

MAY 26 RECD
76



MODEL B-150D

Spec. No. 3199G01

INSTRUCTION MANUAL WITH PARTS LIST



**Koehring
Master Division**

The safety control circuit essentially consists of three parts: a light-sensitive cell (flame sensor), a silicon-controlled rectifier (SRC), and the circuit breaker. The circuit breaker automatically trips if the flame fails, thereby causing the heater to shut down. (See figure 2.)

The flame sensor 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 flame sensor's function is to control the trigger voltage of a 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 flame sensor senses light and decreases its resistance, 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 15 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 a complete unit.

When the thermostat dial is set to a temperature setting higher than the temperature of the surrounding air, the heater will operate until the temperature of the air reaches the dial setting then shut off. The heater will cycle on and off in response to the thermostat.

C. POWER REQUIREMENTS

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

D. SPECIFICATIONS

Output Rating (BTU per hour)	150,000
Amperage (During normal run)	5.0
Air Pump Pressure (PSI)	5 ¹ / ₄
Weight (Approx. Lbs.)	
Shipping	90.5
Dry (net)	76
Fuel Tank Capacity, U.S. Gallons	13.5
Fuel Consumption, Approx. U.S. Gallons per hour	1.0
Electrical Requirements	
Voltage	115
Cycles	60
Motor RPM	3450
Fuel	Kerosene or No. 1 Fuel Oil Only
Duct	No Duct Recommended

TROUBLE SHOOTING CHART (Continued)

PROBLEM	POSSIBLE CAUSE	REMEDY	FOR FURTHER DETAILS SEE:
Sec. V, Para. N.			
6. <u>Control System Troubles</u> a. Heater ignites, but red button of safety control circuit breaker pops out anyway.	a. Defective photo cell.	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.	
	b. Defective safety control.	Replace with a control that is known to be good.	
	c. Defective electrical connections in circuit through cell and control relay.	Be sure all solder joints and wiring connections are secure. Check wiring diagram.	
b. Safety Control circuit breaker fails to trip when a no-flame condition exists.	a. Defective circuit breaker.	Replace with a circuit breaker that is known to be good.	
	b. Contacts dirty or defective.	Replace defective contacts with one that is known to be good.	
	c. Photocell electrical leads shorted.	Check photocell leads for shorted leads. Replace photocell if damaged.	
c. Button on safety control circuit breaker won't stay in when pressed.	a. Resetting is tried too soon after the breaker trips.	Wait 5 minutes and try again.	
	b. Defective circuit breaker.	Replace with a circuit breaker that is known to be good.	
	c. Photo cell circuit open.	Check photocell for open condition. Replace if damaged.	

