

MASTER®

User's Manual & Operating Instructions

Model Numbers

MH-70-SS-A



CONSUMER: READ AND SAVE THESE INSTRUCTIONS

▲ DANGER GENERAL HAZARD WARNING:
READ AND UNDERSTAND ALL OF THE INSTRUCTIONS IN THIS MANUAL BEFORE ASSEMBLING, STARTING, OR SERVICING THE HEATER. Be sure to comply with the instructions and warnings provided with this heater. Failure to comply can result in fire or explosion that can cause property loss, bodily injury, or loss of life. Only persons who can follow and understand these instructions should operate or service this heater. If you need heater info; such as an operating manual, labels, etcetera, contact Pinnacle Products International at 800-641-6996.

▲ DANGER **NOT FOR USE IN RESIDENTIAL LIVING AREAS OR IN ENCLOSED SPACES WITHOUT ADEQUATE VENTILATION. FOR OUTDOOR USE. INDOOR USE PERMITTED ONLY FOR: THE TEMPORARY HEATING OF ADEQUATELY VENTILATED BUILDINGS OR STRUCTURES UNDER CONSTRUCTION, ALTERATION OR REPAIR.** This is an unvented portable heater that uses air (Oxygen) from within the area in which it is used. Failure to provide adequate combustion and ventilation air will result in asphyxiation, carbon monoxide poisoning, bodily injury or death. Refer to "Ventilation" on Page 6.

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Safety Information

▲WARNING FIRE, BURN, INHALATION AND EXPLOSION HAZARD. Keep combustibles such as; building materials, paper or cardboard a safe distance away from the heater as recommended by these instructions. Never use the heater in spaces which contain products such as; gasoline, solvents, paint thinners, dust particles, volatile or airborne combustibles or any unknown chemicals. This is an unvented portable heater. It uses air (Oxygen) from the area in which it is used. Adequate combustion and ventilation air must be provided. Refer to "Ventilation" on page 6. Bulk fuel storage should be a minimum of 25 feet from heater.

▲WARNING DO NOT OPERATE THIS HEATER UNTIL YOU HAVE READ AND THOROUGHLY UNDERSTAND THESE SAFETY AND OPERATING INSTRUCTIONS.
Failure to comply with the precautions and instructions provided with this heater can result in death, serious bodily injury, property loss or damage from the hazards of fire, soot production, explosions, burns, asphyxiation or carbon monoxide poisoning. Only persons who can read and understand these instructions should use or service this heater.

▲WARNING DO NOT START THE HEATER WHEN EXCESS OIL HAS ACCUMULATED.

▲WARNING DO NOT START THE HEATER WHEN THE CHAMBER IS HOT.

▲WARNING CALIFORNIA RESIDENTS: This product contains chemicals, including lead, known to the State of California to cause birth defects or other reproductive harm.
Wash hands after handling.

MASSACHUSETTS RESIDENTS: Massachusetts state law prohibits the use of this heater in any building which is used in whole or in part for human habitation. Use of this heating device in Massachusetts requires local fire department permit (M.G.L.C. 148, Section 10A).

NEW YORK CITY RESIDENTS: The New York City Fire Code prohibits the storage, handling and use of kerosene fueled heaters for space heating. Any person violating that provision may be punished by a fine up to \$10,000 and a term of imprisonment of up to 6 months.

THE INSTALLATION OF THIS HEATER SHALL COMPLY WITH THE REGULATIONS OF THE AUTHORITIES HAVING JURISDICTION.



Look for this icon throughout the manual for helpful tips on how to assemble, use and clean your OFR Heater.

Safety Information

▲ WARNING RISK OF INDOOR AIR POLLUTION!

The products described in this manual are Kerosene/Diesel direct-fired, forced air heaters. Kerosene/Diesel forced air heaters are primarily intended for use for temporary heating of buildings under construction, alteration or repair. Direct-fired means that all of the combustion products of the heater enter the heated space. This appliance is rated at 98% combustion efficiency, but does produce small amounts of carbon monoxide.

▲ WARNING CARBON MONOXIDE POISONING MAY LEAD TO DEATH!

Carbon monoxide is toxic. Humans can tolerate only small amounts of carbon monoxide and so precautions should be taken to provide proper ventilation. Failure to provide proper ventilation in accordance with the instructions in this manual can result in death.

People with breathing problems should consult a physician before using this heater.

Early signs of carbon monoxide poisoning resemble the flu. Symptoms of improper ventilation / carbon monoxide poisoning are:

**Headache • Dizziness • Nausea • Dry Mouth
Sore Throat • Burning of Nose and Eyes**

If you experience any of these symptoms:

GET FRESH AIR AT ONCE! Have your heater serviced and check for proper ventilation. Some people are more affected by carbon monoxide than others. These include: pregnant women, those with heart or lung problems, anemia or those under the influence of alcohol or at high altitudes.

FOR OUTDOOR USE. INDOOR USE PERMITTED ONLY FOR: The temporary heating of adequately ventilated buildings or structures under construction, alteration or repair! Provide at least a three square foot (2,800 sq cm) opening of outside air for every 100,000 Btu / Hr heater rating. Refer to "Ventilation" on page 5 for further instructions.

▲ WARNING RISK OF ELECTRIC SHOCK!

ALWAYS use only the electrical power (voltage and frequency) specified on the model plate of the heater.

ALWAYS use only three-prong, grounded outlet and extension cord.

ALWAYS use only 14 AWG or better extension cord.

ALWAYS unplug the heater when not in use.

ALWAYS install the heater so that it is not directly exposed to water spray, rain, dripping water, or wind.

▲ WARNING RISK OF BURNS, FIRE AND EXPLOSION!

NEVER use fuels such as gasoline, benzene, paint thinners or other oil compounds in this heater.

NEVER refill the heater's fuel tank while the heater is operating or still hot. This heater is **EXTREMELY HOT** while in operation.

NEVER block air outlet (front).

NEVER use duct work in front of heater.

NEVER move or handle heater while still hot.

NEVER transport heater with fuel in tank.

NEVER use with an external fuel tank.

