

**BADGER™ SWEEPER/SCRUBBER
TSS/62E**

**OPERATION,
MAINTENANCE
& PARTS**



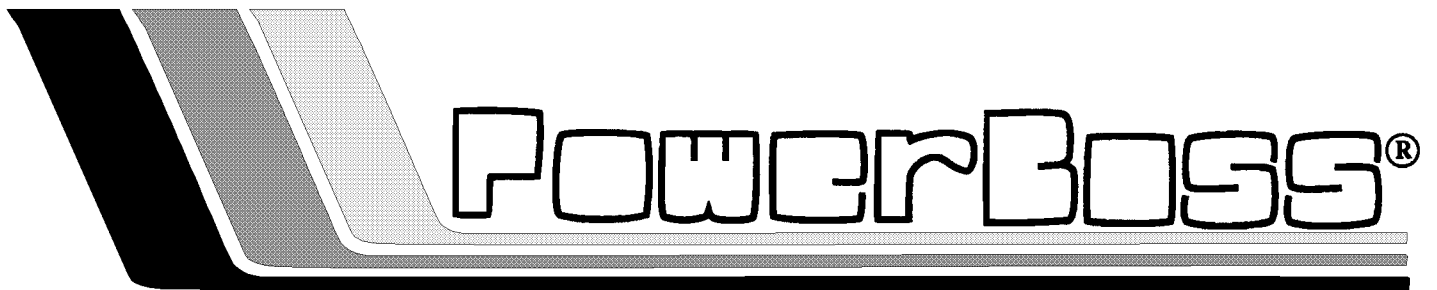
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AAR POWERBOSS, INC.

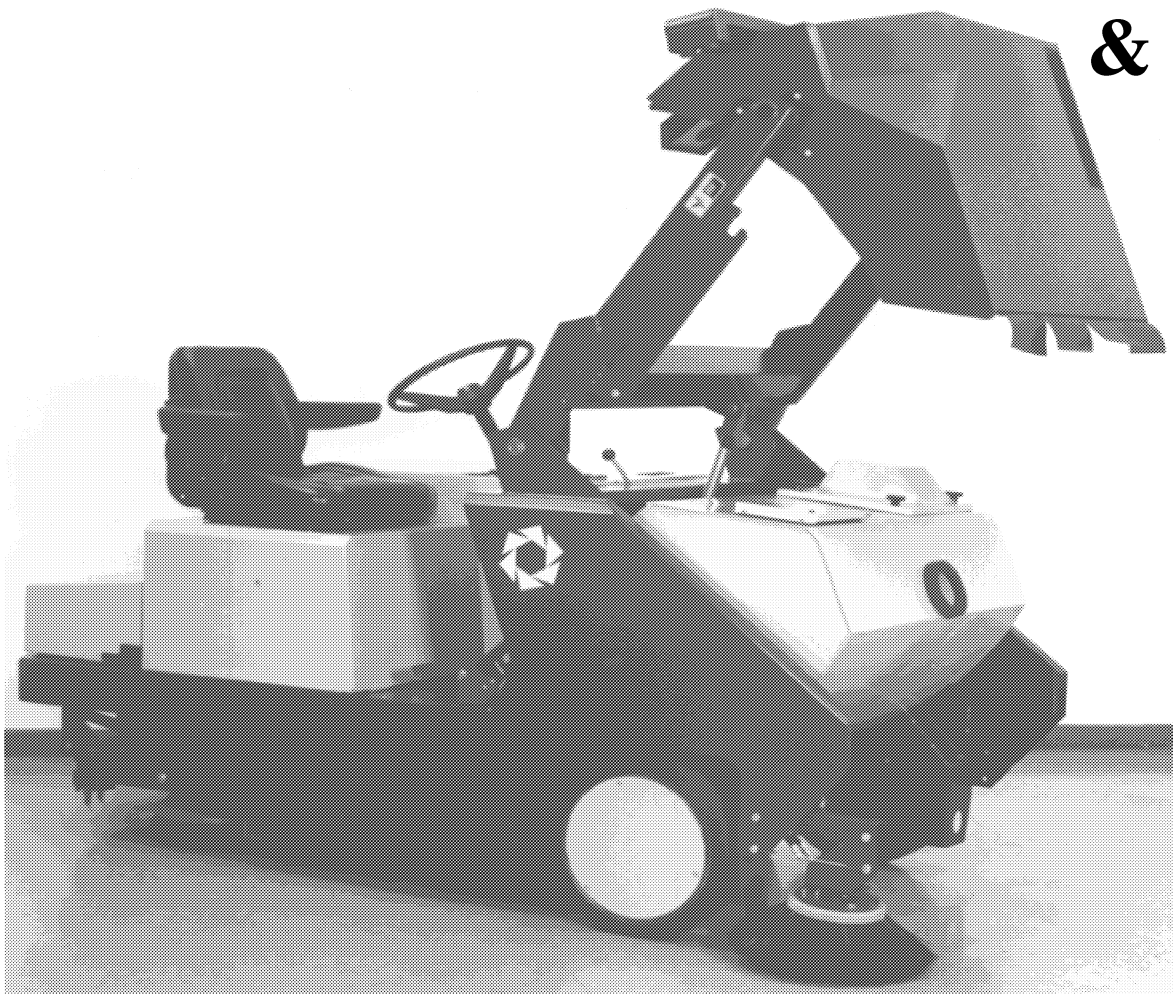
ANDERSON & TAYLOR STREETS / P.O. BOX 1227
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OCTOBER '95



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SAFETY SYMBOLS

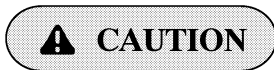
Five symbols are used throughout this manual to emphasize various levels of safety information. These symbols and the meaning of each are listed below.



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



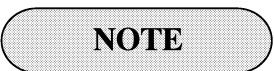
WARNING: To warn of hazards or unsafe practices which could result in severe personal injury or death.



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



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



NOTE: To direct your attention to important equipment information or special instructions for preventing damage to equipment.

Symbols at the top of the list are the strongest warnings. However, all symbols represent important information which should be observed to protect you and others from harm and injury, and to prevent damage to equipment.

SAFETY DECALS

Decals directly attached to various parts of the sweeper/scrubber are highly visible safety reminders which should be read and observed. Make sure the decals are replaced if they become illegible or damaged. The decal below is located in the driver's compartment. Other safety decals on your machine appear on the next page.



