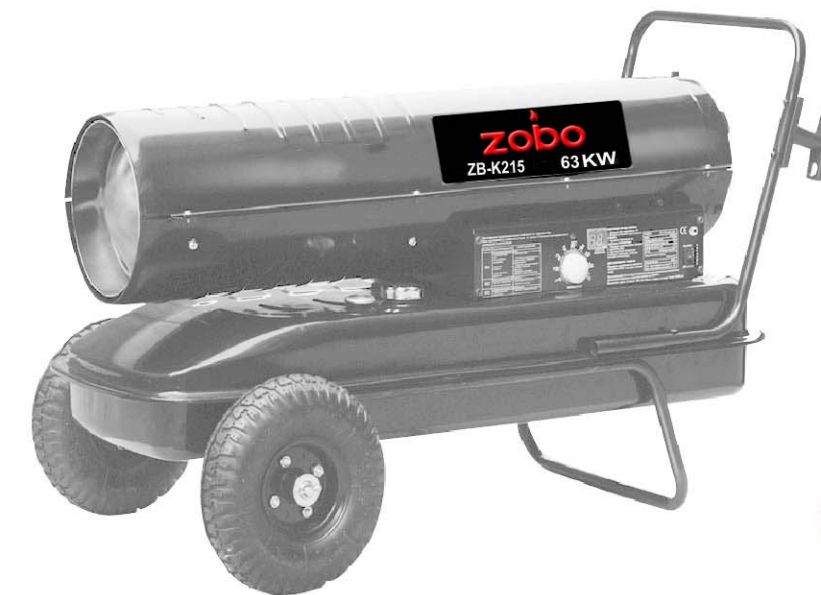


Model #s: ZB-K45, ZB-K70
ZB-K125, ZB-K175, ZB-K215



CONSUMER: Retain this manual for future reference.

IMPORTANT: Read and understand all of the directions in this manual before assembling, starting, or servicing the heater. Improper use of this heater can cause serious injury. Keep this manual for future reference.

▲ DANGER GENERAL HAZARD WARNING:

Be sure to comply with the instructions and warnings provided with this heater, or death, serious bodily injury and property loss, damage from the hazards of fire, explosion, burn, asphyxiation, and carbon monoxide poisoning can result. Only persons who can follow and understand these instructions should use or service this heater. If you need heater information such as an instruction manual, labels, etcetera, contact the manufacturer.

▲ DANGER NOT FOR USE IN NON-ADEQUATELY VENTILED ENCLOSED SPACES.

NEVER LEAVE HEATER UNATTENDED WHILE BURNING OR WHILE CONNECTED TO A POWER SOURCE

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TECHNOLOGY

Kerosene
Forced Air Heaters

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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.

This is a kerosene, direct-fired, forced air heater. It is primarily intended for use for temporary heating of buildings under construction, alteration or repair. Direct-fired means that all of the combustion products of the heater enter the heated space. This appliance is rated at 98% combustion efficiency, but does produce small amounts of carbon monoxide. Carbon monoxide is toxic.

▲ DANGER Carbon Monoxide poisoning may lead to death!

Humans can tolerate small amounts of carbon monoxide, and precautions should be taken to provide proper ventilation. Failure to provide proper ventilation according to this manual can result in death. Early signs of carbon monoxide poisoning resemble the flu. Symptoms of improper ventilation are:

- * headache * dizziness * burning of the nose and eyes
- * nausea * dry mouth * sore throat

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 or #2 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 or #2 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 29KW(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.

▲ 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).

▲ WARNING Fire, burn, inhalation, and explosion hazard. Keep combustibles, such as building materials, paper or cardboard, a safe distance away from the heater as recommended by these instructions. Never use the heater in spaces which contain products such as gasoline, solvents, paint thinners, dust particles, volatile or airborne combustibles, or any unknown chemicals. This is an unvented portable heater. It uses air (oxygen) from the area in which it is used. Adequate combustion and ventilation air must be provided. Refer to VENTILATION on Page 7.

▲ WARNING Do not operate this heater until you have read, and thoroughly understand these safety and operating instruction. Failure to comply with the precautions and instructions provided with this heater can result in death, serious bodily injury, property loss or damage from the hazards of fire, soot production, explosion, burns, asphyxiation or carbon monoxide poisoning. Only persons who can read and understand these instructions should use or service this heater. Not for use in homes or recreational vehicles.

▲ WARNING Electrical Safety It is the responsibility of the owner to check this electrical product before use to ensure it is safe. You must inspect power cables, plugs, sockets etc for signs of wear or damage. You must ensure the risk of electric shock is minimised by the installation of appropriate safety devices. A residual current circuit breaker (RCCB) should be incorporated in the main distribution board. We also recommend a residual current device is used (RCD). An RCD is particularly important for mobile devices that are connected to a supply without an RCCB. Any fault rectification or electrical work including the connection of a plug must be carried out by a qualified electrician.

You must also comply with electrical safety requirements including the Electricity at Work Act 1989 which requires portable electrical appliances used on business premises be PAT tested annually. The Health & Safety at Work Act 1974 places responsibility for safe condition of electrical appliances upon owners. Power cables and plugs should always be regularly inspected for safety. If in doubt about electrical safety you must consult a qualified electrician.

NEVER LEAVE HEATER UNATTENDED WHILE BURNING OR WHILE CONNECTED TO A POWER SOURCE

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Kerosene
Forced Air Heaters

Safety Information (Continued)

- 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.
- 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.
- 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.
- 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.

- Never use this heater in living or sleeping areas.
- NEVER use this heater where flammable vapors may be present.

▲ 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.

Minimum clearance from Combustibles:

	ZB-K45	ZB-K70	ZB-K125	ZB-K175	ZB-K215
Top	4 ft.	4 ft.	4 ft.	4 ft.	4 ft.
Sides	4 ft.	4 ft.	4 ft.	4 ft.	4 ft.
Front	8 ft.	8 ft.	8 ft.	8 ft.	8 ft.

