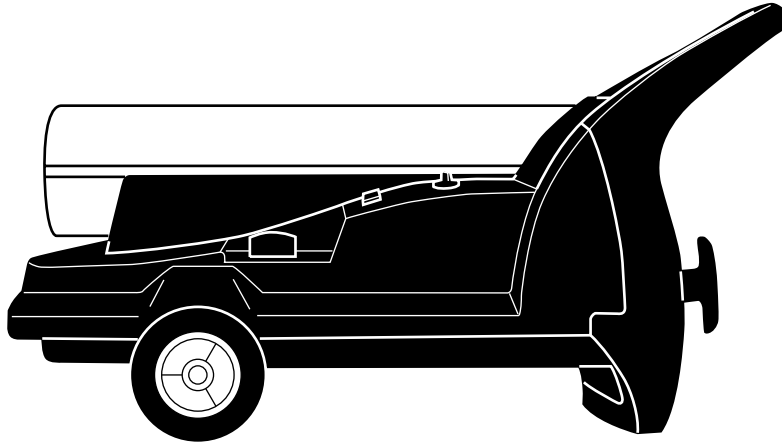


For more information, visit www.desatech.com



Heater Sizes:

125,000 and 170,000 Btu/Hr Thermostat

100,000 140,000 and 200,000 Btu/Hr Variable Output with Thermostat

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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Fill In For Your Records

Model No. _____
(Located on side panel)

Serial No. _____
(Located on fuel tank)

Date of Purchase: _____



Save this manual for future reference.

SAFETY INFORMATION

WARNINGS

IMPORTANT: Read this owner's manual carefully and completely before trying to assemble, operate, or service this heater. Improper use of this heater can cause serious injury or death from burns, fire, explosion, electrical shock, and carbon monoxide poisoning.

 DANGER: Carbon monoxide poisoning may lead to death!

Carbon Monoxide Poisoning: Early signs of carbon monoxide poisoning resemble the flu, with headaches, dizziness, and/or nausea. If you have these signs, the heater may not be working properly. **Get fresh air at once!** Have heater serviced. Some people are more affected by carbon monoxide than others. These include pregnant women, persons with heart or lung disease or anemia, those under the influence of alcohol, and those at high altitudes.

Make certain you read and understand all warnings. Keep this manual for reference. It is your guide to safe and proper operation of this heater.

- Use only kerosene, #1/#2 diesel/fuel oil, JET A or JP-8 fuels 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 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 762cm (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 authority having jurisdiction.
- Use only 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-vented areas. Before using heater, provide at least a 2800 square cm (three-square-foot) opening of fresh, outside air for each 30 kw (100,000 Btu/Hr) of rating. This heater produces carbon monoxide, which is listed by the State of California as a reproductive toxin under Proposition 65.
- 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 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 attach duct work to front or rear of heater.
- Never attach heater to external fuel tank.
- 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 304.8cm (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.
- Unplug heater when not in use.
- Never block air inlet (rear) or air outlet (front) of heater.
- **Warning to New York City Residents**
For Use Only At Construction Sites in accordance with applicable NYC codes under NYCFD certificate of approval #4803, #4899, #4908, #4909, or #4934.

PRODUCT IDENTIFICATION

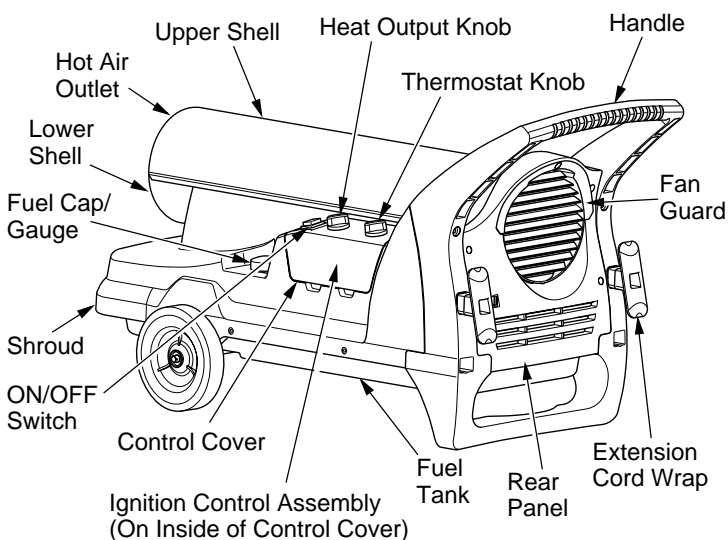


Figure 1 - Variable Output With Thermostat Model

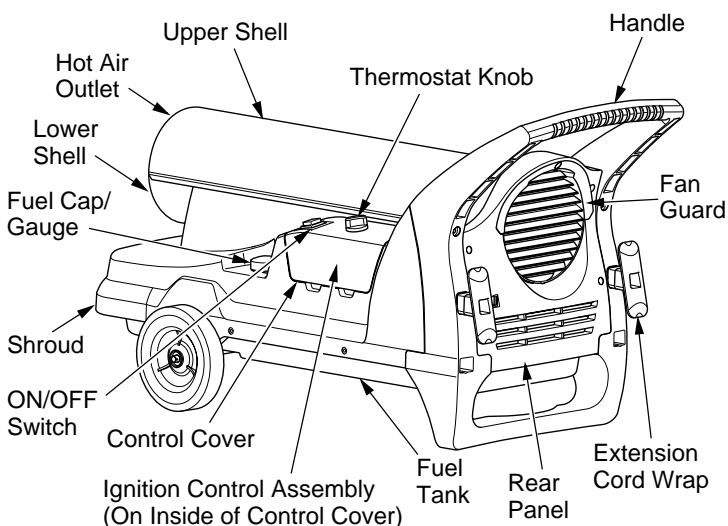


Figure 2 - Thermostat Model

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.

FUELS

⚠ WARNING: Use only kerosene, #1/#2 diesel/fuel oil, JET A or JP-8 fuels to avoid risk of fire or explosion. Never use gasoline, oil drained from crankcases, naphtha, paint thinners, alcohol or other highly flammable fuels.

Use only kerosene, #1/#2 diesel/fuel oil, JET A or JP-8 fuels. Heavier fuels such as No. 2 fuel oil or No. 2 diesel fuel may also be used but will result in:

- noticeable odor
- additional fuel filter maintenance
- the need for nontoxic, anti-icer additives in very cold weather

Do not use fuels heavier than No. 2 grade or heavy oils such as oil drained from crankcases. These heavy oils will not ignite properly and will contaminate the heater.

IMPORTANT: Use a KEROSENE ONLY (blue) or DIESEL ONLY (yellow) storage container. Be sure storage container is clean. Foreign matter such as rust, dirt, or water will cause the ignition control assembly 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 three square feet (2,800 square cm) for each 100,000 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 58.6kw (200,000 Btu/Hr) heater requires one of the following:

- a two-car garage door [4.88 meter (16 feet) opening] raised 12.7 cm (5 inches)
- a single-car garage door [2.74 meter (9 feet) opening] raised 20.3 cm (8 inches)
- two, 76.2 cm (30 inch) windows raised 38.1 cm (15 inches)

THEORY OF OPERATION

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

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

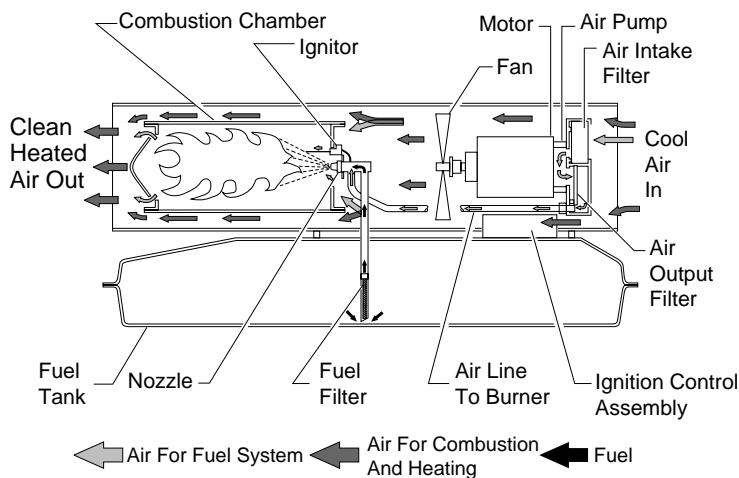


Figure 3 - Cross Section Operational View

ASSEMBLY

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

Tools Needed

- Medium Phillips Screwdriver
- Hammer
- Pliers
- Flat Blade Screwdriver

1. Slide axle through shroud. Install washers and wheels on axle as shown in Figure 4.

IMPORTANT: When installing wheels, point extended hub of wheels toward shroud (see Figure 4).

2. Place cotter pins in axle. Bend cotter pin legs around axle.
3. Install extension cord wraps into handle.
4. Slide handle onto shroud leaving a one inch gap between parts.
5. Place washers onto screws and insert screws into holes in handles.
6. Visually confirm that all six screws are threaded into nuts in the shroud. Push the handle completely into the shroud.
7. Tighten all screws.

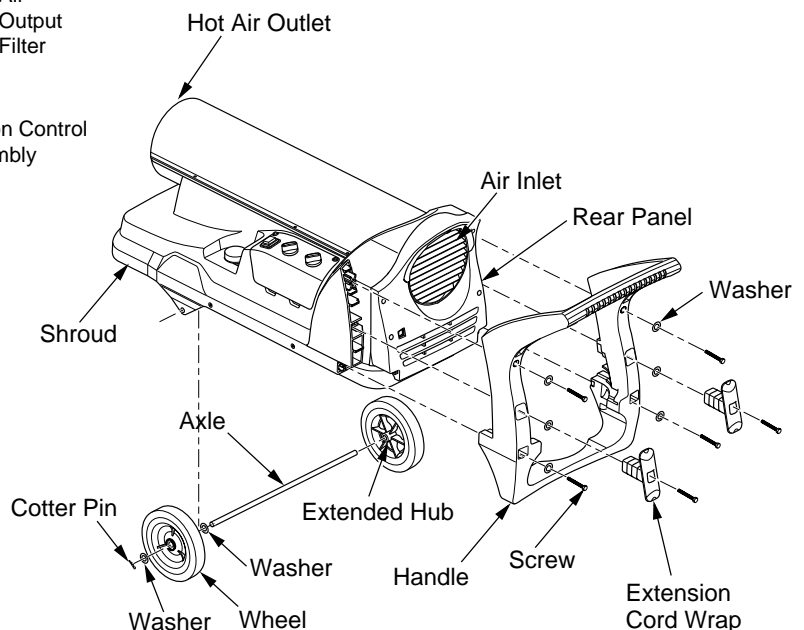


Figure 4 - Wheel and Handle Assembly

OPERATION (Thermostat Models)

IMPORTANT: Review and understand the warnings in the *Safety Information* section, page 2. They are needed to safely operate this heater. Follow all local ordinances and codes when using this heater.

