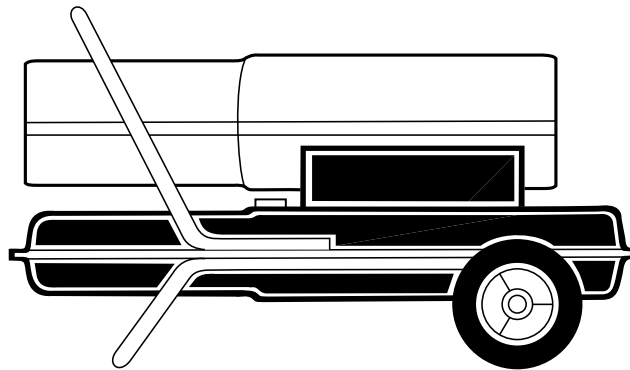
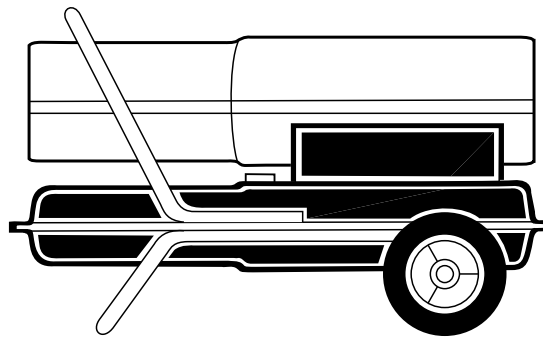


PORTABLE FORCED AIR HEATERS

OWNER'S MANUAL



Heater Sizes:

110,000 150,000 155,000 165,000 Btu/Hr

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.




110,000 150,000 155,000 165,000 BTU/HR 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 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 federal, state, and local 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 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 federal, state, or local 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 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 three-square-foot opening of fresh, outside air for each 100,000 Btu/Hr of rating. This heater produces carbon monoxide, which is listed by the State of California as a reproductive toxin under Proposition 65.
- 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: 8 Ft.
Top: 4 Ft.

Sides: 4 Ft.
Rear: 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.
- 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.

OWNER'S MANUAL

PRODUCT IDENTIFICATION

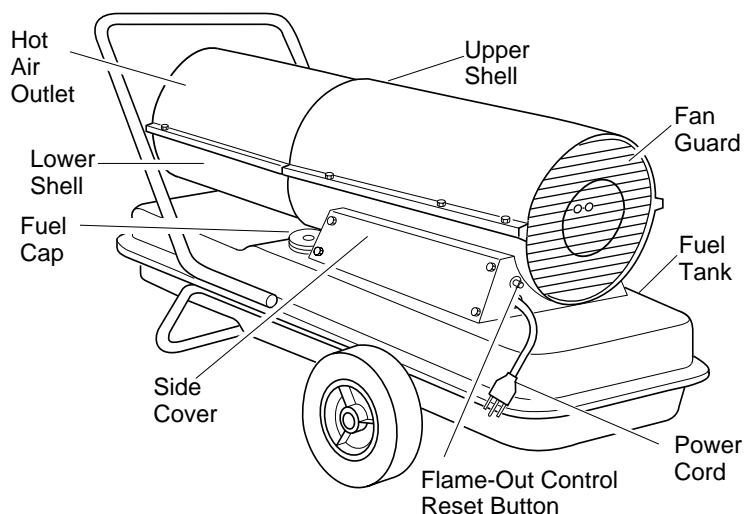


Figure 1 - Product Identification

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.

ASSEMBLY

These models are furnished with wheels and a front handle. Some models are furnished with a rear handle also. Wheels, handle(s), 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 2).

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 if provided) on top of fuel tank flange. Insert screws through handle(s), 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.

