



## OPERATING INSTRUCTIONS AND PARTS MANUAL

# PORTABLE OIL-FIRED HEATERS

MODELS 2E510D, 2E511C, 3E218C AND 3E219C

FORM 5S1792

03431

0691/212

VP

**READ THESE INSTRUCTIONS 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! KEEP THESE INSTRUCTIONS FOR FUTURE REFERENCE.**

### *General Safety Information*

#### **⚠ WARNINGS**

**WARNING: 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, people 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 these instructions for reference. They are your guide to safe and proper operation of this heater.

- Use only kerosene or No. 1 fuel oil to avoid risk of fire or explosion. Never use gasoline, naphtha, paint thinners, alcohol, or other highly flammable fuels.
- Never use heater where gasoline, paint thinner, or other highly flammable vapors are present.
- Follow all local ordinances and codes when using heater.

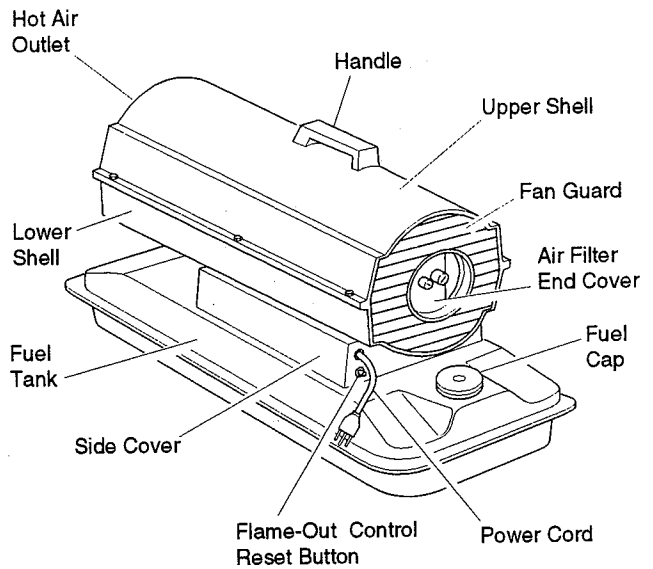
- Use only in well-vented areas. Provide at least three square feet of fresh, outside air for each 100,000 BTU/Hr of rating. This heater produces carbon monoxide, which is listed by the State of California as a reproductive toxin under Proposition 65.
- Use only in places free of flammable vapors or high dust content.
- Use only with the electrical voltage and frequency specified on model plate.
- Use only a three-prong, grounded extension cord.
- Minimum heater clearances from combustibles:  
Outlet: 8 Ft. Sides: 4 Ft. Top: 4Ft. 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.
- When used with thermostat, heater may start anytime.
- Never use heater in living or sleeping areas.
- Never block air inlet (rear) or air outlet (front) of heater.
- Never move, handle, refuel, or service a hot, operating, or plugged-in heater.
- Never attach duct work to front or rear of heater.



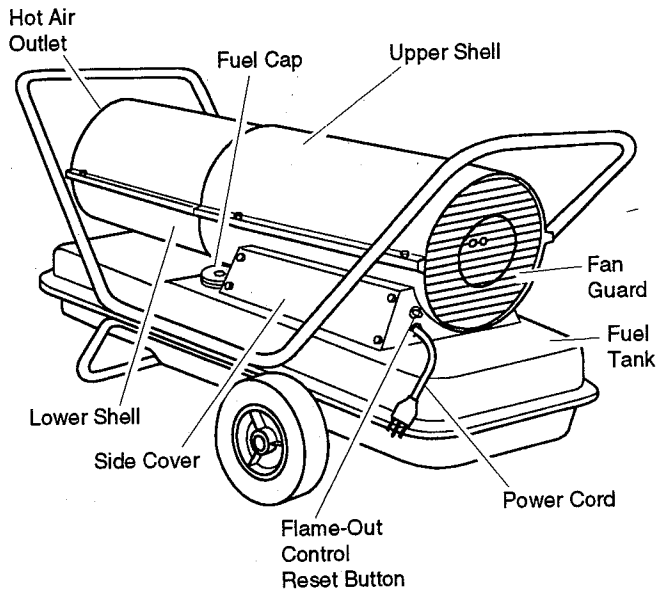
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**Figure 1 - 2E510D and 2E511C**



**Figure 2 - 3E218C and 3E219C Models**

## Specifications

MODELS	2E510D	2E511C	3E218C	3E219C
Output rating (BTU)	35,000	50,000	100,000	150,000
Fuel	Kerosene or No. 1 fuel oil (same all models)			
Fuel tank capacity (U.S. gallons)	3.0	4.0	9.0	13.5
Fuel consumption (approx., U.S. gal. per hour)	.26	.37	.74	1.10
Electric requirements	120 volts, 60 Hz. (same all models)			
Amperage (during normal run)	2.0	2.0	4.5	4.5
Motor RPM	1725	1725	3450	3450
Hot air output (CFM)	165	165	480	500
Air pump pressure (PSI)	3.0	3.6	4.0	5.0
Shipping weight (approx. pounds)	38	39	65	65
Heater weight without fuel (approx. pounds)	35	36	55	55
Spark plug gap (inches)	.055	.055	.055	.075

### Unpacking

1. Remove all packing items applied to 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.

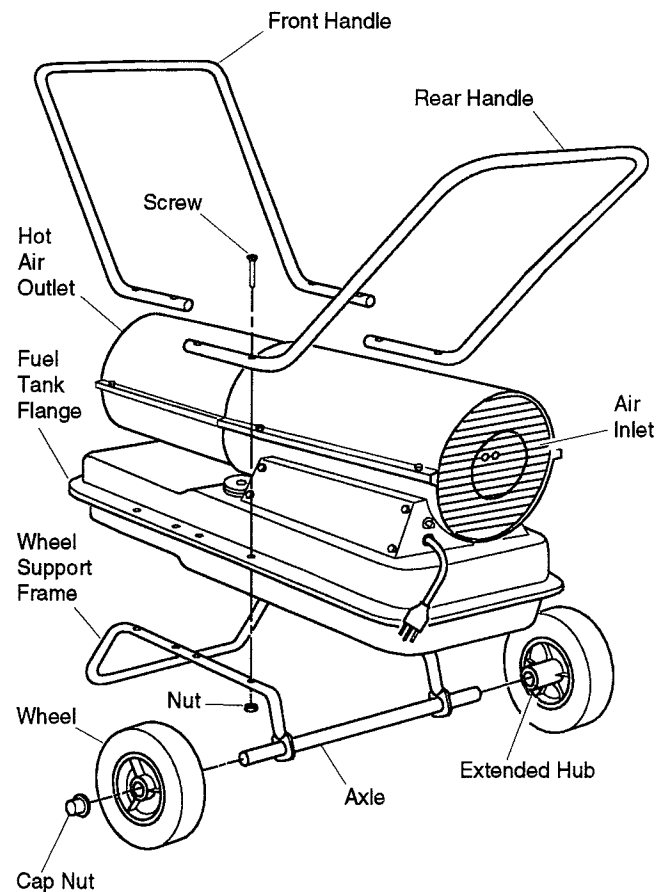
### Assembly

(For Models 3E218C and 3E219C Only)

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

#### TOOLS NEEDED

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



**Figure 3 - Wheel and Handle Assembly, Models 3E218C and 3E219C Only**

### Theory of Operation

**THE FUEL SYSTEM:** The air pump forces air through the air line. The air is then pushed through the burner head nozzle. This air causes fuel to lift from the tank. A fine mist of fuel is sprayed into the combustion chamber.

**THE AIR SYSTEM:** The motor turns the fan. The fan pushes air into and around the combustion chamber. This air is heated and provides a stream of clean, hot air.

**THE IGNITION SYSTEM:** The electronic ignitor sends voltage to the spark plug. The spark plug ignites the fuel and air mixture.

