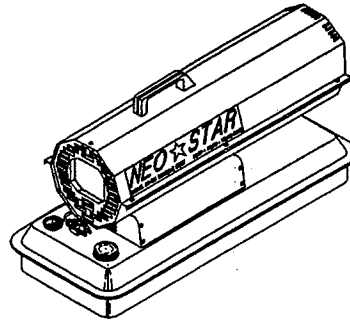
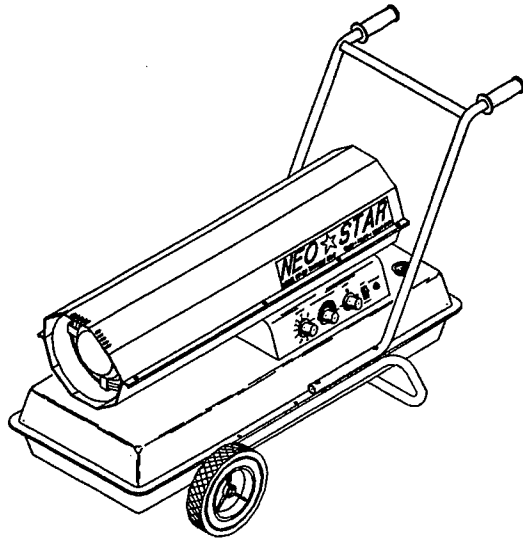


KEROSENE PORTABLE FAN-FORCED AIR HEATERS

OWNER'S INSTALLATION, OPERATION AND MAINTENANCE MANUAL

MODELS: K-40, K-160, KV-55, KV-85, KV-130



- CAREFULLY READ THIS MANUAL TO UNDERSTAND ALL INSTRUCTIONS REGARDING INSTALLATION, OPERATION AND MAINTENANCE OF THE KEROSENE CONSTRUCTION HEATER.
- NEVER USE THIS HEATER IN OTHER THAN ITS INTENDED LOCATION AS DESCRIBED.
- ALWAYS KEEP THIS MANUAL FOR REFERENCE.

****WARNING****

- * Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- * Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operation and maintenance instructions thoroughly before installation or servicing this equipment.
- * Improper use of the heater can cause fire, explosion, electrical shock or carbon monoxide poisoning resulting in property damage, serious personal injury or loss of life.
- * Use only the type of fuel (Kerosene or No. 1 fuel) shown on the rating plate. **NEVER** use any highly flammable fuels like gasoline, alcohol, paint thinners etc.

UNIVERSAL HEATING, INC.
3830 Prospect Ave.
Yorba Linda, CA 92886

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TOOLS NEEDED

Wrenches, Screwdrivers, & Level

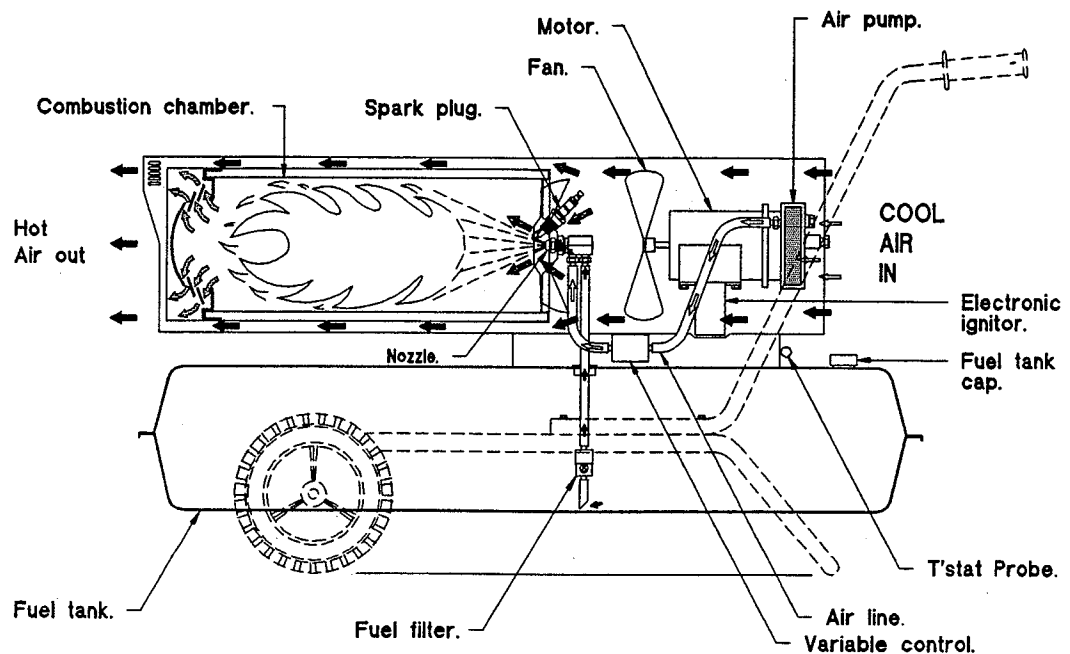
IMPORTANT

IMPORTANT SAFETY RULES

1. It is important to follow these rules to avoid fire hazard, property damage, bodily injury, or death from malfunction of the heater. For safety, read all rules carefully and check local codes.
2. It is **PROHIBITED** to install and use the heater inside a home.
3. Due to high temperatures, place the heater out of traffic and away from combustible (flammable) materials.
4. Prevent children and adults from touching the heater when being operated so as to avoid clothing ignition and burn injury.
5. Installation and repair should be done by a qualified service person. This heater should be inspected before use and at least annually by a professional service person.
6. Any physical change to this heater or its controls can be **DANGEROUS**.
7. Keep children and animals away from heater.

SPECIFICATIONS

MODEL NUMBER	K-40	K-160	KV-55	KV-85	KV-130
ADJUSTABLE SETTING (I, II, III)	NO	NO	YES	YES	YES
CAPACITY (BTU OUTPUT/HR.)	40,000	160,000	I. 40,000 II. 45,000 III. 55,000	I. 65,000 II. 75,000 III. 85,000	I. 90,000 II. 110,000 III. 130,000
HEATING AREA (CUBIC FT.)	7,500	29,960	I. 7,500 II. 8,360 III. 10,300	I. 12,100 II. 14,000 III. 16,000	I. 16,850 II. 21,500 III. 24,300
HOT AIR FLOW (CFM)	165	560	I. 165 II. 170 III. 175	I. 455 II. 465 III. 475	I. 485 II. 495 III. 505
FUEL TANK CAPACITY	5.0 GAL	13.5 GAL	5.0 GAL	8.5 GAL	13.5 GAL
CONSUMPTION (GAL./HR.)	0.29	1.12	I. 0.29 II. 0.32 III. 0.40	I. 0.46 II. 0.53 III. 0.60	I. 0.63 II. 0.81 III. 0.91
OPERATING TIME (HRS./TANK)	17.2	12.1	I. 17.2 II. 15.6 III. 12.5	I. 18.5 II. 16.0 III. 14.2	I. 21.4 II. 16.7 III. 14.8
ELECTRONIC IGNITION	YES	YES	YES	YES	YES
MOTOR (60HZAC 115V)	1/15 HP	1/5 HP	1/15 HP	1/5 HP	1/5 HP
ON/OFF SWITCH	YES	YES	YES	YES	YES
EXTERNAL THERMOSTAT	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
AUTO FUEL SHUT OFF	YES	YES	YES	YES	YES



INSTALLATION

Installation must conform with applicable local ordinance and codes.

