



MODEL BV125S

Spec. No. 3133G04

**OPERATING, MAINTENANCE and SERVICE
INSTRUCTIONS with PARTS LIST**



**Koehring
Master Division**

ner into the combustion chamber. A constantly-firing spark between the electrodes of the spark plug ignites the mixture of fuel and air.

4. Control System. The safety control circuit essentially consists of three parts: a light-sensitive cell, a solid state circuit board containing a silicon-controlled rectifier (SRC), and a circuit breaker. The circuit breaker automatically trips if the flame fails, thereby causing the heater to shut down.

The cell is used to sense the presence of light due to the flame inside the combustion chamber. It varies its electrical resistance in relation to light rays. When under the influence of light, the cell has very low resistance. The resistance is high when little or no light strikes the light-sensitive surface. The cell's function is to control the trigger voltage to the silicon-controlled rectifier.

The SCR acts as a voltage-operated switch. When the trigger voltage reaches a certain level, the SCR will conduct and allow a current to flow through the heating coil of the circuit breaker. When the voltage drops, such as when the cell senses light, its resistance decreases and the SCR will turn off and block the flow of current.

The circuit breaker is a thermally operated switch. Current flowing through the heating coil will cause it to heat. When a specific temperature of a bi-metal element is reached, the contacts of the breaker will open to interrupt the current flow to the motor and transformer. This action takes approximately 25 seconds at 70 degrees F. The breaker must be manually reset by pressing the red circuit breaker reset button. The flow of current through the heating coil is controlled by the action of the SCR. If ignition takes place before the breaker trips, the flow of current through the coil is virtually stopped, the heating action stops and the contacts remain closed, thus allowing current to continue to flow to the motor and transformer.

The SCR and its circuit are mounted on top of the circuit breaker and is replaceable only as an assembly.

A thermostat accessory (Model No. HA-1200) may be incorporated into the electrical circuit. The accessory can be set to any desired temperature between 35 degrees F. and 95 degrees F. When the temperature of the surrounding air reaches the pre-set temperature, the thermostat contacts open to shut down the

heater. When the air cools, the contacts close and the heater recycles. To shut down the heater when using the thermostat accessory, place the dial in the "NO HEAT" position.

C. POWER REQUIREMENTS

The heaters are manufactured for use on 115 volt, 60 cycle power.

D. SPECIFICATIONS

Output Rating (BTU per hour)	88,000
Cold Air Flow	317
Amperage (During normal run)	4.0
Air Pump Pressure (PSI)	5 ± 1/4
Weight (Approx. Lbs.)	
Shipping	95
Dry (net)	80
Fuel Tank Capacity, U.S. Gallons	13.5
Fuel Consumption, Approx.	
U.S. Gallons per hour	0.65
Electrical Requirements	
Voltage	115
Cycles	60
Motor RPM	3450
Fuel	Kerosene or No. 1 Fuel Oil Only
Vent	4 in.

E. ACCESSORIES

A thermostat control kit, Part No. HA1200 is available as an accessory for use with these heaters. The thermostat can be set for any temperature between 35° and 95° F, and will cycle the heater on and off to maintain the surrounding air at the desired temperature. At its NO HEAT position, the thermostat shuts the heater off.

F. INSTALLATION

The installation of this unit shall be in accordance with the regulations of authorities having jurisdiction.

Refer to Section II for venting instructions.