**THE FLAME-OUT CONTROL SYSTEM:** This system causes the heater to shut down if the flame goes out.

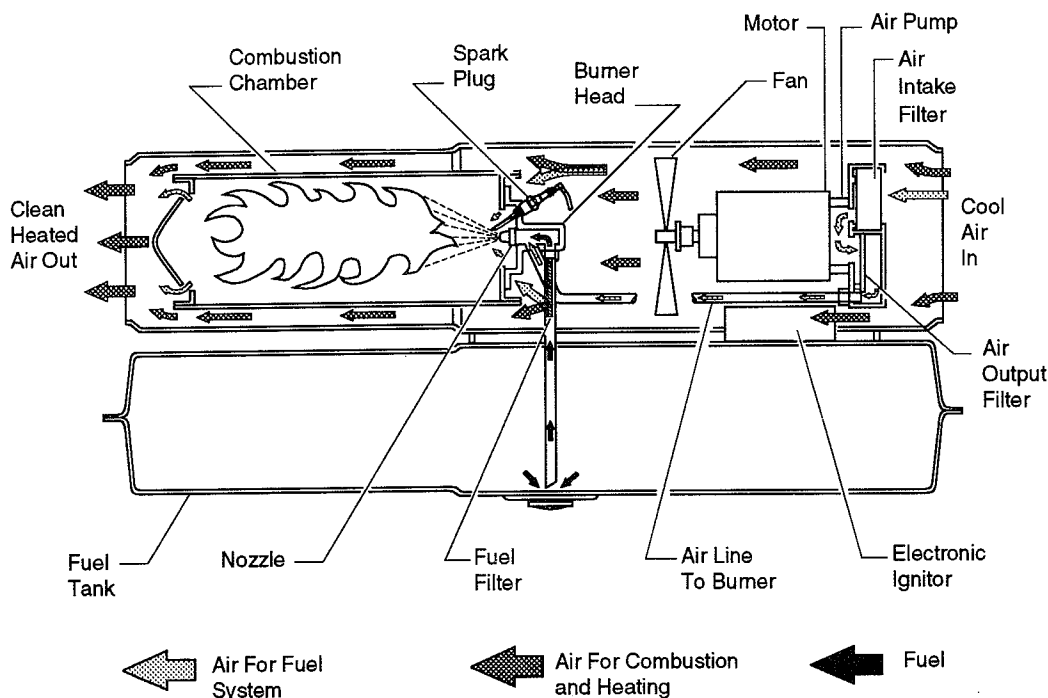


Figure 4 - Cross Section Operational View

### Fuels

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

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

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

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

### Ventilation

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

Provide a fresh air opening of at least three square feet for each 100,000 BTU/Hr rating. Provide extra fresh air if more heaters are being used.

**Example:** A 150,000 BTU/Hr heater requires one of the following:

- a two-car garage door raised six inches
- a single-car garage door raised nine inches
- two, thirty-inch windows raised twelve inches

## Operation

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

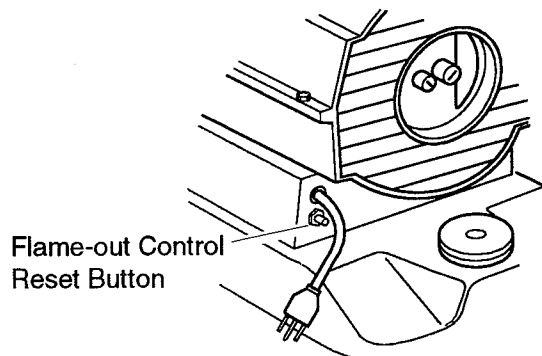
### TO START HEATER

1. Follow all ventilation and safety information.
2. Fill fuel tank with kerosene or No. 1 fuel oil.
3. Attach fuel cap.
4. Plug power cord of heater into three-prong, grounded extension cord. Extension cord must be at least six feet long

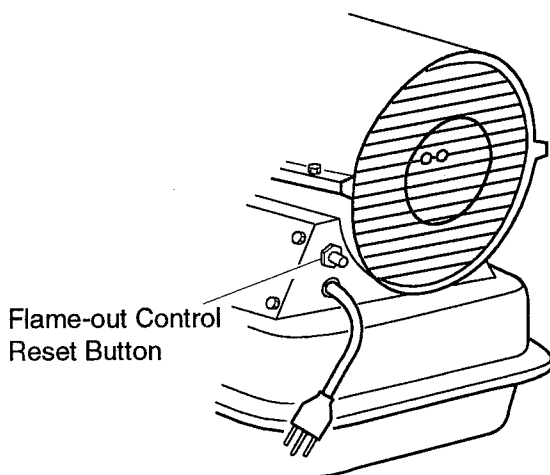
#### Extension Cord Wire Size Requirements

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

5. Plug extension cord into standard 120 volt/60 hertz, three-hole, grounded outlet. Heater will start when extension cord is plugged into outlet. If not, push in flame-out control reset button (see Figures 5 and 6).



**Figure 5 - Flame-out Control Reset Button, Models 2E510D and 2E511C**



**Figure 6 - Flame-out Control Reset Button, Models 3E218C and 3E219C**

### TO STOP HEATER

1. Unplug extension cord from outlet.

### TO RESTART HEATER

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

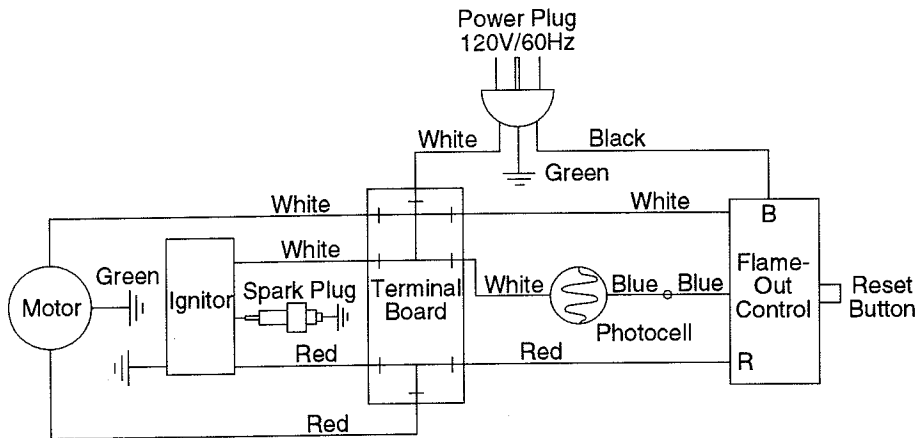
**NOTE:** For automatic operation, use Model 2E535 or Model 2E817 thermostat (see *Accessories*, page 13).

## Storage

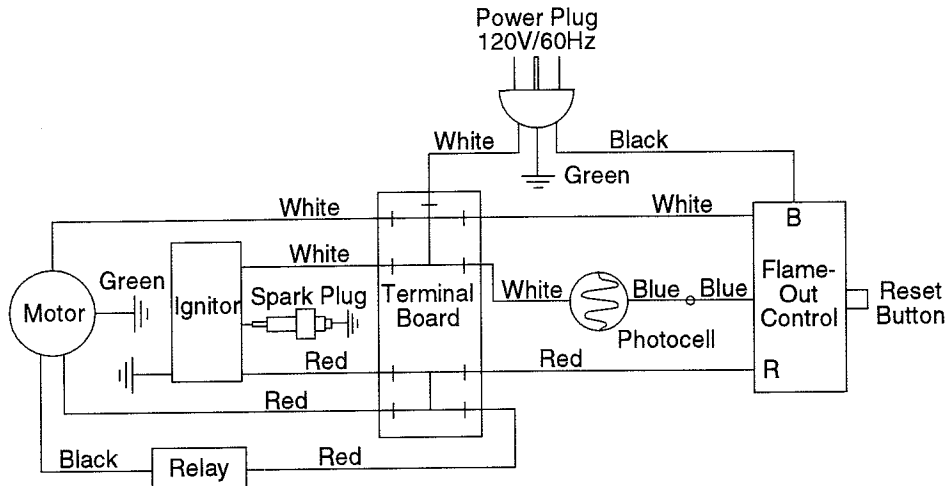
1. Drain fuel tank.  
*Note:* Some models have drain plug on underside of fuel tank. If so, remove drain plug to drain all fuel. If heater does not have drain plug, drain fuel through fuel cap opening. Be sure all fuel is removed.
2. Replace drain plug if used.
3. Add one gallon of clean kerosene to fuel tank.
4. Attach fuel cap.
5. Move heater forwards and backwards to stir fuel.
6. Remove fuel cap or drain plug and drain fuel tank. Be sure all fuel is removed.
7. Replace fuel cap or drain plug. Properly dispose of old and dirty fuel.
8. 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.

**Wiring Diagrams**



**Figure 7 - Wiring Diagram for Models 2E510D and 2E511C**



**Figure 8 - Wiring Diagram for Models 3E218C and 3E219C**

**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>Storage</i> , page 5.
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 8.
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 8.
Fuel filter	Clean twice a heating season or as needed.	See <i>Fuel Filter</i> , page 9.
Spark plug	Clean and regap every 600 hours operation or replace as needed.	See <i>Spark Plug</i> , page 10.
Fan blades	Clean every season or as needed.	See <i>Fan</i> , page 8.
Motor	Not required/permanently lubricated.	

