

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 3VE48F, 3VE49F, 3VE50G, 3VE51G and 3VE52H heaters are 45,000 to 210,000 BTU/Hr heaters. These heaters use 1-K Kerosene (see Operation section for alternative fuels) for combustion, and electricity to run the fan. It is primarily intended for temporary heating of well ventilated buildings under construction, alteration, or repair. This heater may be used in agricultural, industrial and commercial environments.

Specifications

ELECTRICAL SPECIFICATIONS

Model	Electrical Input	Amperage	Fuse	Spark Plug Gap
3VE48F	120V, 60 Hz	1.6	125V/8 amp	.140" (3.5mm)
3VE49F	120V, 60 Hz	1.6	125V/8 amp	.140" (3.5mm)
3VE50G	120V, 60 Hz	2.5	125V/8 amp	.140" (3.5mm)
3VE51G	120V, 60 Hz	3.2	125V/8 amp	.140" (3.5mm)
3VE52H	120V, 60 Hz	3.7	125V/8 amp	.140" (3.5mm)

GENERAL SPECIFICATIONS

Model	Type of Fuel	Input Rating	Pump Pressure	Fuel Tank Capacity	Fuel Consumption	Size L x W x H (Inches)	Weight Lbs. (kg)
3VE48F	1-K Kerosene	45,000 BTU/Hr	2.8 PSI	5.0 Gallons	.35 Gal/Hr	32 x 11 ¹ / ₄ x 16 ³ / ₄	27.6 (12.5)
3VE49F	1-K Kerosene	75,000 BTU/Hr	3.8 PSI	5.0 Gallons	.57 Gal/Hr	32 x 11 ¹ / ₄ x 16 ³ / ₄	27.6 (12.5)
3VE50G	1-K Kerosene	125,000 BTU/Hr	5.5 PSI	10.0 Gallons	.95 Gal/Hr	36 ¹ / ₁₀ x 21 ¹ / ₂ x 24 ⁶ / ₁₀	58.6 (26.6)
3VE51G	1-K Kerosene	170,000 BTU/Hr	6.5 PSI	13.0 Gallons	1.3 Gal/Hr	41 ⁸ / ₁₀ x 23 ¹ / ₁₀ x 26 ¹ / ₁₀	65.0 (29.5)
3VE52H	1-K Kerosene	210,000 BTU/Hr	8.5 PSI	13.0 Gallons	1.6 Gal/Hr	41 ⁸ / ₁₀ x 23 ¹ / ₁₀ x 26 ¹ / ₁₀	66.6 (30.2)

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Introduction

Please read this USER'S MANUAL carefully. It will show you how to assemble, maintain and operate this heater safely and efficiently to obtain the full benefits of its many features.



Figure 1 - Models 3VE48F and 3VE49F



Figure 2 - Models 3VE50G, 3VE51G and 3VE52H

Consumer: Retain these instructions for future reference.

Unpacking

1. Remove all packing items applied to heater for shipment.
2. Remove all items from carton.
3. Check all items for shipping damage. If heater is damaged, promptly inform dealer where you purchased heater.



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Dimensions

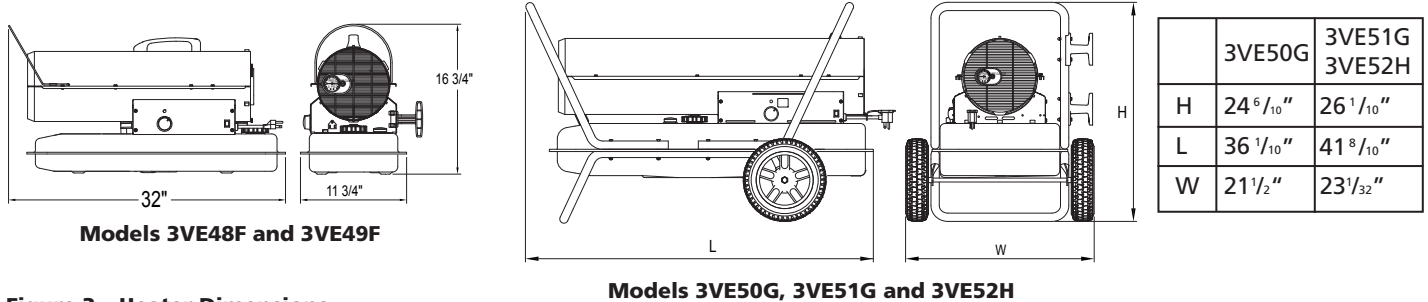


Figure 3 – Heater Dimensions

Product Features

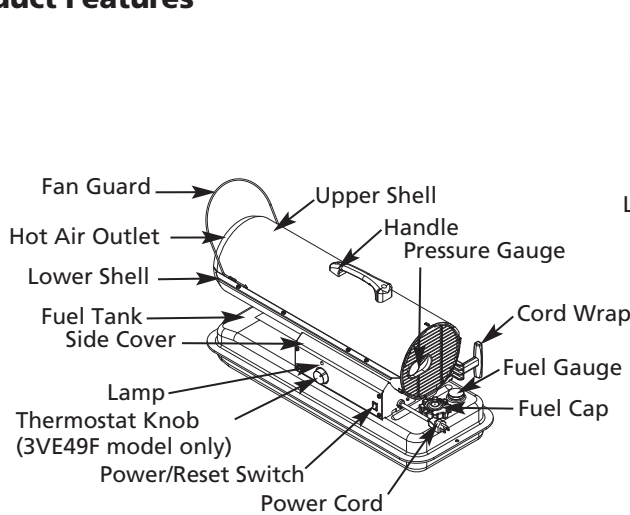


Figure 4 – Models 3VE48F and 3VE49F Features

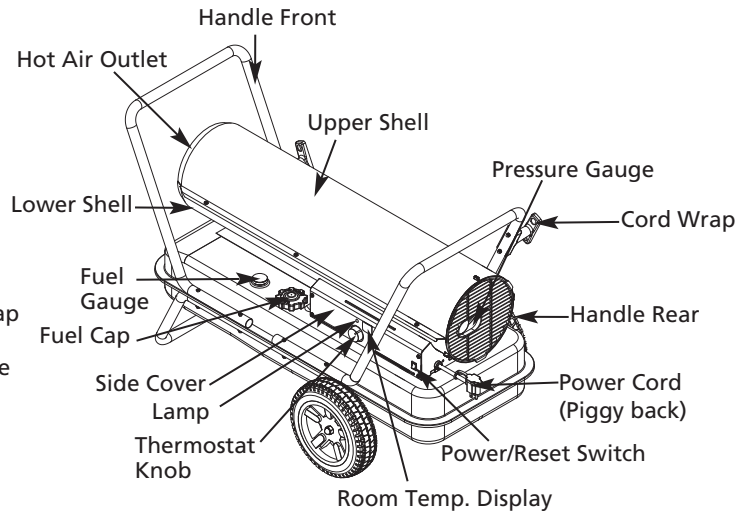


Figure 5 – Models 3VE50G, 3VE51G and 3VE52H Features

General Safety Information

⚠ DANGER Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.

⚠ WARNING Indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.

⚠ CAUTION Indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury.

⚠ WARNING Before using this heater, please read this **USER'S MANUAL** very carefully. This **USER'S MANUAL** has been designed to instruct you as to the proper manner in which to assemble, maintain, store, and most importantly, how to operate the heater in a safe and efficient manner.

⚠ WARNING Never leave the heater unattended while burning!

⚠ DANGER Improper use of this heater can result in serious injury or death from burns, fire, explosion, electrical shock, and/or carbon monoxide poisoning.

For optimal performance of this heater, it is strongly suggested that 1-K kerosene be used. 1-K kerosene has been refined to virtually eliminate contaminants, such as sulfur, which can cause a rotten egg odor during the operation of the heater.

Models 3VE48F, 3VE49F, 3VE50G, 3VE51G and 3VE52H

General Safety Information (Continued)

However, #1 fuel oil (diesel fuel) may also be used if 1-K kerosene is not available. Be advised that these fuels do not burn as clean as 1-K kerosene, and care should be taken to provide more fresh air ventilation to accommodate any added contaminants that may be added to the heated space. Use of #1 fuel oil may result in more periodic maintenance.

▲WARNING *Risk of Indoor Air Pollution!*

- Use this heater only in well ventilated areas! Provide at least a three square foot (2,800 sq. cm) opening of outside air for every 100,000 BTU/hr of heater rating.
- People with breathing problems should consult a physician before using the heater.
- Carbon Monoxide Poisoning: Early signs of carbon monoxide poisoning resemble flu-like symptoms such as headaches, dizziness, and/or nausea. If you have these symptoms, your heater may not be working properly.
- Get fresh air at once! Have the heater serviced. Some people are more affected by carbon monoxide than others. These include pregnant women, those with heart or lung problems, anemia, or those under the influence of alcohol, or at high altitudes.
- Never use this heater in living or sleeping areas.

▲WARNING *Risk of Burns/Fire/Explosion!*

- NEVER use fuels such as gasoline, benzene, paint thinners, or other oil compounds in this heater (RISK OF FIRE OR EXPLOSION).
- NEVER use this heater where flammable vapors may be present.
- NEVER refill the heater's fuel tank while heater is operating or still hot. This heater is EXTREMELY HOT while in operation.
- Keep all combustible materials away from this heater.

Minimum Clearances

Outlet 8 feet (250 cm)
Sides, Top and Rear 4 feet (125 cm)

- NEVER block air inlet (rear) or air outlet (front) of heater.
 - NEVER use duct work in front or at rear of heater.
 - NEVER move or handle heater while still hot.
 - NEVER transport heater with fuel in its tank.
- When used with optional thermostat or if equipped with a thermostat, the heater may start at any time.
- ALWAYS locate heater on a stable and level surface.
 - ALWAYS keep children and animals away from heater.
 - Use 1-K kerosene in this heater. #1 fuel oil is a suitable substitute.
 - Bulk fuel storage should be a minimum of 25 ft. from heaters, torches, portable generators, or other sources of ignition. All fuel storage should be in accordance with federal, state, or local authorities having jurisdiction.