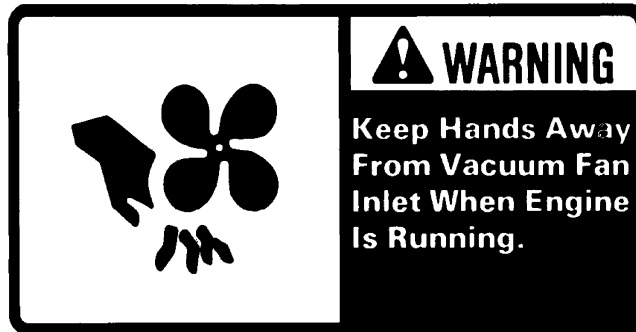
CAUTION

For Your Safety And Safety Of Others:

- 1. DO NOT Operate Machine:
Unless Operation Manual Is Read And Understood.
Unless Authorized And Trained.
In Areas With Flammable Or Explosive Conditions.
Without Adequate Ventilation.**
- 2. Do Not Use Flammable Cleaning Materials.**
- 3. Inspect Vehicle For Fuel Leakage.**
- 4. Drive Slowly On Inclines And Slippery Surfaces.**
- 5. Do Not Power Dump Hopper Unless Vehicle Is On A
Level Surface.**
- 6. Before Leaving Vehicle: Lock Parking Brake, Stop
Engine, And Remove Key.**

Part Number 301854

Located at the Impeller:



Part Number 301729

Located on the high dump hopper:



Part Number 301732

Located on the shroud of the radiator:



Part Number 301733

BASIC PowerBoss® SAFETY

PowerBoss sweeper/scrubbers should never be operated unless: 1. the operator is trained and authorized to operate the equipment and, 2. the equipment is free of malfunctions. Malfunctioning equipment should be removed from service.

DANGER

1. Keep cigarettes, matches, and all other flame sources away from the sweeper/scrubber. Lead acid batteries are dangerous due to the highly explosive hydrogen gas they emit.

WARNING

1. Before turning the machine on, make sure that:
 - You are securely seated in the operator's seat.
 - The parking brake is locked.
 - The directional control pedal is in neutral.
 - Hydraulic controls are in OFF position.
2. During operation:
 - Keep your hands and body clear of moving parts, especially when the hopper or lift arms are partially or fully raised.
 - Make sure others in the area stay clear of the equipment and moving parts.
 - Never attempt to dump debris from a dock or mezzanine. Dump from ground level only.
 - When adding cleaning solution, wear safety glasses to prevent possible eye injury.
3. When leaving the sweeper/scrubber unattended:
 - Place the controls in OFF position.
 - Set the parking brake.

4. During cleaning and maintenance:
 - Always stop the machine and set the parking brake before servicing.
 - Never use detergents or cleansers that are flammable or combustible.
 - Do not attempt any impeller adjustment unless you have shut off the machine. Never place your hands near the intake hoses or inlet when the machine is running.
 - Always engage the safety arm before getting under the hopper. Do not rely on the hydraulic cylinder to keep the hopper raised.

5. When servicing or repairing:
 - Work in a properly ventilated area, do not smoke, or allow an open flame near the battery. Wear safety glasses.
 - Never bypass safety components unless you are testing them.
 - Never bypass the fuses, except when testing them (and always reconnect them after testing).
 - Always use a piece of paper to test for hydraulic leaks. Personal injury may occur if any part of your body comes in contact with hydraulic fluid forced through a small hole at a high rate of pressure.

6. Replace any defective safety components before operating the sweeper/scrubber.

⚠ CAUTION

1. Do not drive with the hopper in the raised position except the few feet necessary to position the hopper over the dumpster or receptacle. Driving with the hopper raised reduces visibility and creates conditions for striking overhead objects, throwing the machine off-balance, and other hazards.

2. Travel slowly on grades.

3. Place a block or chock behind the wheels when parking on inclines.

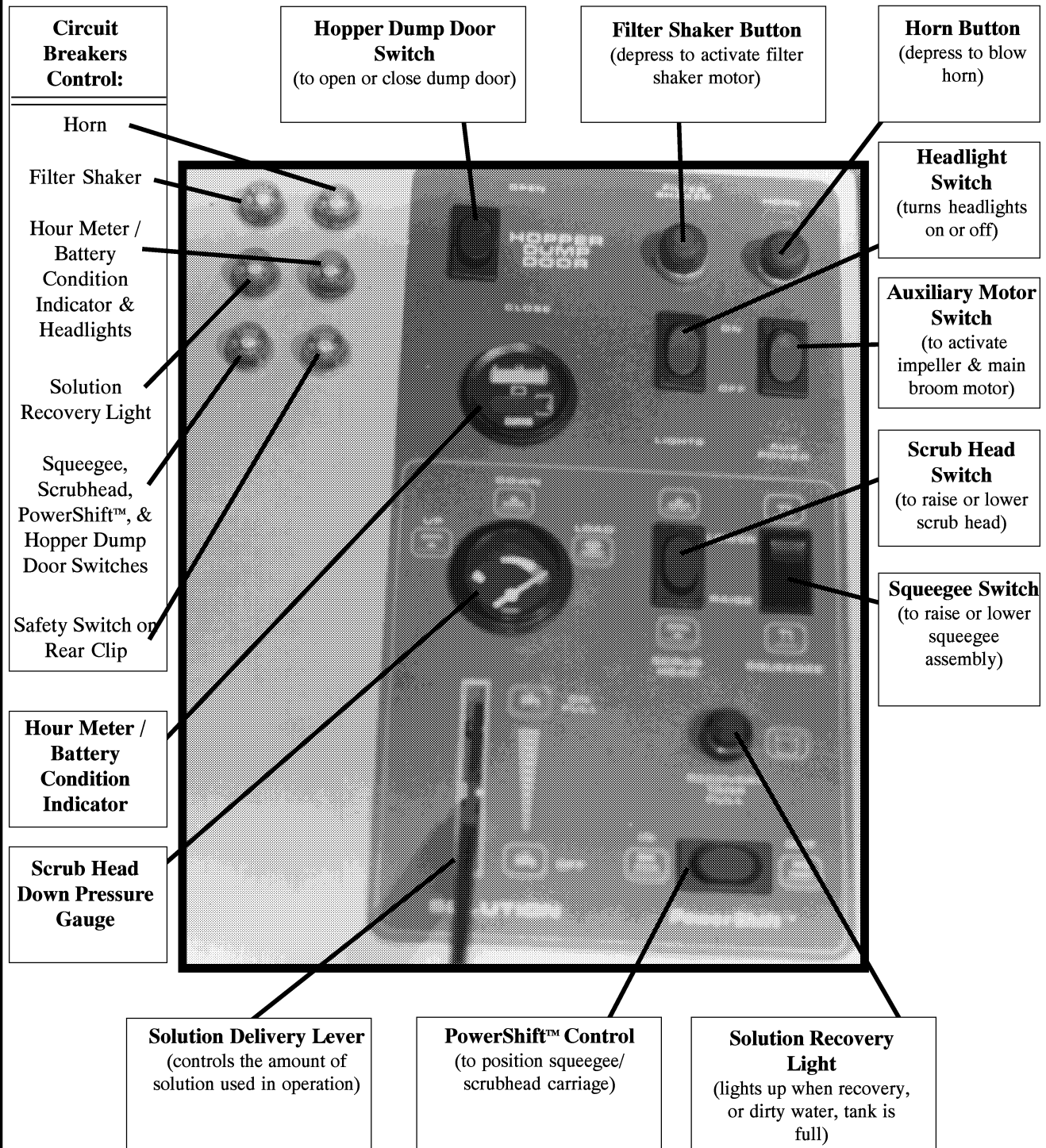
4. Use special care when traveling on wet surfaces.

