

F2000™ / L2000D™

SERVICE MANUAL

WARNING OF POTENTIAL INJURY

This product contains moving parts. To reduce the risk of injury—unplug the machine before servicing.

Whenever repairs are made ensure electrical connections are correct and wiring matches APPROPRIATE diagram before plugging machine into an electrical outlet.

CAUTION:

- 1.) See the Owner's Guide for complete operating instructions.
- 2.) Maintenance and repairs must only be done by qualified personnel.
- 3.) Using non-Windsor parts to repair this machine will void the warranty.

The assemblies shown in this manual are for the F2000 & L2000D 115V models, with notes pertaining to the other models. The chart below provides a brief description of each model.

MODEL	DESCRIPTION
F2000	115V Filtronic with automatic pad pressure control
F2000I	230V Filtronic with automatic pad pressure control
F2000J	100V Filtronic with automatic pad pressure control
L2000D	115V Dust Control with manual pad pressure controls
L2000DI	230V Dust Control with manual pad pressure controls

Record model and serial number located on data label. Refer to these numbers when calling Windsor dealer for parts or service.

MODEL : _____
 SERIAL NO. : _____
 PURCHASE DATE : _____

GROUNDING INSTRUCTIONS:

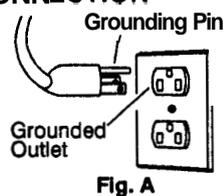
This appliance must be grounded. If it should malfunction or break down, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This appliance is equipped with a cord having an equipment-grounding conductor and grounding plug. The plug must be inserted into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

WARNING:

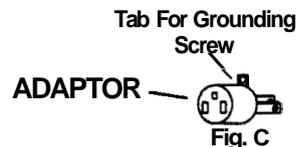
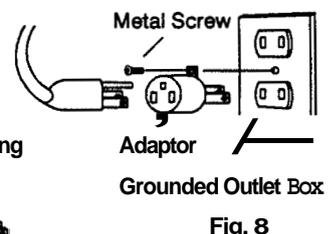
Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or service person if you are in doubt as to whether the outlet is properly grounded. Do not modify the plug provided with the appliance — if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

This appliance is for use on a nominal 120-volt circuit, and has a grounded plug that looks like the plug in "Fig. A" below. A temporary adaptor that looks like the adaptor in "Fig. C" below may be used to connect this plug to a 2-pole receptacle as shown in "Fig. B" below, if a properly grounded outlet is not available. The temporary adaptor should be used only until a properly grounded outlet (Fig. A) can be installed by a qualified electrician. The green colored rigid ear, lug, or the like extending from the adaptor must be connected to a permanent ground such as a properly grounded outlet box cover. Whenever the adaptor is used, it must be held in place by a metal screw.

PROPER GROUNDING CONNECTION



GROUNDING CONNECTION USING AN ADAPTOR



NOTE: Adaptors are not allowed in Canada.



WINDSOR® INDUSTRIES, INC., 1351 W. Stanford Ave., Englewood CO 80110 USA *303-762-1800* FAX 303-762-0817

TROUBLE SHOOTING CHART :

PROBLEM	POSSIBLE CAUSE	SOLUTION
No power to machine	Dead electrical circuit breaker or fuse box.	Check building circuit
	Power switch failure	Test switch for continuity and replace if necessary.
	Faulty circuit breaker	Replace.
	Faulty power cord	Replace.
Electrical shock	Equipment not grounding	Follow grounding instructions exactly.
	Receptacle not grounded	Have an electrician inspect building's wiring.
	Internal wiring problem	Ensure that the machines wiring matches the appropriate wiring diagram. Replace any wires or components which are short circuiting.
Red brush wear light on	Carbon brushes inside motor are worn out.	Replace all four carbon motor brushes. Failure to service brushes will result in motor damage.
Red pad pressure light on	No pad	Install pad.
	Pad too thin	Remove pad and install thicker pad.
Pad pressure light not coming on	Faulty light	Replace light if the lift mechanism is functioning and the light does not come on.
	Faulty circuit board	See "Pad pressure not adjusting"
Pad pressure not adjusting	Bad wire connections	Check for and repair any problem connections.
	Jammed gears	Check to be sure the gears in the lift mechanism have not jammed or picked up any debris.
	Faulty transformer	Incoming voltage should match local voltage from outlet, output should be 24V AC.
	Motor worn out	With the correct transformer output voltage (24VAC) the motor should respond. Remove motor to test with 24VAC power source. Replace motor if necessary.
	Faulty circuit board	The green light indicates board is working properly. Replace the entire circuit board assembly if; light does not come on, lift mechanism won't work, and the tests listed above have been performed.
Circuit breaker tripping	Faulty circuit breaker	Test circuit breaker for continuity. Replace circuit breaker if necessary.
	Mechanical problem	Higher amp draws indicate a mechanical problem, find the parts which are not moving as freely as they should, and repair or replace.
Dust escaping underneath shroud	Felt skirt damaged.	Replace.
	Plugged fill tube	Clean fill tube out.
Dust escaping above shroud or around filter.	Worn Gasket	Replace
	Clogged filter	Clean or replace.

OPERATION *(from the Owner's Guide)*

The F2000 is a high speed floor polishing machine and should be operated in a straight line **-forward and rearward-** not side to side as low speed polishers are operated.

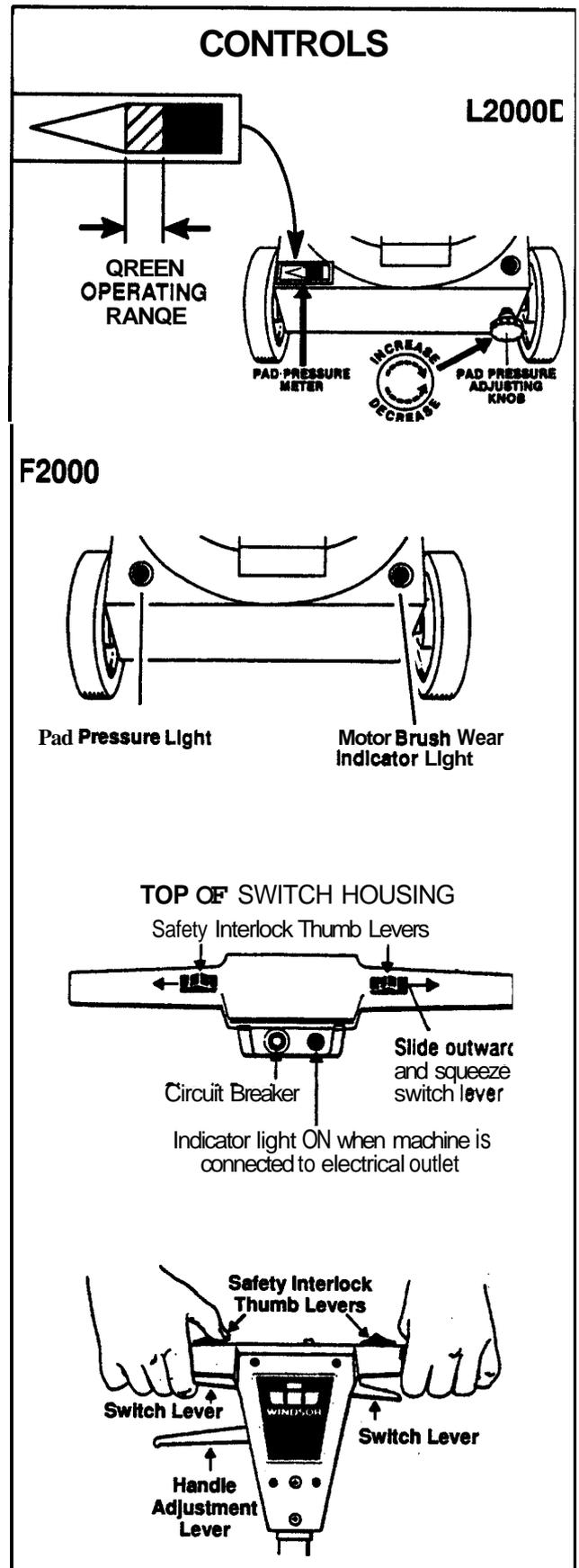
Use this machine only for dry polishing, **DO NOT USE FOR WET FLOOR SCRUBBING OR POLISHING WITH WET SPRAY BUFF LIQUIDS.**

CAUTION: To prevent possible damage to floor surface, always keep the machine moving when the pad is in contact with the floor.

