

INSTRUCTION MANUAL

WITH PARTS LIST

MODEL B-90 PORTABLE HEATER

Spec # 271861

WARRANTY

The Company warrants its equipment to be free from defects in material or workmanship, under normal and proper use in accordance with instructions of the Company for a period of ninety days from date of delivery to the buyer, but the liability on such warranty shall be limited to the repair or replacement by the Company (f. o. b. Dayton, Ohio) of any of its equipment which may be returned by the buyer to Dayton, Ohio, transportation charges and handling fees prepaid, within said ninety day period and which is found by the Company to have been thus defective in material or workmanship. The foregoing is the full extent of the responsibility of the Company. Except as expressly stated above, we make no warranty of merchantability and no warranty of fitness for any particular purpose nor do we make any warranty, express or implied, of any nature whatsoever with respect to our equipment or the use thereof, and in no event shall the Company be liable for delay caused by defects, for consequential damages, or for any charges or expenses of any nature incurred without its written consent. This warranty will not apply to any product which has been repaired or altered outside of our Dayton factory, in any respect which, in our judgment, affects its condition or operation.

MASTER VIBRATOR COMPANY, DAYTON 1, OHIO

DIVISION OF MASTER CONSOLIDATED INC.



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SECTION I INTRODUCTION

GENERAL

The purpose of this Instruction Manual is to give users of the Model 90 Heater a working knowledge of the unit, and to provide instructions for use when the heater requires service. A repair parts list is also included in the rear of this Manual.

The Model 90 Heater is for use anywhere temporary portable heating is required, and adequate ventilation is available. The unit is designed for many hours of trouble-free operation under rugged conditions. The heater has been tested and fired at the factory before shipment.

SPECIFICATIONS

Rating	75,000 BTU
Heater air output (cubic feet per minute)	345 (approx.)
Fuel	Kerosene or No. 1 fuel oil
Motor (totally enclosed)	3450 RPM, 115 V, 60 cycle, single phase
Fan	10°, Four-blade, 8-5/32 inch diameter
Pump	Air pump, dry, four-vane
Amperage	4 amps. (during normal run)
Duct	Not recommended
Weight	53 lbs. (approx.)
Fuel tank capacity	7.5 gal.

SECTION II OPERATION

CAUTION

The heater must be used in a well ventilated area only, and must be at least four (4) feet from any combustible materials. A partly opened door or window near the heater level will provide enough ventilation.

USE OF GROUNDING ADAPTER

If the heater is equipped with a three-prong extension cord an adapter must be used to connect it to a standard receptacle that receives only two prongs. Obtain these adapters from local hardware or electrical supply stores. The adapter is equipped with a green lead, with or without a terminal. The lead must be attached to a ground source.

In most instances the receptacle box is grounded, as electrical codes require, and can be used for grounding the adapter. Loosen one of the metal screws that hold the receptacle in the box, and insert the green lead of the adapter between the box and the metal arm of the receptacle. Retighten the screw.

This procedure grounds the frame of the heater.

STARTING

To start the portable heater, plug it into an electrical outlet which has the same voltage and cycle characteristics as those shown on the heater name plate. The heater will ignite immediately and provide instant heat.

CAUTION

If plugged into current other than that specified on the heater instruction plate, the transformer will burn up.

STOPPING

To stop the portable heater, unplug the electrical cord from the power supply. The heater will stop immediately, and with no harmful effects.

EXTENSION CORD WIRE SIZES

Length of Extension Cord	Wire Size (AWG)
100 feet	14
200 feet	12
300 feet	10
400 feet	8
500 feet	6

SECTION III MAINTENANCE INSTRUCTIONS

CLEANING

Fuel Tank

Drain and flush after every 150 hours of operation with clean fuel oil.

