Electronic Service Manuals

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Serving the Cleaning Industry Since 1922

Smart 2000

Battery Sweeper/Scrubber

Operator's Manual

READ THIS BOOK

This book has important information for the use and safe operation of this machine. Failure to read this book prior to operating or attempting any service or maintenance procedure to your machine could result in injury to you or to other personnel; damage to the machine or to other property could occur as well. you must have training in the operation of this machine before using it.

All directions given in this book are as seen from the operator's position at the rear of the machine.

American-Lincoln®

Form Number OM28600254 2000 English

TABLE OF CONTENTS - CHAPTER 1 - OPERATIONS

SPECIFICATIONS

CLEANING PATH		
Scrubbing	-	40 in. (101 cm)
	-	46 in. (117 cm)
Sweeping	-	46in. (117 cm)
Edge Cleaning	-	6 in.(15 cm) Right Side 46in. 117 cm) only
TRAVEL SPEED	-	0-4 MPH (0 - 6.4kph)
STEERING	-	Rack & Pinion 90°-90° Hyd. Power Steering
	-	Adjustable Steering Column
TURNING RADIUS		
Left	-	59 in. (150 cm)
Right	-	59 in. (150 cm)
Aisle "U" Turn	-	87 in. (221 cm)
DIMENSIONS		
Length	-	87 in. (221 cm)
Width	-	46 in. (116.8 cm)
Height	-	52 in. (132 cm)
Height w/Overhead Guard	-	79 in. (200.6 cm)
Wheel Base	-	37.6 in. (95.5 cm)
WEIGHT		
Standard Machine (Battery)	-	1700 lbs. (765 kg.) without battery
	-	510 Ah battery 1800 lbs. (810 kg)
	-	720 Ah battery 1990 lbs. (896 kg)
TIRES		
Front (Battery) Solid Urethane	-	Two (2)16 in (41cm) x 3.75 in (8.26 cm)
Rear (Battery) Solid Rubber	-	One (1)16 in (41 cm) x 4.00 in (10.16cm)
RAMP CLIMBING		
Transporting	-	8° (battery)

MAIN BROOM

One piece plastic core disposable type. Broom position can be set to "restricted down" or "free floating".

Length	-	36 in (91.4 cm)
Diameter	-	10 inches (25.4 cm)
Optional Bristle Type	-	Nylon (High density)
	-	Proex
	-	Nylon Eight (8) Row
SIDE BROOM		
Side Broom Size	-	16 inches (40.6 cm) Diameter

INSTRUMENTS AND CONTROLS

Main/Side Broom Switch	Key Switch
(activates immediately when lowered)	Rectangular Hour Meter
Headlight/Taillight Switch (option)	Battery Rollout
Squeegee Switch	Recovery High Light
3 Position Scrub Deck Switch	Dust Control Switch(with certain models)
Horn Button	Solution Low Light
Solution Control	Coolant Temperature Light
Hopper Up/Down	Filter Shaker Switch

SCRUBBING SYSTEM

Brush Size-46" (116.84 cm)	-	Three (3) 16" (40.6cm) Diameter
Brush Size-40" (101.4 cm)	-	Two (2) 20" (51cm) Diameter
Brush Drive Lift	-	Electric Actuator
Scrub Load		
40" scrub path)(116.84 cm)	-	From 90 lbs. to 140 lbs. per brush (Battery)
46" scrub path)(101.4 cm)	-	From 90 lbs. to 140 lbs. per brush (Battery)

SQUEEGEE

Rear	-	Accu-Trac™ 46 in(116.8 cm) Swing, break away, w/no tool squeegee replacement
Side	-	26 in (66 cm) Easy Change

TANKS

Solution Tank	-	55 Gallons (208 liter)Polyethylene
Recovery Tank	-	55 Gallons (208liter)Polyethylene
Solution Metering	-	Variable to 3.0 GPM (11.4 lpm)
Drain Hose	-	48 in (122 cm) No Plug required
Clean Out Port	-	5.7 in (14.5 cm) heavy debris

HOPPER

Capacity	-	2.5 cu.ft.(71liter)

DUMP AND LIFT

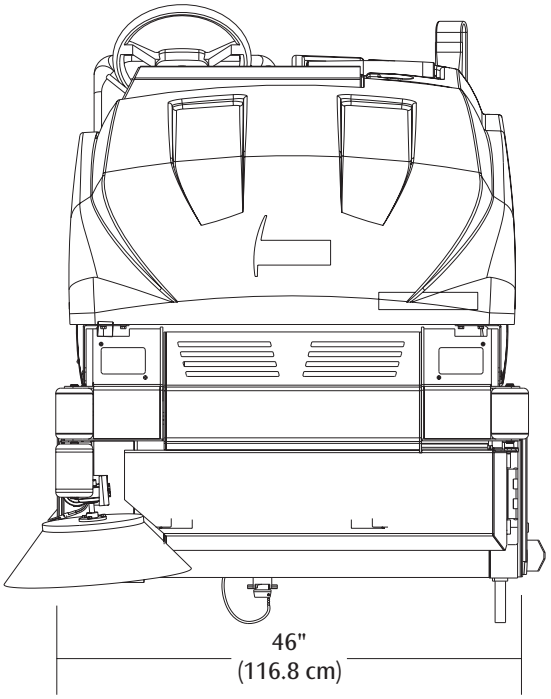
Dump Height	-	14 in (35.6 cm.)

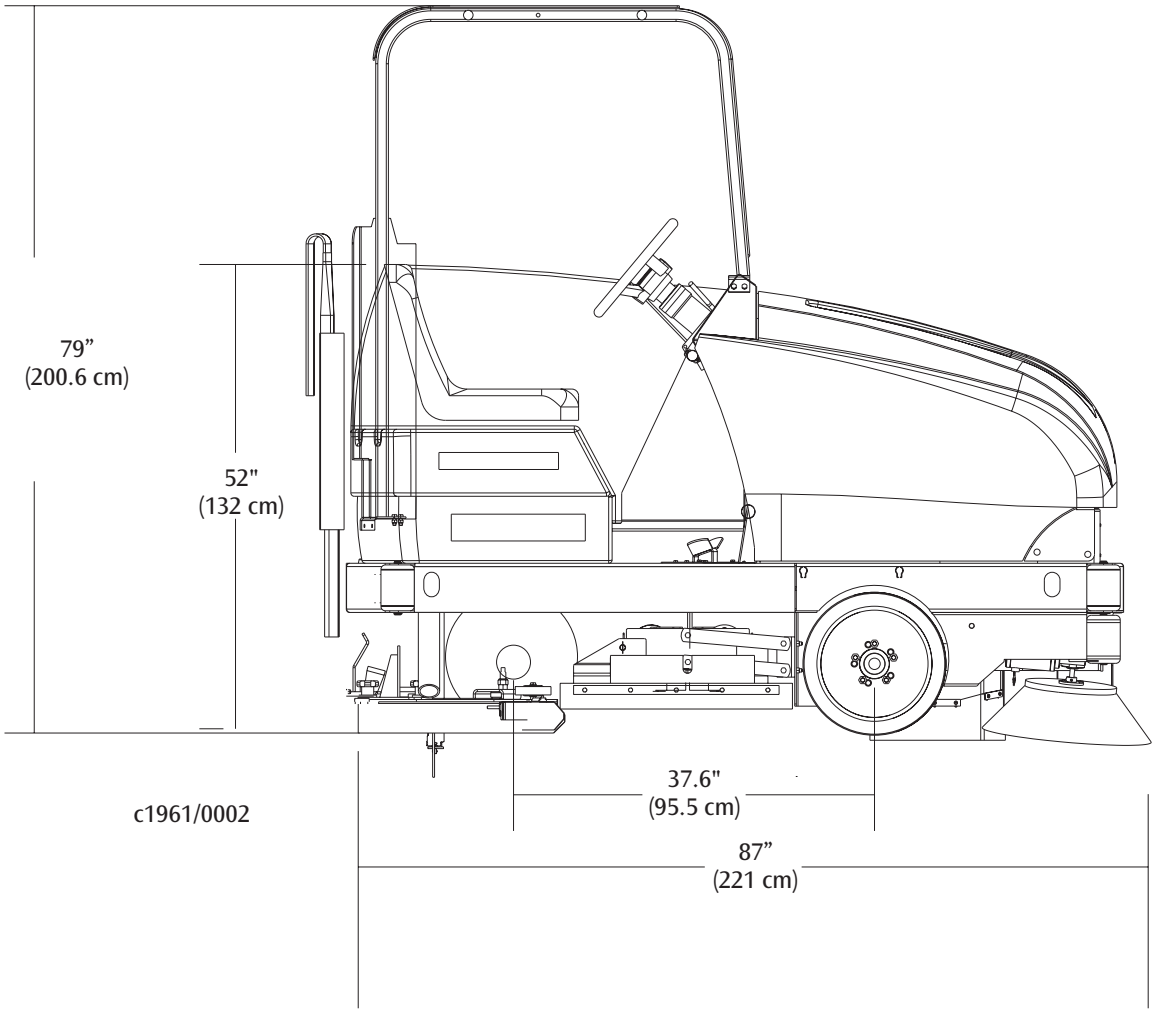
SYSTEM FLUID CAPACITIES

Hydraulic System (Battery)	-	4.7 Gallons (17.79 Liters)

OPTIONAL EQUIPMENT

Back-Up Alarm	Headlight/Taillights
Push Pull Light Switch (Work Light)	Strobe Light (Red or Amber)
ESP System w/o Detergent Provisions	Overhead Guard
Pad Drivers	Arm Rest
Spray and Vac Wand Option	Fire Extinguisher
Linatex Squeegee	Squeegee Wand
720 Amp Hour Battery	510 Amp Hour Battery


46"
(116.8 cm)


79”
(200.6 cm)
52"
(132 cm)
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87”
(221 cm)
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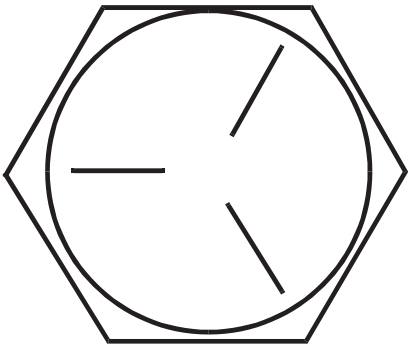
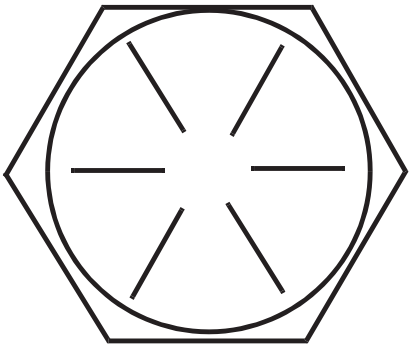
BOLT IDENTIFICATION



SAE - Grade 5



SAE - Grade 8

Screw Size	Grade 5 Plated		Grade 8 Plated		410H Stainless		Brass	Type F & T & BT		Type B, AB
	C	F	C	F	C	F		C	F	
*6	14	15	-	-	18	20	5	20	23	21
*8	27	28	-	-	33	35	9	37	41	34
*10	39	43	-	-	47	54	13	49	64	49
*1/4	86	108	130	151	114	132	32	120	156	120
5/16	15	17	22	24	19	22	6	-	-	-
3/8	28	31	40	44	34	39	10	-	-	-
7/16	44	49	63	70	55	62	16	-	-	-
1/2	68	76	95	108	85	95	-	-	-	-
9/16	98	110	138	155	-	-	-	-	-	-
5/8	135	153	191	216	-	-	-	-	-	-
3/4	239	267	338	378	-	-	-	-	-	-
7/8	387	-	545	-	-	-	-	-	-	-
1	579	-	818	-	-	-	-	-	-	-

C = Coarse Thread
F = Fine Thread
* = Torque values for #6 through 1/4 are lb./in. All others are lb./ft.

NOTE

Decrease the torque by 20% when using thread lubricant
The torque tolerance is ± on torque values.

+

C2000/9905

HYDRAULIC TORQUE REQUIREMENTS

Refer to the following chart for torque values on all hydraulic hoses and fittings.

