



**SERVICE MANUAL  
PARTS LIST**

**SHAMPOO POLISHER**

**MODELS:**

**P-4000**

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**SERVICE**

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## I. - FINAL TEST FOR PRODUCT SAFETY

AT THE COMPLETION OF ANY REPAIR THE PRODUCT SHOULD BE ELECTRICALLY TESTED FOR RUNNING AND ELECTRIC STRENGTH AS FOLLOWS

### **ELECTRIC TEST**

- A). - Set hi-pot meter at 1500 V
- B). -Product Switch to on position.
- C). -Touch one probes of tester to on blade of power cord plug and touch other probe to handle tube. There should be no breakdown.

### **RUNNING**

#### **RUN THE MACHINE WITHOUT BRUSHES ( FREE RUNNING ) AND CHECK :**

- A) . -There should be no unusual noise or vibration.
- B) . -The carbon brushes spark should be small and uniform
- C) . - The current shall be no more than 1.5 A
- D) .- Run the machine with scrubbing brushes on the floor ,the current shall be 3.0 A

## II. - REPLACEMENT PROCEDURES

### 1. TO REPLACED A FIELD ( 73 ) OR ARMATURE ( 63 )

- 1.1.-Disconnected elbow hose connector ( 33 ) from tray assembly ( 105 ) and remove bumper ( 40 )
- 1.2.- Remove cover ( 42 ) by removing four cover screws ( 39 )
- 1.3.-Pull open the connector on the motor cable ( 13 ) and disconnect the ground lead from the motor frame.
- 1.4.- Remove the connector support ( 81 ) with the connector motor ( 13 ) connector block
- 1.5.-Remove gear cover plate screws ( 61 ) from both sides along with cover plates and gaskets ( 78-79-80 )
- 1.6.-Remove the four motor covers screws ( 61-72 ) and the motor cover ( 60 )
- 1.7.-Remove the bearing clamp screws ( 70 ) from both sides along with the bearing clamps ( 69 )
- 1.8.- Remove the carbon brush holder assembly ( 62 )
- 1.9.-Remove the field support screws ( 75 ) and field supports ( 74 )
- 1.10.-To replace the field , the connector block ( 77 ) must be removed , push the retaining tab of each terminal with a pin and release it by pulling it pulling it out .
- 1.11.-The field ( 73 ) and armature ( 63 ) may now be lifted out replacement .

### 2.- TO REASSEMBLE

- 2.1.-Position the armature in the field so that the armature commutator is on the same side as the field leads
- 2.2.-Position an armature bearing package ( 64-67-68-71 ) on each end of the armature shaft so that the rectangular projection on the seal is facing the armature winding and is between the bearing and armature .
- 2.3.-Position the armature ( 63 ) and the field ( 73 ) in the motor frame ( 82 ) making sure the leads side of the field are placed close the bottom windows in the motor frame ( 82 ) witch are next to the carbon brush holder ( 62 ) .
- 2.4.-The armature bearing and seals on the armature ( 63 ) ate positioned in their respective places in the motor frame ( 82 ) making sure the two straight sides on the boss of the bearings are in the vertical position.
- 2.5.-Hold the field position replacing the fields supports ( 74 ) and screws ( 75 )
- 2.6.-Replace the carbon brush holder ( 62 ) and carbon brushes .
- 2.7.-Make sure that armature thrust plates and the armature thrust balls are in position on the ends of the armature shaft.
- 2.8.- Replace armature bearing clamps ( 69 ) on top of the armature bearing ,with screws ( 70 )
- 2.9.-Adjust endplay by adding thin plates until there is 0.005"-0.010" clearance between the armatures thrust plate on the fan end of the unit .measured by a feeler gage.
- 2.10.-Replace the cover plates ,gaskets and screws ( 78-79-80 ) and ( 61 ) .
- 2.11.-Replace the connector support ( 81 ) with the connector block ( 77 ) push close the connector on motor cable ( 13 ) and reconnect the ground lead to the motor frame .
- 2.12.- Place the unit into the cover ( 42 ) and secure with the four cover screws ( 39 ) .
- 2.13.-Reconnect the elbow hose connector ( 33 ) into the tray ( 105 )