ASSEMBLY

Models with handle cart : Unpack and assemble accessories (handles, wheels, wheel frame etc.), following the instructions, in the package.

LOCATION

Heater must be located in a well ventilated area. This heater produces carbon monoxide (a colorless, odorless gas) that can cause severe physical discomfort. In excess amount, Carbon monoxide can be deadly. Allow at least 5 SQ IN. opening of fresh air into the area where heater is installed for every 1,000 BTU of output.

Make sure the environment is free from excessive dust and flammable vapors.

Select a location for the heater that will provide maximum heat where needed, but will not be subjected to accidental contact.

Adequate clearance must be provided from combustible materials/ walls, as follows:

SIDES4 Ft
 BACK.....4 Ft
 TOP.....4 Ft
 OUTLET.....8 Ft

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

The heater must be set on a level surface and be stable while in operation.

Fresh air shall be supplied, by either natural or mechanical means, in sufficient quantity to maintain the health and safety of workers. Particular attention shall be given to areas where heat and fumes may accumulate and workers may be present (roof areas, peaks, basements, enclosed scaffold work, etc.).

When heaters are used in confined spaces, special care shall be taken to test the atmosphere to ensure proper combustion, maintain the health and safety of workers and limit temperature rise in the area. Heaters shall not be located, moved or handled except by qualified personnel familiar with heater operation and using necessary safe handling equipment.

ELECTRICAL

Electrical Requirement: 120V, 60Hz, 1-Phase

A grounded & 3-Prong electrical extension cord must be used

DO NOT ATTEMPT TO OPERATE THE HEATER IN THE EVENT OF A POWER FAILURE.

FUELING

1. Personnel involved with fueling shall be qualified and thoroughly familiar with the manufacturer's instructions and applicable federal, state and local regulations regarding the safe fueling of heating units.
2. Only the type of fuel specified on the heater's data plate shall be used.
3. During fueling, all fuel lines and fuel-line connections shall be inspected for leaks. Leaks shall be repaired prior to returning the unit to service.
4. At no time shall more than one day's supply of heater fuel be stored inside a building in the vicinity of the heater. Bulk fuel storage shall be outside the structure.
5. All fuel storage shall be located a minimum of 25 feet from heaters, torches, welding equipment and similar sources of ignition (exception: fuel reservoirs attached to and integral with the heater unit.)
6. Whenever possible, fuel storage should be confined to areas where floor penetrations do not permit fuel to drip onto or be ignited by a fire at a lower elevation.
7. Fuel storage shall not be permitted within 10 feet of floor penetrations used for vertical access unless separated from the penetration by full height masonry walls.
8. Fuel storage shall be in accordance with the federal, state or local authority having jurisdiction.

OPERATION

Fuel: Use only KEROSENE or No.1 FUEL

DO NOT use any highly flammable fuels like gasoline, alcohol, paint thinners etc.

***** CAUTION*****

When heaters are used in enclosed or partially enclosed permanent or temporary structures, tests for the presence of carbon monoxide shall be made within one hour after the start of each shift and at least every four hours thereafter. Immediate or more frequent testing may be dictated by job conditions.

Heaters shall not be used in confined spaces where the presence of toxic, flammable or explosive contaminants may be present or is subject to oxygen deficient atmosphere. The confined space shall be tested for such contaminants or deficiency prior to entry and ignition of any heaters.

IMPORTANT

Safety tips, caution and warnings in this manual are provided to prevent mishaps during installation operation & service. Exercise common sense and practice safe usage. All possible circumstances for error cannot be covered here.

- Disconnect power when heater is not used.
- Keep front & rear of the heater unblocked.
- Do not move heater during operation.

For maximum efficiency, refill the tank when the fuel level is less than half full or switch heat setting knob to No. 3 position (on models with variable heat setting).

STARTING THE HEATER

- Fill fuel tank with Kerosene or No.1 fuel. Make sure to close the tank with the cap.
- Plug in the power cord to 120V supply.
- Turn power switch to ON.
- Turn thermostat to desired setting (if provided).
- On models with variable heat (BTU) setting, turn knob to desired level.
- If timer is provided, set to hours of operation desired.

POWER SWITCH

Turning power switch to "ON" will supply power to controls and motor/air pump assembly.

VARIABLE HEAT SETTING

Variable heat setting is provided to adjust amount of heat desired.

SAFETY DEVICE

Safety sensor is provided to prevent fuel flow inside the combustion chamber when failure of ignition occurs. When the sensor does not see or detect flame inside the chamber within 15 seconds of fuel flow, it will trip the reset switch and shut the heater down. To turn the heater back "ON" wait for at least 60 seconds before pushing the reset switch in.

MAINTENANCE & SERVICE

A good maintenance and service schedule is very important not only for proper operation of the heater but also to extend the life of the heater.

Before maintenance and service procedure:

- Make sure the heater is cool.
- Make sure the heater is not in operation.
- Make sure to unplug the heater.

PARTS REMOVAL

TOP COVER (Ref. Figure 2)

1. Remove screws from both sides of the top cover, using a Phillips screw driver.
2. Lift top cover off.

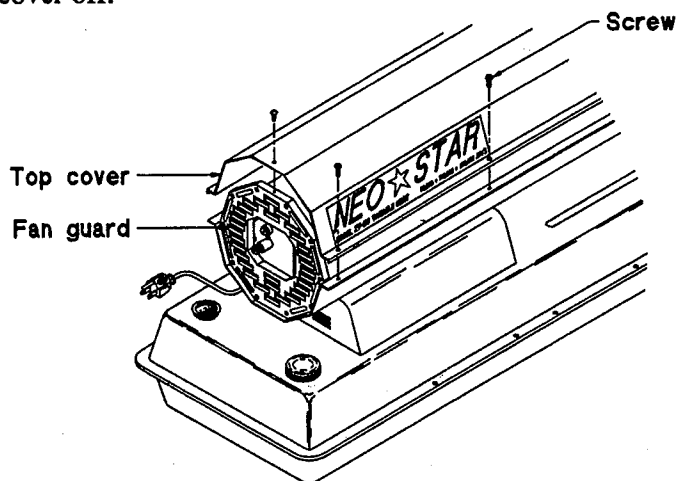


Fig 2

FAN GUARD (Ref. Figure 3)

1. Remove screws from both sides of the bottom cover.
2. Remove fan guard.

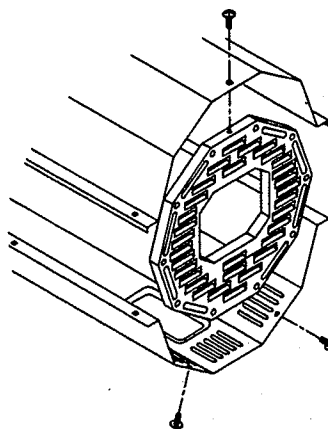


Fig 3

FAN

1. Remove top cover. (Ref. Figure 4)
2. With 1/8" allen wrench, loosen the set screw.
3. Slide fan off of the motor shaft.
4. Wipe clean the fan with cloth moistened in kerosene.
5. Dry fan before reinstalling.
6. Replace parts in the reverse order.