WARNING:

**HIGH STARTING TORQUE.
HOLD MACHINE FIRMLY WITH BOTH HANDS.**

- 1.) Ensure that the polishing pad is installed correctly and in good shape. Install or change pad if necessary.
 - 2.) Plug the machine into a wall outlet as described in the grounding instructions. Check that the red light is lit on top of the switch housing.
 - 3.) Lower the handle by pulling the adjustment lever and moving the handle into position. The handle will only lock in the storage position.
 - 4.) Slide safety interlock thumb levers outward.
 - 5.) Squeeze one of the switch levers, turning the machine on. (These levers can be operated independently of each other)
 - 6.) Check the pad pressure light located on the left of the main housing, near the floor. It should be green. If it is red, check to be sure the pad is installed..)
Check the pad pressure light located on the left of the main housing, near the floor. It should be green. If it is red, check to be sure the pad is installed.
 - 7.) **F2000** pad pressure will adjust automatically to compensate for irregularities in the floor surface, pad thickness, aggressiveness, and load. The motor amp draw is monitored causing the front caster to be raised or lowered. **DO NOT CONTINUE TO OPERATE THE MACHINE IF THE PAD PRESSURE LIGHT REMAINS RED.**
- L2000D** pad pressure is manually adjusted using the knob located at the right rear of the machine. With the correct operating pad pressure the needle on the pad pressure meter will be in the green operating range.
- 8.) To stop the machine, release the switch lever and safety interlock thumb levers.
- NOTE:** The machine is equipped with a circuit breaker to protect the motor in the event an overload condition occurs. The circuit breaker is located at the top of the switch housing. Push the reset button to restart the machine. If the breaker trips again, correct the cause of overloading before proceeding.- 9.) Do not let machine rest on pad. When finished with the machine for the day return to the storage position. Be sure to leave machine in a safe place where there is no risk of being tipped over.



FILTER CARTRIDGE

Warning:

Never operate this machine without the filter or filter cover in place.

The filter (pn 34212) is accessed using the latch at the front of the cover.

Vacuum out the filter after the machine is done being used for the day.

Periodically wash the filter out. **Ensure filter is completely dry before using machine.**

BELT ADJUSTMENT

Warning:

Always remove the power cord from the electrical outlet before adjusting the belt.

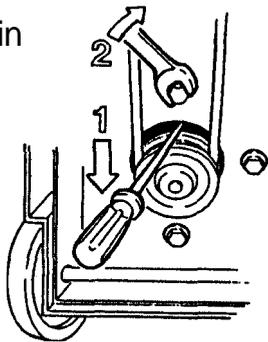
1.) To access the belt, unplug the machine and place in the storage position, remove the belt guard and loosen the (4) bolts holding the motor in place.

2.) Pry downwards on the pulley to tighten.

3.) With belt tension set in step 2 tighten top center bolt to lock pulley in place.

4.) Tighten remaining bolts and replace.

5.) Replace belt guard.



DUST CONTROL SKIRT

Replace the felt dust skirt (pn 73448) when excessively soiled or damaged. The felt skirt has slots which slip over the T-nuts located along the inside of the main shroud.

There is also a plastic seal (pn 73612) which will need to be replaced if damaged. It is attached to the intermediate shroud using a clamp (pn 20077).

DAILY MAINTENANCE:

(At the end of each working day):

1.) Inspect power cord for wear. To prevent electrical shock replace cords with frayed or cracked insulation immediately.

2.) Place machine in the storage position.

3.) Check polishing pad condition. Change if soiled or torn.

4.) Remove filter (pn 34212) and clean with vacuum. Periodically wash filter out with water (allow filter to dry completely before using).

PERIODIC MAINTENANCE:

1.) Wash or replace filter cartridge.

2.) Open motor housing and remove any dust and lint using compressed air or vacuum. Also check carbon motor brushes and replace if worn down to less than 3/8 inch in length.

3.) Check belt for wear and replace if needed. Tighten if necessary.

4.) Vacuum out any dust or lint build-up in the tube which connects the filter and chassis.

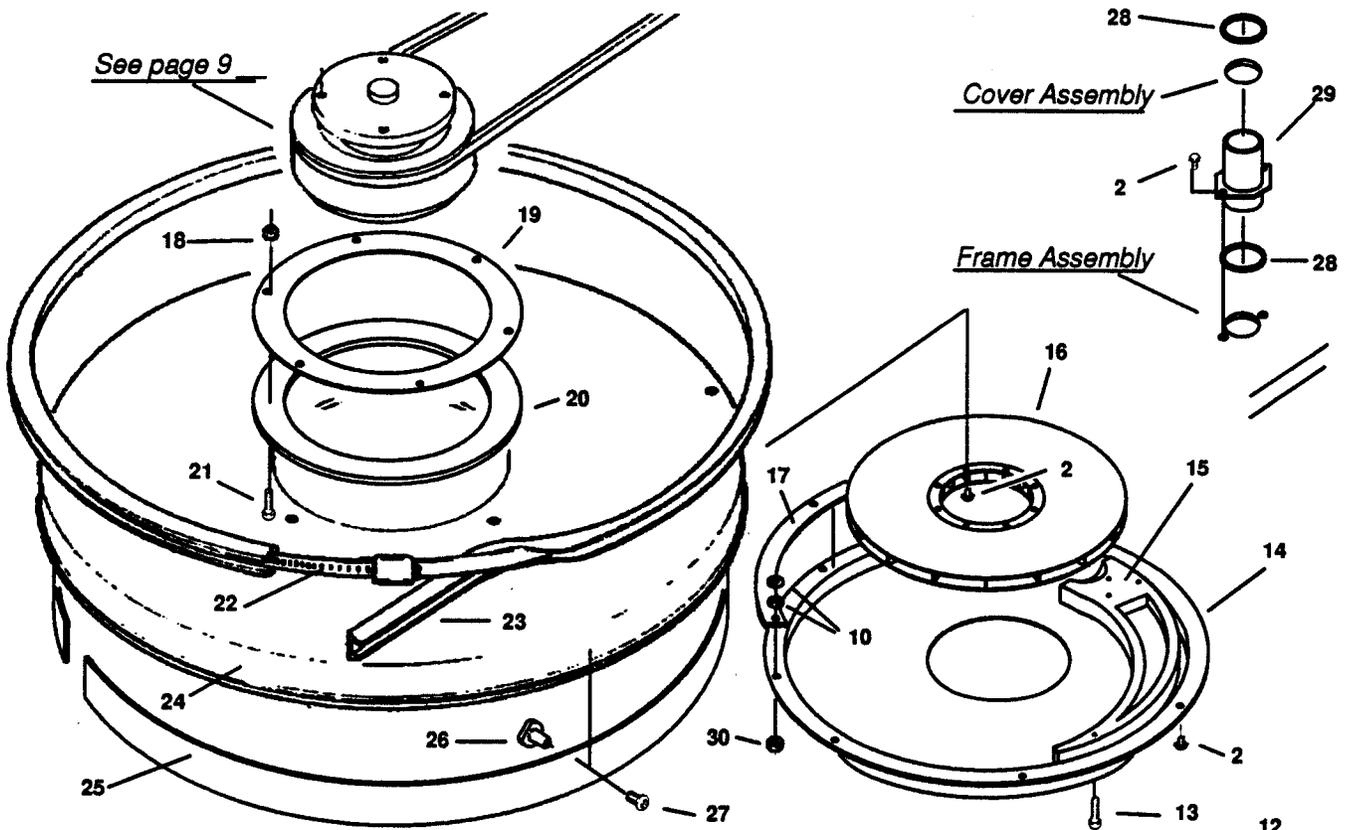
5.) Inspect felt skirt and replace if necessary.

6.) Lubricate the lift mechanism gears using a graphite spray lubricant. There are (4) in the F2000 and (2) in the L2000D.

7.) Check for dust escaping around any gaskets and tighten or replace.

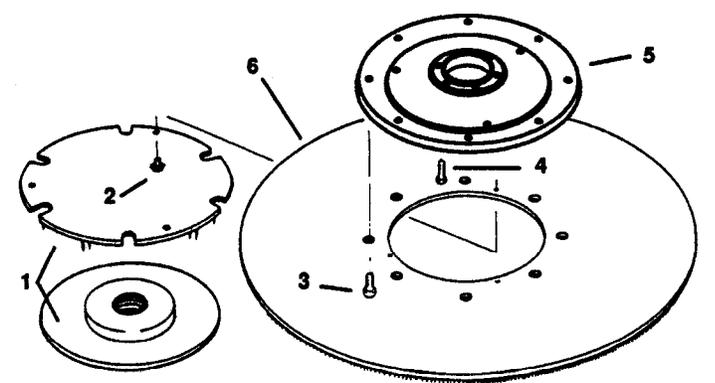
PADS:

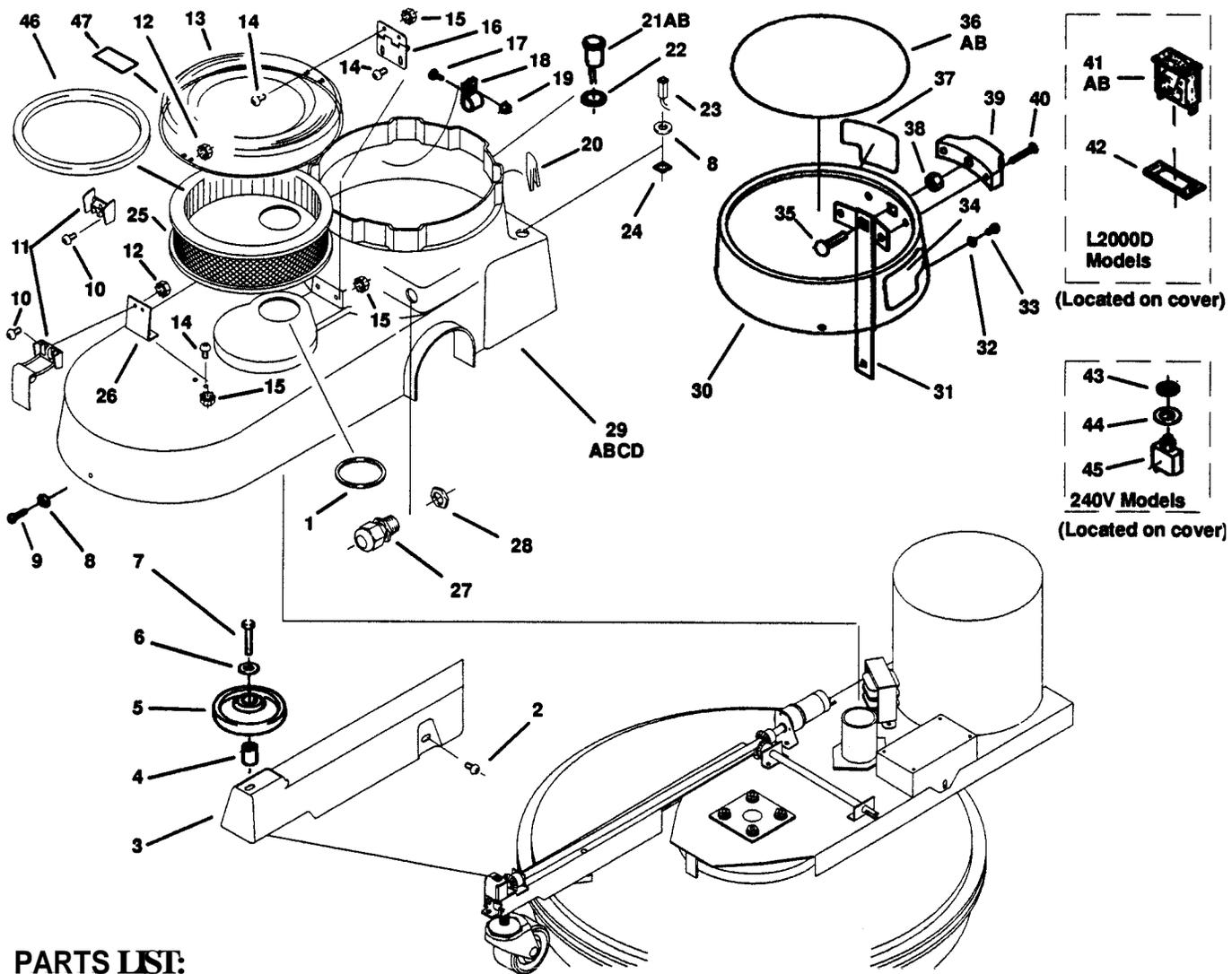
Only standard 1 inch thick pads suitable for high speed burnishing are recommended.



PARTS LIST:

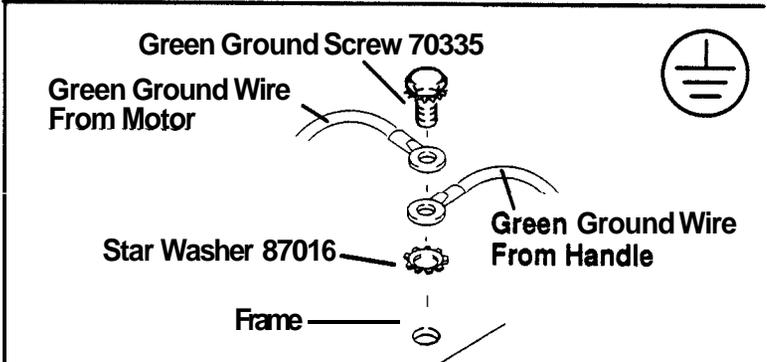
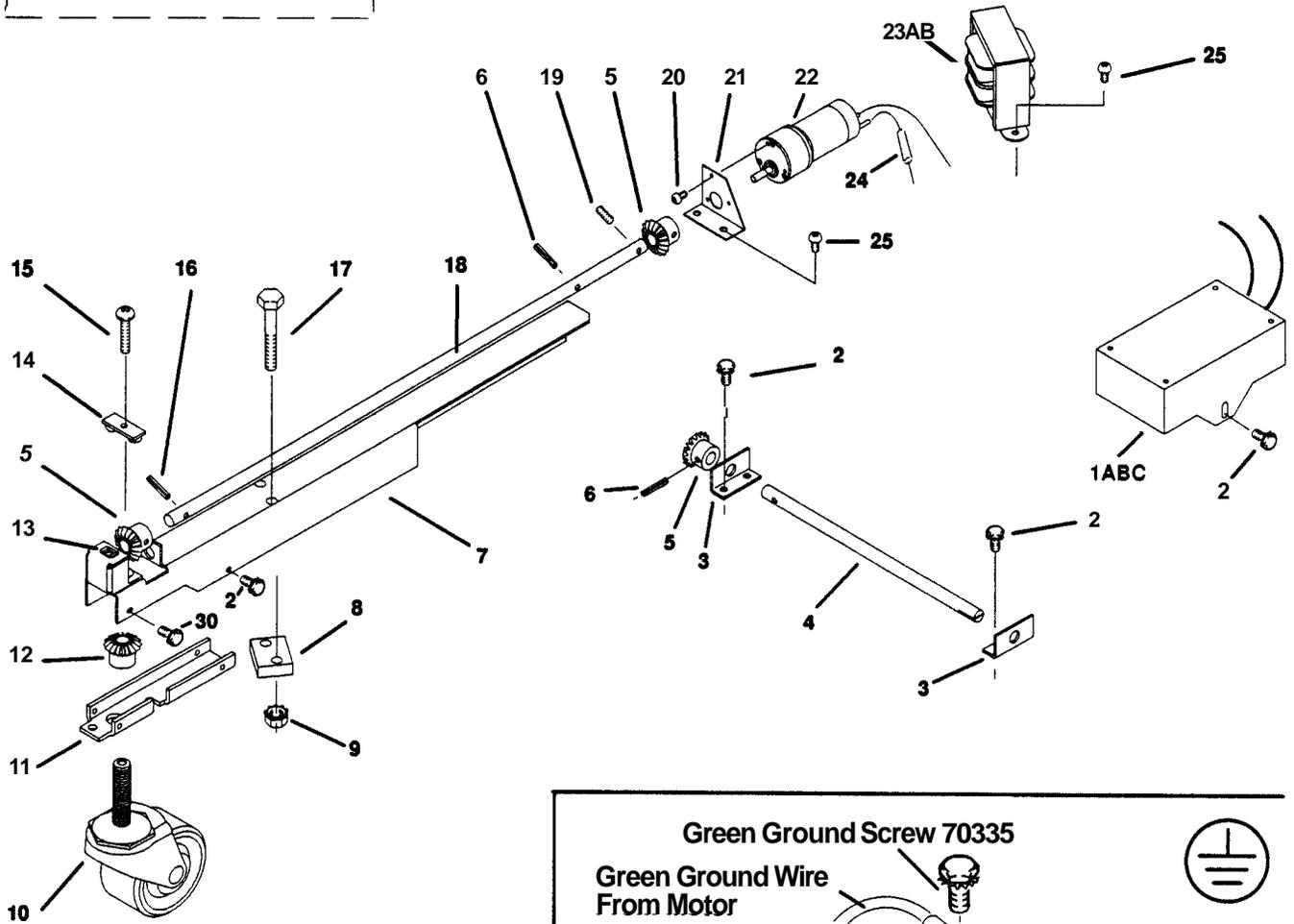
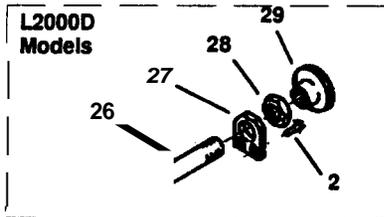
KEY	PART NO.	DESCRIPTION
1	41161	Pad Holder, Center Lock
2	70351	Scr, 10-32 x 3/8 HHTR
3	70384	Scr, 1/4 x 1/2 PHTR
4	70383	Scr, 10-32 x 3/4 PHTR
5	41187	Hub, Flex Disc
6	66142	Pad Driver
7	73612	Seal, Shroud
8	20077	Clamp, #HS356
9	57017	Nut, 15/32-32 Panel
10	87018	Washer, #10 x 9/16 OD
11	73615	Spacer, Nylon
12	73412	Shroud, Intermediate
13	70198	Scr, #10 x 3/4 PHMS
14	41188	Housing, Impeller
15	14742	Block, Impeller Housing
16	14667	Blower
17	36130	Gasket, Impeller Housing
18	57106	Nut, 8-32 w/Star Washer
19	62396	Plate, Clamp_Rina
20	35130	Gasket, Polisher Shroud
21	70054	Scr, 8-32 x 3/8 FHMS
22	20076	Clamp, #390
23	14740	Bumper, Shroud
24	73411	Shroud
25	73448	Skirt, Felt Shroud
26	57173	Nut, 8-32 Tee
27	70052	Scr, 8-32 x 3/8 PHMS
28	35117	Gasket, Filter
29	78239	Tube
30	57104	Nut, 10-32 w/Star Washer