Filters

Clean the air and fuel filters twice a season, or as needed (every 500 hours of operation).

a. Air intake filter (figure 6, item 47). Remove "snap-on" cover of Ozonaire filter housing. Lift out filter element and wash in hot or cold water and mild detergent, dry thoroughly and replace. Be sure cover is on tight.

b. Output air line filter (49). Remove hex head screw and filter bowl. Lift out filter element, wash in hot or cold water and mild detergent and dry. Replace filter element, bowl and tighten hex head screw securely. Do not attempt to adjust pressure relief valve, as it is capped and preset at factory.

c. Fuel intake filter (5). Remove fuel line (29) from filter, and with wrench back out (counterclockwise) filter. Immerse in clean fuel and rinse several times. Blow out through fitting end. Replace securely and connect fuel line.

Fan

Fan blades must be cleaned twice a season or as needed (every 500 hours of operation). Accumulation of dust and dirt will reduce air supply.

Remove access door (33) and wipe blades with clean cloth. If deposits will not come off readily use kerosene or solvent on tip of cloth. Blades must be dried thoroughly. Replace access door.

Burner

To remove burner assembly (17) for cleaning, remove access door cover (33) by removing two screws. Disconnect air line (84) and fuel line (29) at both ends of each line and also electrode leads that are attached at back of burner on electrodes. Loosen screw (28) (do not remove) and twist burner clockwise. This will release burner from grooves in fins, and by drawing straight out toward fan, burner can be removed.

Soak complete burner head in non flammable liquid cleaning agent (do not use kerosene or fuel oil) for one hour and blow out through both fittings in rear of head. Do not attempt to remove nozzle or open passage with a drill, as you will damage it beyond repair.

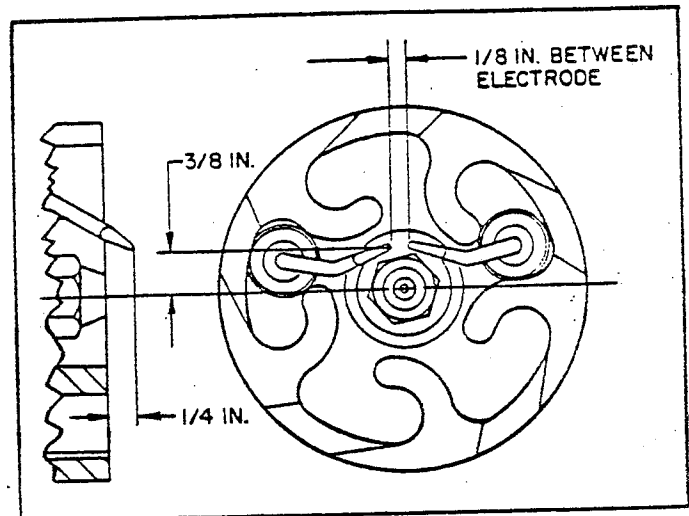


Figure 1. Electrode Settings

Reassemble burner in heater, after checking electrode settings according to manual instructions, Figure 1, making sure burner is snug against combustion chamber backplate. Turn counterclockwise as far as possible and tighten screw (28). Tighten connections on air and fuel lines securely and electrode leads must be inserted until they snap into place. Replace access door.

SPECIAL TOOLS

The following special tools are required for servicing and maintaining the heaters:

Air Gage (Part No. M9148), 15 pound minimum pressure range, 1/4-pound divisions (must be able to read 4-1/4 pounds accurately).

Nozzle Wrench (Oil burner type).

Gland Tool (Part No. M9115) tool used for the disassembly and reassembly of the rubber sleeve and gland nut to the burner.

TROUBLE-SHOOTING GUIDE

1 - Heater will not start:

- Check outlet for power supply. Should be same as on instruction plate.
- Check fan to see that it rotates freely. If it does not, return heater to vendor for service.

WARNING

Motor has automatic thermal overload protector. It may stop due to low voltage or motor overload, then RESTART automatically. BE SURE to disconnect heater before inspecting.