5. Observe all proper procedures for operation and maintenance of the sweeper/scrubber, as outlined in this manual.
6. Remain alert at all times to people and equipment in and around your area of operation.

ATTENTION!

1. Never push or tow a machine faster than specified.

Operator's Console (Control Panel to Operator's Left)

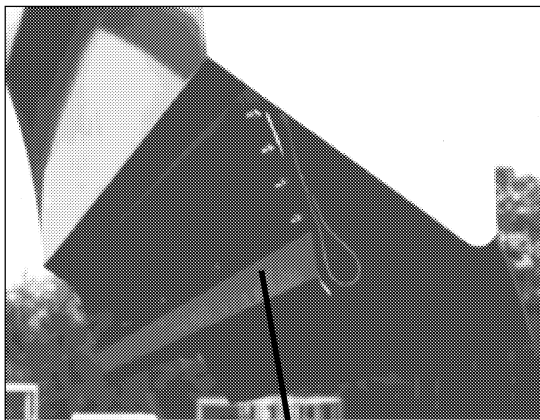


The Hopper Group

- The TSS/62E has a 9 cu. ft. hopper that will hold up to 500 lbs. of debris. Its multi-level high dump design allows dumping up to 60 inches.
- The hopper contains one fully enclosed positive-sealed reusable panel filter, with 50 sq. ft. of filtering area. The panel filter is located behind the filter access door (see illustration on previous page).
- The hopper must be in a partially raised position to gain access to the panel filter.
- Due to the position of the hopper, an electrically activated dump door is provided to restrict debris from exiting the hopper during the dump cycle (see illustration below).
- During normal sweeping the dump door must be in the open position to allow debris to enter the hopper. A switch located on the operator's console activates the dump door.

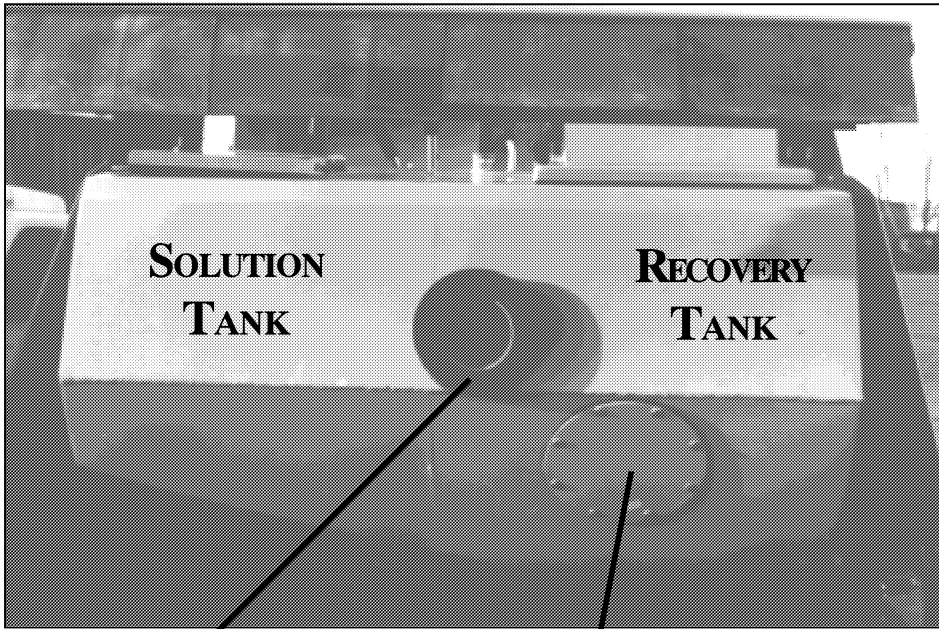
To dump the hopper:

- First depress the dump door switch to the closed position. Keep the switch depressed until you hear the actuator ratchet. Release the switch as soon as you hear this ratcheting sound. Excessive ratcheting will cause damage to the actuator.
- Once the door is closed, raise the hopper to the desired dump height.
- To let debris exit the hopper, depress the dump door switch to the open position. Again, the actuator will ratchet when the cycle is complete.
- After the hopper is emptied, return the hopper to its sweeping position.
- It is not necessary to close the dump door after you empty the hopper.



Hopper Dump Door

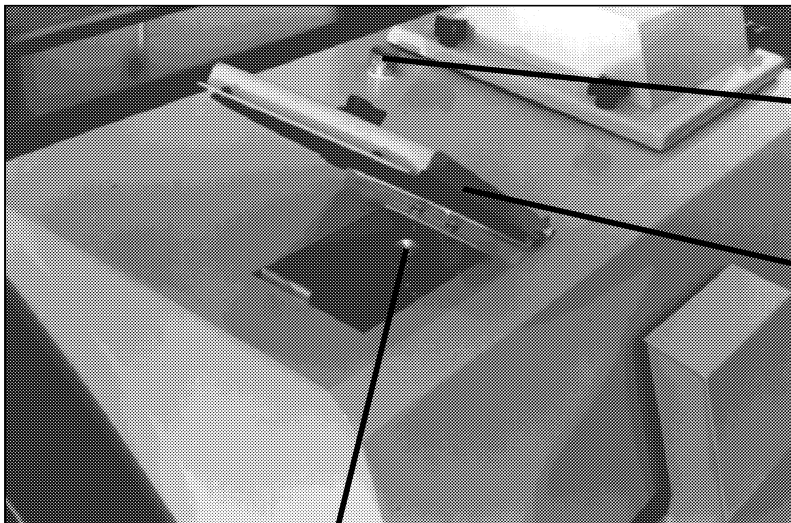
**HOPPER IN
FULLY RAISED
(DUMP)
POSITION**



**HOPPER
IN FULLY
RAISED
(DUMP)
POSITION**

Hopper Gasket

Clean Out Cover



AutoFlush™ Adapter

Access Door

EasyFill™ Adapter

The Tank Group

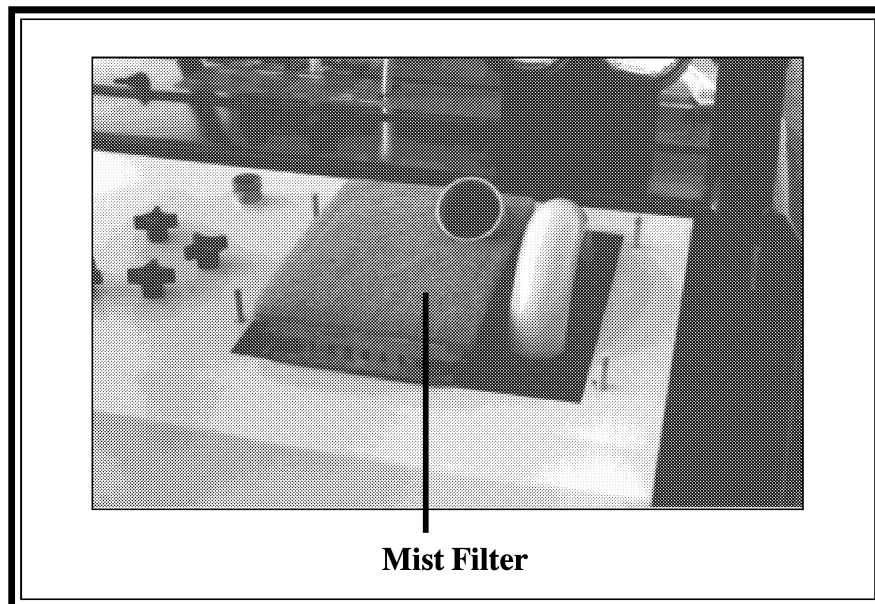
The tank assembly located directly behind the hopper contains a 55 gallon stainless steel solution tank and a 50 gallon stainless steel recovery tank.

