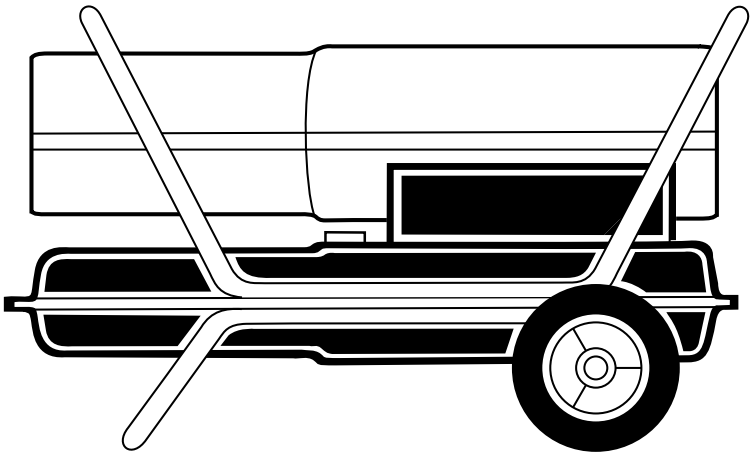
MASTER®

# PORTABLE FORCED AIR HEATERS

## (With Built-In Thermostat)

## OWNER'S MANUAL



Heater Size: 150,000 Btu/Hr

Model: BR150CE

**IMPORTANT**

**Read and understand this manual before assembling, starting or servicing heater. Improper use of heater can cause serious injury. Keep this manual for future reference.**

CE

# CONTENTS



# SAFETY INFORMATION

## ⚠WARNINGS

**IMPORTANT: Read this Owner's Manual carefully and completely before trying to assemble, operate, or service this heater. Improper use of this heater can cause serious injury or death from burns, fire, explosion, electrical shock, and carbon monoxide poisoning.**

### ⚠DANGER

**Carbon monoxide poisoning may lead to death!**

**Carbon Monoxide Poisoning:** Early signs of carbon monoxide poisoning resemble the flu, with headaches, dizziness, and/or nausea. If you have these signs, the heater may not be working properly. **Get fresh air at once!** Have heater serviced. Some people are more affected by carbon monoxide than others. These include pregnant women, persons with heart or lung disease or anemia, those under the influence of alcohol, and those at high altitudes.

Make certain you read and understand all Warnings. Keep this manual for reference. It is your guide to safe and proper operation of this heater.

*Continued*

# SAFETY INFORMATION
***Continued***

## ⚠ WARNINGS *(Continued)*

- Use only kerosene or No. 1 fuel oil to avoid risk of fire or explosion. Never use gasoline, naphtha, paint thinners, alcohol, or other highly flammable fuels.
- Fueling
  a) Personnel involved with fueling shall be qualified and thoroughly familiar with the manufacturer's instructions and applicable regulations regarding the safe fueling of heating units.
  b) Only the type of fuel specified on the heater's data plate shall be used.
  c) All flame, including the pilot light, if any, shall be extinguished and the heater allowed to cool, prior to fueling.
  d) During fueling, all fuel lines and fuel-line connections shall be inspected for leaks. Any leaks shall be repaired prior to returning the heater to service.
  e) At no time shall more than one day's supply of heater fuel be stored inside a building in the vicinity of the heater. Bulk fuel storage shall be outside the structure.
  f) All fuel storage shall be located a minimum of 762cm (25 feet) from heaters, torches, welding equipment, and similar sources of ignition (exception: the fuel reservoir integral with the heater unit).
  g) Whenever possible, fuel storage shall be confined to areas where floor penetrations do not permit fuel to drip onto or be ignited by a fire at lower elevation.
  h) Fuel storage shall be in accordance with the authority having jurisdiction.
- Never use heater where gasoline, paint thinner, or other highly flammable vapors are present.
- Follow all local ordinances and codes when using heater.
- Heaters used in the vicinity of tarpaulins, canvas, or similar enclosure materials shall be located a safe distance from such materials. The recommended minimum safe distance is 304.8cm (10 feet). It is further recommended that these enclosure materials be of a fire retardant nature. These enclosure materials shall be securely fastened to prevent them from igniting or from upsetting the heater due to wind action.
- Use only in well-vented areas. Before using heater, provide at least a 2800 square cm (three-square-foot) opening of fresh, outside air for each 100,000 Btu/Hr of rating.
- Use only in places free of flammable vapors or high dust content.
- Use only the electrical voltage and frequency specified on model plate.
- Use only a three-prong, grounded extension cord.
- Minimum heater clearances from combustibles:
  Outlet: 250 cm (8 Ft.)  Sides, Top, and Rear: 125 cm (4 Ft.)
- Locate heater on a stable and level surface if heater is hot or running or a fire may occur.
- When moving or storing heater, keep heater in a level position or fuel spillage may occur.
- Keep children and animals away from heater.
- Unplug heater when not in use.
- Heater is equipped with a thermostat and may start anytime.
- Never use heater in living or sleeping areas.
- Never block air inlet (rear) or air outlet (front) of heater.
- Never move, handle, refuel, or service a hot, operating, or plugged-in heater.
- Never attach duct work to front or rear of heater. Using duct work could reduce the necessary air flow of the heater. Heater would produce excessive carbon monoxide.

# PRODUCT IDENTIFICATION

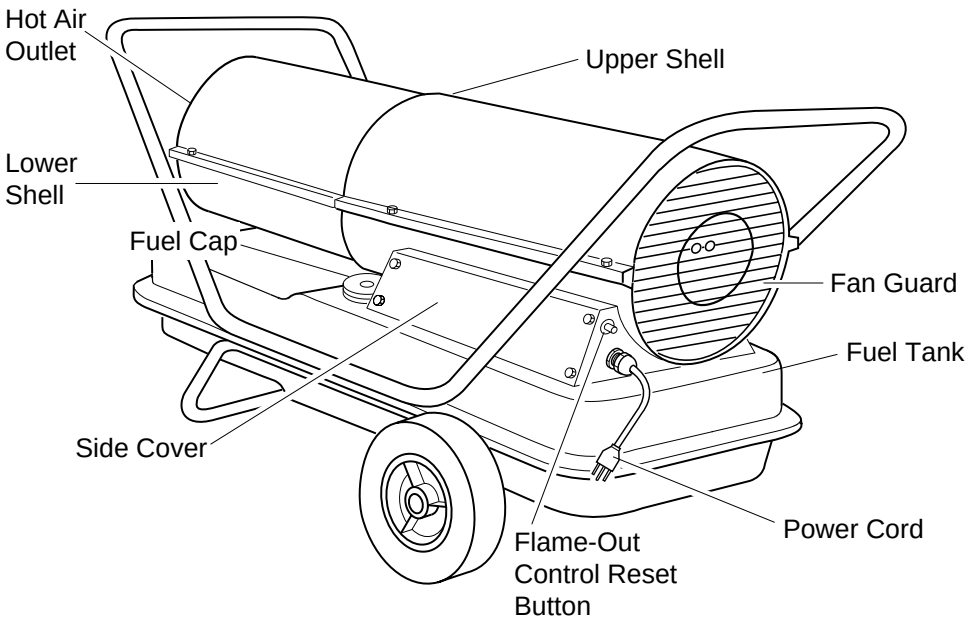



***Figure 1 - 150,000 Btu/Hr***

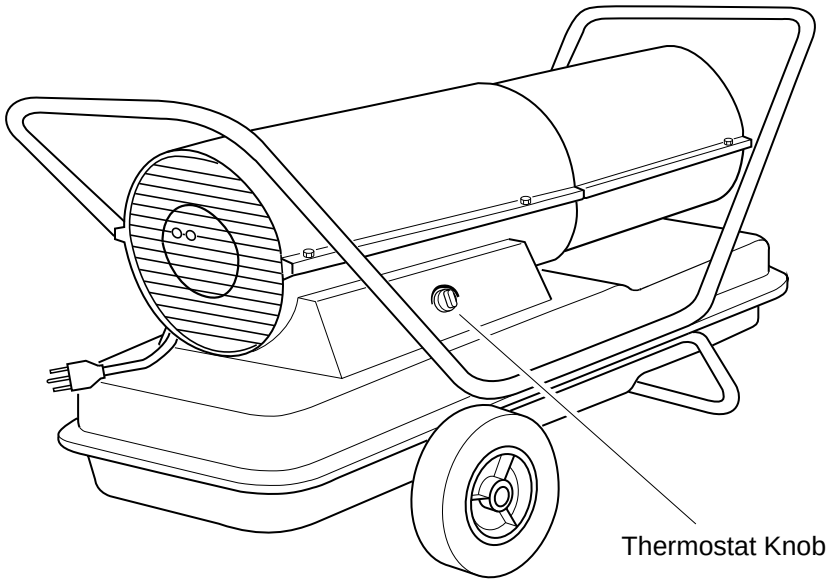



***Figure 2 - 150,000 Btu/Hr***

# UNPACKING

1. Remove all packing items applied to heater for shipment.
2. Remove all items from carton.
3. Check items for any shipping damage. If heater is damaged, promptly inform dealer where you bought heater.

