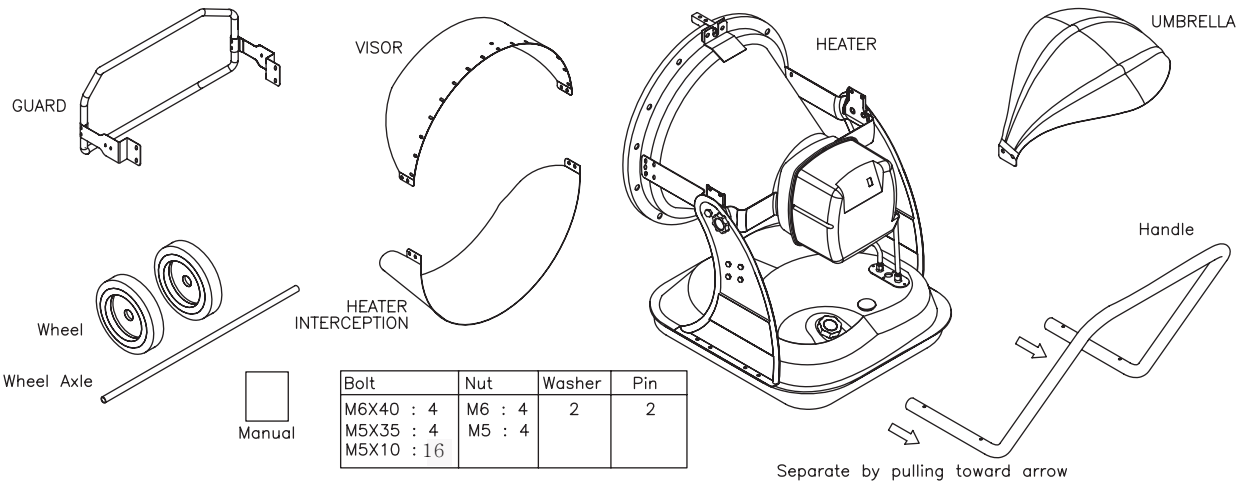
Flame detector: This heater mounted a photoelectric tube, as a flame detector, that senses flame to check continuous combustion upon combustion. Therefore if the flame is out or imperfect, the flame detector senses this so that get the combustion stopped and send the abnormal signal to the instrument board.

Overheating protection sensor: An overheating protection device was prepared to check abnormal overheating in the heater that could be happened upon combustion. If the temperature of the heater inside (except the combustion chamber) becomes over 80~90℃, it sense then make the combustion stop and send the abnormal signal to the instrument board.

Setting Float Sensor: Check the fuel amount in fuel tank and stop operation before making soot and bad smell originated from lack of fuel during operation.(The power lamp will flickering l eaving 0.2 seconds space.)

Parts in Packing

Open the packing box and take out the heater, accessories and manual etc then check. For the contents, refer to the picture.



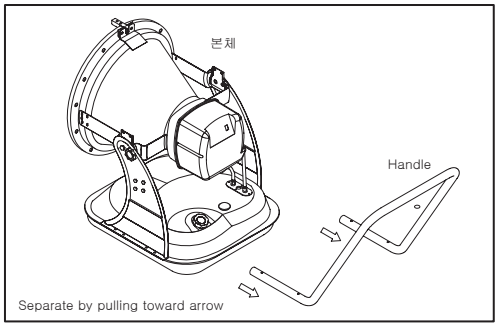
Bolt	Nut	Washer	Pin
M6X40 : 4 M5X35 : 4 M5X10 : 16	M6 : 4 M5 : 4	2	2

Picture 4. Packing contents

Product assembly

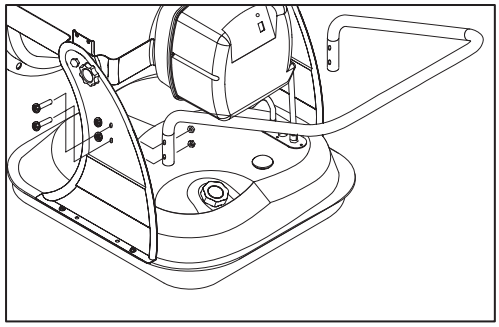
Assembling. 1

Open the box and take out the Heater. Separate the handle, inserted in Heater by pulling toward arrows



