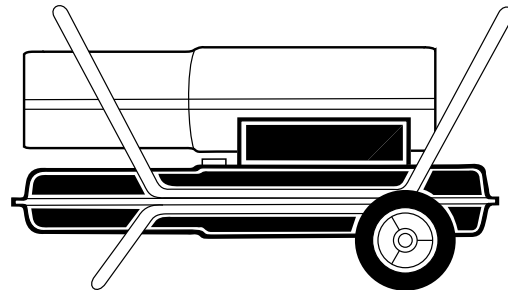
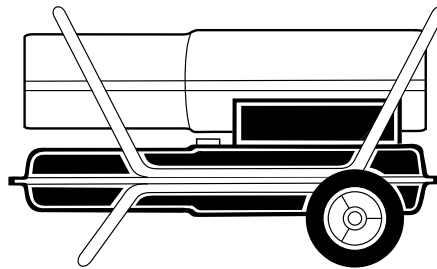
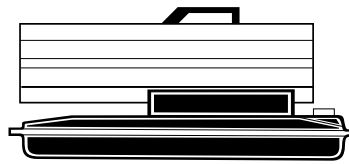


PORTABLE FORCED AIR HEATERS

OWNER'S MANUAL



**Heater Sizes: 8,8 (30,000) 20,5 (70,000)
26,4 (90,000) 44 kW (150,000 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.

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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, 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.

SAFETY INFORMATION

Continued

- Use only kerosene or No. 1 fuel oil to avoid risk of fire or explosion. Never use gasoline, naphtha, paint thinners, alcohol, or other highly flammable fuels.
- Fueling
 - a) Personnel involved with fueling shall be qualified and thoroughly familiar with the manufacturer's instructions and applicable regional 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 regional 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. Provide at least a three-square foot (2800 square cm) opening of fresh, outside air for each 29,3 kW (100,000 Btu/Hr) of rating.
- Use only in places free of flammable vapors or high dust content.
- Use only with the electrical voltage and frequency specified on model plate.
- Use only a grounded (earthed) extension cord.
- Minimum heater clearances from combustibles:
Outlet: 250 cm (8 Ft.) Sides, Top, and Rear: 125 cm (8 Ft.)
- Locate heater on a stable and level surface while 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. Using duct work could reduce the necessary air flow of heater. Heater would produce excessive carbon monoxide.

PRODUCT IDENTIFICATION

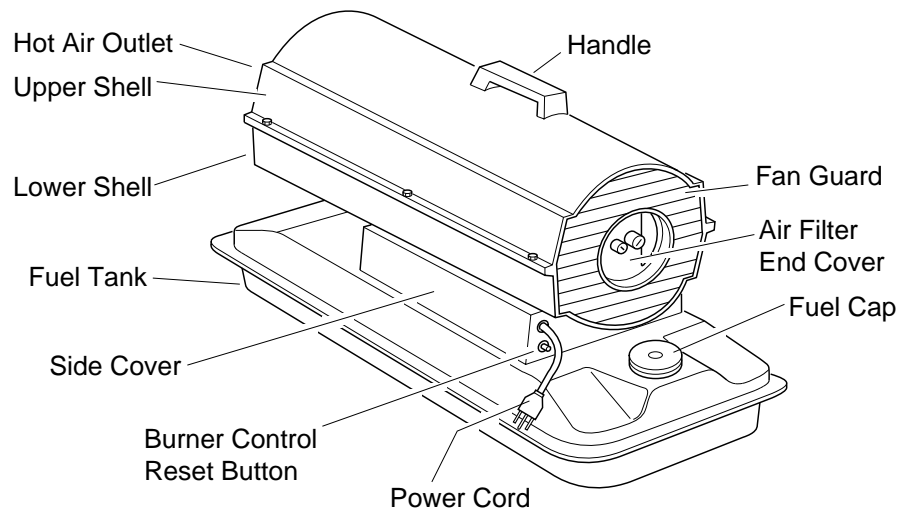


Figure 1 - 8,8/20,5 kW (30/70,000 Btu/Hr) Models

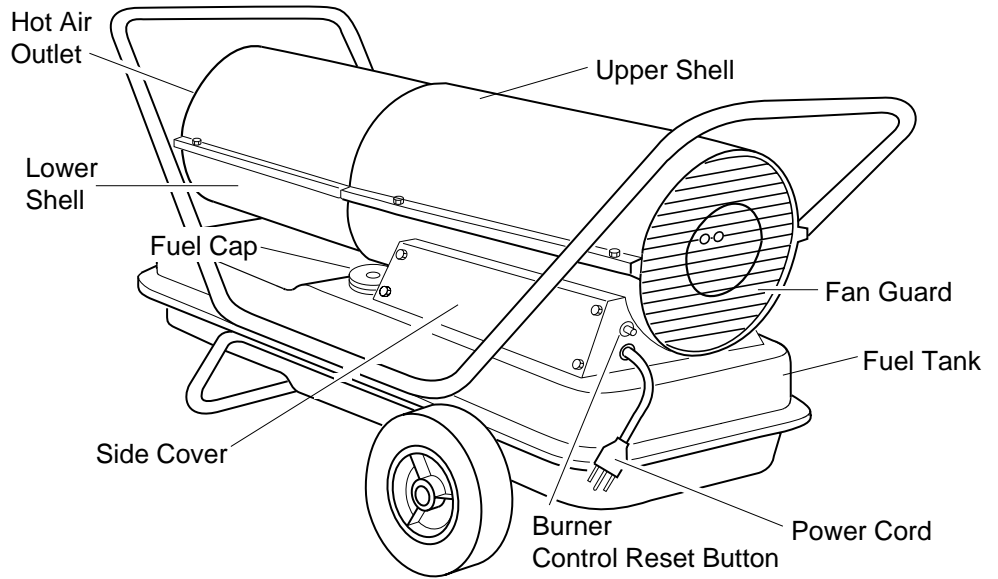


Figure 2 - 26,4/44 kW (90/150,000 Btu/Hr) Model

UNPACKING

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

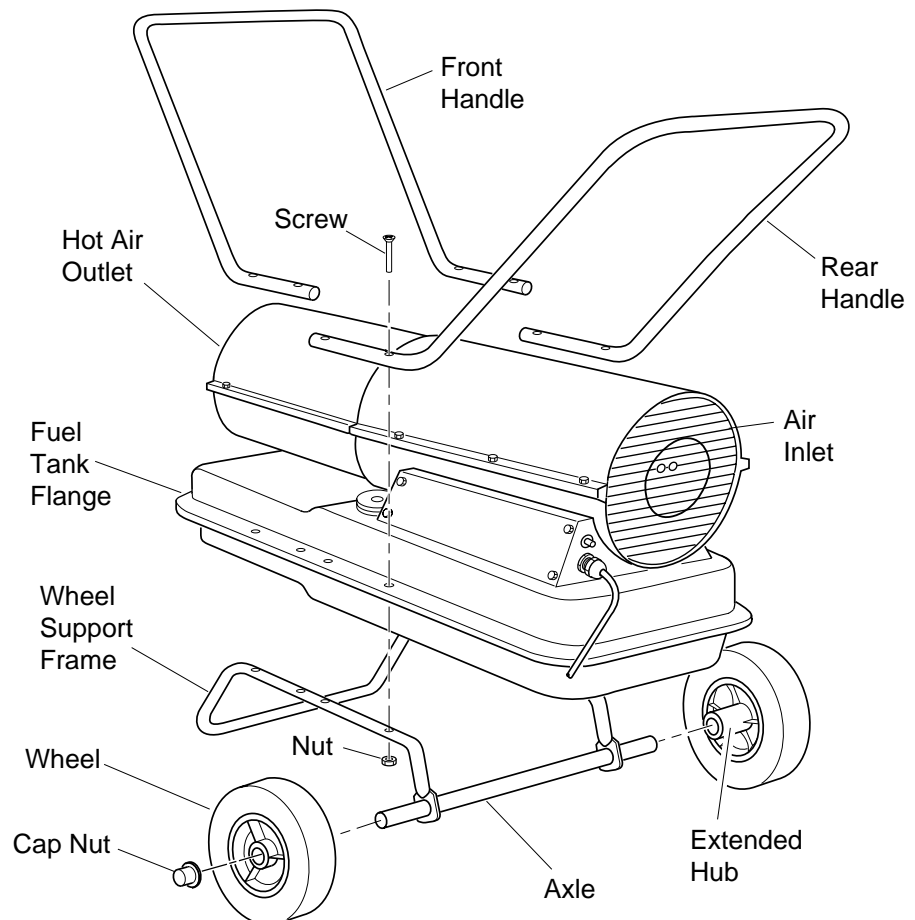
ASSEMBLY

(For 26,4 and 44 kW [90,000 and 150,000 Btu/Hr] Models Only)

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

Tools Needed

- Medium Phillips Screwdriver
 - 3/8" Open or Adjustable Wrench
 - Hammer
1. Slide axle through wheel support frame. Install wheels on axle.
IMPORTANT: When installing wheels, point extended hub of wheels toward wheel support frame (see Figure 3).
 2. Place cap nuts on axle ends. Gently tap with hammer to secure.
 3. Place heater on wheel support frame. Make sure air inlet end (rear) of heater is over wheels. Line up holes on fuel tank flange with holes on wheel support frame.
 4. Place front handle and rear handle on top of fuel tank flange. Insert screws through handles, fuel tank flange, and wheel support frame. Attach nut finger tight after each screw is inserted.
 5. After all screws are inserted, tighten nuts firmly.



**Figure 3 - Wheel and Handle Assembly, 26,4/44 kW
(90/150,000 Btu/Hr Models) Only**

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

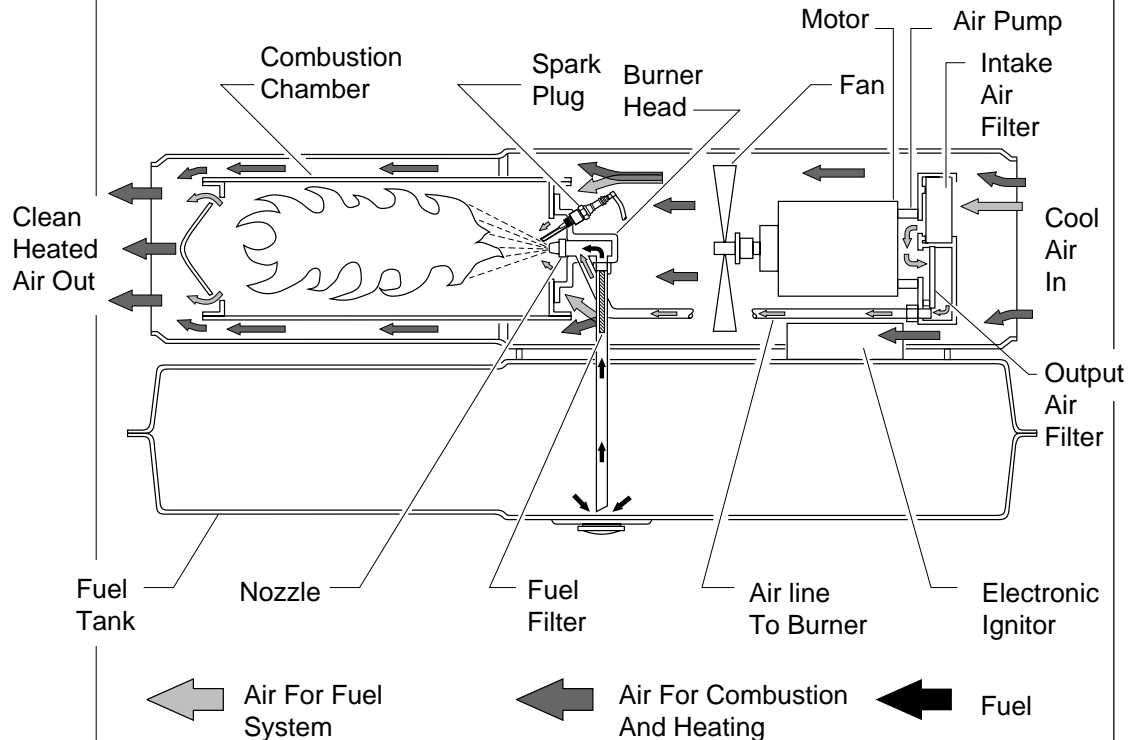


Figure 4 - Cross Section Operational View

FUELS

! WARNING

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

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

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

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

VENTILATION

⚠ WARNING

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

Provide a fresh air opening of at least 2800 square cm (three square feet) for each 29,3 kW (100,000 Btu/Hr) rating. Provide extra fresh air if more heaters are being used.