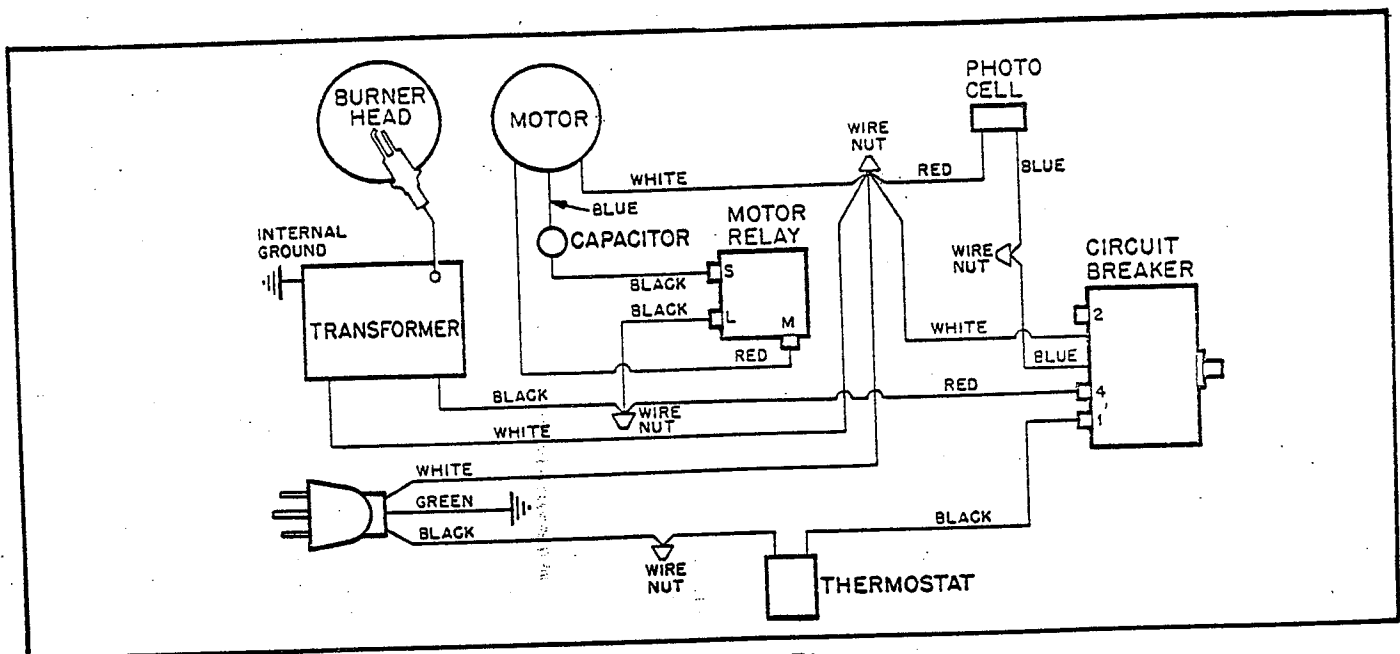


Figure 9. Wiring Diagram

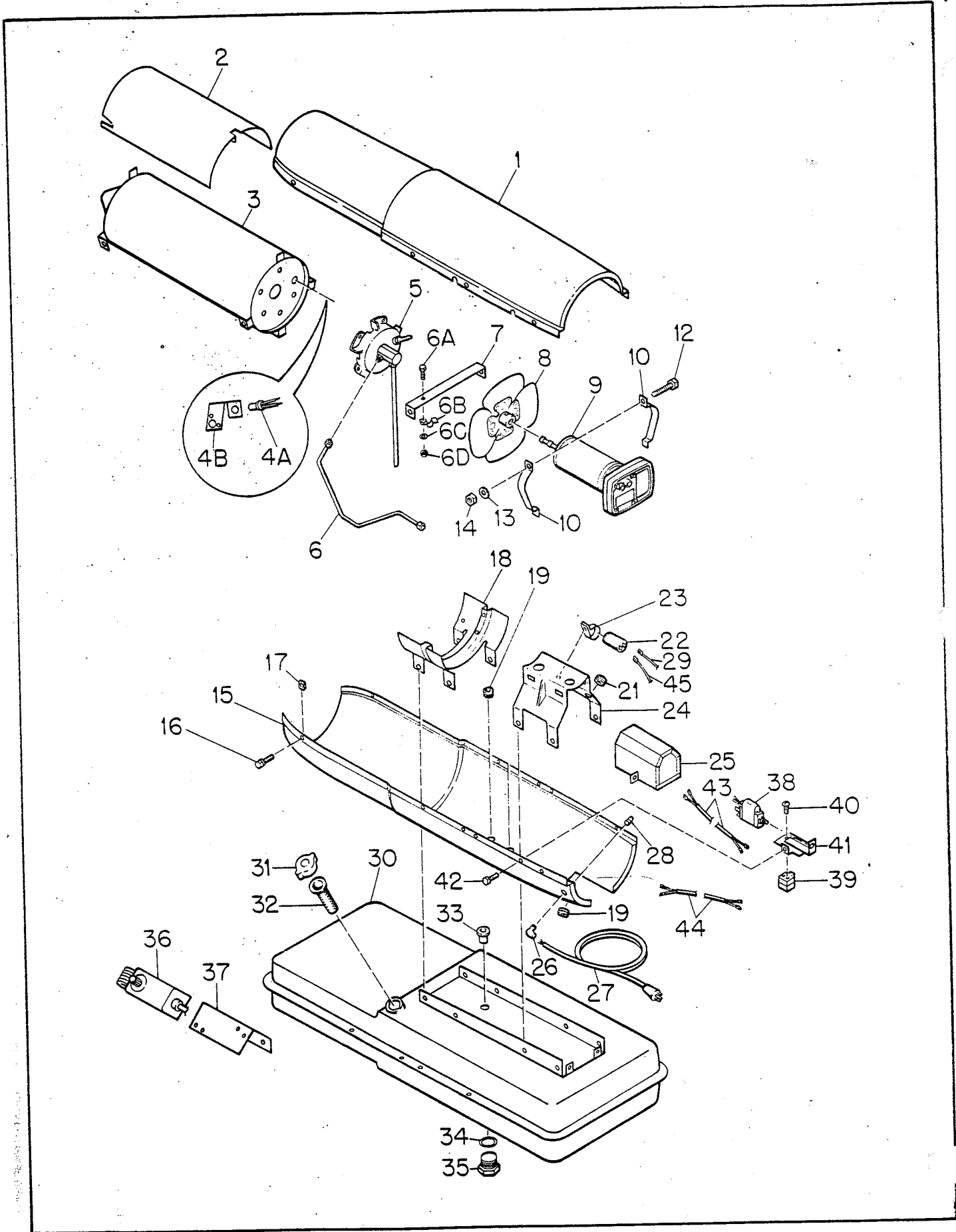


Figure 13. Heater Assembly, Exploded View

SECTION VI PARTS LIST

This section contains a list of all service parts in the equipment covered by this manual. Standard hardware items are indicated by the symbol (*).

Check the model decal for correct model number of the

equipment. Include model, specification, and serial numbers when ordering parts. Order parts by part name and part number only. Do not use index numbers from the illustration when ordering parts. Specify color when ordering painted parts.

Index No.	Part Number	Part Name or Description	Ref. Notes	Qty.
1	M17015-1A	Shell Assembly, Upper		1
2	M16679	Deflector, Heat		1
3	M16887-6	Combustion Chamber Assy		1
	M11084-27	Screw (Combustion Chamber attaching, front) *		2
	M11084-29	Screw (Combustion Chamber attaching, rear) *\$		2
4A	M16656-3	Cell and Bushing Assy		1
4B	M16660	Bracket, Photo Cell		1
	M10908-1	Screw		2
5	M16803-4	Burner Head Assembly (See Figure 14)	@	1