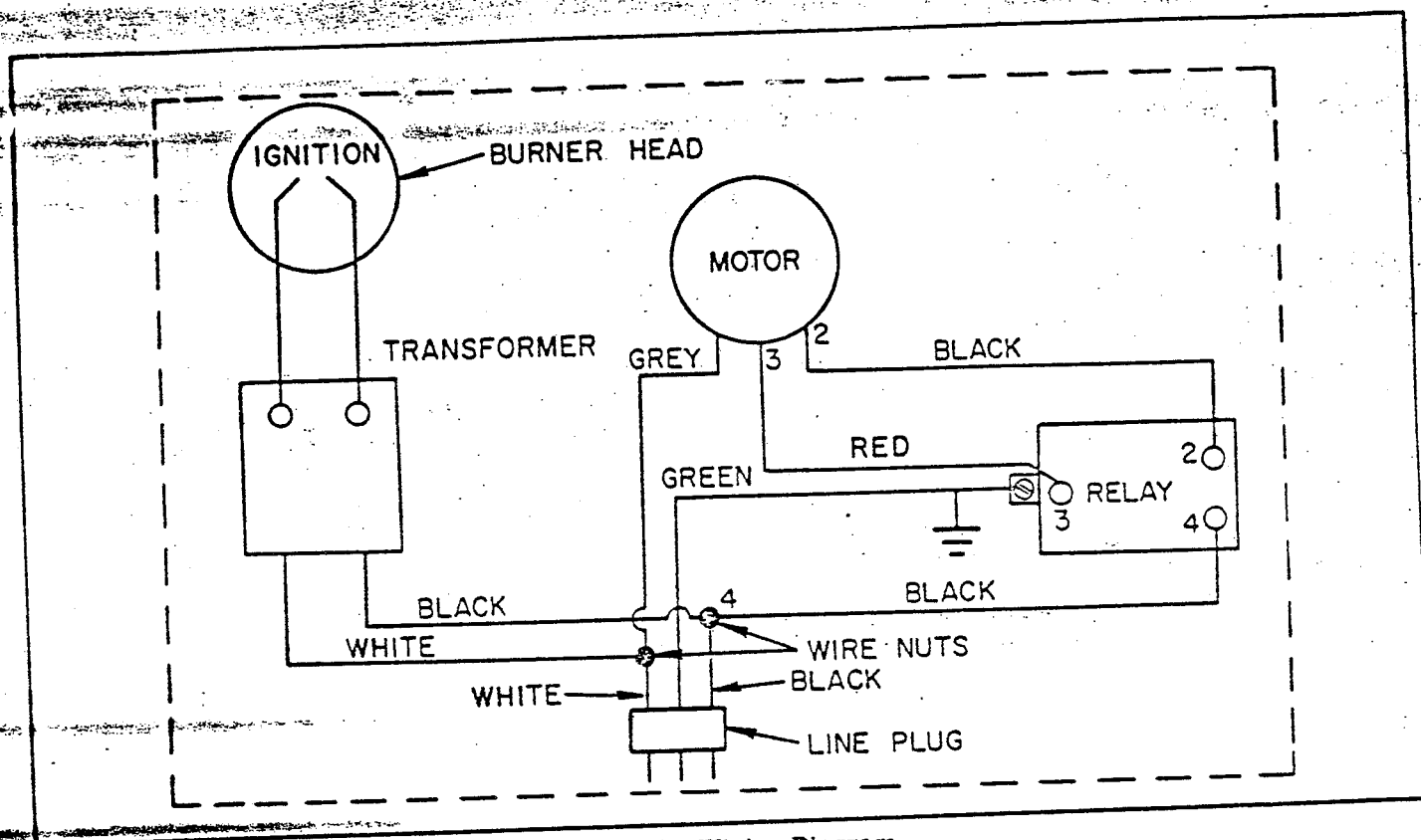


Figure 2. Wiring Diagram

TRUBLE-SHOOTING GUIDE (Continued)

2 - Heater burns, but gives off fumes:

- a. Check fuel and air lines for tight connections.
- b. Clean all filters (see cleaning instructions).
- c. Clean burner assembly (see cleaning instructions).

3 - Heater burns but licks of flame or puffs of smoke can be seen:

- a. Check fuel line for tight connections.
- b. Water condensation in fuel tank. Drain and flush with clean fuel.
- c. Heater running out of fuel.