▲ WARNING CAUTION! HOT WHILE IN OPERATION. DO NOT TOUCH. KEEP CHILDREN, ANIMALS, CLOTHING AND COMBUSTIBLES AWAY FROM HEATER.

Keep all combustible materials away from this heater.

Minimum Clearance From Combustibles	
	MH-70-SS-A
Top	4 ft.
Sides	4 ft.
Front	8 ft.

ALWAYS locate heater on a stable and level surface.

If your heater is equipped with a thermostat, once it is plugged in, it can start at anytime in accordance with the thermostat setting.

Specifications

Model #	MH-70-SS-A
Rating: Btu/Hr	70,000
Fuel Consumption: G/Hr	.50
Fuel Tank Capacity: G	4
Max Operating Hours	7.2
Volts: AC/Hz	120V / 60Hz
Amps	5
Heating Area m ²	1,750

Specifications subject to change without notice.

Features

MH-70-SS-A

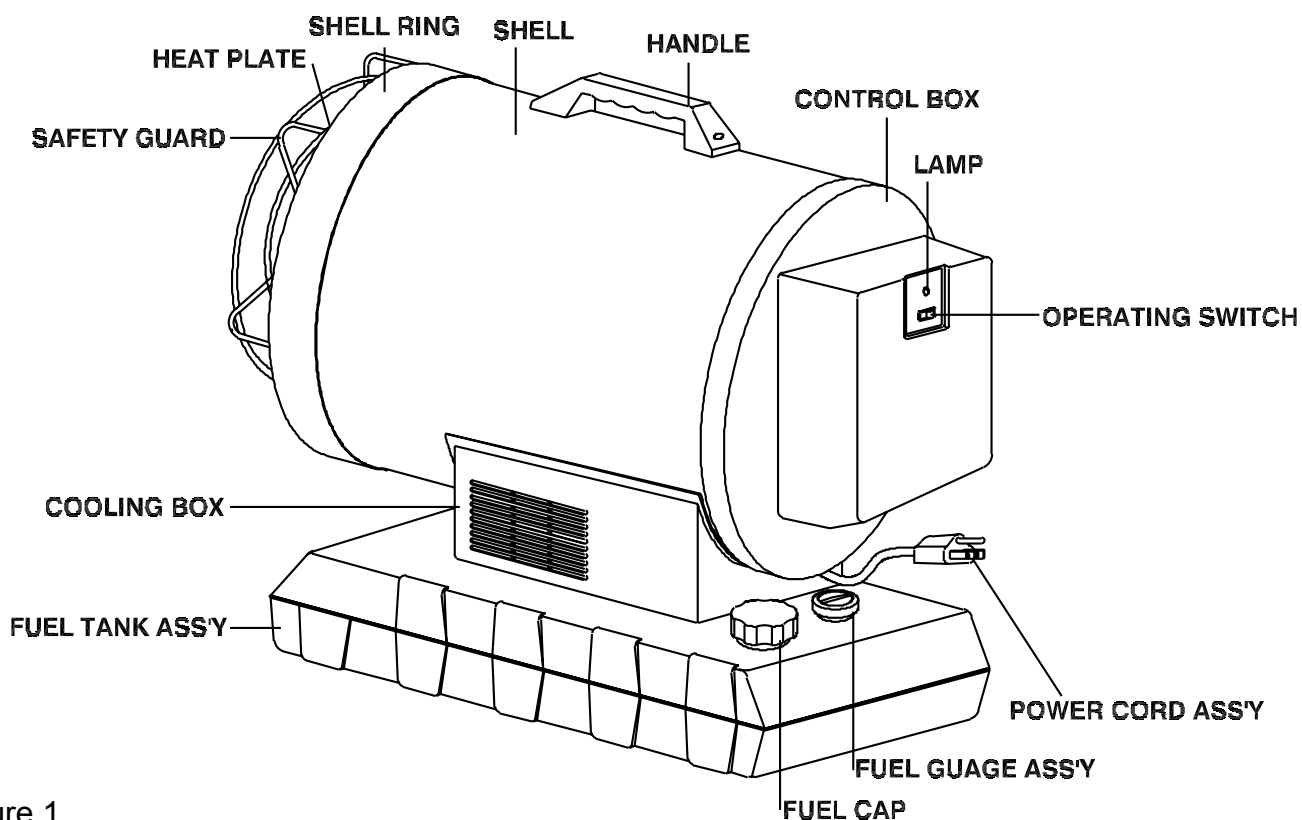


Figure 1

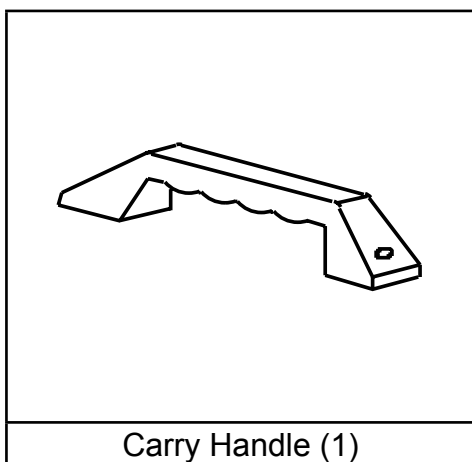
Assembly Instructions

MH-70-SS-A

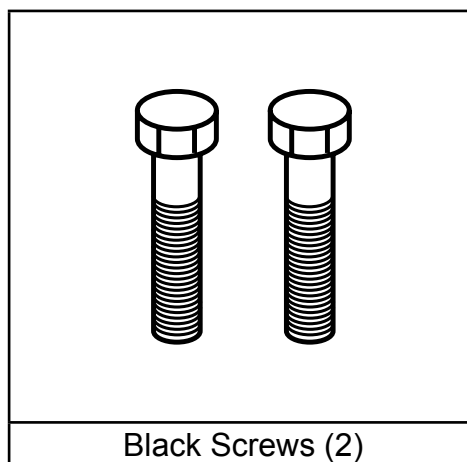
- Remove the heater and all packaging materials from the shipping carton.

Note: Save the box and packaging materials for future storage.