### Troubleshooting Chart

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

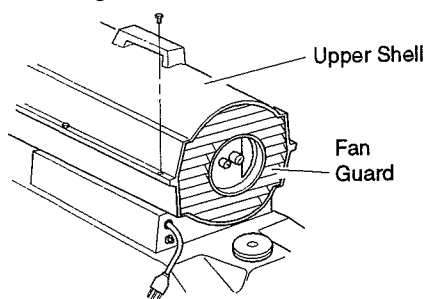
SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Heater ignites, but flame-out control shuts off heater after a short period of time.	<ol style="list-style-type: none"> <li>1. Wrong pump pressure</li> <li>2. Dirty air output, air intake and lint filters</li> <li>3. Dirty fuel filter</li> <li>4. Dirt in nozzle</li> <li>5. Dirty photocell lens</li> <li>6. Bad flame-out control</li> </ol>	<ol style="list-style-type: none"> <li>1. See <i>Pump Pressure Adjustment</i>, page 9.</li> <li>2. See <i>Air Output, Air Intake and Lint Filters</i>, page 8.</li> <li>3. See <i>Fuel Filter</i>, page 9.</li> <li>4. See <i>Nozzle</i>, pages 11 and 12.</li> <li>5. Clean photocell lens.</li> <li>6. Replace flame-out control.</li> </ol>
Heater will not ignite, but motor runs for a short period of time.	<ol style="list-style-type: none"> <li>1. Wrong pump pressure</li> <li>2. Carbon deposits on spark plug and/or improper gap</li> <li>3. Dirty fuel filter</li> <li>4. Dirt in nozzle</li> <li>5. Water in fuel tank</li> </ol> <p style="text-align: center;"><b>⚠ WARNING: High Voltage!</b></p> <ol style="list-style-type: none"> <li>6. Electronic ignitor not grounded</li> <li>7. Bad electronic ignitor</li> </ol>	<ol style="list-style-type: none"> <li>1. See <i>Pump Pressure Adjustment</i>, page 9.</li> <li>2. See <i>Spark Plug</i>, page 10.</li> <li>3. See <i>Fuel Filter</i>, page 9.</li> <li>4. See <i>Nozzle</i>, pages 11 and 12.</li> <li>5. Drain and flush fuel tank with clean kerosene. See <i>Storage</i>, page 5.</li> <li>6. Make sure electronic ignitor mounting is tight.</li> <li>7. Replace electronic ignitor.</li> </ol>
Motor does not start when heater is plugged in, fan rotates slowly or does not turn.	<ol style="list-style-type: none"> <li>1. Flame-out control not reset</li> <li>2. Solid state relay not allowed to reset</li> <li>3. Binding pump rotor</li> </ol>	<ol style="list-style-type: none"> <li>1. Press flame-out control reset button.</li> <li>2. Wait two minutes before trying to restart heater.</li> <li>3. If fan is hard to turn, see <i>Pump Rotor</i>, page 12.</li> </ol>

## Maintenance

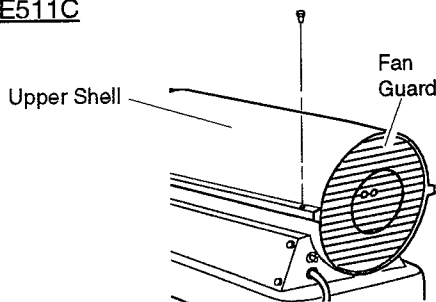
**WARNING: Never service heater while it is plugged in, operating, or hot. Severe burns and electrical shock can occur.**

### 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 9 and 10).
2. Lift upper shell off.
3. Remove fan guard.



**Figure 9 - Upper Shell Removal, Models 2E510D and 2E511C**

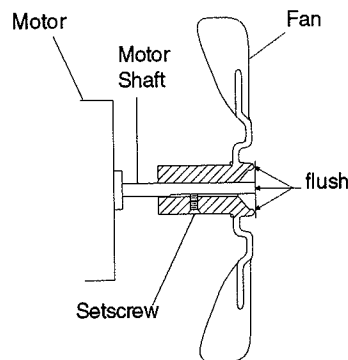


**Figure 10 - Upper Shell Removal, Models 3E218C and 3E219C**

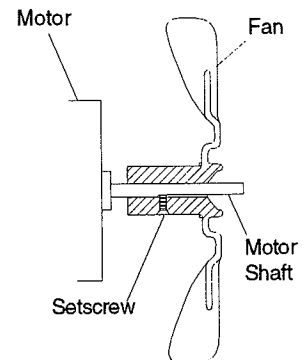
### FAN

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

1. Remove upper shell (see above).
2. Use 1/8" Allen wrench to loosen 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. (Models 2E510D, 2E511C, and 3E218C) Replace fan on motor shaft. Place fan hub flush with end of motor shaft (see Figure 11). (Model 3E219C) Replace fan on motor shaft. Make sure set screw is touching back of flat surface on motor shaft (see Figure 12).
7. Place setscrew on flat of shaft. Tighten setscrew firmly (40-50 inch-pounds).
8. Replace fan guard and upper shell.



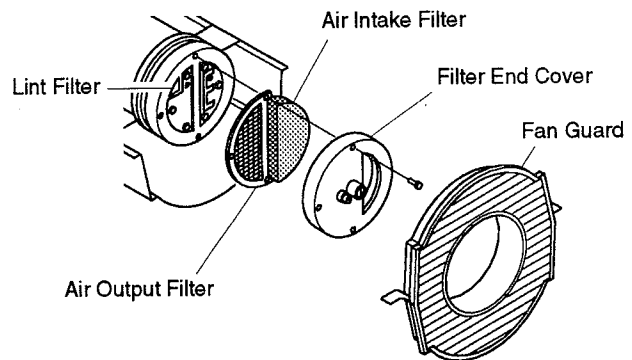
**Figure 11 - Fan Cross Section, Models 2E510D, 2E511C, and 3E218C**



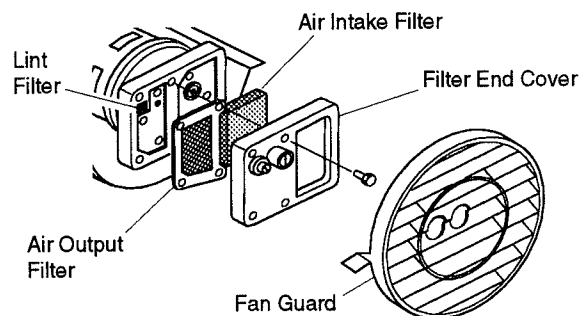
**Figure 12 - Fan Cross Section, Model 3E219C**

### AIR OUTPUT, AIR INTAKE, AND LINT FILTERS

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



**Figure 13 - Air Output, Air Intake, and Lint Filters, Models 2E510D and 2E511C**



**Figure 14 - Air Output, Air Intake, and Lint Filters, Models 3E218C and 3E219C**

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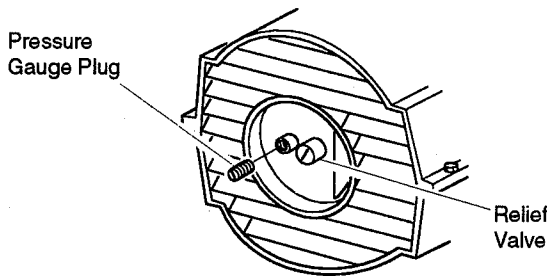
**Maintenance (Continued)**

**PUMP PRESSURE ADJUSTMENT**

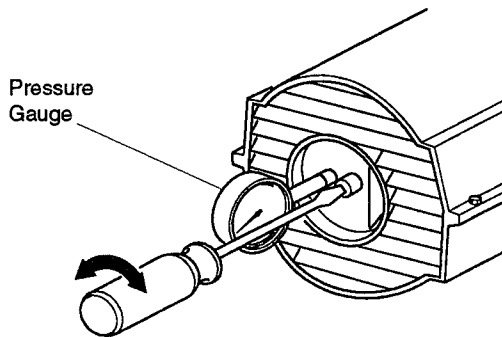
1. Remove pressure gauge plug from filter end cover (see Figure 15).
2. Install accessory pressure gauge (part number HA1180) (see Figure 16).
3. Start heater (see *Operation*, page 5). Allow motor to reach full speed.
4. Adjust pressure. Turn relief valve to right to increase pressure. Turn relief valve to left to decrease pressure. See specification chart below for correct pressure for each model.

