

Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

Dayton® Portable Oil-Fired Heaters

Description

Dayton Models 2E510F, 2E511F, 3E218E, and 3E219E are 40,000 to 155,000 Btu/Hr heaters. These heaters use only Kerosene or No. 1 fuel oil for combustion and electricity to run the motor. They are primarily intended for indoor and outdoor temporary heating of well-ventilated buildings under construction, alteration, or repair. They may be used in agricultural, industrial, and commercial environments.

Unpacking

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



Figure 1 – Models 2E510F and 2E511F



Figure 2 – Models 3E218E and 3E219E



Specifications

GENERAL SPECIFICATIONS

Model	Output Rating Btu	Fuel	Fuel Tank Capacity (U.S. Gallons)	Fuel Consumption (U.S. Gallons/Hr.)	Motor RPM
2E510F	40,000	Kerosene or No. 1 fuel oil	3.0	0.3	1725
2E511F	60,000	Kerosene or No. 1 fuel oil	5.0	0.44	1725
3E218E	110,000	Kerosene or No. 1 fuel oil	9.0	0.8	3450
3E219E	155,000	Kerosene or No. 1 fuel oil	13.5	1.14	3450

Model	Hot Air Output (CFM)	Air Pump Pressure (psi)	Shipping Weight (Pounds)	Heater Weight (Pounds - without fuel)
2E510F	170	3.0	32	28
2E511F	180	3.4	33	29
3E218E	490	5.3	58	49
3E219E	550	5.4	67	56

Dayton® Portable Oil-Fired Heaters

Specifications (Continued)

ELECTRICAL SPECIFICATIONS

Model	Electrical Input	Amperage (during normal run)
2E510F	120 Volt/60 Hertz	2.0
2E511F	120 Volt/60 Hertz	2.0
3E218E	120 Volt/60 Hertz	3.6
3E219E	120 Volt/60 Hertz	3.6

Product Identification

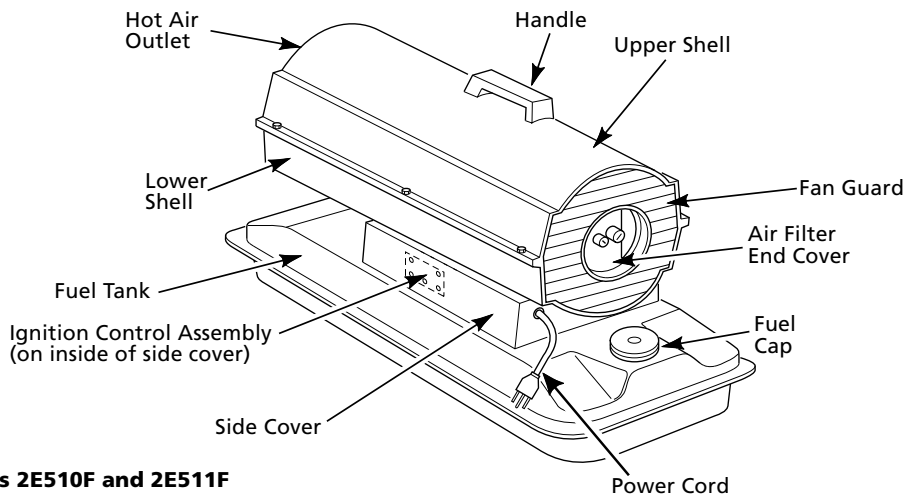


Figure 3 – Models 2E510F and 2E511F

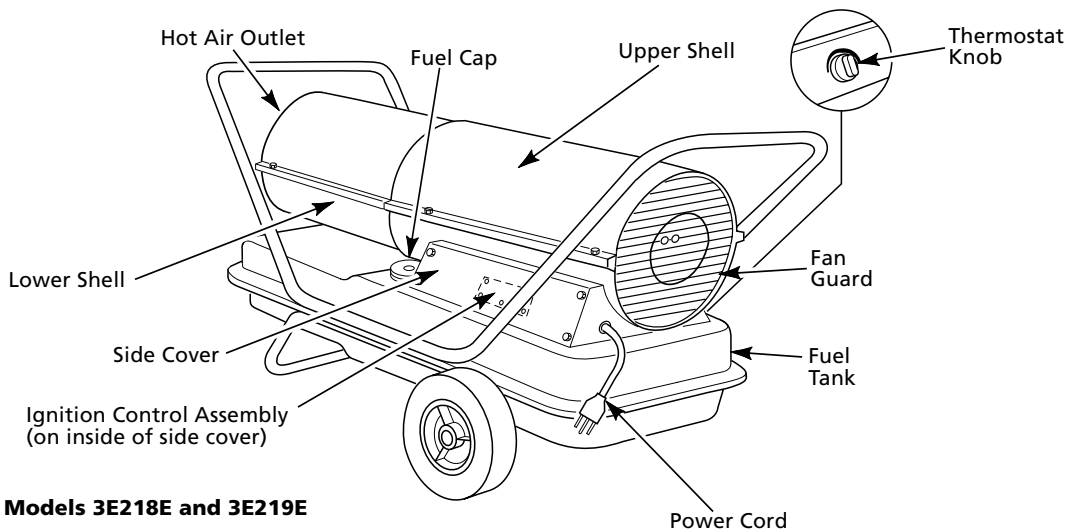


Figure 4 – Models 3E218E and 3E219E

Models 2E510F, 2E511F, 3E218E, and 3E219E

General Safety Information

Make certain you read and understand all warnings. Keep these instructions for reference. They are your guide to safe and proper operation of this heater.

Safety information appears throughout these instructions. Pay close attention to them. Below are definitions for the safety information listed throughout this manual.

▲ DANGER Under this heading, installation, operating, and maintenance procedures or practices will be found that, if not carefully followed, WILL result in IMMEDIATE serious personal injury or death.

▲ WARNING Under this heading, installation, operating, and maintenance procedures or practices will be found that, if not carefully followed, COULD result in severe personal injury or death.

▲ CAUTION Under this heading, installation, operating, and maintenance procedures or practices will be found that, if not carefully followed, COULD result in minor personal injury, product or property damage.

IMPORTANT: Every possible circumstance that might involve a hazard cannot be anticipated. The warnings in this manual and on tags or decals affixed to the unit are therefore not all-inclusive. If a procedure, work method, or operating technique not specifically recommended by Dayton is used, you must make sure it is safe for you and others. You should also ensure that equipment will not be damaged or made unsafe by the operating or maintenance method you choose.

▲ DANGER *Carbon monoxide poisoning may lead to death! Some people are more affected by carbon monoxide than others. 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 operating properly, or the areas may not be sufficiently ventilated. Get fresh air at once! Have heater serviced.*

▲ WARNING *Improper use of this heater can cause serious injury or death from burns, fire, explosion, electrical shock, and carbon monoxide poisoning.*

Make certain you read and understand all warnings. Keep these instructions for reference. They are your guide to safe and proper operation of this heater.

▲ 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.*

• **Fueling**

- a) *Personnel involved with fueling shall be qualified and thoroughly familiar with the manufacturer's instructions and applicable federal, state, and local regulations regarding the safe fueling of heating units.*
- b) *Only the type of fuel specified on the heater's data plate shall be used.*
- c) *All flame, including the pilot light, if any, shall be extinguished and the heater allowed to cool, prior to fueling.*

d) *During fueling, all fuel lines and fuel-line connections shall be inspected for leaks. Any leaks shall be repaired prior to returning the heater to service.*

e) *At no time shall more than one day's supply of heater fuel be stored inside a building in the vicinity of the heater. Bulk fuel storage shall be outside the structure.*

f) *All fuel storage shall be located a minimum of 25 feet from heaters, torches, welding equipment, and similar sources of ignition (exception: the fuel reservoir integral with the heater unit).*

g) *Whenever possible, fuel storage shall be confined to areas where floor penetrations do not permit fuel to drip onto or be ignited by a fire at lower elevation.*

h) *Fuel storage shall be in accordance with the federal, state, or local authority having jurisdiction.*

- *Never use heater where gasoline, paint thinner, or other highly flammable vapors are present.*
- *Follow all local ordinances and codes when using heater.*
- *Use only in well-vented areas. Provide at least three square feet of fresh, outside air for each 100,000 Btu/Hr of rating. This heater produces carbon monoxide, which is listed by the State of California as a reproductive toxin under Proposition 65.*
- *Use only in places free of flammable vapors or high dust content.*
- *Use only with the electrical voltage and frequency specified on model plate.*
- *Use only a three-prong, grounded extension cord.*

Dayton® Portable Oil-Fired Heaters

General Safety Information (Continued)

- Heaters used in the vicinity of tarpaulins, canvas, or similar enclosure materials shall be located a safe distance from such materials. The recommended minimum safe distance is 10 feet. It is further recommended that these enclosure materials be of a fire retardant nature. These enclosure materials shall be securely fastened to prevent them from igniting or from upsetting the heater due to wind action.
- Minimum heater clearances from combustibles:

Outlet: 8 Ft.	Sides: 4 Ft.
Top: 4 Ft.	Rear: 4 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.
- This heater is equipped 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.
- **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.**

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 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.