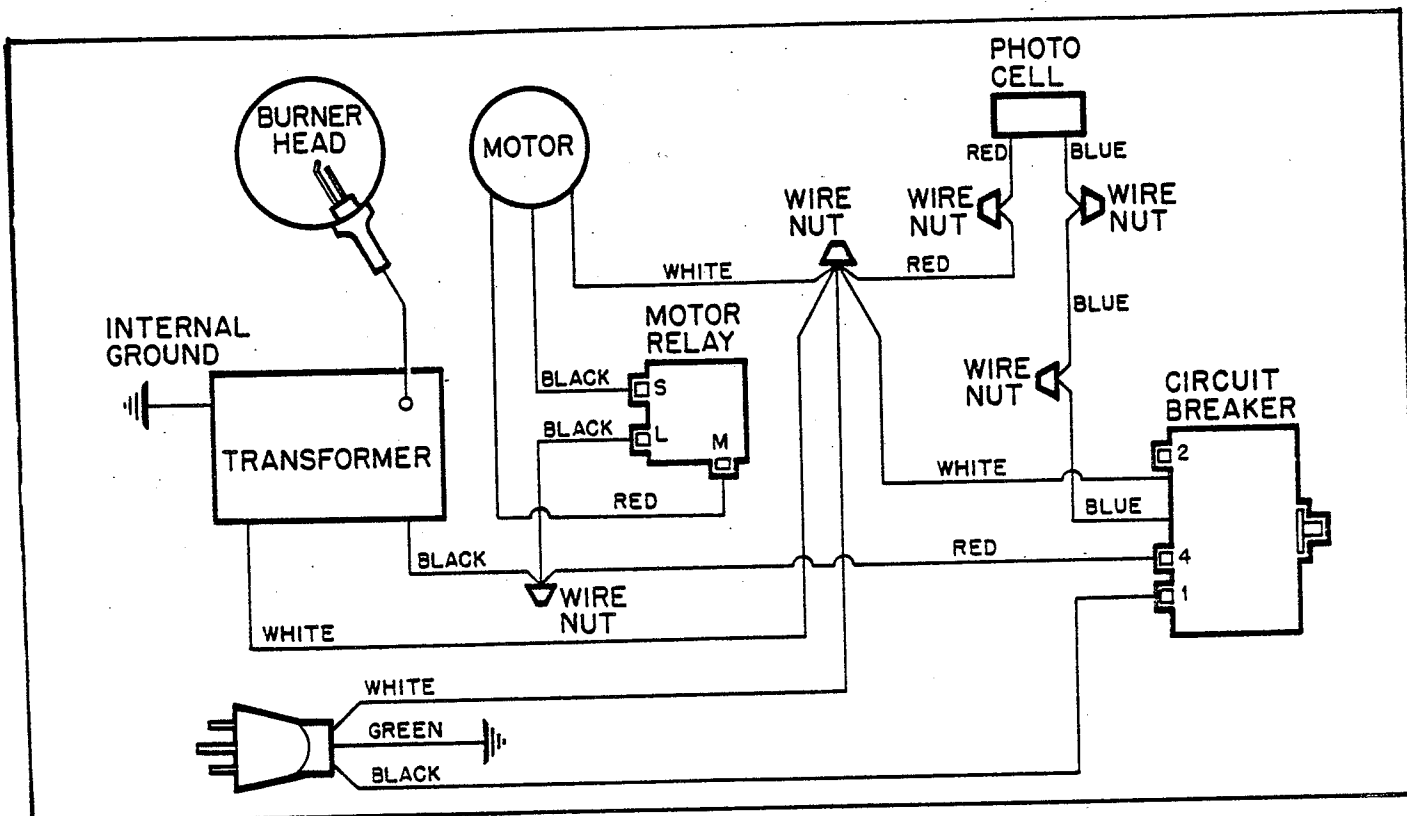


Figure 9. Wiring Diagram

TROUBLE SHOOTING CHART (Continued)

PROBLEM	POSSIBLE CAUSE	REMEDY
5. Heater occasionally stops operating.	a. Defective electrical supply or defective connections.	Be sure extension cord and heater service cord are in good condition, without intermittent open circuits. Check mechanical and electrical soundness of all wiring connections in the heater and service cord.
6. <u>Control System Troubles</u>		
6A. Heater ignites, but red button of control unit pops out anyway.	a. Defective photo cell. b. Defective control. c. Defective electrical connections in circuit through cell and control.	Check to see if glass face of cell is so dirty it can't "see" the flame; clean glass if dirty. Replace with a cell that is known to be good. Replace with a control unit that is known to be good. Be sure all solder joints and wiring connections are secure. Check wiring diagram.
6B. Control unit fails to trip when a "no-flame" condition exists.	a. Defective control unit.	Replace with a control unit that is known to be good.
6C. Button on control unit won't stay in when pressed.	a. Resetting is tried too soon after the control trips. b. Defective control unit.	Wait 5 minutes and try again. Replace with a control unit that is known to be good.