TO START HEATER

1. Follow all ventilation and safety information.
2. Locate heater to provide maximum circulation of the heated air. Follow all location requirements noted in *Safety Information*, page 2.
3. Fill fuel tank with fuel. Use only kerosene, #1/#2 diesel/fuel oil, JET A or JP-8 fuels to avoid risk of fire or explosion. Never use gasoline, naphtha, paint thinners, alcohol, or other flammable fuels.
4. Attach fuel cap/gauge.
5. 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

6. Plug extension cord into standard 120 volt/60 hertz, 3-prong grounded outlet.
7. Turn thermostat knob to the right (clockwise) to the warmest position.
8. Push ON/OFF switch to the ON (I) position. Light will come on. **Note:** Ignitor will preheat for five seconds, then heater will start.
9. After heater is running, adjust thermostat knob to the desired setting. **Note:** A cold heater may affect the thermostat setting. This thermostat is a general-heating control. It is not intended for precise temperature control. Adjust thermostat until heater cycles at the desired setting.

TO STOP HEATER

Push ON/OFF switch to the OFF (O) position.

TO RESET HEATER

1. Push ON/OFF switch to the OFF (O) position and wait 10 seconds. (Wait two minutes if heater has been running.)
2. Repeat steps under *To Start Heater*.

OPERATION (Variable Output with Thermostat Models)

IMPORTANT: Review and understand the warnings in the *Safety Information* section, page 2. They are needed to safely operate this heater. Follow all local ordinances and codes when using this heater.

TO START HEATER

1. Follow all ventilation and safety information.
2. Locate heater to provide maximum circulation of the heated air. Follow all location requirements noted in *Safety Information*, page 2.
3. Fill fuel tank with fuel. Use only kerosene, #1/#2 diesel/fuel oil, JET A or JP-8 fuels to avoid risk of fire or explosion. Never use gasoline, naphtha, paint thinners, alcohol, or other flammable fuels.
4. Attach fuel cap/gauge.
5. 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

6. Plug extension cord into standard 120 volt/60 hertz, 3-prong grounded outlet.

Manual Mode of Operation

1. Adjust HEAT OUTPUT knob to the desired setting.
2. Push ON/OFF switch to the ON (I) position. Light will come on. **Note:** Ignitor will preheat for five seconds, then heater will start.
3. Heater will run in the HI heat output setting for 10 to 15 seconds, then automatically adjust to the desired heat output.

Note: HEAT OUTPUT can be adjusted to any setting between LO and HI while the heater is running.

Note: In the manual mode of operation, the setting of the THERMOSTAT knob has no effect on the operation of the heater.

OPERATION (Variable Output with Thermostat Models)

Continued

Automatic Mode of Operation

1. Set the HEAT OUTPUT Knob to the AUTO setting.
2. Set the THERMOSTAT Knob to the desired temperature.
3. Push ON/OFF switch to the ON (I) position. Light will come on.
4. If the thermostat is calling for heat (ie. room temperature is lower than the desired temperature setting), ignitor will pre-heat for five seconds, then heater will start in the HI heat output setting.

Note: Heater will automatically adjust the heat output to precisely maintain the desired temperature. This results in quieter operation and better fuel economy.

Note: The heat output setting will be lowered automatically as the room temperature approaches the desired setting.

Note: The heater will shut off when the room temperature is two degrees higher than the desired temperature setting. The heater will restart when the room temperature is two degrees lower than the desired temperature setting.

COOL DOWN MODE (200VT MODEL ONLY)

When operating in the automatic mode

After the desired temperature is reached, the heater will continue to run without burning fuel for 30 seconds to cool down the components inside the heater. This provides added safety for the operator and extends the life of the components.

Note: During the 30 second cool down period, the heater will not immediately respond to any changes to the temperature setting. If the setting is increased the heater will start after the cool down period if the desired temperature setting is 2 degrees higher than the room temperature. If the setting is lowered during the cool down period, the heater will remain off until the room temperature drops two degrees below the desired temperature setting.

After a safety shutdown

If heater turns off for safety reasons or it runs out of fuel, the heater will continue to run without burning fuel for 30 seconds to cool down the components inside the heater. This safety shutdown can occur while operating in either the Automatic or Manual mode.

TO STOP HEATER

Push ON/OFF switch to the OFF (O) position.

TO RESET HEATER

1. Push ON/OFF switch to the OFF (O) position and wait 10 seconds. (Wait two minutes if heater has been running.)
2. Repeat steps under *To Start Heater*.

OPERATION WITH PORTABLE GENERATOR

⚠ WARNING: Before operating heater or any appliance from a portable generator, verify that generator has been properly connected to earth ground. Improper grounding or failure to ground generator can result in electrocution if a ground fault occurs. Refer to owner's manual supplied by generator manufacturer for proper grounding procedures.

The operating voltage range of the heater is 108 to 132 Volts (120 Volts +/- 10%). Prior to plugging heater into generator the output voltage should be verified (if generator is equipped with the automatic idle feature, the output voltage should be measured with the generator running at full speed). If the voltage does not measure in this range the heater should not be plugged into the generator.

Refer to *Operation*, page 5, for starting, stopping, and resetting heater procedures.

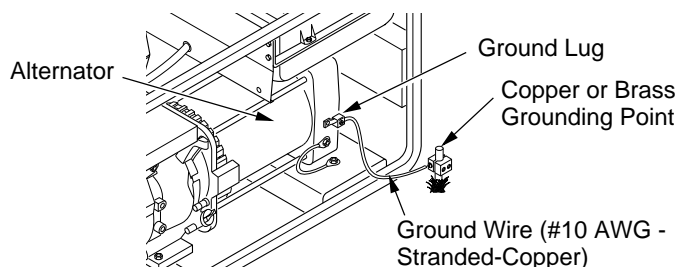


Figure 5 - Typical Generator Grounding Method (Generator construction may vary from that shown)

STORING, TRANSPORTING, OR SHIPPING

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

1. Remove drain plug from bottom side of fuel tank and drain all fuel.
2. Replace drain plug.
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. 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> , pages 10 and 11 |
| Ignitor | No maintenance required | |
| Fan blades | Clean every season or as needed | See <i>Fan</i> , page 9 |
| Motor | Not required/permanently lubricated | |

TROUBLESHOOTING

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

| FAULT CONDITION | POSSIBLE CAUSE | REMEDY |
|--|--|--|
| Motor does not start five seconds after heater is plugged in | 1. No power to heater | 1. Check circuit breaker in electrical panel |
| | 2. ON/OFF switch not in the ON (I) position | 2. Verify the ON/OFF switch is in ON (I) position and light is on |
| | 3. Thermostat setting is too low | 3. Turn thermostat knob to a higher setting |
| | ⚠ WARNING: High voltage! | |
| | 4. Bad electrical connection between motor and ignition control assembly or ignition control assembly and power cord | 4. Check all electrical connections. See <i>Wiring Diagrams</i> , page 17 |
| | 5. Binding pump rotor | 5. If fan does not turn freely, see <i>Pump Rotor</i> , page 15 |
| | 6. Blown fuse (F1, GMA 10A) on ignition control assembly | 6. See <i>Ignition Control Assembly</i> , page 16 |
| | 7. Defective ignition control assembly | 7. Replace ignition control assembly |
| Motor starts and runs but heater does not ignite | 8. Defective motor | 8. Replace motor |
| | 1. No fuel in tank | 1. Fill tank with kerosene |
| | 2. Pump pressure incorrect | 2. See <i>Pump Pressure Adjustment</i> , page 10 |
| | 3. Dirty fuel filter | 3. See <i>Fuel Filter</i> , pages 10 and 11 |
| | 4. Obstruction in nozzle | 4. See <i>Nozzle Assembly</i> , pages 13 and 14 |
| | 5. Water in fuel tank | 5. Drain and flush fuel tank with clean kerosene. See <i>Storing, Transporting, or Shipping</i> , page 7 |
| | ⚠ WARNING: High voltage! | |
| | 6. Bad electrical connection between ignitor and ignition control assembly | 6. Check electrical connections. See <i>Wiring Diagrams</i> , page 17 |
| Heater ignites but ignition control assembly shuts heater off after a short period of time | 7. Defective ignitor | 7. Replace ignitor, see page 12 |
| | 8. Blown fuse (F2) on ignition control assembly | 8. See <i>Ignition Control Assembly</i> , page 16 |
| | 9. Defective ignition control assembly | 9. Replace ignition control assembly |
| | 10. 200VT Model Only: Defective fuel valve | 10. See <i>Fuel Valve</i> , page 11 |
| | 1. Pump pressure incorrect | 1. See <i>Pump Pressure Adjustment</i> , page 10 |
| | 2. Dirty air intake, air output, and/or lint filter | 2. See <i>Air Output, Air Intake, and Lint Filters</i> , page 9 |
| | 3. Dirty fuel filter | 3. See <i>Fuel Filter</i> , pages 10 and 11 |
| | 4. Obstruction in nozzle | 4. See <i>Nozzle Assembly</i> , pages 13 and 14 |
| Heater ignites but ignition control assembly shuts heater off after a short period of time | 5. Photocell assembly not properly installed (not seeing the flame) | 5. Make sure photocell boot is properly seated in bracket |
| | 6. Dirty photocell lens | 6. Clean photocell lens |
| | ⚠ WARNING: High voltage! | |
| | 7. Bad electrical connection between photocell and ignition control assembly | 7. Check electrical connections. See <i>Wiring Diagrams</i> , page 17 |
| | 8. Defective photocell | 8. Replace photocell |
| | 9. Defective ignition control assembly | 9. Replace ignition control assembly |

SERVICE PROCEDURES

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

UPPER SHELL REMOVAL

1. Remove screws along each side of heater using phillips screw-driver. These screws attach upper and lower shells together. See Figure 6.
2. Lift upper shell off.
3. Remove fan guard.

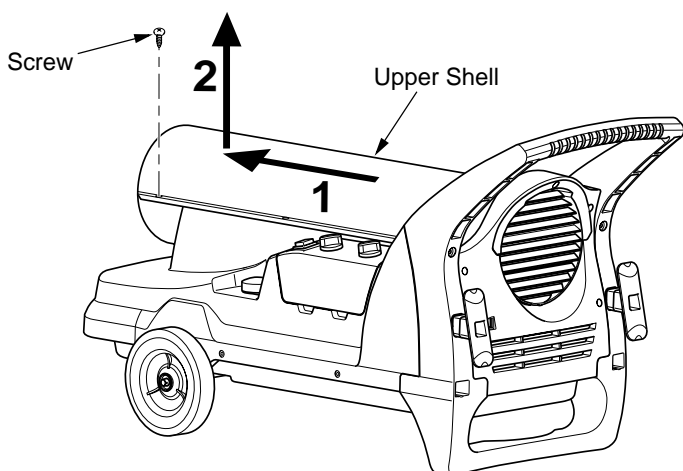


Figure 6 - Upper Shell Removal (Variable Output Model Shown)

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 (see Figure 7).

1. Remove upper shell (see Figure 6).
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 8).
7. Place setscrew on flat of shaft. Tighten setscrew firmly (40-50 inch-pounds/4.5-5.6 n-m).
8. Replace upper shell.

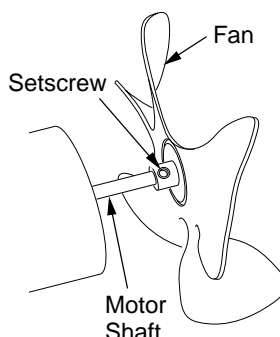


Figure 7 - Fan, Motor Shaft, and Setscrew Location

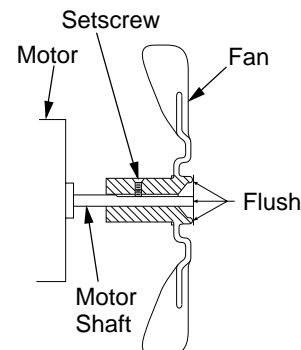


Figure 8 - Fan Cross Section and Setscrew Location

AIR OUTPUT, AIR INTAKE AND LINT FILTERS

1. Remove upper shell (see Figure 6).
2. Remove filter end cover screws using 5/16" nut-driver (see Figure 9).
3. Remove filter end cover.
4. Replace air output and lint filters.
5. Wash or replace air intake filter (see *Preventative Maintenance Schedule*, page 7).
6. Replace filter end cover.
7. Replace upper shell.

