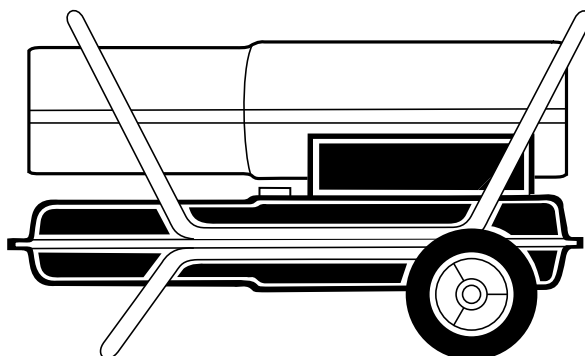


CANADIAN PORTABLE FORCED AIR HEATERS

OWNER'S MANUAL



Models: 35, 50, 70, 100, and 150

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.



This heater is certified by the Canadian Gas Association to Canadian Standards Specifications B140.0 and B140.8.

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**Install heater according to local regulations and
CSA standard B139.**

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!

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 (such as pregnant women, persons with heart or lung disease, persons with anemia, those under the influence of alcohol, and those at high altitudes) are more affected by carbon monoxide than others.

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.
- Use only with the electrical voltage and frequency specified on model plate.
- Heater must be grounded. Use only a properly grounded three-wire extension cord. Plug into grounded outlet only.
- Use only in areas free of flammable vapors or high dust content.
- Minimum clearance from any combustible materials: 8 feet (244 cm) from hot air outlet; 6 feet (183 cm) from top; and 2 feet (61 cm) from sides and inlet.
- Locate heater on a stable and level surface while hot or operating or a fire may occur.
- Use only in well ventilated areas. Provide ventilation of at least three square feet (2,800 square cm) for each 100,000 Btu of rating.
- Keep children and animals away from heater at all times.
- Never start heater when combustion chamber is hot or if fuel has accumulated in combustion chamber.
- When used with a thermostat, heater may start at anytime.
- When heater is moved or stored, it must be in a level position or fuel spillage may occur.
- Use heater only in accordance with local ordinances and codes.
- Never use gasoline, crankcase drainings, naphtha, paint thinners, alcohol, or other highly flammable fuels.
- Never use heater where gasoline, paint thinner, or other highly flammable vapors are present.
- Never use heater in living or sleeping areas.
- Never leave a heater plugged in without adult supervision if children or animals are likely to be present.
- Never move, handle, refuel, or service a hot, operating, or plugged-in heater.
- Never block air inlet at motor end (rear) of heater.
- Never attach duct work to front of heater.
- Never attach heater to external fuel tank.

**PRODUCT
IDENTIFICATION**

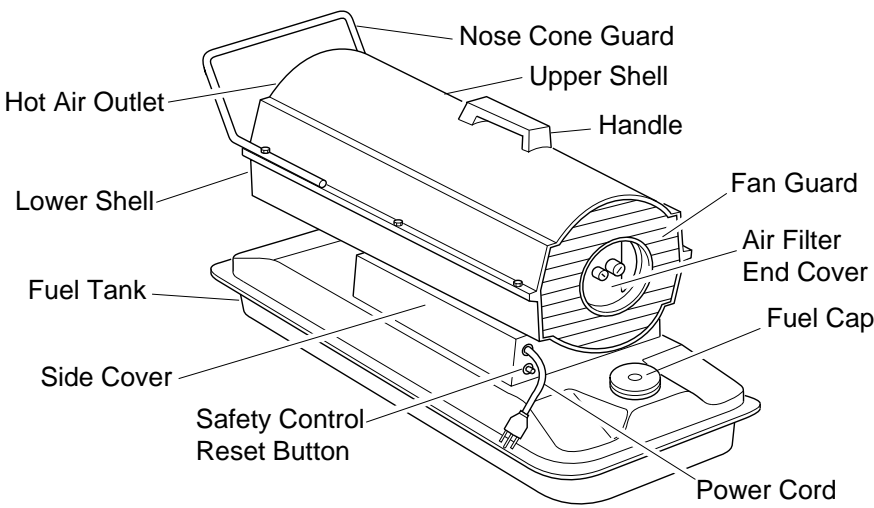


Figure 1 - 35/50/70 Models

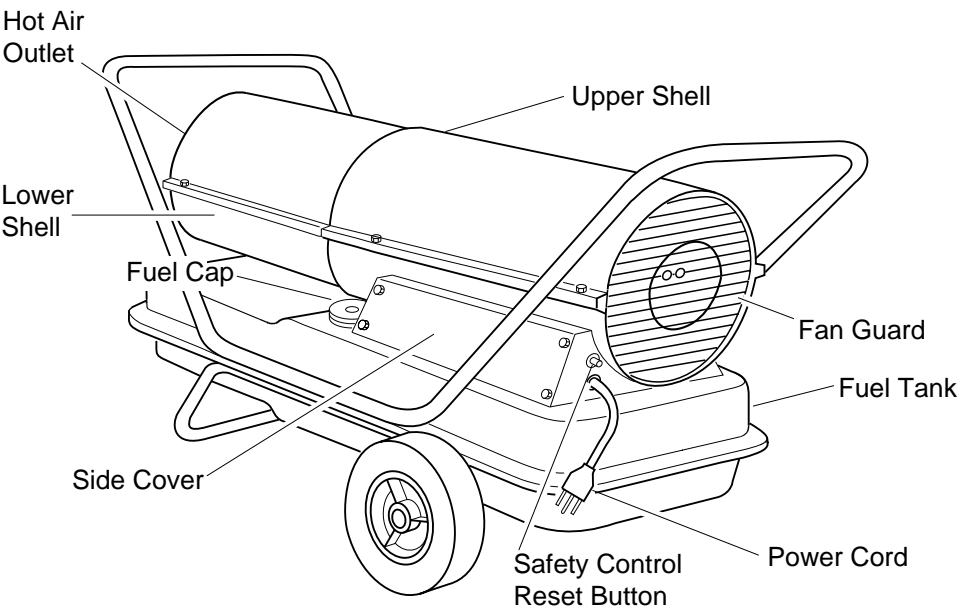


Figure 2 - 100/150 Models

UNPACKING

1. Remove all protective packaging that has been applied to heater for shipment
2. Remove heater from carton.
3. Check heater for any shipping damage. If damage is found, promptly inform dealer where heater was purchased.

ASSEMBLY

(For 35, 50, and 70
Models Only)

These models are furnished with a nose cone guard. Nose cone guard and mounting screws are found in the shipping carton.

Tools Needed

- 5/16" Nut Driver or Wrench

1. Place nose cone guard on top of upper shell flange. Make sure nose cone guard is on hot air outlet end of heater.
2. Insert screws through nose cone guard and upper shell flange.
3. Tighten screws firmly.

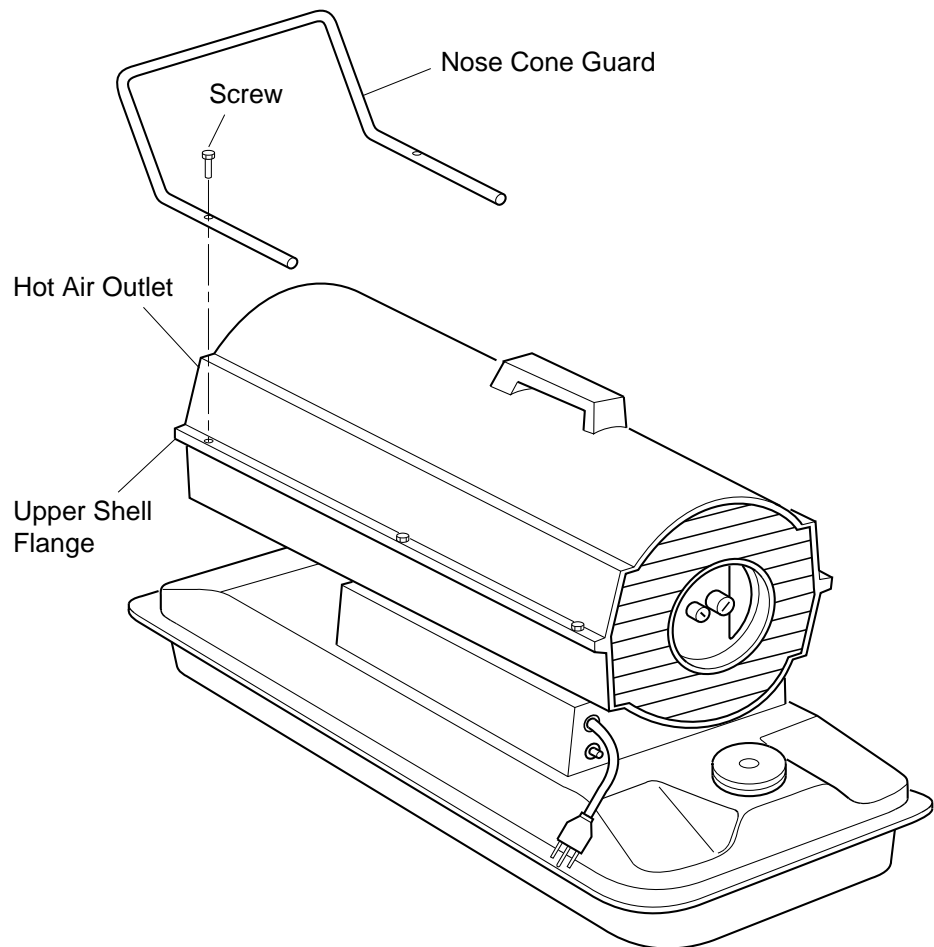


Figure 3 - Nose Cone Guard Assembly, 35/50/70 Models Only

ASSEMBLY

(For 100 and 150 Models Only)

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 is 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: Place extended hub of wheel toward wheel support frame.
2. Place cap nuts on axle ends. Gently tap with hammer to secure.
3. Place heater on wheel support frame assembly. Make sure air inlet end of heater is over wheels.
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. Tighten all nuts firmly.

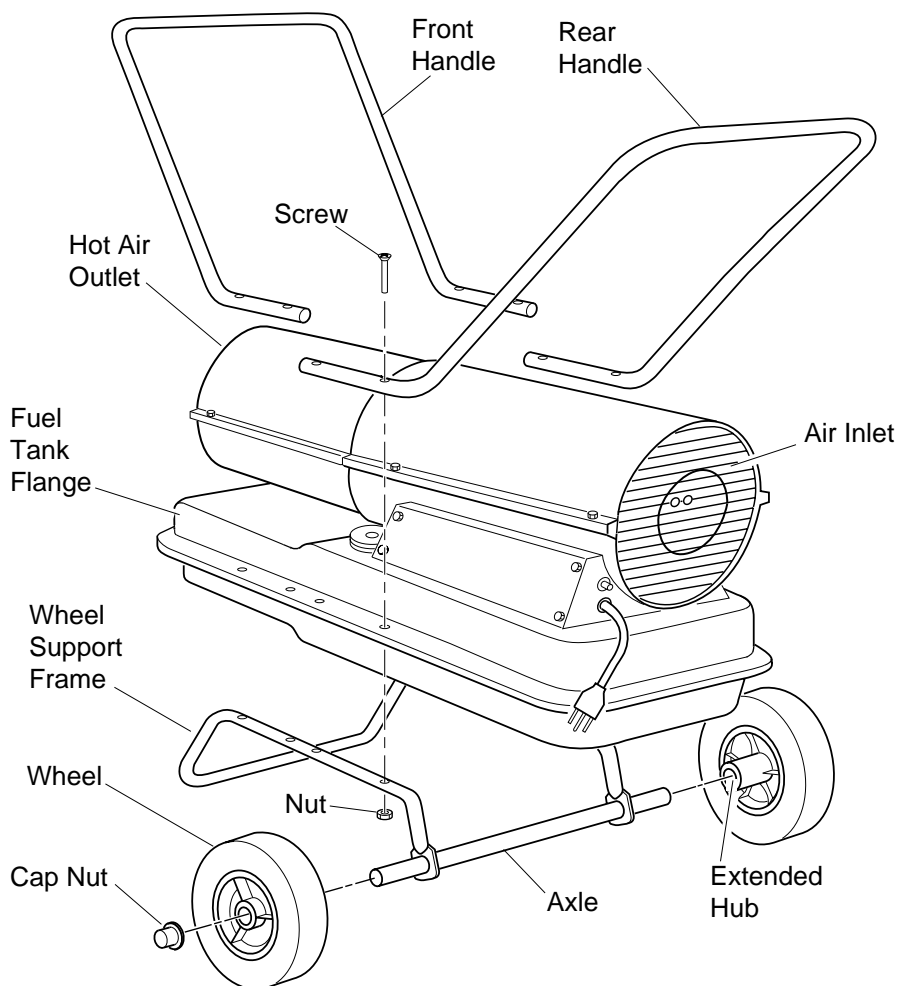


Figure 4 - Wheel and Handle Assembly, 100/150 Models Only

THEORY OF OPERATION

The Fuel System: An air pump is located on one end of the motor shaft. The air pump forces air through the air line. The air is then pushed through the burner head nozzle. The moving air causes fuel to be lifted from the tank. The fuel and air mixture is sprayed into the combustion chamber in a fine mist.

