



Electronic Service Manuals

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Serving the Cleaning Industry Since 1922

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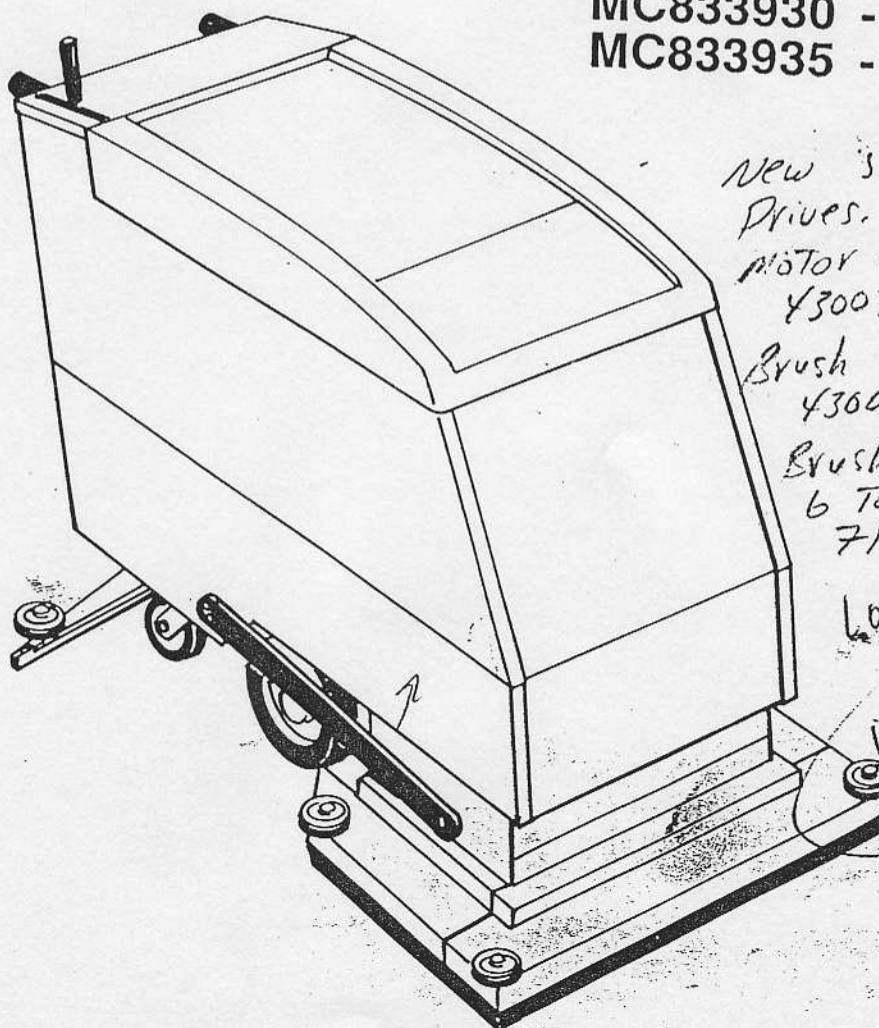
- OPERATION
- SERVICE
- PARTS
- CARE

*Spring Loaded
Casters - S.S. - 832597
Version 4*

Hako[®]

Minuteman[®]

Model No. MC833465 - 24B-S
 MC833470 - 24B-P
 MC833475 - 32B-S
 MC833480 - 32B-P
 MC833930 - 32B-F
 MC833935 - 24B-F



*new style Brush
Drives.*

*motor end
430035*

*Brush end
430036*

*Brush Screws
6 TOTAL (2)
710017*

Long Screws

*Washers
711517*

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ILLUSTRATIONS, SPARE PARTS, OPERATION AND SERVICE

INFORMATION

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OPERATING AND SERVICE MANUAL

INSPECTION

Carefully unpack and inspect your scrubber for shipping damage. Each unit is tested and thoroughly inspected before shipment and any damage is the responsibility of the delivering carrier who should be notified immediately.

ELECTRICAL

This machine is battery operated and is designed to operate on 36 volts D.C. six 6-volt batteries.

SPECIAL SAFETY PRECAUTIONS

- 1) Keep hands and feet clear of moving parts while machine is in operation.
- 2) Electrical motors and components can cause an explosion when operated near explosive materials or vapors. Do not operate this machine near flammable materials such as solvents, thinners, fuels, grain dusts, etc.
- 3) While machine is in operation special attention should be paid to avoiding loose floor tile, electrical cables, telephone connection boxes, door jams, etc.

BATTERIES

Scrubbers are shipped without batteries.

Part No. 956720/809360 6V 220AH 20 Hour Rate 6 required

We do not recommend mixing AMP hour capacities. Any alternate battery sets can be used if they equal physical size and capacity.

BATTERY SERVICE AND INSTALLATION:

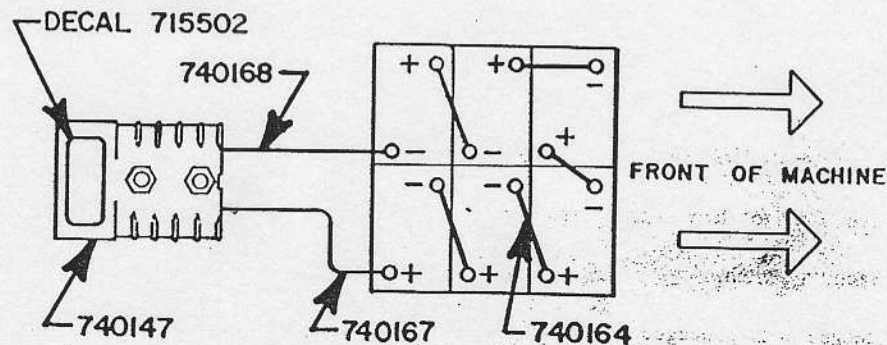
•Warning: Battery acid can cause burns. When working on or around batteries, wear protective clothing and safety glasses. Remove metal jewelry. Do not lay tools or metal objects on top of batteries.

CHARGING OF BATTERIES

Part No. 957726/832771 (36V 23AMP 115V input) battery charger is recommended to charge batteries. Charge batteries in a well ventilated area; gases generated while charging batteries are explosive. Always charge batteries away from spark or flame. The Top Cover, Part No. 760316, should be raised during the charging cycle to provide venting and access to battery inspection caps.

Fluid levels should be checked before and after charging and be maintained at the proper levels. If scrubber is not used for extended periods of time, batteries should be kept fully charged with a boost charge once a week. Batteries should be charged after each use or when battery condition indicator shows **LOW CHARGE**.

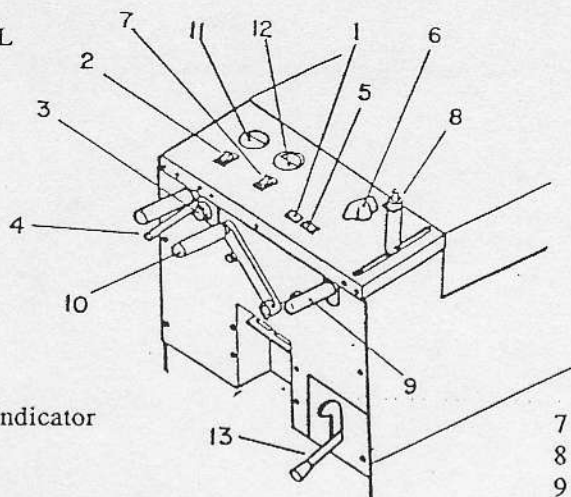
BATTERY CABLE ROUTING



OPERATING PROCEDURES

CAUTION: Familiarity with controlling this machine is essential before entering areas which contain equipment and/or people.