# ASSEMBLY

These models are furnished with wheels and handles. Wheels, handles, and the mounting hardware are found in the shipping carton.

## Tools Needed

- Medium Phillips Screwdriver
- 3/8" Open or Adjustable Wrench
- Hammer

1. Slide axle through wheel support frame. Install wheels on axle. *IMPORTANT:* When installing wheels, point extended hub of wheels toward wheel support frame (see Figure 3).
2. Place cap nuts on axle ends. Gently tap with hammer to secure.
3. Place heater on wheel support frame. Make sure air inlet end (rear) of heater is over wheels. Line up holes on fuel tank flange with holes on wheel support frame.
4. Place front handle and rear handle on top of fuel tank flange. Insert screws through handles, fuel tank flange, and wheel support frame. Attach nut finger tight after each screw is inserted.
5. After all screws are inserted, tighten nuts firmly.

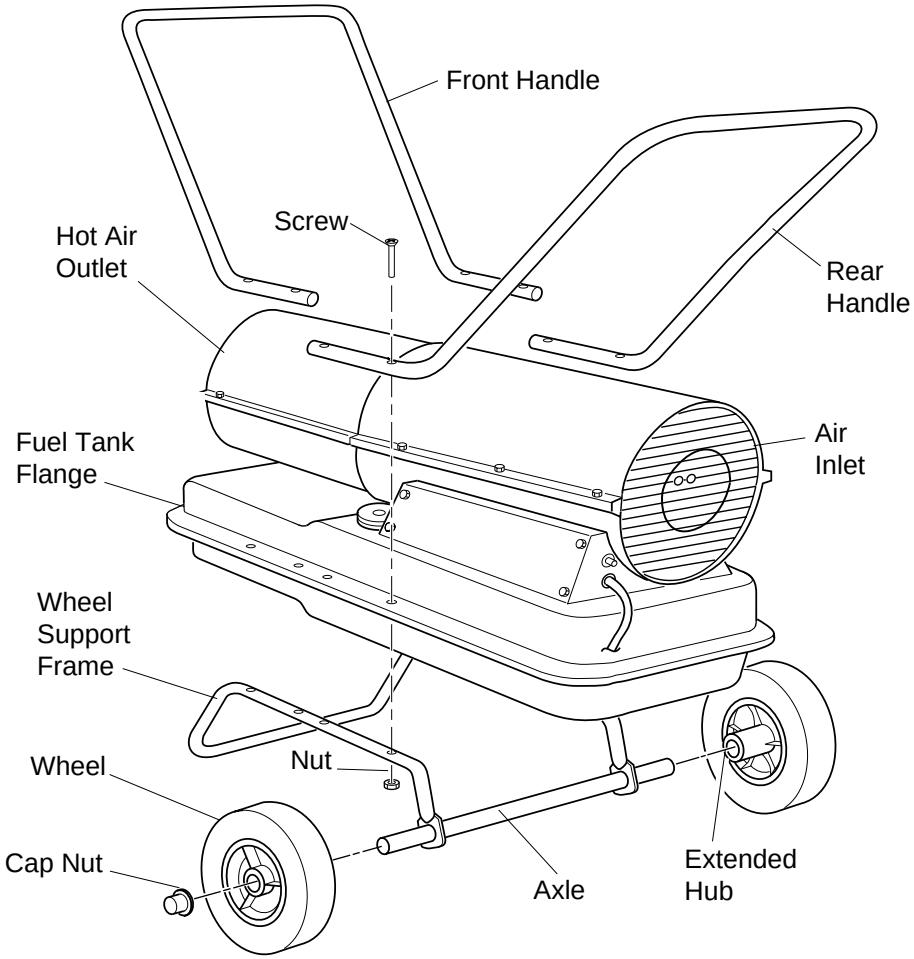



***Figure 3 - Wheel and Handle Assembly***

# THEORY OF OPERATION

**The Fuel System:** The air pump forces air through the air line. The air is then pushed through the burner head nozzle. This air causes fuel to lift from the tank. A fine mist of fuel is sprayed into the combustion chamber.

**The Air System:** The motor turns the fan. The fan pushes air into and around the combustion chamber. This air is heated and provides a stream of clean, hot air.

**The Ignition System:** The electronic ignitor sends voltage to the spark plug. The spark plug ignites the fuel and air mixture.

**The Flame-Out Control System:** This system causes the heater to shut down if the flame goes out.

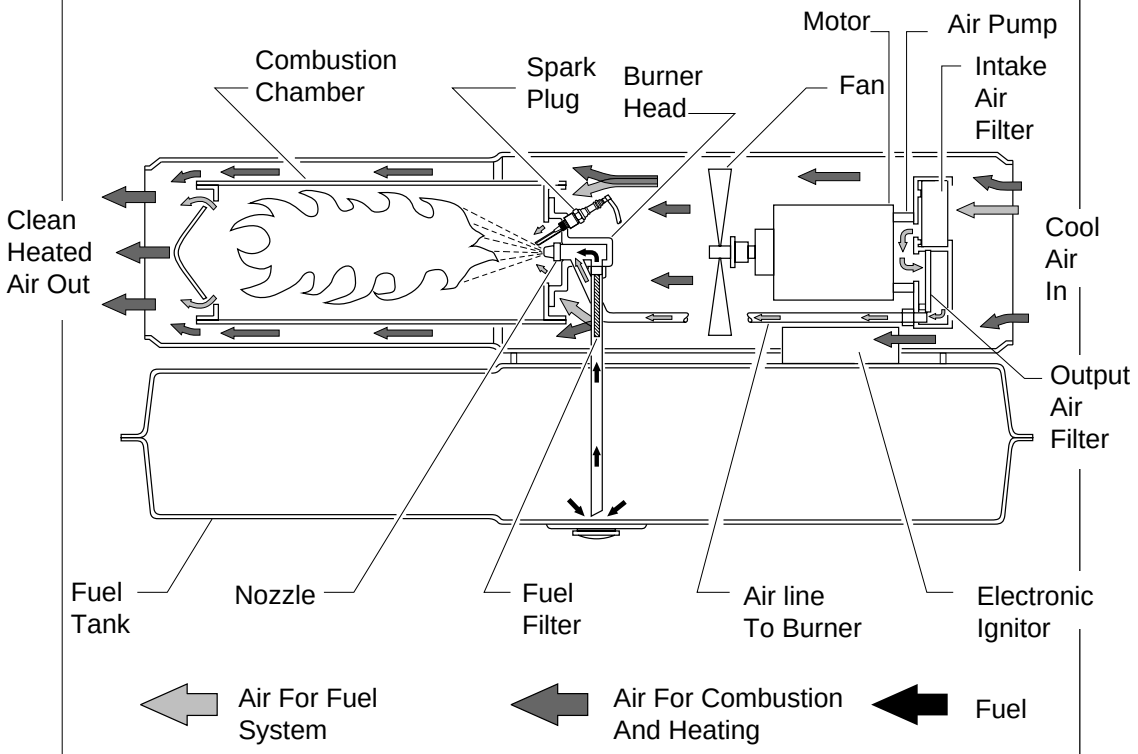



***Figure 4 - Cross Section Operational View***

# FUELS

**⚠ WARNING**

**Use only kerosene or No. 1 fuel oil to avoid risk of fire or explosion. Never use gasoline, naphtha, paint thinners, alcohol or other highly flammable fuels.**

Do not use heavy fuels such as No. 2 fuel oil or No. 2 Diesel. Using heavy fuels will result in:

- clogged fuel filter and nozzle
- carbon build up on spark plug
- use of non-toxic anti-icer in fuel during very cold weather

*IMPORTANT:* Use a KEROSENE ONLY container. Be sure storage container is clean. Foreign matter such as rust, dirt, or water will cause the flame-out control to shut down heater. Foreign matter may also require you to clean fuel system often.