-	M11084-27	Screw (Burner Head to Combustion Chamber) *\$		3
6	M16804	Air Line	@	1
6A	M12461-27	Screw (Air line retaining)		1
6B	M24717	Clamp (Air line)		1
6C	WLM-3	Lockwasher No. 10		1
6D	NPF-3C	Nut, Plain No. 10-32		1
7	M16871	Strap, Retainer		1
	M11084-27	Screw (Retainer Strap to Lower Shell) *\$		2
8	M17058	Fan, 16° Pitch		1
	SF4-2-1/2K	Setscrew, Soc. hd., cup pt., 1/4-28 (Fan to Motor Shaft)		2
9	M17875-9	Motor Package Assy (See Figure 15)	@	1
10	M16661	Clamp, Motor		4
11	Not Used			
12	HC4-10C	Screw (Motor Clamps) *\$		2
13	WLM-4	Lockwasher, 1/4 in., (Motor Clamps) \$		2
14	NPC-4C	Nut, Hex, 1/4-20 (Motor Clamps)		2
15	M16810A	Shell, Lower	¢	1
16	M11084-27	Screw (Upper Shell to Lower Shell) *\$		8
17	M11271-6	Nut, Tinnerman (Upper Shell to Lower Shell) \$		8
18	M12828	Bracket, Shell Support		1
	M11084-29	Screw (Support Bracket to Lower Shell & Fuel Tank) *\$		4
	M11084-27	Screw (Lower Shell to Support Bracket) *\$		2
19	1000576	Grommet (Cables and Leads thru Lower Shell)		4
20	Not Used			