24/32B CONTROL PANEL



- 1 Reverse Mode Red Indicator
- 2 Vacuum Switch
- 3 Speed Control Knob
- 4 Deadman Switch Lever
- 5 Forward Mode Green Indicator
- 6 Solution Control Lever

- 7 Brush Switch
- 8 Brush Pressure Lever
- 9 Forward/Reverse Twist Grip
- 10 Squeegee Lift
- 11 Battery Condition Gauge
- 12 Operating Range Gauge
- 13 Brake Lever

MOUNTING OF BRUSHES

Lift up lower front panel; release latches on sides of splashguards. Then remove front splashguard by removing the two wingnuts which retain it. Lock scrubhead assembly into high position by pulling backward on #8 (pressure lever). On 32B model there is a hinged left splashguard to allow easier access to rear brush. You may now lift this up and reach under to slide out support arm. Brushes can now be installed. Pull lock back and lift onto coupling. Turn brush in direction illustrated in Figure 2.

MOUNTING OF SQUEEGEE

Rotate #10 (Squeegee Lift) to the right and mount squeegee at rear of machine with tee nuts provided, tighten securely. Then connect vacuum hose to squeegee, and check other end of hose to insure it is attached to inlet vacuum tank. Hand tighten the tee nut securely (do not use wrench or pliers).

The estimated breaking-in periods for the squeegee are as follows:

Terrazzo floors	Light pressure	2 - 4 hours
Tile floors	Moderate pressure	1 - 2 hours
Cement floors	Heavy pressure	15 - 30 minutes

TRANSPORTATION OF MACHINE

Insure that the machine and its attachments clear loading ramps by removing the brushes, squeegee, and splash guards. The ramp should have a capacity of at least 2,000 lbs. The braking action of the drive motor can be used to slow down or stop the machine on the ramp by closing the deadman switch and leaving the forward/reverse in the corresponding position. When transporting, be sure that wheels are blocked and machine is securely tied down to prevent rolling and tipping. Do not operate handles in tie down locations.

SCRUBBING

- 1) To prevent splashing, adjust front splash guard to 1/8" above floor and side splash guards to lightly touch floor.
- 2) Turn speed control knob counterclockwise to low speed position.
- 3) Lower scrub head to floor with pressure lever.
- 4) Turn on vacuum switch.
- 5) Lower squeegee with squeegee lift.
- 6) Turn solution valve to 'ON' or desired intermediate setting.
- 7) Turn on scrubber switch.
- 8) Put machine into forward with forward/reverse switch.
- 9) Squeeze deadman switch and adjust speed range of machine by turning speed control knob with thumb of left hand.

10) When using reverse, be sure to raise squeegee assembly above floor level to prevent damage to squeegee blades.

Adjust scrubbing force desired with pressure lever. Floating positions can be attained through the use of locking ring provided on lever. In making turns, it is recommended that the machine be slowed down and the solution valve be turned off 8 to 10 feet before the turn is begun. Restart solution flow as turn is being completed.

Drain vacuum tank each time solution tank is filled. This will allow uninterrupted use between fillings.

When the tank is full, a float will automatically shut off suction. A change in vacuum motor noise level indicates this. When this occurs, turn off solution valve, vacuum motor and scrub motor.

DRAINING OF VACUUM TANK

- 1) Unhook vacuum tank drain hose, remove hose plug, and drain.
- 2) Flush tank with clean water if area being scrubbed is very dirty. This can be done by removing vacuum motor float assembly.
- 3) Reinstall the hose plug and hook in place.

STRIPPING PROCEDURES

The procedure is the same as for scrubbing, but with the following exceptions:

- 1) Apply a low foam wax and finish stripper to the floor, and allow a reaction time of 5 to 10 minutes.
- 2) Use stripping attachments, such as the Poli-Grit Brush, Part No. 809654 for the 24-B, and Part No. 809679 for the 32-B.
- 3) Adjust machine speed and stripping force to obtain maximum stripping efficiency.

POLISHING

Polishing brushes are available for use on this machine; Part No. 809448 for the 24-B, and Part No. 809535 for the 32-B. When using these brushes, no solution is applied to the floor, nor is the vacuum operated. The small amount of finish powder generated by polishing may be picked up by folding a water dampened flannel towel and placing it under the squeegee.

FORCE ON SQUEEGEE

Force on the squeegee can be adjusted by increasing (or decreasing) the spring tension on the squeegee mount plate. This is done by turning the knurled nuts. It is recommended that the force on the squeegee be kept at a minimum, consistent with good performance. The use of more force than is required causes undue rubber wear and uses battery power needlessly. The following are recommended squeegee pressures:

- Terrazzo floors - light pressure
- Tile floors - moderate pressure
- Cement floors - heavy pressure

MAINTENANCE OF MACHINE

SPEED CONTROL---IT IS IMPORTANT TO OBSERVE THE FOLLOWING PRECAUTIONS:

The speed control is a solid-state design and will serve for a very long period of time without any servicing. IF NOT ABUSED. To prolong unit life, follow these recommendations:

1. Do not subject machine to heavy current draws, which will occur if:
 - a. Motor circuit is left in "ON" position when machine's movement is blocked or held back.
 - b. Machine is used to pull load other than its own weight.
2. Take care not to short out motor circuit when performing maintenance.
3. Check battery connections to insure that they are not loose.
4. Take care to prevent reversed connections when servicing and/or replacing the batteries.

VACUUM MOTOR

Motor brushes can be replaced with Brush Set, Part No. 741008. Brushes should be replaced only once. More than once brush replacement will cause very high current consumption. This undue current consumption lowers overall machine performance and is not in the best interest of economical machine use.

CARBON BRUSHES IN DRIVE MOTOR

Inspect these brushes once every 18 months or 720 hours.

First, remove the batteries, battery pan, squeegee, scrub head assembly, vacuum tank and solution tank. Then pick up back end of machine and carefully tip over on its front end.

The brushes can now be inspected by removing the air vent ring near the end of the drive motor. Examine all four brush lengths; if the back end of a brush is even with the edge of the brush holder or shorter, the brush must be replaced. Replace with Brush Set, Part No. 833855. When installing new brushes, also inspect commutator for pits and/or excessive wear. If it is in poor condition, replace drive motor with Part No. 833850.

Also check and adjust drive train when servicing drive motor brushes. Follow procedure outlined in Section **DRIVE CHAIN**.

CARBON BRUSHES IN BRUSH DRIVE MOTORS

Inspect these brushes once every six months or 360 hours.

Remove scrub head assembly. Then remove the air vent ring on each motor and examine brush lengths; if the back end of brush is even with the edge of the brush holder or shorter, the brush must be replaced. Replace with Part No. 833474. When installing new brushes, also inspect commutator for pits and/or excessive wear. Replace motor with Part No. 833379 if commutator is in poor condition.

LUBRICATION

1. Grease casters once every week (two fittings per caster) or 15 hours.
2. Lightly grease drive chain once every two weeks or every 30 hours.
3. Oil all moving parts such as hinges and pressure points once every month or every 60 hours.

SQUEEGEE RUBBERS

When the thick rear squeegee rubber is damaged or worn excessively, it will cause streaking and poor solution pickup. Extended rubber life can be obtained by reversing it, provided it is not torn or otherwise damaged. Do not tighten screws so tightly that squeegee rubbers are made to bulge and show an uneven edge. Replace with Part No. 809395 on 24-B or 809532 on 32-B, if required.

DRIVE CHAIN

The Drive Chain is durable and will give trouble free service under conditions of normal machine use. Should it become necessary to adjust tension it will be necessary to tip the machine on its front. This can be done by removing the batteries, battery pan, squeegee, scrubhead assembly and tanks. If chain is worn or damaged it should be replaced. Check slack in chain and adjust to a deflection of 1/8" - 3/16". Lightly coat chain with grease, also check sprocket and differential for alignment. Adjust if out of alignment.