PARTS LIST:

KEY	PART NO.	DESCRIPTION	KEY	PART NO.	DESCRIPTION
1	35117	Gasket, Filter	26	14853	Bracket, Latch
2	70351	Scr, 10-32 x 3/8 HHTR	27	73195	Strain Relief, 1/2 NPT
3	27556	Cover, Caster Bracket	28	57040	Nut, 1/2 NPT
4	73420	Spacer, .259 x .375 x 1.00	29A	27466	Cover, 115V F2000 Main
5	89059	Wheel, Bumper	29B	27535	Cover, 240V F2000I Main
6	87013	Washer, 1/4 Flat	29C	27547	Cover, 115V L2000D Main
7	70249	Scr, 1/4-20 x 1.25 HHMS	29D	27597	Cover, 240V L2000DI Main
8	87004	Washer, #12 Dress	30	27309	Cover, Motor
9	70050	Scr, 10-32 x 3/4 OHMS	31	14590	Bracket, Motor Cover
10	70051	Scr, 8-32 x 1/2 PHMS	32	87016	Washer, #10 Star
11	51179	Latch	33	70086	Scr, 10-24 x 1/2 PHMS
12	27505	Cover, Filter	34	50470	Label, Brush Warning
13	57106	Nut, 8-32 w/Star Washer	35	70332	Scr, 3/8-16 x 2.00 Carriage
14	70088	Scr, 10-32 x 1/2 PHMS	36A	50570	Label, F2000 Main
15	57104	Nut, 10-32 w/Star Washer	36B	50461	Label, L2000 Main
16	41227	Hinge	37	50541	Label, Brush Wear
17	70243	Scr, 8-32 x 1/2 PHMS	38	57111	Nut, 3/8-16 Hex
18	20005	Clamp 5/16 Plastic	39	14574	Bumper
19	57106	Nut, 8-32 w/Star Washer	40	70336	Scr, 10-32 x 1.0 THMS
20	57028	Nut, 10-24 Tinneman	41A	54119	Meter, Pad Pressure 115V
21A	51116	Light, Brush Wear Indicator 115V	41B	54120	Meter, Pad Pressure 240V
21B	51118	Light, Brush Wear Indicator 240V	42	62283	Plate, Meter Retaining
22	87101	Washer, Spring	43	57024	Nut, 3/8 Panel
23	51175	Light, Pad Pressure 115V	44	50394	Label, Circuit Breaker
24	22046	Clip, Neon	45	14312	Breaker, 7 amp Circuit
25	34212	Filter Cartridge	46	35130	Gasket, Filter & Cover
			47	50562	Label, Filter Cover Warning

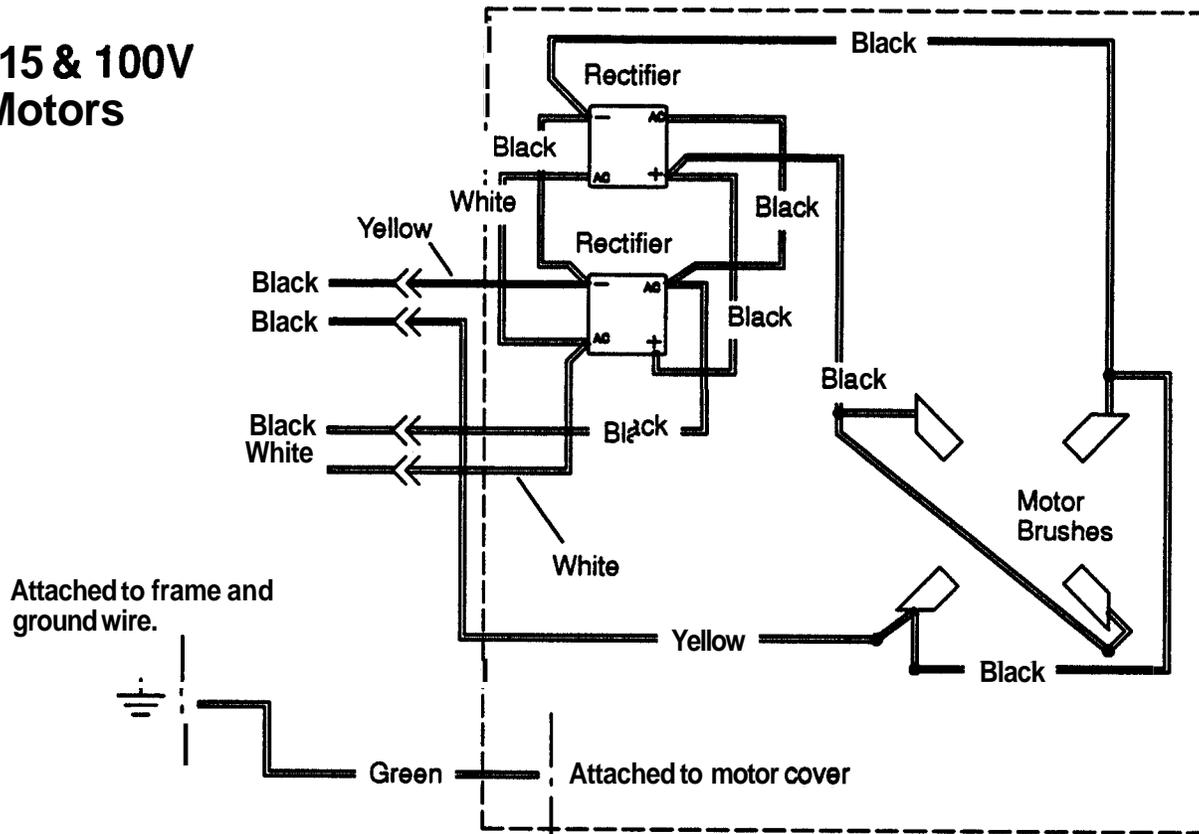


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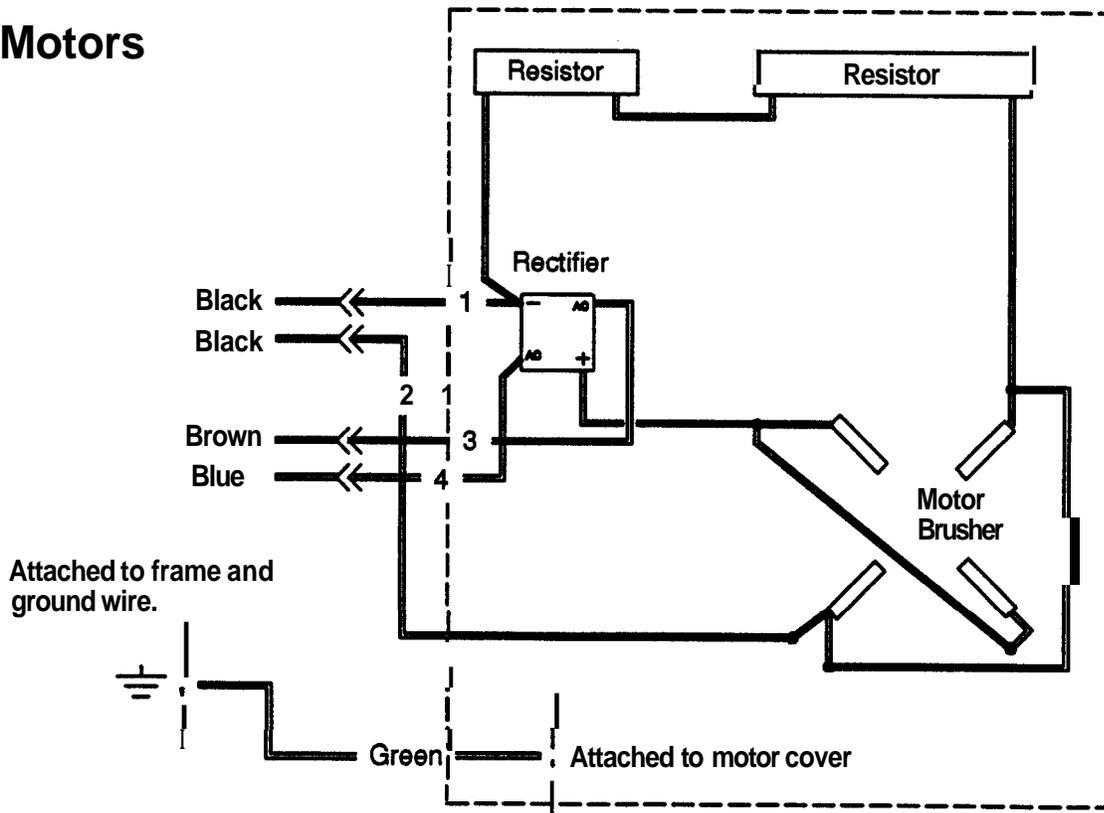
KEY	PART NO.	DESCRIPTION	KEY	PART NO.	DESCRIPTION
1A	27613	Control Asm, 115V Pad Pressure	16	66145	Pin, 5/64 x 1.00 Roll
1B	27614	Control Asm, 240V Pad Pressure	17	70022	Scr, 1/4-20 x 2.00 HHMS
1C	27612	Control Asm, 100V Pad Pressure	18	67264	Rod, F2000 Caster Adjust
2	70351	Scr, 10-32 x 3/8 HHTR	19	70369	Set Scr, 8-32 x 1/8 KCP
3	14850	Bracket, Gear Over-Ride	20	70242	Scr, 4-40 x 1/4 PHMS
4	67268	Rod, Mechanical Over-Ride	21	14835	Bracket, Height Adjust Motor
5	36113	Gear, 3/8 Bore (Pin)	22	53214	Motor Assembly, Height Adj
6	66024	Pin, 5/64 x 3/4 Roll	23A	78260	Transformer, 120V/24VAC Class II
7	14677	Bracket, Front Caster	23B	78261	Transformer, 240V/24VAC
8	73568	Spacer, Front Caster	24	67280	Resistor, 5W 5 ohm
9	57105	Nut, 1/4-20 w/Star Washer	25	70323	Scr, 10-32 x 1/4 PHTR
10	18033	Caster	26	67218	Rod, L2000D Caster Adjust
11	62285	Plate, Front caster	27	62288	Plate, Caster Knob
12	36114	Gear, 1/2-13 (Threaded)	28	57085	Nut, 3/8-16 Hex Jam
13	57080	Nut, 1/4-20 Captive	29	48053	Knob, L2000D Caster Adjust
14	73613	Stop, Caster	30	70361	Scr, 10-32 x 1/2 HHTR
15	70162	Scr, 10-32 x 3/8 PHMS			