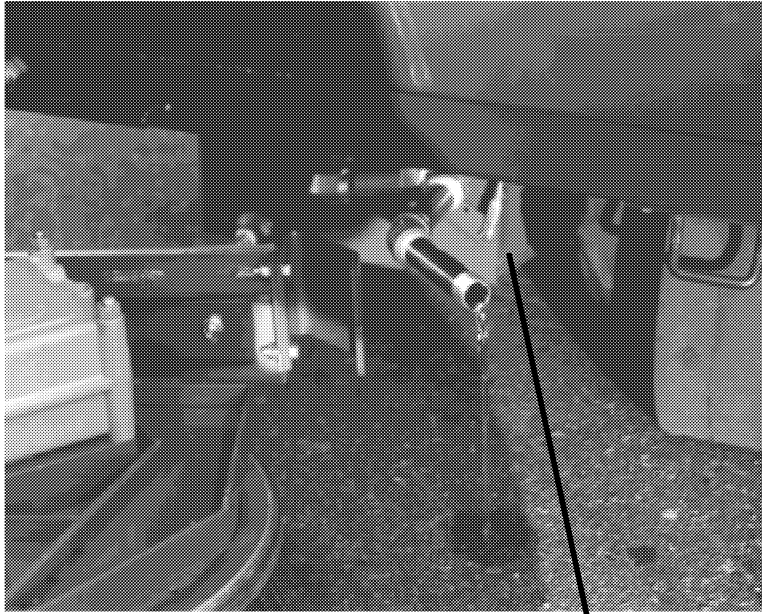
Solution Tank

- The 55 gallon solution tank portion of the assembly is located at the left front corner of the tank (see illustration).
- The solution tank is equipped with the EasyFill™ automatic water shut-off system.
- Simply attach a standard garden hose to the brass garden hose adapter located behind the access door (see illustration).
- Once the tank is full, EasyFill™ automatically shuts off water flow to the tank.

Recovery Tank

- The 50 gallon recovery (dirty water) tank is equipped with an AutoFlush™ clean-out system.
- To flush the recovery tank, simply hook a standard garden hose to the brass garden hose adapter located at the center top of the tank (see illustration).
- The drain hose for the recovery tank is located under the plate behind the forward/reverse pedal. Simply pull the plate upward to gain access to the hose.
- Remove the plug in the hose end and drape over the side of the machine.
- The drain hose must be unplugged before AutoFlush™ is activated.





Lower Water Tank

**SHOWN
WITH
REAR
POD
OPEN**



Water Collection Pan

Water Feed Hoses

**SHOWN
WITH
REAR
POD
OPEN**

Solution Delivery

To deliver cleaning solution to the scrub brushes, move the solution lever located on the console forward. Clean water is stored in the solution tank and the lower water tank located at the rear of the machine. Once the solution lever is activated, water is fed to a water collection pan located in the scrub head assembly (see illustration). From the collection pan, water is gravity fed to each brush by means of a rubber tube.

The collection pan must be kept free of large debris particles that might obstruct water flow.

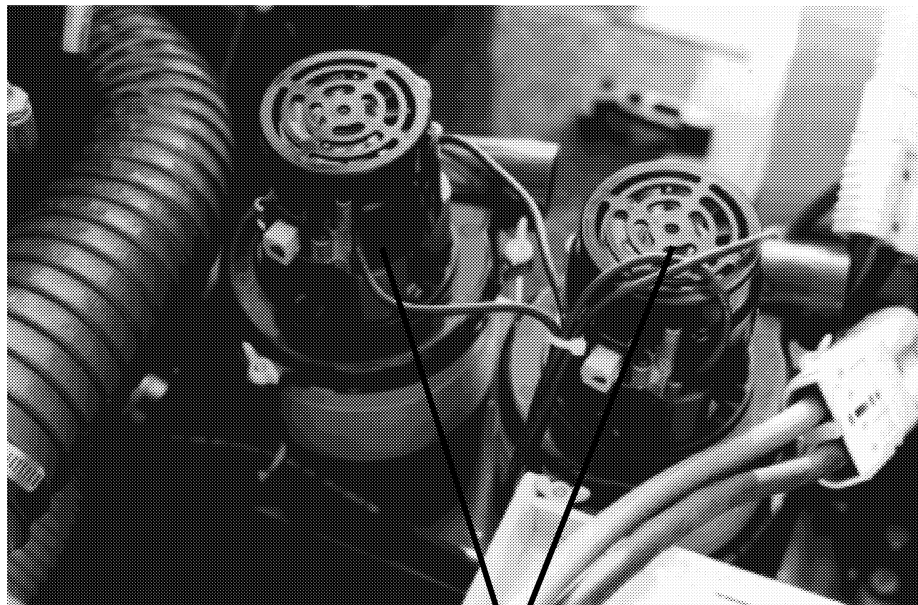
In the event that a hose gets clogged, use compressed air to dislodge any debris.

Solution Pick-Up

Solution pick-up is achieved by the use of two 3-stage 5.7 inch diameter, 36 volt DC double ball bearing vacuum motors.

The motors are mounted on top of a vacuum box located under the clip assembly next to the impeller. Solution pick-up occurs at the rear squeegee and is returned to the recovery (dirty water) tank. The vacuum motors will automatically be activated when the squeegee is put into the down position.

Note: The key to efficient water pick-up is to insure that the squeegee is properly adjusted and that the suction port at the squeegee is free of any obstructions.



Vacuum Motors

**LOCATED
UNDER
REAR
CLIP
ASSEMBLY**

The Brake Group

- The TSS/62E uses a drum and shoe type brake system.
- Pressing the brake pedal moves the brake arm assembly which in turn, expands the brake shoes by the use of a brake rod and clevis design.
- Brake adjustment is achieved by loosening the clevis lock nut and adjusting the rod length.

The Steering Group

- The steering system on the TSS/62E utilizes a standard automotive recirculating ball-type through rear wheel system.
- The steering gear is equipped with one grease fitting and should be checked every 500 hours for proper lubrication. Use 90 weight gear oil for steering gear box lubrication.

The Main Broom Group

The TSS/62E uses a 36-inch long 14-inch cylindrical main broom that is raised and lowered from the operator's compartment.

