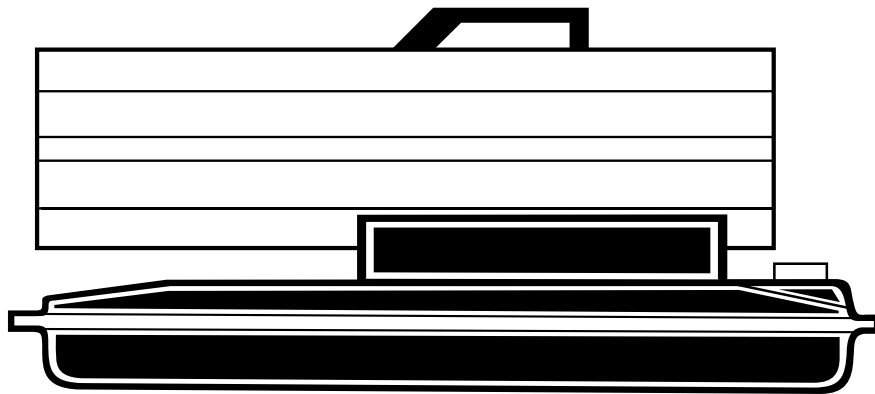


PORTABLE FORCED AIR HEATER

OWNER'S MANUAL



Heater Sizes:
RJ45 And RJ70

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.

RJ45 And RJ70

PORTABLE FORCED AIR HEATERS

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.

- Use only kerosene or no. 1 fuel oil to avoid risk of fire or explosion. Never use gasoline, naphtha, paint thinner, 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 governing 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 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 8 meters 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 3 meters. 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-centimeter opening of fresh, outside air for each 25,000 Kcal/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: 2.5 meters
 - Sides: 1.25 meters
 - Top: 1.25 meters
 - Rear: 1.25 meters
- 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.
- When used with thermostat, heater 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.

UNPACKING

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

OWNER'S MANUAL

PRODUCT IDENTIFICATION

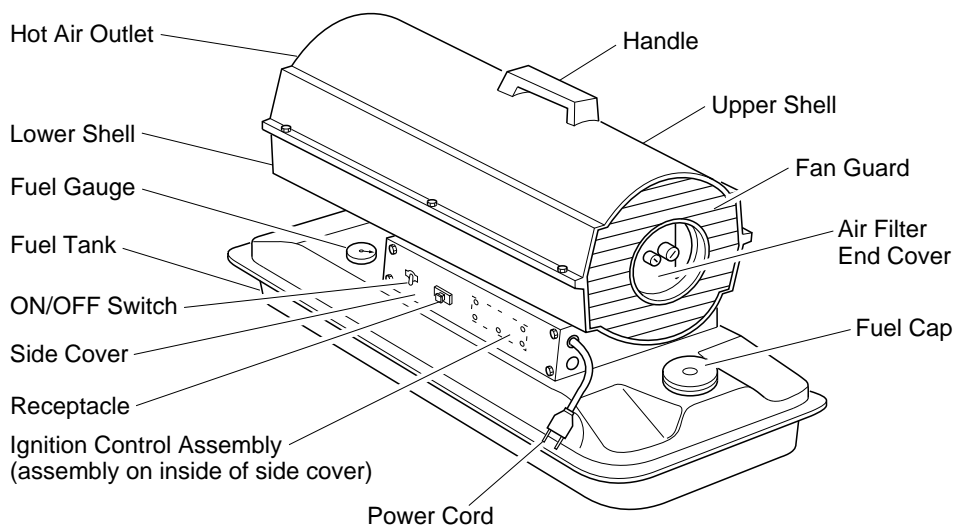


Figure 1 - RJ45

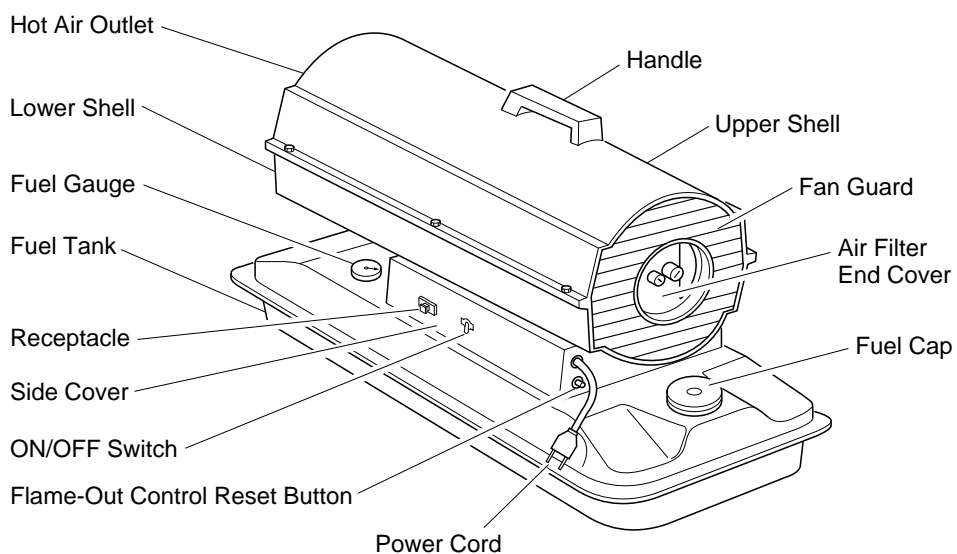


Figure 2 - RJ70

RJ45 And RJ70

PORTABLE FORCED AIR HEATERS

THEORY OF OPERATION

The Fuel System: The air pump forces air through the air line. The air is then pushed through the 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 (RJ45): The ignition control assembly provides power to the ignitor. This ignites the fuel/air mixture in the combustion chamber.

The Ignition System (RJ70): 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.

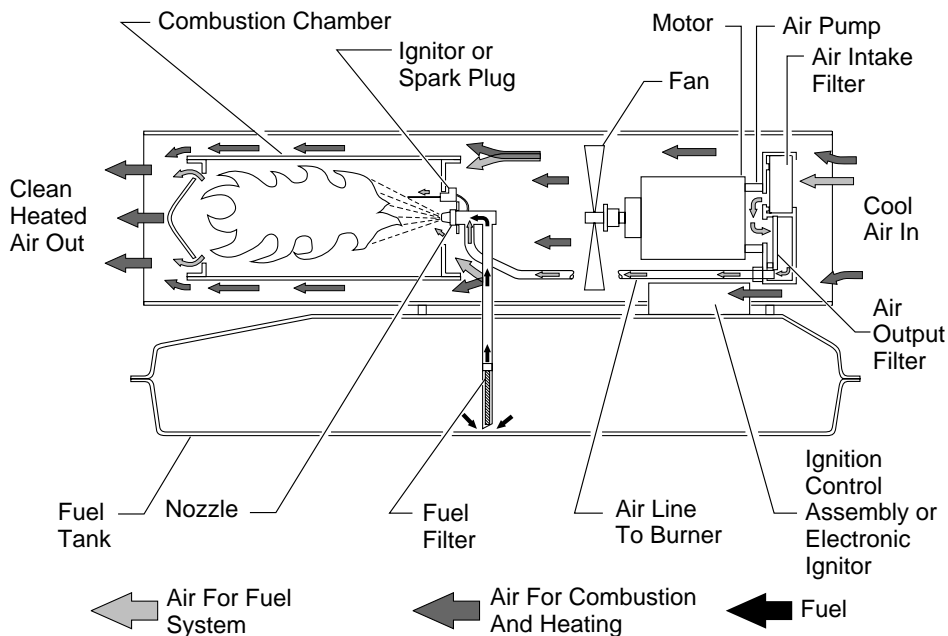


Figure 3 - Cross Section Operational View

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 diesel. Using heavy fuels will result in:

- clogged fuel filter and nozzle
- the need of nontoxic anti-icer in fuel during very cold weather

IMPORTANT: Use a KEROSENE ONLY storage container. Be sure storage container is clean. Foreign matter such as rust, dirt, or water will cause the control to shut down the 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 at least a 2800 square-centimeter opening of fresh, outside air for each 25,000 Kcal/Hr rating. Provide extra fresh air if more heaters are being used.