Nominal SAE Dash Size	O-Ring Face Seal End		SAE O-Ring Boss End	
	Thread Size Inch	Swivel Nut Torque LB-FT	Thread Size Inch	Str. Fitting or Locknut Torque LB-FT
-3	*	*	3/8-24	8-10
-4	9/16-18	10-12	7-16-20	14-16
-5	*	*	1/2-20	18-20
-6	11/16-16	18-20	9/16-18	24-25
-8	13/16-16	32-35	3/4-16	50-60
-10	1-14	46-50	7/8-14	72-80
-12	1 3/16-12	65-70	1 1/16-12	125-135
-14	1 3/16-12	65-70	1 3/16-12	160-180
-16	1 7-16-12	92-100	1 5/16-12	200-220
-20	1 11/16-12	125-140	1 5/8-12	210-280
-24	2-12	150-165	1 7/8-12	270-360

* O-Ring face seal type end not defined for this tube size.

NOTE

Parts must be lightly oiled with hydraulic fluid.

C-2002

FRACTION	DECIMAL	MILLIMETER	FRACTION	DECIMAL	MILLIMETER
1/64	0.015625	0.3969	33/64	0.515625	13.0969
1/32	0.03125	0.7938	17/32	0.53125	13.4938
3/64	0.046875	1.1906	35/64	0.546875	13.8906
1/16	0.0625	1.5875	9/16	0.5625	14.2875
5/64	0.078125	1.9844	37/64	0.578125	14.6844
3/32	0.09375	2.3813	19/32	0.59375	15.0813
7/64	0.109375	2.7781	39/64	0.609375	15.4781
1/8	0.125	3.1750	5/8	0.625	15.8750
9/64	0.140625	3.5719	41/64	0.640625	16.2719
5/32	0.15625	3.9688	21/32	0.65625	16.6688
11/64	0.171875	4.3656	43/64	0.671875	17.0656
3/16	0.1875	4.7625	11/16	0.6875	17.4625
13/64	0.203125	5.1594	45/64	0.703125	17.8594
7/32	0.21875	5.5563	23/32	0.71875	18.2563
15/64	0.234375	5.9531	47/64	0.734375	18.6531
1/4	0.25	6.3500	3/4	0.75	19.0500
17/64	0.265625	6.7469	49/64	0.765625	19.4469
9/32	0.28125	7.1438	25/32	0.78125	19.8438
19/64	0.296875	7.5406	51/64	0.796875	20.2406
5/16	0.3125	7.9375	13/16	0.8125	20.6375
21/64	0.328125	8.3344	53/64	0.828125	21.0344
11/32	0.34375	8.7313	27/32	0.84375	21.4313
23/64	0.359375	9.1281	55/64	0.859375	21.8281
3/8	0.375	9.5250	7/8	0.875	22.2250
25/64	0.390625	9.9219	57/64	0.890625	22.6219
13/32	0.40625	10.3188	29/32	0.90625	23.0188
27/64	0.421875	10.7156	59/64	0.921875	23.4156
7/16	0.4375	11.1125	15/16	0.9375	23.8125
29/64	0.453125	11.5094	61/64	0.953125	24.2094
15/32	0.46875	11.9063	31/32	0.96875	24.6063
31/64	0.484375	12.3031	63/64	0.984375	25.0031
1/2	0.5	12.7000	1	1.0000	25.4000

C-2001/9907

Figure 1

YOUR SMART 2000 MACHINE HAS BEEN SHIPPED COMPLETE, BUT DO NOT ATTEMPT TO OPERATE WITHOUT FOLLOWING THESE INSTRUCTIONS.

PREPARING THE MACHINE FOR OPERATION (IC Engine Powered)

1. Connect and tighten battery cables.
2. Fill the tank with REGULAR GRADE gasoline. (Diesel fuel if equipped with diesel engine.)

WARNING

Never fill the tank while the engine is running. Always be sure the gasoline container and sweeper are electrically connected before pouring gasoline. This can easily be done by providing an insulated wire (permanently attached to container) with a battery clip on the other end.

3. Check engine crankcase oil level. Although properly lubricated at the factory, check before starting the engine. No special break in oil is used and recommended number of operating hours before the initial oil change is the same as normal. See Maintenance.
4. Check radiator coolant level. Permanent type antifreeze is added at the factory to provide protection to approximately -35°F (37°C). To retain this protection level, always add ½ part water to ½ part antifreeze.
5. Check oil level in the hydraulic reservoir located at the drivers side of the machine beside the engine. The oil fill level should be halfway on sight glass. If oil is needed, add Standard, 30 weight, non-detergent motor oil. After the first 50 operating hours, service must be performed on your engine to ensure future high performance and trouble free operation. See Maintenance.

NOTE

After the first 35 operating hours, service must be performed on your engine to ensure future high performance and trouble free operation. See Maintenance.

BATTERY POWERED MACHINES

*Uncrate the machine and carefully remove from skid to prevent damage.
*The SMART 2000 machines that are shipped without batteries have the (+) positive drive motor lead disconnected.
*Open the battery compartment and connect the (+) positive motor lead to the top terminal post (the wire "P" is also attached to it). Tighten the terminal nut.
*Install the scrub brushes.
*Check the oil level in the hydraulic reservoir
*Install batteries as follows (if not included):

1. Turn the key to the "OFF" position.
2. Raise the Front Cover to the open position.
3. Use a battery lifting device with a 2500 lbs. (1150 Kg) capacity hoist to lift the battery. Set up the battery tray in the center position. Make sure the size of the battery fits into the tray prior to installation (20.25W x 38.50 x 31.00 L).
4. Using the lifting device, lower the 36 volt battery into the battery tray directly in front of the driver's compartment. Orient the cables & plug them in as required.
5. Plug the polarized connector from the battery into the 36 volt plug provided.

 **WARNING**

Hydrogen gas is formed during the charging operation and is explosive! Only charge batteries in a well ventilated area with the lid open. Avoid any open flame or electrical sparks. Pulling out the charger plug with the timer on will cause an arc and must be avoided.

SAFETY INSTRUCTIONS

THE FOLLOWING STATEMENTS ARE USED THROUGHOUT THIS MANUAL AS INDICATED IN THEIR DESCRIPTIONS:

DANGER

To warn of immediate hazards which will result in severe personal injury or death.

WARNING

To warn of hazards or unsafe practices which could result in severe personal injury or death.

CAUTION

To warn of hazards or unsafe practices which could result in minor personal injury.

ATTENTION

To warn of unsafe practices which could result in extensive equipment damage.

NOTE

To give important information or to warn of unsafe practices which could result in equipment damage.

WARNING

THE FOLLOWING INFORMATION SIGNALS POTENTIALLY DANGEROUS CONDITIONS TO THE OPERATOR OR EQUIPMENT. READ THIS MANUAL CAREFULLY. KNOW WHEN THESE CONDITIONS CAN EXIST. THEN, TAKE NECESSARY STEPS TO TRAIN MACHINE OPERATING PERSONNEL. FOR THE SAFE OPERATION OF THIS MACHINE, READ AND UNDERSTAND ALL WARNINGS, CAUTIONS AND NOTES.

WARNING

Machines can ignite flammable materials and vapors. Do not use with or near flammables such as gasoline, grain dust, solvents, and thinners.

WARNING

Improper use of heavy machinery can cause personal injury.

WARNING

Operate only when lids, doors, and access panels are securely closed.

WARNING

Use care when reversing machine in confined area.

WARNING

When servicing the machine, disconnect the batteries first to prevent possible injury.

WARNING

When working on the machine, empty hopper, remove batteries, clear area of people and obstructions, use additional people and proper procedures when lifting the machine.

WARNING

Always empty the hopper and disconnect the battery before doing maintenance.

WARNING

You must have training in the operation of this machine before using it. READ THE INSTRUCTION BOOK.

WARNING

Do not operate this machine unless it is completely assembled.

WARNING

Do not use this machine as a step or furniture.

WARNING

Stop and leave this machine on a level surface. When you stop the machine, put the power switch in the "OFF" position and engage the Wheel Lock.

WARNING

To prevent injury and damage to the machine, do not lift the machine or move it to an edge of a stair or loading dock.

WARNING

Lead acid batteries generate gases which can cause an explosion. Keep sparks and flames away from batteries. NO SMOKING. Charge batteries only in areas with good ventilation.

WARNING

Always wear eye protection and protective clothing when working near batteries. Remove all jewelry. Do not put tools or other metal objects across the battery terminals or across the tops of batteries.

WARNING

Maintenance and repairs must be done by authorized personnel only. Tighten all fasteners. Maintain adjustments according to the specifications given in the service manual for the machine. Keep the electrical parts of the machine dry. For storage, keep the machine in a building.

WARNING

Make sure all labels, decals, warnings, cautions and instructions are fastened to the machine. Purchase new labels and decals from American-Lincoln Technology.

WARNING

The operator must exhibit extreme caution when negotiating, turning, and traveling across grades or ramps. Start, stop, change direction, travel and brake smoothly. Slow down when turning.

WARNING

Avoid uneven surfaces and loose materials. Watch for obstructions, especially overhead.

WARNING

Operate only from the designated operator's position. Stay inside the body of the machine. Keep hands and feet on the designated controls. Always operate in well lighted areas.

WARNING

Do not carry passengers on the machine. Set the Wheel Lock when leaving the machine. Chock (block) the wheels if the machine is parked on a grade (ramp), or is being prepared for Maintenance.

WARNING

Never leave the operator's compartment when the is engine running.

WARNING

Report damage or faulty operation immediately. Do not operate the machine until repairs have been completed. Maintenance and repairs must be done by authorized personnel only.

WARNING

To maintain the stability of this machine in normal operation, the overhead guard, counterweights, roller bumper guards, or any similar equipment installed by the manufacturer as original equipment should never be removed. If it becomes necessary to remove such equipment for repair or maintenance, this equipment must be reinstalled before the machine is placed back into operation.

WARNING

Electrical hazard. Shocks can cause serious personal injury. Unplug the battery before cleaning or servicing. To avoid possible injury or property damage, read the Operator's Manual before servicing the machine. Maintenance and repair must be done by authorized personnel.

WARNING

Disconnecting the battery connector with the key switch in the "I" position will cause sparks that could ignite explosive hydrogen gas generated by the batteries. To prevent serious injury or possible property damage, turn Key Switch to "O" position before disconnecting the battery cable from the machine for charging or service.

FOR SAFETY, OBSERVE THE FOLLOWING WARNINGS. FAILURE TO COMPLY MAY CREATE A SERIOUS RISK OF INJURY TO YOURSELF AND OTHERS. THIS MACHINE SHOULD NOT BE USED IN HAZARDOUS LOCATIONS INCLUDING AREAS OF VOLATILE DUST OR VAPOR CONCENTRATIONS.

Operators must be trained and qualified to operate this machine. They must also understand the operator's manual before starting.

Use caution when mounting or dismounting the machine particularly on wet slippery surfaces. Do not dump the hopper over an open pit or dock. Do not dump the hopper when positioned on a grade (ramp). The machine must be level (horizontal).

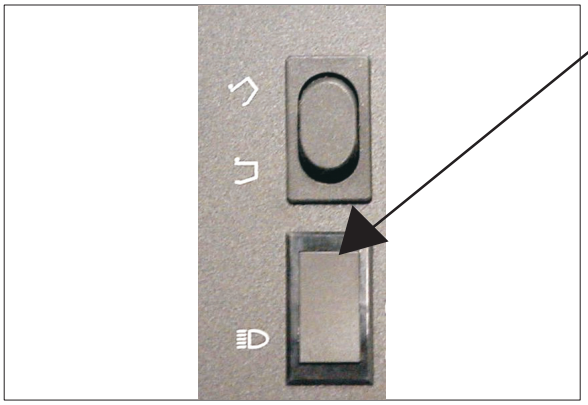


Figure 2

LIGHT SWITCH (See Figure 2)
The light switch is located above the horn button to the left of the steering wheel. By pressing on the lower part of the switch, it will work various light options that are available for this machine, such as:

Headlights
Taillights

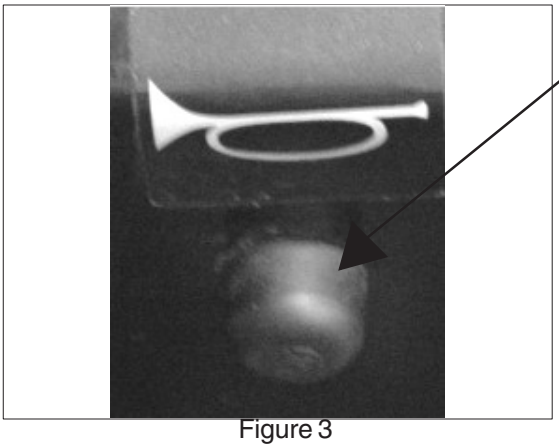


Figure 3

HORN BUTTON (See Figure 3)
The horn button is located to the left of the steering column below the instrument panel. The horn button is always active.