TANKS

At the end of a day's work (or work cycle), both the vacuum and solution tanks should be drained and flushed with warm water.

Once a week or 15 hours the vacuum tank should be cleaned of settled debris. This can be done by removing the drain cover and scraping out the debris with the small hoe provided for this purpose. Rinse with water.

BATTERIES (956720)

Periodically remove batteries from machine. Clean batteries, battery tray, and battery compartment with a solution of baking soda and water. Check all battery cable and wiring for signs of damage or wear. Replace as needed. Check battery fluid level each charge. Check electrolyte with hydrometer (809445) every 15 hours.

TROUBLE SHOOTING

1. Inefficient scrubbing -- floors are smeared in appearance.

Solution: Use proper type and correct amount of detergent. Replace worn or damaged scrub attachments. Increase force on scrubbing head. Loosen, 1/3 turn, screw holding scrub-head to actuating arm, to allow scrubbing head to rock slightly and follow irregular surfaces.

2. Scrubbing head is hard to raise.

Solution: Check screw holding scrub-head to actuating arm; if too tight, loosen slightly to allow free movement. Check return spring on pressure lever, replace if broken with part # 809299. Lubricate pressure points on pressure lever system.

3. Attachments, when mounting, do not clear gear-units -- front end of machine is too low.

Solution: Check machine to be sure it is not sitting on uneven section of floor. Check drive wheel tires for wear; if worn to less than 9-3/4" diameter, replace with part # 809983, or # 828187 if your machine has pneumatic tires.

4. Squeegee streaks.

Solution: Check rear squeegee rubber for imbedded objects, clean; reverse, or replace if worn or damaged. Make sure scrub solution is being fed onto brush properly. Use more scrubbing solution. Replace well-worn scrubber attachments.

5. Odor development

Solution: Inspect and clean thoroughly the vacuum tank, solution tank, squeegee, vacuum motor, vacuum hose. NOTE: Super Staph-Trole 64 disinfectant cleaner can be helpful in reducing odors.

6. Drive components

Loud clunking or chattering noise. First check chain tension. If it is too tight, it will cause these sounds. Chain is properly tensioned if the slack side can be moved freely the thickness of the chain up or down. The noise could be caused by worn motor bearings. To check for this remove chain from sprockets and run motor. If noise persists the bearings are bad. Replace motor as needed.

Machine pulls to one side while running. This could be caused by worn wheel bearings on the side of the machine that it pulls to - if the machine pulls to the right check the right side wheel bearings. The problem could also be a bad caster on the side the machine pulls to.

7. Vacuum not picking up.

Solution: Water lift should be 40-60" with fully charged batteries. Check seals around vacuum motor and hose connections. Check vacuum tank drain hose and plug to insure seal. Check hoses for holes. Clean out squeegee inlet and check squeegee rubbers for severe wear. Make sure solution is properly feeding into scrub-head attachments. Clean and/or repair vacuum motor.

8. Charger malfunction.

Solution: Consult maintenance and repair data contained in brochure herewith for detailed information. In general, make sure charger is put in upright position when charging -- this helps keep unit cool. Do not cover charger when it is in use. Make sure connectors on inlet and outlet cords are not broken. Check AC input voltage -- it should be 110 volts, 120 volts, maximum. Replace faulty fuses, ammeter, timer, or other components, when necessary.

9. Use cycle too short.

Solution: Check voltage on batteries after full charging; output voltage should be 43-45 volts with specific gravity at 1.260-1.265. Check battery electrolyte level. Check for loose or corroded battery leads and connections. Replace batteries that will not hold a charge. Lubricate casters. Reduce scrubbing pressure. Check brushes on motors, especially on vacuum motor. Replace brushes on motors when needed. Test charger for output, it may need repair.

10. Motors will not start or run.

Solution: Check battery leads and connections for corrosion and looseness; correct if required. Check switches for proper contacting; replace if required. Check motor brushes; replace brushes or motors if required.

11. Switch failure -- motor will not run.

Solution: Remove the positive and negative power leads from the top R/H and L/H batteries, when servicing the switches, to prevent possible shorting and speed control damage. In the case of the forward-reverse switch, it is possible that switch will operate in one direction only. Vacuum switch can fail if vacuum motor is not kept in good condition. Replace switches with the following part numbers: Deadman # 830072, forward-reverse 827391, Vacuum # 740107 and scrubber # 740107.

12. Speed control does not function.

Solution: The speed control has built-in protection to guard against reversed connections, check battery connections. Machine locked in high or low speed. Inspect entire speed control for burn marks of components that have broken. These would be caused by a direct short in the circuit. Replace entire control as needed, # 831296.

Machine previously runs fine, suddenly will not run. First activate deadman switch with the forward-reverse switch off. There should be a loud click or snapping sound. This is the solenoid activating. If there is no sound, replace the drive system solenoid. The problem could be the potentiometer. Replace the potentiometer with a new unit, and try to run machine. If this doesn't solve problem refer to speed control trouble shooting.

SPEED CONTROL UNIT - TROUBLE SHOOTING

SYMPTOM--1) Machine is always in ""high" speed. Control knob has no effect.

PROCEDURE

- A
- 1) Check for a good connection of the three wires from the potentiometer to terminals Hi, M, and LO on the connecting block.
 - 2) Check for the knob being tight on the potentiometer shaft.
 - 3) Rotate the control knob from full Counter Clock-Wise (CCW) to full Clock Wise (CW) a number of times. This has a self-cleaning action on the control.

Turn the potentiometer to "slow" (full CCW). Again attempt to operate the machine in "forward". If the machine is still on "high" speed, replacement of the potentiometer will repair the unit.

- B
- Remove the speed control unit from the machine. Visually check all wire connections between the terminal block, finned heat sink and printed circuit board. Short circuits, loose wires or mechanical damage should be repaired, if possible. Examine the printed circuit board. It should be free from heavy accumulations of dirt, grease, etc. The entire unit can be cleaned with soap and water, being careful to clean and dry the printed circuit board thoroughly.

Reinstall the speed control unit and check its operation. If the unit still does not function properly, the entire unit must be replaced.

SYMPTOM--2) Machine won't move. Control knob has no effect.

PROCEDURE

- A)
- Locate the battery + and - terminal connections on the speed control unit. With a voltmeter set to read 36 volts DC, check to be sure that the 36 volt battery voltage is present from terminal (+) to terminal (-) on the connecting block when the dead man switch is closed, with the forward/reverse switch set to forward, and the speed control knob set to "high" (CW). If no voltage is present, the malfunction is not in the speed control unit. If 36 volts is present from battery (+) to (-) check for the presence of 36 volts from the motor (+) to (-) terminals. If voltage (36V) is present, then the speed control unit is functioning and the failure must be elsewhere.

SYMPTOM--3) Speed is erratic

PROCEDURE

- A)
- Check potentiometer leads for good connection at both the potentiometer and at the speed control terminal block. Replace potentiometer if erratic control persists.