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 buildup on spark plug
- the need of nontoxic anti-icer in fuel during very cold weather

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

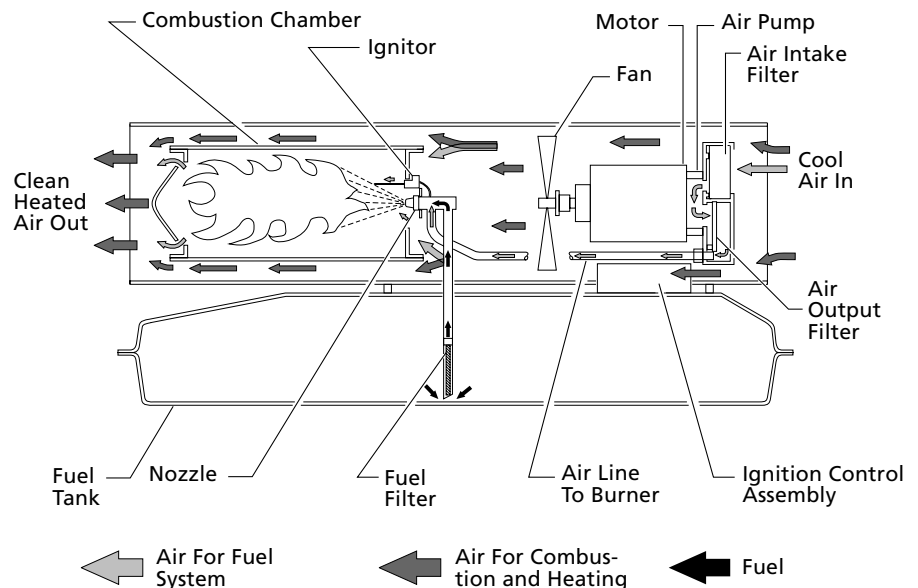


Figure 5 - Cross Section Operational View

Models 2E510F, 2E511F, 3E218E, and 3E219E

Assembly

(For Models 3E218E and 3E219E Only)

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

TOOLS NEEDED

- Medium Phillips Screwdriver
- 3/8" Open or Adjustable Wrench
- Hammer

1. Slide axle through wheel support frame. Install wheels on axle.

IMPORTANT: When installing wheels, point extended hub of wheels toward wheel support frame (See Figure 6).

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 handles on top of fuel tank flange. Insert screws through handles, fuel tank flange, and wheel support frame. Attach nut finger tight after inserting each screw.
5. After inserting all screws, tighten nuts firmly.

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 *General Safety Information*, page 3.
3. Fill fuel tank with Kerosene or No. 1 fuel oil.
4. Attach fuel cap.
5. If equipped, turn thermostat knob clockwise to the HIGH position.
6. Plug power cord of heater into three-prong, grounded extension cord. Extension cord must be at least six feet long.

EXTENSION CORD WIRE SIZE REQUIREMENTS

- 6 to 10 feet long, use 18 AWG rated cord.
 - 11 to 100 feet long, use 16 AWG rated cord.
 - 101 to 200 feet long, use 14 AWG rated cord.
7. Plug extension cord into standard 120 Volt/60 hertz, three-hole, grounded outlet.

NOTE: Ignitor will preheat for five seconds, then heater will start.

8. If equipped, adjust thermostat knob to the desired setting.

NOTE: If equipped, a cold heater may affect the thermostat setting. Further adjustments may be needed until the heater cycles at the desired setting. This thermostat is a general-heating control. It is not intended for precise temperature control.

TO STOP HEATER

Unplug extension cord from outlet.

TO RESET HEATER

1. Unplug extension cord from outlet and wait 10 seconds (two minutes if heater has been running).
2. Repeat steps under *To Start Heater*.

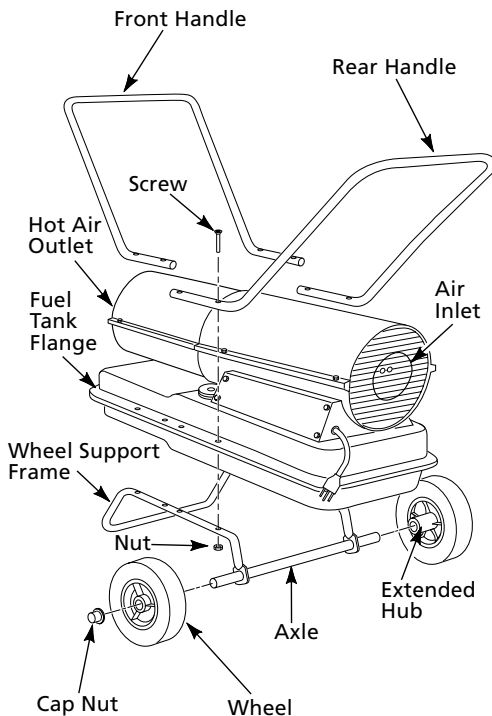


Figure 6 - Wheel and Handle Assembly, Models 3E218E and 3E219E Only

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 three square feet for each 100,000 Btu/Hr rating. Provide extra fresh air if more heaters are being used.

Example: A 155,000 Btu/Hr heater requires one of the following:

- a two-car garage door (16-foot-wide opening) raised 3.5 inches
- a single-car garage door (9-foot-wide opening) raised 6.5 inches
- two, 30-inch windows raised 11.5 inches

Operation

⚠ WARNING Review and understand the warnings in the *General Safety Information* section. They are needed to safely operate this heater. Follow all local codes when using this heater.

Dayton® Portable Oil-Fired Heaters

Maintenance

⚠ 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 (See Figures 7 and 8).
2. Lift upper shell off.
3. Remove fan guard.

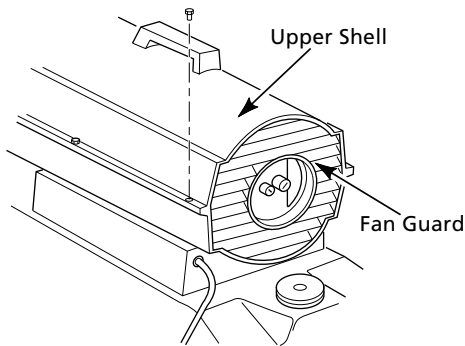


Figure 7 - Upper Shell Removal, Models 2E510F and 2E511F

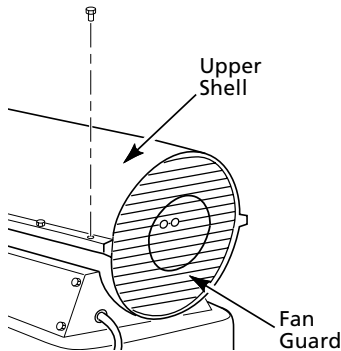


Figure 8 - Upper Shell Removal, Models 3E218E and 3E219E

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 Figures 7 and 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 9).
7. Place setscrew on flat of shaft. Tighten setscrew firmly (40-50 inch-pounds).
8. Replace fan guard and upper shell.

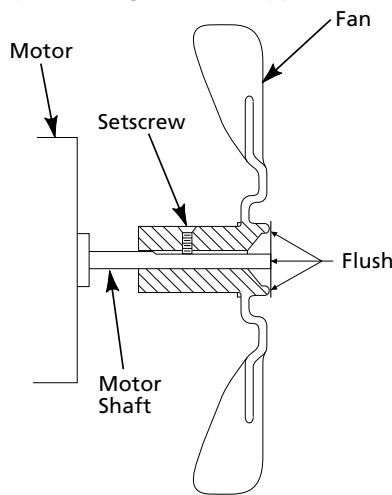


Figure 9 - Fan Cross Section

AIR OUTPUT, AIR INTAKE, AND LINT FILTERS

1. Remove upper shell (See Figures 7 and 8).
2. Remove filter end cover screws using 5/16" nut-driver (See Figures 10 and 11).
3. Remove filter end cover.
4. Replace air output and lint filters.
5. Wash and dry with soap and water or replace air intake filter.
6. Replace filter end cover.
7. Replace fan guard and upper shell.

IMPORTANT: Do not oil filters.

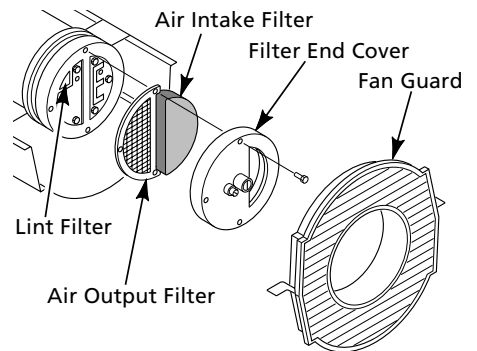


Figure 10 - Air Output, Air Intake, and Lint Filters, Models 2E510F and 2E511F

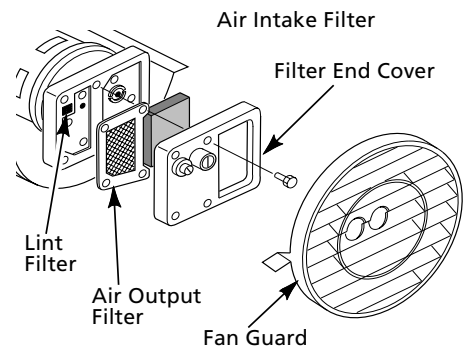


Figure 11 - Air Output, Air Intake, and Lint Filters, Models 3E218E and 3E219E

Models 2E510F, 2E511F, 3E218E, and 3E219E

Maintenance (Continued)

PUMP PRESSURE ADJUSTMENT

1. Remove pressure gauge plug from filter end cover (See Figure 12).
2. Install accessory pressure gauge (Part Number HA1180) (See Figure 13).
3. Start heater (See *Operation*, page 5). Allow motor to reach full speed.
4. Adjust pressure. Turn relief valve to right to increase pressure. Turn relief valve to left to decrease pressure. See specification chart below for correct pressure for each model.