Example:

The RJ45 (11,900 Kcal/Hr) heater requires a 1400 square-centimeter opening of fresh outside air.

The RJ70 (17,600 Kcal/Hr) heater requires a 2000 square-centimeter opening of fresh outside air.

OWNER'S MANUAL

OPERATION

⚠ WARNING: Review and understand the warnings in the *Safety Information* section, page 2. 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 grounded extension cord. Extension cord must be at least 2 meters long.

Extension Cord Wire Size Requirements

- 2 to 3 meters long, use 1 mm² cord
- 3 to 30 meters long, use 1.5 mm² cord
- 30 to 60 meters long, use 2 mm² cord

5. Plug extension cord into standard 100 volt/50 or 60 hertz grounded outlet.

6. Switch heater ON.

RJ45 Note: Ignitor will preheat for five seconds, then heater will start.

RJ70 Note: If heater will not start, push in flame-out control reset button (see Figure 2, page 3).

TO STOP HEATER

1. Switch heater OFF.
2. Unplug extension cord from outlet.

TO RESTART HEATER

1. Switch heater OFF. Wait 10 seconds (two minutes if heater has been running).
2. Switch heater ON.

RJ45 Note: Ignitor will preheat for five seconds then heater will start.

RJ70 Note: If heater will not start, push in flame-out control reset button (see Figure 2, page 3).

STORING, TRANSPORTING, OR SHIPPING

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

1. Drain fuel tank. Drain fuel through drain-plug under tank. Be sure all fuel is removed.
2. If any debris is noted in old fuel, add 1 or 2 liters of clean kerosene to tank, stir, and drain again. This will prevent excess debris from clogging filters during future use.
3. Replace fuel cap. Properly dispose of old and dirty fuel. Check with local automotive service stations that recycle oil.
4. 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 <i>Storing, Transporting, or Shipping</i> , above
Air output and lint filters	Replace every 500 hours of operation or once a year	See <i>Air Output, Air Intake, and Lint Filters</i> , page 8
Air intake filter	Wash and dry with soap and water every 500 hours of operation or replace as needed	See <i>Air Output, Air Intake, and Lint Filters</i> , page 8
Fuel filter	Clean twice a heating season or replace as needed	See <i>Fuel Filter</i> , page 9
RJ45: Ignitor	No maintenance required	
RJ70: Spark Plug	Clean and regap every 600 hours of operation or replace as needed	See <i>Spark Plug</i> , page 10
Fan blades	Clean each season or as needed	See <i>Fan</i> , page 8
Motor	Not required/permanently lubricated	

RJ45 And RJ70

PORTABLE FORCED AIR HEATERS

TROUBLESHOOTING

RJ45

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

OBSERVED FAULT

POSSIBLE CAUSE

REMEDY

Motor does not start five seconds after heater is plugged in and switched ON

1. No power to heater

⚠ WARNING: High voltage!

2. Bad electrical connection between motor and ignition control assembly or ignition assembly and power cord
3. Binding pump rotor
4. Defective ignition control assembly
5. Defective motor
6. Defective ON/OFF switch

1. Check circuit breaker in electrical panel

2. Check all electrical connections. See *Wiring Diagrams*, page 12
3. If fan does not turn freely, see *Pump Rotor*, page 11
4. Replace ignition control assembly
5. Replace motor
6. Replace ON/OFF switch

Motor starts and runs but heater does not ignite

1. No fuel in tank
2. Pump pressure incorrect
3. Dirty fuel filter
4. Obstruction in nozzle
5. Water in fuel tank

1. Fill tank with kerosene
2. See *Pump Pressure Adjustment*, page 8
3. See *Fuel Filter*, page 9
4. See *Nozzle*, page 10
5. Drain and flush fuel tank with clean kerosene. See *Storing, Transporting, or Shipping*, page 5

⚠ WARNING: High voltage!

6. Bad electrical connection between ignitor and ignition control assembly
7. Defective ignitor
8. Defective ignition control assembly

6. Check electrical connections. See *Wiring Diagrams*, page 12
7. Replace ignitor, see page 9
8. Replace ignition control assembly

Heater ignites but ignition control assembly shuts heater off after a short period of time

1. Pump pressure incorrect
2. Dirty air intake, air output, and/or lint filter
3. Dirty fuel filter
4. Obstruction in nozzle
5. Photocell assembly not properly installed (not seeing the flame)
6. Dirty photocell lens

1. See *Pump Pressure Adjustment*, page 8
2. See *Air Output, Air Intake, and Lint Filters*, page 8
3. See *Fuel Filter*, page 9
4. See *Nozzle*, page 10
5. Make sure photocell boot is properly seated in bracket
6. Clean photocell lens

⚠ WARNING: High voltage!

7. Bad electrical connection between photocell and ignition control assembly
8. Defective photocell
9. Defective ignition control assembly


7. Check electrical connections. See *Wiring Diagrams*, page 12
8. Replace photocell
9. Replace ignition control assembly

OWNER'S MANUAL

TROUBLESHOOTING *Continued*

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

RJ70

OBSERVED FAULT	POSSIBLE CAUSE	REMEDY
Heater ignites, but flame-out control shuts off heater after a short period of time	<ol style="list-style-type: none">1. Photocell assembly not properly installed (seeing flame)2. Wrong pump pressure3. Dirty air output, air intake and lint filters4. Dirty fuel filter5. Dirt in nozzle6. Dirty photocell lens7. Defective flame-out control8. Defective photocell	<ol style="list-style-type: none">1. Make sure photocell boot is properly seated in bracket2. See <i>Pump Pressure Adjustment</i>, page 83. See <i>Air Output, Air Intake and Lint Filters</i>, page 84. See <i>Fuel Filter</i>, page 95. See <i>Nozzle</i>, page 116. Clean photocell lens7. Replace flame-out control8. Replace photocell
Heater will not ignite, but motor runs for a short period of time	<ol style="list-style-type: none">1. No fuel in tank2. Wrong pump pressure3. Carbon deposits on spark plug and/or improper gap4. Dirty fuel filter5. Dirt in nozzle6. Water in fuel tank	<ol style="list-style-type: none">1. Fill tank with kerosene2. See <i>Pump Pressure Adjustment</i>, page 83. See <i>Spark Plug</i>, page 104. See <i>Fuel Filter</i>, page 95. See <i>Nozzle</i>, page 116. Drain and flush fuel tank with clean kerosene. See <i>Storage, Transporting, or Shipping</i>, page 5
<div> WARNING: High voltage!</div>		
	<ol style="list-style-type: none">7. Electronic ignitor not grounded8. Defective electronic ignitor	<ol style="list-style-type: none">7. Make sure electronic ignitor mounting is tight8. Replace electronic ignitor
Motor does not start when heater is plugged in and switched ON, fan rotates slowly or does not turn	<ol style="list-style-type: none">1. Flame-out control not reset2. Binding pump rotor3. Defective motor4. Defective ON/OFF switch5. No power to heater6. Bad electrical connections	<ol style="list-style-type: none">1. Press flame-out control reset button2. If fan is hard to turn, see <i>Pump Rotor</i>, page 113. Replace motor4. Replace ON/OFF switch5. Check circuit breaker in electrical panel6. Check all electrical connections. See <i>Wiring Diagrams</i>, page 12

RJ45 And RJ70

PORTABLE FORCED AIR HEATERS

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 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.

