

PowerTec 20X™

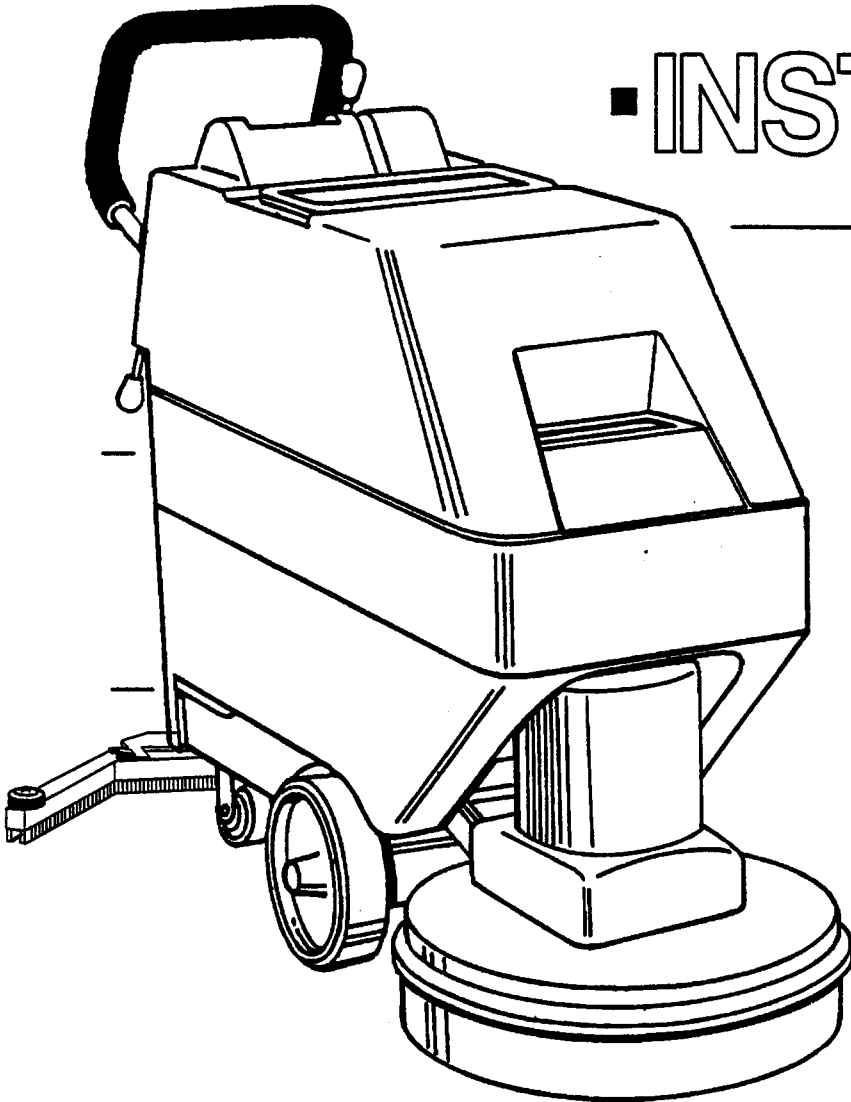
AUTOMATIC SCRUBBER

■ OPERATION MANUAL

■ INSTRUCTION

■ SERVICE

■ CARE



*Model C20X
Battery Powered
Floor Scrubber
with Removable
Battery System*



INDUSTRIES, INC., 1351 W. Stanford Ave., Englewood CO 80110 USA *303-762-1900*FAX 303-762-0517

Operator Safety Instructions



WARNING:

Read the instruction manual before operating machine.

Operate this machine only from the rear of machine.

CAUTION: For Indoor Use Only.

To prevent possible damage to the floor when using the Brush use water or other approved cleaning solution while operating.

When using the pad option, always keep the machine moving when in contact with the floor.

Use caution when operating the machine on a ramp or incline. Do not turn or leave this machine unattended on a ramp or incline.

Make sure all Warning and Caution labels are legible and properly attached to the machine.

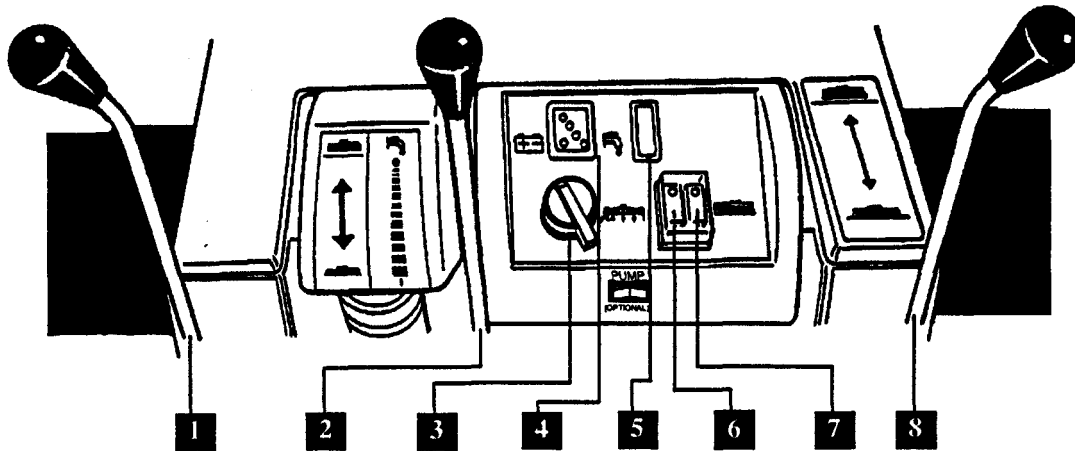
Store machine inside. Keep the electrical components of the machine dry.

Lead acid batteries generate gasses which can cause an explosion. Keep sparks and flames away from the batteries. Charge the batteries only in a well ventilated area.

Wear eye protection when working near batteries. Do not put any type of metal objects across the battery terminals or on top of the batteries.

Maintenance and repairs must be done by qualified personnel only. Maintain adjustments on machine as per specifications noted in the service manual.

Machine can cause an explosion when operated near flammable vapors and materials.



- | | |
|----|---|
| 1. | Raises and Lowers Squeegee Assembly |
| 2. | Controls flow of cleaning solution to floor. |
| 3. | Controls electric power to all switched components. |
| 4. | Indicates charge condition of batteries. |
| 5. | Light "ON" indicates solution valve is open. |
| 6. | Switches on Vacuum motor. |
| 7. | Switches on Brush Drive Motor. |
| 8. | Raises and lowers Scrub Deck Assembly. |

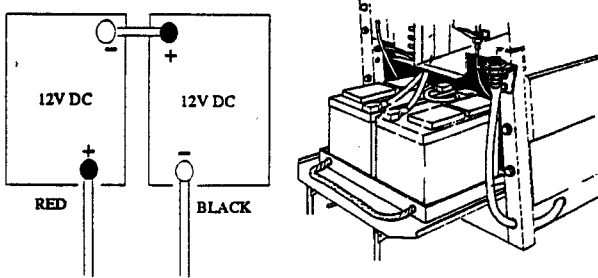
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MACHINE PREPARATION

BATTERIES

1. Install the batteries and connect the cables as shown.

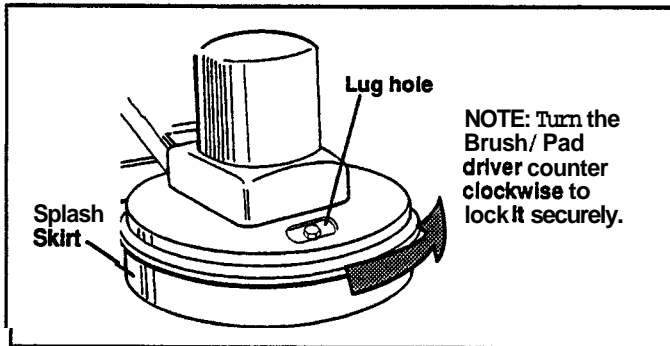


WARNING: PROVIDE PROPER VENTILATION, LEAVE DOOR OPEN WHEN CHARGING BATTERIES.

2. Charge the batteries before using the machine. (See battery charging procedure).

BRUSH/DRIVE PAD ASSEMBLY

1. Turn OFF **main** power switch & brush motor switch
2. Raise scrub deck assembly by raising control lever to store position.
3. Reach under scrub deck and rotate drive plate until a lug hole is visible through the scrub deck sight hole.



4. Position brush/pad driver under plate and lift up to engage brush lugs in plate. A quick counterclockwise motion will lock brush/pad driver in position.
5. Lower scrub deck by pulling control lever rearward. Adjust splash skirt to floor.

CLEANING SOLUTION

1. Fill machine with hot water and add cleaning chemical at the proportion noted on the container.

CAUTION: Always use a low sudsing cleaning chemical designed for use in automatic hard surface floor scrubbers.

CAUTION: To avoid possible distortion of polyethylene solution/recovery tanks. DO NOT USE WATER TEMPERATURE THAT EXCEEDS 150°F (65 °C.)

CHEMICALS

The internal parts of the pump used in the scrubber (on models equipped with auxiliary pump) are suitable for use with most cleaning chemicals. But it is susceptible to chemical attack from some cleaning substances, such as hydrocarbon solvents and chlorinated bleaches. These non-compatible materials are not of the type normally used for cleaning.

SUITABLE CHEMICALS

Alkalis	Soaps
Clorox II Bleach*	Sta-Puf Fabric Softener*
Defoaming Agents	Vinegar
Detergents	White Monday Bleach*
Hydroxides	D-Limonene @
Oxygen Bleaches	@ When properly diluted
	*Registered Trademark

NONCOMPATIBLE CHEMICALS

Aldehydes	Chlorinated Hydrocarbons
Aromatic Hydrocarbons	Lysol*
SP Butyls	Methyl Ethel Ketone (MEK)
Carbon Tetrachloride	Perchlorethylene (perc)
Chlorox*	Phenolics
Chlorinated Bleaches	Trichlorethylene

NOTE: In the following instructions all letter designations, **IE: A** will be shown in the upcoming graphical examples in this guide.