Example: A 44 kW (150,000 Btu/Hr) heater requires one of the following:

- a 4,88 m (16 foot) wide two-car garage door raised 8,59 cm (3.38 inches)
- a 2,75 m (9 foot) wide single-car garage door raised 15,24 cm (6 inches)
- two, 76,20 cm (thirty-inch) wide windows raised 28 cm (11 inches)

OPERATION

⚠ WARNING

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

To Start Heater

1. Follow all ventilation and safety information.
2. Fill fuel tank with kerosene or No. 1 fuel oil.
3. Attach fuel cap.
4. Plug power cord of heater into standard 230 volt/50 hertz, grounded (earthed) outlet. Use an extension cord if needed. Use only a grounded (earthed) extension cord.

Extension Cord Wire Size Requirements

Up to 100 feet (30.5 meters) long, use 16 AWG (1.0 mm²) conductor

101 to 200 feet (30.6 to 61 meters) long, use 14 AWG (1.5 mm²) conductor

Heater will start when power cord is plugged into outlet. If not, push in burner control reset button (see Figures 5 and 6).

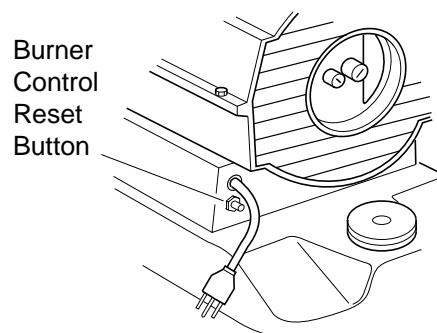


Figure 5 - Burner Control Reset Button, 8,8/20,5 kW (30/70,000 Btu/Hr) Models

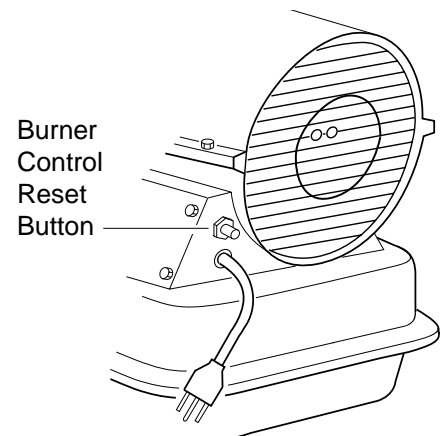


Figure 6 - Burner Control Reset Button, 26,4/44 kW (90/150,000 Btu/Hr) Models

OPERATION

STORING, TRANSPORTING, OR SHIPPING

PREVENTATIVE MAINTENANCE SCHEDULE

To Stop Heater

1. Unplug power cord from outlet.

To Restart Heater

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

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.

WARNING


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

<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 13.
Air intake filter	Wash and dry with soap and water every 500 hours of operation or as needed.	See <i>Air Output, Air Intake, and Lint Filters</i> , page 13.
Fuel filter	Clean twice a heating season or as needed.	See <i>Fuel Filter</i> , pages 10
Spark plug	Clean and regap every 600 hours operation or replace as needed.	See <i>Spark Plug</i> , pages 11 and 12.
Fan blades	Clean every season or as needed.	See <i>Fan</i> , page 17.
Motor	Not required/permanently lubricated	

TROUBLE-SHOOTING

WARNING

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

<u>OBSERVED FAULT</u>	<u>POSSIBLE CAUSE</u>	<u>REMEDY</u>
Heater ignites, but burner control shuts off heater after a short period of time.	Wrong 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 13.
	Dirty fuel filter	See <i>Fuel Filter</i> , page 10.
	Dirt in nozzle	See <i>Nozzle</i> , pages 14 and 15.
	Dirty photocell lens	Clean photocell lens.
	Bad burner control	Replace burner control.
Heater will not ignite, but motor runs for a short period of time.	Wrong pump pressure	See <i>Pump Pressure Adjustment</i> , page 13.
	Carbon deposits on spark plug and/or improper gap	See <i>Spark Plug</i> , pages 11 and 12.
	Dirty fuel filter	See <i>Fuel Filter</i> , page 10.
	Dirt in nozzle	See <i>Nozzle</i> , pages 14 and 15.
	Water in fuel tank	Drain and flush fuel tank with clean kerosene. See <i>Storing, Transporting, or Shipping</i> , page 8.
 WARNING: High voltage!		
	Electronic ignitor not grounded (earthed)	Make sure electronic ignitor mounting is tight.
	Bad electronic ignitor	Replace electronic ignitor.
Motor does not start when heater is plugged in, fan rotates slowly or does not turn.	Burner control not reset	Reset burner control button, see Figures 5 and 6, page 7.
	Binding pump rotor	If fan is hard to turn, see <i>Pump Rotor</i> , page 16.

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.

Fuel Filter

(8,8/20,5 kW [30/70,000 Btu/Hr] Models)

1. Remove side cover screws using 5/16" nut-driver.
2. Remove side cover.
3. Pull rubber 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 rubber fuel line to fuel filter neck.
7. Replace side cover.

Fuel Filter

(26,4/44 kW [90/150,000 Btu/Hr] Models)

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

⚠ WARNING

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

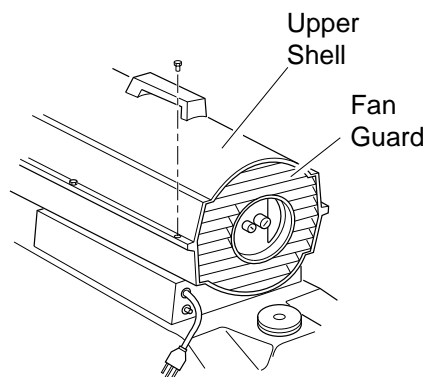


Figure 7 - Upper Shell Removal, 8,8/20,5 kW (30/70,000 Btu/Hr) Models

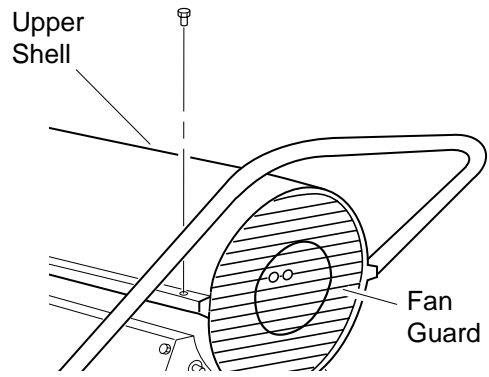


Figure 8 - Upper Shell Removal, 26,4/44 kW (90/150,000 Btu/Hr) Model

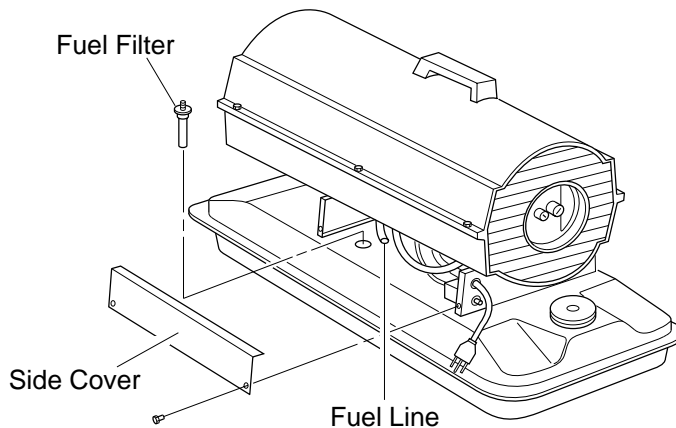


Figure 9 - Fuel Filter Removal, 8,8/20,5 kW (30/70,000 Btu/Hr) Models

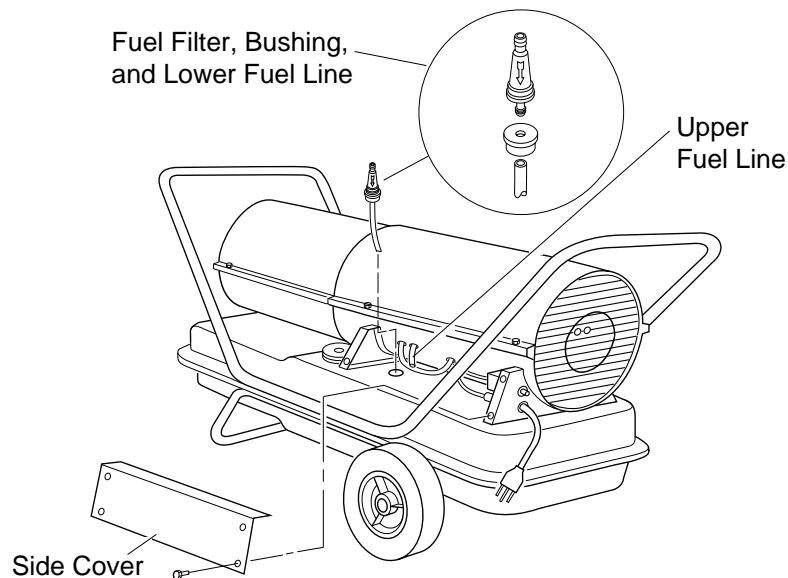


Figure 10 - Fuel Filter Removal, 26,4/44 kW (90/150,000 Btu/Hr) Models

Spark Plug

(8,8 kW [30,000 Btu/Hr] Model)

1. Remove upper shell (see page 10).
2. Remove fan (see page 17).
3. Remove fuel and air line hoses from nozzle assembly.
4. Remove spark plug wire 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 (see Figure 13).
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 wire to spark plug.
15. Attach fuel and air line hoses to nozzle assembly.
16. Replace fan (see page 17).
17. Replace fan guard and upper shell.