4 - Heater smokes continuously:

- a. Check fuel line for tight connections.
- b. Excessive amount of water in fuel tank. Drain and flush with clean fuel.
- c. Check for foreign material around motor and fan.

5 - Heater will not ignite:

- a. Electrodes cracked - see field replacement parts.
- b. Electrodes out of position - see Figure 1.
- c. Transformer burnt out - see field replacement parts.
- d. Transformer electrode leads off - remove back panel on tank and check leads.

Fuel Line (Figure 6, Item 29)

Remove access door (33) and disconnect line at both tank and burner. (Fuel line always connects to fitting on burner nearest fan.)

Replace with new line and be sure fittings are tight. Replace cover.

Air Line (Figure 6, Item 84)

Remove access door (33) and disconnect line at both pump and burner. Replace with new line and be sure fittings are tight. Replace cover.

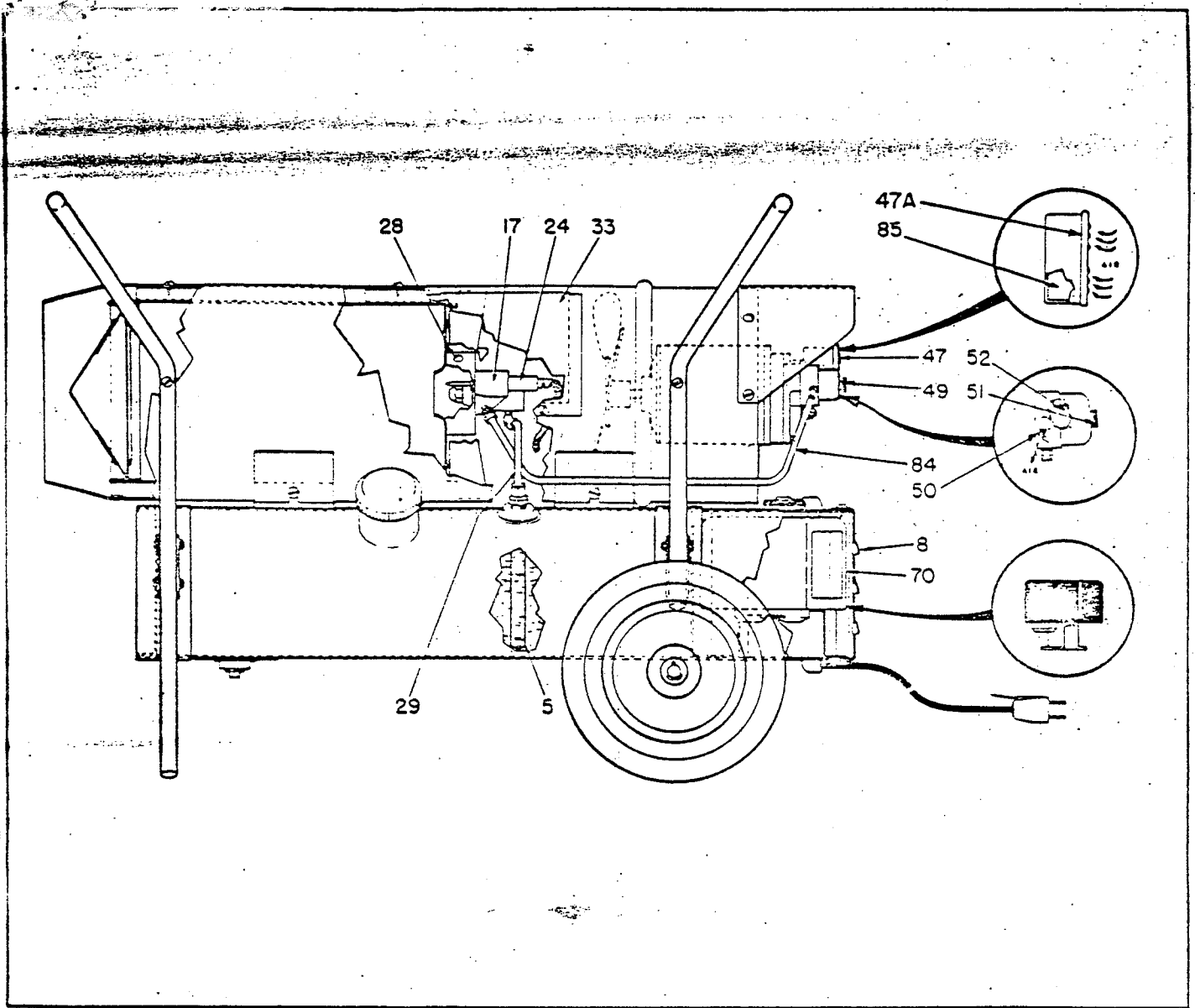


Figure 6. Portable Heater - Side View

Index No.	Part Number	RECOMMENDED FIELD REPLACEMENT PARTS Part Name	Units Per Assy
5	M10808G1	Fuel Filter	1
8	M10782	Cover	1
17	M8789G1	Burner Head Assembly	1
24	M8990	Electrode, RH	1
24	M8989	Electrode, LH	1
28	HF3-3	Hex Head Screw	3
29	M8685G1	Fuel Line	1
33	M8633-1	Access Door	1
47	M8769	Air Cleaner	1
47A	M9191	Filter Cover	1
49	M9791G1	Air Output Filter	1
50	M9716	Block (Housing)	1
51	HF4-4C	Hex Head Screw	1
52	M9942G1	Felt Filter	2
70	M3259-4	Transformer	1
84	M9952G1	Air Line	1
85	M8849	Filter Element	1

SECTION V

FIELD REPLACEMENT PARTS

Electrodes