OPERATING THE MACHINE

1. Adjust the operator control handle to a comfortable position.
2. Switch on **main** power switch.
3. Release solution. (Pull solution control lever rearward.) **NOTE:** The amount of solution can be regulated during operation depending on the type of floor and the traverse speed of the machine.
4. Switch on brush drive motor.
5. Switch on vacuum motor.
6. Lower scrub deck. Pull deck lift lever rearward. **CAUTION:** Do not leave brush running on floor while machine is stationary.
7. Lower squeegee. Pull squeegee lift lever rearward. **NOTE:** Use adjusting knob to change pressure on the squeegee. Item 26 page 12 of this manual.
8. Turn to page 3 for description on **Traction Drive Operation** for the proper motion control of the machine. **CAUTION:** Move control handles slow at first until you are comfortable with operation.

OPERATING MACHINE WITH ACCESSORY TOOLS

The **HFT** floor tool for wet pick-up *can* be used on models equipped with the auxiliary pump kit option. (**NOTE:** Factory installed option only.)

1. Remove **vac hose** from squeegee and connect to accessory **vac hose**, using metal hose coupler.
2. **Connect solution hose** from accessory tool to solution outlet nipple located at lower right hand corner of **rear** panel.
3. Check solution **tank** for cleaning solution and make **sure** dome is in place.
4. Switch **on** **main** power switch.
5. Switch **on** auxiliary pump and vacuum switches.



WARNING: Do not switch on brush motor when operating machine with accessory tools.

REGULAR MAINTENANCE BEFORE STARTING WORK PERIOD:

1. Disconnect battery charger. **NOTE:** Disconnect the "AC" power cord from the wall receptacle before removing the "DC" Charger plug from the machine.
2. Check **water** level in batteries. Add **distilled** water as needed.
3. **Attach** brush or drive pad to drive plate.
4. Check **vac** hose **connection** at squeegee **shoe**.
5. Check squeegee blades for wear.
6. **Fill** machine with hot water and add cleaning chemical at the proportions **noted** on the container. **NOTE:** Use a low sudsing cleaner designed for **use** in automatic hard surface floor scrubbers.

BEFORE STORING MACHINE AT THE END OF WORK PERIOD:

1. **Drain** both solution and recovery tanks and **rinse** clean.
2. Remove dome, **lift** out float assembly to **allow** recovery **tank** to **air** **dry**.
3. Remove **brush** or drive pad **from** drive plate and store upside down **or** hang **on** wall.
4. Wipe down exterior of machine With damp cloth.
5. Raise squeegee assembly to "store" position.
6. **Charge** batteries. (See Battery Charging Procedure)

BATTERIES - CHARGING AND MAINTENANCE

BATTERY CHARGING PROCEDURE



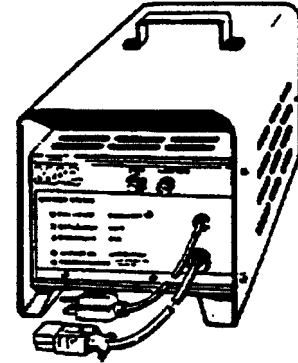
WARNING: Lead acid batteries generate gasses which can cause an explosion. Keep sparks and flames away from batteries.

NO SMOKING. Always wear eye protection when working near batteries. Charge the batteries only in a well ventilated area.

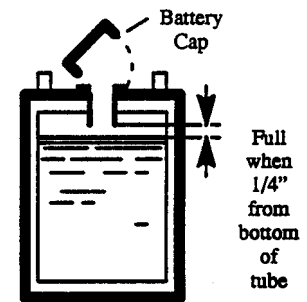
BATTERIES - CHARGING AND MAINTENANCE (Cont.)

BATTERY CHARGING PROCEDURE

1. Set the charger **on** a flat level surface.
2. **Open** battery compartment door. Leave door open during **charging** cycle.
3. Connect the "DC" charger plug to the connector **on** the machine.



4. Connect charger "AC" plug to properly grounded outlet that **has** correct voltage for the charger.
5. The charger supplied by WINDSOR is totally automatic and **shuts off** when the batteries are **fully** charged.
6. After charging **check** electrolyte level of the batteries. Add distilled water to the level as **shown** in diagram.



BATTERY MAINTENANCE

1. Keep **tops** of batteries clean **and** **dry**. Use a damp cloth with a weak solution of baking **soda** or **ammonia** and water. Use a clean **dry** cloth to wipe **battery tops** **dry** after cleaning.
2. If **corrosion** (white deposits) appears **on** the battery **terminals** and cable clamps, remove and clean. Use a battery **terminal** and connector cleaning tool.
3. **Keep** the battery electrolyte at the correct level - approximately 1/4" below bottom of filler tube **of** each cell. Distilled water should be **added**, as needed, **AFTER** charging cycle.

BATTERY TERMINAL CLEANER



Windsor Part #02101

SERVICING THE POWERTEC SCRUBBER

CAUTION: Before making and adjustments or repairs to the machine...

1. Only qualified maintenance personnel are to perform repairs.
2. Make sure battery charger is disconnected.
3. Make sure all switches are "OFF".
4. Remove batteries as required or disconnect main battery leads from batteries when making repairs to electrical system..
5. Refer to wiring diagram when replacing electrical electrical parts or repairing electrical system.

VACUUM MOTOR

1. Disconnect battery leads and remove batteries from compartment.
2. Remove (6) screws holding vac motor/ plate assembly to recovery tank. **P**
3. Disconnect vac motor lead **Q** from connector and lift out vac motor/ plate assembly.
4. Check motor brushes. When worn to 3/8" replace both brushes.

PUMP ASSEMBLY

(On models equipped with auxiliary pump)

1. Remove batteries and squeegee assembly. Lay the machine on side.
2. Disconnect pump motor leads. Remove (4) screws **R** holding pump to chassis. Disconnect solution hoses from pump head **S** and lift out pump drawing for replacement parts.

CAUTION: When replacing hose barb on the pump head - DO NOT OVERTIGHTEN - as this could crack intake and exhaust ports in pump head.

WHEELS / CASTERS

1. Use allen wrench to remove wheel retaining screw.
2. Use arbor press to replace bearings as required. Use grease gun to lubricate bearings through zerk fitting on wheel hub and caster axle.

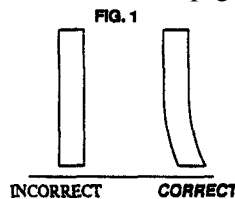
SQUEEGEE ASSEMBLY

To remove squeegee assembly-

1. Raise squeegee lift arm to store position.
2. Remove vac hose from squeegee.
3. Pull retaining pin from locator stud. Push down and slide squeegee to the right to disengage right hand stud from drag arm.
4. When installing or replacing squeegee blades make sure the smooth side of the blade is next to the squeegee casting.

ADJUSTMENT OF SQUEEGEE

1. The angle of the squeegee can be changed with the adjusting screw. **T** Turn screw clockwise to tilt squeegee forward and counterclockwise to tilt rearward. Tighten lock nut after making adjustment.
2. Down pressure can be increased or decreased with the adjusting nut. A properly adjusted squeegee blade should have a slight bend. (Fig. 1)
3. Squeegee tracking can be controlled by adjusting tension of squeegee springs. **NOTE:** Position recovery hose as shown on page 7 item 37.



SOLUTION STRAINER

1. An inline solution strainer is located under chassis **W** behind left wheel. Remove sediment bowl and screen periodically and rinse clean with hot water. Be careful not to misplace the Gasket.