### 3 .- TO REPLACE GEAR ( 84 OR 85 ) OR A SPINDLES ( 91-92 )

- 3.1.- Remove the four cover screws ( 39 ) separate the base plate ( 40 )
- 3.2.- Separate the base plate ( 101 ) and motor assembly from cover ( 43 )
- 3.3.- Pull open the motor cable connector and disconnected the ground lead from the motor frame.
- 3.4.-Remove the two screws that hold the motor cable support ( 81 ) to the base plate ( 79 ) ,and separate the complete motor assembly ( 43 ) .
- 3.5.-Remove the gear case plate screws ( 61 ) the cover plates and gaskets ( 78-79-80 ) and the motor cover ( 60 ) .This provides access to the gearboxes
- 3.6.-Remove the spindle nuts ( 83 ) the gears ( 84-85 ) and the keys ( 87 )
- 3.7.-Remove the spindles by lightly tapping the spindle top inside the gear case.
- 3.8.-The gearboxes should be cleaned of all foreign material and old grease .
- 3.9.-inspect the condition of the armature shaft and gears ,if damaged, replace them.
- 3.10.-Insert the new spindles from bottom of motor frame ,and replace the gears aligning the slot on the gear with the slot on the spindle, and reinsert the key making sure the gear shoulder is placed below in contact with the motor frame, and replace the nut ( 87 )
- 3.11.-The gear boxes should be regressed with the grease provided in the bag together with the gears ,making sure all the grease is used ,the most of it applied in the contact zone of the gears
- 3.12.- Replace the cover plates and gaskets ( 78-79-80) and reassemble the motor pack on reverse order.

#### **4.-TO REPLACE THE CARBON BRUSHES**

- 4.1.- Follow steps 1.1,1.2,1.3,1.4,1.6,1.8
- 4.2.-Replace the carbon brushes and reassembles.

#### **5.-TO REPLACE THE MOTOR CABLE ( 13 )**

- 5.1.-Remove four covers screws ( 39 ) and remove base plate ( 101 ) from the cover ( 42 )
- 5.2.-Pull open the connector on motor cable .
- 5.3.-Remove the motor cable bushing.
- 5.4.-Remove the switch box retaining screw ( 5 )
- 5.5.-Remove the switch box ( 5 ) from handle tube ( 2 ) .
- 5.6.-Open switch back cover and remove the wiring cover ( 24 )
- 5.7.-Disconnect the motor cable ( 13 ) from the switch ( 7 ) and from ground screw on handle .
- 5.8.-Connect the new motor cable leads to the switch and handle ,and the ground lead to the ground screw.
- 5.9.-Rearrange the wires inside the switch box ,replace the wiring cover ( 24 ) and close the back cover.
- 5.10.-Reassemble the switches box in the handle and secure it with the switch box retaining screw ( 7 )

#### **6 .-TO REPLACE A LINE CORD ( 23 )**

- 6.1.- Follow steps 5.4,5.5 y 5.6.
- 6.2.-Disconnected the line cord ( 12 ) from the switch ( 7 ) and from, the ground screw on handle .
- 6.3.-After replacement is an accomplished ,the line cord ( 12 ) must be reassemble in exactly the same manner as it was prior to disassembly.
- 6.4.- Follow steps 5.9 and 5.10.

#### **7 .-TO REPLACE THE SWITCH ( 7 ) .**

- 7.1.-Remove the switch box retaining screw ( 5 ) and separate the switch box ( 4 ) from the handle tube ( 2 ) .
- 7.2.-Open the switch back cover, remove the wiring cover ( 24 ) and disconnected the leads from the switch
- 7.3.-Press the side tabs on the switch and pull it out from the box .
- 7.4.-Replace the switch pressing it on the switch opening until the side tabs snaps, and reconnects the lead terminal.
- 7.5.-Press the leads as the were as the were before, put the wiring cover on top ,close the box back ,and replace the box on the handle.

#### **8 .-TO REPLACE A 8 SLOTS BRUSH DRIVE COUPLE ( 95 –96 )**

- 8.1.-Turnt the machine with the brush side facing up.
- 8.2.-Insert a pair of brushes on the slot couples.
- 8.3.-Hold the left brush ( black couple ) and turn the right brush C.C.W. until the couple unscrew and came out of the spindle
- 8.4.-Replace the new right couple ( yellow ) turning it C.W. on the spindle ,while holding the other brush .
- 8.5.-Remove and replace the left couple ( black ) on similar way turning it C.W. to loosening and C.C.W. to tighten.

