

Operator manual-



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A-4 / ENGLISH

INTRODUCTION

This manual will help you get the most from your Nil sk sweeper / scrubber. Read it thoroughly before operating the machine.

PARTS AND SERVICE

Repairs, when required, should be performed by your Authorized Nil sk Service Center, who employs factory trained service personnel, and maintains an inventory of Nil sk original replacement parts and accessories.

MODIFICATIONS

Modifications and additions to the cleaning machine which affect capacity and safe operation shall not be performed by the customer or user without prior written approval from Nil sk A/S. Unapproved modifications will void the machine warranty and make the customer liable for any resulting accidents.

NAMEPLATE

The Model Number and Serial Number of your machine are shown on the Nameplate, located on the wall of the operator's compartment. This information is needed when ordering repair parts for the machine. Use the space below to note the Model Number and Serial Number of your machine for future reference.

MODEL _____

SERIAL NUMBER _____

Note: Reference the separately supplied engine manufacturer's maintenance and operator manual for more detailed engine specification and service data.

UNPACKING THE MACHINE

Upon delivery, carefully inspect the shipping crate and the machine for damage. If damage is evident, save all parts of the shipping crate so that they can be inspected by the trucking company that delivered the machine. Contact the trucking company immediately to file a freight damage claim.

MACHINE OPERATION**FIGURE 1**

YOUR CR1500 MACHINE HAS BEEN SHIPPED COMPLETE, BUT DO NOT ATTEMPT TO OPERATE WITHOUT FOLLOWING THESE INSTRUCTIONS.

PREPARING THE MACHINE FOR OPERATION

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

 WARNING

Never fill tank while engine is running. Always be sure fuel container and sweeper are electrically connected before pouring fuel. This can easily be done by permanently attaching one end of an insulated wire to the container with battery clip on the opposite end.

3. Check engine crankcase oil level. Although properly lubricated at factory, check before starting engine. No special brand oil is used. 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 mix 1 part water to 1 part antifreeze.
5. Check oil level in the hydraulic reservoir located at center of machine beside the engine. Oil level should be two (2) inches (5 cm.) below filler neck assembly. If oil is required, add HYDRAULIC FLUID ONLY, automatic transmission fluid FORD type "F". After the first 50 operating hours, service must be performed on your engine to insure future high performance and trouble-free operation. See Maintenance.

CAUTIONS AND WARNINGS

SYMBOLS

Nil sk uses the symbols below to signal potentially dangerous conditions. Always read this information carefully and take the necessary steps to protect personnel and property.

DANGER!

Is used to warn of immediate hazards that will cause severe personal injury or death.

WARNING!

Is used to call attention to a situation that could cause severe personal injury.

CAUTION!

Is used to call attention to a situation that could cause minor personal injury or damage to the machine or other property.



Read all instructions before using.

GENERAL SAFETY INSTRUCTIONS

Specific Cautions and Warnings are included to warn you of potential danger of machine damage or bodily harm. This machine is for commercial use, for example in hotels, schools, hospitals, factories, shops and of ces other than normal residential housekeeping purposes.

DANGER!

- This machine emits exhaust gases (carbon monoxide) that can cause serious injury or death, always provide adequate ventilation when using machine.

WARNING!

- This machine shall be used only by properly trained and authorized persons.
- This machine is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge.
- While on ramps or inclines, avoid sudden stops. Avoid abrupt sharp turns. Use low speed down ramps.
- To avoid hydraulic oil injection or injury always wear appropriate clothing and eye protection when working with or near hydraulic system.
- Turn the key switch off (O) and disconnect the batteries before servicing electrical components.
- Never work under a machine without safety blocks or stands to support the machine.
- Do not dispense ammable cleaning agents, operate the machine on or near these agents, or operate in areas where ammable liquids exist.
- Do not clean this machine with a pressure washer.
- * Observe the Gross Vehicle Weight, GVW, of the machine when loading, driving, lifting or supporting the machine.

CAUTION!

- This machine is not approved for use on public paths or roads.
- This machine is not suitable for picking up hazardous dust.
- Use care when using scari er discs and grinding stones. Nil sk will not be held responsible for any damage to oor surfaces caused by scari ers or grinding stones.
- When operating this machine, ensure that third parties, particularly children, are not endangered.
- Before performing any service function, carefully read all instructions pertaining to that function.
- Do not leave the machine unattended without rst turning the key switch off (O), removing the key and applying the parking brake.
- Turn the key switch off (O) before changing the brushes, and before opening any access panels.
- Take precautions to prevent hair, jewelry, or loose clothing from becoming caught in moving parts.
- Use caution when moving this machine in below freezing temperature conditions. Any water in the solution or recovery tanks or in the hose lines could freeze.
- Before use, all doors and hoods should be properly latched.

SAVE THESE INSTRUCTIONS

CONSIGNES DE PRUDENCE ET DE SECURITE

SYMBOLES

Nil sk utilise les symboles reproduits ci-dessous pour attirer l'attention de l'opérateur sur des situations potentiellement dangereuses. Il est donc conseillé de lire attentivement ces indications et de prendre les mesures adéquates en vue de protéger le personnel et le matériel.

DANGER !

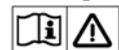
Ce symbole est utilisé pour mettre l'opérateur en garde contre les risques immédiats pouvant provoquer des dommages corporels graves, voire entraîner la mort.

ATTENTION !

Ce symbole est utilisé pour attirer l'attention sur une situation susceptible d'entraîner des dommages corporels graves.

PRUDENCE !

Ce symbole est utilisé pour attirer l'attention de l'opérateur sur une situation qui pourrait entraîner des dommages corporels minimes ou des dommages à la machine ou à d'autres équipements.



Lire toutes les instructions avant d'utiliser l'appareil.

CONSIGNES GENERALES DE SECURITE

Les consignes spéci ques de prudence et de sécurité mentionnées ici ont pour but de vous informer de la survenance de tout risque de dommages matériels ou corporels. Cette machine est destinée à un usage commercial et peut, entre autres, être utilisée dans les hôtels, écoles, hôpitaux, usines et bureaux. Elle n'a donc pas été conçue pour l'entretien ménager.

DANGER !

- Les gaz d'échappement (monoxyde de carbone) évacués par la machine peuvent entraîner de graves dommages corporels, voire la mort. Veuillez donc toujours à béné cier d'une ventilation suf sante lorsque vous utilisez la machine.

ATTENTION !

- Cette machine ne pourra être utilisée que par du personnel parfaitement entraîné et dûment autorisé.
- L'utilisation de cette machine n'est pas destinée aux personnes (notamment les enfants) qui souffrent de capacités physiques, sensorielles ou mentales diminuées, ou d'un manque d'expérience et de connaissances.
- Évitez les arrêts soudains lorsque la machine se trouve sur des rampes ou des pentes. Évitez les virages serrés. Adoptez une vitesse réduite lorsque la machine est en descente.
- Lorsque vous utilisez le système hydraulique ou travaillez à proximité de celui-ci, veillez à porter une tenue appropriée et des lunettes de protection a n d'éviter tout risque de blessures ou toute projection d'huile.
- Positionnez la clé de contact sur off (O) et déconnectez les batteries avant de procéder à l'entretien des composants électriques.
- Ne travaillez jamais sous une machine sans y avoir placé, au préalable, des blocs de sécurité ou des étais destinés à soutenir la machine
- Ne déversez pas d'agents nettoyants in amposables, ne faites pas fonctionner la machine à proximité de ces agents ou d'autres liquides in amposables.
- Ne nettoyez pas cette machine avec un nettoyeur à pression.
- * Respectez le poids brut du véhicule (PBV) de la machine quand vous chargez, conduisez, levez ou supportez la machine.

PRUDENCE !

- Cette machine n'est pas conçue pour une utilisation sur les chemins ou voies publiques.
- Cette machine n'est pas conçue pour le ramassage des poussières dangereuses.
- Faites extrêmement attention lorsque vous utilisez des disques de scari cateur et des meules. Nil sk ne pourra, en aucun cas, être tenu pour responsable des dommages occasionnés à vos sols par ce type d'équipement.
- Lors de l'utilisation de cette machine, assurez-vous que des tiers, et notamment des enfants, ne courent pas le moindre risque.
- Avant de procéder à toute opération d'entretien, veuillez lire attentivement toutes les instructions qui s'y rapportent.
- Ne laissez pas la machine sans surveillance sans avoir, au préalable, coupé le contact, enlevé la clé de contact (O) et tiré le frein à main.
- Positionnez la clé de contact sur off (O) avant de remplacer les brosses ou d'ouvrir tout panneau d'accès.
- Prenez toutes les mesures nécessaires pour éviter que les cheveux, les bijoux ou les vêtements amples ne soient entraînés dans les parties mobiles de la machine.
- Faites attention lorsque vous déplacez cette machine dans un endroit où la température peut descendre sous 0°. Car l'eau contenue dans la solution, dans les réservoirs de récupération ou dans les conduites risquerait de geler.
- Avant utilisation, toutes les portes et capots doivent être correctement fermés.

CONSERVEZ SOIGNEUSEMENT CES INSTRUCTIONS

OPERATIONS OF CONTROLS AND GAUGES

- | | |
|---|--|
| <p>A Water Temperature Gauge
 B Hour Meter
 C Fuel Gauge
 D Oil Pressure Gauge
 E Volt Meter
 F Main Broom Switch
 G Side Broom Switch
 H Dust Control Switch
 I Filter Shaker Switch
 J Ignition Switch
 K Light Switch
 L Glow Plug Switch (Diesel Only)
 M Side Broom Lift
 N Horn Push Button
 O Foot Brake
 P Backup Alarm Switch
 Q Accelerator & Directional Control Pedal
 R Seat Adjustment
 S Parking Brake</p> | <p>T Check Engine Light (Gasoline/LP)
 U Turn Signal
 V Throttle Diesel
 W Throttle Gasoline/LP
 X Solution Control
 Y Sweeping Broom Lift Control
 Z ESP Option
 AA Detergent Flow Knob
 AB Detergent Low Light
 AC Recycling System Switch
 AD Solution High Light
 AE Hopper Dump door
 AF Hopper Lift
 AG Low Solution Warning Light
 AH High Recovery Warning Light
 AJ Brush Pressure Switch
 AK Scrub Brush Lift Switch
 AL Squeegee Switch
 AM Brush Rotation Switch</p> |
|---|--|

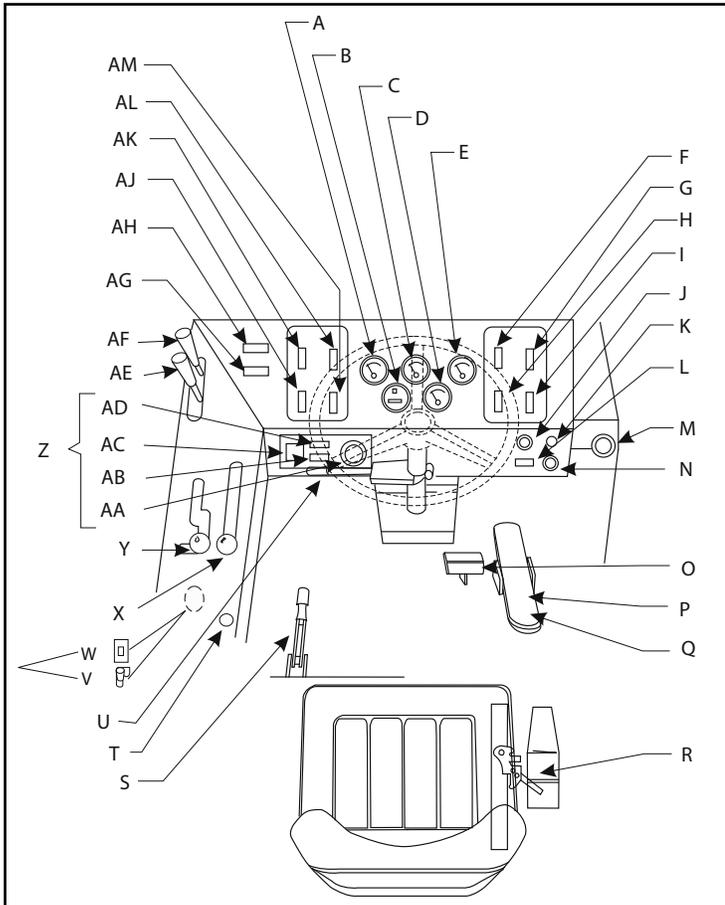


FIGURE 2

IGNITION SWITCH

The keyed Ignition Switch (J) is located to the right of the steering column on the front face of the instrument console. It has four positions.

1. The key turned to the center "OFF" position will shut off the engine. The following items can be activated in the "OFF" position.
 - (a.) Horn
 - (b.) Light Options
2. The key turned to the right "IGN/ON" position will allow all the following items to be activated (but will NOT start the engine):
 - (c.) Horn
 - (d.) Light Options
 - (e.) Turn Signals
 - (f.) Instrument Panel Gauges
3. The key turned to the far right "START" position will start the engine. This position is a momentary position. The key will revert to the "IGN/ON" position when it is released.

LIGHT SWITCH

The Light Switch (K) is located above the horn button to the right of the steering wheel. It will work various light options that are available for this machine, such as:

- * HEAD LIGHTS
- * TAIL LIGHTS
- * INSTRUMENT LIGHTS

All gauges, with the exception of the hour meter, can have an optional internal instrument light.

OPERATIONS OF CONTROLS AND GAUGES

4-WAY TURN SIGNAL (OPTION)

The Turn Signal Option (U) 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.

GLOW PLUG SWITCH (DIESEL)

Under no circumstances should any other unauthorized starting aids be used at the same time as Glow Plugs. The Glow Plug Switch (L) is located to the right of the steering column on the front face of the instrument console. Use the following procedure to operate:

1. Before operating the starter motor, press the "GLOW PLUG" button for 20 to 30 seconds.
2. With the "GLOW PLUG" button still depressed, engage the starter motor until the engine starts.
3. Continue to press the "GLOW PLUG" button for a few seconds after the engine has started until even running has been obtained.
4. If the engine does not start, disengage the starter motor, but keep the "GLOW PLUG" button depressed for an additional 10 to 15 seconds. Keep the Glow Plugs energized while starting the engine and for a few seconds after the engine has been running smoothly.