Index No.	Part Number	Part Name or Description	Ref. Notes	Qty.
21	1000577	Grommet (Leads to Motor and Capacitor)		2
22	M12650-1	Capacitor		1
23	M12651-1	Clamp, Tinnerman (Capacitor Mounting)		1
	M11084-27	Screw (Capacitor Clamp to Motor Support Bracket) *\$		1
24	M16645	Bracket, Motor Support		1
	M11084-27	Screw (Motor Support Bracket to Lower Shell and Fuel Tank) *\$		4
	M11084-27	Screw (Service Cord grounding to Motor Support Bracket) *\$		1
25	M16697	Transformer, 5000 Volt	@	1
	M11084-27	Screw (Transformer to Motor Support Bracket) *\$		2
26	M11143-1	Bushing, Strain Relief (Service Cord to Lower Shell)		1
27	M10813-33	Service Cord		1
28	M13942-7	Connector (Wire Nut)	\$	4
	M13942-5	Connector (Wire Nut)	\$	2
29	M9900-77	Wire Assy (to Capacitor)		1
30	M27547-01A	Fuel Tank	¢	1
31	M23284	Cap, Fuel Tank		1
32	M18053	Screen, Filler Neck		1
33	M10990-3	Bushing, Rubber (Fuel Filter into Fuel Tank)		1
34	M27417	Plug, Drain		1
	M25297-1	Thermostat Assy		1
	RC1-3C	Screw (Thermostat to Bracket) *		2
	NPC-1C	Nut, Plain 6-32 (AP)		2
	WLI-1	Lockwasher (AP)		4
35	M25121B	Bracket, Thermostat		1
	M11084-27	Screw (Thermostat Bracket to Lower Shell (AP) *\$		2
36	M28898-02	Safety Control Assembly **		1
37	M28897-01	. Trigger Circuit		1
38	M29201	. Circuit Breaker		1
39	M12462-6	Relay, Starting		1
40	RC2-2C	Screw (Relay to Relay Bracket) *		2
41	M25296-1	Bracket, Safety Control		1
42	M11084-27	Screw		1
43	M16615-1	Wiring Harness Assy		1
44	M9900-80	Wire Assy., Safety Control		1
45	M9900-62	Wire Assy \$		1
	ST2-2AC	Screw (Grounding)		1

*See listing of standard screws, page 21 for description.

@Parts recommended for normal replacement by owner or user.

\$Standard Hardware - Procure locally in most areas.

**Supersedes M24982-5 and M24982-6.

BURNER HEAD ASSEMBLY

Index No.	Part Number	Part Name or Description	Ref. Notes	Qty.
14-	M16803-4	Burner Head Assembly (See figure 13)	@	1
1	M16790-12	. Filter Tube	@	1
2	M19630	. Filter, Fuel	@	1
3	M13849	. Nut, Flare		1
4	M16741-18	. Ring, Retaining		1
	M16787-3	. Nozzle Adapter Assy		1
5	M16791	. . Connector, Male		1
6	M5976	. . Connector, Male		1
7	M8882	. . Sleeve, Nozzle Seal		1
8	M10659-1	. . Washer, Nozzle Seal		2
9	M10809-1	. . Spring, Nozzle Seal		1
10	M18022	. . Nozzle, Aspirating, 1.0 gph		1
11	M16535	. . Adapter, Nozzle		1
12	M10962-2	. Spark Plug		1
13	M23090	. Body, Burner		1