Features

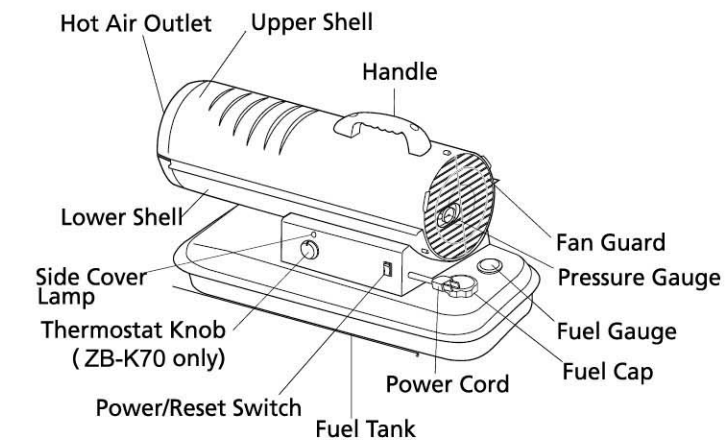


Figure 1. Features of Models ZB-K45/ZB-K70

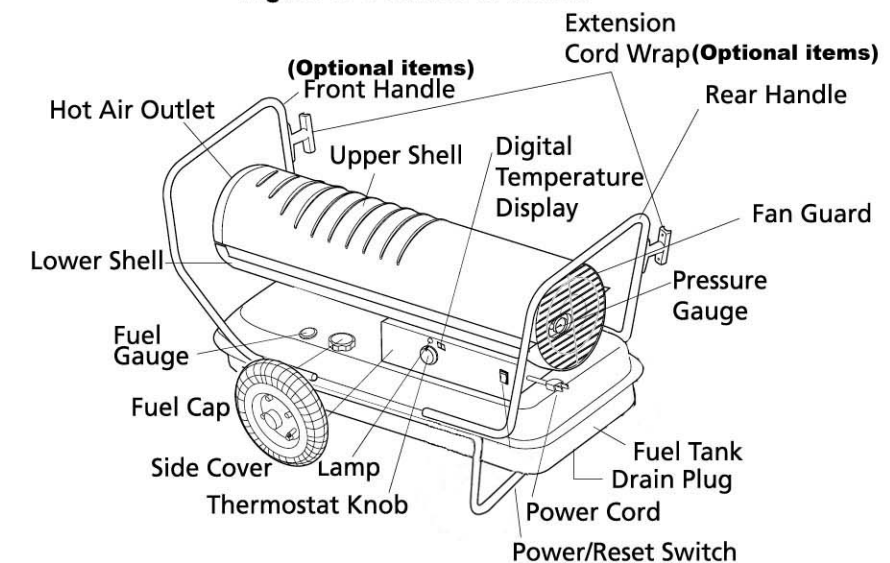


Figure 2. Features of Model ZB-K125 / ZB-K175 / ZB-K215

42*28 cm

NEVER LEAVE HEATER
UNATTENDED WHILE BURN-
ING OR WHILE CONNECTED
TO A POWER SOURCE

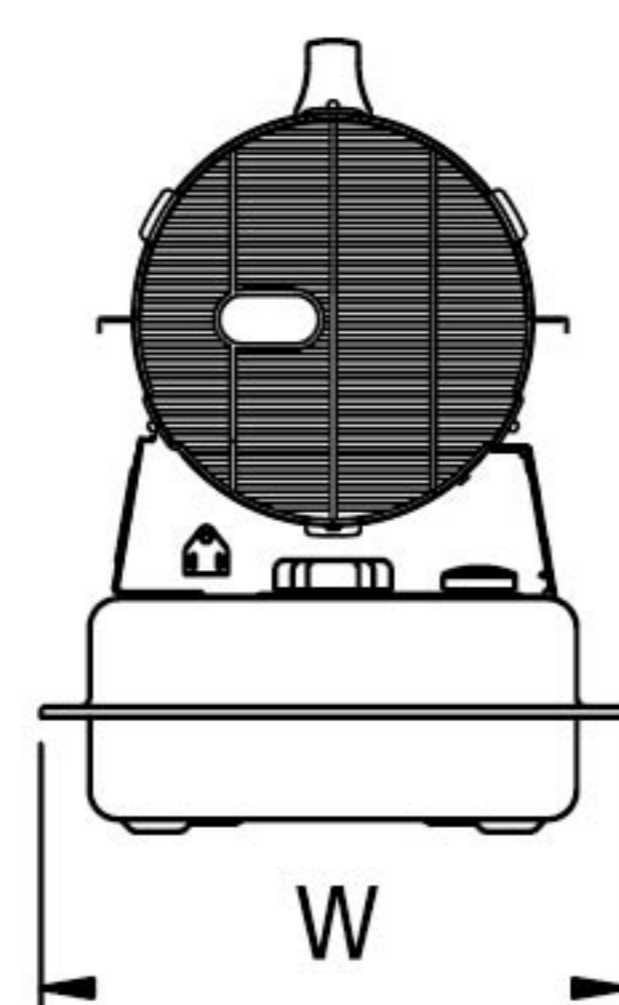
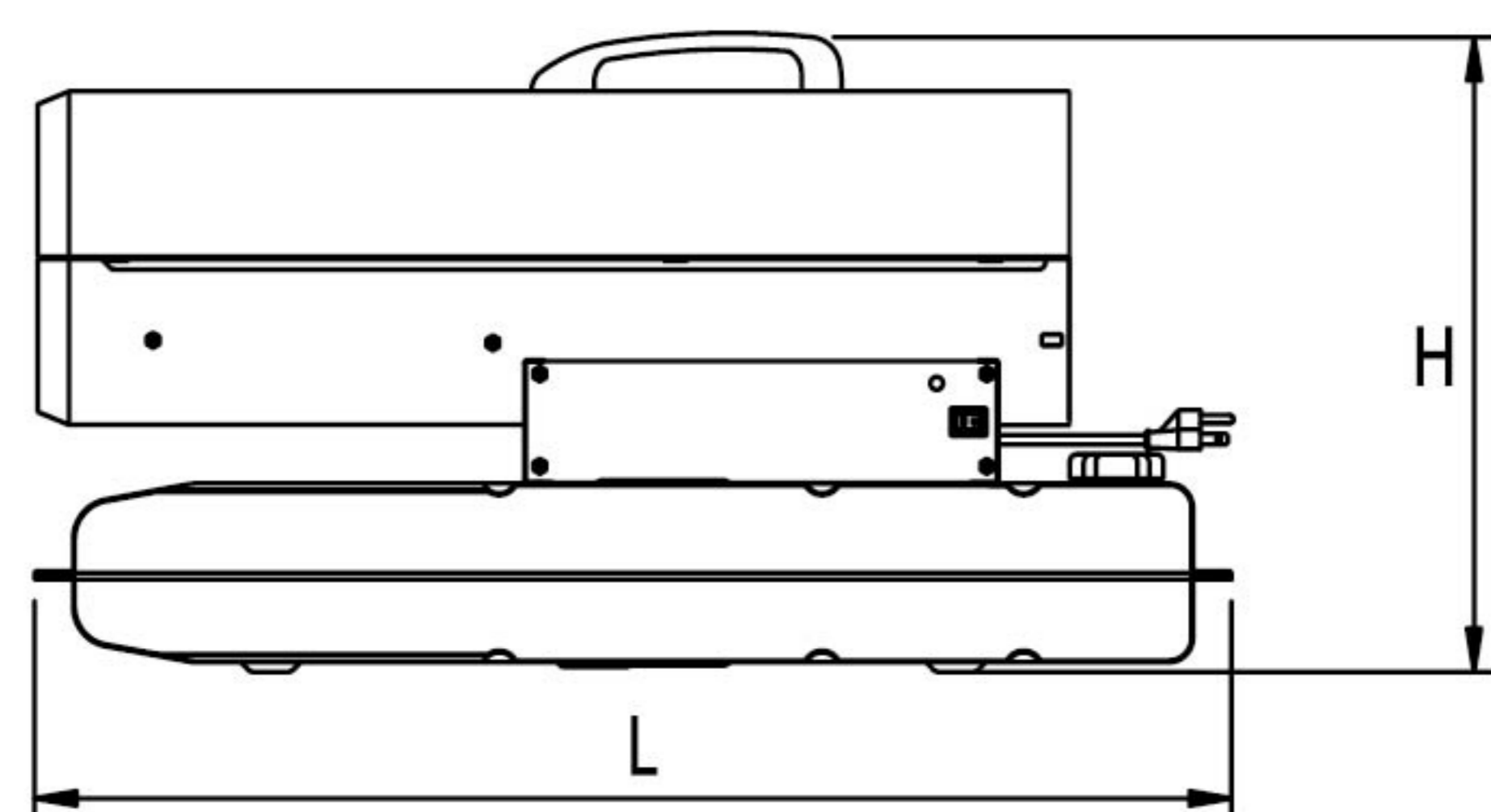
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Kerosene
Forced Air Heaters

Specifications

Model #	ZB-K45	ZB-K70	ZB-K125	ZB-K175	ZB-K215
Rating KW(BTU/Hr)	13KW(45.000)	20KW(70.000)	37KW(125.000)	51KW(175.000)	63KW(215.000)
Fuel Consumption L(Gal)	1.29(0.34)	2.01(0.53)	3.60(0.95)	5.00(1.32)	6.13(1.62)
Fuel Tank Capacity L(Gal)	19(5)	19(5)	38(10)	51(13.5)	51(13.5)
Pump Pressure Kpa(Psi)	20.7(3)	27.6(4)	34.5(5)	51.8(7.5)	62.1(9)
POWER SUPPLY V/Hz/A	220-240/50/5	220-240/50/5	220-240/50/5	220-240/50/5	220-240/50/5
Phase	Single	Single	Single	Single	Single
Size (L x W x H)	31" x 11" x 16"	31" x 11" x 16"	42" x 21" x 25"	43" x 24" x 25"	43" x 24" x 25"
Net Weight (Lbs)	28	28	51	58	60

Specifications subject to change without notice



ZB-K45 / 70	
H	16"
L	31"
W	11"

ZB-K125	
H	25"
L	42"
W	21"

ZB-K175 ZB-K215	
H	25"
L	43"
W	24"