Remove burner assembly from heater (see cleaning instructions, Section III) and remove electrodes (Figure 6, Item 24) by loosening screws (28). Electrodes must be removed from face side of burner as electrode tips would be damaged if forced out from back. Replace electrodes if old ones are cracked or excessively dirty. The metal bands (one for each electrode) must be positioned directly under screws (28) so porcelain will not be damaged when tightened. Otherwise screws tightened directly on electrodes will crack them and tips will not position correctly. Refer to Figure 1 for electrode settings. Replace burner.

Transformer

Transformer is located in tank extension on rear of heater. Remove cover (Figure 6, Item 8). Before removing transformer, check across electrode terminals with insulated screwdriver when heater is running. If burned out, no arcing will be seen. Disconnect primary leads from wire nuts (see Figure 2) and electrode leads from terminals on bottom of transformer. Loosen two hex nuts from transformer studs on underside of bracket and slide transformer to left. Bracket is slotted. Remove and replace with new transformer. Tighten hex nuts, connect electrode leads, hook up primary leads and be sure cover is fastened securely.

SECTION VI

PARTS LIST

The following is a list of all parts used in the heaters covered by this manual. The only parts recommended for replacement by owner are listed in Figure 6. Check the model decal for the correct model number of your heater. Include model and serial number when ordering parts.

Index No.	Part Number	Part Name	Units Per Assy
1	M10780G1	Fuel Tank	1
2	M3353	Cap, Fuel Tank	1
3	M11084-13	Screw, Hex Head	2
4	1000576	Grommet	1
5	M10808G1	Fuel Filter	1
6	M10908-30	Screw, Self Tapping	2
7	M8257	Drain Plug	1
8	M10782	Cover	1
10	WP4	Washer, Flat	2
11	M10805G1	Shell Assembly, Outer	1
12	1000576	Grommet	2
13	M3530	Grommet	1
14	M5233	Nut, Tinnerman	2
15	M10828G1	Combustion Chamber	1
17	M8789G1	Burner Head Assembly	1
18	M9844	Body, Burner	1
19	M8667	Nozzle	1