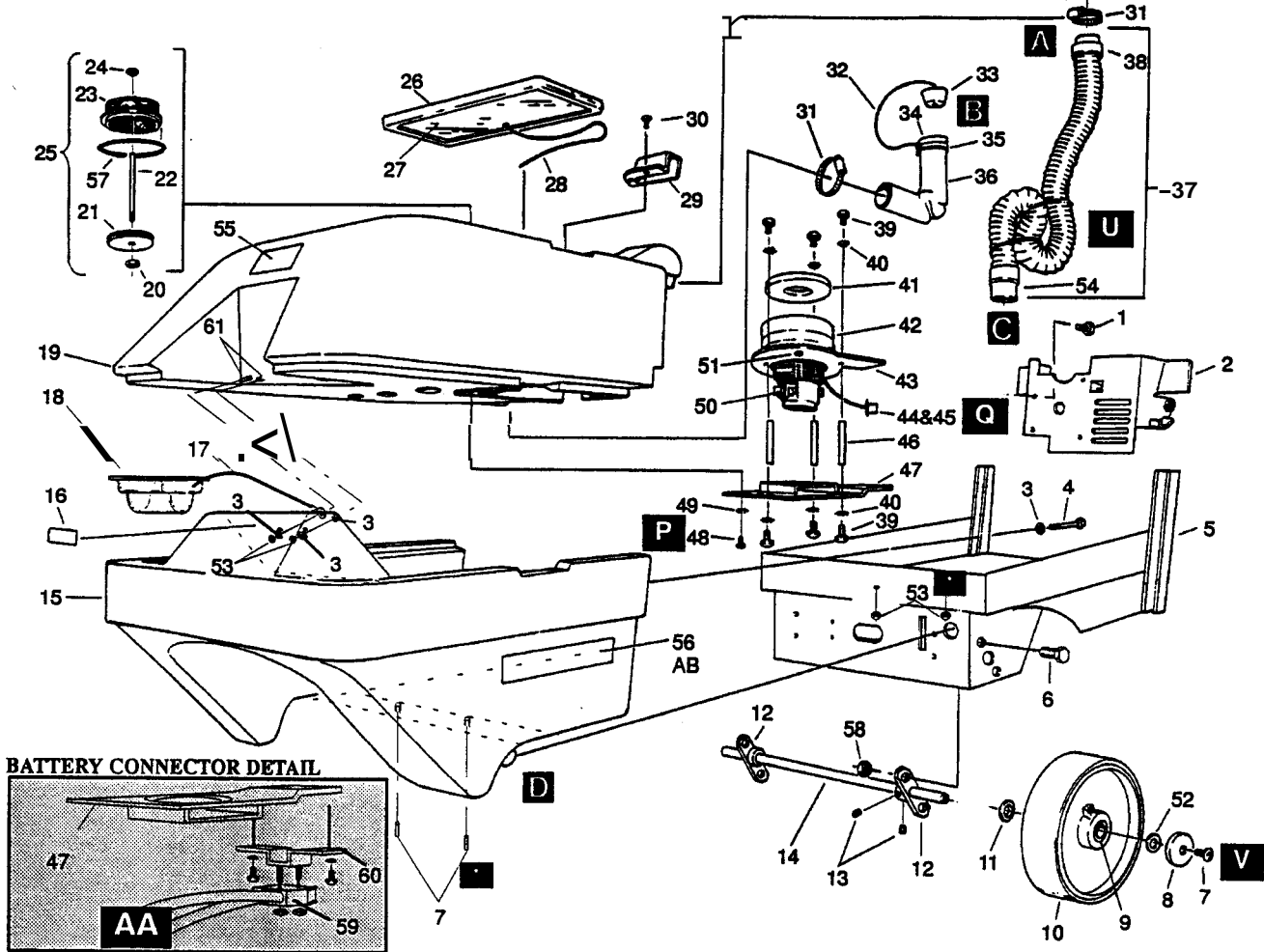
SCRUB DECK / BRUSH MOTOR

1. Remove batteries and squeegee assembly. Lay machine on side. **X**
2. Remove (4) screws holding motor shroud
3. Remove center screw holding drive plate. **Y** Slide drive plate off motor shaft.
4. Disconnect motor leads from terminal block.
5. Remove (4) screws holding brush motor to scrub deck. **Z**

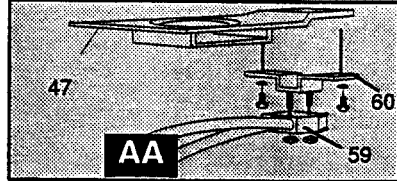
Brush Motor

6. Remove (2) motor thru-bolts and lift off end bell. Replace brushes when worn to 3/8" inch.

TANKS, VAC & FRAME

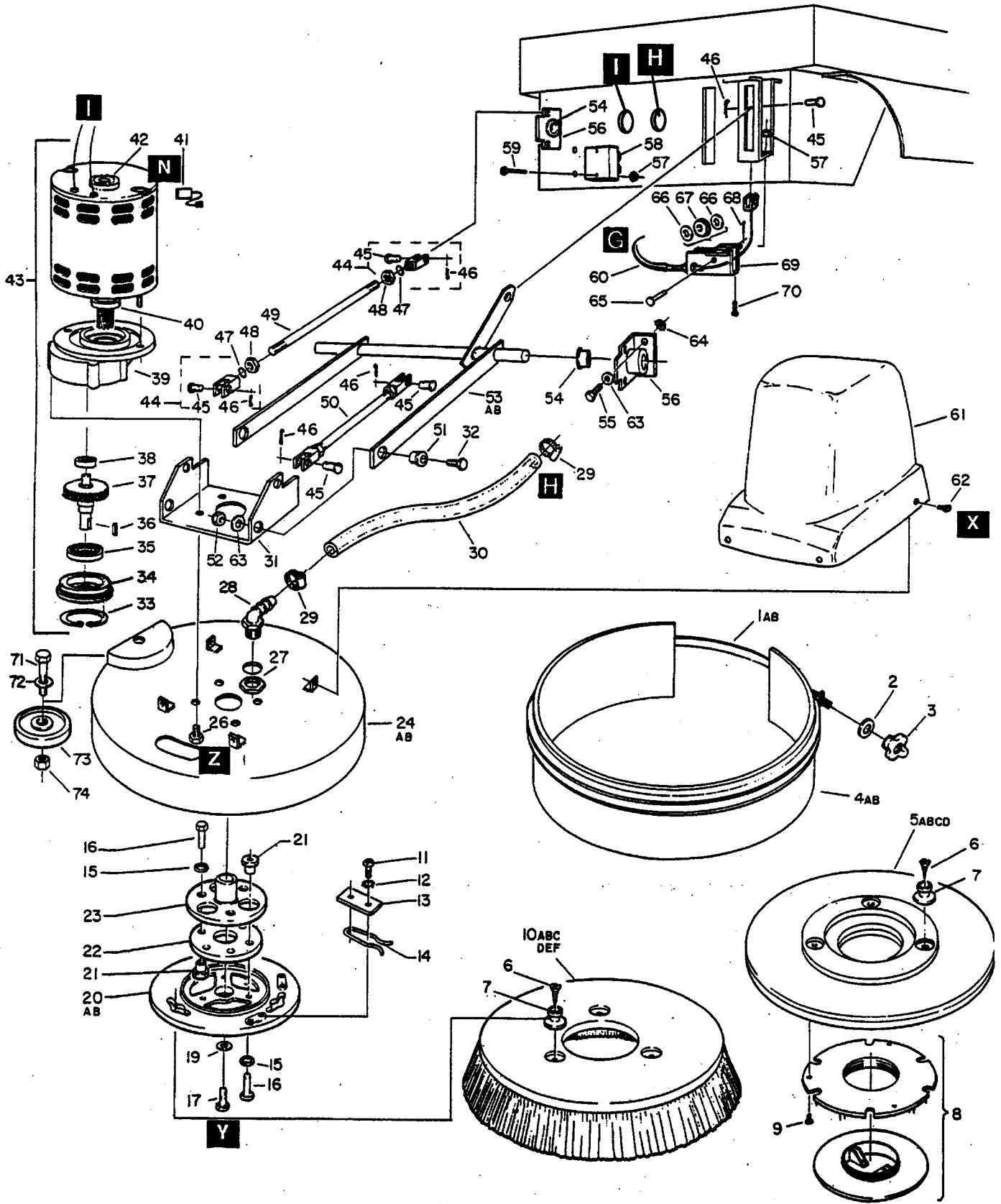


BATTERY CONNECTOR DETAIL



KEY	PART NO.	DESCRIPTION	KEY	PART NO.	DESCRIPTION
1	70020	Scr, 1/4-20 x 1/2 HHMS	32	27188	Cord, Drain Hose Plug
2	61266	Panel, Rear	33	66051	Plug, Drain Hose
3	87090	Washer, 1/4 Flat	34	40019	Hosebarb, 1.5 Double
4	70105	Scr, 1/4-20 x 1.5 HHCS	35	20002	Clamp, 2" Nylon
5	34210	Frame, Main	36	39037	Hose, 1.5 x 24" Drain
6	70266	Scr, 3/8-16 x 1 HHCS	37	39437	Hose Asm, Vac
7	70327	Scr, 1/4-20 x 3/8 THMS	38	27282	Cuff, 1.5 Slip x 1.5 Hose
8	27266	Cap, Wheel Hub	39	70085	Scr, 1/4-20 x 1/2 PHMS
9	09010	Bearing, Caged Cup Needle	40	87025	Washer, 1/4 Star
10	89068	Wheel, (With Item 11)	41	35122	Gasket, Vac Fan Seal
11	73437	Spacer, Wheel Axle	42	53755	Vac Mtr, w/ Conn., 24VDC 5.7
12	27408	Collar, Axle	43	62279	Plate, Vac Divider
13	70119	Set Scr, 1/4-20 x 3/8 KCP	44	76004	Connector, 2-Pin M-Molex
14	03058	Axle, Wheel	45	76015	Terminal, Female Pin Molex
15	75152	Tank, Solution	46	73491	Spacer, Vac Motor
16	50363	Label, Solution Warning	47	62350	Plate, Vac Cover
17	27416	Cord, Solution Lid	48	70088	Scr, 10-32 x 1/2 PHMS
18	51138	Lid, Solution Tank	49	87016	Washer, #10 Star
19	75153	Tank, Recovery	50	14696	Brush Set, Vac Motor
20	57047	Nut, 1/4-20 Ny-Lock	51	70114	Scr, #10 x 3/4 Polyfast
21	73427	Float	52	87013	Washer, 1/4 Flat
22	67227	Rod, Vac Float	53	57105	Nut, 1/4-20 Hex w/Star
23	73423	Screen, Float	54	27079	Cuff, 1.5" Wht Hose
24	27142	Cap Nut, 1/4"	55	50485	Label, WINDSOR Logo
25	34190	Float Asm, Vac Shut-off	56A	50518	Label, PTC17 "Compact"
26	35060	Gasket, Dome	56B	50519	Label, PTC20 "Compact"
27	28040	Lid, Recovery Tank	57	78224	Trim, Vac Screen
28	27417	Cord, 1/8 x 12"	58	57119	Nut, 3/8-16 Lock
29	29154	Deflector, Vac Intake	59	23174	Cable Asm, Compact Battery
30	70233	Scr, #10 x 3/8 PH Hi-Lo	60	14907	Brckt, Compact Battery
31	20046	Clamp, 2.25 Hose	61	70393	Set Screw, 1/4-20 x 1.25L
			62	70251	Set Screw, 1/4-20 x 3.5 HHMS pltd