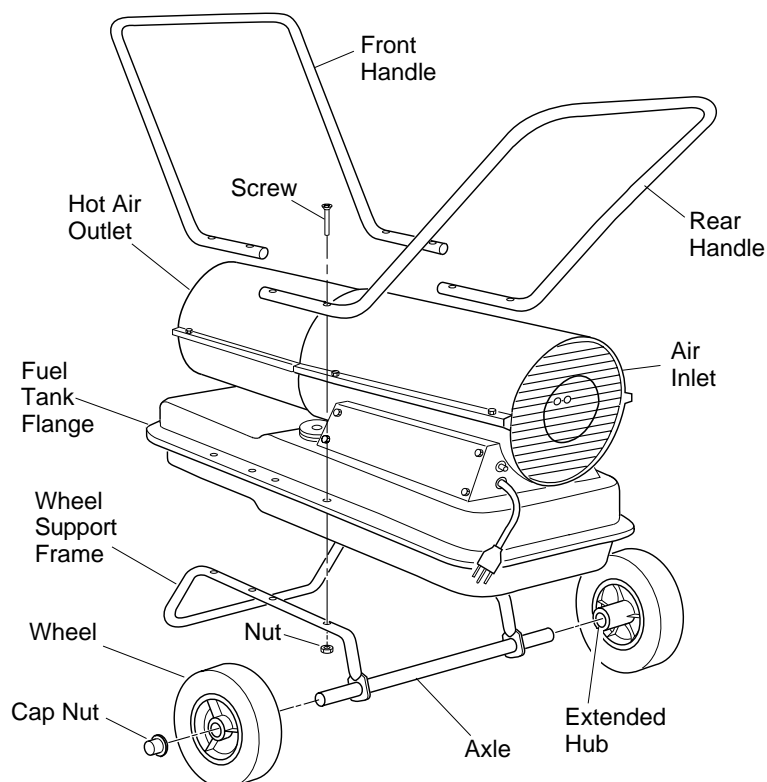


Figure 2 - Wheel and Handle Assembly

110,000 150,000 155,000 165,000 BTU/HR 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 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.

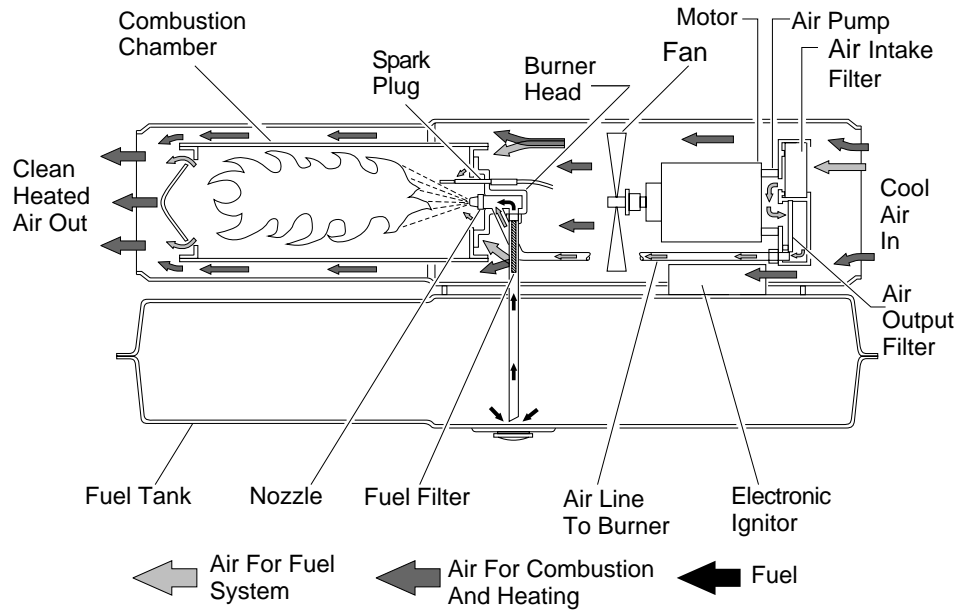


Figure 3 - Cross Section Operational View

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 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
- the need of non-toxic 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 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 at least a three-square-foot opening of fresh, outside air for each 100,000 Btu/Hr rating. Provide extra fresh air if more heaters are being used.

Example: A 165,000 Btu/Hr heater requires one of the following:

- a two-car garage door (16 feet wide opening) raised four inches
- a single-car garage door (9 feet wide opening) raised seven inches
- two windows (30 inches wide opening) raised twelve inches

OPERATION

⚠ WARNING: Review and understand the warnings in the Safety Information Section, pages 2 and 3. 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 three-prong, grounded extension cord. Extension cord must be at least six feet long.

Extension Cord Wire Size Requirements

6 to 10 feet long, use 18 AWG rated cord
11 to 100 feet long, use 16 AWG rated cord
101 to 200 feet long, use 14 AWG rated cord

OPERATION

Continued

- Plug extension cord into standard 120 volt/60 hertz, three-hole, grounded outlet. Heater will start when extension cord is plugged into outlet. If not, push in flame-out control reset button (see Figure 4).

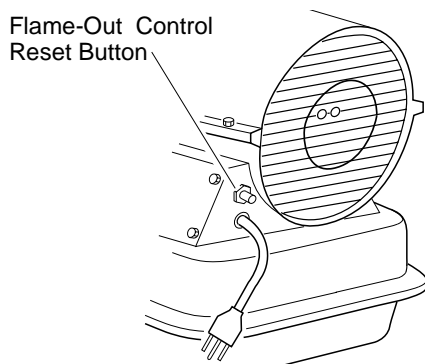


Figure 4 - Flame-Out Control Reset Button

TO STOP HEATER

- Unplug extension cord from outlet.

TO RESTART HEATER

- Wait two minutes after stopping heater.
- Repeat steps under *To Start Heater*, page 4.

STORING, TRANSPORTING, OR SHIPPING

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

- 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.