What's In The Box



Carry Handle (1)



Black Screws (2)

Carry Handle Assembly

1. Align holes in the upper housing with the 2 holes in the handle as shown in Figure 2.
2. Insert screws and tighten firmly.

Tools Needed:

- Phillips Head Screw Driver



Attach the handle while still in the box for easier unpacking. (See Figure 3)

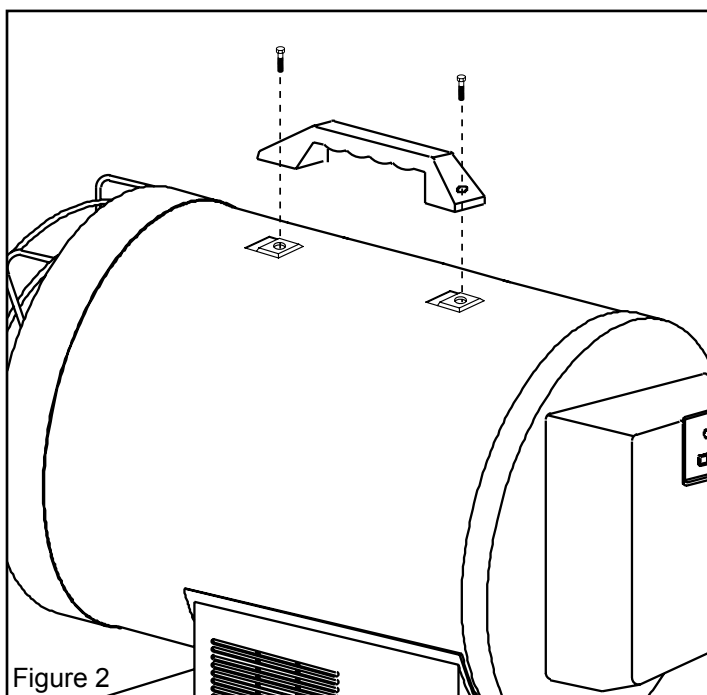


Figure 2

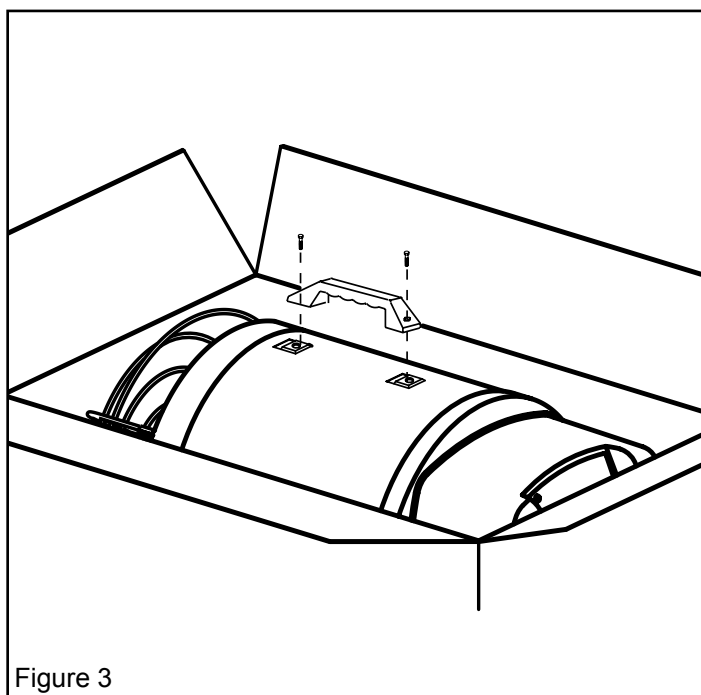


Figure 3

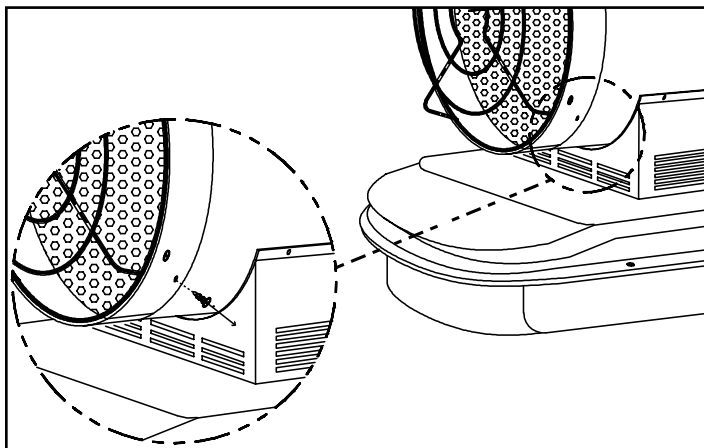
Assembly

IMPORTANT:

- INSTALL HEAT SHIELD BEFORE OPERATING YOUR MH-70-SS HEATER**

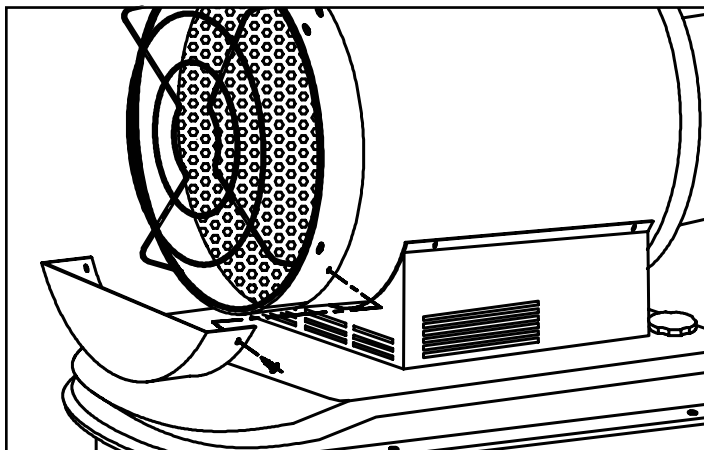
Step 1:

- Remove existing screws from shell ring on either side of heater.**

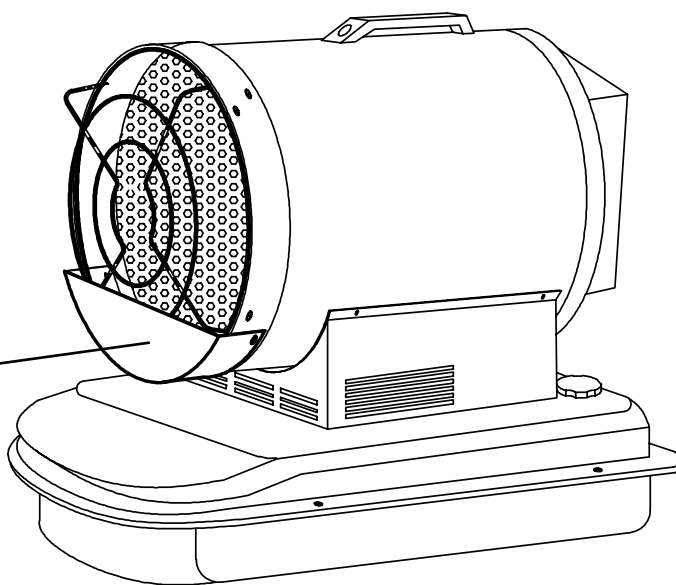


Step 2:

- Line up holes on heat shield with holes in shell ring. Attach with screws removed in step 1.**



Heat Shield



Operation

Fueling The Heater:

Kerosene

For optimal performance of this heater, it is strongly suggested that Kerosene be used. Kerosene has been refined to virtually eliminate contaminants, such as sulfur, which can cause a rotten egg odor during the operation of the heater. Using diesel fuel can cause excess soot production. Do not use Bio-Diesel as this fuel will damage your heater's seals and filter.

⚠ DANGER NEVER REFUEL THIS HEATER WHILE IT IS HOT OR OPERATING. FIRE OR EXPLOSION COULD RESULT.

⚠ CAUTION NEVER FILL THE FUEL TANK INDOORS. ALWAYS FILL THE TANK OUTDOORS. BE SURE THAT THE HEATER IS ON LEVEL GROUND WHEN FUELING, AND NEVER OVERFILL THE TANK.

⚠ WARNING DO NOT USE GASOLINE OR CRANKCASE DRAININGS.

- NEVER use fuel such as, benzene, alcohol, white glass, camp stove fuel, paint thinners, or other oil compounds in this heater. THESE ARE VOLATILE FUELS THAT CAN CAUSE A FIRE OR EXPLOSION.
- NEVER store Kerosene in the living space. Kerosene should be stored in a well ventilated area outside the living area.
- NEVER store Kerosene in direct sunlight or near a source of heat.
- NEVER use Kerosene that has been stored from one season to the next. Kerosene deteriorates over time. OLD Kerosene WILL NOT BURN PROPERLY IN THIS HEATER.

NOTE: Kerosene should only be stored in a blue container that is clearly marked "Kerosene." Never store Kerosene in a red container. Red is associated with gasoline.

Ventilation:

- Risk of indoor air pollution and Carbon Monoxide Poisoning. Use heater only in well ventilated areas.
- Refer to Safety Information on pages 1-2 for information about Carbon Monoxide Poisoning.
- **ALWAYS** provide a fresh air opening in the heated space of at least 2,800 square centimeters (3 sq. ft) for each 100,00 Btu / Hr. of heater output. Provide a larger opening if more heaters are being used.

⚠ DANGER CARBON MONOXIDE POISONING MAY LEAD TO DEATH!

Minimum Ventilation Opening Needed
MH-70-SS-A
2.1 ft. ²
64 cm ²

Operation

Starting the Heater: (Ignition)

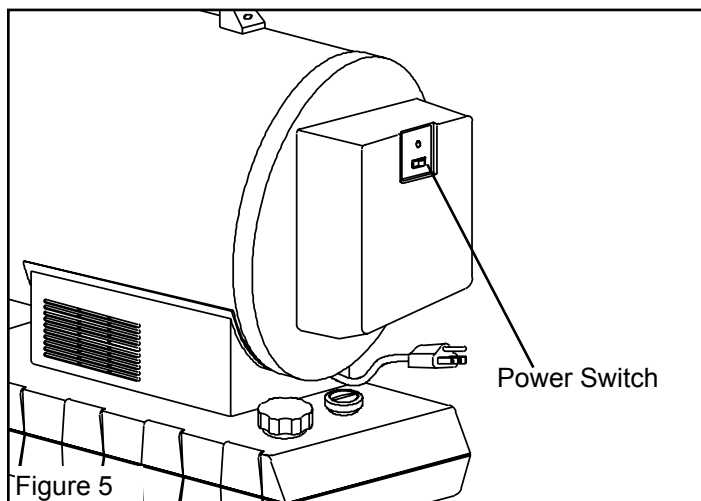
MH-70-SS-A:

1. Fill the tank with Kerosene or other approved fuel until needle on fuel gauge points to "F".
2. Replace fuel cap and tighten firmly.
3. Connect the heater to a three prong (grounded) power source. You must use a three prong (grounded) extension cord that is at least 1.8 meters long and is a minimum of 14 AWG rating.

NOTE: On first ignition or after refueling, you may hear a grinding sound just before ignition. This is the fuel pump removing the air from the fuel line. Your heater will start up within seconds. If it does not start repeat start-up procedures with fuel gauge reading at least 1/2 tank.

NOTE: The electrical components of these heaters are protected by a fuse mounted in the PC board. If the heater fails to ignite, check this fuse first and replace if necessary. Also check the power source to be sure the proper voltage is being provided to the heater.

1. Complete steps 1-3 above.
2. Push the power switch to the "ON" position. The power indicator lamp will light and heater will ignite. (See Figure 5)



Stopping the Heater: (Cool Down)

1. Turn the power switch to the "OFF" position. Combustion will stop and the Cooling Cycle will begin.

- MH-70-SS-A: approx. 7 mins

When the Cooling Cycle is complete the fan will stop running and it will be safe to unplug the heater.

NOTE: Unplugging the heater before the Cooling Cycle has been completed may cause overheating, possible damage to the heater and heat plate.

