OPERATING INSTRUCTIONS & PARTS MANUAL

HIGH PRESSURE OIL-FIRED HEATER

MODELS 3E358 & 3E359

FORM
5S2514
01582

DAYTON ELECTRIC MANUFACTURING CO. CHICAGO 60648

0484/109/1M

READ ALL INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THE DAYTON HIGH PRESSURE HEATER!
RETAIN INSTRUCTIONS FOR FUTURE REFERENCE.

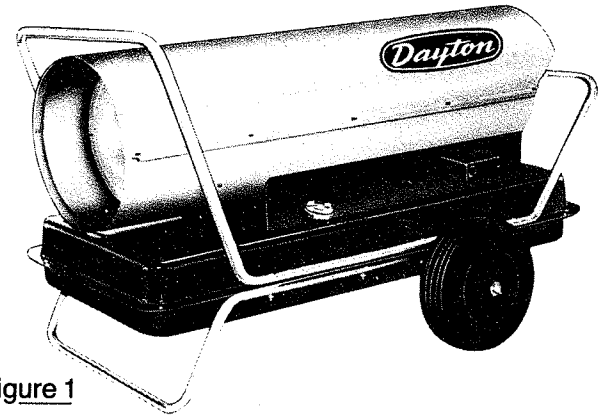


Figure 1

Description

The Dayton high pressure oil-fired heater is designed for use where large amounts of heat are needed. It must be used where adequate ventilation and proper electrical power are available.

This manual contains operating, maintenance and trouble-shooting instructions for the heater. A complete list is included at the end of the manual.

Specifications

MODEL 3E358

BTU rating	350,000 per hour
Air delivery	875 SCFM
Voltage	115, 60 Hz, 1 phase
Amperes: Starting	28.0
Running	7.1
Fuel	Kerosene or No. 1 fuel oil
Fuel tank capacity	30 U.S. gallons
Nozzle	2.50 GPH 70° hollow cone
Motor	1/3 HP @1725 RPM
Weight: Empty	180 lbs.
Full tank	390 lbs.
Pump pressure	100 psi

MODEL 3E359

BTU rating	600,000 per hour
Air delivery	2500 SCFM
Voltage	115, 60 Hz, 1 phase
Amperes: Starting	38.0
Running	10.0
Fuel	Kerosene or No. 1 fuel oil
Fuel tank capacity	36 U.S. gallons
Nozzle	4.46 GPH 80° hollow cone
Motor	1/2 HP @ 1725 RPM
Weight: Empty	285 lbs.
Full tank	550 lbs.
Pump pressure	110 psi

General Safety Information

WARNING:

- **IMPORTANT: READ AND UNDERSTAND INSTRUCTION MANUAL BEFORE STARTING OR SERVICING!**
- **IMPROPER USE OF THIS HEATER CAN RESULT IN SERIOUS BODILY INJURY DUE TO HAZARDS OF FIRE OR EXPLOSION, CARBON MONOXIDE POISONING, BURN, AND ELECTRICAL SHOCK.**
- **USE ONLY KEROSENE OR NUMBER 1 FUEL OIL. NEVER BURN GASOLINE, NAPHTHA, PAINT THINNERS, ALCOHOL OR OTHER VOLATILE FUELS!**
- **USE ONLY IN AREAS FREE OF FLAMMABLE VAPOR OR HIGH DUST CONTENT. NEVER USE HEATER WHERE GASOLINE, PAINT THINNER OR OTHER HIGHLY FLAMMABLE VAPORS ARE PRESENT.**
- **MAKE SURE HOT AIR OUTLET IS AT LEAST 8 FEET FROM COMBUSTIBLE MATERIALS.**
- **FILL FUEL TANK OR MOVE HEATER ONLY WHEN HEATER IS UNPLUGGED.**
- **NEVER USE HEATER IN ROOMS USED FOR SLEEPING.**
- **USE ONLY IN WELL VENTILATED ROOMS. PROVIDE VENTILATION OF AT LEAST 3 SQUARE FEET FOR EACH 100,000 BTU OF RATING. (FOR EXAMPLE, A 30,000 BTU HEATER WOULD REQUIRE A TWO FOOT WIDE WINDOW RAISED SIX INCHES.)**
- **WHEN USED WITH THERMOSTAT, HEATER MAY START ANYTIME!**
- **KEEP CHILDREN AWAY FROM HEATER AT ALL TIMES — NEVER LEAVE A HEATER PLUGGED IN WITHOUT AN ADULT PRESENT IF CHILDREN ARE LIKELY TO BE PRESENT.**
- **USE ONLY WITH ELECTRICAL VOLTAGE AND FREQUENCY SPECIFIED ON MODEL PLATE.**
- **USE ONLY A PROPERLY GROUNDED THREE-WIRE EXTENSION CORD.**
- **DO NOT MOVE, HANDLE OR SERVICE WHILE HOT OR BURNING.**
- **USE ONLY IN ACCORDANCE WITH LOCAL ORDINANCES AND CODES.**
- **NEVER ADD DUCT WORK TO FRONT OF HEATER.**
- **SAFETY REQUIREMENTS AND MODEL PLATE DATA COMPLY WITH AMERICAN NATIONAL STANDARDS INSTITUTE SAFETY REQUIREMENTS. ANSI A 10-1970**