- Replace drain plug if provided.
- 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.
- Replace fuel cap or drain plug. Properly dispose of old and dirty fuel. Check with local automotive service stations that recycle oil.
- 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> .
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 7.
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 7.
Fuel filter	Clean twice a heating season or replace as needed.	See <i>Fuel Filter</i> , page 8.
Spark plug	Clean and regap every 600 hours operation or replace as needed.	See <i>Spark Plug</i> , page 8.
Fan blades	Clean each season or as needed.	See <i>Fan</i> , page 7.
Motor	Not required/permanently lubricated	

110,000 150,000 155,000 165,000 BTU/HR PORTABLE FORCED AIR HEATERS

TROUBLESHOOTING

⚠ 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.	1. Wrong pump pressure	1. See <i>Pump Pressure Adjustment</i> , page 7.
	2. Dirty air output, air intake and lint filters	2. See <i>Air Output, Air Intake and Lint Filters</i> , page 7.
	3. Dirty fuel filter	3. See <i>Fuel Filter</i> , page 8.
	4. Dirt in nozzle	4. See <i>Nozzle</i> , page 8.
	5. Dirty photocell lens	5. Clean photocell lens.
	6. Bad flame-out control	6. Replace flame-out control.
Heater will not ignite, but motor runs for a short period of time.	1. Wrong pump pressure	1. See <i>Pump Pressure Adjustment</i> , page 7.
	2. Carbon deposits on spark plug and/or improper gap	2. See <i>Spark Plug</i> , page 8.
	3. Dirty fuel filter	3. See <i>Fuel Filter</i> , page 8.
	4. Dirt in nozzle	4. See <i>Nozzle</i> , page 8.
	5. Water in fuel tank	5. Drain and flush fuel tank with clean kerosene. See <i>Storing, Transporting, or Shipping</i> , page 5.
⚠ WARNING: High voltage!		
Motor does not start when heater is plugged in, fan rotates slowly or does not turn.	6. Electronic ignitor not grounded	6. Make sure electronic ignitor mounting is tight.
	7. Bad electronic ignitor	7. Replace electronic ignitor.
	1. Flame-out control not reset	1. Press flame-out control reset button.
	2. Solid state relay not allowed to reset	2. Wait two minutes before trying to restart heater.
	3. Binding pump rotor	3. If fan is hard to turn, see <i>Pump Rotor</i> , page 9.

OWNER'S MANUAL

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.

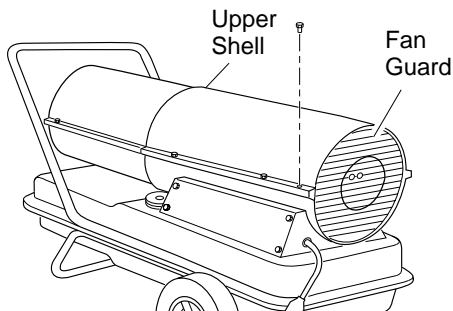


Figure 5 - Upper Shell Removal

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 6).
7. Place setscrew on flat of shaft. Tighten setscrew firmly (40-50 inch-pounds).
8. Replace fan guard and upper shell.

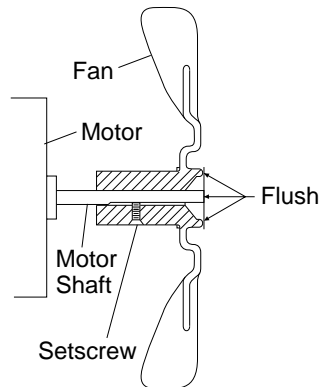


Figure 6 - Fan Cross Section

AIR OUTPUT, AIR INTAKE, AND LINT FILTERS

1. Remove upper shell (see above).
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.

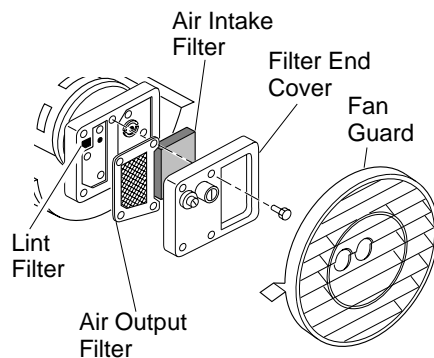


Figure 7 - Air Output, Air Intake, and Lint Filters

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*, pages 4 & 5). 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.

