

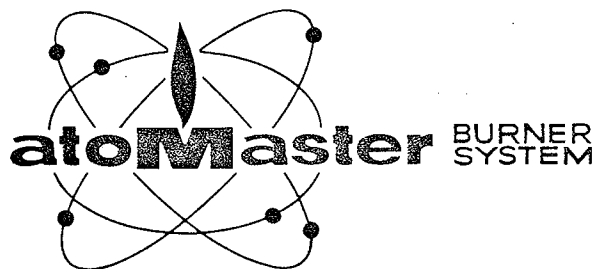
# **INSTRUCTION MANUAL**

## **WITH PARTS LIST**

### **MODELS B-99C and F-98C**

(B-99C, Spec. Nos. 2826G1, 2826G1-1 and 2826G1-2)

(F-98C, Spec. Nos. 2826G2, 2826G2-1 and 2826G2-2)



**Master**  
**Division of Koehring Company**

## SECTION I

### INTRODUCTION

#### GENERAL

The purpose of this Instruction Manual is to give users of the Portable 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 Portable 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 . . . . . 345 (approx.)  
(cubic feet per minute)  
Fuel . . . . . Kerosene or No. 1 fuel oil  
Motor (totally enclosed). .3450 RPM, 115V, 60 cycle  
Fan . . . . . 17" . . . . . Four-blade, 8 inch diameter  
Pump . . . . . Air pump, dry, four-vane  
Amperage . . . . . 4 amps (during normal run)  
Duct . . . . . Not recommended  
Weight . . . . . 68 lbs. (approx.)  
Fuel tank capacity . . . . . 9.0 U. S. 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.

#### GROUNDING OF HEATER

The heater is equipped with an extension cord with a three-prong plug. An adapter must be used when only two-prong receptacles are available.

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 metal arm of the receptacle. Retighten the screw.

This procedure grounds the frame of the heater.

#### STARTING

To start the portable heater, fill the fuel tank; then, ground the green lead on the adapter and plug 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. Remove the four screws (2), fig. 6, lockwashers (3), and cover (1). Take out the output filter (5), intake filter (4), and the lint filter (6). Wash filters with a mild detergent. Dry thoroughly and replace filters, cover and screws.

b. Loosen the 4 screws at the sides and lift off upper shell (1, fig. 4). Disconnect the fuel filter assembly (9) from the burner assembly (8) and withdraw filter assembly. Immerse in clean fuel and rinse several times. Blow out through fitting end. Replace securely in tank and connect to burner.

##### 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 upper shell (1), and wipe blades with clean cloth. If deposits will not come off readily, use kerosene or solvent on tip of cloth. Dry blades thoroughly. Replace upper shell.

##### Burner

To remove burner assembly (8) for cleaning, remove upper shell. Disconnect fuel filter (9), air line (10) at both ends, and the two electrode leads (44) at the back of burner. Loosen screw (8A) (do not remove); then, twist burner clockwise, to release it from grooves in fins, and draw it straight back toward fan. Lift out burner.

Soak complete burner head in non-flammable liquid cleaning agent (do not use kerosene or fuel oil)

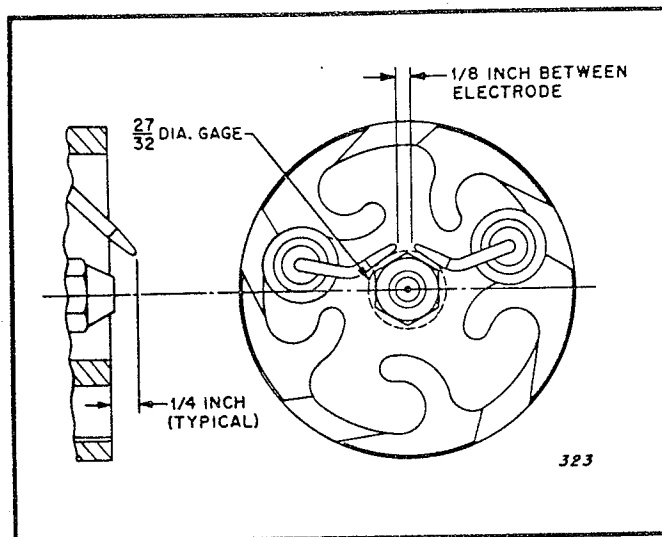


Figure 1. Electrode Settings

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.

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 (8A, figure 4). Tighten connections on air line and fuel filter securely and push electrode leads into burner head electrodes, until they snap into place. Replace upper shell.

#### 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-pounds accurately).

#### TROUBLE-SHOOTING GUIDE

##### 1. Heater will not start:

a. Check outlet for power. Supply must be same as specified on instruction plate.

### WARNING

Motor has automatic thermal overload protector. It may stop due to low voltage or motor over-load. BE SURE to disconnect heater before inspecting. To reset, push red button on protector.