Motor Brush Wiring Diagrams

115 & 100V Motors



240V Motors



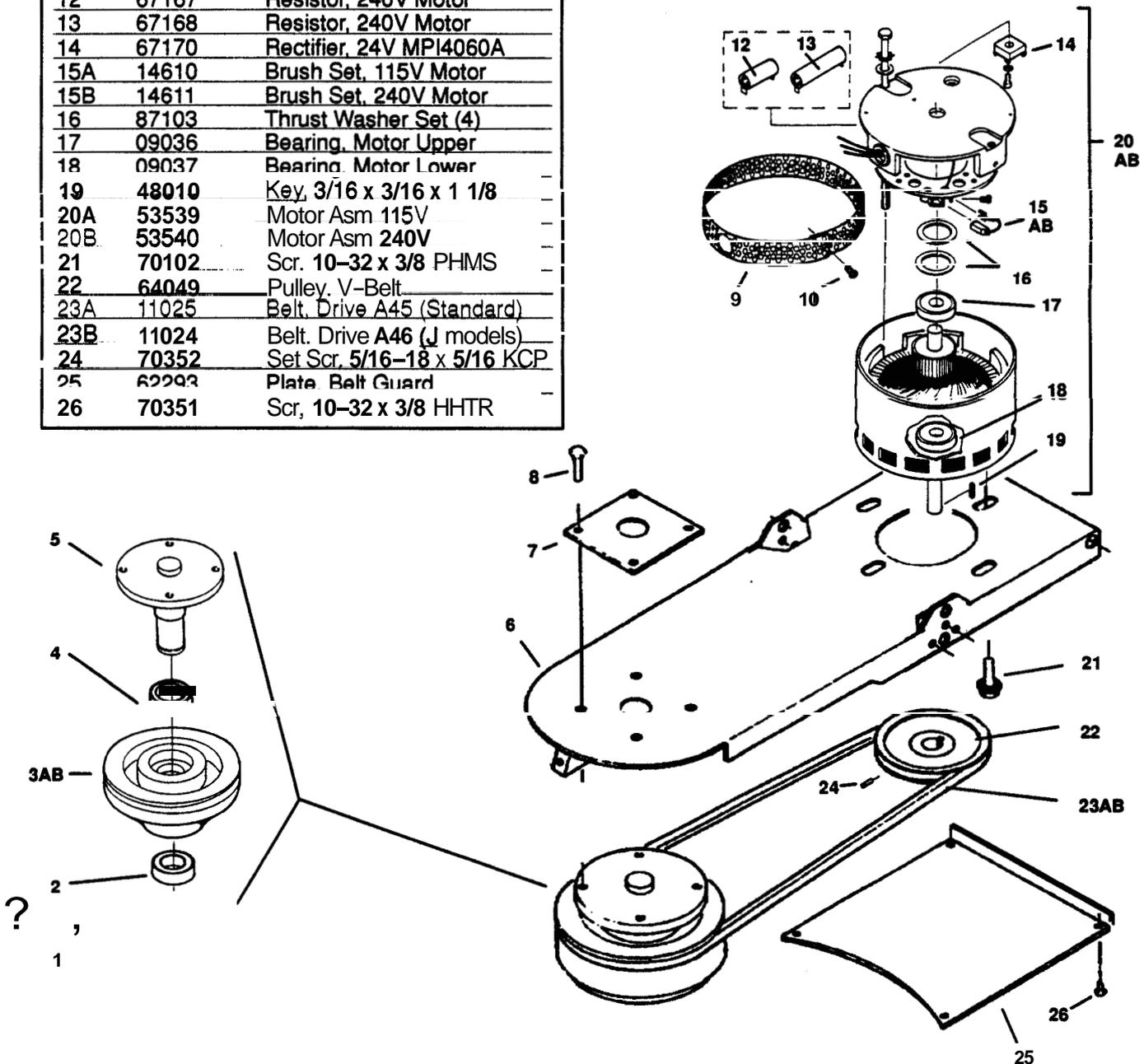
PARTS LIST:

KEY	PART NO.	DESCRIPTION
1	67162	Ring, 3/4 External Snap Ring
2	09030	Bearing, .75 x 2.00
3A	64052	Pulley, Pad (standard)
3B	64065	Pulley, Pad (J models)
4	09033	Bearing, 1.00
5	03049	Axle, Pad Driver
6	34205	Frame, Main
7	62241	Plate, Axle Mounting
8	70337	Scr, 5/16-18 x 3/4 HHTF
9	73381	Screen, Motor
10	70323	Scr, 10-32 x 1/4 PHTR
11	14637	Bushing, 5/8 ID Snap
12	67167	Resistor, 240V Motor
13	67168	Resistor, 240V Motor
14	67170	Rectifier, 24V MPI4060A
15A	14610	Brush Set, 115V Motor
15B	14611	Brush Set, 240V Motor
16	87103	Thrust Washer Set (4)
17	09036	Bearing, Motor Upper
18	09037	Bearing, Motor Lower
19	48010	Key, 3/16 x 3/16 x 1 1/8
20A	53539	Motor Asm 115V
20B	53540	Motor Asm 240V
21	70102	Scr, 10-32 x 3/8 PHMS
22	64049	Pulley, V-Belt
23A	11025	Belt, Drive A45 (Standard)
23B	11024	Belt, Drive A46 (J models)
24	70352	Set Scr, 5/16-18 x 5/16 KCP
25	62293	Plate, Belt Guard
26	70351	Scr, 10-32 x 3/8 HHTR

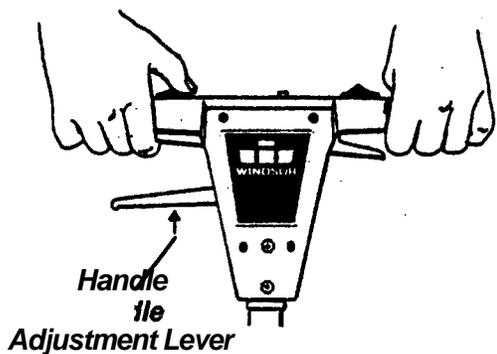
The F2000 & L2000D are equipped with rectified DC permanent magnet motors. A red warning light, located at the rear of the machine, will come on when the carbon motor brushes need to be replaced.

Periodically remove the motor cover and use compressed air to blow out dust from the motor.