IMPORTANT: Do not oil filters.

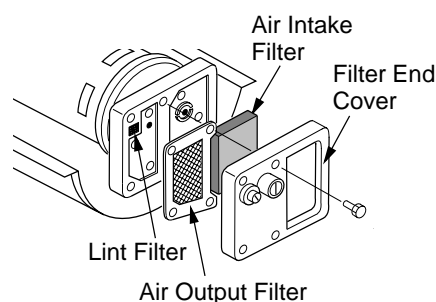


Figure 9 - Air Output, Air Intake, and Lint Filters

SERVICE PROCEDURES

Continued

PUMP PRESSURE ADJUSTMENT

1. Remove fan guard.
2. Remove pressure gauge plug from filter end cover (see Figure 10).
3. Install accessory pressure gauge (part number HA1180).
4. Start heater (see *Operation*, page 5). Allow motor to reach full speed.
5. For variable output (VT) models, set heat output knob to HI (see Figure 1, page 3).
6. Adjust pressure. Turn relief valve to right to increase pressure. Turn relief valve to left to decrease pressure. See specifications below for correct pressure (see Figure 11).
7. Remove pressure gauge. Replace pressure gauge plug in filter end cover.

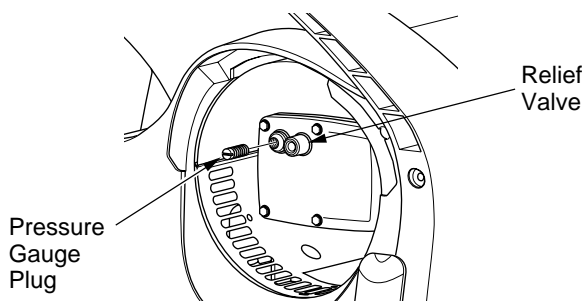


Figure 10 - Pressure Gauge Plug Removal

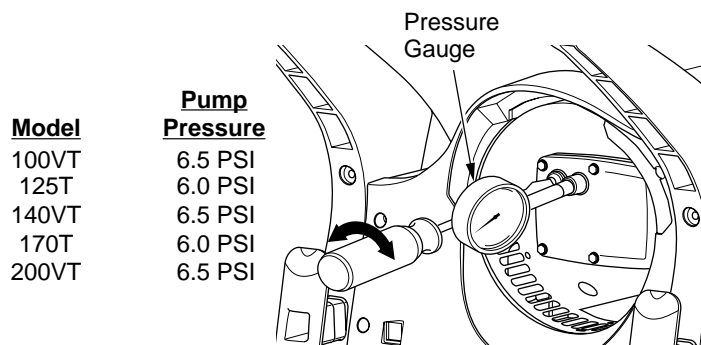


Figure 11 - Adjusting Pump Pressure

FUEL FILTER

1. Remove control cover screws using 5/16" nut-driver.
2. Remove control cover.
3. Pull upper fuel line off fuel filter neck (see Figure 12).
4. Carefully pry bushing, fuel filter, and lower fuel line out of fuel tank (see Figure 12).
5. Wash fuel filter with clean fuel and replace in tank.
6. Attach upper fuel line to fuel filter neck.
7. Replace control cover.

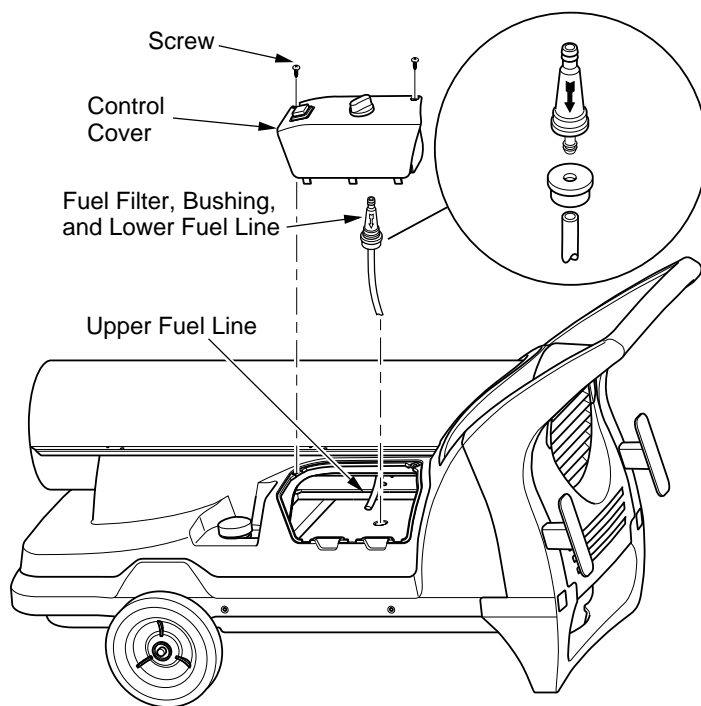


Figure 12 - Fuel Filter Removal

SERVICE PROCEDURES

Continued

(For 200VT Model Only)

1. Remove control cover screws using phillips screwdriver.
2. Remove control cover (see Figure 13).
3. Pull lower fuel line off the fuel valve fitting (see Figure 13).
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 lower fuel line to fuel valve fitting.
7. Replace control cover.

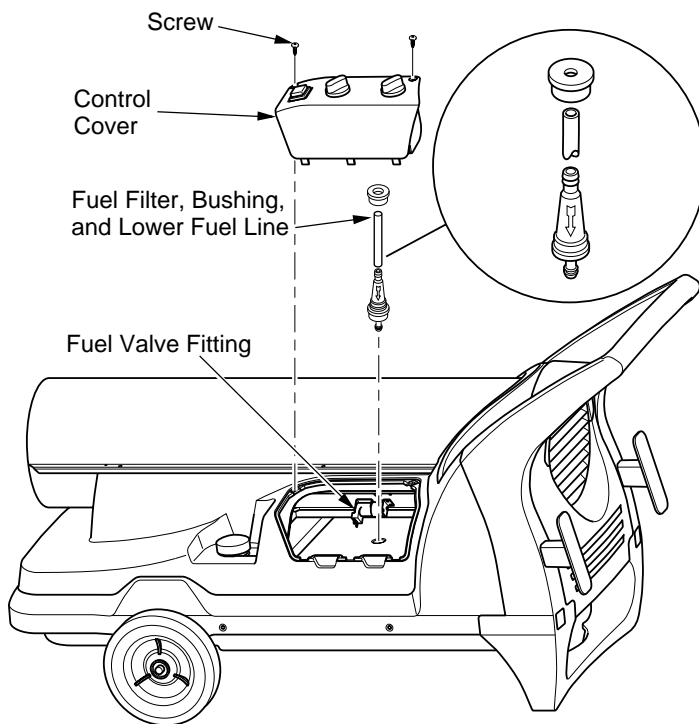


Figure 13 - Fuel Filter Removal, 200VT Model Only

FUEL VALVE

(For 200VT Model Only)

1. Remove control cover (see Figure 13) and upper shell (see Figure 6, page 9) screws using phillips screwdriver.
2. Remove fan (see *Fan*, page 9).
3. Pull lower fuel line off the fuel valve fitting (see Figure 14).

⚠ WARNING: High Voltage

4. Disconnect red and white wires from fuel valve (see Figure 14).
5. Using 1/4" nut driver remove 2 screws holding fuel valve and bracket to lower shell (see Figure 14). Save these screws.
6. Using 1/4" nut driver remove 2 screws holding fuel valve to bracket. Save these screws.
7. Attach new fuel valve to bracket with 2 screws.
8. Install new fuel valve and bracket on lower shell with 2 screws.
9. Connect red and white wires (polarity not important). Connect upper and lower fuel lines to fuel valve (see Figure 14).
10. Replace fan, upper shell, and control cover.

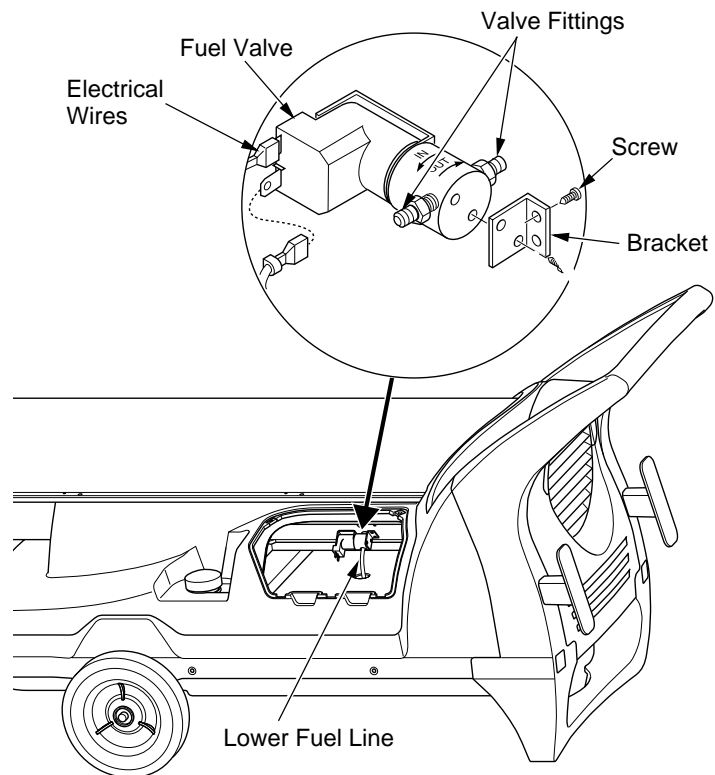


Figure 14 - Fuel Valve Replacement, 200VT Model Only

SERVICE PROCEDURES

Continued

IGNITOR

1. Remove upper shell (See *Upper Shell Removal*, page 9).
2. Remove fan (see page 9).
3. Remove 2 control cover screws with a phillips screwdriver. Remove control cover (see Figure 12, page 10 or Figure 13, page 11, according to model).
4. Disconnect ignitor wires from ignition control assembly (see Figure 15). Pull the ignitor wires up through the hole in the lower shell.
5. Disconnect fuel line hose and air line hose. Remove photocell from photocell bracket (see Figure 15).
6. Remove combustion chamber. Stand combustion chamber on end with nozzle adapter bracket on top (see Figure 16).
7. Remove ignitor screw with a 1/4" nut driver. Carefully remove ignitor from nozzle adapter bracket.
8. Carefully remove replacement ignitor from styrofoam packing.
9. Carefully guide ignitor into opening in nozzle adapter bracket. Do not strike ignitor element. Attach ignitor to nozzle adapter bracket with screw using a 1/4" nut driver (see Figure 16). Torque .90 to 1.69 N-m (8 to 15 in-lbs) Do not over torque.
10. Replace combustion chamber.
11. Route the ignitor wires back down through the hole in the lower shell. Connect wires to the ignition control assembly (see Figure 15).
12. Replace control cover (see Figure 12, page 10 or Figure 13, page 11, according to model).
13. Connect and route fuel line hose and air line hose to nozzle adapter assembly. See *Fuel and Air Line Replacement and Proper Routing*, page 14.
14. Replace photocell in photocell bracket. Route wires as shown in either Figure 17, page 13, or Figure 20, page 14, according to model.
15. Replace fan (see page 9).
16. Replace upper shell (see page 9).