▲WARNING *Risk of Electric Shock!*

- Use only the electrical power (voltage and frequency) specified on the model plate of the heater. Use only a three-prong, grounded outlet and extension cord.
- ALWAYS install the heater so that it is not directly exposed to water spray, rain, dripping water, or wind.
- ALWAYS unplug the heater when not in use.

CALIFORNIA RESIDENTS:

This heater produces carbon monoxide, which is listed by the State of California as a reproductive toxin under Proposition 65.

MASSACHUSETTS RESIDENTS:

Massachusetts state law prohibits the use of this heater in any building which is used in whole or in part for human habitation. Use of this heating device in Massachusetts requires local fire dept. permit (M.E.L.C. 148, Section 10A).

CANADIAN RESIDENTS:

Use of this heater shall be in accordance with authorities having jurisdiction and CSA Standard B139.

NEW YORK CITY RESIDENTS:

For use only at construction sites in accordance with applicable NYC codes under NYC FD certificate of approval #5034 and 5037.

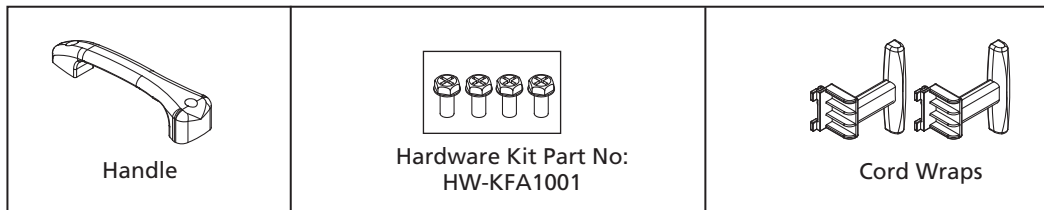
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Assembly

Model	3VE48F, 3VE49F	3VE50G	3VE51G	3VE52H
Wheel Support Frame	No	Yes	Yes	Yes
Wheels	No	Yes	Yes	Yes
Front-Handle	No	Yes	Yes	Yes
Rear-Handle	No	Yes	Yes	Yes
Threaded Axle	No	Yes	Yes	Yes
Handle	Yes	No	No	No
Cord Wrap	Yes	Yes	Yes	Yes
Hardware Kit: HW-KFA1001	Yes	No	No	No
Hardware Kit: HW-KFA1021	No	Yes	Yes	Yes

3VE48F / 3VE49F Models



3VE50G / 3VE51G / 3VE52H Models

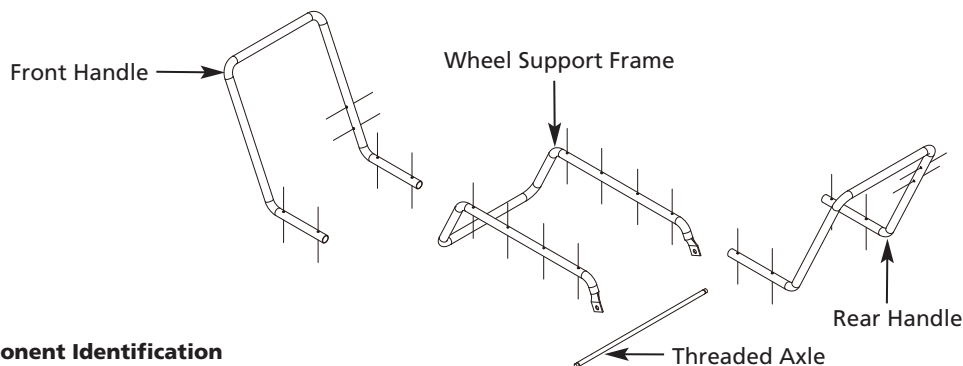
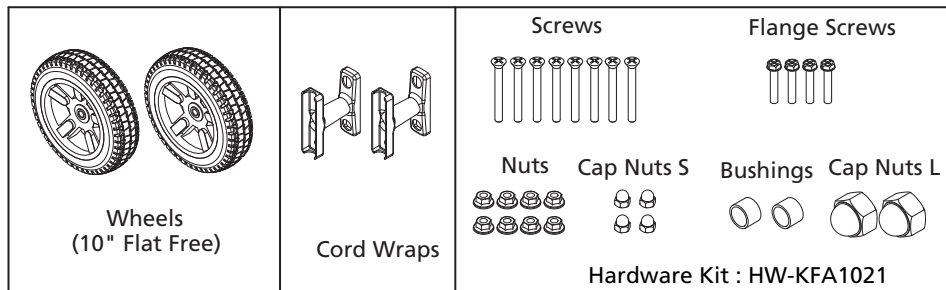


Figure 6 – Component Identification

For Technical Support or Troubleshooting, Call: 1-800-Grainger

Models 3VE48F, 3VE49F, 3VE50G, 3VE51G and 3VE52H

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Assembly (Continued)

FOR MODELS 3VE48F AND 3VE49F ONLY

TOOLS REQUIRED

- Medium Phillips screwdriver.

1. Lift front guard for arrow direction and make sure that guard's wedged portion fits into the slit hole on the upper housing.
2. Align the holes in upper housing with two mounting holes on the handle as shown in Figure 7.
3. Secure handle with screws provided.
4. Insert cord wrap into the rectangle holes on the supporter and align the hole on the cord wrap with the mounting hole on the side cover as shown in Figure 7.
5. Secure cord wrap with screws provided.

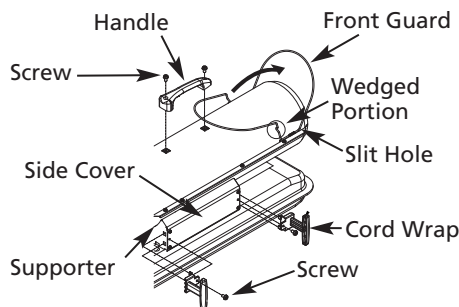


Figure 7 – Handle and Cord Wrap Installation 3VE48F and 3VE49F only

FOR MODELS 3VE50G, 3VE51G AND 3VE52H ONLY

TOOLS REQUIRED

- Medium Phillips Screwdriver.
- 3/4 inch socket or adjustable wrench
Assembling Handle & Wheel and Cord Wrap

1. Slide threaded axle through the rear section of the wheel support frame.

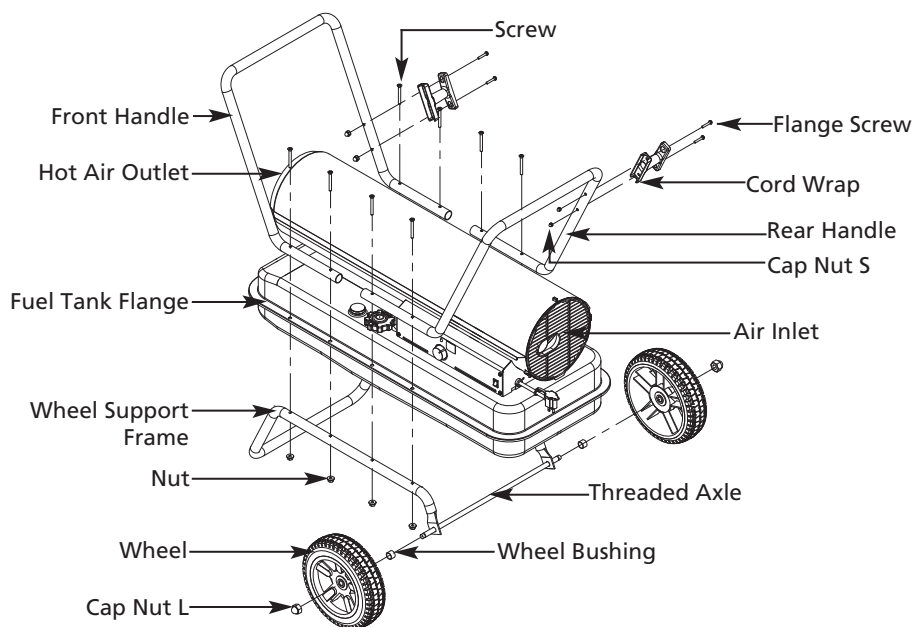


Figure 8 – Models 3VE50G, 3VE51G and 3VE52H Assembly

2. Slide one axle bushing on to each side of the axle. Slide one wheel on to each side of the axle. Attach one cap nut on to each side of the threaded axle and tighten well.
3. Place heater on wheel support frame. Align the holes on fuel tank flange with holes on wheel support frame.
4. Position the Handles on top of fuel tank flange. Insert screws through handles, fuel tank flange and wheel support frames as shown in Figure 8 and attach nut finger tight after each screw is inserted.
5. Align the hole on the handles with the mounting hole on the Cord Wrap. Insert Screws through Cord Wrap, handles and attach nut finger tight after each screw is inserted.
6. After all screws are inserted, tighten nuts firmly.

CAUTION Do not operate heater without support frame fully assembled to tank.

Operation KEROSENE (1-K)

For optimal performance of this heater, it is strongly suggested that 1-K kerosene be used. 1-K kerosene has been refined to virtually eliminate contaminants, such as sulfur, which can cause a rotten egg odor during the operation of the heater. However, #1 fuel oil (diesel fuel) may also be used if 1-K kerosene is not available. Be advised

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ENGLISH

Operation (Continued)

that these fuels do not burn as clean as 1-K kerosene, and care should be taken to provide more fresh air ventilation to accommodate any added contaminants that may be added to the heated space.

NOTE: Kerosene should only be stored in a blue container that is clearly marked "kerosene". Never store kerosene in a red container. Red is associated with gasoline.

- NEVER store kerosene in the living space. Kerosene should be stored in a well ventilated area outside the living area.
- NEVER use fuel such as gasoline, benzene, alcohol, white gas, camp stove fuel, paint thinners, or other oil compounds in this heater (THESE ARE VOLATILE FUELS THAT CAN CAUSE A FIRE OR EXPLOSION).
- NEVER store kerosene in direct sunlight or near a source of heat.
- NEVER use kerosene that has been stored from one season to the next. Kerosene deteriorates over time. OLD KEROSENE WILL NOT BURN PROPERLY IN THIS HEATER.
- Use 1-K kerosene in this heater. #1 fuel is a suitable substitute.