HORN PUSH BUTTON

The Horn Button (N) is located to the right of the steering column on the front face of instrument console. The horn button is always active. Push the horn button to sound the horn.

SIDE BROOM LIFT

The Side Broom Lift Lever (M) is located to the right of the instrument console. The handle pulled back and turned to the right will raise the side broom and lock it into position.

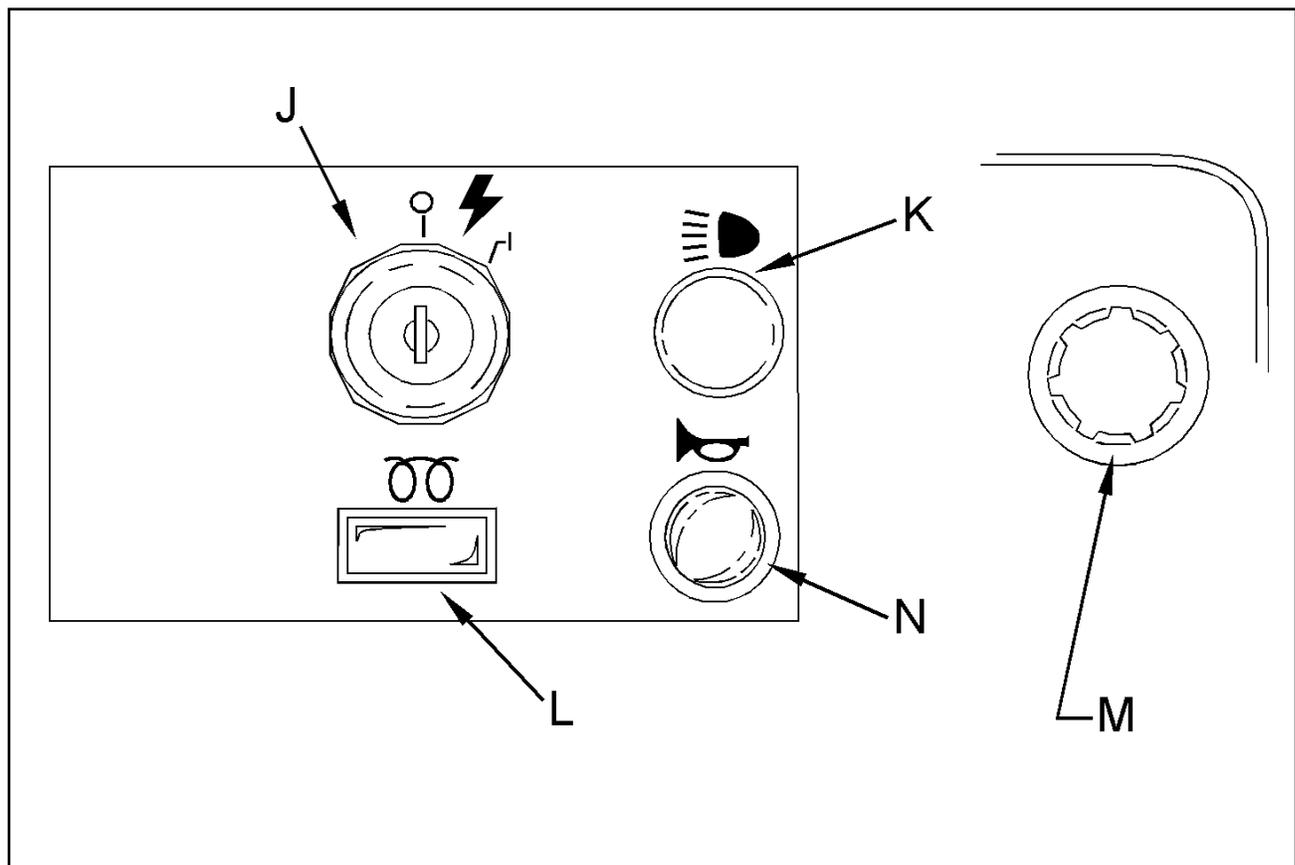


FIGURE 3

OPERATIONS OF CONTROLS AND GAUGES

MAIN BROOM SWITCH

The Main Broom Switch (F) is located on the console to the right of the steering wheel in the SWEEPING section. This switch will activate the Main Broom. This switch has two positions "ON" and "OFF". See Sweeping Broom Lift Control.

SIDE BROOM SWITCH

The Side Broom Switch (G) is located on the console to the right of the steering wheel in the SWEEPING section. This switch will activate the Side Broom. This switch has two positions "ON" and "OFF". See Side Broom Lift Control.

DUST CONTROL SWITCH

The Dust Control Switch (H) is located on the console to the right of the steering wheel in the SWEEPING section. This switch will activate the dust control system.

FILTER SHAKER SWITCH (VARIABLE DUMP MACHINES ONLY)

The Filter Shaker Switch (I) is located on the console to the right of the steering wheel in the SWEEPING section.

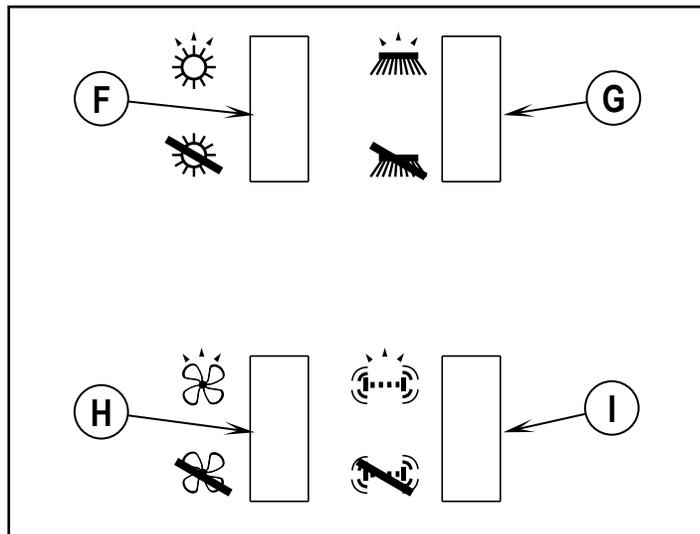
NOTE - (Variable Dump Machines Only)

THE MAIN BROOM SWITCH MUST ALWAYS BE PLACED IN THE OFF POSITION BEFORE SHAKING THE FILTER. FAILURE TO DO SO WILL RESULT IN DUST REMAINING ON THE SURFACE OF THE FILTER ENVELOPES INSTEAD OF DROPPING INTO THE HOPPER.

The button can be used when the ignition key is in the "ignition" position. The filter shaker control button is used during the sweeping cycle and the hopper unloading cycle. Use the filter shaker control switch to remove dust from the filter. Use the following procedures to operate the filter shaker control switch:

1. After the machine has made a long sweeping run, turn the broom switch to the "OFF" position.
2. Push the filter shaker control switch for 5 to 15 seconds to allow the filter to unload.
3. Turn the broom switch to the "ON" position. Repeat this procedure after each long sweeping run.

FIGURE 4



NOTE - (Variable Dump Machines Only)

The main broom, side broom, dust control and filter shaker turn off automatically when the hopper is dumping and/or the dump door is in a closed position. SEE HOPPER LIFT and HOPPER DUMP DOOR.

OPERATIONS OF CONTROLS AND GAUGES

WATER TEMPERATURE GAUGE

The Water Temperature Gauge (A) is located on the console panel above the steering wheel in the gauge cluster. The gauge is mechanical and activated by a sender in the engine. It displays the engine coolant temperature in Fahrenheit.

HOURLY METER

The Hour Meter (B) is located on the console panel above the steering wheel in the gauge cluster. This meter is activated when the engine begins running. The meter indicates actual "run" time of the machine. The meter can be used to determine machine maintenance intervals.

FUEL GAUGE

The Fuel Gauge (C) is located on the console panel above the steering wheel in the gauge cluster. This gauge indicates the level of fuel contained in the fuel tank.

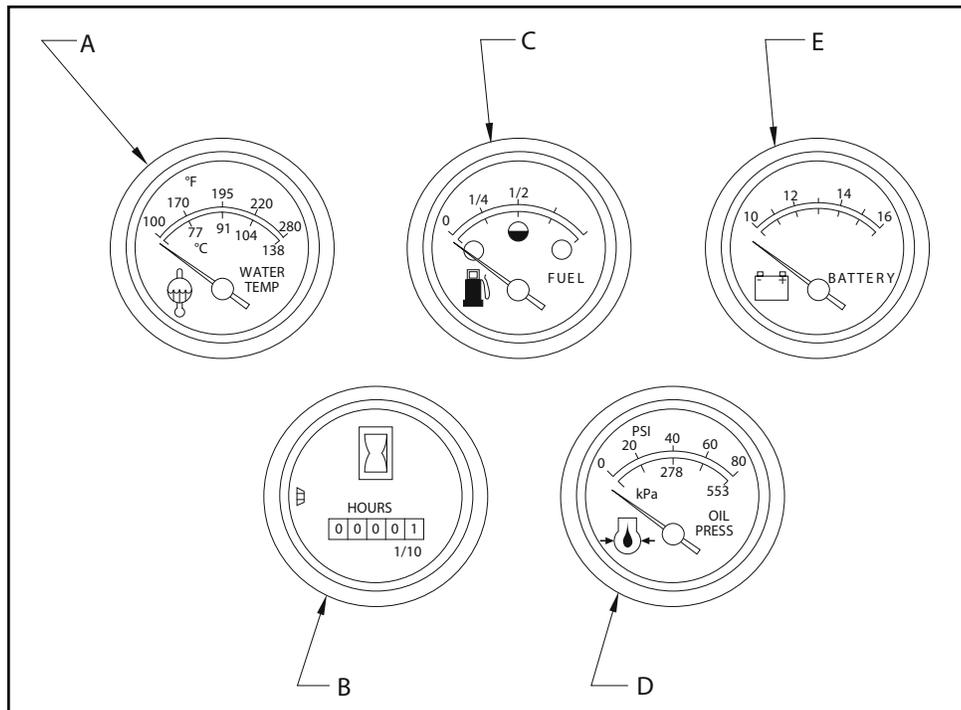
OIL PRESSURE GAUGE

The Oil Pressure Gauge (D) is located on the console panel above the steering wheel in the gauge cluster. The gauge is mechanical and activated by a sender in the engine. It displays the engine oil pressure in PSI.

VOLT METER

The Volt Meter (E) is located on the console panel above the steering wheel in the gauge cluster. The gauge indicates the charge level of the battery.

FIGURE 5



OPERATIONS OF CONTROLS AND GAUGES

SCRUB BRUSHES SWITCH

The Brushes Switch (**AK**) is located on the console to the left of the steering wheel in the “SCRUBBING” section. This switch in the position marked “LOWER” will lower the scrub brush deck and activate the three scrub brushes. The Brush Rotation Switch (**AM**) and the Brush Pressure Switch (**AJ**) can not be activated unless this switch is in the “LOWER” position. This switch in the “RAISE” position will stop the brushes from rotating and raise the scrub brush deck.

BRUSH ROTATION SWITCH

The Brush Rotation Switch (**AM**) is located on the console to the left of the steering wheel in the “SCRUBBING” section. This switch reverses the rotation of the scrub brushes. This switch has two positions, “NORMAL” and “REVERSED”. This switch can not be activated unless the Scrub Brush Lift Switch is in the “LOWER” position. The switch will light when activated.

BRUSH PRESSURE SWITCH

The Brush Pressure Switch (**AJ**) is located on the console to the left of the steering wheel in the “SCRUBBING” section. This switch applies additional downward pressure to the scrub brushes. This switch has two positions, “NORMAL” and “HEAVY”. This switch can not be activated unless the Scrub Brush Lift Switch is in the “LOWER” position. The switch will light when the switch can be activated.

SQUEEGEE BLADE SWITCH

The Squeegee Blade Switch (**AL**) is located on the console to the left of the steering wheel in the “SCRUBBING” section. This switch in the position marked “LOWER” will lower the squeegee and activate the squeegee vacuum. This switch in the “RAISE” position will stop the squeegee vacuum and raise the squeegee. A switch activated by the forward-reverse foot pedal will automatically raise the squeegee if it is in the lowered position and the machine is in reverse.

HIGH RECOVERY WARNING LIGHT

The High Recovery Warning Light (**AH**) is located on the console to the left of the steering wheel beside the “SCRUBBING” section. The recovery warning light will illuminate approximately 5 minutes before the recovery tank is full, giving ample time to complete the scrubbing cycle before the mechanical squeegee shuts off the vacuum to the recovery tank.

LOW SOLUTION WARNING LIGHT

The Low Solution Warning Light (**AG**) is located on the console to the left of the steering wheel beside the “SCRUBBING” section. The Solution Warning Light will illuminate when the solution tank is empty, marking the end of the scrubbing cycle.

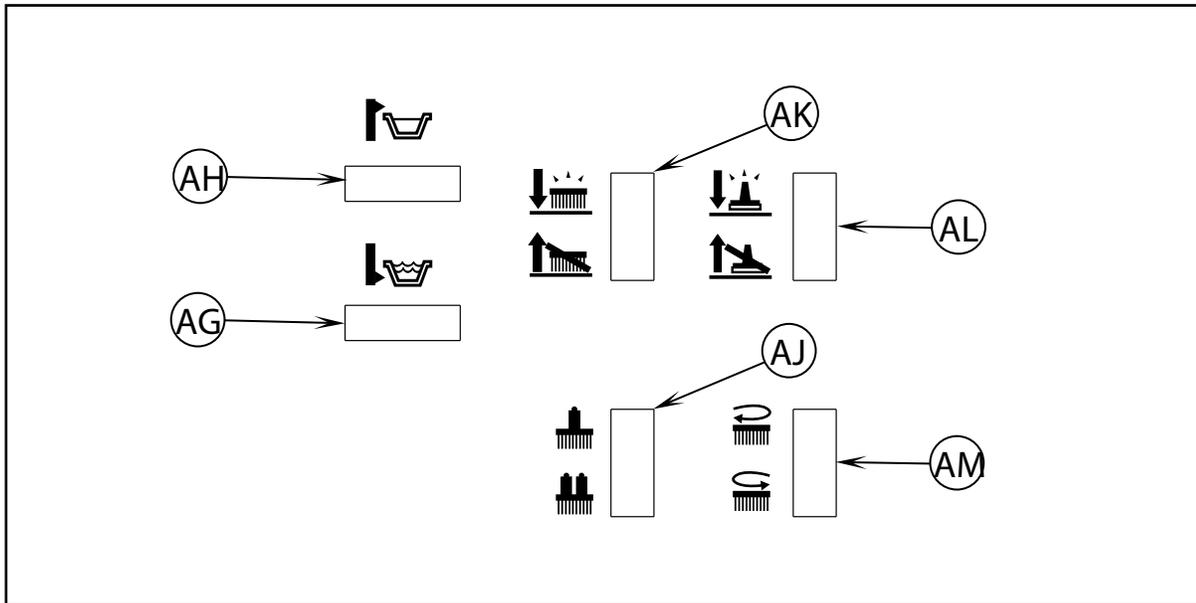


FIGURE 6

OPERATIONS OF CONTROLS AND GAUGES

HOPPER LIFT - (VARIABLE MACHINES ONLY)

The Hopper Lift Lever (AF) is located to the left of the steering wheel on the left side of the driver compartment. This lever, which is marked "HOPPER", raises and lowers the debris hopper to ease unloading.