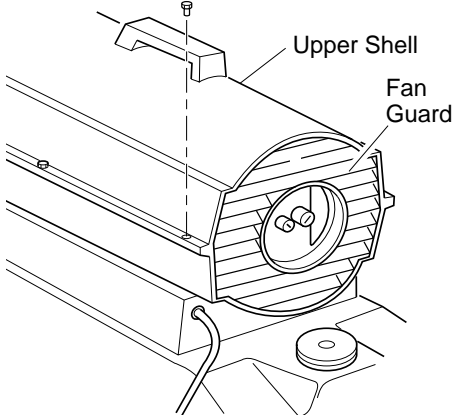


Figure 4 - Upper Shell Removal

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 above).
2. Use 1/8" Allen wrench to loosen set-screw which holds fan to motor shaft.
3. Slip fan off motor shaft.
4. Clean fan using 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 5).
7. Place setscrew on flat of shaft. Tighten setscrew firmly (7200-8900 grams/centimeter).
8. Replace fan guard and upper shell.

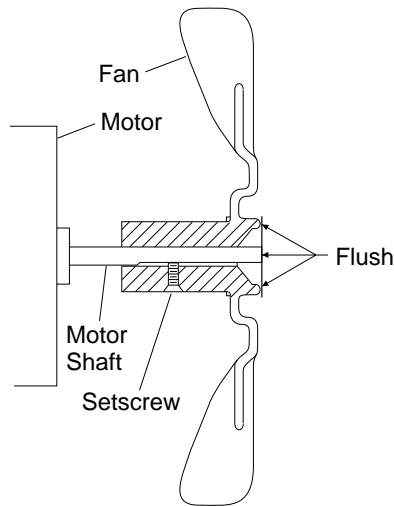


Figure 5 - Fan Cross Section

AIR OUTPUT, AIR INTAKE, AND LINT FILTERS

1. Remove upper shell (see *Upper Shell Removal*).
 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 5).
 6. Replace filter end cover.
 7. Replace fan guard and upper shell.
- IMPORTANT:** Do not oil filters.

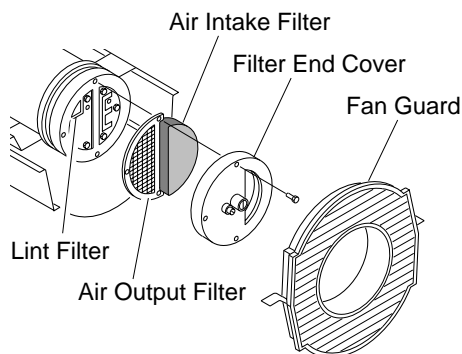


Figure 6 - Air Output, Air Intake, and Lint Filters

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 5). Allow motor to reach full speed.
4. Using a flat blade screwdriver, adjust pressure. Turn relief valve to right to increase the pressure. Turn relief valve to left to decrease the pressure. Set pump pressure as follows:
RJ45: 0.22 kg/cm² at 50 Hz.
0.24 kg/cm² at 60 Hz.
RJ70: 0.35 kg/cm² at 50 Hz.
0.38 kg/cm² at 60 Hz.
5. Remove pressure gauge. Replace pressure gauge plug in filter end cover.

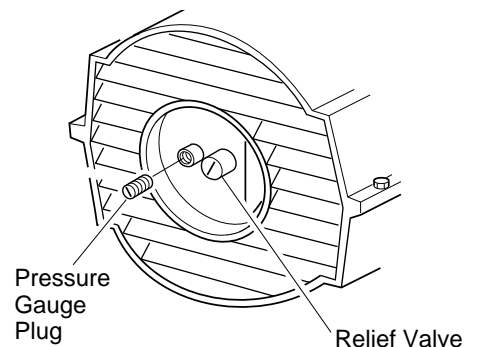


Figure 7 - Pressure Gauge Plug Removal

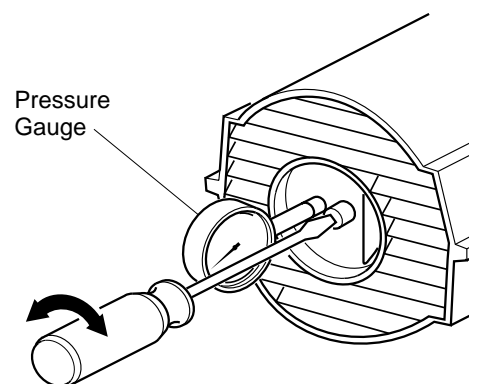


Figure 8 - Adjusting Pump Pressure

SERVICE PROCEDURES

Continued

FUEL FILTER

1. Remove side cover screws using 5/16" nut-driver (see Figure 9).
2. Remove side cover.
3. Pull upper fuel line off fuel filter neck.
4. Carefully pry bushing 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 (see Figure 9).

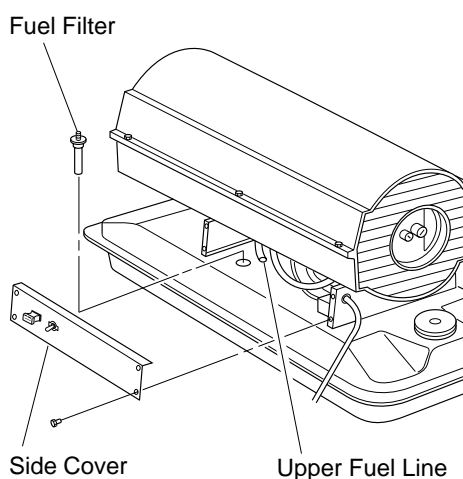


Figure 9 - Fuel Filter Removal

IGNITOR (RJ45)

1. Remove upper shell and fan guard (see *Upper Shell Removal*, page 8).
2. Remove fan (see *Fan*, page 8).
3. Remove side cover screws with a 5/16" nut driver. Remove side cover (see Figure 9).
4. Disconnect ignitor wires from ignition control assembly (see Figure 10). Pull the ignitor wires up through the hole in the lower shell.
5. Disconnect fuel line hose and air line hose. Remove photocell from photocell bracket (see Figure 10).
6. Remove combustion chamber. Stand combustion chamber on end with nozzle adapter bracket on top (see Figure 11).
7. Remove ignitor screw with a 1/4" nut driver. Carefully remove ignitor from nozzle adapter bracket.

CAUTION: Do not bend or strike ignitor element. Handle with care.

8. Carefully remove replacement ignitor from styrofoam packing.
9. Carefully guide ignitor into opening in nozzle adapter bracket. Do not strike ignitor element. Attach ignitor to nozzle adapter bracket with screw using a 1/4" nut driver (see Figure 11). Torque 1800 to 3500 grams/centimeters. Do not over torque.
10. Replace combustion chamber.
11. Route the ignitor wires back down through the hole in the lower shell. Connect wires to the ignition control assembly. See *Wiring Diagrams*, page 12, for correct terminal locations.
12. Replace side cover (see Figure 9).
13. Connect and route fuel line hose and air line hose to nozzle assembly. See *Fuel and Air Line Replacement and Proper Routing*, page 10.
14. Replace photocell in photocell bracket. Route wires between hoses and back down through the hole in the lower shell with ignitor wires (see Figure 10).
15. Replace fan (see *Fan*, page 8).
16. Replace fan guard and upper shell (see *Upper Shell Removal*, page 8).