Assembly

1. Remove the heater from its shipping container and take off any protective packing material which may be applied to it.
2. Check the heater for possible shipping damage. If any is found, IMMEDIATELY notify the agent of the carrier which delivered the heater to you and make out a claim for the damage.
3. Fill the fuel tank with the proper fuel.
   NOTE: If the heater is used at below zero temperatures, the fuel may congeal. To prevent this, add two tablespoons of Frostex or similar anti-icer to each 5 gallons of fuel. Be sure tank and fuel is water-free before filling.
4. Use heater only with adequate ventilation. If used in a closed room, a partly-opened door or window near the heater will provide enough ventilation. Do not use this heater as a source of heat in sleeping quarters.
5. Use only kerosene or No.1 fuel oil; do not use No. 2 or heavier fuel oil as they contain tars which will contaminate the heater. DO NOT USE GASOLINE: IT IS VOLATILE AND DANGEROUS.
6. Use the heater only on the electrical power specified on the instruction plate.
7. Plug the heater into a grounded receptacle or use a grounding adapter. Be sure the heater is grounded whenever it is in operation and whenever you are working on or near it.
8. Keep the heater at least 8 feet from any combustible materials.
9. DO NOT use the heater in the presence of flammable vapors such as paint, gasoline, or solvents.
10. Never add fuel while the heater is operating.
11. Keep the air inlet and discharge areas free of loose materials and any obstructions that would hinder the free flow of air into and out of the heater.
    NOTE: The motor contains a manual reset overload protector. If this should stop the motor due to low voltage or overload, the motor can be re-started by pressing the red button. Be sure to disconnect the power cord before opening the heater or checking the motor, because the heater may start at any time.

Installation

1. Plug the heater into an electrical outlet of 115 volt 60 cycle (Hertz).
2. Do not use a power source other than that specified on the nameplate. It is important to use extension cords of the right size if the heater is to be operated at a distance from the electrical source.
3. The following table shows the minimum recommended wire sizes for various lengths of extension cords. This wire size is calculated to assure that adequate voltage reaches the heater. Use of a smaller wire size than those recommended will result in slow starting and may result in malfunction of electrical components.

RECOMMENDED WIRE SIZES

LENGTH OF CORD (FEET)	200	100	50
MINIMUM WIRE SIZE (AWG)	8	10	12

Operation

Operation of the heater involves four simple systems:

1. Fuel System. A gear-type fuel pump attached to one end of the motor shaft delivers fuel at 105 PSI from the fuel tank through a filter and a solenoid valve to the nozzle, which forces it into the combustion chamber in a fine spray.
2. Air System. A fan attached to the other end of the motor pushes air through the heater. Part of the air enters the combustion chamber and mixes with the atomized fuel to form a combustible mixture.
   The rest of the air passes over and around the combustion chamber. At the front of the heater it mixes with the hot air coming from inside the combustion chamber. This results in a jet of clean, heated air flowing out of the front of the heater.
3. Ignition System. A transformer provides high voltage to a spark plug which extends through the burner head into the combustion chamber. A constantly firing spark from the spark plug ignites the mixture of fuel and air.
   NOTE: The installation of this unit shall be in accordance with the regulations of the authorities having jurisdiction.
4. Control System. The control system is actuated by a light sensing, instantly reacting cell used in conjunction with the safety control to initiate a safety shutdown in the event of ignition or flame failure. In addition, the control system provides a period of blower operation after normal shutoff to purge and cool the combustion chamber.
5. A thermostat, mounted on the heater, will operate it in response to the temperature setting provided that the setting is higher than the surrounding air temperature.

1. Starting.
   a. Plug heater into adequate electrical outlet receptacle.
   b. Set the thermostat dial to the desired temperature. Operation from this point on is automatic.
2. Stopping.
   a. Stop the heater by turning the thermostat dial to the NO HEAT position.
   b. You can also stop the heater temporarily by setting the thermostat to a temperature lower than the surrounding air.
   c. The heater flame will go out immediately, but the thermal switch will keep motor operating long enough to enable the air flow from the fan to cool the combustion chamber.
   d. Do not shut the heater off by unplugging it, as this deprives it of the purge cycle.

CAUTION: The heater should never be unplugged while in operation because this could cause damage to heater. The heater should not be restarted until the combustion chamber has cooled.

WIRING DIAGRAM

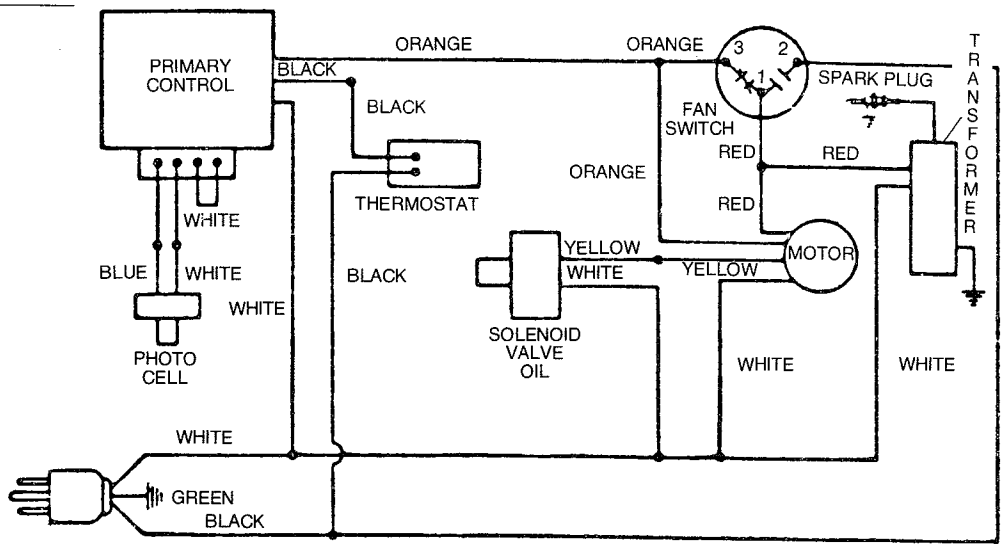


Figure 2

Operation (Continued)