Model	Pump Pressure
2E510D	3.0 PSI
2E511C	3.6 PSI
3E218C	4.0 PSI
3E219C	5.0 PSI

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



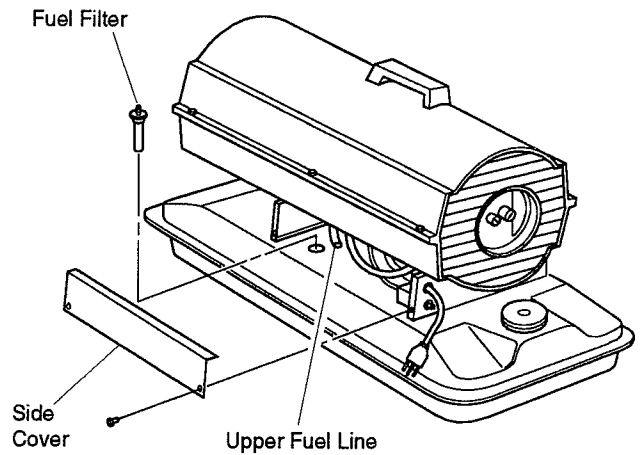
**Figure 15 - Pressure Gauge Plug Removal**



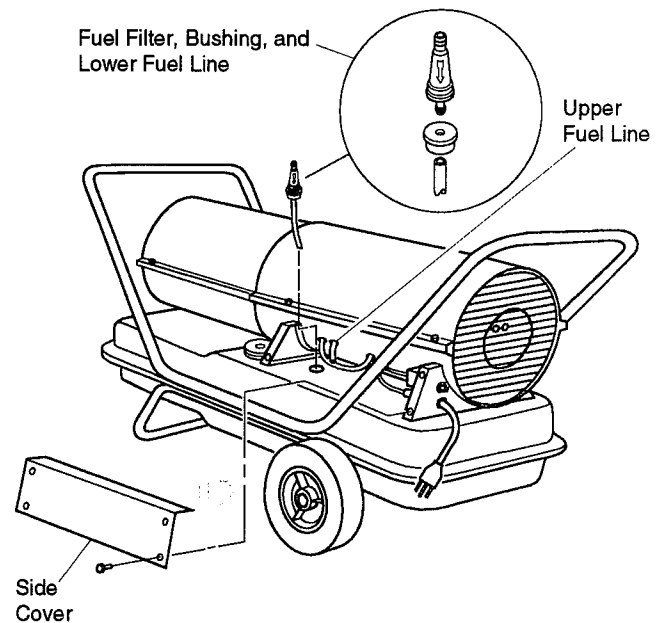
**Figure 16 - Adjusting Pump Pressure**

**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 17).
4. Carefully pry bushing, fuel filter, and lower fuel line (Models 3E218C and 3E219C only) out of fuel tank (see Figure 18).
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 17 - Fuel Filter Removal, Models 2E510D and 2E511C**

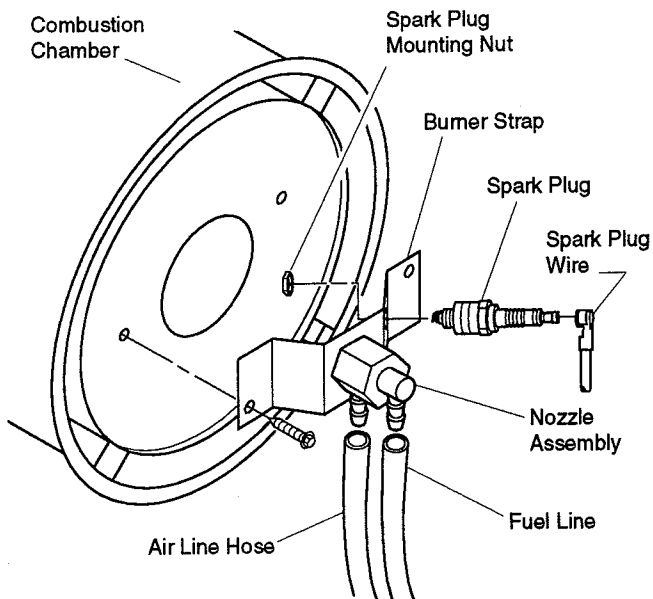


**Figure 18 - Fuel Filter Removal, Models 3E218C and 3E219C**

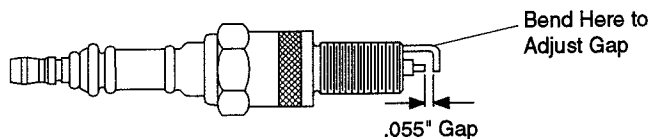
**Maintenance (Continued)****SPARK PLUG**

(Models 2E510D and 2E511C)

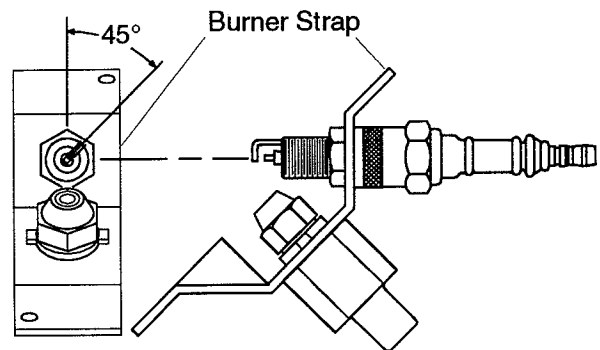
1. Remove upper shell (see page 8).
2. Remove fan (see page 8).
3. Remove fuel and air line hoses from nozzle assembly.
4. Remove spark plug wire from spark plug.
5. Remove two screws using 5/16" nut-driver and remove burner strap.
6. Place hex-body of spark plug into vise and tighten.
7. Remove spark plug mounting nut using 11/16" open-end wrench.
8. Remove burner strap from spark plug.

**Figure 19 - Spark Plug Removal, Models 2E510D and 2E511C**

9. Clean and regap spark plug electrodes to .055" gap.

**Figure 20 - Spark Plug Gap, Models 2E510D and 2E511C**

10. Replace burner strap onto spark plug. Rotate burner strap to position spark plug electrodes (see Figure 21).

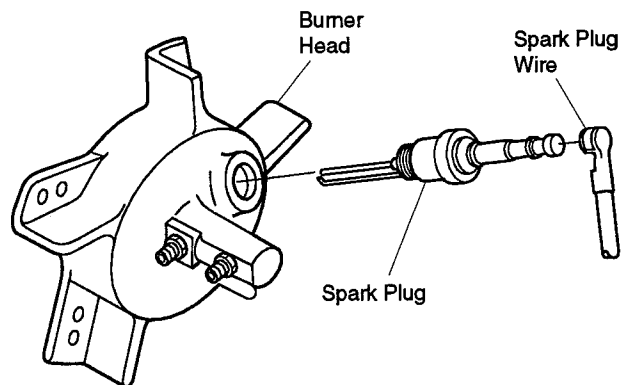
**Figure 21 - Spark Plug Rotation, Models 2E510D and 2E511C**

11. Tighten spark plug with spark plug mounting nut.
12. Release hex-body of spark plug from vise.
13. Replace burner strap onto combustion chamber.
14. Attach spark plug wire to spark plug.
15. Attach fuel and air line hoses to nozzle assembly.
16. Replace fan (see page 8).
17. Replace fan guard and upper shell.

**SPARK PLUG**

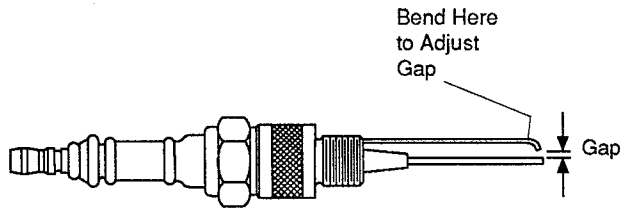
(Models 3E218C and 3E219C)

1. Remove upper shell (see page 8).
2. Remove fan (see page 8).
3. Remove spark plug wire from spark plug.
4. Remove spark plug from burner head using 13/16" open-end wrench.

**Figure 22 - Spark Plug Removal, Models 3E218C and 3E219C***Continued*

**Maintenance (Continued)****SPARK PLUG (CONTINUED)**

- Clean and regap spark plug electrodes as follows:  
Model 3E218C = .055"  
Model 3E219C = .075"



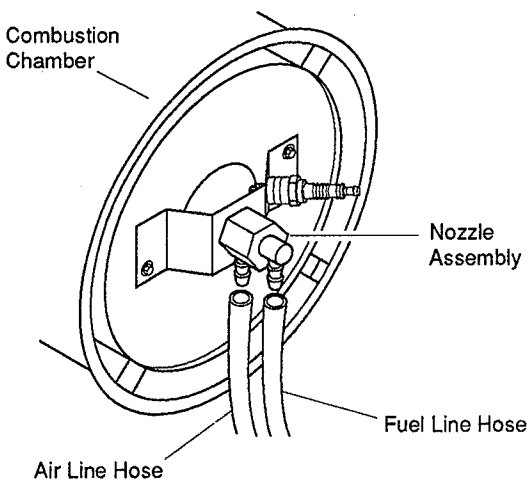
**Figure 23 - Spark Plug Gap, Models 3E218C and 3E219C**

- Install spark plug in burner head.
- Attach spark plug wire to spark plug.
- Replace fan (see page 8).
- Replace fan guard and upper shell.

**NOZZLE**

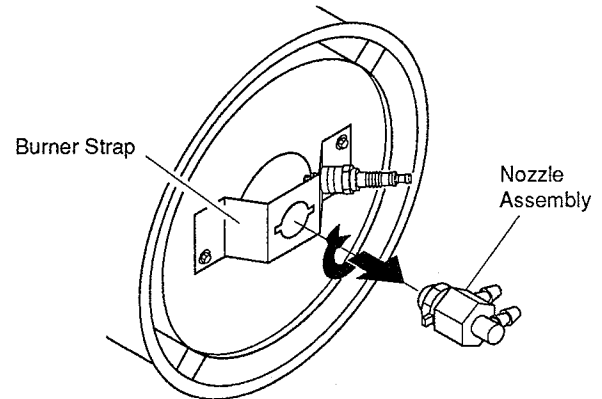
(Models 2E510D and 2E511C)

- Remove upper shell (see page 8).
- Remove fan (see page 8).
- Remove fuel and air line hoses from nozzle assembly.