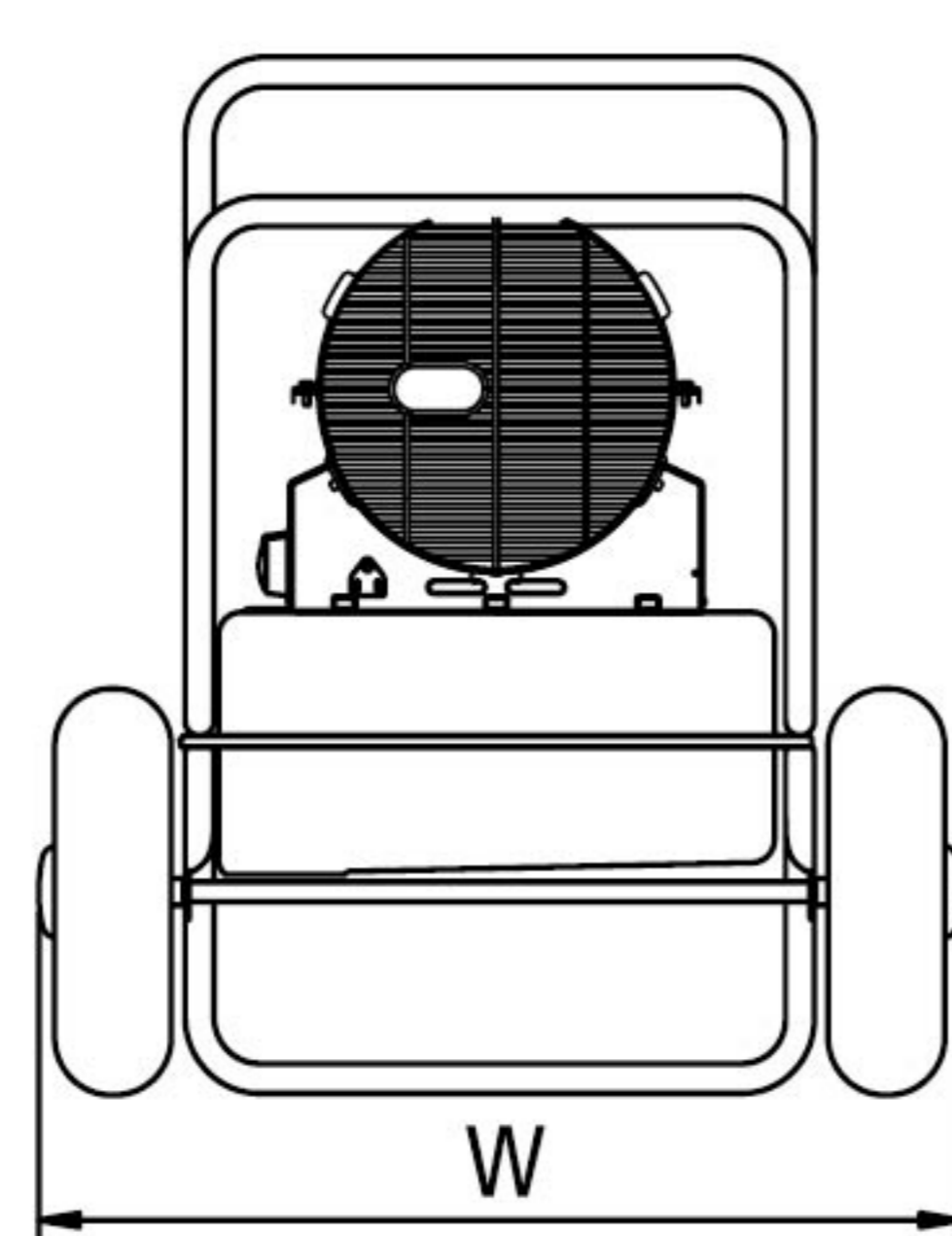
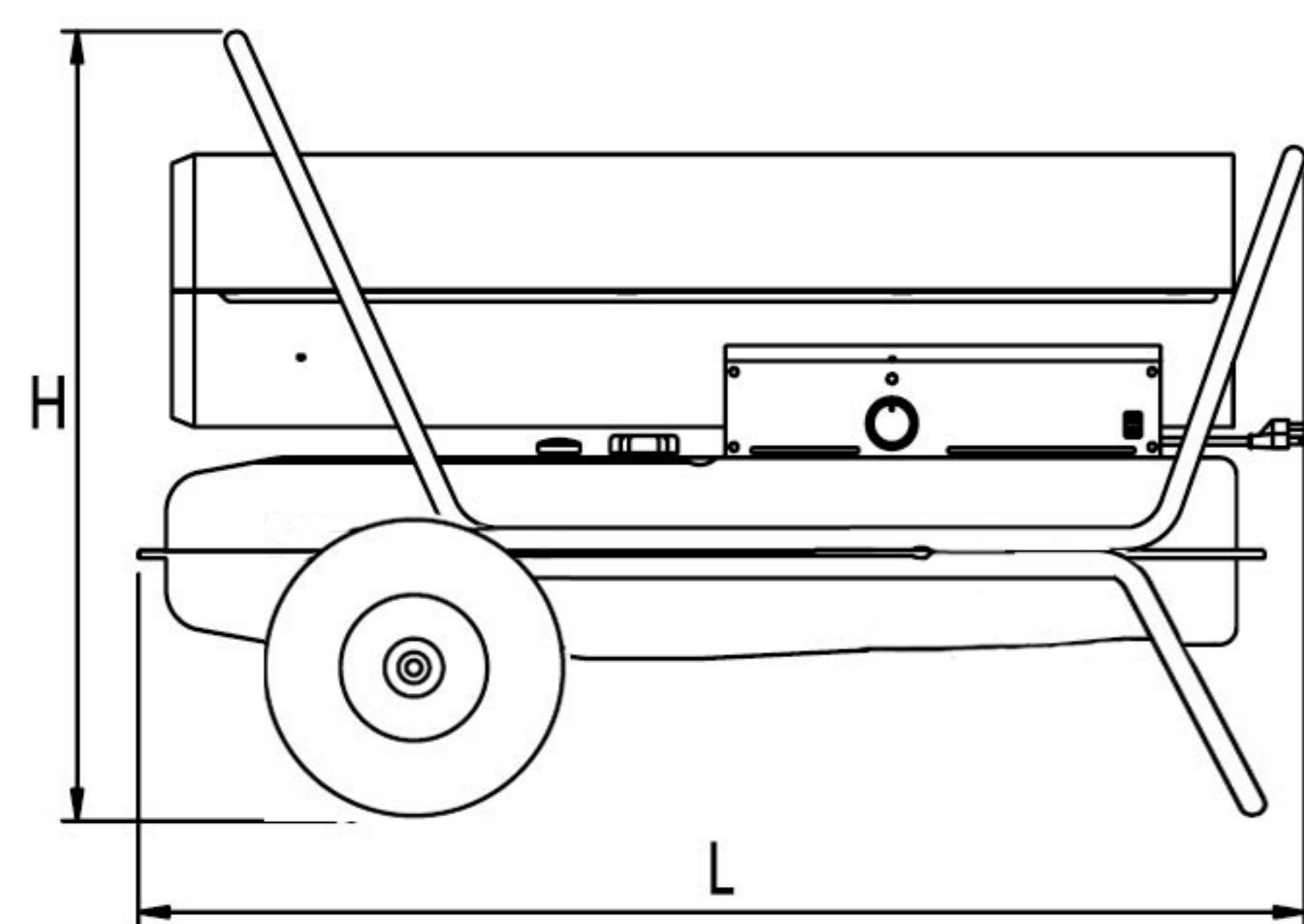


Figure 3. Product Dimensions

42*28 cm

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Kerosene
Forced Air Heaters

Unpacking

Remove the heater and all of the packaging materials from the shipping carton.

NOTE: Save the box and packaging materials for future storage.

Check the chart below to be sure that you have all of the parts required to assembly your heater.

Assembly

	ZB-K45	ZB-K70	ZB-K125	ZB-K175	ZB-K215
Wheel support frame	NO	NO	YES	YES	YES
Wheel (2 pieces)	NO	NO	YES	YES	YES
Rear Handle	NO	NO	YES	YES	YES
Axle	NO	NO	YES	YES	YES
Top Handle	YES	YES	NO	NO	NO
Screws & Nuts (A) 8 each	NO	NO	YES	YES	YES
Screws & Nuts (B) 4 each	YES	YES	NO	NO	NO
Cotter Pins, Bushings, Washers (L & S)	NO	NO	YES	YES	YES