#### **9.-TO REPLACE A MOTOR FRAME ( 88 OR A BASE PLATE ) ( 92 )**

- 9.1.-Follow steps 1.1,1.2,and 1.3.
- 9.2.-Remove the complete motor pack.
- 9.3.-Replace the new motor pack and reassemble in reverse order ,

### III.- TROUBLE SHOOTING CHART

PROBLEM	POSSIBLE CAUSE	SOLUTION
1) Shampooed / Polisher does not run	A) Defective Switch. B) Defective power cord. C) Defective internal wiring. D) Motor failure. E ) Worn carbon brushes	Replace switch . Replace power cord. Check wire connection at switch ,check motor cord check armature and held and replace armature and/ or field. Replace carbon brushes.
2) Excessive arcing	A) Dirt build up in motor B) Bad armature C) Worn carbon brushes	Blow with clean air Replace armature Replace carbon brushes .
3) Cleaning Brush does not run	A ) Broken or missing drive pin .	Replace drive pin.
	B) Gear failure .	Replace gear
4) Handle and yoke assembly does remain in " up " position	A) Worn or broken yoke spring	Replace yoke spring
5) Cleaning brush does not lock on spindle cap	A) Defective spindle cap or brush retainer	Replace spindle cap or retainer

**WHEN ORDERING ,DO NOT FORGET TO SPECIFY :**

- ✓ **PART NUMBER**