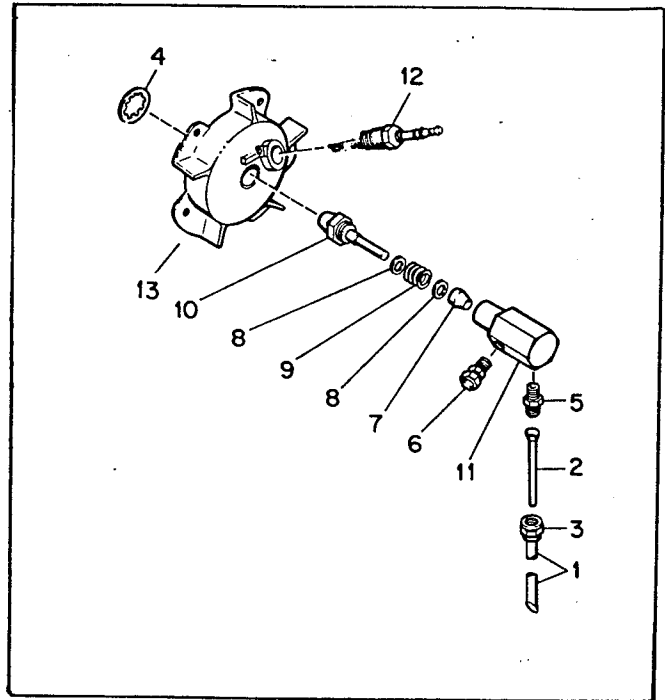


Figure 14. Burner Head Assembly

STANDARD SCREWS

Part Number	Part Name or Description
FHPF3-7C	Screw, Fillister hd., No. 10-32 x 7/8 in.
HC4-10C	Screw, Hex hd., machine, 1/4-20 x 1-1/4 in.
M11084-27	Screw, Self-tapping hex hd., No. 10-12-1/2 in. Type "A"
M11084-29	Screw, Self-tapping, hex hd., No. 10-12 x 3/4 in., Type "A"
M12345-31	Screw, Oval hd., machine, No. 10-24 x 1-1/4 in.
M12345-34	Screw, Oval hd., machine, No. 10-24 x 2 in.
M12461-31	Screw, Hex hd., No. 10-32 x 1 in.
M12461-34	Screw, Hex hd., No. 10-32 x 1-1/2 in.
M15823-26	Screw, Self-tapping, hex hd., No. 10-12 x 3/8 in., Type "B"

MOTOR PACKAGE ASSEMBLY

Index No.	Part Number	Part Name or Description	Qty.	Index No.	Part Number	Part Name or Description	Qty.
15-	M17875-9	<u>Motor Package Assembly</u> (See Figure 13, Index No. 9)	1	9	WLI-3	.. Lockwasher, Internal, No. 10	6
-	M16675G2	<u>Pump and Filter Parts Package</u>	1	10	M8643-3	.. Blade	4
1	M16545	.. End Cover, Filter	1	11	M22456-3	.. Rotor	1
2	M12461-31	.. Screw (Filter End Cover to Pump End Cover)	4	12	M22009	.. Insert	1
3	WLI-3	.. Lockwasher, Internal No. 10	4	13	M8645-3	.. Pump Body	1
4	M12179	.. Intake Air Filter	1	14	FHPF3-7C	.. Screw (Pump Body to Motor)	2
5	M12244-1	.. Output Filter Assy	1	15	M5976	.. Connector, Male	1
6	M11637	.. Filter, Lint	1	16	M22997	.. Plug	1
7	M12233	.. End Cover, Pump (Port Plate)	1	17	M27694	.. Screw, Pressure Adjustment	1
8	M12461-34	.. Screw (End Cover to Motor)	6	18	M10993-1	.. Spring, Compression (Pressure Relief)	1
				19	M8940	.. Ball, 1/4 in. dia.	1
				20	M17814-6	.. Motor	1
				-	M16675-2	Kit, Pump and Filter	1

