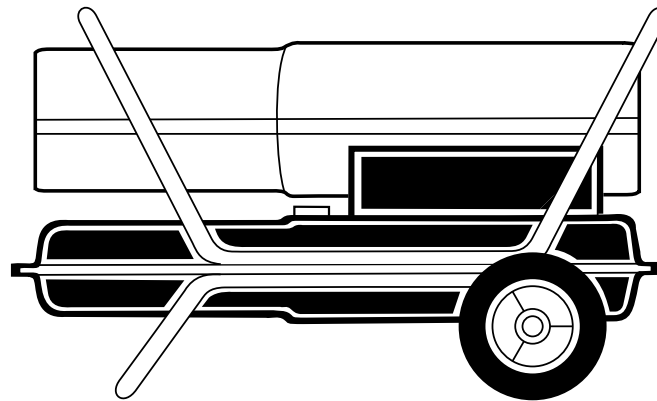
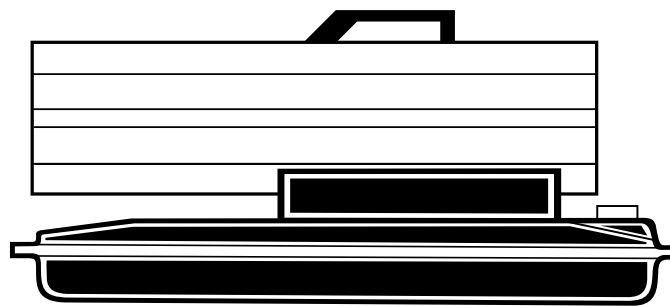


PORTABLE FORCED AIR HEATERS

OWNER'S MANUAL



Heater Sizes: 20,5 kW (70,000 Btu/Hr)
29,3 kW (100,000 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.

70,000 AND 100,000 BTU/HR PORTABLE FORCED AIR HEATER

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.

- 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.
- 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.
- Never use heater where gasoline, paint thinner, or other highly flammable vapors are present.
- Follow all local ordinances and codes when using heater.
- 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.

OWNER'S MANUAL

PRODUCT IDENTIFICATION

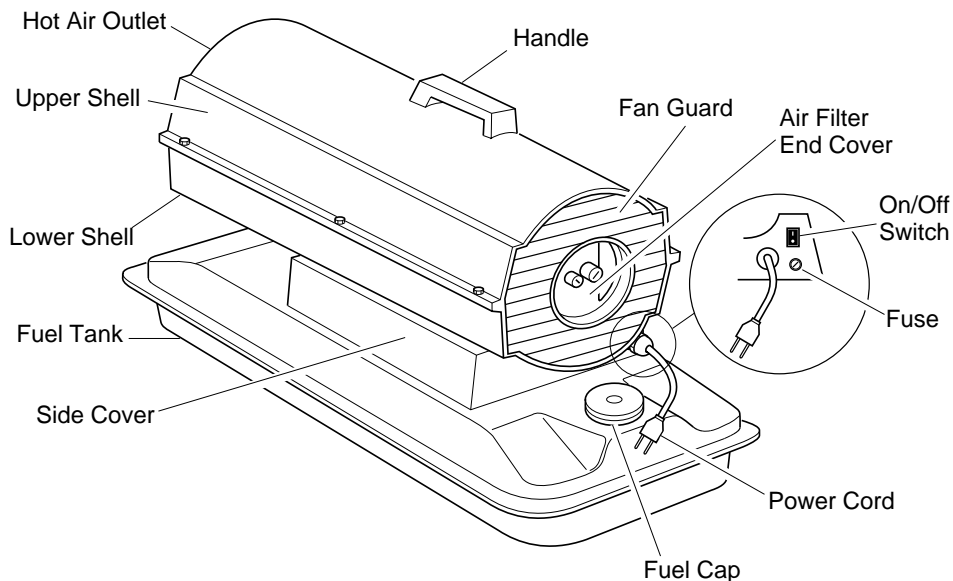


Figure 1 - 20.5 kW (70,000 Btu/Hr) Model

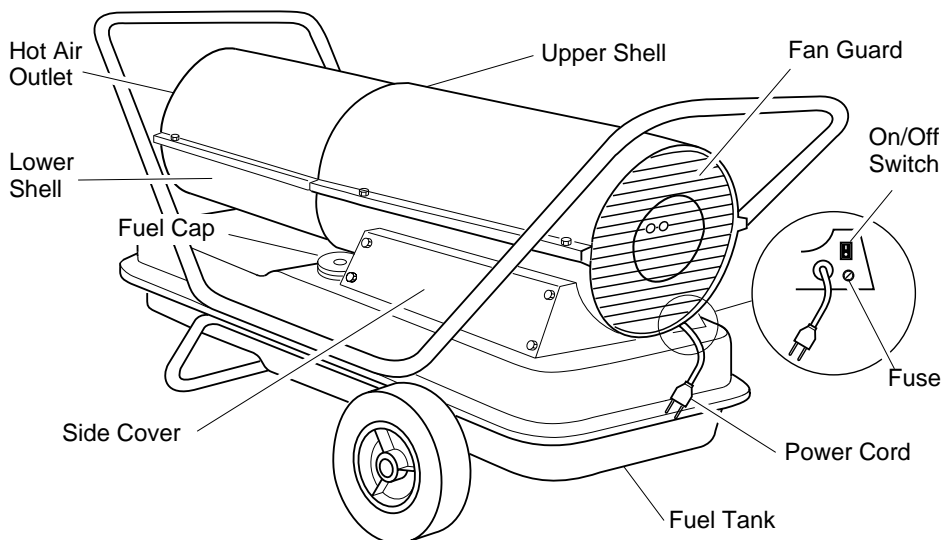


Figure 2 - 29.3 kW (100,000 Btu/Hr) Model

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.

70,000 AND 100,000 BTU/HR PORTABLE FORCED AIR HEATER

ASSEMBLY

(For 20,5 kW [70,000 Btu/Hr] Model Only)

GROMMET AND FUEL CAP

Within the plastic bag are the following:

- Fuel Cap (1)
- Cushion Grommet (3)

1. Install fuel cap on fuel tank.
2. Install three cushion grommets in holes on bottom of fuel tank. Install two grommets on one foot and one grommet on opposite foot (see Figure 3).

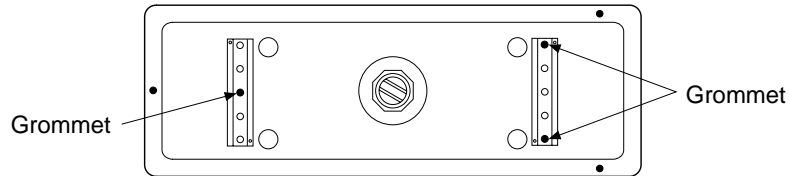


Figure 3 - Installing Grommets, 20,5 kW (70,000 Btu/Hr Model) Only

(For 29,3 kW [100,000 Btu/Hr] Model Only)

This model is 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 4).
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.