Figure 4

KEY SWITCH (See Figure 4)
The keyed ignition switch is located on the instrument panel to the right of the broom lever.

The “OFF” position (O position) will shut off the engine. The IGN/ON position (I position) provides power to all machine systems and accessories. The “START” position (one position clockwise of I position) is momentary and provides power to the starter motor.

NOTE
To reengage, the key must be returned to the “OFF” position.

Figure 5

HOUR METER (See Figure 5)
The hour meter is located on the instrument panel below the fuel gauge (gas version), below the battery condition meter (battery version). The meter is activated when the key switch is placed in the ignition position. The meter indicates the actual “run” time of the machine. The meter can be used to determine when maintenance should be done on the machine.

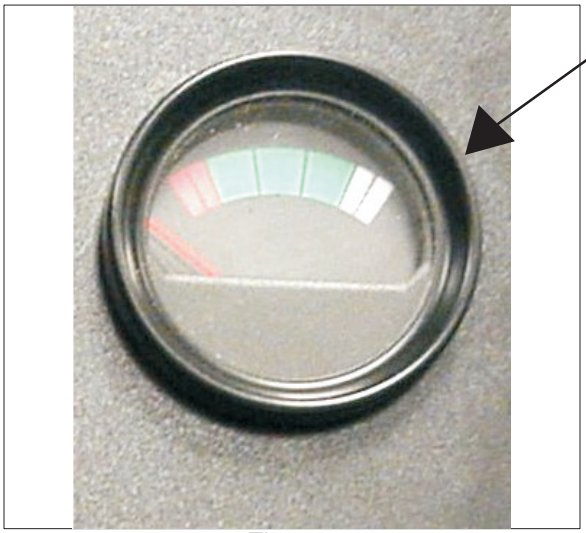


Figure 6

BATTERY CONDITION METER (See Figure 6)
The battery condition meter is located on the right side of the instrument panel. The condition meter indicates the level of charge in the batteries (inspect underload). The batteries are sufficiently charged when the needle stays in the green area on the gauge while the machine is being operated.

Charge the batteries when the needle drops into the red zone while operating the machine. Do not operate the machine if the needle stays in the red area.

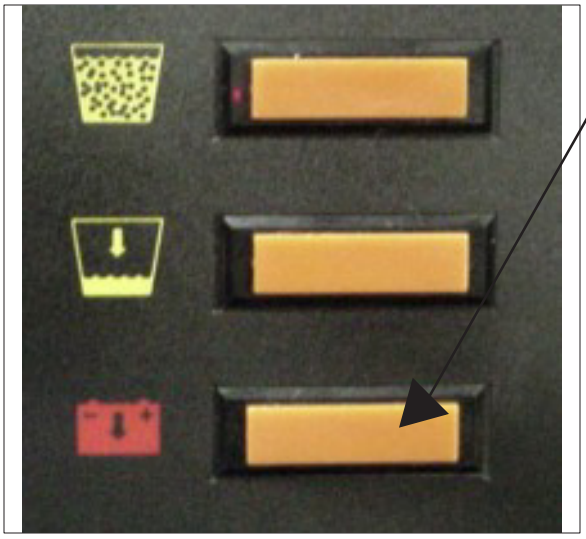


Figure 7

BATTERY CONDITION LIGHT (See Figure 7)
The meter shows the condition of the battery, while the machine is running, under load. When the battery voltage falls below 31-32 volts for longer than 2-3 seconds the low voltage light will come on and the Brush/Water solenoids will be shut off automatically. This is a permanent lockout until the power is turned off to module. The low voltage lock out can be reset almost immediately by turning off all power to the module for 3-5 seconds. In a permanent low battery condition, the machine can be functional only for one minute periods an then only by turning the ignition off and on.

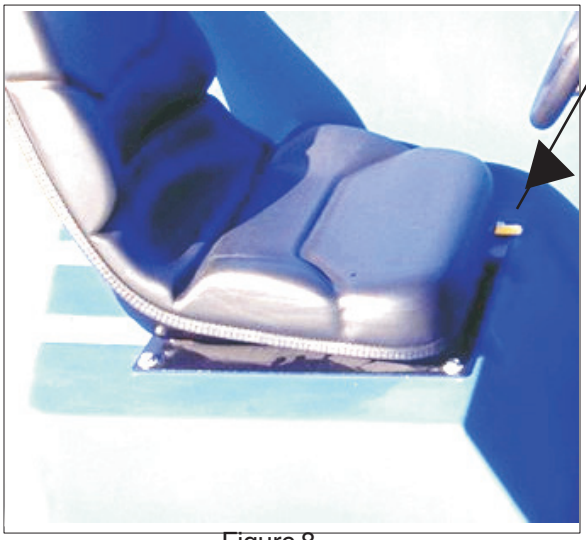


Figure 8

SEAT POSITION ADJUSTMENT (See Figure 8)
The seat position adjustment lever is located on the front of the seat to the left. The lever is spring loaded to the “LOCK” position.

To adjust the seat, push the lever to the “RIGHT” and move the seat to the desired position. Then release the lever to “LOCK” the seat into place.

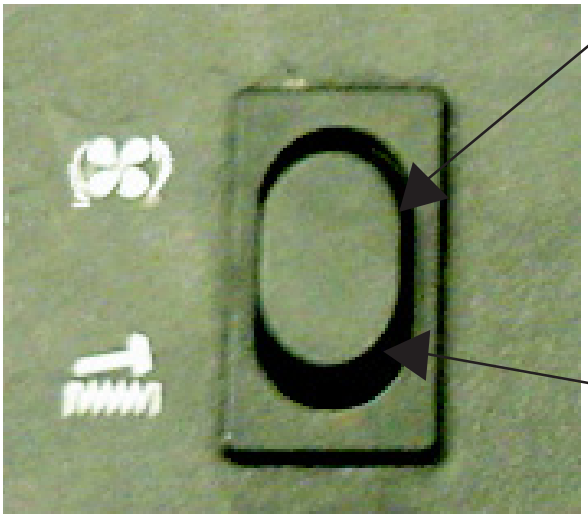


Figure 9

FILTER SHAKER SWITCH (See Figure 9)
The filter shaker switch is located on the top left corner of the instrument panel . By pressing and holding in the lower part of the switch, it will activate the filter shaker motors for 20 to 30 seconds. Upon releasing the switch, it will return to the off (middle) position.

The Impeller fan will stop when the filter shaker has been activated. The filter shaker will only operate with the hopper in the “DOWN” position.

DUST CONTROL SWITCH (See Figure 9)
The Dust Control Switch located on the top left corner of the instrument panel. To turn on the dust control system for “NORMAL” sweeping, press in the upper portion of the switch. To turn off the dust control system for sweeping in wet conditions, return the switch to the middle position (wet sweep bypass). This will prevent the filter from being damaged by water pickup while sweeping.

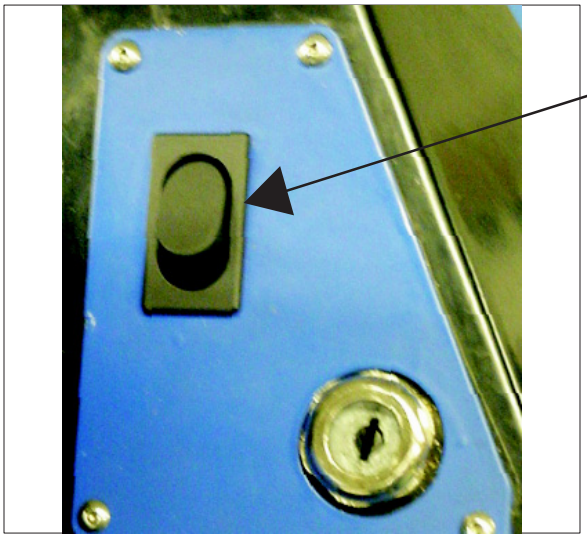


Figure 10

SIDE BROOM and MAIN BROOM SWITCH (See Figure 10)
The Side and Main Broom Switch is located to the right of the steering column. By pressing in the upper portion of the switch, the side and main broom are raised and turned off. To lower and turn on both brooms, press the lower portion of the switch.

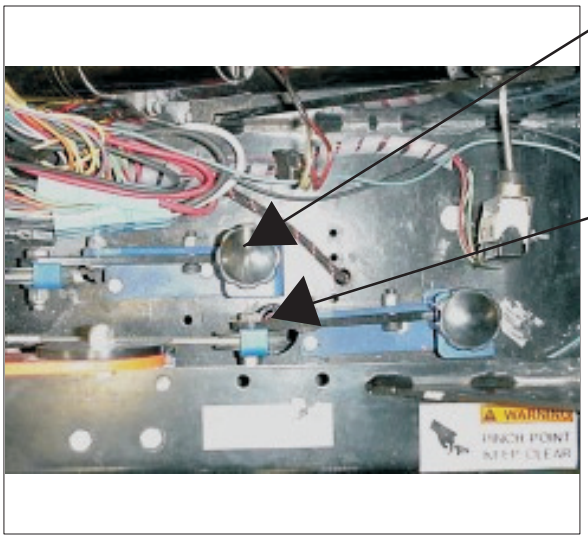


Figure 11

MAIN BROOM ADJUSTMENT (See Figure 11)
The main broom adjustment knob for changing the sweep height to compensate for broom wear, is located in front of the machine to the right of the filter. Turning the knob to the left (counterclockwise) will lower the main broom.

SIDE BROOM ADJUSTMENT (See figure 11)
The side broom adjustment knob for changing the sweep height to compensate for broom wear, is located in front of the machine to the right of the filter. Turning the knob to the left (counterclockwise) will lower the side broom.

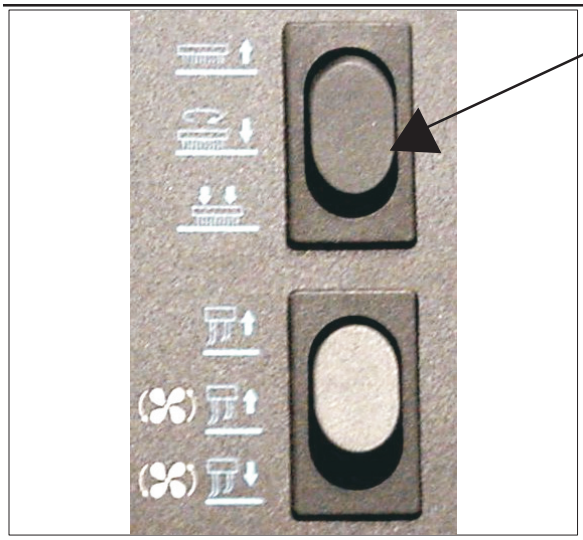


Figure 12

SCRUB DECK SWITCH (See Figure 12)
The scrub deck switch is located on the instrument panel to the left of the solution control knob. Pressing in the upperportion of th switch raises the scrub deck and turns the brush. In the middle position, the scrub deck lowers to the normal down position. Pressing the lower portion of the switch lowers the scrub deck to the heavy down position.

In the third position, Scrub Deck Heavy, additional downward pressure is applied. This will help for extremely dirty surfaces.

NOTE
Lowering the scrub deck does not turn on the brushes. The brushes turn on automatically when the machine moves in the forward or reverse direction.

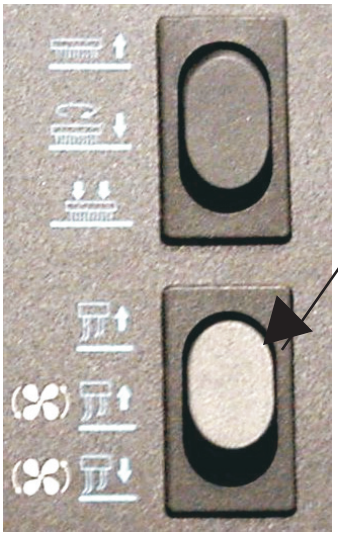


Figure 13

SQUEEGEE SWITCH (See Figure 13)
The squeegee blade switch is located on the console to the left of the steering wheel.Pressing the lower portion of the switch will lower the squeegee and activate the squeegee vacuum. Pressing the upper portion of the switch will turn off the squeegee vacuum and raise the squeegee.