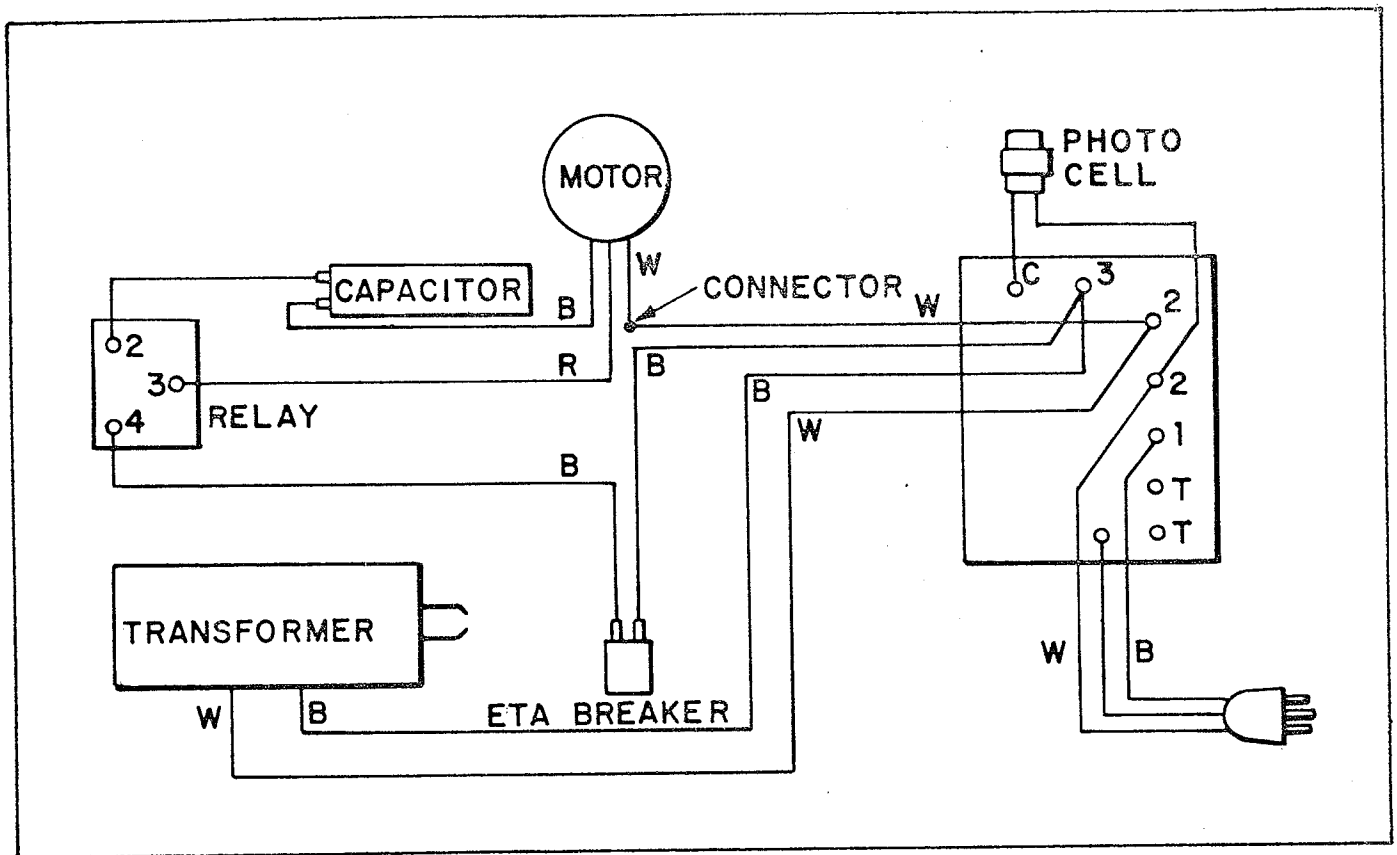


Figure 2. Wiring Diagram

# TRUBLE-SHOOTING GUIDE (Continued).

b. Push reset buttons on Penn control and overload protector.

c. Check that fan rotates freely. If not, return heater to vendor for service.

## 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 filter for tight connection.

b. Water condensation in fuel tank. Drain and flush with clean fuel. Refill tank.

c. Heater running out of fuel. Refill tank.

## 4. Heater smokes continuously:

a. Check fuel filter for tight connection.

b. Excessive amount of water in fuel tank. Drain and flush with clean fuel. Refill tank.

c. Check for foreign material around motor and fan. Clean if necessary.