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

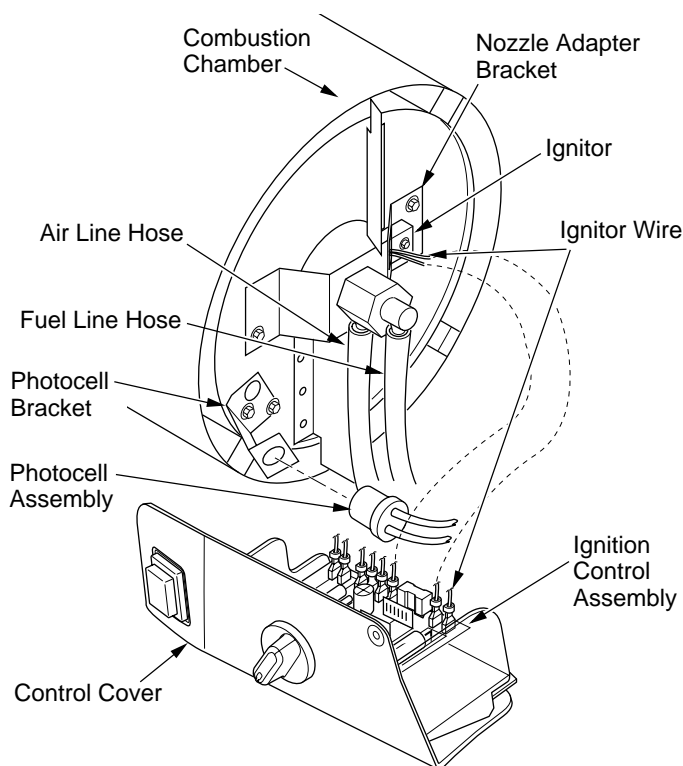


Figure 15 - Disconnecting Ignitor Wires from Ignition Control Assembly

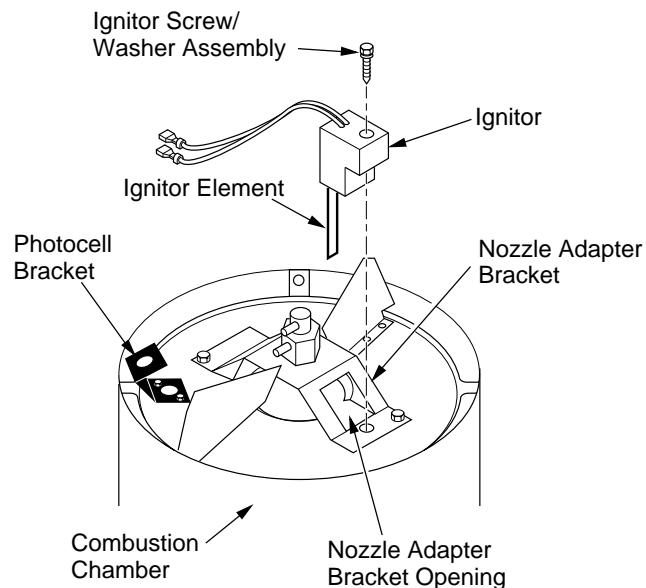


Figure 16 - Ignitor Replacement

SERVICE PROCEDURES

Continued

NOZZLE ASSEMBLY

(For 125T/170T/100VT/140VT Models Only)

1. Remove upper shell (see *Upper Shell Removal*, page 9).
2. Remove fan (see *Fan*, page 9).
3. Remove fuel and air line hoses from nozzle assembly (see Figure 17).
4. Turn nozzle assembly 1/4 turn to left and pull toward motor to remove (see Figure 18).
5. Place plastic hex-body into vise and lightly tighten.
6. Carefully remove nozzle from the nozzle adapter using 5/8" socket wrench (see Figure 19).
7. Blow compressed air through face of nozzle. This will free any dirt in nozzle area.
8. Inspect nozzle sleeve for damage.
9. Replace nozzle into nozzle adapter until nozzle seats. Tighten 1/3 turn more using 5/8" socket wrench 4.5 to 5.1 N-m (40 to 45 in-lbs). See Figure 19.
10. Attach nozzle assembly to burner strap (see Figure 18).
11. Attach fuel and airline hoses to nozzle assembly. See *Fuel and Airline Replacement and Proper Routing*, page 14.
12. Replace fan (see *Fan*, page 9).
13. Replace upper shell (see *Upper Shell Removal*, page 9).

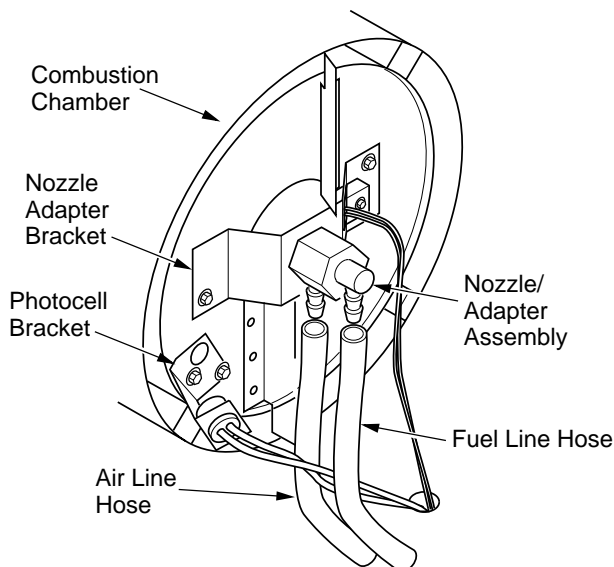


Figure 17 - Removing Air and Fuel Line Hoses
(125T/170T/100VT/140VT Models Only)

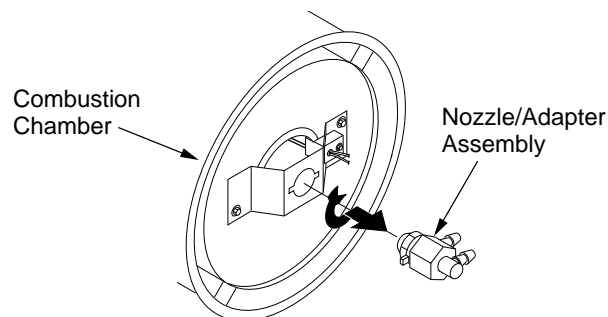


Figure 18 - Removing Nozzle/Adapter Assembly

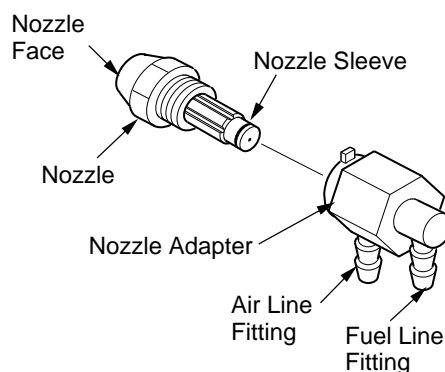


Figure 19 - Nozzle and Nozzle Adapter

SERVICE PROCEDURES

Continued

(For 200VT Model Only)

1. Remove combustion chamber and ignitor by following steps 1 through 7 under *Ignitor*, page 12.
2. Carefully place the ignitor in a safe location.
3. Remove two nozzle adapter bracket screws (see Figure 20).
4. Place hex-shaped aluminum nozzle adapter into vise (do not overtighten).
5. Carefully remove nozzle from nozzle adapter using 5/8" socket wrench (see Figure 21).
6. Blow compressed air through face of nozzle. This will remove any debris in nozzle.
7. Inspect nozzle seal for damage.
8. Replace nozzle into nozzle adapter until nozzle seats. Tighten 80-110 inch-pounds.
9. Attach nozzle adapter bracket to combustion chamber with two screws removed in step 3.
10. Repeat steps 9 through 16 under *Ignitor*, page 12.

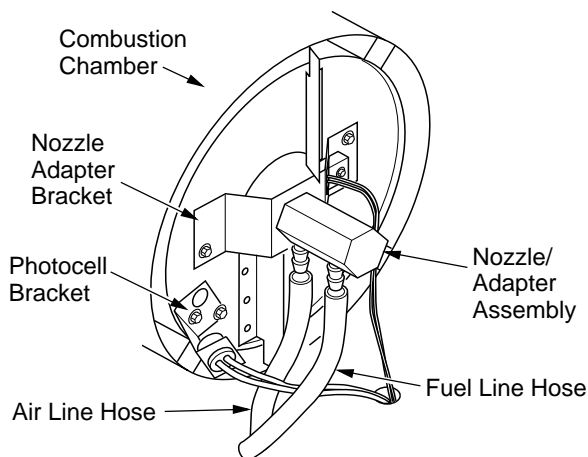


Figure 20 - Removing Air and Fuel Line Hoses (200VT Model Only)

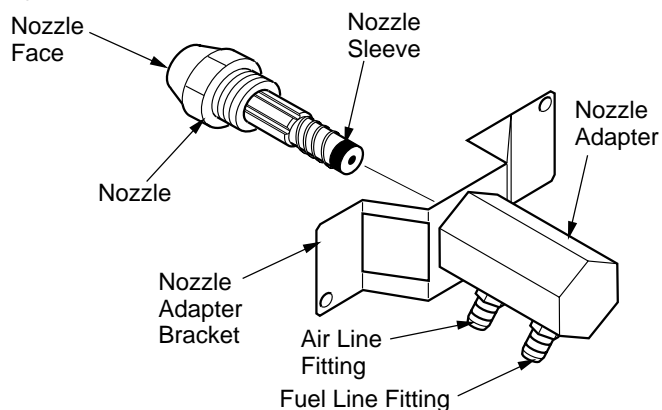


Figure 21 - Nozzle and Nozzle Adapter

FUEL AND AIR LINE REPLACEMENT AND PROPER ROUTING

1. Remove upper shell (see *Upper Shell Removal*, page 9).
2. Remove control cover screws using phillips screwdriver (see Figure 12, page 9).
3. Remove control cover.
4. Inspect fuel and air line hoses for cracks and/or holes. If fuel line hose is damaged, disconnect from nozzle adapter (see Figure 17, page 13, or Figure 20, according to model) and from fuel filter (see *Fuel Filter*, pages 10 and 11). If air line hose is damaged, disconnect from nozzle adapter (see Figure 17, page 12, or Figure 20, according to model) and from barb fitting on pump end cover (see Figure 22).
5. Install new air and/or fuel line. Attach one end of air line hose to barb fitting on pump end cover (see Figure 28) and the other end to nozzle adapter (see Figure 17, page 13, or Figure 20, according to model). Attach one end of fuel line hose to fuel filter (see *Fuel Filter*, pages 10 and 11) and the other end to nozzle adapter (see Figure 17, page 13, or Figure 20, according to model).

Note: Route hoses as shown in see Figure 17, page 12, or Figure 20, according to model. Hoses are not to touch photocell bracket.