In the middle position the switch will raise the squeegee. In this position the vacuum remains on to allow vacuuming the water that is left in the squeegee recovery hose. This prevents water from dripping on the floor with the squeegee “UP.”

If the squeegee is lowered and the direction of the machine is reverse (activated by the FWD/REV pedal) the squeegee will automatically raise.

Upon moving in the forward position, the squeegee wil automatically return to the lowered position.

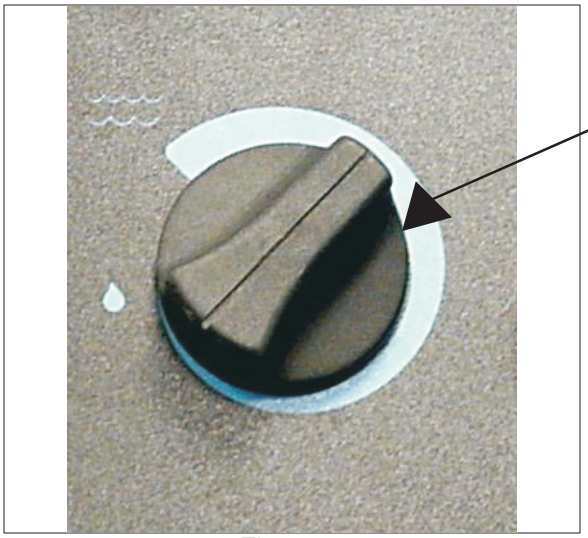


Figure 14

SOLUTIONS CONTROL KNOB (See Figure 14)
The solution control knob is located to the left hand side of the steering wheel. Turning the knob counterclockwise will increase the flow of solution and water. The farther the solution control knob is turned the heavier the flow of water and solution will be. Turning the knob counterclockwise will decrease the flow of the water and solution. To turn the water and solution off turn the knob all the way counterclockwise.

NOTE
For best results, discontinue application of solution 10 feet before stopping or making a 90° or 180° turn.

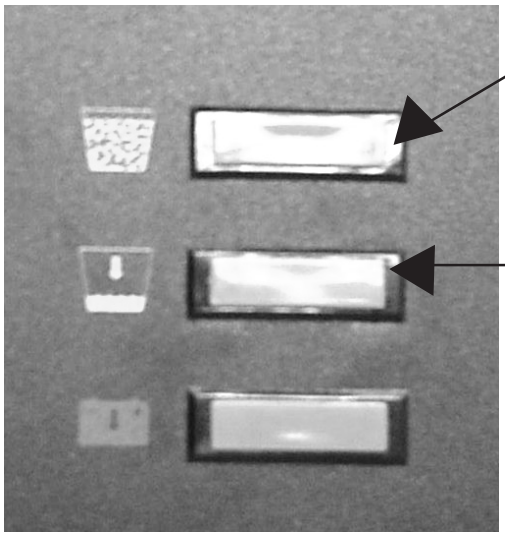


Figure 15

RECOVERY HIGH LIGHT (See Figure 15)
The recovery high warning light will illuminate approximately 5 minutes before the recovery tank is full, giving ample time to complete the scrubbing cycle, before the mechanical float shuts off the vacuum to the recovery tank.

LOW SOLUTION LIGHT (See Figure 15)
The Low Solution Warning Light is located on the console. The Solution Warning Light will illuminate when the solution tank is empty, marking the end of the scrubbing cycle.

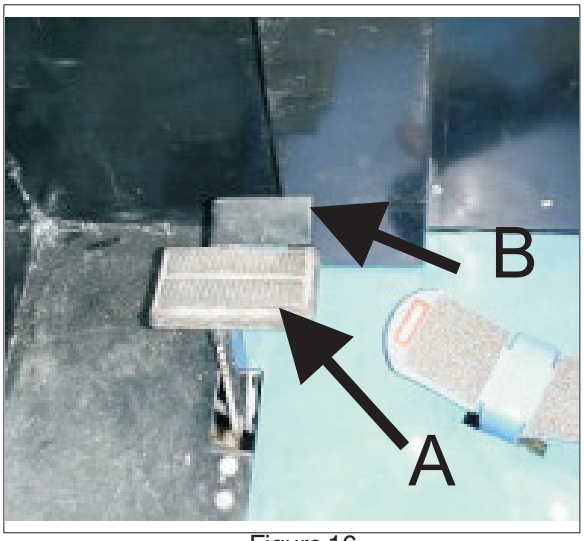


Figure 16

PARKING BRAKE (See Figure 16)
Never leave operator's seat without engaging the parking brake. The parking brake is located on the floor of the machine left of the directional control pedal. To set the parking brake, press down on the foot pedal (Item A) and the press down the lock (Item B). To unlock the parking brake, push down on the upper portion of the foor pedal and release.

TURN SIGNAL - 4-Way (Option)
The turn signal option is located on the steering column and works as automotive turn signals work, forward on the lever for right and back on the lever for left. The 4-way flasher will activate when the turn signal lever is pulled out.

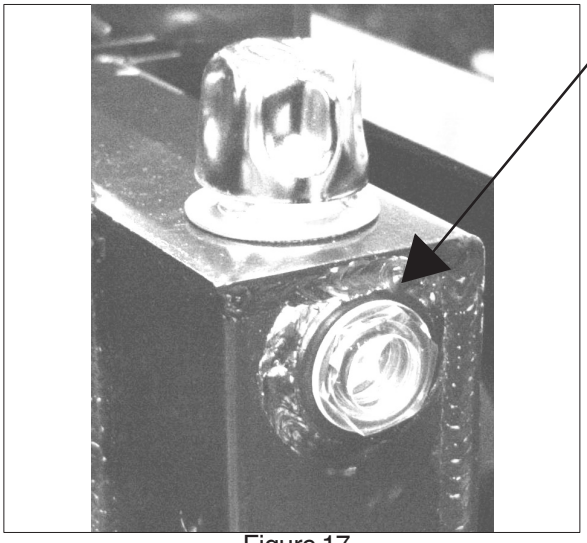


Figure 17

HYDRAULIC RESERVOIR LEVEL SIGHT GAUGE (See Figure 17)
The sight gauge is located on the left side of the machine under the front cover. The sight gauge is used to indicate the level of fluid in the reservoir. The fluid level must be visible in the sight gauge when the hopper is in the down position.

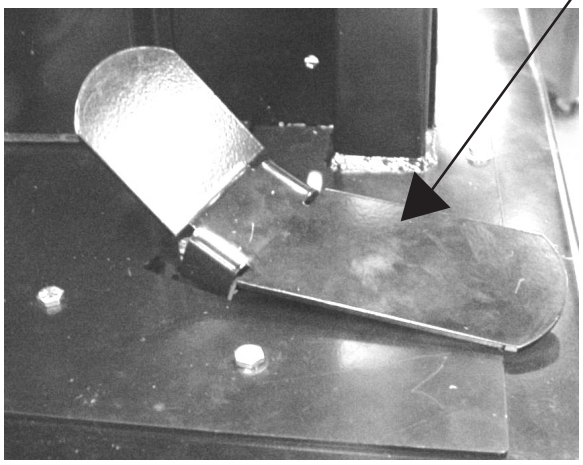


Figure 18

ACCELERATOR and DIRECTIONAL CONTROL PEDAL - (See Figure 18)

The Accelerator and Directional Control Pedal is located on the floor of the operator's area. This pedal controls the machine direction and travel speed.

1. Put foot pressure on the right side of the pedal. The machine will move forward.
2. Increase the foot pressure on the right side of the pedal to increase the forward speed.
3. Put foot pressure on the left side of the pedal. The machine will move in reverse.
4. Increase the foot pressure on the left side of the pedal to increase the reverse speed.
5. To stop the machine, allow directional control pedal to return to neutral (center position). Pedal will automatically return to neutral when foot pedal is released, or put light foot pressure on the opposite end of the accelerator and directional control pedal. If the machine is moving forward, put light foot pressure on the left side of the pedal. If the machine is moving in reverse, put light foot pressure on the right side of the pedal.

BACK-UP ALARM SWITCH (Option)

The back-up alarm is operated by a switch that is located under the accelerator and directional control pedal mounting plate. The alarm makes a loud audible noise when the machine is being driven in reverse.

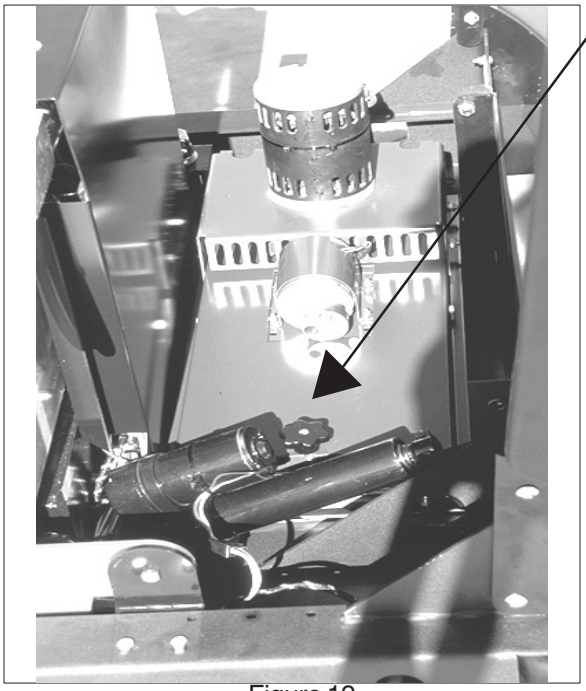


Figure 19

FILTER PANEL KNOB (See Figure 19)

The filter panel knob is used to hold the dust control filter down. It is located in the hopper filter compartment and will need to be removed periodically for cleaning or replacement. Removal of the filter panel requires no tools. The hopper cover must be opened to gain access to the filter compartment. The panel filter is held in place by a hinged frame and knob.

To remove the panel filter, turn the knob counterclockwise and lift the hinged frame. The panel filter can now be lifted out and cleaned or replaced.

To install the replacement panel filter, place a new filter in the machine, lower the frame and twist the knob clockwise to lock the filter in place.

Figure 20

MAIN BROOM COMPARTMENT DOOR (See Figure 20)
The main broom compartment door is located in front of the left side tire of the machine. The door provide access to the main broom for service or inspection. The hopper must be raised to access.

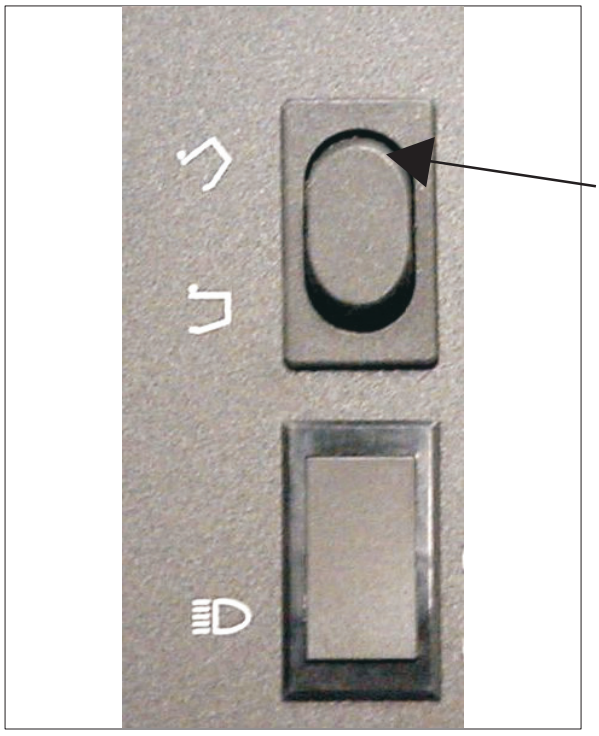


Figure 21

WARNING
Engage hopper safety arm while accessing the main broom.