# VENTILATION

**⚠ WARNING**

**Follow the minimum fresh, outside air ventilation requirements. If proper fresh, outside air ventilation is not provided, carbon monoxide poisoning can occur. Provide proper fresh, outside air ventilation before running heater.**

Provide a fresh air opening of at least 2800 square cm (three square feet) for each 100,000 Btu/Hr rating. Provide extra fresh air if more heaters are being used.

*Example:* A 150,000 Btu/Hr heater will require at least 4,200 square cm (4.5 square feet) fresh air opening.

# OPERATION

**⚠ WARNING**

**Review and understand the warnings in the Safety Information Section. They are needed to safely operate this heater. Follow all local codes when using this heater.**

## To Start Heater

1. Follow all ventilation and safety information.
2. Fill fuel tank with kerosene or No. 1 fuel oil.
3. Attach fuel cap.
4. Plug power cord of heater into standard 220 volt/50 hertz, grounded (earthed) outlet. Use an extension cord if needed. Use only a three-prong, grounded (earthed) extension cord.

   **Extension Cord Wire Size Requirements**

   Up to 30.5 meters (100 feet) long, use 1.0 $mm^2$ (16 AWG) conductor
   30.6 to 61 meters (101 to 200 feet) long, use 1.5 $mm^2$ (14 AWG) conductor

   Heater will start when power cord is plugged into outlet. If not, push in flame-out control reset button (see Figure 5).
5. Adjust thermostat to desired setting. If heater does not start, thermostat may be set too low. Turn thermostat knob to higher position to start heater. If thermostat is in HIGH position and heater still will not start, push in flame-out control reset button (see Figure 5).

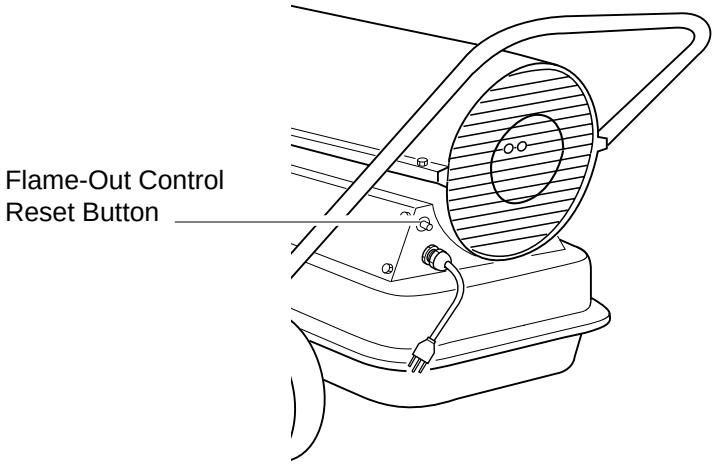



***Figure 5 - Flame-Out Control Reset Button***

*Continued*

# OPERATION
***Continued***

### To Stop Heater

1. Unplug power cord from outlet.

### To Restart Heater

1. Wait 2 minutes after stopping heater.
2. Repeat steps under *To Start Heater*, page 7.

# STORING, TRANSPORTING, OR SHIPPING

*Note:* If shipping, transport companies require fuel tanks to be empty.

1. Drain fuel tank.

   *Note:* Some models have drain plug on underside of fuel tank. If so, remove drain plug to drain all fuel. If heater does not have drain plug, drain fuel through fuel cap opening. Be sure all fuel is removed.
2. Replace drain plug provided.
3. If any debris is noted in old fuel, add 1 or 2 quarts of clean kerosene to tank, stir, and drain again. This will prevent excess debris from clogging filters during future use.
4. Replace fuel cap or drain plug. Properly dispose of old and dirty fuel. Check with local automotive service stations that recycle oil.
5. If storing, store heater in dry place. Make sure storage place is free of dust and corrosive fumes.

*IMPORTANT:* Do not store kerosene over summer months for use during next heating season. Using old fuel could damage heater.

# PREVENTATIVE MAINTENANCE SCHEDULE

**⚠ WARNING**

**Never service heater while it is plugged in, operating, or hot. Severe burns and electrical shock can occur.**

| Item | How Often | How To |
|---|---|---|
| Fuel tank | Flush every 150-200 hours of operation or as needed. | See *Storing, Transporting, or Shipping* above. |
| Air output and lint filters | Replace every 500 hours of operation or once a year. | See *Air Output, Air Intake, and Lint Filters*, page 12. |
| Air intake filter | Wash and dry with soap and water every 500 hours of operation or as needed. | See *Air Output, Air Intake, and Lint Filters*, page 12. |
| Fuel filter | Clean twice a heating season or as needed. | See *Fuel Filter*, page 10. |
| Spark plug | Clean and regap every 600 hours operation or replace as needed. | See *Spark Plug*, page 11. |
| Fan blades | Clean every season or as needed. | See *Fan*, page 15. |
| Motor | Not required/permanently lubricated | |

# TROUBLE-SHOOTING

**⚠ WARNING**

**Never service heater while it is plugged in, operating, or hot. Severe burns and electrical shock can occur.**

| OBSERVED FAULT | POSSIBLE CAUSE | REMEDY |
|---|---|---|
| Heater ignites, but flame-out control shuts off heater after a short period of time. | Wrong pump pressure | See *Pump Pressure Adjustment*, page 12. |
| | Dirty air output, air intake, and lint filters | See *Air Output, Air Intake and Lint Filters*, page 12. |
| | Dirty fuel filter | See *Fuel Filter*, page 10. |
| | Dirt in nozzle | See *Nozzle*, page 13. |
| | Dirty photocell lens | Clean photocell lens. |
| | Bad flame-out control | Replace flame-out control. |
| Heater will not ignite, but motor runs for a short period of time. | Wrong pump pressure | See *Pump Pressure Adjustment*, page 12. |
| | Carbon deposits on spark plug and/or improper gap | See *Spark Plug*, page 11. |
| | Dirty fuel filter | See *Fuel Filter*, page 10. |
| | Dirt in nozzle | See *Nozzle*, page 13. |
| | Water in fuel tank | Drain and flush fuel tank with clean kerosene. See *Storing, Transporting, or Shipping*, page 8. |
| | **⚠ WARNING: High voltage!** | |
| | Electronic ignitor not grounded (earthed) | Make sure electronic ignitor mounting is tight. |
| | Bad electronic ignitor | Replace electronic ignitor. |
| Motor does not start when heater is plugged in, fan rotates slowly or does not turn. | Flame-out control not reset | Reset flame-out control button, see Figure 5, page 7. |
| | Binding pump rotor | If fan is hard to turn, see *Pump Rotor*, page 14. |
| | Thermostat setting is too low. | Turn thermostat knob to a higher setting. |

# SERVICE PROCEDURES

## ⚠ WARNING

**Never service heater while it is plugged in, operating, or hot. Severe burns and electrical shock can occur.**

### Upper Shell Removal

1. Remove screws and lock washers along each side of heater using 5/16" nut-driver. These screws attach upper and lower shells together.
2. Lift upper shell off.
3. Remove fan guard.

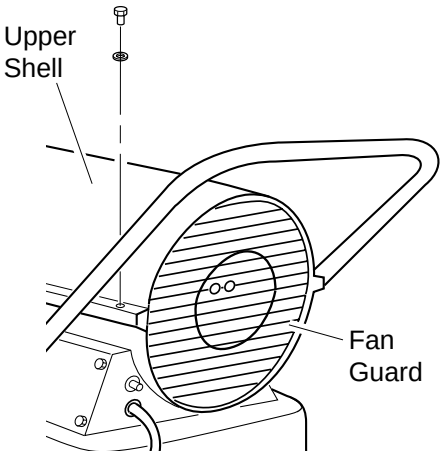



***Figure 6 - Upper Shell Removal***

### Fuel Filter

1. Remove side cover screws using 5/16" nut-driver.
2. Remove side cover.
3. Pull upper fuel line off fuel filter neck.
4. Carefully pry bushing, lower fuel line, and fuel filter out of fuel tank.
5. Wash fuel filter with clean fuel and replace in tank.
6. Attach upper fuel line to fuel filter neck.
7. Replace side cover.