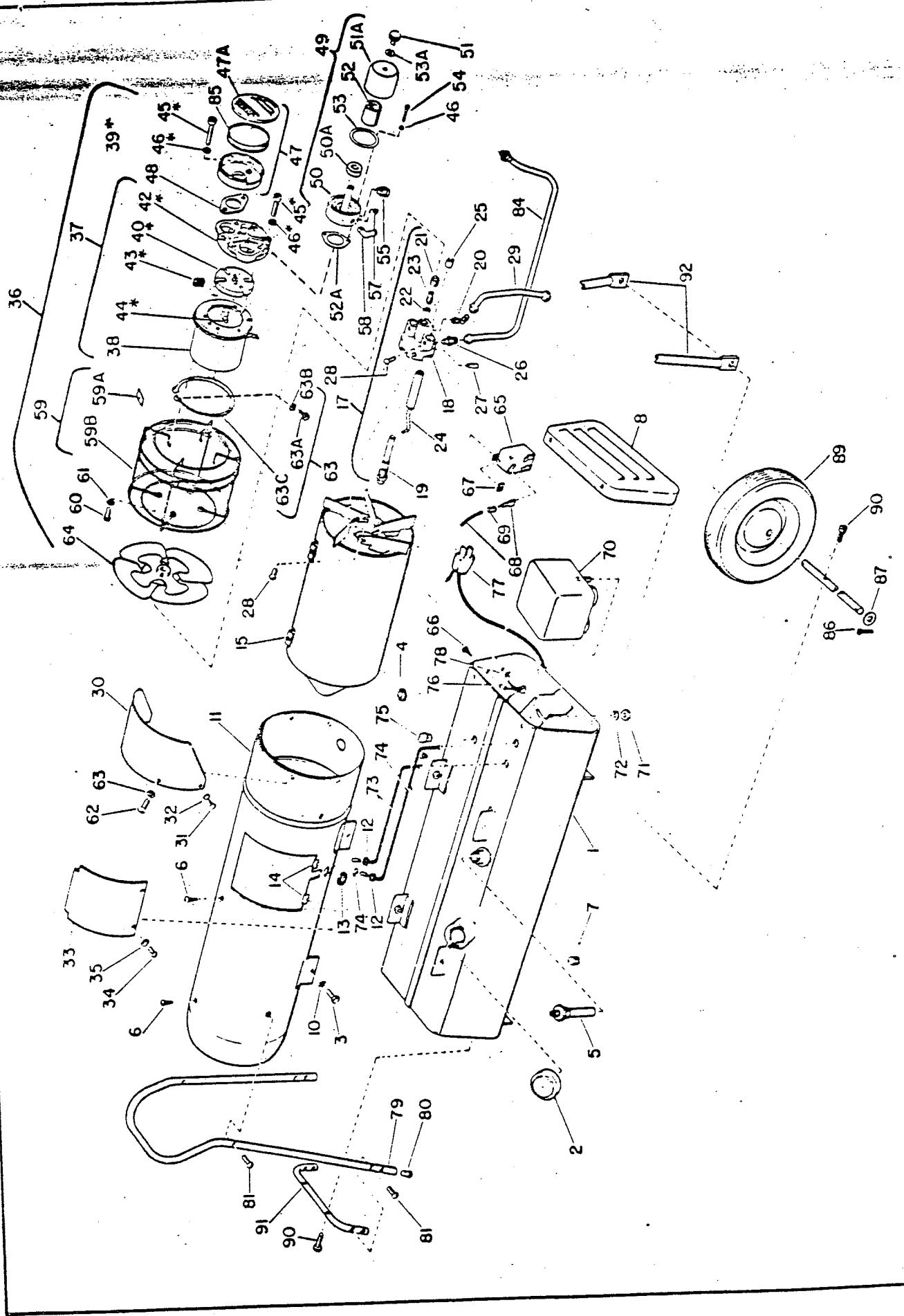


Figure 7. Portable Heater - Exploded View

Units
Per Assy

Index No.	Part Number	Part Name	Units Per Assy
20	M9181	Elbow, 90°	1
21	M8994	Plug, Pipe	1
22	M8882	Sleeve	1
23	M8958 <i>NA</i>	Nut, Gland	1
24	M8989	Electrode, Left Hand	1
24	M8990	Electrode, Right Hand	1
25	M9788	Bushing	2
26	69249	Connector	1
27	ROP12-8	Pin, Roll	2
28	HF3-3	Screw, Hex Head	3
29	M8685G1	Fuel Line Assembly (Filter to Burner)	1
30	M8628	Cowl	1
31	M10908-14	Screw	2
32	WLI-2	Lock Washer	2
33	M8633-1	Door, Access	1
34	M10908-27	Screw, Round Head	2
35	WLI-2	Lock Washer	2
36	M8641 <i>NA</i>	Motor Package Assembly	1
37	M10815-1 <i>NA</i>	Motor and Pump Assembly	1
38	M9916 <i>NA</i>	Motor and Pump Body Assembly	1
39	M9981	Pump Parts Package	1
40	M8644	Rotor	1
42	M8646	Cover, End	1
43	M8643	Blades, Carbon	4
44	M8677 <i>M22009</i>	Pin, Rotor	1
45	FHPF-3-12	Screw, Fillister Head	4
46	M3962	Washer, Lock	6
47	M8769	Cleaner, Air	1
47A	M9191	Filter Cover	1
48	M10257	Gasket	1
49	M9791G1	Filter, Output	1
50	M9716	Block	1
50A	M10261	Filter	1
51	HF4-4C	Screw, Hex Head	1
51A	M9767	Bowl	1
52	M9942G1	Filter (Felt)	1
52A	M8784	Gasket	1
53	M9769	Gasket	1
53A	M9770	Washer	1
54	FHPF-3-14	Screw, Fillister Head	2
55	M8943G1	Valve, Pressure Relief	1
57	M10837	Plug	1
58	M9132	Elbow, 90°	1
59	M8948G1	Grille Assembly	1
59A	M5233	Speed Nut	4