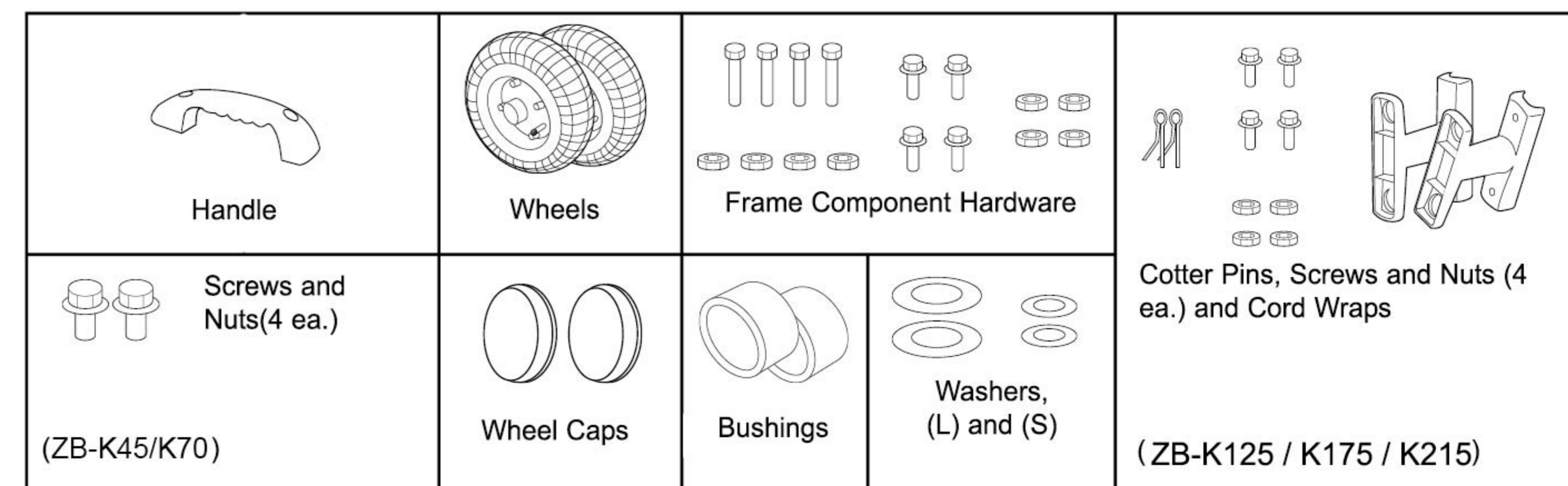


Figure 4. Hardware Components

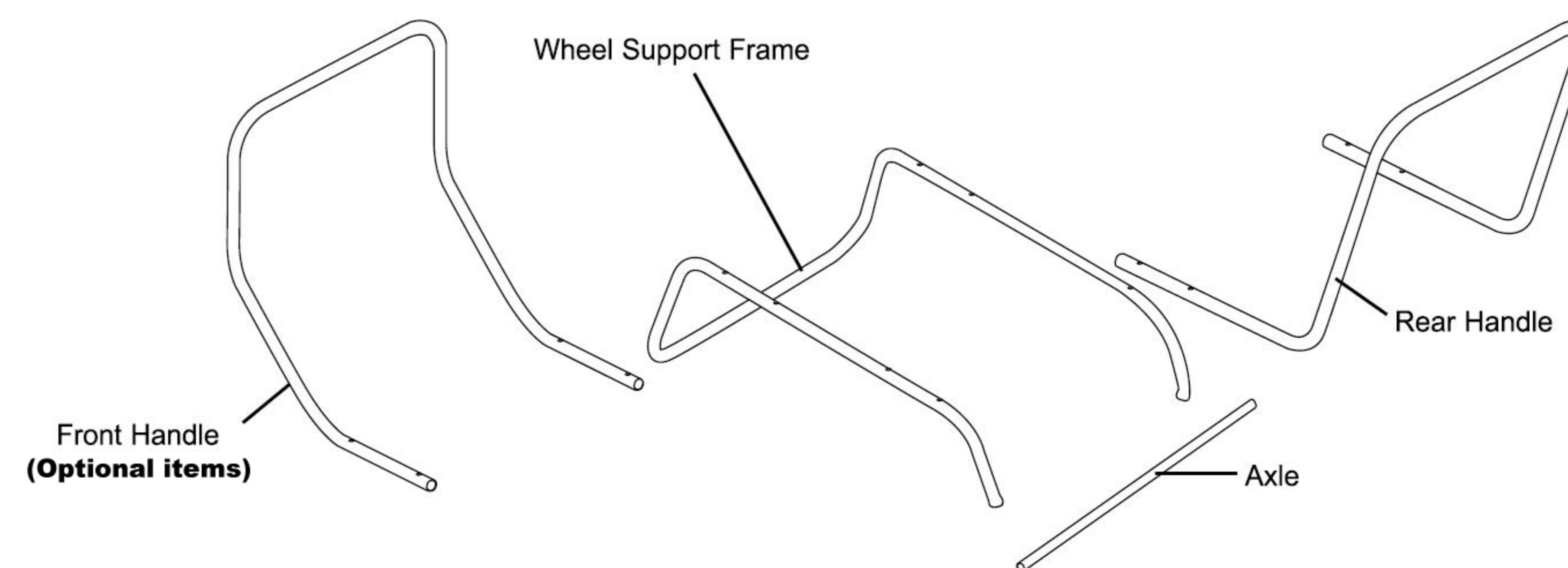


Figure 5. Frame components, Models ZB-K125 / K175 / K215

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Kerosene
Forced Air Heaters

Assembly Continued)

MODELS ZB-K45/ZB-K70 ONLY

- **Tools required:** Medium phillips screw driver.

ASSEMBLING HANDLE

1. Align the holes in the upper housing with the 2 holes in the handle as shown in **Figure 6**.
2. Insert and tighten screws securely with screw driver.

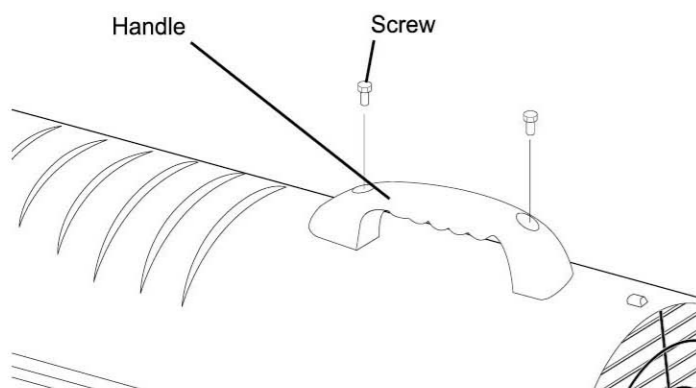


Figure 6. Handle Mounting, Models ZB-K45/K70

ASSEMBLING CORDWRAP

1. Insert tabs on cordwrap into slots in shell support, lining up the holes on the cordwrap with those on the side cover.
2. Insert and tighten screws securely with screw driver.

MODELS ZB-K125/K175/K215 ONLY

- **Tools required:** Medium phillips screw driver, 5/16" open end or adjustable wrench, needle nose pliers.

ASSEMBLING FRAME AND WHEELS

1. Slide axle through holes in wheel support frame. Slide wheel bushings and flat washer (A) on to each end of axle.
2. Slide wheels on to each axle, being sure that the valve stem (if pneumatic) is to the outside (see **Figure 7**).
3. Slide flat washers (B) onto axle past the small hole. Insert cotter pin in axle hole and bent legs of pin with needle nose pliers to secure.
4. Snap the wheel caps onto the large washers (B).
5. Place heater on the assembled frame, making sure that the air inlet end is by the wheels, and the mounting holes on the tank flange of the heater align with holes in frame.
6. Take the front handle and align the mounting holes with the corresponding holes in the tank flange/wheel frame. Slide a screw (A) through the holes and loosely attach a nut. Repeat for the other 3 holes, then fully tighten all 4 screws and nuts.
7. Repeat this process with the rear handle.

NOTE: The front handle is longer than the rear handle.

ASSEMBLING CORDWRAP

1. Align holes in cordwrap with corresponding holes in front handle. Insert screws (B) through holes, attach nuts and tighten (see **Figure 7**).
2. Repeat this process with the rear handle.

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

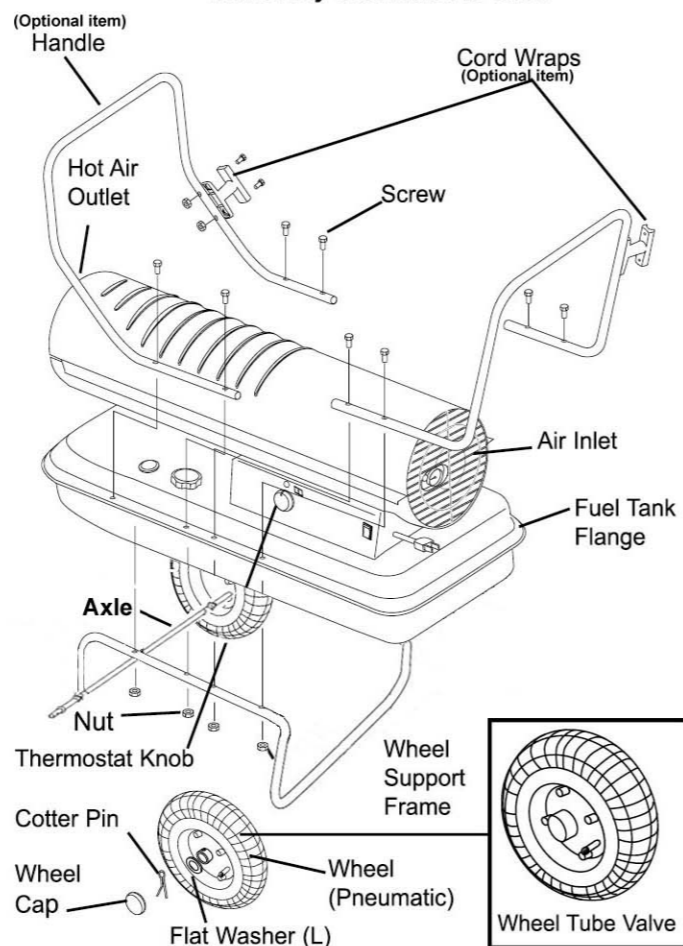


Figure 7. Assembly of Models ZB-K125 / K175 / K215

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 or #2 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. **Using diesel fuel can cause excess soot production.** DO NOT use any fuel that is not approved above.

NEVER LEAVE HEATER UNATTENDED WHILE BURNING OR WHILE CONNECTED TO A POWER SOURCE

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Kerosene
Forced Air Heaters

Operation (Continued)

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.

THEORY OF OPERATION

Fuel System: This heater is equipped with an air pump that operates off of the electric motor. The pump forces air through the air line connected to the fuel tank, drawing fuel to the nozzle in the burner head. Air also passes through the nozzle where it mixes with the fuel and is sprayed into the combustion chamber in a fine mist.

Quick-Fire Ignition: A transformer sends high voltage to a two pronged spark plug. The spark ignites the fuel/air mixture as it is sprayed into the combustion chamber.

Air System: A fan is turned by the heavy duty motor, which forces air around and into the combustion chamber, where it is super-heated and forced out the front of the chamber.

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.

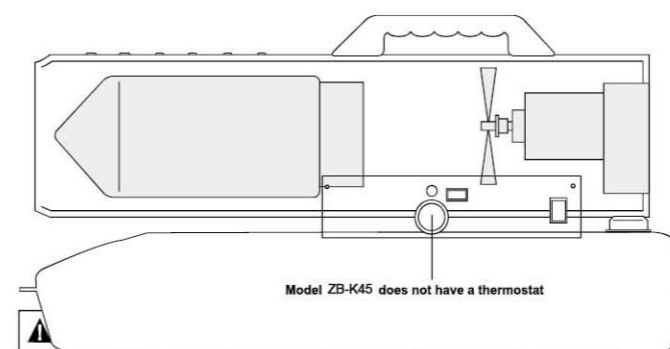


Figure 8. ZB-K45

Electrical System Protection: The heaters' electrical system is protected by a circuit breaker that protects the system components from damage. If the heater fails, check the fuse first, and replace if necessary.