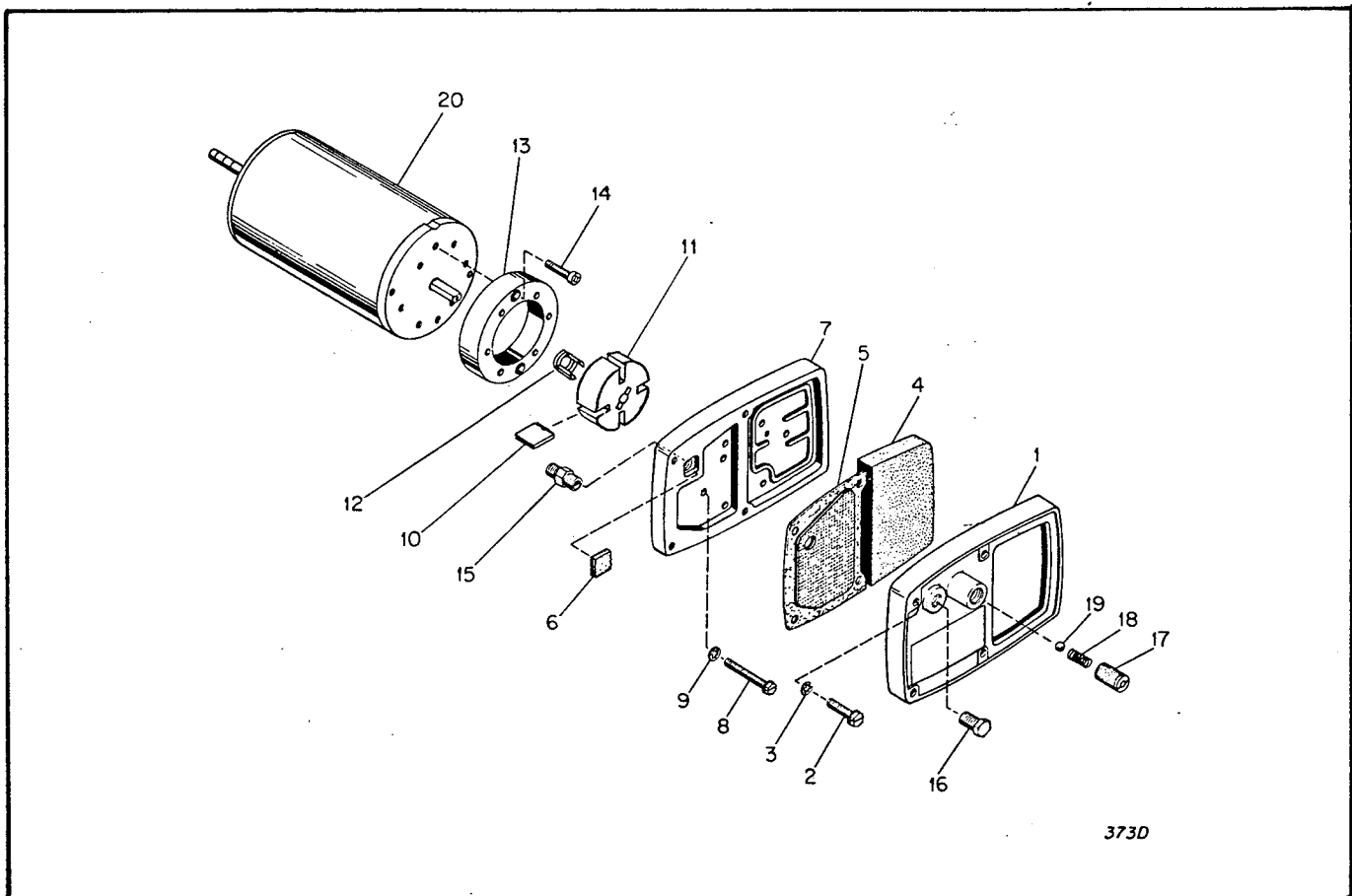


Figure 15. Motor Package Assembly

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
	M24688	Decal, Wiring	1
	M25325	Decal, Rese	1
	M22743	Decal, Warning	1
	M27311	Decal, Model	1
	M16749	Decal, Safety Control	1

HANDLES AND WHEELS

1	M14244-3	Handle, Front	1
2	M14243-3	Handle, Rear	1
3	M12831-3	Frame, Wheel Support	1
4	M12345-34	Screw	8
5	NTC-3C	Nut, Torque Lock No. 10-24	8
6	M28526	Nut, Cap	2
7	WP-8C	Washer, Flat, 1/2 inch	2
8	M19295	Wheel	2
9	M16801-2	Axle	1

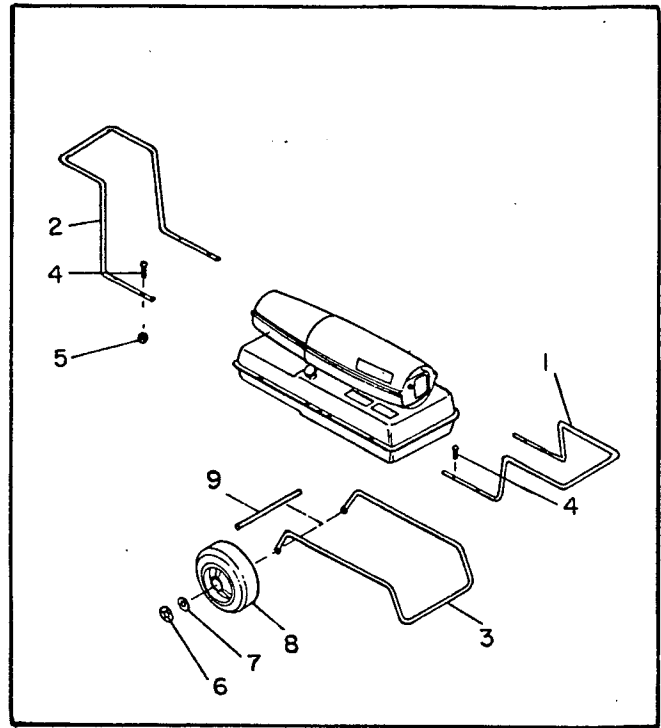


Figure 16. Handles and Wheels