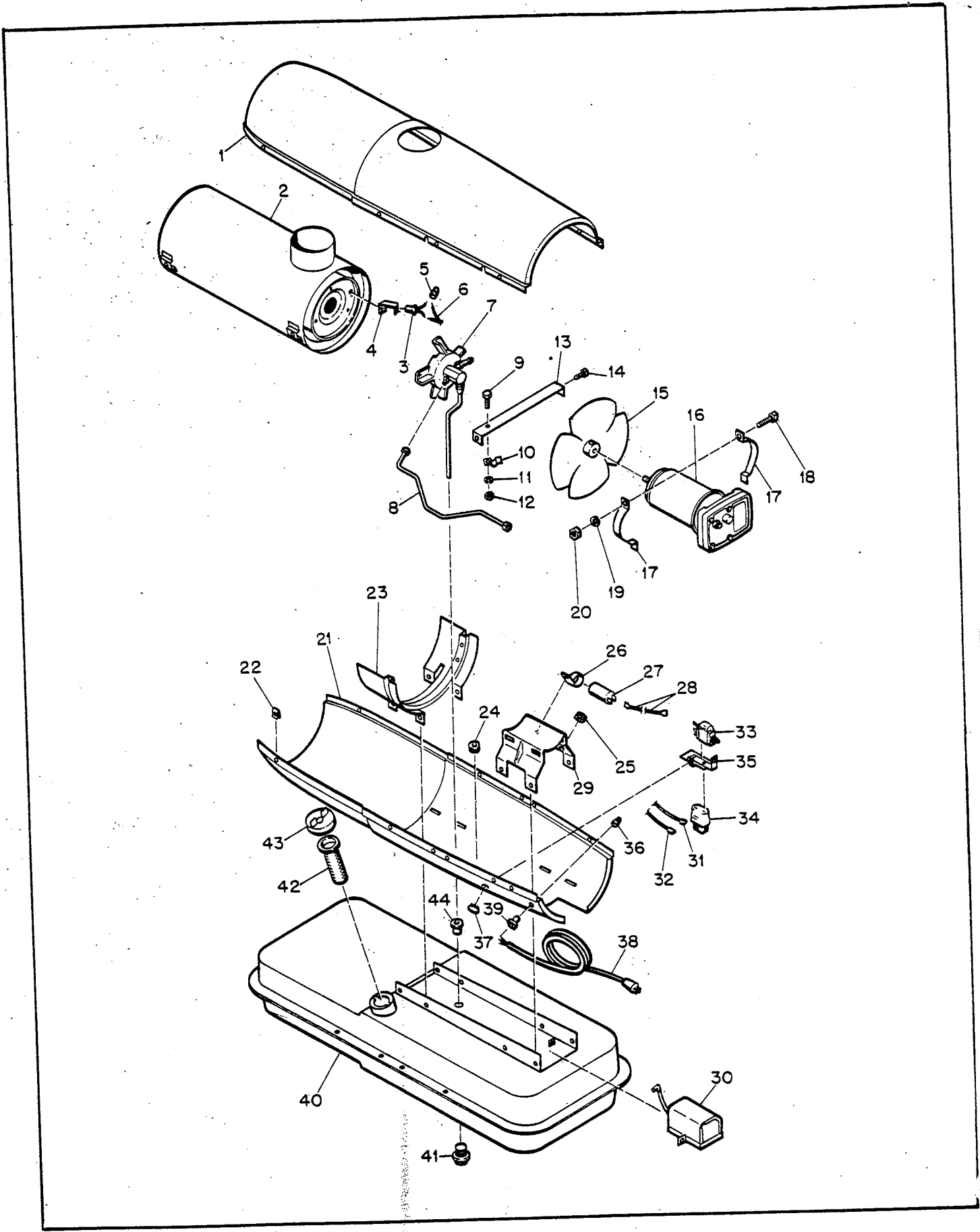


Figure 13. Heater Assembly, Exploded View

HEATER ASSEMBLY

Fig. & Index No.	Part Number	Part Name	Qty.
1	M23748A	Upper Shell Assembly	1
	ML1084-27	Screw, Hex hd., 10-12 x 1/2 in. (AP)	8
2	M23734-2	Combustion Chamber	1
	ML1087-27	Screw, Hex hd., 10-12 x 1/2 in. (AP)	4
3	M16656-3	Cell and Bushing Assembly	1
4	M16660	Bracket, Photo cell	1
	ML10908-1	Screw, Hex hd., 6-32 x 1/4 in. (AP)	2
	NPC-2C	Nut, Plain, 8-32 (Spark Plug lead)	1
	WLI-2	Washer, Lock No. 8 (Spark Plug lead)	1
5	M13942-5	Connector, Wire	2
6	M16615-1	Wiring Harness Assembly	1
7	M23150-6	Burner Head Assembly (For details see Fig. 15)	1
	ML1087-27	Screw, Hex hd., 10-12 x 1/2 in. (AP)	3
8	M23753	Air Line	1
9	M12461-27	Screw, Hex hd., 10-32 x 1/2 in.	1
10	M24717	Clamp, Air Line	1
11	WLM-3	Lockwasher, No. 10	1
12	NPF-3C	Nut, Plain, No. 10-32	1
13	M16871	Strap, Retainer	1
14	ML1084-27	Screw, Hex hd., 10-12 x 1/2 in. (AP)	2
15	M27982	Fan	1
	SF4-2-1/2K	Setscrew, Socket hd., cup pt. 1/4-28	2
16	M17875-8	Motor Package Assembly	1
17	M16661	Clamp, Motor (AP)	4
18	HC4-10C	Screw, Hex hd., 1/4-20 x 1-1/4 in. (AP)	2
19	WLM-4	Lockwasher, 1/4 in.	2

Fig. & Index No.	Part Number	Part Name	Qty.
20	NPC-4C	Nut, Hex 1/4-20	2
21	M23758A	Shell, Lower	1
22	ML1271-6	Nut, Tinnerman	8
23	M12828A	Bracket, Shell Support	1
	ML1084-29	Screw, Hex hd., 10-12 x 3/4 in. (AP)	4
24	1000576	Grommet	2
25	1000577	Grommet	2
26	M12651-1	Clamp, Capacitor	1
	ML1084-27	Screw, Hex hd., 10-12 x 1/2 in. (AP)	1
27	M12650-1	Capacitor	1
28	M9900-77	Wire Assembly, Capacitor	1