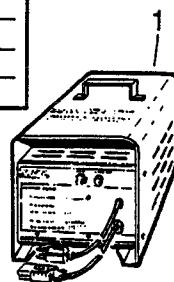
SCRUB DECK



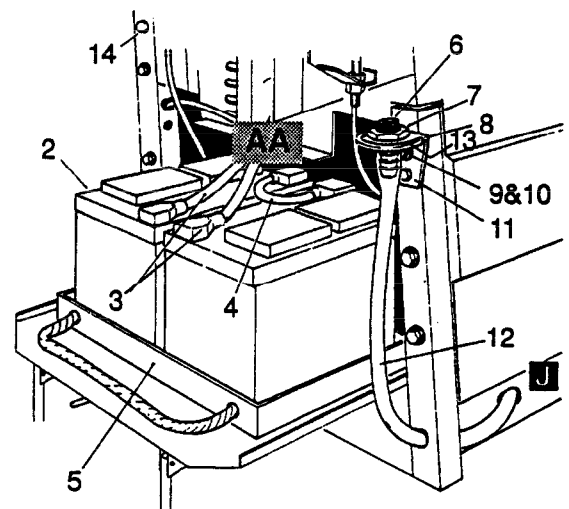
KEY	PART NO.	DESCRIPTION
1A	73465	Strap Asm, C20 Bumper
1B	73425	Strap Asm, C17 Bumper
2	87090	Washer, 1/4 Flat
3	48012	Knob, ADM Handle
4A	14571	Bumper, C20 Brush Shroud
4B	14676	Bumper, PTC17 Brush Shroud
5A	02162	Pad Driver, 16" Ylw Pad Lock
5B	02156	Pad Driver, Asm, 16" Weighted
5C	02098	Pad Driver, 18" Blk Pad Lock
5D	02169	Pad Driver Asm, 18" Weighted
6	70304	Scr. #14 x 1.25 FHWS
7	51076	Lug, Brush Mtg.
8	41200	Synthetic Pad Lock
9	70233	Scr. #10 x 3/8 PH Hi-Lo
10A	02115	Brush Asm, 16" Nvlon
10B	02116	Brush Asm. 16" Polv
10C	02117	Brush Asm. 16" Malarit
10D	02095	Brush Asm. 18" Nvlon
10E	02096	Brush Asm. 18" Polv
10F	02097	Brush Asm. 18" Malari
11	70088	Scr. 10-32 x 1/2 PHMS
17	87016	Washer. #10 Star
13	70068	Clamp. Brush Lug
14	73354	Spring-Brush Locking
15	87067	Washer, 5/16 Int Star
16	70302	Scr, 5/16-18 x 1.0 HHCS
17	70305	Scr, 5/16-18 x 3/4 HHCS
19	87102	Washer, 5/16 ID x 1-1/4 Flat
20A	62327	Plate, Brush Drive Blk PTC20
20B	62304	Plate, Brush Dive Ylw (Mchd)
21	57137	Nut, 5/16-18 Shoulder
22	27317	Coupling, Brush Drive
23	62141	Plate, Brush Drive
24A	73422	Scrub Deck, PTC17
24B	73463	Scrub Deck, PT20
26	10266	Scr, 3/8-16 x 1.0 HHCS
27	57044	Nut, 3/8 NPT Hex Brass
28	40027	Hosebarb, 3/8 MPT x 1/2 90 deg.
29	20042	Clamp, 3/8 Hose
30	39381	Hose, 1/2 x 22" Clear Sol. Feed
31	14663	Brkt, Scrub Deck Mta
32	70018	Scr, 1/4-20 x 1 HHMS
33	73404	Snap Ring, 3.12 Internal

KEY	PART NO.	DESCRIPTION
34	73420	Seat, Bearing
35	09047	Bearing, Lower Gear Box
36	48040	Key, 1/4 Sq x 1.0
37	36105	Gear, Brush Motor Drive
38	09046	Bearing, Upper Gear Box
39	41182	Housing, Brush Motor
40	09045	Bearing, Lower Brush Motor
41	14695	Brush Set, Brush Motor
42	09044	Bearing, Upper Brush Motor
43	53556	Motor Asm, Brush
44	27277	Clevis, 5/16-24 Rod Kit
45	66116	Pin, 1/4 x 3/4 Clevis
46	27277	Clevis, 5/16-24 Rod Kit
47	87096	Washer, 5/16 Int Star
48	57117	Nut, 5/16-24 Hex
49	51165	Linkage, C20 Secondary Rod
50	51166	Linkage Asm, C20 Sec Rod
51	14493	Bushing, .25 ID x .37 OD Flange
52	57047	Nut, 1/4-20 Nylock
53A	67216	Rod Asm, PT17 Scrub Deck
53B	67241	Rod Asm, PTC20 Scrub Deck
54	14664	Bushing, 5/8 ID Flange
55	70015	Scr, 1/4-20 x 3/4 HHMS
56	27384	Collar Asm, PT17 Scrub Deck
57	57104	Nut, 10-32 w Star Washer
58	14538	Terminal Block
59	70092	Scr, 10-32 x 1.5 PHMS
60	27593	Cable Asm, Scrub Deck
61	27412	Cover Motor, PT17
62	70351	Scr, 10-32 x 3/8 HHTF w / Star
63	87013	Washer, 1/4 Flat
64	57105	Nut, 1/4-20 w / Star Washer
65	66133	Pin, 3/16 x 7/8 L Clevis
66	87008	Washer, 1/4 ID x 1-1/4 OD
67	64064	Pulley, Cable Roller
68	66073	Pin, 1/16 x 3/4 Cotter
69	14852	Bracket, Cable Pulley
70	70066	Scr, 10-32 x 3/4 PHMS
71	70368	Scr, 3/8-16 x 1-3/4 HHMS
72	87003	Washer, 3/8 ID x 7/8 OD
73	89059	Wheel, Scrub Deck Bumper
74	57022	Nut, 3/8-16 Lock

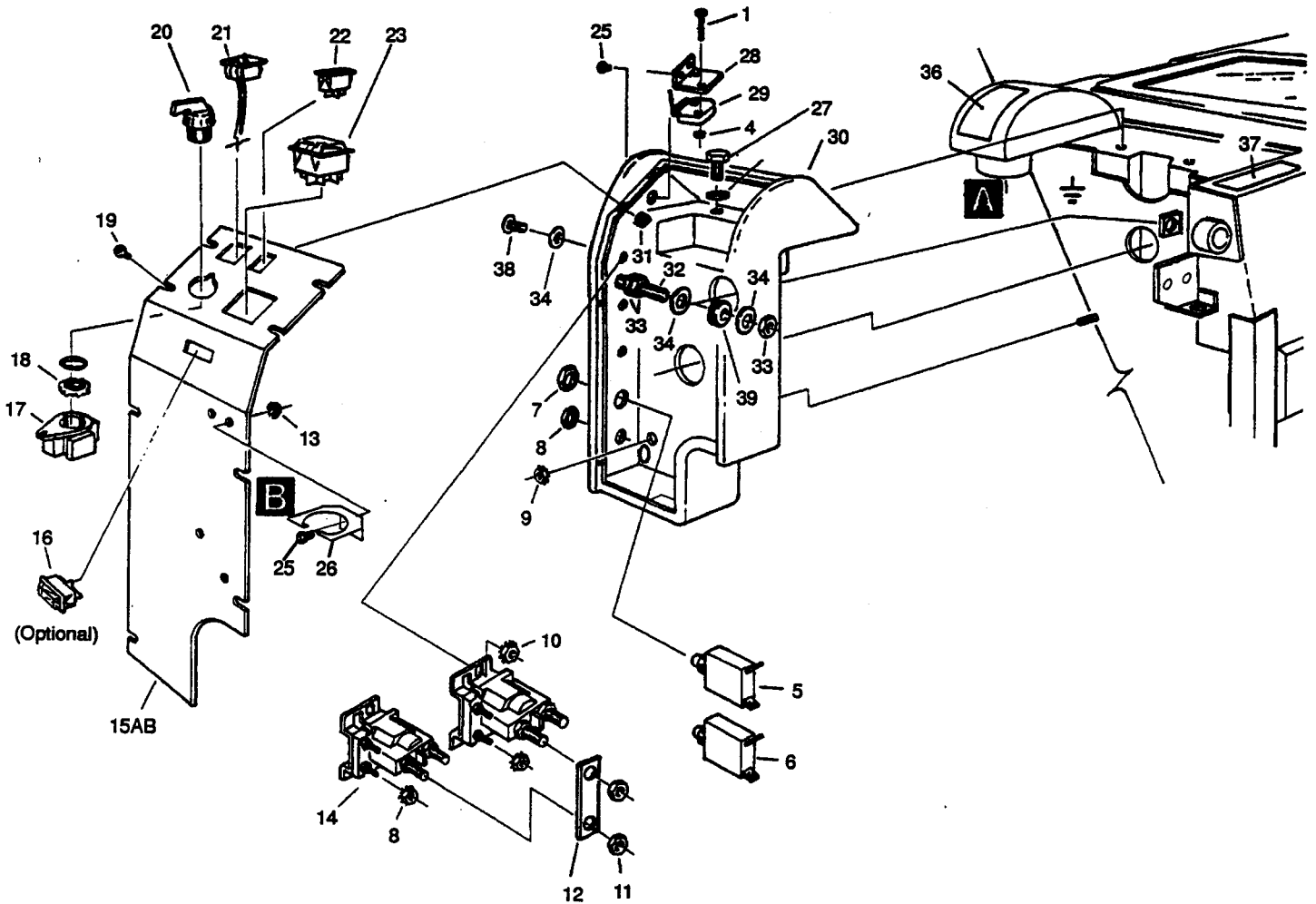
KEY	PART NO.	DESCRIPTION
1	02135	Charger, 24VDC 10 Amp
2	02215	Battery, 12 VDC 140AH
3	23174	Compact Battery Conn.
4	23125	Cable Asm, Batt. Jumper 1 2
5	78283	Tray, Batteryw/ Rope
6	40013	Hosebarb, 3/8 MPT x 1/2
7	57044	Nut, 3/8 NPT Hex Brass
8	14665	Brkt, Sinht Tube
9	87090	Washer, 1/4 Flat
10	70010	Scr, 1/4-20 x 1.50 HHCS
11	70191	Scr, 10-32 x 1/2 HHST #23
12	39438	Hose, 1/2 ID Clear x 36"
13	78225	Trim, Sinht Tube, Brkt
14	14169	Bumper, Rubber