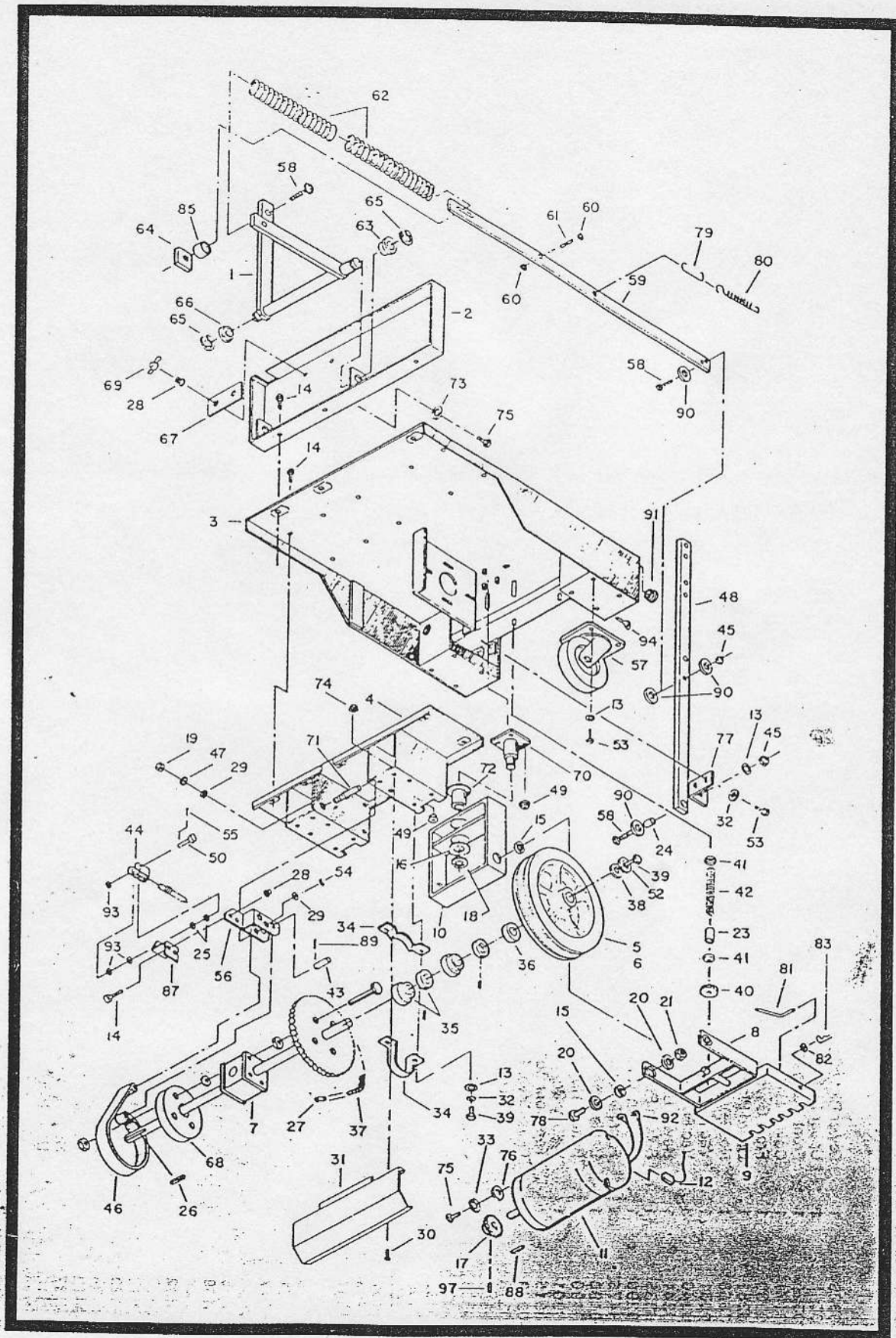
SYMPTOM--4) Machine does not "soft start"

- A)
- Inter lock detent on forward/reverse switch is broken - operator can change directions without pause in "neutral" --replace forward/reverse switch.
- B)
- Follow the cleaning and inspection procedure under Paragraph 1B. Pay particular attention to getting the printed circuit board clean and dry. If the soft start feature will still not function, the entire unit should be replaced.

[illegible]

Basic Assembly - 833663

ITEM PART NO.	QTY	DESCRIPTION	ITEM PART NO.	QTY	DESCRIPTION	ITEM PART NO.	QTY	DESCRIPTION
1 760328	1	Lower Right Side Panel	49 750057	1	Vac Tank Door Weld	95 833694	1	Decal
2 750066	1	Upper Right Side Panel	50 828274	1	Pivot Bracket Weld	96 809702	1	Decal
3 760329	1	Front Access Cover	51 828282	1	Squeegie Lift Rod	98 827656	1	Decal (Caution, Tank)
4 809171	1	Cover, Hinge	52 750069	1	Rear Panel Assembly	99 809293	1	Handle Cleanout
5 760330	1	Front Cover	53 750058	1	Hose Box	100 711368	2	Wing Nut
6 828281	1	Guard Plate	54 829242	1	Squeegie Lift Weld	102 828062	15	Tie
8 833668	1	Hose, Vac 25" Asm.	55 762086	1	Handle Grip	103 711247	2	Bolt 3/8
9 740031	1	Vac Motor	56 881002	1	Clevis Pin	104 711439	2	Nut 3/8
10 760340	3	Vac Spacer	57 805073	1	Cotter Key	105 711508	4	Washer
11 760341	1	Heyco Bushing	58 700435	2	Spring Washer	106 809799	1	Clevis Clip
12 760335	1	Splash Plate	59 712539	10	10-24 x 1/2" Screw SS	107 710586	2	Bolt
13 809290	1	Solution Tank	60 712638	14	10-24 Nyloc Nut	108 711425	5	Nut 1/4-20
14 833476	1	Filler Neck Cover	61 711420	4	Jam Nut 5/16-18	109 711114	4	Screw
15 809196	1	Baffle Plate	62 711575	4	Washer, Flat	110 881152	1	Roll Pin
16 809190	1	Battery Tray	63 712071	4	Thumbscrew 5/16-18 x 2"	111 710195	10	Screw 5/16-18 x .75
17 830901	1	Battery Box	64 828263	2	Stop	112 833823	1	Plug 2 1/16
18 760315	1	Top Front Cover	65 711231	2	Screw 5/16-18 x 1.25	113 711668	1	Clevis Pin 3/8 x 1"
19 760349	1	Front Cover Hinge	66 806921	1	Grommet	114 829129	1	Clamp
20 760316	1	Top Main Cover	67 712074	2	Screw 1/2-13 x 2.00	115 833824	1	Washer
21 760350	1	Main Cover Hinge	68 712303	2	Spacer	116 712081	1	Brake Decal
22 760333	1	Control Panel	69 830549	2	Lockwasher	117 715087	1	Snap Switch
23 750065	1	Upper Left Side Panel	70 711547	2	Hex Nut 1/2-13	118 740128	1	Brake Handle
24 760332	1	Lower Left Side Panel	71 711437	2	Guard Plate Screw	119 750098	1	Brake Bracket
25 750059	1	Float Pan Weldment	72 712818	35	Nut 10-24 FL	120 750099	1	Brake Cable Asm.
26 760351	1	Hose 46" Asm.	73 712908	35	Screw 10-24 x .5	121 760236	1	Oval Tapered Knob
27 806157	2	Hose Clamp	74 712822	1	Support Bar	122 760592	1	Extension Spring
28 833633	2	Gasket Seal	75 760309	1	#10-32 Hex Nut Nyloc	123 760594	1	Face Plate
29 830987	1	Float Shutoff	76 711350	3	Hinge Bracket	124 760595	1	Cotter Pin 7/64 x 1
30 832279	1	Float Cage	77 760311	2	Screw 1/4-20 x .50	125 809311	1	Spring .62 x .75 x 1.75
31 830978	1	Filler Bag	78 710755	1	Tinnerman Nut 6-32	126 833102	1	Battery Decal
32 809281	1	Waste Tank	79 711430	5	Gasket, Hinge	127 715500	2	Nut 6-32
33 710177	4	Screw 1/4-20 x .37	80 710779	1	1/4-20 x .62	128 711435	1	Flange Bushing
34 809283	1	Intake Weldment	81 762139	3	1/4 Lockwasher	129 829052	1	Flat Washer
35 827008	1	Hose Barb	82 710750	9	#10-24 x 5/8 Truss Head Screw	130 711506	2	Carbon Brush (Repl.)
36 809469	1	Hose 38" Asm.	83 711544	2	Hose Clamp 2"	131 741008	5	Clamp (Large)
37 829644	2	Plate Mount Bracket	84 712536	4	Screw 1/4-20 x 7/8	132 833864	2	Clamp (Small)
38 809282	2	Tank Door Gasket	85 829067	2	Flatwasher .44 x .87 x .07	133 833866	1	Bolt 1/4-20
39 710307	2	Screw 6-32	86 711206	8	Scrubhead Support Bar	134 712569	2	Flat Washer
41 809412	6	Tank Gasket 1/2"	87 711515	2	Hinge Brace	135 712314	2	Nut 1/4-20
42 809429	1	Solution Door Weldment	88 711504	1	Yoke	136 712667	5	Screw 10-24 x .625
43 827004	1	Solution Feed Line 50.5"	89 830547	1	Skirt, Rubber	137 711143	5	Washer
44 809413	1	Solution Valve	90 760308	2	Strip	138 712302	5	Nut Flange
45 833837	1	Hole Plug	91 881009	1	Decal	139 712908		
46 833316	2	Drain Plug	92 760440	1				
47 760343	2	Hose Sleeve	93 760441	3				
48 760353	2	Drain Hose 18"	94 715095					