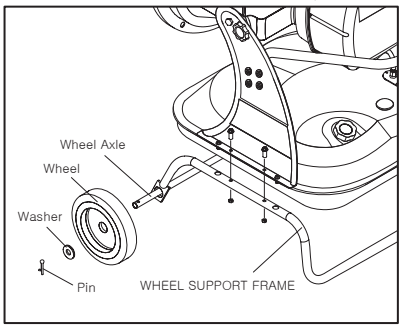
Assembling. 2

Fix the handle tightly according to the direction on diagram with Bolt(M6X40) and Nut



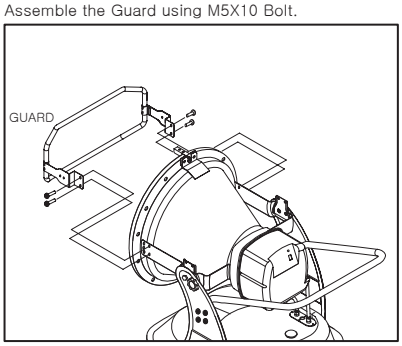
Assembling. 3

Assemble the Heater on appointed position of wheel Support Frame(described on diagram) with Bolt(M5X35) and Nut According to diagram, After assembling wheel and Wheel Axle, and fix with washer and pin.



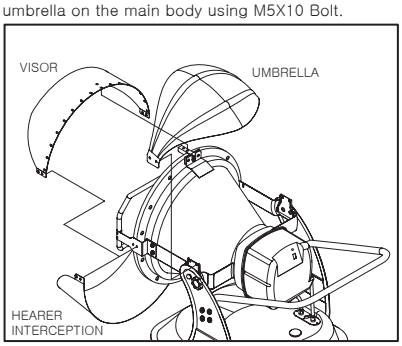
Assembling. 4

Assemble the Guard using M5X10 Bolt.