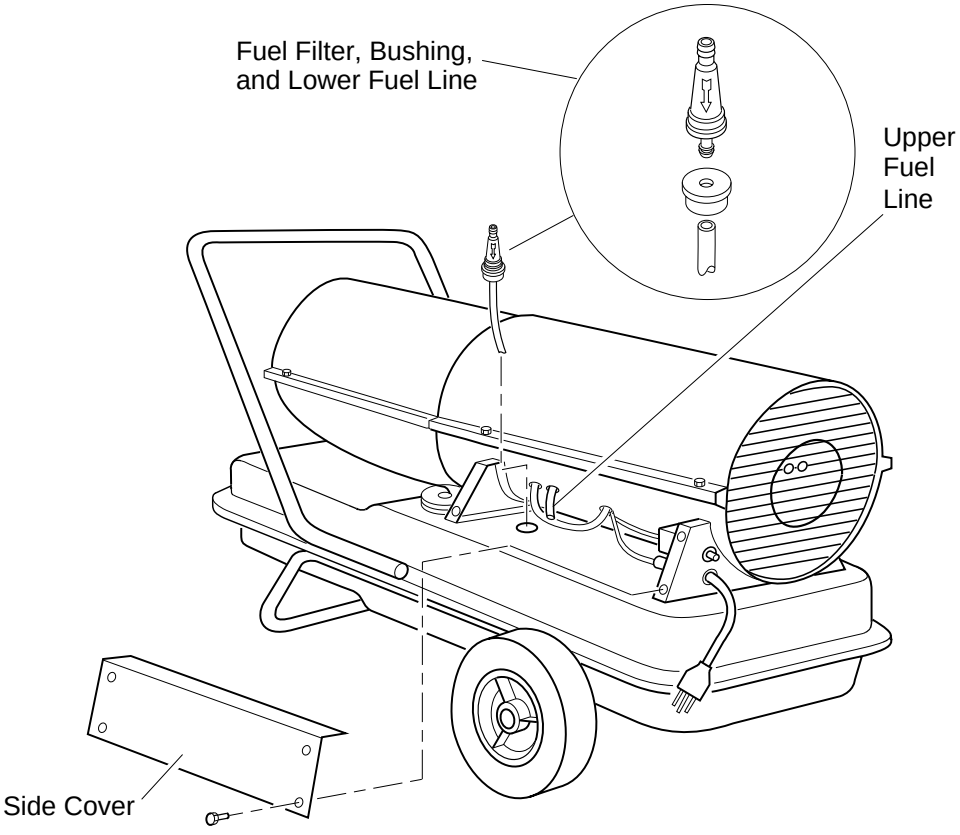



***Figure 7 - Fuel Filter Removal***

## Spark Plug

1. Remove upper shell (see page 10).
2. Remove fan (see page 15).
3. Remove spark plug wire from spark plug.
4. Remove spark plug from burner head using 13/16" open-end wrench.
5. Clean and regap spark plug electrodes as follows: 2.8 mm (0.110") gap
6. Install spark plug in burner head.
7. Attach spark plug wire to spark plug.
8. Replace fan (see page 15).
9. Replace fan guard and upper shell.

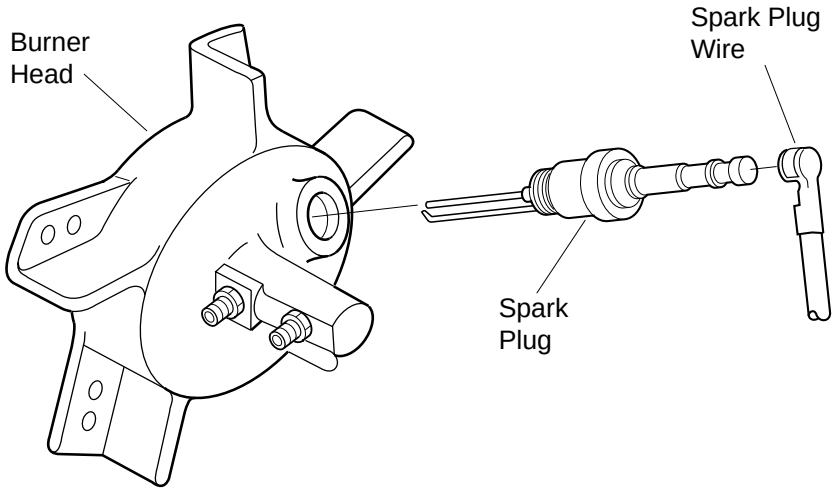



***Figure 8 - Spark Plug Removal***

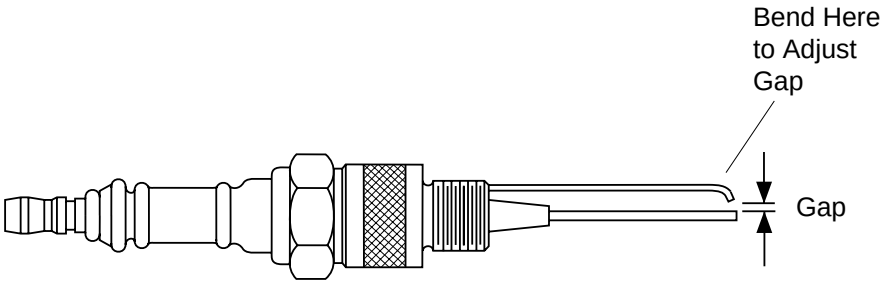



***Figure 9 - Spark Plug Gap***

## Air Output, Air Intake, and Lint Filters

1. Remove upper shell (see page 10).
2. Remove filter end cover screws using 5/16" nut-driver.
3. Remove filter end cover.
4. Replace air output and lint filters.
5. Wash or replace air intake filter (see *Preventative Maintenance Schedule,* page 8).
6. Replace filter end cover.
7. Replace fan guard and upper shell.

*IMPORTANT:* Do not oil filters

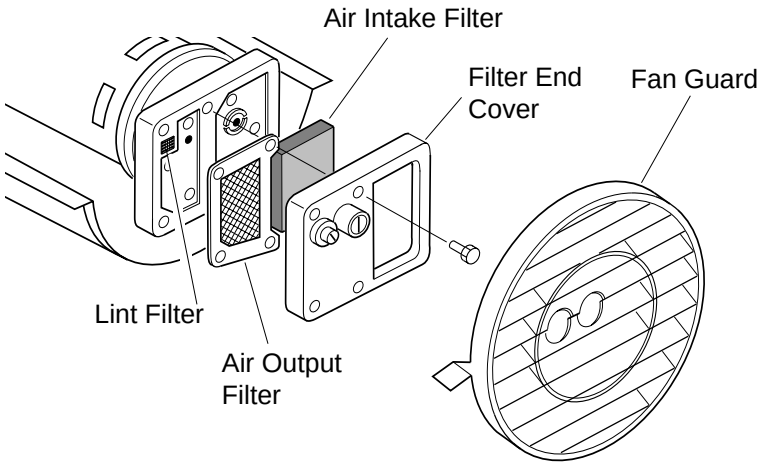



***Figure 10 - Air Output, Air Intake, and Lint Filters***

## Pump Pressure Adjustment

1. Remove pressure gauge plug from filter end cover.
2. Install accessory pressure gauge (part number HA1180).
3. Start heater (see *Operation,* page 7). Allow motor to reach full speed.
4. Adjust pressure. Turn relief valve to right to increase pressure. Turn relief valve to left to decrease pressure. See specifications at right for correct pressure for each model.
5. Remove pressure gauge. Replace pressure gauge plug in filter end cover.