The Air System: The motor turns a fan which 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 causes the spark plug to ignite the fuel and air mixture.

The Safety Control System: This system causes the heater to shut down if the flame goes out.

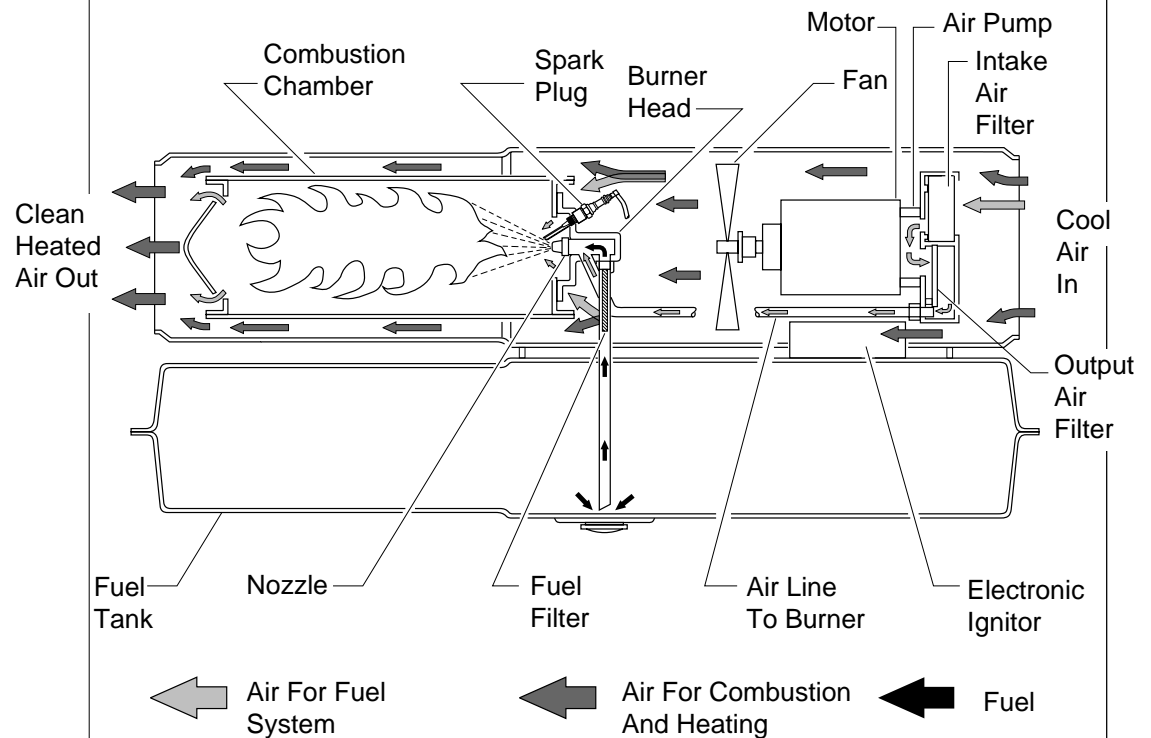


Figure 5 - Cross Section Operational View

FUELS

WARNING

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

Use only kerosene or No. 1 fuel oil. Do not use heavy fuels such as No. 2 fuel oil or No. 2 diesel. The use of heavy fuels will result in:

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

Do not use No. 3 fuel oil or heavy oils such as crankcase drainings. These heavy oils will not ignite properly and will contaminate the heater.

IMPORTANT: Use a KEROSENE ONLY storage container. Be sure storage container is clean. Foreign matter such as rust, dirt or water will cause the heater's safety control to shut down heater. Foreign matter may also require heater's fuel system to be frequently cleaned.

VENTILATION

WARNING

Provide a fresh air opening of at least one square foot (930 square cm) for each 35,000 BTU/HR rating. Provide extra fresh air if more heaters are being used. The minimum ventilation requirements must be followed to avoid risks associated with carbon monoxide poisoning. Make certain these requirements are met prior to operating heater.

Example: A 150 model heater requires one of the following:

- a two-car garage door raised six inches (15.24 cm)
- a single-car garage door raised nine inches (22.86 cm)
- two, thirty-inch (76.20 cm) windows raised twelve inches (30.48 cm)

OPERATION

IMPORTANT

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

To Start Heater

1. Fill fuel tank with kerosene or No. 1 fuel oil.
2. Attach fuel cap.
3. Follow all ventilation and safety information.

OPERATION

Continued

4. Plug heater's power cord into approved, grounded, three-wire extension cord. Extension cord must be at least six feet (1.8 meters) long.

Extension Cord Size Requirement

6 to 10 feet (1.8 to 3 meters) long, use 18 AWG (0.75 mm²) rated cord

11 to 100 feet (3.3 to 30.5 meters) long, use 16 AWG (1.0 mm²) rated cord

101 to 200 feet (30.8 to 61 meters) long, use 14 AWG (1.5 mm²) rated cord

5. Plug extension cord into standard 120 volt/60 hertz, 3-prong grounded outlet. Heater will start when extension cord is plugged into outlet. If not, push in heater's safety control reset button (see Figures 6 and 7).

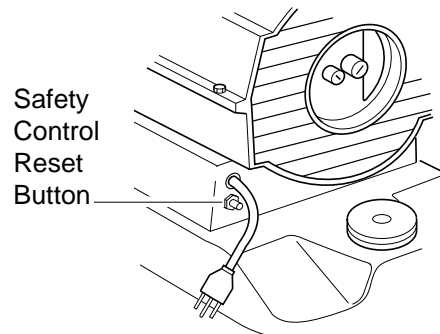


Figure 6 - Safety Control Reset Button, 35/50/70 Models

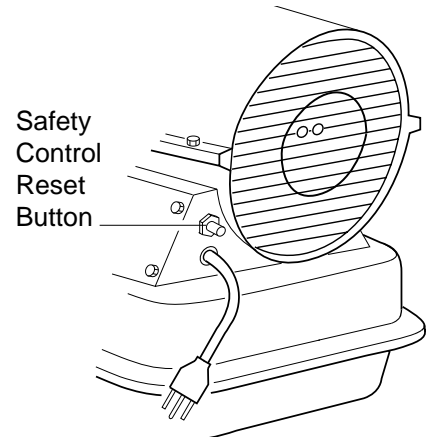


Figure 7 - Safety Control Reset Button, 100/150 Models

To Stop Heater

1. Unplug extension cord from outlet.

To Restart Heater

1. Wait two minutes after stopping heater.
2. Repeat steps under *To Start Heater*.

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 if 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


To avoid risk of burn and electrical shock, never attempt to service heater while it is plugged in, operating, or hot.

<u>Item</u>	<u>How Often</u>	<u>How To</u>
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 12.
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 12.
Fuel filter	Clean twice a heating season or replace as needed.	See <i>Fuel Filter</i> , page 13.
Spark plug	Clean and regap every 600 hours operation or replace as needed.	See <i>Spark Plug</i> , page 14.
Fan blades	Clean every season or as needed.	See <i>Fan</i> , page 12.
Motor	Not required/permanently lubricated	

TROUBLE- SHOOTING

WARNING

To avoid risk of burn and electrical shock, never attempt to service heater while it is plugged in, operating, or hot.

<u>OBSERVED FAULT</u>	<u>POSSIBLE CAUSE</u>	<u>REMEDY</u>
Heater ignites, but safety control shuts off heater after a short period of time.	Incorrect pump pressure	See <i>Pump Pressure Adjustment</i> , page 13.
	Dirty air output, air intake and lint filters	See <i>Air Output, Air Intake and Lint Filters</i> , page 12.
	Dirty fuel filter	See <i>Fuel Filter</i> , page 13.
	Dirt in nozzle	See <i>Nozzle</i> , page 15.
	Dirty photocell lens	Clean photocell lens.
	Defective safety control	Replace safety control.
Heater will not ignite, but motor runs for a short period of time.	Incorrect pump pressure	See <i>Pump Pressure Adjustment</i> , page 13.
	Carbon deposits on spark plug and/or improper gap	See <i>Spark Plug</i> , page 14.
	Dirty fuel filter	See <i>Fuel Filter</i> , page 13.
	Dirt in nozzle	See <i>Nozzle</i> , page 15.
	Water in fuel tank	Drain and flush fuel tank with clean kerosene. See <i>Storing, Transporting, or Shipping</i> , page 10.
<div>  WARNING: High voltage! </div>		
	Electronic ignitor not grounded	Make sure electronic ignitor mounting is tight.
	Defective electronic ignitor	Replace electronic ignitor.
Motor hums when heater is plugged in, fan rotates slowly or does not turn.	Solid state relay not allowed to reset	Wait two minutes before trying to restart heater.
	Binding pump rotor	If fan is hard to turn, see <i>Pump Rotor</i> , page 16.
Motor does not start; thermostat (if used) is set to call for heat.	Motor thermal trip out	Wait for motor to cool down. It will reset automatically.

SERVICE PROCEDURES

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.

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 setscrews 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 10).
7. Place setscrews on flat of shaft. Tighten setscrews firmly (40-50 inch-pounds/4.5-5.6 n-m).
8. Replace fan guard and upper shell.

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 10).
6. Replace filter end cover.
7. Replace fan guard and upper shell.

IMPORTANT: Do not oil filters.

⚠ WARNING

To avoid risk of burn and electrical shock, never attempt to service heater while it is plugged in, operating or hot.