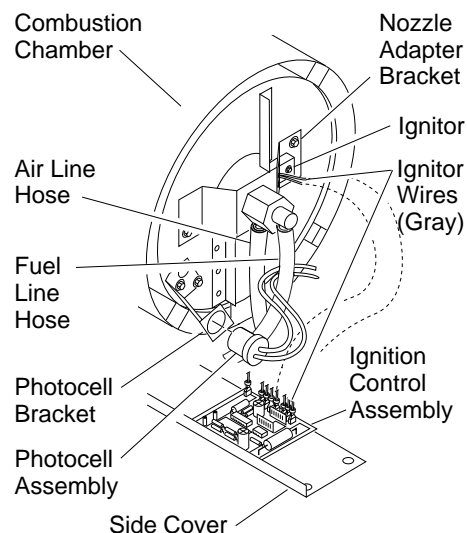


Figure 10 - Disconnecting Ignitor Wires from Ignition Control Assembly

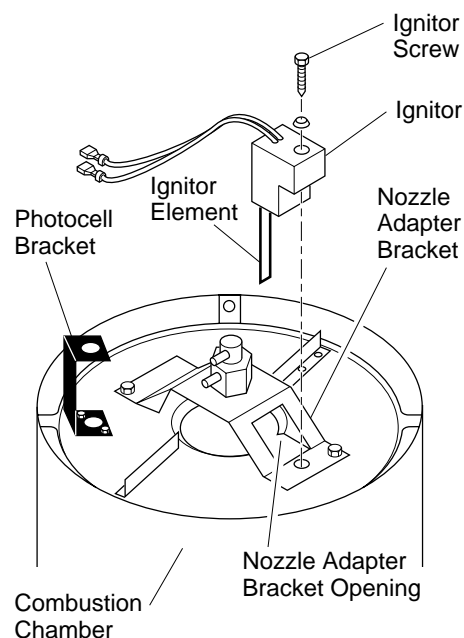


Figure 11 - Ignitor Replacement

Continued

RJ45 And RJ70

PORTABLE FORCED AIR HEATERS

SERVICE PROCEDURES

Continued

SPARK PLUG (RJ70)

1. Remove upper shell (see *Upper Shell Removal*, page 8).
2. Remove fan (see *Fan*, page 8).
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 to 2.2 mm.
6. Install spark plug in burner head.
7. Attach spark plug wire to spark plug.
8. Replace fan (see *Fan*, page 8).
9. Replace fan guard and upper shell (see *Upper Shell Removal*, page 8).

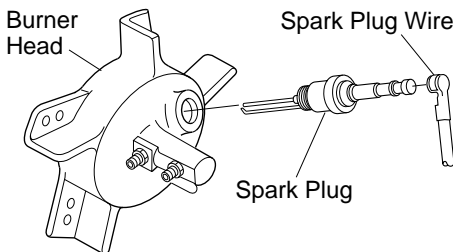


Figure 12 - Spark Plug Removal



Figure 13 - Spark Plug Gap

NOZZLE (RJ45)

1. Remove upper shell (see *Upper Shell Removal*, page 8).
2. Remove fan (see *Fan*, page 8).
3. Remove fuel and air line hoses from nozzle adapter.
4. Turn nozzle adapter 1/4 turn to left and pull toward motor to remove.
5. Place nozzle adapter into vise and lightly tighten.
6. Carefully unscrew nozzle from the nozzle adapter using 5/8" socket wrench.
7. Blow compressed air through face of nozzle. This will free any dirt in nozzle area.
8. Inspect nozzle seal for damage.

9. Screw nozzle into nozzle adapter until nozzle seats. Tighten 7200-8000 grams/centimeter using 5/8" socket wrench.
10. Install nozzle adapter into nozzle adapter bracket.
11. Connect and route fuel line hose and air line hose to nozzle assembly. See *Fuel and Air Line Replacement and Proper Routing*, page 10.
12. Replace fan (see *Fan*, page 8).
13. Replace fan guard and upper shell (see *Upper Shell Removal*, page 8).

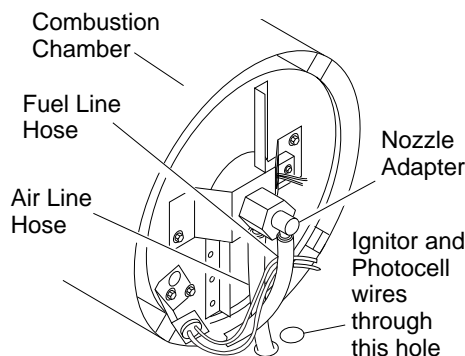


Figure 14 - Removing Air and Fuel Line Hoses

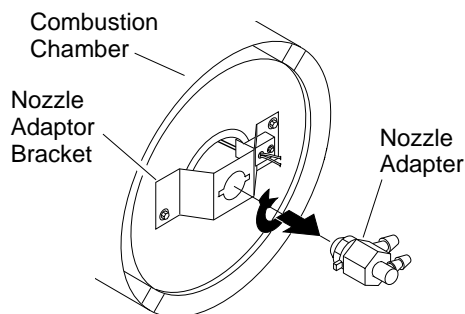


Figure 15 - Removing Nozzle Assembly

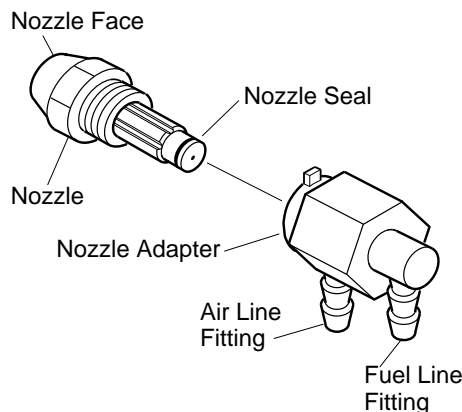


Figure 16 - Nozzle and Nozzle Adapter

FUEL AND AIR LINE REPLACEMENT AND PROPER ROUTING

1. Remove upper shell (see *Upper Shell Removal*, page 8).
 2. Remove side cover screws using 5/16" nut driver (see Figure 9, page 9).
 3. Remove side cover.
 4. Inspect fuel and air line hoses for cracks and/or holes. If fuel line hose is damaged, disconnect from nozzle adapter or burner head (see Figure 14 or Figure 18, page 11) and from fuel filter (see *Fuel Filter*, page 9). If air line hose is damaged, disconnect from nozzle adapter or burner head (see Figure 14 or Figure 18, page 11) and from barb fitting on pump end cover (see Figure 17).
 5. Install new air and/or fuel line. Attach one end of air line hose to barb fitting on pump end cover (see Figure 17) and the other end to nozzle adapter or burner head (see Figure 14 or Figure 18, page 11). Attach one end of fuel line hose to fuel filter (see *Fuel Filter*, page 9) and the other end to nozzle adapter (see Figure 14 or Figure 18, page 11). Route air and fuel line approximately as shown in Figure 14 (RJ45) or 18 (RJ70), page 11.
- Note:** Hoses are not to touch photocell bracket.
6. Replace side cover.
 7. Replace upper shell and fan guard (see *Upper Shell Removal*, page 8).