6. Replace control cover.
7. Replace upper shell (see *Upper Shell Removal*, page 9).

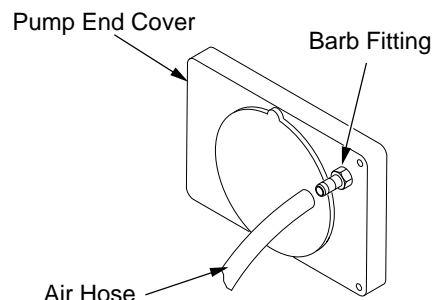


Figure 22 - Air Hose to Barb Fitting

SERVICE PROCEDURES

Continued

PUMP ROTOR

(Procedure if Rotor is Binding)

1. Remove upper shell (see *Upper Shell Removal*, page 9).
2. Remove fan guard.
3. Remove filter end cover screws using 5/16" nut driver (see Figure 23).
4. Remove filter end cover and air filters.
5. Remove pump plate screws using 5/16" nut-driver.
6. Remove pump plate.
7. Remove rotor, insert, and blades (see Figure 23).
8. Check for debris in pump. If debris is found, blow out with compressed air.
9. Install insert and rotor.
10. Check gap on rotor. Adjust to .076/.101 mm (.003"/.004") if needed (see Figure 24).
Note: Rotate rotor one full turn to ensure the gap is .076/.101 mm (.003"/.004") at tightest position. Adjust if needed.
11. Install blades, pump plate, air filters, and filter end cover.
12. Replace fan guard and upper shell (see *Upper Shell Removal*, page 9).
13. Adjust pump pressure (see *Pump Pressure Adjustment*, page 10).
Note: If rotor is still binding, proceed as follows.
14. Perform steps 1 through 6.
15. Place fine grade sandpaper (600 grit) on flat surface. Sand rotor lightly in "figure 8" motion four times (see Figure 25).
16. Reinstall insert and rotor.
17. Perform steps 10 through 12.

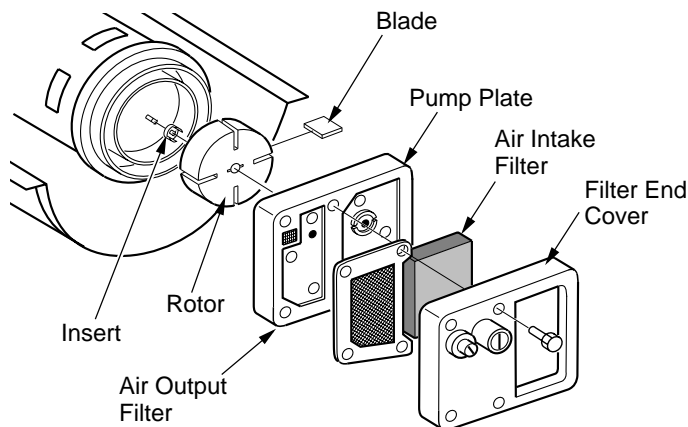


Figure 23 - Rotor Location

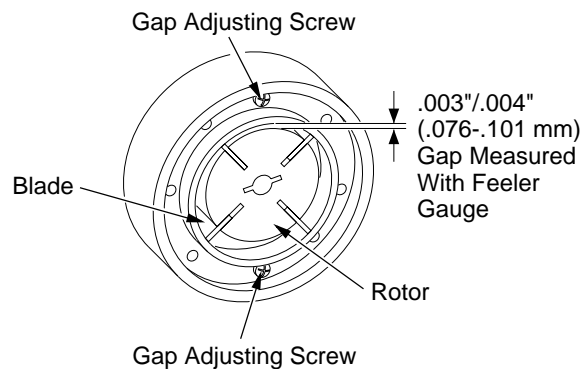


Figure 24 - Gap Adjusting Screw Locations

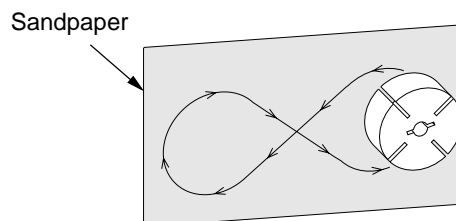


Figure 25 - Sanding Rotor

SERVICE PROCEDURES

Continued

IGNITION CONTROL ASSEMBLY (Thermostat Models)

⚠ WARNING: High voltage!

1. Unplug heater.
2. Remove control cover screws (2) using phillips screwdriver to expose ignition control assembly.
3. Remove fuse cover.
4. Remove fuse from fuse clips.
5. Replace with new fuse (DESA part number 105880-02). Do not substitute a fuse with a higher current rating. Use Bussmann GMA-10 or equivalent.
6. Replace fuse cover.
7. Replace control cover (see Figure 12, page 10).

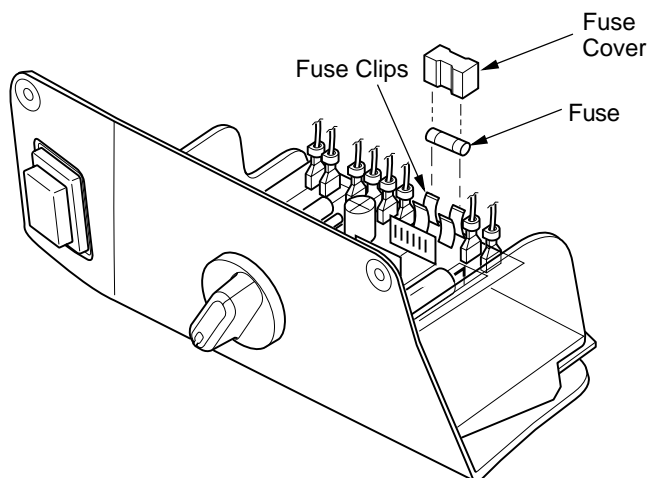


Figure 26 - Replacing Fuse

IGNITION CONTROL ASSEMBLY (Variable Output with Thermostat Models)

⚠ WARNING: High voltage!

1. Unplug heater.
2. Remove control cover screws (2) using phillips screwdriver to expose ignition control assembly.

Replacing Fuse F1

1. Remove fuse from fuse clips.
2. Replace with new fuse (DESA part number 105880-01). Do not substitute a fuse with a higher current rating. Use Bussmann GMA-10 or equivalent.
3. Replace control cover (see Figure 13, page 11).

Replacing Fuse F2

1. Remove fuse from socket.
2. Replace with new fuse (DESA part number 109115-01). Do not substitute a fuse with a higher current rating. Use Wickmann 3821100041 or equivalent.
3. Replace control cover (see Figure 12, page 9).

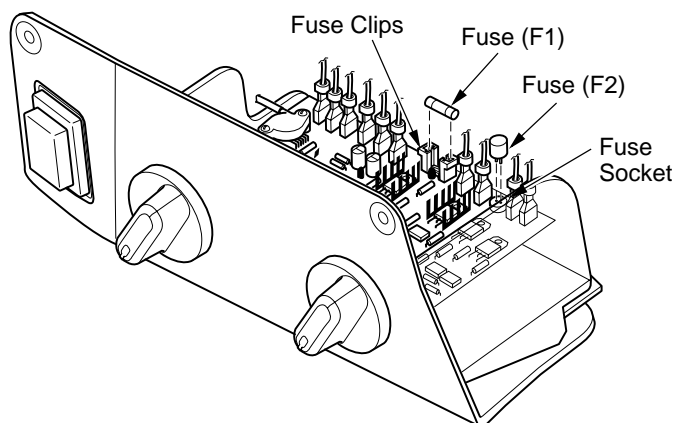


Figure 27 - Replacing Fuses F1 and F2

SPECIFICATIONS

| Model Size | 125T | 170T | 100VT | 140VT | 200VT |
|--|--|-----------|-------------------|--------------------|---------------------|
| Output Rating (Btu/Hr) | 125,000 | 170,000 | 65,000-100,000 | 100,000-140,000 | 140,000-200,000 |
| Fuel | Use only kerosene, #1/#2 diesel/fuel oil, JET A or JP-8 fuels* | | | | |
| Fuel Tank Capacity (U.S. Gal./Liters) | 13.5/51 | 13.5/51 | 13.5/51 | 13.5/51 | 13.5/51 |
| Fuel Consumption (Gal. Per Hr/Liters Per Hr) | .90/3.41 | 1.25/4.73 | .50-.75/1.89-2.84 | .75-1.05/2.84-3.97 | 1.05-1.40/3.97-5.30 |
| Pump Pressure (psi) | 6.0 | 6.0 | 6.5 | 6.5 | 6.5 |
| Electric Requirements | 120 V/60 HZ (Same All Models) | | | | |
| Amperage (Normal Run) | 3.6 | 3.6 | 3.6 | 3.6 | 4.0 |
| Maximum Motor Speed (RPM) | 3400 | 3400 | 3400 | 3400 | 3400 |
| Hot Air Output (CFM) | 520 | 580 | 400/480 | 480/540 | 500/600 |
| Motor Horsepower | 1/5 | 1/5 | 1/5 | 1/5 | 1/4 |
| Shipping Weight (Approximate Pounds/Kilograms) | 85/38.5 | 85/38.5 | 85/38.5 | 85/38.5 | 87/39.4 |
| Heater Weight without Fuel (Approximate Pounds/Kilograms) | 73/33.1 | 73/33.1 | 73/33.1 | 73/33.1 | 75/34 |

* Use of #2 diesel/fuel oil will result in noticeable odor and could require additional fuel filter maintenance. Use in extreme cold temperatures may require nontoxic anti-icer additives.

WIRING DIAGRAMS

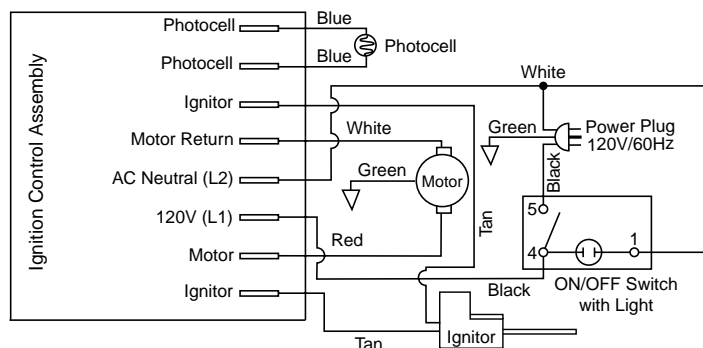


Figure 28 - Wiring Diagram (100VT and 140VT Models)

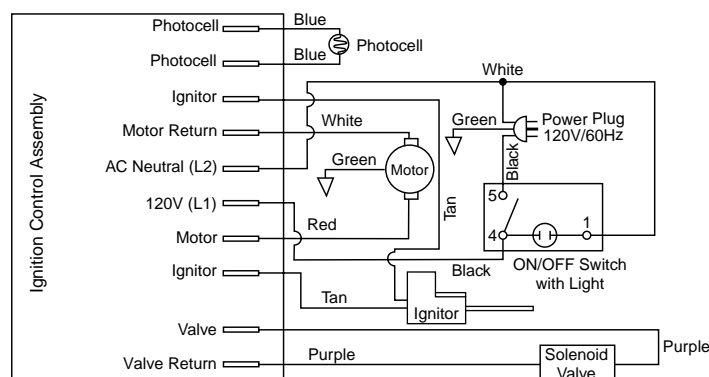


Figure 30 - Wiring Diagram (200VT Model)