Flame Sensor: The heater uses a photocell to "see" the flame in the combustion chamber. Should the flame extinguish, the sensor will stop electrical current and the heater will shut off.

FUELING THE HEATER

CAUTION NEVER FILL THE FUEL TANK INDOORS. ALWAYS FILL THE TANK OUTDOORS. BE SURE THAT THE HEATER IS ON LEVEL GROUND WHEN FUELING, AND NEVER OVERFILL THE FUEL TANK.

WARNING NEVER REFUEL THIS HEATER WHILE IT IS HOT OR OPERATING. FIRE OR EXPLOSION COULD RESULT.

It is always a good idea to fire the heater outdoors for the first time. This will allow any oils used in the manufacturing process to be burned off in a safe environment. This initial burn should last at least 10 minutes

VENTILATION

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

Always provide a fresh air opening in the heated space of at least three square feet (2,800 sq. cm) for each 29KW (100,000 BTU/Hr.) of heater output. Provide a larger opening if more heaters are being used. As an example, an ZB-K215 heater will require:

- a two-car garage door open 15.24cm (6 inches) or
- a single car garage open 22.86cm (9 inches) or
- TWO,81cm(32 inch)wide windows open 38.1cm(15 inch).

TO START THE HEATER

1. Fill the tank with kerosene until fuel gauge points to "F".
2. Be sure fuel cap is secure.
3. Plug power cord into three prong, grounded extension cord and plug extension cord into three prong 220-240V grounded outlet. The extension cord should be at least six feet long.

- Extension cord wire size requirements are as follows:

- 6 to 10 feet (1.8 to 3 meters), use 18 AWG wire.
- 11 to 100 feet (3.4 to 30.4 meters), use 16 AWG wire.
- 101 to 200 feet (30.8 to 61 meters), use 14 AWG wire.

4. Turn thermostat control knob to desired temperature setting (70/125/175/215 only). The setting range is from 40° F to 110° F. Push the Power switch to the "ON" position (See figure 9). The power indicator lamp and room temperature display (125/175/215 only) will light and the heater will start.

NOTE: The room temperature display (125/175/215 only) will indicate the following:

- When temperature is less than 0° F, display says "LO".

42*28 cm

NEVER LEAVE HEATER UNATTENDED WHILE BURNING OR WHILE CONNECTED TO A POWER SOURCE

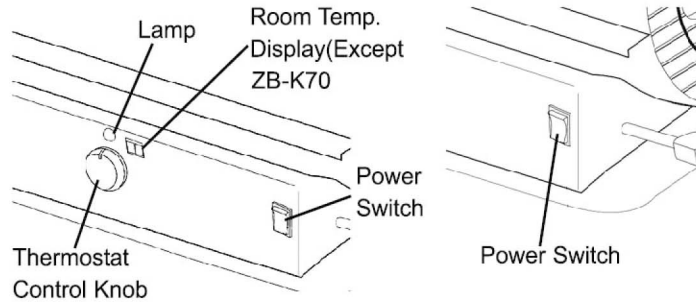
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**Kerosene
Forced Air Heaters**

Operation (Continued)

If the heater does not fire, the thermostat may be set too low. Turn the Control Knob to a higher setting until heater fires. If the heater still does not start, push Power Switch to "OFF", then back to "ON". If heater still does not fire, see Troubleshooting Guide on Page 15.

NOTE: The electrical components of this heater are protected by a fuse mounted in the PC board. If the heater fails to fire, check this fuse first, and replace if necessary. Also check the power source to be sure that the proper voltage is being provided to the heater.



Models ZB-K70 / K125 / K175 / K215 **Model ZB-K45**
Figure 9. Control Panel for all Models

TO STOP THE HEATER

Simply turn the Power switch to "OFF" position and unplug the Power Cord.

TO RESTART THE HEATER

1. Wait ten seconds after shutting off heater.
2. Turn the Power Switch to "ON" position.
3. Be sure to follow all starting procedure precautions.

ELECTRICAL OUTLET

⚠ WARNING Shock Hazard!

- Never plug in an appliance with more than a 5 amp rating into this outlet.
- Always keep outlet covered when not in use.

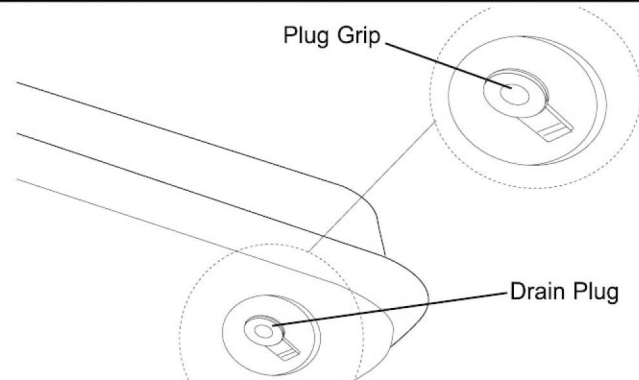


Figure 10. Drain Plug Removal

**LONG TERM STORAGE
Drain Fuel Tank**

- For models ZB-K45 / K70 drain fuel through the fuel cap opening using an approved siphon. For models ZB-K125/K175/K215 drain fuel through the Drain Plug at the bottom of the Fuel Tank.
2. To remove the Drain Plug (125/175/215), pull the Plug Grip downward and remove seal head from drain hole in tank (See Figure 10).
 3. Using a small amount of kerosene, rinse and swirl the kerosene inside of the Fuel Tank. Empty the tank fully.
 4. To replace, push the drain head fully into the drain hole and secure by pushing the seal cap fully into the head hole (See Figure 11).

IMPORTANT: Never store leftover kerosene over the summer. Using old fuel can damage your heater.

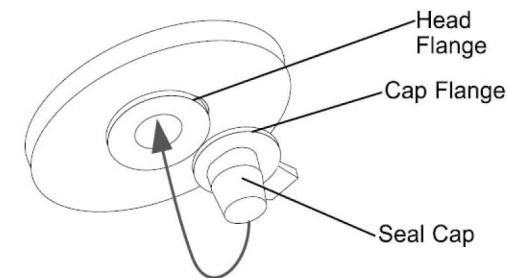
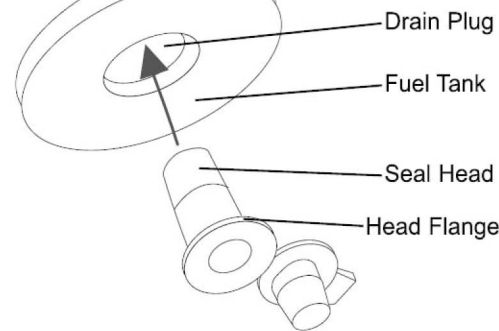


Figure 11. Drain Plug Reinstall

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**Kerosene
Forced Air Heaters**

Store heater in a dry, well-ventilated area

Be sure that the storage area is free of dust and corrosive vapors. Repack the heater in the original shipping material. Keep the Users Manual in an easily accessible place.

Maintenance

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

Use only original equipment replacement parts. The use of alternate or third party components can cause unsafe operating conditions, and will void your warranty.

We suggest following a maintenance schedule as follows:

FUEL/FUEL TANK:

Flush every 200 hours of operation or as needed. Do not use water to flush the tank. Use fresh 1-K kerosene only.

AIR FILTERS:

The *Air Intake Filter* should be replaced or washed with soap and water and dried thoroughly every 500 hours of operation, or less, depending on conditions.

The *Output and Lint Filters* should be replaced every 500 hours of operation or less, depending on conditions.

NOTE: Use of diesel may require additional maintenance.

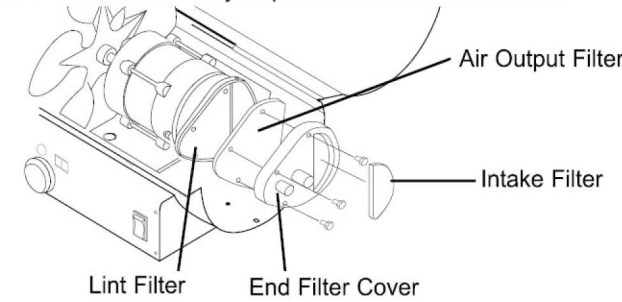


Figure 12. Filter Replacement

FAN BLADES:

Blades should be cleaned at least once per heating season, depending on conditions. Remove all accumulated dust and dirt with a damp cloth, taking care not to bend any of the fan blades. Be sure fan blades are dry before re-starting the heater. For Fan removal, see **Figure 13.**

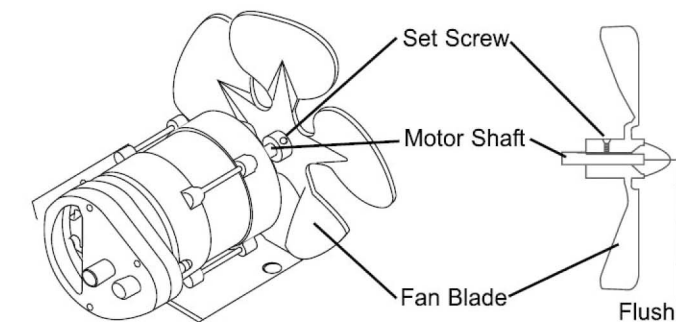


Figure 13. Fan Replacement

NOZZLES:

Nozzles should be cleaned or replaced at least once per heating season. Contaminated fuel could make this necessary immediately.