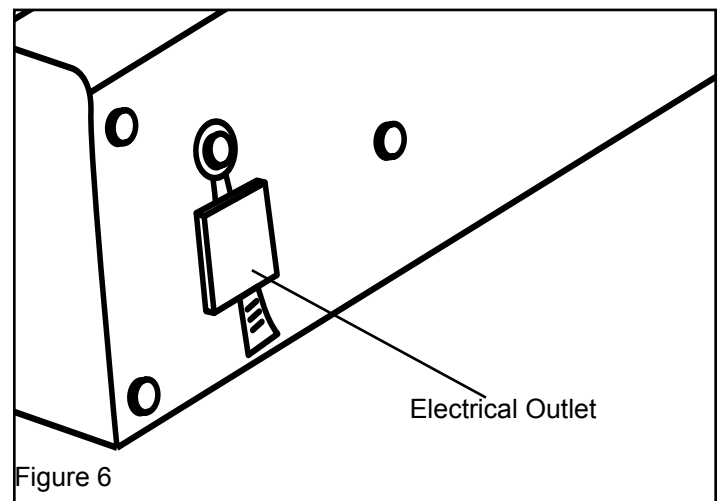
Restarting the Heater:

1. Wait ten seconds after Cooling Cycle has been completed.
2. Follow all start-up procedures above.

⚠ WARNING DO NOT disconnect heater from power source before cooling cycle has been completed.

Electrical Outlet:

- Never plug an appliance with more than a 5 amp rating into this outlet (See Figure 6).
- Always keep outlet covered when not in use



Maintenance

Long Term Storage:

1. Unscrew the fuel cap.
2. Using an approved siphon, remove the Kerosene or diesel.
3. Using a small amount of Kerosene or diesel, rinse and swirl the fuel inside the fuel tank

NOTE: NEVER MIX WATER WITH FUEL. It will cause rust inside the tank.

4. Empty the tank completely.

IMPORTANT: Never store leftover Kerosene between seasons, using old fuel can damage heater.

Store Heater in a dry, well ventilated area.

- Be sure that the storage area is free of dust and corrosive vapors. Repack the heater in the original packaging and keep user's manual in an easily accessible place.

Service:

▲ WARNING

Never service heater while it is plugged in or hot!

DO NOT TAMPER WITH THE UNIT. HAVE AN EXPERIENCED SERVICEMAN MAKE ANY NECESSARY ADJUSTMENT OR REPAIRS.

We suggest following a maintenance schedule as follows:

FUEL / FUEL TANK:



TIP: Follow the long term storage instructions to flush the tank.

Flush tank every 200 hours of operation or as needed. DO NOT flush with water, use fresh Kerosene only.

SPARK PLUG:

Clean and re-gap every 600 hours of operation or replace as needed. After removing the Spark Plug, clean the terminals with a wire brush. Re-gap the terminals to 0.140" (3.5mm). (See Figure 7)

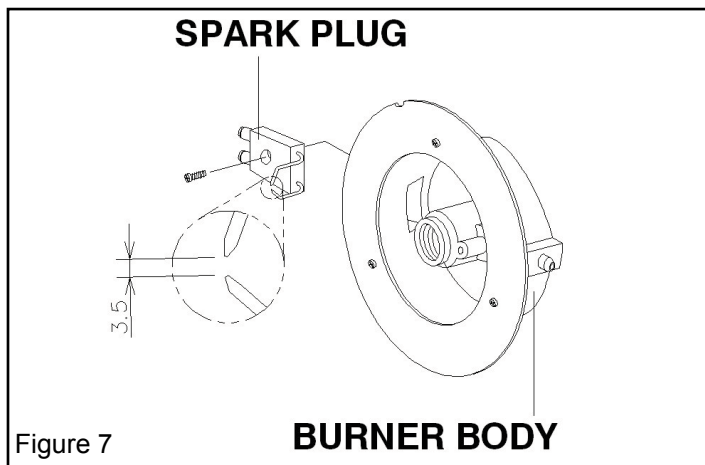


Figure 7

FAN BLADES:

The fan blades should be cleaned at least once per heating season, depending on conditions. Remove all accumulated dust and dirt with a burst of condensed air. (See Figure 8)

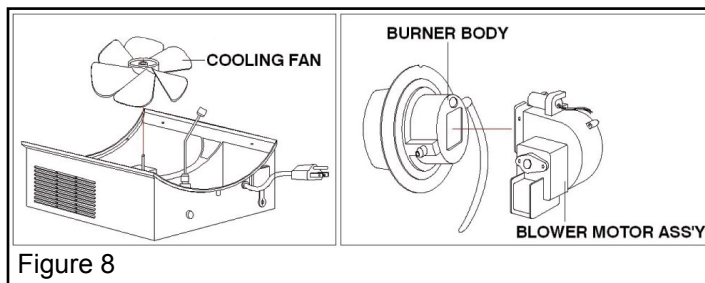


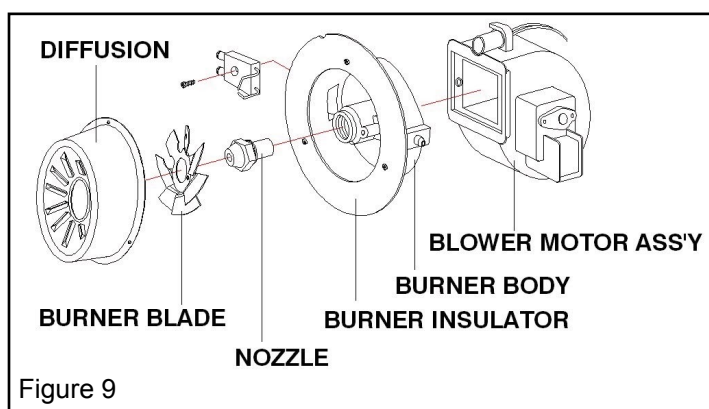
Figure 8

Maintenance

Service (Continued):