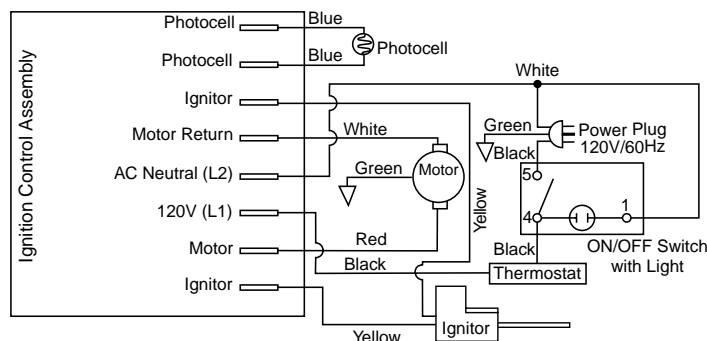
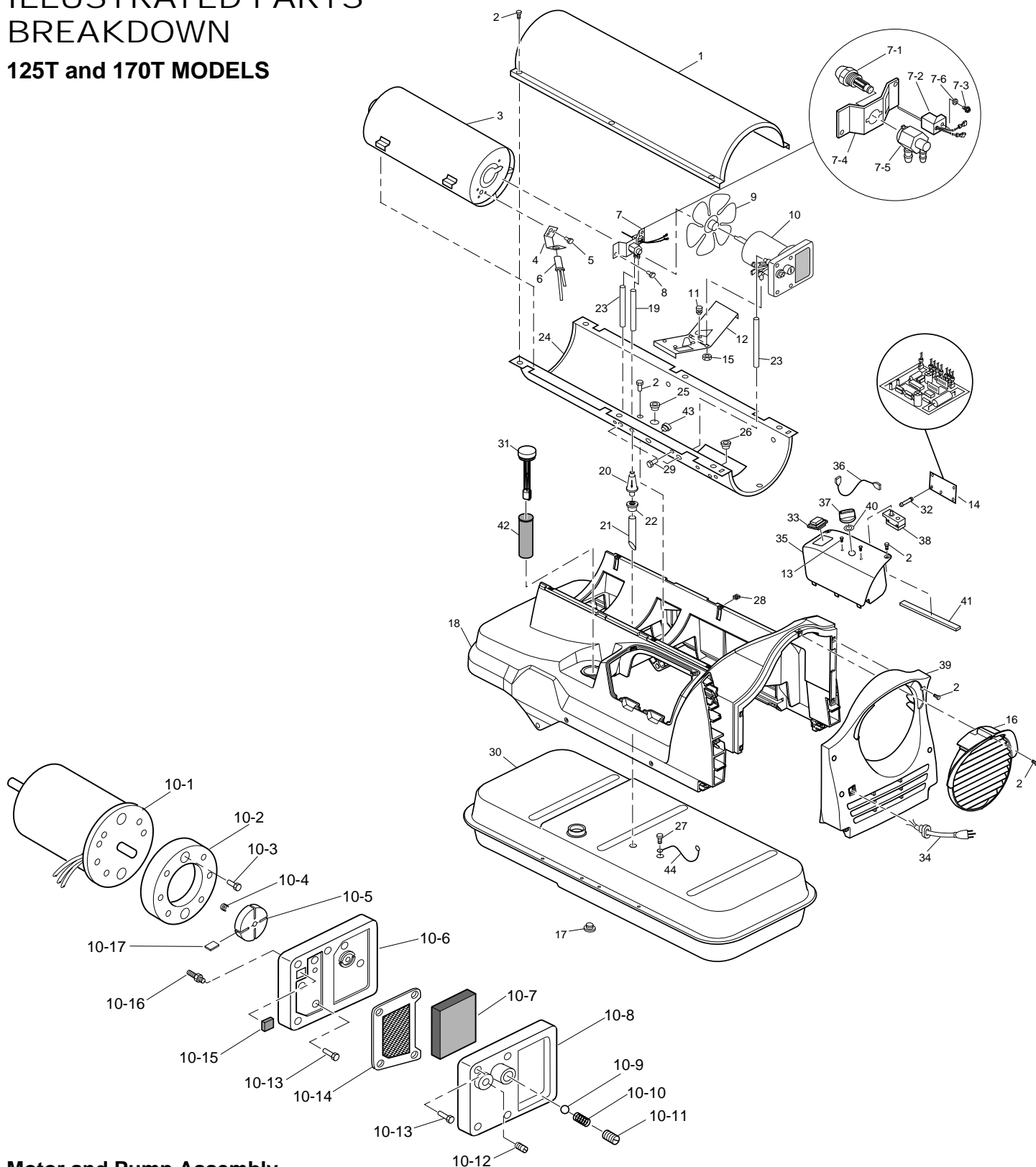


Figure 29 - Wiring Diagram (125T and 170T Models)

ILLUSTRATED PARTS BREAKDOWN

125T and 170T MODELS



Motor and Pump Assembly

For more information, visit www.desatech.com

PARTS LIST

125T and 170T MODELS

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 | 107353-01 | Upper Shell (Service Part Will Be Black) | 1 | 12 | 101206-01 | Motor Mounting Bracket | 1 |
| 2 | 108631-01 | Screw, #10-16 x 1" | 14 | 13 | M10908-1 | Screw, #6-32 x 1/4" | 2 |
| 3 | 098512-65 | Combustion Chamber (125T) | 1 | 14 | 104068-02 | Ignition Control Assembly | 1 |
| | 098512-73 | Combustion Chamber (170T) | 1 | 15 | NTC-4C | Hex Lock Nut, 1/4-20 | 2 |
| 4 | 103154-05 | Photocell Bracket | 1 | 16 | 108460-01 | Fan Guard | 1 |
| 5 | M10908-2 | Screw, #6-32 x 3/8" | 2 | 17 | M27417 | Drain Plug (Includes "o" Ring) | 1 |
| 6 | M16656-21 | Photocell Assembly | 1 | 18 | 108457-01 | Shroud | 1 |
| 7 | Δ | Burner Head Assembly | 1 | 19 | M51345-09 | Fuel Line | 1 |
| 7-1 | HA3027 | Nozzle Assembly (125T) | 1 | 20 | 106896-01*** | Fuel Filter | 1 |
| | HA3029 | Nozzle Assembly (170T) | 1 | 21 | M51151-02 | Fuel Line Tube | 1 |
| 7-2 | 102548-07 | Ignitor Kit | 1 | 22 | M10990-3 | Rubber Bushing | 1 |
| 7-3 | M10908-75 | Screw | 1 | 23 | M50814-03 | Airline | 1 |
| 7-4 | 102336-01 | Nozzle Adapter Bracket | 1 | 24 | 107353-05 | Lower Shell (Service Part Will Be Black) | 1 |
| 7-5 | 104054-01 | Nozzle Adapter | 1 | 25 | M50104-06 | Bushing | 1 |
| 7-6 | 103347-01 | Washer | 1 | 26 | M50104-01 | Bushing | 1 |
| 8 | 107992-01 | Screw, #10-16 x 3/8" | 2 | 27 | M12461-51 | Screw, #10-16 x 0.38" | 1 |
| 9 | 097293-01 | Fan (125T) | | 28 | 108708-01 | Clip Nut | 13 |
| | 102042-01 | Fan (170T) | 1 | 29 | M10908-14 | Screw, #8-32 x 3/8" | 1 |
| 10 | Δ | Motor and Pump Assembly | 1 | 30 | 108088-12 | Fuel Tank | 1 |
| 10-1 | 102001-31 | Motor | 1 | 31 | 097663-03 | Fuel Cap/Gauge | 1 |
| 10-2 | 079975-02 | Pump Body | 1 | 32 | 108668-01 | P.C. Board Support | 5 |
| 10-3 | FHPF3-5C | Screw, #10-32 x 5/8" | 2 | 33 | 108394-01 | ON/OFF Switch | 1 |
| 10-4 | M22009** | Rotor Insert | 1 | 34 | 107994-01 | Power Cord | 1 |
| 10-5 | M22456-1** | Pump Rotor | 1 | 35 | 108461-01 | Control Cover | 1 |
| 10-6 | M50545 | Pump End Cover | 1 | 36 | M9900-170 | Wire Assembly, Black | 1 |
| 10-7 | M12179*** | Intake Filter | 1 | 37 | 109541-01 | Knob | 1 |
| 10-8 | M16545 | Filter End Cover | 1 | 38 | 097657-03 | Thermostat | 1 |
| 10-9 | M8940∞ | Steel Ball, 1/4" Diameter | 1 | 39 | 108458-01 | Rear Panel | 1 |
| 10-10 | M10993-1∞ | Relief Spring | 1 | 40 | 109544-01 | Rubber Washer | 1 |
| 10-11 | M27694∞ | Adjusting Screw | 1 | 41 | 097785-08 | Foam Gasket | 1 |
| 10-12 | M22997∞ | Plug | 1 | 42 | 108739-01 | Filler Neck Screen | 1 |
| 10-13 | M12461-31 | Screw, #10-32 x 1" | 10 | 43 | 097467-02 | Button Plug | 1 |
| 10-14 | M12244-1*** | Output Filter | 1 | 44 | M9900-197 | Wire Assembly, Green | 1 |
| 10-15 | M11637*** | Lint Filter | 1 | | 103814-01 | Wire Tie (Not Shown) - Groups | 1 |
| 10-16 | 104096-01 | Fitting, Straight Nylon Barb | 1 | | | wires connected to Ignition | |
| 10-17 | M8643** | Blade | 4 | | | Control Assembly | |
| 11 | M50631 | Rubber Bumper | 2 | | 105880-02 | Fuse (Not Shown) | 1 |

Δ Not available as an assembly

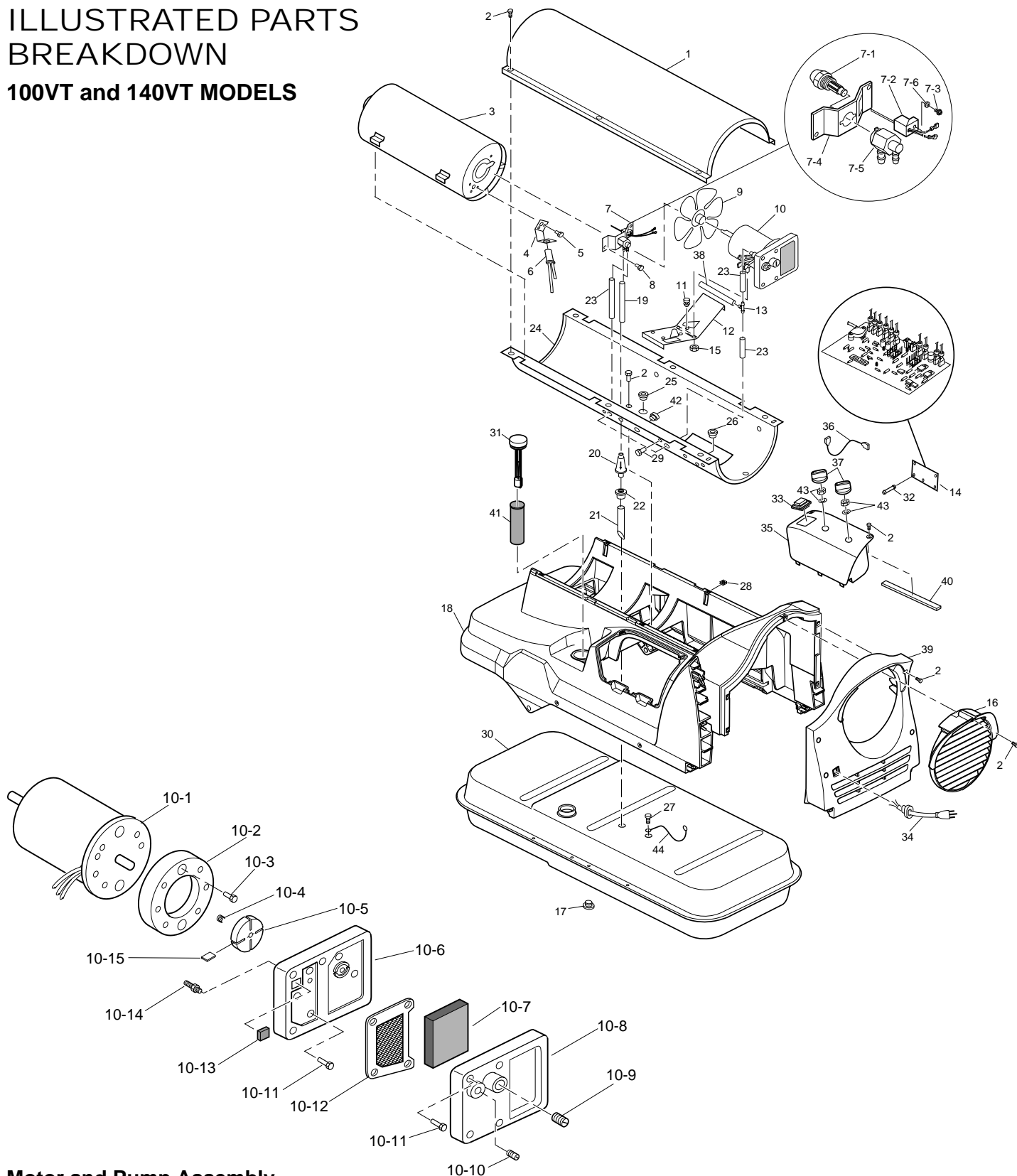
*** Included in Filter Kit (Part No. HA3017)