OVERVIEW OF HEATER DESIGN

Fuel System: This heater is equipped with an electric air pump that forces air through the air line connected to the fuel intake, and then through a nozzle in the burner head. When air passes in front of the fuel intake, it causes fuel to rise from the tank and into the burner nozzle.

This fuel and air mixture is then sprayed into the combustion chamber in a fine mist.

SureFire Ignition: The electronic ignitor sends voltage to a specially designed spark plug. The spark plug ignites the fuel and air mixture described above.

The Air System: The heavy duty motor turns a fan that forces air into and around the combustion chamber. Here, the air is heated and then forced out the front of the heater.

THE SAFETY SYSTEM

Temperature Limit Control: This heater is equipped with a Temperature Limit Control designed to turn the heater off should the internal temperature rise to an unsafe level. If this device activates and turns your heater off, it may require service.

Once the temperature falls below the reset temperature, you will be able to start your heater.

Electrical System Protection: This heater's electrical system is protected by a fuse mounted to the PCB Assembly that protects it and other electrical

components from damage. If your heater fails to operate, check this fuse first and replace as needed. Refer to Specification chart on page 1.

Flame-Out Sensor: Utilizes a photocell to monitor the flame in burn chamber during normal operation. It will cause the heater to shut off should the burner flame extinguish.

FUELING YOUR HEATER

Never fill the heater fuel tank in the living space: fill the tank outdoors.

Do not overfill your heater and be sure heater is level.

⚠ WARNING *Never refill fuel tank when heater is operating or still hot.*

IMPORTANT: REGARDING FIRST IGNITION OF HEATER. The first time you light the heater, it should be done OUTDOORS. This allows the oils, etc., used in manufacturing heater to be burned off outside.

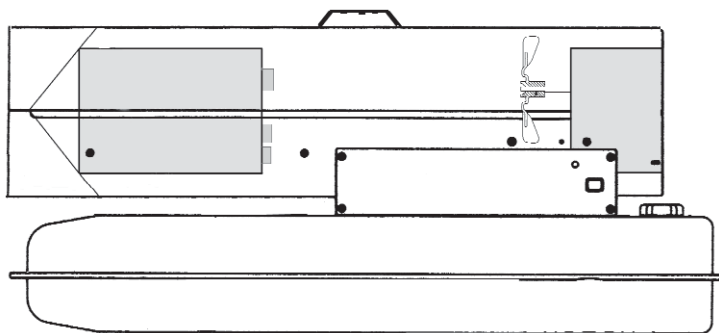


Figure 9 – Overview of Heater Design

Model	Internal Shut-Off Temp. +/-10 Degrees	Reset Temp. +/-10 Degrees
3VE50G/3VE51G	230°F/110°C	194°F/90°C
3VE48F/3VE49F	176°F/80°C	122°F/50°C
3VE52H	194°F/90°C	140°F/60°C

For Technical Support or Troubleshooting, Call: 1-800-Grainger

Models 3VE48F, 3VE49F, 3VE50G, 3VE51G and 3VE52H

Operation (Continued)

VENTILATION

CAUTION Risk of indoor air pollution. Use heater only in well ventilated areas.

Provide a fresh air opening of at least three (3) square feet (2,800 sq. cm) for each 100,000 BTU/Hr. rating. Provide extra fresh air if more heaters are being used.

Example: A 3VE52H heater requires one of the following :

1. A two-car garage door raised six inches (15.24 cm).
2. A single-car garage door raised nine inches (22.86 cm).
3. Two, thirty inch (76.20 cm) windows raised fifteen inches (38.1 cm).

TO START HEATER

1. Fill fuel tank with kerosene or No. 1 fuel oil.
2. Attach fuel cap.
3. Plug power cord into three prong, grounded extension cord. Extension cord must be at least six feet long.
 - Extension Cord Wire Size Requirements:
 - 6 to 100 feet (1.8 to 30.53 meters) long, use 16 AWG conductor.
 - 101 to 200 feet (30.8 to 61 meters) long, use 14 AWG conductor.

4. 3VE48F model Only: Push power switch to "ON" position. Power Lamp will light and heater will start.
5. 3VE49F, 3VE50G, 3VE51G, and 3VE52H models: Turn thermostat control knob to desired setting and push power switch to "ON" position. Power lamp will light and heater will start.

NOTE: Room Temp. display indicates as following:

- When room temp. is less than 0°F: "Lo".
- When room temp. is between 0°F and 99°F: Indicates in figure.
- When room temp is less than 99°F: "Hi".

If heater does not start, the thermostat setting may be too low. Turn THERMOSTAT CONTROL KNOB to higher position to start heater. If heater still does not start, turn power switch to "OFF" and then to "ON" position (See Figure 10). If heater still does not start, see Troubleshooting on page 18.

NOTE: The major electrical components of this heater are protected by a safety fuse mounted to the PCB board. If your heater fails to start, check this fuse first and replace as necessary. You should also check your power source to insure that proper voltage and frequency are being supplied to the heater.

TO SHUT DOWN HEATER

Turn switch to "OFF" and unplug power cord.

TO RESTART HEATER

1. Wait 10 seconds after stopping heater.
2. Repeat steps under, "TO START HEATER."

PIGGYBACK POWER CORD

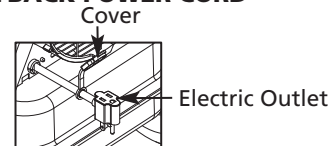


Figure 11 - Piggyback Power Cord

WARNING Shock Hazard! Always cover electric outlet when not in use. Don't plug and use an appliance of more than 5A current in this outlet.

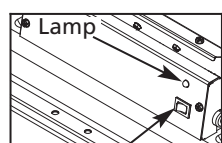
LONG-TERM STORAGE OF YOUR HEATER

FUEL TANK DRAIN

1. Drain fuel tank through fuel cap opening. (For Models 3VE48F, 3VE49F Only)
2. Remove fuel drain bolt from rear bottom side of fuel tank using 3/4" socket or adjustable wrench and drain. (For Models 3VE50G 3VE51G, 3VE52H only)
3. Using a small amount of kerosene, swirl and rinse the inside of the tank. NEVER mix water with the kerosene as it will cause rust inside the tank. Pour the kerosene out making sure that you remove it all.

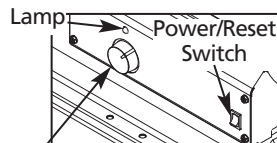
IMPORTANT : Do not store kerosene over summer months for use during next heating season. Using old fuel could damage heater.
4. Reinstall fuel cap. Properly dispose of old and dirty fuel. (For Models 3VE48F, 3VE49F Only)
5. Reinstall Fuel Drain Bolt to Fuel tank and tighten firmly using 3/4" socket or adjustable wrench. (For Models 3VE50G, 3VE51G, 3VE52H only. See Figure 12)

Model 3VE48F



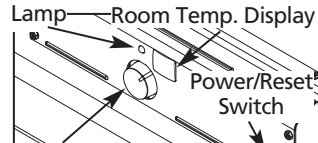
Power/Reset Switch

Model 3VE49F



Thermostat Control Knob

Model 3VE50G, 3VE51G, 3VE52H



Thermostat Control Knob

Figure 10 – Controls for All Models

For Technical Support or Troubleshooting, Call: 1-800-Grainger

Dayton® Portable Oil-Fired Heaters

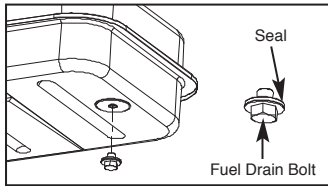


Figure 12 - Drain Bolt

6. Store heater in dry well ventilated area. Make sure storage place is free of dust and corrosive fumes.
7. Store the heater in the original box with the original packing material and keep the USER'S MANUAL with the heater.

- Make sure storage place is free of dust and corrosive fumes.
- Store the heater in the original box with the original packing material and keep USER'S MANUAL with heater.

Maintenance

▲ WARNING *Never service heater while it is plugged in or while hot!*

USE ORIGINAL EQUIPMENT REPLACEMENT PARTS. Use of third-party or other alternate components will void warranty and may cause unsafe operating conditions.

FUEL TANK

Flush every 200 hours of operation or as needed (See Long-term Storage, page 7).

AIR INTAKE FILTER

WASH AND DRY WITH SOAP AND WATER EVERY 500 HOURS OF OPERATION, OR AS NEEDED.

- Remove screws along each side of heater using medium Phillips screwdriver.
- Lift off upper shell.
- Remove fan guard.
- Wash or replace air intake filter.
- Reinstall fan guard and upper shell.

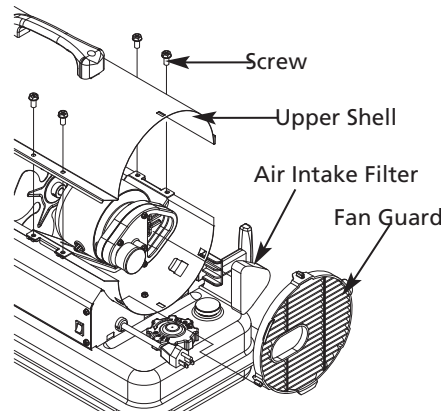


Figure 13 - Air Filter Access

AIR OUTPUT FILTER, LINT FILTER

REPLACE EVERY 500 HOURS OF OPERATION OR ONCE A YEAR

- Remove upper shell and fan guard (See Air Intake Filter Figure 14).
- Turn air pressure gauge counter-clockwise and remove.
- Remove end filter cover screws using medium Phillips screwdriver.
- Remove end filter cover.
- Replace air output and lint filter.
- Reinstall end filter cover and air pressure gauge.
- Reinstall fan guard and upper shell.