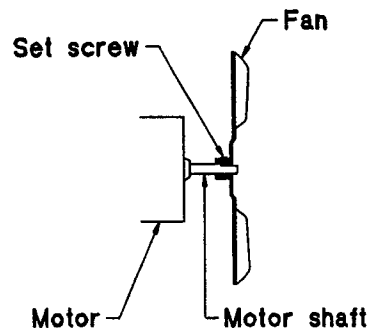
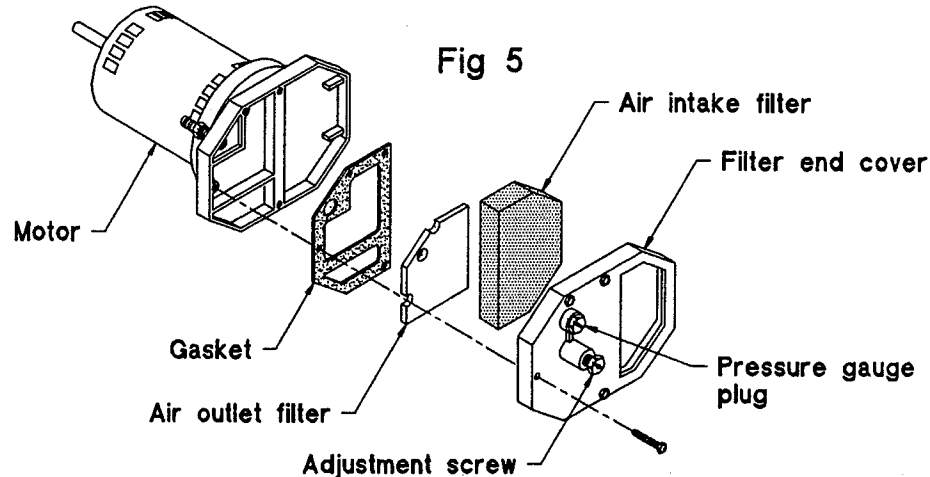


Fig 4

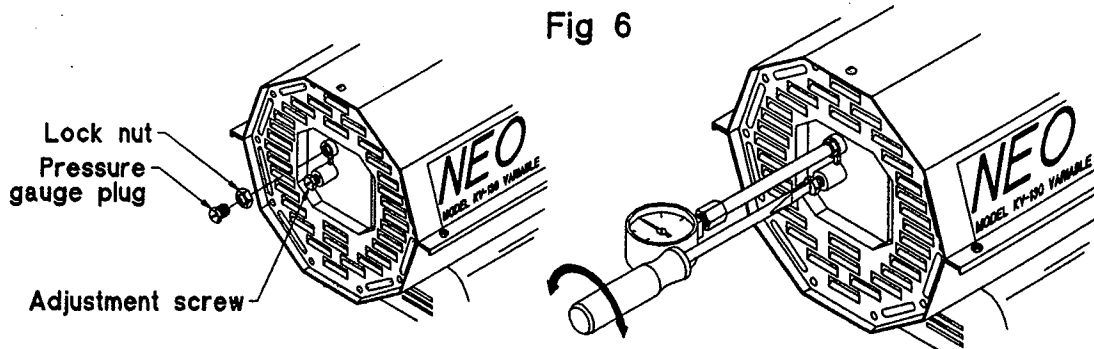
AIR INTAKE & AIR OUTLET FILTER (Ref. Figure 5)

1. Remove top cover & fan guard.
2. With 5/16" socket wrench, remove filter end cover.
3. Wash air intake filter with soap water and dry well before replacing.
4. Replace air outlet filter, if necessary.
5. Replace and reinstall parts in the reverse order.



PUMP PRESSURE ADJUSTMENT (Ref. Figure 6)

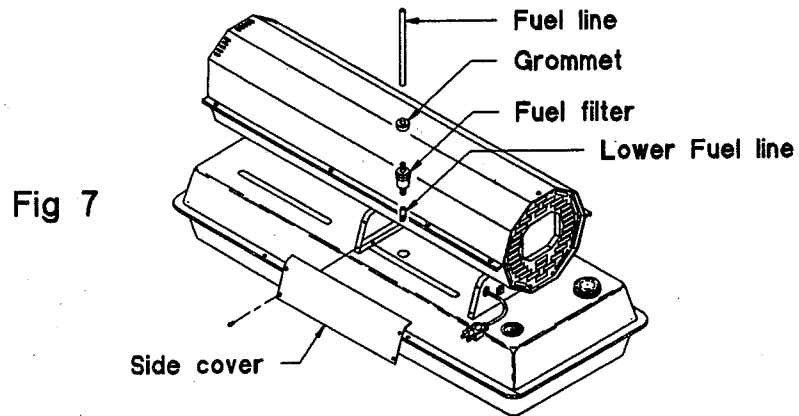
1. Unscrew pressure gauge plug from filter end cover.
2. Screw in accessory pressure gauge(P/N KA97515).
3. Turn heater "ON" and wait for motor to reach full speed.
4. Refer to table and adjust pressure, if necessary. Loosen lock nut and turn adjustment screw clockwise to increase pressure or counterclockwise to decrease pressure. Tighten lock nut.
5. Replace parts in the reverse order.



MODEL	K-40	KV-55	KV-85	KV-130	K-160
PRESSURE (PSI)	3.2	4.1 4.2 4.3	5.25 5.45 5.5	7.7 7.2 6	6

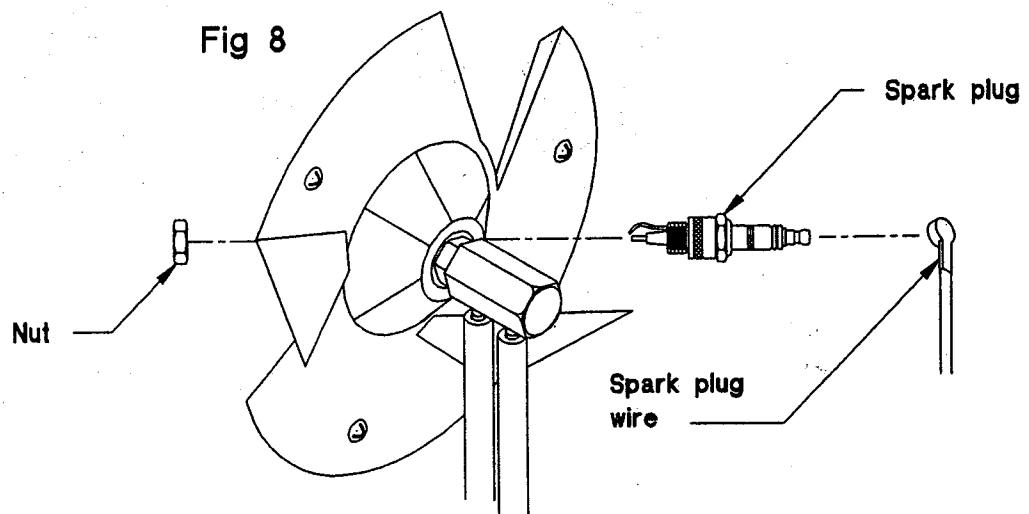
FUEL FILTER (Ref. Figure 7)