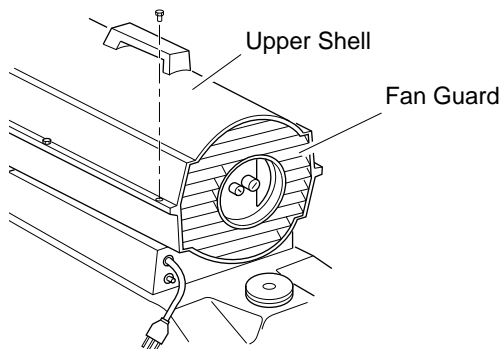


Figure 8 - Upper Shell Removal

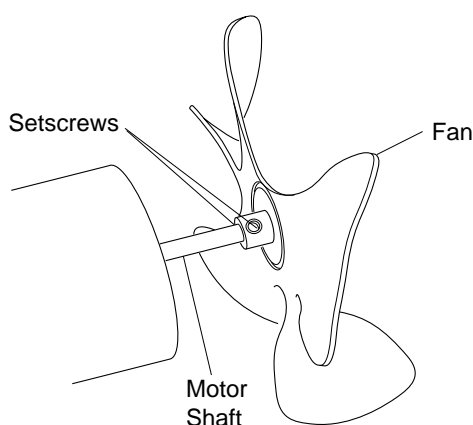


Figure 9 - Fan, Motor Shaft, and Setscrew Location

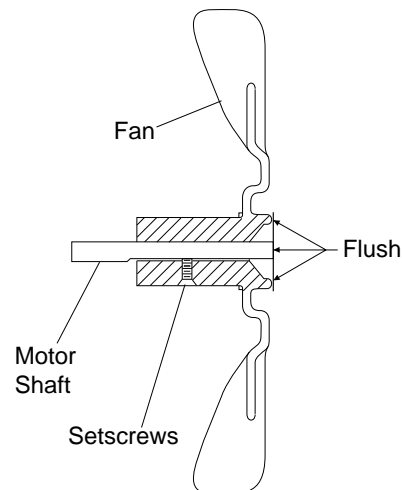


Figure 10 - Fan Cross Section

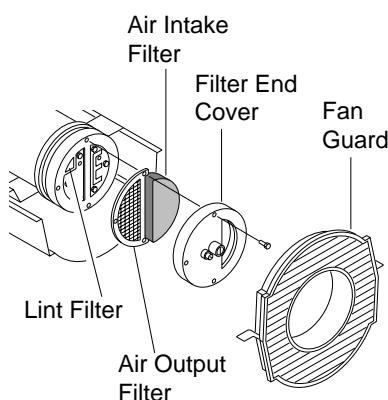


Figure 11 - Air Output, Air Intake, and Lint Filters, 35/50/70 Models

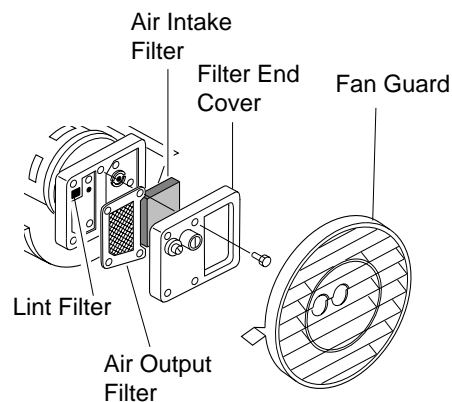


Figure 12 - Air Output, Air Intake, and Lint Filters, 100/150 Models

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 8). 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.

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 (see Figure 15).
4. Carefully pry bushing, fuel filter, and lower fuel line (100/150 models only) out of fuel tank (see Figure 16).
5. Wash fuel filter with clean fuel and replace in tank.
6. Attach upper fuel line to fuel filter neck.
7. Replace side cover.

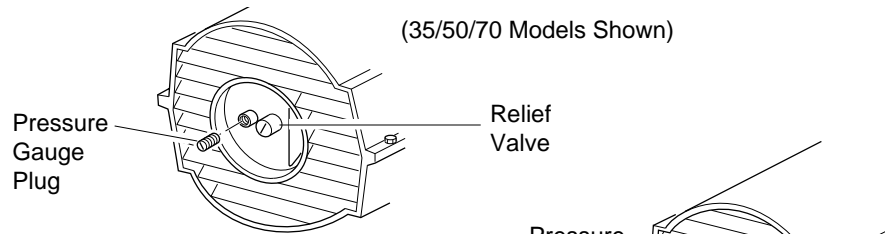


Figure 13 - Pressure Gauge Plug Removal

Model	Pump Pressure
35	3 PSI
50	3.6 PSI
70	4 PSI
100	4 PSI
150	5 PSI

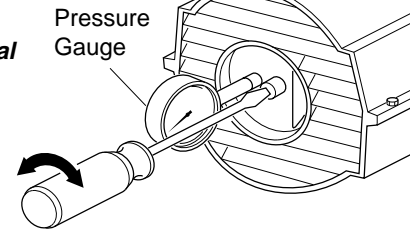


Figure 14 - Adjusting Pump Pressure

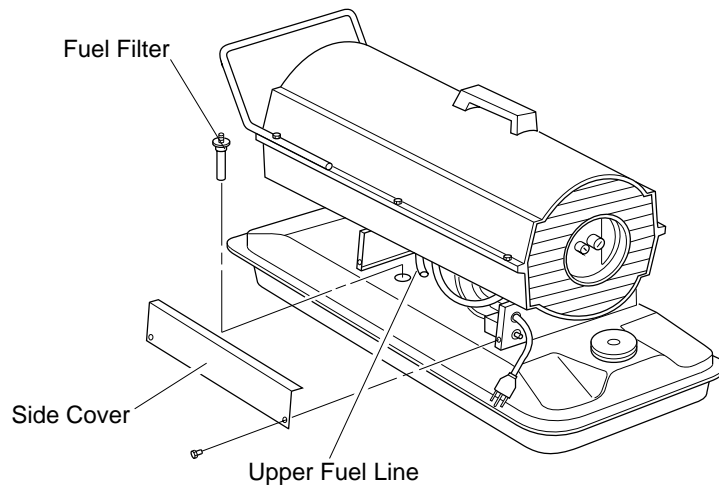


Figure 15 - Fuel Filter Removal, 35/50/70 Models

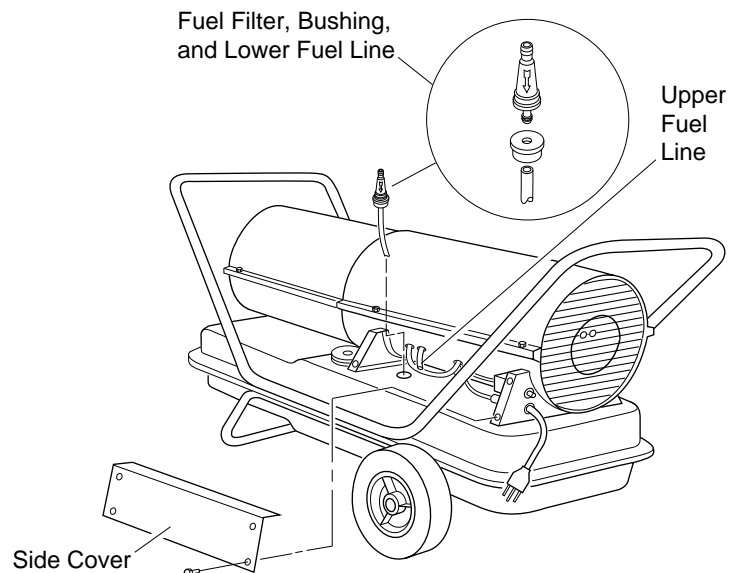


Figure 16 - Fuel Filter Removal, 100/150 Models

Spark Plug

(35/50 Models)

1. Remove upper shell (see page 12).
2. Remove fan (see page 12).
3. Remove fuel and air line hoses from nozzle assembly.
4. Remove spark plug cable from spark plug.
5. Remove two screws using 5/16" nut-driver and remove burner strap.
6. Place hex-body of spark plug into vise and tighten.
7. Remove spark plug mounting nut using 11/16" open-end wrench.
8. Remove burner strap from spark plug.
9. Clean and regap spark plug electrodes to .055" (1.4 mm) gap.
10. Replace burner strap onto spark plug. Rotate burner strap to position spark plug electrodes as shown in Figure 19.
11. Tighten spark plug with spark plug mounting nut.
12. Release hex-body of spark plug from vise.
13. Replace burner strap onto combustion chamber.
14. Attach spark plug cable to spark plug.
15. Attach fuel and air line hoses to nozzle assembly.
16. Replace fan (see page 12).
17. Replace fan guard and upper shell.

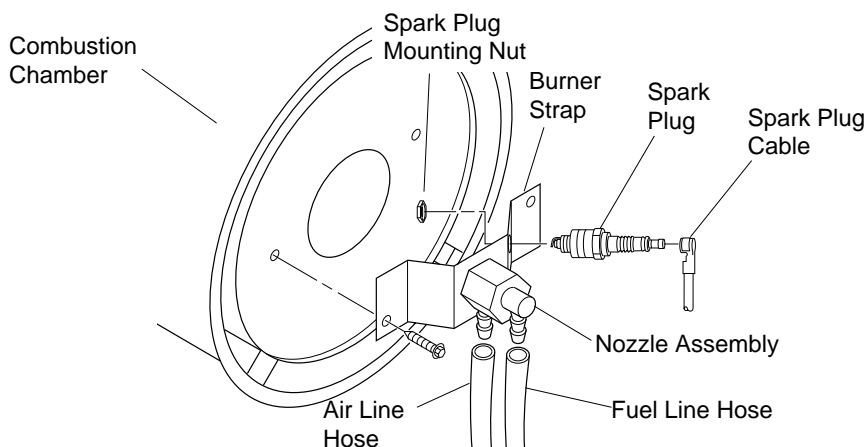


Figure 17 - Spark Plug Removal, 35/50 Models

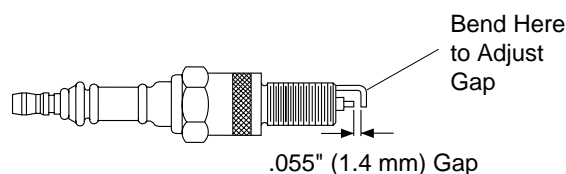


Figure 18 - Spark Plug Gap, 35/50 Models

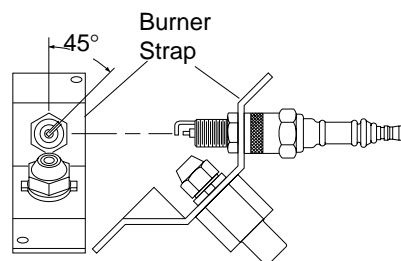


Figure 19 - Spark Plug Rotation, 35/50 Models

Spark Plug

(70/100/150 Models)

1. Remove upper shell (see page 12).
2. Remove fan (see page 12).
3. Remove spark plug cable 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:
70/100 Models = .055" (1.4 mm) gap
150 Model = .075" (1.9 mm) gap
6. Install spark plug in burner head.
7. Attach spark plug cable to spark plug.
8. Replace fan (see page 12).
9. Replace fan guard and upper shell.

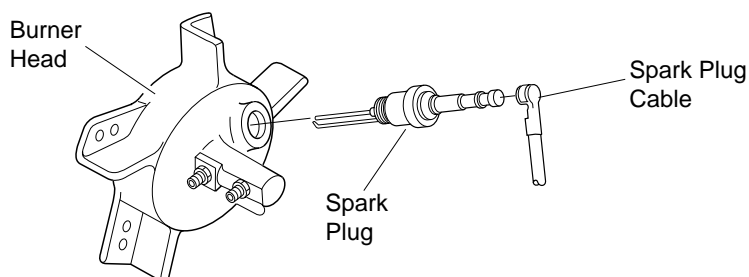


Figure 20 - Spark Plug Removal, 70/100/150 Models

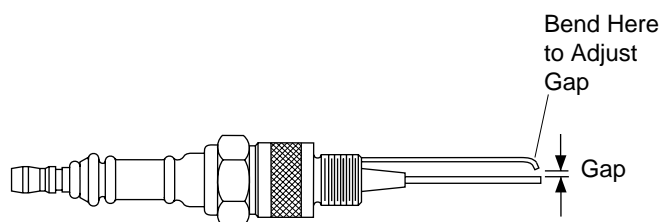


Figure 21 - Spark Plug Gap, 70/100/150 Models

Nozzle

(35/50 Models)

1. Remove upper shell (see page 12).
2. Remove fan (see page 12).
3. Remove fuel and air line hoses from nozzle assembly.
4. Turn nozzle assembly 1/4 turn to left and pull toward motor to remove.
5. Place plastic hex-body into vise and lightly tighten.
6. Carefully remove nozzle from the nozzle adapter using 5/8" socket wrench.
7. Blow compressed air thru face of nozzle. This will free any dirt in nozzle area.
8. Inspect nozzle seal for damage.
9. Replace nozzle into nozzle adapter until nozzle seats. Tighten 1/3 turn more using 5/8" socket wrench (40-45 inch-pounds/4.5-5.1 n-m).
10. Attach nozzle assembly to burner strap.
11. Attach fuel and airline hoses to nozzle assembly.
12. Replace fan (see page 12).
13. Replace fan guard and upper shell.

Nozzle

(70/100/150 Models)

1. Remove upper shell (see page 12).
2. Remove fan (see page 12).
3. Remove fuel and air line hoses from burner head.
4. Remove spark plug cable 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.