## 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 upper shell and connect leads.

# MODELS B-99C AND F-98C

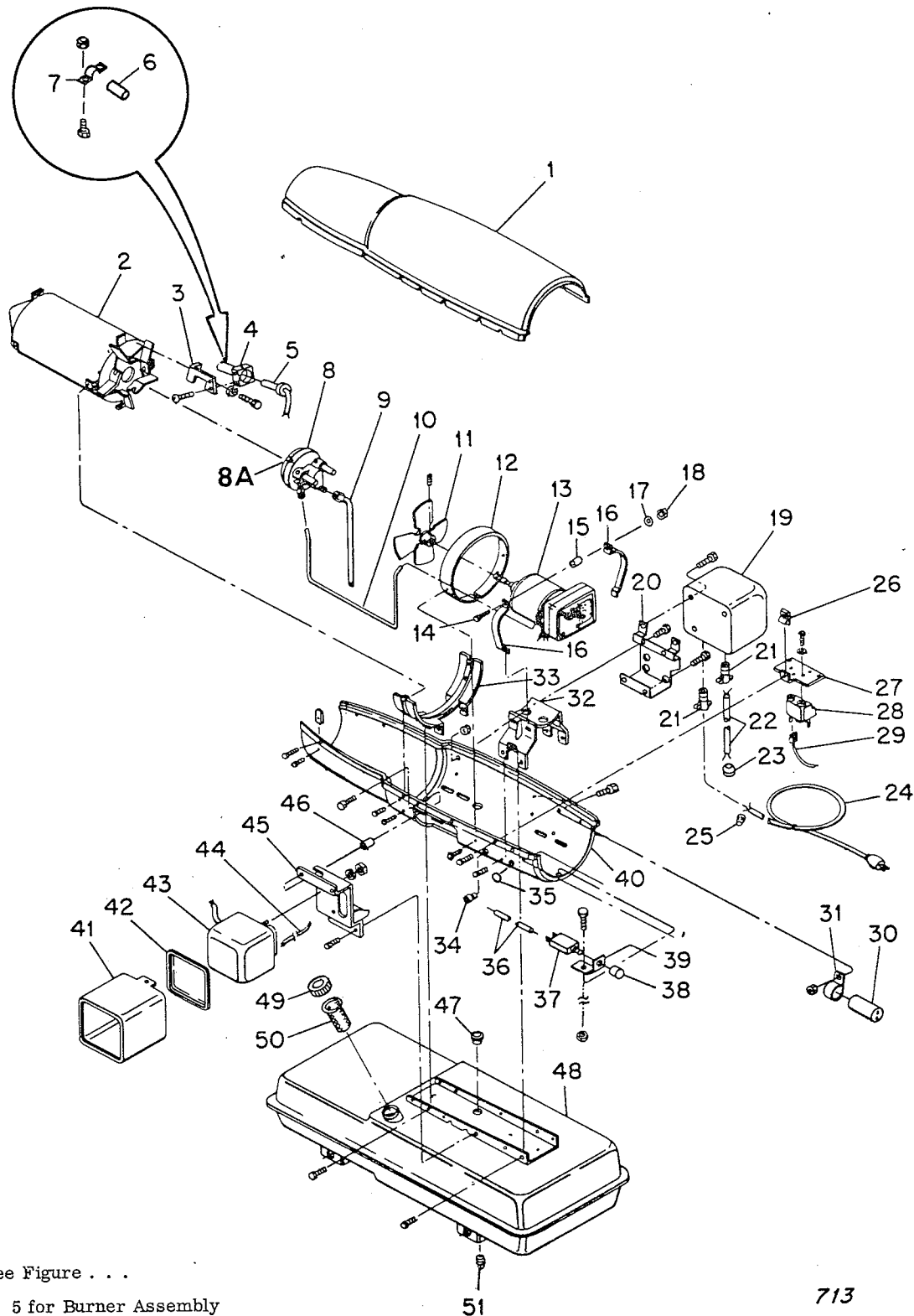


Figure 4. Portable Heater, Exploded View, General Assembly

## SECTION VI

### ILLUSTRATED PARTS LIST

This section contains a list of all replaceable parts used in the heater covered by this manual. The only parts that are recommended for replacement by the heater's owner or user are indicated by the symbol (\*). Parts indicated by the symbol (\*\*) are standard hardware items, and may be obtained locally.

Major parts of the heaters are indexed on the exploded views. Usually parts (such as screws and nuts) that attach these major parts are shown on the illustration, but have no index numbers. In this case, the attaching parts are listed immediately following the parts they attach.

Most parts of the heaters are identical for each Specification Number. Wherever there is a difference, the usage

is coded by means of a note. The code is as follows:

A - Used on Spec. Nos. 2826G1 and 2826G2

B - Used on Spec. Nos. 2826G1-1 and 2826G2-1

C - Used on Spec. Nos. 2826G1-2 and 2826G2-2

To order parts, first check the nameplate decal for the correct model number and Spec. No. of the heater. INCLUDE THE MODEL AND SPEC. NUMBER WHEN ORDERING PARTS. Order parts by part name and part number only. Do not use the index numbers from the illustration when ordering parts.