29	M16645	Bracket, Motor Support	1
	ML1084-27	Screw, Hex hd., 10-12 x 1/2 in. (AP)	4
30	M16697	Transformer, 5000 Volt	1
	ML1084-27	Screw, Hex hd., 10-12 x 1/2 in. (AP)	2
31	M9900-62	Wire Assembly, Relay	1
32	M9900-80	Wire Assembly, Relay	1
33	M24982-5	Control Assembly, Safety	1
34	M12462-6	Relay, Starting	1
	RC2-2C	Screw, Rd. hd., 8-32 x 1/4 in. (AP)	2
35	M25296-1	Bracket, Safety Control	1
	ML1084-27	Screw, Hex hd., 10-12 x 1/2 in. (AP)	1
36	M13942-2	Connector, Wire	3
37	M25042	Plug, Button	1
38	M10813-33	Extension Cord Assembly	1
39	M11954	Bushing, Strain Relief	1
40	M27547-01A	Fuel Tank Assembly	1
41	M27417	Plug, Drain	1
42	M18053	Screen, Filler Neck	1
43	M23284	Cap, Filter Neck	1
44	M10990-3	Bushing, Rubber	1

Fig. & Index No.	Part Number	Part Name	Qty.
1	M17875-9	Motor Package Assembly	1
	M16545	End Cover, Filter	1
2	M12461-31	Screw, Hex hd., 10-32 x 1 (AP)	4
3	WLI-3	Lockwasher, Internal No. 10 (AP)	4
4	M12179	Intake Air Filter	1
5	M12244-1	Output Filter Assembly	1
6	M11637	Filter, Lint	1
7	M12233	Front Cover, Pump (Port plate)	1
8	M12461-34	Screw, Hex hd., No. 10-32 x 1-1/2 (AP)	6
9	WLI-3	Lockwasher, Internal No. 10 (AP)	6

Fig. & Index No.	Part Number	Part Name	Qty.
10	M8643-3	Blade, Pump	4
11	M22456-3	Rotor, Pump	1
12	M22009	Insert, Rotor	1
13	M8645-3	Pump Body	1
14	FHPF3-7C	Screw (Pump Body to Motor)	2
15	M5976	Connector, Male	1
16	M22997-	Plug	1
17	M23105	Screw, Pressure Adjustment	1
18	M10993-1	Spring, Compression (Pressure Relief)	1
19	M8940	Ball, 1/4 in. dia.	1
20	M17814-6	Motor	1