OPERATING SEQUENCE

The following is a description of the normal automatic operating sequence of the heater (See the Wiring Diagram, Figure 2).

1. The heater is turned on by the thermostat automatically in response to a temperature setting of the dial, provided the setting is higher than the surrounding air temperature.
2. When operation is called for, the transformer and the motor, fan and fuel pump start operating immediately.
3. After fan reaches running speed, the solenoid valve will open. This allows fuel to flow to the nozzle. The heater will then ignite.
4. After about 2 minutes, the purge circuit is energized.
5. When the thermostat setting equals the surrounding air temperature or is turned to the NO HEAT position, the solenoid valve shuts off the flow of fuel to the nozzle, and the fire goes out immediately. The fan continues to run, purging the heater.
6. When the combustion chamber cools, the thermal switch changes back to its starting position, shutting off the motor.
7. If, for some reason, the fire goes out before the thermostat is satisfied, or if the heater fails to ignite when operation is called for, the safety control will shut off the heater within 15 seconds. If this should occur, unplug the heater, and determine the cause of the shutdown. Correct the cause then press the reset button on the safety control and restart the heater.

Maintenance

Maintenance consists of the operations the owner or user of the heater can perform to keep the heater operating properly. If routine maintenance fails to return a heater to top-operating condition, refer to the Trouble Shooting Chart. Keep the heater clean to reduce the need for extensive maintenance or repair.

FUEL SYSTEM MAINTENANCE

1. Use the cleanest fuel available. Dirt and water in the fuel will clog the filter, and may cause the heater to burn with an odor. If there is excessive water in the fuel, the flame may go out. Every 250 hours (or oftener) drain the tank and rinse it with clean, "dry" fuel (having no water in it.) Then refill with clean fuel.
2. Every 250 hours of operation, unscrew the filter can to remove the filter element. Rinse the bowl in clean kerosene and wipe dry with a clean cloth to remove all accumulated dirt. Use a new filter element and a new gasket before replacing filter bowl.
3. Check the fuel line connections occasionally to be sure they are tight.
4. If the solenoid valve should begin to stick open or closed, replace it.

AIR SYSTEM MAINTENANCE

1. If the heater is used in dusty or dirty air, the fan blades may in time build up enough dirt to reduce the over-all efficiency of the heater. Inspect them occasionally, and wipe off any loose dirt. Use a rag moistened with kerosene or non-flammable cleaning solvent to get stubborn dirt off the blades.
2. Keep the deflector plate and the air passages around the burner head free from dirt and trash.

BURNER MAINTENANCE AND SERVICE

WARNING: BE SURE THE HEATER IS DISCONNECTED FROM THE POWER LINE BEFORE OPENING UP AND WORKING IN THE BURNER AREA.

1. For access to the nozzle (Figure 3), remove the upper shell. Disconnect the fuel line, spark plug lead. Remove the screws attaching the burner head assembly to remove it from the combustion chamber.

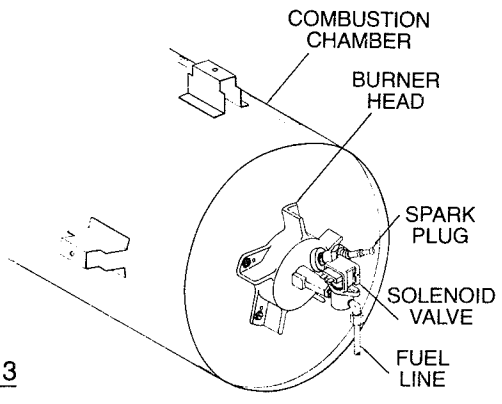


Figure 3

Maintenance (Continued)

CAUTION: Never use a drill, wire or any other tool in the nozzle orifice as this will damage the nozzle and require its replacement. While it is out of the burner, guard the nozzle from damage or dirt. This is important. If the nozzle is damaged replace it.

SPARK PLUG

WARNING: BE SURE THE HEATER IS NOT PLUGGED INTO THE OUTLET. THE SPARK PLUG WIRE CARRIES HIGH VOLTAGE DURING HEATER OPERATION.

1. Disconnect the spark plug wire.
2. Remove the spark plug from the burner head, and check the gap between the electrodes, as shown in Figure 4.
3. Adjust the gap by bending the outside electrodes where shown in Figure 4. If you do not install the plug immediately, protect it from damage until it is reinstalled.
4. Install the plug into the burner head, if no further burner head maintenance is required. Make sure the spark plug is seated firmly in the burner head.