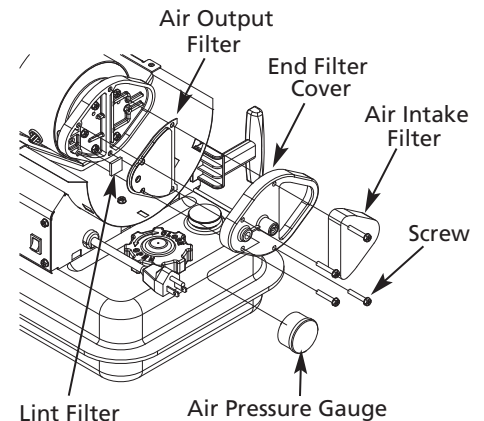


Figure 14 - Filter Assembly

FAN BLADES

CLEAN EVERY SEASON OR AS NEEDED

- Remove upper shell (See Air Intake Filter).
- Use M6 Allen wrench to loosen set screw which holds fan blade to motor shaft.
- Slip fan blade off motor shaft.
- Clean fan blade using soft cloth moistened with kerosene or solvent.
- Dry fan blade thoroughly.
- Reinstall fan blade to motor shaft.
- Place fan blade hub flush with end of motor shaft.

Models 3VE48F, 3VE49F, 3VE50G, 3VE51G and 3VE52H

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Maintenance (Continued)

- Place set screw on flat of shaft.
- Tighten screw firmly (40-50 inch-pounds/4.5-5.6 N-m). Reinstall upper shell.

NOZZLE

CLEAN NOZZLE AS NEEDED

(For Models 3VE48F, 3VE49F, 3VE50G and 3VE51G only)

- Remove upper shell (See Air Intake Filter, page 8).
- Remove fan blade (See Fan Blades).
- Remove fuel and air line hoses from nozzle adaptor.
- Remove ignitor wire from spark plug.
- Remove spark plug from nozzle adaptor using medium phillips screwdriver.
- Turn nozzle adaptor 1/9 turn(40°) to counter clock wise and pull toward motor to remove. (See Figure 14)
- Place plastic hex-body into vise and lightly tighten.
- Carefully remove nozzle from nozzle adaptor using 5/8" socket wrench.
- Blow compressed air through face of nozzle. (this will remove any dirt in nozzle)
- Reinstall nozzle into nozzle adaptor until nozzle seats.
- Tighten 1/3 turn more using 5/8" socket wrench. (40~45 inch-pounds)
- Reinstall nozzle adaptor to burner head.
- Reinstall spark plug to nozzle adaptor.
- Attach ignitor wire to spark plug.
- Attach fuel and air line hoses to nozzle adaptor.
- Reinstall fan blade and upper shell.

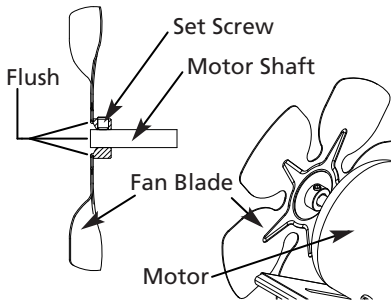


Figure 15 – Fan Assembly

(For Model 3VE52H only)

- Remove upper shell (See Air Intake Filter, page 8).
- Remove fan blade (See Fan Blades).
- Remove fuel and air line hoses from nozzle adaptor.
- Remove ignitor wire from spark plug.
- Remove spark plug from nozzle adaptor using medium phillips screwdriver.
- Turn nozzle adaptor 1/8 turn (45°) to counter clock wise and pull toward motor to remove. (See Figure 15)
- Place plastic hex-body into vise and lightly tighten.
- Carefully remove nozzle from nozzle adaptor using 5/8" socket wrench.
- Blow compressed air through face of nozzle. (this will remove any dirt in nozzle)
- Reinstall nozzle into nozzle adaptor until nozzle seats.
- Tighten 1/3 turn more using 5/8" socket wrench (40~45 inch-pounds)

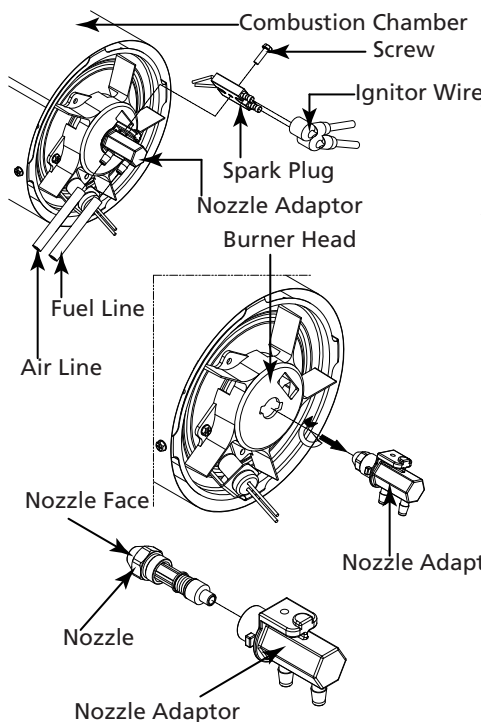


Figure 16 – Nozzle Replacement

- Reinstall nozzle adaptor to burner bracket
- Reinstall spark plug to nozzle adaptor.
- Attach ignitor wire to spark plug.
- Attach fuel and air line hoses to nozzle adaptor.
- Reinstall fan blade and upper shell.

SPARK PLUG

CLEAN AND REGAP EVERY 600 HOURS OF OPERATION OR REPLACE AS NEEDED.

(For Models 3VE48F, 3VE49F, 3VE50G and 3VE51G only)

- Remove upper shell (See Air Intake Filter, page 8).
- Remove fan (See Fan Blades).
- Remove ignitor wire from spark plug.
- Remove spark plug from nozzle adaptor using medium phillips screwdriver.
- Clean and regap spark plug electrodes to 3.5mm gap.(0.138")

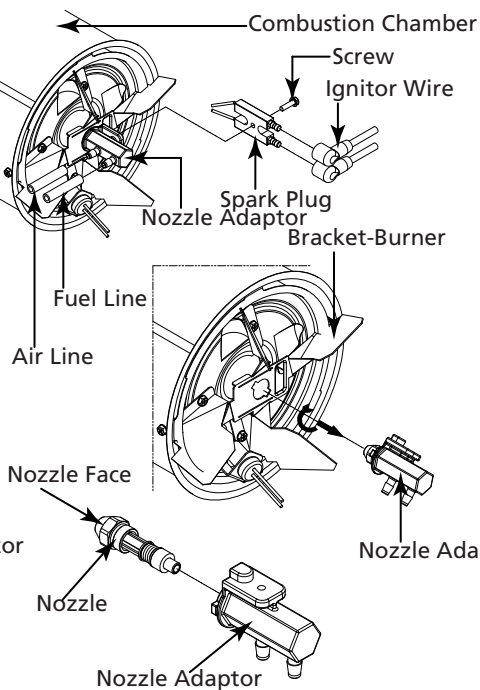


Figure 17 – Nozzle Replacement

For Technical Support or Troubleshooting, Call: 1-800-Grainger

Dayton® Portable Oil-Fired Heaters

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Maintenance (Continued)

- Reinstall spark plug to nozzle adaptor.
- Attach ignitor wire to spark plug.
- Reinstall fan and upper shell.

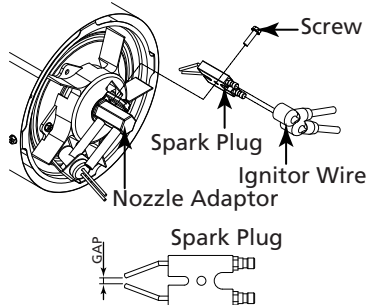


Figure 18 – Spark Plug Replacement

(For Model 3VE52H only)

- Remove upper shell (See Air Intake Filter, page 8).
- Remove fan (See Fan Blades).
- Remove ignitor wire from nozzle adaptor.
- Remove spark plug from nozzle adaptor using medium Phillips screwdriver.
- Clean and regap spark plug electrodes to 3.5mm gap.(0.138")
- Reinstall spark plug to nozzle adaptor.
- Attach ignitor wire to spark plug.
- Reinstall fan and upper shell.

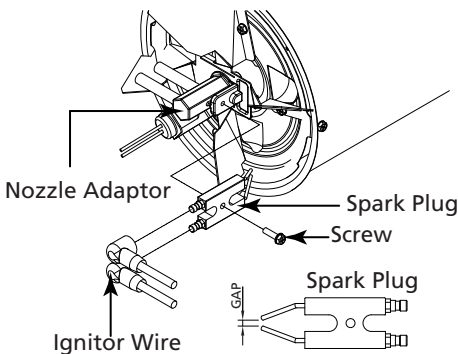


Figure 19 – Spark Plug Replacement

PHOTOCELL

CLEAN PHOTOCELL ANNUALLY OR AS NEEDED.

(For Model 3VE48F only)

- Remove upper shell (See Air Intake Filter, page 8).
- Remove fan (See Fan Blades).
- Remove photocell from its mounting bracket.
- Clean photocell lens with cotton swab.

TO REPLACE: Remove side cover near power switch.

- Disconnect wires from circuit board and remove photocell.
- Install new photocell and attach wires to circuit board.
- Reinstall fan and upper shell.

(For Model 3VE49F, 3VE50G, 3VE51G and 3VE52H only)

- Remove upper shell (See Air Intake Filter, page 8).
- Remove fan (See Fan Blades).
- Remove photocell from its mounting bracket.
- Clean photocell lens with cotton swab.

TO REPLACE: Remove side cover near power switch.

- Disconnect wires from power switch and remove side cover.
- Disconnect wires from circuit board and remove photocell.
- Install new photocell and attach wires to circuit board.
- Replace switch wires to power switch and side cover.
- Replace fan and upper shell.