HOPPER LIFT SWITCH (See Figure 21)
The hopper lift switch is located on the operator's compartment console. The switch controls the operation of the hopper lift system.

To raise the hopper for dumping, press and hold the upper portion of the switch until the hopper reaches the desired height or a ratcheting sound is heard, then release.

NOTE
While the hopper is open a chime will ring letting the operator know it is open. The chime will stop when the hopper is completely closed.

To close the hopper press in and hold the lower portion of the switch until the hopper closes completely (chime wil turn off) then release.

THE SCRUBBING SYSTEM - HOW IT WORKS

There are two scrubbing systems available for the SMART 2000 machine, the non-recycling or standard scrubbing system and the recycling or ESP scrubbing system.

THE NON-RECYCLING OR STANDARD SCRUBBING SYSTEM - HOW IT WORKS

During the scrubbing process, detergent solution water from the solution tank is fed to the solution line. There it is fed to the floor where three disc scrubbing brushes work to dislodge soil. After scrubbing, the dirty solution is vacuumed from the floor and discharged into the containment chamber in the forward portion of the recovery tank, where a system of baffles helps to clarify the solution.

Sensors in each tank will indicate, by lights on the control panel, when the water in the solution tank is too low or when the water in the recovery tank is too high.

THE ESP RECYCLING SYSTEM ON/OFF SWITCH (Option)

This switch turns the ESP recycling system on and off.

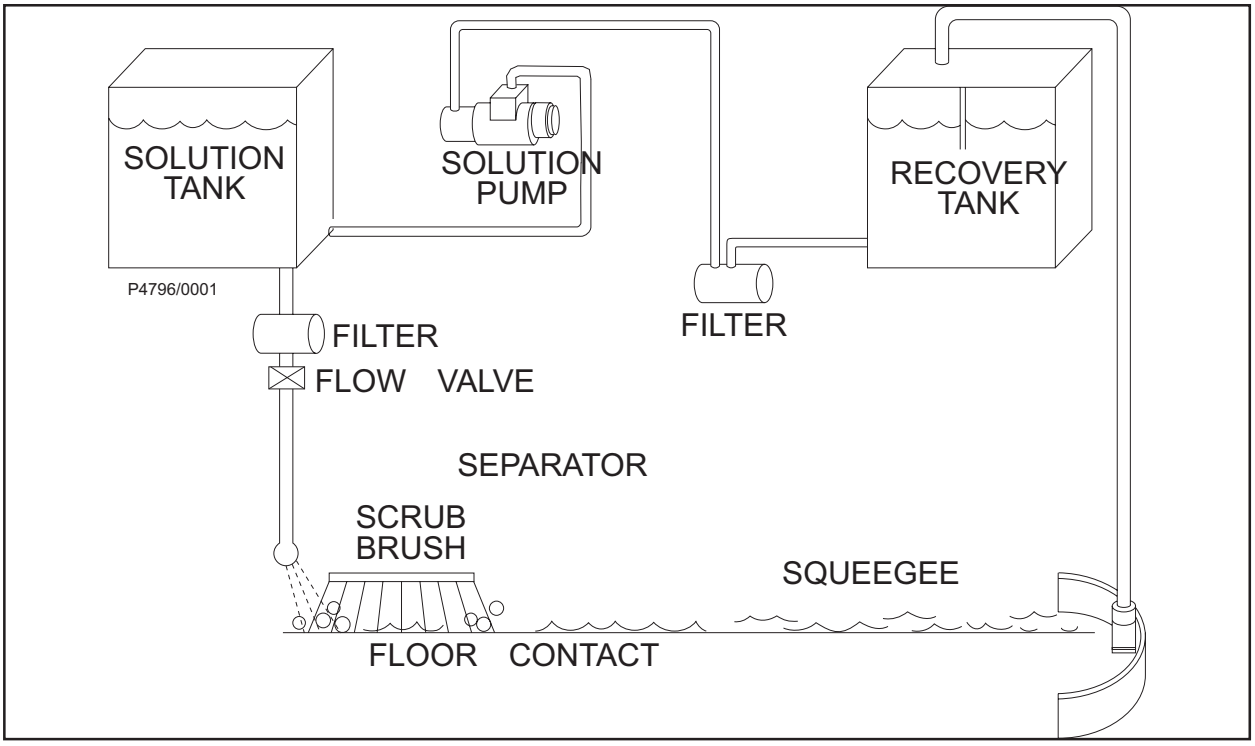


Figure 22

NOTE

The solution control lever must be on "FULL" for ESP operation.

THE RECOVERY OR ESP SYSTEM - HOW IT WORKS

During the scrubbing process, filtered water from the solution tank is fed to the solution line, where it combines with detergent . This mixture is then fed to the floor where three disc scrubbing brushes work to dislodge soil. After scrubbing, the dirty solution is vacuumed from the floor and discharged into the recovery tank. At intervals, a float switch activates the recycling pump, which sends filtered solution from the recovery tank to the solution tank.

BEFORE STARTING THE MACHINE

1. Set parking brake.
2. Make sure all controls are in the “OFF” position.
3. Be sure the directional control pedal is in neutral.
4. Ensure the batteries have been fully charged and serviced (see battery service instructions).

NOTE

Before starting the engine, perform the pre-start checklist.

PRE-START CHECKLIST

1 Clean engine air filter element.
2 Check hydraulic fluid level.
3 Check all systems for leaks.
4 Check brakes and controls for proper operation.
5 Check broom patterns.
6 Check to ensure that all covers, panels and access doors are securely closed.

NOTE

To prevent possible fire, never fill fuel tank while the engine is running. Always be sure gasoline container and machine are grounded before dispensing gas. This can be done by permanently attaching an insulated wire with a battery clip on the end to the gasoline container.

STARTING BATTERY MACHINES

Starting the battery powered models is accomplished by turning the key switch to the “I” (on) position. It is important to note that the batteries should be fully charged and serviced prior to using the machine.

NOTE

After turning off the machine, perform these post-operation checks.

POST-OPERATION CHECKLIST

1. Clean the debris hopper.
2. Check sweeping brooms for wear or damage.
3. Check all flaps for wear, damage and adjustment.
4. Check all systems for leaks.
5. Charge and service motive power batteries.
6. Check squeegees for damage.

SERVICE CHART

Check items for proper operation. If service is required, please contact an authorized American-Lincoln Technology distributor. For best performance, replace worn parts with genuine American-Lincoln Technology parts.

EVERY eight (8) HOURS or DAILY check and clean/adjust if necessary:

1 Inspect panel filters for damage and clean them.
2 Inspect and clean hopper.
3 Inspect and clean recovery tank screens and filters.
4 Check hydraulic fluid level.
5 Check all flaps for wear or damage.
6 Check brooms for wear or damage, adjust as required.
7 Check brake pedal and parking brake.
8 Check hydraulic oil filter.
9 Check battery electrolyte level.
10 Check all fluid system components for leaks.

50 HOUR (WEEKLY) MAINTENANCE CHECKLIST

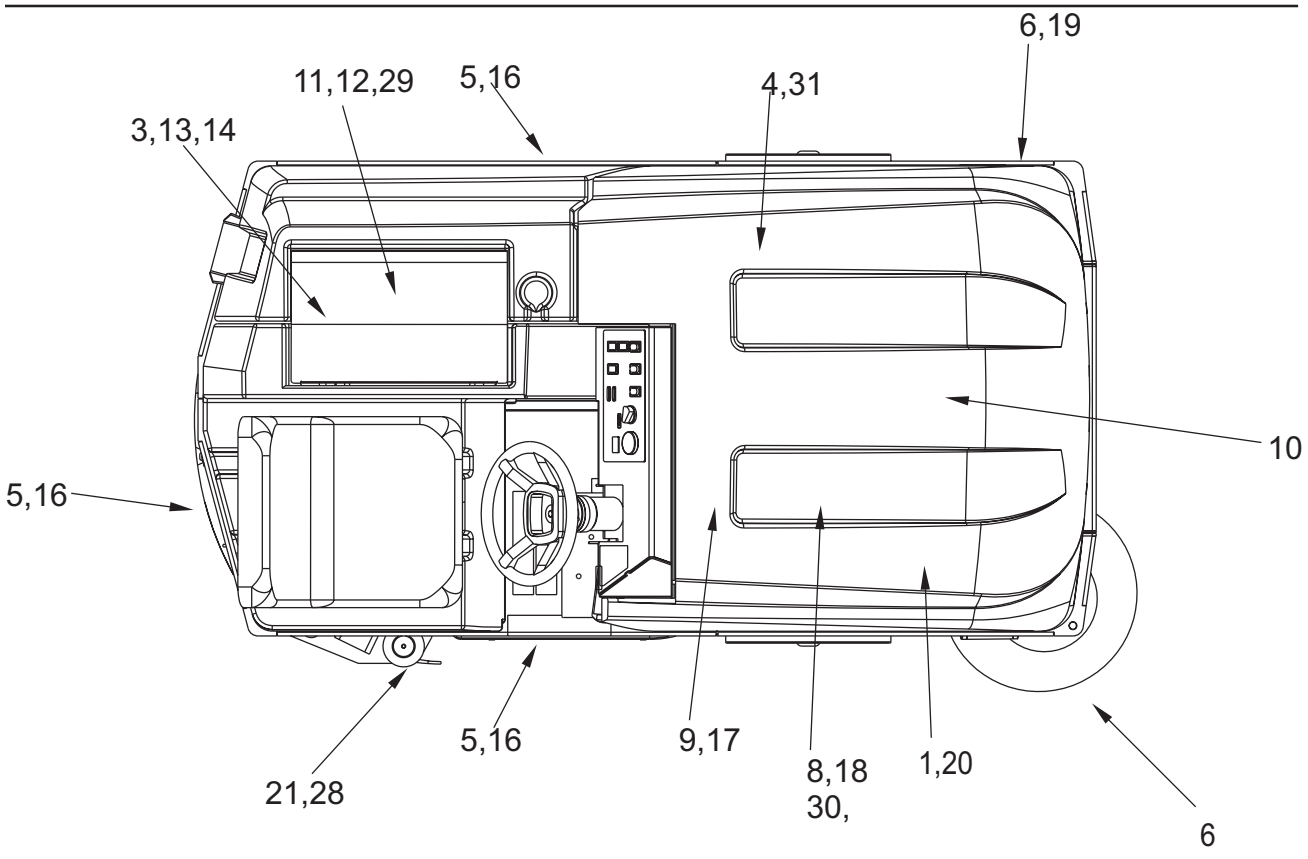
11 Check solution tank (recycling or ESP system).
12 Check solution filter screen (recycling or ESP system).
13 Check recovery tank.
14 Check recovery tank screens and filters.
15 Inspect scrub brushes for wear or damage.
16 Inspect rear and side squeegees for wear or damage.
17 Check battery electrolyte level.
18 Check all hydraulic hoses for wear or cuts.
19 Rotate main brush (end over end).
20 Clean or replace panel filters.
21 Lubricate squeegee casters.
22 Clean throttle rod springs

100 HOUR MAINTENANCE CHECKLIST

23 Lubricate drive wheel, swivel wheel bearings, and steering rack guide (engine side above rear wheel).
24 Lubricate front wheel bearings.
25 Lubricate all moving joints.
26 Check brake shoes for wear and adjust accordingly.
27 Lubricate all bushings with anti-seize lubricant. The bushings are located on the steering, scrub deck lift, and squeegee lift