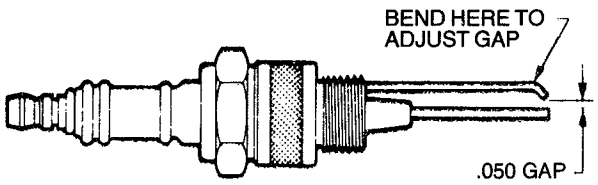


Figure 4

SAFETY CONTROL CIRCUIT TESTING

NOTE: The following testing procedures should be performed only if trouble indicates the safety control circuit may be at fault.

1. Unplug the heater cord. Disconnect the two photocell wires from the safety control.
2. Make certain that the reset buttons on the motor and the control are pressed in. Set the thermostat to a temperature above the temperature of the surrounding air.
3. Plug in the heater and after the flame is established, quickly jumper the terminals marked F1 and F2 on the side of the control. If the heater shuts off within 15 seconds, the control is defective and should be replaced.

   If the heater continues to run for a couple of minutes, remove the jumper and the control should trip out in 15 seconds. When the control trips out, the flame will disappear, but the motor will continue to run to purge heat from the heater. If heater continues to burn, first check solenoid. If solenoid functions normally, the control is defective and should be replaced.
4. If the control functions normally from the tests above, there are two possible causes for the problem. The heater does not have a well established flame pattern or the problem is in the photocell. The photocell is a light sensitive device that changes resistance from a high resistance (greater than 100,000 ohms), when no flame is sensed, to a low resistance (less than 3000 ohms) when the flame is sensed. Connect an ohmmeter across the photocell leads and check for this change in resistance. If the ohmmeter reads zero or open, the cell should be checked for dirt on the face or shorted leads. If the face of the photocell is dirty, clean with soft cloth and replace. Check for the resistance change in the photocell from no flame to flame. If the cell still reads zero or open check the wiring from one end to the other for opens and across the leads for shorts. If no problem is found replace the cell and check once again for the resistance change.
5. If the photocell and primary safety control function properly, the problem is that the heater is not burning properly.
6. If the control fails to shut down the heater, it is defective and must be replaced.
7. After replacing control system components, test fire the heater to make sure it will function properly. If it does not, check all wiring connections according to the wiring diagram, Figure 2. Repeat the testing procedure if necessary.

TUNE UP

To keep your heater in top operating condition, perform the following services at the start of each heater season then at the interval specified below:

CLEAN AND/OR REPLACE FUEL FILTER

Clean at least twice a season. More often if heater performance indicates the need. Replace if necessary.

CLEAN FAN

Clean fan after every 500 hours of operation. Clean more frequently if heater is operating in dusty areas or if there is a build-up of dirt on the blades.

REPLACE BURNER NOZZLE

Replace nozzle at least once during the heater season or more often if heater performance indicates the need.

CLEAN AND ADJUST SPARK PLUG

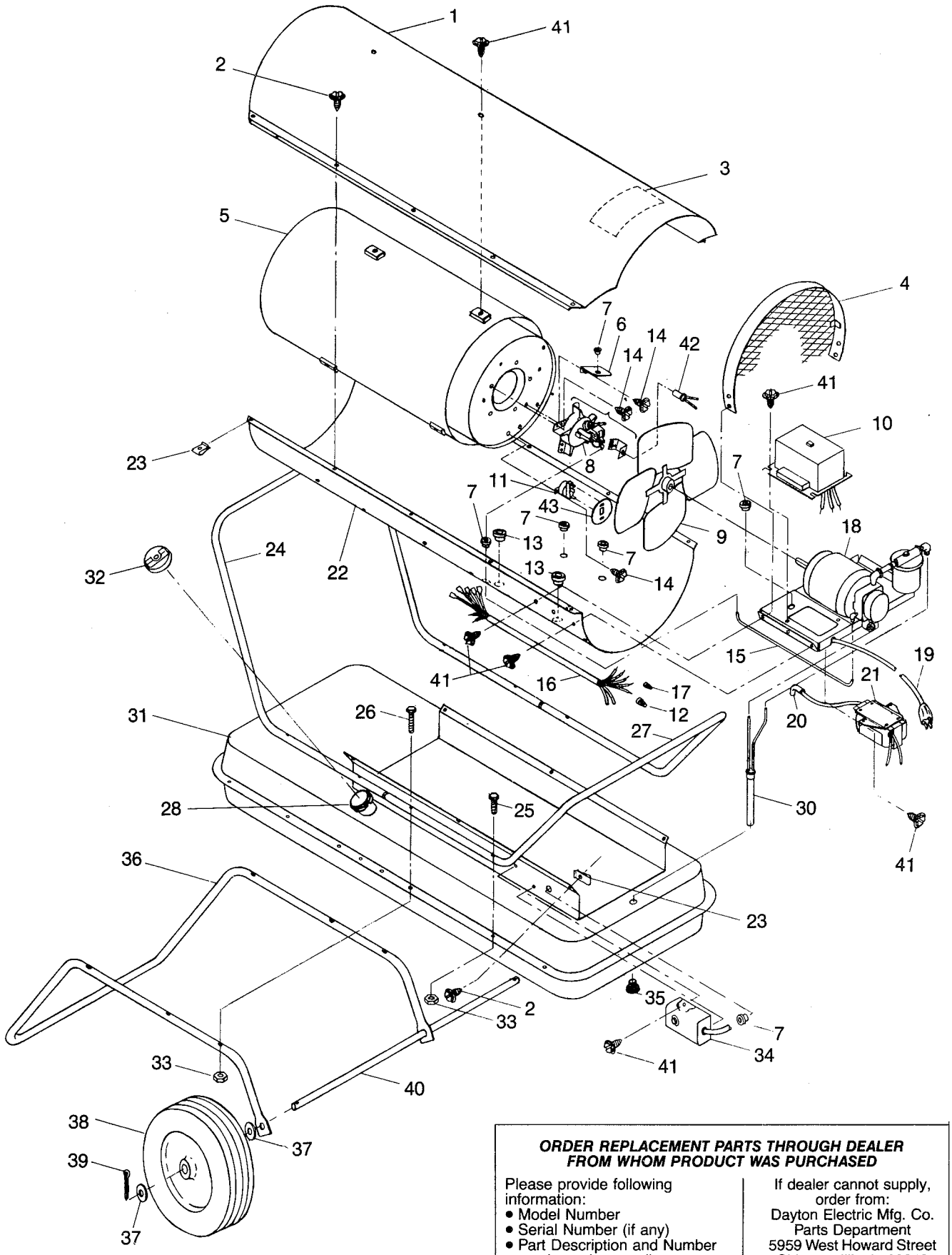
After every 300 hours of operation, clean and adjust spark plug electrodes. Adjust gap or replace the plug if electrodes have been burned, erroded, or carboned.