REAR COMPARTMENT



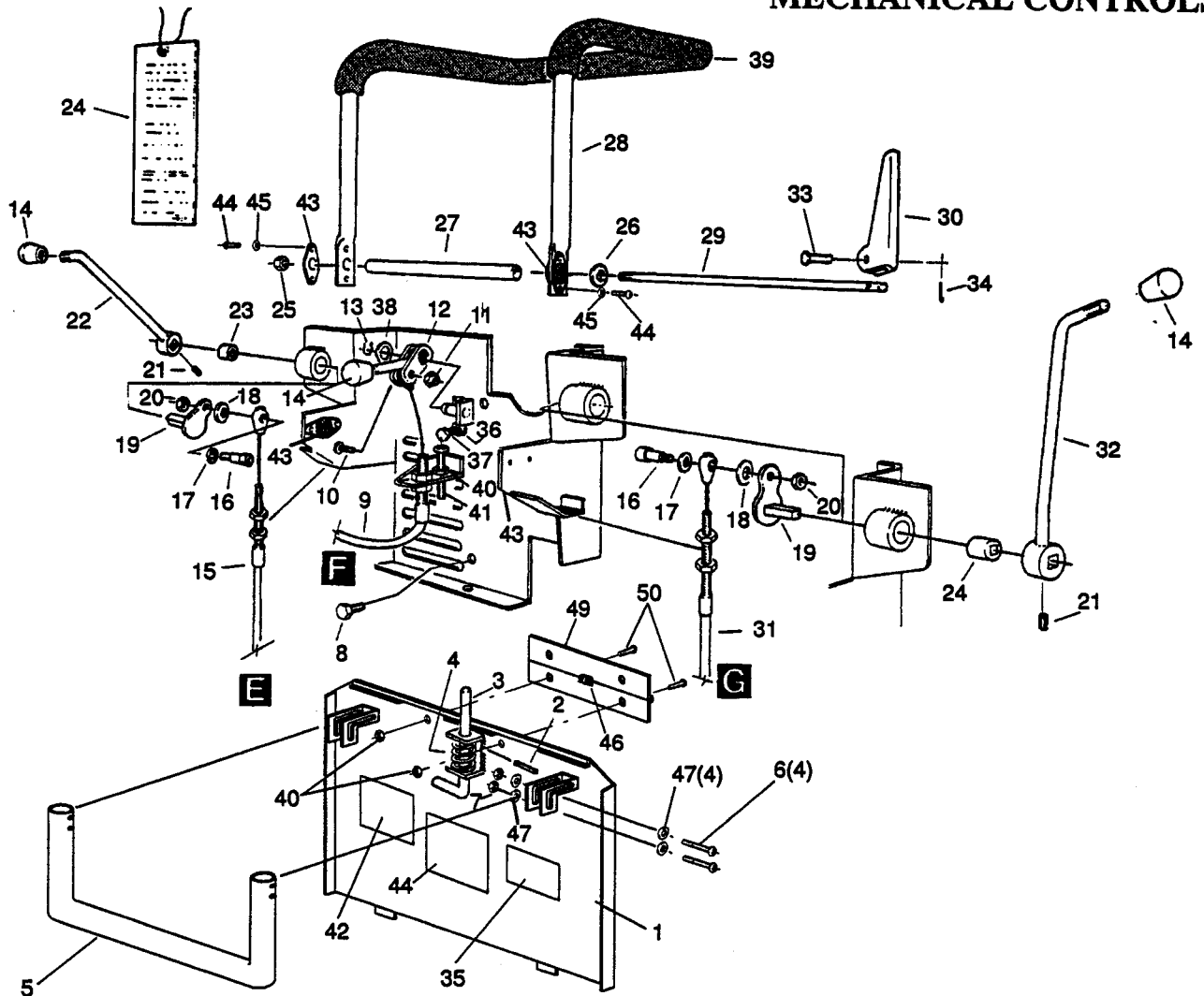
ELECTRICAL CONTROLS



PARTS LIST: Electrical Controls

KEY	PART NO.	DESCRIPTION	KEY	PART NO.	DESCRIPTION
1	70245	Scr, 4040 x 3/4 PHMS	21	54145	Meter, 24V Batt. Charge Level
2	76065	Connector, 50 DCA (not shown)	22	51124	Light, 28 VDC Blue
4	57100	Nut, 4040 Hex	23	72080	Switch, 28 VDC Dual SPST
5	14607	Brkr, 25A 50 VDC circuit (Vac)	25	70052	Scr, 8-32 x 3/8 PHMS
6	14688	Brkr, 35A 50 VDC circuit (Br. Mtr.)	26	14520	Clip, Drain Hose
7	57017	Nut, 15/32-32 Panel	27	70011	Scr, 1/4-20 x 5/8 HHMS
8	57109	Nut, 7/16-28 Panel	28	14689	Brkt, Micro Switch
9	57104	Nut, 10-32 w/ Star Washer	29	72082	Switch, Solution Lever
10	57105	Nut, 1/4-20 w/ Star Washer	30	61288	Panel, Ctrl. Enc. Ext. Conn.
11	57117	Nut, 5/16-24 Hex	31	57157	Nut, 6-32 U-Tinnerman
12	14693	Busbar	32	70289	Stud, 5/16-18 x 2.12 Brass
13	57106	Nut, 8-32 w/ Star Washer	33	57125	Nut, 5/16-18 Brass
14	67118	Relay, 24 VDC Start Selenoid	34	87029	Washer, 5/16 Brass
15A	61256	Control Panel, w/o Pump Optn.	35	87090	Washer, 1/4 ID x 3/4 OD Flat
15B	61257	Control Panel, w/ Pump Optn.	36	50487	Label, Squeegee/Solution
16	72081	Switch, 28 VDC SPST Pump	37	50486	Label, Scrub Deck
17	72050	Switch, Rotary Contact	38	70415	Scr, 1/4-20 x 3/4 THMS
18	57107	Nut, M22.5	39	36019	Grommet, 5/16 ID x 9/16 Groove
19	70394	Scr, 6-32 x 1/2 THMS Blk			
20	72051	Switch, Main Rotary			