To clean dirt from nozzle, blow compressed air through nozzle front. It may be necessary to soak nozzle in clean 1-K kerosene to help loosen any particles.

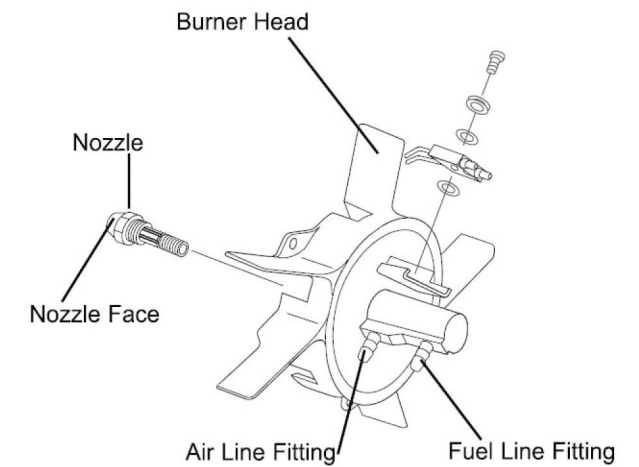
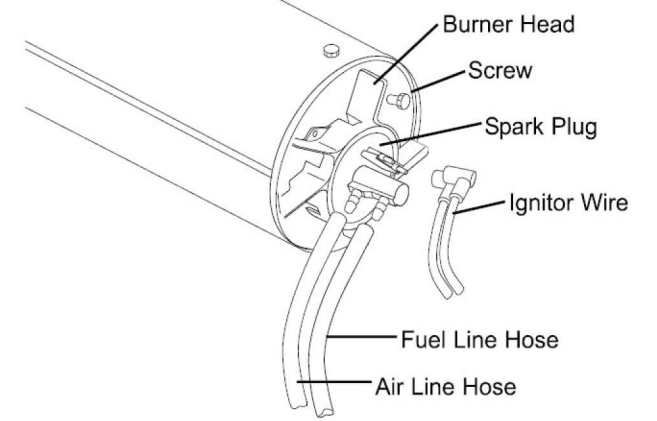


Figure 14. Nozzle Replacement

NOTE: Use of diesel may require additional maintenance. Using this heater without proper maintenance or with contaminated or old fuel may lead to improper combustion and possible soot production. **BE SURE FUEL USED IS APPROVED** (see OPERATION on page 6).

NEVER LEAVE HEATER UNATTENDED WHILE BURNING OR WHILE CONNECTED TO A POWER SOURCE

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**Kerosene
Forced Air Heaters**

Maintenance (Continued)

SPARK PLUG:

Clean and re-gap every 600 hours of operation, or replace as needed. After removing the Spark Plug, clean the terminals with a wire brush. Re-gap the terminals to 0.140" (3.5mm).

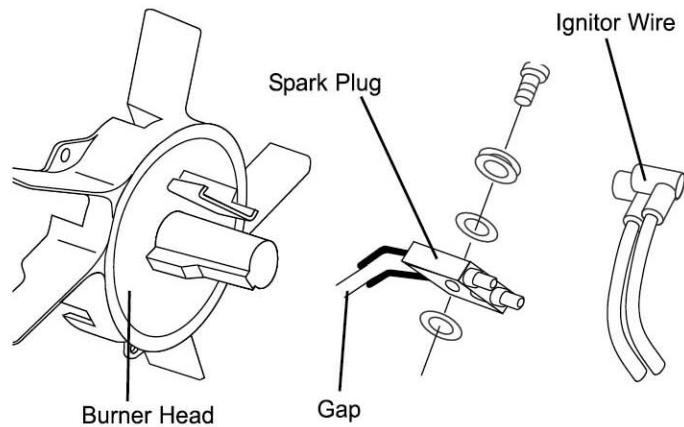


Figure 15. Spark Plug Replacement

PHOTOCELL:

The Photocell should be cleaned at least once per heating season or more depending on conditions. Use a cotton swap dipped in water or alcohol to clean the lens of the Photocell. Note the proper Photocell position as noted in **Figure 16** and **Figure 17**.

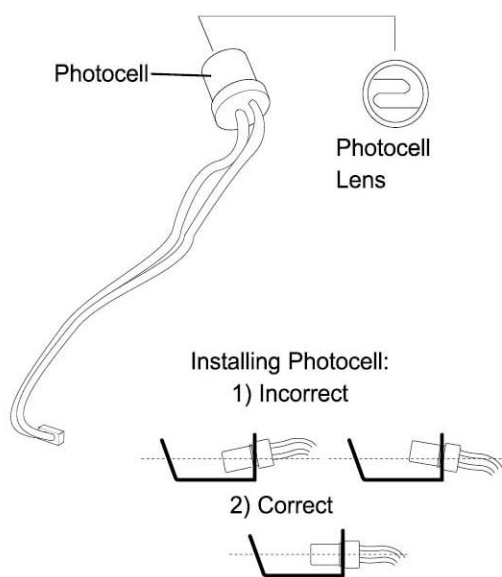


Figure 16. Photocell Positioning

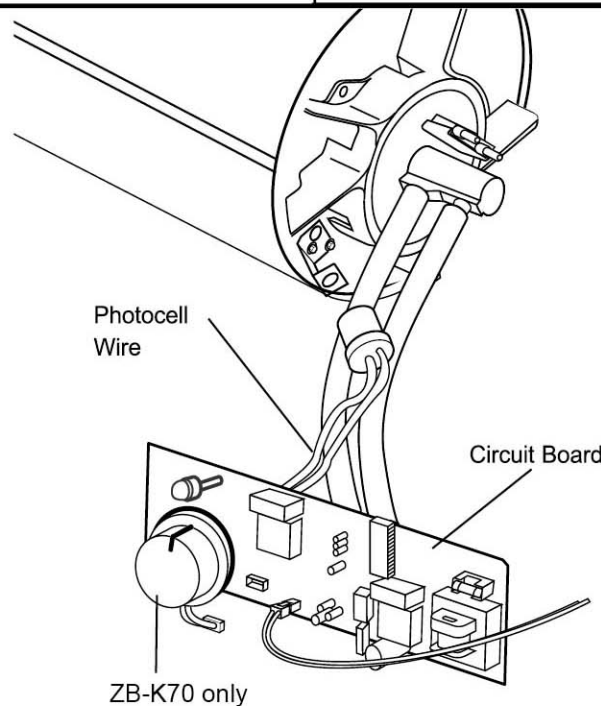


Figure 17. Photocell Position for ZB-K45/K70

FUEL FILTER:

The Fuel Filter should be cleaned at least twice per heating season by rinsing it in clean 1-K kerosene. Contaminated fuel could make this necessary immediately (See **Figure 18**).

NOTE: To remove the fuel filter for all model, pls draw out the rubber plug directly. Use of diesel may require additional maintenance. **Improper maintenance can lead to poor combustion and soot production.**

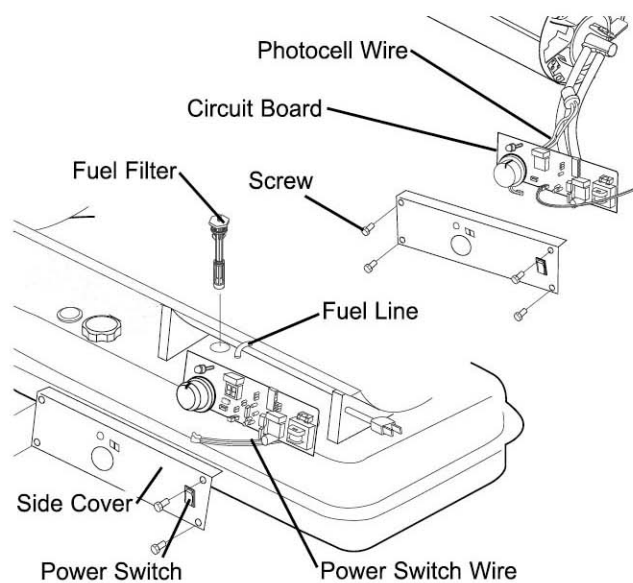


Figure 18. Fuel Filter Replacement

42*28 cm

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Maintenance (Continued)

PUMP PRESSURE ADJUSTMENT:

While heater is operating, turn relief valve clockwise to increase, counterclockwise to decrease (see **Figure 19**). Use flat blade screwdriver to turn valve. Correct pump pressure is as follows:

Model #	Pump Pressure
ZB-K45	20.7Kpa (3Psi)
ZB-K70	27.6Kpa (4Psi)
ZB-K125	34.5Kpa (5Psi)
ZB-K175	51.8Kpa (7.5Psi)
ZB-K215	62.1Kpa (9Psi)

Tolerance \pm 10%

For best measurement of pressure, test with full tank of fuel. **Optimum pressure occurs when the nose cone is cherry red and there are no extending flames from the heater.**