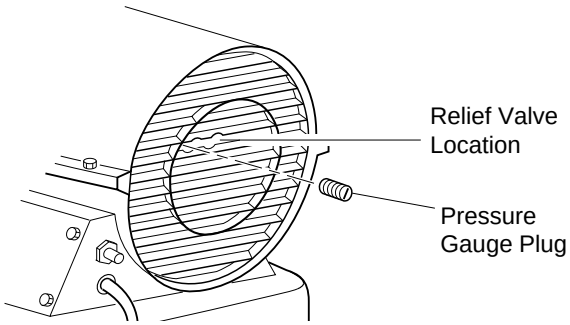



***Figure 11 - Pressure Gauge Plug Removal***

| MODEL | PUMP PRESSURE |
|---|---|
| 150,000 Btu/Hr | 4.8 PSI |

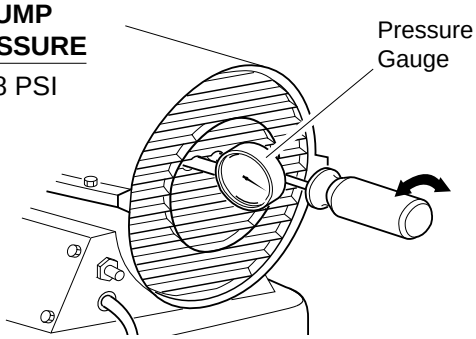



***Figure 12 - Adjusting Pump Pressure***

## Nozzle

1. Remove upper shell (see page 10).
2. Remove fan (see page 15).
3. Remove fuel and air line hoses from burner head.
4. Remove spark plug wire from spark plug.
5. Remove spark plug from burner head using 13/16" open-end wrench.
6. Remove three screws using 5/16" nut-driver and remove burner head from combustion chamber.
7. Place burner head into vise and lightly tighten.
8. Carefully remove nozzle from burner head using 5/8" socket wrench (see Figure 14).
9. Blow compressed air through face of nozzle. This will free any dirt in nozzle area.
10. Inspect nozzle seal for damage.
11. Replace nozzle into burner head and tighten firmly (9.1-12.4 n-m/80-110 inch-pounds).
12. Attach burner head to combustion chamber.
13. Install spark plug in burner head.
14. Attach spark plug wire to spark plug.
15. Attach fuel and airline hoses to burner head.
16. Replace fan (see page 15).
17. Replace fan guard and upper shell.

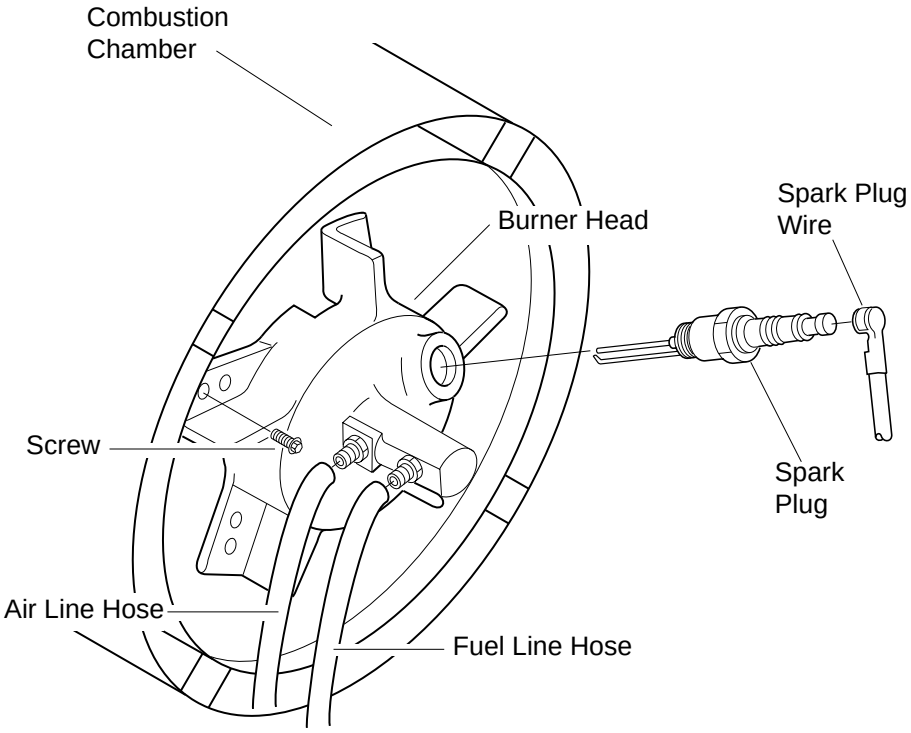



***Figure 13 - Removing Burner Head***

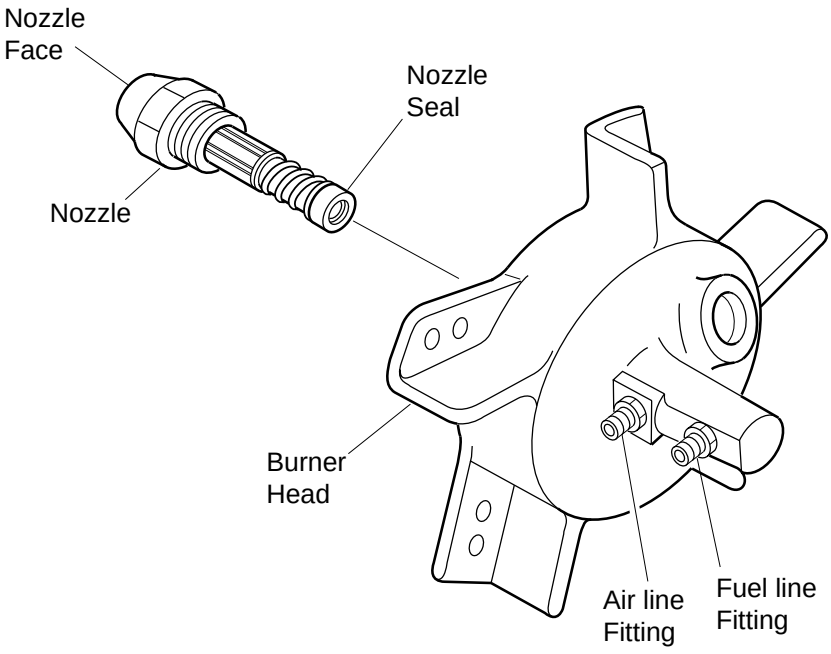



***Figure 14 - Removing Nozzle***

## Pump Rotor

**(Procedure if rotor is binding)**

1. Remove upper shell (see page 10).
2. Remove filter end cover screws using 5/16" nut-driver.
3. Remove filter end cover and air filters.
4. Remove pump plate screws using 5/16" nut-driver.
5. Remove pump plate.
6. Remove rotor, insert, and blades.
7. Check for debris in pump. If debris is found, blow out with compressed air.
8. Install insert and rotor.
9. Check gap on rotor. Adjust to .076/.101 mm (.003"/.004") if needed (see Figure 16).

*Note:* Rotate rotor one full turn to insure the gap is .076/.101 mm (.003"/.004") at tightest position. Adjust if needed.

10. Install blades, pump plate, air filters, and filter end cover.
11. Replace fan guard and upper shell.
12. Adjust pump pressure (see page 12).

*Note:* If rotor is still binding, proceed as follows.

13. Perform steps 1 through 6 above.
14. Place fine grade sandpaper (600 grit) on flat surface. Sand rotor lightly in "figure 8" motion four times (see Figure 17).
15. Reinstall insert and rotor.
16. Perform steps 10 through 12 above.