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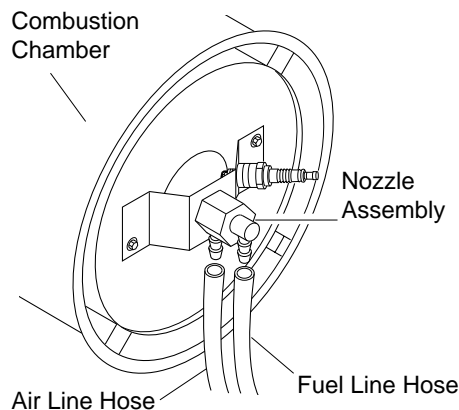


Figure 22 - Removing Air and Fuel Line Hoses, 35/50 Models

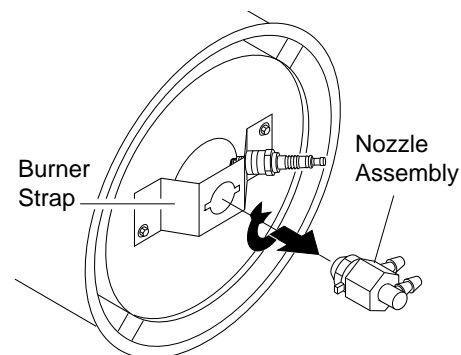


Figure 23 - Removing Nozzle Assembly, 35/50 Models

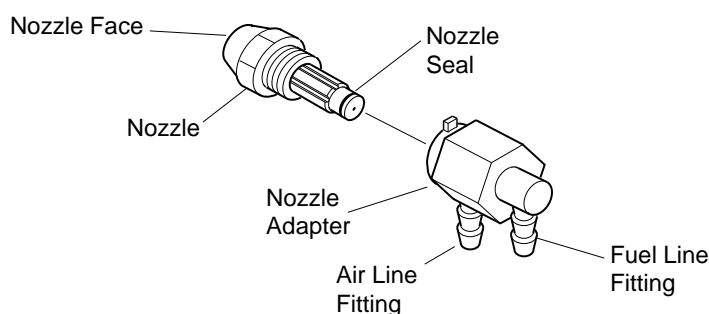


Figure 24 - Nozzle and Nozzle Adapter, 35/50 Models

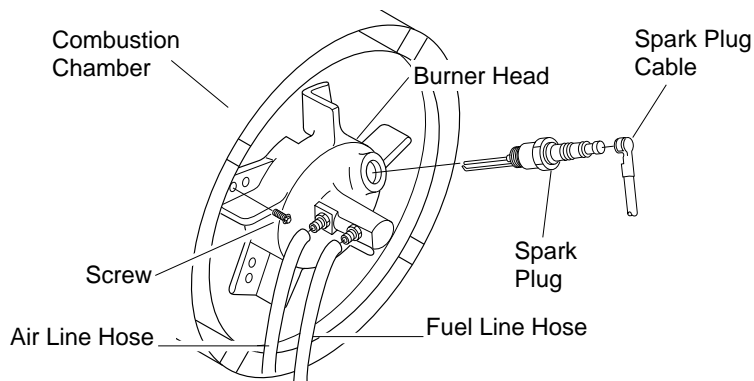


Figure 25 - Removing Burner Head, 70/100/150 Models

8. Carefully remove nozzle from burner head by using 5/8" socket wrench (see Figure 26).
9. Blow compressed air thru 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/9.1-12.4 n-m).
12. Attach burner head to combustion chamber.
13. Install spark plug in burner head.
14. Attach spark plug cable to spark plug.
15. Attach fuel and airline hoses to burner head.
16. Replace fan (see page 12).
17. Replace fan guard and upper shell.

Pump Rotor

(Procedure if rotor is binding)

1. Remove upper shell (see page 12).
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" (.076-.101 mm) if needed (see Figure 29).

Note: Rotate Rotor one full turn to insure the gap is .003"/.004" (.076-.101 mm) 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 13).

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

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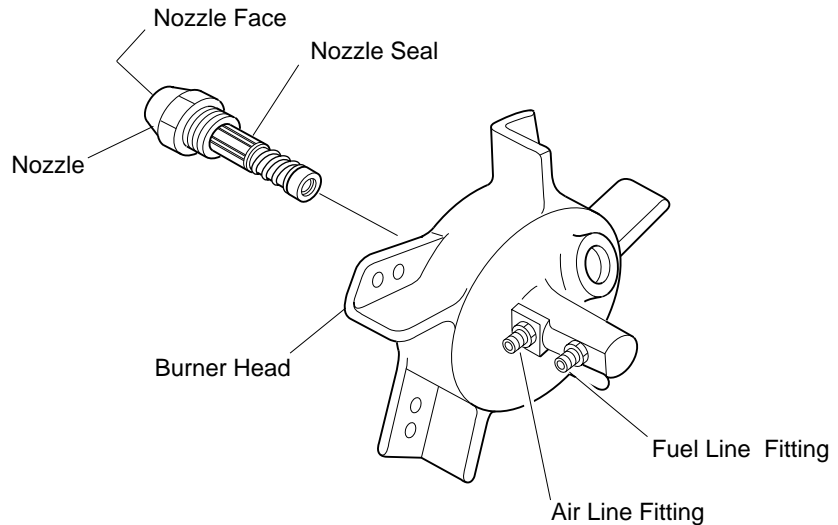


Figure 26 - Removing Nozzle, 70/100/150 Models

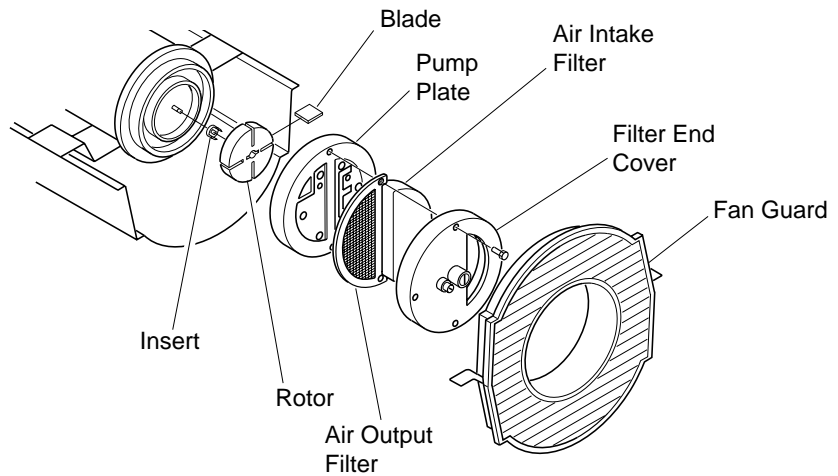


Figure 27 - Rotor Location, 35/50/70 Models

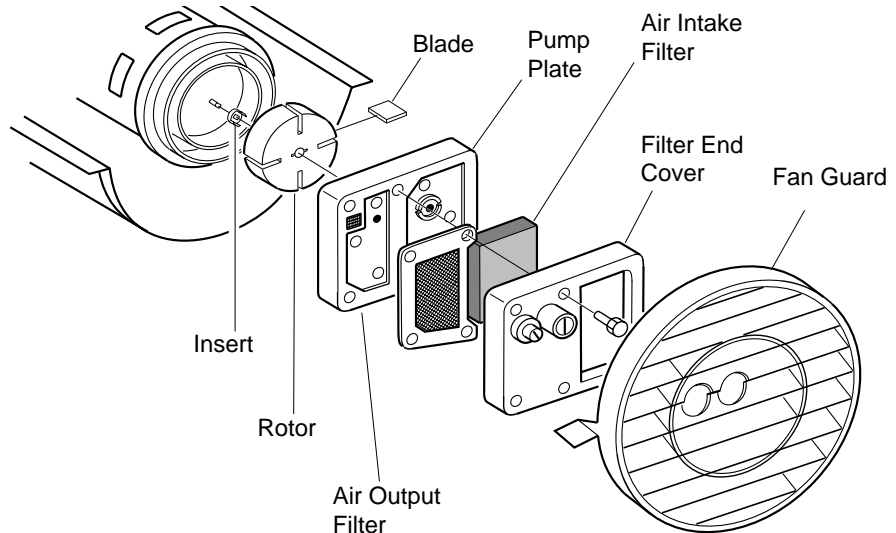


Figure 28 - Rotor Location, 100/150 Models

13. Perform steps 1 thru 6 (see page 16).
14. Place fine grade sandpaper (600 grit) on flat surface. Sand rotor lightly in “figure 8” motion four times (see Figure 30).
15. Reinstall insert and rotor.
16. Perform steps 10 thru 12 (see page 16).

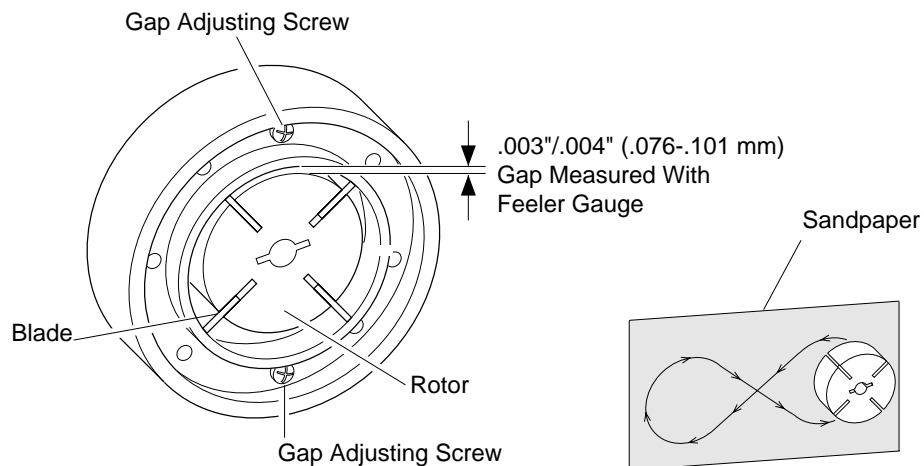


Figure 29 - Gap Adjusting Screw Locations

Figure 30 - Sanding Rotor

SPECIFICATIONS

Model Size	35	50	70	100	150
Output Rating (Btu/Hr)	35,000	50,000	70,000	98,000	150,000
Fuel	Use Only Kerosene or No. 1 Fuel Oil				
Fuel Tank Capacity (U.S. Gal./Liters)	3/11.3	4/15.1	5/18.9	9/34	13.5/51
Fuel Consumption (Gal. Per Hr/Liters Per Hr)	.26/.98	.37/1.40	.5/1.89	.74/2.80	1.12/4.24
Nozzle Spray Angle	50°	50°	50°	60°	60°
Nozzle Spray Pattern	Solid Cone (All Models)				
Electric Requirements	120 V/60 HZ (Same All Models)				
Amperage (Normal Run)	1.7	2.0	2.3	3.2	4.4
Motor RPM	1725	1725	3450	3450	3450
Hot Air Output (CFM)	165	165	253	481	500