⚠ WARNING

The hopper may drop unexpectedly and cause injury, always engage the safety arm before working under the hopper.

HOPPER SAFETY LOCK ARM (VARIABLE DUMP ONLY)

⚠ WARNING

When the hopper is raised the safety arm must be engaged before any work is done under the hopper

The Hopper Safety Lock Arm is located under the hopper assembly. After the work is complete, the safety arm must be disengaged.

HOPPER DUMP DOOR - (VARIABLE DUMP MACHINES ONLY)

The Hopper Dump Door Lever (AE) is located to the left of the steering wheel on the left of the driver compartment. This lever opens and closes the hopper door. This lever is located below the Hopper Lift Door and is marked "DUMP DOOR".

SOLUTION CONTROL

To apply solution to the scrubbing brushes, push the Solution Control Lever (X) forward until the desired setting is reached. The solution rate is continuously variable from off to approximately 1-3/4 GPM at low and 3-1/2 GPM at high. To stop application of solution, pull back on the lever until it stops at the "off" position. The solution warning light will illuminate when the solution tank is empty, marking the end of the scrubbing cycle.

NOTE

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

SWEEPING BROOM LIFT CONTROL

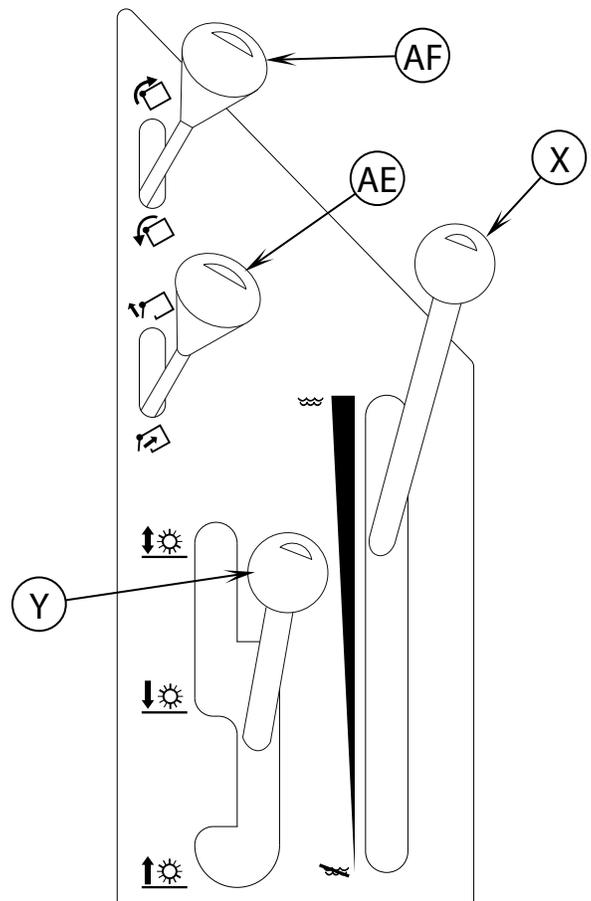
The Main Broom Lift Control (Y) is located to the left of the driver seat. To lower the main broom, grasp the lever and pull back to clear the locking notch. Move the lever forward to the first or second notch in the elongated slot. The first notch, "SWEEP", is for normal sweeping (2 to 3 inch [5 to 8 cm.] broom pattern). The second notch, "FLOAT", is for heavy sweeping (4 to 5 inch [10 to 13 cm.] broom pattern).

To raise the main broom, pull the lever back and slide into the locking notch. You may operate the main broom in either the "SWEEP" or "FLOAT" position. However, the "SWEEP" position should be used for normal sweeping and will result in increased broom life. The "FLOAT" position should be used only when sweeping extremely uneven areas.

NOTE - (Variable Dump Machines Only)

A switch triggered by the hopper and dump door position controls the sweeping functions, main broom, side broom, dust control, and filter shaker. The hopper must be down and the dump door open before these functions will work.

FIGURE 7



OPERATIONS OF CONTROLS AND GAUGES

THROTTLE CONTROL

See Figure 2. The Throttle Control (**V or W**) is located on the left side console. Gas and LP equipment have a Throttle Switch (**W**). Diesel versions have a Lever (**V**). To operate the diesel: For full throttle, grasp the lever and push up and right to the locking notch. To reduce to idle, grasp the lever and push it up and to the left (away from the locking notch). Let the lever lower until it rests at the bottom of the slot. "Load" (brooms and/or brushes and/or dust control operating) and "No Load" (brooms, brushes & dust control off) RPMs are the same for gas and LP equipment. There will be a slight drop between "Load" and "No Load" RPMs with diesels. Always return the throttle switch/lever to the idle position before turning off the key to stop the engine.

MACHINE		RPM's	
		IDLE	"NO LOAD"
SWEEPER / SCRUBBER (1 speed)	Gas/LP	950	2050
	Diesel	950	2150
SWEEPER (2 speed levels)	Gas/LP	1st	950
		2nd	950
	Diesel	1st	950
		2nd	950

CHECK ENGINE LIGHT (MIL) - GAS, LP ONLY

The Check Engine Light "MIL" (**T**) is located on the left side console. If the light comes on, it indicates a problem with the engine. Go to the GM Engine Service Manual, Section 7, for directions on how to diagnose the problem.

PARKING BRAKE

The Parking Brake Lever (**S**) is located in the left side of the driver compartment floor. See Figure 8. This lever, when raised to the upright position (**a**), will "lock" the foot brake pedal in the down position.

FOOT BRAKE

See Figure 2. The Foot Brake Pedal (**O**) is located to the right of the steering column on the floor of the driver compartment. See Figure 9. The foot brake on the front wheels is a mechanical system actuated by the brake pedal.

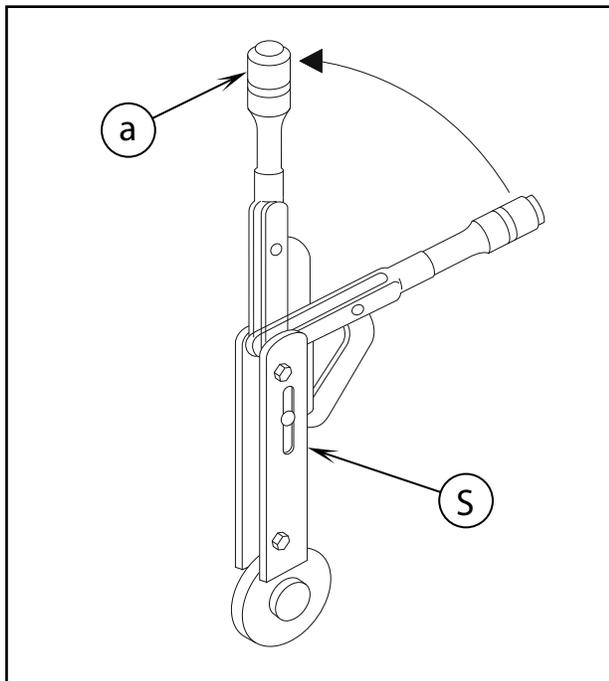


FIGURE 8

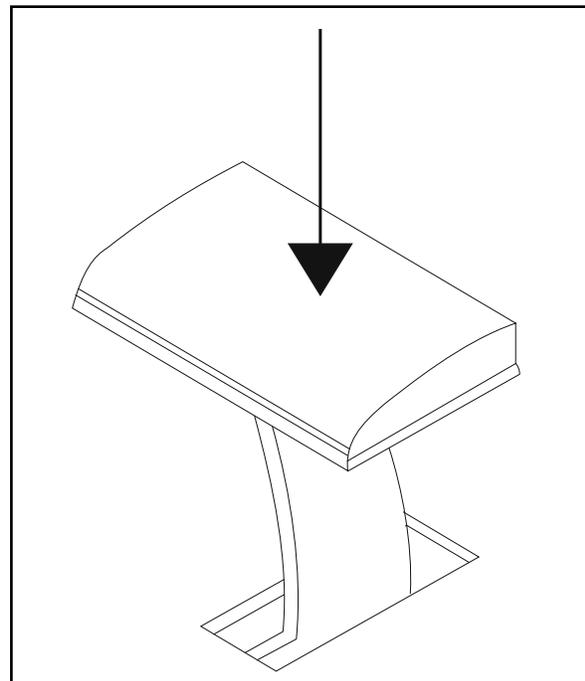


FIGURE 9

OPERATIONS OF CONTROLS AND GAUGES

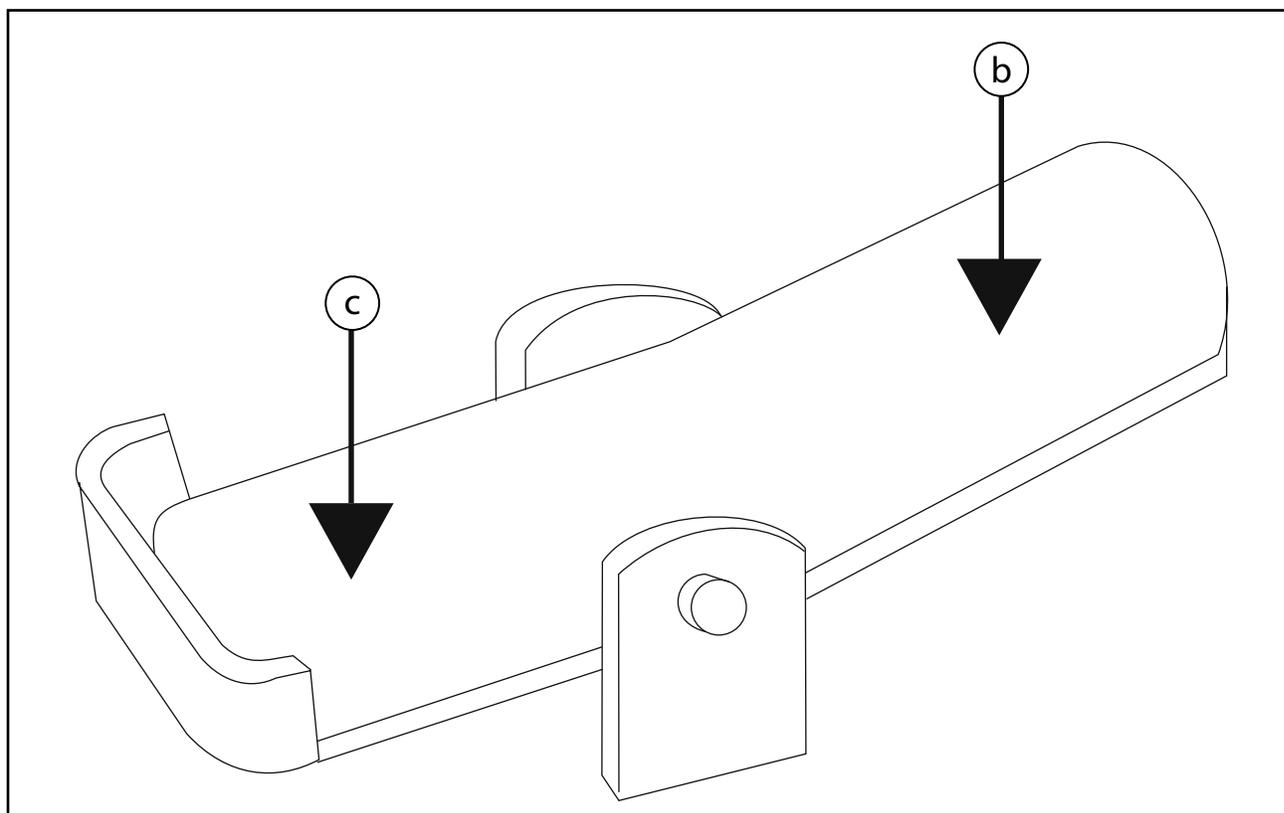


FIGURE 10

ACCELERATOR & DIRECTIONAL CONTROL PEDAL

See Figure 2. The Accelerator and Directional Control Pedal (**Q**) is located on the floor of the driver compartment, to the right of the brake pedal. The accelerator and directional control pedal controls machine direction and travel speed.

1. Put foot pressure on the upper portion of the pedal (**b**). The machine will move forward.
2. Increase the foot pressure on the upper portion of the pedal to increase the forward speed.
3. Put foot pressure on the lower portion of the pedal (**c**). The machine will move in reverse.
4. Increase the foot pressure on the lower portion of the pedal to increase the reverse speed.
5. To stop the machine, 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 lower portion of the pedal. If the machine is moving in reverse put light foot pressure on the upper portion of the pedal.

BACKUP ALARM SWITCH

See Figure 2. The Backup Alarm Switch (**P**) is located under the lower section of the accelerator and directional control pedal and operates the backup alarm. The alarm makes a loud audible noise when the machine is being driven in reverse.

SEAT ADJUSTMENT

See Figure 2. The Seat Adjustment Lever (**R**) is located on the right of the seat. This lever allows the seat to be adjusted forward or back when the lever is moved.