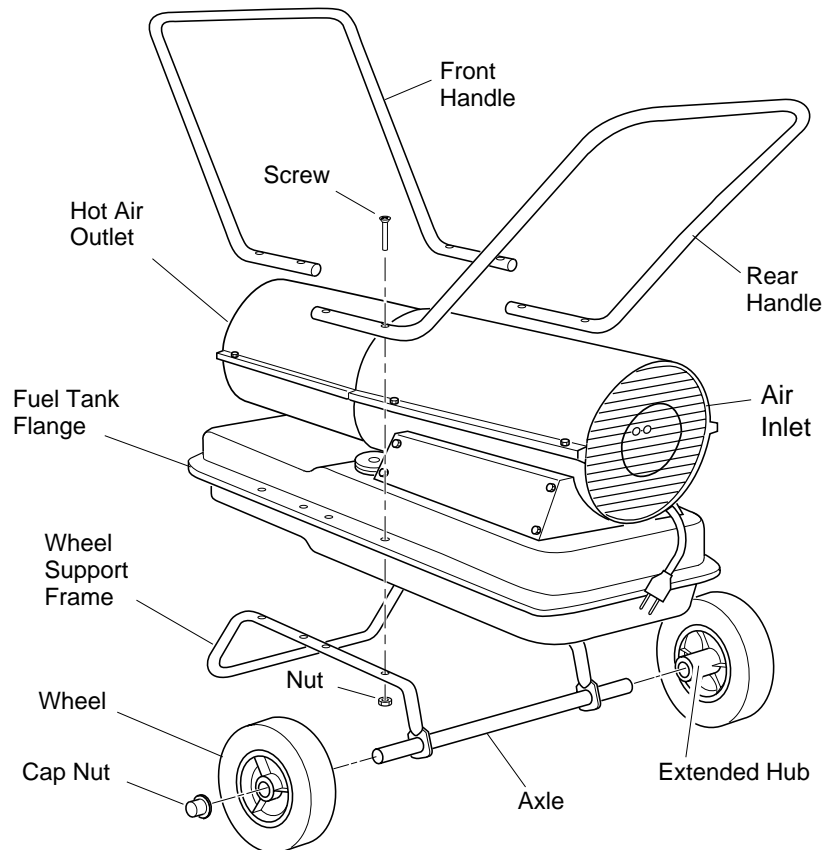


Figure 4 - Wheel and Handle Assembly, 29,3 kW (100,000 Btu/Hr Model) Only

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 transformer sends voltage to the spark plug. The spark plug ignites the fuel and air mixture.

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

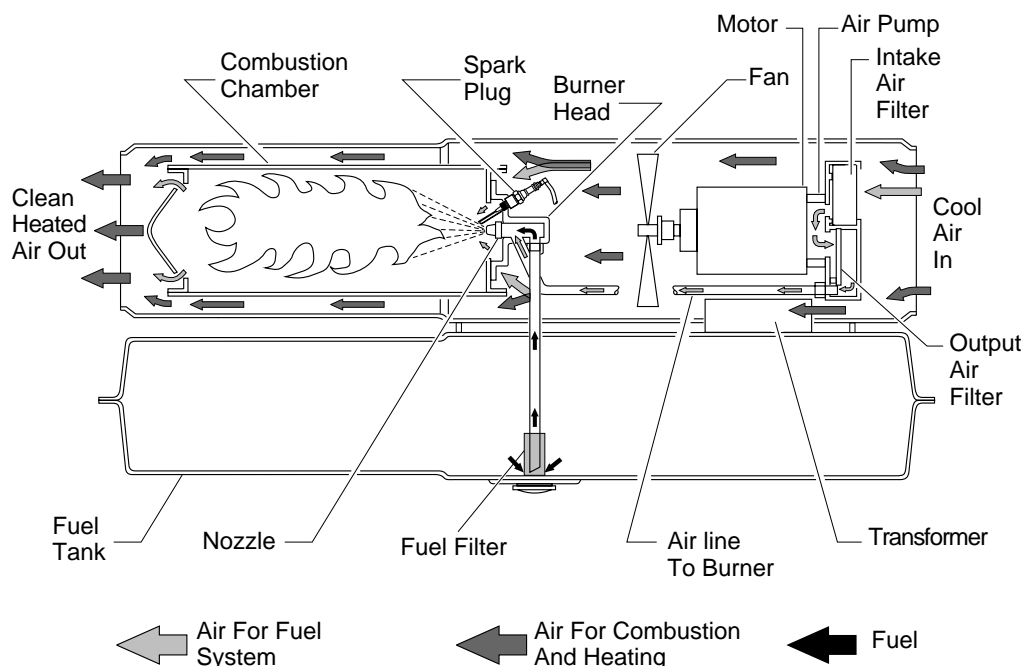


Figure 5 - Cross Section Operational View

FUELS

⚠ WARNING: Use only kerosene or No. 1 fuel oil to avoid risk of fire or explosion. Never use gasoline, 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
- poor starting during very cold weather

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

VENTILATION

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

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

Example: A 29,3 kW (100,000 Btu/Hr) heater requires one of the following:

- a 4,88 m (16 foot) wide two-car garage door raised 5,72 cm (2.25 inches)
- a 2,75 m (9 foot) wide single-car garage door raised 10,16 cm (4 inches)
- two, 76,20 cm (thirty-inch) wide windows raised 18,42 cm (7.25 inches)

70,000 AND 100,000 BTU/HR PORTABLE FORCED AIR HEATER

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

5. Switch heater on.

To Stop Heater

1. Switch heater off. Unplug power cord from outlet.

To Restart Heater

1. Wait 2 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: Never service heater while it is plugged in, operating, or hot. Severe burns and electrical shock can occur.

Item	How Often	How To
Fuel tank	Flush every 150-200 hours of operation or as needed.	See <i>Storing, Transporting, or Shipping</i> , above.
Air output and lint filters	Replace every 500 hours of operation or once a year.	See <i>Air Output, Air Intake, and Lint Filters</i> , page 9.
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 9.
Fuel filter	Clean twice a heating season or as needed.	See <i>Fuel Filter</i> , page 8.
Spark plug	Clean and regap every 300 hours operation or replace as needed.	See <i>Spark Plug</i> , page 8.
Fan blades	Clean every season or as needed.	See <i>Fan</i> , page 12.
Motor	Not required/permanently lubricated	

OWNER'S MANUAL

TROUBLESHOOTING

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

OBSERVED FAULT	POSSIBLE CAUSE	REMEDY
Heater ignites, but flame-out control shuts off heater after a short period of time.	<ol style="list-style-type: none">1. Wrong pump pressure2. Dirty air output, air intake, and lint filters3. Dirty fuel filter4. Dirt in nozzle5. Dirty photocell lens6. Bad flame-out control	<ol style="list-style-type: none">1. See <i>Pump Pressure Adjustment</i>, page 9.2. See <i>Air Output, Air Intake and Lint Filters</i>, page 9.3. See <i>Fuel Filter</i>, page 8.4. See <i>Nozzle</i>, page 10.5. Clean photocell lens.6. Replace flame-out control.
Heater will not ignite, but motor runs for a short period of time.	<ol style="list-style-type: none">1. Congealed fuel2. Wrong pump pressure3. Carbon deposits on spark plug and/or improper gap4. Dirty fuel filter5. Dirt in nozzle6. Water in fuel tank	<ol style="list-style-type: none">1. Temporarily move unplugged heater to a warmer, ventilated location.2. See <i>Pump Pressure Adjustment</i>, page 9.3. See <i>Spark Plug</i>, page 8.4. See <i>Fuel Filter</i>, page 8.5. See <i>Nozzle</i>, page 10.6. Drain and flush fuel tank with clean kerosene. See <i>Storing, Transporting, or Shipping</i>, page 6.
<p> WARNING: High voltage!</p>		
	<ol style="list-style-type: none">7. Transformer not grounded (earthed)8. Bad transformer	<ol style="list-style-type: none">7. Make sure transformer mounting is tight.8. Replace transformer.
Motor does not start when heater is plugged in, fan rotates slowly or does not turn.	<ol style="list-style-type: none">1. Binding pump rotor	<ol style="list-style-type: none">1. If fan is hard to turn, see <i>Pump Rotor</i>, page 11.