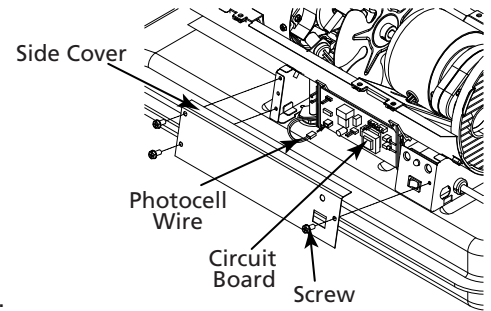


Figure 20 – Photocell Replacement for 3VE48F

FUEL FILTER

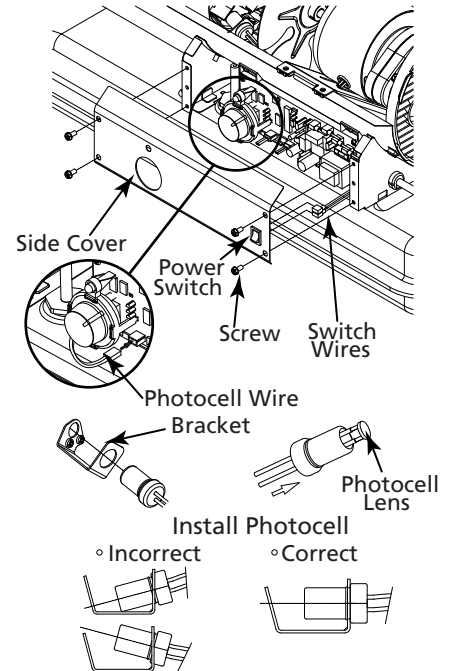


Figure 21 – Photocell Replacement for 3VE49F, 3VE50G, 3VE51G, 3VE52H

CLEAN OR REPLACE TWICE PER HEATING SEASON OR AS NEEDED.

(For Models 3VE48F, 3VE49F only)

- Remove side cover screws using medium Phillips screwdriver.
- Disconnect switch wires from power switch (3VE49F only) .

Models 3VE48F, 3VE49F, 3VE50G, 3VE51G and 3VE52H

Maintenance (Continued)

- Remove side cover.
- Pull fuel line off fuel filter neck.
- Turn fuel filter counterclockwise 90 degrees, pull, and remove.
- Wash fuel filter with clean fuel and replace in tank.
- Attach fuel line to fuel filter neck.
- Reinstall side cover.

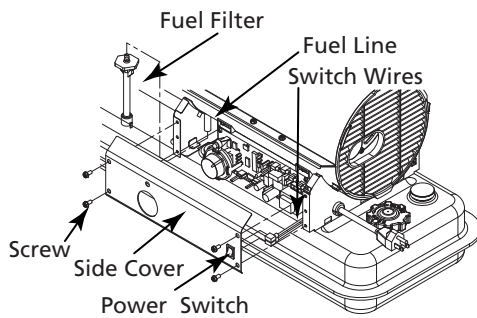


Figure 22 – Fuel Filter Replacement

(For Models 3VE50G, 3VE51G, 3VE52H only)

- Remove side cover screws using medium Phillips screwdriver.
- Disconnect switch wires from power switch and remove side cover.
- Pull fuel line off fuel filter neck.
- Turn fuel filter clockwise 90 degrees and pull to remove.
- Wash fuel filter with clean fuel and replace in tank.
- Attach fuel line to fuel filter neck.
- Reinstall side cover.

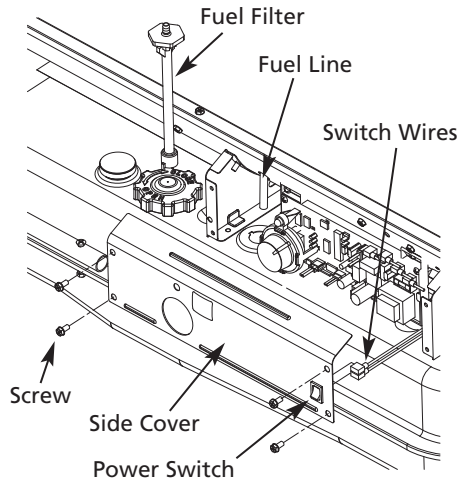


Figure 23 – Fuel Filter Replacement

PUMP PRESSURE ADJUSTMENT

- Start heater (See "Operation", page 7).
- Allow motor to reach full speed.
- Adjust pressure (using flat blade screwdriver).
- Turn relief valve clockwise to increase pressure.
- Turn relief valve counterclockwise to decrease pressure.
- Set pump pressure to correct pressure for each model.
- Stop heater (see "Operation", page 7).

Model	Pump Pressure
3VE48F	2.8 PSI
3VE49F	3.8 PSI
3VE50G	5.5 PSI
3VE51G	6.5 PSI
3VE52H	8.5 PSI

NOTE: USE ONLY ORIGINAL EQUIPMENT REPLACEMENT PARTS. Use of alternate or third party components will void warranty and may cause an unsafe operating condition.

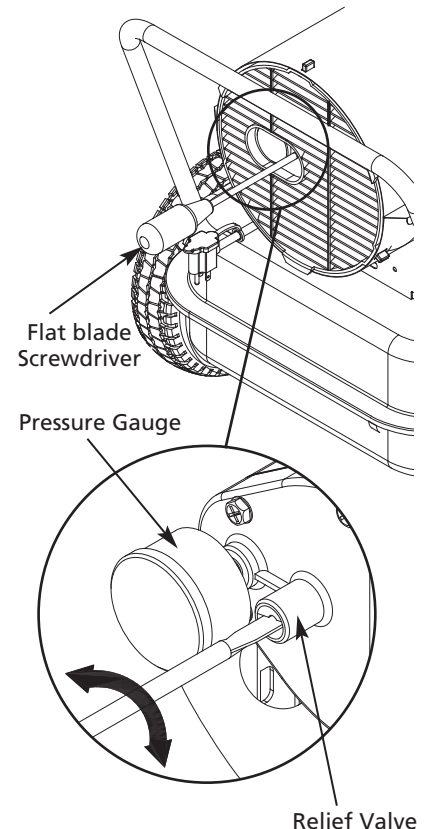


Figure 24 – Adjusting Pump Pressure

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Dayton® Portable Oil-Fired Heaters

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Maintenance (Continued)

REPLACING FUSE

NOTE: The heater is fuse protected. If your heater fails to ignite, DO NOT RETURN YOUR HEATER TO THE STORE.

Please follow the simple instructions below to inspect and change the fuse.

▲ WARNING **SHOCK HAZARD.** To prevent personal injury, unplug the power cord before replacing fuse.

- Unplug heater.
- Remove side cover screws using medium Phillips screwdriver.
- Disconnect switch wires from power switch (3VE49F, 3VE50G, 3VE51G and 3VE52H Models Only) .
- Remove fuse from fuse holder (See Figure 25).
- Replace fuse with enclosed fuse.

▲ WARNING **FIRE HAZARD.** To avoid fire, Do not substitute with a higher or lower current rating.

- Replace switch wires to power switch (3VE49F, 3VE50G, 3VE51G and 3VE52H Models Only).
- Replace side cover.