SCRUBBING SYSTEM OPERATING INSTRUCTIONS

THE ESP RECYCLING CONTROL PANEL

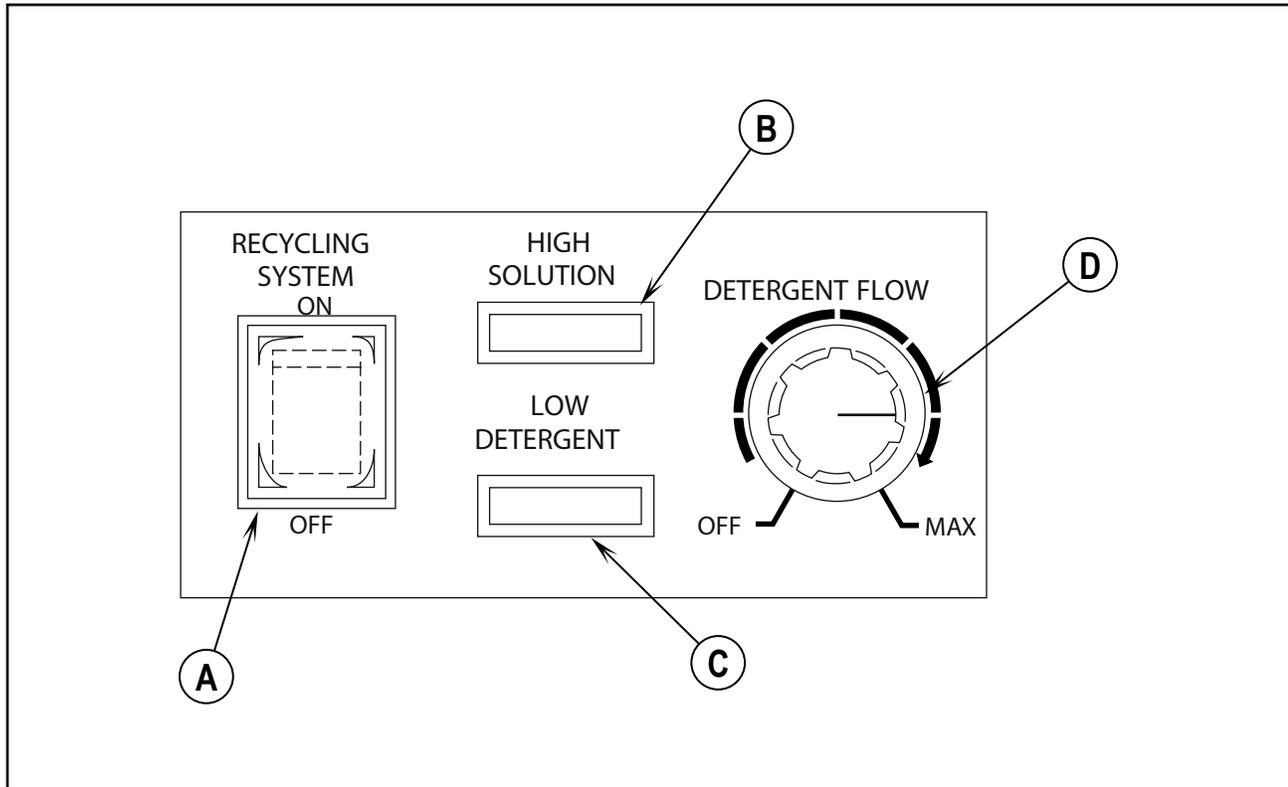


FIGURE 11

THE ESP RECYCLING SYSTEM ON/OFF SWITCH

See Figure 11. The ESP Recycling System ON/OFF Switch (A) turns the ESP recycling system on and off.

SOLUTION HIGH WARNING LIGHT

The Solution High Warning Light (B) will come on if the solution tank is too full of water from the recycling system.

DETERGENT LOW WARNING LIGHT

The Detergent Low Warning Light (C) will illuminate when the detergent tank is low, warning the operator to add detergent.

DETERGENT FLOW KNOB

The rotary Detergent Flow Knob (D) controls the detergent flow into the scrubbing solution. The operator may choose from any detergent setting, for light to heavy cleaning applications. The detergent light will illuminate when the detergent tank is low, warning the operator to add detergent.

SCRUBBING SYSTEM OPERATING INSTRUCTIONS

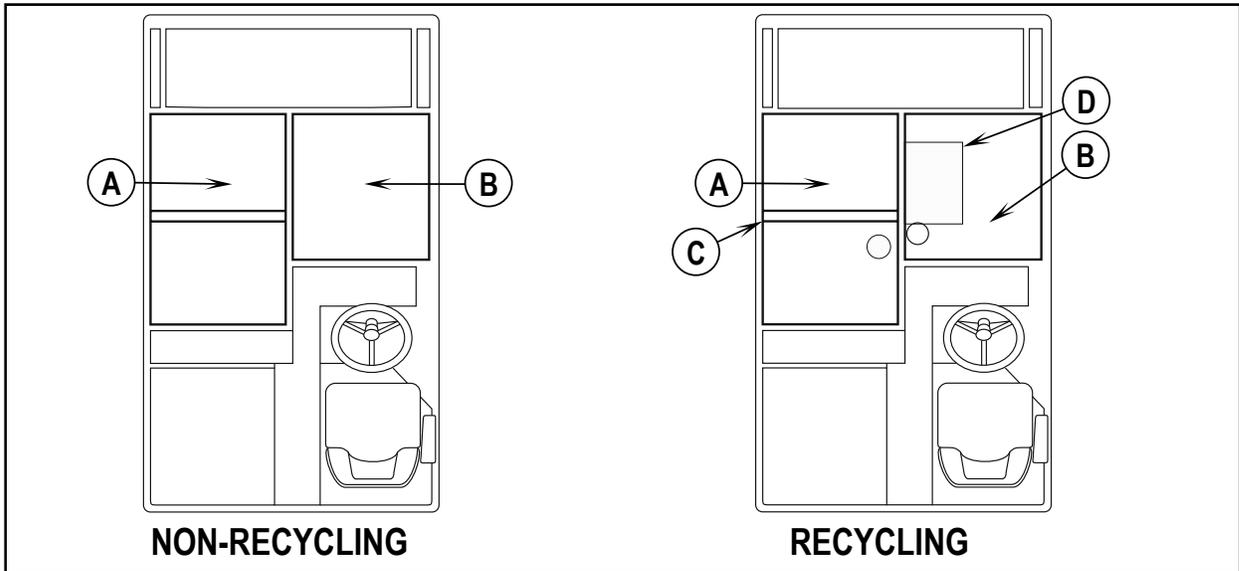


FIGURE 12

THE SCRUBBING SYSTEM - HOW IT WORKS

There are two scrubbing systems available for the CR1500 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 (shown in Figure 13), 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.

- A Recovery Tank
- B Solution Tank
- C Baffle
- D Detergent Tank
- E Check Valve
- F Solution Pump
- G Orifice
- H Filter
- I Flow Valve
- J Auto Valve
- K Detergent Pump
- L Scrub Brushes
- M Fill Coupling
- N Squeegee
- O Floor Contact
- P Solution Line
- Q Vacuum

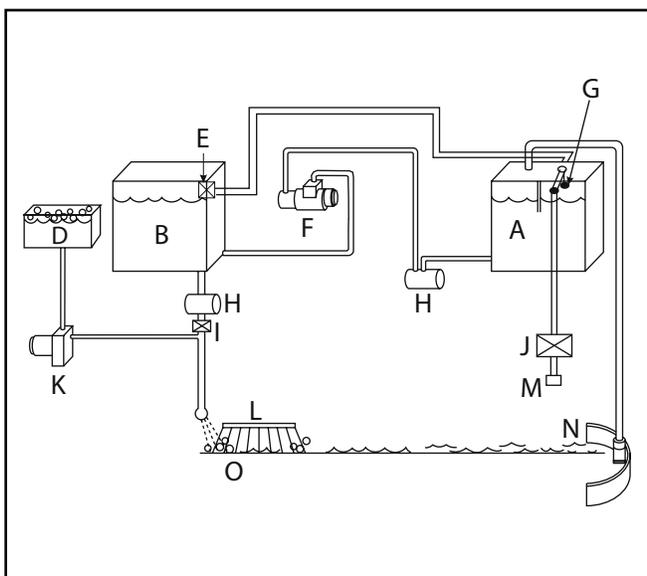


FIGURE 13

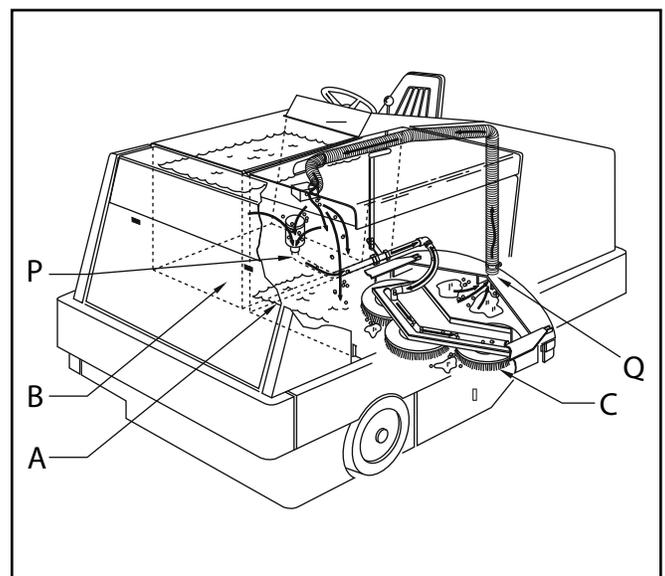


FIGURE 14

SCRUBBING SYSTEM OPERATING INSTRUCTIONS THE RECOVERY OR ESP SCRUBBING SYSTEM - HOW IT WORKS

During the scrubbing process (shown in Figure 15), filtered water from the solution tank is fed to the solution line, where it combines with detergent from the metering pump. 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 containment chamber in the forward portion of the recovery tank, where a system of baffles helps to clarify the solution on its way to the pumping chamber in the rear of the recovery tank. At intervals, a system of sensors activates the recycling pump, which sends filtered solution from the pumping chamber on its way to the solution tank. Here, it is ready to be mixed with fresh, metered detergent and repeat the cycle.

- A Recovery Tank
- B Solution Tank
- C Baffle
- D Detergent Tank
- E Check Valve
- F Solution Pump
- G Orifice
- H Filter
- I Flow Valve
- J Auto Drain Valve
- K Detergent Pump
- L Scrub Brushes
- M Fill Coupling
- N Squeegee
- O Floor Contact
- P Solution Line
- Q Vacuum

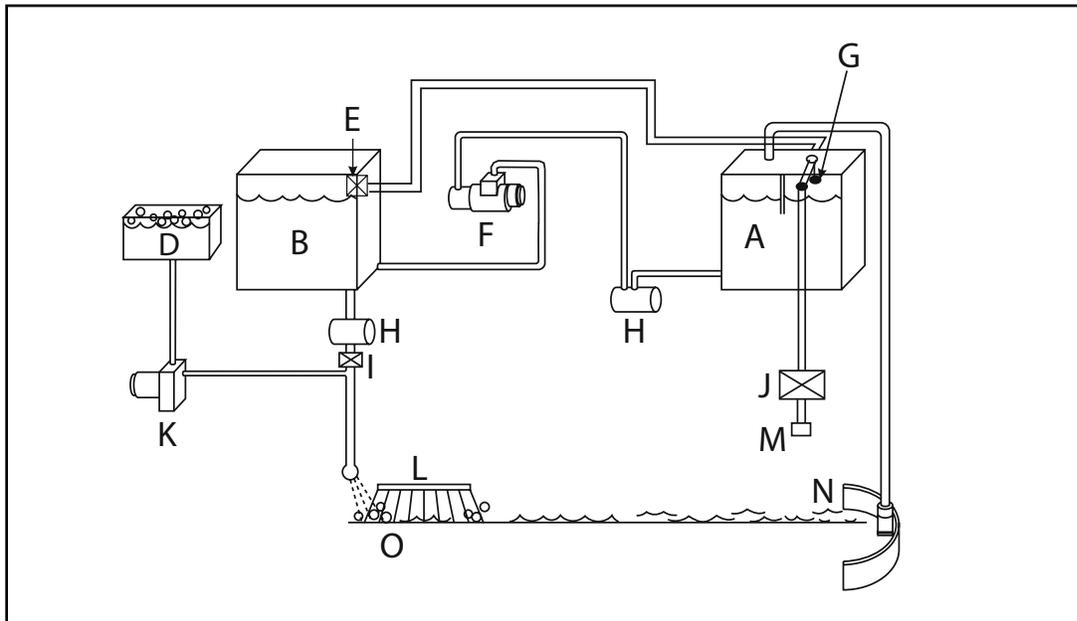


FIGURE 15

DUST CONTROL OPERATING INSTRUCTIONS
THE VARIABLE DUMP SWEEPING AND DUST CONTROL SYSTEMS - HOW THEY WORK

Variable Dump CR1500 machines are equipped with a sweeping and dust control system. Figure 16 shows the highest position for the variable dump.