1. Remove side cover using Phillips screwdriver.
2. Pull fuel line out and pry from fuel filter.
3. Pull fuel filter & lower fuel line out of the fuel tank.
4. Disconnect fuel filter from lower fuel line.
5. Clean filter with clean fuel and blow air to remove any residues.
6. Replace parts in the reverse order.



SPARK PLUG (Ref. Figure 8)

1. Remove top cover.
2. Remove fan.
3. Disconnect fuel line, air line from nozzle adapter.
4. Disconnect spark plug wire from spark plug.
5. Remove 3 screws holding the deflector plate.
6. Hold the spark plug with a wrench on the hex of the spark plug body.
7. With another wrench, remove the nut holding the spark plug on the other side of the deflector plate.
8. Clean and check spark plug gap. Gap should be .06" to .08".
9. Replace parts in the reverse order.



NOZZLE (Ref. Figure 9)

1. Remove top cover.
2. Remove fan.
3. Disconnect fuel line, air line from nozzle adapter.
4. Disconnect spark plug wire from spark plug.
5. Remove 3 screws holding the air deflector plate.
6. Hold the nozzle adapter with a wrench and unscrew the nozzle with another wrench.
7. Clean nozzle by blowing air through the face of the nozzle.
8. Make sure the nozzle is thoroughly cleaned before replacing.
9. Replace parts in the reverse order.

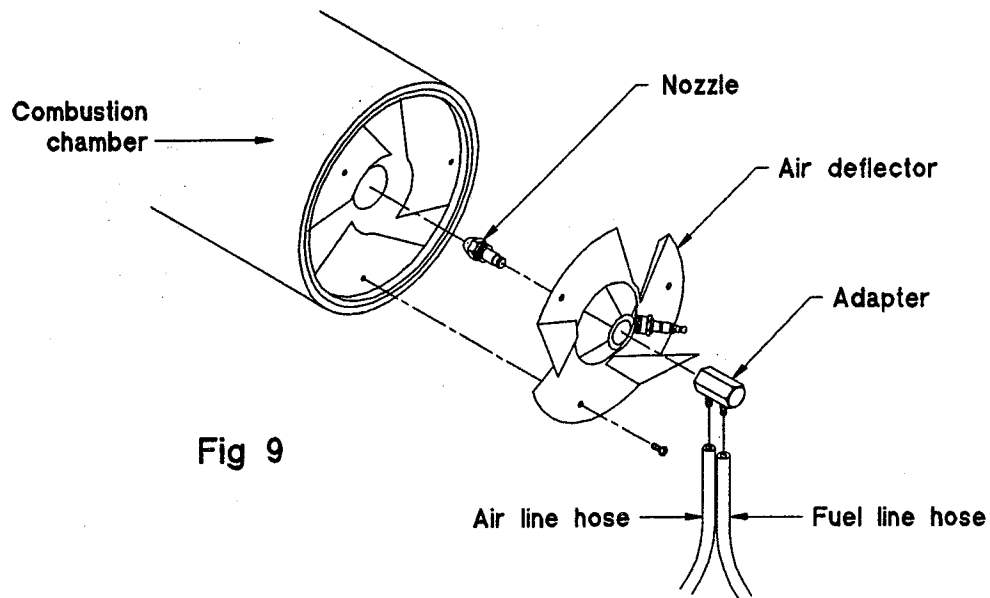


Fig 9

AIR PUMP ROTOR (If Defective)(Ref. Figure 10)

1. Remove top cover & fan guard.
2. Remove filter end cover, air intake & air outlet filter (Ref. Page 9).
3. Using 5/16" socket wrench, remove pump plate.
4. Remove rotor, insert and blades.
5. If any debris is present in the pump, clean it thoroughly.
6. Install new insert and rotor.
7. Adjust gap to be .003"/.004" (Ref Figure 11).
8. Replace parts in the reverse order.
9. Check air pump pressure (Ref. Page 9).