Truck Assembly
Pneumatic - 833645
Solid - 833643
Foam Filled - 833933

Tire Size 4.10/3.50 x 4

Chain 3 1/2" long

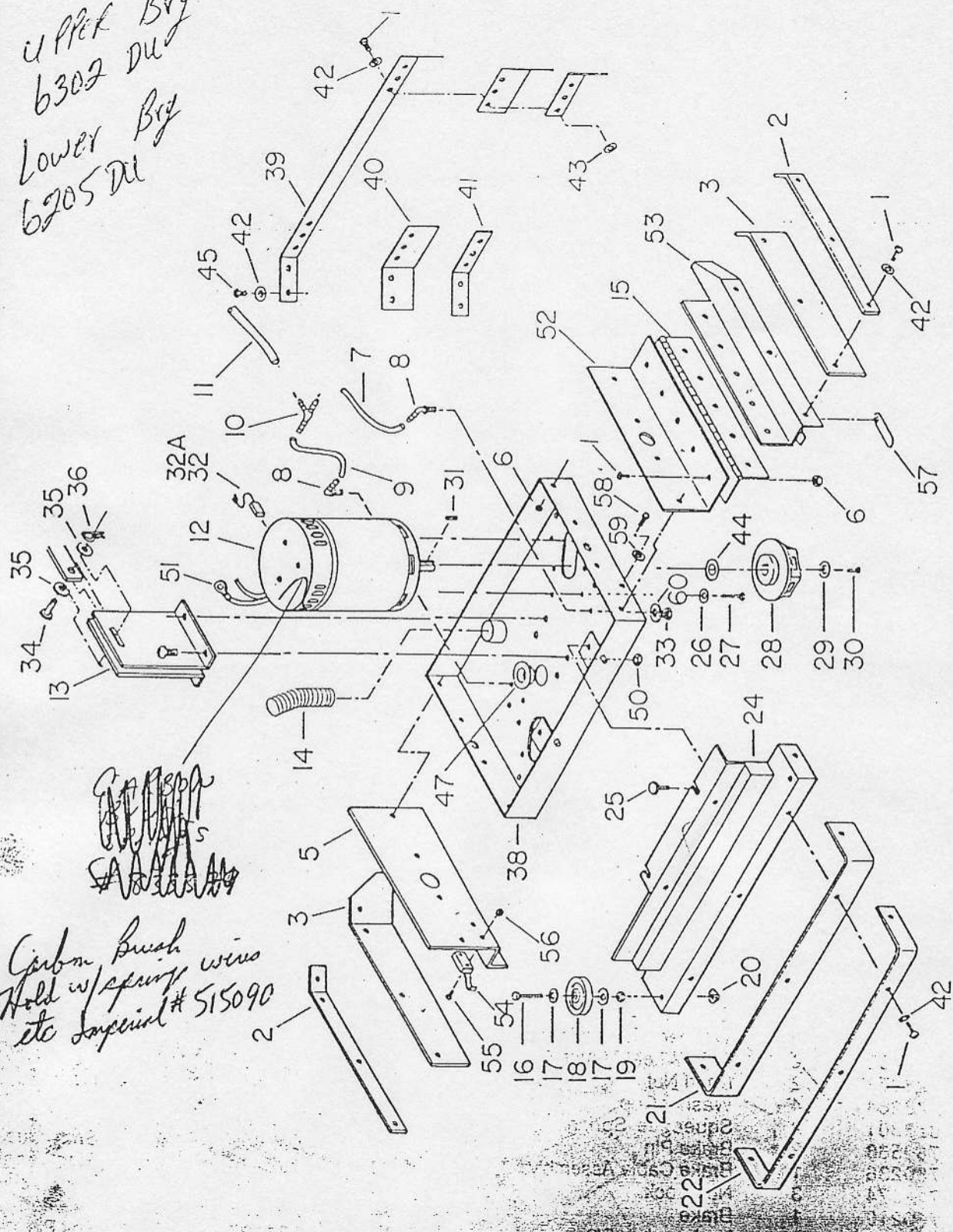
Parts List

ITEM	PART #	QTY	DESCRIPTION	ITEM	PART #	QTY	DESCRIPTION
1	830559	1	Lever Weldment	49	711439	4	Locknut 3/8-16
2	809229	1	Panel Weldment	50	711668	2	Clevis Pin 3/8 x 1
3	750127	1	Frame Weldment	51	828271	2	Angle Support Bracket
4	828170	1	Wheel Mount Weldment	52	711538	2	Washer 3/8
5	809983	2	Wheel - Solid	53	711228	8	Screw 3/8-16 x 1"
6	828169	2	Wheel - Pneumatic	54	808756	1	Retaining Ring Extern
	833910	2	Wheel - Foam Filled	55	809799	2	Cotter Pin .12 x 1.75
7	830544	1	Differential	56	750109	1	Bracket
8	750115	1	Carriage Weldment	57	827110	2	Caster
9	828289	1	Mount Plate Weldment	58	712576	2	Screw 5/16-18 x 1.25
10	750110	1	Squeegee Bkt. Weldment	59	830548	1	Pressure Lever
11	833850	1	Drive Motor	60	809328	2	Retaining Ring
12	833855	4	Carbon Brush Replacement	61	809327	1	Pin
13	711575	18	Flatwasher	62	809329	2	Spring
14	711228	16	5/16-18 x 3/4 Screw	63	809236	1	Flanged Bearing
15	829023	2	Bushing .5 x .62 x .560	64	809330	1	Retainer Block
16	711512	1	Flatwasher .75 x 1.37 x .08	65	809237	2	Snap Ring
17	760601	1	Sprocket	66	809238	1	Flange Bearing
18	711715	1	Retaining Ring	67	809239	1	Insulator
19	711445	1	Hex Nut 5/8-11	68	760591MCH	1	Brake Hub
20	712303	4	Flatwasher	69	711368	2	Nut, Wing
21	711376	2	Nut, Nyloc 1/2-13	70	750113	1	Pivot Assembly
23	830898	2	Tube, Spring	71	760593	1	Brake Pin
24	809321	1	Bushing	72	809236	1	Bushing
25	711515	2	Flatwasher .44 x .87 x .07	73	828267	1	Bushing
26	809227	2	Key 1/4 x 1/4 x 2 1/4	74	712908	4	Locknut 10-24
27	833629	1	Drive Chain Link	75	711206	4	Bolt HH 1/4-20 x .75
28	711425	14	Hex Nut 1/4-20	76	711519	4	Washer
29	711527	2	Flatwasher .63 x 1.12 x .11	77	809320	1	Angle Bracket
30	712811	4	Screw #10-24 x 1/2	78	712075	2	Bolt 1/2-13 x 1.5
31	760569	1	Splash Shield	79	809324	1	Catch, Lever
32	711540	34	Lockwasher	80	809993	1	Spring
33	711544	4	Lockwasher 1/4"	81	828283	1	Rod Connector
34	828173	4	Pillow Block Bearing	82	711504	2	Washer
35	828173	4	Sold as Complete Set (see Item 34)	83	805073	2	Pin
36	809224	2	Spacer	84	804197	2	Roll Pin
37	760602	1	Drive Chain 31.5"	85	809331	1	Spacer
38	809226	2	Washer, Wheel Mount	86	711545	8	Lockwasher
39	711250	2	Bolt, Wheel Mount 5/16-18 x 1.25	87	760597	1	Brake Bracket
40	828273	2	Knurl Nut	88	833621	1	Key 1/4 x 1/4 x 1
41	828264	4	Washer Cup	89	711616	2	Roll Pin .12 x 1
42	828301	2	Squeegee Spring	90	711506	5	Washer
43	760568	2	Brake Pin	91	809803	2	Snap Bushing
44	760236	1	Brake Cable Assembly	92	809434	2	Ring Terminal
45	711374	3	Nut, Lock	93	712317	3	Flat Washer
46	760210	1	Brake	94	712086	2	Eye Bolt
47	711557	1	Lockwasher 5/8	95	804197	1	Roll Pin
48	828280	1	Pressure Lever	96	715510	1	Decal
				97	711005	1	Set Screw Replacement