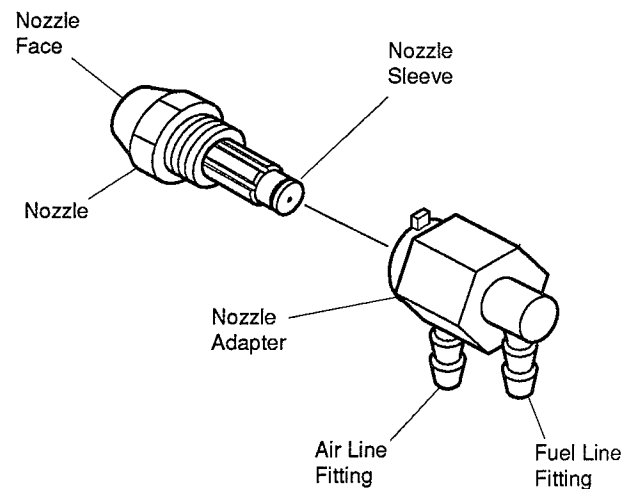
**Figure 24 - Removing Air and Fuel Line Hoses, Models 2E510D and 2E511C**

- Turn nozzle assembly 1/4 turn to left and pull toward motor to remove (see Figure 25).



**Figure 25 - Removing Nozzle Assembly, Models 2E510D and 2E511C**

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



**Figure 26 - Nozzle and Nozzle Adapter, Models 2E510D and 2E511C**

- Blow compressed air thru face of nozzle. This will free any dirt in nozzle area.
- Inspect nozzle sleeve for damage.
- Replace nozzle into nozzle adapter until nozzle seats. Tighten 1/3 turn more using 5/8" socket wrench (40-45 inch-pounds).
- Attach nozzle assembly to burner strap.
- Attach fuel and airline hoses to nozzle assembly.
- Replace fan (see page 8).
- Replace fan guard and upper shell.

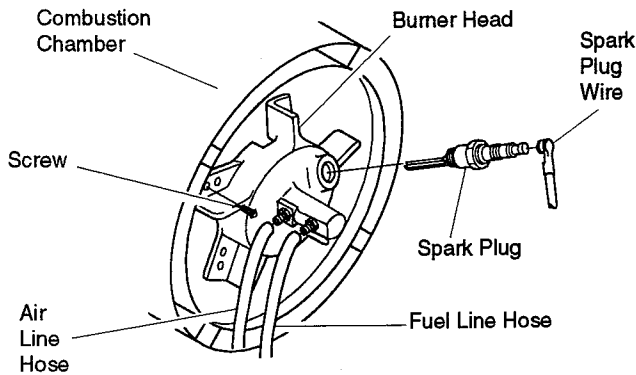
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**Maintenance (Continued)**

**NOZZLE**

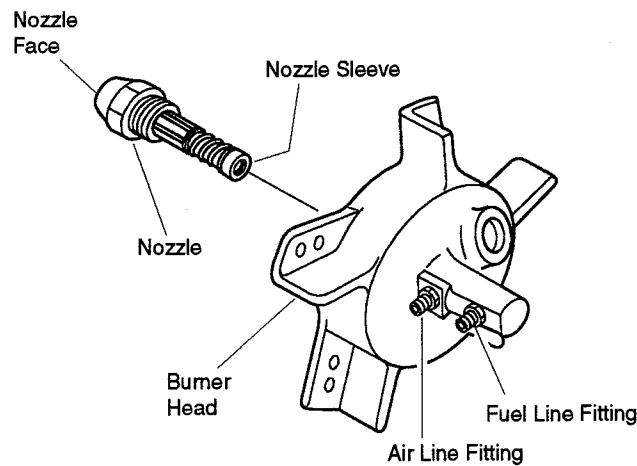
(Models 3E218C and 3E219C)

1. Remove upper shell (see page 8).
2. Remove fan (see page 8).
3. Remove fuel and air line hoses from burner head.
4. Remove spark plug wire from spark plug.
5. Remove spark plug from burner head using 13/16" open-end wrench.
6. Remove three screws using 5/16" nut-driver and remove burner head from combustion chamber.



**Figure 27 - Removing Burner Head, Models 3E218C and 3E219C**

7. Place burner head into vise and lightly tighten.
8. Carefully remove nozzle from burner head using 5/8" socket wrench (see Figure 28).



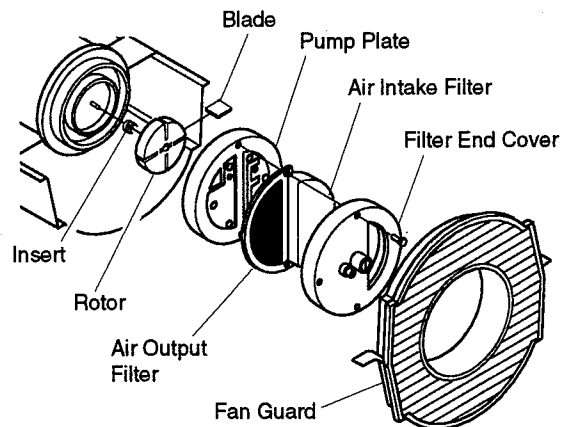
**Figure 28 - Removing Nozzle, Models 3E218C and 3E219C**

9. Blow compressed air through face of nozzle. This will free any dirt in nozzle area.
10. Inspect nozzle sleeve for damage.
11. Replace nozzle into burner head and tighten firmly (80-110 inch-pounds).
12. Attach burner head to combustion chamber.
13. Install spark plug in burner head.
14. Attach spark plug wire to spark plug.
15. Attach fuel and airline hoses to burner head.
16. Replace fan (see page 8).
17. Replace fan guard and upper shell.

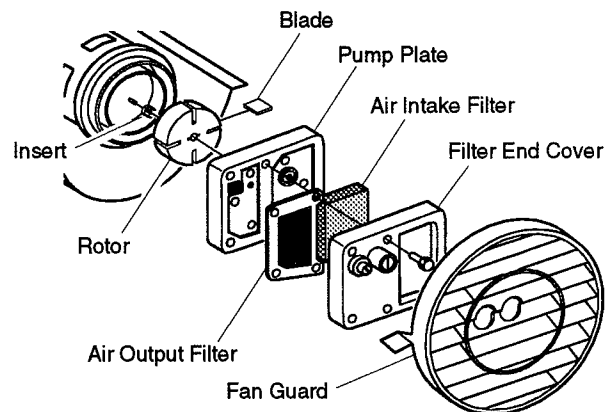
**PUMP ROTOR**

(Procedure if rotor is binding)

1. Remove upper shell (see page 8).
2. Remove filter end cover screws using 5/16" nut-driver.
3. Remove filter end cover and air filters.
4. Remove pump plate screws using 5/16" nut-driver.
5. Remove pump plate.
6. Remove rotor, insert, and blades.



**Figure 29 - Rotor Location, Models 2E510D and 2E511C**



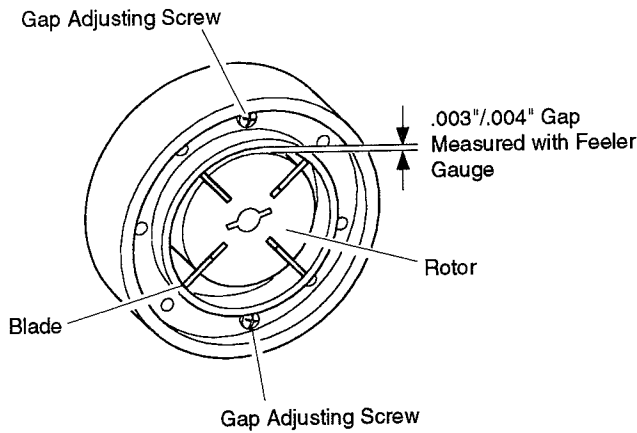
**Figure 30 - Rotor Location, Models 3E218C and 3E219C**

*Continued*

**Maintenance (Continued)**

**(PUMP ROTOR, CONTINUED)**

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 31).



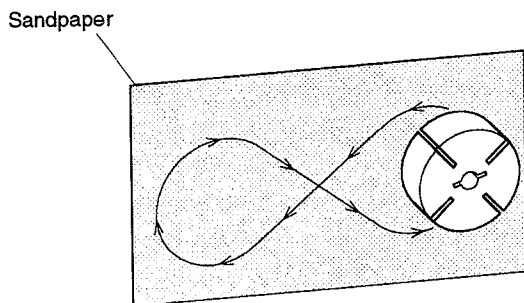
**Figure 31 - Gap Adjusting Screw Locations**

*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 9).