CLEAN PHOTO CELL

Clean the photo cell face with a soft cloth at least once during the heater season. If cell face tends to soot up, check with your nearest service station to determine the cause.

FUEL PUMP MAINTENANCE AND SERVICE

1. The pump operates at 105 PSI. To check pressure, remove the hex head pipe plug from the port marked gauge on the fuel pump and install a pressure gauge.
2. If the pressure gauge does not read 105 PSI, plus or minus 5 PSI, when the motor is running and pumping fuel, adjust the pump.
3. Remove the access plug on the side of the pump body marked pressure adjustment. To increase the fuel pressure, turn the slotted screw inside the port clockwise. To decrease the fuel pressure, turn the screw inside the port counterclockwise. After completion of the adjustment install the plug into the adjusting port, then remove the gauge. Install the plug into the fuel pump.
4. If the fuel pressure cannot be adjusted, replace the pump.



ORDER REPLACEMENT PARTS THROUGH DEALER FROM WHOM PRODUCT WAS PURCHASED

Please provide following information:
- Model Number
- Serial Number (if any)
- Part Description and Number as shown in parts list.

If dealer cannot supply, order from:
Dayton Electric Mfg. Co.
Parts Department
5959 West Howard Street
Chicago, Illinois 60648

Figure 5 — Replacement Parts Illustration for Model 3E358

Replacement Parts List for Model 3E358

REF. NO.	PART NO.	DESCRIPTION	QTY.	REF. NO.	PART NO.	DESCRIPTION	QTY.
1	M50060AZ	Upper shell	1	23	M11271-6	Clip nut (Tinnerman)	16
2	M11084-27	#10-12 × 1/2" screw	16	24	M50062-03	Front handle	1
3	M50089	Wiring diagram decal	1	25	M51043-01	Hex capscrew •	2
4	M50097-01AA	Fan guard	1	26	HC4-18C	Screw (1/4-20 × 2¼") •	6
5	M50099-02 M50542-01	Combustion chamber & heat deflector	1	27	M50062	Rear handle	1
6	M50086	Air deflector	5	28	M18053	Filler neck screen	1
7	M30865-02	Short bushing	8	30	M50115-04	Fuel line assembly	1
8	M51129-03	Burner head assembly (see Figure 9 for details)	1	31	M50071-01AA	Fuel tank assembly c98513-05	1
9	M50121	Fan	1	32	M23284	Fuel tank cap	1
10	M50230	Safety control	1	33	NTC-4C	Hex locknut (1/4-20)	8
11	M51336-02	Fan switch (kit, incl. 44)	1	34	M25297-14	Thermostat assembly	1
12	M13942-5	Connector wire	4	35	M27417	Drain plug	1
13	M50104-02	Short bushing	3	36	M50063	Wheel support frame	1
14	M11084-27	Screw #10-12 × 1/2"	14	37	WP-10C	Flatwasher (5/8" I.D.)	4
15	M50295	Fuel line	1	38	M50389	Wheel	2
16	M50391-01	Wire harness assembly	1	39	C5-10C	Cotter pin (5/32 × 1¼")	2
17	M13942-7	Wire connector	4	40	M18774	Axle (5/8" Dia.)	1
18	M50079-04	Motor & pump assembly‡	—	41	M11084-26	Hex head screw (#10 × 1/2)	20
19	M10813-88	Extension cord assembly (Power cord)	1	42	M16656-4	Photo cell assembly	4
20	M50050	Ignition boot	1	43	M51160-01	Fan switch cover	1
21	M50570-02	Transformer 5000 volt and bracket	1	▲	M50278	Sleeve (located on motor shaft, between fan & motor)	1
22	M50061AZ	Lower shell	1	▲	M50296	Wheel spacer	

‡Not available as complete assembly. See Figure 6 for details.
▲Not shown.
•Holds handle in position