The desired broom pattern for optimum sweeping performance is 1-inch. The correct pattern should be 1-inch wide the entire length of the broom (see illustration on previous page).

TAPER ADJUSTMENT

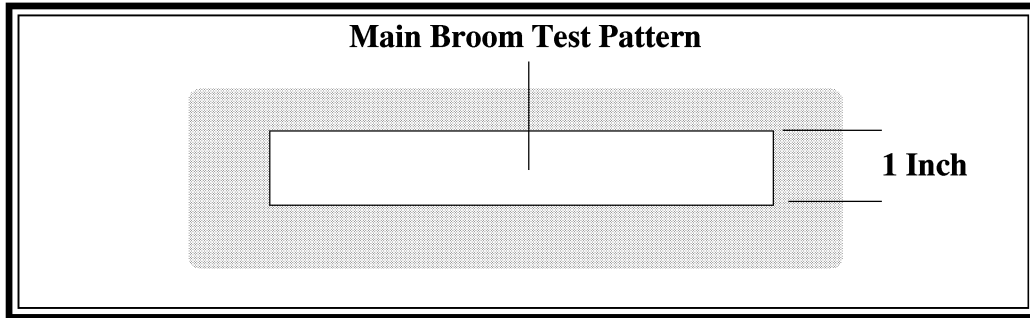
In the event that you get a tapered pattern, the following adjustments are necessary:

- Park unit on level surface.
- Lower main broom and run for 20 seconds.
- Drive machine forward and check broom pattern.
- To correct a tapered pattern:
 - First, remove the right side access panel.
 - Locate the main broom bearing mount (item # 8 in parts breakdown)
 - Loosen the two 3/8-16 bolts and move the main broom tube bearing mount bracket up or down until the 1-inch pattern is achieved.



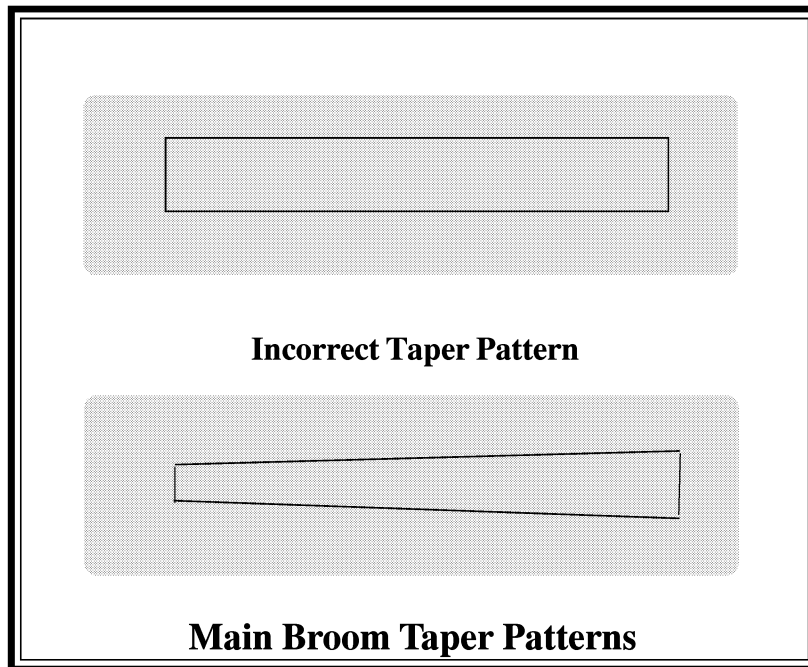
The Main Broom Height Adjustment Knob
*(located in operator's compartment
below the steering wheel)*

NOTE: A rectangular shape the length of the main broom, 1" wide, indicates the main broom is properly adjusted. A pattern smaller than 1" indicates need for lower adjustment. A pattern wider than 1" indicates a need for higher adjustment. If pattern is tapered from end to end instead of rectangular, see Taper Adjustment below.



MAIN BROOM TAPER ADJUSTMENT

NOTE It is not usually necessary to perform this adjustment. However, if the main broom adjustment test shows a pattern that is tapered in length (one end is wider than the other), perform the procedures which follow.



The Impeller Group

- The impeller system consists of a belt-driven high volume low pressure 9-inch diameter impeller.
- By engaging the auxiliary motor switch on the console, the impeller is activated.
- The unit is equipped with a manual remote wet sweep. By pulling the lever up, air flow to the hopper is shut off.
- During normal operation, the lever should be in the down position.
- The remote wet sweep by-pass lever is located to the extreme left of the lintel control panel.

The Hydraulic System

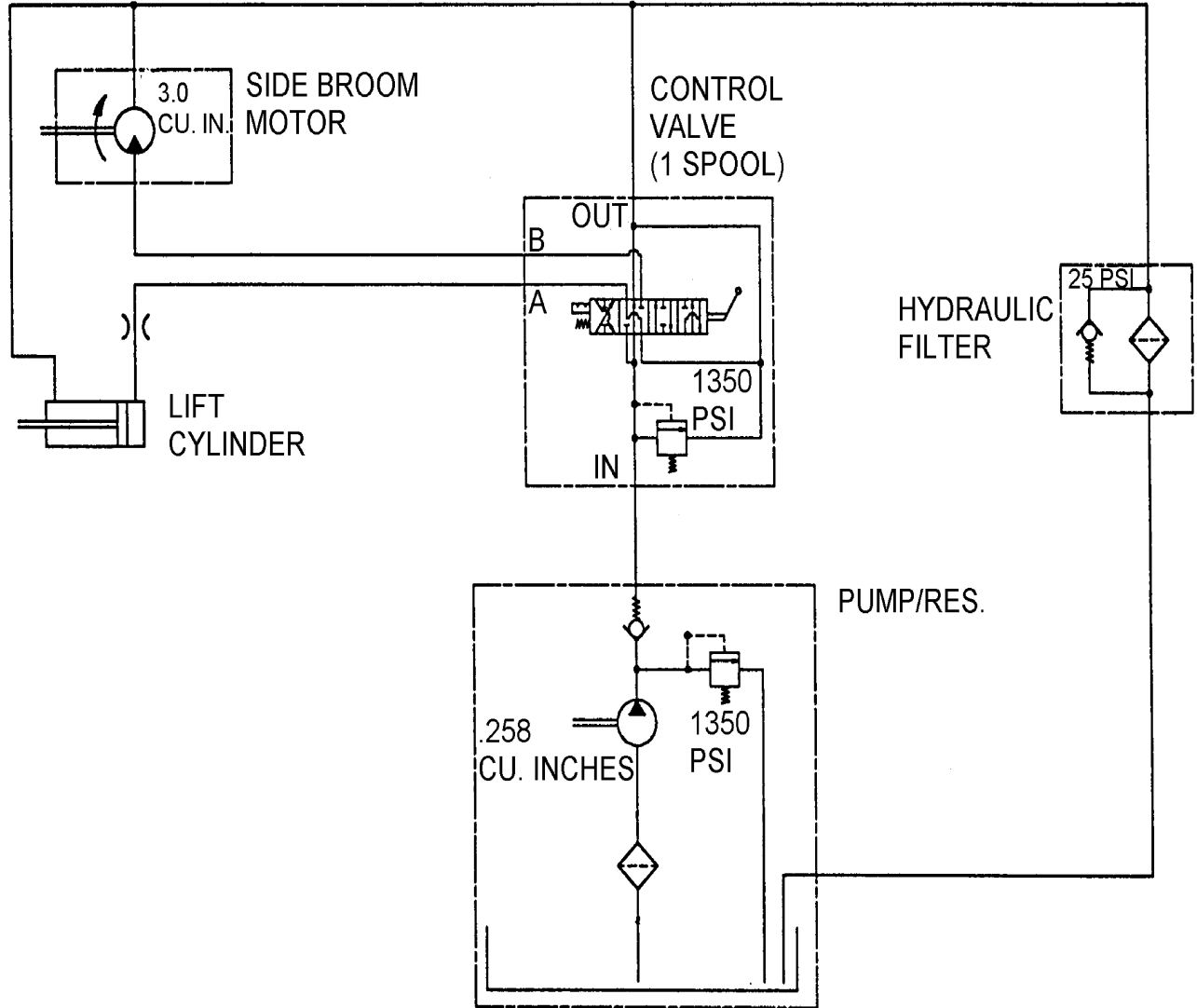
The hydraulic system is used for two functions on the TSS/62E.