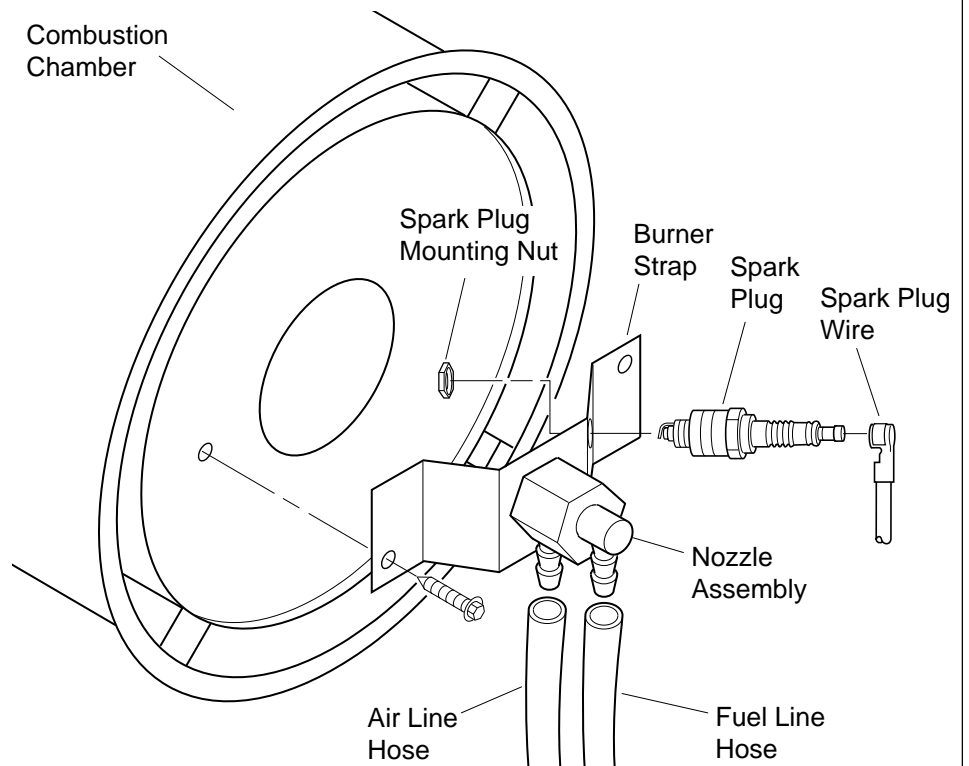


Figure 11 - Spark Plug Removal, 8,8 kW (30,000 Btu/Hr) Model

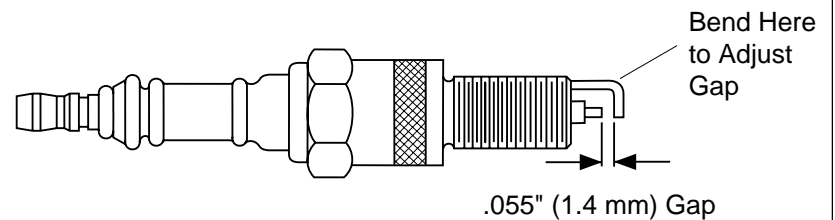


Figure 12 - Spark Plug Gap, 8,8 kW (30,000 Btu/Hr) Model

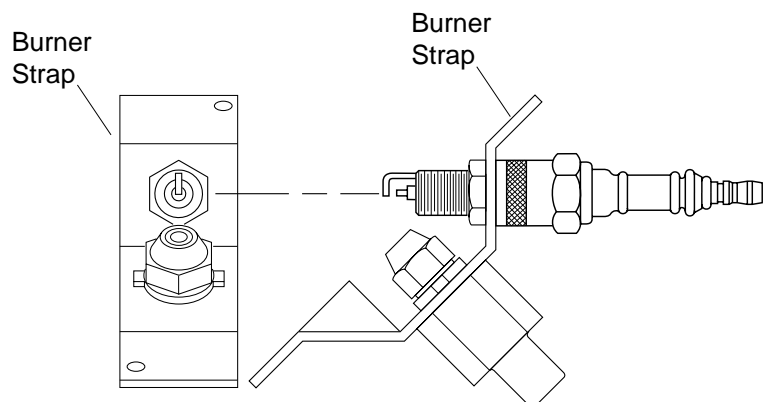


Figure 13 - Spark Plug Rotation, 8,8 kW (30,000 Btu/Hr) Model Only

Spark Plug

(20,5/26,4/44 kW [70/90/150,000 Btu/Hr] Models)

1. Remove upper shell (see page 10).
2. Remove fan (see page 17).
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:
 - 20.5/26.4 kW models: .055" (1.4 mm)
 - 44 kW models: .110" (2.8 mm)
6. Install spark plug in burner head.
7. Attach spark plug wire to spark plug.
8. Replace fan (see page 17).
9. Replace fan guard and upper shell.

(20,5/26,4 kW [70/90,000 Btu/Hr] Model Shown)

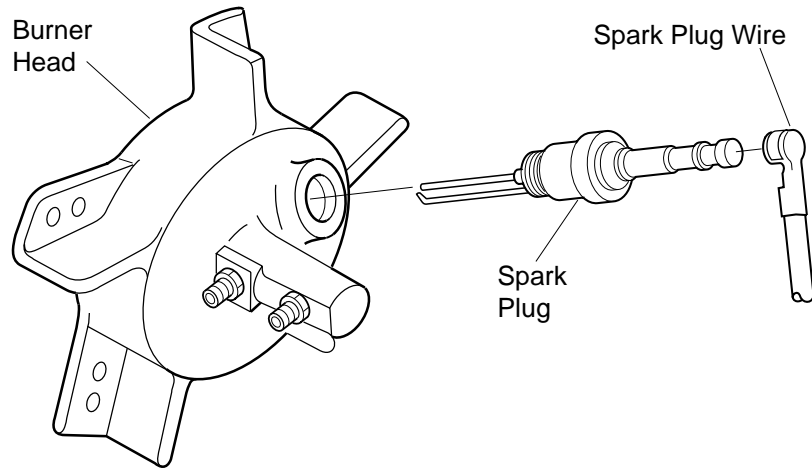


Figure 14 - Spark Plug Removal, 20,5/26,4/44 kW (70/90/150,000 Btu/Hr) Models

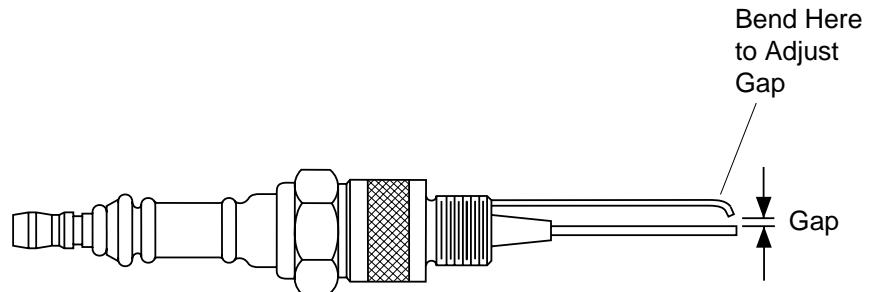


Figure 15 - Spark Plug Gap, 20,5/26,4/44 kW (70/90/150,000 Btu/Hr) Models

Air Output, Air Intake, and Lint Filters

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

IMPORTANT: Do not oil filters

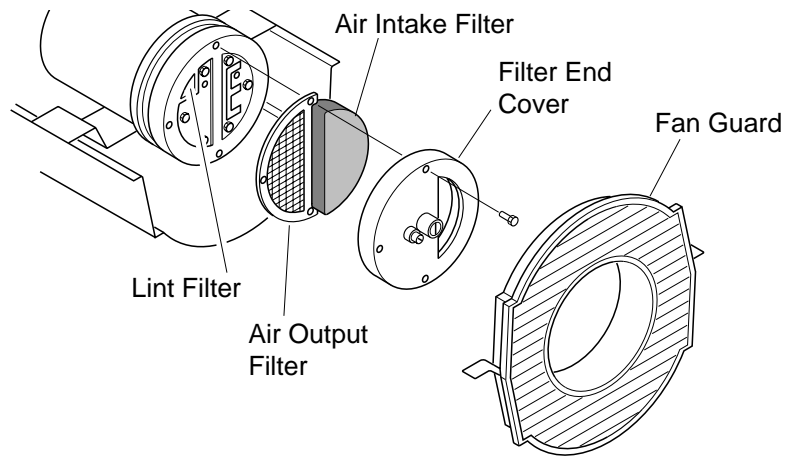


Figure 16 - Air Output, Air Intake, and Lint Filters, 8,8/20,5 kW (30/70,000 Btu/Hr) Models

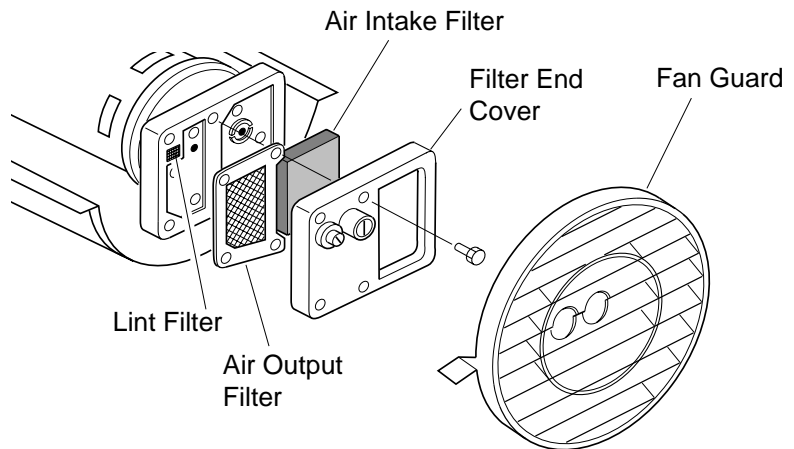


Figure 17 - Air Output, Air Intake, and Lint Filters, 26,4/44 kW (90/150,000 Btu/Hr) Models

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 7). Allow motor to reach full speed.
4. Adjust pressure. Turn relief valve to right to increase pressure. Turn relief valve to left to decrease pressure. See specifications at right for correct pressure for each model.
5. Remove pressure gauge. Replace pressure gauge plug in filter end cover.

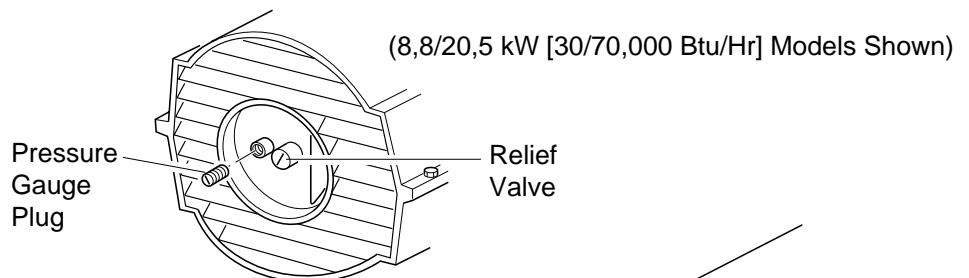


Figure 18 - Pressure Gauge Plug Removal

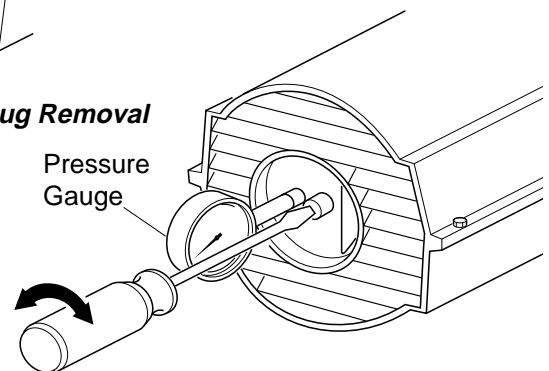


Figure 19 - Adjusting Pump Pressure

Model	Pump Pressure
8,8 kW (30,000 Btu/Hr)	17,93 kPa (2.6 PSI)
20,5 kW (70,000 Btu/Hr)	24,82 kPa (3.6 PSI)
26,4 kW (90,000 Btu/Hr)	30,34 kPa (4.4 PSI)
44 kW (150,000 Btu/Hr)	33,09 kPa (4.8 PSI)

Nozzle

(8,8 kW [30,000 Btu/Hr] Model)

1. Remove upper shell (see page 10).
2. Remove fan (see page 17).
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 17).
13. Replace fan guard and upper shell.