Model	Pump Pressure
2E510F	3.0 psi
2E511F	3.4 psi
3E218E	5.3 psi
3E219E	5.4 psi

5. Remove pressure gauge. Replace pressure gauge plug in filter end cover.

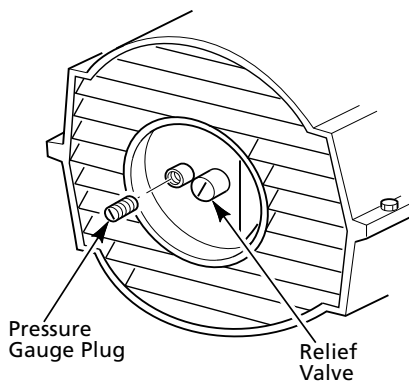


Figure 12 - Pressure Gauge Plug Removal

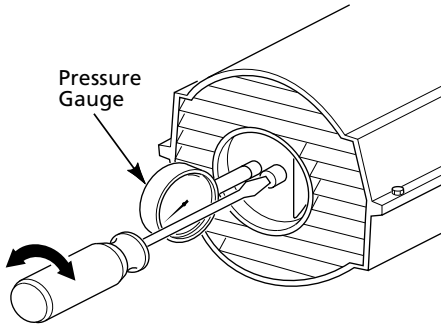


Figure 13 - Adjusting Pump Pressure

FUEL FILTER

1. Remove side cover screws using 5/16" nut-driver.
2. Remove side cover.
3. Pull upper fuel line off fuel filter neck (See Figure 14).
4. Carefully pry bushing, fuel filter, and lower fuel line (Models 3E218E and 3E219E only) out of fuel tank (See Figure 15).
5. Wash fuel filter with clean fuel and replace in tank.
6. Attach upper fuel line to fuel filter neck.
7. Replace side cover.

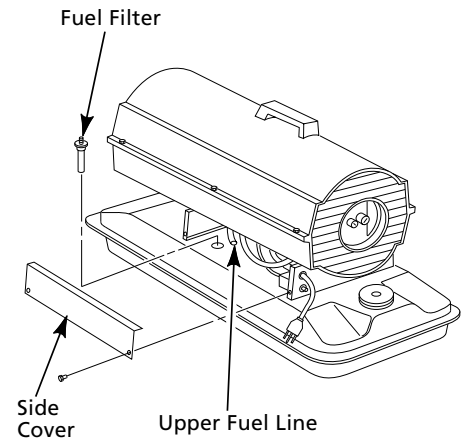


Figure 14 - Fuel Filter Removal, Models 2E510F and 2E511F

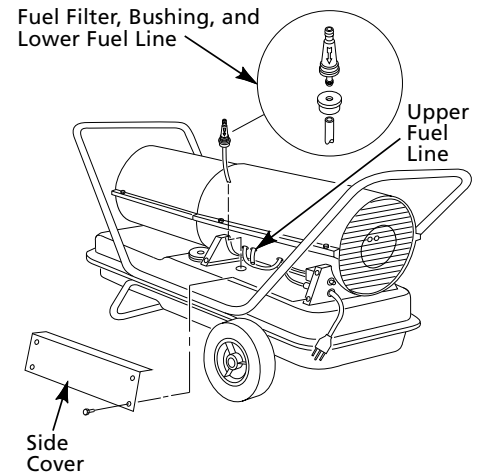


Figure 15 - Fuel Filter Removal, Models 3E218E and 3E219E

Dayton® Portable Oil-Fired Heaters

Maintenance (Continued)

IGNITOR

1. Remove upper shell and fan guard (See page 6).
2. Remove fan (See page 6).
3. Remove 4 side cover screws with a 5/16" nut driver. Remove side cover (See Figures 14 and 15).
4. Disconnect ignitor wires (yellow for 3E218E and 3E219E, gray for 2E510F and 2E511F) from ignition control assembly (See Figure 16). 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 16).

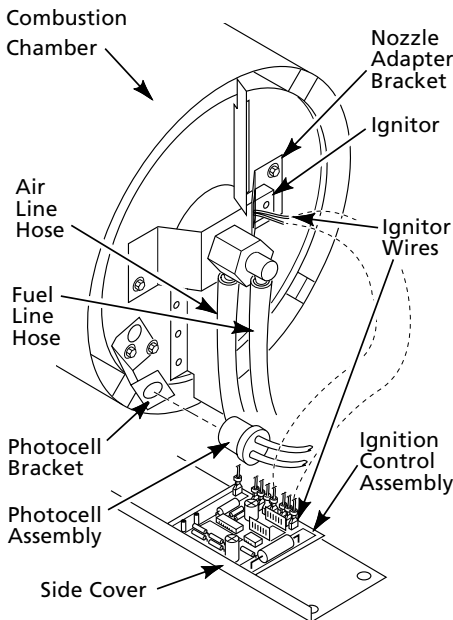


Figure 16 - Disconnecting Ignitor Wires from Ignition Control Assembly

6. Remove combustion chamber. Stand combustion chamber on end with nozzle adapter bracket on top (See Figure 17).

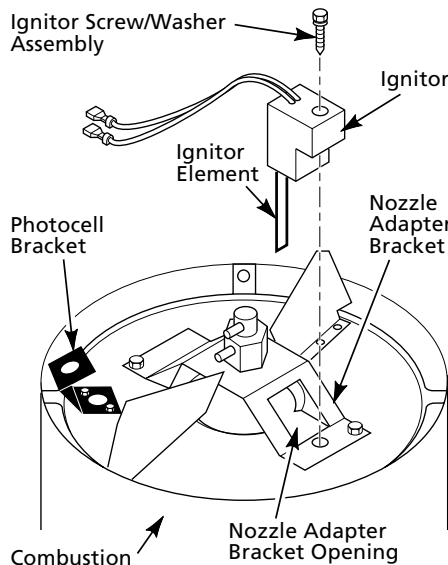


Figure 17 - Ignitor Replacement

7. Remove ignitor screw with a 1/4" nut driver. Carefully remove ignitor from nozzle adapter bracket.

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

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 17). Torque 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.
12. Replace side cover (See Figures 14 and 15).
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 9).
14. Replace photocell in photocell bracket. Route wires as shown in Figure 18, 19, or 20.
15. Replace fan (See page 6).
16. Replace fan guard and upper shell (See page 6).

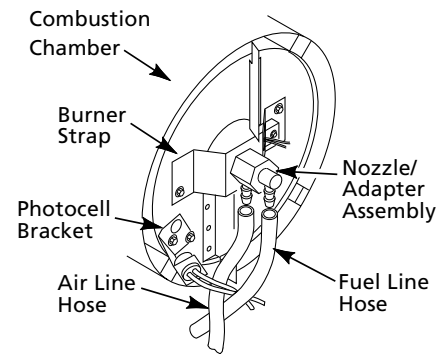


Figure 18 - Removing Air and Fuel Line Hoses (40 and 60,000 Btu/Hr Models Only)

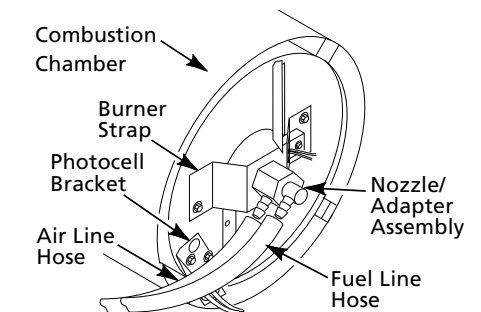


Figure 19 - Removing Air and Fuel Line Hoses (110,000 Btu/Hr Model Only)

Models 2E510F, 2E511F, 3E218E, and 3E219E

Maintenance (Continued)

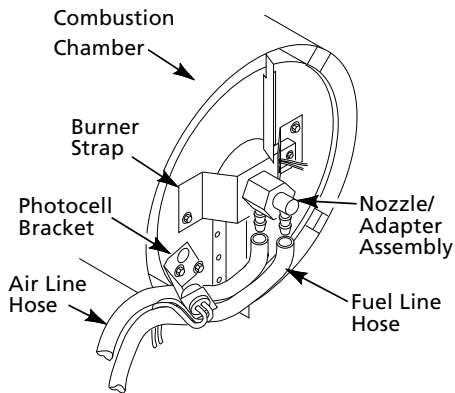


Figure 20 - Removing Air and Fuel Line Hoses (155,000 Btu/Hr Model Only)

NOZZLE

1. Remove upper shell (See page 6).
2. Remove fan (See page 6).
3. Remove fuel and air line hoses from nozzle assembly (See Figure 18, 19, or 20).
4. Turn nozzle assembly 1/4 turn to left and pull toward motor to remove (See Figure 21).

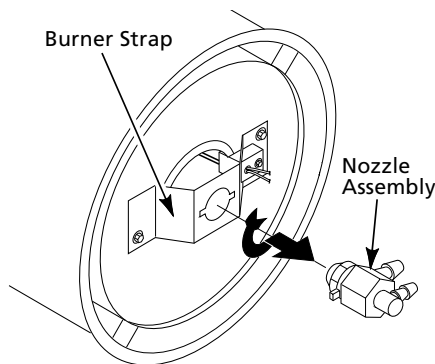


Figure 21 - Removing Nozzle Assembly, All Models

5. Place plastic hex-body into vise and lightly tighten.
6. Carefully remove nozzle from the nozzle adapter using 5/8" socket wrench.