WIRING DIAGRAMS

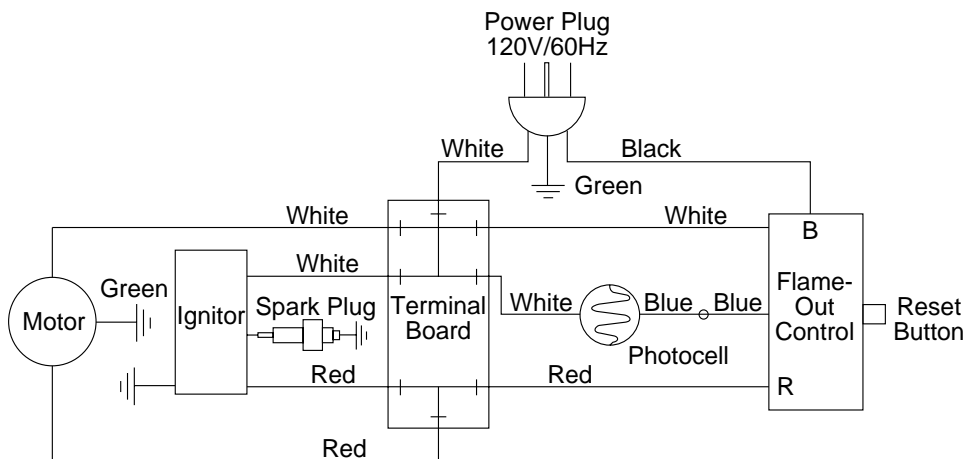


Figure 31 - Wiring Diagram, 35/50 Models

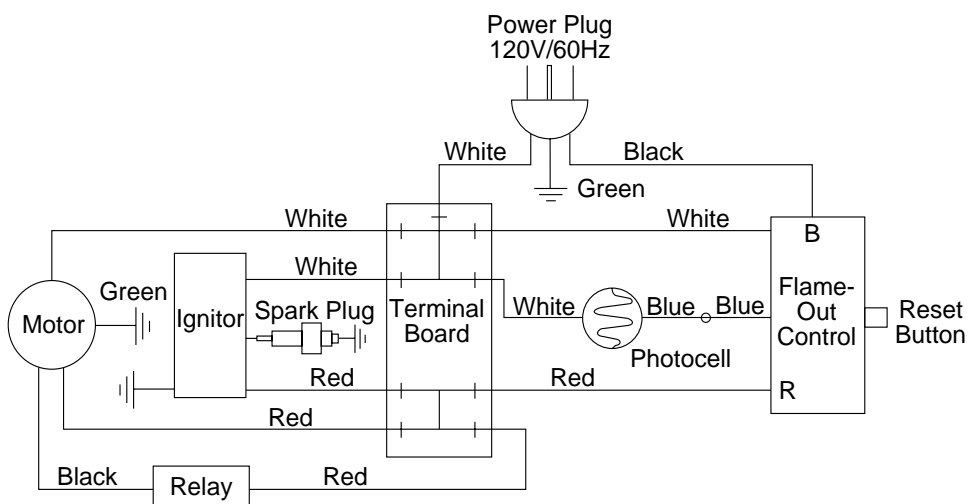


Figure 32 - Wiring Diagram, 70/100/150 Models

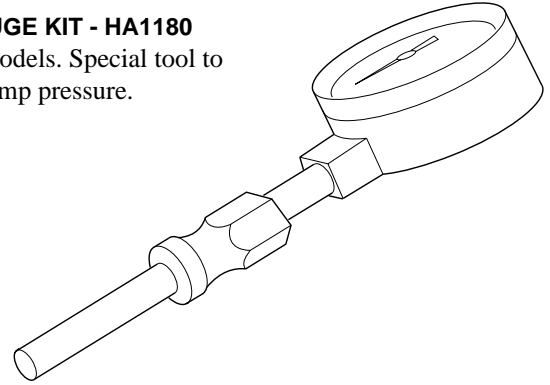
ACCESSORIES

Heater accessories and parts are available at your local dealer. Should your dealer not stock or is unable to order a particular accessory or part, please contact DESA Industries for more information.

DESA Industries of Canada, Inc.
2220 Argentia Road
Unit #4
Mississauga, Ontario
L5N 2K7
Parts Department
1-905-826-8010

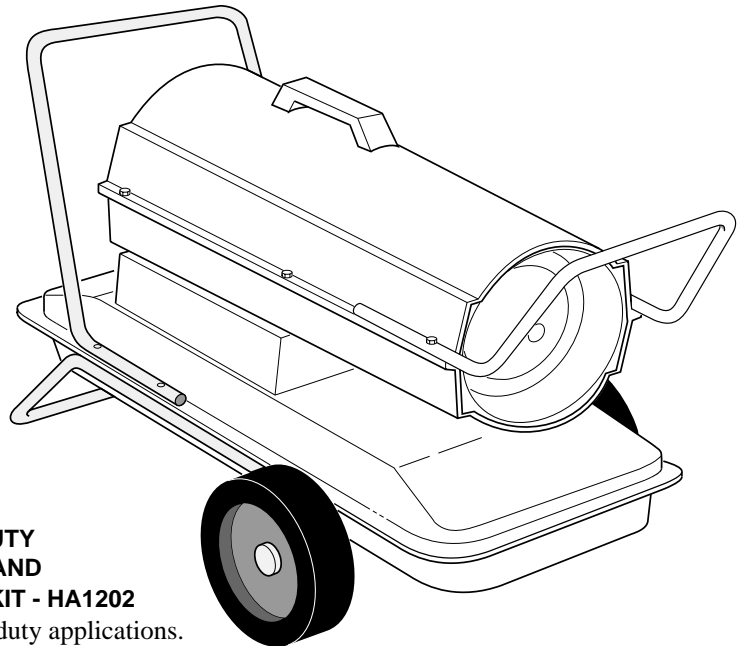
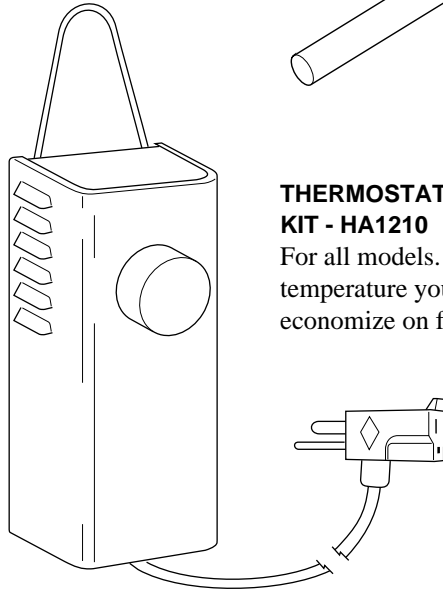
AIR GAUGE KIT - HA1180

For all models. Special tool to check pump pressure.



THERMOSTAT KIT - HA1210

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

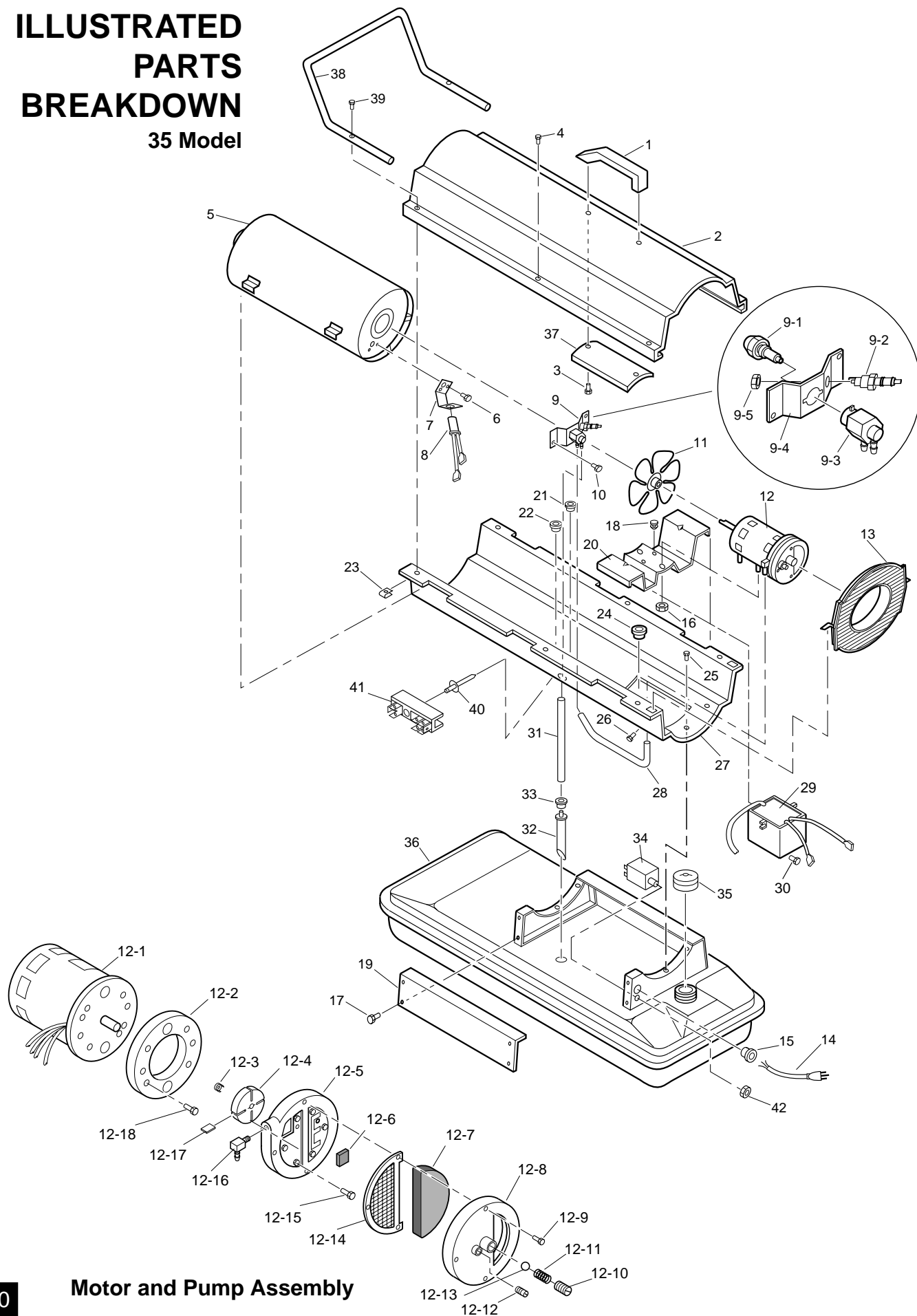


HEAVY DUTY WHEELS AND HANDLE KIT - HA1202

For heavy duty applications. Makes your heater even more portable and convenient. Fits 35/50/70 models.

ILLUSTRATED PARTS BREAKDOWN

35 Model



Motor and Pump Assembly

PARTS LIST

35 Model

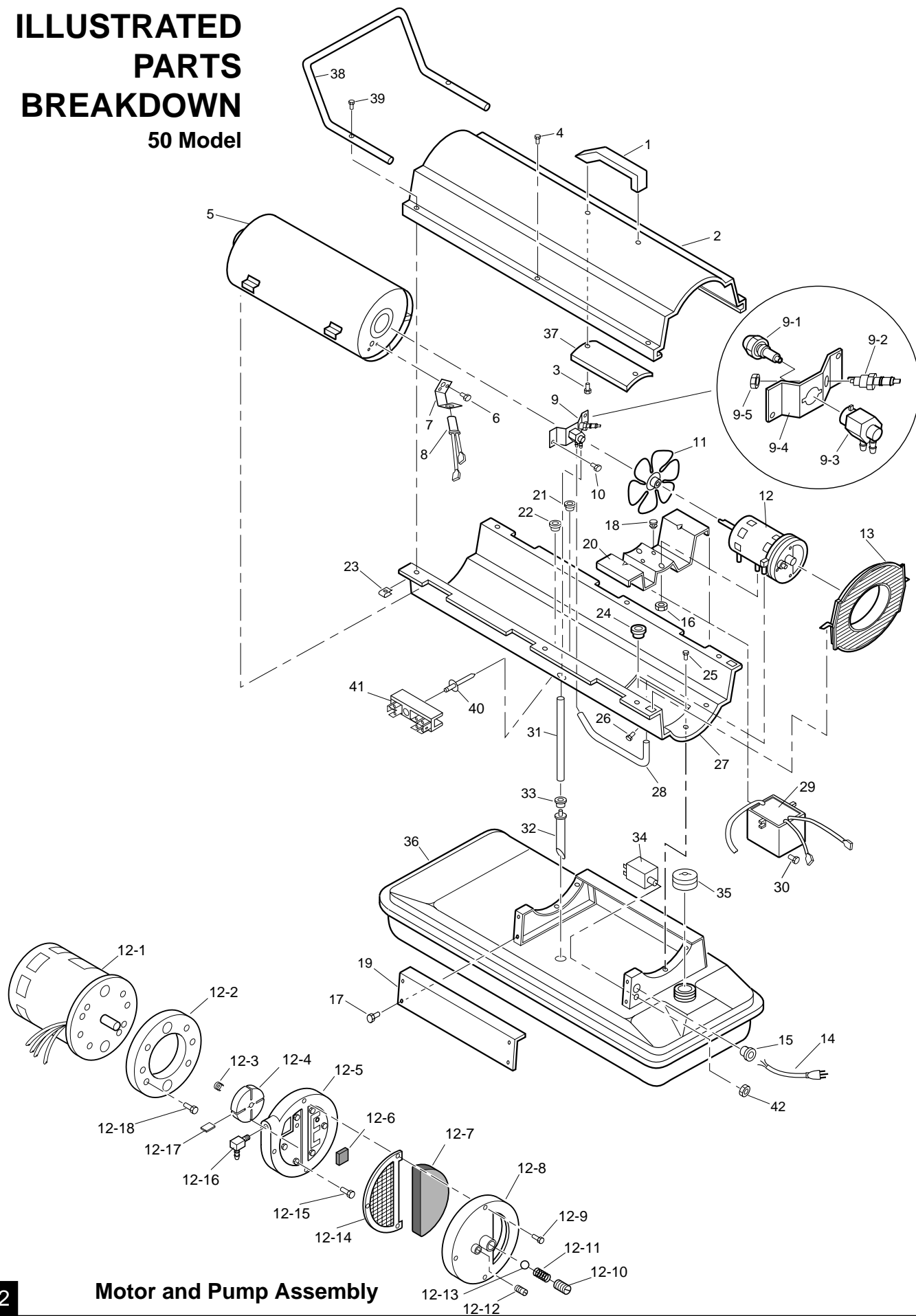
This list contains replaceable parts used in your heater. When ordering parts, be sure to provide the correct model and serial numbers (from the model plate), then the part number and description of the desired part.