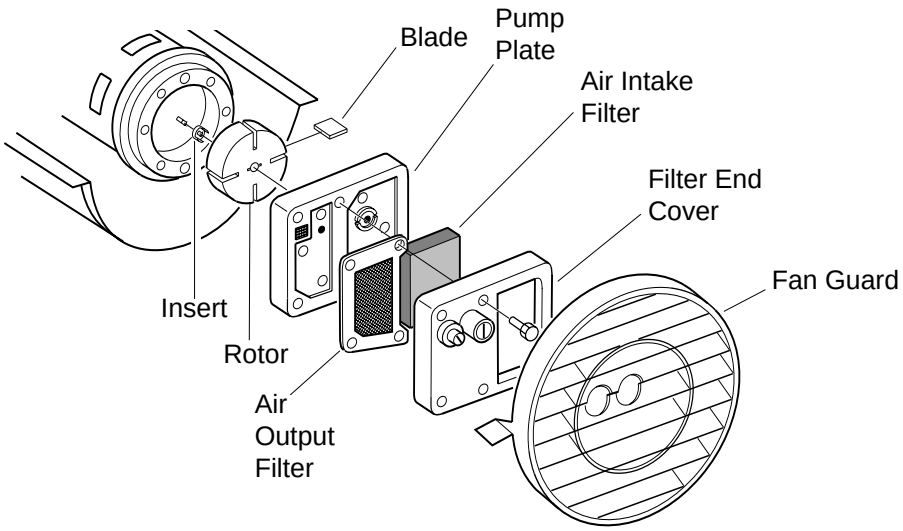



***Figure 15 - Rotor Location***

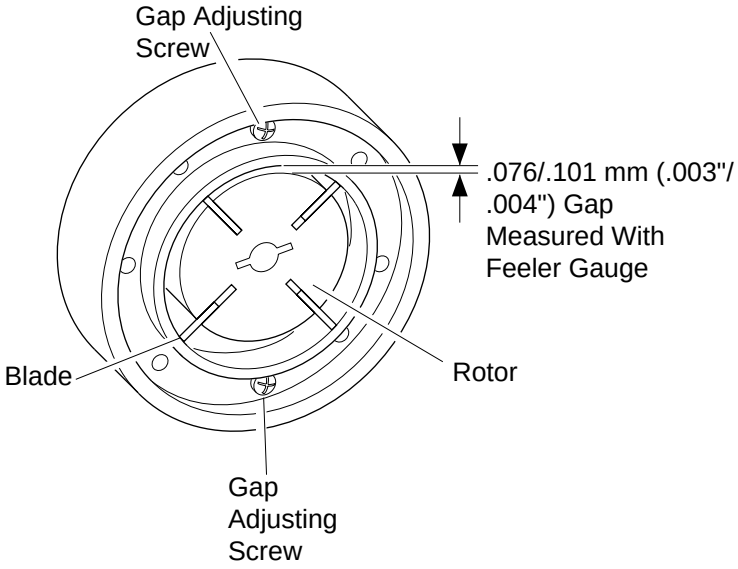



***Figure 16 - Gap Adjusting Screw Locations***

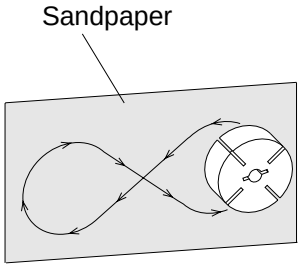



***Figure 17 - Sanding Rotor***

## Fan

*IMPORTANT:* Remove fan from motor shaft before removing motor from heater. The weight of the motor resting on the fan could damage the fan pitch.

1. Remove upper shell (see page 10).
2. Use 1/8" allen wrench to loosen setscrew which holds fan to motor shaft.
3. Slip fan off motor shaft.
4. Clean fan using a soft cloth moistened with kerosene or solvent.
5. Dry fan thoroughly.
6. Replace fan on motor shaft. Place fan hub flush with end of motor shaft (see Figure 19).
7. Place setscrew on flat of shaft. Tighten setscrew firmly (40-50 inch-pounds/ 4.5-5.6 n-m).
8. Replace fan guard and upper shell.