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

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

ILLUSTRATED PARTS
BREAKDOWN

100VT and 140VT MODELS



Motor and Pump Assembly

For more information, visit www.desatech.com

PARTS LIST

100VT and 140VT MODELS

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 | 107353-01 | Upper Shell (Service Part Will Be Black) | 1 | 13 | 108669-01 | Reducing Tee Fitting | 1 |
| 2 | 108631-01 | Screw, #10-16 x 1" | 14 | 14 | 104068-06 | Ignition Control Assembly | 1 |
| 3 | 098512-70 | Combustion Chamber (100VT) | 1 | 15 | NTC-4C | Hex Lock Nut, 1/4-20 | 2 |
| | 098512-71 | Combustion Chamber (140VT) | 1 | 16 | 108460-01 | Fan Guard | 1 |
| 4 | 103154-05 | Photocell Bracket | 1 | 17 | M27417 | Drain Plug (Includes "o" Ring) | 1 |
| 5 | M10908-2 | Screw, #6-32 x 3/8" | 2 | 18 | 108457-01 | Shroud | 1 |
| 6 | M16656-21 | Photocell Assembly | 1 | 19 | M51345-09 | Fuel Line | 1 |
| 7 | Δ | Burner Head Assembly | 1 | 20 | 106896-01*** | Fuel Filter | 1 |
| 7-1 | 100735-32 | Nozzle Assembly (100VT) | 1 | 21 | M51151-02 | Fuel Line Tube | 1 |
| | 100735-24 | Nozzle Assembly (140VT) | 1 | 22 | M10990-3 | Rubber Bushing | 1 |
| 7-2 | 102548-07 | Ignitor Kit | 1 | 23 | M50814-03 | Airline | 1 |
| 7-3 | M10908-75 | Screw | 1 | 24 | 107353-05 | Lower Shell (Service Part Will Be Black) | 1 |
| 7-4 | 102336-01 | Nozzle Adapter Bracket | 1 | 25 | M50104-06 | Bushing | 1 |
| 7-5 | 104054-01 | Nozzle Adapter | 1 | 26 | M50104-01 | Bushing | 1 |
| 7-6 | 103347-01 | Washer | 1 | 27 | M12461-51 | Screw, #10-16 x 0.38" | 1 |
| 8 | 107992-01 | Screw, #10-16 x 3/8" | 2 | 28 | 108708-01 | Clip Nut | 13 |
| 9 | 097293-01 | Fan (100VT) | 1 | 29 | M10908-14 | Screw, #8-32 x 3/8" | 1 |
| | 102042-01 | Fan (140VT) | 1 | 30 | 108088-12 | Fuel Tank | 1 |
| 10 | Δ | Motor and Pump Assembly | 1 | 31 | 097663-03 | Fuel Cap/Gauge | 1 |
| 10-1 | 102001-31 | Motor (100VT) | 1 | 32 | 108668-01 | P.C. Board Support | 3 |
| | 102001-32 | Motor (140VT) | 1 | 33 | 108394-01 | ON/OFF Switch | 1 |
| 10-2 | 079975-02 | Pump Body | 1 | 34 | 107994-01 | Power Cord | 1 |
| 10-3 | FHPF3-5C | Screw, #10-32 x 5/8" | 2 | 35 | 108461-01 | Control Cover | 1 |
| 10-4 | M22009** | Rotor Insert | 1 | 36 | M9900-170 | Wire Assembly, Black | 1 |
| 10-5 | M22456-1** | Pump Rotor | 1 | 37 | 108480-01 | Knob | 2 |
| 10-6 | M50545 | Pump End Cover | 1 | 38 | 109118-01 | Silicone Tubing | 1 |
| 10-7 | M12179*** | Intake Filter | 1 | 39 | 108458-01 | Rear Panel | 1 |
| 10-8 | M16545 | Filter End Cover | 1 | 40 | 097785-08 | Foam Gasket | 1 |
| 10-9 | 106939-01 | Assembly, Screw and Stem | 1 | 41 | 108739-01 | Filler Neck Screen | 1 |
| 10-10 | M22997∞ | Plug | 1 | 42 | 097467-02 | Button Plug | 1 |
| 10-11 | M12461-31 | Screw, #10-32 x 1" | 10 | 43 | 109510-01 | Nut and Lockwasher (2 Each) | 1 |
| 10-12 | M12244-1*** | Output Filter | 1 | 44 | M9900-197 | Wire Assembly, Green | 1 |
| 10-13 | M11637*** | Lint Filter | 1 | | 103814-01 | Wire Tie (Not Shown) - Bundled Wires Connected to Control Assembly | 1 |
| 10-14 | 104096-01 | Fitting, Straight Nylon Barb | 1 | | | | |
| 10-15 | M8643** | Blade | 4 | | | | |
| 11 | M50631 | Rubber Bumper | 2 | | 105880-02 | Fuse F1 (Not Shown) | 1 |
| 12 | 101206-01 | Motor Mounting Bracket | 1 | | 109115-01 | Fuse F2 (Not Shown) | 1 |

Δ Not available as an assembly

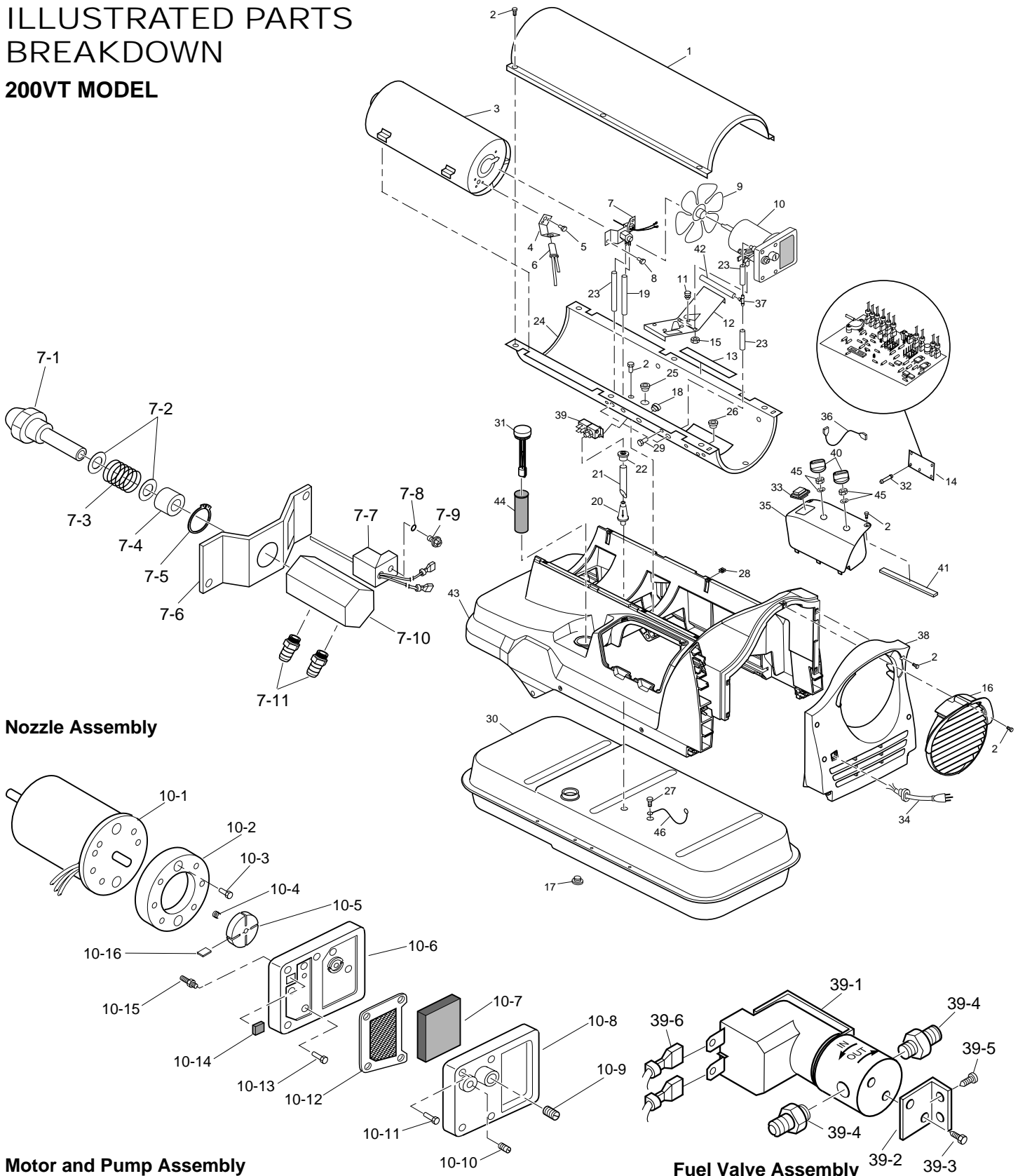
*** Included in Filter Kit (Part No. HA3017)