These functions are:

- To raise the debris hopper for dumping
- To turn the side broom for sweeping

The hydraulic system consists of the following five components:

- 1 - Combination pump/reservoir
- 1 - Single spool control valve with built-in 1,250 PSI relief valve
- 1 - Hopper lift cylinder
- 1 - Side broom motor
- 1 - Filter housing with spin-on type filter



TSS/62E Hydraulic Schematic

The Frame Group

The frame utilizes a unitized steel assembly with 1.5-inch X 5-inch box section reinforcement. For optimum sweeping, it is important that all flaps and seals are adjusted and in good condition.

- Rear broom chamber flap 1/8" off floor
- Recirculation flap 3/8" to 1/2" off floor
- Broom door flaps 1/8" off floor

Note: Flap adjustment must be done off level floor area.

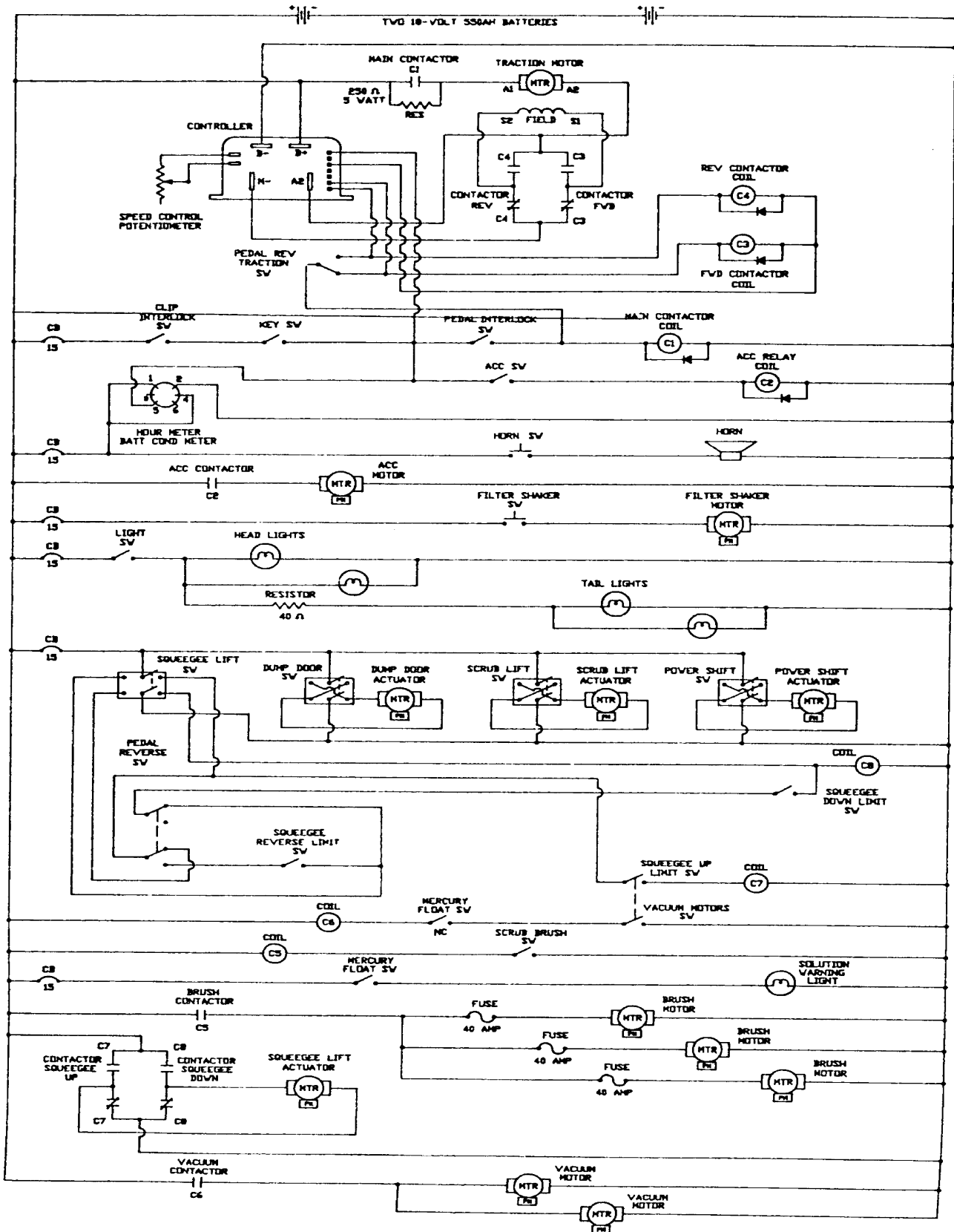
The Rear Clip Group

- The portion of the machine that houses the seat and control box is referred to as the clip assembly.
- To gain access to the batteries and other components, unlatch the rubber latch directly below the seat assembly and open the clip assembly.

Electrical System

- The TSS/62E operates on a 36 volt electrical system. Two 18 volt 550 AH batteries (available from your PowerBoss distributor) are recommended for power supply.
- A 2.0 HP (1.50 kw) propelling motor is used to drive the machine.
- One 1.9 HP (1.43 kw) accessory motor powers the main sweeping broom, the impeller fan for dust control and the hydraulic pump.
- A Curtis PMC 1200 Series Controller allows superior operator control of the vehicle's drive motor speed.
- The main battery connection is located under the seat clip on the left front side of the control box.
- **The battery supply should be disconnected while performing any maintenance work to the machine (safety precaution).**

TSS/62E Electrical Schematic



Pod

The assembly at the rear of the machine will be referred to as the “Pod”.