59B	M9949	Grille	1
60	RC2-3	Screw, Round Head	4
61	WLE-2	Lock Washer	4
62	ST3-4B	Screw, Round Head	4
63	M9182G1	Ring Assembly, Grille Support	1
63A	RC3-10	Screw, Round Head	1
63B	M5233	Speed Nut	1
63C	M9948	Ring, Grille Support	1
64	M8697	Fan	1
65	M8800	Relay	1
66	M10908-14	Screw, Self Tapping	2
67	M8886	Nut, Tinnerman	2

Units
Per Assy

Index No.	Part Number	Part Name	Units Per Assy
		Lead, Starting relay to line	1
68	M9946G1	Tubing, Polyform No. 8	3
69	M8208-4	Transformer	1
70	M3259-4	Nut, Hexagon	2
71	NPC-4	Washer, Lock	2
72	WLM-4	Lead Assembly, Electrode	2
73	M10816G1	Strain Relief	1
74	M8949	Bushing	3
75	M6916	Connector	2
76	69321-61	Cord, Extension	1
77	M10813G1	Terminal, Ground	1
78	69321-10	Leg, Front	1
79	M10801	Plug Button	2
80	M8704	Screw, Round Head	8
81	M10908-32	Nut, Hexagon	2
82	NLF-3	Air Line	1
84	M9952G1	Element, Filter	1
85	M8849	Pin, Cotter	2
86	C4-8	Washer	1
87	WP-8	Axle	2
88	M10804	Wheel	4
89	M3976	Screw	1
90	M11084-7	Brace Assembly	1
91	M10826G1	Leg, Rear	1
92	M10802	Decal, Filter	1
	M8603	Decal, Fuel tank drain	1
	M8987	Plate, Operating instructions	1
	M10882	Decal, Master	1
	M9015/	Name Plate	1
	M10898	Thermostat Kit (optional equipment)	1
	N-10987	Decal, Caution	1
	M9816	Kit, Hardware	1
	M9599	Relay (Substitute for M8800)	1
	M10954G1		

B90 motor is
not available -
you can use
M31315 motor &
pump
and readapt air
line hose