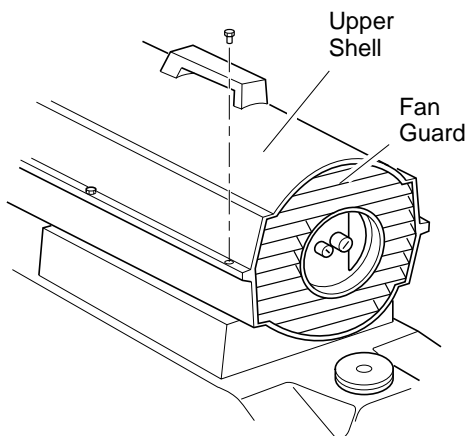
70,000 AND 100,000 BTU/HR PORTABLE FORCED AIR HEATER

SERVICE PROCEDURES

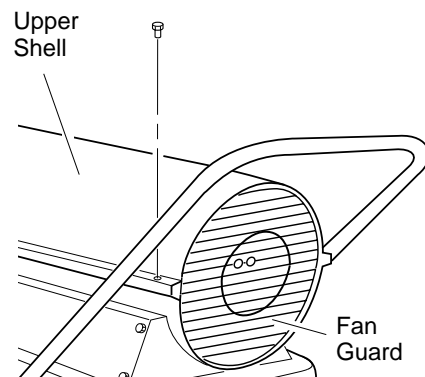
⚠ WARNING: Never service heater while it is plugged in, operating, or hot. Severe burns and electrical shock can occur.

Upper Shell Removal

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



**Figure 6 - Upper Shell Removal,
20,5 kW (70,000 Btu/Hr) Model**



**Figure 7 - Upper Shell Removal,
29,3 kW (100,000 Btu/Hr) Model**

Fuel Filter

1. Remove drain plug to access the fuel filter.
2. Remove fuel filter with needle nose pliers.
3. Wash fuel filter with clean fuel and replace on pick-up tube.
4. Replace drain plug.

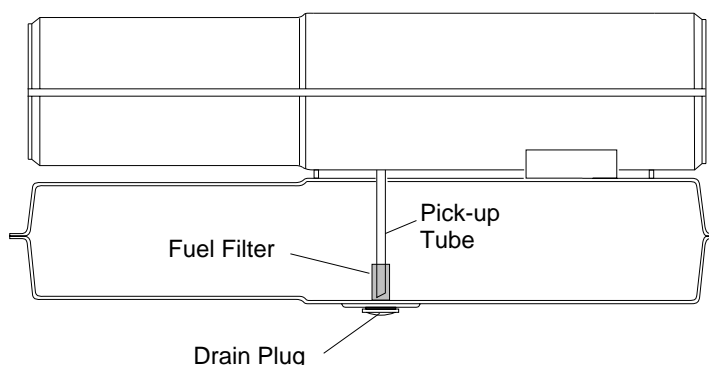


Figure 8 - Fuel Filter Removal

Spark Plug

1. Remove upper shell (see above).
2. Remove fan (see page 12).
3. Remove spark plug wire from spark plug.
4. Remove spark plug from burner head using 13/16" open-end wrench.
5. Clean and regap spark plug electrodes to .055" (1.4 mm) gap.
6. Install spark plug in burner head.
7. Attach spark plug wire to spark plug.
8. Replace fan (see page 12).
9. Replace fan guard and upper shell.

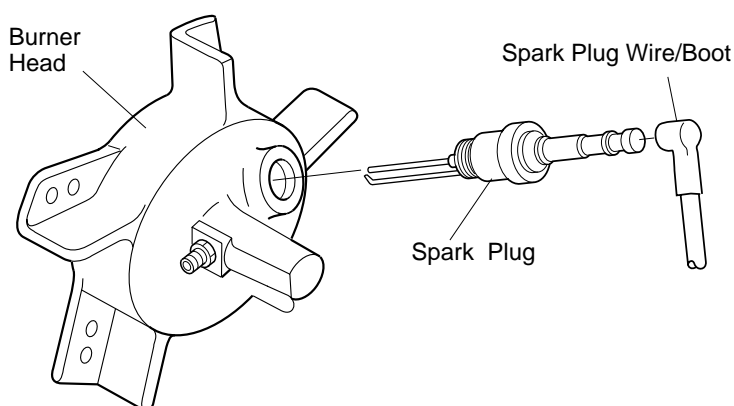


Figure 9 - Spark Plug Removal

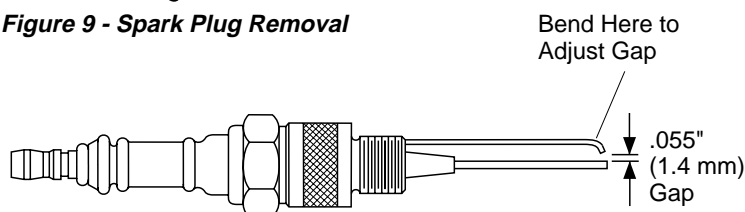


Figure 10 - Spark Plug Gap

SERVICE PROCEDURES

Continued

Air Output, Air Intake, and Lint Filters

1. Remove upper shell (see page 8).
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 6).
6. Replace filter end cover.
7. Replace fan guard and upper shell.

IMPORTANT: Do not oil filters

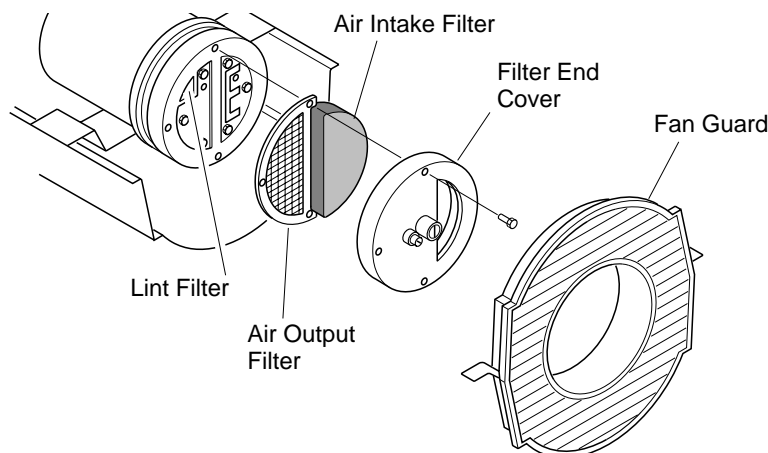


Figure 11 - Air Output, Air Intake, and Lint Filters, 20,5 kW (70,000 Btu/Hr) Model

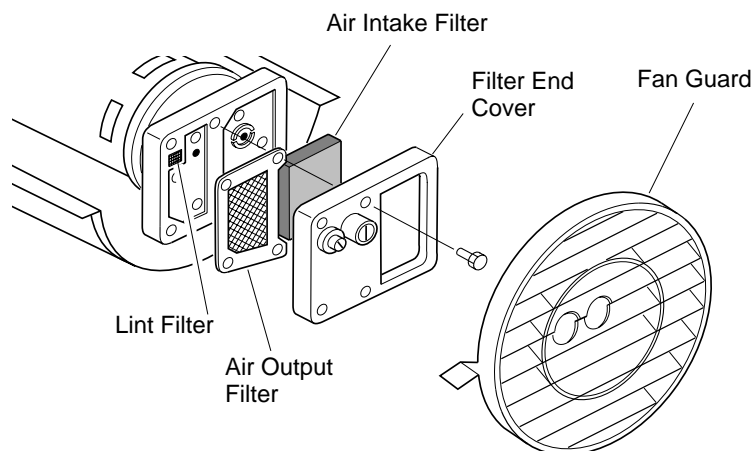


Figure 12 - Air Output, Air Intake, and Lint Filters, 29,3 kW (100,000 Btu/Hr) Model

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 6). 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.