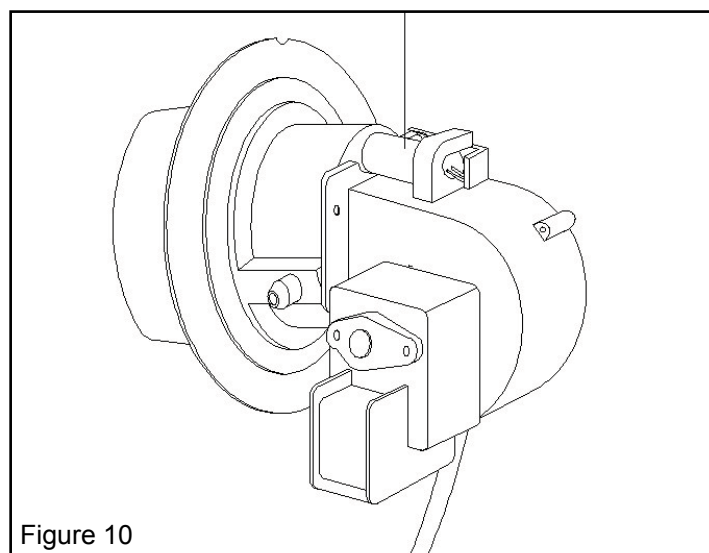
NOZZLES:

Nozzles should be cleaned or replaced at least once per heating season. Contaminated fuel could make this necessary immediately. To clean dirt from nozzle, blow compressed air through nozzle front. It may be necessary to soak nozzle in clean Kerosene or diesel to help loosen any particles. (See Figure 9)



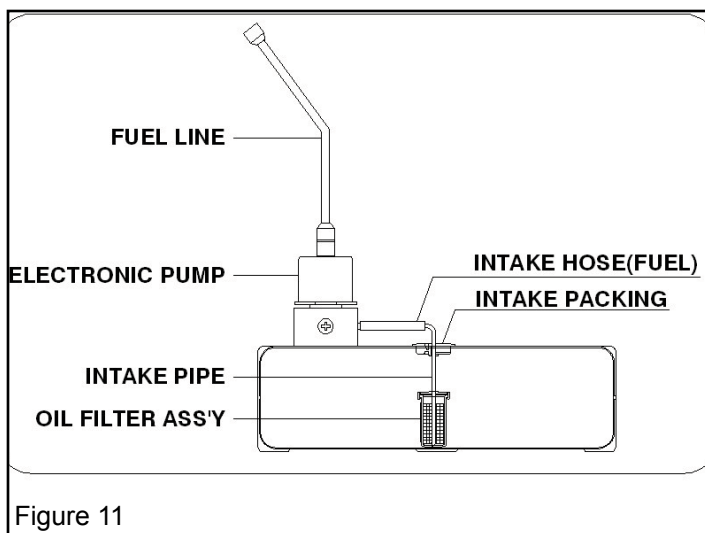
PHOTOCELL:

The photocell should be cleaned at least once per heating season or more depending on conditions. Use a cotton swab and water or alcohol to clean the lens of the photocell. Be certain to reinstall the photocell in proper position as shown below. (See Figure 10)



FILTERS:

The fuel filter and oil filter should be cleaned at least twice per heating season by rinsing it in clean Kerosene or diesel. Contaminated or old fuel could make cleaning necessary immediately. (See Figure 11)



Troubleshooting Guide

Problem	Possible Cause	Solution
Heater fires, but shuts down after a short period of time.	<ol style="list-style-type: none">1. Dirty Fuel Filter.2. Nozzle Dirty.3. Photocell Dirty.4. Photocell not installed properly.5. Photocell Defective .6. Improper electrical connection between Circuit Board and Photocell.7. Cooling Fan is obstructed	<ol style="list-style-type: none">1. Clean/replace Fuel Filter.2. Clean/replace Nozzle3. Clean/replace Photocell .4. Adjust Photocell position.5. Replace Photocell.6. Check wiring connections (See Wiring Diagrams, Page 11).7. Check to be sure cooling fan is not obstructed.
Heater will not operate, or motor runs for short time.	<ol style="list-style-type: none">1. No Kerosene/ diesel in fuel tank.2. Corroded Spark Plug or incorrect plug gap.3. Dirty Fuel Filter.4. Dirty Nozzle.5. Moisture in Fuel/Fuel Tank.6. Improper electrical connection between Transformer and Circuit Board.7. Transformer Wires not connected to Spark Plug.8. Defective Transformer.	<ol style="list-style-type: none">1. Fill tank with fresh Kerosene/ diesel.2. Clean/replace Spark Plug.3. Clean/replace Fuel Filter.4. Clean/replace Nozzle.5. Rinse out fuel tank with clean fresh Kerosene/ diesel.6. Inspect all electrical connections. (See Wiring Diagrams, Page 11).7. Re-attach Transformer wires to Spark Plug.8. Replace Transformer.
Fan does not operate when heater is plugged in and Operating Switch is in the "ON" position.	<ol style="list-style-type: none">1. Broken electrical connection between Circuit Board and motor.2. Not enough amps available to power heater.	<ol style="list-style-type: none">1. Inspect all electrical connections on Wiring Diagrams (Page 11).2. Use a new extension cord or try another electrical socket.
Heater makes grinding noise.	<ol style="list-style-type: none">1. Air in fuel pump.	<ol style="list-style-type: none">1. Sound will stop after 3 seconds. If grinding sound continues, add fuel to tank.
Heater does not turn on and the lamp is not lit.	<ol style="list-style-type: none">1. Temperature limit sensor has overheated.2. No electrical power.3. Fuse break down.4. Improper electrical connection between Temperature Limit Sensor and Circuit Board.	<ol style="list-style-type: none">1. Push Operating Switch to "OFF" and allow heater to cool for 5 minutes. Push Operating Switch back to "ON".2. Check power cord and extension cord to insure of proper connection. Test power supply.3. Check/replace Fuse.4. Inspect all electrical connections. (See Wiring Diagrams, Page 11).
Poor combustion and / or soot production.	<ol style="list-style-type: none">1. Pump Pressure.2. Poor fuel quality.	<ol style="list-style-type: none">1. Be sure pump pressure is adjusted correctly.2. Be sure Kerosene/ diesel is not old or contaminated.