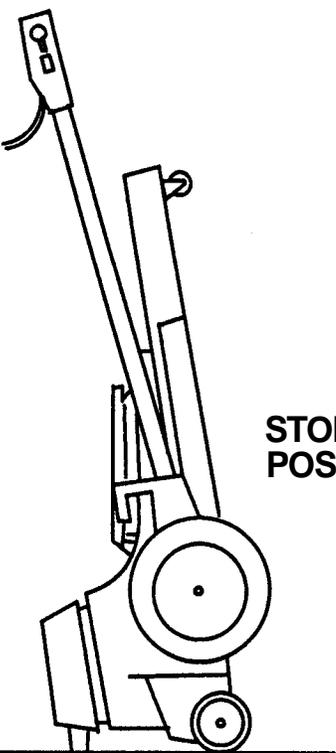
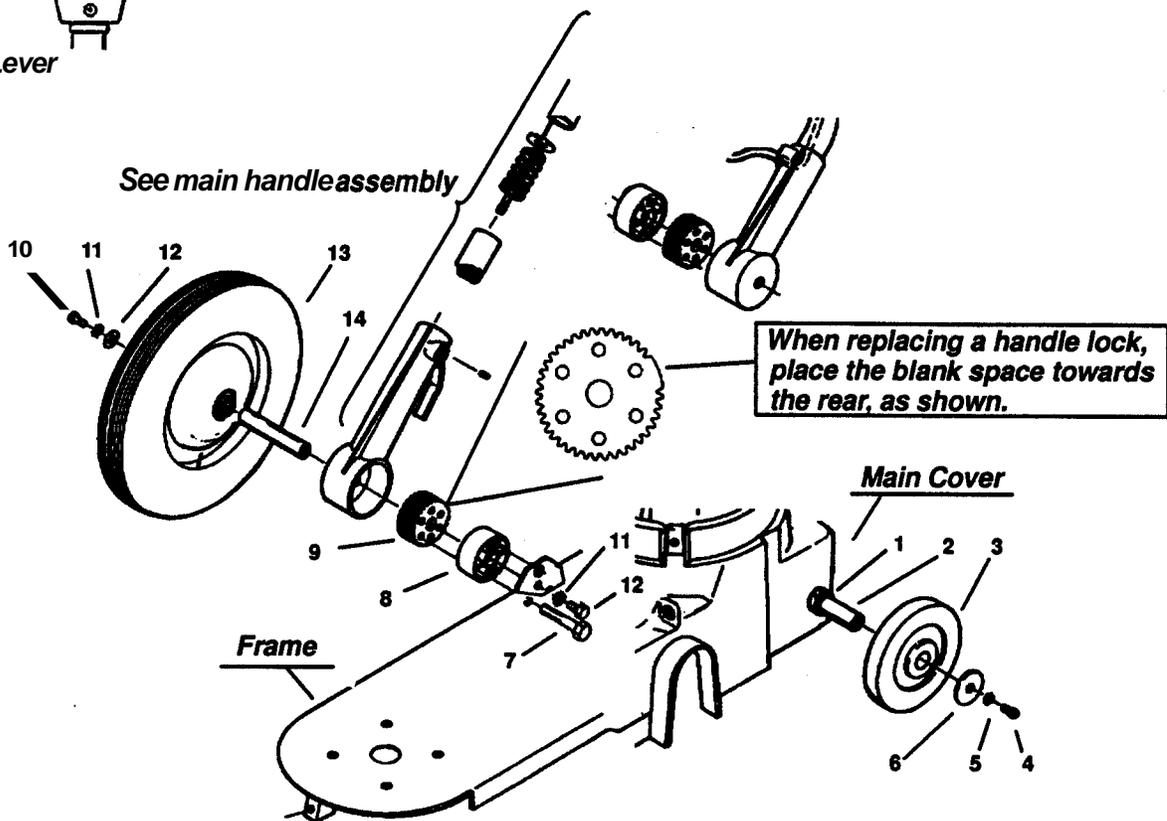
To replace brushes; use a small wire hook to pull brush springs out of the way, ensure wires from new brushes do not prevent free movement of the brush in the holder, and that the brush with the Yellow sensor lead is installed in the same holder as the old brush with the yellow sensor lead.



To tighten or remove the belt; Remove the belt guard, item 25, and loosen the (4) motor bolts, item 21. For additional information see page 4.



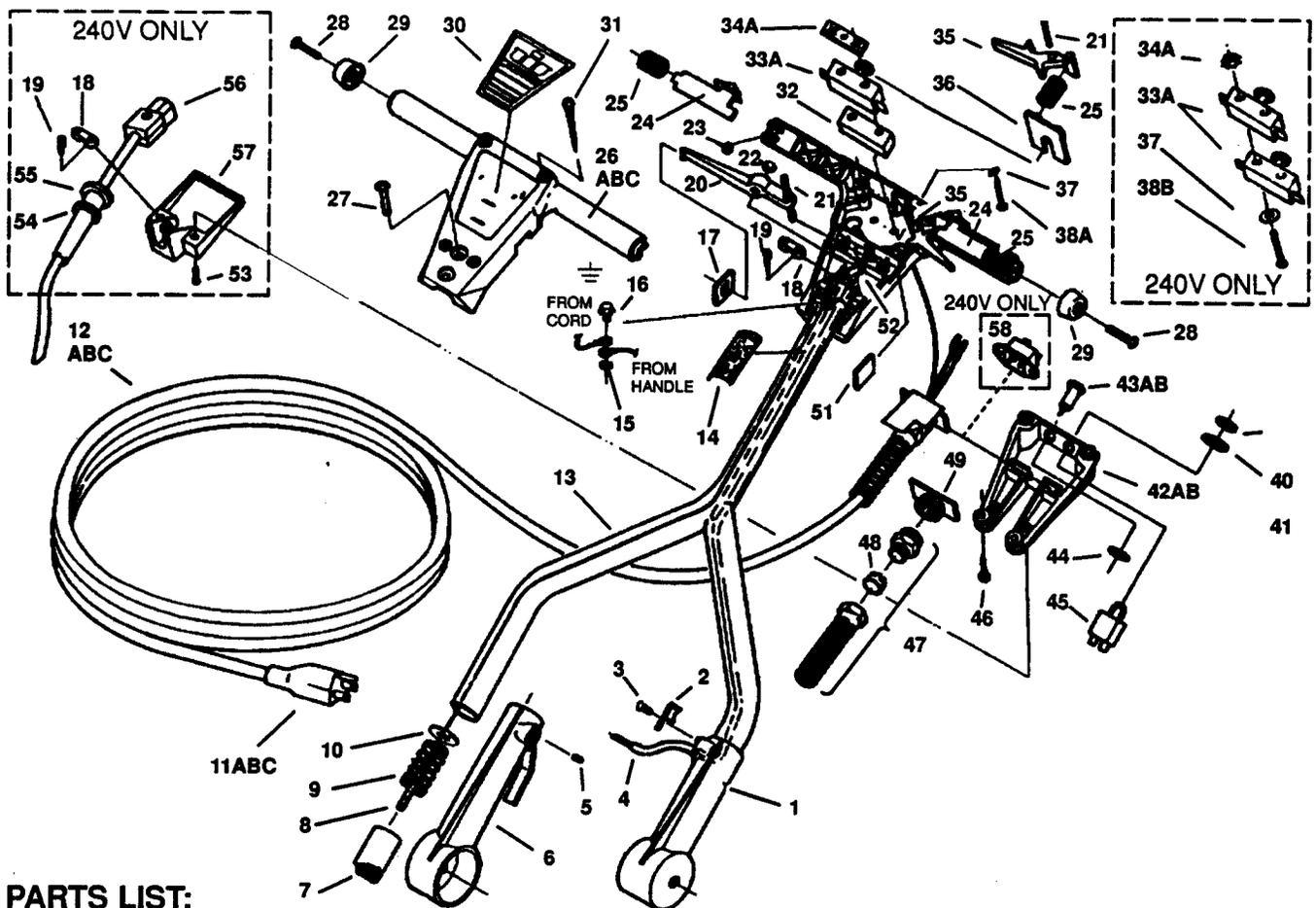
See main handle assembly



STORAGE POSITION

PARTS LIST:

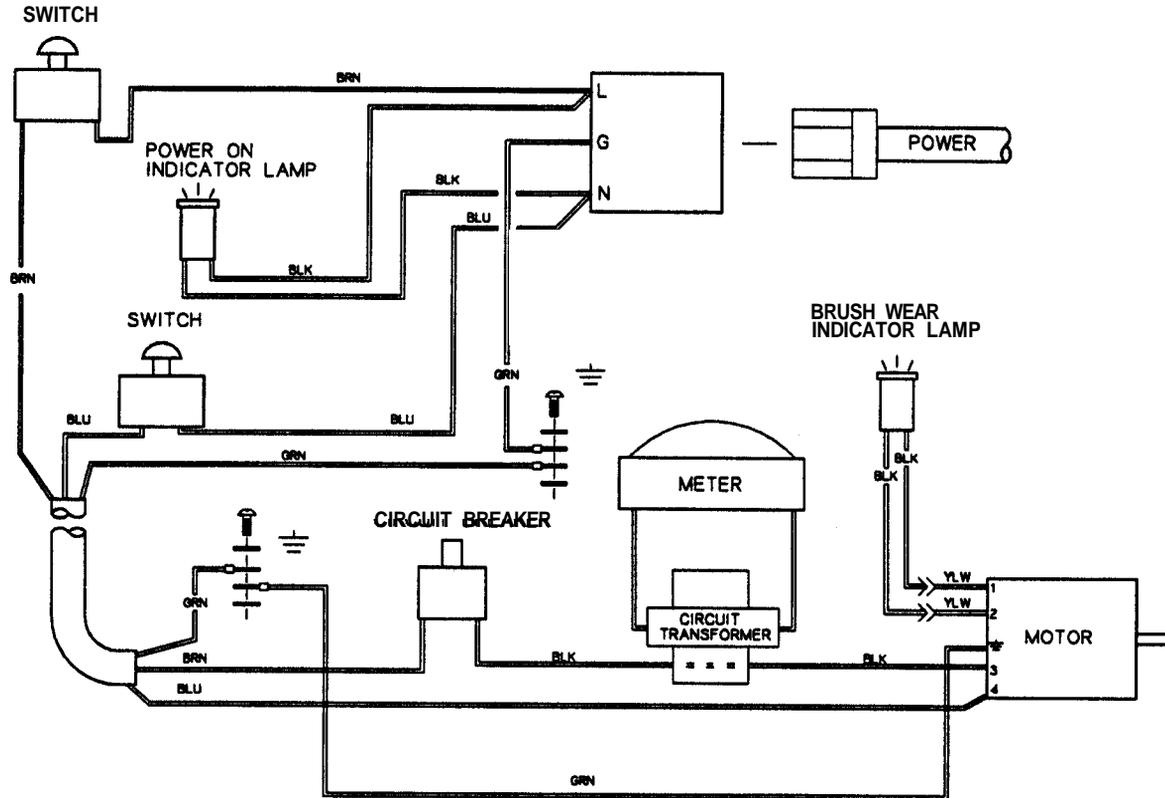
KEY	PART NO.	DESCRIPTION
1	73440	Spacer, .390 x 1.00 x .25 Bore
2	03059	Axle, 3/8 Transport Wheel
3	89063	Wheel, 5 x 1 x 3/8 Transport
4	70088	Scr, 10-32 x 1/2 PHMS
5	87016	Washer, #10 Star
6	87093	Washer, #10 x 1.0 Flat
7	70320	Scr, 5/16 x 2.0 GR5 HHCS
8	73398	Spacer, Handle
9	36122	Gear, Handle Lock
10	70020	Scr, 1/4-20 x 1/2 HHMS
11	87025	Washer, 1/4 Star
12	87008	Washer, 1/4 x 1.25 Flat
13	89064	Wheel, 8" Main
14	03054	Axle, 1/2 Main Wheel



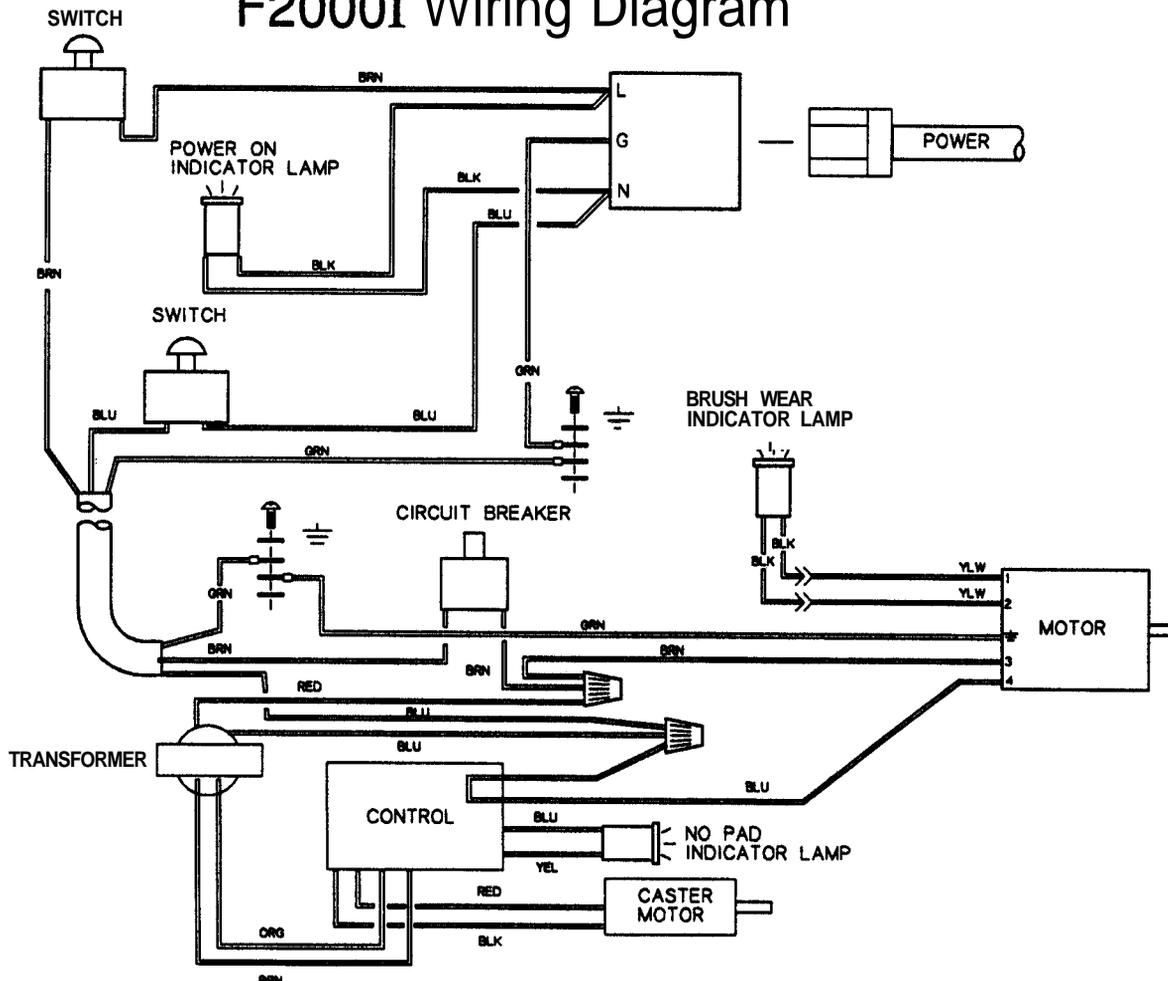
PARTS LIST:

KEY	PART NO.	DESCRIPTION	KEY	PART NO.	DESCRIPTION
1	41195	Housing, Handle Pivot (Left)	28	70336	Scr, 10-32 x 1.0 THMS
2	20069	Clamp, Cord	29	27316	Cap, Handle End
3	70177	Scr, 10-32 x 1/2 FHMS	30	50398	Label, Polisher
4A	88442	Wire Asm, L2000D Handle (115V)	31	70247	Scr, #10 x 1.5 PHSM
4B	88443	Wire Asm, F2000/L2000D (240V)	32	73400	Spacer, UL Switch
4C	88620	Wire Asm, F2000 Handle (115V)	33A	72073	Switch, 25A SPST (115V)
5	70330	Set Scr, 5/16-16 x 1/2 Cone Pt	33B	72062	Switch, SPST (240V)
6	41204	Housing, Handle Pivot (Right)	34A	57147	Nut Plate, Switch
7	51114	Lock, Handle Position	34B	57116	Nut, 6-32 w/Star Washer
8	27308	Cable, Handle Lock	35	51027	Lever, Handle Switch
9	73307	Spring, Handle Lock	36	62267	Plate, Switch Mounting
10	87086	Washer, M10 x 30	37	87017	Washer, #8 Flat
11A	26006	Cord End, 125V 15A NEMA 5-15P	38A	70359	Scr, #6B x 1.25 PHSM
11B	26036	Cord End, 250V CEE 7/7 Europe	38B	70079	Scr, 6-32 x 2.0 RHMS
11C	26037	Cord End, 10A/240 Australia	40	57024	Nut, 3/8-27 Panel
12A	23538	Cord Asm, 115V F2000/L2000D	41	50394	Label, Circuit Breaker
12B	23536	Cord Asm, 240V F2000/L2000D	42A	41164	Housing, Strain Relief (115V)
12C	23537	Cord Asm, 250V F2000/L2000D	42B	41164R	Housing, Strain Relief (240V)
13	38138	Handle, Main	43A	51115	Light, 115V Power On
14	50399	Label, Warnina	43B	51117	Light, 240V Power On
15	87016	Washer, #10 Star	44	87101	Washer, 1/2 ID Spring
16	70323	Scr, 10-32 x 1/4 PHTR	45	14646	Breaker, 16 amp Circuit
17	62251	Plate, Handle Lever	46	70198	Scr, #10 x 3/4 PHMS
18	20034	Clamp, Cable	47	73366	Strain Relief, 1/2 NPT (Metal)
19	70333	Scr, #8A x 3/4 PHMS	48	14587	Bushing, Strain Relief
30	51029	Lever, Handle Release	49	04068	Adapter, Strain Relief
21	66111	Pin, 7/32 x 2.0	50	27369	Cover, Dielectric
77	57018	Nut, 10-74 Lock	51	62252	Plate, Lever Plug
23	57014	Nut, 10-32 Hex	52	62264	Plate, Divider
74	51079	Lock, Switch	53	70142	Scr, M4 x 7-10 PHMS
75	73308	Spring, Switch Interlock	54	73095	Strain Relief, 240V
76A	41167	Housing, Front Handle	55	87052	Washer, 22 x 17 2.5mm Fiber
26B	41163	Housing, Rear Handle (115V)	56	26023	Cord End, 240V Handle
26C	41179	Housing, Rear Handle (240V)	57	27348	Cover, 240V Cord End
27	70329	Scr, 1/4-20 x 3/4 PHTR	58	73104	Socket, IEC 320 Power Inlet