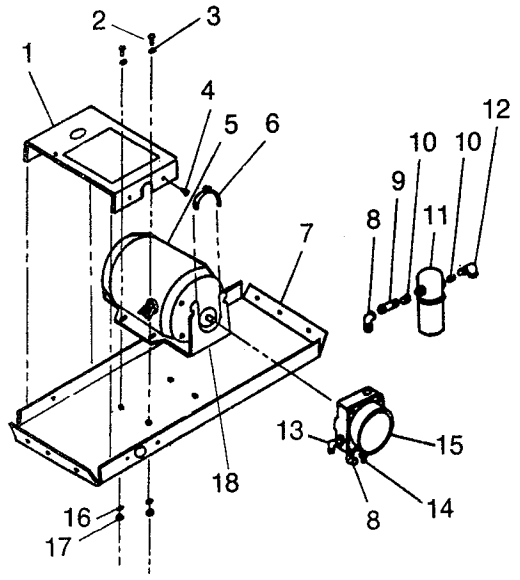


Figure 6 — Replacement Parts Illustration for Motor and Pump Assembly

Replacement Parts List for Model 3E358 Motor & Pump Assembly

REF. NO.	PART NO.	DESCRIPTION	QTY.
‡	M50079-04	Motor & pump assembly	N/A
1	M50082AA	Wiring cover	1
2	HF5-5C	Screw (5/16-24)	4
3	WLE-5	Lockwasher (5/16)	3
4	M11084-26	Screw (#10-12 × 3/8")	5
5	M50064-01	Motor	1
6	M50116	Flanged clamp	1
7	M50083AA	Motor support	1
8	57413	Street elbow	2
9	M17499-2	Long nipple	1
10	M20137	Pipe bushing	1
11	M50398	Filter	1
	M51102-01	Filter element	1
12	M50114-02	90° male elbow 1/4 to 1/4	1
13	M50297	Compression elbow	1
14	M50113-02	Straight fitting 1/4 to 1/4	1
15	M50065	Fuel pump	1
16	WLM-5C	Lockwasher (5/16)	4
17	NPF-5C	Hex nut (5/16-24)	4
18	M50987-01	Motor base	1

‡ Not sold in assembly form.