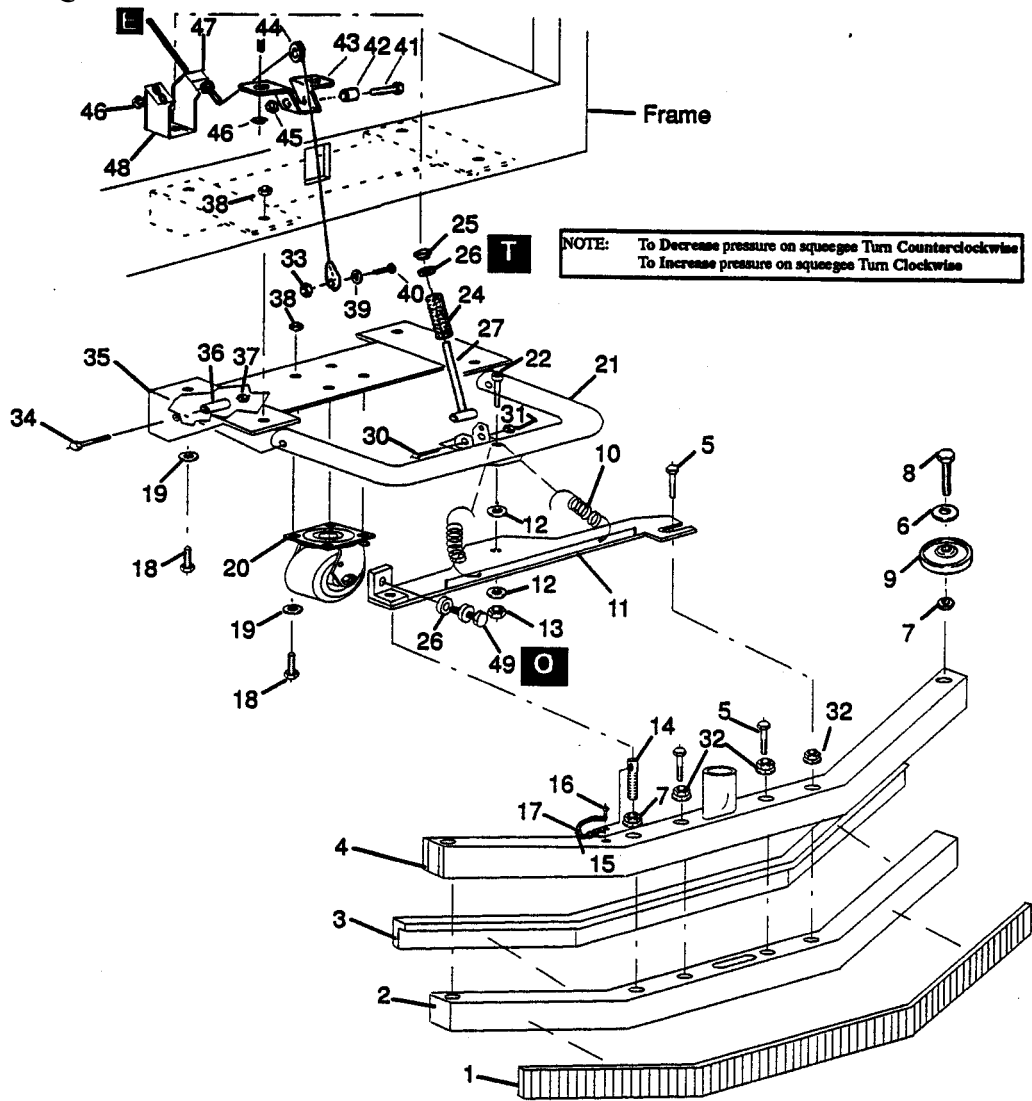
MECHANICAL CONTROLS



PARTS LIST: Mechanical Controls

KEY	PART NO.	DESCRIPTION	KEY	PART NO.	DESCRIPTION
1	29182	Door, Battery Compartment	26	87080	Washer, 1/2" Flat
2	66068	Pin, 1/8 x 5/8 Roll	27	78220	Tube, Handle Adj.
3	67226	Rod, Battery Door Lock	28	38208	Handle, PTC17
4	73236	Spring, 1.12 Compression	29	67224	Rod, Handle Adj.
5	51211	Leg, Battery Door	30	51142	Lever, Handle Clamp
6	70320	Scr, 5/16-18 X 2.0 HHCS GR5	31	27593	Cable, Scrub Deck
7	57113	Nut, 5/16-18 Nyl Self-Lock	32	67228	Rod, Scrub Deck Lift
8	70020	Scr, 1/4-20 x 1/2 HHMS	33	66133	Pin, 3/16 x .88 L Clevis
9	27594	Cable, Solution	34	66073	Pin, 1/16 Dia x 3/4 L Cotter
10	70025	Scr, 10-32 x 3/4 HHMS	35	50477	Label, Charger Warning
11	57030	Nut, 10-32 Ny-Lock	36	57105	Nut, 1/4-20 Hex w/ Star
12	51185	Lever, Solution	37	70018	Scr, 1/4-20 x 1 HHCS
13	67138	Ring, 3/8 Ext Snap	38	87003	Washer, 5/16 Flat
14	48030	Knob, Handle	39	36059	Grip, MX Handle
15	27592	Cable, Squeegee	40	57104	Nut, 10-32 w/ Star Washer
16	70298	Shoulder Bolt, 5/16 OD x 3/8 L	41	70092	Scr, 10-32 x 1.5 PHMS
17	87029	Washer, 5/16 Flat	42	50654	Label, C17/20 Wiring Ext. Conn.
18	87030	Washer, 3/8 x 3/4 Nylon	43	51184	Lock, Handle Adjustment
19	66144	Pivot, Cable	44	70228	Scr, 10-32 x 1/4 PHMS SS
20	57006	Nut, 1/4-20 Hex	45	87018	Washer, #10 Flat
21	70119	Set Scr, 1/4-20 x 3/8 KCP	46	73699	Spring, Torsion
22	67221	Rod, Main Lever	47	87030	Washers, 3/8 ID x 3/4 OD Plastic
23	14679	Bushing, Lever Pivot	48	50685	Label, Warning C20X Batt. Door
24	50559	Card, Instruction	49	41276	Hinge Asm, Battery Door C20X
25	57032	Nut, 3/8-16 Serrated Flange	50	70088	Screw, 10-32 X 1/2 PHMS

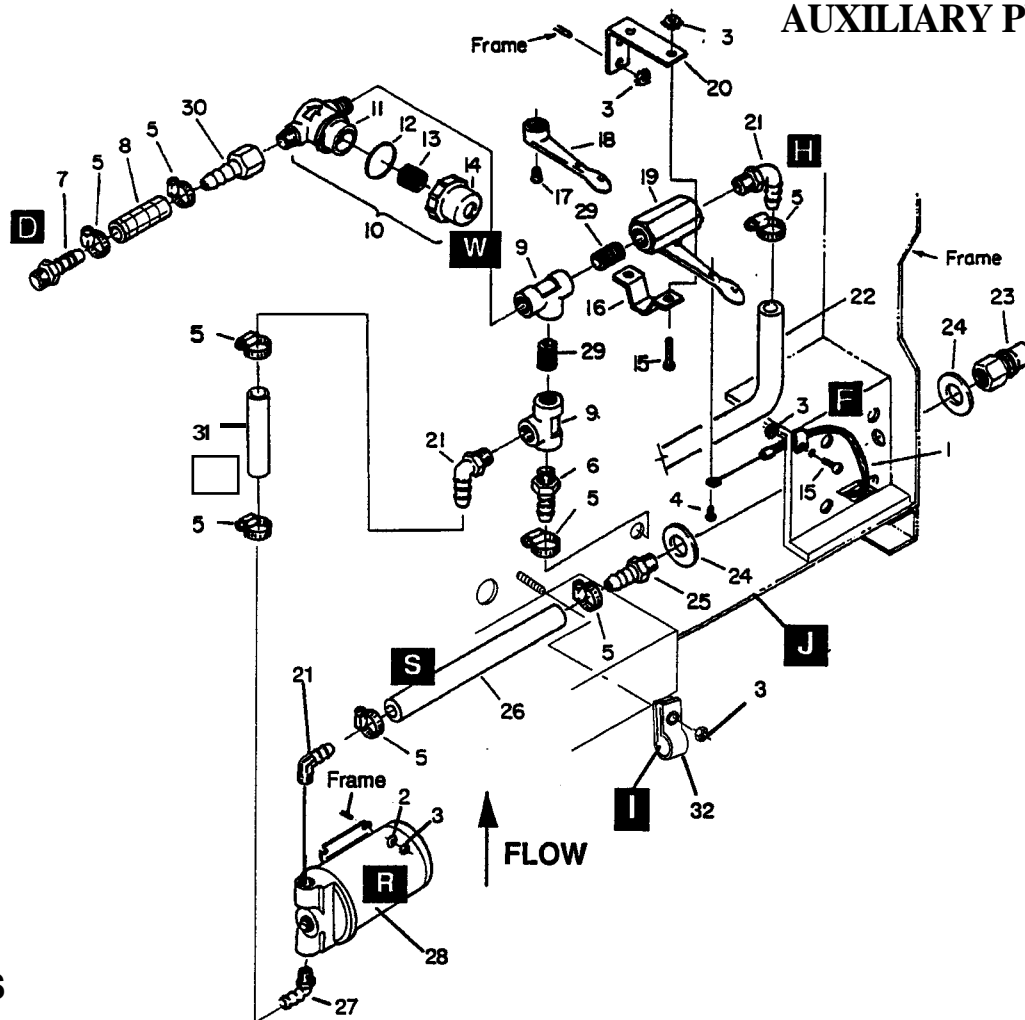
SQUEEGEE & SQUEEGEE LIFT MECHANISM



PARTS LIST: Squeegee & Squeegee Lift Mechanism

KEY	PART NO.	DESCRIPTION	KEY	PART NO.	DESCRIPTION
1	73625	Squeegee Blade, 34.5" Front	26	57124	Nut, Camber Lock
2	73603	Shoe Asm, Inner Squeegee	27	67212	Rod, Squeegee Spring
3	73597	Squeegee Blade, 36" Rear	28	57113	Nut, 5/16-18 Hex
4	73604	Shoe Asm, Outer Squeegee	30	70259	Scr, 5/16-18 x 1.75 HHCS Pltd
5	70266	Scr, 3/8-16 x 1.0 HHCS GR5 Plt	31	57113	Nut, 5/16-18 Nyi Self-Lock Plt
6	87003	Washer, 3/8 ID x 7/8 OD SS	32	57032	Nut, 3/8-16 Flange
7	57085	Nut, 3/8-16 Hex Jam	33	57030	Nut, 10-32 Lock
8	70368	Scr, 3/8-16 x 1-3/4 HHMS Plt	34	70105	Scr, 1/4-20 x 1.75 HHMS
9	89059	Wheel, PT20 Squeegee Bumper	35	62317	Plate, Caster/Squeegee Mtg.
10	73240	Spring, 1/2 x 2.25L Extension	36	73420	Spacer, .259 x .375 x 1.00
11	71121	Support Asm, Squeegee	37	57047	Nut, 1/4-20 Ny-Lock Self-Lock
12	87137	Washer, 5/8" ID x 2" OD x 3/32 Thk	38	57119	Nut, 3/8-16 Lock
13	57153	Nut, 1/2-13 Lock Thin NTE Pltd	39	87018	Washer, #10 x 9/16 Flat
14	14483	Bolt, Squeegee Stud	40	70066	Scr, 10-32 x 3/4 PHMS
15	66092	Pin, Hair Spring Cotter	41	70018	Scr, 1/4-20 x 1 HHMS
16	70052	Scr, 8-32 x 3/8 PPHMS	42	73206	Spacer, .259 ID x 1/2
17	27295	Chain, Squeegee x 4"	43	14848	Brkt, Cable Roller
18	70266	Scr, 3/8-16 x 1 HHCS	44	64063	Pulley, Cable
19	87003	Washer, 3/8 ID x 7/8 OD	45	57047	Nut, 1/4-20 Ny-Lock
20	18027	Caster	46	57104	Nut, 10-32 x Star Washer
21	66198	Pivot Asm, Squeegee	47	54149	Mount, Squeegee Spring
22	70296	Shoulder Bolt, 5/16 x 1/2 L	48	27537	Cable, Squeegee
24	73439	Spring, Squeegee Compression	49	48032	Knob, Squeegee Camber Adj.
25	27423	Cap, Spring Retainer			

