Etnyre INTERNATIONAL

MO-PS3-25

PavementSaver III

Operation Manual

3650 Sabin Brown Rd, Wickenburg, Arizona 85390

Phone: 916-826-1007

PARTS/SERVICE: 888-897-0575

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LIMITED WARRANTY

Etnyre International warrants products of its manufacture against defects in material and workmanship for a period of 180 days from date of delivery to customer. Any component part or parts proving defective within the warranty period will be repaired or replaced, at the option of Etnyre International, F.O.B. the factory in Wickenburg AZ, providing such parts are returned to the factory and found to be defective by Etnyre International.

This warranty is not transferable and does not cover damage resulting from other than defects in material or workmanship, or damage caused by unreasonable use including the failure to provide reasonable and necessary maintenance. In addition, this warranty does not cover general check-ups on electrical equipment, hydraulic equipment, engines, or replacement of non-defective parts (such as filters, fan belts, etc.) that may wear and need to be replaced with reasonable use within the warranty period or which may require replacement in connection with normal maintenance.

This warranty does not apply to any trade accessory, engine, electrical equipment, hydraulic equipment, or other component which is separately warranted by another manufacturer and not manufactured by Etnyre International. Etnyre International assumes no responsibility beyond the warranty of the warranty of the manufacturer of such equipment or accessories

Etnyre International's liability is limited to the replacement of defective parts, and no allowance shall be made for labor performed, delays or expense incidental to the replacement of the defective parts nor any other special, incidental or consequential damage or injuries. This warranty will not apply to any product that has been repaired or altered outside of Etnyre International's factory, nor to any product that has been subject to misuse, negligence, or accident.

Etnyre International reserves the right to make changes in design and specifications without incurring the obligation to furnish them or machines previously sold or shipped.

All parts returned for warranty shall be shipped to :

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Wickenburg, AZ 85390

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⚠ WARNING

Unsafe operation of this equipment can result in injury or death to the operator and/or to others nearby—read, understand and follow all safety instructions.

All crew persons, in addition to the operator, must be trained on safe equipment use before starting or operating the equipment.

Equipment should be inspected before each use. Any defects should be repaired prior to operating the machine.

This equipment uses hydraulics at high pressure.

Tires should be inspected for tread condition, air pressure, and any excessive build up of seal coat material.

Only the operator should be on the machine when in operation. No other riders are allowed on the machine or on the squeegee under any circumstances.

The operator should use the handrails to mount and dismount the equipment and must use the seat and seat belts provided.

The joystick must always be in the neutral position before starting the engine.

The operator must be seated before the equipment can be started.

Refrain from wearing loose clothing, keep long hair tied back to prevent injury.

Turn the engine off before filling tank.

Keep mixer tank lid closed at all times when not in the process of filling the tank. The engine MUST not be running while filling tank.

Disconnect the battery and Red Tag the machine before cleaning or servicing the mixer shaft or any moving parts.

All fluid levels should be checked before starting machine.

Do not drill, weld or modify the equipment without consulting **Etnyre International at 1-928-684-7851**

BEFORE YOU BEGIN

General Safety Information

These instructions are for your safety and the safety of the end user. Read them carefully until they are understood.

To prevent injury to yourself and/or damage to the equipment

- Check all the fluid levels in the engine and hydraulic tank.
- Periodically inspect the gear oil in the drive and drag box gear reducers.
- Check for damage or defects before each use.
- Tires should be properly inflated, have adequate tread and be free from excessive seal coat build up.
- Inspect the mixer auger for free movement and that it is free from any obstruction before loading with seal material.
- Turn off the engine and disconnect the battery before cleaning the interior of the seal coat tank.
- Inspect the discharge gate valve and cam coupling for excessive material buildup or damage.
- Inspect the squeegee box for excessive buildup and wear of the rubber.
- The rear squeegee assembly should pivot freely and smoothly.
- The squeegee should be free of damage.
- Any damage can result in uneven seal coat application.

To avoid injury to yourself and/or others

- This machine is not a toy, nor is it a race car.
- This machine is powerful and can turn sharply.
- PavementSaver II need to be handled with care and respect.
- Everyone, operator and crew alike, needs to stay clear of all moving parts, this includes the squeegee which can swivel quickly.
- Situational Awareness: Always be aware of your surroundings while using or working around this equipment.
- NEVER use this machine in a way other than for what it was designed for.
- Operator should adjust the seat and steering wheel for maximum comfort prior to starting the machine.
- All persons operating this machine are advised to wear eye protection.
- Integrated safety features should never be bypassed.