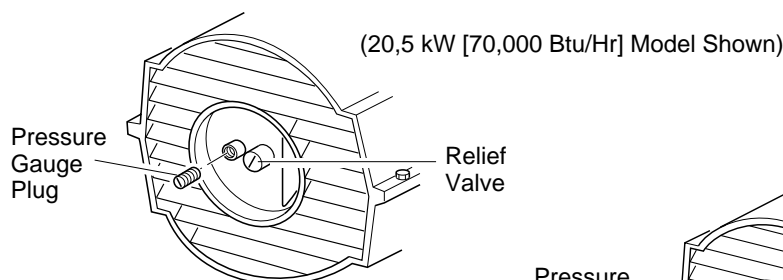


Figure 13 - Pressure Gauge Plug Removal

Model	Pump Pressure
20,5 kW (70,000 Btu/Hr)	34,50 kPa (5.0 PSI)
29,3 kW (100,000 Btu/Hr)	27,60 kPa (4.0 PSI)

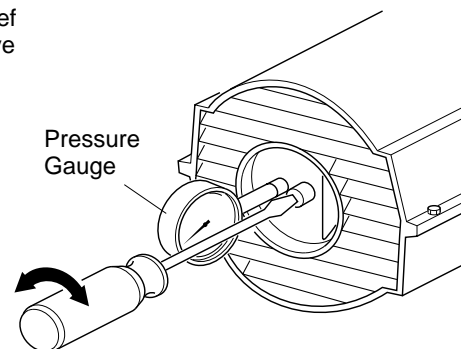


Figure 14 - Adjusting Pump Pressure

Continued

70,000 AND 100,000 BTU/HR PORTABLE FORCED AIR HEATER

SERVICE PROCEDURES

Continued

Nozzle

1. Remove upper shell (see page 8).
2. Remove fan (see page 12).
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 16).
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 12).
17. Replace fan guard and upper shell.

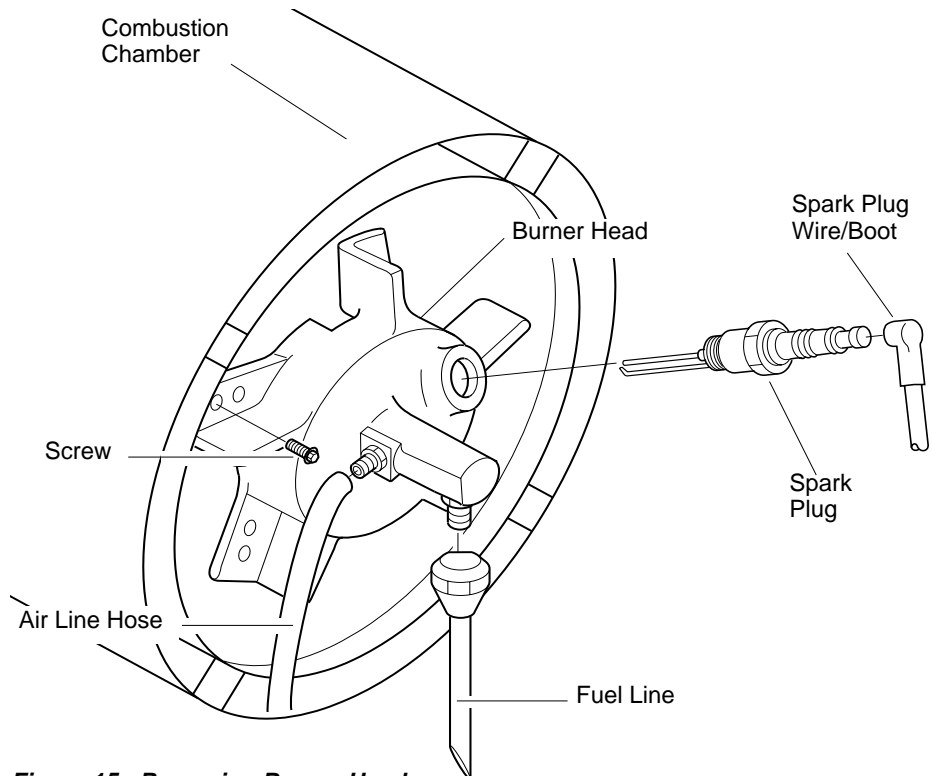


Figure 15 - Removing Burner Head

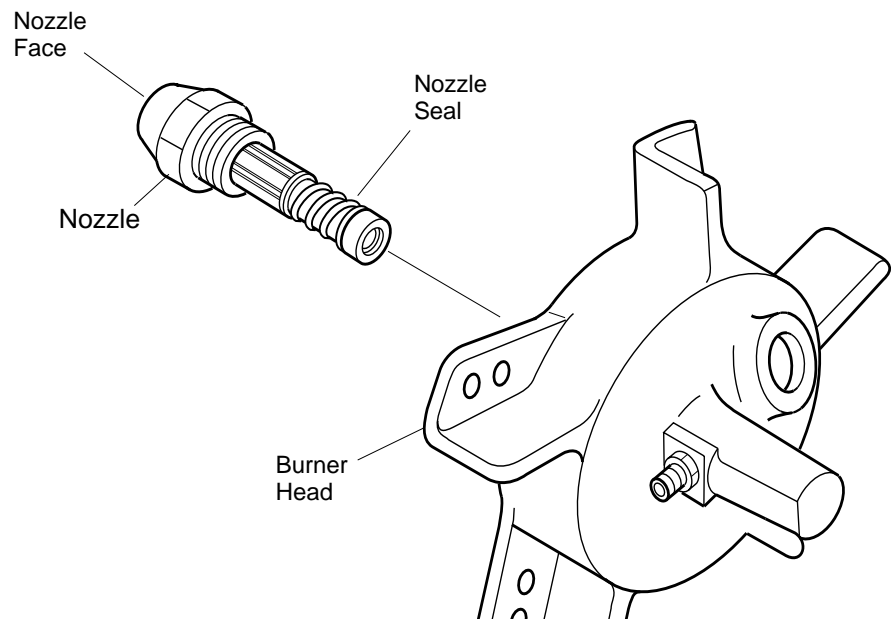


Figure 16 - Removing Nozzle

SERVICE PROCEDURES

Continued

Pump Rotor (Procedure if rotor is binding)

1. Remove upper shell (see page 8).
2. Remove filter end cover screws using 5/16" nut-driver.
3. Remove filter end cover and air filters.
4. Remove pump plate screws using 5/16" nut-driver.
5. Remove pump plate.
6. Remove rotor, insert, and blades.
7. Check for debris in pump. If debris is found, blow out with compressed air.
8. Install insert and rotor.
9. Check gap on rotor. Adjust to .003"/.004" (.076/.101 mm) if needed (see Figure 19).

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 9).

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 20).
15. Reinstall insert and rotor.
16. Perform steps 10 thru 12 above.