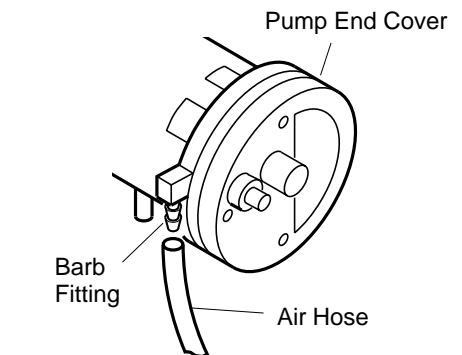


Figure 17 - Air Hose to Barb Fitting

SERVICE PROCEDURES

Continued

NOZZLE (RJ70)

1. Remove upper shell (see *Upper Shell Removal*, page 8).
2. Remove fan (see *Fan*, page 8).
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 19).

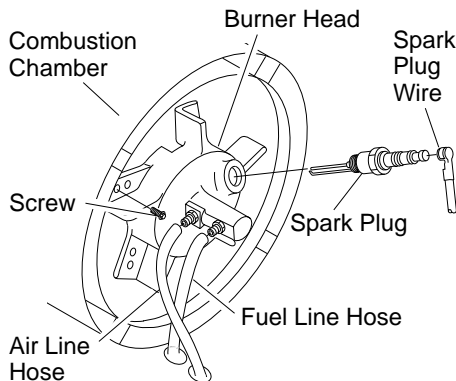


Figure 18 - Removing Burner Head

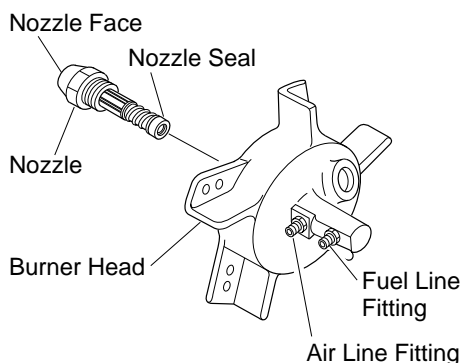


Figure 19 - Removing Nozzle

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 (14,300-19,600 grams/centimeter).
12. Attach burner head to combustion chamber.
13. Install spark plug in burner head.
14. Attach spark plug wire to spark plug.
15. Connect and route fuel line hose and air line hose to burner head. See *Fuel and Air Line Replacement and Proper Routing*, page 10.
16. Replace fan (see *Fan*, page 8).
17. Replace fan guard and upper shell (see *Upper Shell Removal*, page 8).

PUMP ROTOR (Procedure if Rotor is Binding)

1. Remove upper shell (see *Upper Shell Removal*, page 8).
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 0.08/0.10 mm if needed (see Figure 21). **Note:** Rotate rotor one full turn to insure the gap is 0.08/0.10 mm at tightest position. Adjust if needed.

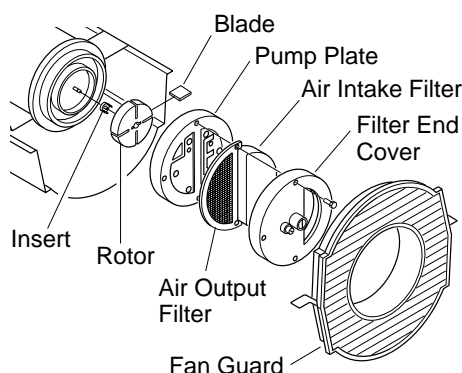


Figure 20 - Rotor Location

10. Install blades, pump plate, air filters, and filter end cover.
11. Replace fan guard and upper shell.
12. Adjust pump pressure (see *Pump Pressure Adjustment*, page 8). **Note:** If rotor is still binding, proceed as follows.
13. Perform steps 1 through 6, column 1.
14. Place fine grade sandpaper (600 grit) on flat surface. Sand rotor lightly in "figure 8" motion four times (see Figure 22).
15. Reinstall insert and rotor.
16. Perform steps 10 through 12.