GETTING FAMILIAR WITH YOUR PAVEMENT SAVER III

***Fig 1*: Joystick**

1. Pavement fogging sys. switch
2. Squeegee box pivot right
3. Squeegee box pivot left
4. Squeegee box up
5. Squeegee box down
6. Spray Bar Close
7. Spray Bar Open
8. Material valve Open (Under JS)
9. Material Valve Close (Under JS)

***Fig 2*: Keypad**

1. Material Pump (towards Spray Bar)
2. Material Pump (Towards Tank)
3. Discharge knife valve Lockout
4. Two Speed for Propel
5. RH Squeegee Wing Open
6. RH Squeegee Wing Close
7. LH Squeegee Wing Open
8. LH Squeegee Wing Close
9. Parking brake

GETTING FAMILIAR WITH YOUR PAVEMENT SAVER III (CONTINUED)

Fig 3*: ARC Dash Panel Detail

1. Tank Mixer Fast
2. Tank Mixer Slow
3. Engine RPM Down
4. Engine RPM UP
5. Engine Key Switch (Start/Stop)

Fig 4*: ARC Dash Panel Detail

1. See ARC Section for details

GETTING FAMILIAR WITH YOUR PAVEMENT SAVER III (CONTINUED)

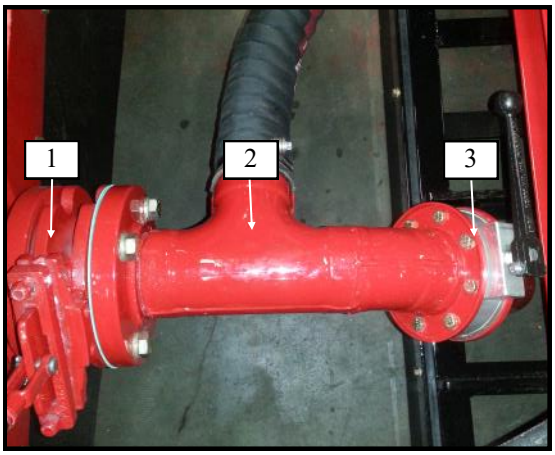

***Fig 6*: Seal Coat Discharge**

1. Hydraulic Knife Valve
2. Optional Tee for Spray system *
3. Gate valve

***Fig 7*: Kubota turbo diesel engine**

1. Hydraulic Pump Stack
2. Air cleaner assembly
3. Radiator
4. Steering assembly

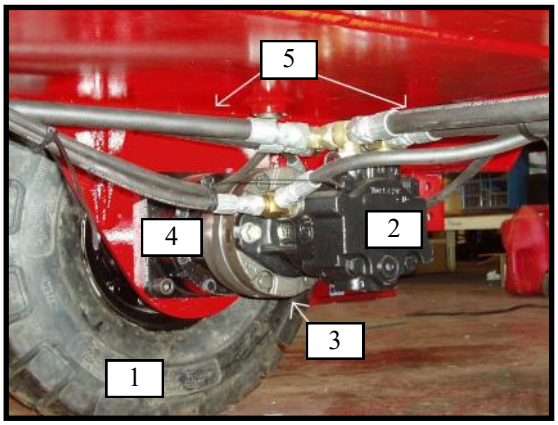

Fig 8*: Wheels and drive train (rear)

1. Tire and wheel assembly (air filled)
2. Hydraulic drive motor
3. Parking brake assembly
4. Gear reduction box
5. Hydraulic lines

**Right side shown, left side symmetrical*

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GETTING FAMILIAR WITH YOUR PAVEMENT SAVER III (CONTINUED)

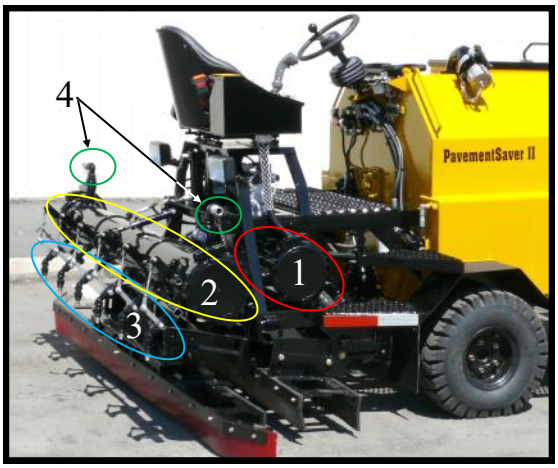
***Fig 9*: Front wheel and drive train**