- AE Hopper Door Lever
- AF Hopper Lift Lever

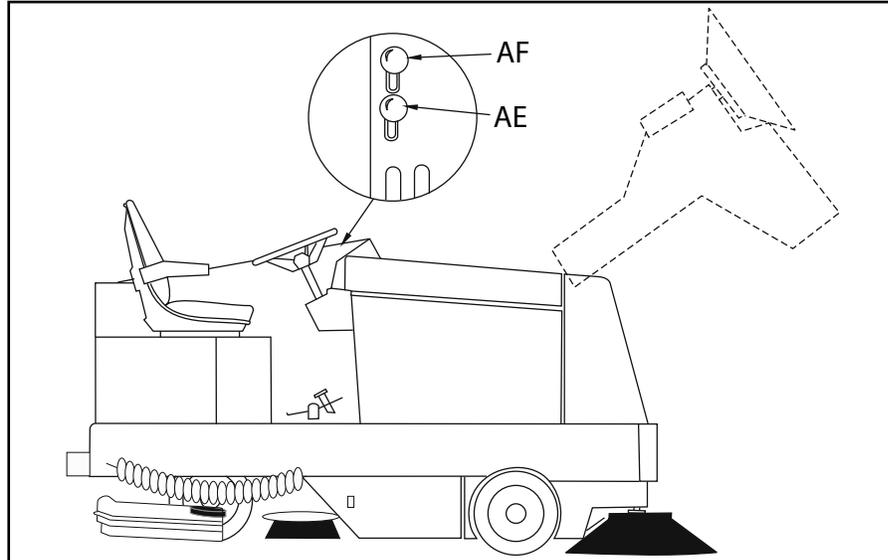


FIGURE 16

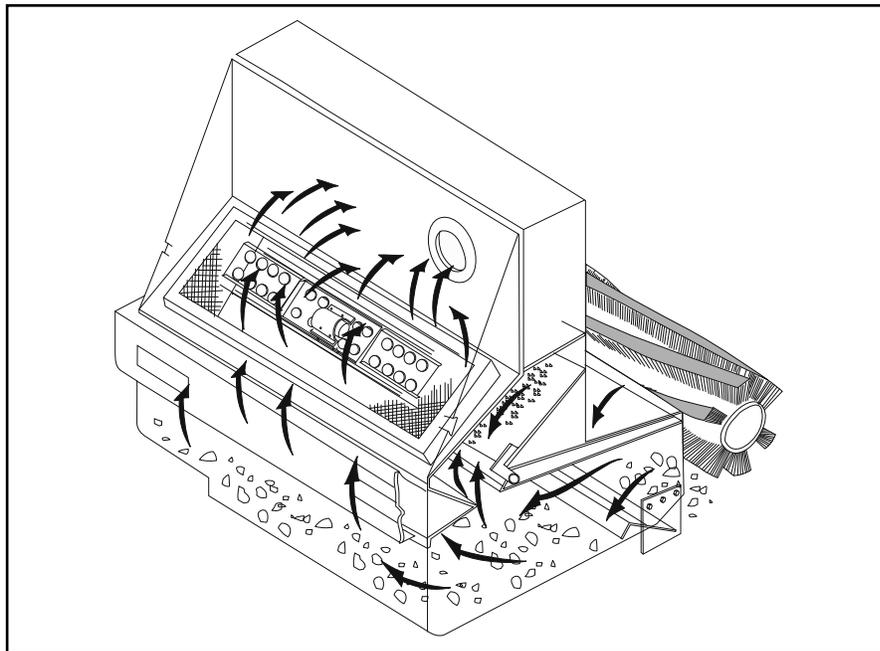


FIGURE 17

The debris from sweeping is thrown into the hopper (Figure 17). The baffle system that is built into the variable dump debris hopper is designed to minimize dust in the air while the machine is sweeping. The impeller vacuum fan pulls the lighter dust up and through a baffle system. The Pre-Clean Flap separates the heavier dust particles to an area below the filters. The dust filters capture the lighter dust particles. This allows the dust filters to remain cleaner and need less shaking to remove dust. When the dust filters become clogged the filter shaker switch should be pushed to start the dust shaker cycle. This will extend the life of the filters.

NOTE
TURN MAIN BROOM OFF FIRST

OPERATING INSTRUCTIONS FILLING THE SOLUTION TANK

NON-RECYCLING OR STANDARD SCRUBBING SYSTEM

1. Make sure the solution control lever is in the "Off" (rear) position.
2. Open the solution tank cover (right hand side).
3. Fill the tank with 100 gallons (378 L) of water and the correct mixture of American-Lincoln #100 Industrial Cleaner for the job.
4. Close the solution tank cover.

RECYCLING OR ESP SYSTEM

1. Make sure the solution control lever is in the "Off" (rear) position.
2. Open the solution tank cover (right hand side).
3. Fill the solution tank as outlined above with 100 gallons (378 L) of pure water.
4. Fill the detergent tank with 5 gallons (19 L) of American-Lincoln #100 Industrial Cleaner.
5. Close the solution tank cover.

NOTE

Fill recovery tank halfway with water for the ESP system

WARNING

To prevent over-sudsing and machine damage,
use only AMERICAN-LINCOLN Industrial Cleaning Solution #100.

WARNING

DO NOT put gasoline, combustibile or other ammable material
in the solution, recovery or detergent tanks.

NOTE

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

PRE-START CHECKLIST

1. Clean engine air filter element if needed
2. Check engine oil level
3. Check radiator coolant level
4. Check hydraulic fluid level
5. Check fuel level
6. Check all systems for leaks
7. Check brakes and controls for proper operation

BEFORE STARTING ENGINE

1. Set parking brake
2. Make sure all controls are in the "Off" position

TO START ENGINE

1. Be sure accelerator and directional control pedal is in neutral.
2. Turn key to "On" position and hold it until the engine starts.
3. If engine fails to start after following the above procedures, refer to Engine Manual.

WARNING

The manufacturer does not advise storing the machine in below-freezing temperatures unless all fluids have been drained from the detergent, solution and recovery tanks and associated systems. When machine has been stored in below-freezing temperatures, run engine at lowest possible settings and let machine sit 5-10 minutes to warm engine and hydraulic oil.

OPERATING INSTRUCTIONS

POST-START CHECKLIST (ENGINE RUNNING)

1. Check main and side brooms to make sure they are free of debris which will inhibit rotation & pick-up.
NOTE: Always wear hand protection when cleaning debris from brooms and/or brushes.
2. Check squeegees to make sure there is no damage and they meet the floor.

TO TRANSPORT MACHINE (NO SCRUBBING OR SWEEPING)

1. Be sure the brooms, brushes (scrub deck) and squeegee are in the "Up" position with all other controls in the "Off" position.
2. Release parking brake.
3. Push throttle control up.
4. Push forward on the directional control pedal to place the machine in motion.
5. Vary your foot pressure on the directional control pedal to obtain desired travel speed.
6. To stop, allow directional control pedal to return to neutral (centered) position. (Pedal will automatically return to neutral when foot pressure is released). FOR NORMAL OPERATION, DEPRESS DIRECTIONAL CONTROL PEDAL WITH HEEL INTO NEUTRAL.
7. Push engine throttle down. Turn key to "Off".
8. Set parking brake.

TO BEGIN THE CLEANING OPERATION

1. Choose the mode of operation (recycling ESP or non-recycling STANDARD) as dictated by the machine model or machine type.
2. Bring engine to full RPM.
3. Lower the main broom.
4. Lower the side broom.
5. Turn on the main and side brooms.
6. Sweep for the length of the machine.
7. Move recovery switch to the "On" position.
8. Lower the scrub brushes.
9. Lower squeegee to the "Lower" position.
10. Move solution control lever to the desired setting.
11. Turn on the Recovery Switch for the ESP Recycling system, if applicable.
12. Begin scrubbing operation.

Single sweep and scrub the average floor with light to medium soil. In this operation the cleaning is accomplished in one pass with simultaneous solution feed, sweeping, scrubbing and dirty water pick-up. The rate of solution feed and the speed of travel required will vary with floor condition. This knowledge will come with operator experience.

OPERATING INSTRUCTIONS HELPFUL HINTS FOR CLEANING OPERATION

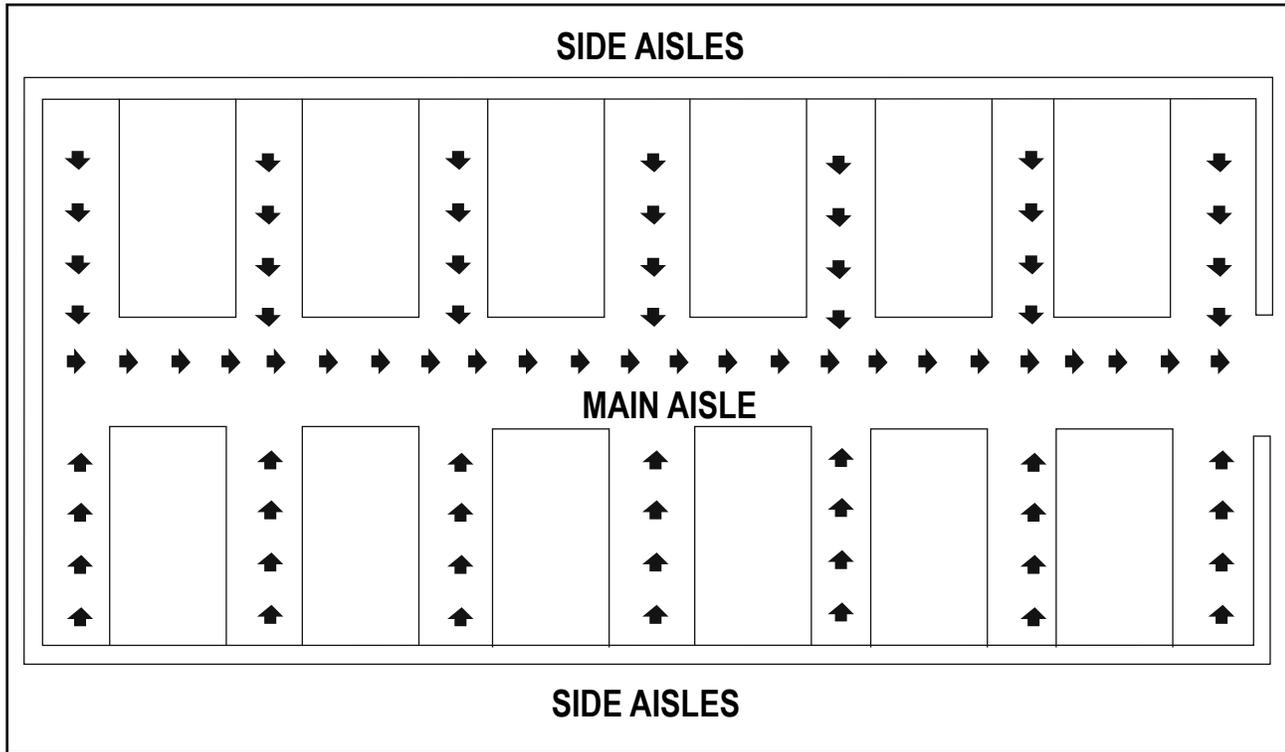


FIGURE 18

WARNING

Do not turn the steering wheel sharply when the machine is in motion. The sweeper 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.

When the machine is in motion, do not push the directional/speed control pedal all the way forward. This is the same as starting in "High" and will put a strain on the motor and drive system.

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 aisle ahead of time. Do an entire floor, or section at one time.
2. Pick up oversize debris before sweeping.
3. Allow a few inches overlap of sweep and scrub paths. This will eliminate leaving dirty patches.
4. Don't turn steering wheel too sharply when 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. When placing the machine in motion, avoid slamming the directional control pedal all the way forward quickly. This is equivalent to starting out in "HIGH" and puts needless strain on the engine and drive system.
7. Always allow the machine to warm up before operating in cold temperatures.
8. Periodically turn sweeping (main) broom end for end to prevent the bristles from "setting" in one direction.

NOTE

Replace sweeping broom when bristles are worn to 3-inch (8-cm.) length. Replace disc brushes when bristles are reduced to 1/2 inch (1.3 cm) in length. Replace squeegee blades when all usable edges have become rounded with wear, impairing the wiping action.

POST-OPERATION & CLEAN-UP INSTRUCTIONS

TO STOP THE CLEANING OPERATION

Discontinue the cleaning operation whenever a solution or recovery warning or stop light is illuminated.

The solution light will illuminate when the solution tank is empty. At this time, discontinue the scrubbing cycle, put all controls in position for transport and drive to the drain area. See instructions on how to drain and clean the recovery and solution tanks, and empty the debris hopper.

The recovery warning light will illuminate approximately 5 minutes before loss of vacuum to the recovery tank. This warning period should give ample time to complete the scrubbing cycle and transport or scrub to the drain area.

NOTE

After stopping the engine, perform this post-operation checklist.

POST-OPERATION CHECKLIST

1. Clean debris hopper.
2. Check sweeping broom for wear or damage.
3. Check all caps for wear, damage and adjustment.
4. Drain and clean solution tank (ESP system)
5. Clean solution filter screen (ESP system)
6. Drain and clean recovery tank.
7. Clean recovery tank screens and floats.
8. Check manifold and vacuum hoses for debris or obstructions, back flush if necessary.
9. Check scrub brushes for wear or damage.
10. Check rear and side squeegees for wear, damage and adjustment.
11. Fill fuel tank.
12. Check all systems for leaks.

TO DRAIN SOLUTION TANK (RECYCLING OPERATION) (ESP SYSTEM)

Draining the solution tank is accomplished by a 4-foot (92 cm.) long drain hose located under the frame channel. To drain the tank, lower the hose, remove the plug and drain. When the draining operation is completed, clean the solution tank as outlined below.

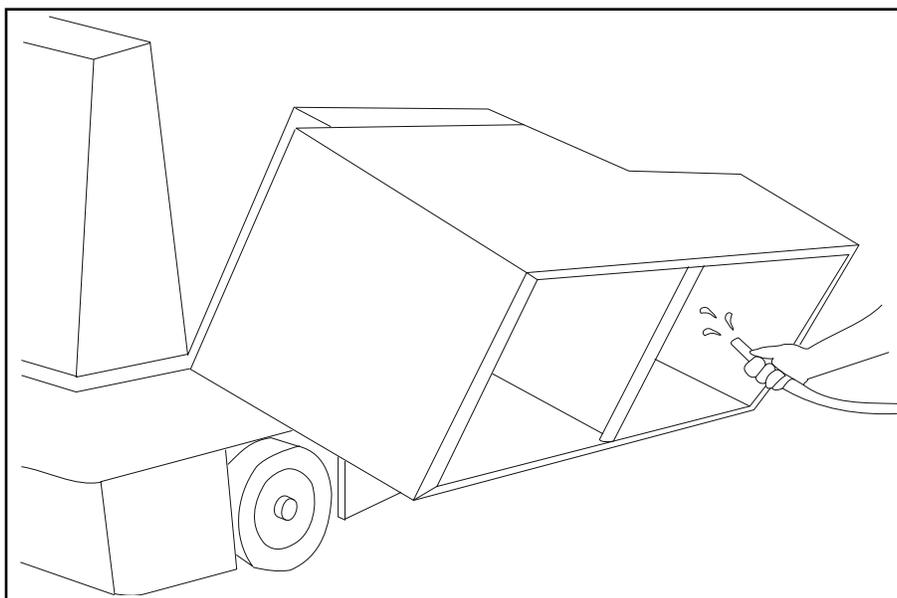


FIGURE 19

TO CLEAN SOLUTION TANK (RECYCLING OPERATION) (ESP SYSTEM)

Cleaning the solution tank is simplified by the large access cover. Flush all deposits from the tank, also flush all probes and the solution line strainer to remove any deposits - remove strainer if necessary. When the cleaning operation is completed, plug and replace the hose. Close and secure covers.