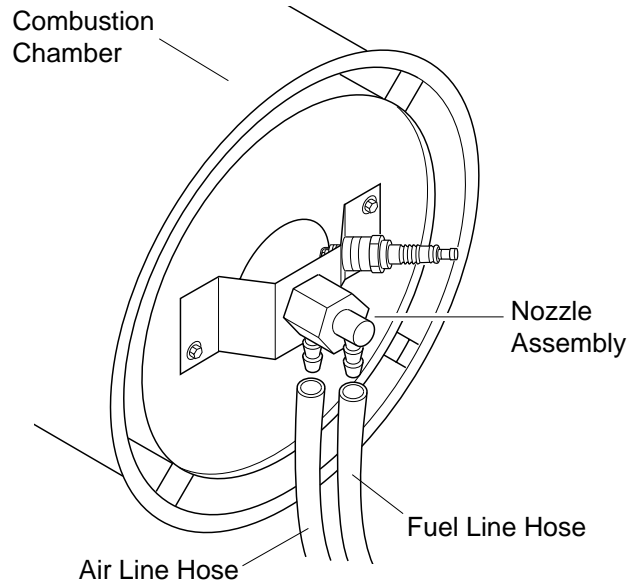


Figure 20 - Removing Air and Fuel Line Hoses, 8,8 kW (30,000 Btu/Hr) Model

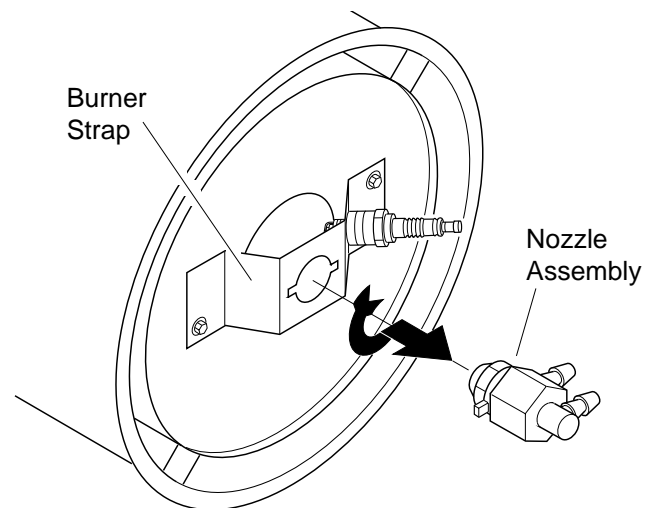


Figure 21 - Removing Nozzle Assembly, 8,8 kW (30,000 Btu/Hr) Model

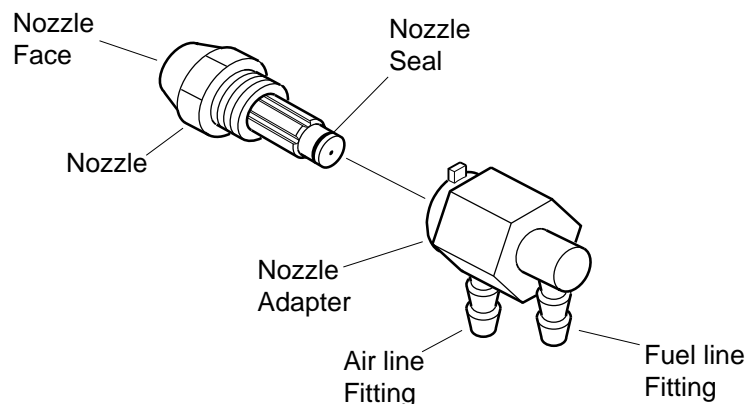


Figure 22 - Nozzle and Nozzle Adapter, 8,8 kW (30,000 Btu/Hr) Model

Nozzle

(20,5/26,4/44 kW [70/90/150,000 Btu/Hr] Models)

1. Remove upper shell (see page 10).
2. Remove fan (see page 17).
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 24).
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 wire to spark plug.
15. Attach fuel and airline hoses to burner head.
16. Replace fan (see page 17).
17. Replace fan guard and upper shell.

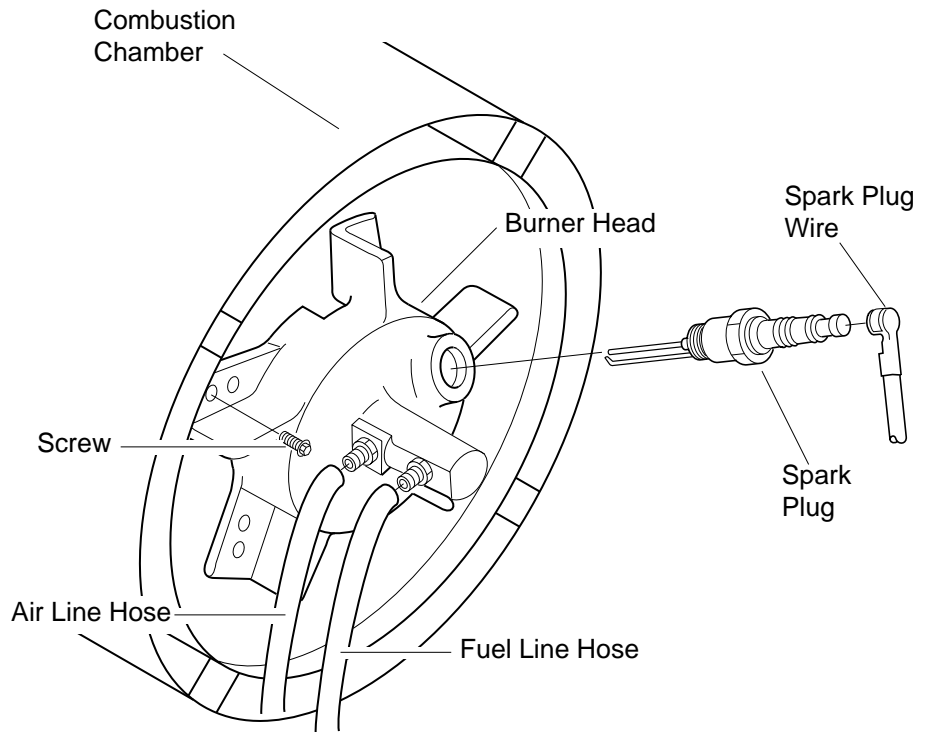


Figure 23 - Removing Burner Head, 20,5/26,4 kW (70/90,000 Btu/Hr) Models

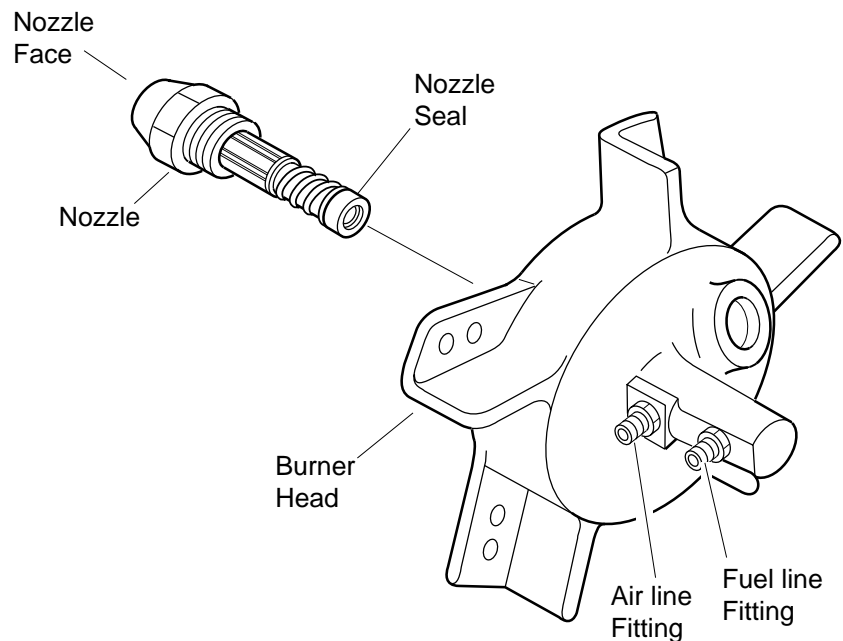


Figure 24 - Removing Nozzle, 20,5/26,4 kW (70/90,000 Btu/Hr) Models

Pump Rotor

(Procedure if rotor is binding)

1. Remove upper shell (see page 10).
2. Remove filter end cover screws using 5/16" nut-driver.
3. Remove filter end cover and air filters.
4. Remove pump plate screws using 5/16" nut-driver.
5. Remove pump plate.
6. Remove rotor, insert, and blades.
7. Check for debris in pump. If debris is found, blow out with compressed air.
8. Install insert and rotor.
9. Check gap on rotor. Adjust to .003"/.004" (.076/.101 mm) if needed (see Figure 27).

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.

13. Perform steps 1 thru 6 above.
14. Place fine grade sandpaper (600 grit) on flat surface. Sand rotor lightly in "figure 8" motion four times (see Figure 28).
15. Reinstall insert and rotor.
16. Perform steps 10 thru 12 above.