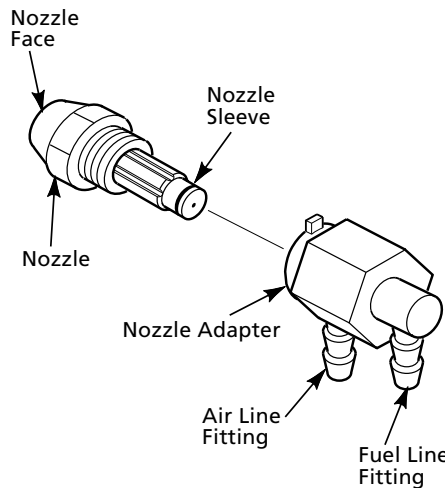


Figure 22 - Nozzle and Nozzle Adapter, All Models

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 (40-45 inch-pounds).
10. Attach nozzle assembly to burner strap.
11. Attach fuel and airline hoses to nozzle adapter assembly (see *Fuel and Air Line Replacement and Proper Routing*).
12. Replace fan (See page 6).
13. Replace fan guard and upper shell.

FUEL AND AIR LINE REPLACEMENT AND PROPER ROUTING

1. Remove upper shell (See page 6).
2. Remove side cover screws using 5/16" nut driver.
3. Remove side 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 18, 19, or 20) and from fuel filter (See page 7). If air line hose is damaged, disconnect from nozzle adapter (See Figure 18, 19, or 20) and from barb fitting on pump end cover (See Figure 23).
5. Install new air and/or fuel line. Attach one end of air line hose to barb fitting on pump end cover (See Figure 23) and the other end to nozzle adapter (See Figure 18, 19, or 20). Attach one end of fuel line hose to fuel filter (See page 7) and the other end to nozzle adapter (See Figure 18, 19, or 20).

NOTE: Route hoses as shown in Figure 18, 19, or 20 according to Model. Hoses are not to touch photocell bracket.
6. Replace side cover.
7. Replace upper shell and fan guard (See page 6).

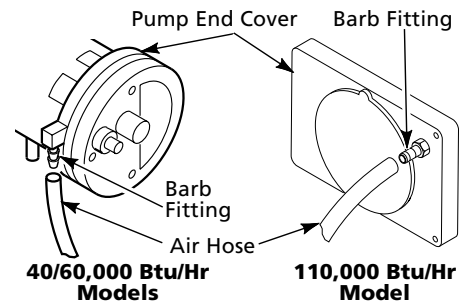


Figure 23 - Air Hose to Barb Fitting

Dayton® Portable Oil-Fired Heaters

Maintenance (Continued)

PUMP ROTOR

(Procedure if rotor is binding)

1. Remove upper shell (See page 6).
2. Remove filter end cover screws using 5/16" nut-driver (See Figures 24 and 25).
3. Remove filter end cover and air filters.
4. Remove pump plate screws using 5/16" nut-driver.

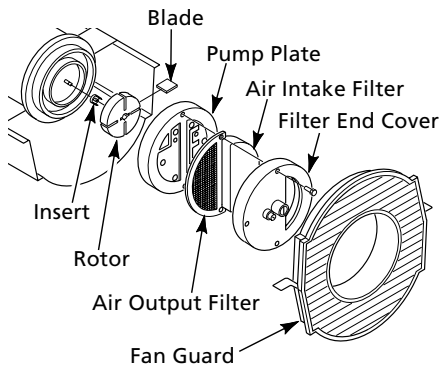


Figure 24 - Rotor Location, Models 2E510F and 2E511F

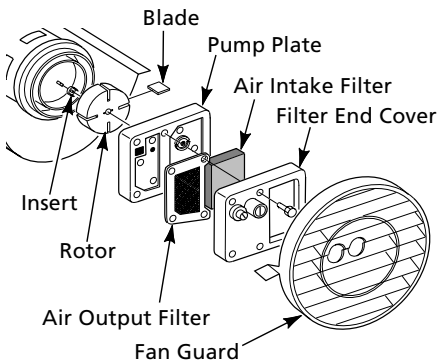


Figure 25 - Rotor Location, Models 3E218E and 3E219E

5. Remove pump plate.
6. Remove rotor, insert, and blades.
7. Check for debris in pump. If debris is found, blow out with compressed air.
8. Install insert and rotor.
9. Check gap on rotor. Adjust to .003"/.004" if needed (See Figure 26).

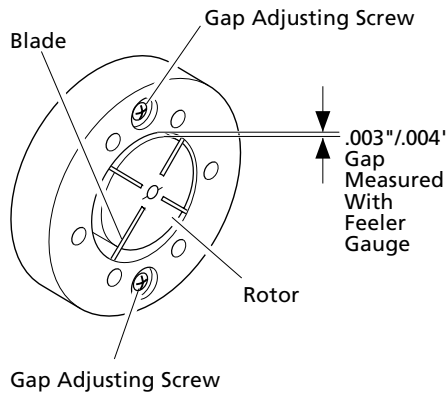


Figure 26 - Gap Adjusting Screw Locations

NOTE: Rotate rotor one full turn to insure the gap is .003"/.004" at tightest position. Adjust if needed.

10. Install blades, pump plate, air filters, and filter end cover.
11. Replace fan guard and upper shell.
12. Adjust pump pressure (See page 7).

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

13. Perform steps 1 through 6 above.
14. Place fine grade sandpaper (600 grit) on flat surface. Sand rotor lightly in "figure 8" motion four times (See Figure 27).

15. Reinstall insert and rotor.
16. Perform previous steps 10 through 12.

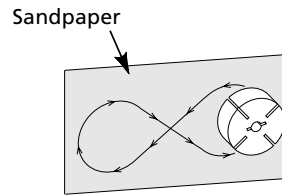


Figure 27 - Sanding Rotor

IGNITION CONTROL ASSEMBLY

(PROCEDURE FOR REPLACING FUSE ON MODELS 3E218E AND 3E219E)

⚠ WARNING High Voltage!

1. Unplug heater.
2. Remove side cover screws (4) using 5/16" nut-driver to expose ignition control assembly.
3. Remove fuse cover.
4. Remove fuse from fuse clips.
5. Replace fuse with fuse of the same type and rating (GMA-10). Do not substitute a fuse with a higher current rating.
6. Replace fuse cover.
7. Replace side cover.

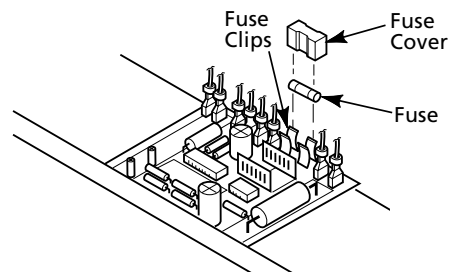


Figure 28 - Replacing Fuse

Models 2E510F, 2E511F, 3E218E, and 3E219E

Maintenance (Continued)

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 6
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 6
Fuel filter	Clean twice a heating season or as needed	See <i>Fuel Filter</i> , page 7
Fan blades	Clean every season or as needed	See <i>Fan</i> , page 6
Motor	Not required/permanently lubricated	

**For Replacement Parts, call 1-800-323-0620
24 hours a day - 365 days a year**

Please provide following information:

- Model number
- Serial number (if any)
- Part description and number as shown in parts list

Address parts correspondence to:

Grainger Parts
P.O. Box 3074
1657 Shermer Road
Northbrook, IL 60065-3074 U.S.A.