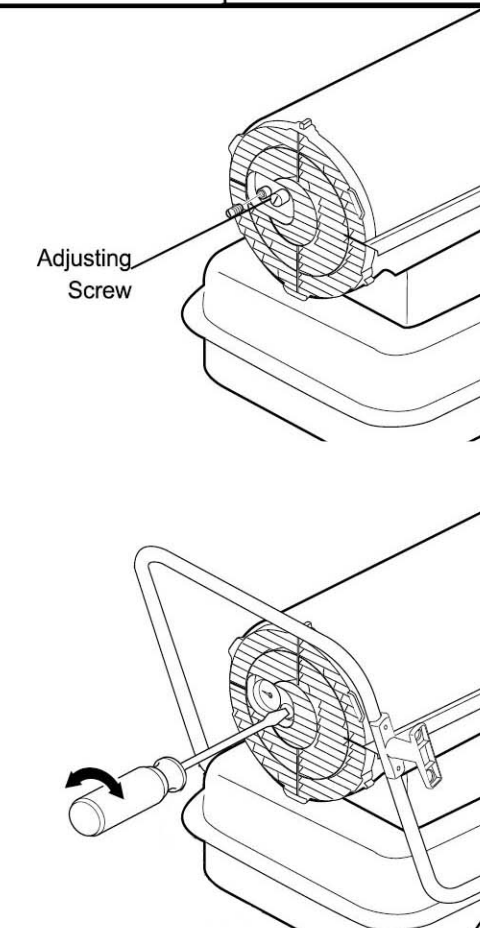


Figure 19. Pump Pressure Adjustment

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Exploded Drawing Part Breakdown

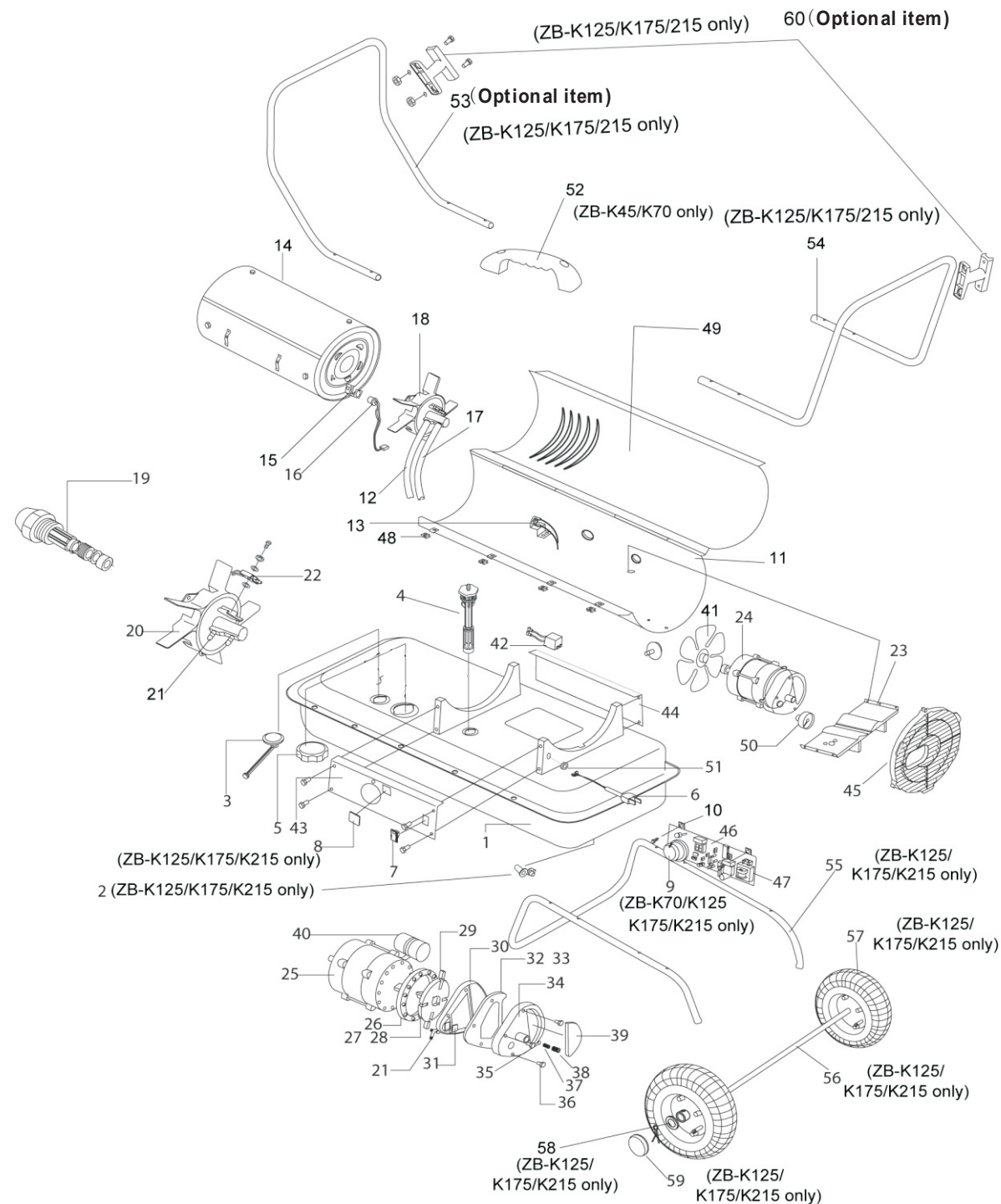


Figure 20. Exploded View Models ZB-K45/K70/K125/K175/K215

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Ref. No.	Description	Part Number for Models:				
		ZB-K45	ZB-K70	ZB-K125	ZB-K175	ZB-K215
1	Fuel Tank Assembly	K45-040000	K45-040000	K125-040000	K175-040000	K175-040000
2	Drain Plug	---	---	K125-380000	K125-380000	K125-380000
3	Fuel Gauge Assembly	K45-210000	K45-210000	K125-210000	K125-210000	K125-210000
4	Fuel Filter Assembly	K45-220000	K45-220000	K125-220000	K125-220000	K125-220000
5	Fuel Cap	K45-140000	K45-140000	K45-140000	K45-140000	K45-140000
6	Power Cord	K45-150000	K45-150000	K45-150000	K45-150000	K45-150000
7	Power Switch	K45-170000	K45-170000	K45-170000	K45-170000	K45-170000
8	Window Display	---	---	K125-280000	K125-280000	K125-280000
9	Thermostat Control Knob	---	K70-200200	K70-200200	K70-200200	K70-200200
10	PCB Mounting Bracket	K45-190000	K45-190000	K45-190000	K45-190000	K45-190000
11	Lower Shell	K45-020000	K45-020000	K125-020000	K175-020000	K175-020000
12	Air Line	K45-090000	K45-090000	K125-090000	K175-090000	K175-090000
13	Thermostat Limit Control	K45-250000	K45-250000	K45-250000	K45-250000	K45-250000
14	Combustion Chamber Assembly	K45-030000	K70-030000	K125-030000	K175-030000	K215-030000
15	Photocell Bracket	K45-230000	K45-230000	K45-230000	K45-230000	K45-230000
16	Photocell Assembly	K45-240000	K45-240000	K45-240000	K45-240000	K45-240000
17	Fuel Line	K45-080000	K45-080000	K125-080000	K125-080000	K215-080000
18	Burner Head Assembly	K45-070000	K70-070000	K125-070000	K175-070000	K215-070000
19	Nozzle Kit	K45-070100	K70-070100	K125-070100	K175-070100	K215-070100
20	Burner Head	K45-070200	K45-070200	K125-070200	K125-070200	K125-070200
21	Nipple	K45-070400	K45-070400	K45-070400	K45-070400	K45-070400
22	Spark Plug Kit	K45-070300	K45-070300	K45-070300	K45-070300	K45-070300
23	Motor Mounting Bracket	K45-100000	K45-100000	K125-100000	K125-100000	K125-100000
24	Motor and Pump Assembly	K45-120000	K70-120000	K125-120000	K175-120000	K215-120000
25	Motor	K45-120100	K45-120100	K125-120100	K175-120100	K175-120100
26	Pump Body	K45-120200	K45-120200	K45-120200	K45-120200	K45-120200
27	Rotor Kit Insert	K45-120300	K45-120300	K45-120300	K45-120300	K45-120300
28	Rotor Kit	K45-120400	K45-120400	K45-120400	K45-120400	K45-120400
29	Blade	K45-120500	K45-120500	K45-120500	K45-120500	K45-120500
30	End Pump Cover	K45-120600	K45-120600	K45-120600	K45-120600	K45-120600
31	Lint Filter	K45-120900	K45-120900	K45-120900	K45-120900	K45-120900
32	Output Filter	K45-120700	K45-120700	K45-120700	K45-120700	K45-120700
33	Gasket Outlet Filter	K45-120800	K45-120800	K45-120800	K45-120800	K45-120800
34	End Filter Cover	K45-121100	K45-121100	K45-121100	K45-121100	K45-121100
35	Ball	K45-121200	K45-121200	K45-121200	K45-121200	K45-121200
36	Plug/Pump Adjustment Kit	K45-121500	K45-121500	---	---	---
37	Spring	K45-121300	K45-121300	K45-121300	K45-121300	K45-121300
38	Adjustment Screw	K45-121400	K45-121400	K45-121400	K45-121400	K45-121400
39	Filter Kit	K45-121000	K45-121000	K45-121000	K45-121000	K45-121000
40	Capacitor	K45-120101	K45-120101	K125-120101	K125-120101	K125-120101
41	Fan Assembly	K45-110000	K70-110000	K125-110000	K175-110000	K215-110000
42	Ignitor	K45-180000	K45-180000	K45-180000	K45-180000	K45-180000
43	Left Side Cover	K45-050000	K70-050000	K125-050000	K175-050000	K175-050000
44	Right Side Cover	K45-060000	K45-060000	K125-060000	K175-060000	K175-060000
45	Fan Guard	K45-130000	K45-130000	K125-130000	K125-130000	K125-130000
46	Main PCB Assembly	K45-200100	K70-200100	K125-200100	K125-200100	K125-200100
47	Fuse	K45-200101	K45-200101	K45-200101	K45-200101	K45-200101
48	Clip Nut	K45-270000	K45-270000	K45-270000	K45-270000	K45-270000
49	Upper Shell	K45-010000	K45-010000	K125-010000	K175-010000	K175-010000
50	Air Pressure Gauge	---	---	K125-121500	K125-121500	K125-121500
51	Cord Bushing	K45-160000	K45-160000	K45-160000	K45-160000	K45-160000
52	Handle	G10-010000	G10-010000	---	---	---
53	Front Handle	---	---	K125-290000	K175-290000	K175-290000
54	Rear Handle	---	---	K125-300000	K175-300000	K175-300000
55	Wheel Support Frame	---	---	K125-310000	K175-310000	K175-310000
56	Wheel Axle	---	---	K125-320000	K175-320000	K175-320000
57	Wheel	---	---	K125-330000	K125-330000	K125-330000
58	Spacer	---	---	K125-340000	K125-340000	K125-340000
59	Wheel Cap	---	---	K125-360000	K125-360000	K125-360000
60	Cord W rap	---	---	K125-370000	K125-370000	K125-370000