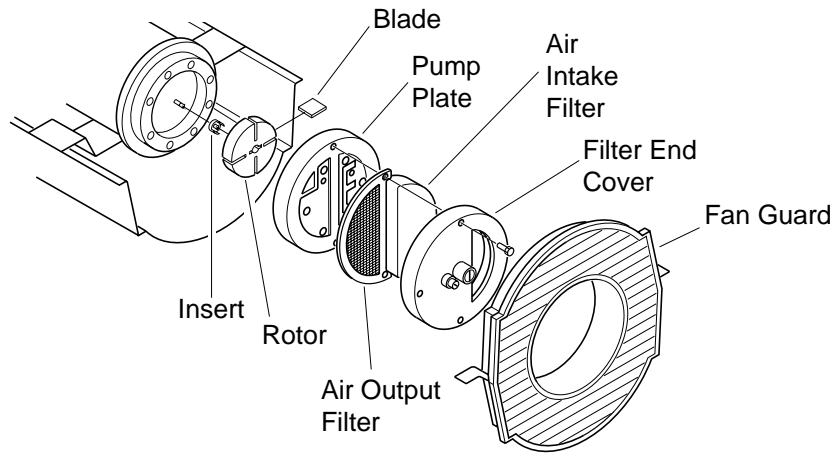


Figure 25 - Rotor Location, 8,8/20,5 kW (30/70,000 Btu/Hr) Models

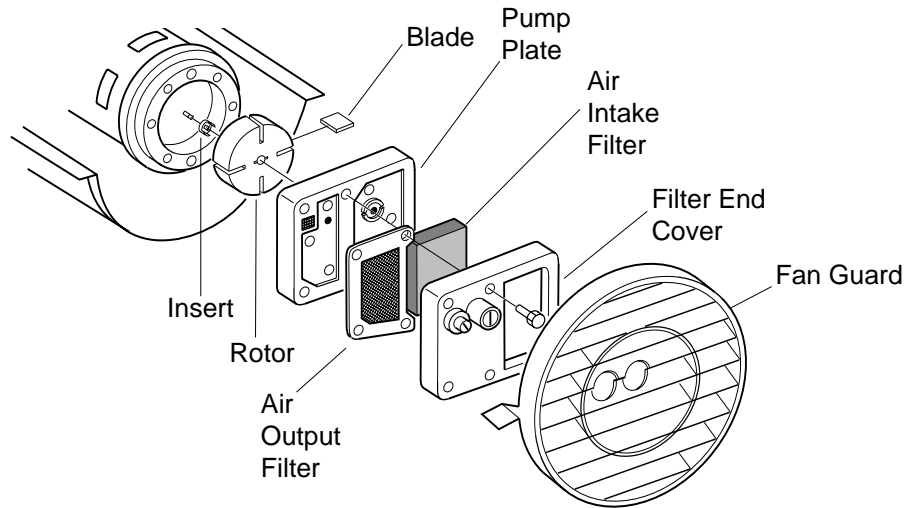


Figure 26 - Rotor Location, 26,4/44 kW (90/150,000 Btu/Hr) Models

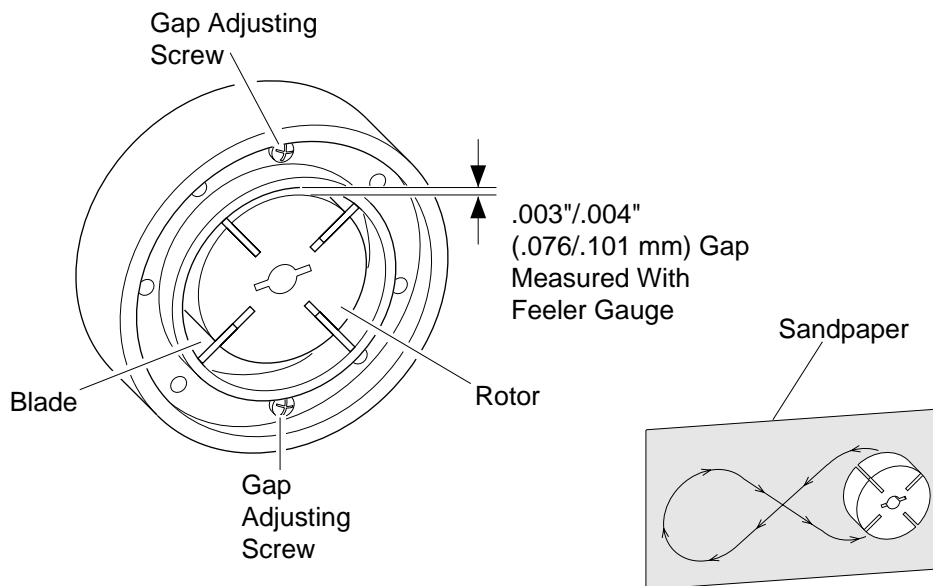


Figure 27 - Gap Adjusting Screw Locations

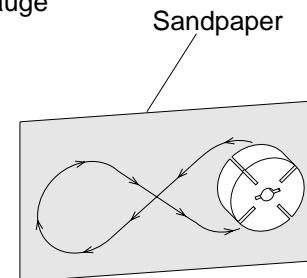


Figure 28 - Sanding Rotor

Fan

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

1. Remove upper shell (see page 10).
2. Use 1/8" allen wrench to loosen setscrew which holds fan to motor shaft.
3. Slip fan off motor shaft.
4. Clean fan using a soft cloth moistened with kerosene or solvent.
5. Dry fan thoroughly.
6. Replace fan on motor shaft. Place fan hub flush with end of motor shaft (see Figure 30).
7. Place setscrew on flat of shaft. Tighten setscrew firmly (40-50 inch-pounds/ 4.5-5.6 n-m).
8. Replace fan guard and upper shell.

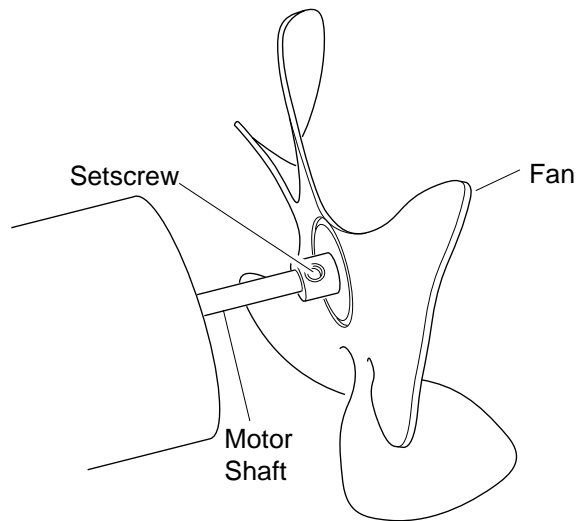


Figure 29 - Fan, Motor Shaft, and Setscrew Location

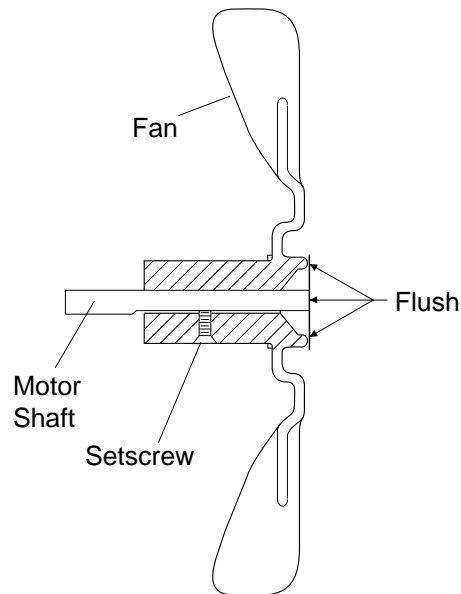


Figure 30 - Fan Cross Section

SPECIFICATIONS

Output Rating (kW)	8,8	20,5	26,4	44
(Btu/Hr)	30,000	70,000	90,000	150,000
Fuel	Use Only Kerosene or No. 1 Fuel Oil			
Fuel Tank Capacity (U.S. Gal./Liters)	3.0/11.35	5.0/18.92	9.0/34.06	13.5/51.09
Fuel Consumption (Gal. Per Hr./Liters Per Hr.)	.23/.87	.49/1.85	.66/2.5	1.10/4.16
Electric Requirements	230 V/50 Hz (Same All Models)			
Amperage (Normal Run)	.8	1.0	1.58	1.2
Hot Air Output (CFM/CMM)	140/3.96	225/6.36	425/12	500/14.2
RPM	1425	2850	2850	2850

WIRING DIAGRAMS

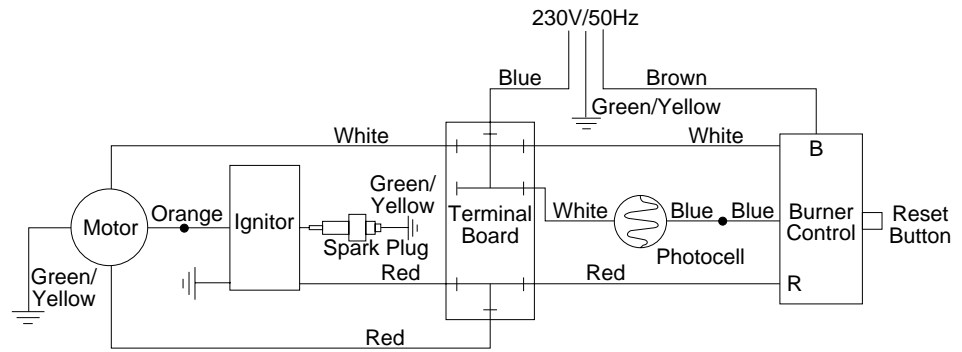


Figure 31 - Wiring Diagram, 8,8/44 kW (30/150,000 Btu/Hr) Model

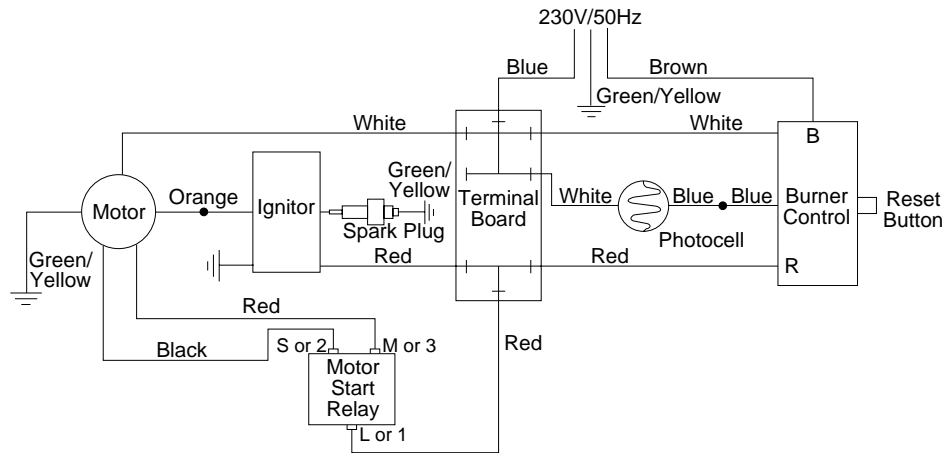
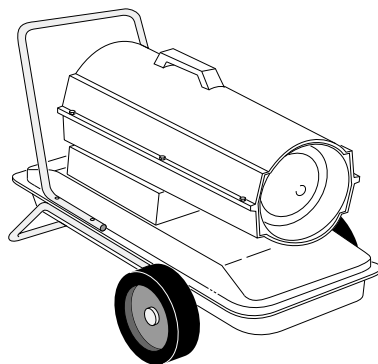


Figure 32 - Wiring Diagram, 20,5/26,4 kW (70/90,000 Btu/Hr) Models

ACCESSORIES

Purchase accessories from your local dealer.



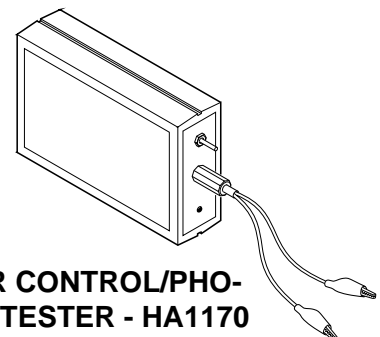
HEAVY DUTY WHEELS AND HANDLE KIT - HA1202

For heavy duty applications. Makes your heater even more portable and convenient. For 8,8/20,5 kW (30/70,000 Btu/Hr) models.



AIR GAUGE KIT - HA1180

For all models. Special tool to check pump pressure.