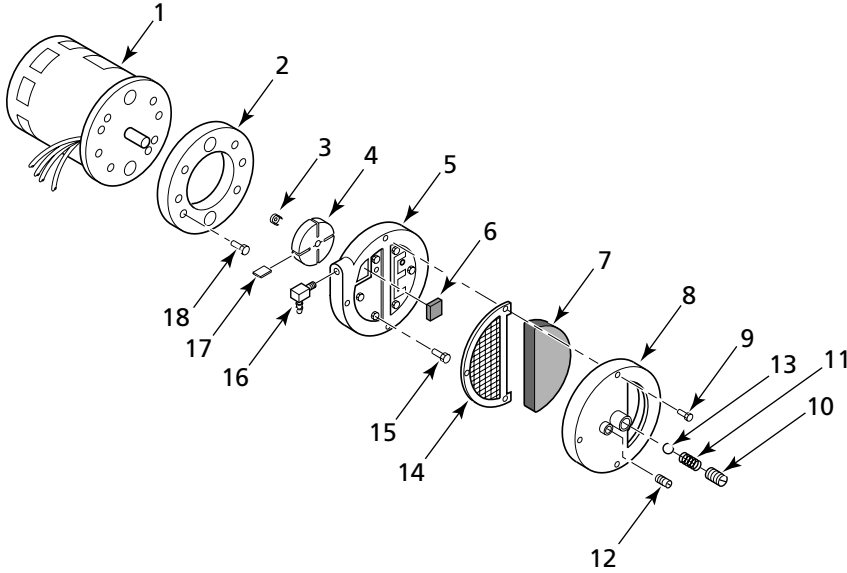


Figure 29 - Motor and Pump Assembly for Models 2E510F and 2E511F

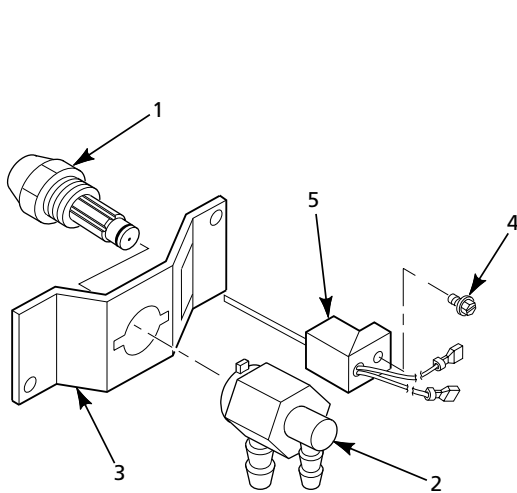


Figure 30 - Burner Head Assembly for All Models

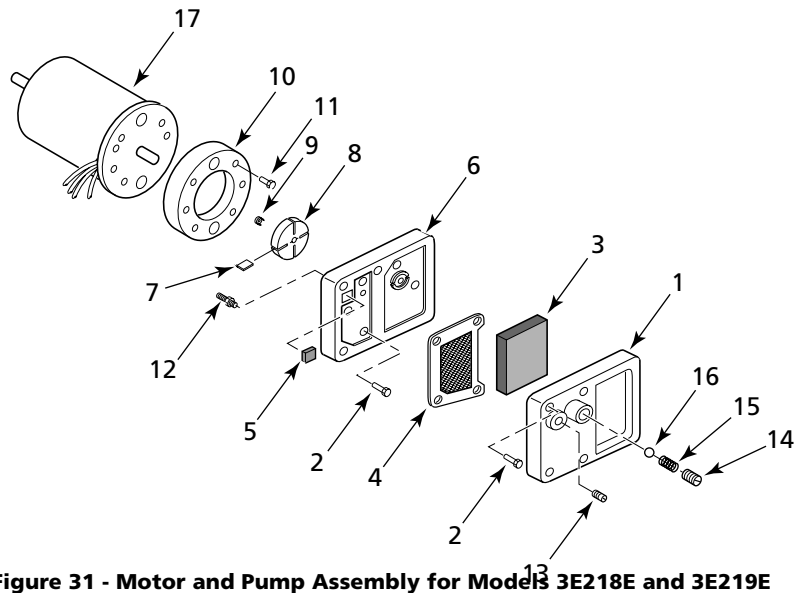


Figure 31 - Motor and Pump Assembly for Models 3E218E and 3E219E

Models 2E510F, 2E511F, 3E218E, and 3E219E

Replacement Parts List for Motor and Pump Assembly for Models 2E510F and 2E511F - Figure 29

Ref. No.	Description	Part Number	2E510F Qty.	2E511F Qty.	Ref. No.	Description	Part Number	2E510F Qty.	2E511F Qty.
1	Motor	102001-01	1	1	11	Pressure Relief Spring	M10993-1	1	1
2	Pump Body	079975-02	1	—	12	Plug	M22997	1	1
		079975-03	—	1	13	1/4" Diameter Steel Ball	M8940	1	1
3	Insert	M22009	1	1	14	Output Filter	M29612-01	1	1
4	Rotor	M22456-1	1	—	15	#10-32 x 1" Screw	*M12461-31	6	—
		M22456-2	—	1		#10-32 x 1 1/8" Screw	M12461-32	—	6
5	End Pump Cover	M29608	1	1	16	90° Elbow	103676-01	1	1
6	Lint Filter	M29632	1	1	17	Blade	M8643	4	—
7	Intake Filter	M29633	1	1			M8643-2	—	4
8	End Cover	M29609	1	1	18	#10-32 x 5/8" Screw	*FHFP3-5C	2	—
9	#10-32 x 1" Screw	*M12461-31	3	3		#10-32 x 3/4" Screw	*FHFP3-6C	—	2
10	Adjusting Screw	M27694	1	1					

(* Standard hardware item, available locally.

Replacement Parts List for Burner Head Assembly for All Models - Figure 30

Ref. No.	Description	Part Number	2E510F Qty.	2E511F Qty.	3E218E Qty.	3E219E Qty.
1	Nozzle	HA3006	1	—	—	—
		100735-17	—	1	—	—
		100735-19	—	—	1	—
		100735-20	—	—	—	1
2	Nozzle Adapter	104056-01	1	1	—	—
		104054-01	—	—	1	1
3	Nozzle Adapter Bracket	102336-01	1	1	1	1
4	Screw/Washer Assy.	104023-01	1	1	1	1
5	Ignitor	102548-01	1	1	—	—
		102548-03	—	—	1	1

Replacement Parts List for Motor and Pump Assembly for Models 3E218E and 3E219E - Figure 31

Ref. No.	Description	Part Number	3E218E Qty.	3E219E Qty.	Ref. No.	Description	Part Number	3E218E Qty.	3E219E Qty.
1	End Filter Cover	M16545	1	1	10	Pump Body	079975-02	1	1
2	#10-32 x 1" Screw	*M12461-31	10	10	11	#10-32 x 1/4" Screw	*FHFP3-5C	2	2
3	Intake Filter	M12179	1	1	12	Barb Fitting	M50820-02	1	1
4	Output Filter	M12244-1	1	1	13	Plug	M22997	1	1
5	Lint Filter	M11637	1	1	14	Adjusting Screw	M27694	1	1
6	End Pump Cover	M50545	1	1	15	Relief Spring	M10993-1	1	1
7	Blade	M8643	4	4	16	1/4" Diameter Ball	M8940	1	1
8	Rotor Pump	M22456-1	1	1	17	Motor	102001-21	1	1
9	Rotor Insert	M22009	1	1					

(* Standard hardware item, available locally.

**For Replacement Parts, call 1-800-323-0620
24 hours a day - 365 days a year**

Please provide following information:

- Model number
- Serial number (if any)
- Part description and number as shown in parts list

Address parts correspondence to:

Grainger Parts
P.O. Box 3074
1657 Shermer Road
Northbrook, IL 60065-3074 U.S.A.