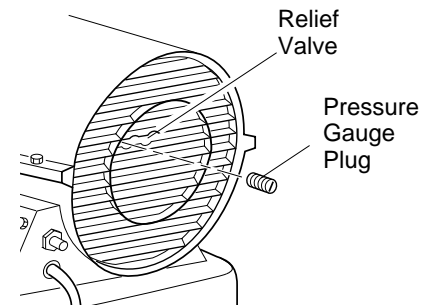
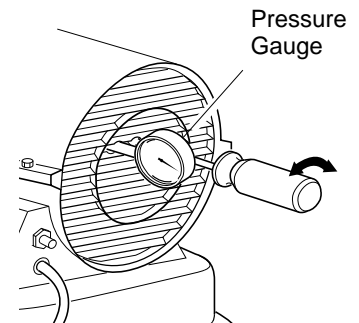


Figure 8 - Pressure Gauge Plug Removal



Model	Pump Pressure
110,000 Btu/Hr	4.5 PSI
150,000 Btu/Hr	5.0 PSI
155,000 Btu/Hr	5.0 PSI
165,000 Btu/Hr	5.4 PSI

Figure 9 - Adjusting Pump Pressure

110,000 150,000 155,000 165,000 BTU/HR PORTABLE FORCED AIR HEATERS

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, fuel filter, and lower fuel line 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.

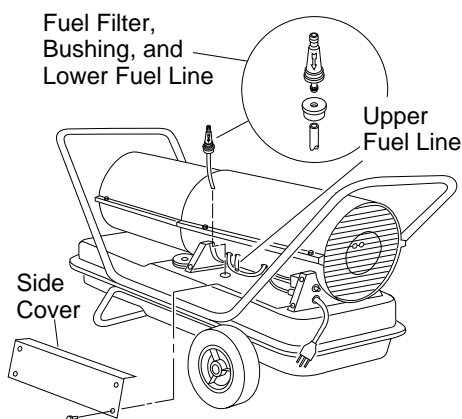


Figure 10 - Fuel Filter Removal

SPARK PLUG

1. Remove upper shell (see page 7).
2. Remove fan (see page 7).
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:
 - 110,000, 150,000, 155,000 B.T.U. Models = .075" gap
 - 165,000 B.T.U. Model = .085" gap
6. Install spark plug in burner head.
7. Attach spark plug wire to spark plug.
8. Replace fan (see page 7).
9. Replace fan guard and upper shell.

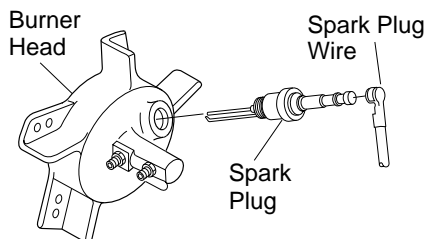


Figure 11 - Spark Plug Removal

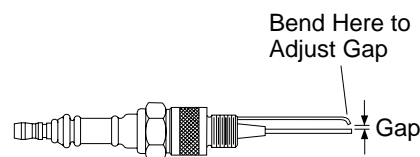


Figure 12 - Spark Plug Gap

NOZZLE

1. Remove upper shell (see page 7).
2. Remove fan (see page 7).
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 (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 7).
17. Replace fan guard and upper shell.

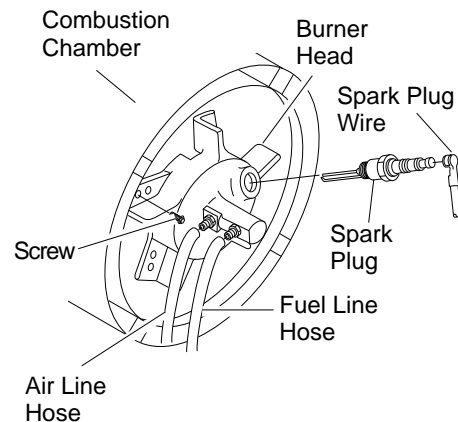


Figure 13 - Removing Burner Head

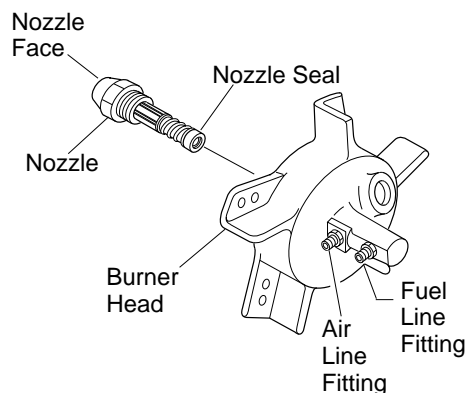


Figure 14 - Removing Nozzle

OWNER'S MANUAL

PUMP ROTOR

(Procedure if rotor is binding)

1. Remove upper shell (see page 7).
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 .003"/.004" if needed (see Figure 16).

Note: Rotate rotor one full turn to insure the gap is .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 7).

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.