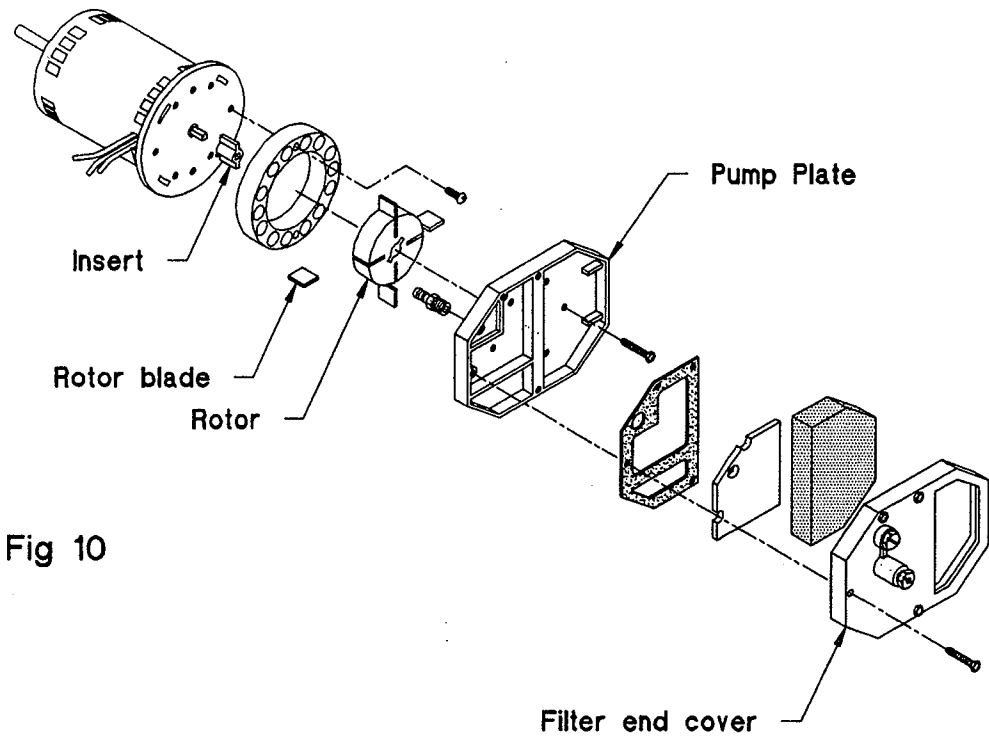


Fig 10

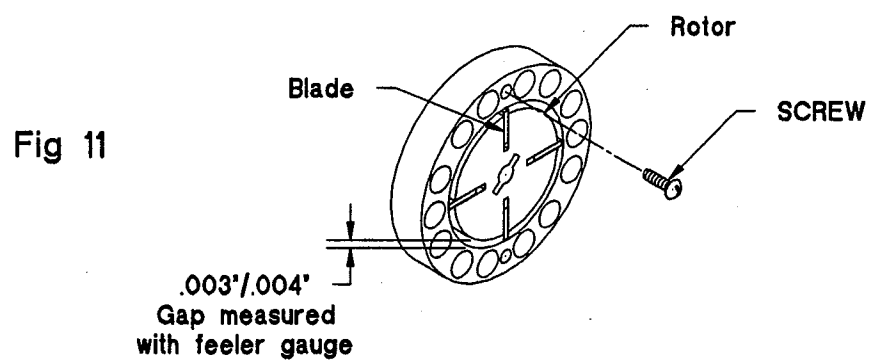
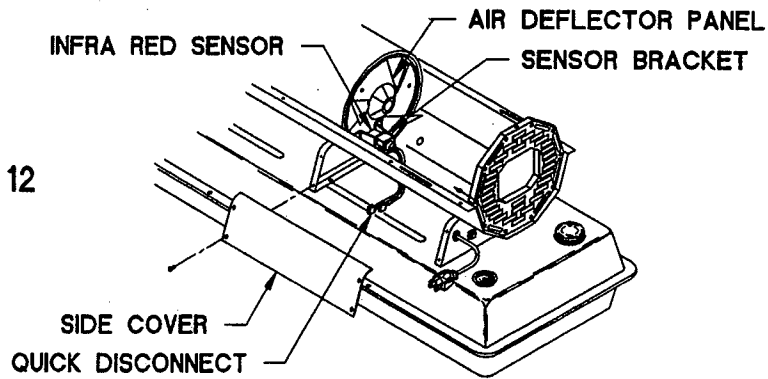


Fig 11

INFRARED SENSOR (Ref Figure 12)

1. Remove top cover.
2. Remove side cover.
3. Remove 2 screws holding the infrared sensor bracket to the air deflector panel.
4. Push infrared sensor out from the holding bracket.
5. Disconnect infrared sensor wires at the quick-disconnect.
6. Install new infrared sensor.
7. Replace parts in the reverse order.

Fig 12



Safety Sensor Test

This test is to periodically check and ensure that the infrared sensor is functioning properly.

1. Turn heater on and allow to run for a few minutes.
2. Turn valve control knob to "safety sensor test" position (Ref. figure. 13).
3. The heater will shut off by tripping the reset switch in about 15 seconds.
4. If heater shuts off, the infrared sensor is functioning properly.
Turn valve control knob to "ON" or desired position (1, 2, or 3).
5. If heater does not shut off within 20 seconds, turn power switch to "OFF" and unplug the power cord.
6. Replace infrared sensor.

Trouble-shooting	Problem	Probable cause	Remedy
	Heater keeps shutting off after operating for a short period of time.	<ol style="list-style-type: none"> 1. Wrong pump pressure. 2. Dirty air outlet and air intake filters. 3. Dirty fuel filter. 4. Dirt in nozzle 5. Bad infrared sensor. 6. Control valve improperly set in between setting. 	<ol style="list-style-type: none"> 1. Check pump pressure adjustment (Ref. page 9). 2 Check air outlet, air intake filters (Ref. page 9). 3. Check fuel filter(Ref. page 10) . 4. Check nozzle (Ref. page 11). 5. Replace infrared sensor. 6. Set control valve to ON position.
	Motor runs for a while but the heater will not come ON.	<ol style="list-style-type: none"> 1. Control valve improperly set in between setting . 2. Wrong pump pressure. 3. Carbon deposits on spar plug and/or improper gap. 4. Dirty fuel filter. 5. Dirt in nozzle. 6. Water in fuel tank. 7. Ignitor module not grounded. 8. Bad ignitor module. 	<ol style="list-style-type: none"> 1. Set control valve to ON position. 2. Check pump pressure adjustment (Ref. page 9). 3. Check spark plug (Ref. Page 10). 4. Check fuel filter (Ref. Page 10). 5. Check nozzle(Ref. page 11). 6. Drain and flush fuel tank with clean kerosene. 7. Make sure ignitor module mounting is tight. 8. Replace ignitor module.

Motor does not start when heater is plugged in, fan rotates slowly or does not turn and motor makes noise.

During operation, radiant cone assembly is not red in color. Turns black and / or produces pungent odor.

1. Safety control not reset.
2. Solid state relay not allowed to reset (K-85, 130, 160).
3. Binding pump rotor.

1. Fuel is almost empty in the tank

1. Press control reset button.
2. Wait two minutes before trying to restart heater.
3. If fan is hard to turn, see air pump rotor (Ref. page 11).

1. Refill fuel in the tank to full

REPLACEMENT PARTS

NOTE: In order for you to receive credit for parts replaced under warranty, only original replacement parts must be used and defective parts must be returned to **Universal Heating, Inc.** or the authorized distributor.

A. UNDER WARRANTY:

Contact authorized dealers of this product. If they are unable to supply original replacement part(s), call **Universal Heating, Inc.**. Be prepared to indicate name, address, model number, and how heater was malfunctioning and purchase date. In most cases, the defective part will be requested to be returned to the authorized distributor of **Universal Heating, Inc.**

B. NOT UNDER WARRANTY:

Contact authorized dealers of this product. If they are unable to supply original replacement part(s), call **Universal Heating, Inc.** Be prepared to indicate model number and replacement part(s) number.

When calling **Universal Heating, Inc.** have ready

- Model number of your heater.
- The replacement part number.

ACCESSORIES

Purchase heater accessories from your local dealer. If they cannot supply these accessories, call the Customer Service Department at (800)444-5106 for information.

Limited Warranty

For NEO-STAR Kerosene Portable Fan-Forced Air Heaters

This product has a warranty period of one year from the date of purchase and is applicable only to the original retail purchaser when proof of purchase is provided. UNIVERSAL HEATING, INC. warrants this product to be free from defects in workmanship and materials for one year when operated and maintained within the terms specified on the heater and within the owner's manual.

THIS WARRANTY COVERS the cost of parts and labor incurred when performing warranty repairs necessary to restoring the unit to operating condition.

THIS WARRANTY DOES NOT COVER costs associated with warranty repairs, such as shipping charges to and from service centers.

THIS WARRANTY DOES NOT COVER defects arising from negligence, lack of proper maintenance, alteration, modification, contaminated fuels, repairs using improper parts, repairs by a non-authorized dealer or service center, or normal wear.

THIS WARRANTY DOES NOT COVER any costs related to normal routine maintenance of the heater.