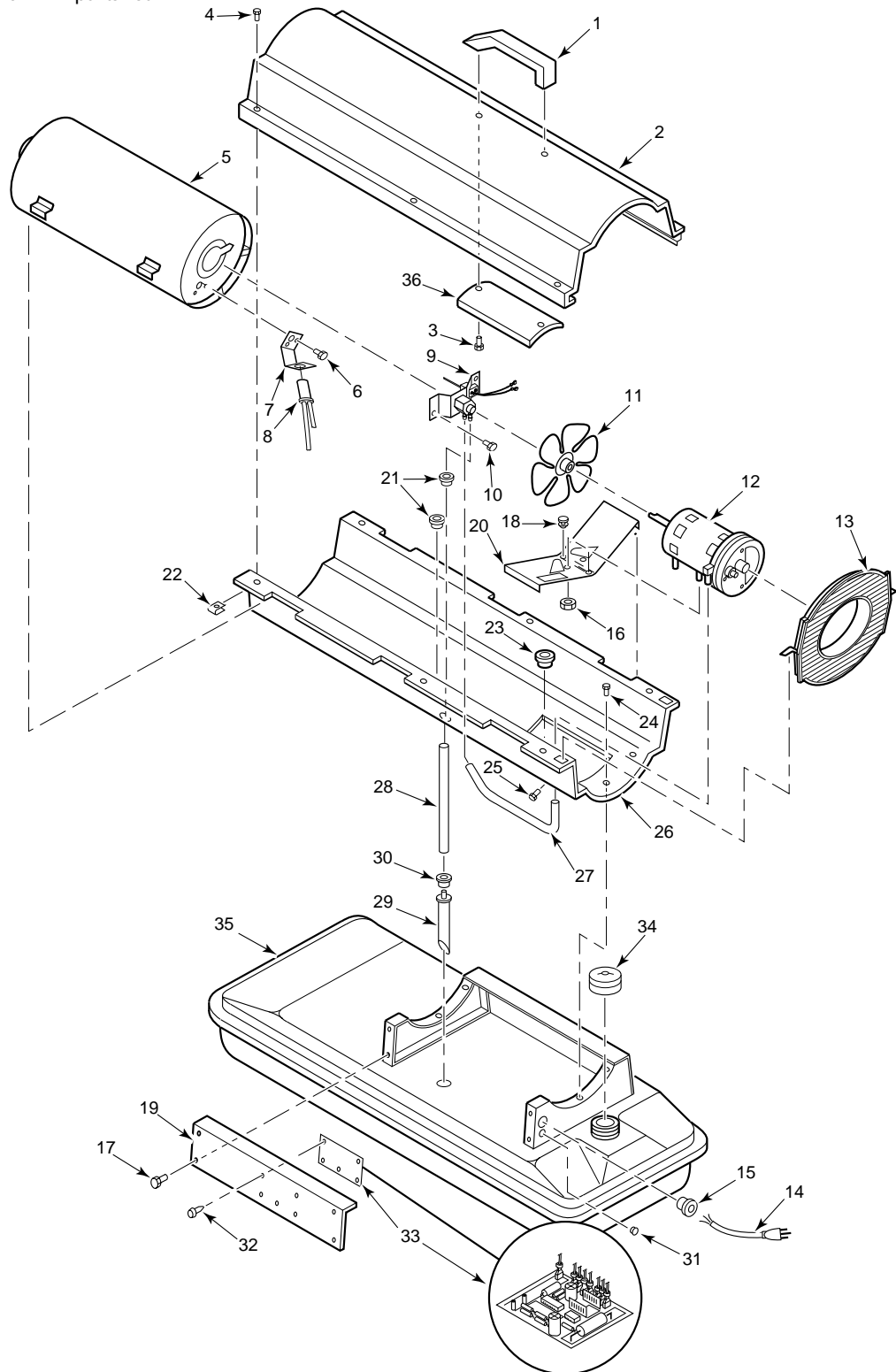


Figure 32 - Replacement Parts Illustration for Models 2E510F and 2E511F

Models 2E510F, 2E511F, 3E218E, and 3E219E

Replacement Parts List for Models 2E510F and 2E511F

Ref. No.	Description	Part Number	2E510F Qty.	2E511F Qty.	Ref. No.	Description	Part Number	2E510F Qty.	2E511F Qty.
1	Handle	M51104-01	1	1	20	Motor Bracket	101205-01	1	1
2	Upper Shell	098511-34	1	1	21	Bushing	M30865-02	2	2
3	#10-16 x 3/4" Screw	* M11084-29	2	2	22	Clip Nut	M11271-8	6	6
4	#10-16 x 1/2" Screw	* 100647-01	6	6	23	Bushing	M50104-02	1	1
5	Combustion Chamber	098512-58	1	—	24	#10-16 x 3/8" Screw	* M11084-26	6	6
		098512-50	—	1	25	#8-32 x 3/8" Screw	* M10908-14	1	1
6	#6-32 x 3/8" Screw	* M10908-2	2	2	26	Lower Shell	098511-14	1	1
7	Photocell Bracket	103154-03	1	1	27	Rubber Airline	M50814-06	1	1
8	Photocell Assembly	M16656-23	1	1	28	Fuel Line	079973-01	1	1
9	Burner Assembly	†	1	1	29	Fuel Filter (with Bushing)	M50876-04	1	—
10	#10-16 x 3/8" Screw	* M11084-26	2	2			M50876-05	—	1
11	Fan	103684-01	1	1	30	Rubber Bushing	M10990-3	1	1
12	Motor and Pump Assembly	†	1	1	31	Button Plug	101695-01	1	1
13	Fan Guard	M51105-01	1	1	32	PCB Support	102349-01	5	5
14	Power Cord	098219-31	1	1	33	Ignition Control Assembly	104068-03	1	1
15	Strain Relief Bushing	M11143-1	1	1	34	Fuel Cap (Includes Gasket)	097702-01	1	1
16	1/4-20 Hex Lock Nut	NTC-4C	2	2	35	Fuel Tank	098513-23	1	—
17	#10-16 x 3/8" Screw	* M11084-26	4	4			098513-62	—	1
18	Rubber Bumper	M50631	2	2	36	Shell Heat Shield	M51108-01	1	1
19	Side Cover	097461-03AA	1	1	Δ	Wire Tie	103814-01	1	1

(*) Standard hardware item, available locally.

(Δ) Not shown.

(†) Not available as an assembly, see page 13.

**For Replacement Parts, call 1-800-323-0620
24 hours a day - 365 days a year**

Please provide following information:
 -Model number
 -Serial number (if any)
 -Part description and number as shown in parts list

Address parts correspondence to:
 Grainger Parts
 P.O. Box 3074
 1657 Shermer Road
 Northbrook, IL 60065-3074 U.S.A.

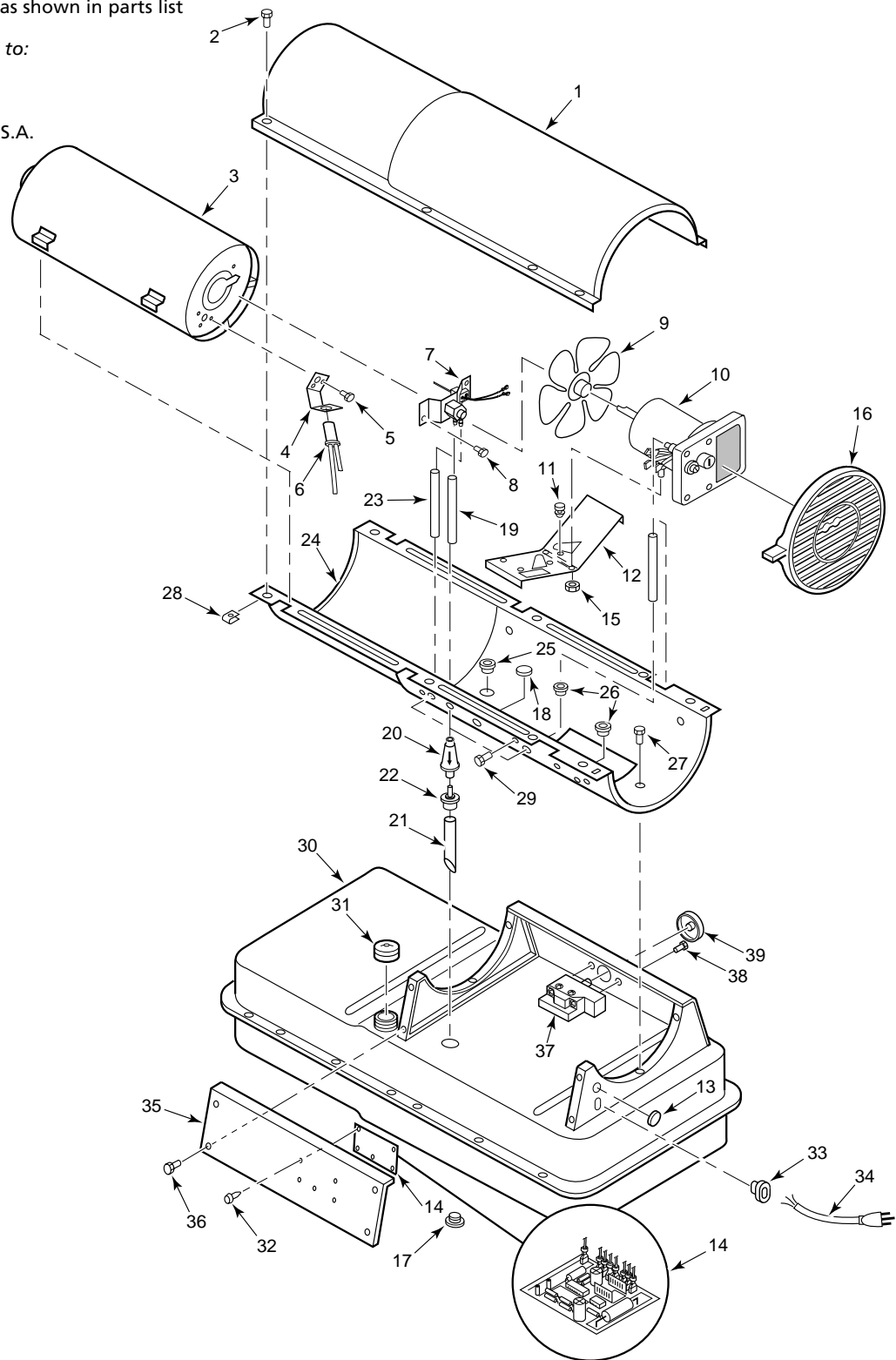


Figure 33 - Replacement Parts Illustration for Model 3E218E

Models 2E510F, 2E511F, 3E218E, and 3E219E

Replacement Parts List for Model 3E218E

Ref. No.	Description	Part Number	Qty.	Ref. No.	Description	Part Number	Qty.
1	Upper Shell	098511-164	1	22	Rubber Bushing	M10990-3	1
2	#10-16 x 1/2" Screw	*100647-01	8	23	Airline	M50814-03	1
3	Combustion Chamber	098512-54	1	24	Lower Shell	098511-282	1
4	Photocell Bracket	103971-01	1	25	Bushing	M50104-03	1
5	#6-32 x 3/8" Screw	*M10908-2	2	26	Bushing	M50104-01	2
6	Photocell Assembly	M16656-24	1	27	#10-16 x 1/2" Screw	*M11084-27	6
7	Burner Head Assembly	†	1	28	Clip Nut	M11271-8	8
8	#10-16 x 1/2" Screw	*M11084-27	2	29	#8-32 x 3/8" Screw	*M10908-14	1
9	Fan	097293-01	1	30	Fuel Tank	098513-87	1
10	Motor and Pump Assembly	†	1	31	Fuel Cap (Includes Gasket)	097702-01	1
11	Rubber Bumper	M50631	2	32	P.C. Board Support	102349-01	5
12	Motor Mounting Bracket	101206-01	1	33	Strain Relief Bushing	M11143-1	1
13	Button Plug	101695-01	1	34	Power Cord	098219-24	1
14	Ignition Control Assembly	104068-02	1	35	Side Cover	M51077-09AA	1
15	1/4-20 Hex Lock Nut	NTC-4C	2	36	#10-16 x 1/2" Screw	*M11084-27	4
16	Fan Guard	M51114-01	1	37	Thermostat	097657-03	1
17	Drain Plug (Includes O-ring)	M27417	1	38	#6-32 x 1/4" Screw	M10908-1	2
18	Button Plug	099213-01	1	39	Thermostat Knob	104905-01	1
19	Fuel Line	M51345-06	1	Δ	Wire Clip (Secures Wires of Thermostat)	099650-01	1
20	Fuel Filter	099743-01	1	Δ	Wire Tie	103814-01	1
21	Fuel Line Tube	M51151-01	1				

(*) Standard hardware item, available locally.