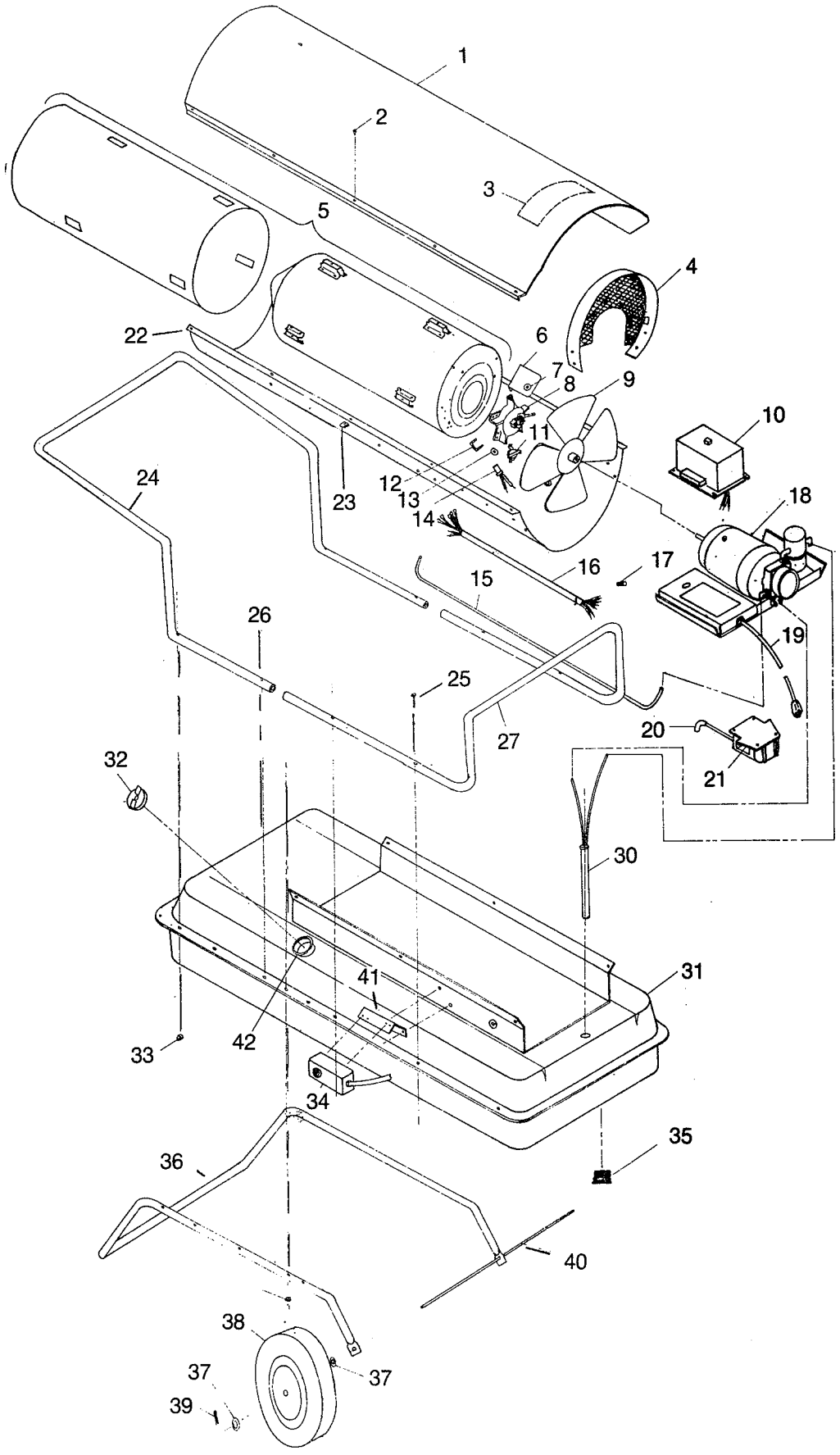


Figure 7 — Replacement Parts Illustration for Model 3E359

Replacement Parts List for Model 3E359

REF. NO.	PART NO.	DESCRIPTION	QTY.	REF. NO.	PART NO.	DESCRIPTION	QTY.
1	M50167AZ	Upper shell	1	20	M50050	Ignition boot	1
2	M11084-27	Screw #10-32 × 1/2	51	21	M50570-02	Transformer, 5000 volt	1
3	M50089	Wiring diagram decal	1	22	M50168AZ	Lower shell	1
4	M50186-01AA	Fan guard	1	23	M11271-6	Clip nut (Tinnerman)	18
5	M50543-01	Combustion chamber & shield	1	24	M50224	Front handle	1
6	M50157	Air deflector	5	25	HC4-22C	Screw (1/4-20 × 2¾)	8
7	M30865-02	Bushing	1	26	M51043-01	Screw (1/4-20 × 1½)	6
8	M51129-02	Burner head assembly (see Figure 9 for details)	3	27	M28872-01	Rear handle	1
9	M50194	Fan	1	30	M50115-04	Fuel line assembly	1
10	M50230	Control, safety, primary	1	31	M50071-02AA	Fuel tank 098513-07	1
11	M50276	Switch, fan	1	32	M23284	Fuel cap	1
	M10908-14	Screw (#8-32 × 3/8")†	2	33	NTC-4C	Hex nut (1/4-20)	18
12	M50340-02	Photo cell bracket	1	34	M25297-5	Thermostat	1
13	M30865-02	Bushing	4	35	M27417	Drain plug	1
14	M16656-4	Photo cell assembly	1	36	M28140-02	Wheel support frame	1
15	M50119-01	Fuel line	1	37	WP-10C	Flatwasher (5/8")	4
16	M50391-02	Wire harness	1	38	M50389	Wheel	2
17	M13942-5	Wire connector	4	39	C5-10C	Cotter pin (5/32 × 1¼")	2
18	M50172-02	Motor & pump assembly‡	N/A	40	M18774	Axle	1
19	M10813-88	Power cord	1	41	M25121B	Thermostat bracket	1
				42	M18053	Filler neck screen	1

†Part of subassembly. Can be ordered separately or as a whole.
‡Not available as a complete assembly. See Figure 8 for details.

Replacement Parts List for Model 3E359 Motor & Pump Assembly

REF. NO.	PART NO.	DESCRIPTION	QTY.
‡	M50172-02	Motor & pump assembly	N/A
1	M50082AA	Wire cover	
2	HF5-5C	Hex head screw (5/16 × 5/8)	4
3	WLE-5	Lockwasher (5/16)	4
4	M11084-26	Screw (#10 × 3/8)	3
5	M50064-02	Motor	1
6	M50116	Flanged clamp	1
7	M50161AA	Motor support	1
8	57413	Street elbow	1
9	M17499-2	1/4 pipe nipple	1
10	M20137	Pipe bushing	1
11	M50398	Fuel filter	1
	M51102-01	Element (service replacement)	1
12	M50114-02	90° male elbow	1
13	M50297	Compression elbow	1
14	M50113-02	Straight fitting	1
15	M50065	Fuel pump	1
16	WLM-5	Lockwasher	4
17	NPF-5C	Hex nut (5/16 × 24)	4
18	M50987-01	Motor base	1

‡Not sold in assembly form.

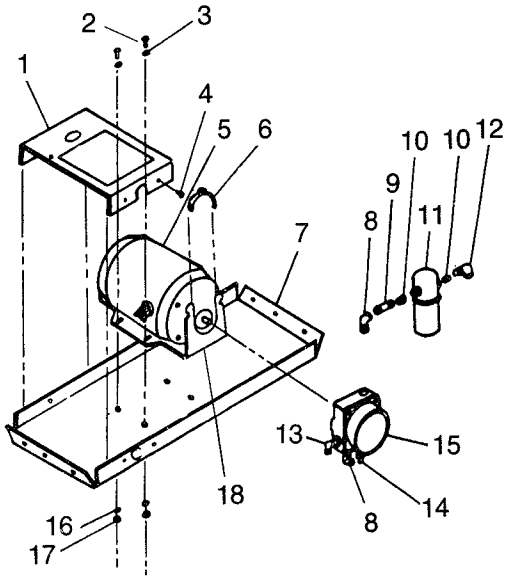
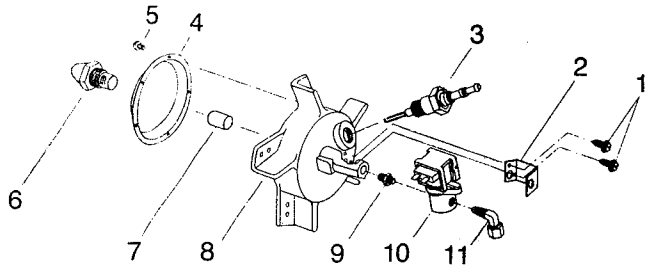


Figure 8 — Replacement Parts Illustration for Motor and Pump Assembly



ORDER REPLACEMENT PARTS THROUGH DEALER FROM WHOM PRODUCT WAS PURCHASED

Please provide following information:

- Model Number
- Serial Number (if any)
- Part Description and Number as shown in parts list.