#### MODELS B-99C AND F-98C

#### PORTABLE HEATER, GENERAL ASSEMBLY

Index No.	Part Number	Part Name	Usage Code	Quan.	Index No.	Part Number	Part Name	Usage Code	Quan.
1	M13134G2	Shell, Upper		1	6	M13962	Tubing, Photocell	BC	1
-	M12461-51	Screw (Upper shell to lower shell)	A	6	7	M13963	Clamp, Photocell	BC	1
-	M11084-27	Screw	BC	6	-	NTC-1C	Nut, Torque Lock, No. 6-32	BC	2
-	M11271-4	Nut, Tinnerman (Upper shell to lower shell)	A	6	-	M12461-2	Screw	BC	2
-	M11271-6	Nut, Tinnerman	BC	6	8	Ref.	Burner Assembly (See Figure 5)		1
2	M11920G2	Combustion Chamber Assy		1	8A	Ref.	Screw (Burner to Combustion Chamber)		-
-	M10908-51	Screw (Combustion chamber attaching, front)	A	2	9	M11932G1	Fuel Filter Assembly (Superseded by M13846G1. Part No. M11932G1 requires use of M10990-1 Bushing, Index No. 47, having 19/32 in. dia. hole.)	A	1
-	M11084-27	Screw (Combustion chamber attaching, front)	BC	2	9	M13846G1	Fuel Filter Assembly (Supersedes M11932G1. Part No. M13846G1 requires use of M10990-3 Bushing, Index No. 47, having 3/8 in. dia. hole.)	BC	1
-	M10908-52	Screw (Combustion chamber and support bracket attaching, rear)	A	4	10	M11943	Air Line	*	1
-	M11084-29	Screw (Combustion chamber and support bracket attaching, rear)	BC	4	11	M9726	Fan	*AB	1
3	M12017	Bracket, Photo Cell Mounting	A	1	11	M12464	Fan	*C	1
3	M13961	Bracket, Photo Cell Mounting	BC	1	-	SF4-2-1/2K	Setscrew, Soc. hd, knurled cup pt., 1/4-28		2
-	WLI-1	Lockwasher, No. 6	A	2	12	M12331	Fan Housing		1
-	M10908-1	Screw (Photo Cell mounting bracket to combustion chamber)		2	-	M11084-27	Screw		4
4	M11856	Block, Photo Cell Mounting	A	1	13	Ref.	Motor Package Assy (See Fig. 6)		1
-	RC1-2C	Screw (Block to mounting bracket)	A	1					
5	M9211	Photo Cell	A	1					
5	M9211-1	Photo Cell	BC	1					

\* Only these parts are recommended for replacement by the owner or user of the heater.

When ordering parts, please state Heater Model, Specification, and Serial Number.