The pod assembly is made up of:

- Scrub Head Assembly
- Squeegee Assembly
- Pod Frame Assembly

SCRUB HEAD

The scrub head is comprised of three electric scrub motors mounted to the scrub chassis.

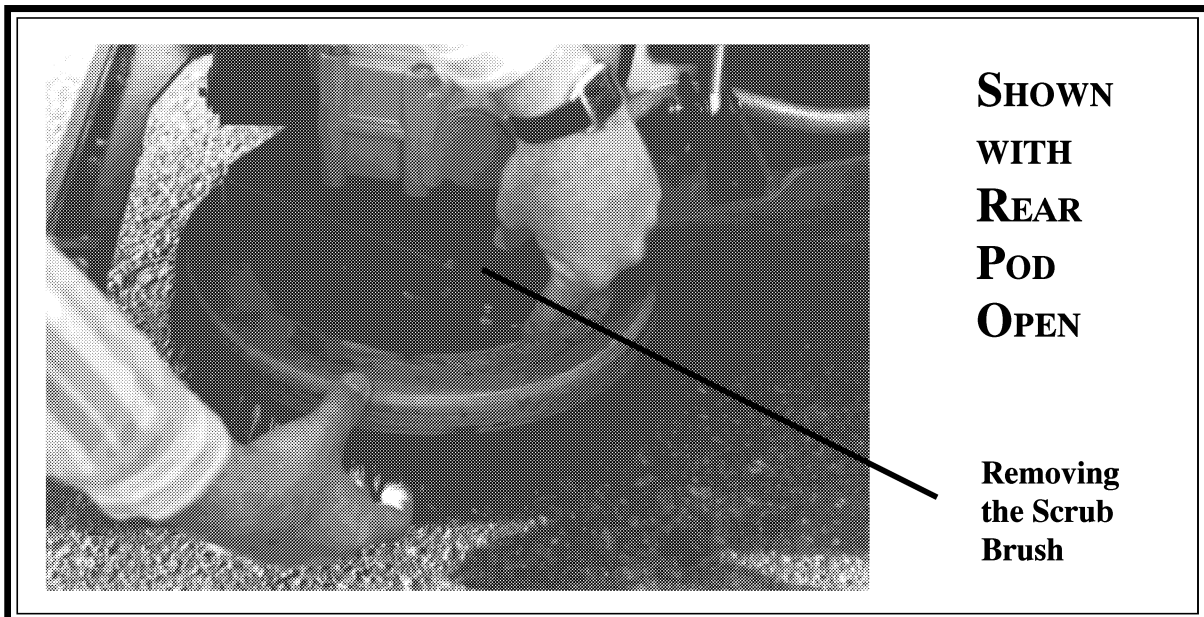
Three 14" rotary scrub brushes are used to accomplish the scrubbing cycle. Each brush incorporates the quick change design. Simply lift the brush retainer up and pivot the brush out of its slots.

To lower the scrub head, depress the scrub head switch on the operator’s console. A down pressure gauge is provided to assist the operator in knowing when the brushes are down. **As the brushes are lowered, the brush motors will automatically turn on.**

To feed water to the scrub head, simply push the solution lever at the console forward.

To raise the scrub head, depress the scrub head switch to the UP position. The brushes will automatically turn off.

(Scrub head adjustment procedure is shown on following page.)



**SHOWN
WITH
REAR
POD
OPEN**

**Removing
the Scrub
Brush**

Scrub Head Adjustment - TSS/62E

1. Disconnect the lower wire from the switch located under the scrub head lift actuator. **This is very important as it prevents the brush motors from turning on while working on the scrub head.**
2. Raise the scrub head. Install three nylo-grit scrub brushes. (Softer brushes make it difficult to see the brush pattern on the floor.)
3. Lower the scrub head to a point where the lift springs just reach their fully extended position.
4. Loosen the front and rear adjusting nuts, (two on each side) and back them away from the scrub head frame 1/4" to 3/8".
5. Slightly loosen the lower rear trailing arm bolts. (One on each side of the scrub head)
6. Spin the front and rear adjusting nuts up against the scrub head frame by hand, then unscrew the rear nuts 1/16" to 1/8".
7. Tighten the front adjustment nuts until the scrub head contacts the rear adjustment nuts.
8. Tighten the lower rear trailing bolts.
9. If the scrub head does not raise and lower level (as viewed from behind), it can be leveled by tightening the lift rod nut on the low side.
10. Reconnect brush switch wire.

CAUTION! Scrub Motors May Start!!

11. Test brush pattern.
12. Reposition adjustment nuts if necessary, (moving the adjusting nuts forward causes the front of the scrub head to raise, moving the backward causes the front of the scrub head to lower).
13. If test brushes must be removed:
 - Raise scrub head fully.
 - Disconnect battery.
 - Remove scrub brushes.

NOTE: *The correct scrub head adjustment will produce a pattern on the floor showing three even brush disks with even pressure and constant contact.*

Pod (Cont.)

SQUEEGEE

The squeegee assembly uses one 44.75" U-shaped squeegee with quick change rubber.

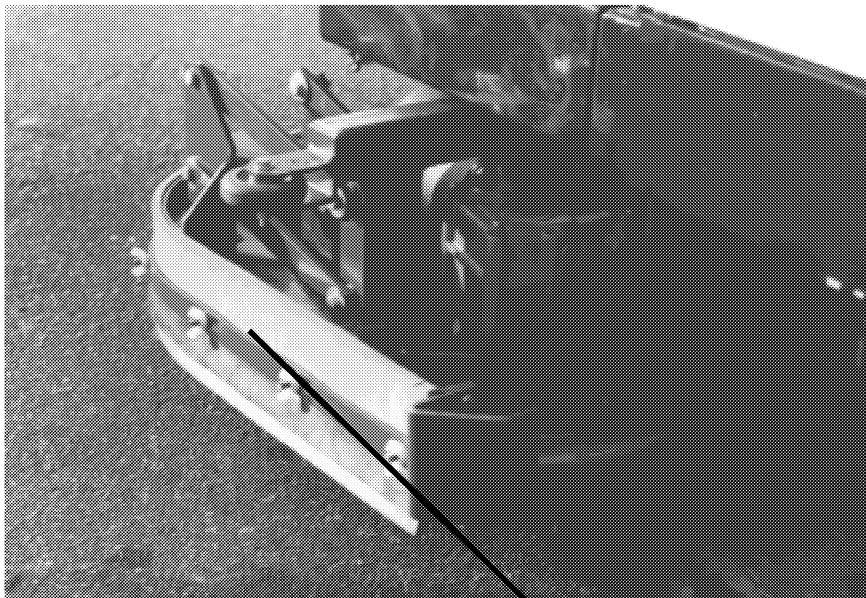
To lower the squeegee, depress the squeegee switch on the operator's console.

Once the squeegee switch is depressed, the vacuum motors will automatically come on. It is not necessary to hold the switch in the DOWN position.