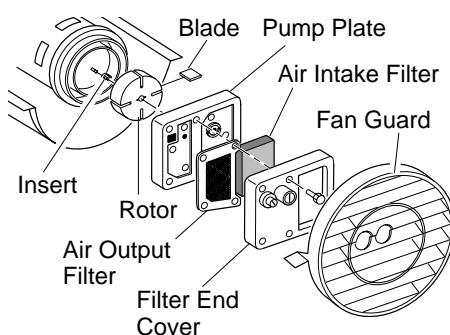


Figure 15 - Rotor Location

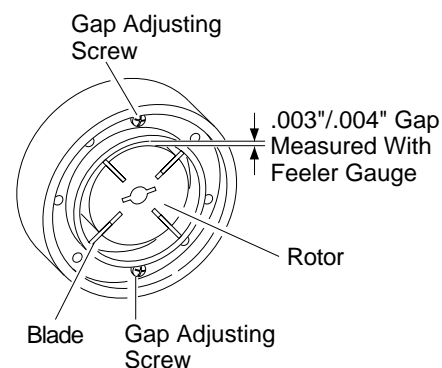


Figure 16 - Gap Adjusting Screw Locations

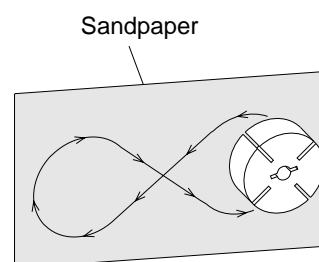


Figure 17 - Sanding Rotor

SPECIFICATIONS

Output Rating (Btu/Hr.)	110,000	150,000	155,000	165,000
Fuel	Use Only Kerosene or No. 1 Fuel Oil			
Fuel Tank Capacity (U.S. Gal.)	9.0	13.5	13.5	13.5
Fuel Consumption (Gal. Per Hr.)	.82	1.10	1.10	1.20
Electric Requirements	120 V/60 Hz (Same All Models)			
Amperage (Normal Run)	4.5	4.5	4.5	4.5
Hot Air Output (CFM)	490	550	550	575
Motor RPM	3450	3450	3450	3450
Motor HP	1/5	1/5	1/5	1/4
Shipping Weight (Approx. Lbs)	58	67	67	69
Heater Weight without Fuel (Approx. Lbs)	49	56	56	58

110,000 150,000 155,000 165,000 BTU/HR PORTABLE FORCED AIR HEATERS

WIRING DIAGRAM

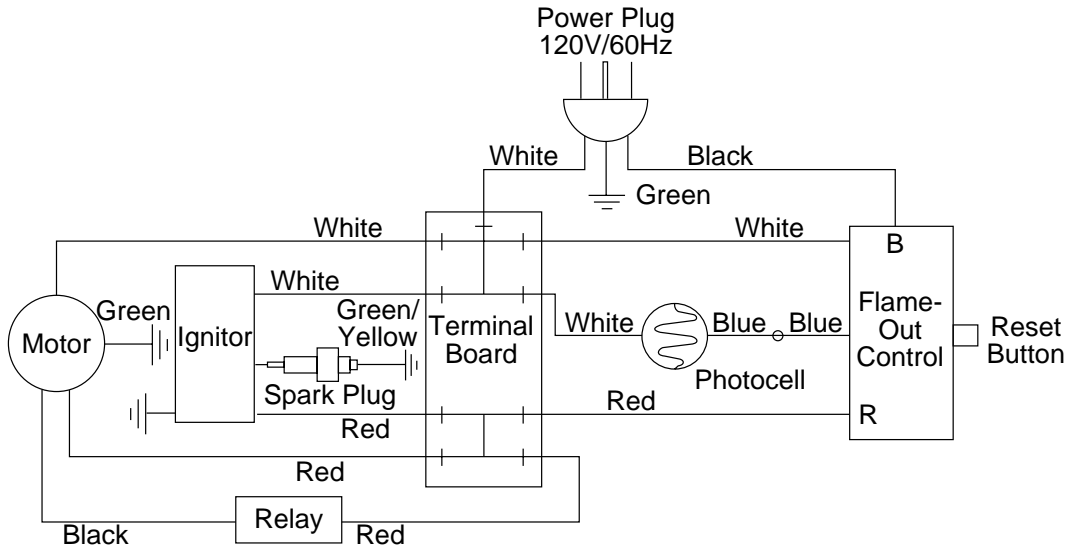


Figure 18 - Wiring Diagram

MAINTENANCE KITS

Btu/Hr	110,000	150,000	155,000	165,000
Flame-Out Control Part No.	HA3003	HA3003	HA3003	HA3003
Spark Plug Part No.	HA3012	HA3012	HA3012	HA3012
Filter Kit Part No.	HA3017	HA3017	HA3017	HA3017
Nozzle Kit Part No.	HA3022	HA3010	HA3010	HA3023
Rotor/Air Pump Kit Part No.	HA3004	HA3004	HA3004	HA3004
Handle Part No.	HA2203	HA2204	HA2204	HA2204
Photocell Part No.	HA3019	HA3019	HA3019	HA3019
Pump Adjustment Part No.	HA3020	HA3020	HA3020	HA3020

TECHNICAL SERVICE

You may have further questions about installation, operation, or troubleshooting.