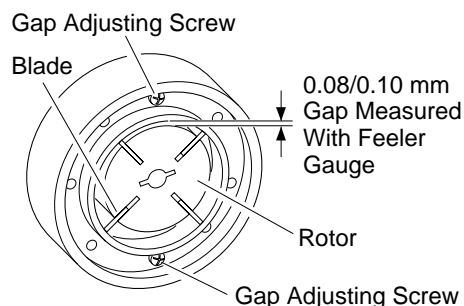


Figure 21 - Gap Adjusting Screw Locations

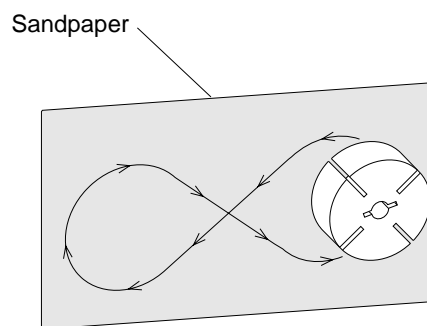


Figure 22 - Sanding Rotor

RJ45 And RJ70

PORTABLE FORCED AIR HEATERS

WIRING DIAGRAMS

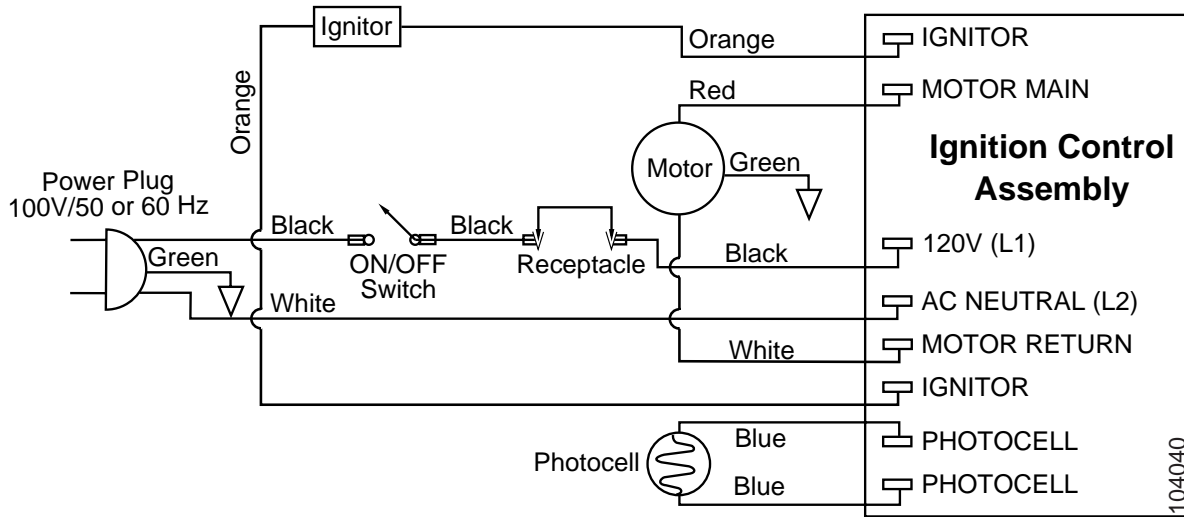


Figure 22- Wiring Diagram For RJ45

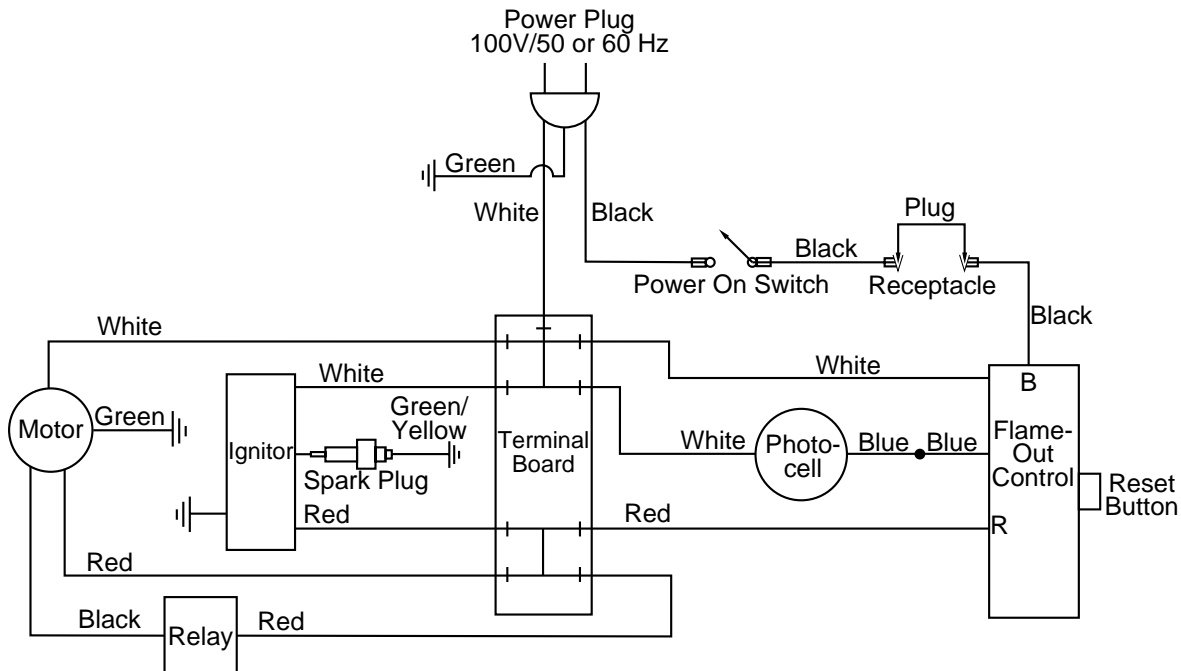


Figure 23- Wiring Diagram For RJ70

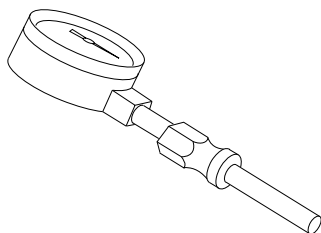
OWNER'S MANUAL

SPECIFICATIONS

	RJ45	RJ70
Maximum Output Rating (Kcal/Hr)	11,900	17,600
Fuel	Use Only Kerosene or No. 1 Fuel Oil	
Fuel Tank Capacity (liters)	15.1	18.9
Fuel Consumption (liters/Hr)	1.3	1.9
Electric Requirements	100V/50 or 60 Hz	
Amperage (Normal Run)	3.7	3.0
Motor Speed (RPM at 50/60 Hz)	2850/3450	2850/3450
Motor Watts	93	93
Pump Pressure (kg/cm ² at 50/60 Hz)	0.22/0.24	0.35/0.38

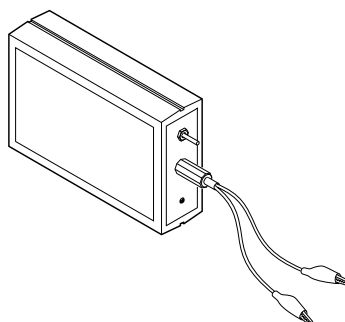
ACCESSORIES

Purchase accessories and parts from your nearest dealer.



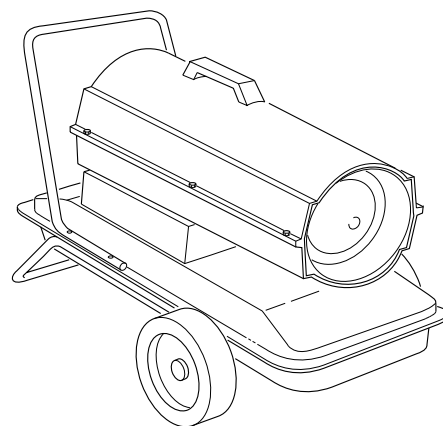
AIR GAUGE KIT - HA1180

Special tool to check pump pressure.



IGNITION CONTROL ASSEMBLY/PHOTOCELL TESTER - HA1170

Special tool used to test the ignition control assembly and photocell.



HEAVY DUTY WHEELS AND HANDLE KIT - HA1202

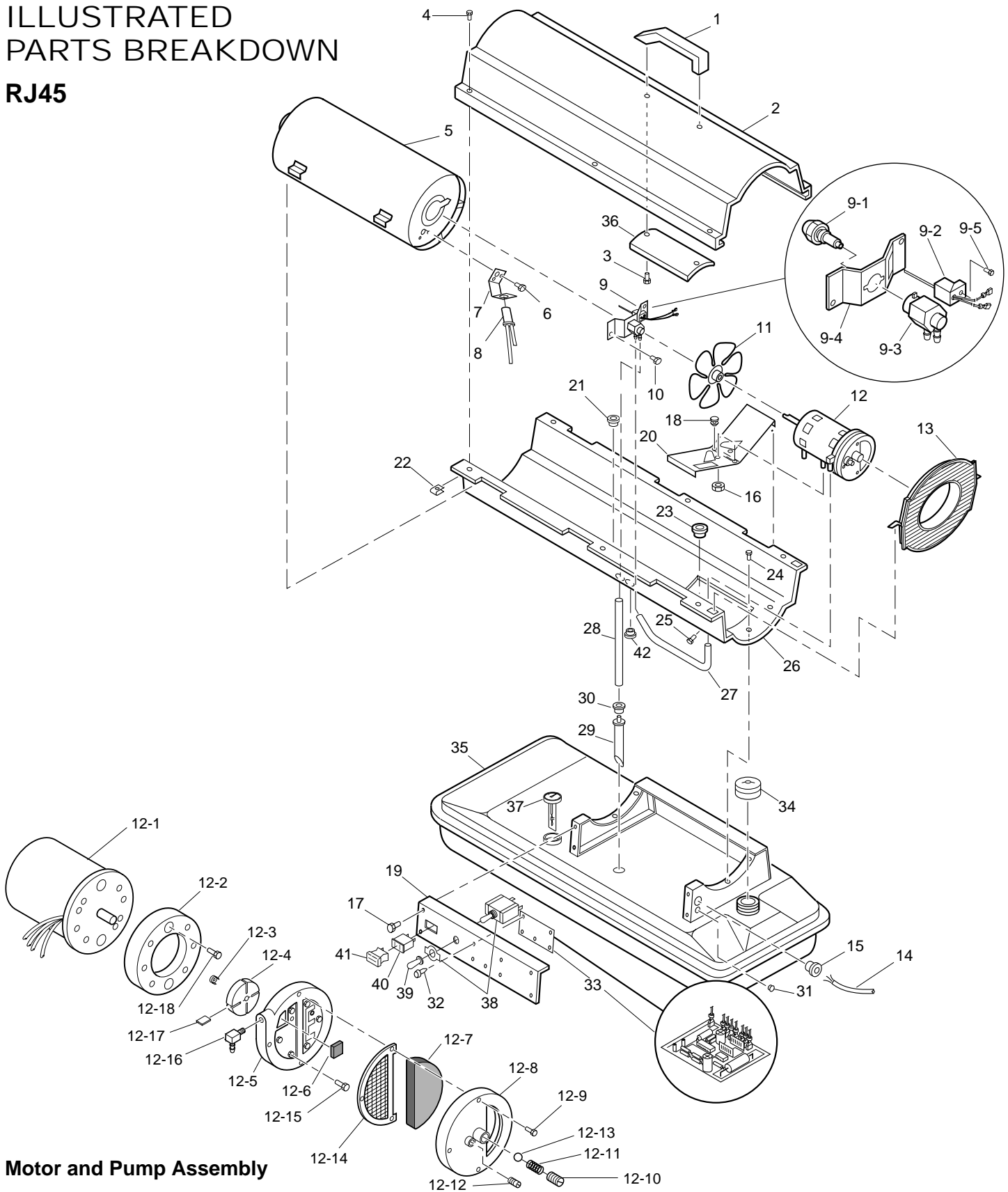
For heavy duty applications. Makes your heater even more portable and convenient.