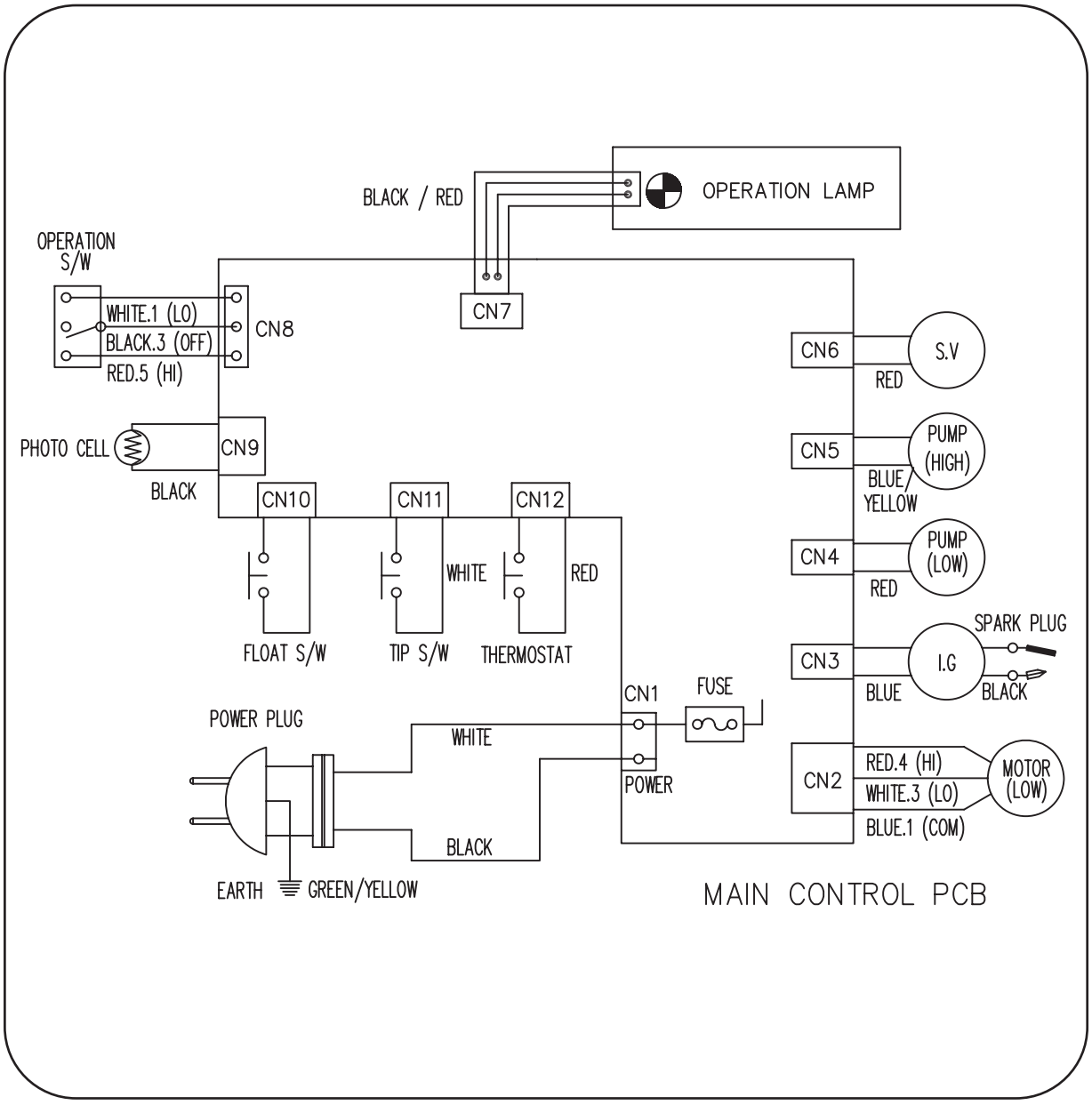


Assembling. 5

Assemble Visor, Heater Interception and Heat umbrella on the main body using M5X10 Bolt.



Electric circuit diagram



Using fuel

For the fuel used in this product, kerosene is recommended. (Depending on circumstances, light oil can be used.)
Of course kerosene is more suitable for the using condition. In general the light oil is the heat amount is higher than the kerosene though, it is inferior in the management aspect because of the nozzle clogging, hardening problem in the extreme low temperature. Hence kerosene is recommended. Be cautious of the following case when use the fuel.

Never keep the fuel at residential area. Keep the fuel at outdoors where always ventilates well.
Never put the fuel at a place where sunlight is directly shone or in front of the heater when the heater burns.
Never use the fuel unused over a year. In case that use the fuel contained in the tank for long, it become a reason of the heater trouble.

Long unused fuel is not burned normally.

> ⚠ **Warning** Since the highly volatile fuel such as gasoline, benzene, alcohol, thinner for painting etc brings about explosion or unpredictable consequences, never use it.

When refuel do outdoors not indoors. Also refuel not to overflow at a flat place. In case that buy for the first time then use, it is advisable to operate outdoors for minimum over 10 minutes. It is because why the oily substance remained upon manufacturing can be burned then poisonous gas can be come out for a while.

> ⚠ **Warning** When the heater is overheated or operated, never refuel. Explosion could be happened.

Ventilation

> ⚠ **Warning** For proper injection of oxygen to this product, open space of minimum 1m² a product is necessary.

Operating method

Getting started

1. Refuel until the needle of the flowmeter is indicated at ”F”.
2. Close the fuel cap without fail after refueling.
3. Put the plug in power socket
4. The heater will operate when press the HIGH or LOW button
5. During operating, if you change the mode Low to high or high to low, you have to go through the off mode, At this time, if you stay over 2 seconds on off mode, the heater will be turned off.

Caution: This product mounted a fuse on the electronic board to protect the electric equipment. When the power supply is normal yet the power lamp are not turned on, check the fuse.

Extinguishing

1. Once put the power supply switch “OFF”, the combustion is stopped. The fan will further revolve for about 3~4 minutes to enable the overheated heater to cool after the combustion was stopped.
2. When the fan stopped, pull out the power supply plug in the socket.