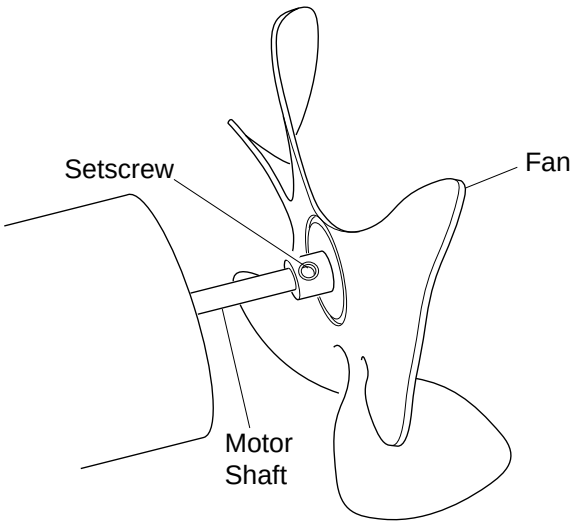



***Figure 18 - Fan, Motor Shaft, and Setscrew Location***

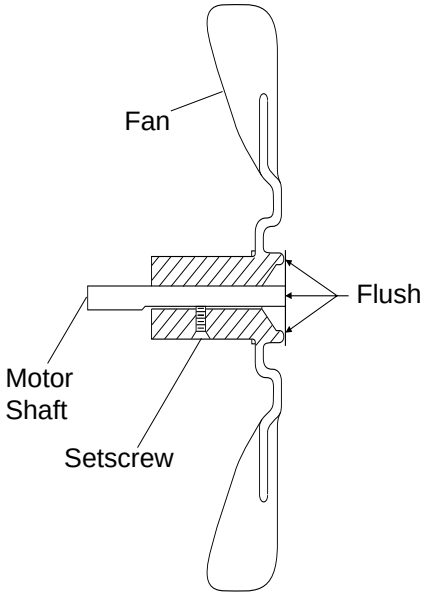


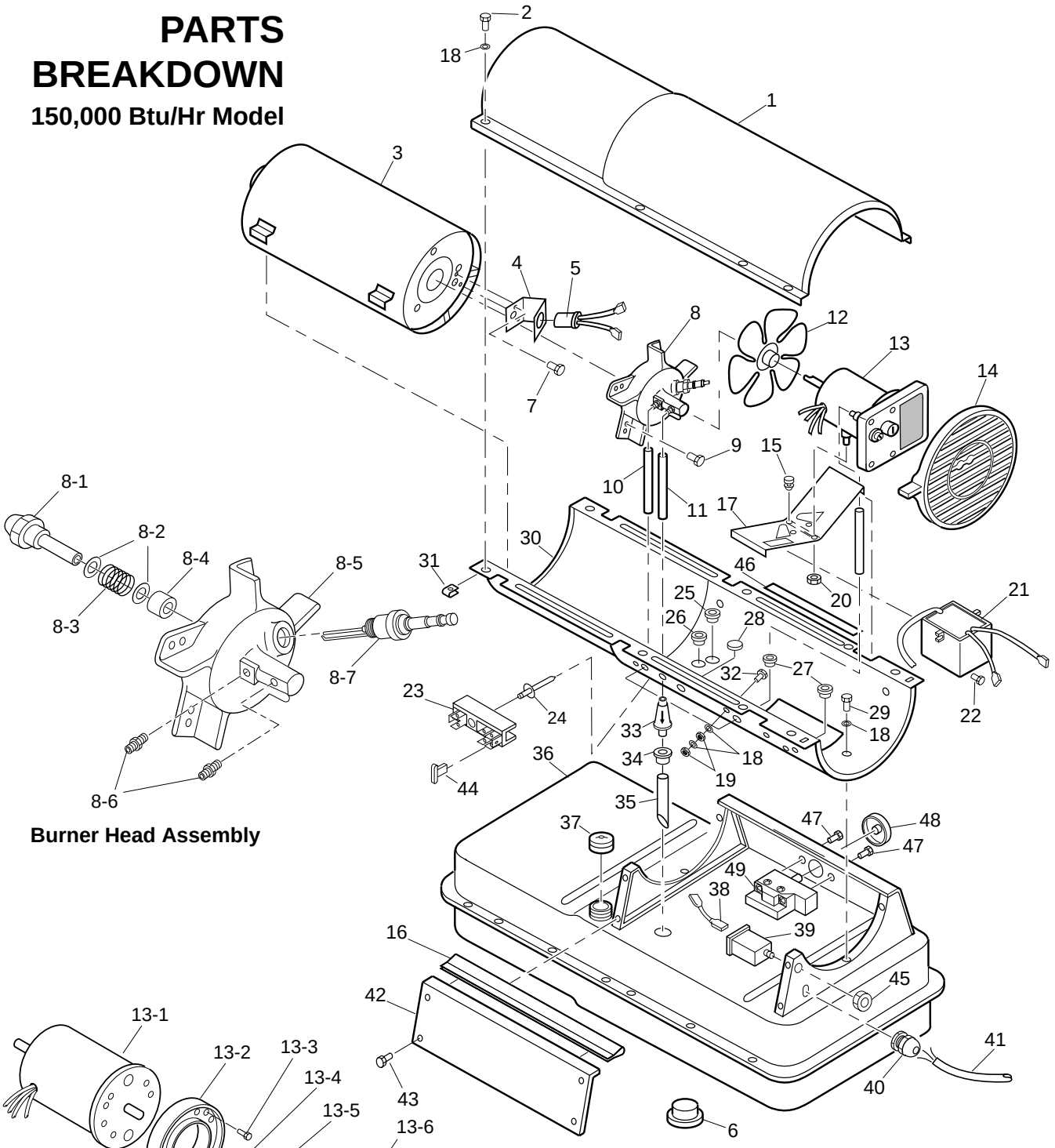

***Figure 19 - Fan Cross Section***

# SPECIFICATIONS

| | |
|---|---|
| Output Rating (Btu/Hr) | 150,000 |
| Fuel | Use Only Kerosene or No. 1 Fuel Oil |
| Fuel Tank Capacity (U.S. Gal./Liters) | 13.5/51.1 |
| Fuel Consumption (Gal. Per Hr./Liters Per Hr.) | 1.1/4.1 |
| Electric Requirements | 220 V/50 Hz |
| Amperage (Normal Run) | 1.2 |
| Hot Air Output (CFM/CMM) | 500/14.2 |
| RPM | 2850 |

# ILLUSTRATED PARTS BREAKDOWN

**150,000 Btu/Hr Model**




**Burner Head Assembly**

**Motor and Pump Assembly**

# PARTS LIST

**150,000 Btu/Hr Model**

This list contains replaceable parts used in your heater. When ordering parts, be sure to provide the correct model and serial numbers (from the model plate), then the part number and description of the desired part.

| KEY NO. | PART NUMBER | PART DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | 098511-138 | Upper Shell | 1 |
| 2 | 100647-01 | Screw, #10-16 x 1/2" | 8 |
| 3 | 098512-36 | Combustion Chamber | 1 |
| 4 | 099229-01 | Photocell Bracket | 1 |
| 5 | HA3019 | Photocell Assembly | 1 |
| 6 | M27417 | Drain Plug | 1 |
| 7 | M10908-2 | Screw, #6-32 x 3/8" | 2 |
| 8 | ** | Burner Head Assembly | 1 |
| 8-1 | 100735-11 | Nozzle | 1 |
| 8-2 | M10659-1 | Nozzle Seal Washer | 2 |
| 8-3 | M10809-1 | Nozzle Seal Spring | 1 |
| 8-4 | M8882 | Nozzle Seal Sleeve | 1 |
| 8-5 | M50924-08 | Burner Head Body | 1 |
| 8-6 | M50820-02 | Barb Fitting | 2 |
| 8-7 | HA3012 | Spark Plug | 1 |
| 9 | M11084-27 | Screw, #10-16 x 1/2" | 3 |
| 10 | M50814-06 | Air Line | 1 |
| 11 | M51345-01 | Fuel Line | 1 |
| 12 | 102042-01 | Fan | 1 |
| 13 | ** | Motor and Pump Assembly | 1 |
| 13-1 | 102001-03 | Motor (with capacitor) | 1 |
| 13-2 | 079975-03 | Pump Body | 1 |
| 13-3 | FHPF3-6C | Screw, #10-32 x 3/4" | 2 |
| 13-4 | M22009 | Insert | 1 |
| 13-5 | M22456-2 | Rotor | 1 |
| 13-6 | M50545 | End Pump Cover | 1 |
| 13-7 | M12179 | Intake Filter | 1 |
| 13-8 | M16545 | End Filter Cover | 1 |
| 13-9 | M8940 | Steel Ball (1/4" Dia.) | 1 |
| 13-10 | M10993-1 | Pressure Relief Spring | 1 |
| 13-11 | M27694 | Adjusting Screw | 1 |
| 13-12 | M22997 | Plug | 1 |
| 13-13 | M12461-31 | Screw, #10-32 x 1" | 4 |
| 13-14 | M12244-1 | Output Filter | 1 |
| 13-15 | M12461-32 | Screw, #10-32 x 1 1/8" | 6 |
| 13-16 | M11637 | Lint Filter | 1 |
| 13-17 | M50820-02 | Barb Fitting | 1 |
| 13-18 | M8643-2 | Blade | 4 |
| 14 | M51114-01 | Fan Guard | 1 |
| 15 | M50631 | Rubber Bumper | 2 |
| 16 | 097468-01 | Edge Liner | 1 |
| 17 | 101206-01 | Motor Bracket | 1 |
| 18 | WLE-3 | Lock Washer, #10 | 16 |
| 19 | NPF-3B | Nut, #10-32 | 2 |
| 20 | NTC-4C | Hex locknut | 2 |
| 21 | 102482-02 | Electronic Ignitor | 1 |
| 22 | M11084-29 | Screw, #10-16 x 3/4" | 2 |
| 23 | 099125-02 | Terminal Board | 1 |
| 24 | 099157-01 | Rivet | 1 |
| 25 | M50104-03 | Bushing | 1 |
| 26 | M50104-03 | Bushing | 1 |
| 27 | M50104-01 | Bushing | 2 |
| 28 | 099213-01 | Button Plug | 1 |
| 29 | M11084-27 | Screw, #10-16 x 1/2" | 6 |
| 30 | 098511-191 | Lower Shell | 1 |
| 31 | M11271-8 | Clip Nut | 6 |
| 32 | RF3-5B | Screw, #10-32 x 1/2" | 1 |
| 33 | M51150-01 | Fuel filter | 1 |
| 34 | M10990-3 | Rubber Bushing | 1 |
| 35 | M51151-02 | Fuel Line | 1 |
| 36 | 098513-82 | Fuel Tank | 1 |
| 37 | 097702-01 | Fuel Tank Cap | 1 |
| 38 | M16841-57 | Wire Assembly (red 8 1/2") | 1 |
| 39 | 097630-02 | Flame-Out Control | 1 |
| 40 | M50400 | Strain Relief Bushing | 1 |
| 41 | 079673-03 | Power Cord | 1 |
| 42 | M51077-01AA | Side Cover | 1 |
| 43 | M11084-27 | Screw, #10-16 x 1/2" | 4 |
| 44 | 078918-01 | Terminal Board Tab Cap | 1 |
| 45 | 099177-01 | Hex Nut | 1 |
| 46 | 097785-04 | Foam Gasket | 2 |
| 47 | M10908-1 | Screw, #6-32 x 1/4" | 2 |
| 48 | 104905-01 | Thermostat Knob | 1 |
| 49 | 097657-02 | Built-in Thermostat | 1 |