KEY NO.	PART NO.	DESCRIPTION	QTY.	KEY NO.	PART NO.	DESCRIPTION	QTY.
1	M51104-01	Handle	1	22	M30865-02	Bushing (Ignitor Lead)	1
2	098511-67	Upper Shell (Black)	1	23	M11271-8	Clip Nut	6
	098511-70	Upper Shell (Green)	1	24	M50104-02	Bushing	1
	098511-36	Upper Shell (White)	1	25	M11084-26	Screw, #10-16 x 3/8"	6
3	M11084-29	Screw, #10-16 x 3/4"	2	26	097211-01	Screw, #8-18 x 1/4"	1
4	M11084-27	Screw, #10-16 x 1/2"	4	27	098511-81	Lower Shell (Black)	1
5	098512-20	Combustion Chamber	1		098511-91	Lower Shell (Green)	1
6	M10908-2	Screw, #6-32 x 3/8"	2		098511-18	Lower Shell (White)	1
7	M16660	Photocell Bracket	1	28	M29652-04	Rubber Airline	1
8	HA3019	Photocell Assembly	1	29	098557-06	Ignitor Kit	1
9	†	Burner Head Assy.	1	30	M11084-29	Screw, #10-16 x 3/4"	2
9-1	HA3006	Nozzle	1	31	M29652-05	Fuel Line	1
9-2	HA3013	Spark Plug	1	32	M50876-04	Fuel Filter	
9-3	079980-01	Nozzle Adapter	1			(Includes Bushing)	1
9-4	097125-01	Bracket	1	33	M10990-3	Rubber Bushing	1
9-5	M29824	Nut, 14mm	1	34	HA3003	Safety Control	1
10	M11084-26	Screw, #10-16 x 3/8"	2	35	097702-01	Fuel Cap	
11	079598-01	Fan	1			(Includes Gasket)	1
12	†	Motor and Pump Assy.	1	36	098513-23	Fuel Tank	1
12-1	079479-02	Motor	1	37	M51108-01	Heat Shield	1
12-2	079975-01	Pump Body	1	38	079532-01	Nose Cone Guard	1
12-3	M22009	Rotor Insert	1	39	079007-31	Screw, #10-16 x 1"	2
12-4	M22456-1	Rotor	1	40	099157-01	Rivet	1
12-5	M29608	Pump End Cover	1	41	099125-02	Terminal Board	1
12-6	M29632	Lint Filter	1	42	099177-01	Nut, 3/8-27	1
12-7	M29633	Intake Filter	1	PARTS AVAILABLE - NOT SHOWN			
12-8	M29609	Filter End Cover	1		097764-01	Tradename Decal	
12-9	M12461-31	Screw, #10-32 x 1"	3			(Black Shell Model)	
12-10	M27694	Adjusting Screw	1		079871-01	Tradename Decal	
12-11	M10993-1	Pressure Relief Spring	1			(Green Shell Model)	
12-12	M22997	Plug	1		097232-01	Tradename Decal	
12-13	M8940	Steel Ball, 1/4" Dia.	1			(White Shell Model)	
12-14	M29612-01	Output Filter	1		098168-04	General Info. Decal (English)	
12-15	M12461-31	Screw, #10-32 x 1"	6			(Black Shell Model)	
12-16	M50016	Elbow, 90°	1		098169-04	General Info. Decal (French)	
12-17	M8643	Blade	4			(Black Shell Model)	
12-18	FHPF3-2C	Screw, #10-32 x 1/4"	2		098168-05	General Info. Decal (English)	
13	M51105-01	Fan Guard	1			(Green Shell Model)	
14	098219-21	Power Cord	1		098169-05	General Info. Decal (French)	
15	M11143-1	Strain Relief Bushing	1			(Green Shell Model)	
16	NTC-4C	Hex Lock Nut, 1/4-20	2		098168-03	General Info. Decal (English)	
17	M11084-26	Screw, #10-16 x 3/8"	2			(White Shell Model)	
18	M50631	Rubber Bumper	2		098169-03	General Info. Decal (French)	
19	M50899-03AA	Side Cover	1			(White Shell Model)	
20	101205-01	Motor Bracket	1				
21	M30865-02	Bushing					
		(Photocell Wires)	1				

† Not available as an assembly.

ILLUSTRATED PARTS BREAKDOWN

50 Model



Motor and Pump Assembly

PARTS LIST

50 Model

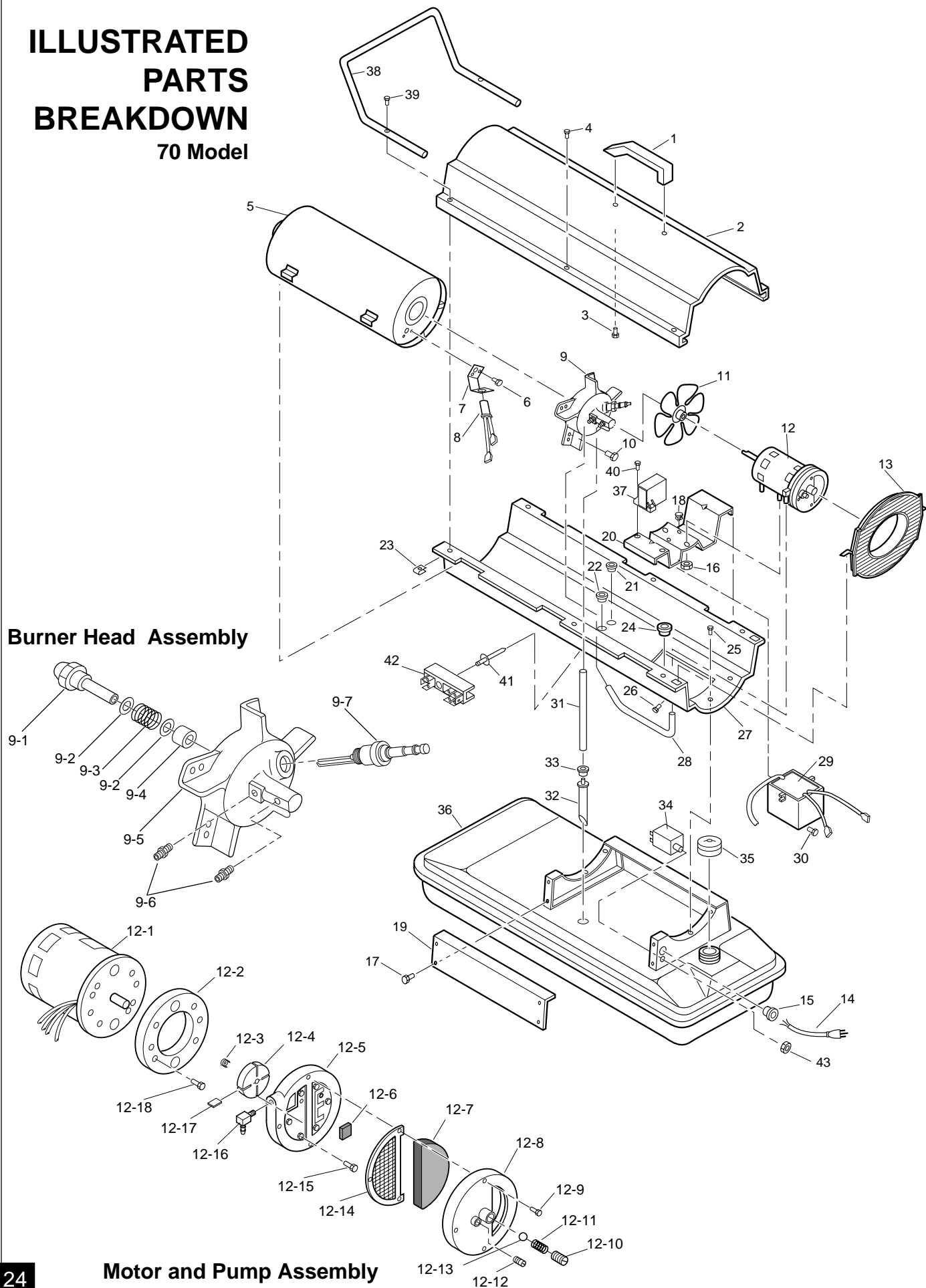
This list contains replaceable parts used in your heater. When ordering parts, be sure to provide the correct model and serial numbers (from the model plate), then the part number and description of the desired part.

KEY NO.	PART NO.	DESCRIPTION	QTY.	KEY NO.	PART NO.	DESCRIPTION	QTY.
1	M51104-01	Handle	1	17	M11084-26	Screw, #10-16 x 3/8"	2
2	098511-36	Upper Shell (White)	1	18	M50631	Rubber Bumper	2
3	M11084-29	Screw, #10-16 x 3/4"	2	19	M50899-03AA	Side Cover	1
4	100647-01	Screw, #10-16 x 1/2"	4	20	101205-01	Motor Bracket	1
5	098512-13	Combustion Chamber	1	21	M30865-02	Bushing	
6	M10908-2	Screw, #6-32 x 3/8"	2			(Photocell Wires)	1
7	M16660	Photocell Bracket	1	22	M30865-02	Bushing (Ignitor Lead)	1
8	HA3019	Photocell Assembly	1	23	M11271-8	Clip Nut	6
9	†	Burner Head Assy.	1	24	M50104-02	Bushing	1
9-1	HA3007	Nozzle	1	25	M11084-26	Screw, #10-16 x 3/8"	6
9-2	HA3013	Spark Plug	1	26	097211-01	Screw, #8-18 x 1/4"	1
9-3	079980-01	Nozzle Adapter	1	27	098511-18	Lower Shell (White)	1
9-4	097124-01	Bracket	1	28	M29652-04	Rubber Airline	1
9-5	M29824	Nut, 14mm	1	29	098557-06	Ignitor Kit	1
10	M11084-26	Screw, #10-16 x 3/8"	2	30	M11084-29	Screw, #10-16 x 3/4"	2
11	079598-01	Fan	1	31	079973-01	Fuel Line	1
12	†	Motor and Pump Assy.	1	32	M50876-02	Fuel Filter	
12-1	079479-02	Motor	1			(Includes Bushing)	1
12-2	079975-02	Pump Body	1	33	M10990-3	Rubber Bushing	1
12-3	M22009	Rotor Insert	1	34	HA3003	Safety Control	1
12-4	M22456-1	Rotor	1	35	097702-01	Fuel Cap	
12-5	M29608	Pump End Cover	1			(Includes Gasket)	1
12-6	M29632	Lint Filter	1	36	098513-20	Fuel Tank	1
12-7	M29633	Intake Filter	1	37	M51108-01	Heat Shield	1
12-8	M29609	Filter End Cover	1	38	079532-01	Nose Cone Guard	1
12-9	M12461-31	Screw, #10-32 x 1"	3	39	079007-31	Screw, #10-16 x 1"	2
12-10	M27694	Adjusting Screw	1	40	099157-01	Rivet	1
12-11	M10993-1	Pressure Relief Spring	1	41	099125-02	Terminal Board	1
12-12	M22997	Plug	1	42	099177-01	Nut, 3/8-27	1
12-13	M8940	Steel Ball, 1/4" Dia.	1	PARTS AVAILABLE - NOT SHOWN			
12-14	M29612-01	Output Filter	1		097232-01	Tradename Decal	
12-15	M12461-31	Screw, #10-32 x 1"	6			(White Shell Model)	
12-16	M50016	Elbow, 90°	1		101231-01	General Info. Decal (English)	
12-17	M8643	Blade	4			(White Shell Model)	
12-18	FHPF3-5C	Screw, #10-32 x 5/8"	2		101232-01	General Info. Decal (French)	
13	M51105-01	Fan Guard	1			(White Shell Model)	
14	098219-21	Power Cord	1				
15	M11143-1	Strain Relief Bushing	1				
16	NTC-4C	Hex Lock Nut, 1/4-20	2				

† Not available as an assembly.