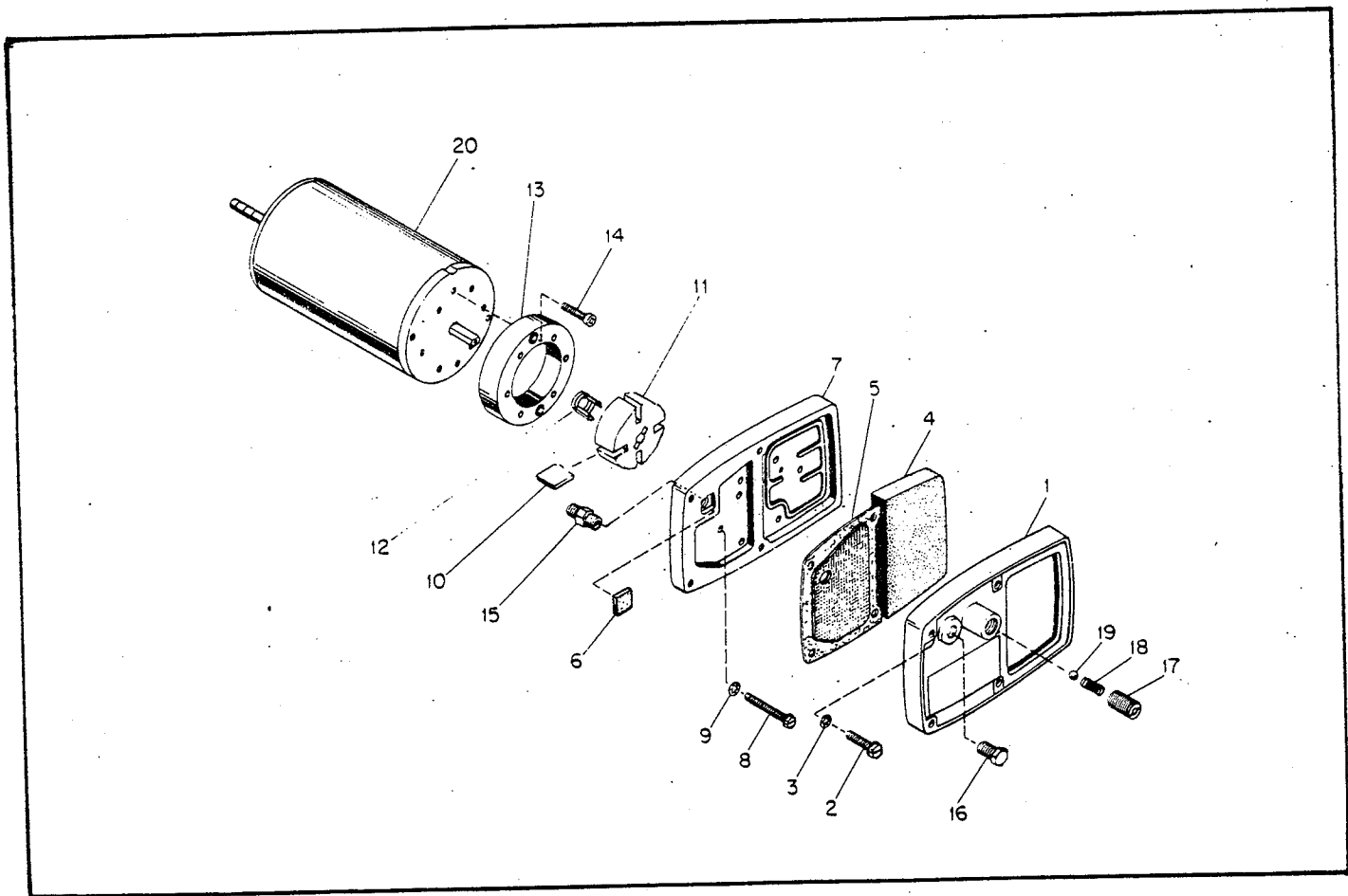


Figure 14. Motor Package Assembly

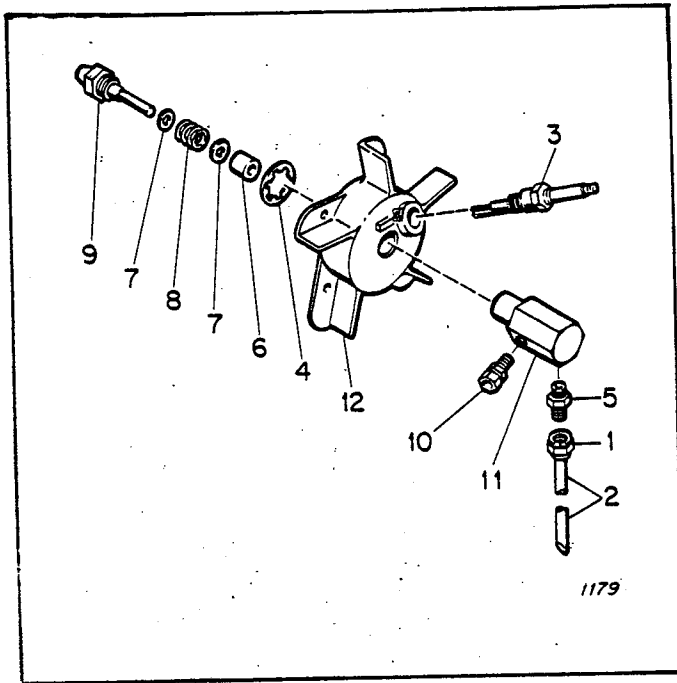


Figure 15. Burner Head Assembly

Fig. & Index No.	Part Number	Part Name	Qty.
	M23150-6	Burner Head Assembly	Ref.
1	M13849	Nut, Flared	1
2	M16789-9	Fuel Filter Assembly	1
3	M10962-2	Spark Plug	1
4	M16741-18	Ring, Retaining	1
	M23151-1	Nozzle Adapter Assembly	1
5	M5976	Connector, Male	1
6	M8882	Sleeve, Nozzle Seal	1
7	M10659-1	Washer, Nozzle Seal	2
8	M10809-1	Spring, Nozzle Seal	1
9	M23103	Nozzle, Aspirating	1
10	M16791	Connector, Male	1
11	M16535	Adapter, Nozzle	1
12	M16534	Body, Burner Head	1

DECALS, HANDLES AND WHEELS