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

13. Perform steps 1 through 6 (see page 12).
14. Place fine grade sandpaper (600 grit) on flat surface. Sand rotor lightly in "figure 8" motion four times (see Figure 32).



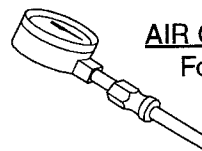
**Figure 32 - Sanding Rotor**

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

**Maintenance Kits**

	PART NUMBERS FOR MODELS			
	2E510D	2E511C	3E218C	3E219C
Flame-out Control	HA3003	HA3003	HA3003	HA3003
Spark Plug	HA3013	HA3013	HA3012	HA3012
Filter Kit	HA3014	HA3014	HA3017	HA3018
Nozzle Kit	HA3006	HA3007	HA3009	HA3010
Rotor/Air Pump Kit	HA3004	HA3004	HA3004	HA3004
Handle	—	—	HA2203	HA2204
Photocell	HA3019	HA3019	HA3019	HA3019
Pump Adjustment	HA3020	HA3020	HA3020	HA3020

**Accessories**



**AIR GAUGE KIT - HA1180**

For all models. Special tool to check pump pressure.

**THERMOSTAT MODELS 2E535 OR 2E817**

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

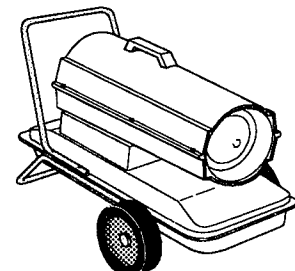
**STANDARD WHEELS AND HANDLE KIT - HA1206**

Makes heater even more portable and convenient. Easy to assemble. Fits Models 2E510D and 2E511C.

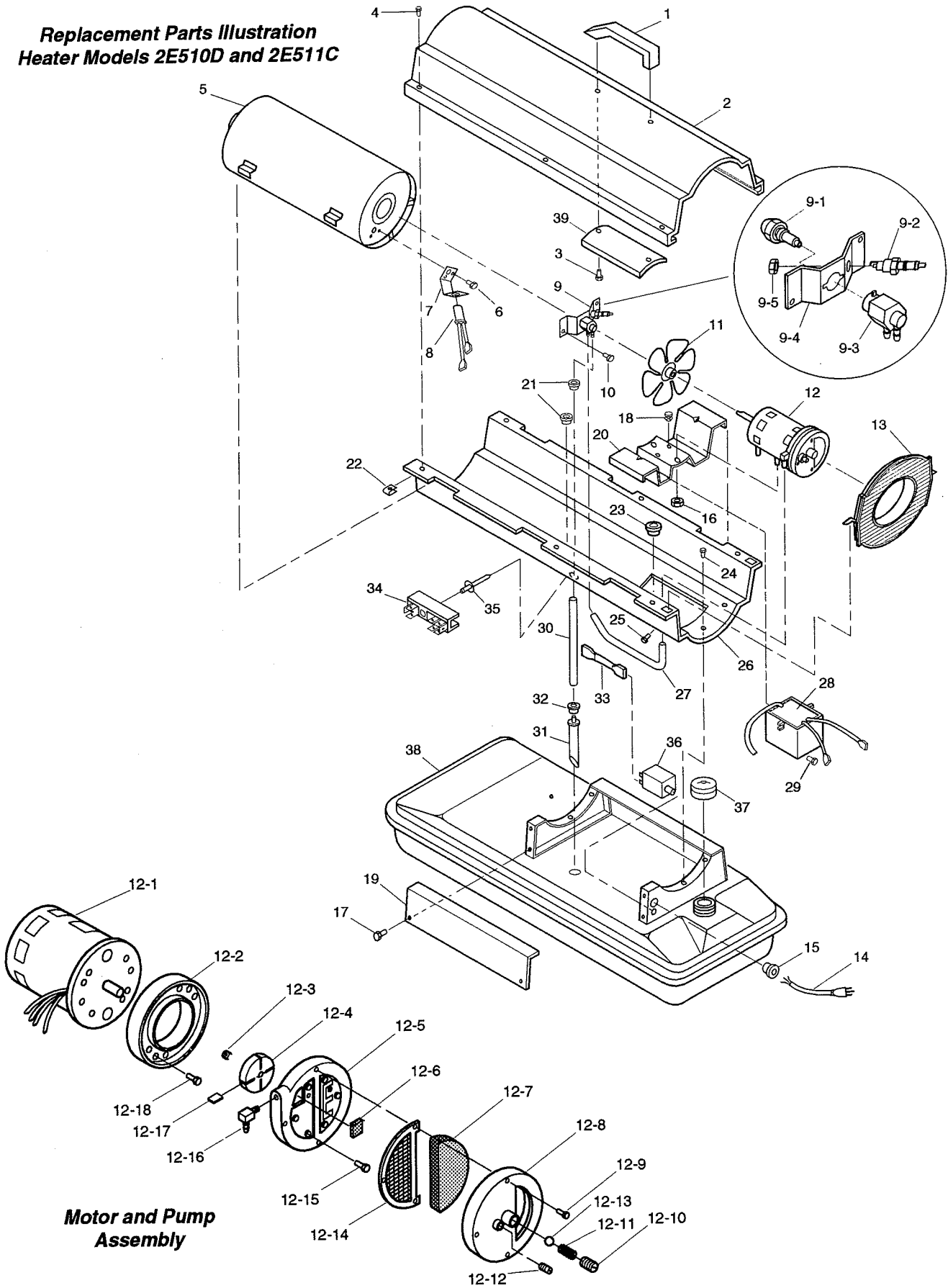


**HEAVY DUTY WHEELS AND HANDLE KIT - HA1202**

For heavy duty applications. Makes your heater even more portable and convenient. Fits Models 2E510D and 2E511C.



**Replacement Parts Illustration  
Heater Models 2E510D and 2E511C**



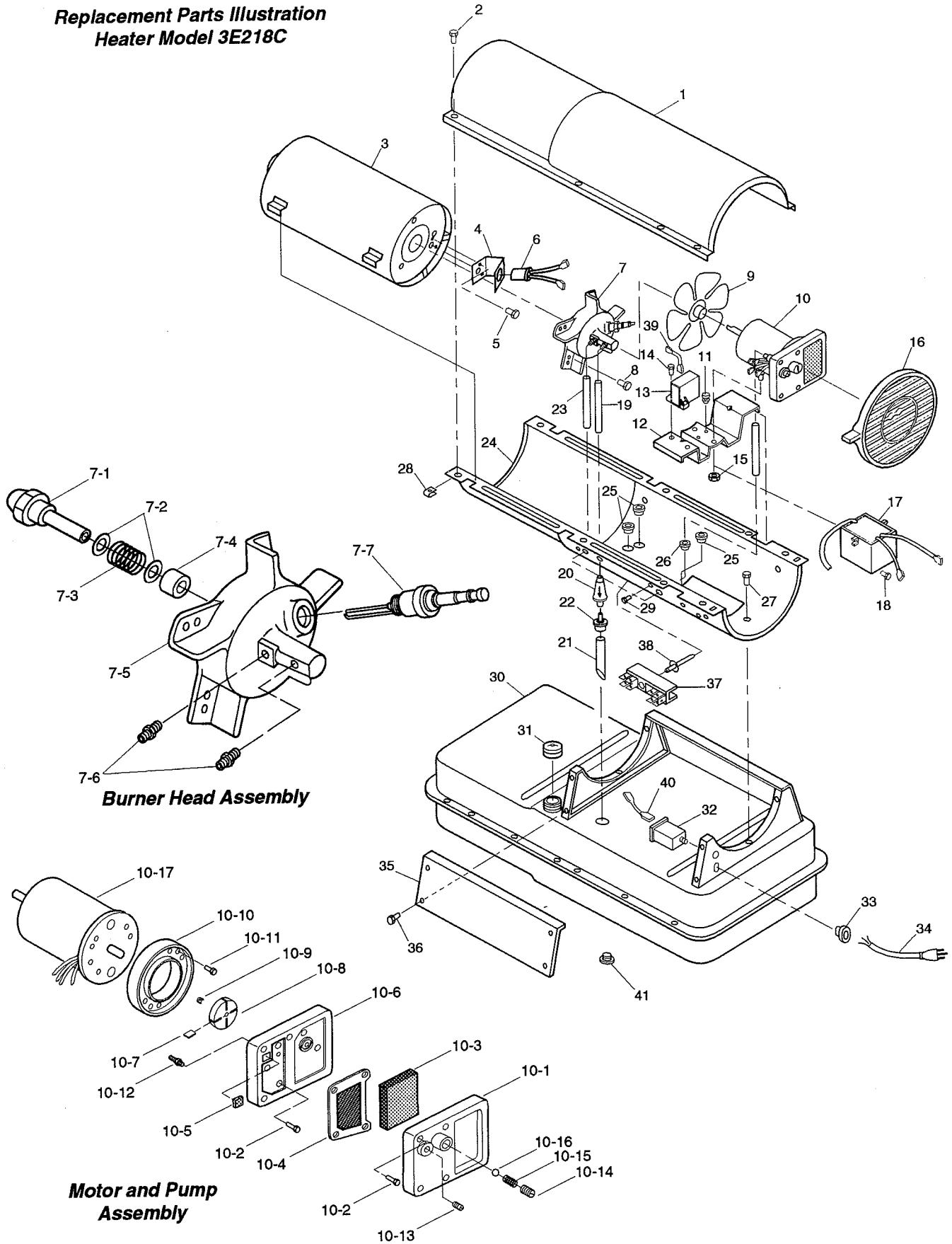
## Replacement Parts List for Heater Models 2E510D and 2E511C