- ✓ **DESCRIPTION**
- ✓ **MODEL NUMBER**

**NOTE: Drawing numbers are for identification purposes only.**

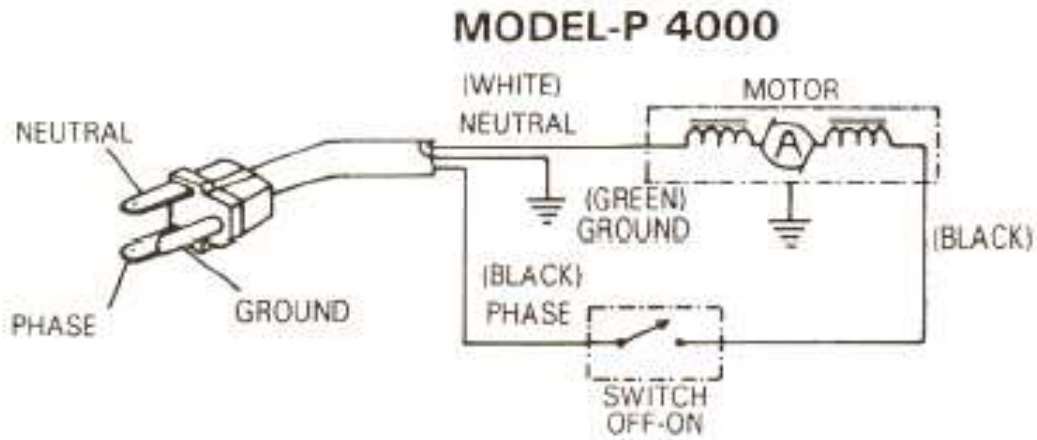
#### IV.- ELECTRICAL RATING

V~  
120

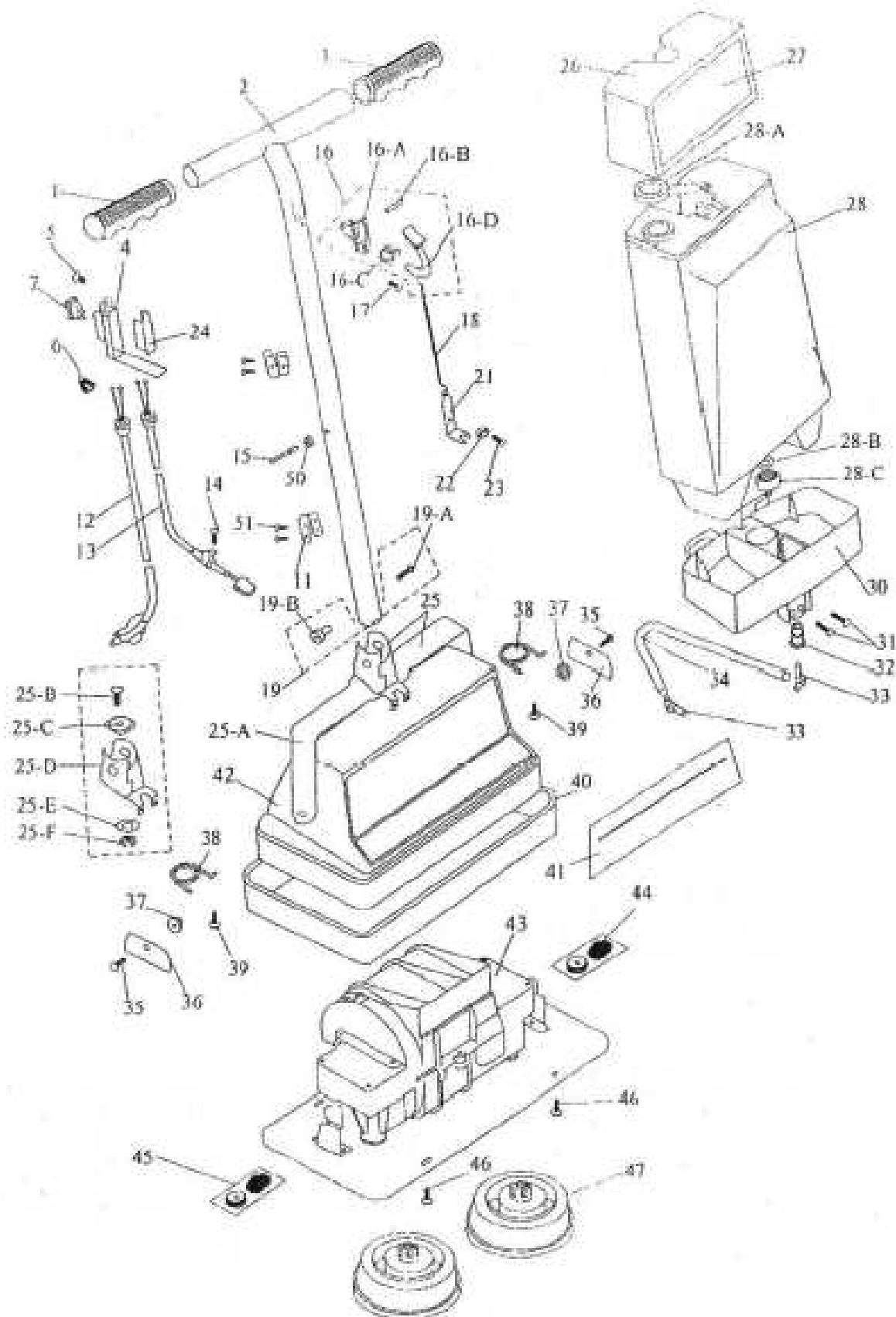
A  
4.2

Hz  
50/60

#### V.- WIRING DIAGRAM



## VI. SCHEMATIC EXTERNAL PARTS

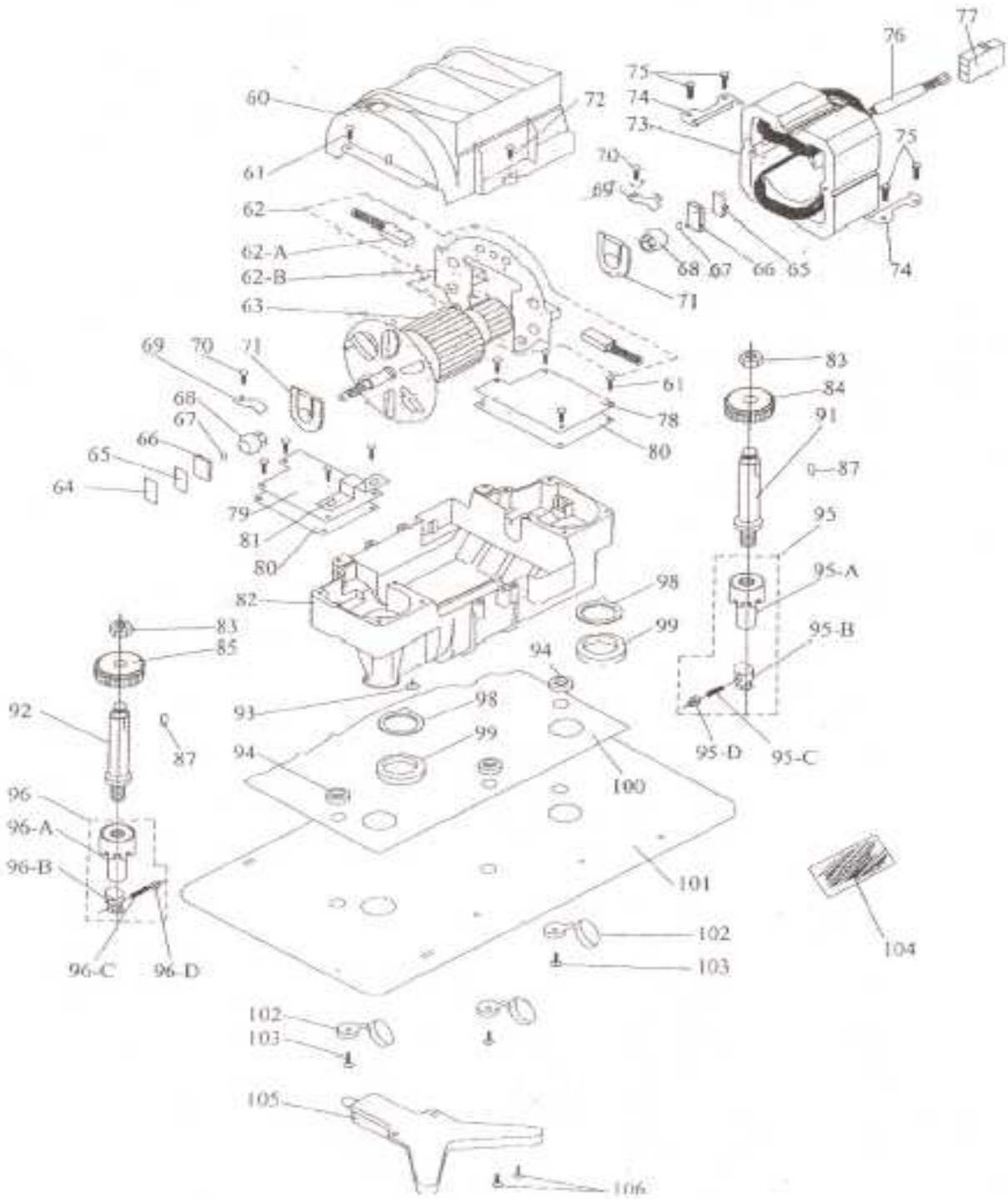




## VII.- EXTERNAL MACHINE PARTS LIST

ITEM	PART No	DESCRIPTION	P-4000
1	13-0947-5	HANDLE GRIP	2
2	23-0476-4	T-BAR HANDLE TUBE	1
3	13-0946-7	1-SPEED SWITCH BOX, BLACK	1
5	01-0062-8	SELF-TAPPING SCREW #6-20	1
6	10-0042-1	P. NOZZLE WIRE CONNECTOR	1
7	11-0138-5	POWER NOZZLE SWITCH	1
11	05-2142-7	CORD HOOK	2
12	28-1172-7	LINE CORD ASSEMBLY 28 FT	1
13	28-0108-2	MOTOR CABLE ASSEMBLY	1
14	01-0063-6	SCREW No: 6 X 1/2	1
15	03-0210-9	RIVET	1
16	46-1865-8	POLISHER LEVER	1
16-A	06-0463-7	CONTROL LEVER SUPPORT	1
16-B	25-0661-6	SPIRAL PIN 3/32	1
16-C	24-0158-6	VALVE SPRING	1
16-D	06-0464-5	DISPENSER	1
17	01-0062-8	SCREW No: 6 X 3/8	1
18	09-0811-1	DISPENSING ROD	1
19	45-0330-6	HANDLE SCREW & NUT PACKAGE	1
19-A	01-0747-4	SCREW #10-32	1
19-B	02-0067-5	USE 02-0141-8	1
21	05-2197-1	VALVE HOOK	1