If so, contact DESA International's Technical Service Department at 1-800-323-5190.

REPLACEMENT PARTS

Note: Use only original replacement parts. This will protect your warranty coverage for parts replaced under warranty.

PARTS UNDER WARRANTY

Contact authorized dealer from whom you purchased this product. If they cannot supply original replacement part(s), call DESA International's Technical Service Department at 1-800-323-5190 for referral information.

When contacting your dealer or DESA International, have ready:

- your name
- your address
- model number of your heater
- how heater was malfunctioning
- purchase date

Usually, we will ask you to return the defective part to the factory.

PARTS NOT UNDER WARRANTY

Contact authorized dealers of this product. If they cannot supply original replacement part(s), call DESA International's Parts Department at 1-800-972-7879 for referral information.

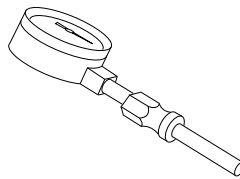
When calling DESA International, have ready:

- model number of your heater
- the replacement part number

ACCESSORIES

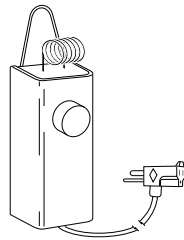
Purchase accessories and parts from your nearest dealer or service center. If they can not supply these accessories or parts, either contact your nearest Parts Central or DESA International for referral information. Parts Centrals are listed in the Authorized Service Center booklet supplied with heater.

DESA International
P.O. Box 90004
Bowling Green, KY
42102-9004
1-800-972-7879
Parts Department



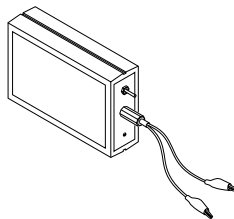
AIR GAUGE KIT - HA1180

Special tool to check pump pressure.



THERMOSTAT KIT - HA1210

Keeps your building at the temperature you select day and night. Helps economize on fuel.