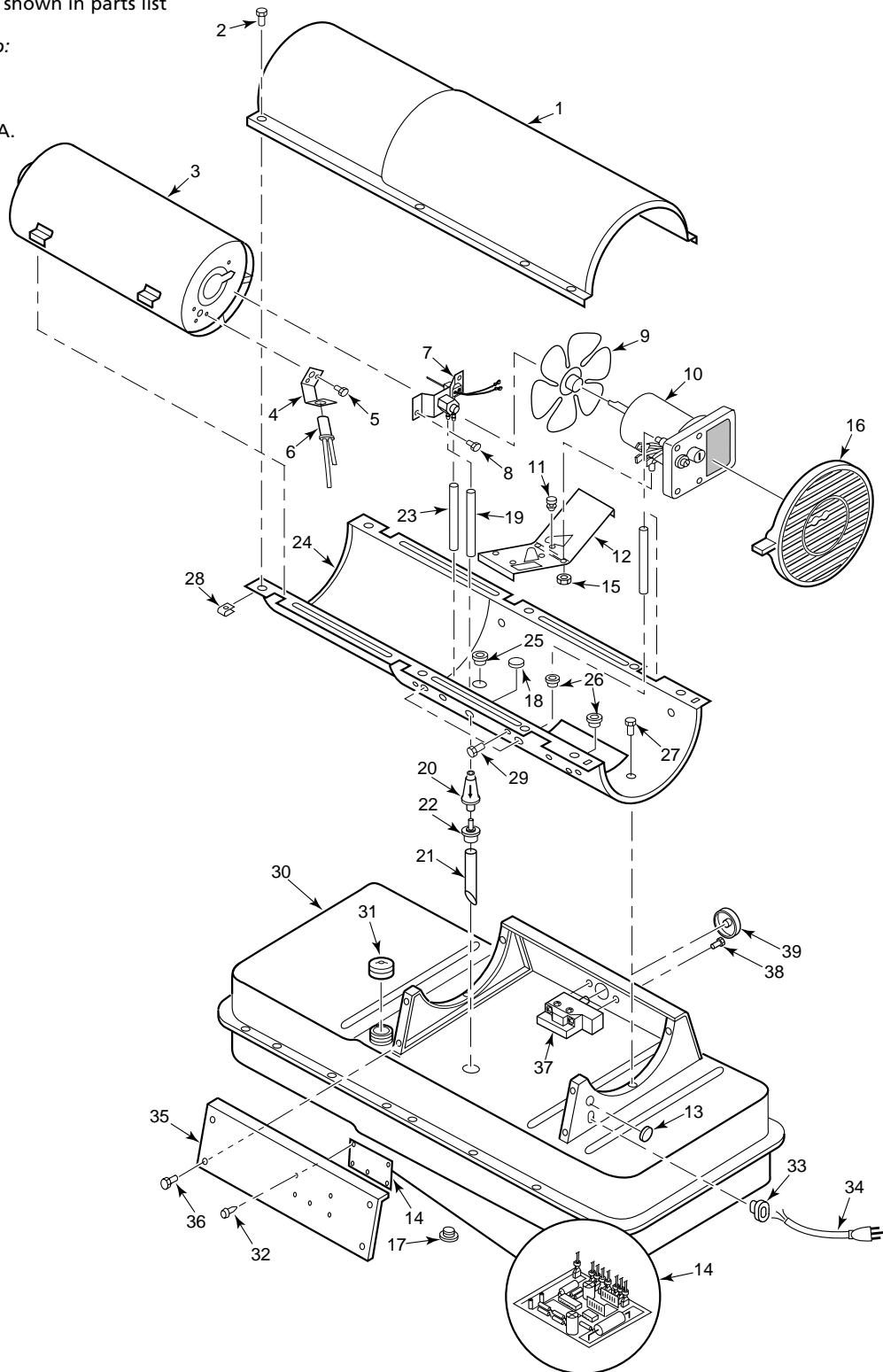
(Δ) Not shown.

(†) Not available as an assembly, see page 13.

**For Replacement Parts, call 1-800-323-0620
24 hours a day - 365 days a year**

Please provide following information:
 -Model number
 -Serial number (if any)
 -Part description and number as shown in parts list

Address parts correspondence to:
 Grainger Parts
 P.O. Box 3074
 1657 Shermer Road
 Northbrook, IL 60065-3074 U.S.A.



**Figure 34 - Replacement Parts Illustration
for Model 3E219E**

Models 2E510F, 2E511F, 3E218E, and 3E219E

Replacement Parts List for Model 3E219E

Ref. No.	Description	Part Number	Qty.	Ref. No.	Description	Part Number	Qty.
1	Upper Shell	098511-164	1	22	Rubber Bushing	M10990-3	1
2	#10-16 x 1/2" Screw	* 100647-01	8	23	Airline	M50814-03	1
3	Combustion Chamber	098512-59	1	24	Lower Shell	098511-282	1
4	Photocell Bracket	099229-01	1	25	Bushing	M50104-03	1
5	#6-32 x 3/8" Screw	* M10908-2	2	26	Bushing	M50104-01	2
6	Photocell Assembly	M16656-24	1	27	#10-16 x 1/2" Screw	* M11084-27	6
7	Burner Head Assembly	†	1	28	Clip Nut	M11271-8	8
8	#10-16 x 1/2" Screw	* M11084-27	2	29	#8-32 x 3/8" Screw	* M10908-14	1
9	Fan	102042-01	1	30	Fuel Tank	098513-67	1
10	Motor and Pump Assembly	†	1	31	Fuel Cap (Includes Gasket)	097702-01	1
11	Rubber Bumper	M50631	2	32	P.C. Board Support	102349-01	5
12	Motor Mounting Bracket	101206-01	1	33	Strain Relief Bushing	M11143-1	1
13	Button Plug	101695-01	1	34	Power Cord	098219-24	1
14	Ignition Control Assembly	104068-02	1	35	Side Cover	M51077-09AA	1
15	1/4-20 Hex Lock Nut	NTC-4C	2	36	#10-16 x 1/2" Screw	* M11084-27	4
16	Fan Guard	M51114-01	1	37	Thermostat	097657-03	1
17	Drain Plug (includes O-ring)	M27417	1	38	#6-32 x 1/4" Screw	M10908-1	2
18	Button Plug	099213-01	1	39	Thermostat Knob	104905-01	1
19	Fuel Line	M51345-06	1	Δ	Wire Clip (Secures Wires of Thermostat)	099650-01	1
20	Fuel Filter	099743-01	1	Δ	Wire Tie	103814-01	1
21	Fuel Line Tube	M51151-02	1				

(*) Standard hardware item, available locally.

(Δ) Not shown.

(†) Not available as an assembly, see page 13.

Dayton® Portable Oil-Fired Heaters

Replacement Parts List for Handle and Wheel Group Models 3E218E and 3E219E

Ref. No.	Description	Part Number		Qty.
		3E218E	3E219E	
1	Front Handle	HA2203	HA2204	1
2	Rear Handle	HA2203	HA2204	1
3	#10 - 24 x 1 ³ / ₄ " Oval Head Screw	M12345-33	M12345-33	8
4	Wheel Support Frame	M12342-3	M12831-3	1
5	10-24 Torque Lock Hex Nut	NTC-3C	NTC-3C	8
6	Axle	M51015-01	M16801-2	1
7	Wheel	097896-04	097896-04	2
8	Cap Nut	M28526	M28526	2

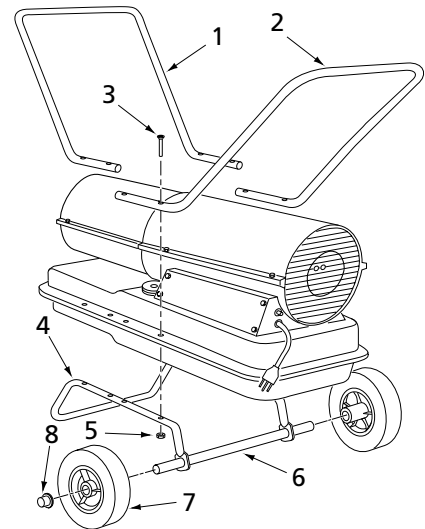


Figure 35 - Handle and Wheel Assembly

Maintenance Kits

	Part Numbers for Models			
	2E510F	2E511F	3E218E	3E219E
Ignition Control	104068-03	104068-03	104068-02	104068-02
Ignitor	102548-01	102548-01	102548-03	102548-03
Filter Kit	HA3014	HA3014	HA3017	HA3017
Nozzle Kit	HA3006	100735-17	100735-19	100735-20
Rotor/Air Pump Kit	HA3004	HA3005	HA3004	HA3004
Handle	—	—	HA2203	HA2204
Photocell	M16656-23	M16656-23	M16656-24	M16656-24
Pump Adjustment	HA3020	HA3020	HA3020	HA3020

Accessories

	2E510F	2E511F	3E218E	3E219E
Air Gauge Kit	HA1180	HA1180	HA1180	HA1180
Standard Wheels and Handle Kit	HA1206	HA1206	—	—
Heavy Duty Wheels and Handle Kit	HA1202	HA1202	—	—