22	05-2223-5	VALVE HOOK SPACER	1
23	01-0154-3	SCREW No: 6 X 5/16	1
24	08-1825-5	WIRING COVER	1
25	23-0156-2	CHROME YOKE SOCKET ASSY.	1
25-A	05-3294-5	CHROMED YOKE	1
25-B	01-1431-4	SCREW	1
25-C	05-2379-5	PLATE SOCKET	1
25-D	05-3190-5	SOCKET	1
25-E	04-0420-2	CONCAVE WASHER	1
25-F	02-0092-3	SECURITY NUT	1
26	13-1406-1	CONTAINER TOP	1
27	17-2492-1	TOP COVER INSERT	1
28	45-0015-3	120 OZ. TANK ASSEMBLY	1
28-A	13-0064-9	TANK CAP	1
28-B	04-0136-4	WASHER VALVE SPRING CUP	1
28-C	13-0068-0	VALVE CAP	1
30	13-0948-3	BLACK CONTAINER BASE	1
31	01-1093-2	SELF-TAPPING SCREW	2
32	12-0694-5	CONTAINER BASE SEAL	1
33	13-0065-6	ELBOW HOSE CONNECTOR	2
34	13-0071-4	POLISHER TANK HOSE	1
35	01-0883-7	HEX SCREW 1/4-20	2
36	05-3297-8	YOKE SPRING COVER CHROMED	2
37	25-1072-5	YOKE SPACER	2
38	24-0258-4	EXTERIOR YOKE SPRING	2
39	01-1483-5	SELF-TAPPING SCREW #6 X 3/8	2
40	12-0457-7	FURNITURE GUARD	1
41	17-2494-7	ENCLOSURE INSERT	1
42	06-0701-0	DIE CAST COVER, PAINTED	1
43	46-1418-6	MOTOR ASSEMBLY	1
44	46-1717-1	RIGHT GEAR W/GREASE	1
45	46-1718-9	LEFT GEAR W/GREASE	1
46	01-1489-2	SCREW #8 X 1 1/2	4
47	45-0202-7	SHAMPOO BRUSH 8 SLOT	2
50	25-0789-5	HOLD DOWN SPACER	1