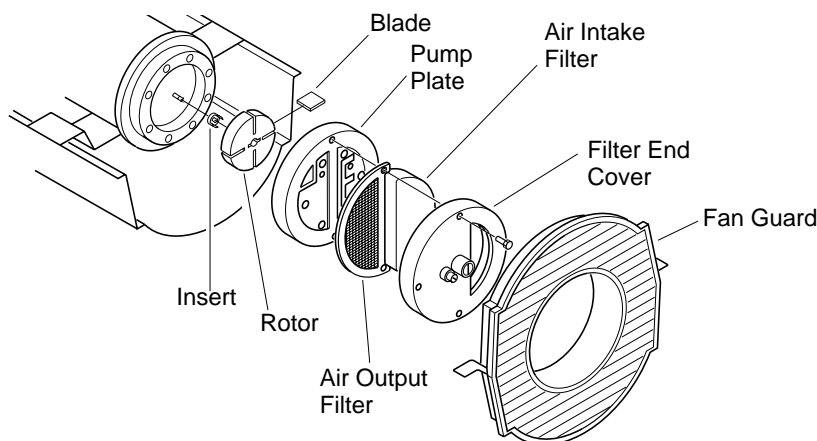


Figure 17 - Rotor Location, 20,5 kW (70,000 Btu/Hr) Model

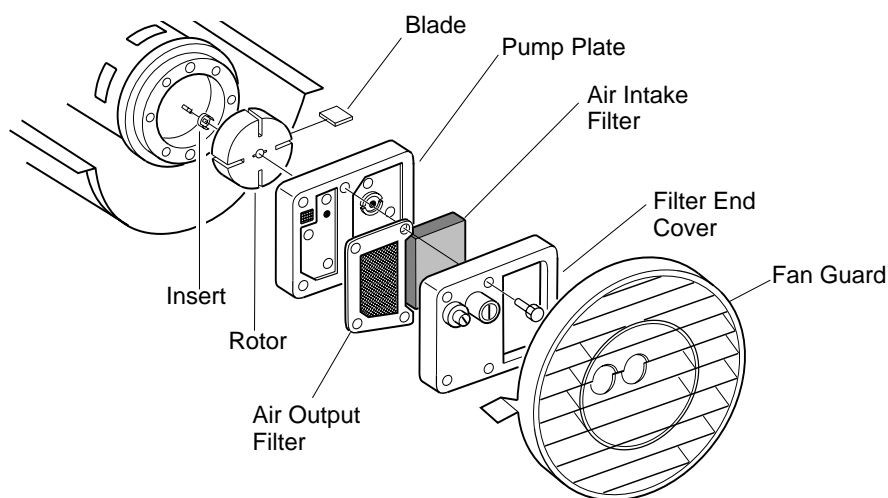


Figure 18 - Rotor Location, 29,3 kW (100,000 Btu/Hr) Model

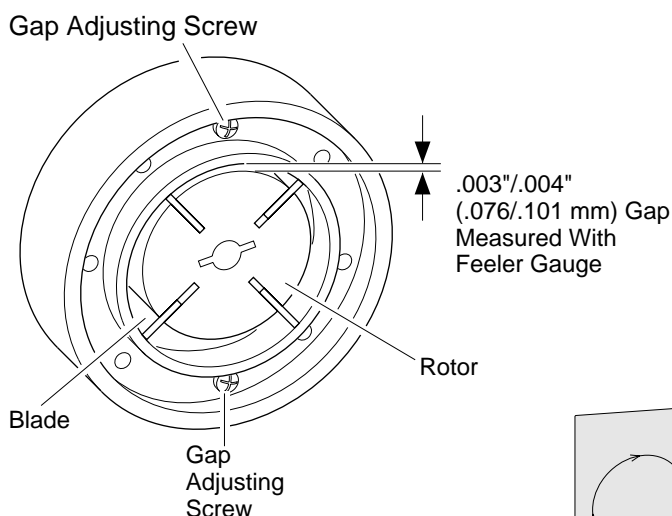


Figure 19 - Gap Adjusting Screw Locations

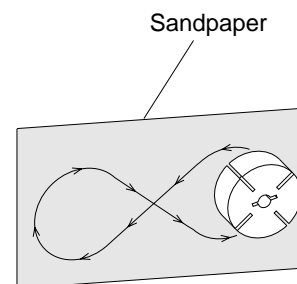


Figure 20 - Sanding Rotor

70,000 AND 100,000 BTU/HR PORTABLE FORCED AIR HEATER

SERVICE PROCEDURES

Continued

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 8).
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 22).
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.

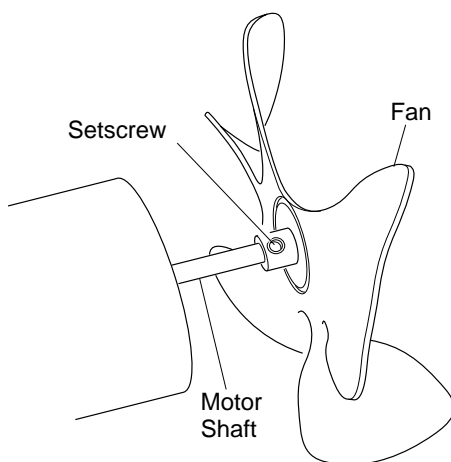


Figure 21 - Fan, Motor Shaft, and Setscrew Location

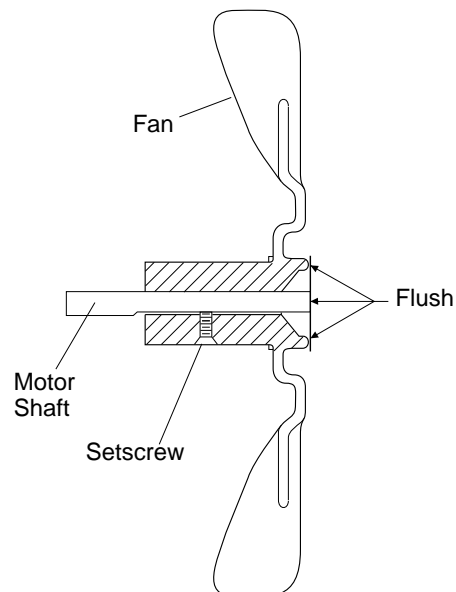


Figure 22 - Fan Cross Section

SPECIFICATIONS

Output Rating (kW)	20,5	29,3
(Btu/Hr)	70,000	100,000
Fuel	Use Only Kerosene or No. 1 Fuel Oil	
Fuel Tank Capacity		
(U.S. Gal./Liters)	5.0/18.92	9.0/34.06
Fuel Consumption		
(Gal. Per Hr./Liters Per Hr.)	.52/1.97	.73/2.76
Electric Requirements	230 V/50 Hz	230 V/50 Hz
Amperage (Normal Run)	2.0	2.0
Hot Air Output (CFM/CMM)	225/6.36	425/12
RPM	2850	2850