RJ45

PORTABLE FORCED AIR HEATERS

ILLUSTRATED PARTS BREAKDOWN

RJ45



OWNER'S MANUAL

PARTS LIST

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.

RJ45

KEY NO.	PART NUMBER	DESCRIPTION	QTY.	KEY NO.	PART NUMBER	DESCRIPTION	QTY.
1	M51104-01	Handle	1	12-18	FHPF3-5C	Screw	2
2	098511-36	Upper Shell	1	13	M51105-01	Fan Guard	1
3	M11084-29	Screw, #10-16 x 3/4"	2	14	102330-01	Power Cord	1
4	100647-01	Screw, #10-16 x 1/2"	6	15	099492-01	Strain Relief Bushing	1
5	098512-62	Combustion Chamber	1	16	NTC-4C	Hex Lock Nut, 1/4-20	2
6	M10908-2	Screw, #6-32 x 3/8"	2	17	M11084-26	Screw, #10-16 x 3/8"	4
7	103154-03	Photocell Bracket	1	18	M50631	Rubber Bumper	2
8	M16656-23	Photocell Assembly	1	19	097461-06AA	Side Cover	1
9	Δ	Burner Head Assembly	1	20	101205-01	Motor Bracket	1
9-1	100735-22	Nozzle Assembly	1	21	M30865-02	Bushing	1
9-2	102548-04	Ignitor Kit	1	22	M11271-8	Clip Nut	6
9-3	104056-01	Nozzle Adapter	1	23	M50104-02	Bushing	1
9-4	102336-01	Nozzle Adapter Bracket	1	24	M11084-26	Screw, #10-16 x 3/8"	6
9-5	104023-01	Screw/Washer Assembly	1	25	M10908-14	Screw, #8-32 x 3/8"	1
10	M11084-26	Screw, #10-16 x 3/8"	2	26	098511-18	Lower Shell	1
11	097033-01	Fan	1	27	M50814-06	Rubber Airline	1
12	Δ	Motor and Pump Assembly	1	28	079973-01	Fuel Line	1
12-1	102001-22	Motor	1	29	M50876-02	Fuel Filter with bushing	1
12-2	079975-02	Pump Body	1	30	M10990-3	Rubber Bushing	1
12-3	M22009**	Insert	1	31	101695-01	Button Plug	1
12-4	M22456-1**	Rotor	1	32	102349-01	PCB Support	5
12-5	M29608	Pump End Cover	1	33	104068-02	Ignition Control Assembly	1
12-6	M29632 ⊕	Lint Filter	1	34	097702-01	Fuel Cap (Includes Gasket)	1
12-7	M29633 ⊕	Intake Filter	1	35	098513-100	Fuel Tank	1
12-8	M29609	Filter End Cover	1	36	M51108-01	Shell Heat-Shield	1
12-9	M12461-31	Screw, #10-32 x 1"	3	37	097190-05	Fuel Gauge	1
12-10	M27694 ∞	Adjusting Screw	1	38	098226-01	On/Off Switch	1
12-11	M10993-1 ∞	Pressure Relief Spring	1	39	097196-02	Switch Seal	1
12-12	M22997 ∞	Plug	1	40	097202-01	Receptacle	1
12-13	M8940 ∞	Steel Ball, 1/4" Diameter	1	41	097274-01	Jumper Plug	1
12-14	M29612-01 ⊕	Output Filter	1	42	097467-02	Button Plug	1
12-15	M12461-31	Screw, #10-32 x 1"	6	PARTS AVAILABLE - NOT SHOWN			
12-16	103676-01	Nylon Elbow, 90°	1		104949-01	General Information Decal	1
12-17	M8643**	Blade	4		103814-01	Wire Tie	1

Δ Not available as an assembly

** Included in Rotor Kit (Part No. HA3004)

⊕ Included in Filter Kit (Part No. HA3014)

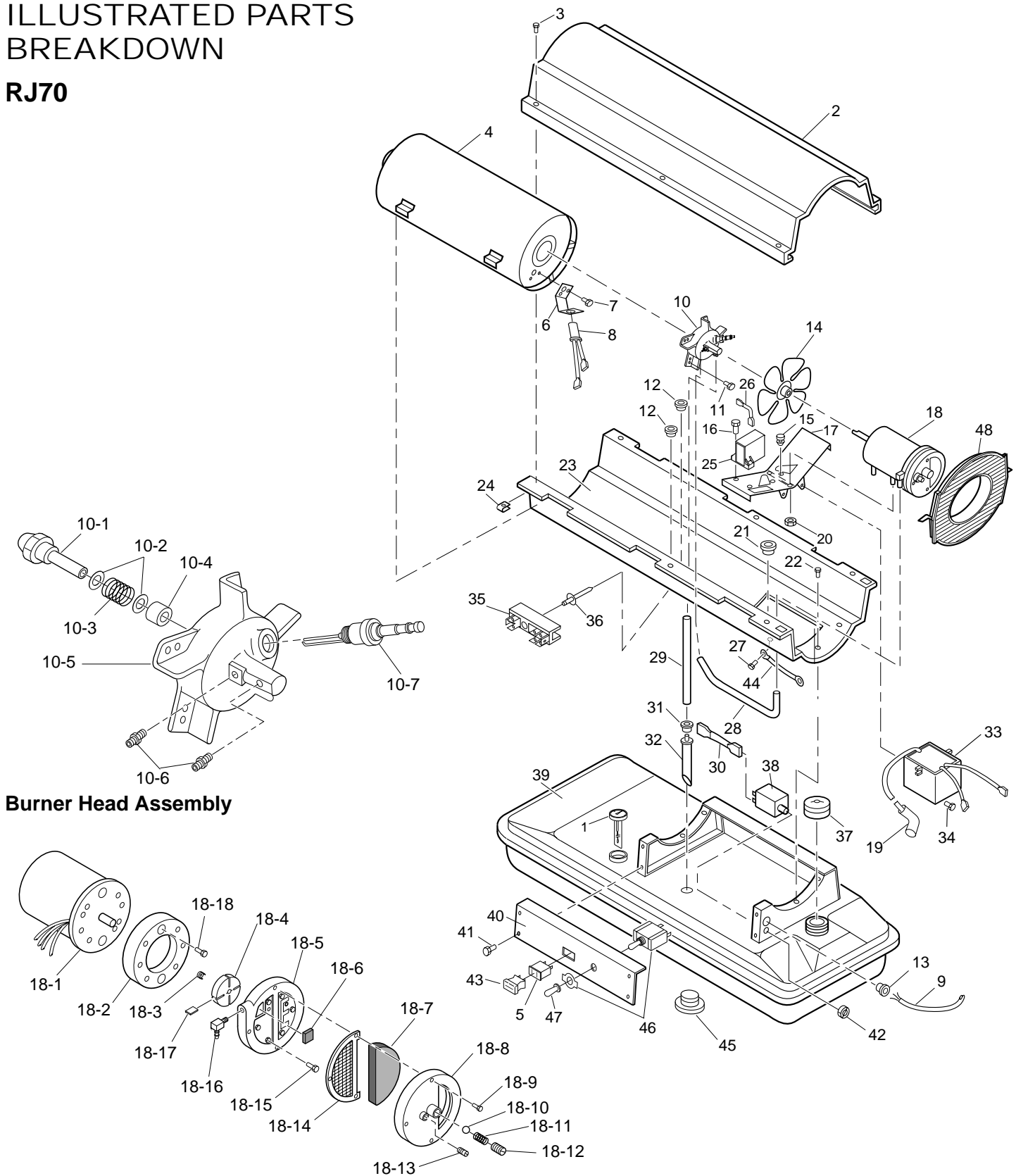
∞ Included in Pump Adjustment Kit (Part No. HA3020)