250 HOUR MAINTENANCE CHECKLIST

28 Lubricate squeegee casters.
29 Clean solution tank and filter screen.
30 Replace hydraulic filter element.
31 Clean hydraulic reservoir.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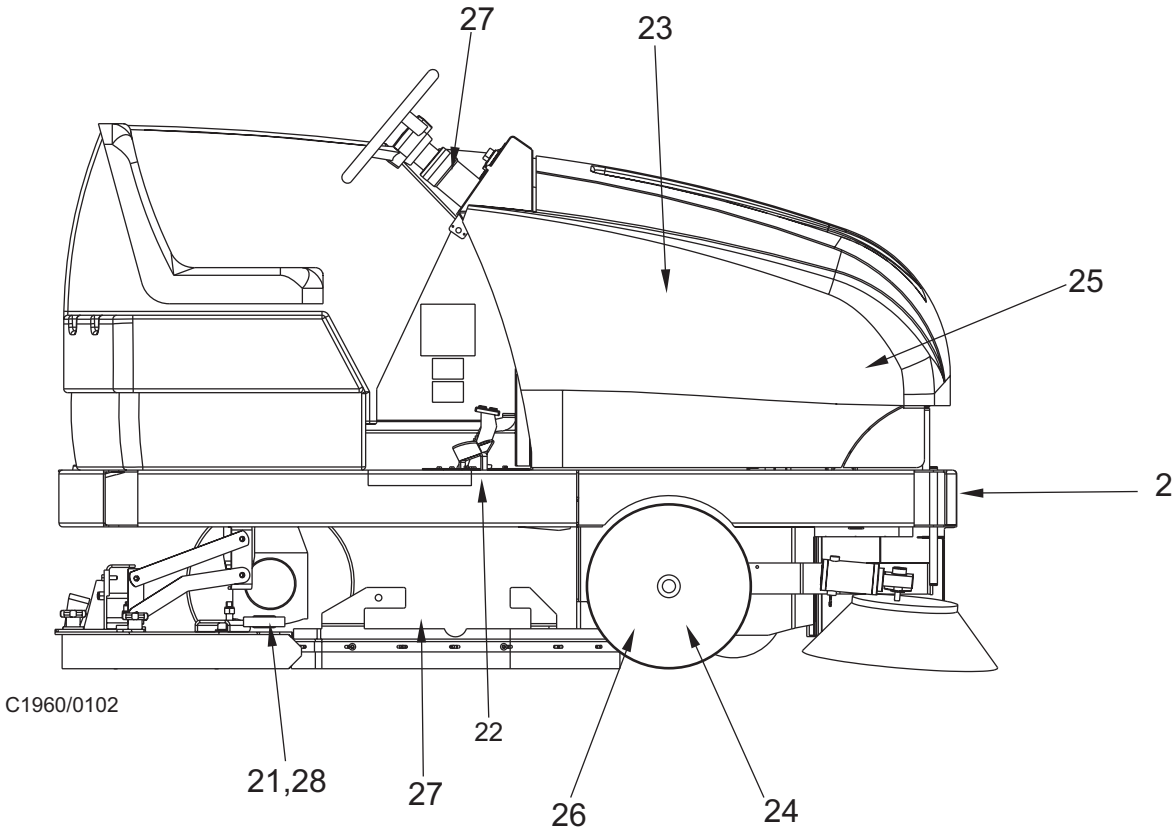
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Figure 23

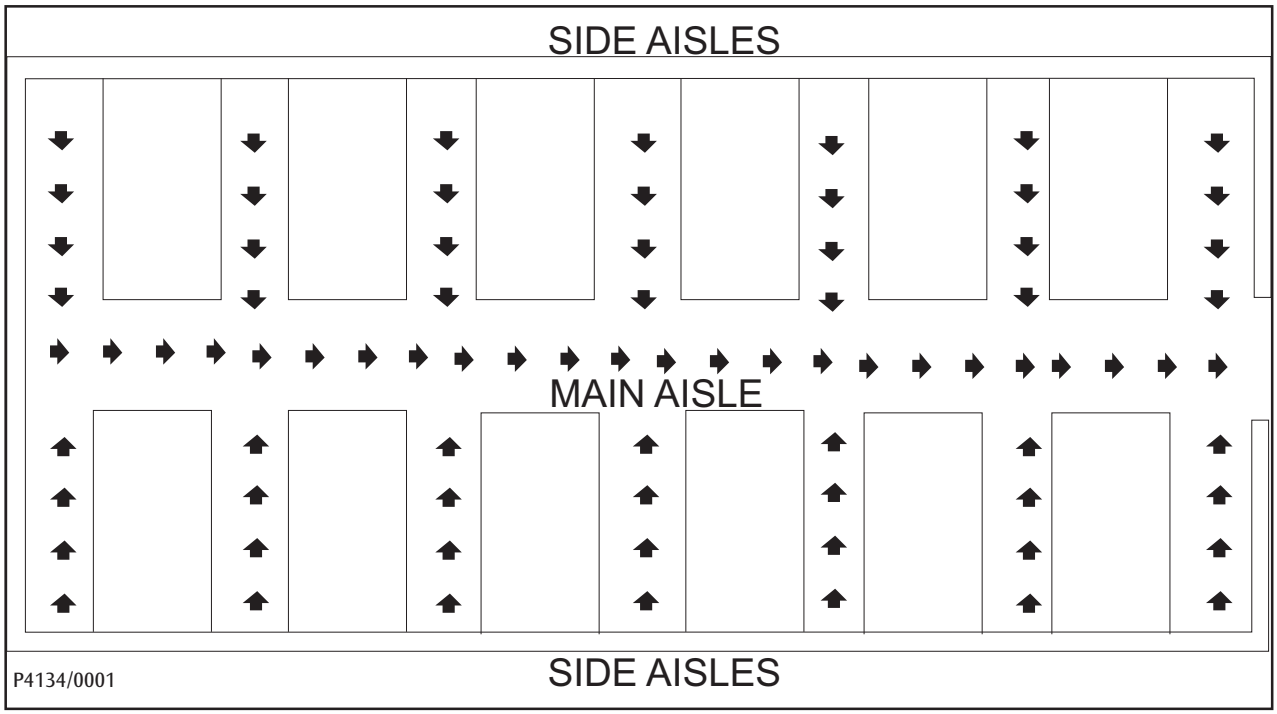


Figure 24

WARNING

Do not turn the steering wheel sharply when the machine is in motion. The machine is very responsive to movement of the steering wheel. Do not make sudden turns. Scrub in straight paths. Do not bump posts. Do not scrape the sides of the machine.

1. Plan your sweeping and scrubbing in advance. Try to arrange long runs with minimum stopping and starting. Sweep debris from narrow aisles out into main aisles ahead of time. Do an entire floor or section at one time.
2. Pick up oversize debris before sweeping.
3. Allow a few inches of overlap of sweep and scrub paths. This will eliminate leaving dirty patches.
4. Do not turn steering wheel too sharply when the machine is in motion. The machine is very responsive to movement of the steering wheel, so avoid sudden turns.
5. Try to follow as straight a path as possible. Avoid bumping into posts or scraping the sides of the machine.
6. Always allow the machine to warm up before operating in cold temperatures.
7. Periodically turn the sweeping broom end-over-end to prevent the bristles from “setting” in one direction.

NOTE

Replace the sweeping broom when the bristles are worn to 3 inch (8 cm) length. Replace disc brushes when bristles are reduced to ½ inch (1.3 cm) in length. Replace squeegee rubbers when all usable edges have become rounded with wear, impairing the wiping action.

For safety, read and follow the service precautions below. Know the hazards associated with the equip ment you are working on to prevent personal injury or damage to equipment.

For service assistance, consult you nearest American Lincoln Technology Dealer. For best performance replace worn parts with genuine American Lincoln Technology parts.

Refer all Maintenance and Service requirements to Qualified Maintenance Personnel.

 **WARNING**

DO NOT attempt to service this machine until you have read and understand all Safety Warnings associated with the equipment you are working on.

 **WARNING**

Electrical repairs must be done by authorized personnel only. Consult your American-Lincoln Authorized Service Person to do service procedures. Use only genuine American-Lincoln parts.

 **WARNING**

Unexpected movement could cause injury. Always park on a level surface, turn key off, and engage parking brake before working on the machine.

 **WARNING**

Maintenance and repairs must be done by authorized personnel only. Always empty the hopper and disconnect the batteries before doing any maintenance. Keep all fasteners tight. Keep adjustments according to the specifications as shown in the Service Manual for this machine.

 **WARNING**

Always wear eye protection and protective clothing when working near batteries. Do not put tools or other metal objects across the tops of the batteries. NO SMOKING.

 **WARNING**

The hopper could fall and cause serious injury. Always engage the hopper safety arm before working under the hopper.

 **WARNING**

Moving the fan and belt may cause injury. Stay clear of moving parts.

 **WARNING**

Pinch points may cause injury. Stay clear of moving parts.

 **WARNING**

To maintain the stability of this machine in normal operation, the overhead guard, or any similar equipment installed by the manufacturer as original equipment should not be removed. If it becomes necessary to remove such equipment for repair or maintenance, this equipment must be reinstalled before the machine is placed back in operation.

 **WARNING**

To prevent injury or engine damage, do not remove the radiator cap under any conditions while the engine is running or when it is hot. To prevent burns from steam or scalding hot coolant being expelled from the radiator, use extreme care when removing the radiator cap. Wait until the engine has cooled.

SWEEPING SYSTEM SERVICE

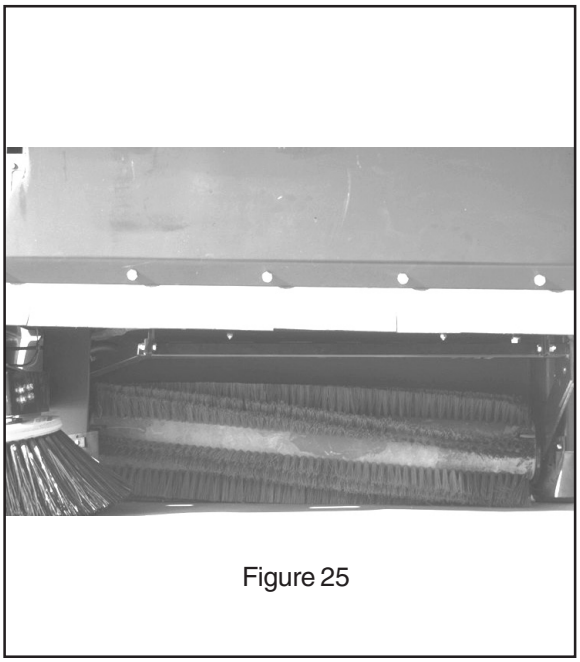


Figure 25

MAIN BROOM

To prevent the broom from “setting” in one direction and to provide the maximum life of the broom it is recommended that the broom be turned end over end periodically.

ADJUSTING THE MAIN BROOM HEIGHT

When changing the sweep height adjustment it is recommended that the knob be adjusted 1 turn at a time. After adjustment, recheck the sweep pattern to determine if further adjustment is necessary.

Turn the adjustment knob counterclockwise to IN-CREASE the sweep pattern width.

Turn the adjustment knob clockwise to DECREASE the sweep pattern width.

Figure 26

REPLACING THE MAIN BROOM

The Main Broom should be replaced when the bristles become worn to less than 3". The main broom is held in place by the right side broom door. This feature provides for easy removal and installation of the main broom without the need for special tools or equipment. Follow the instructions below for main broom removal & replacement.

1. Park sweeper on a smooth level surface, engage park ing brake, turn key switch to “O”, place the main/side broom switch in the “SWEEP” position.
2. Open the main broom door.
3. Swing the broom drive idler hub out to clear the main broom.
4. Remove the broom from the broom compartment.
5. Install the replacement broom. Pay special attention to the slots on the broom, it may be necessary to rotate the broom so the tabs on the drive hub align with the slots on the broom.
6. Swing the idler hub to engage the main broom and close the access door. Check the door latch for proper engage ment when closed.
7. Check the Main Broom sweep pattern and adjust as necessary.

SIDE BROOMS SERVICE

Figure 27

SIDE BROOM

The Side Broom sweeping angle is not adjustable however the height of the side brooms can be adjusted to compensate for wear as the broom becomes worn from use. Always check and adjust the sweep pattern after changing the side broom.

ADJUSTING THE SIDE BROOM HEIGHT

Turn the side broom adjustment knob to change the side broom sweep height. Recheck for proper sweep pattern after adjustment.

Turn the adjustment knob counterclockwise to IN-CREASE the sweep pattern width.

Turn the adjustment knob clockwise to DECREASE the sweep pattern width.

Figure 28

REPLACING THE SIDE BROOM

Change the side brooms when the bristles become worn to less than 3 inches length.

1. Park the machine on a smooth level surface, turn key switch to “O” Position and engage parking brake.
2. Place the side brooms switch in the “UP” position.
3. Remove the lock pin that holds the broom flange to the motor shaft.
4. Disassemble the flange from the broom by removing the screws that hold the flange to the broom.
5. Assemble the flange to the replacement broom and fasten using the hardware removed.
6. Install the replacement broom on the shaft and insert the lock pin.