42*28 cm

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Wiring Diagrams

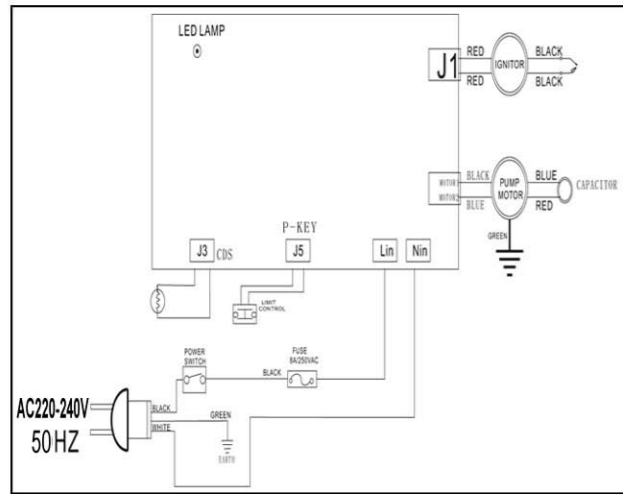


Figure 21 Model ZB-K45

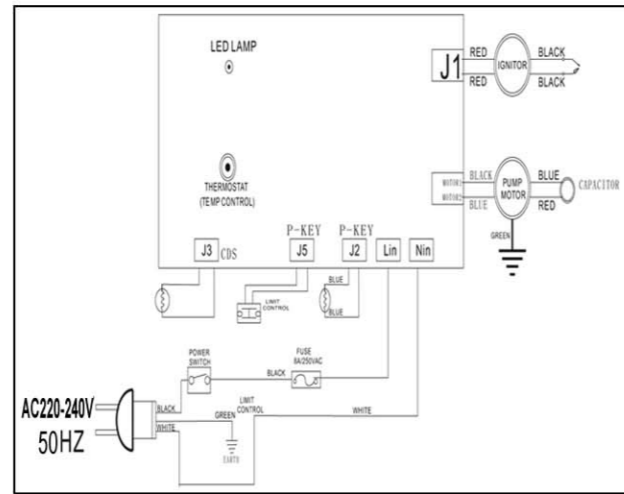


Figure 22 Model ZB-K70

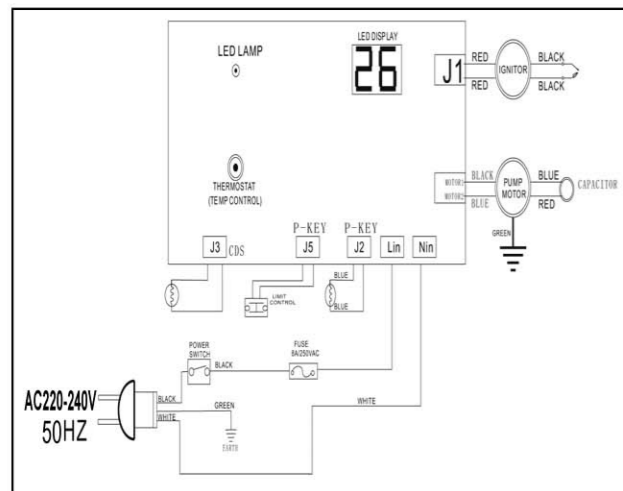


Figure 23 Model ZB-K125/K175/K215

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Troubleshooting Guide

Problem	Possible Cause	Solution
Heater fires, but Main PCB shuts heater off after a short period of time. Lamp is flickering, and LED display shows "E1". (1 Flashes)	<ol style="list-style-type: none"> 1. Incorrect pump pressure 2. Dirty Input, Output or Lint Filter 3. Dirty Fuel Filter 4. Nozzle is Dirty 5. Photocell lens is Dirty 6. Photocell not installed properly 7. Photocell Defective 8. Improper electrical connection between Main PCB and Photocell. 	<ol style="list-style-type: none"> 1. Adjust Pump Pressure (Page 11) 2. Clean/replace Air Filter (Page 9) 3. Clean/replace Fuel Filter (Page 10) 4. Clean/replace Nozzle (Page 9) 5. Clean/replace Photocell (Page 10) 6. Adjust Photocell position (Page 10) 7. Replace Photocell (Page 10) 8. Check wiring connections (See Wiring Diagrams, Page 14)
Heater will not operate, or motor runs for short time. Lamp flickers and LED display shows "E1". (1 Flashes)	<ol style="list-style-type: none"> 1. No kerosene in fuel tank 2. Incorrect pump pressure 3. Corroded Spark Plug or incorrect plug gap. 4. Dirty Fuel Filter 5. Dirty Nozzle 6. Moisture in Fuel/Fuel Tank 7. Improper electrical connection between Transformer and Circuit Board 8. Ignitor Wire not connected to Spark Plug 9. Defective Ignitor 	<ol style="list-style-type: none"> 1. Fill tank with fresh kerosene 2. Adjust Pump Pressure (Page 11) 3. Clean/replace Spark Plug (Page 10) 4. Clean/replace Fuel Filter (Page 10) 5. Clean/replace Nozzle (Page 9) 6. Rinse out fuel tank with clean fresh kerosene (Page 9) 7. Inspect all electrical connections. See Wiring Diagrams (Page 14) 8. Re-attach Ignitor wire to Spark Plug (Page 9) 9. Replace Ignitor
Fan does not operate when heater is plugged in and Power Switch is in the "ON" position. The lamp is flickering or on and LED Display shows "E1" or "E2". (1 Flashes or 2 Flashes)	<ol style="list-style-type: none"> 1. Thermostat is set too low (Does not apply to ZB-K45) 2. Broken electrical connection between Main PCB and motor 	<ol style="list-style-type: none"> 1. Rotate thermostat to a higher setting 2. Inspect all electrical connections. See Wiring Diagrams (Page 14)
Lamp is flickering, and LED display shows "E3" (3 Flashes)	<ol style="list-style-type: none"> 1. Thermostat Switch has failed 	<ol style="list-style-type: none"> 1. Replace Thermostat Switch. Wiring Diagrams (Page 14)
Poor Combustion and / or excess soot production	<ol style="list-style-type: none"> 1. Dirty Input, Output or Lint Filter 2. Dirty Fuel Filter 3. Poor quality of fuel 4. PSI is too high or too low 	<ol style="list-style-type: none"> 1. Clean/replace Air Filter (Page 9) 2. Clean/replace Fuel Filter (Page 10) 3. Be sure fuel is not contaminated or old 4. Use proper pressure (Page 11)
Heater does not turn on and the lamp is not lit	<ol style="list-style-type: none"> 1. Temperature limit sensor has overheated 2. No electrical power 3. Fuse Blown 4. Improper electrical connection between Temperature Limit Sensor and Circuit Board 	<ol style="list-style-type: none"> 1. Push Power Switch to "OFF" and allow heater to cool for 10 minutes. Push Power Switch to back to "ON" 2. Check power cord and extension cord to insure of proper connection. Test power supply 3. Check/replace Fuse 4. Inspect all electrical connections. Wiring Diagrams (Page 14)

42*28 cm