WIRING DIAGRAM

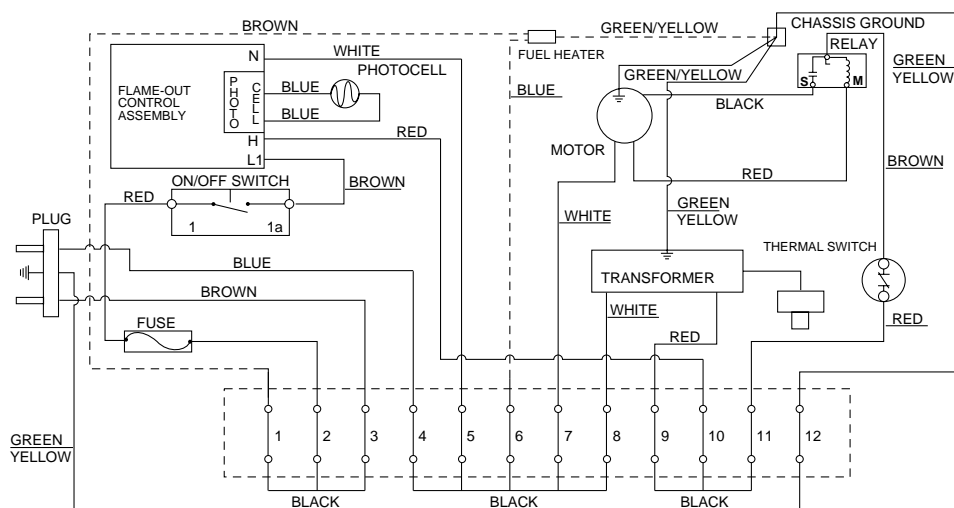
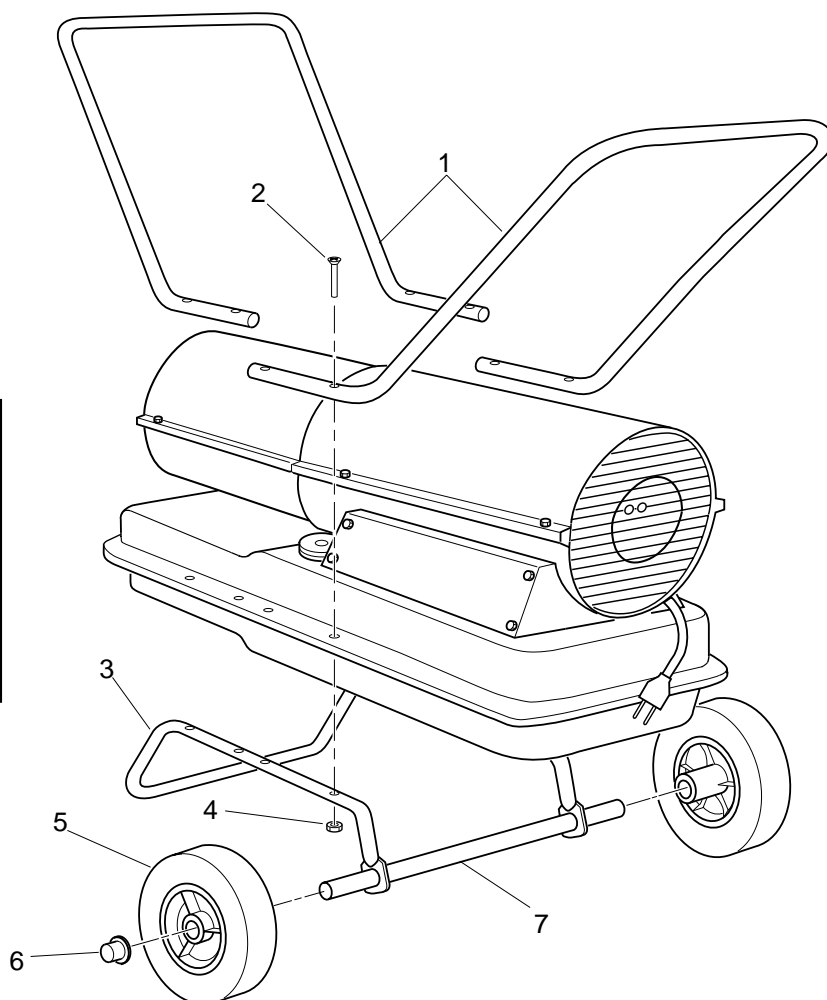


Figure 23 - Wiring Diagram

ILLUSTRATED PARTS BREAKDOWN AND PARTS LIST

WHEELS AND HANDLES FOR 29,3 kW (100,000 Btu/Hr) MODEL

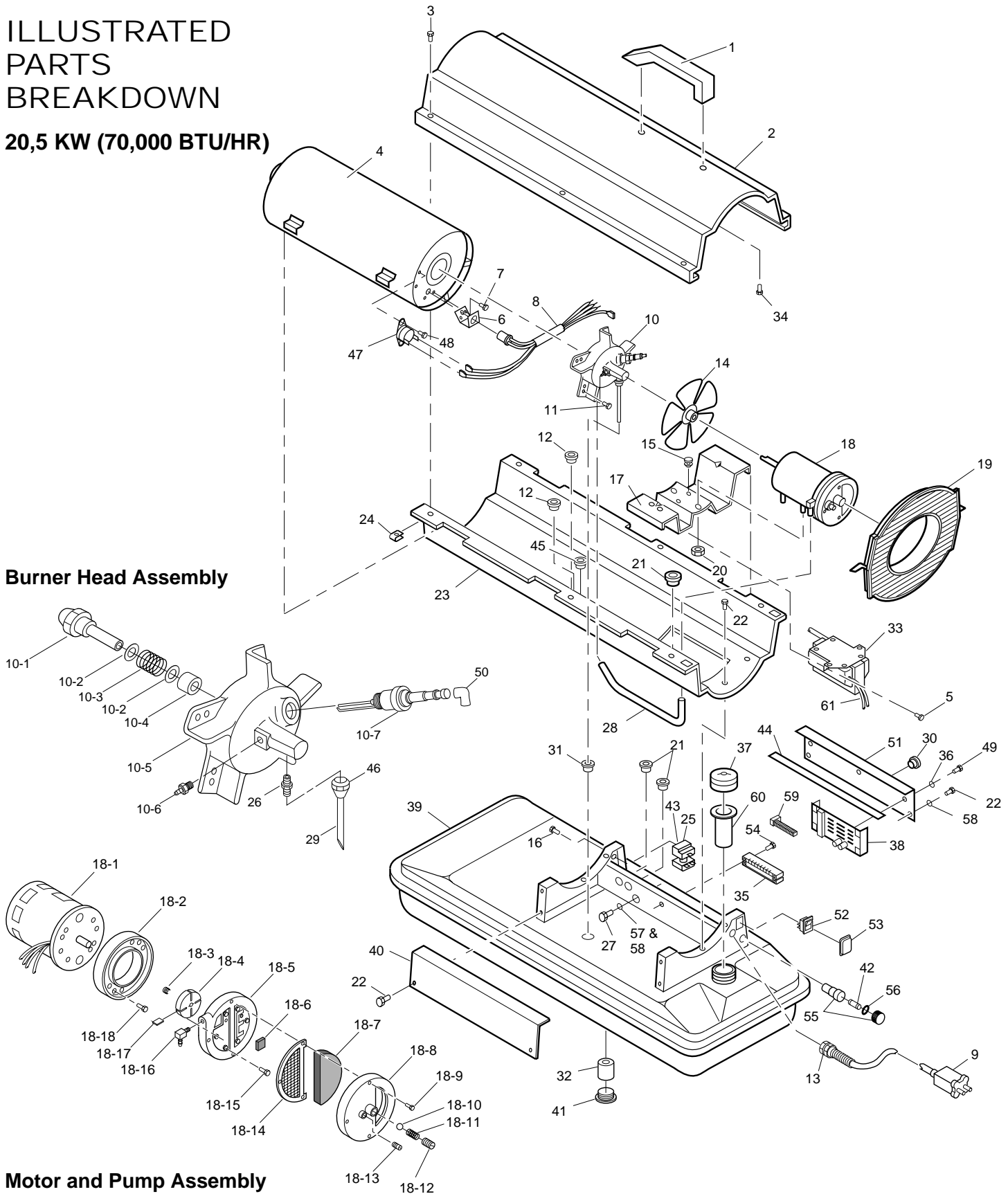
KEY NO.	PART NUMBER	PART DESCRIPTION	QTY.
1	HA2203	Handles	2
2	M12345-33	Screw, #10-24 x 1 3/4"	8
3	M12342-3	Wheel Support Frame	1
4	NTC-3C	Hex Nut, #10-24	8
5	097896-03	Wheel	2
6	M28526	Cap Nut	2
7	M51015-01	Axle	1