NOTE: Specified fuse rating: AC 125/8A

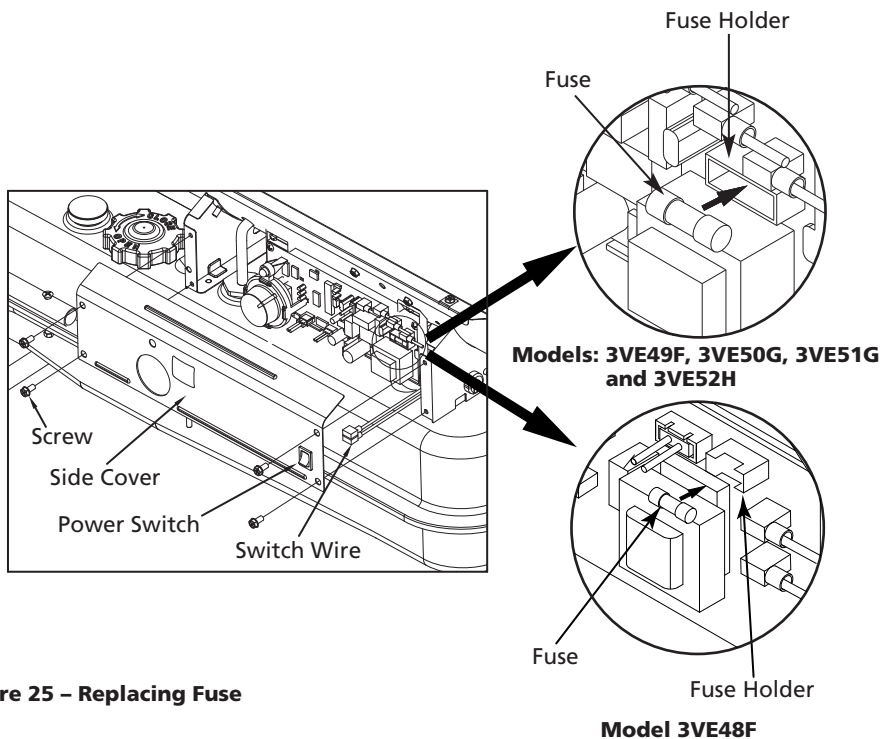


Figure 25 – Replacing Fuse

Models 3VE48F, 3VE49F, 3VE50G, 3VE51G and 3VE52H

Wiring Diagrams

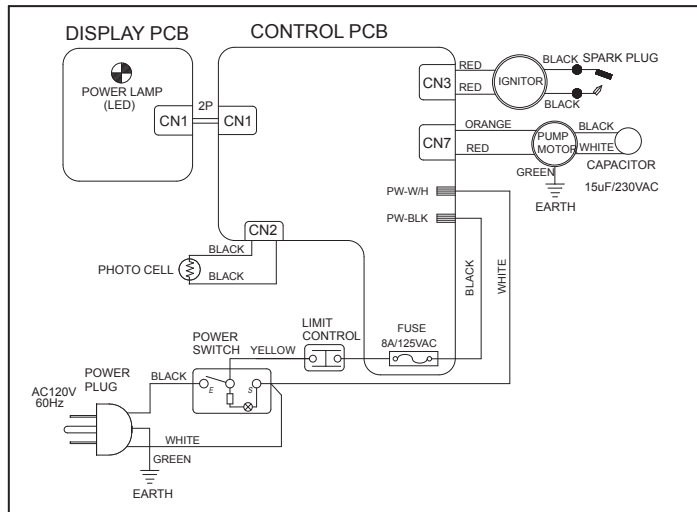


Figure 26 – Wiring Diagram Model 3VE48F

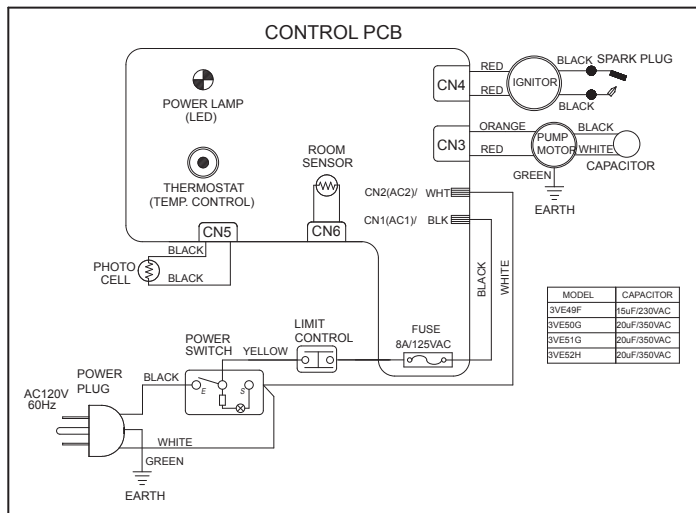


Figure 27 – Wiring Diagram Models 3VE49F, 3VE50G, 3VE51G and 3VE52H

ENGLISH

For Repair Parts, call 1-800-Grainger

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

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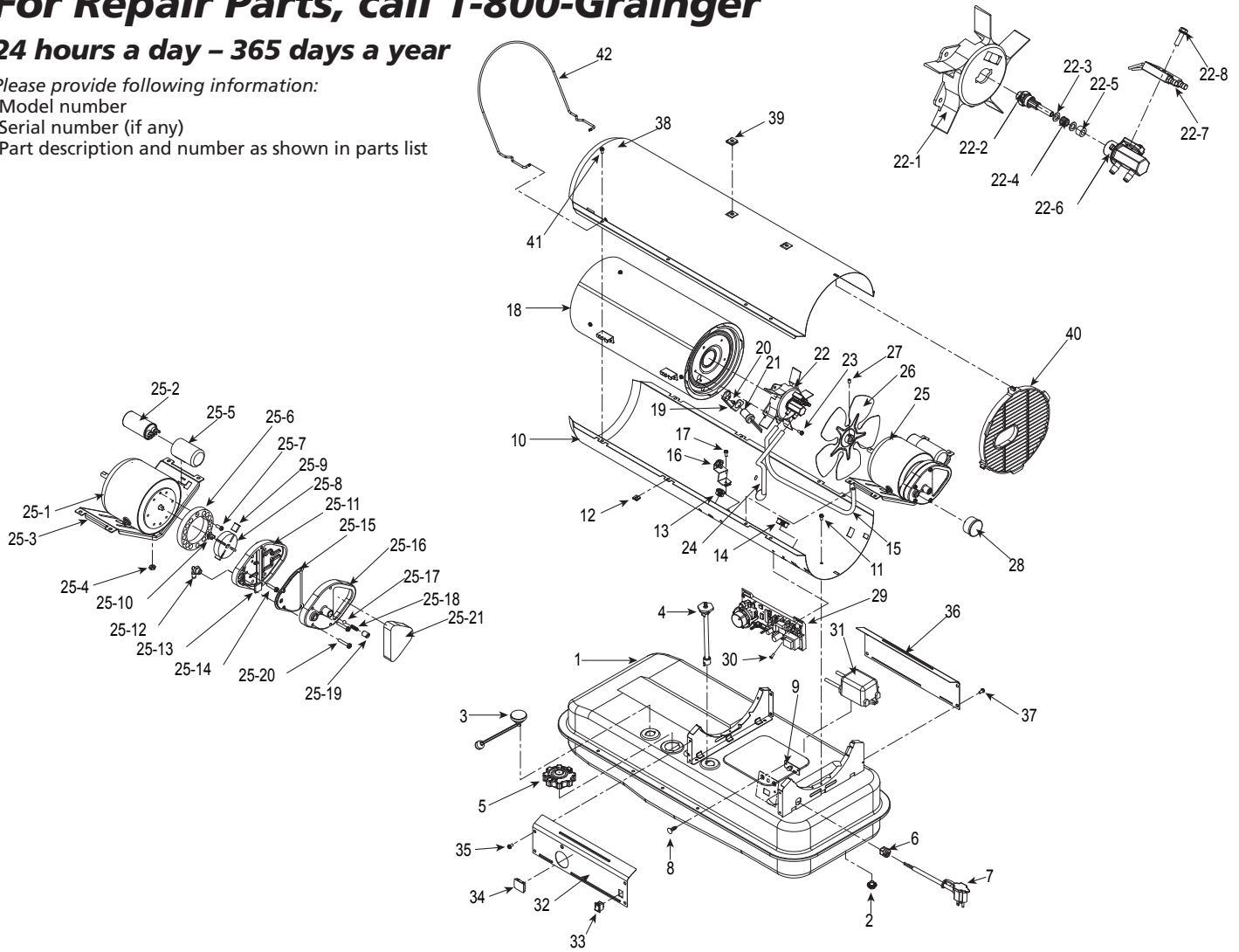


Figure 28 – Repair Parts Illustration for Portable Oil-Fired Heaters Models 3VE48F, 3VE49F, 3VE50G and 3VE51G

Repair Parts List for Portable Oil-Fired Heaters

Reference Number	Description	Part Number for Models:				Quantity
		3VE48F	3VE49F	3VE50G	3VE51G	
1	Fuel Tank Assmby	2151-0026-00	2151-0027-00	2151-0028-00	2151-0029-00	1
2	Fuel Drain-Bolt	-	-	4329-0072-00	4329-0072-00	1
3	Fuel Gauge	2156-0046-00	2156-0049-00	2156-0050-00	2156-0051-00	1
4	Fuel Filter Assmby	2155-0005-00	2155-0005-00	2155-0001-00	2155-0001-00	1
5	Fuel Cap	2151-0041-00	2151-0041-00	2151-0041-00	2151-0041-00	1
6	Cord Bushing	3712-0013-00	3712-0013-00	3712-0013-00	3712-0013-00	1
7	Power Cord	3980-0232-00	3980-0232-00	3980-0178-00	3980-0178-00	1
8	Button Support	3713-0048-00	-	-	-	2
9	Display P.C.B Assembly	215A-0013-00	-	-	-	1
10	Shell Lower	3111-0343-03	3111-0343-03	3111-0344-03	3111-0345-03	1
11	Flange Screw	4319-0015-00	4319-0015-00	4319-0015-00	4319-0015-00	4
12	Clip Nut	3131-0182-00	3131-0182-00	3131-0182-00	3131-0182-00	8
13	Bushing-Grommet(S)	3231-0120-00	3231-0120-00	3231-0120-00	3231-0120-00	1
14	Bushing-Grommet(L)	3231-0121-00	3231-0121-00	3231-0121-00	3231-0121-00	1
15	Air-Line	3341-0021-00	3341-0021-00	3341-0002-00	3341-0022-00	1
16	Temperature Limit Assembly	2153-0022-00	2153-0022-00	2153-0023-00	2153-0023-00	1
17	Flange-Screw	4319-0015-00	4319-0015-00	4319-0015-00	4319-0015-00	1
18	Chamber Assembly	2152-0151-00	2152-0152-00	2152-0153-00	2152-0154-00	1
19	Bracket Photocell	3131-0159-00	3131-0159-00	3131-0159-00	3131-0159-00	1

For Technical Support or Troubleshooting, Call: 1-800-Grainger

Models 3VE48F, 3VE49F, 3VE50G and 3VE51G

Repair Parts List for Portable Oil-Fired Heaters (Continued)