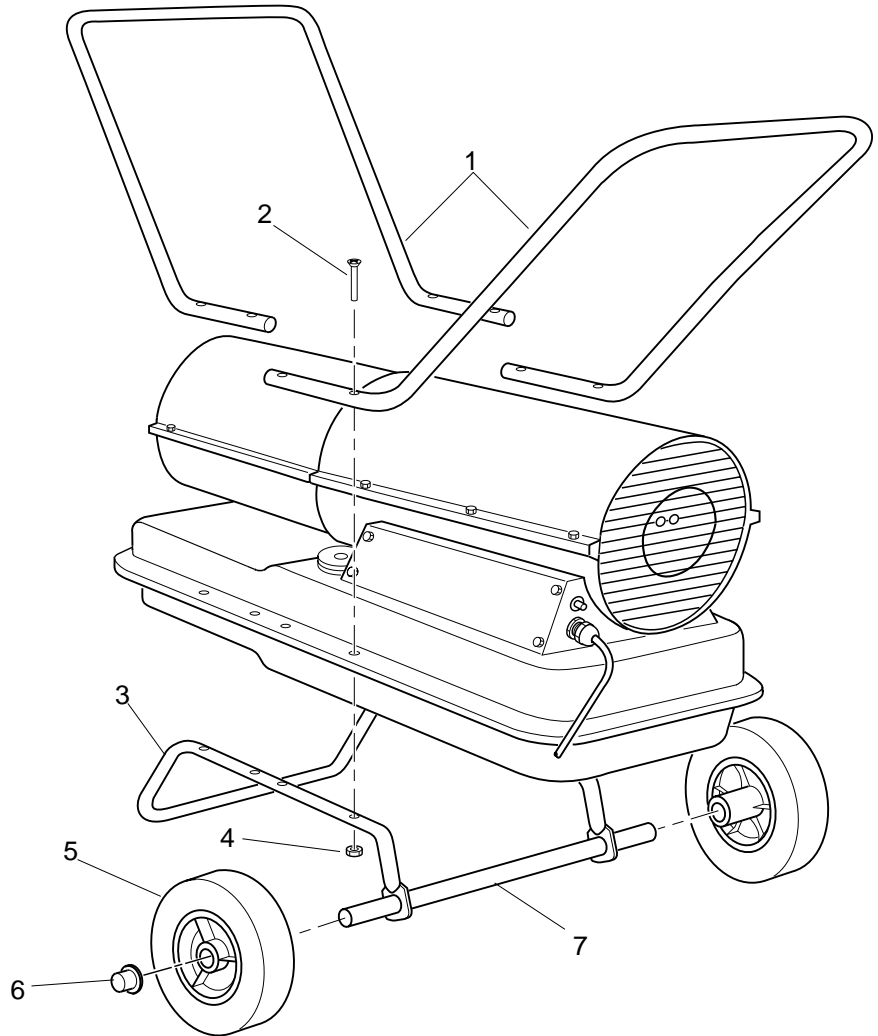
BURNER CONTROL/PHOTOCELL TESTER - HA1170

For all models. Special tool used to test the burner control and photocell.

ILLUSTRATED PARTS BREAKDOWN AND PARTS LIST

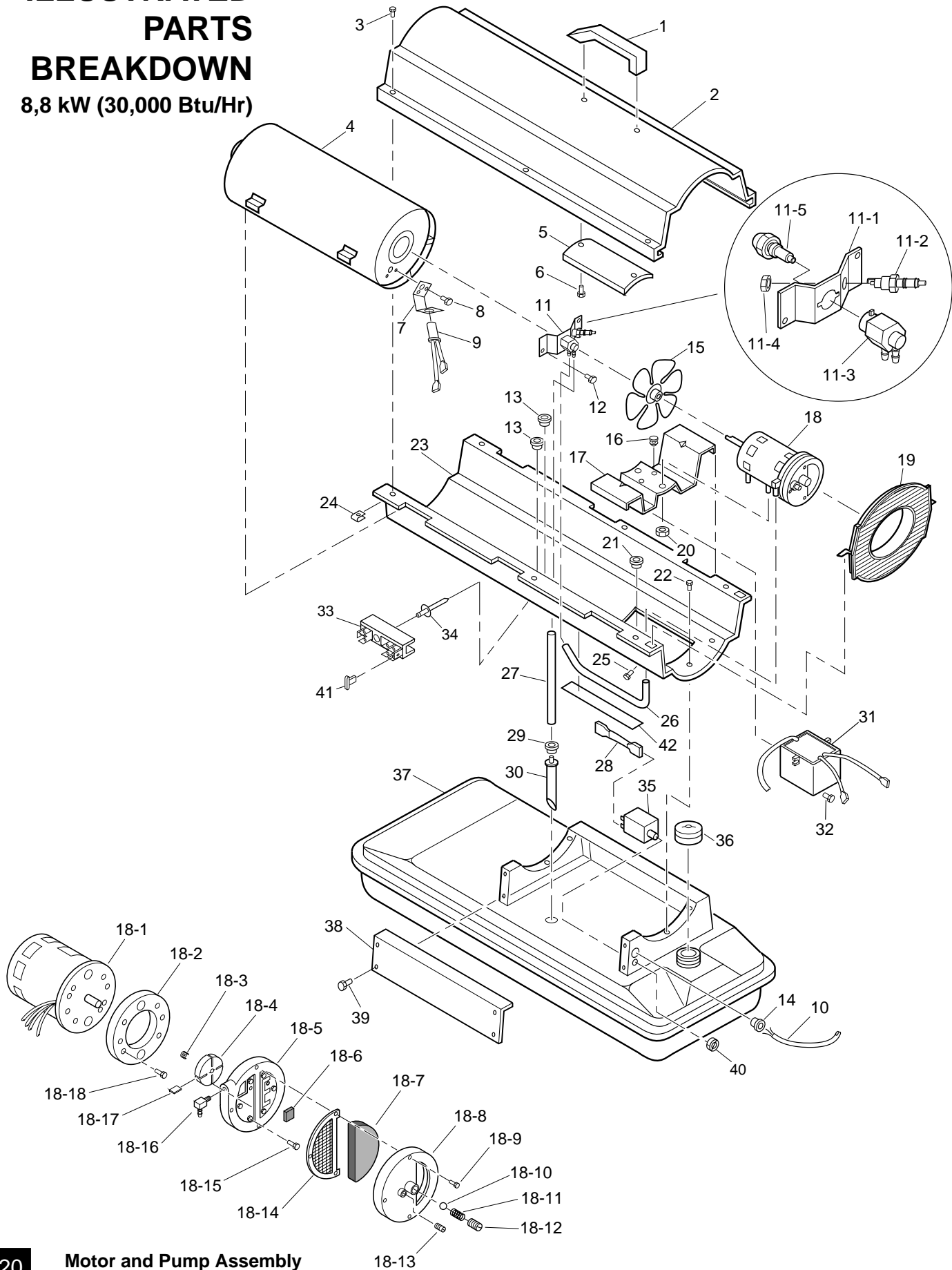
WHEELS AND HANDLES FOR 26,4 and 44 kW (90,000 AND 150,000 Btu/Hr) MODELS

KEY NO.	PART NUMBER	PART DESCRIPTION	26,4 90,000 QTY.	44 150,000 QTY.
1	HA2203	Handles	2	—
	HA2204	Handles	—	2
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	097766-01	Wheel	2	2
6	M28526	Cap Nut	2	2
7	M51015-01	Axle	1	—
	M16801-2	Axle	—	1



ILLUSTRATED PARTS BREAKDOWN

8,8 kW (30,000 Btu/Hr)



PARTS LIST

8,8 kW (30,000 Btu/Hr)

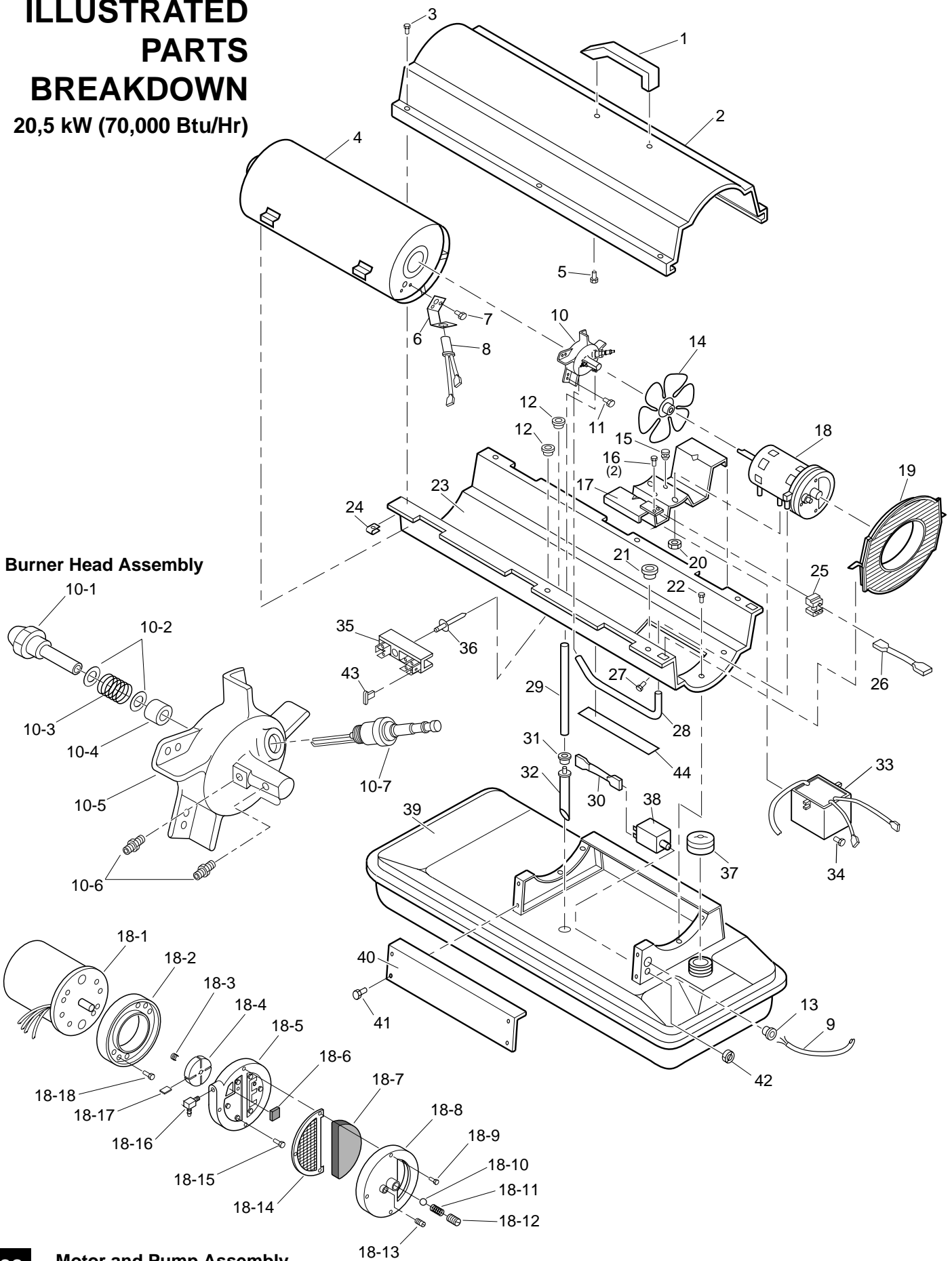
This list contains replaceable parts used in your heater. When ordering parts, be sure to provide the correct model and serial numbers (from the model plate), then the part number and description of the desired part.