To raise the squeegee, the switch must be held until the squeegee reaches its full UP position. Once you hear the actuator ratchet, **LET GO OF THE SWITCH.** (Excessive ratcheting may cause harm to the actuator.)

The key to obtaining good squeegee performance is to insure that the squeegee is properly adjusted. A properly adjusted squeegee will result in longer rubber life and more efficient water pick-up.

(Squeegee adjustment procedure is shown on following page.)



**SHOWN WITH
POWERSHIFT™
ACTIVATED**

"U"-shaped Squeegee

Squeegee Adjustment - TSS/62E

1. With the squeegee in the raised position, raise the two casters so that they will not hold the squeegee off the floor during adjustment.
2. Lower squeegee, making sure that the rear squeegee rubber is not curled under at any point along its length.
3. Loosen the front and rear adjusting nuts, (two on each side) and back them away from the squeegee frame 1/4" to 3/8".
4. Slightly loosen the lower rear trailing arm bolts (one on each side of the squeegee frame).
5. Spin the front and rear adjusting nuts up against the squeegee frame by hand, then unscrew the front nuts 1/8".
6. Tighten the rear adjusting nuts until the squeegee frame contacts the front adjusting nuts.
7. Tighten the lower rear trailing bolts.
8. Position the casters so that the upper rotating portion of the caster clears the squeegee frame by 1/16".
9. Test squeegee.
10. Reposition adjusting nuts, if necessary. (Moving the adjusting nuts forward causes the front of the squeegee to raise. Moving them backwards causes the front of the squeegee to lower.)

NOTE: *Squeegee tips may curl under slightly, but the squeegee frame itself should not be lower in the front than at the rear. This can cause the squeegee to "dig in" when moving. The raised squeegee should be as high as possible while preventing the upper rear trailing arm mounts from contacting the pod frame when shifting the carriage.*

Pod (Cont.)

POD FRAME ASSEMBLY

The pod frame assembly houses the scrub head and squeegee assembly. One unique feature of the TSS/62E is the ability to disengage the pod from the main machine frame.

By simply raising the pod cover and removing the chrome release pin, the entire pod swings open for complete accessibility to the scrub brushes and squeegee mechanism.

PowerShift™

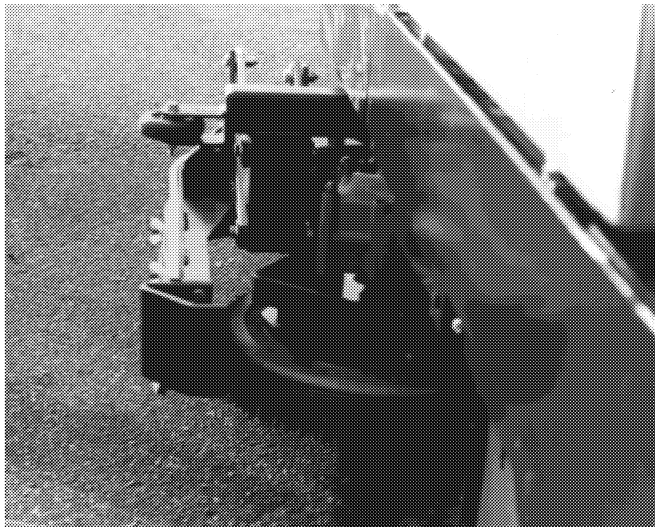
The PowerShift™ feature allows the scrub head and squeegee carriage to shift up to 8" outside the machine frame.

To activate PowerShift™, depress the PowerShift™ button on the operator's console.

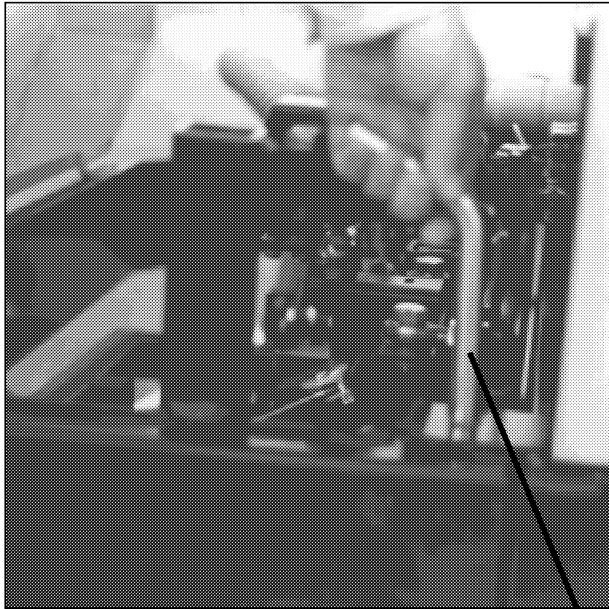
The operator controls the length of travel by depressing the switch. When the carriage is at maximum position, the actuator will ratchet. (Excessive ratcheting may cause damage to the actuator.)

PowerShift™ can be achieved with the carriage either up or down.

The entire pod assembly is shock-mounted with a breakaway system to avoid damage from accidental impact.



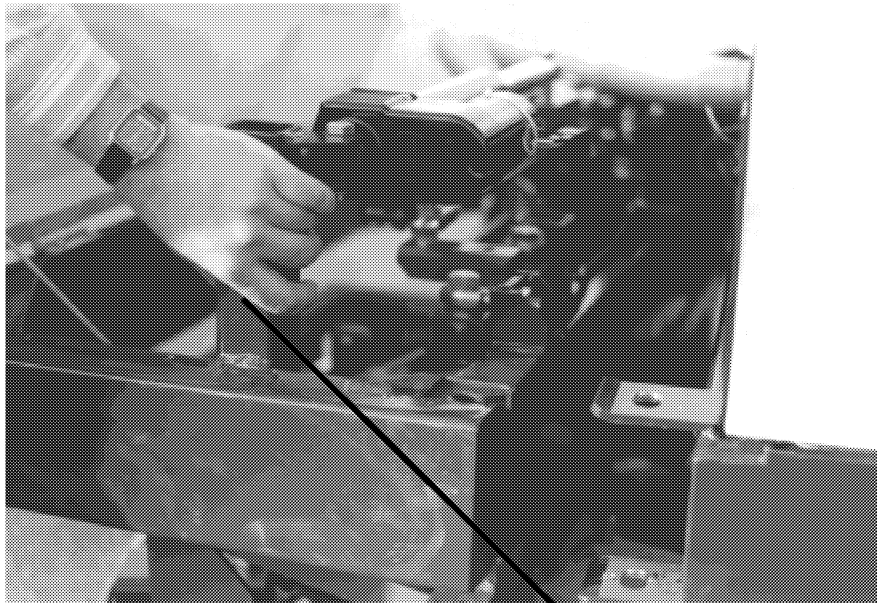
**SHOWN WITH
POWERSHIFT™ FULLY
ACTIVATED
(AT MAXIMUM TRAVEL)**



**TO DISENGAGE
POD:**

**(SHOWN WITH
REAR POD COVER
OPEN)**

1. Remove Locking Pin



**SHOWN
WITH
REAR
POD
OPEN**

2. Pull Pod