ILLUSTRATED PARTS BREAKDOWN 70 Model

Burner Head Assembly



Motor and Pump Assembly

PARTS LIST

70 Model

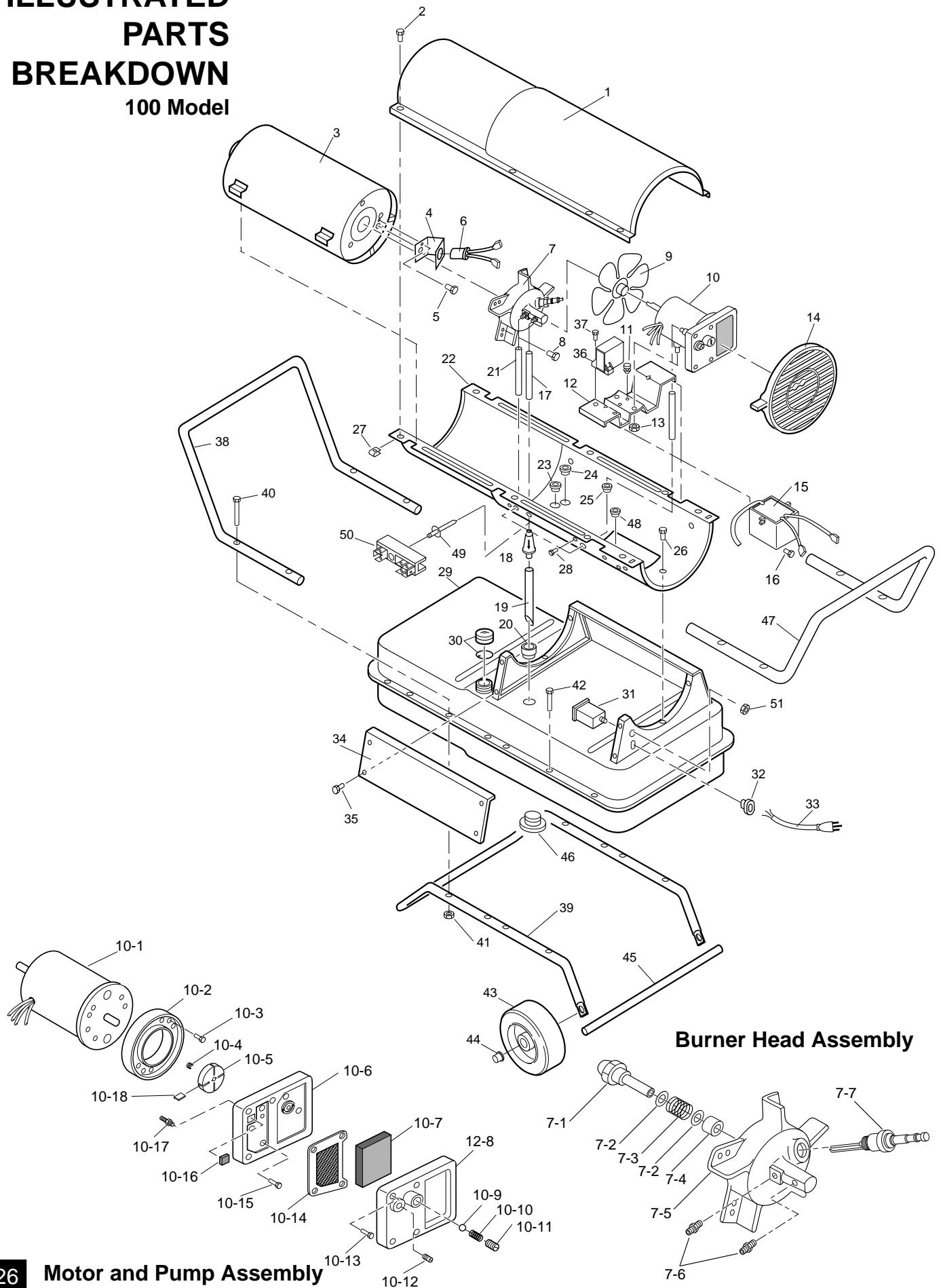
This list contains replaceable parts used in your heater. When ordering parts, be sure to provide the correct model and serial numbers (from the model plate), then the part number and description of the desired part.

KEY NO.	PART NO.	DESCRIPTION	QTY.	KEY NO.	PART NO.	DESCRIPTION	QTY.
1	M51104-01	Handle	1	19	M50899-03AA	Side Cover	1
2	098511-54	Upper Shell (Yellow)	1	20	101205-01	Motor Bracket	1
	098511-36	Upper Shell (White)	1	21	M30865-02	Bushing	
3	M11084-29	Screw, #10-16 x 3/4"	2			(Photocell Wires)	1
4	M11084-27	Screw, #10-16 x 1/2"	4	22	M30865-02	Bushing (Ignitor Lead)	1
5	098512-12	Combustion Chamber	1	23	M11271-8	Clip Nut	6
6	M10908-2	Screw, #6-32 x 3/8"	2	24	M50104-02	Bushing	1
7	M16660	Photocell Bracket	1	25	M11084-26	Screw, #10-16 x 3/8"	6
8	HA3019	Photocell Assembly	1	26	097211-01	Screw, #8-18 x 1/4"	1
9	†	Burner Head Assembly	1	27	098511-12	Lower Shell (Yellow)	1
9-1	HA3008	Nozzle with Sleeve	1		098511-18	Lower Shell (White)	1
9-2	M10659-1	Nozzle Seal Washer	2	28	M29652-04	Rubber Airline	1
9-3	M10809-1	Nozzle Seal Spring	1	29	098557-06	Ignitor Kit	1
9-4	M8882	Nozzle Sleeve Seal	1	30	M11084-29	Screw, #10-16 x 3/4"	2
9-5	M51098-02	Burner Head Body	1	31	079973-01	Fuel Line	1
9-6	M50820-01	Barb Fitting	2	32	M50876-05	Fuel Filter	
9-7	HA3012	Spark Plug	1			(Includes Bushing)	1
10	M11084-27	Screw, #10-16 x 1/2"	3	33	M10990-3	Rubber Bushing	1
11	079480-01	Fan	1	34	HA3003	Safety Control	1
12	†	Motor and Pump Assy.	1	35	097702-01	Fuel Cap	
12-1	079487-02	Motor	1			(Includes Gasket)	1
12-2	079975-01	Pump Body	1	36	098513-24	Fuel Tank	1
12-3	M22009	Rotor Insert	1	37	097061-01	Solid State Relay	1
12-4	M22456-1	Rotor	1	38	079532-01	Nose Cone Guard	1
12-5	M29608	Pump End Cover	1	39	079007-31	Screw, #10-16 x 1"	2
12-6	M29632	Lint Filter	1	40	M15823-39	Screw, #8-18 x 1/2"	2
12-7	M29633	Intake Filter	1	41	099157-01	Rivet	1
12-8	M29609	Filter End Cover	1	42	099125-03	Terminal Board	1
12-9	M12461-31	Screw, #10-32 x 1"	3	43	099177-01	Nut, 3/8-27	1
12-10	M27694	Adjusting Screw	1	PARTS AVAILABLE - NOT SHOWN			
12-11	M10993-1	Pressure Relief Spring	1		097650-01	Tradename Decal	
12-12	M22997	Plug	1			(Yellow Shell Model)	2
12-13	M8940	Steel Ball, 1/4" Diameter	1		097232-01	Tradename Decal	
12-14	M29612-01	Output Filter	1			(White Shell Model)	2
12-15	M12461-31	Screw, #10-32 x 1"	6		097066-03	General Info. Decal (English)	
12-16	M50016	Elbow, 90°	1			(Yellow Shell Model)	1
12-17	M8643	Blade	4		097069-03	General Info. Decal (French)	
12-18	FHPF3-2C	Screw, #10-32 x 1/4"	2			(Yellow Shell Model)	1
13	M51105-01	Fan Guard	1		097066-04	General Info. Decal (English)	
14	098219-21	Power Cord	1			(White Shell Model)	1
15	M11143-1	Strain Relief Bushing	1		097069-04	General Info. Decal (French)	
16	NTC-4C	Hex Lock Nut, 1/4-20	2			(White Shell Model)	1
17	M11084-26	Screw, #10-16 x 3/8"	2			(Yellow Shell Model)	1
18	M50631	Rubber Bumper	2			(White Shell Model)	1

† Not available as an assembly.