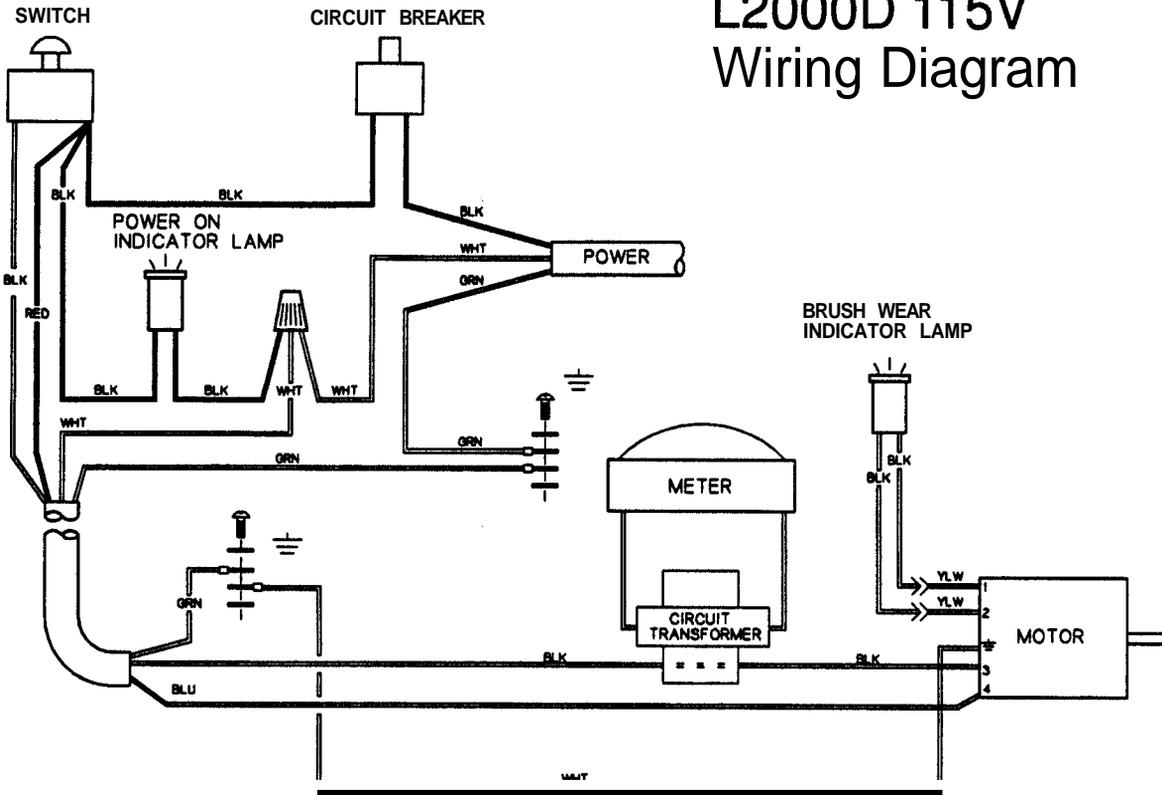
L2000DI 230V Wiring Diagram



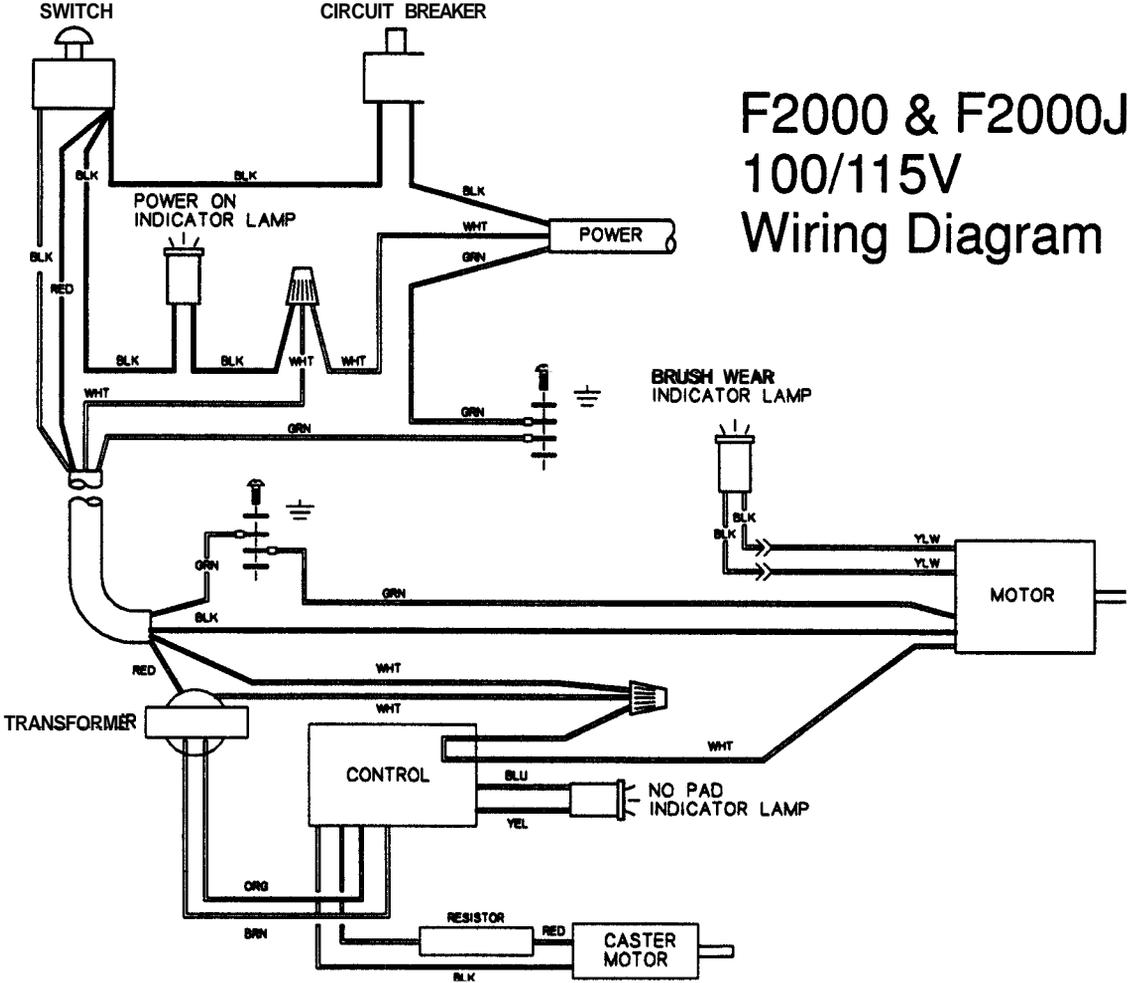
F2000I Wiring Diagram



L2000D 115V Wiring Diagram



F2000 & F2000J 100/115V Wiring Diagram





Limited Warranty

Windsor Industries warrants that the Windsor machine covered by this warranty is free from defects in workmanship and materials under the following terms:

6 YEARS:

On Rotationally Molded Polyethylene Tanks.

3 YEARS:

On Traverse Drive Motors, Gear Units, AC Induction Polisher Motors, all Metal Chassis and Metal Frames.

1 YEAR:

On all other parts which are not specifically referenced herein, plus an extra year (2 years total) on Rectified DC Polisher Motors and Scrubber Brush Motors.

The warranty period shall commence at the date of FIRST PURCHASE BY THE END USER FROM AN AUTHORIZED WINDSOR DISTRIBUTOR and applies to defective parts only, not to failure caused by abuse or normal wear.

Windsor will at its option, repair or replace without charge, except for normal transportation costs, parts that fail under normal use and service when operated and maintained in accordance with the Owner's Guide and the Preventive Maintenance Guide where applicable. This warranty shall apply to defects in material and workmanship only and does not apply to: a) transportation damages, b) alterations by unauthorized persons, c) misuse or abuse (including use of incompatible or corrosive chemicals or overloading of capacity), d) failure caused by lack of proper maintenance and cleaning, e) batteries and chargers which are warranted by the original manufacturer for one year, and g) normal wear on items such as belts, brushes, bearings, capacitors, carbon brushes, clutches, cords, filters, finishes, gaskets, hoses, pulleys, relays, rectifiers, and switches.

This warranty is in lieu of all warranties, expressed or implied, and releases Windsor from all other obligations and liabilities. Windsor Industries is not responsible for costs of repairs performed by persons other than those specifically authorized by Windsor. This warranty does not apply to damage or loss of income due to malfunctioning of the machine. USE OF PARTS NOT APPROVED BY WINDSOR WILL VOID WARRANTY.

If a difficulty develops with this machine, contact the Dealer from whom you purchased the product or the Windsor Customer Service Department.

**Customer Service Manager
Windsor Industries, Inc.
1351 West Stanford Avenue
Englewood, Colorado, 80110 USA
(303) 762-1800
800-444-7654
FAX: (303) 762-0817**