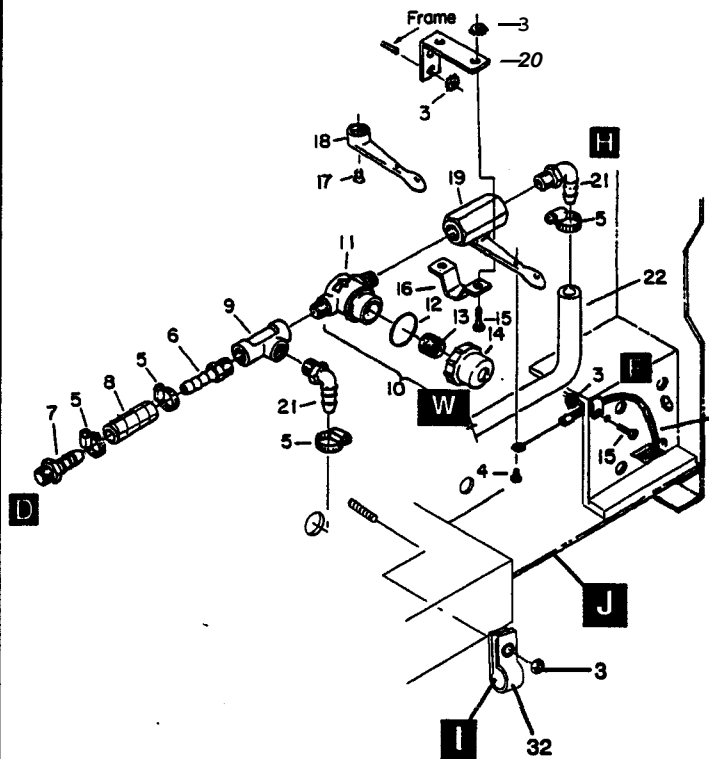
AUXILIARY PUMP MODEL



PARTS LIST:

KEY	PART NO.	DESCRIPTION
1	27594	Cable, Solution
2	87018	Washer, #10 9/16 OD
3	57104	Nut, 10-32 w/Star Washer
4	70233	Scr, #10 x 3/8 PH Hi-Lo
5	20042	Clamp, 3/8 Hose
6	40013	Hosebarb, 3/8 MPT x 1/2
7	40022	Hosebarb, 1/2 MPT x 1/2
8	39439	Hose, 1/2" Nylobraid x 9"
9	78212	Tee, 3/8 FPT
10	73383	Strainer Asm, Solution
11	41184	Housing, Strainer
12	59021	O-Ring, Filter Seal
13	73405	Screen, 80 Mesh
14	27372	Cap, Strainer
15	70066	Scr, 10-32 x 3/4 PHMS
16	14454	Brkt, Valve
17	70091	Scr, 10-24 x 1/2 FHMS
18	38136	Handle, Valve Lever
19	84112	Valve, 3/8 FPT
20	14617	Brkt, Solution Valve Mtg.
21	40027	Hosebarb, 3/8 MPT x 1/2 90deg
22	39381	Hose, 1/2 ID Clear x 22"
23	56012	Nipple, 1/4 FPT QD
24	87015	Washer, 9/16 ID x 1.06 Flat
25	40014	Hosebarb, 1/4 MPT x 3/8
26	39311	Hose, 14" Rubber
27	40034	Hosebarb, 3/8 MPT x 3/8 90deg
28	65104	Pump Asm, w/Conn, 24V 50psi
29	56036	Nipple, 3/8 Close
30	40040	Hosebarb, 3/8 FPT x 1/2 Hose
31	39297	Hose, 1.6 Clear
32	20005	Clamp, 5/16" Dia. Plastic

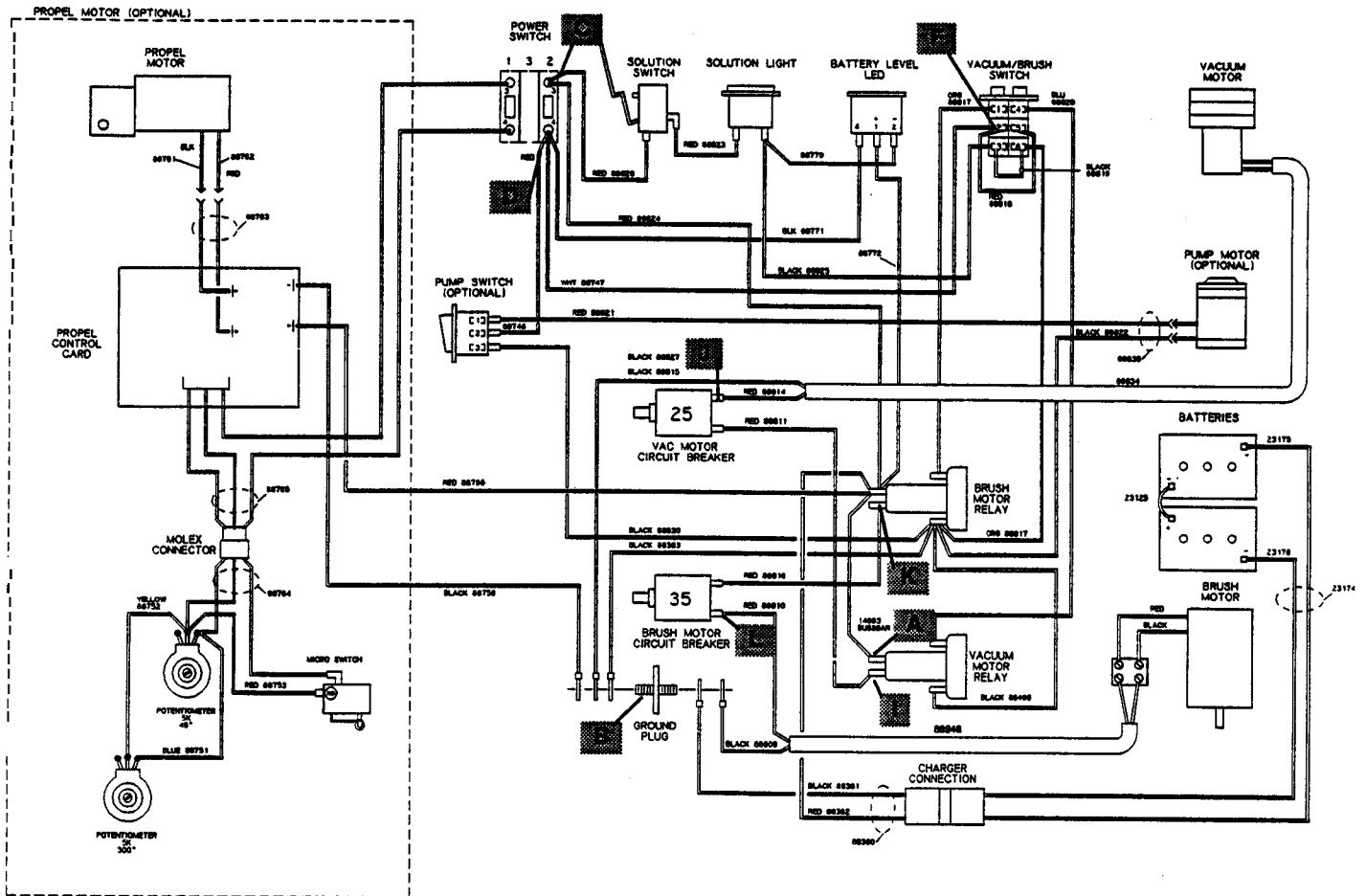
STANDARD MODEL



TROUBLE-SHOOTING GUIDE

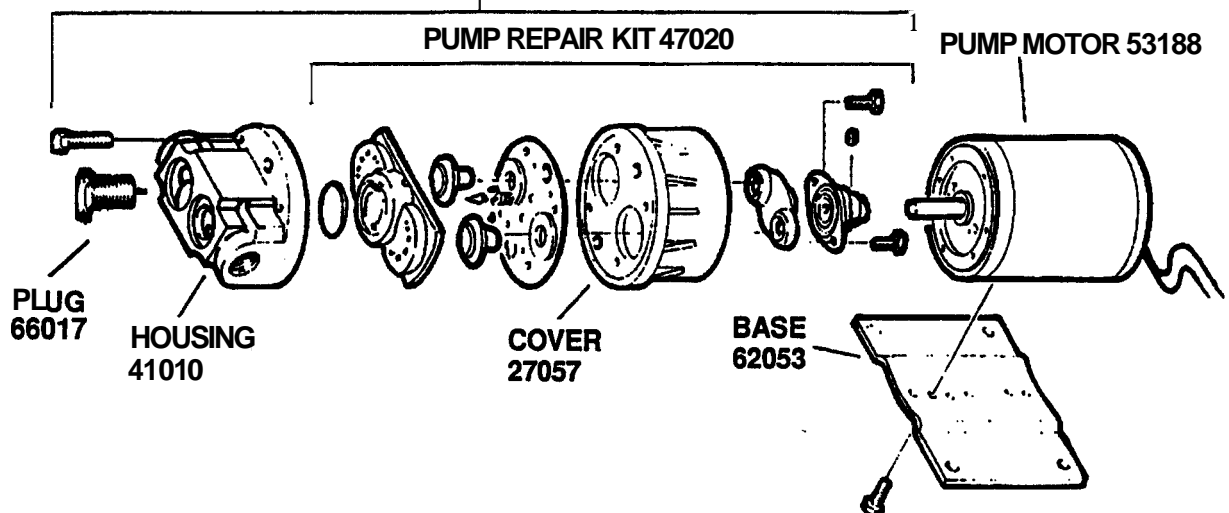
PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
No Power	Battery cables corroded at battery terminals. Faulty main switch.	1. Clean battery cable clamps and battery terminals. 2. Check voltage at points A and B . Voltage should be 22/26 VDC . 1. Check voltage at points B & C . Voltage should be 22/26 VDC . 2. Turn main switch on and check voltage at points B & D. Voltage should be 22/26 VDC . If no voltage remove leads and check switch for continuity.
	Faulty safety override switch	With main switch "ON" check voltage at points B & G, and B & H. If no voltage at B & H remove leads and check micro switch for continuity. Should have continuity in normal position and no continuity when switch is activated
Vacuum motor does not run.	Circuit Breaker tripped.	Reset vac motor Circuit breaker (25 amp).
	Loose connection. Faulty Vac Switch. Faulty Vac Relay	Check motor lead connections at terminals. Remove leads and check switch for continuity. Replace as needed with main switch "ON" and vac switch "ON" check voltage at points B & I. Voltage should be 22/26 VDC .
	Faulty Vac C i t Breaker.	With main switch "ON" and vac switch "ON" check voltage at points B & J. Voltage should be 22/26 VDC .
	Motor brushes worn	Check motor brushes. Replace when worn to 3/8" . With batteries fully charged and motor secured apply battery voltage directly to motor. The amp draw of motor should be between 18–24 amps.
Brush motor does not run.	Circuit Breaker tripped	Reset Circuit Breaker.
	Loose Connections	Check motor leads at terminal block connections (located on inside of frame), Tighten screws as needed
	Faulty Brush Switch. Faulty Brush Relay.	Remove leads and check switch for continuity. Replace as needed with main switch "ON" and brush switch "ON" check voltage at points B & K. Voltage should be 22/26 VDC .
	Faulty Brush Circuit . Breaker Motor brushes worn .	With main switch "ON" and brush switch "ON" check voltage at points B & K. Voltage should be 22/26 VDC . Check motor brushes. Replace when worn to 3/8" . With batteries fully charged and motor secured , apply battery voltage directly to motor should be 6 to 8 amps.
Solution Light does not work.	Loose Connections	Check for loose connections at solution light, solution switch and at vac fan relay ground.
	Faulty Solution Light	Remove light and apply direct voltage (24VDC) to light . Replace light as needed.
	Light stays on with solution lever in "OFF" position.	Adjust solution light switch.
Battery charge	Loose connections	Check connections at battery card , micro switch at charger connection, and ground connection at vac motor relay.