**VIII .- SCHEMATIC MACHINE INTERNAL PARTS**



## IX,- INTERNAL MACHINE PARTS LIST

ITEM	PART No .	DESCRIPTION	P-4000
60	13-1418-6	MOTOR COVER	1
61	01-1483-5	SELF-TAPPING SCREW #6 X 3/8	10
62	28-0324-5	BRUSH HOLDER ASS	1
62-A	46-0104-3	CARBON BRUSH & SPRING	2
62-B	46-0590-3	BRUSH HOLDER	1
63	28-0263-5	ARMATURE	1
64	25-1063-4	THRUST PLATE	1
65	25-0060-1	THIN PUSH PLATE	4
66	25-0059-3	THICK PUSH PLATE	2
67	26-0001-3	BALL ARM SHAFT/R - 30465P2	2
68	26-0026-0	ARMATURE BEARING	2
69	05-0607-1	BEARING CLAMP	2
70	01-1490-0	SCREW	2
71	12-0133-4	ARMATURE BEARING SEAL	2
72	01-0066-9	SCREW No: 6 X 7/8	1
73	28-0265-0	FIELD 1 SPEED 120 V	1
74	05-4244-9	FIELD RETAINER	2
75	01-1489-2	SCREW #8 X 1 1/2	4
76	08-1832-8	FIELD SLEEVE	1
77	10-0051-2	CONNECTOR BLOCK 3 SPEED	1
78	23-0462-4	GEAR CASE COVER	1
79	23-0461-6	GEAR CASE COVER	1
80	37-0133-1	GASKET GEAR COVER	2
81	05-2717-6	RETAINER	1
82	23-0446-7	MOTOR FRAME ASSEMBLY	1
83	02-0016-2	SPINDLE NUT	2
84	42-0011-9	GEAR (COMM.)	1
85	42-0012-7	GEAR (FAN)	1
87	25-0988-3	SPINDLE KEY	1
91	23-0447-5	COMMERCIAL SPINDLE ASSEMBLY	1
92	23-0448-3	SPINDLE ASSEMBLY	1
93	13-0059-9	FRAME SPACER	1
94	13-1040-8	MOTOR SUPPORT	3
95	46-1833-6	8-NOTCH RIGHT COUPLING	1
95-A	13-1073-9	BRUSH DRIVE	1
95-B	13-1174-5	SECURE CLAMP BRUSH	1
95-C	24-0225-3	BRUSH LOCK SPRING	1
95-D	25-0987-5	SECURE BRUSH	1
96	46-1834-4	8-NOTCH LEFT COUPLING	1
96-A	13-1072-1	COUPLING "L" ASSEMBLY BLACK	1
96-B	13-1071-3	COUPLING "L" BLACK	1
96-C	24-0225-3	BRUSH LOCK SPRING	1
96-D	25-0987-5	SECURE BRUSH	1
98	05-3032-9	WASHER SUPPORT BASE SEAL	2
99	12-0467-6	RUBBER SEAL	2
100	13-1136-4	BASE INSULATOR	1
101	05-3375-2	BASE PLATE	1
102	13-0551-5	SCREW INSULATOR	3
103	01-1489-2	SCREW 8 X1/2	3
104	46-2069-6	GREASE	2
105	13-1212-3	TRAY DISPENSER	1
106	01-0154-3	SCREW No: 6 X 5/16	2



**FACTORY AUTHORIZED SERVICE**

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LP-P4000-200609