REF. NO.	DESCRIPTION	PART NO.	2E510D QTY.	2E511C QTY.	REF. NO.	DESCRIPTION	PART NO.	2E510D QTY.	2E511C QTY.
1	Handle	M51104-01	1	1	12-16	Elbow, 90°	M50016	1	1
2	Upper Shell	098511-34	1	1	12-17	Blade	M8643	4	4
3	Screw, #10-16x3/4"	M11084-29	2	2	12-18	Screw, #10-32x1/4"	FHPF3-2C	2	2
4	Screw, #10-16x1/2"	M15823-27	6	6	13	Fan Guard	M51105-01	1	1
5	Combustion Chamber	098512-05	1	—	14	Power Cord	098219-18	1	1
6	Screw, #6-32x3/8"	098512-13	—	1	15	Strain Relief Bushing	M11143-1	1	1
7	Photocell Bracket	M10908-2	2	2	16	Hex Lock Nut	NTC-4C	2	2
8	Photocell Assembly	M16660	1	1	17	Screw, #10-16x3/8"	M11084-26	2	2
9	Burner Assembly	HA3019	1	1	18	Rubber Bumper	M50631	2	2
9-1	Nozzle	HA3006	1	1	19	Side Cover	M50899-03AA	1	1
9-2	Nozzle	HA3007	—	1	20	Motor Bracket	098138-01	1	1
9-3	Spark Plug	HA3013	1	1	21	Bushing	M30865-02	2	2
9-4	Nozzle Adapter	079980-01	1	1	22	Clip Nut	M11271-8	6	6
9-5	Bracket	097125-01	1	1	23	Bushing (wires)	M50104-02	1	1
10	Nut, 14mm	M29824	1	1	24	Screw, #10-16x3/8"	M11084-26	6	6
11	Screw, #10-16x3/8"	M11084-26	2	2	25	Screw, #8-18x1/4"	M15823-37	1	1
12	Fan	M30884	1	1	26	Lower Shell	098511-14	1	1
12-1	Motor Package Assembly	097073-02	1	1	27	Rubber Airline	M29652-04	1	1
12-2	Pump Body	079975-01	1	1	28	Ignitor	098557-06	1	1
12-3	Insert	M22009	1	1	29	Screw, #10-16x3/4"	M11084-29	2	2
12-4	Rotor	M22456-1	1	1	30	Fuel Line	M29652-05	1	1
12-5	End Pump Cover	M29608	1	1	31	Fuel Filter Assembly	M50876-04	1	—
12-6	Lint Filter	M29632	1	1	32	Fuel Filter Assembly	M50876-02	1	1
12-7	Intake Filter	M29633	1	1	33	Rubber Bushing	M10990-3	1	1
12-8	End Cover Filter	M29609	1	1	34	Wire Assembly (red, 8 1/2")	M16841-57	1	1
12-9	Screw, #10-32x1"	M12461-31	3	3	35	Terminal Board	099125-02	1	1
12-10	Adjusting Screw	M27694	1	1	36	Rivet	099157-01	1	1
12-11	Pressure Relief Spring	M10993-1	1	1	37	Flame-out Control	HA3003	1	1
12-12	Plug	M22997	1	1	38	Fuel Cap (Includes Gasket)	097702-01	1	1
12-13	Steel Ball, 1/4" Diameter	M8940	1	1	39	Fuel Tank	098513-23	1	—
12-14	Output Filter	M29612-01	1	1	Δ	Fuel Tank	098513-20	1	1
12-15	Screw, #10-32x1"	M12461-31	6	6	Δ	Heat Shield	M51108-01	1	1
					Δ	General Information Decal	098220-12	1	—
					Δ	General Information Decal	098221-13	1	1
					Δ	Thermostat Control (optional)	2E535	1	1
					Δ	Thermostat Control (optional)	2E817	1	1

(†) Not available as an assembly

(Δ) Not shown

**Replacement Parts Illustration  
Heater Model 3E218C**





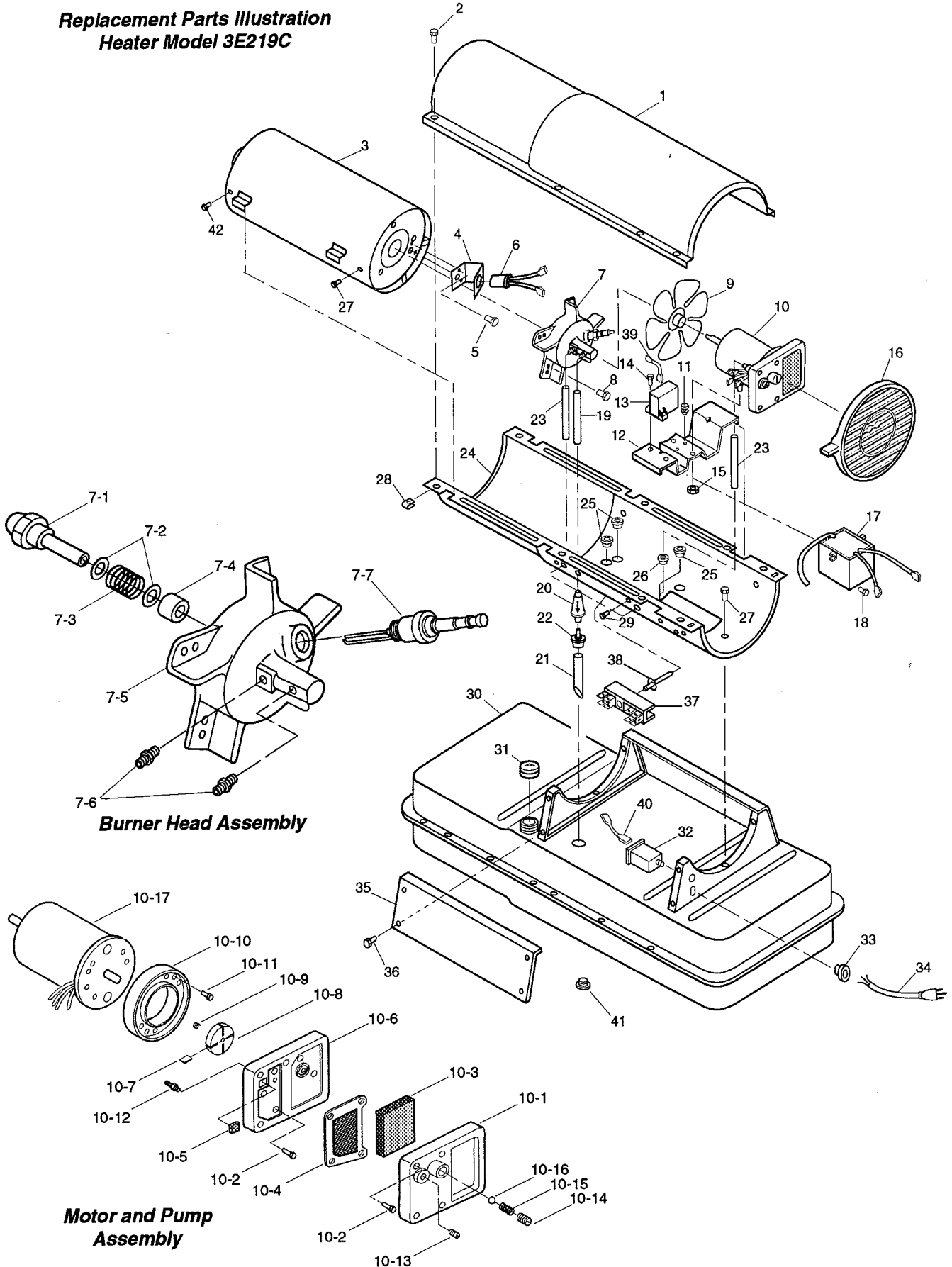
Replacement Parts List for Heater Model 3E218C