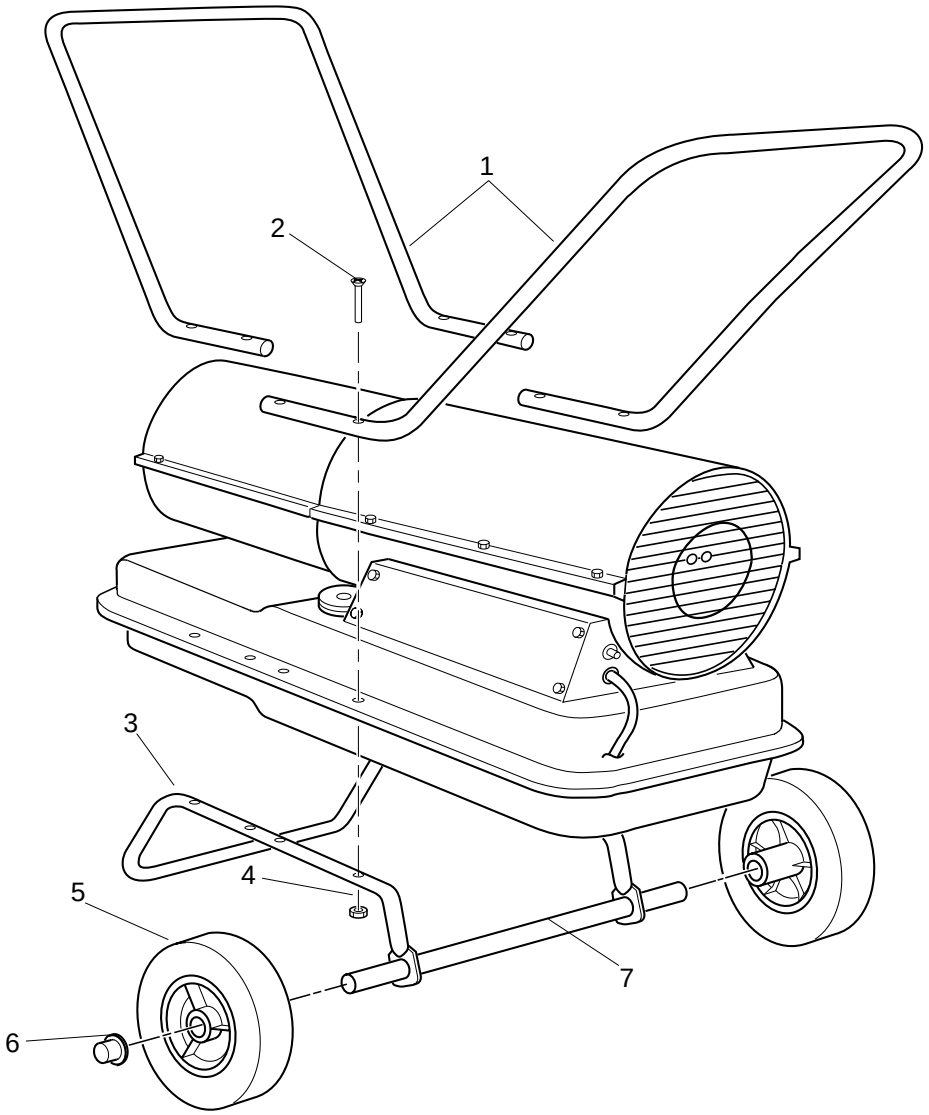
**PARTS AVAILABLE - NOT SHOWN**

| | | |
|---|---|---|
| HA2210 | Filler Neck Screen | 1 |
| 097650-01 | Tradename Decal | 1 |
| M9900-192 | Combustion Chamber Ground Wire | 1 |
| 101888-19 | Operation Decal | 1 |
| 101639-11 | Warning Decal | 1 |
| 099650-01 | Thermostat Wire Clip | 1 |

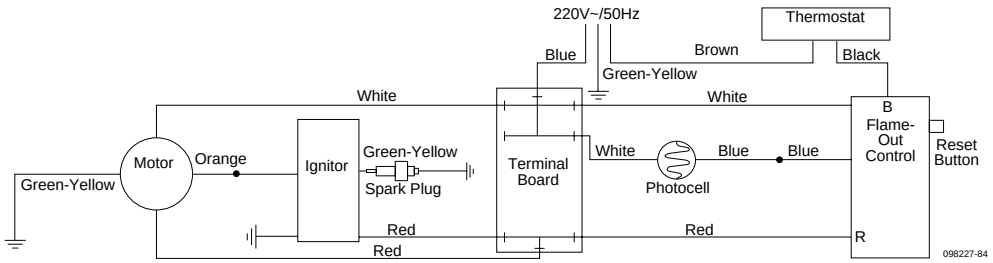
**Not available as an assembly, order parts separately.

# WHEELS AND HANDLES

| KEY NO. | PART NUMBER | PART DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | HA2204 | Handles | 2 |
| 2 | M12345-33 | Screw, #10-24 x 1 3/4" | 8 |
| 3 | M12831-3 | Wheel Support Frame | 1 |
| 4 | NTC-3C | Hex Nut, #10-24 | 8 |
| 5 | 097896-04 | Wheel | 2 |
| 6 | M28526 | Cap Nut | 2 |
| 7 | M16801-2 | Axle | 1 |



# WIRING DIAGRAMS

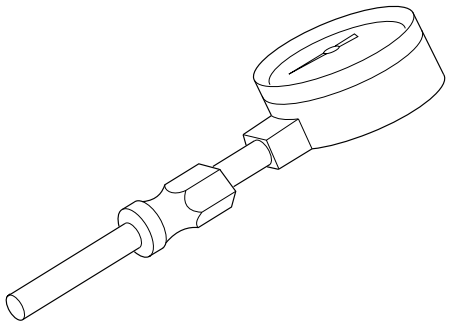



# ACCESSORY

Purchase this accessory from your local dealer.

**AIR GAUGE KIT - HA1180**

For all models. Special tool to check pump pressure.



# EC CONFORMITY DECLARATION

**EC CONFORMITY DECLARATION**

**DESA Europe B.V.**
**Industrieweg 167, 3044 AS**
**Postbus 11158**
**3004 ED Rotterdam**
**Holland**

**Manufacturer:**
**DESA International, Inc.**
**2701 Industrial Drive**
**Bowling Green, KY 42101 U.S.A.**

**Kerosene Portable Forced Air Heaters**
**Model Numbers: BR150CE**

It is declared that these models conform to the Machinery Directive 89/392/EEG, including 91/368/EEG.

We declare that the models noted are in conformity.

| | |
|---|---|
| Company | DESA International, Inc. |
| Name | Douglas D. Rohrer |
| Title | Vice President, Specialty Products Engineering |

Bowling Green, KY
Date and Place

Douglas D. Rohrer
Signature

# WARRANTY AND REPAIR SERVICE

## CERTIFICATE OF GENERAL EQUIPMENT - LIMITED ONE YEAR WARRANTY

DESA International warrants new Products sold by it to be free from defects in material or workmanship for a period of one (1) year after date of delivery to the first user and subject to the following conditions:

DESA International's obligation and liability under this Warranty is expressly limited to repairing or replacing at DESA International's option, any parts which appear to DESA International upon inspection to have been defective in material or workmanship when shipped from the factory. Such parts shall be provided at no cost to the user, at the business establishment of any factory authorized service center or the factory during regular working hours. The Warranty shall not apply to component parts or accessories of Products not manufactured by DESA International and which carry the warranty of the manufacturer thereof, or to normal maintenance (such as pressure adjustments) or to normal maintenance parts (such as filters and spark plugs). Replacement or repair parts installed in the Product covered by this Warranty are warranted only for the remainder of this Warranty as if such parts were original components of said Product. DESA INTERNATIONAL MAKES NO OTHER EXPRESS WARRANTY. TO THE EXTENT PERMITTED BY LAW DESA INTERNATIONAL MAKES NO IMPLIED WARRANTY AND MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. IN ANY EVENT IMPLIED WARRANTIES INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED TO THE DURATION OF THIS EXPRESS WARRANTY.

Any transportation charges, costs of installation, duty, taxes or any other charges whatsoever must be borne by the user. DESA International's obligation under this limited Warranty shall not include any liability for direct, indirect, incidental, or consequential damage or delay. If requested by DESA International, Products or parts for which a warranty claim is made are to be returned transportation prepaid by user to the factory. Any improper use, including operation after discovery of defective or worn parts, operation beyond capacity, substitution of parts not approved by DESA International, or any alteration or repair by others in such manner as in DESA International's judgement affects the Product materially and adversely, shall void this Warranty.

NO EMPLOYEE OR REPRESENTATIVE IS AUTHORIZED TO CHANGE THIS WARRANTY IN ANY WAY OR GRANT ANY OTHER WARRANTY UNLESS SUCH CHANGE IS MADE IN WRITING AND SIGNED BY AN OFFICER OF DESA INTERNATIONAL AT ITS HOME OFFICE.

### WARRANTY SERVICE

Always specify model and serial numbers when communicating with the factory.

We reserve the right to amend these specifications at any time without notice. The only Warranty applicable is our standard written Warranty. We make no other Warranty, expressed or implied.

A Service Manual is available by writing to the Technical Service Department at:

**DESA INTERNATIONAL**
**Corporate Headquarters**
2701 Industrial Drive
P.O. Box 90004
Bowling Green, Kentucky 42102-9004
U.S.A.



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