TO DRAIN RECOVERY TANK

A 4-foot long drain hose for the recovery tank is located under the frame channel. To drain the tank, lower the hose, remove the plug and drain. Open the recovery tank and remove the drain plug. When the draining operation is completed, flush and clean the recovery tank as outlined on the next page.

POST-OPERATION & CLEAN-UP INSTRUCTIONS

TO CLEAN RECOVERY TANK

The large access cover on the recovery tank simplifies the cleaning process. Once the recovery tank lid is opened, tip out the tank. With the recovery tank in the tipped out position (Figure 19), flush all sand, sludge, debris, etc. out of the tank with a water hose, then replace the tank and flush the manifold, ball float screen and level switch to remove any deposits. The tank lid should be removed and cleaned approximately every 50 running hours.

WARNING

Do not attempt to flush large amounts of tank debris through the drain hose - This will cause clogging and hamper future drainage. Always flush the recovery tank with clean water at the end of each cleaning cycle. Never let debris accumulate, settle and harden in the tank, tank lid, or on associated hardware.

AE Hopper Door Lever

AF Hopper Lift Lever

AN Tow Control Shaft

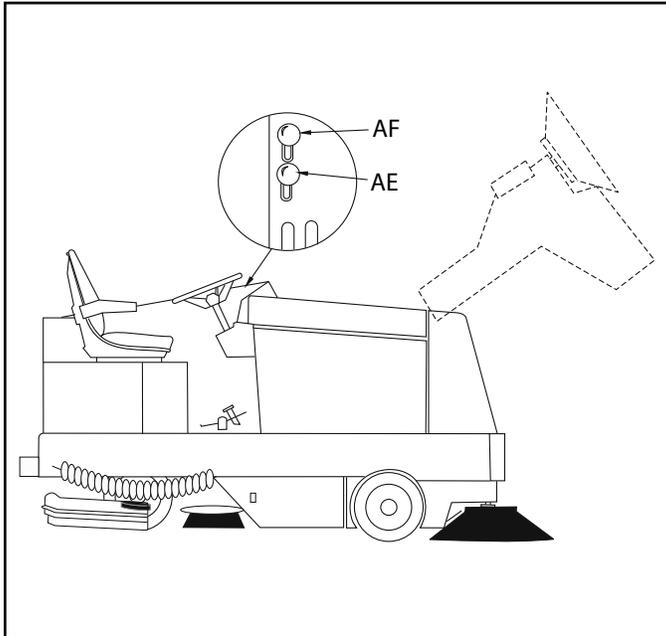


FIGURE 20

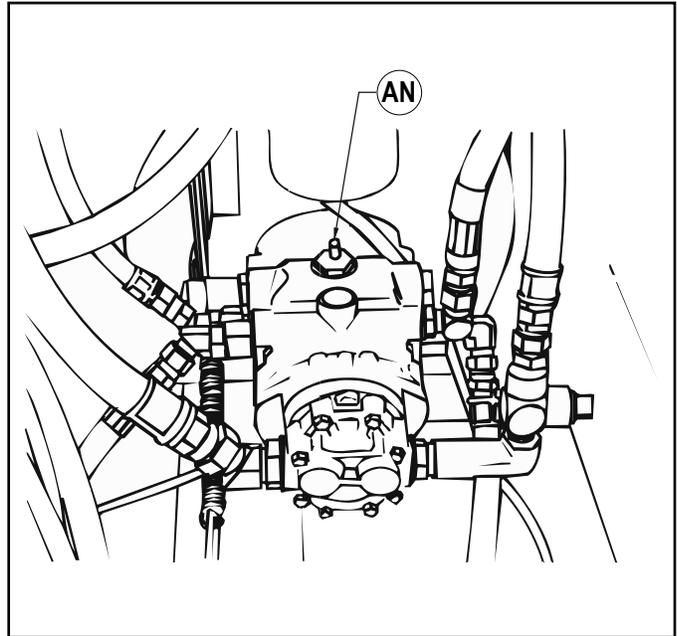


FIGURE 21

POST-OPERATION & CLEAN-UP INSTRUCTIONS**TO EMPTY DEBRIS HOPPER**

1. Transport or sweep and scrub to the dump site.
2. Close the hopper dump door with the hopper dump lever.
3. Raise the hopper with the hopper lift lever to the desired level.
4. Move the machine forward, over the dumpster, if necessary.
5. Open the hopper dump door with the hopper dump lever.
6. Lower the hopper with the hopper lift lever to the normal operation position.

NOTE (Variable Dump Only)

The sweep functions - main broom, side broom, dust fan, and filter shakers - only work when the hopper is down and the dump door is open.

TOWING INSTRUCTIONS (SEE FIGURE 21)

1. Locate Tow Control shaft Extension (**AN**) as shown in Figure 21. (See arrow)
2. To open hydraulic circuit to wheel drive motor, turn shaft 90° so that the flats on the shaft are parallel to the front axle.
3. After towing, turn shaft 90° so that the flats on the shaft are parallel to the pump centerline.

SERVICE CHART

For service assistance, consult the yellow pages under power sweepers and scrubbers. For best performance, replace worn parts with genuine American-Lincoln parts.

EVERY 8 HOURS or DAILY operation check and clean/adjust if necessary:

1. Inspect panel filters for damage and clean.
2. Check engine oil level.
3. Check hydraulic fluid level.
4. Check radiator core for blockage.
5. Check all caps for wear or damage.
6. Check brooms for wear or damage, adjust as required.
7. Check panel filters (clean side) for leakage.
8. Check brake pedal and parking brake.
9. Check for LP/Diesel odor at connections.
10. Check water separator (Diesel).
11. Check engine air cleaner.
12. Check hydraulic oil filter.
13. Check coolant level.

50 HOUR (WEEKLY) MAINTENANCE CHECKLIST

14. Solution tank (recycling or ESP system).
15. Solution filter screen (recycling or ESP system).
16. Recovery tank. (Include cleaning of tank lid.)
17. Recovery tank screens and filters.
18. Scrub brushes for wear or damage.
19. Rear and side squeegees for wear or damage.
20. Check tension on all belts.
21. Check battery electrolyte level. (Unless Maintenance-Free Battery)
22. Check all hydraulic hoses for wear or cuts.
23. Rotate main broom (end-to-end).
24. Clean or replace panel filters.

Perform recommended engine maintenance (see engine manual if applicable).

100 HOUR MAINTENANCE CHECKLIST

25. Change crankcase oil.
26. Change engine oil filter.
27. Lubricate drive wheel, I swivel wheel bearings, and steering rack guide (engine side above rear wheel).
MAKE SURE TO **GREASE ZERK** LOCATED ABOVE PINION RACK (See Rear Wheel Assy., Parts List)
28. Lubricate front wheel bearings.
29. Lubricate all moving joints.
30. Check brake pads for wear and adjust accordingly.
31. Lubricate all bushings with Loctite® Silver Grade Anti-Seize compound. Note that the bushings are located on the steering, scrub deck lift cylinder, squeegee lift cylinder, main broom lift cylinder, both threaded ends of the throttle cable and on the variable dump door cylinders. (Refer to the relevant sections in the Service Manual and the Parts List.)

Perform recommended engine maintenance (see engine manual if applicable).

250 HOUR MAINTENANCE CHECKLIST

32. Lubricate squeegee casters.
33. Clean solution tank and filter screen.
34. Replace engine air filter element.
35. Flush radiator coolant system.
36. Remove spark plug - clean or replace (Gas/LP).
37. Check distributor and points - service or replace (Gas/LP).
38. Clean and lubricate governor linkage (Diesel).
39. Replace fuel filter.
40. Replace hydraulic filter element.

Perform recommended engine maintenance (see engine manual if applicable).

400 HOUR MAINTENANCE CHECKLIST

41. Clean hydraulic reservoir.
42. Clean hydraulic intake strainer.
43. Change hydraulic fluid.

Perform recommended engine maintenance (see engine manual if applicable).

SERVICE CHART

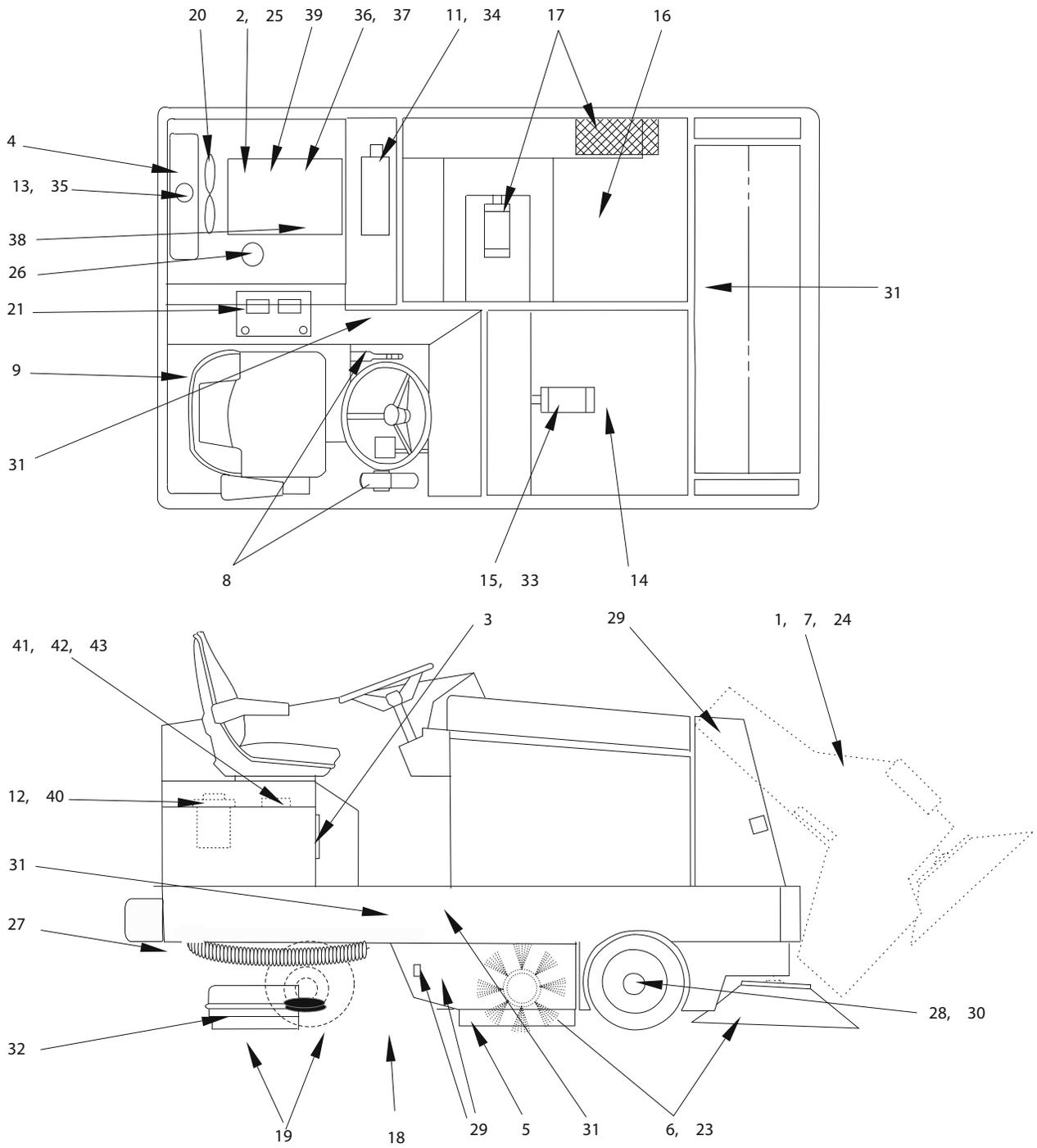
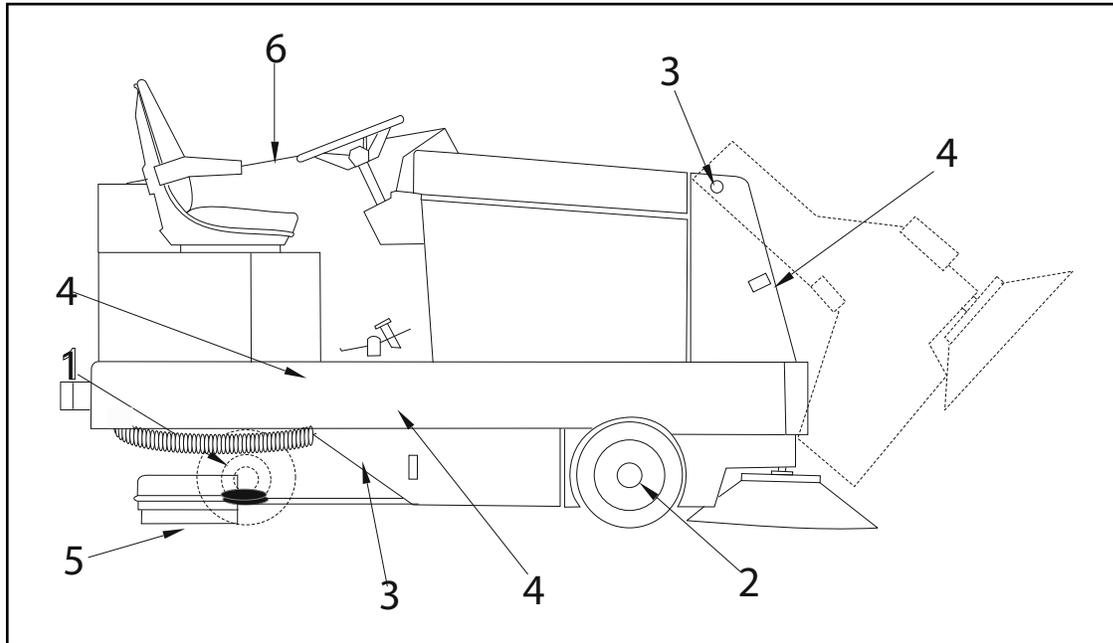


FIGURE 22

GENERAL MACHINE MAINTENANCE



Lubrication Points - FIGURE 23

LUBRICATION

100 Hour Lubrication

1. Lubricate drive wheel swivel, wheel bearings and steering rack guide (see next page).
2. Lubricate front wheel bearings.
3. Lubricate all moving joints.
4. Lubricate all bushings with Loctite® Silver Grade Anti-Seize compound. Note that the bushings are located on the steering, scrub deck lift cylinder, squeegee lift cylinder, main broom lift cylinder, both threaded ends of the throttle cable and on the variable dump door cylinders. (Refer to the relevant sections in the Service Manual and the Parts List.)