Reference Number	Description	Part Number for Models:				Quantity
		3VE48F	3VE49F	3VE50G	3VE51G	
20	Screw-BH1	4311-0068-00	4311-0068-00	4311-0068-00	4311-0068-00	2
21	Photocell Assembly	SP-KFA1007	SP-KFA1007	SP-KFA1007	SP-KFA1007	1
22	Burner Head Assembly	2152-0120-00	2152-0121-00	2152-0122-00	2152-0123-00	1
22-1	Burner Head	3531-0026-00	3531-0026-00	3531-0025-00	3531-0024-00	1
22-2	Nozzle*	SP-KFA1026	SP-KFA1027	SP-KFA1003	SP-KFA1004	1
22-3	Washer-Nozzle Seal	4349-0016-00	4349-0016-00	4349-0016-00	4349-0016-00	2
22-4	Spring-Nozzle Seal	3431-0010-00	3431-0010-00	3431-0010-00	3431-0010-00	1
22-5	O-Ring	3311-0002-00	3311-0002-00	3311-0002-00	3311-0002-00	1
22-6	Nozzle Adaptor	3231-0178-00	3231-0178-00	3231-0179-00	3231-0179-00	1
22-7	Spark Plug*	SP-KFA1008	SP-KFA1008	SP-KFA1009	SP-KFA1009	1
22-8	Bolt-Flange	4329-0079-00	4329-0079-00	4329-0079-00	4329-0079-00	1
23	Flange Screw	4319-0015-00	4319-0015-00	4319-0015-00	4319-0015-00	3
24	Fuel Line	3341-0024-00	3341-0024-00	3341-0025-00	3341-0025-00	1
25	Motor and Pump Assembly	2154-0078-00	2154-0078-00	2154-0079-00	2154-0080-00	1
25-1	Motor	3970-0210-00	3970-0210-00	3970-0211-00	3970-0212-00	1
25-2	Capacitor	3820-0257-00	3820-0257-00	3820-0258-00	3820-0258-00	1
25-3	Motor Support	3121-0481-00	3121-0481-00	3121-0482-00	3121-0482-00	1
25-4	Nut-Hex	4331-0022-00	4331-0022-00	4331-0022-00	4331-0022-00	2
25-5	Holder Capacitor	-	-	3231-0182-00	3231-0182-00	1
25-6	Pump Body	3541-0022-00	3541-0022-00	3541-0022-00	3541-0022-00	1
25-7	Bolt-BH Special	4321-0198-00	4321-0198-00	4321-0198-00	4321-0198-00	2
25-8	Rotor*	See SP-KFA1000 ¹	See SP-KFA1000 ¹	See SP-KFA1000 ¹	See SP-KFA1000 ¹	1
25-9	Blade*	See SP-KFA1000 ¹	See SP-KFA1000 ¹	See SP-KFA1000 ¹	See SP-KFA1000 ¹	4
25-10	Insert*	See SP-KFA1000 ¹	See SP-KFA1000 ¹	See SP-KFA1000 ¹	See SP-KFA1000 ¹	1
25-11	End Pump Cover	3531-0027-00	3531-0027-00	3531-0027-00	3531-0027-00	1
25-12	Elbow	3231-0181-00	3231-0181-00	3231-0181-00	3231-0181-00	1
25-13	Lint Filter*	See SP-KFA1005 ²	See SP-KFA1005 ²	See SP-KFA1005 ²	See SP-KFA1005 ²	1
25-14	Bolt Flange	4329-0016-00	4329-0016-00	4329-0016-00	4329-0081-00	6
25-15	Output Filter*	See SP-KFA1005 ²	See SP-KFA1005 ²	See SP-KFA1005 ²	See SP-KFA1005 ²	1
25-16	End Filter Cover	3221-0029-00	3221-0029-00	3221-0029-00	3221-0029-00	1
25-17	Ball	See SP-KFA1006 ³	See SP-KFA1006 ³	See SP-KFA1006 ³	See SP-KFA1006 ³	1
25-18	Spring	See SP-KFA1006 ³	See SP-KFA1006 ³	See SP-KFA1006 ³	See SP-KFA1006 ³	1
25-19	Adjusting Screw	See SP-KFA1006 ³	See SP-KFA1006 ³	See SP-KFA1006 ³	See SP-KFA1006 ³	1
25-20	Bolt Flange	4329-0016-00	4329-0016-00	4329-0016-00	4329-0016-00	4
25-21	Intake Filter*	See SP-KFA1005 ²	See SP-KFA1005 ²	See SP-KFA1005 ²	See SP-KFA1005 ²	1
26	Fan Assembly	2154-0009-00	2154-0009-00	2154-0004-00	2154-0007-00	1
27	Bolt Headless Hex Socket	4323-0004-00	4323-0004-00	4323-0004-00	4323-0004-00	1
28	Pressure Gauge	3740-0049-00	3740-0049-00	3740-0049-00	3740-0049-00	1
29	Main P.C.B Assembly	215A-0048-00	215A-0073-00	215A-0074-00	215A-0074-00	1
30	Screw-TH2S	4312-0046-00	4312-0046-00	4312-0046-00	4312-0046-00	2
31	Ignitor	39E0-0071-00	39E0-0071-00	39E0-0071-00	39E0-0071-00	1
32	Side Cover-Right	3121-0496-12	3121-0497-19	3121-0498-14	3121-0499-25	1
33	Power Switch	39A0-0153-00	39A0-0153-00	39A0-0153-00	39A0-0153-00	1
34	Window Display	-	-	3231-0113-00	3231-0113-00	1
35	Flange Screw	4319-0015-00	4319-0015-00	4319-0015-00	4319-0015-00	4
36	Side Cover-Left	3121-0190-00	3121-0350-00	3121-0504-00	3121-0506-00	1
37	Flange Screw	4319-0015-00	4319-0015-00	4319-0015-00	4319-0015-00	4
38	Shell Upper	3111-0347-03	3111-0347-03	3111-0348-03	3111-0349-03	1
39	Clip Nut	3131-0182-00	3131-0182-00	-	-	2
40	Fan Guard	3221-0050-00	3221-0050-00	3221-0051-00	3561-0058-01	1
41	Flange Screw	4319-0015-00	4319-0015-00	4319-0015-00	4319-0015-00	8
42	Front Guard	3561-0066-00	3561-0066-00	-	-	1
	Tune Up Kit	21EX25	21EX26	21EX27	21EX28	

(*) Parts included in tune-up kit.

Reference Number	Description	Part Number for Models:				Quantity
		3VE48F	3VE49F	3VE50G	3VE51G	
1	Rotor kit	SP-KFA1000	SP-KFA1000	SP-KFA1000	SP-KFA1000	1
2	Filter kit	SP-KFA1005	SP-KFA1005	SP-KFA1005	SP-KFA1005	1
3	Plug/Pump adjuster kit	SP-KFA1006	SP-KFA1006	SP-KFA1006	SP-KFA1006	1

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Please provide following information:

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

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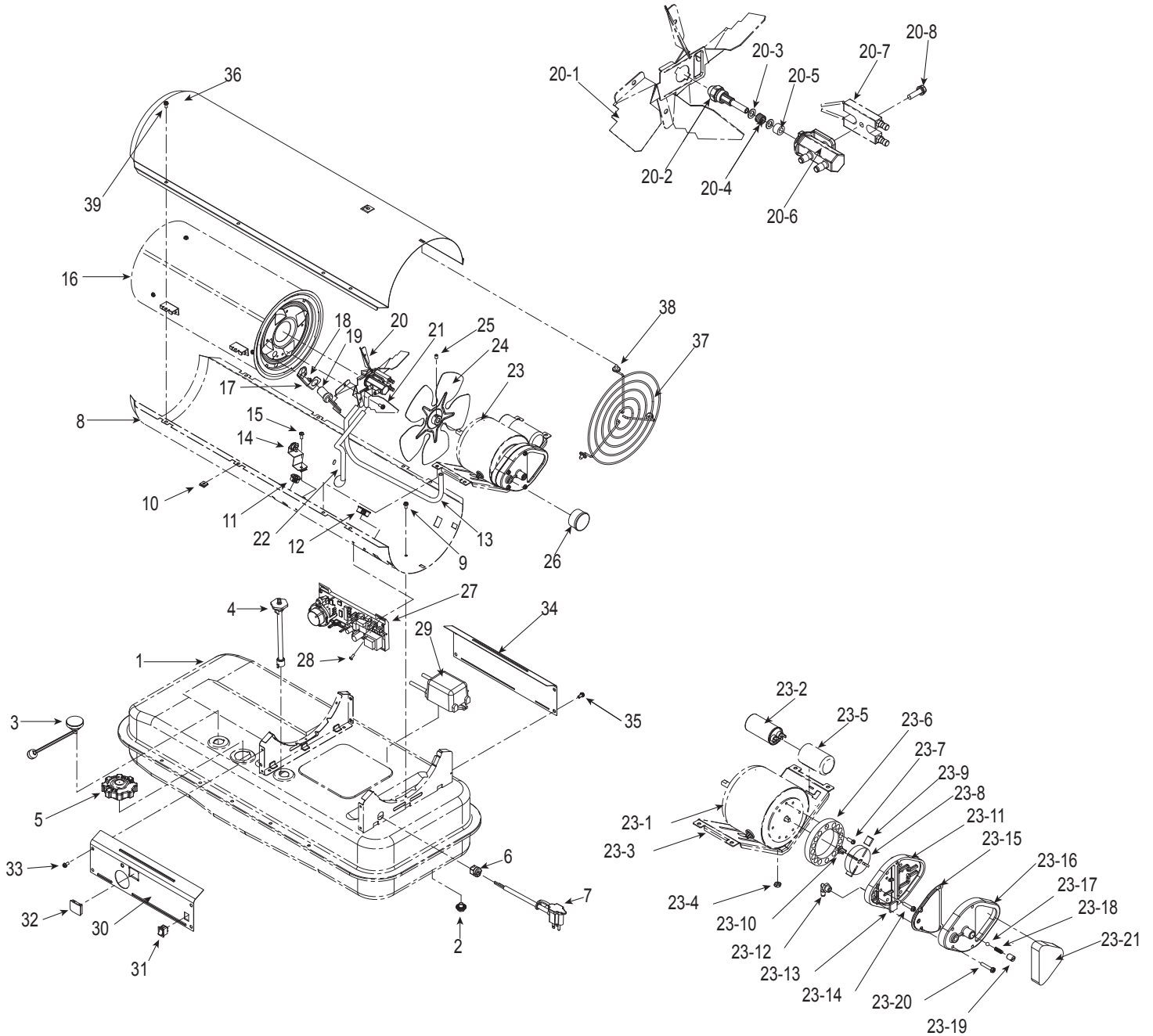


Figure 29 – Repair Parts Illustration for Portable Oil-Fired Heater (Model 3VE52H)

For Technical Support or Troubleshooting, Call: 1-800-Grainger

Model 3VE52H

Repair Parts List for Portable Oil-Fired Heater (Model 3VE52H)