All warranty services must be done through authorized dealers and service centers. Service Centers and Dealers are independently owned and operated.

This warranty gives you specific legal right and you may also have other rights which vary from state to state. This is a non-pro-rated warranty. Universal Heating, Inc. reserves the right to amend the terms of this warranty at any time without notice.

Service Under Warranty

Units being serviced should be returned to the nearest authorized service center. Proof of purchase must accompany the heater. If a defect from faulty material or workmanship is found, UNIVERSAL HEATING, INC. will repair or replace the heater without charge.

Repair Service Outside of Warranty

Repairs not covered by the warranty should be taken to the nearest authorized service center where they will be performed at a standard price.

Retain this warranty for your records.

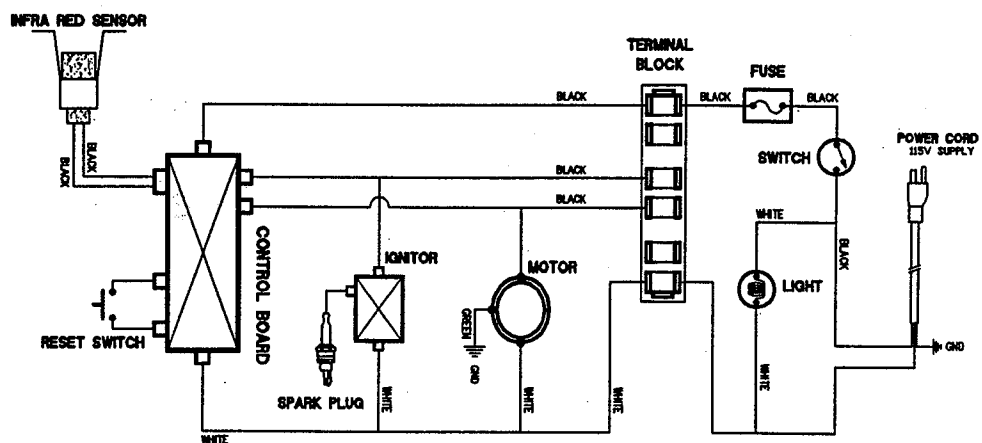
Model No. _____

Serial No. _____

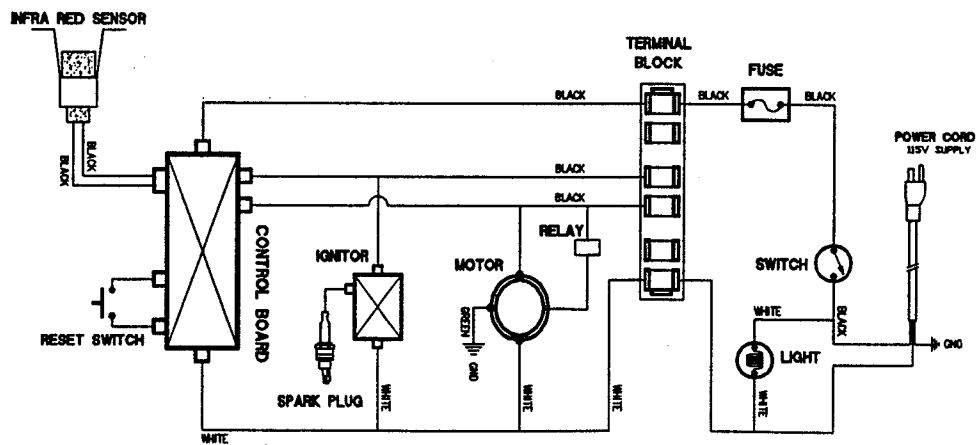
Date of Purchase _____

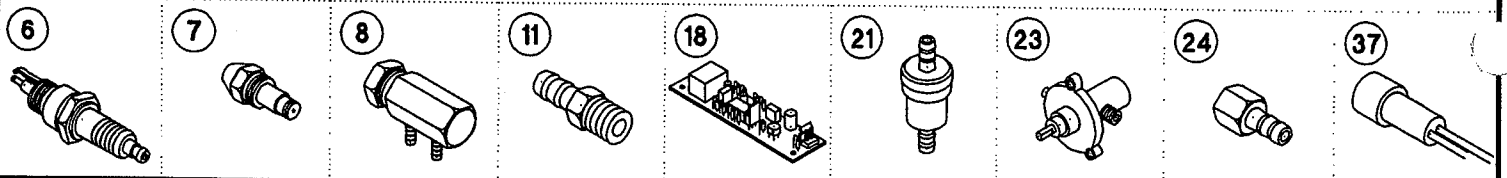
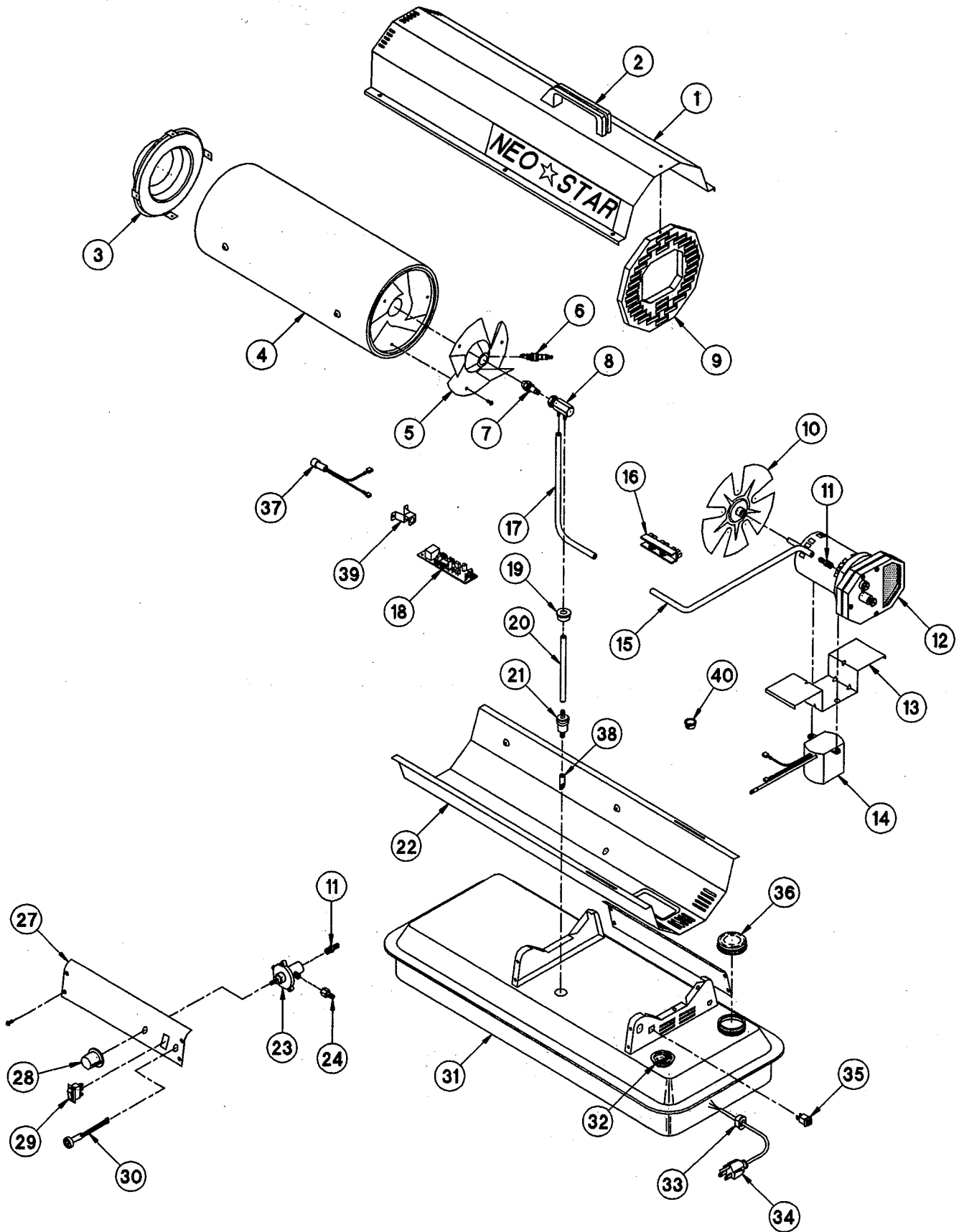
For further information, write or call:
UNIVERSAL HEATING, INC.
3830 Prospect Ave.
Yorba Linda, CA 92886
1-800-444-5106