WIRING DIAGRAM



PUMP

PUMP ASSEMBLY 115V 65019



Battery Cart Option

WARNINGS:

1. DO NOT STAND IN FRONT OF CART WHILE ATTEMPTING TO ENGAGE CART WITH THE MACHINE.
2. DO NOT PUSH THE CART BACKWARDS.



OPERATION:

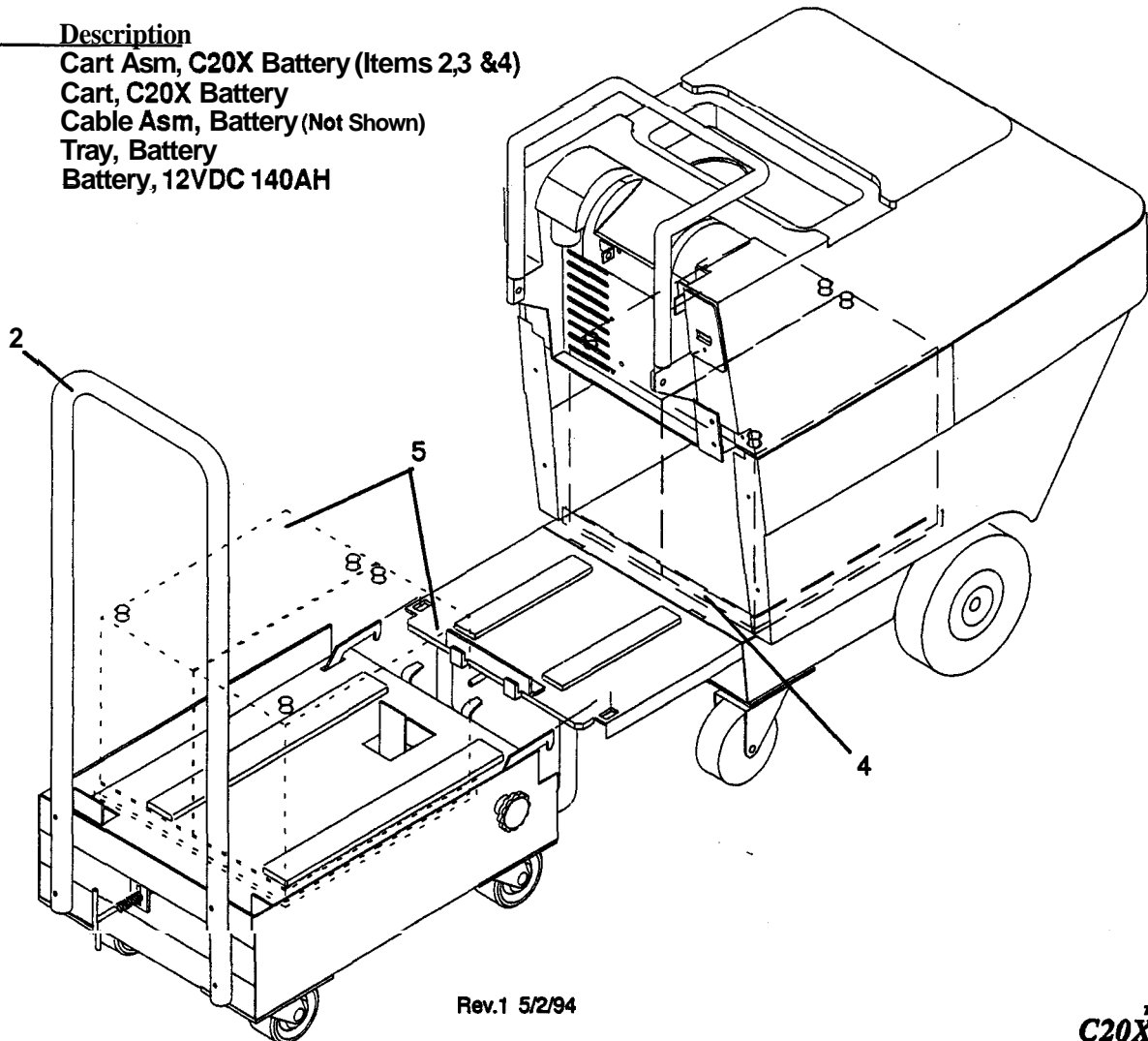
CAUTION: Follow procedures carefully, being sure to keep hands and feet clear of rolling cart.
TO INSTALL:

- 1.) Make **sure** battery door **is open** and door leg **is in** the down position.
- 2.) **Roll** the Battery Cart up **to the rear** of the machine (**Aligning the front** of the cart to the rear of the machine door.)
- 3.) **Push** the cart until the hooks lock **into** the slots on the machine door. **NOTE: Inspect to make sure cart is securely hooked to machine door.**
- 4.) While holding the handle **on the bottom rear** of the cart **in**, push the batteries **into** the machine **until** the batteries are off the cart and completely inside **the** machine.
- 5.) Turn knob **on** the side of cart **counterclockwise** to disengage hooks and roll cart away **from** machine.
- 6.) Close door and fold legs **on** the machine and continue with normal operation.

TO REMOVE;

- 1.) Open machine door **and** place door leg in **the** down position.
- 2.) **Roll** the Battery Cart up **to the rear** of the machine (**Aligning the front** of the cart to the rear of the machine.)
- 3.) Push the cart until the hooks lock into the **slots** on the machine door. **NOTE: Inspect to make sure cart is securely hooked to machine door.**
- 4.) **Roll** the batteries **onto** the cart **until** the locking bracket at the front of cart locks in an upright position.
- 5.) Turn knob **on** the side of cart **counterclockwise** to disengage hooks **and roll** cart & batteries away **from** machine.
- 6.) Close door and fold legs **on the** machine **and** continue with **normal** operation.

KEY	Part No.	Description
1	02222	Cart Asm, C20X Battery (Items 2,3 &4)
2	02214	Cart, C20X Battery
3	23166	Cable Asm, Battery (Not Shown)
4	78306	Tray, Battery
5	02215	Battery, 12VDC 140AH



Rev.1 5/2/94



Suggested Spare Parts List C20X

Tanks, Vac, & Frame

Part #	Description	Qty
34190	Float Asm. , Vac Shut-off	1
28040	Lid, Recovery Tank	1
35060	Gasket, Dome	1
51138	Lid, Solution Tank	1
58735	Motor Asm. , 24VDC 5.7"	1
18027	Caster	1

Scrub Deck

Part#	Description	Qty
48012	Knob, Adjustment	1
41200	Lock, Pad Center	1
20068	Clamp, Brush Lug	1
73354	Spring, Brush Locking	1

Electrical Control

Part #	Description	Qty
76065	Connector, 50 Amp DC	1
14607	Breaker, 25A 50 VDC Vac Circuit	1
14688	Breaker, 35A 50 VDC Brush Circuit	1
67118	Relay, 24 VDC Solenoid Start	1
72050	Switch, Rotary Contact	1
72051	Switch, Main Rotary Actuator	1
54145	Meter, Battery Charge Level	1
51124	Light, 28 VDC Blue Solution	1
72080	Switch, 28 VDC Dual SPST	1

Mechanical Controls

Part #	Description	Qty
27594	Cable, Solution	1
48030	Knob, Handle	1
27593	Cable, Scrub Deck	1
27592	Cable, Squeegee Lift	1

Squeegee & Squeegee **Lift** Mechanism

Part #	Description	Qty
89058	Wheel, Squeegee Roller	1
66108	Pin, Squeegee Wheel	1
73416	Squeegee Blade, Rear	2
73415	Squeegee Blade, Front	2
89059	Wheel, Squeegee Bumper	1
48032	Knob, Squeegee Camber Adj.	1
73426	Spring, Squeegee	1
57124	Nut, Camber Lock	1

Plumbing

Part #	Description	Qty
73383	Strainer Asm. , Solution	1
59021	O-Ring, Filter Seal	2
73405	Screen, 80 Mesh	2
38136	Handle, Valve Lever	1
84112	Valve, 3/8" Solution	1