Ref. No.	Description	Part No.	Qty.	Ref. No.	Description	Part No.	Qty.
1	Fuel Tank Assmebly	2151-0029-00	1	23-5	Holder Capacitor	3231-0182-00	1
2	Fuel Drain-Bolt	4329-0072-00	1	23-6	Pump Body	3541-0050-00	1
3	Fuel Gauge	2156-0052-00	1	23-7	Bolt-BH Special	4321-0198-00	2
4	Fuel Filter Assmby	2155-0001-00	1	23-8	Rotor*	See SP-KFA1022 ¹	1
5	Fuel Cap	2151-0041-00	1	23-9	Blade*	See SP-KFA1022 ¹	4
6	Cord Bushing	3712-0013-00	1	23-10	Insert*	See SP-KFA1022 ¹	1
7	Power Cord	3980-0178-00	1	23-11	End Pump Cover	3531-0027-00	1
8	Shell Lower	3111-0346-03	1	23-12	Elbow	3231-0181-00	1
9	Flange Screw	4319-0015-00	4	23-13	Lint Filter*	See SP-KFA1005 ²	1
10	Clip Nut	3131-0182-00	8	23-14	Bolt Flange	4329-0016-00	6
11	Bushing-Grommet(S)	3231-0120-00	1	23-15	Output Filter*	See SP-KFA1005 ²	1
12	Bushing-Grommet(L)	3231-0121-00	1	23-16	End Filter Cover	3221-0029-00	1
13	Air-Line	3341-0002-00	1	23-17	Ball	See SP-KFA1006 ³	1
14	Temperature Limit Assembly	2153-0024-00	1	23-18	Spring	See SP-KFA1006 ³	1
15	Flange-Screw	4319-0015-00	1	23-19	Adjusting Screw	See SP-KFA1006 ³	1
16	Chamber Assembly	2152-0119-00	1	23-20	Bolt Flange	4329-0016-00	4
17	Bracket Photocell	3131-0159-00	1	23-21	Intake Filter*	See SP-KFA1005 ²	1
18	Screw-BH1	4311-0068-00	2	24	Fan Assembly	2154-0007-00	1
19	Photocell Assembly	SP-KFA1007	1	25	Bolt Headless Hex Socket	4323-0004-00	1
20	Burner Head Assembly	2152-0124-00	1	26	Pressure Gauge	3740-0049-00	1
20-1	Bracket Burner	3121-0477-00	1	27	Main P.C.B Assembly	215A-0074-00	1
20-2	Nozzle*	SP-KFA1011	1	28	Screw-TH2S	4312-0046-00	2
20-3	Washer-Nozzle Seal	4349-0016-00	1	29	Ignitor	39E0-0071-00	1
20-4	Spring-Nozzle Seal	3431-0010-00	1	30	Side Cover-Right	3121-0499-07	1
20-5	O-Ring	3311-0002-00	1	31	Power Switch	39A0-0153-00	1
20-6	Nozzle Adaptor	3231-0180-00	1	32	Window Display	3231-0113-00	1
20-7	Spark Plug*	SP-KFA1021	1	33	Flange Screw	4319-0015-00	4
20-8	Bolt-Flange	4329-0079-00	1	34	Side Cover-Left	3121-0506-00	1
21	Flange Screw	4319-0015-00	4	35	Flange Screw	4319-0015-00	4
22	Fuel Line	3341-0019-00	1	36	Shell Upper	3111-0350-03	1
23	Motor and Pump Assembly	2154-0081-00	1	37	Fan Guard	3561-0058-01	1
23-1	Motor	3970-0213-00	1	38	Bushing Fan Guard	3351-0010-00	3
23-2	Capacitor	3820-0258-00	1	39	Flange Screw	4319-0015-00	8
23-3	Supportor Motor	3121-0482-00	1		Tune Up Kit	21EX29	
23-4	Nut-Hex	4331-0022-00	2				

(*) Parts included in tune-up kit.

Ref. No.	Description	Part No.	Qty.
1	Rotor kit	SP-KFA1022	1
2	Filter kit	SP-KFA1005	1
3	Plug/Pump adjuster kit	SP-KFA1006	1

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Please provide following information:

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

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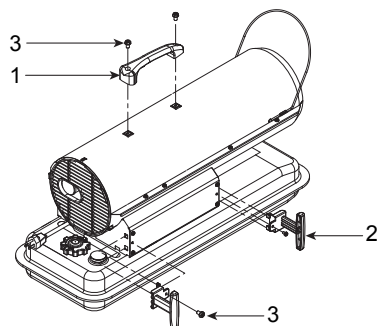


Figure 30 – Repair Parts Illustration for Models 3VE48F, 3VE49F

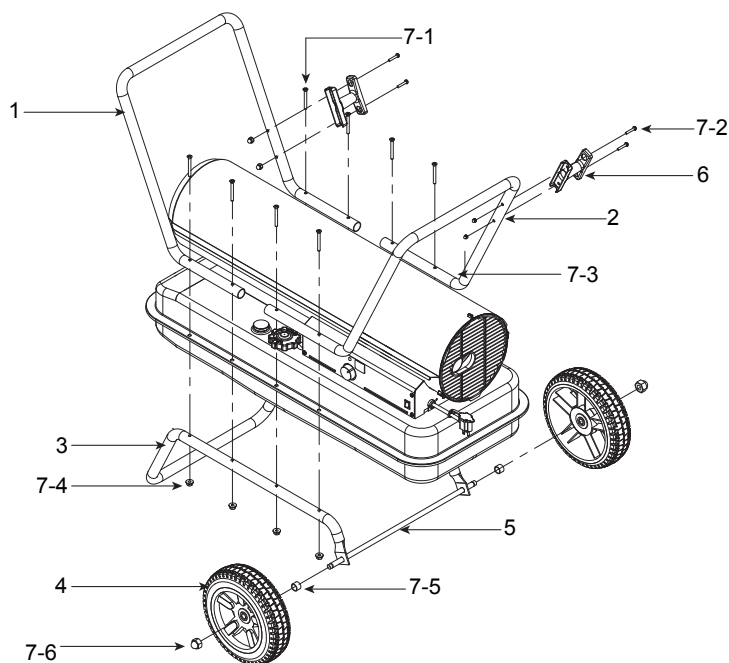


Figure 31 – Repair Parts Illustration for Models 3VE50G, 3VE51G, 3VE52H

Replacement Parts List for Models 3VE48F, 3VE49F

Ref. No.	Description	Part No.	Qty.
1	Handle	3231-0073-00	1
2	Cord Wrap	3221-0041-00	2
3	Hardware Kit	HW KFA1001	1

Replacement Parts List for Models 3VE50G, 3VE51G, 3VE52H

Ref. No.	Description	Part No. for Models:		Qty.
		3VE50G	3VE51G/ 3VE52H	
1	Front Handle	3551-0104-00	3551-0112-00	1
2	Rear Handle	3551-0105-00	3551-0113-00	1
3	Wheel Support Frame	3551-0111-00	3551-0114-00	1
4	Wheel	3720-0017-00	3720-0017-00	2
5	Threaded Axle	3551-0088-00	3551-0089-00	1
6	Cord Wrap	3221-0088-00	3221-0088-00	2
7	Hardware Kit	HW-KFA1021	HW-KFA1021	1
7-1	Screw	INCLUDED IN HARDWARE KIT	INCLUDED IN HARDWARE KIT	8
7-2	Flange Screw	INCLUDED IN HARDWARE KIT	INCLUDED IN HARDWARE KIT	4
7-3	Cap Nut S	INCLUDED IN HARDWARE KIT	INCLUDED IN HARDWARE KIT	4
7-4	Nut	INCLUDED IN HARDWARE KIT	INCLUDED IN HARDWARE KIT	8
7-5	Bushing	INCLUDED IN HARDWARE KIT	INCLUDED IN HARDWARE KIT	2
7-6	Cap Nut L	INCLUDED IN HARDWARE KIT	INCLUDED IN HARDWARE KIT	2

Models 3VE48F, 3VE49F, 3VE50G, 3VE51G and 3VE52H

Troubleshooting Chart

Symptom	Possible Cause(s)	Corrective Action
Heater ignites but MAIN PCB assembly shuts heater off after a short period of time. (Indicator Lamp is flickering and room temp. display indicates "E1")	<ol style="list-style-type: none"> 1. Wrong pump pressure 2. Dirty Air Output, Air Intake or Lint Filter 3. Dirty Fuel Filter 4. Dirt in Nozzle 5. Dirt Photocell Lens 6. Photocell Assembly not Properly Installed (not seeing the flame) 7. Bad electrical connection between photocell and MAIN PCB Assembly 8. Defective photocell 	<ol style="list-style-type: none"> 1. See Pump Pressure Adjustment, page 11 2. See Air Output, Air Intake and Lint Filters, page 8 3. See Fuel Filter, page 11 4. See Nozzle, page 9 5. Clean Photocell Lens, page 10 6. Make sure photocell boot is properly seated in bracket, Page 10 7. Check electrical components. See Wiring Diagrams, page 13 8. Replace Photocell, page 10
Heater will not ignite but motor runs for a short period of time. (Indicator Lamp is flickering and room temp. display indicates "E1")	<ol style="list-style-type: none"> 1. No fuel in tank 2. Wrong pump pressure 3. Carbon deposits on spark plug and/or improper gap 4. Dirty fuel filter 5. Dirt in Nozzle 6. Water in fuel tank 7. Bad electrical connection between igniter and MAIN PCB Assembly 8. Igniter wire is not attached to spark plug 	<ol style="list-style-type: none"> 1. Fill tank with kerosene 2. See Pump Pressure Adjustment, page 11 3. See Spark Plug, page 9 4. See Fuel Filter, page 11 5. See Nozzle, page 9 6. Flush fuel tank with clean kerosene, page 7 7. Check electrical components. See Wiring Diagram, page 13 8. Attach igniter to spark plug. See Spark Plug, page 9
Fan does not turn when heater is plugged in and power switch was in the "ON" position. (Indicator Lamp is on or flickering)	<ol style="list-style-type: none"> 1. Thermostat setting is too low 2. Bad electrical connection between motor and MAIN PCB Assembly 	<ol style="list-style-type: none"> 1. Turn thermostat control knob to a higher setting 2. Check electrical connections. See Wiring Diagram, page 13
(Indicator Lamp is flickering and room temp. display indicates "E2")	<ol style="list-style-type: none"> 1. Sensor Failure 	<ol style="list-style-type: none"> 1. Replace sensor. See Wiring Diagram, page 13
(Indicator Lamp is flickering and room temp. display indicates "E3")	<ol style="list-style-type: none"> 1. Thermostat switch failure 	<ol style="list-style-type: none"> 1. Replace switch. See Wiring Diagram, page 13
Heater will not turn-on (Indicator Lamp is off)	<ol style="list-style-type: none"> 1. Temperature limit safety device is overheated 2. No electrical power 3. Blown fuse 4. Bad electrical connection between temperature limit safety device and PCB board 	<ol style="list-style-type: none"> 1. Turn power switch to "OFF" and allow to cool (about 10 min.) 2. Check to insure heater cord and extension cord are plugged in. Check power supply 3. Replace safety fuse in PCB board. See Replacing Fuse, page 12 4. Check electrical connections. See Wiring Diagrams, page 13

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Dayton® Portable Oil-Fired Heaters

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