## BURNER ASSEMBLY

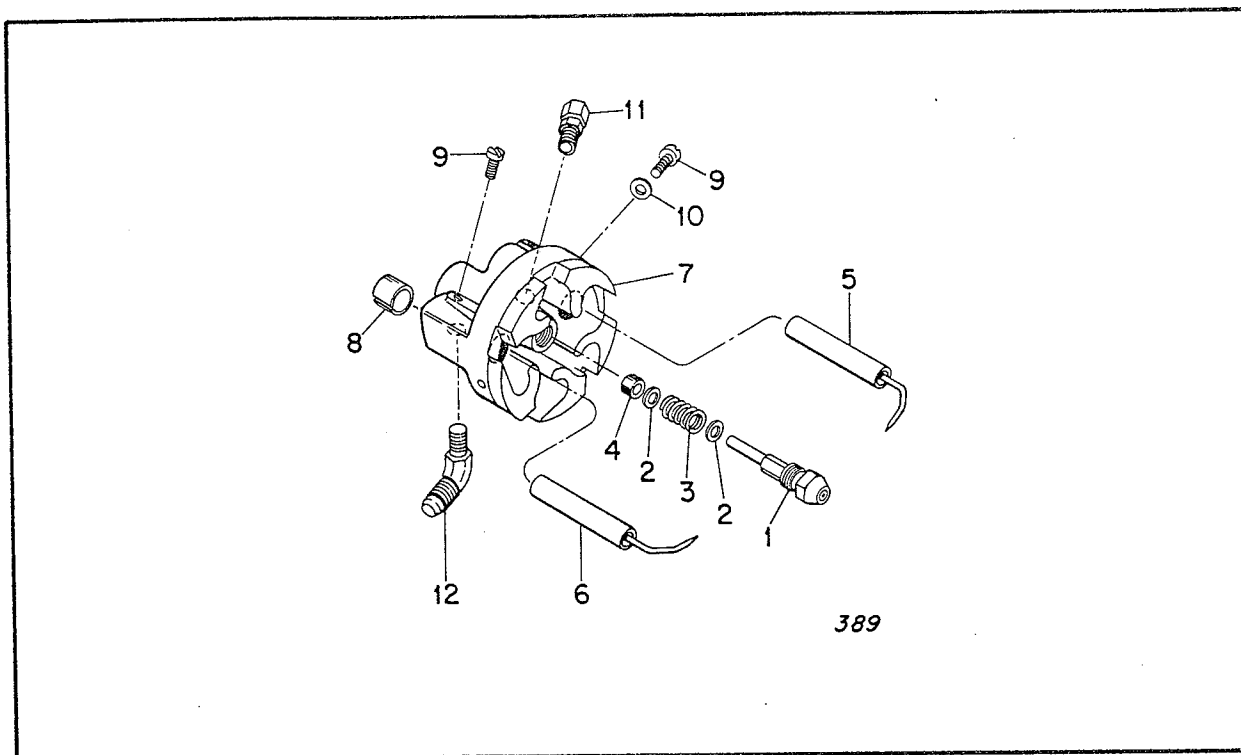


Figure 5. Burner Assembly

Index No.	Part Number	Part Name	Usage Code	Quan.
-	M11929G1	Burner Assembly	*	1
-1	M8667	. Nozzle, Siphon		1
-2	M10659-1	. Washer, Nozzle seal		2
-3	M10809-1	. Spring, Nozzle seal		1
-4	M8882	. Sleeve		1
-5	M8989	. Electrode, L.H.	*	1
-6	M8990	. Electrode, R.H.	*	1
-7	M8716G2	. Burner Head Assembly (Includes roll pins, bushings, and burner head casting)		1
-8	M16712	. . Bushing, Electrode		1
-9	HF3-3C	. Screw, Hex hd.		3
-10	WP-3C	. Washer, Flat		1
-11	M5976	. Connector, Male		1
-12	M11931	. Elbow, Male, 45°		1

\* Only these parts are recommended for replacement by the owner or user of the heater.