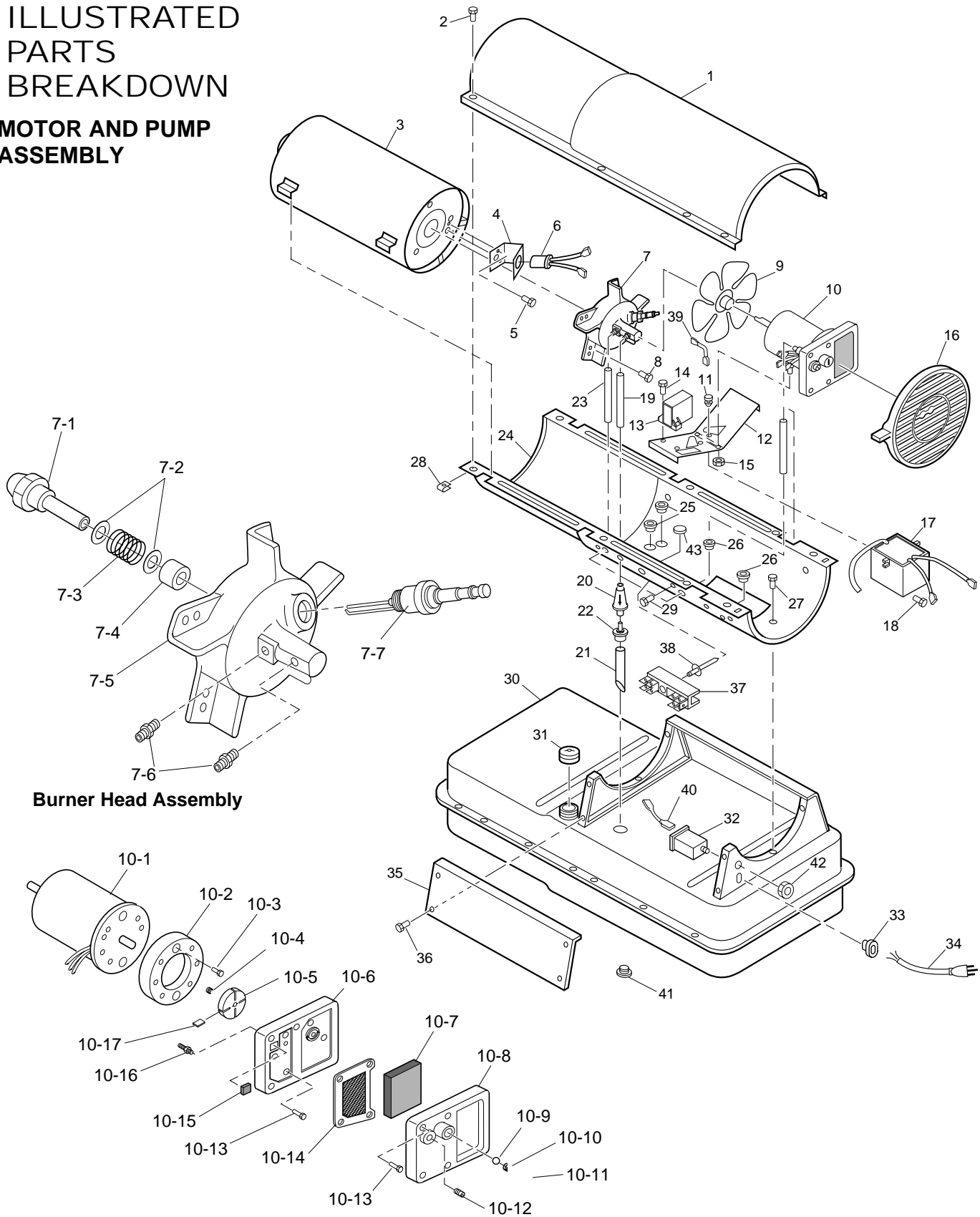
FLAME-OUT CONTROL/PHOTOCELL TESTER - HA1170

Special tool used to test the flame-out control and photocell.

110,000 150,000 155,000 165,000 BTU/HR PORTABLE FORCED AIR HEATERS

ILLUSTRATED PARTS BREAKDOWN

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.

KEY NO.	PART NUMBER	DESCRIPTION	QTY.	KEY NO.	PART NUMBER	DESCRIPTION	QTY.
1	098511-138	Upper Shell (Yellow)	1	10-12	M22997**	Plug	1
	098511-66	Upper Shell (Black)	1	10-13	M12461-31	Screw, #10-32 x 1"	10
	098511-135	Upper Shell (White)	1	10-14	M12244-1**	Output Filter	1
2	100647-01	Screw, #10-16 x 1/2"	8	10-15	M11637**	Lint Filter	1
3	098512-31	Combustion Chamber (110 model)	1	10-16	M50820-02	Barb Fitting	1
	098512-37	Combustion Chamber (150/155 models)	1	10-17	M8643**	Blade	4
	098512-36	Combustion Chamber (165 model)	1	11	M50631	Rubber Bumper	2
4	M16660	Photocell Bracket (110 model)	1	12	101206-01	Motor Mounting Bracket	1
	099229-01	Photocell Bracket (150/155/165 models)	1	13	097061-01	Solid State Relay	1
5	M10908-2	Screw, #6-32 x 3/8"	2	14	M15823-39	Screw, #8-18 x 1/2"	2
6	HA3019	Photocell Assembly	1	15	NTC-4C	Hex Lock Nut, 1/4-20	2
7	***	Burner Head Assembly	1	16	M51114-01	Fan Guard	1
7-1	HA3009	Nozzle with Sleeve (110 model)	1	17	102482-01	Ignitor Kit	1
	HA3011	Nozzle with Sleeve (150/155 models)	1	18	M11084-29	Screw, #10-16 x 3/4"	2
	HA3023	Nozzle with Sleeve (165 model)	1	19	M51345-01	Fuel Line	1
7-2	M10659-1	Nozzle Washer	2	20	M51150-01**	Fuel Filter	1
7-3	M10809-1	Nozzle Spring	1	21	M51151-01	Fuel Line Tube (110 model)	1
7-4	M8882	Nozzle Sleeve	1		M51151-02	Fuel Line Tube (150/155/165 models)	1
7-5	M50924-03	Burner Head Body (110 model)	1	22	M10990-3	Rubber Bushing	1
	M50924-07	Burner Head Body (150/155/165 models)	1	23	M50814-03	Airline	1
7-6	M50820-02	Barb Fitting	2	24	098511-140	Lower Shell (Yellow)	1
7-7	HA3012	Spark Plug	1		098511-137	Lower Shell (White)	1
8	M11084-27	Screw, #10-16 x 1/2"	3		098511-82	Lower Shell (Black)	1
9	097293-01	Fan (110/150/155 models)	1	25	M50104-03	Bushing	2
	101897-01	Fan (165 model)	1	26	M50104-01	Bushing	2
10	***	Motor and Pump Assembly	1	27	M11084-27	Screw, #10-16 x 1/2"	6
10-1	097300-02	Motor (110/150/155 models)	1	28	M11271-8	Clip Nut	8
	102001-07	Motor (165 model)	1	29	M10908-14	Screw, #8-32 x 3/8"	1
10-2	079975-02	Pump Body	1	30	098513-21	Fuel Tank (110 model)	1
10-3	FHPF3-5C	Screw, #10-32 x 5/8"	2		098513-55	Fuel Tank (150/155/165 models)	1
10-4	M22009**	Rotor Insert	1	31	097702-01	Fuel Cap (Includes Gasket)	1
10-5	M22456-1**	Pump Rotor	1	32	HA3003	Flame-Out Control	1
10-6	M50545	Pump End Cover	1	33	M11143-1	Strain Relief Bushing	1
10-7	M12179**	Intake Filter	1	34	098219-19	Power Cord	1
10-8	M16545	Filter End Cover	1	35	M51077-01AA	Side Cover	1
10-9	M8940**	Steel Ball, 1/4" Diameter	1	36	M11084-27	Screw, #10-16 x 1/2"	4
10-10	M10993-1**	Relief Spring	1	37	099125-03	Terminal Board	1
10-11	M27694**	Adjusting Screw	1	38	099157-01	Rivet	1
				39	079010-20	Wire Assembly (Red, 18")	1
				40	M16841-57	Wire Assembly (Red, 6")	1
				41	M27417	Drain Plug (Includes "o" Ring)	1
				42	099177-01	Hex Nut, 3/8 - 27	1
				43	099213-01	Button Plug	1