70,000 AND 100,000 BTU/HR PORTABLE FORCED AIR HEATER

ILLUSTRATED PARTS BREAKDOWN

20,5 KW (70,000 BTU/HR)



OWNER'S MANUAL

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, 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	098511-54	Upper Shell	1	20	NTC-4C	Hex locknut	2
3	100647-01	Screw, #10-16 x 1/2"	6	21	M50104-02	Bushing	4
4	098512-56	Combustion Chamber	1	22	M11084-26	Screw, #10-16 x 3/8"	12
5	M11084-29	Screw, #10-16 x 3/4"	2	23	098511-87	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	M50420-06	Relay (motor start) Assembly	1
8	097475-03	Wire Harness Assembly	1	26	079685-01	Male Connector	1
9	097545-01	Power Cord	1	27	RF3-6B	Screw, #10-32 x 3/4"	1
10	**	Burner Head Assembly	1	28	M29652-04	Rubber Airline	1
10-1	100735-04	Nozzle	1	29	097514-01	Fuel Line	1
10-2	M10659-1	Nozzle Seal Washer	2	30	097467-02	Button Plug	1
10-3	M10809-1	Nozzle Seal Spring	1	31	M10990-3	Rubber Bushing	1
10-4	M8882	Nozzle Seal Sleeve	1	32	M27669-01	Fuel Filter Assembly	1
10-5	M51098-01	Burner Head Body	1	33	099673-02	Transformer	1
10-6	M50820-01	Barb Fitting	1	34	M11084-29	Screw, #10-16 x 3/4"	2
10-7	M10962-2	Spark Plug	1	35	097549-01	Terminal Board	1
11	M11084-27	Screw, #10-16 x 1/2"	3	36	WLE-2C	Washer	2
12	M30865-02	Bushing	2	37	097702-01	Fuel Tank Cap	1
13	097740-01	Strain Relief Bushing	1	38	097748-02	Flame-Out Control	1
14	M30884	Fan	1	39	098513-34	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	M27417	Drain Plug	1
17	101205-01	Motor Bracket	1	42	097746-01	4 Amp Fuse	1
18	**	Motor and Pump Assembly	1	43	M50422	Bracket	1
18-1	097464-01	Motor (230V/50Hz)	1	44	097785-01	Vinyl Foam Gasket	1
18-2	079975-02	Pump Body	1	45	097467-01	Button Plug	1
18-3	M22009	Insert	1	46	M50660-05	Flared Nut	1
18-4	M22456-1	Rotor	1	47	M51028-03	Limit Switch	1
18-5	M29608	End Pump Cover	1	48	M12749-2	Screw, #6-32 x 3/8"	2
18-6	M29632	Lint Filter	1	49	M11084-37	Screw, #8-18 x 1/4"	2
18-7	M29633	Intake Filter	1	50	102916-01	Sparkplug Boot	1
18-8	M29609	End Filter Cover	1	51	097461-02AA	Side Cover	1
18-9	M12461-31	Screw, #10-32 x 1"	3	52	097462-01	Switch	1
18-10	M8940	Steel Ball (1/4" Dia.)	1	53	079919-01	Switch Cover	1
18-11	M10993-1	Pressure Relief Spring	1	54	097470-01	Screw, #4 x 5/8"	2
18-12	M27694	Adjusting Screw	1	55	100682-01	Fuse Holder	1
18-13	M22997	Plug	1	56	100681-01	Drip Proof Ring	1
18-14	M29612-01	Output Filter	1	57	NPF-3B	Nut, 10-32	3
18-15	M12461-31	Screw, #10-32 x 1"	6	58	WLE-3	Washer	7
18-16	M50016	Elbow, 90° (Barb Fitting)	1	59	098380-01	Cable Tie	1
18-17	M8643	Blade	4	60	M18053	Filler Neck Screen	1
18-18	FHPF3-5C	Screw, #10-32 x 5/8"	2	61	101711-01	Varnish Tubing	1

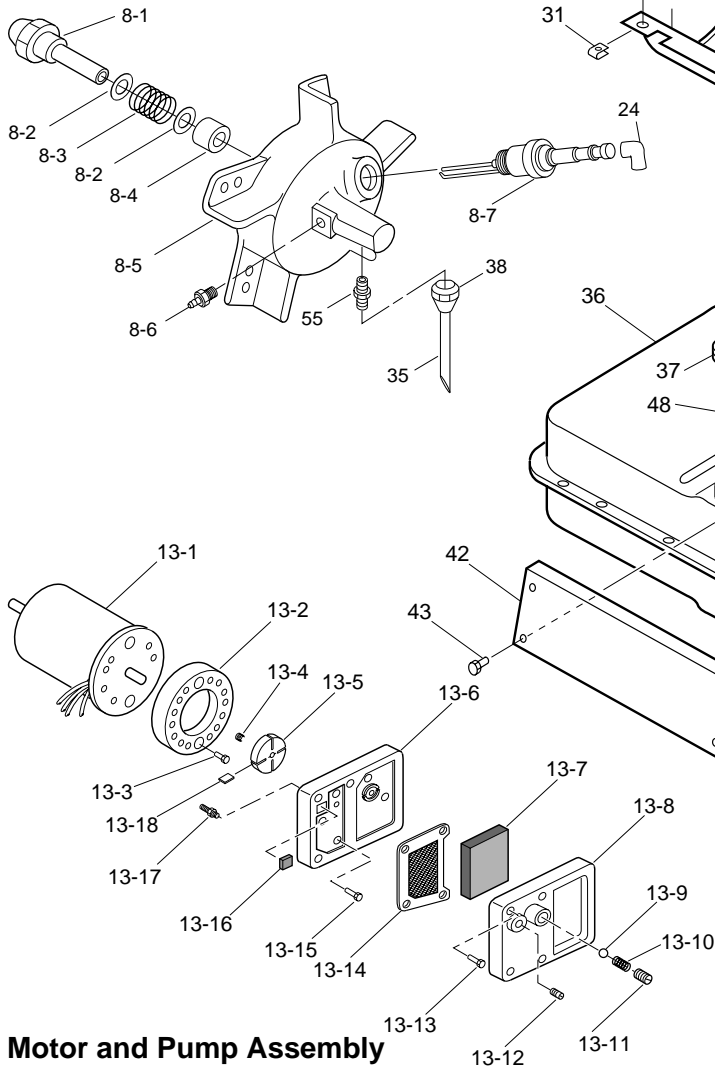
**Not available as an assembly, order parts separately.