KEY NO.	PART NUMBER	PART DESCRIPTION	QTY.	KEY NO.	PART NUMBER	PART DESCRIPTION	QTY.
1	M51104-01	Handle	1	19	M51105-01	Fan Guard	1
2	098511-67	Upper Shell	1	20	NTC-4C	Hex locknut	2
3	100647-01	Screw, #10-16 x 1/2"	6	21	M50104-02	Bushing (wires)	1
4	098512-20	Combustion Chamber	1	22	M11084-26	Screw, #10-16 x 3/8"	6
5	M51108-01	Heat Shield	1	23	098511-81	Lower Shell	1
6	M11084-29	Screw, #10-16 x 3/4"	2	24	M11271-8	Clip Nut	6
7	M16660	Photocell Bracket	1	25	M10908-14	Screw, #8-32 x 3/8"	1
8	M10908-2	Screw, #6-32 x 3/8"	2	26	M29652-04	Rubber Airline	1
9	HA3019	Photocell Assembly	1	27	M29652-05	Fuel Line	1
10	101909-01	Power Cord	1	28	M16841-57	Wire Assembly (red 8 1/2")	1
11	**	Burner Strap Assembly	1	29	M10990-3	Rubber Bushing	1
11-1	097124-01	Bracket	1	30	M50876-04	Fuel Filter Assembly (Includes bushing)	1
11-2	HA3013	Spark Plug	1				
11-3	079980-01	Nozzle Adapter	1	31	098557-07	Electronic Ignitor	1
11-4	M29824	Nut, 14mm	1	32	M11084-29	Screw, #10-16 x 3/4"	2
11-5	M29681	Nozzle	1	33	099125-02	Terminal Board	1
12	M11084-26	Screw, #10-16 x 3/8"	2	34	099157-01	Rivet	1
13	M30865-02	Bushing	2	35	097630-02	Burner Control	1
14	M11143-1	Strain Relief Bushing	1	36	097702-01	Fuel Tank Cap	1
15	M30884	Fan	1	37	098513-23	Fuel Tank	1
16	M50631	Rubber Bumper	2	38	M50899-03AA	Side Cover	1
17	101205-01	Motor Bracket	1	39	M11084-26	Screw, #10-16 x 3/8"	2
18	**	Motor and Pump Assembly	1	40	099177-01	Hex Nut	1
18-1	102001-15	Motor (230V/50Hz)	1	41	078918-01	Terminal Board Tab Cap	1
18-2	079975-03	Pump Body	1	42	097785-01	Vinyl Foam Gasket	1
18-3	M22009	Insert	1	PARTS AVAILABLE - NOT SHOWN			
18-4	M22456-2	Rotor	1				
18-5	M29608	End Pump Cover	1		HA2210	Filler Neck Screen	1
18-6	M29632	Lint Filter	1		097764-04	Tradename Decal	2
18-7	M29633	Intake Filter	1		098234-54	General Info. Decal (English)	1
18-8	M29609	End Filter Cover	1				
18-9	M12461-31	Screw, #10-32 x 1"	3		100941-07	General Info. Decal (Spanish)	1
18-10	M8940	Steel Ball (1/4" Dia.)	1				
18-11	M10993-1	Pressure Relief Spring	1				
18-12	M27694	Adjusting Screw	1				
18-13	M22997	Plug	1				
18-14	M29612-01	Output Filter	1				
18-15	M12461-32	Screw, #10-32 x 1 1/8"	6				
18-16	M50016	Elbow, 90° (Barb Fitting)	1				
18-17	M8643-2	Blade	4				
18-18	FHPF3-6C	Screw, #10-32 x 3/4"	2				

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

ILLUSTRATED PARTS BREAKDOWN

20,5 kW (70,000 Btu/Hr)



Burner Head Assembly

22 Motor and Pump Assembly

PARTS LIST

20,5 kW (70,000 Btu/Hr)

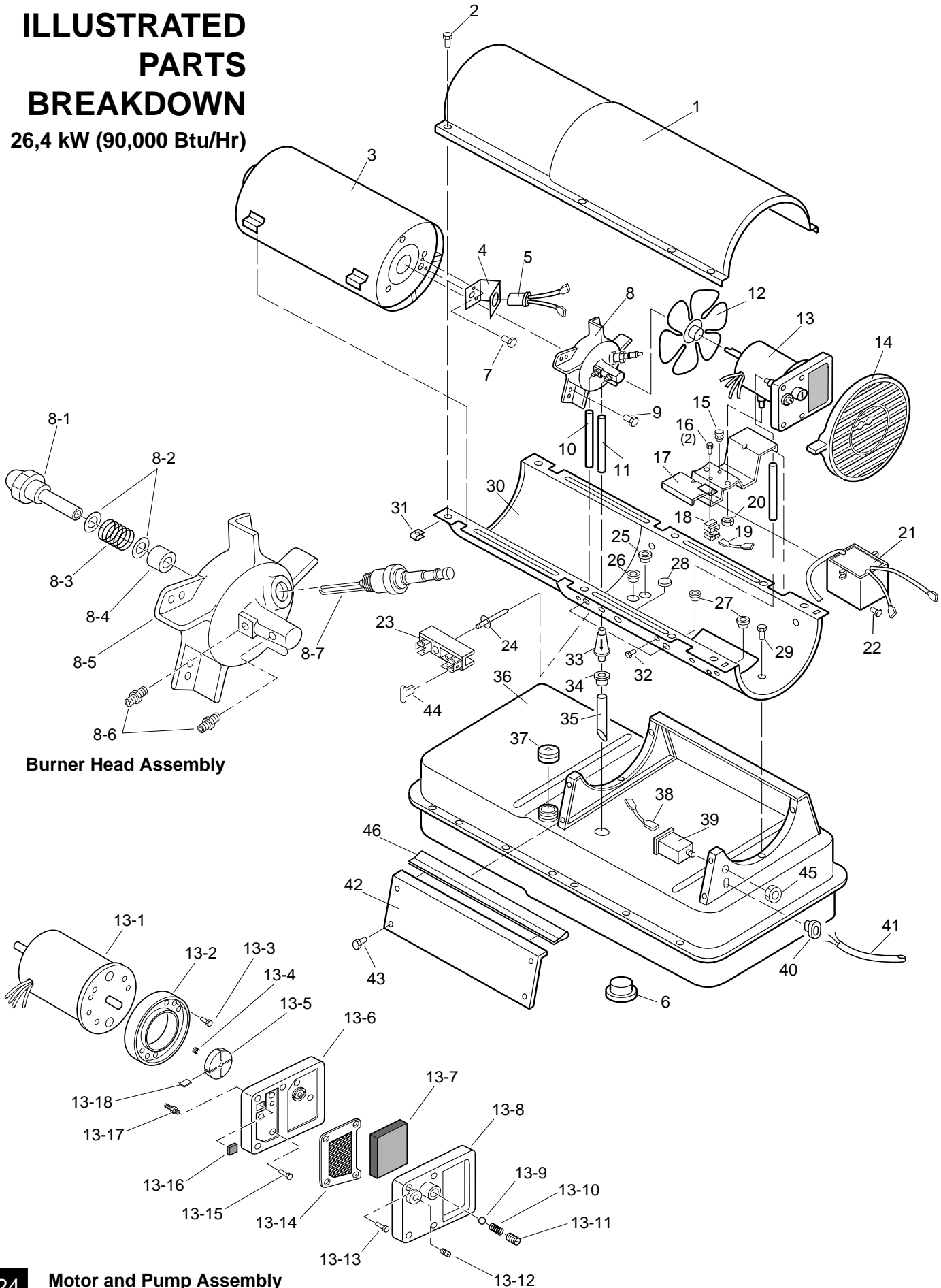
This list contains replaceable parts used in your heater. When ordering parts, be sure to provide the correct model and serial numbers (from the model plate), then the part number and description of the desired part.

KEY NO.	PART NUMBER	PART DESCRIPTION	QTY.	KEY NO.	PART NUMBER	PART DESCRIPTION	QTY.
1	M51104-01	Handle	1	19	M51105-01	Fan Guard	1
2	098511-67	Upper Shell	1	20	NTC-4C	Hex locknut	2
3	100647-01	Screw, #10-16 x 1/2"	6	21	M50104-02	Bushing (wires)	1
4	098512-12	Combustion Chamber	1	22	M11084-26	Screw, #10-16 x 3/8"	6
5	M11084-29	Screw, #10-16 x 3/4"	2	23	098511-81	Lower Shell	1
6	M16660	Photocell Bracket	1	24	M11271-8	Clip Nut	6
7	M10908-2	Screw, #6-32 x 3/8"	2	25	098165-02	Relay (motor start)	1
8	HA3019	Photocell Assembly	1	26	M16841-58	Wire Assembly (red 9 1/2")	1
9	101909-01	Power Cord	1	27	M10908-14	Screw, #8-32 x 3/8"	1
10	**	Burner Head Assembly	1	28	M29652-04	Rubber Airline	1
10-1	HA3008	Nozzle	1	29	079973-01	Fuel Line	1
10-2	M10659-1	Nozzle Seal Washer	2	30	M16841-57	Wire Assembly (red 8 1/2")	1
10-3	M10809-1	Nozzle Seal Spring	1	31	M10990-3	Rubber Bushing	1
10-4	M8882	Nozzle Seal Sleeve	1	32	M50876-05	Fuel Filter Assembly (Includes bushing)	1
10-5	M51098-02	Burner Head Body	1	33	098557-07	Electronic Ignitor	1
10-6	M50820-01	Barb Fitting	2	34	M11084-29	Screw, #10-16 x 3/4"	2
10-7	HA3012	Spark Plug	1	35	099125-02	Terminal Board	1
11	M11084-27	Screw, #10-16 x 1/2"	3	36	099157-01	Rivet	1
12	M30865-02	Bushing	2	37	097702-01	Fuel Tank Cap	1
13	M11143-1	Strain Relief Bushing	1	38	097630-02	Burner Control	1
14	M51107-01	Fan	1	39	098513-24	Fuel Tank	1
15	M50631	Rubber Bumper	2	40	M50899-03AA	Side Cover	1
16	M12461-13	Screw, #8-32 x 1/4" (holds relay in position)	2	41	M11084-26	Screw, #10-16 x 3/8"	2
17	101205-01	Motor and Relay Bracket Assembly	1	42	099177-01	Hex Nut	1
18	**	Motor and Pump Assembly	1	43	078918-01	Terminal Board Tab Cap	1
18-1	102001-16	Motor (230V/50Hz)	1	44	097785-01	Vinyl Foam Gasket	1
18-2	079975-02	Pump Body	1	PARTS AVAILABLE - NOT SHOWN			
18-3	M22009	Insert	1		HA2210	Filler Neck Screen	1
18-4	M22456-1	Rotor	1		097764-03	Tradename Decal	2
18-5	M29608	End Pump Cover	1		098234-55	General Info. Decal (English)	1
18-6	M29632	Lint Filter	1		100941-08	General Info. Decal (Spanish)	1
18-7	M29633	Intake Filter	1				
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				
18-11	M10993-1	Pressure Relief Spring	1				
18-12	M27694	Adjusting Screw	1				
18-13	M22997	Plug	1				
18-14	M29612-01	Output Filter	1				
18-15	M12461-31	Screw, #10-32 x 1"	6				
18-16	M50016	Elbow, 90° (Barb Fitting)	1				
18-17	M8643	Blade	4				
18-18	FHPF3-2C	Screw, #10-32 x 1/4"	2				

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

ILLUSTRATED PARTS BREAKDOWN

26,4 kW (90,000 Btu/Hr)



Burner Head Assembly

PARTS LIST

26,4 kW (90,000 Btu/Hr)