Pneumatic Wheel Replacement Parts

xx	833861	Hub Only
xx	828188	Inner Tube
xx	828187	Replacement Tube
xx	833910	Foam Filled Tire

Upper Brg
6302 Du
Lower Brg
6205 Du



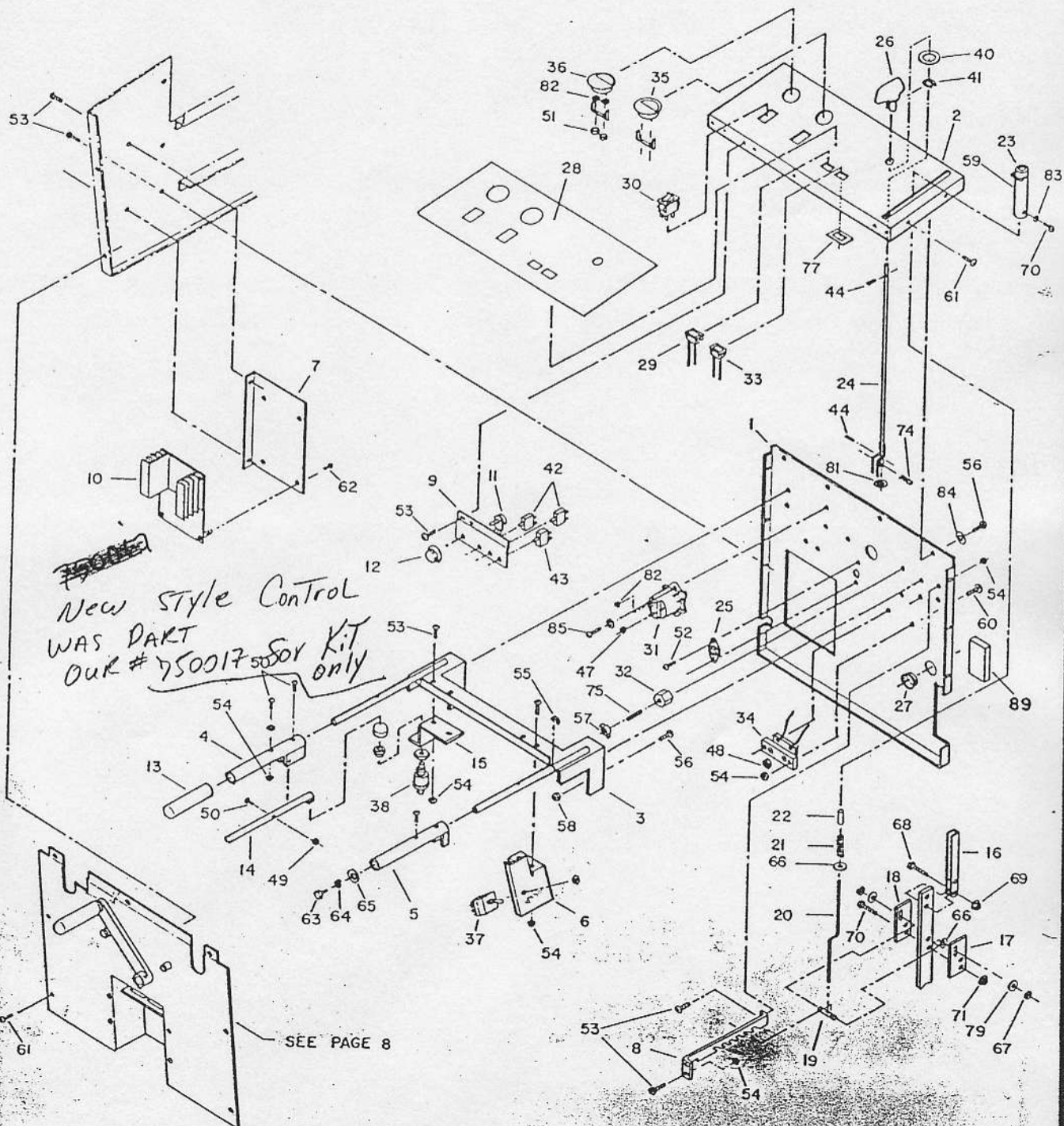
~~Carbon Brush Hold w/ spring wire etc Imperial # 515090~~