RJ70

PORTABLE FORCED AIR HEATERS

ILLUSTRATED PARTS BREAKDOWN

RJ70



Burner Head Assembly

Motor and Pump Assembly

OWNER'S MANUAL

PARTS LIST

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.

RJ70

KEY NO.	PART NUMBER	PART DESCRIPTION	QTY.	KEY NO.	PART NUMBER	PART DESCRIPTION	QTY.
1	097190-01	Fuel Gauge	1	18-17	M8643**	Blade	4
2	098511-36	Upper Shell	1	18-18	FHPF3-5C	Screw, #10-32 x 5/8"	2
3	100647-01	Screw, #10-16 x 1/2"	6	19	M50050	Rubber Cap	1
4	098512-41	Combustion Chamber	1	20	NTC-4C	Hex locknut	2
5	097202-01	Receptacle	1	21	M50104-02	Bushing (wires)	1
6	M16660	Photocell Bracket	1	22	M11084-26	Screw, #10-16 x 3/8"	6
7	M10908-2	Screw, #6-32 x 3/8"	2	23	098511-18	Lower Shell	1
8	HA3019	Photocell Assembly	1	24	M11271-8	Clip Nut	6
9	102330-01	Power Cord	1	25	097061-01	Relay (motor start)	1
10	Δ	Burner Head Assembly	1	26	079010-18	Wire Assembly (red 16")	1
10-1	100735-14	Nozzle	1	27	M10908-14	Screw, #8-32 x 3/8"	1
10-2	M10659-1	Nozzle Seal Washer	2	28	M29652-04	Rubber Airline	1
10-3	M10809-1	Nozzle Seal Spring	1	29	079973-01	Fuel Line	1
10-4	M8882	Nozzle Seal Sleeve	1	30	M16841-57	Wire Assembly (red 8 1/2")	1
10-5	M51098-02	Burner Head Body	1	31	M10990-3	Rubber Bushing	1
10-6	M50820-01	Barb Fitting	2	32	M50876-05	Fuel Filter Assembly (Includes bushing)	1
10-7	HA3012	Spark Plug	1	33	102482-01	Electronic Ignitor	1
11	M11084-27	Screw, #10-16 x 1/2"	3	34	M11084-29	Screw, #10-16 x 3/4"	2
12	M30865-02	Bushing	2	35	099125-03	Terminal Board	1
13	099492-01	Strain Relief Bushing	1	36	099157-01	Rivet	1
14	097200-01	Fan	1	37	097702-01	Fuel Tank Cap	1
15	M50631	Rubber Bumper	2	38	097997-02	Flame-Out Control	1
16	M15823-39	Screw, #8-18 x 1/2"	2	39	098513-57	Fuel Tank	1
17	101205-01	Motor and Relay Bracket	1	40	097194-02AA	Side Cover	1
18	Δ	Motor and Pump Assembly	1	41	M11084-26	Screw, #10-16 x 3/8"	4
18-1	102001-12	Motor	1	42	099177-01	Hex Nut	1
18-2	079975-02	Pump Body	1	43	097274-01	Jumper Plug	1
18-3	M22009**	Insert	1	44	M9900-162	Wire Assembly (green 16")	1
18-4	M22456-1**	Rotor	1	45	M27417	Drain Plug	1
18-5	M29608	End Pump Cover	1	46	098226-01	ON/OFF Switch	1
18-6	M29632⊕	Lint Filter	1	47	097196-02	Switch Seal	1
18-7	M29633⊕	Intake Filter	1	PARTS AVAILABLE - NOT SHOWN			
18-8	M29609	End Filter Cover	1				
18-9	M12461-31	Screw, #10-32 x 1"	3				
18-10	M8940∞	Steel Ball (1/4" Dia.)	1		HA2210	Filler Neck Screen	1
18-11	M10993-1∞	Pressure Relief Spring	1		102415-01	Wiring Decal	1
18-12	M27694∞	Adjusting Screw	1		097204-22	Tradename Decal	1
18-13	M22997∞	Plug	1		097208-33	Nameplate Decal	1
18-14	M29612-01⊕	Output Filter	1		M9900-170	Wire Assembly (Black 12")	2
18-15	M12461-31	Screw, #10-32 x 1"	6				
18-16	M50016	Elbow, 90° (Barb Fitting)	1				

Δ Not available as an assembly

** Included in Rotor Kit (Part No. HA3004)

⊕ Included in Filter Kit (Part No. HA3014)

∞ Included in Pump Adjustment Kit (Part No. HA3020)

WARRANTY AND REPAIR SERVICE

LIMITED WARRANTY

DESA International warrants this product and any parts thereof, to be free from defects in materials and workmanship for one (1) year from the date of first purchase when operated and maintained in accordance with instructions. This warranty is extended only to the original retail purchaser, when proof of purchase is provided.

This warranty covers only the cost of parts and labor required to restore the product to proper operating condition. Transportation and incidental costs associated with warranty repairs are not reimbursable under this warranty.

Warranty service is available only through authorized dealers and service centers.

This warranty does not cover defects resulting from misuse, abuse, negligence, accidents, lack of proper maintenance, normal wear, alteration, modification, tampering, contaminated fuels, repair using improper parts, or repair by anyone other than an authorized dealer or service center. Routine maintenance is the responsibility of the owner.

THIS EXPRESS WARRANTY IS GIVEN IN LIEU OF ANY OTHER WARRANTY EITHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

DESA International assumes no responsibility for indirect, incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations or exclusions may not apply to you. This Limited Warranty gives you specific legal rights and you may also have other rights which vary from state to state.

WARRANTY SERVICE

Should your heater require service, return it to your nearest authorized service center. Proof of purchase must be presented with the heater. The heater will be inspected. A defect may be caused by faulty materials or workmanship. If so, DESA International will repair or replace the heater without charge.

REPAIR SERVICE

Return the heater to your nearest authorized service center. Repairs not covered by the warranty will be billed at standard prices.

Each Service Center is independently owned and operated. We reserve the right to amend these specifications at any time without notice.

KEEP THIS WARRANTY

Model No. _____

Serial No. _____

Date of Purchase _____

(To be filled in by purchaser)

DESA

INTERNATIONAL
Corporate Headquarters

2701 Industrial Drive
P.O. Box 90004
Bowling Green, KY 42102-9004



104950 01

NOT A UPC

104950-01
Rev B
09/99