250 Hour Lubrication

5. Lubricate squeegee casters.
6. Lubricate governor linkage (Diesel).

Use high quality multipurpose grease. Avoid using excessive amounts of grease.

GENERAL MACHINE MAINTENANCE

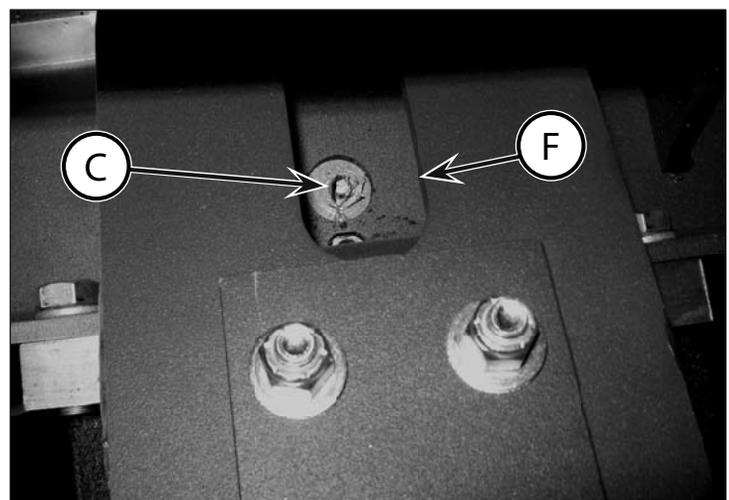
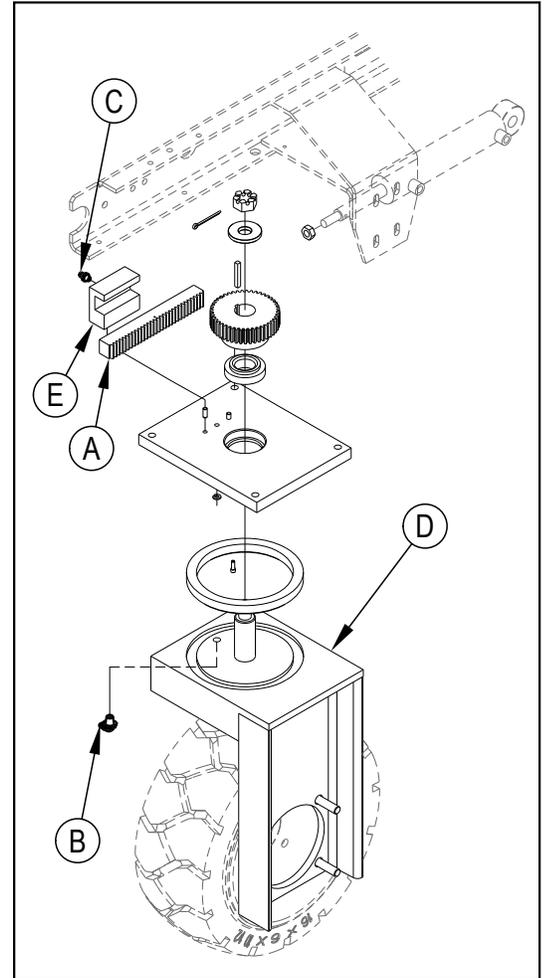
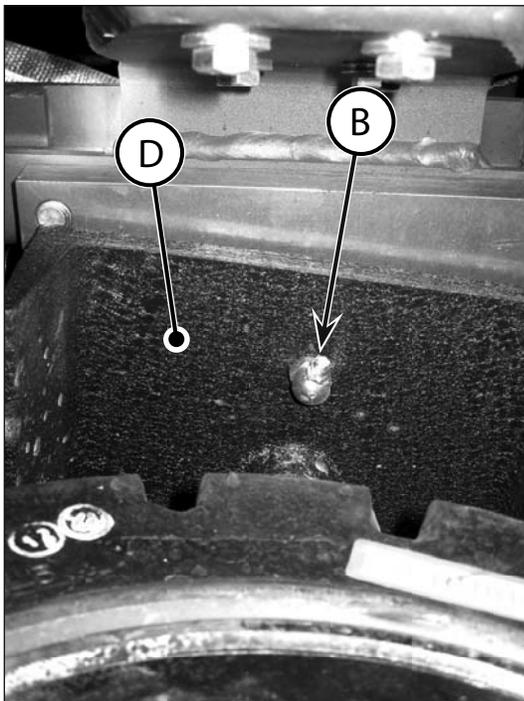
LUBRICATION OF STEERING RACK GUIDE

⚠ WARNING

Make sure the steering system and surrounding components are cool to the touch before attempting to grease the steering system lubrication fittings. Failure to observe this safety precaution can result in severe burns.

Grease the **Rack (A)**, and the **Lubrication Fittings (B & C)** on the bottom of the **Rear Wheel Support (D)** and on the **Rack Guide (E)** every 100 hours of operation. Note that the **Rear Wheel Support Lubrication Fitting (B)** is mounted on the bottom of the **Rear Wheel Support (D)**. There is a **Cutout (F)** in the frame to allow access to the **Rack Guide Lubrication Fitting (C)**.

Service Note: To grease the **Rack (A)**, turn the steering wheel all the way toward the right. This will extend the **Rack (A)** toward the rear of the machine to allow you to grease the teeth on the **Rack (A)**.



GENERAL MACHINE MAINTENANCE

ENGINE

Read and follow all the instructions in the Engine Manual Section. Due to the nature of work being done by the machine, extra care must be taken to protect the engine from these elements. Check the oil each day before starting operations. Be sure to check the air filter cap's dust collector and empty as necessary. Also check the air cleaner and replace as conditions demand. Do not let the engine become coated with dust and dirt.

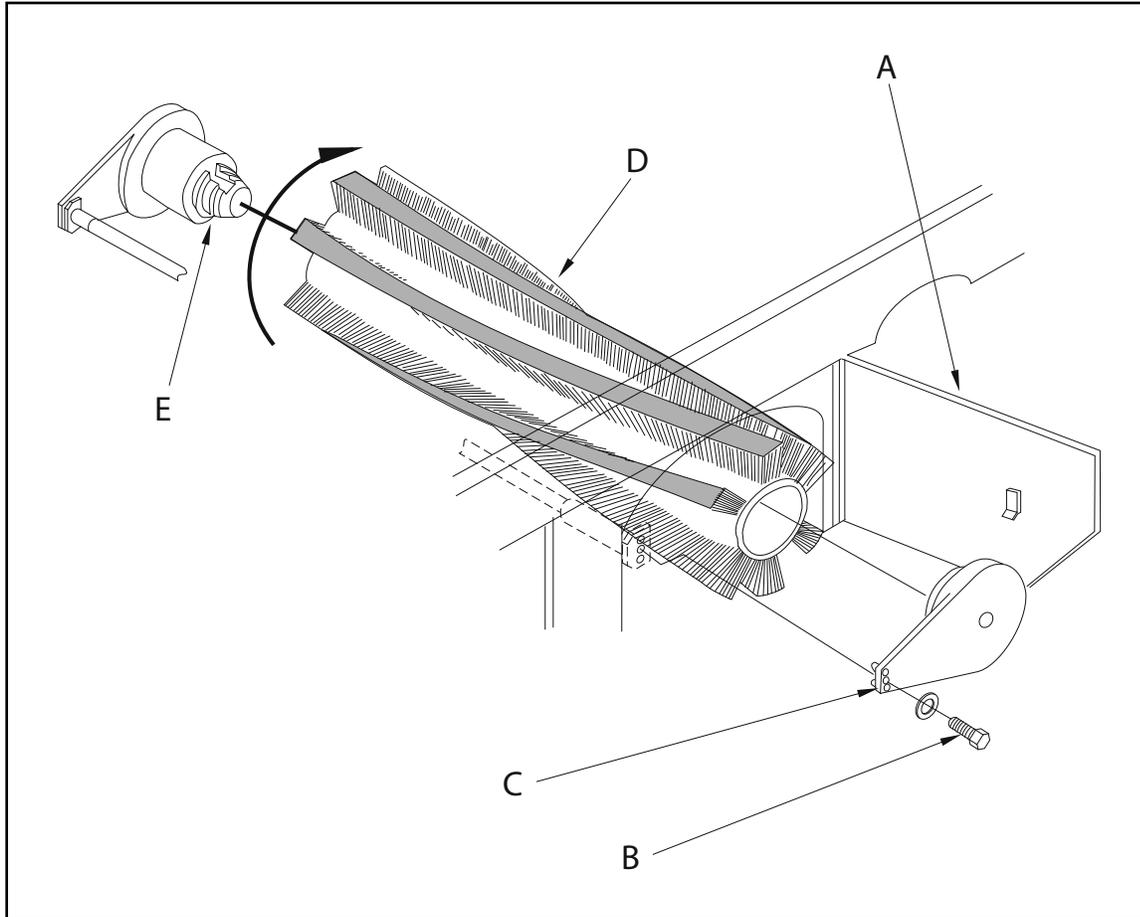


FIGURE 24

TO REMOVE MAIN SWEEPING BROOM

1. Open the Right Broom Chamber Door (A).
2. Put the main broom control in the "SWEEP" position.
3. Remove the Retaining Bolt (B).
4. Remove the Idler Arm Assembly (C).
5. Remove the Main Broom (D) and discard.
6. Put a new main broom in the broom chamber.
7. Rotate the new broom to the right on the Drive Hub (E) until it engages the drive hub broom tabs.
8. Put the Idler Arm Assembly (C) in place.
9. Put the Retaining Bolt (B) in place and tighten.
10. Close the Broom Chamber Door (A).
11. Start the engine.
12. Put the broom lever in the "SWEEP" position.
13. Let the broom sweep in place for 30 seconds.
14. Put the broom lever in the "UP" position.
15. Back the machine off the test spot.
16. Inspect the polished area where the broom swept, for broom bristle contact with the floor. The area of broom bristle contact with the floor should be 2 to 3 inches (5 to 8 cm.) wide.

GENERAL MACHINE MAINTENANCE

MAIN BROOM LEVEL ADJUSTMENT

The main broom level is factory set and shouldn't need adjustment, if the level gets out of adjustment and the broom bristle contact pattern is not an even 2" to 3" (5 to 8 cm.) wide. Adjust the broom arm lift frame. The frame is supported by two angle bearings. These bearings are located inside the broom doors. The carriage bolts on the two end angles must be loosened. The frame can then be leveled and the bolts tightened.

HOW TO ADJUST MAIN BROOM WEAR PATTERN

When the bristles of the broom begin to wear out the following adjustments may be made to keep a 2-inch (5-cm.) broom pattern.

1. Loosen the nut located in the engine compartment.
2. Set the broom lever to the "Sweep" position and adjust the lock nut to obtain a 2-inch (5 cm) broom pattern. The lock nut will move the adjusting rod that adjusts the sweeping pattern of the broom for wear.

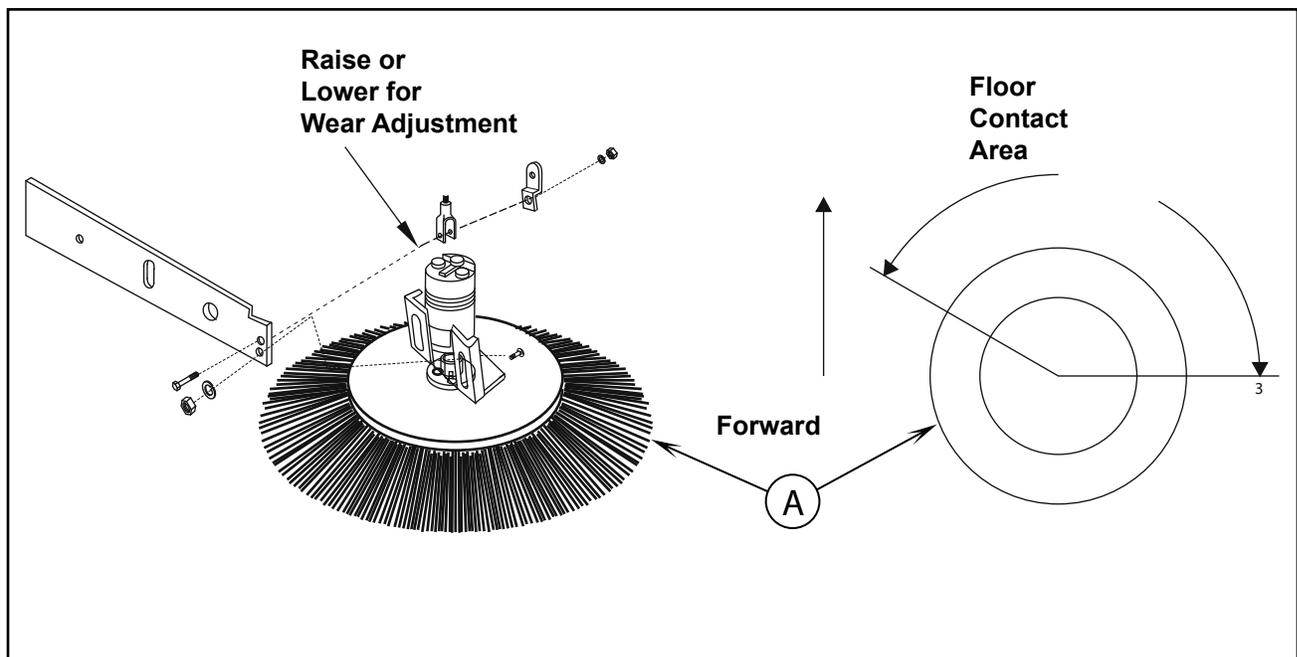


FIGURE 25

SIDE BROOM LEVEL ADJUSTMENT

As the Side Broom (A) wears, loosen the two wear adjusting bolts and slide the broom-motor assembly into a position so that the broom contacts the floor at a 3 degree angle when lowered as shown in Figure 25.

SIDE BROOM REPLACEMENT

Put the side broom lift control in the "UP" position. Remove the retaining screw in the bottom middle of the side broom. Remove the side broom. Transfer the side broom angle spacer and screws to the replacement side broom. Put the replacement side broom on the shaft. Put the retaining screw in position and tighten.