70,000 AND 100,000 BTU/HR PORTABLE FORCED AIR HEATER

ILLUSTRATED PARTS BREAKDOWN

**29,3 KW (100,000
BTU/HR)**

Burner Head Assembly



Motor and Pump Assembly

OWNER'S MANUAL

PARTS LIST

29,3 KW (100,000 BTU/HR)

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

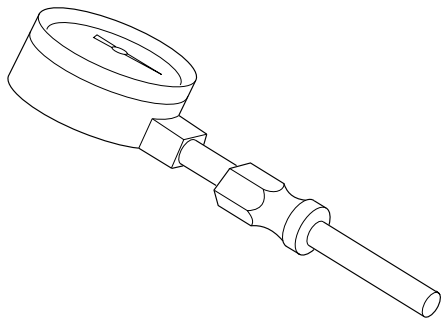
KEY NO.	PART NUMBER	PART DESCRIPTION	QTY.	KEY NO.	PART NUMBER	PART DESCRIPTION	QTY.
1	098511-138	Upper Shell	1	20	NTC-4C	Hex locknut	2
2	100647-01	Screw, #10-16 x 1/2"	8	21	099673-03	Transformer	1
3	098512-57	Combustion Chamber	1	22	M12749-2	Screw, #6-32 x 3/8"	2
4	M16660	Photocell Bracket	1	23	097549-01	Terminal Board	1
5	097475-04	Wire Harness Assembly	1	24	102916-01	Spark Plug Boot	1
6	M27417	Drain Plug	1	25	M50104-03	Bushing	1
7	M10908-2	Screw, #6-32 x 3/8"	2	26	097470-02	Screw, #4 x 7/8"	2
8	**	Burner Head Assembly	1	27	M50104-02	Bushing	2
8-1	100735-15	Nozzle	1	28	099213-01	Button Plug	1
8-2	M10659-1	Nozzle Seal Washer	2	29	M11084-27	Screw, #10-16 x 1/2"	6
8-3	M10809-1	Nozzle Seal Spring	1	30	098511-85	Lower Shell	1
8-4	M8882	Nozzle Seal Sleeve	1	31	M11271-8	Clip Nut	8
8-5	M50924-01	Burner Head Body	1	32	M50104-01	Bushing	2
8-6	M50820-02	Barb Fitting	1	33	M27669-01	Fuel filter	1
8-7	M10962-2	Spark Plug	1	34	M10990-3	Rubber Bushing	1
9	M11084-27	Screw, #10-16 x 1/2"	3	35	M16790-8	Fuel Line	1
10	M50814-06	Air Line	1	36	098513-33	Fuel Tank	1
11	M11084-37	Screw, #8-18 x 1/4"	2	37	097702-01	Fuel Tank Cap	1
12	102042-01	Fan	1	38	M50660-05	Flared Nut	1
13	**	Motor and Pump Assembly	1	39	097748-02	Flame-Out Control	1
13-1	102001-11	Motor (230V/50Hz)	1	40	097740-01	Strain Relief Bushing	1
13-2	079975-02	Pump Body	1	41	097545-01	Power Cord	1
13-3	FHPF3-5C	Screw, #10-32 x 5/8"	2	42	M51077-01AA	Side Cover	1
13-4	M22009	Insert	1	43	M11084-26	Screw, #10-16 x 3/8"	10
13-5	M22456-1	Rotor	1	44	M51028-04	Limit Switch	1
13-6	M50545	End Pump Cover	1	45	097462-01	On/Off Switch	1
13-7	M12179	Intake Filter	1	46	097468-01	Edge Liner	1
13-8	M16545	End Filter Cover	1	47	079919-01	Switch Cover	1
13-9	M8940	Steel Ball (1/4" Dia.)	1	48	M18053	Filler Neck Screen	1
13-10	M10993-1	Pressure Relief Spring	1	49	097750-02AA	Side Cover	1
13-11	M27694	Adjusting Screw	1	50	097467-02	Button Plug	1
13-12	M22997	Plug	1	51	098029-01	Nylon Spacer	2
13-13	M12461-31	Screw, #10-32 x 1"	4	52	NPF-3B	Nut, 10-32	3
13-14	M12244-1	Output Filter	1	53	RF3-6B	Screw, #10-32 x 3/4"	1
13-15	M12461-31	Screw, #10-32 x 1"	6	54	WLE-3	Washer, #10	7
13-16	M11637	Lint Filter	1	55	079685-01	Male Connector	1
13-17	M50820-02	Barb Fitting	1	56	101711-01	Varnish Tubing	1
13-18	M8643	Blade	4	57	WLE-2C	Washer, #8	2
14	M51114-01	Fan Guard	1	58	098380-01	Cable Tie	1
15	M50631	Rubber Bumper	2	59	M50422	Bracket	1
16	M12461-13	Screw, #8-32 x 1/4"	2	60	100682-01	Fuse Holder	1
17	101206-01	Motor Bracket	1	61	100681-01	Drip Proof Ring	1
18	M50420-06	Relay (motor start) Assembly	1	62	097746-01	4 Amp Fuse	1
19	097467-01	Button Plug	1				

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

70,000 AND 100,000 BTU/HR PORTABLE FORCED AIR HEATER

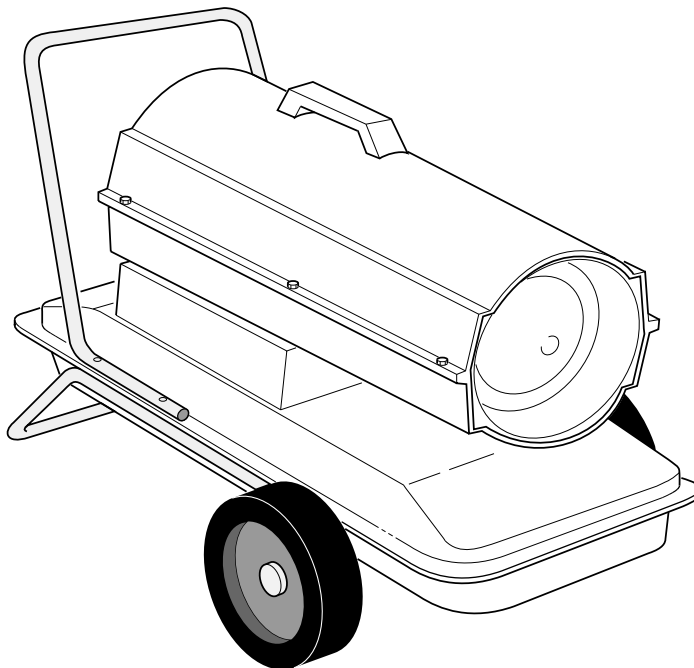
ACCESSORIES

Purchase accessories from your local dealer.



AIR GAUGE KIT - HA1180

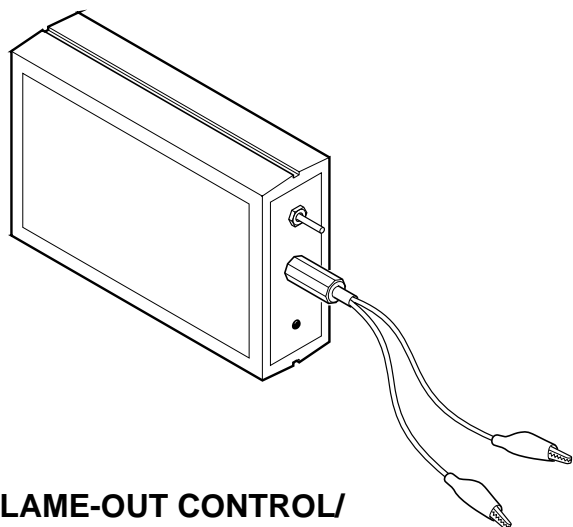
For all models. Special tool to check pump pressure.



HEAVY DUTY WHEELS AND HANDLE KIT - HA1202

For heavy duty applications.

Makes your heater even more portable and convenient. For 20,5 kW (70,000 Btu/Hr) model.



FLAME-OUT CONTROL/ PHOTOCELL TESTER - HA1170

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

NOTES

[illegible]

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:

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Corporate Headquarters
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