When ordering parts, please state Heater Model, Specification, and Serial Number



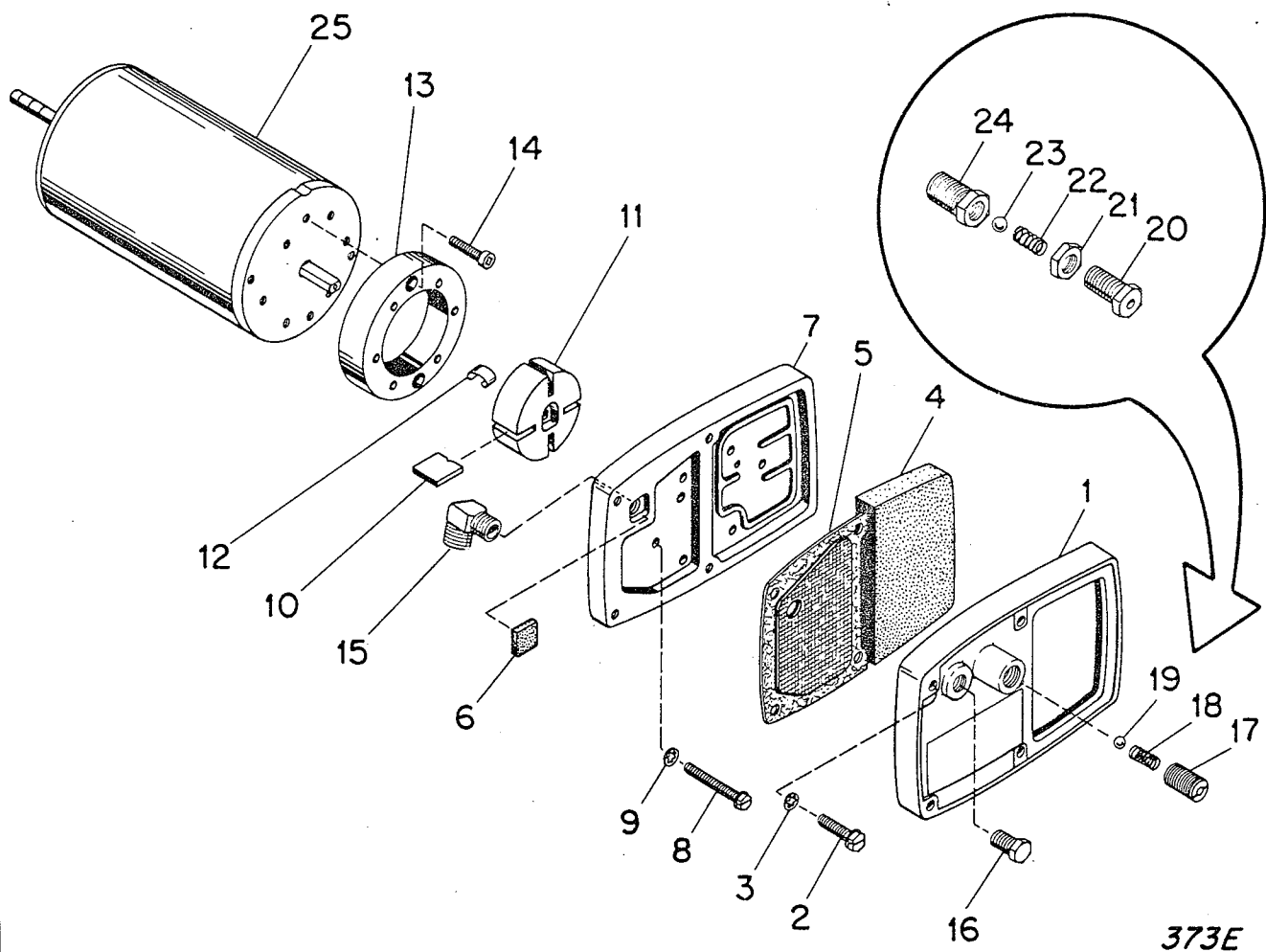


Figure 6. Motor Package Assembly

# MOTOR PACKAGE ASSEMBLY

Index No.	Part Number	Part Name	Usage Code	Quan.	Index No.	Part Number	Part Name	Usage Code	Quan.
-	M11937G3	Motor Package Assembly	AB		-22	M8941	. . Spring Compression	AB	1
-	M18146G5	Motor Package Assembly	C	1	-23	M8940	. . Ball, 1/4 in. Dia.		1
-1	M12234	. End Cover	AB	1	-24	M10362	. . Connector	AB	1
-1	M16545	. End Cover	C	1	-25	M17941-3	. Motor (Supersedes Part No. M11938-3; Requires use of Part No. M12462-5 Relay)	C	1
-2	M12461-31	. Screw	C	4	-25	M11938-3	. Motor (Superseded by Part No. M17941-3. Part No. M11938-3 requires use of part No. M11951 Relay)	AB	1
-3	WLI-3	. Lockwasher, Internal tooth, No. 10		4	-	M19579	Kit, Motor and Relay Replacement (Consists of M17941-3 Motor and M12462-5 Relay, to replace M11938-3 motor and/or M11938-3 motor with M11951 Relay on heaters built to Specification Nos. 2826G1.		
-4	M12179	. Filter, Intake	*	1	-	M13614G1	Kit, Pump and Filter Parts (Same as M11937G3 except without motor)	AB	1
-5	M12244G1	. Filter Assy	*	1	-	M16886G2	Kit, Pump and Filter Parts (Same as M18146G5 except without motor)	C	1
-6	M11637	. Filter, Lint	*	1					
-7	M12233	. End Cover, Pump		1					
-8	M12461-32	. Screw		6					
-9	WLI-3	. Lockwasher, Internal tooth, No. 10		4					
-10	M8643	. Blade		4					
-11	M11959	. Rotor	¢	1					
-12	M11966-5	. Spring	¢	1					
-13	M8645	. Body, Pump		1					
-14	FHPF3-4C	. Screw		2					
-15	69248	. Elbow, Compression		1					
-16	M10837	. Pipe Plug		1					
-17	M10992-1	. Screw, Pressure adjusting	C	1					
-18	M10993-1	. Spring, Pressure relief	C	1					
-19	M8940	. Ball, 1/4 in. Dia.		1					
-	M8943G2	. Pressure Relief Valve Assembly	AB	1					
-20	M11941	. . Bushing, Adjusting	AB	1					
-21	M8993	. . Nut, Hex, 3/8-24	AB	1					

¢ Up to and including heater serial No. 660375, a Pin M8877 and Rotor M8644 were used. Parts shown as items 11 and 12 in the above list are used in heaters with Serial No. 660376 and up.

\* Only these parts are recommended for replacement by the owner or user of the heater.