K - SERIES
(40, 55)

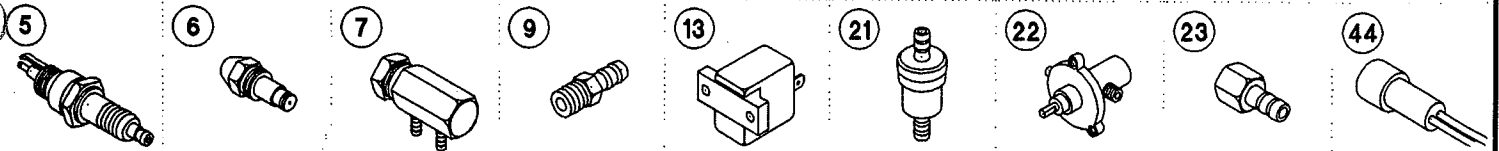
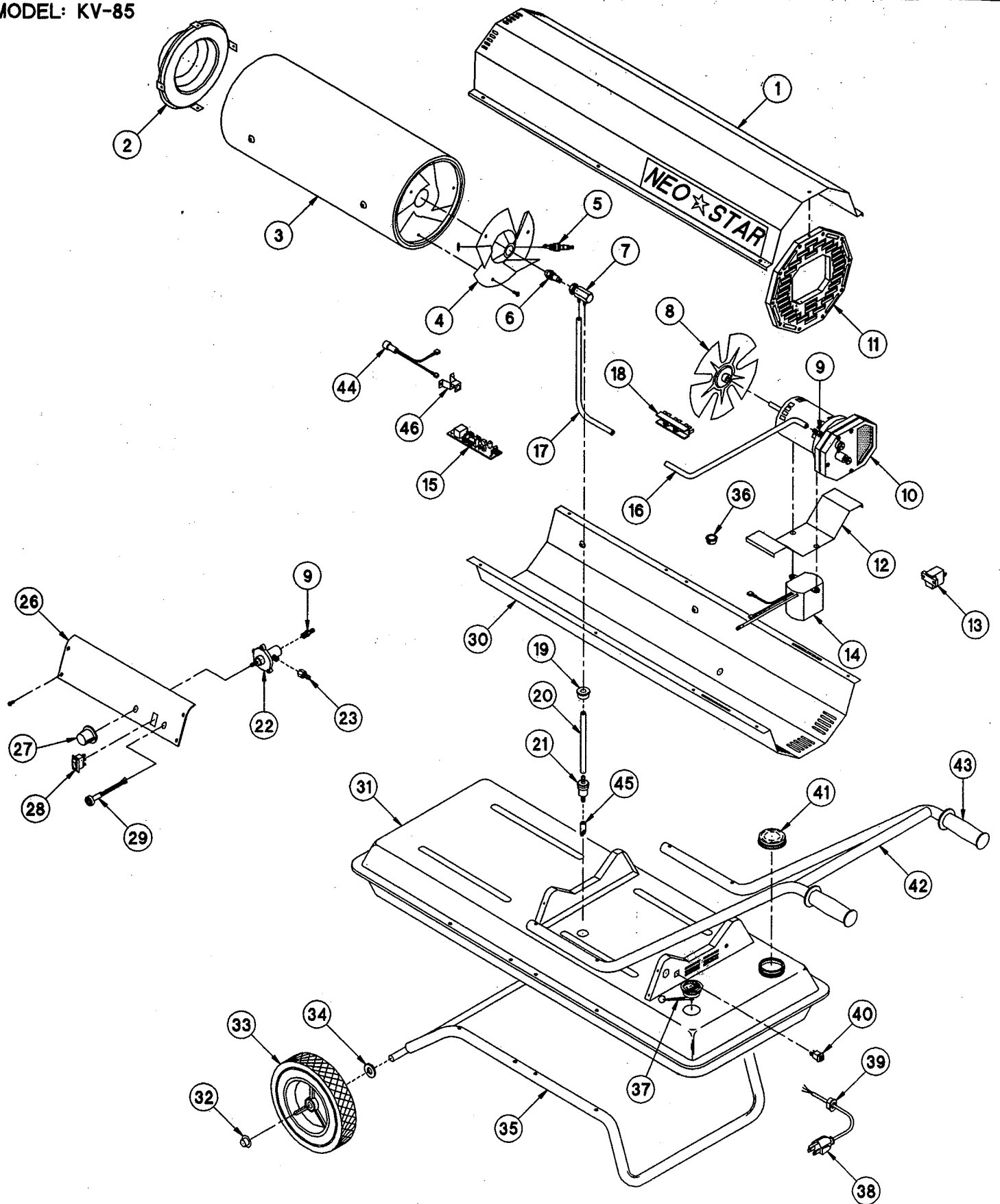