REF. NO.	DESCRIPTION	PART NO.	QTY.	REF. NO.	DESCRIPTION	PART NO.	QTY.
1	Upper Shell	098511-164	1	11	Rubber Bumper	M50631	2
2	Screw, #10-16x1/2"	M15823-27	8	12	Motor Mounting Bracket	098138-02	1
3	Combustion Chamber	098512-07	1	13	Solid State Relay	097061-01	1
4	PhotoCell Bracket	M16660	1	14	Screw, #8-18x1/2"	M15823-39	2
5	Screw, #6-32x3/8"	M10908-2	2	15	Hex Lock Nut	NTC-4C	2
6	PhotoCell Assembly	HA3019	1	16	Fan Guard	M51114-01	1
7	Burner Assembly	†		17	Ignitor	098557-06	1
7-1	Nozzle	HA3009	1	18	Screw, #10-16x3/4"	M11084-29	2
7-2	Nozzle Washer	M10659-1	2	19	Fuel Line	M51345-01	1
7-3	Nozzle Spring	M10809-1	1	20	Fuel Filter	M51150-01	1
7-4	Nozzle Sleeve	M8882	1	21	Fuel Line Tube	M51151-01	1
7-5	Burner Head Body	M50924-03	1	22	Rubber Bushing	M10990-3	1
7-6	Barb Fitting	M50820-02	2	23	Airline	M50814-03	1
7-7	Spark Plug	HA3012	1	24	Lower Shell	098511-163	1
8	Screw, #10-16x1/2"	M11084-27	3	25	Bushing	M30865-02	3
9	Fan	M51153-01	1	26	Bushing	M50104-02	1
10	Motor and Pump Assembly	†		27	Screw, #10-16x1/2"	M11084-27	6
10-1	End Filter Cover	M16545	1	28	Clip Nut	M11271-8	8
10-2	Screw, #10-32x1"	M12461-31	10	29	Screw, #8-18x1/4"	M15823-37	1
10-3	Intake Filter	M12179	1	30	Fuel Tank	098513-21	1
10-4	Output Filter	M12244-1	1	31	Fuel Cap (Includes Gasket)	097702-01	1
10-5	Lint Filter	M11637	1	32	Flame-out Control	HA3003	1
10-6	End Pump Cover	M50545	1	33	Strain Relief Bushing	M11143-1	1
10-7	Blade	M8643	4	34	Power Cord	098219-19	1
10-8	Rotor Pump	M22456-1	1	35	Side Cover	M51077-01AA	1
10-9	Rotor Insert	M22009	1	36	Screw, #10-16x1/2"	M11084-27	4
10-10	Pump Body	079975-01	1	37	Terminal Board	099125-03	1
10-11	Screw, #10-32x1/4"	FHPF3-2C	2	38	Rivet	099157-01	1
10-12	Barb Fitting	M50820-02	1	39	Wire Assembly (red, 16")	079010-18	1
10-13	Plug	M22997	1	40	Wire Assembly (red, 8 1/2")	M16841-57	1
10-14	Adjusting Screw	M27694	1	41	Drain Plug (Includes O-ring)	M27417	1
10-15	Relief Spring	M10993-1	1	Δ	Thermostat Control (optional)	2E535	1
10-16	Ball, 1/4" Diameter	M8940	1	Δ	Thermostat Control (optional)	2E817	1
10-17	Motor	097300-02	1	Δ	General Information Decal	098223-15	1

(†) Not available as an assembly

(Δ) Not shown

**Replacement Parts Illustration  
Heater Model 3E219C**



Replacement Parts List for Heater Model 3E219C

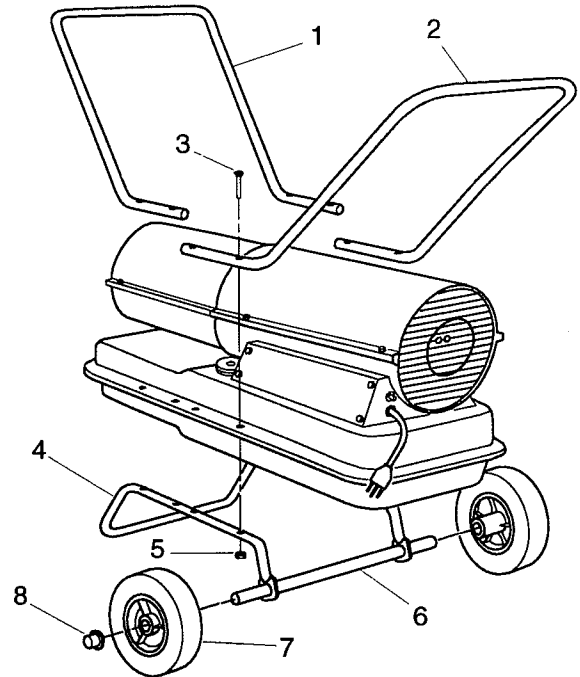
REF. NO.	DESCRIPTION	PART NO.	QTY.	REF. NO.	DESCRIPTION	PART NO.	QTY.
1	Upper Shell	098511-164	1	11	Rubber Bumper	M50631	2
2	Screw, #10-16x1/2"	M15823-27	8	12	Motor Mounting Bracket	098138-02	1
3	Combustion Chamber	098512-28	1	13	Solid State Relay	097061-01	1
4	Photocell Bracket	099229-01	1	14	Screw, #8-18x1/2"	M15823-39	2
5	Screw, #6-32x3/8"	M10908-2	2	15	Hex Lock Nut, 1/4-20	NTC-4C	2
6	Photocell Assembly	HA3019	1	16	Fan Guard	M51114-01	1
7	Burner Assembly	†	1	17	Ignitor	098557-06	1
7-1	Nozzle	099245-01	1	18	Screw, #10-16x3/4"	M11084-29	2
7-2	Nozzle Washer	M10659-1	1	19	Fuel Line	M51345-02	1
7-3	Nozzle Spring	M10809-1	2	20	Fuel Filter	M51150-01	1
7-4	Nozzle Sleeve	M8882	1	21	Fuel Line Tube	M51151-02	1
7-5	Burner Head Body	M50924-03	1	22	Rubber Bushing	M10990-3	1
7-6	Barb Fitting	M50820-02	2	23	Airline	M50814-03	1
7-7	Spark Plug	HA3012	1	24	Lower Shell	098511-163	1
8	Screw, #10-16x1/2"	M11084-27	1	25	Bushing	M30865-02	3
9	Fan	097293-01	3	26	Bushing	M50104-02	1
10	Motor and Pump Assembly	†	1	27	Screw, #10-16x1/2"	M11084-27	8
10-1	End Filter Cover	M16545	1	28	Clip Nut	M11271-8	8
10-2	Screw, #10-32x1"	M12461-31	10	29	Screw, #8-18x1/4"	M15823-37	1
10-3	Intake Filter	M12179	1	30	Fuel Tank	098513-55	1
10-4	Output Filter	M12244-1	1	31	Fuel Cap (Includes Gasket)	097702-01	1
10-5	Lint Filter	M11637	1	32	Flame-out Control	HA3003	1
10-6	End Pump Cover	M50545	1	33	Strain Relief Bushing	M11143-1	1
10-7	Blade	M8643	4	34	Power Cord	098219-19	1
10-8	Rotor Pump	M22456-1	1	35	Side Cover	M51077-01AA	1
10-9	Rotor Insert	M22009	1	36	Screw, #10-16x1/2"	M11084-27	4
10-10	Pump Body	079975-01	1	37	Terminal Board	099125-03	1
10-11	Screw, #10-32x1/4"	FHPF3-2C	2	38	Rivet	099157-01	1
10-12	Barb Fitting	M50820-02	1	39	Wire Assembly (red, 16")	079010-18	1
10-13	Plug	M22997	1	40	Wire Assembly (red, 8 1/2")	M16841-57	1
10-14	Adjusting Screw	M27694	1	41	Drain Plug (includes O-ring)	M27417	1
10-15	Relief Spring	M10993-1	1	42	Screw, #10-16x3/8"	099230-01	2
10-16	Ball, 1/4" Diameter	M8940	1	Δ	Thermostat Control (optional)	2E535	1
10-17	Motor	097300-02	1	Δ	Thermostat Control (optional)	2E817	1
				Δ	General Information Decal	098224-15	1

(†) Not available as an assembly

(Δ) Not shown

**Replacement Parts List for Handle and Wheel Group Models 3E218C and 3E219C**

REF. NO.	DESCRIPTION	PART NO.		QTY.
		3E218C	3E219C	
1	Front Handle	HA2203	HA2204	1
2	Rear Handle	HA2203	HA2204	1
3	Oval Head Screw, #10 - 24 x 1 3/4"	M12345-33	M12345-33	8
4	Wheel Support Frame	M12342-3	M12831-3	1
5	Torque Lock Hex Nut, 10-24	NTC-3C	NTC-3C	8
6	Axle	M51015-01	M16801-2	1
7	Wheel	097896-01	097896-01	2
8	Cap Nut	M28526	M28526	2



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