When ordering parts, please state Heater Model, Specification, and Serial Number

## WHEELS AND HANDLES

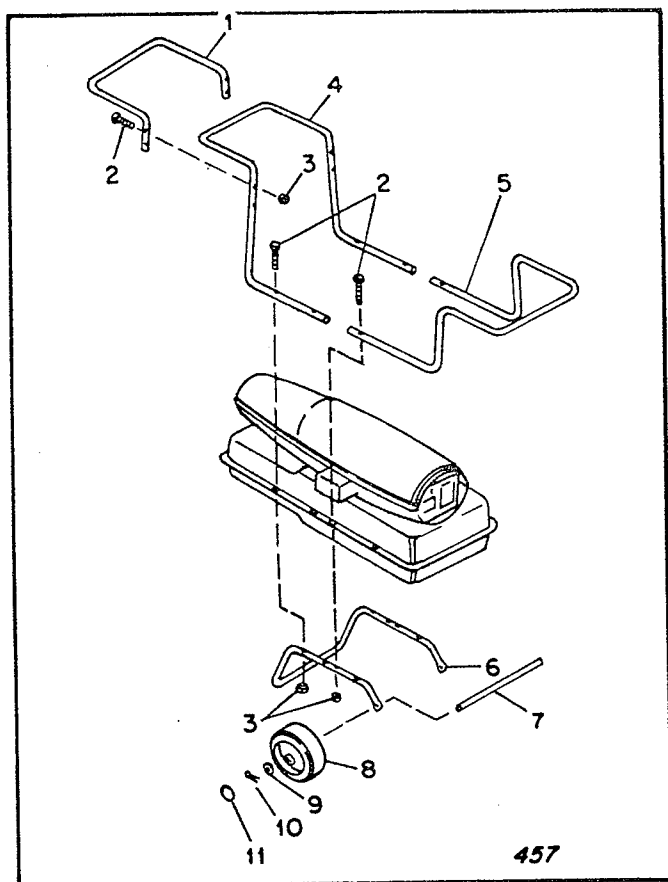


Figure 7. Wheels and Handles (Current)

Index No.	Part Number	Part Name	Usage Code	Quan.
1	M17306	Guard, Nose cone	BC	1
2	M12345-34	Screw	BC	12
3	NTC-3C	Nut, No. 10-24	BC	12
4	M17305	Handle, Front	BC	1
	M13830	Handle, Rear	BC	1
6	M12342	Frame, Wheel Support	BC	1
7	M11957	Axle	B	1
7	M16801	Axle	C	1
8	M14261-2	Wheel	B	2
8	M16896	Wheel	C	2
9	WP-8C	Washer	B	2
10	C4-7	Cotter Pin	B	2
11	M14262	Hub Cap	B	2
11	M16802	Hub Cap	C	2
-	M16741-15	Ring, Retaining (for wheels)	C	2

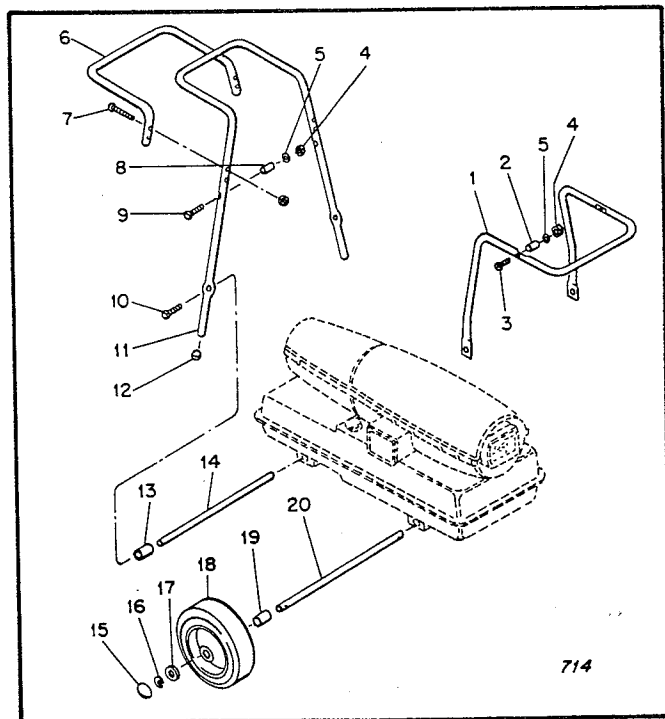


Figure 8. Wheels and Handles  
(Spec. Nos. 2826G1 and 2826G2)

Index No.	Part Number	Part Name	Usage Code	Quan.
1	M13131G1	Leg, Rear	A	1
2	M12508-2	Spacer, Leg	A	2
3	M12345-51	Screw	A	2
4	NEC-3C	Nut, Hex, No. 10-24	A	8
5	WP-3C	Washer, No. 10	A	4
6	M12607	Guard, Nose Cone	A	1
7	M12345-32	Screw	A	4
8	M12508-1	Spacer, Leg	A	2
9	M12345-50	Screw	A	2
10	M12619-23	Screw	A	2
11	M13130G2	Leg, Front	A	1
12	M8704	Plug Button	A	2
13	M12387	Spacer, Front	A	2
14	M12386	Rod, Tie	A	1
15		Hub Cap	A	2
16	M12665	Retainer	A	2
17	WP-8C	Washer	A	2
18	M12664	Wheel	A	2
19	M12391	Spacer, Rear	A	2
20	M12930-3	Axle	A	1

When ordering parts, please state Heater Model, Specification, and Serial Number

## DECALS, NAMEPLATES, TOUCH-UP PAINT

Part Number	Part Name or Description	Model Nos.	Usage Code	Quan.	Part Number	Part Name or Description	Model Nos.	Usage Code	Quan.
M12019	Decal, Wiring Diagram			1	M4119	C.S.A. Approval Label			1
M12802	Decal, Trade Name	B-99C		2	M13141	Decal, Cover Removal		AB	1
M12645	Decal, Trade Name	F-98C		2	M15943	Decal, Cover Removal		C	1
M13140	Decal, Operating Instructions			1	M18196	Decal, Manufactured by		BC	1
M12810	Decal, Air Filter		AB	1	M13386-8	Touch-Up Paint, Aerosol can, Black			
M8603	Decal, Filter			1	M13386-4	Touch-Up Paint, Aerosol can, Yellow			
M8987	Decal, Fuel Tank Drain			1	M13386-3	Touch-Up Paint, Aerosol can, Green		F-98C	
M13279	Decal, Caution			1					
M9285	Nameplate, Penn Control			1					

Note: If no Model Number is shown, the part is used on both B-99C and F-98C.