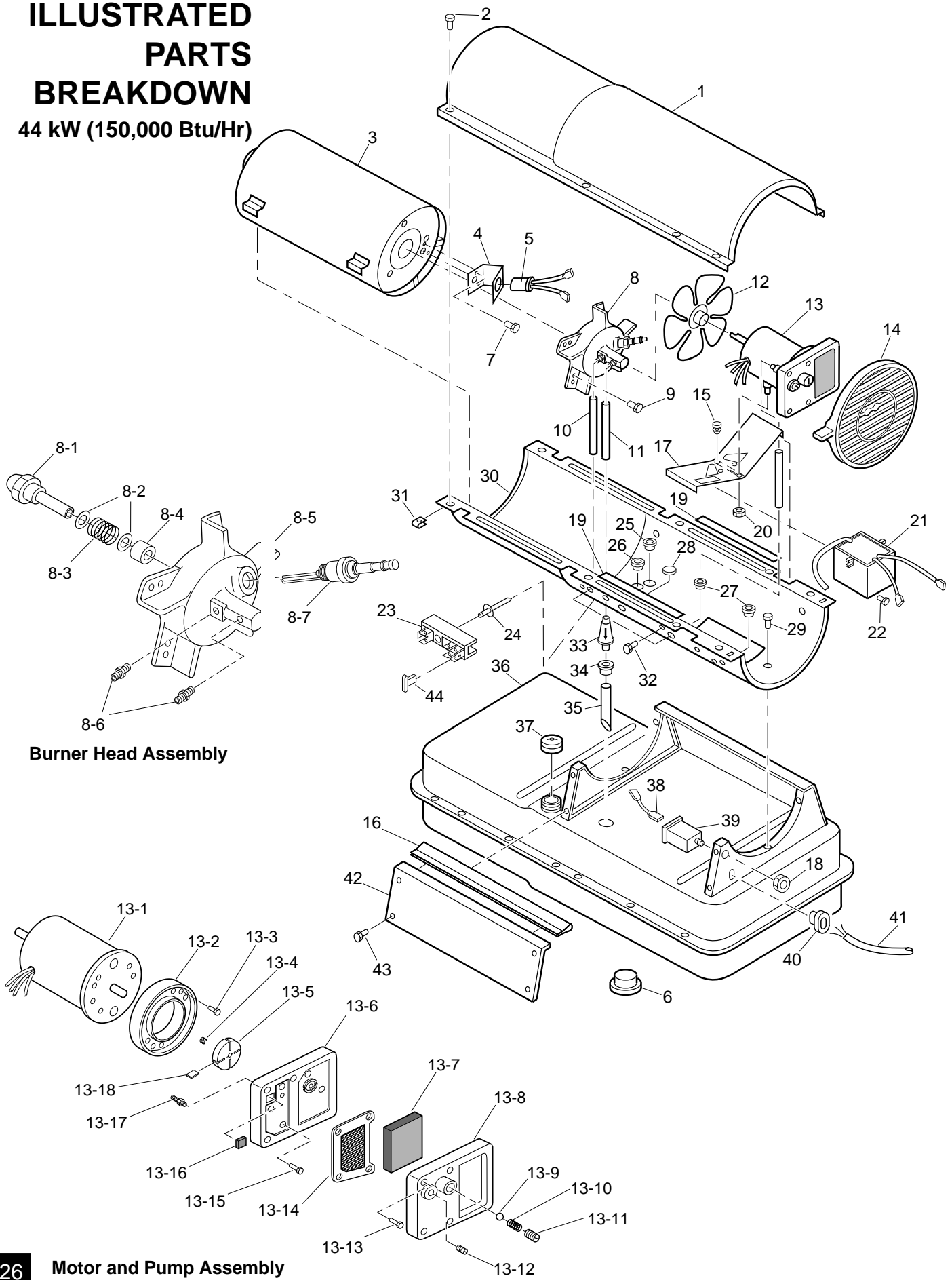
This list contains replaceable parts used in your heater. When ordering parts, be sure to provide the correct model and serial numbers (from the model plate), then the part number and description of the desired part.

KEY NO.	PART NUMBER	PART DESCRIPTION	QTY.	KEY NO.	PART NUMBER	PART DESCRIPTION	QTY.
1	098511-66	Upper Shell	1	19	M16841-59	Wire Assembly (red 13 1/2")	1
2	100647-01	Screw, #10-16 x 1/2"	6	20	NTC-4C	Hex locknut	2
3	098512-07	Combustion Chamber	1	21	098557-07	Electronic Ignitor	1
4	M16660	Photocell Bracket	1	22	M11084-29	Screw, #10-16 x 3/4"	2
5	HA3019	Photocell Assembly	1	23	099125-02	Terminal Board	1
6	M27417	Drain Plug	1	24	099157-01	Rivet	1
7	M10908-2	Screw, #6-32 x 3/8"	2	25	M30865-02	Bushing	1
8	**	Burner Head Assembly	1	26	M30865-02	Bushing	1
8-1	100735-05	Nozzle	1	27	M50104-01	Bushing	2
8-2	M10659-1	Nozzle Seal Washer	2	28	099213-01	Button Plug	1
8-3	M10809-1	Nozzle Seal Spring	1	29	M11084-27	Screw, #10-16 x 1/2"	6
8-4	M8882	Nozzle Seal Sleeve	1	30	098511-82	Lower Shell	1
8-5	M50924-03	Burner Head Body	1	31	M11271-8	Clip Nut	6
8-6	M50820-02	Barb Fitting	2	32	M10908-14	Screw, #8-32 x 3/8"	1
8-7	HA3012	Spark Plug	1	33	M51150-01	Fuel filter	1
9	M11084-27	Screw, #10-16 x 1/2"	3	34	M10990-3	Rubber Bushing	1
10	M50814-06	Air Line	1	35	M51151-01	Fuel Line	1
11	M51345-01	Fuel Line	1	36	098513-21	Fuel Tank	1
12	097293-01	Fan	1	37	097702-01	Fuel Tank Cap	1
13	**	Motor and Pump Assembly	1	38	M16841-57	Wire Assembly (red 8 1/2")	1
13-1	102001-17	Motor (230V/50Hz)	1	39	097630-02	Burner Control	1
13-2	079975-02	Pump Body	1	40	M11143-1	Strain Relief Bushing	1
13-3	FHPF3-2C	Screw, #10-32 x 1/4"	2	41	101909-01	Power Cord	1
13-4	M22009	Insert	1	42	M51077-01AA	Side Cover	1
13-5	M22456-1	Rotor	1	43	M11084-27	Screw, #10-16 x 1/2"	4
13-6	M50545	End Pump Cover	1	44	078918-01	Terminal Board Tab Cap	1
13-7	M12179	Intake Filter	1	45	099177-01	Hex Nut	1
13-8	M16545	End Filter Cover	1	46	097468-01	Edge Liner	1
13-9	M8940	Steel Ball (1/4" Dia.)	1	PARTS AVAILABLE - NOT SHOWN			
13-10	M10993-1	Pressure Relief Spring	1		HA2210	Filler Neck Screen	1
13-11	M27694	Adjusting Screw	1		097773-01	Tradenname Decal	2
13-12	M22997	Plug	1		098234-56	General Info. Decal (English)	1
13-13	M12461-31	Screw, #10-32 x 1"	4		100941-09	General Info. Decal (Spanish)	1
13-14	M12244-1	Output Filter	1				
13-15	M12461-31	Screw, #10-32 x 1"	6				
13-16	M11637	Lint Filter	1				
13-17	M50820-02	Barb Fitting	1				
13-18	M8643	Blade	4				
14	M51114-01	Fan Guard	1				
15	M50631	Rubber Bumper	2				
16	M12461-13	Screw, #8-32 x 1/4"	2				
17	098138-02	Motor and Relay Bracket Assembly	1				
18	098165-04	Relay (motor start)	1				

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

ILLUSTRATED PARTS BREAKDOWN

44 kW (150,000 Btu/Hr)



Burner Head Assembly

PARTS LIST

44 kW (150,000 Btu/Hr)

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

KEY NO.	PART NUMBER	PART DESCRIPTION	QTY.	KEY NO.	PART NUMBER	PART DESCRIPTION	QTY.
1	098511-66	Upper Shell	1	18	099177-01	Hex Nut	1
2	100647-01	Screw, #10-16 x 1/2"	8	19	097785-04	Foam Gasket	2
3	098512-36	Combustion Chamber	1	20	NTC-4C	Hex locknut	2
4	099229-01	Photocell Bracket	1	21	101901-02	Electronic Ignitor	1
5	HA3019	Photocell Assembly	1	22	M11084-29	Screw, #10-16 x 3/4"	2
6	M27417	Drain Plug	1	23	099125-02	Terminal Board	1
7	M10908-2	Screw, #6-32 x 3/8"	2	24	099157-01	Rivet	1
8	**	Burner Head Assembly	1	25	M50104-03	Bushing	1
8-1	100735-11	Nozzle	1	26	M50104-03	Bushing	1
8-2	M10659-1	Nozzle Seal Washer	2	27	M50104-01	Bushing	2
8-3	M10809-1	Nozzle Seal Spring	1	28	099213-01	Button Plug	1
8-4	M8882	Nozzle Seal Sleeve	1	29	M11084-27	Screw, #10-16 x 1/2"	6
8-5	M50924-08	Burner Head Body	1	30	098511-82	Lower Shell	1
8-6	M50820-02	Barb Fitting	2	31	M11271-8	Clip Nut	8
8-7	HA3012	Spark Plug	1	32	M10908-14	Screw, #8-32 x 3/8"	1
9	M11084-27	Screw, #10-16 x 1/2"	3	33	M51150-01	Fuel filter	1
10	M50814-06	Air Line	1	34	M10990-3	Rubber Bushing	1
11	M51345-01	Fuel Line	1	35	M51151-02	Fuel Line	1
12	102042-01	Fan	1	36	098513-55	Fuel Tank	1
13	**	Motor and Pump Assembly	1	37	097702-01	Fuel Tank Cap	1
13-1	102001-03	Motor (with capacitor)	1	38	M16841-57	Wire Assembly (red 8 1/2")	1
13-2	079975-03	Pump Body	1	39	097630-02	Burner Control	1
13-3	FHPF3-6C	Screw, #10-32 x 3/4"	2	40	M11143-1	Strain Relief Bushing	1
13-4	M22009	Insert	1	41	101909-01	Power Cord	1
13-5	M22456-2	Rotor	1	42	M51077-01AA	Side Cover	1
13-6	M50545	End Pump Cover	1	43	M11084-27	Screw, #10-16 x 1/2"	4
13-7	M12179	Intake Filter	1	44	078918-01	Terminal Board Tab Cap	1
13-8	M16545	End Filter Cover	1	PARTS AVAILABLE - NOT SHOWN			
13-9	M8940	Steel Ball (1/4" Dia.)	1		HA2210	Filler Neck Screen	1
13-10	M10993-1	Pressure Relief Spring	1		097773-02	Tradename Decal	2
13-11	M27694	Adjusting Screw	1		M9900-192	Combustion Chamber Ground Wire	1
13-12	M22997	Plug	1		102751-01	General Information Decal (Spanish)	1
13-13	M12461-31	Screw, #10-32 x 1"	4		102749-01	General Information Decal (English)	1
13-14	M12244-1	Output Filter	1				
13-15	M12461-32	Screw, #10-32 x 1 1/8"	6				
13-16	M11637	Lint Filter	1				
13-17	M50820-02	Barb Fitting	1				
13-18	M8643-2	Blade	4				
14	M51114-01	Fan Guard	1				
15	M50631	Rubber Bumper	2				
16	097468-01	Edge Liner	1				
17	101206-01	Motor Bracket	1				

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

WARRANTY AND REPAIR SERVICE

CERTIFICATE OF GENERAL EQUIPMENT - LIMITED 90 DAY WARRANTY

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

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

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

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

WARRANTY SERVICE

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

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

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

DESA

INTERNATIONAL
Corporate Headquarters

2701 Industrial Drive

P.O. Box 90004

Bowling Green, Kentucky 42102-9004

U.S.A.



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