HOPPER SERVICE

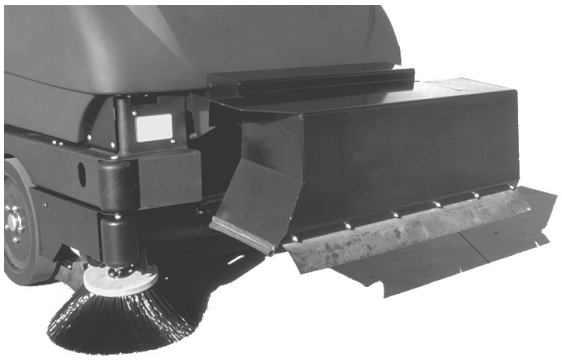


Figure 29

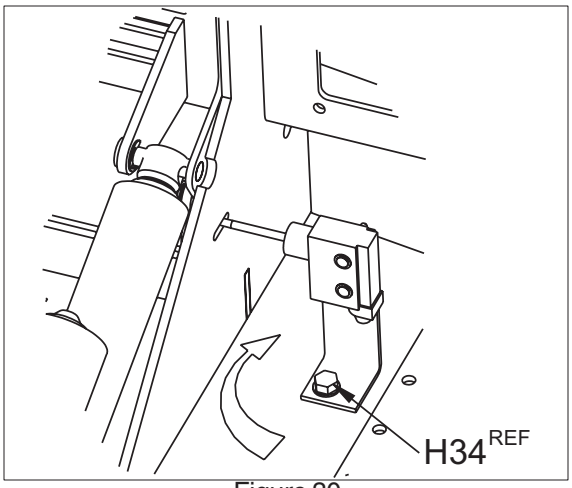


Figure 30

HOPPER

The hopper houses the debris compartment, the dust control filter and the removable dust baffle. For maximum performance and service life, keep the hopper clean and inspect the seals and flaps daily. Clean the hopper prior to parking the sweeper at the end of the day. A clean hopper will make inspecting the flaps and seals much easier and will prevent premature deterioration of hopper components. Do not leave the hopper full of debris while in storage or when parked for extended periods of time

CLEANING THE HOPPER

Once the hopper has been emptied the insides of the hopper should be rinsed out with water.

AJDUSTING THE HOPPER SWITCH

With hopper fully closed and seated and bolt loose, rotate the bracket clockwise until the switch clicks. Retighten bolt. (See Figure 30).

DUST CONTROL FILTER

The dust control filter should be checked daily for damage and cleaned if necessary. A damaged filter must be replaced to prevent damage to other dust control system components. Inspect the filter for tears in the filter media or excessive dirt lodged in the pleats. A tear in the filter media will allow dirt to pass through the filter and can be easily seen as a dirty patch on the top side on the filter. Cleaning of the filter is necessary when the filter shaker fails to adequately clean the pleats.

CHECKING THE DUST CONTROL FILTER

1. Park the machine on a smooth level surface, turn the key switch to the “O” position and engage the parking brake.
2. Raise the hopper lid for access to the filter compartment.
3. Turn the filter latch, lift the filter frame and remove the filter.
4. Inspect the panel filter for tears and clean or replace if necessary.
5. Reinstall the filter, lower the filter frame and engage the filter latch.
6. Close the hopper cover.

CLEANING THE DUST CONTROL FILTER

Clean the dust control filter when the shaker fails to adequately clear the filter. The filter can be cleaned with compressed air not to exceed 100 PSI.

To clean the filter with compressed air, apply the compressed air to the top side of the panel to back flush the lodged dirt from the filter pleats. Be careful to not damage the filter media while cleaning. The filter can be cleaned with a solution of soap and water. If this cleaning method is used do not use the filter until it has completely dried.

HOPPER SERVICE - Cont.

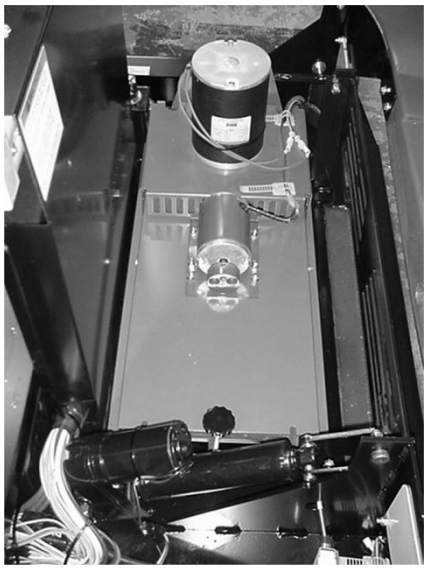


Figure 31

REPLACING THE DUST CONTROL FILTER

Change the filter panel when damage is evident.

1. Park the machine on a smooth level surface, turn the key switch to the “O” position and engage the parking brake.
2. Open the hopper compartment cover to gain access to the filter compartment.
3. Turn the latch on the hinged frame counterclockwise and lift the frame .
4. Remove the filter panel.
5. Install replacement filter, lower the hinged frame and engage the latch.
6. Lower the filter compartment cover.

DUST FLAPS

The dust flaps are very important to sweeping and dust control and are susceptible to damage and should be inspected daily and maintained in good condition.

CHECKING THE DUST FLAPS

The dust flaps are used on the wheel well, broom chamber and broom door. Inspect the flaps daily and replace any flap that shows signs of wear or deterioration. All flaps should be replaced when worn or damaged to the point that they can no longer perform their normal function. The adjustable flaps have slotted mounting holes to facilitate adjustment.

ADJUSTING THE DUST FLAPS

Adjust the flaps so there is a 1/8" to 1/16" gap between the floor and the bottom edge of the flaps. The rear flapadjustment is 1/16" (16 cm.) above the floor.

1. Park the machine on a smooth level surface and engage the parking brake.
2. Loosen the flap retaining screws and adjust the flap to clear the floor and leave a 1/16" to 1/8" gap.
3. Tighten flap retaining screws while holding flap in position.
4. Drive the machine on a smooth surface and recheck the flaps for proper floor clearance.

PARKING BRAKE SERVICE

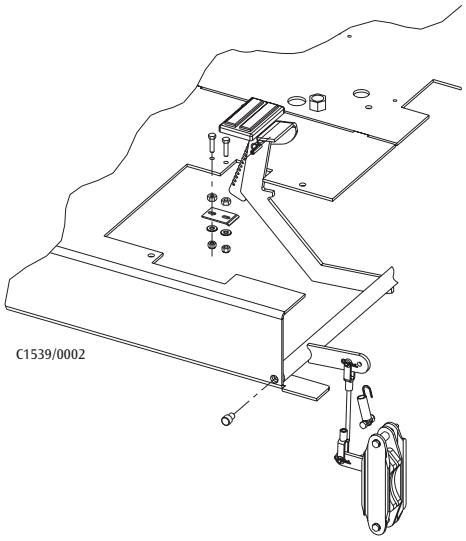


Figure 32

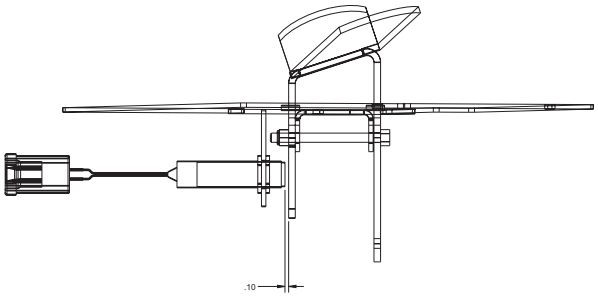


Figure 33

PARKING BRAKES

The parking brakes are located on the front wheels. They are operated by the brake pedal and the lock lever. Check the parking brakes daily for proper operation and inspect the brake pads for wear every 100 hours of operation.

ADJUSTING THE BRAKE PEDAL

Perform this adjustment to ensure proper pedal height and linkage operation. The brakes are properly adjusted when the brakes hold the sweeper on an 8 degree ramp. The brakes need adjusted if the Pedal travels closer than 1 inch to the floor of the operator's compartment when the brakes are fully engaged.

WARNING

The hopper could fall and cause serious injury. Always engage the hopper safety arm before working under the hopper.

WARNING

Always park on a level surface, chock tires and observe safety procedures when adjusting the brakes.

ADJUSTING THE PARKING BRAKES

When adjusting the brake clevis, follow these steps.

1. Open cover.
2. Roll out battery on service cart
3. Remove Pin from clevis (U-Joint)
4. Adjust clevis clockwise to tighten brakes for maximum engagement.
5. With parking brake "off" rotate wheel with minimum drag (not completely free)

ADJUSTING THE FOOT THROTTLE SWITCH

With the foward/reverse pedal in the neutral position, the switches can be adjusted to .100" of face on the forward/reverse pedal.

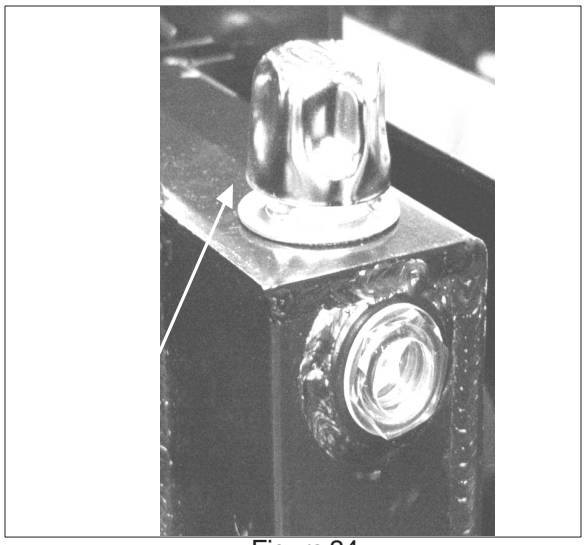


Figure 34

FILLING THE HYDRAULIC RESERVOIR (Figure 29)

1. Access to the hydraulic reservoir is located in the engine compartment.
2. Open the hydraulic reservoir breather filter cap.
3. Remove any debris that is in the breather filter cap screen.
4. Fill the reservoir until the fluid is at the “FULL” line on the hydraulic fluid sight gauge. The sight gauge is located on the center side of the hydraulic res ervoir.
5. Close the hydraulic reservoir breather filter cap.
6. Close the engine compartment cover.

CLEANING THE HYDRAULIC SYSTEM

1. Put a drop cloth on the floor.
2. Drive the machine onto the drop cloth.
3. Set the parking brake.
4. Open the engine covers.
5. Put a container under the reservoir drain to catch the reservoir fluid. Pivot the reservoir out.
6. Remove the drain plug. The reservoir fluid will drain. Do not use the drained fluid to refill the hydraulic reservoir. Dispose of the used fluid.
7. Flush the interior of the hydraulic reservoir with clean fluid.
8. Put the reservoir plug, removed in step six, back in the hydraulic tank drain and tighten it. A pipe thread sealer is required on the plug.
9. Open the breather filter cap.
10. Fill the reservoir with new SAE 30W non detergent automotive transmission fluid. The capacity of the tank is 4.7 gal (17.79 liters). Fill to the “FULL” line on the hydraulic fluid sight gauge.
11. Close the breather filter cap. Rotate the reservoir into the engine compartment.
12. Replace the engine covers.

Figure 35

REPLACING THE RETURN FILTER ELEMENT

1. Replace the return filter element after 250 hours of machine run time.
2. Unscrew the fasteners from the filter assembly cover and retain.
3. Remove the cover and the compression spring and retain.
4. Discard the old filter element.
5. Position the new filter element inside the filter body.
6. Put the compression spring in position. Wipe the cover magnet free of any metal filings or debris.
7. Place O-ring (moisten with clean hydraulic fluid) and cover into position.
8. Reattach fasteners to the filter cover.
9. Clean any hydraulic reservoir fluid spills. The fluid can damage painted surfaces of the machine.