Index No.	Part Number	Part Name or Description	Qty.
	M17137	Decal, Trade name	1
	M18196	Decal, Mfg by	1
	M22898	Decal, Name Plate	1
	M27234	Decal, Wiring	1
	M17081	Decal, Atomaster	1
	M25325	Decal, Reset	1
	M22743	Decal, Warning	1
	M27986-01	Decal, Model	1
	M16749	Decal, Safety Control	1

HANDLES AND WHEELS

1	M14244-A	Handle, Front	1
2	M14243-A	Handle, Rear	1
3	M12831-A	Frame, Wheel Support	1
4	M12345-34	Screw	8
5	NTC-3C	Nut, Torque Lock No. 10-24	8
6	M16741-15	Ring, Retaining	2
7	WP-8C	Washer, Flat, 1/2 inch	2
8	M19295	Wheel	2
9	M16801-2	Axle	1

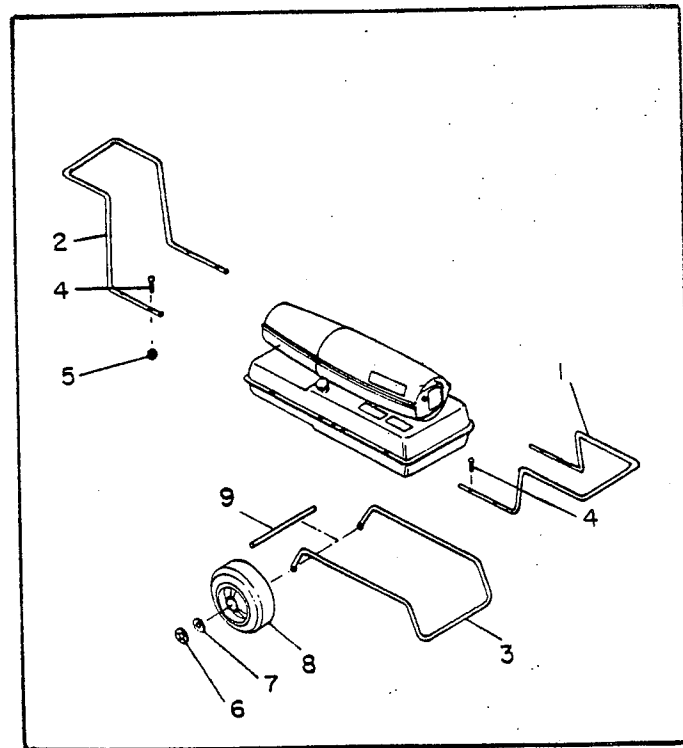


Figure 16. Handles and Wheels