If dealer cannot supply, order from:
Dayton Electric Mfg. Co.
Parts Department
5959 W. Howard St.
Chicago, Illinois 60648

Figure 9— Replacement Parts Illustration for Burner Head Assembly

Replacement Parts List for Models 3E358 & 3E359

REF. NO.	PART NO.	DESCRIPTION	QTY.	REF. NO.	PART NO.	DESCRIPTION	QTY.
—	M51129-02	Burner head assembly (Model 3E358)	N/A	6	M30765 M50112	Nozzle (Model 3E358) Nozzle (Model 3E359)	N/A N/A
—	M51129-03	Burner head assembly (Model 3E359)	N/A	7	M51170-01	Plug	1
1	M10908-02	Hex head screw (#6-32 × 3/8)	2	8	M50924-02	Burner head body	1
2	M50340-02	Photo cell bracket	1	9	69246	Straight nipple	1
3	M10962-2	Spark plug	1	10	M50077	Solenoid valve	1
4	M50396	Burner head orifice	1	11	M50297	Compression elbow	1
5	M10908-1	Hex head screw (#6-32 × 1¼)	5	—	M50298	Nut	1
				—	M50299	Sleeve	1

LIMITED WARRANTY

Dayton high pressure oil-fired heaters, Models 3E358 & 3E359, are warranted by Dayton Electric Mfg. Co. (Dayton) to the original user against defects in workmanship or materials under normal use (rental use excluded), 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 repaired or replaced at Dayton's option. For warranty claim procedures, see "Prompt Disposition" below. This warranty gives purchasers specific legal rights, and purchasers may also have other rights which vary from state to state.

WARRANTY DISCLAIMER. Dayton has made a diligent effort to illustrate and describe the products in this literature accurately; however, such illustrations and descriptions are for the sole purpose of identification, and do not express or imply a warranty that the products are merchantable, or fit 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 "LIMITED WARRANTY" above is made or authorized by Dayton, and Dayton's liability in all events is limited to the purchase price paid.

Certain aspects of disclaimers are not applicable to consumer products; e.g., (a) some states do not allow the exclusion or limitation of incidental or consequential damages, so the bove limitation or exclusion may not apply to you; (b) also, some states do not allow limitations 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 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 warranty. For any product believed to be defective within warranty, first write or call dealer from whom 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. If product was damaged in transit to you, file claim with carrier.

DAYTON ELECTRIC MFG. CO., 5959 W. HOWARD STREET
CHICAGO, ILLINOIS 60648

Trouble Shooting Chart

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Odor from heater	1. Air leak in suction system	1. Check filter for leakage. Tighten all fuel line connections.
	2. Low pump pressure	2. Adjust pump pressure.
	3. Dirty filter	3. Replace filter element and clean the filter bowl.
	4. Dirty burner nozzle	4. Clean the burner and replace nozzle.
	5. Low voltage causing motor to operate below rated speed	5. Voltage at heater should be not less than 90% of rated voltage. (108 volts for 120-volt heaters).
	6. Water deposits suspended in fuel	6. Wait for water to settle out after filling tank; then drain tank and refill with fuel containing no water.
	7. Low motor RPM	7. Check voltage, if OK, check motor RPM. Motor must run at least 1700 RPM on proper voltage. If not, replace motor.
Failure to start (Motor does not start when thermostat is set to call for operation.	1. Proper power not reaching heater	1. Check that heater is connected to a live power line with good fuses, and that the voltage at the heater is correct.
	2. Loose electrical connections	2. Check; tighten if necessary.
	3. Control not activated	3. Press and release reset button on control.
	4. Motor overload protector tripped	4. Check for cause of motor overload. Correct cause or replace motor.
	5. Thermostat defective	5. Replace thermostat.
	6. Safety control defective	6. Replace safety control.
Failure to ignite (Motor runs when thermostat is set to call for operation.)	1. Fuel tank empty	1. Fill fuel tank.
	2. Spark plug dirty or not properly gapped	2. Reset spark plug after cleaning, according to dimensions in Figure 4.
	3. Solenoid valve not opening	3. If electrical connections to solenoid valve are good, replace solenoid valve.
	4. Improperly wired after servicing	4. Check wiring according to Wiring Diagram, Figure 1.
	5. Pump not providing fuel, or providing fuel at too-low pressure	5. Check pump output pressure; adjust if necessary; replace pump if adjustment cannot be made or will not hold. Filter element needs replacing.
	6. Water in fuel	6. Drain tank, rinse with clean fuel; clean filter housing. Replace filter element. Refill with clean fuel.
Nuisance trip-outs	1. Open or damaged photocell	1. Replace photocell.
	2. Defective safety control	2. Replace safety control.
	3. Defective fan switch	3. Replace fan switch.

Service Record

DATE	MAINTENANCE PERFORMED	REPLACEMENT COMPONENTS REQUIRED

Notes