MOTOR Bottom End Bell
HAKO # 833959

Brush Motor is
Imperial # PS6MD010

Scrubhead Assembly
24-B - 833644
32-B - 833642

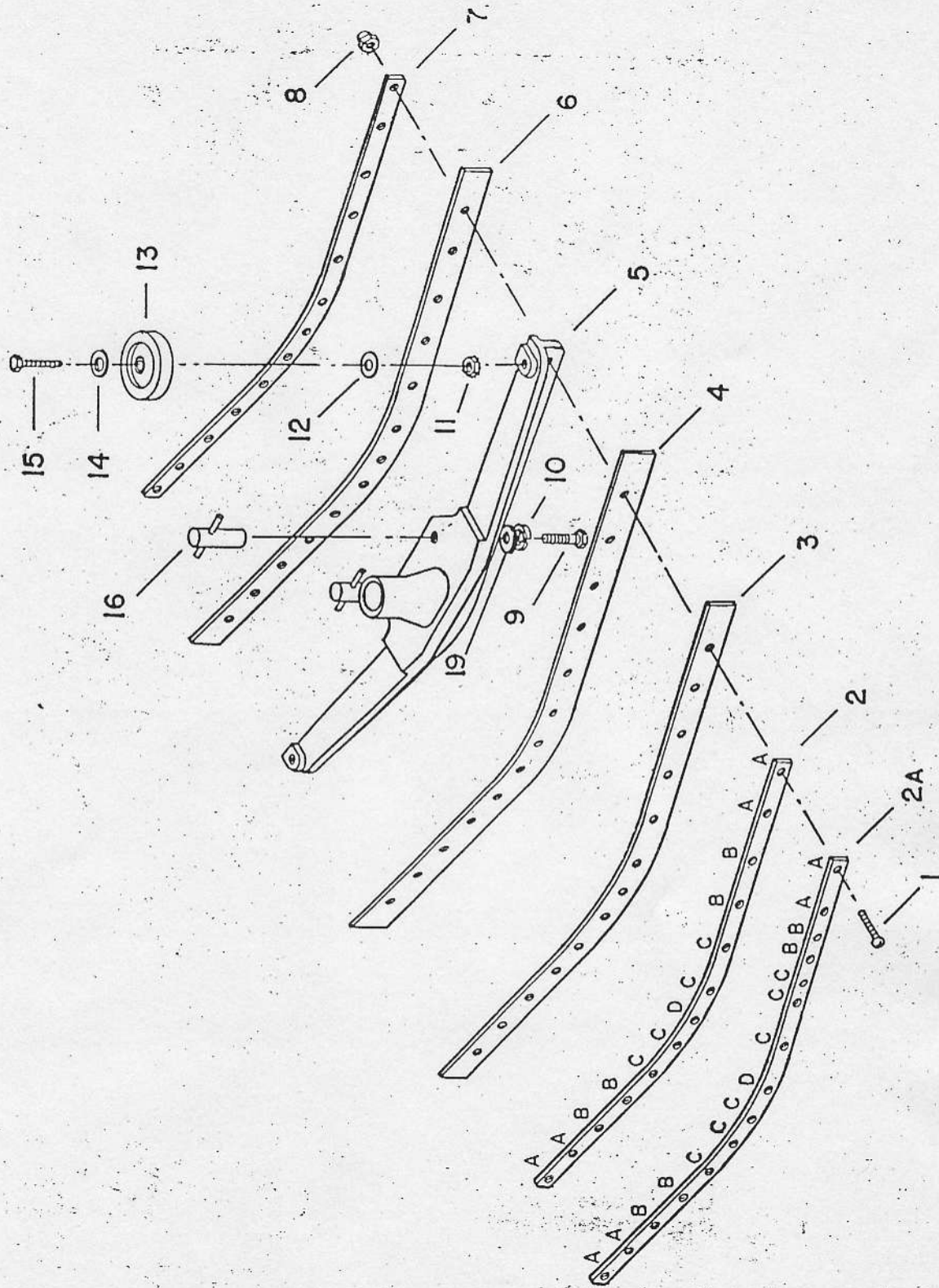
ITEM	PART #	QTY	DESCRIPTION	ITEM	PART #	QTY	DESCRIPTION
1	712822	25	Screw #10-24	30	711228	2	Bolt 5/16-18 x .75
2	830578	2	Skirt Band - 24B	31	833621	2	Key
3	830576	2	Skirt Band - 32B	32	833474	1	Carbon Brush Replace (set/4)
4	830579	2	Skirt - 24B	32A	833918		Replacement Brush Holder for 833379 Motor
5	830577	2	Skirt - 32B				
6	830581	2	Splash Guard - 24B	33	833628	2	Jam Nut, Brass 1/4"
7	830575	1	Splash Guard - 32B R.H.	34	833833	1	Clevis Pin
8	712908	17	10-24 Lock Nut	35	712317	3	Washer 3/8
9	833623	1	Hose 15" (130207 R.M.) 3/8"	36	809799	1	Clevis Clip
10	833625	2	Hose Barb Elbow	37	833363	1	Hose Clamp, Snap
11	833624	1	Hose 3" (130207 R.M.)	38	833108	1	Motor Mount Plate
12	833626	1	Hose Barb "T"	39	760115	1	Support Band
13	827004	1	Hose 50.5" x 0.5 DIA	40	760117	2	Rubber Skirt
14	833379	2	Motor	41	760116	2	Support Bracket
15	833112	2	Hanger	42	711503	21	Washer #10
16	760351	1	Hose 46"	43	712638	11	Hex Nut #10 Nyloc
17	833873	1	Hinge	44	711517	1	Washer
18	711276	4	Bolt 3/8-16 x 1 3/4	45	712532	4	#10-24 Screw Phillips Truss
19	712317	8	Washer, Flat 3/8	46	711575	4	Washer
20	808829	4	Wheel, Truck	47	833444	1	Cap Plug
21	711391	4	Jam Nut 3/8-16	48	711545	2	Lockwasher
22	711440	4	Locknut 3/8-16	49	711241	4	Bolt 3/8-16
23	830580	1	Skirt - 24B	50	711440	4	Nut 3/8-16
24	809845	1	Skirt - 32B	51	809434	4	Terminal
25	830582	1	Front Skirt Band - 24B	52	833876	1	Upper Left Splash Guard - 32B
26	809844	1	Front Skirt Band - 32B	53	833875	1	Lower Left Splash Guard - 32B
27	830583	1	Front Splash Guard - 24B	54	833868	2	Latches
28	809842	1	Front Splash Guard - 32B	55	710328	4	Screw 8-32 x .37
29	711368	2	Wing Nut 1/4-20 Nyloc	56	711372	4	Nut Nyloc 8-32
30	711544	2	Washer 1/4"	57	833889	1	Support Arm - 32B
31	711202	8	Bolt 1/4-20 x 1/2	58	711231	2	Bolt 5/16-18 x 1.25
32	430035	2	Drive Hub	59	711379	2	Nut, Flange 5/16
33	711516	1	Washer	60	712303	2	Washer



Bulkhead Assembly - 833640

Parts List

ITEM	PART NO.	QTY	DESCRIPTION	ITEM	PART NO.	QTY	DESCRIPTION
1	809183	1	Bulkhead Panel	44	808306	2	Rollpin 1/8 x 3/4
2	760333	1	Control Panel	45	710195	2	Screw 5/16-18 x 1/2
3	828250	1	Handle Weldment	46	710378	6	Screw 1/4-20 x 1/2
4	809137	1	Handle Weldment	47	711420	6	Nut 5/16-18
5	827647	1	Fwd/Rev Switch Weld	48	711429	2	Nut 1/4-28
6	809145	1	Bracket, Switch	49	712638	1	Nut 10-24
7	830033	1	Speed Control Mount	50	712533	3	Screw 10-24
8	828293	1	Adjustment Bracket	51	711438	4	Nut 6-32
9	833320	1	Potentiometer Bracket	52	710378	2	Screw 1/4-20
10	831296	1	Speed Control (Includes #11)	53	712822	10	Screw 10-24
11	830068	1	Potentiometer (Repl. Only)	54	712908	10	Nut 10-24
12	809874	1	Potentiometer Knob Replace.	55	809148	1	Ring Retaining
13	762086	2	Handle Grip	56	711229	5	Bolt 5/16-18 x .87
14	809140	1	Deadman Lever	57	711368	2	Nut, Wing
15	830255	1	Switch Bracket	58	712667	4	Nut 1/4-20
16	828269	1	Control Handle	59	809364	1	Clip
17	828265	1	Catch Plate L/H (Flat)	60	712537	2	Screw 10-24
18	828266	1	Catch Plate R/H	61	711144	11	Screw #10 ST
19	828268	1	Pin	62	712062	4	Screw #6 ST
20	828279	1	Catch Rod	63	710195	2	Screw 5/16-18
21	801665	1	Spring	64	711545	2	Washer
22	809301	1	Knob, Lock	65	711508	2	Washer
23	809302	1	Handle	66	711575	2	Washer
24	750068	1	Solution Control Rod	67	808778	2	Ring, Retaining
25	831628	1	Flange Bearing	68	711230	2	Bolt 5/16-18
26	760317PTD	1	Solution Control Knob	69	711379	2	Nut 5/16-18
27	809803	2	Bushing, Snap	70	711206 811024	2	Bolt 5/16-18 Hex
28	715094	1	Panel Decal	71	711425	2	Nut 1/4-20
29	740030	1	Light-Red Indicator	72	830959	1	Capacitor
30	740107	2	Switch, Rocker	73	809444	10	Clip
31	740127	3	Contactor	74	809779	1	Clip
32	740132	2	Glastic Insulator	75	833638	2	Stud 1/4 - 20
33	740133	1	Light-Green Indicator	76	712810	2	Screw
34	740134	1	Shunt	78	715096	1	Decal (Wiring)
35	740135	1	Meter, Operating	79	712317	2	Washer
36	740136	1	Meter, Battery	80	711504	1	Washer
37	827391	1	Forward/Reverse Switch	81	711506	4	Washer
38	830072	1	Deadman Switch	82	711310	8	Hex Nut 10-32
39	711600	1	Nylon Washer	83	712304	2	Lockwasher .2 x .37 x .02
40	711526	1	Wave Washer	84	711575	4	Washer
41	809237	1	E-Clip	85	710755	6	Bolt Hex 1/4-20
42	740220	2	Circuit Breaker 20 Amp	86	833824	2	Washer
43	740131	1	Circuit Breaker 70 Amp	87	712810	2	Screw 10-24
				89	809412	1	Gasket, used as spacer