> ⚠ **Warning** When the bloser fan is operating, do not pull out the power supply plug in the socket. When cooling is not done in a state the heater is heated, it becomes a reason of the trouble and free repair is not available.

Maintenance

> ⚠ **Warning** Do not repair the product in a state the heater is heated or power supply is connected.

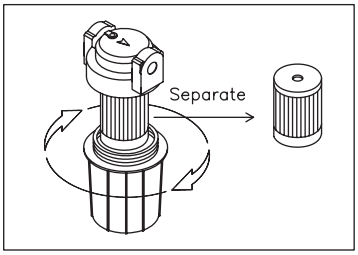
For a part(=component) exchange, in case that use the part other than the part provided by manufacturer, dangerous consequences can be happened and even free repair warranty is difficult to receive. Be sure to comply with the following maintenance gist:

Fuel tank – Clean the tank every 200 hours or when necessary. When cleaning, use gasoline or kerosene not water and use after cleaning and drying completely.

Filter – Filter have 2 kinds which is the injection filter on the fuel injection inlet and the pump filter (or oil filter) used for the fuel to enter into the pump. Clean rinsing out by kerosene or gasoline etc over 2 times a year. If used the contaminated fuel, you should clean right away.

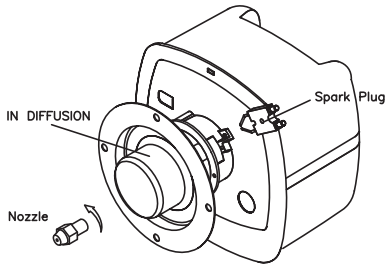
Wing - Warning! Never repair the product when the fan is running or power supply is connected. Wing should be cleaned over 1 time a year. Fan has 2 kinds which is the ventilating fan hung on the burner and the cooling fan on the shell support over the tank. Clean the each wing by rush or wet cloth not to break or bend. For the cleaned wing, sufficiently dry and assemble then use. Please refer to the picture below.

Fan - Warning! Never repair the product when the fan is running or power supply is connected. Wing shoule be cleaned over 1 time a year. For the cleaned wing, sufficiently dry and assemble then use.



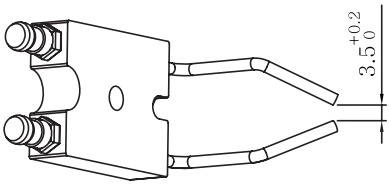
Nozzle – Nozzle should be cleaned or exchanged minimum over one time a year. If used the contaminated fuel, it needs to exchange right away. To clean the nozzle, take it out of the burner, disassemble then soak into thinner or gasoline etc and carefully assemble.

Before disassemble Nozzle, disassemble in diffuser and spark plug first.



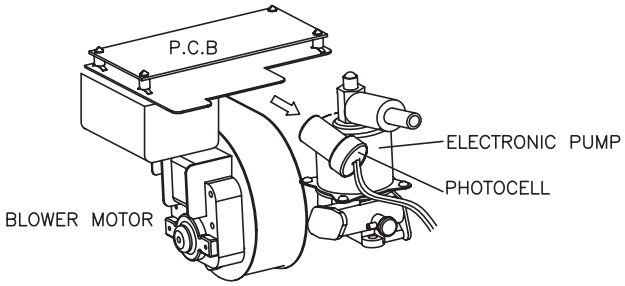
Picture 7. Nozzle management method

Ignition plug – Ignition plug should be cleaned or its gap should be adjusted every 600 hours after using or when necessary. Clean by an iron brush after taking the ignition plug out of the burner. Electrode space should keep the distance of 3.5~3.7mm.



Picture 8. Ignition plug maintenance

Photoelectric tube – Photoelectric tube should be cleaned one time a year or when necessary. Clean the photoelectric tube face by cotton wetted in water or alcohol.



Long term storing

1. Open the fuel cap.
2. Get rid of the fuel by wrinkled hose.
3. Clean the tank inside by using some kerosene, gasoline or thinner etc. At this time never use water. It is because why rust can be fatal.
4. Completely dry the tank.