ILLUSTRATED PARTS BREAKDOWN

100 Model



PARTS LIST

100 Model

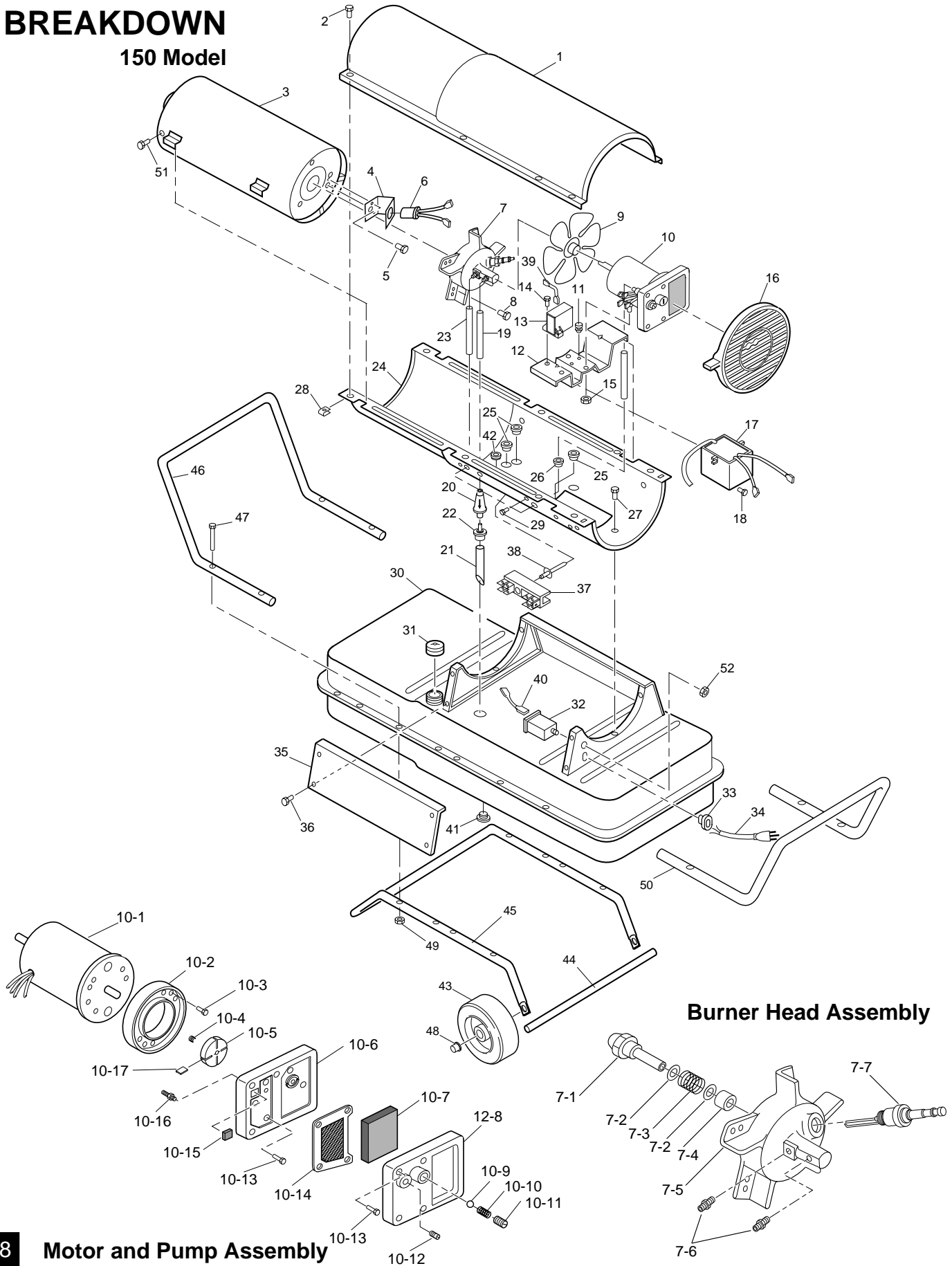
This list contains replaceable parts used in your heater. When ordering parts, be sure to provide the correct model and serial numbers (from the model plate), then the part number and description of the desired part.

KEY NO.	PART NO.	DESCRIPTION	QTY.	KEY NO.	PART NO.	DESCRIPTION	QTY
1	098511-138	Upper Shell (Yellow)	1	24	M30865-02	Bushing (Ignitor Lead to Spark Plug)	1
	098511-135	Upper Shell (White)	1	25	M50104-02	Bushing (Wire Through Shell)	1
	098511-66	Upper Shell (Black)	1	26	M11084-27	Screw, #10-16 x 1/2"	6
2	M15823-27	Screw, #10-16 x 1/2"	8	27	M11271-8	Clip Nut	8
3	098512-07	Combustion Chamber	1	28	097211-01	Screw, #8-18 x 1/4"	1
4	M16660	Photocell Bracket	1	29	098513-21	Fuel Tank	1
5	M10908-2	Screw, #6-32 x 3/8"	2	30	097702-01	Fuel Cap	1
6	HA3019	Photocell Assembly	1	31	HA3003	Safety Control	1
7	†	Burner Head Assembly	1	32	M11143-1	Strain Relief Bushing	1
7-1	HA3009	Nozzle with Sleeve	1	33	098219-21	Power Cord	1
7-2	M10659-1	Nozzle Seal Washer	2	34	M51077-01AA	Side Cover	1
7-3	M10809-1	Nozzle Seal Spring	1	35	M11084-27	Screw, #10-16 x 1/2"	4
7-4	M8882	Nozzle Sleeve Seal	1	36	097061-01	Solid State Relay	1
7-5	M50924-03	Burner Head Body	1	37	M15823-39	Screw, #8-18 x 1/2"	2
7-6	M50820-02	Barb Fitting	2	38	079998-01	Front Handle	1
7-7	HA3012	Spark Plug	1	39	M12342-3	Wheel Support Frame	1
8	M11084-27	Screw, #10-16 x 1/2"	3	40	M12345-33	Screw, #10-24 x 1 3/4"	4
9	103805-01	Fan	1	41	NTC-3C	Torque Lock Nut, #10-24	8
10	†	Motor and Pump Assy.	1	42	M12345-33	Screw, #10-24 x 1 3/4"	4
10-1	079505-03	Motor	1	43	097896-04	Wheel	2
10-2	079975-01	Pump Body	1	44	M28526	Cap Nut	2
10-3	FHPF3-2C	Screw, #10-32 x 1/4"	2	45	M51015-01	Axle	1
10-4	M22009	Insert	1	46	M27417	Drain Plug	1
10-5	M22456-1	Pump Rotor	1	47	M51334-02	Handle (Yellow Shell Model Only)	1
10-6	M50545	Pump End Cover	1	48	M30865-02	Bushing	1
10-7	M12179	Intake Filter	1	49	099157-01	Rivet	1
10-8	M16545	Filter End Cover	1	50	099125-03	Terminal Board	1
10-9	M8940	Steel Ball 1/4" Diameter	1	51	099177-01	Nut, 3/8-27	1
10-10	M10993-1	Pressure Relief Spring	1	PARTS AVAILABLE - NOT SHOWN			
10-11	M27694	Adjusting Screw	1				
10-12	M22997	Pipe Plug	1		097650-01	Tradename Decal (Yellow Shell Model)	
10-13	M12461-31	Screw, #10-32 x 1"	4		097232-02	Tradename Decal (White Shell Model)	
10-14	M12244-1	Output Filter Assembly	1		097773-01	Tradename Decal (Black Shell Model)	
10-15	M12461-31	Screw, #10-32 x 1"	6		097067-03	General Info. Decal (English) (Yellow Shell Model)	
10-16	M11637	Lint Filter	1		097070-03	General Info. Decal (French) (Yellow Shell Model)	
10-17	M50820-02	Barb Fitting	1		097067-04	General Info. Decal (English) (White Shell Model)	
10-18	M8643	Blade	4		097070-04	General Info. Decal (French) (White Shell Model)	
11	M50631	Rubber Bumper	2		097067-05	General Info. Decal (English) (Black Shell Model)	
12	098138-02	Motor Mounting Bracket	1		097070-05	General Info. Decal (French) (Black Shell Model)	
13	NTC-4C	Hex Lock Nut, 1/4-20	2				
14	M51114-01	Fan Guard	1				
15	098557-06	Ignitor Kit	1				
16	M11084-29	Screw, #10-16 x 3/4"	2				
17	M51345-01	Fuel Line	1				
18	M51150-01	Fuel Filter	1				
19	M51151-01	Fuel Line Tube	1				
20	M10990-3	Rubber Bushing	1				
21	M50814-03	Rubber Airline	1				
22	098511-140	Lower Shell (Yellow)	1				
	098511-137	Lower Shell (White)	1				
	098511-82	Lower Shell (Black)	1				
23	M30865-02	Bushing (Photocell Wires)	1				

† Not available as an assembly.

ILLUSTRATED PARTS BREAKDOWN

150 Model



PARTS LIST

150 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	DESCRIPTION	QTY.	KEY NO.	PART NUMBER	DESCRIPTION	QTY.
1	098511-138	Upper Shell (Yellow)	1	25	M30865-02	Bushing	3
	098511-135	Upper Shell (White)	1	26	M50104-02	Bushing	1
	098511-66	Upper Shell (Black)	1	27	M11084-27	Screw, #10-16 x 1/2"	6
2	M15823-27	Screw, #10-16 x 1/2"	8	28	M11271-8	Clip Nut	8
3	098512-30	Combustion Chamber	1	29	097211-01	Screw, #8-18 x 1/4"	1
4	099229-01	Photocell Bracket	1	30	098513-55	Fuel Tank	1
5	M10908-2	Screw, #6-32 x 3/8"	2	31	097702-01	Fuel Cap (Includes Gasket)	1
6	HA3019	Photocell Assembly	1	32	HA3003	Safety Control	1
7	†	Burner Head Assembly	1	33	M11143-1	Strain Relief Bushing	1
7-1	HA3010	Nozzle with Sleeve	1	34	098219-21	Power Cord	1
7-2	M10659-1	Nozzle Washer	2	35	M51077-01AA	Side Cover	1
7-3	M10809-1	Nozzle Spring	1	36	M11084-27	Screw, #10-16 x 1/2"	4
7-4	M8882	Nozzle Sleeve	1	37	099125-03	Terminal Board	1
7-5	M50924-03	Burner Head Body	1	38	099157-01	Rivet	1
7-6	M50820-02	Barb Fitting	2	39	079010-18	Wire Assembly (Red, 16")	1
7-7	HA3012	Spark Plug	1	40	M16841-57	Wire Assembly (Red, 8 1/2")	1
8	M11084-27	Screw, #10-16 x 1/2"	3	41	M27417	Drain Plug (Includes "O" Ring)	1
9	099615-01	Fan	1	42	099213-01	Button Plug	1
10	†	Motor and Pump Assembly	1	43	097896-01	Wheels	2
10-1	099622-01	Motor (Split Phase)	1	44	M16801-2	Axle	1
10-2	079975-01	Pump Body	1	45	M12831-3	Wheel Support Frame	1
10-3	FHPF3-2C	Screw, #10-32 x 1/2"	2	46	099614-01	Front Handle	1
10-4	M22009	Rotor Insert	1	47	M12345-33	Screw, #10-24 x 1 3/4"	8
10-5	M22456-1	Pump Rotor	1	48	M28526	Nut cap	2
10-6	M50545	Pump End Cover	1	49	NTC-3C	Hex Lock Nut, #10-24	8
10-7	M12179	Intake Filter	1	50	099614-02	Rear Handle	
10-8	M16545	Filter End Cover	1			(Yellow Shell Model Only)	1
10-9	M8940	Steel Ball, 1/4" diameter	1	51	099230-01	Screw, #10-16 x 3/8"	2
10-10	M10993-1	Relief Spring	1	52	099177-01	Nut, 3/8-27	1
10-11	M27694	Adjusting Screw	1	PARTS AVAILABLE - NOT SHOWN			
10-12	M22997	Plug	1		097650-01	Tradename Decal (Yellow Shell Model)	
10-13	M12461-31	Screw, #10-32 x 1"	10		097232-02	Tradename Decal (White Shell Model)	
10-14	M12244-1	Output Filter	1		097773-02	Tradename Decal (Black Shell Model)	
10-15	M11637	Lint Filter	1		097065-03	General Info. Decal (English) (Yellow Shell Model)	
10-16	M50820-02	Barb Fitting	1		097068-03	General Info. Decal (French) (Yellow Shell Model)	
10-17	M8643	Blade	4		097065-04	General Info. Decal (English) (White Shell Model)	
11	M50631	Rubber Bumper	2		097068-04	General Info. Decal (French) (White Shell Model)	
12	098138-02	Motor Mounting Bracket	1		097065-05	General Info. Decal (English) (Black Shell Model)	
13	097061-01	Solid State Relay	1		097068-05	General Info. Decal (French) (Black Shell Model)	
14	M15823-39	Screw, #8-18 x 1/2"	2				
15	NTC-4C	Hex Lock Nut, 1/4-20	2				
16	M51114-01	Fan Guard	1				
17	098557-06	Ignitor Kit	1				
18	M11084-29	Screw, #10-16 x 3/4"	2				
19	M51345-02	Fuel Line	1				
20	M51150-01	Fuel Filter	1				
21	M51151-02	Fuel Line Tube	1				
22	M10990-3	Rubber Bushing	1				
23	M50814-03	Airline	1				
24	098511-140	Lower Shell (Yellow)	1				
	098511-137	Lower Shell (White)	1				
	098511-82	Lower Shell (Black)	1				

† Not available as an assembly.

WARRANTY AND REPAIR SERVICE

LIMITED WARRANTY

DESA Industries 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 Industries assumes no responsibility for indirect, incidental or consequential damages. Some provinces do not allow the exclusion or limitation of incidental or consequential damages. These 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 province to province.

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 Industries 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.

A service manual may be purchased from the address listed below. Send a cheque for \$5.00 payable to DESA Industries.

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.

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

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