** See OPTIONAL ACCESSORIES

*** Not available as an assembly.

Continued

110,000 150,000 155,000 165,000 BTU/HR PORTABLE FORCED AIR HEATERS

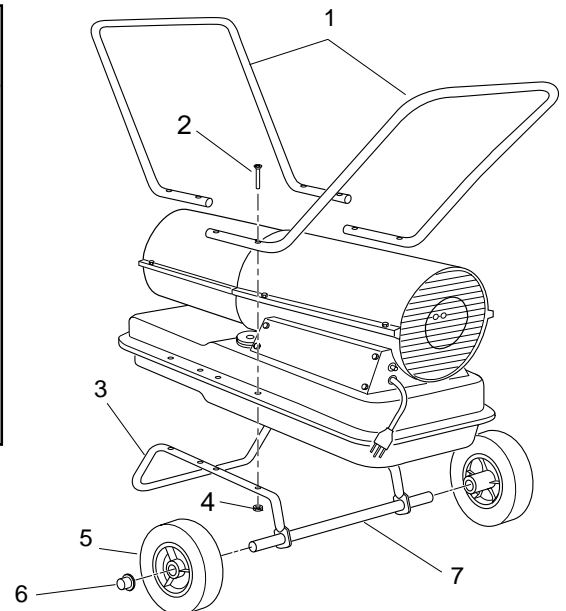
PARTS LIST

Continued

OPTIONAL ACCESSORIES		PARTS AVAILABLE - NOT SHOWN		
PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION	QTY.
HA1210	Hang-up Thermostat	098493-01	General Information Decal	1
HA1180	Air Gauge Kit	097644-02	Tradename Decal (B110)	2
HA2210	Fuel Tank Filter Screen	097643-01	Tradename Decal (B150G)	2
HA3004	Rotor Kit (M22456-1, M22009, M8643)	097644-03	Tradename Decal (B165)	2
HA3017	Filter Kit (M11637, M12179, M12244-1, 51150-01)	097773-03	Tradename Decal (REM110)	2
HA3020	Pump Kit (M27694, M10993-1, M22997, M8940)	097773-02	Tradename Decal (REM150B)	2
		097773-05	Tradename Decal (REM155)	2
		097773-04	Tradename Decal (REM165)	2
		097204-09	Tradename Decal (R110)	2
		097204-05	Tradename Decal (R150D)	2
		097204-11	Tradename Decal (R165)	2
		M9900-192	Combustion Chamber Grounding Wire	1

WHEELS AND HANDLE PARTS LIST

KEY NO.	PART NUMBER	PART DESCRIPTION	110 MODEL QTY.	150/155/165 MODELS QTY.
1	HA2203	Handle	2 (if equipped)	—
	HA2204	Handles	—	2 (if equipped)
2	M12345-33	Screw, #10-24 x 1 3/4"	8	8
3	M12342-3	Wheel Support Frame	1	—
	M12831-3	Wheel Support Frame	—	1
4	NTC-3C	Hex Nut, #10-24	8	8
5	097896-04	Wheel (Master and Remington)	2	2
	097896-01	Wheel (Reddy)	2	2
6	M28526	Cap Nut	2	2
7	M51015-01	Axle	1	—
	M16801-2	Axle	—	1



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.

Illustrated parts lists can be obtained free of charge. Send a self addressed stamped envelope to the address listed below. List the heater model number and the date located in the lower right corner of this page. A service manual may be purchased from the address listed below. Send a check for \$5.00 payable to DESA International.

When writing for information regarding your heater, be sure to include the model number and serial number as shown on the model plate.

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



102439 01

NOT A UPC

For information, write: DESA International, P.O. Box 90004
Bowling Green, Kentucky 42102-9004 ATTN: Customer Service Department
When writing, always include model number and serial number.

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08/97