Never keep in a state refueled in the tank and beyond the season.

Long-stored fuel does damage to the product.

Keep in a dried and well-ventilated place.

Keep the product in a place where dust and humidity are none and keep after repacking into the first packed box.

Keep the manual to a place where is easy to find.

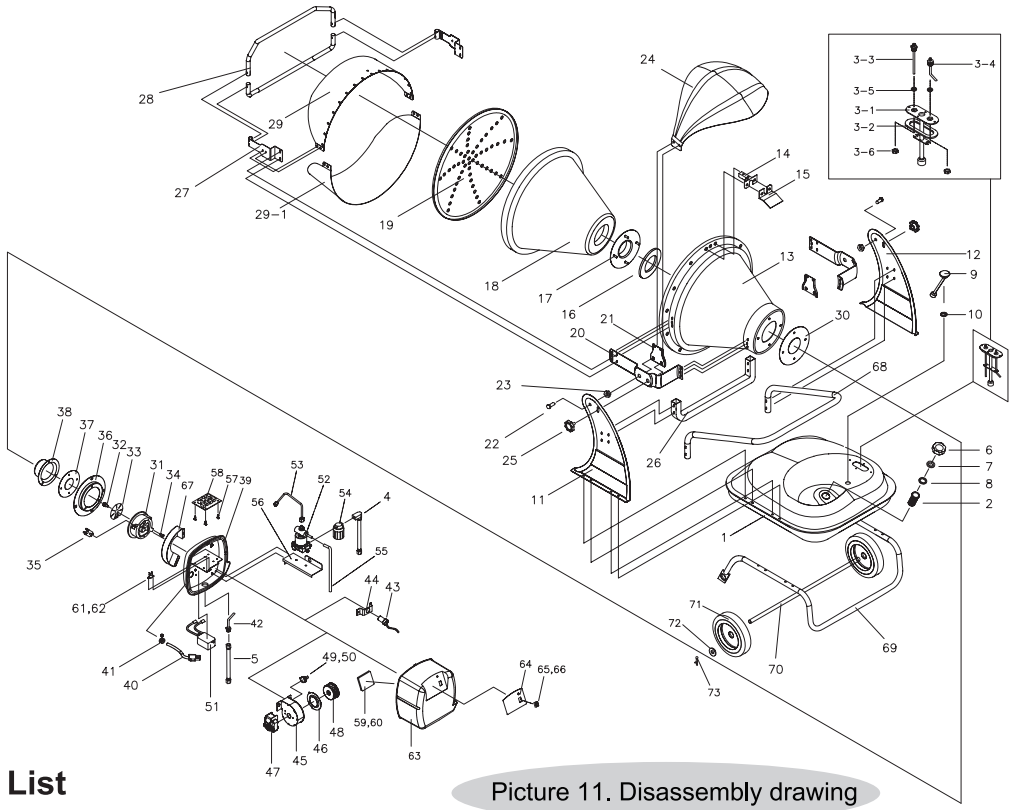
Emergency measure gist

(Step against error code appeared on the temperature indication window)

When flickering the power lamp	Reason	Measure gist
When flickering the power lamp leaving 0.5 second space	Power supply switch manipulation error	
	Electricity supply in a state the switch is turned on at the initial stage	Turn off the power supply then turn off the switch, and turn on the power supply then turn on the switch
	Flame detector (photoelectric tube error)	
	1. Fuel shortage	– Fuel supply
	2. Photoelectric tube inferior	- Photoelectric tube exchange
	3. Imperfect combustion	– Exchange into clean fuel
	4. Photoelectric tube contaminated	- Photoelectric tube cleaning
	5. Contamination of the fuel filter	– Fuel filter cleaning
	6. Ignition inferior	– 1. Igniter cable check – 2. Ignition plug cleaning and exchange
	Temperature perception sensor error	
	1. Temperature sensor terminal broken away	– Terminal re-connection
	2. Perception sensor inferior	– Temperature sensor exchange
	Overheating prevention sensor error/ conductive sensor check	
	- Inner abnormal overheating	- Re-operation after cooling
	- Product inclined or overturned	- Re-operation at a flat place
When flickering the power lamp leaving 0.2 second space	Float sensor	
	Fuel shortage	Fuel supply