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

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

ILLUSTRATED PARTS
BREAKDOWN

200VT MODEL

For more information, visit www.desatech.com

PARTS LIST
200VT 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 | 107353-01 | Upper Shell (Service Part Will Be Black) | 1 | 17 | M27417 | Drain Plug (Includes "o" Ring) | 1 |
| 2 | 108631-01 | Screw, #10-16 x 1" | 14 | 18 | 097467-02 | Button Plug | 1 |
| 3 | 098512-72 | Combustion Chamber | 1 | 19 | M51345-03 | Fuel Line | 1 |
| 4 | 103154-05 | Photocell Bracket | 1 | 20 | M51150-01*** | Fuel Filter | 1 |
| 5 | M10908-2 | Screw, #6-32 x 3/8" | 2 | 21 | M51345-04 | Fuel Line Tube | 1 |
| 6 | M16656-21 | Photocell Assembly | 1 | 22 | M10990-3 | Rubber Bushing | 1 |
| 7 | Δ | Burner Head Assembly | 1 | 23 | M50814-03 | Airline | 1 |
| 7-1 | 100735-13 | Nozzle Assembly | 1 | 24 | 107353-05 | Lower Shell (Service Part Will Be Black) | 1 |
| 7-2 | M10659-1 | Nozzle Washer | 2 | 25 | M50104-06 | Bushing | 1 |
| 7-3 | M10809-1 | Nozzle Spring | 1 | 26 | M50104-01 | Bushing | 1 |
| 7-4 | M8882 | Nozzle Sleeve | 1 | 27 | M12461-51 | Screw, #10-16 x 0.38" | 1 |
| 7-5 | 107272-01 | Retaining Ring | 1 | 28 | 108708-01 | Clip Nut | 13 |
| 7-6 | 102336-03 | Nozzle Adapter Bracket | 1 | 29 | M10908-14 | Screw, #8-32 x 3/8" | 1 |
| 7-7 | 102548-07 | Ignitor Kit | 1 | 30 | 108088-12 | Fuel Tank | 1 |
| 7-8 | 103347-01 | Belleville Washer | 1 | 31 | 097663-03 | Fuel Cap/Gauge | 1 |
| 7-9 | M10908-75 | Screw, #6-32 x .88 | 1 | 32 | 108668-01 | P.C. Board Support | 3 |
| 7-10 | 107273-01 | Nozzle Adapter | 1 | 33 | 108394-01 | On/Off Switch | 1 |
| 7-11 | M50820-02 | Barb Fitting | 1 | 34 | 107994-01 | Power Cord | 1 |
| 8 | 107992-01 | Screw, #10-16 x 3/8" | 2 | 35 | 108461-01 | Control Cover | 1 |
| 9 | 102042-01 | Fan | 1 | 36 | M9900-170 | Wire Assembly, Black | 1 |
| 10 | Δ | Motor and Pump Assembly | 1 | 37 | 108669-01 | Reducing Tee Fitting | 1 |
| 10-1 | 102001-32 | Motor | 1 | 38 | 108458-01 | Rear Panel | 1 |
| 10-2 | 079975-03 | Pump Body | 1 | 39 | Δ | Fuel Valve Assembly | 1 |
| 10-3 | FHPF3-6C | Screw, #10-32 x 5/8" | 2 | 39-1 | 107643-01 | Fuel Valve | 1 |
| 10-4 | M22009** | Rotor Insert | 1 | 39-2 | 107336-01 | Fuel Valve Bracket | 1 |
| 10-5 | M22456-2** | Pump Rotor | 1 | 39-3 | M12461-13 | Hex Head Screw, #8-32 x 1/4" | 2 |
| 10-6 | M50545 | Pump End Cover | 1 | 39-4 | M50820-02 | Fitting Barb | 2 |
| 10-7 | M12179*** | Intake Filter | 1 | 39-5 | 102432-01 | Screw Hex Hd Sems Ext "B" #10-16 x 1/2" | 2 |
| 10-8 | M16545 | Filter End Cover | 1 | 39-6 | 097951-15 | Wire Assembly, Purple | 2 |
| 10-9 | 106939-01 | Assembly, Screw and Stem | 1 | 40 | 108480-01 | Knob | 2 |
| 10-10 | M22997∞ | Plug | 1 | 41 | 097785-08 | Foam Gasket | 1 |
| 10-11 | M12461-31 | Screw, #10-32 x 1" | 4 | 42 | 109118-01 | Silicone Tubing | 1 |
| 10-12 | M12244-1*** | Output Filter | 1 | 43 | 108457-01 | Shroud | 1 |
| 10-13 | M12461-32 | Screw, #10-32 x 1.12" | 6 | 44 | 108739-01 | Filler Neck Screen | 1 |
| 10-14 | M11637*** | Lint Filter | 1 | 45 | 109510-01 | Nuts and Lockwashers (2 Each) | 1 |
| 10-15 | M50820-02 | Barb Fitting | 1 | 46 | M9900-197 | Wire Assembly, Green | 1 |
| 10-16 | M8643-2** | Blade | 4 | | 103814-01 | Wire Tie (Not Shown) (Bundled Wires Connected to Control Assembly) | 1 |
| 11 | M50631 | Rubber Bumper | 2 | | | | |
| 12 | 101206-01 | Motor Mounting Bracket | 1 | | | | |
| 13 | 097785-04 | Foam Gasket | 2 | | | | |
| 14 | 104068-07 | Ignition Control Assembly | 1 | | 105880-02 | Fuse F1 (Not Shown) | 1 |
| 15 | NTC-4C | Hex Lock Nut, 1/4-20 | 2 | | 109115-01 | Fuse F2 (Not Shown) | 1 |
| 16 | 108460-01 | Fan Guard | 1 | | | | |

Δ Not available as an assembly

*** Included in Filter Kit (Part No. HA3017)

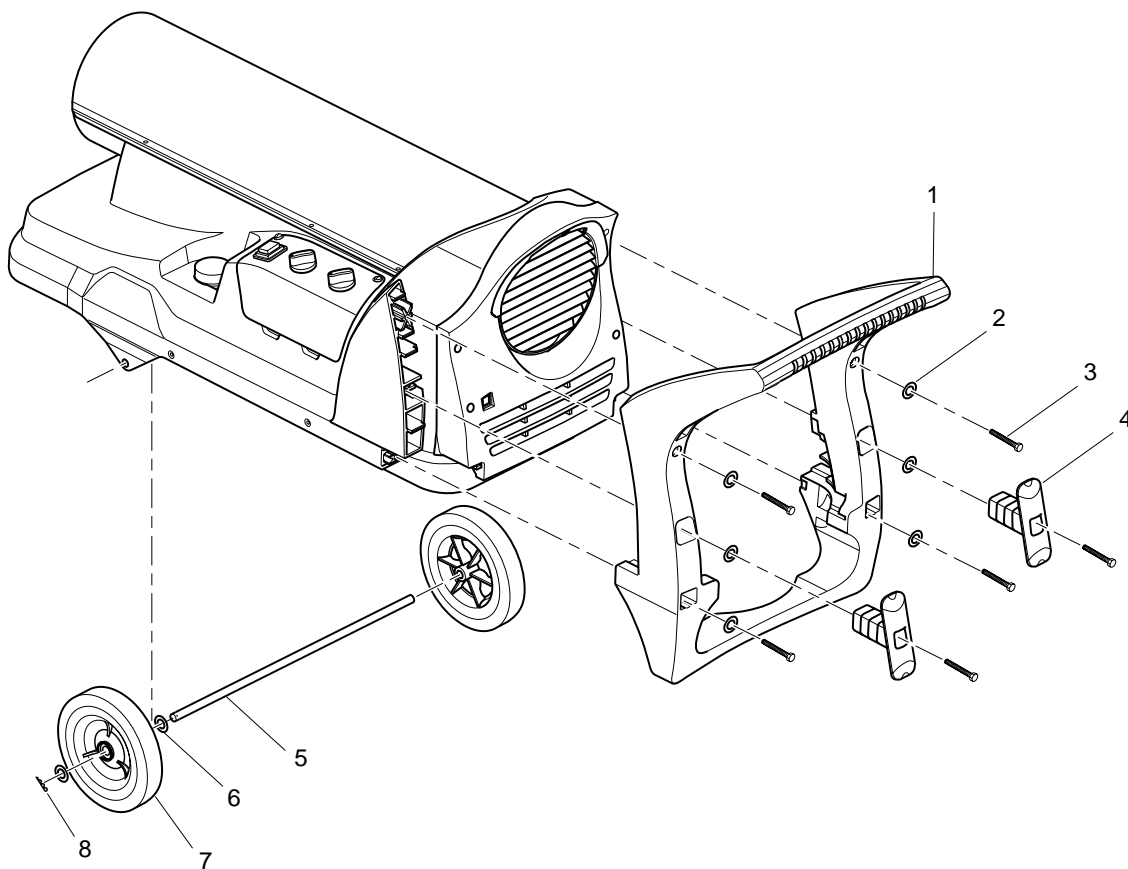
** Included in Rotor Kit (Part No. HA3005)

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

WHEELS AND HANDLE

WHEELS AND HANDLE PARTS LIST

| KEY NO. | PART NUMBER | PART DESCRIPTION | QTY. |
|---------|-------------|---------------------|------|
| 1 | 108459-01 | Handle/Support | 1 |
| 2 | WP 4C | Washer | 6 |
| 3 | 108630-01 | Screw | 6 |
| 4 | 108463-01 | Extension Cord Wrap | 2 |
| 5 | 108466-01 | Axle | 1 |
| 6 | 108468-01 | Washer | 4 |
| 7 | 107426-01 | Wheel Kit | 2 |
| 8 | C3-8C | Cotter Pin | 2 |



TECHNICAL SERVICE

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

If so, contact DESA International's Technical Service Department at 1-866-672-6040.

You can also visit DESA International's technical services web site at **www.desatech.com**.

REPLACEMENT PARTS

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

PARTS UNDER WARRANTY

Contact authorized dealers of this product. If they can't supply original replacement part(s), call DESA International's Technical Service Dept. at 1-866-672-6040.

When calling DESA International, have ready:

- your name
- your address
- model and serial numbers of your heater
- how heater was malfunctioning
- purchase date

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

PARTS NOT UNDER WARRANTY

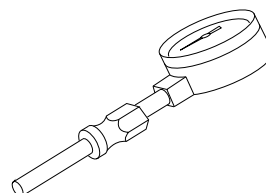
Contact authorized dealers of this product. If they can't supply original replacement part(s), call DESA International at 1-866-672-6040 for referral information. Parts dealers are listed in the Authorized Service Center booklet supplied with heater.

When calling DESA International, have ready:

- model and serial numbers of your heater
- the replacement part number

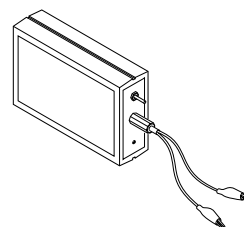
ACCESSORIES

Purchase accessories and parts from your nearest dealer or service center. If they can not supply these accessories or parts, either contact your nearest parts dealer or DESA International at 1-866-672-6040 for referral information. Parts Centrals are listed in the Authorized Service Center booklet supplied with heater.



AIR GAUGE KIT - HA1180

For all models. Special tool to check pump pressure.



IGNITION CONTROL ASSEMBLY/PHOTOCELL TESTER - HA1170

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

WARRANTY AND REPAIR SERVICE

LIMITED WARRANTY

DESA International warrants this product and any parts thereof, to be free from defects in materials and workmanship for two (2) years from the date of first purchase when operated and maintained in accordance with instructions. This warranty is extended only to the original retail purchaser, when proof of purchase is provided.

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

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

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

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

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

WARRANTY SERVICE

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

REPAIR SERVICE

Return the heater to your nearest authorized service center. Each Service Center is independently owned and operated. Repairs not covered by the warranty will be billed at standard prices. We reserve the right to amend these specifications at any time without notice.

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

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

For more information about this warranty, write:

DESATM
INTERNATIONAL

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



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For more information, visit www.desatech.com