## STANDARD SCREWS

Part Number	Part Name or Description	Part Number	Part Name or Description
FHPF3-4C	Screw, Fillister hd, No. 10-32 x 1/2 in.	M12345-32	Screw, Oval hd, machine, No. 10-24 x 1-1/2 in.
FHPF3-7C	Screw, Fillister hd, No. 10-32 x 7/8 in.	M12345-34	Screw, Oval hd machine, No. 10-24 x 2 in.
HC4-10C	Screw, Hex hd. machine, 1/4-20 x 1-1/4 in.	M12345-50	Screw, Oval hd machine, No. 10-24 x 2-1/2 in.
HF3-3C	Screw, Hex hd, No. 10-32 x 3/8 in.	M12345-51	Screw, Oval hd machine, No. 10-24 x 2-3/4 in.
RC1-2C	Screw, Rd hd., No. 6-32 x 1/4 in.	M12461-2	Screw, Hex hd, No. 6-32 x 3/8 in.
RC2-2C	Screw, Rd hd., No. 8-32 x 1/4 in.	M12461-13	Screw, Hex hd, No. 8-32 x 1/4 in.
RC2-3C	Screw, Rd hd., No. 8-32 x 3/8 in.	M12461-27	Screw, Hex hd, No. 10-32 x 1/2 in.
ST2-2AC	Screw, Rd hd., No. 8-15 x 1/4 in.	M12461-31	Screw, Hex hd, No. 10-32 x 1 in.
M10908-1	Screw, Self-tapping, hex hd, No. 6-32 x 1/4 in., Type "S"	M12461-32	Screw, Hex hd, No. 10-32 x 1-1/8 in.
M10908-51	Screw, Self-tapping, hex hd, No. 10-24 x 1/2 in., Type "S"	M12461-34	Screw, Hex hd, No. 10-32 x 1-1/2 in.
M10908-52	Screw, Self-tapping, hex hd, No. 10-24 x 5/8 in., Type "S"	M12461-51	Screw, Hex hd, No. 10-24 x 1/2 in.
M11084-27	Screw, Self-tapping, hex hd, No. 10-12 x 1/2 in., Type "A"	M12619-23	Screw, Self-tapping, Oval hd, No. 10-24 x 1 in., Type "S"
M11084-29	Screw, Self-tapping, hex hd, No. 10-12 x 3/4 in., Type "A"	M15823-26	Screw, Self-tapping, hex hd, No. 10-12 x 3/8 in., Type "B"
M12345-31	Screw, Oval hd machine, No. 10-24 x 1-1/4 in.		

When ordering parts, please state Heater Model, Specification, and Serial Number

## WARRANTY

Manufacturer warrants each new Product made by Manufacturer to be free from defects in material and workmanship, its obligation and liability under this Warranty being expressly limited to repairing or, at Manufacturer's option, replacing free of charge at its factory any part proving defective under normal use and service within one year of operation after date of delivery to a customer as attested by Distributor. Parts claimed to be defective and for which repair or replacement is desired shall be, if requested by Manufacturer, returned transportation prepaid to Manufacturer's factory for inspection. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE, AND THE OBLIGATION AND LIABILITY OF MANUFACTURER UNDER THIS WARRANTY SHALL NOT INCLUDE ANY TRANSPORTATION OR OTHER CHARGES OR THE COST OF INSTALLATION OR ANY LIABILITY FOR DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES OR DELAY RESULTING FROM THE DEFECT. Any operation beyond rated capacity or the improper use or application of Product or the substitution upon it of parts not approved by Manufacturer or any alteration or repair by others in such manner as, in Manufacturer's judgment, to affect the Product materially and adversely shall void this Warranty. No representative of Manufacturer is authorized to change this Warranty in any way, and no attempt, effort or promise to repair Products of Manufacturer either by Manufacturer or by any representative of Manufacturer at any time shall change or extend this Warranty in any way. This Warranty covers only new and unused Products Manufactured by Manufacturer. Products manufactured by others are covered only by such warranties as are extended to Manufacturer by its suppliers.

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WE RESERVE THE RIGHT TO AMEND THESE SPECIFICATIONS AT ANY TIME WITHOUT NOTICE. THE ONLY WARRANTY APPLICABLE IS OUR STANDARD WRITTEN WARRANTY. WE MAKE NO OTHER WARRANTY, EXPRESSED OR IMPLIED.



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