Picture 10. Emergency measure

Parts disassembly drawing



Picture 11. Disassembly drawing

Parts List

Exchange parts list

NO.	PART NAME(US)	PART NO.
1	Fuel Tank	SF2-025-001
2	Fuel Filter	R20-15016-1
3-1	Float Sensor	SF2-025-003-1
3-2	Float Sensor Packing	TK13-008-078
3-3	Fuel Pipe	SF2-025-003-3
3-4	Return Pipe	SF2-025-003-4
3-5	Pipe Packing	TK13-008-081
3-6	Nut	TK13-008-082
4	Flexible Hose	SF2-025-004
5	Elbow Flexible Hose	SF2-025-005
6	Fuel Cap	TK13-000-005
7	Fuel Cap Inner Packing	SF2-025-007
8	Fuel Cap Packing	TK8-000-005-1
9	Fuel Gauge	TK8-003-003
10	Fuel Gauge Packing	TK8-003-003-1
11	Tank Support-L	SF2-025-011
12	Tank Support_R	SF2-025-012
13	Cone Body	SF2-025-013
14	Visor Bracket	SF2-025-014
15	Sticker Bracket	SF2-025-015
16	Out Diffusion Gasket	SF2-025-016
17	Out Diffusion	SF2-025-017
18	Insulator Body	SF2-025-018
19	Heat Plate	SF2-025-019
20	Cone Body Holder	SF2-025-020
21	Umbrella Bracket	SF2-025-021
22	Bolt	M12X20

NO.	PART NAME	PART NO.
23	Nut	M12
24	Umbrella	SF2-025-024
25	Rotate ADJ. Handle	SF2-025-025
26	Support Pipe	SF2-025-026
27	Guard Bracket	SF2-025-027
28	Guard	SF2-025-028
29	Visor	SF2-025-029
29-1	Heater Interception	SF2-025-029-1
30	Burner Bracket Gasket	SF2-025-030
31	Burner Head	SF2-025-031
32	Nozzle	SF2-025-032
33	Burner Head Blade	R20-15039
34	Nipple	R20-15084
35	Spark Plug	R20-15026
36	Burner Bracket	SF2-025-036
37	Burner Head Gasket	SF2-025-037
38	In Diffusion	SF2-025-038
39	Control Base	SF2-025-039
40	Power Cord	SF2-025-040
41	Cord Bush	Tk8-002-053
42	Return Hose Joint Pipe	SF2-025-042
43	Photocell	R20-15229
44	Photocell Bracket	R20-15047
45	Blower Casing	SF2-025-045
46	Inlet	SF2-025-046
47	Blower Motor	SF2-025-047
48	Blower Fan	SF2-025-048

NO.	PART NAME	PART NO.
49	Theamostat	R20-15027
50	Theamostat Wire	SF2-025-050
51	Ignitor	SF2-025-051
52	Electronic Pump	SF2-025-052
53	Electronic Pump Pipe	SF2-025-053
54	Fuel Filter	SF2-025-054
55	Return Hose	SF2-025-055
56	Electronic Pump Base	SF2-025-056
57	Spacer Support	SF2-025-057
58	Main P.C.B	SF2-025-058
59	Sub P.C.B	SF2-025-059
60	P.C.B Wire	SF2-025-060
61	Tip Over Switch	R20-15090
62	Tip Over Switch Wire	R20-15060
63	Back Cover	SF2-025-063
64	Name Plate	SF2-025-064
65	Power Switch	SF2-025-065
66	Power Switch Wire	SF2-025-066
67	Spark Plug Cover	SF2-025-067
68	Handle	SF2-025-068
69	Wheel Support Frame	SF2-025-069
70	Wheel Axle	SF2-025-070
71	Wheel	SF2-025-071
72	Washer	SF2-025-072
73	Pin	SF2-025-073

In case of Diffusion Model, the function of * Marked Parts might be slightly changed or omitted.