Wiring Diagram

MH-70-SS-A

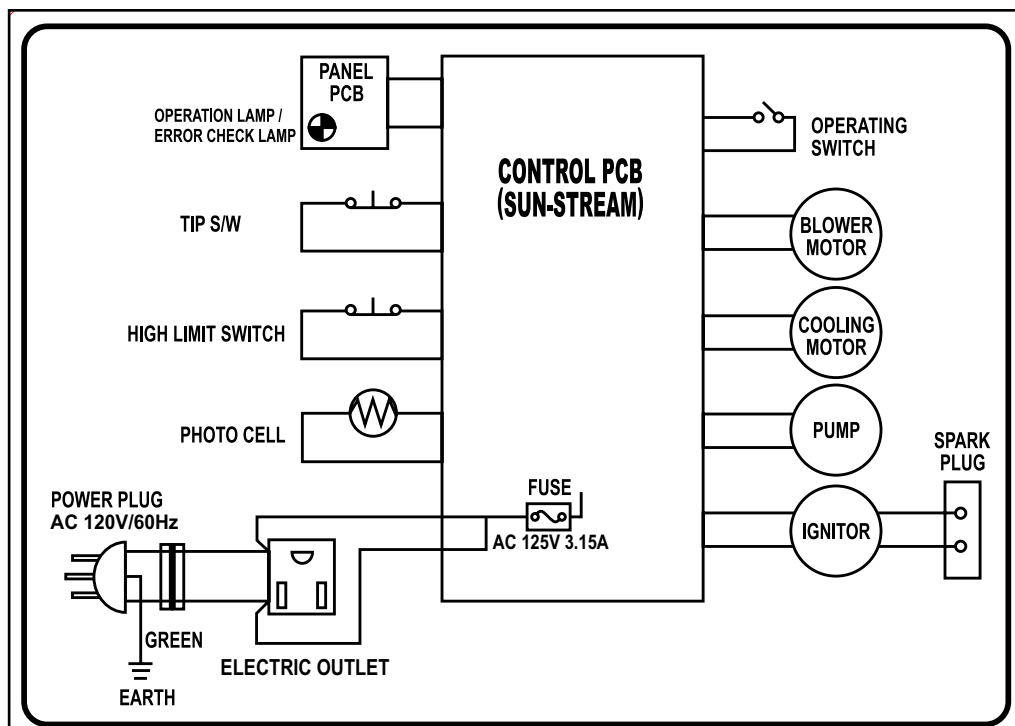


Figure 12

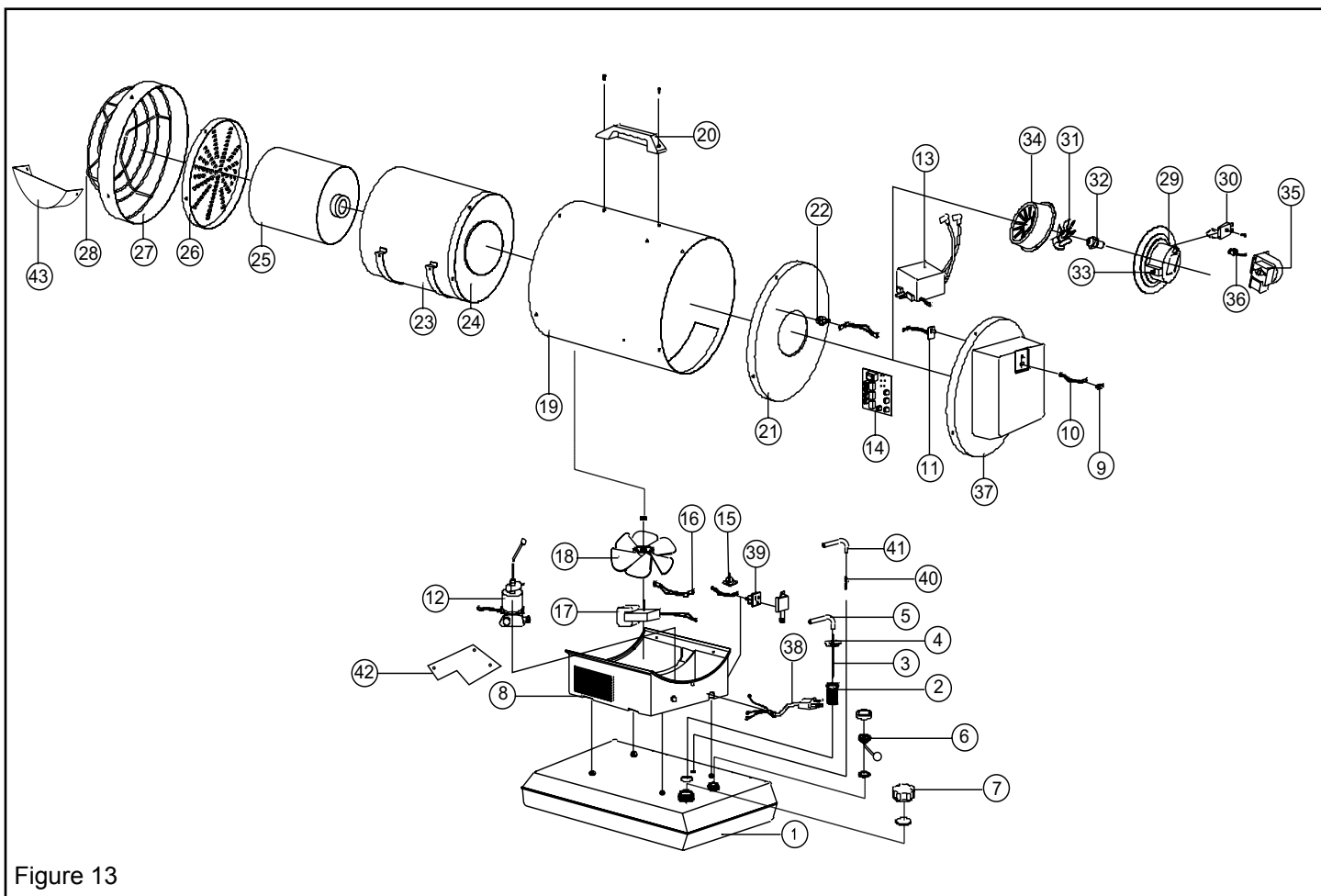
Exploded View**MH-70-SS-A**

Figure 13

Parts List

Item #	Description	MH-70-SS-A
1	Fuel Tank Assembly	75-001-0350
2	Oil Filter Assembly	75-023-0270
3	Fuel Pipe	75-023-0345
4	Fuel Packing	75-023-0355
5	Fuel Hose	75-024-0510
6	Fuel Gauge Assembly	75-022-0210
7	Fuel Cap Assembly	75-002-0110
8	Cooling Fan Housing	75-011-0670
9	Operating Switch	75-012-0110
10	Operating Switch Wire Assembly	75-012-0220
11	Rear PCB Assembly	75-013-0200
12	Electronic-Pump Assembly	75-027-0250
13	Ignitor	75-025-0120
14	Main PCB Assembly	75-025-0400
15	Tip-Over Sensor	75-051-0200
16	Tip-over Sensor Wire Assembly	75-051-0260
17	Cooling Motor Assembly	75-047-0250
18	Cooling Fan	75-047-0200
19	Shell	75-011-1010
20	Handle	75-001-0060
21	Shell Insulator	75-011-1100
22	Temperature Limit Switch	75-040-0100
23	Chamber Assembly	75-035-0800
24	Chamber Insulator	75-035-0820
25	Ceramic Fiber	75-035-0830
26	Heat Plate	75-012-0600
27	Shell Ring	75-011-0650
28	Safety Guard	75-012-0310
29	Burner Body	75-036-0180
30	Spark Plug	75-075-0200
31	Burner Blade	75-036-0120
32	Nozzle	75-036-0400
33	Nipple	75-040-0610
34	Diffusion Cap	75-036-0500
35	Blower Motor Assembly	75-045-0200
36	Photocell Assembly	75-038-0200
37	Back Cover	75-013-0105
38	Power Supply Cable Assembly	75-032-0186
39	Electrical Outlet Assembly	75-029-0100
40	Return Pipe	75-055-0100
41	Return Hose	75-055-0200
42	Electronic Pump Bracket	75-027-0255
43	Heat Shield	75-012-0320

LIMITED WARRANTY

Pinnacle Products International, Inc. warrants this heater to the original retail purchaser only, to be free from defects in material and workmanship for a period of one (1) year from the date of initial purchase. This product must be properly installed, maintained and operated in accordance with the instructions provided.

Pinnacle Products International, Inc. requires reasonable proof of your date of purchase from an authorized retailer or distributor. Therefore, you should keep your sales slip, invoice or cancelled check from the original purchase. This Limited Warranty shall be limited to the repair or replacement of parts, which prove defective under normal use and service within the warranty period, and which **Pinnacle Products International, Inc.** shall determine at its reasonable discretion.

This warranty does not apply to products purchased for rental use.

This Limited Warranty does not cover any failures or operating difficulties due to normal wear and tear, accident, abuse, misuse, alteration, misapplication, improper installation or improper maintenance and service by you or any third part. Failure to perform normal and routine maintenance on the heater, shipping damage, damage related to insects, birds or animals of any kind, and damage due to weather conditions are also not covered. In addition, the Limited Warranty does not cover damage to the finish, such as scratches, dents, discoloration, rust or other weather damage, after purchase.