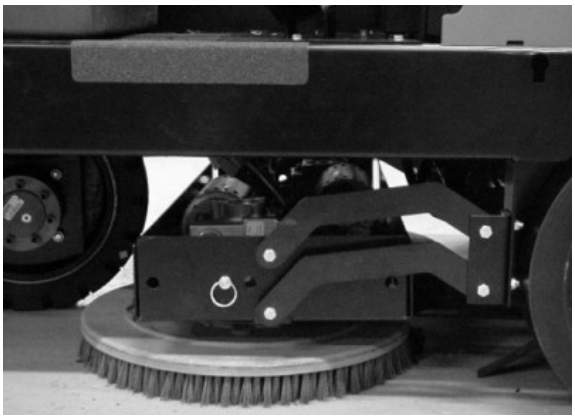


Figure 36

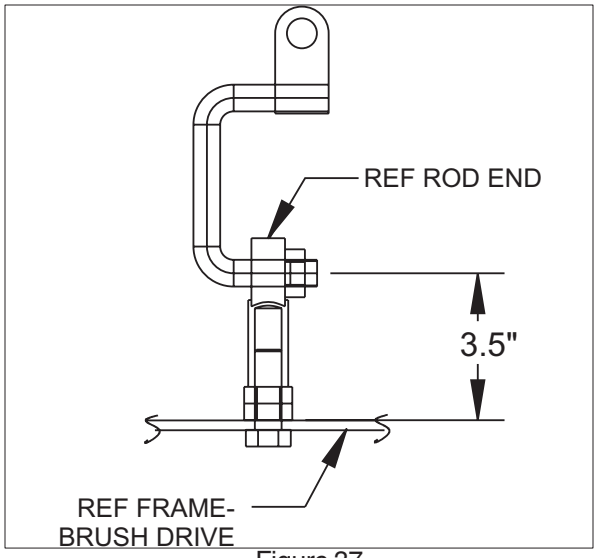


Figure 37

REPLACING THE SCRUB BRUSH

1. Raise the scrub brush deck by pressing the “Scrub Brush” switch on the instrument panel.
2. Press the brush latches in to release the scrub brush.
3. Remove the old scrub brush.
4. Snap the new brush into place.

ADJUSTING THE SCRUD DECK (See Figure 37)

Adjust the center of the rod end to 3.5” from the frame.

COVERS AND LATCHES

The covers have been designed to allow access, either by hinge or removal, to all areas of the machine. No maintenance is required.

SOLUTION LOW WARNING LIGHT

The solution low warning light will illuminate when the solution tank is low. This part of the level control system requires no maintenance. If the system fails to operate, consult the Electrical Troubleshooting Guide.

RECOVERY HIGH WARNING LIGHT

The recovery high warning will illuminate approximately 5 minutes before loss of vacuum to the recovery tank. This part of the level control system requires no maintenance, except for daily cleaning of the tank level switch. If the system fails to operate, consult the Electrical Troubleshooting Guide.

SOLUTION CONTROL (Non-Recycling or Standard)

The solution control knob controls the amount of solution applied to the scrubbing brushes.

The solution control should shut off completely with the knob in the “off” position. If complete shut off does not occur, the control valve should be adjusted.

SOLUTION CONTROL (Recycling or ESP System)

In the recycling mode, the solution control lever is also used to activate the detergent pump. If the detergent pump fails to operate (engine running) when the solution control lever is moved into the low to high range, first check the circuit by manually activating the switch. If the detergent pump does not operate at this time, a further electrical or mechanical check is required (see Electrical Troubleshooting Guide or Detergent Pump Troubleshooting).

RECYCLING PUMP ESP SYSTEM

The recycling pump is located under the seat. The pump is electric and except for daily cleaning of the pump intake screens, it requires no regular maintenance.

RECYCLING PUMP STORAGE

Always drain pump for extended storage, especially when freezing temperatures may be encountered.

REAR SQUEEGEE

The squeegee will require service when the inner edges of the blades become round with wear, impairing the wiping action or water pickup. To service the rear squeegee use the following steps:

1. Loosen the four aluminum knobs
2. Remove the squeegee tool and turn upside down to service the blades or caster wheels. The squeegee blades are designed to flip over and use another unworn edge.

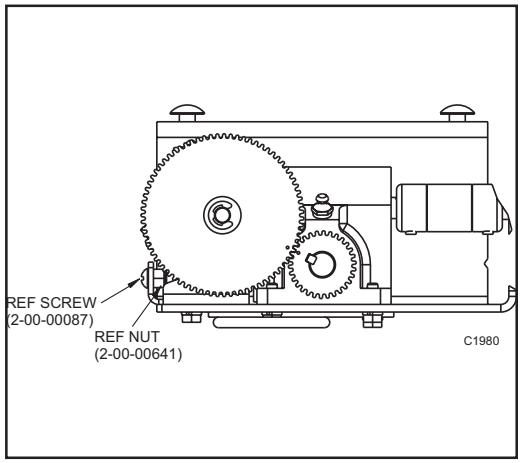


Figure 38

ADJUSTING THE REAR SQUEEGEE LIFT

1. Loosen nut (2-00-00641).
2. Turn screw (2-00-00087) either counterclockwise (to raise) or clockwise (to lower) to adjust the position of the squeegee lift. (The gap between the frame and the squeegee lift should be .75").

NOTE

Raising squeegee lift too far will cause the squeegee lift to hit the frame and may cause damage.

To service the blades

1. Loosen the clamp bolts which clamp items 8 & 9 together.
2. Loosen far enough to slip the end clamp brackets off the squeegee tool. This will allow flipping the blades or installing new blades.
3. Install blades so that the outer blade is 3/16" longer than the inner blades. This is achieved by assembling the top edge of the blade against the squeegee tool weldment.
4. Reinstall the squeegee clamp band and tighten the clamp bolt.

SQUEEGEE CASTER WHEELS

There are 2 grease fittings on each caster wheel. The casters should be greased each time the blades are serviced.

ADJUSTING CASTERS

Lower the squeegee on a flat surface, making sure the rear squeegee blade is perpendicular to the surface. Adjust the caster 3/16" above the flat surface. Lock the jam nuts.

Figure 39

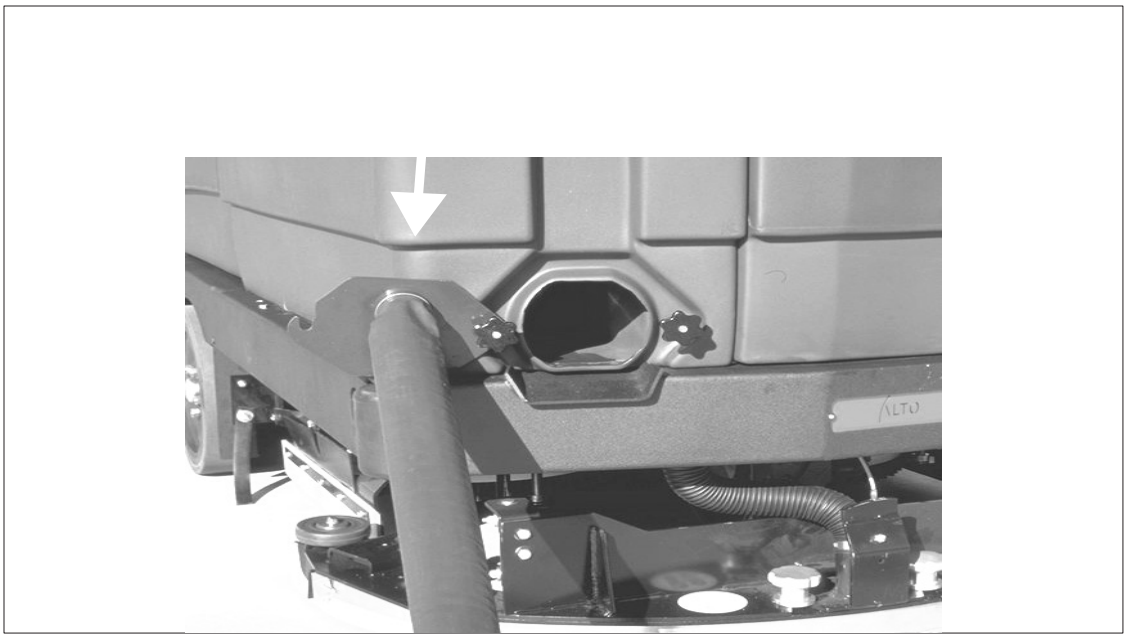


Figure 40

EMPTYING THE RECOVERY TANK (Figure 36)
Simply lower the drain hose, telescope out to a drain and let the recovery tank drain. The farther you telescope the hose the faster the water will drain.

When finished draining recovery tank loosen both knobs on the recovery clean out door. The door will pivot on the left knob, allowing room to let any debris to be sprayed out of the recovery tank with a water hose or pressure washer.

ABBREVIATIONS - SCREWS

ADJ	=	Adjusting Screw
ADJ.SP	=	Adjusting Plunger Screw
BHM	=	Binding Head Machine Screw
BHS	=	Button Head Socket Screw
CAPT.SL	=	Captivated Slotted Screw
CAPT.WG	=	Captivated Wing Screw
FHM	=	Flat Head Machine Screw
FIL.HM	=	Filister Head Machine Screw
HHC	=	Hexagon Head Cap Screw
HHM	=	Hexagon Head Machine Screw
HIHD	=	1/2 High Head Screw
HSHC	=	Hexagonal Socket Head Cap Screw
HSFHC	=	Hexagonal Socket Flat Head Cap Screw
KNH	=	Knurled Head Screw
MHHC	=	Metric Hexagon Head Cap Screw
PHM	=	Pan Head Machine Screw
RHD	=	Round Head Drive Screw
RHM	=	Round Head Machine Screw
RHW	=	Round Head Wood Screw
SHC	=	Shiny Crown Cap Screw
SHTB	=	Shoulder Thumb Screw
SQ	=	Square Head Screw
TB	=	Thumb Screw
THM	=	Truss Head Machine Screw
WELD	=	Weld Stud
WG	=	Wing Screw

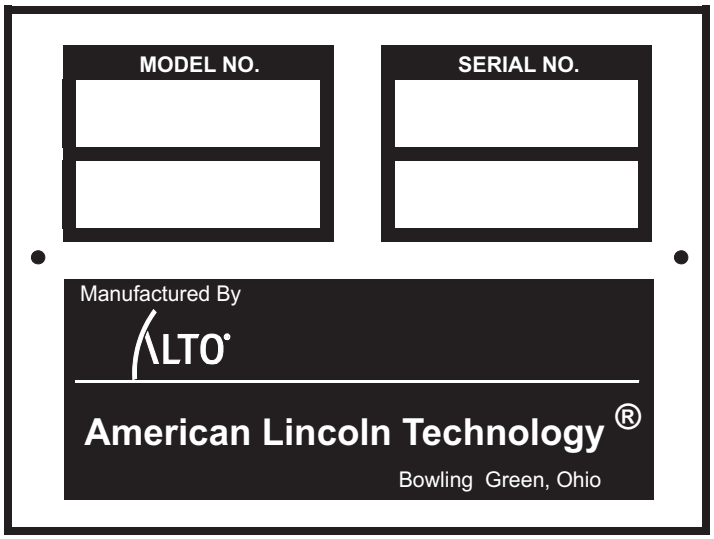
ABBREVIATIONS - SETSCREWS

HS	=	Hexagonal Socket Setscrew
S	=	Slotted Setscrew
SH	=	Square Head Setscrew
-KCP	=	Knurled Cup Point Setscrew
-CP	=	Cup Point Setscrew
-OP	=	Oval Point Setscrew
-FDP	=	Full Dog Point Setscrew
-HDP	=	Half Dog Point Setscrew
-FP	=	Flat Point Setscrew
-COP	=	Cone Point Setscrew

C-2004

Figure 36

Parts may be ordered from American-Lincoln authorized distributors. Inspect the Alto U.S. serial plate to avoid delays in filling you orders:



1. Use the model number, catalog number, and serial number when ordering.
2. Give the part number, description, and quantity of parts needed.
3. Give shipping instructions for either freight, UPS, or parcel post.

Parts and supplies listed in this manual can be ordered from the following address:

Alto U.S., Inc. **American Lincoln Technologies**	**Alto U.S., Inc.** **Distributor**
1100 Haskins Road **Bowling Green, Ohio 43402** **(800) 331-7692**	

MACHINE CATALOG NUMBER

505-310	SMART 2000 40" Sweeper/Scrubber
505-311	SMART 2000 46" Sweeper/Scrubber
505-318	SMART 2000 40" Sweeper/Scrubber w/ Dust Control
505-319	SMART 2000 46" Sweeper/Scrubber w/ Dust Control