Squeegee Assembly **24-B - 828315** **32-B - 828309**

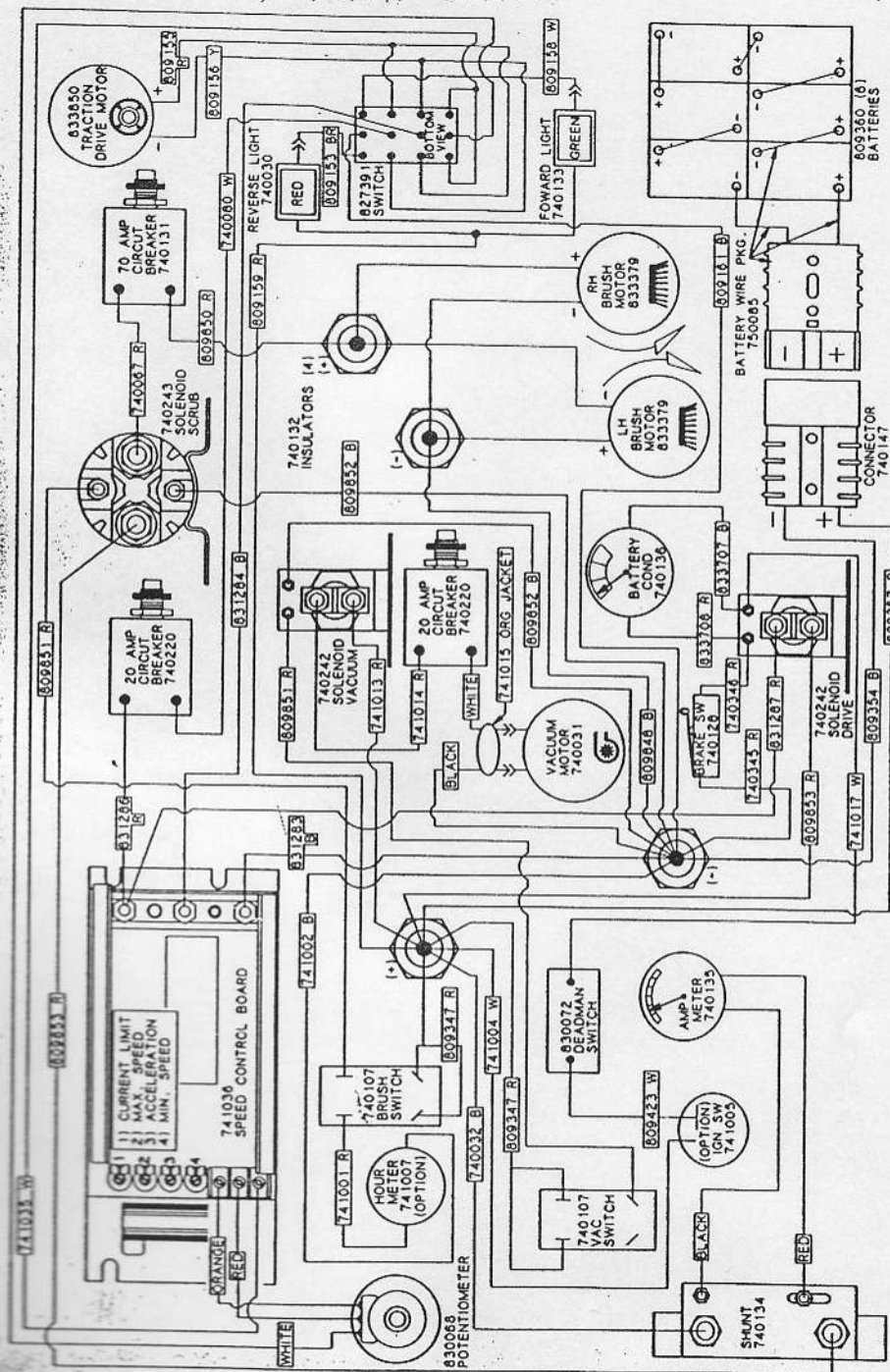
ITEM	PART NO.	QTY	DESCRIPTION	OPTIONAL ACCESSORIES
1A	712533	4	Screw 10-24 x 1.25	24B 240003
1B	712535	4	Screw 10-24 x 1.50	32B 320003
1C	712538	4	Screw 10-24 x 1.75 - 24B	
		6	Screw 10-24 x 1.75 - 32B	
1D	712530	1	Screw 10-24 x 5/8	24B 240005
2	809391	1	Rear Bar - 24B	32B 320005
2A	809527	1	Rear Bar - 32B	
3	809397	1	Reinforcing Blade - 24B	24B 240004
	809528	1	Reinforcing Blade - 32B	32B 320004
4	809395	1	Rear Squeegee Blade - 24B	
	809532	1	Rear Squeegee Blade - 32B	24B 240002
5	828307	1	Squeegee Casting - 24B	32B 320002
	828305	1	Squeegee Casting - 32B	
6	831472	1	Front Blade - 24B	24B 240006
	831473	1	Front Blade - 32B	32B 320006
7	809392	1	Front Bar - 24B	
	809529	1	Front Bar - 32B	24B 741007
8	712638	2	10-24 Nylock Hex Nut	32B 741007
9	712075	13	1/2-13 x 1 1/2" Hex	
10	711547	2	Split Lock	24B 752000
11	711391	2	3/8-16 Jam Nut	32B 752000
12	712317	2	Washer, Flat	
13	808829	2	Truck Wheel	24B 833862
14	712317	2	Washer, Flat	32B 833863
15	711247	2	3/8-16 x 2 Hex Bolt	
16	828310	2	Tee-Nut Assembly	24B 833910
17	828259	2	Pin	32B 833910
18	711539	2	Star Washer	
19	712303	2	Washer	24B 833925
				32B 833932
				24B 833954
				32B 833952

Battery Chargers

Semi-Auto	957726
Auto	957727

LIMITED WARRANTY

Hako Minuteman, Inc. warrants to the original purchaser/user that this product is free from defects in workmanship and materials under normal use and service for a period of two years from date of purchase. In addition, Hako Minuteman, Inc. will, at its option, honor labor warranty claims for the first 12 months from date of sale, provided such claims are submitted through and approved by Hako Minuteman, Inc. without charge, except for handling charges and applicable taxes.



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use specifically authorized
authorized persons, misuse
due to malfunctions of the

state. Some states do not
an implied warranty lasts,

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