All transportation costs for the return of damaged product or parts will be the responsibility of the purchaser. Upon receipt of damaged item, **Pinnacle Products International, Inc.** will examine the item and determine if defective. **Pinnacle Products International, Inc.** will repair or replace and return the item, freight pre-paid.

If **Pinnacle Products International, Inc.** finds the item to be in normal operating condition, or not defective the item will be returned freight collect. This Limited Warranty is in lieu of all other express warranties. **Pinnacle Products International, Inc.** disclaims all warranties for products that are purchased from sellers other than authorized dealers or distributors.

AFTER THE PERIOD OF THE ONE (1) YEAR EXPRESS WARRANTY EXPIRES, **Pinnacle Products International, Inc.** DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR APPLICATION. FURTHER, **Pinnacle Products International, Inc.** SHALL HAVE NO LIABILITY WHATSOEVER TO PURCHASER OR ANY THIRD PARTY FROM ANY SPECIAL, INDIRECT, PUNITIVE INCIDENTAL, OR CONSEQUENTIAL DAMAGES. **Pinnacle Products International, Inc.** assumes no responsibility for any defects caused by third parties. This Limited Warranty gives the purchaser specific legal rights; a purchaser may have other rights depending upon where he or she lives. Some states do not allow the exclusion or limitation of special, incidental or consequential damages, or limitations on how long a warranty lasts, so the above exclusion and limitations may not apply to you.

Pinnacle Products International, Inc. does not authorize any person or company to assume for it any other obligation or liability in connection with the sale, installation, use, removal, return or replacement of its equipment, and no such representations are binding on **Pinnacle Products International, Inc.**

Always be sure to specify the model number and serial number when making any claim with **Pinnacle Products International, Inc.** For your convenience, use the space provided below to list this information.

Register Your Product Online at: http://www.masterindustrialproducts.com/Product_Registration.php

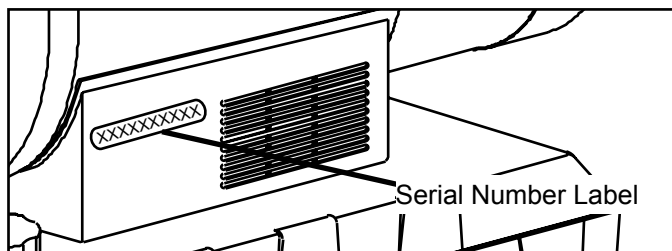
Locating Your Serial Number:

Your serial number can be found on a blue label on the left side cover. It will begin with 2 digits, the letter "H" followed by 6 digits. For Example: 13H123456. Have your Serial Number ready before calling customer service at 800-641-6996.

Model #: _____

Serial #: _____

Date of Purchase: _____





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