GENERAL MACHINE MAINTENANCE

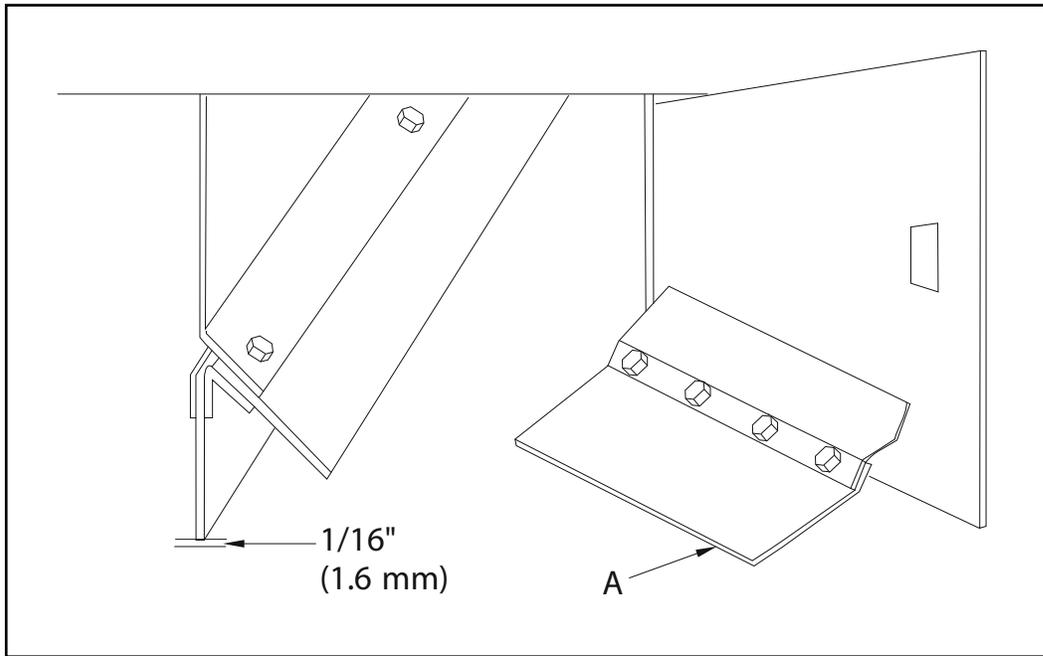


FIGURE 26

FLAPS

The urethane and rubber flaps are susceptible to damage and should be inspected regularly and maintained in good condition. The side flaps are adjustable and should be maintained at approximately 1/16" (1.6 mm.) above the door. Set flap even with the door (**A**). The front and rear flaps have no provision for adjustment.

All flaps should be replaced when worn or damaged to such an extent that they couldn't perform their function.

GENERAL MACHINE MAINTENANCE

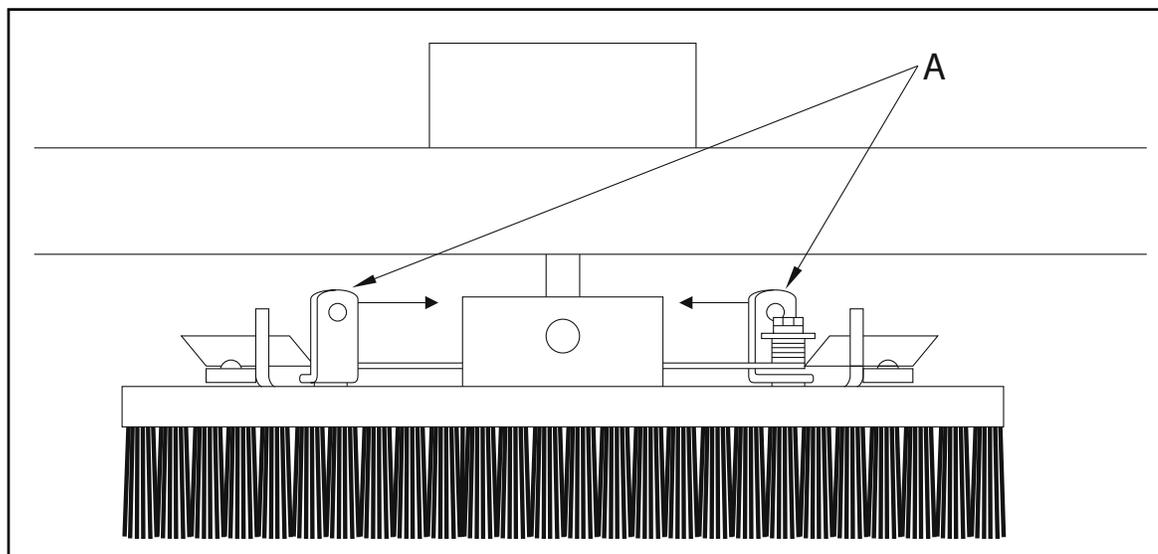


FIGURE 27

SCRUB BRUSH REPLACEMENT

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

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. For lubrication of latches see Lubrication Section.

SOLUTION WARNING LIGHT

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

RECOVERY WARNING LIGHT

The recovery 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 lever controls the amount of solution applied to the scrubbing brushes. Except for a few drops of oil applied to the lever pivot every 100 hours, the system should require no major maintenance.

The solution control should shut off completely with the lever in the (rear) “off” position. If complete shut off does not occur, the control cable 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 indicated. (See Electrical Troubleshooting Guide or Detergent Pump Troubleshooting).

GENERAL MACHINE MAINTENANCE

RECYCLING PUMP ESP SYSTEM

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

NOTE

Do not run pump dry. The unit depends on the liquid pumped for lubrication.

RECYCLING (ESP) 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 item **10**, (these hold the squeegee tool to the squeegee support).
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 (items **5 & 6**).

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 outer blade is 3/16" (4.7 mm) longer than inner blades, this is achieved by assembling the top edge of the blade against the squeegee tool weldment.
4. Reinstall squeegee clamp band and tighten clamp bolt tight.

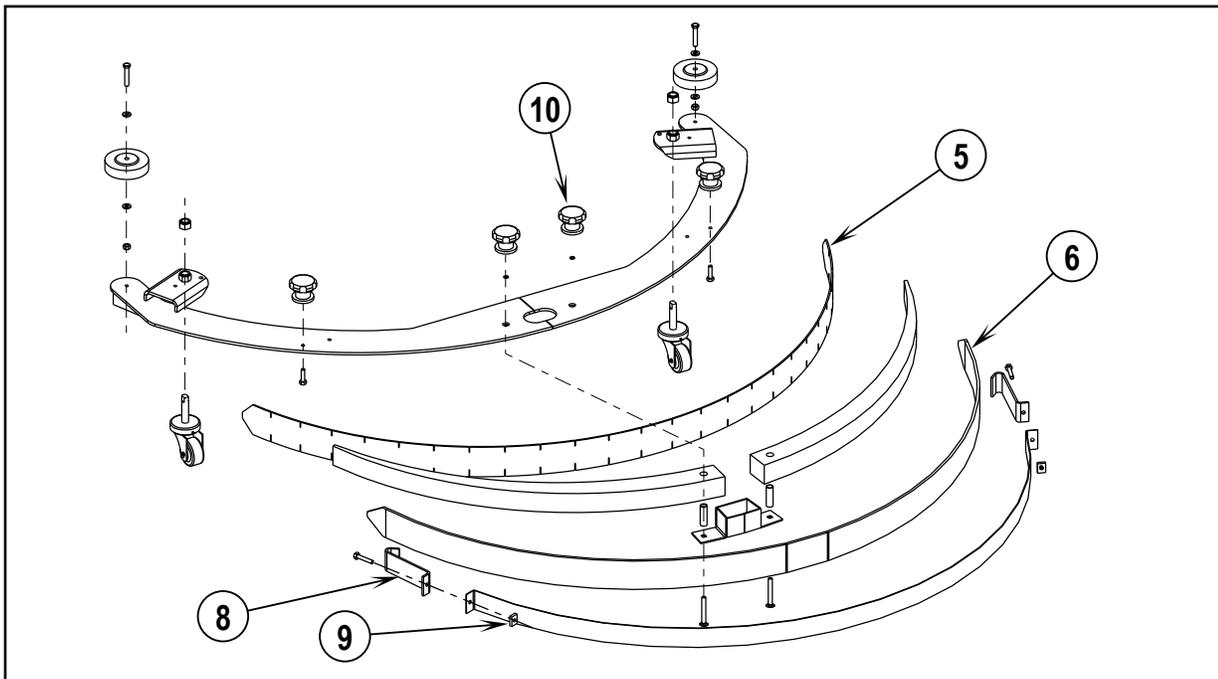


FIGURE 28

SQUEEGEE CASTER WHEELS

Grease caster wheel zerks (2) on each caster should be greased each time the blades are serviced for a total of 3 caster wheels.

ADJUSTING CASTERS

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

GENERAL TROUBLESHOOTING

<u>PROBLEM</u>	<u>PROBABLE CAUSE</u>	<u>REMEDY</u>
Sweeping does not function	<ol style="list-style-type: none"> 1. Dump door closed 2. Hopper is raised 3. Hopper switch out of adjustment 	<ol style="list-style-type: none"> 1. Open dump door 2. Lower hopper 3. Adjust hopper switch
Poor water pick up at squeegee	<ol style="list-style-type: none"> 1. Side or rear squeegee are worn or damaged 2. Clogging in water pick up 3. Air leaks in suction hose and connection 4. Air leaks at recovery tank cover and/or manifold gaskets 5. Poor vacuum 6. Drain hose or drain plug leakage or not closed properly. 	<ol style="list-style-type: none"> 1. Examine squeegee rubber blade for cuts or worn spots. 2. Repair or replace hose and connection 3. Repair or replace gaskets 4. Check seal on recovery tank 5. Check vacuum motor 6. Close, repair or replace drain plug in recovery tank.
Water spill from squeegee	<ol style="list-style-type: none"> 1. Side squeegee blades, poor contact with oor. 2. Squeegee blades worn or damages 3. Too much solution being applied before making turns. 4. Brushes rotating opposite direction 	<ol style="list-style-type: none"> 1. Readjust blades for proper contact 2. Replace or adjust 3. Shut off solution ow 5' to 10' 4. Check position of switches.
Lack of suction at rear	<ol style="list-style-type: none"> 1. Clogged suction hose or pick up tool 2. Loose connections between suction hose and squeegee or between hoses or manifold inlet. 3. Vacuum motor not operating 4. Vacuum oat cage clogged 5. Vacuum oat shut off 	<ol style="list-style-type: none"> 1. Disconnect suction hose from squeegee; ush squeegee & hoses. 2. Check all hose connections for looseness or damage. 3. Check hydraulic motor in recovery 4. Clean perforated metal thoroughly 5. Excessive solution in recovery drain tank. Excessive foam build up, change cleaning chemical mixture. Use American-Lincoln approved materials.

GENERAL TROUBLESHOOTING

<u>PROBLEM</u>	<u>PROBABLE CAUSE</u>	<u>REMEDY</u>
Poor scrubbing	<ol style="list-style-type: none"> 1. Worn scrubbing brushes 2. Incorrect method of operation 3. Wrong cleaning agent or mixture 4. Poor solution distribution 	<ol style="list-style-type: none"> 1. Inspect brushes. If worn to ½" (1.3cm) or less, replace all 3 brushes 2. Check scrubbing procedures, brush pressure, type of brush, solution flow, & cleaning chemical used. For extreme conditions double scrubbing may be necessary. 3. Use Nil sk recommended materials 4. Clean out distribution tube & metering holes to brushes. Check feed hose & clean if necessary. Check valve & cable control system.
Engine runs, but machine will not move on level ground	<ol style="list-style-type: none"> 1. Foot pedal and/or linkage jammed or not adjusted 2. Front wheels jammed or brakes locked 3. Hydraulic pump trouble 4. Rear wheel hydraulic motor, broken shaft key, broken shaft, etc. 	<ol style="list-style-type: none"> 1. Check pedal linkage 2. Check wheels and brakes 3. Check & repair pump, check tow valve. See CESSNA information. 4. Check & repair. See Char-Lynn information
Machine moves slowly	<ol style="list-style-type: none"> 1. Low hydraulic oil level 2. Brake dragging 3. Hydraulic oil temp, too high 4. Worn hydraulic pump or drive wheel motor 	<ol style="list-style-type: none"> 1. Add oil to reservoir 2. Check brakes 3. Check oil level, add SAE 5 (FORD Type F) ATF, if required 4. See hydraulic CESSNA
Hydraulic pump making excessive noise	<ol style="list-style-type: none"> 1. Clogged inlet strainer or suction line 2. Air bubbles in hydraulic fluid 3. Hydraulic pump is worn or damaged 	<ol style="list-style-type: none"> 1. Clean inlet strainer. Drain & flush reservoir, if oil is dirty. Refill with clean SAE 5 (FORD Type F) ATF. 2. Check for low hydraulic fluid level, leaking fittings or hoses 3. See CESSNA Pump Section

TECHNICAL SPECIFICATIONS (as installed and tested on the unit)

Model		CR1500 Petrol (Variable Dump)	CR1500 LPG (Variable Dump)
Model No.		56514850	56514852
Sound Pressure Level (ISO 11201)	dB (A)	87	87
Sound Power Level (ISO 3744)	dB (A)	Lwa 109.0	Lwa 109.0
Total Weight	lbs/kg	4,350 / 1973	4,350 / 1973
Vibrations at the Hand Controls (ISO 5349-1)	m/s ²	0.70 m/s ²	0.70 m/s ²
Vibrations at the Seat (EN 1032)	m/s ²	0.20 m/s ²	0.20 m/s ²
Gradeability			
Transport		14.1% (8°)	14.1% (8°)
Cleaning		10.5% (6°)	10.5% (6°)

Model		CR1500 Diesel (Variable Dump)
Model No.		56514854
Sound Pressure Level (ISO 11201)	dB (A)	87
Sound Power Level (ISO 3744)	dB (A)	Lwa 109.0
Total Weight	lbs/kg	4,350 / 1973
Vibrations at the Hand Controls (ISO 5349-1)	m/s ²	0.70 m/s ²
Vibrations at the Seat (EN 1032)	m/s ²	0.20 m/s ²
Gradeability		
Transport		14.1% (8°)
Cleaning		10.5% (6°)



We supply a full range of cleaning equipment for rental or purchase.

For more information, or a cleaning solution to suit your business, please get in touch –

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