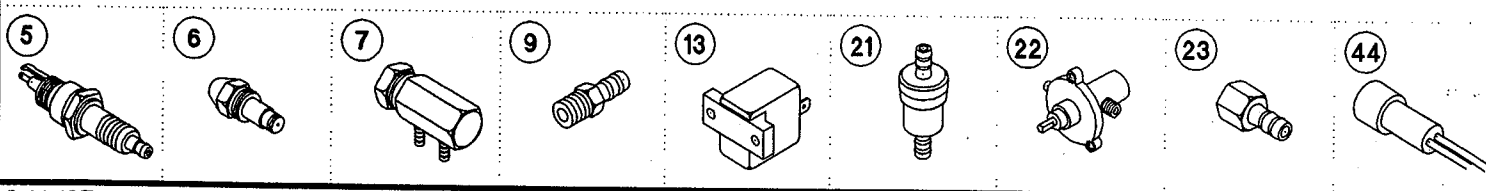
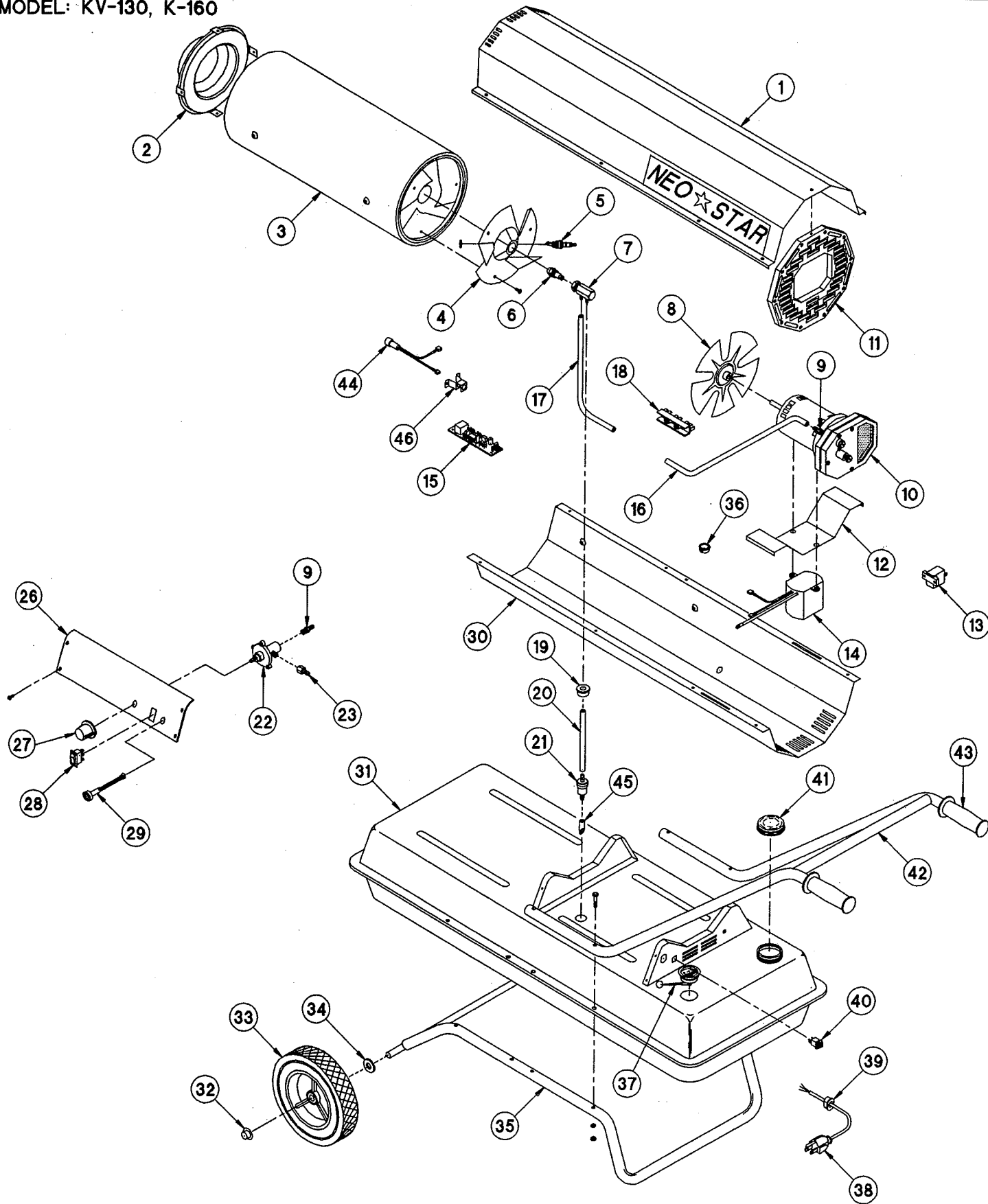
K - SERIES
(85, 130, 160)





MODEL: KV-85





[illegible]

ITEM	DESCRIPTION	PART NUMBERS	KV 85	KV 130	K-160										
1	TOP COVER	KF97105	1	1											
		KF97116			1										
2	RADIANT CONE ASSEMBLY	KA97504	1	1											
		KA97517			1										
3	COMBUSTION CHAMBER	KA97505	1	1											
		KA97518			1										
4	PANEL - AIR DEFLECTOR	KF97106	1	1	1										
5	SPARK PLUG	KP97302	1	1	1										
6	NOZZLE - AIR FUEL	KP97304	1												
		KP97305		1	1										
7	NOZZLE ADAPTER	KP97307	1	1	1										
8	FAN	KP97310	1	1	1										
9	STRAIGHT FITTING - AIR LINE	KP97311	1	1	1										
10	MOTOR / AIR PUMP ASSEMBLY	KA97507	1	1	1										
11	FAN GUARD	KF97115	1	1	1										
12	BRACKET - MOTOR MOUNT	KF97107	1	1	1										
13	RELAY - SOLID STATE	KP97332	1	1	1										
14	MODULE - IGNITOR	KP97312	1	1	1										
15	CONTROL BOARD	KP97316	1	1	1										
16	HOSE - AIR LINE INLET	KP97313	1	1	1										
17	HOSE - AIR LINE OUTLET	KP97314	1	1	1										
18	TERMINAL BLOCK	KP97315	1	1	1										
19	GROMMET - FUEL LINE HOSE	KP97317	1	1	1										
20	HOSE - FUEL LINE	KP97318	1	1	1										
21	FILTER - FUEL	KP97319	1	1	1										
22	VARIABLE CONTROL	KP97345	1	1											
		KP97343			1										
23	FITTING - AIR LINE	KP97320	1	1	1										
24															
25															
26	PANEL - CONTROL MOUNT	KF97108	1	1	1										
27	KNOB	KP97323	1	1	1										
28	SWITCH - POWER	KP97324	1	1											
29	INDICATOR LIGHT	KP97325	1	1	1										
30	BOTTOM COVER	KF97109	1	1											
		KF97117			1										
31	FUEL TANK	KA97508	1												
		KA97509		1	1										
32	CAP	KP97333	2	2	2										
33	CASTER	KP97334	2	2	2										
34	WASHER	KP97335	2	2	2										
35	WHEEL FRAME	KP97337	1	1	1										
36	GROMMET IGNITOR LEAD	KP97350	1	1	1										
37	FUEL GAUGE	KP97346	1												
		KP97347		1	1										
38	POWER CORD	KP97328	1	1	1										
39	GROMMET - POWER CORD	KP97327	1	1	1										
40	SWITCH - RESET	KP97329	1	1	1										
41	CAP - FUEL TANK	KP97348	1	1	1										
42	HANDLE FRAME	KP97338	1	1	1										
43	HANDLE	KP97339	2	2	2										