Models 2E510F, 2E511F, 3E218E, and 3E219E

Wiring Diagram

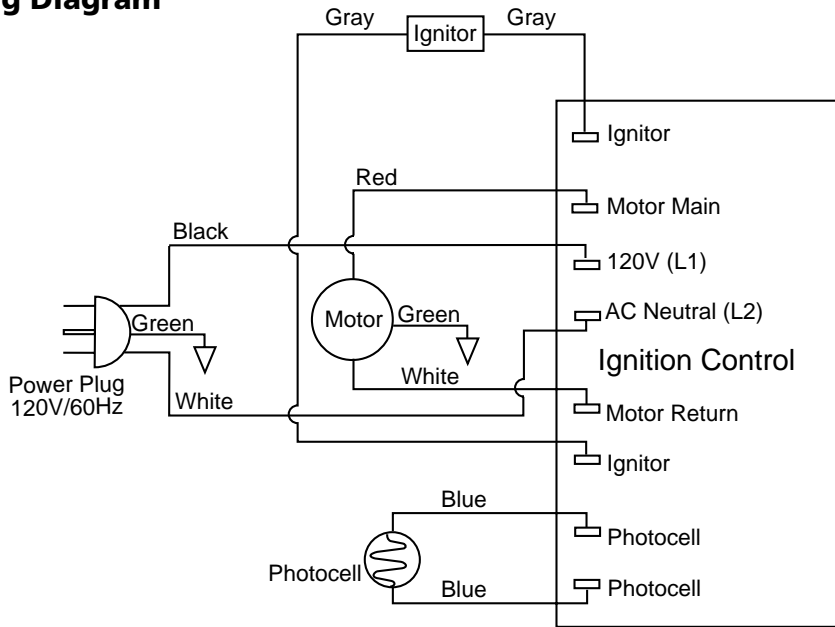


Figure 36 - Wiring Diagram, Models 2E510F and 2E511F

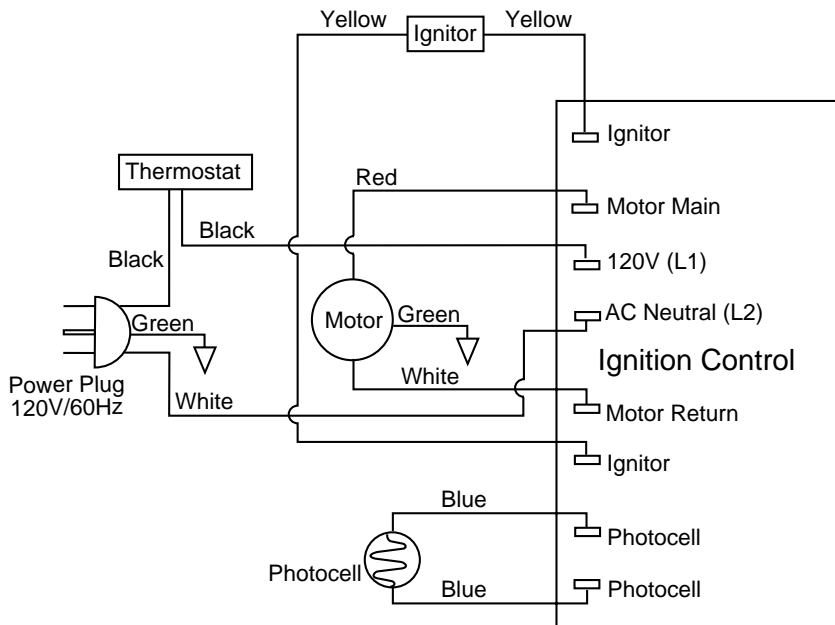


Figure 37 - Wiring Diagram, Models 3E218E and 3E219E

Dayton® Portable Oil-Fired Heaters

Troubleshooting Chart

⚠ WARNING

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

Symptom	Possible Cause(s)	Corrective Action
Motor does not start five seconds after heater is plugged in	1. No power to heater	1. Check circuit breaker in electrical panel
	2. Thermostat setting too low, if equipped	2. Turn thermostat knob to a higher setting
Motor starts and runs but heater does not ignite	⚠ WARNING High Voltage!	
	3. Bad electrical connection between motor and ignition control assembly or ignition control assembly and power cord	3. Check all electrical connections. See Wiring Diagram, page 21
	4. Blown fuse on ignition control assembly	4. See Ignition Control Assembly, page 10
	5. Binding pump rotor	5. If fan does not turn freely, see Pump Rotor, page 9
	6. Defective ignition control assembly	6. Replace ignition control assembly
	7. Defective motor	7. Replace Motor
	Motor starts and runs but heater does not ignite	1. No fuel in tank
2. Pump pressure incorrect		2. See Pump Pressure Adjustment, page 7
3. Dirty fuel filter		3. See Fuel Filter, page 7
4. Obstruction in nozzle assembly		4. See Nozzle, page 9
5. Water in fuel tank		5. Drain and flush fuel tank with clean kerosene. See Storing, Transporting, or Shipping, page 11
Motor starts and runs but heater does not ignite	⚠ WARNING High Voltage!	
	6. Bad electrical connection between ignitor and ignition control assembly	6. Check electrical connections. See Wiring Diagram, page 21
	7. Defective ignitor	7. Replace ignitor, see page 8
8. Defective ignition control assembly	8. Replace ignition control assembly	

Models 2E510F, 2E511F, 3E218E, and 3E219E

Troubleshooting Chart (Continued)

Symptom	Possible Cause(s)	Corrective Action
Heater ignites but ignition control assembly shuts heater off after a short period of time	1. Pump pressure incorrect	1. See Pump Pressure Adjustment, page 7
	2. Dirty air intake, air output, and/or lint filter	2. See Air Output, Air Intake, and Lint Filters, page 6
	3. Dirty fuel filter	3. See Fuel Filter, page 7
	4. Obstruction in nozzle assembly	4. See Nozzle, page 9
	5. Photocell assembly not properly installed (not seeing the flame)	5. Make sure photocell boot is properly seated in bracket
	<div style="border: 1px solid black; padding: 2px; display: inline-block;">▲ WARNING</div> <i>High Voltage!</i>	
	6. Dirty photocell lens	6. Clean photocell lens
	7. Bad electrical connection between photocell and ignition control assembly	7. Check electrical connections. See Wiring Diagram, page 21
	8. Defective photocell	8. Replace photocell
9. Defective ignition control assembly	9. Replace ignition control assembly	

Dayton® Portable Oil-Fired Heaters

LIMITED WARRANTY

DAYTON ONE-YEAR LIMITED WARRANTY. Portable Oil-Fired heaters, Models covered in this manual, are warranted by Dayton Electric Mfg. Co. (Dayton) to the original user against defects in workmanship or materials under normal use for one year after date of purchase. Any part which is determined to be defective in material or workmanship and returned to an authorized service location, as Dayton designates, shipping costs prepaid, will be, as the exclusive remedy, repaired or replaced at Dayton's option. For limited warranty claim procedures, see PROMPT DISPOSITION below. This limited warranty gives purchasers specific legal rights which vary from jurisdiction to jurisdiction.

LIMITATION OF LIABILITY. To the extent allowable under applicable law, Dayton's liability for consequential and incidental damages is expressly disclaimed. Dayton's liability in all events is limited to and shall not exceed the purchase price paid.

WARRANTY DISCLAIMER. Dayton has made a diligent effort to provide product information and illustrate the products in this literature accurately; however, such information and illustrations are for the sole purpose of identification, and do not express or imply a warranty that the products are MERCHANTABLE, or FIT FOR A PARTICULAR PURPOSE, or that the products will necessarily conform to the illustrations or descriptions.

Except as provided below, no warranty or affirmation of fact, expressed or implied, other than as stated in the "LIMITED WARRANTY" above is made or authorized by Dayton.

PRODUCT SUITABILITY. Many jurisdictions have codes and regulations governing sales, construction, installation, and/or use of products for certain purposes, which may vary from those in neighboring areas. While Dayton attempts to assure that its products comply with such codes, it cannot guarantee compliance, and cannot be responsible for how the product is installed or used. Before purchase and use of a product, review the product applications, and all applicable national and local codes and regulations, and be sure that the product, installation, and use will comply with them.

Certain aspects of disclaimers are not applicable to consumer products; e.g., (a) some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you; (b) also, some jurisdictions do not allow a limitation on how long an implied warranty lasts, consequently the above limitation may not apply to you; and (c) by law, during the period of this Limited Warranty, any implied warranties of implied merchantability or fitness for a particular purpose applicable to consumer products purchased by consumers, may not be excluded or otherwise disclaimed.

PROMPT DISPOSITION. Dayton will make a good faith effort for prompt correction or other adjustment with respect to any product which proves to be defective within limited warranty. For any product believed to be defective within limited warranty, first write or call dealer from whom the product was purchased. Dealer will give additional directions. If unable to resolve satisfactorily, write to Dayton at address below, giving dealer's name, address, date, and number of dealer's invoice, and describing the nature of the defect. Title and risk of loss pass to buyer on delivery to common carrier. If product was damaged in transit to you, file claim with carrier.

Manufactured for Dayton Electric Mfg. Co., 5959 W. Howard St., Niles, Illinois 60714 U.S.A.



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