1. Tire and wheel assembly (foam filled)
2. Gear box
3. Hydraulic drive motor
4. Steering motor and gear

***Fig 10*: Fuel tank**

1. Fuel gauge
2. Fill cap (green)
3. Drain plug
4. Shutoff ball valve
5. Filter

***Fig 11:* *Optional* spray bar**



1. Primary strainer
2. Spray bar / secondary strainer assy.
3. Ball valve and spray nozzles (six)
4. Optional spray wand and/or spray tip extender attachment

GETTING FAMILIAR WITH YOUR PAVEMENT SAVER III (CONTINUED)

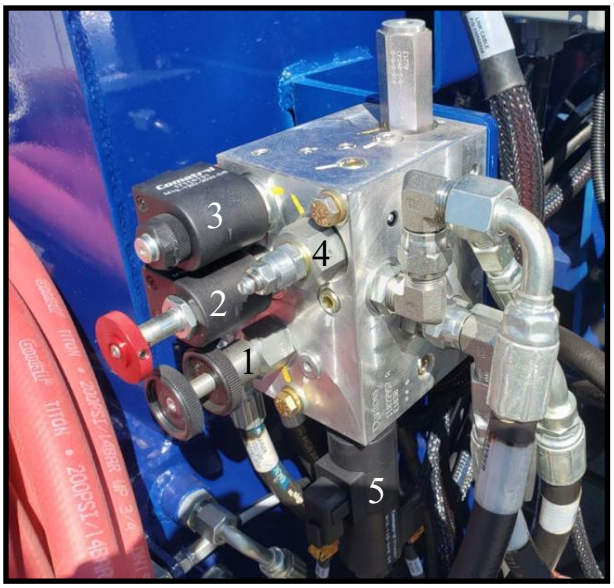


Fig 12: **Front Hydraulic Manifold**

1. Mixer motor speed control
2. Parking Brake solenoid with manual override
3. 2 speed solenoid
4. Hydraulic pressure adjuster
5. Mixer motor directional control solenoid

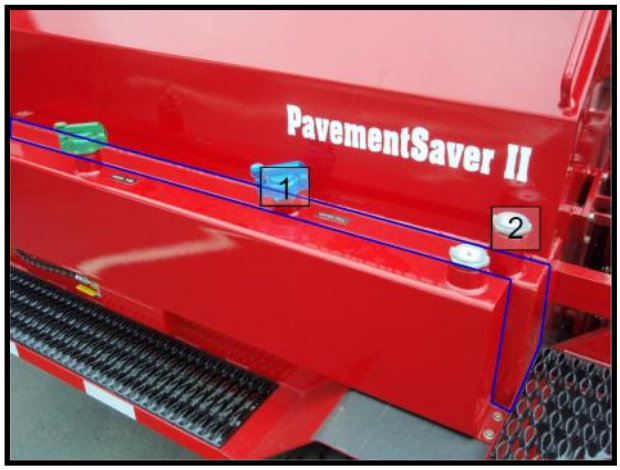


Fig 13**: Water tank**

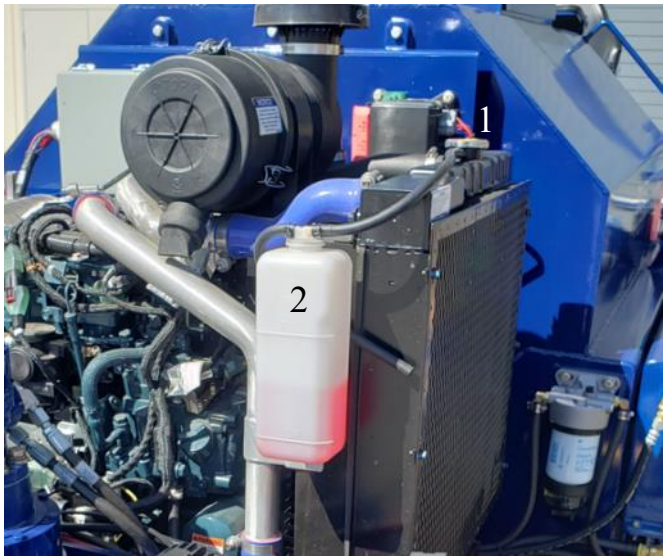
1. Water tank fill cap
2. Water tank level gauge

PAVEMENT SAVER III PRE-CHECK

Engine oil dipstick is located on the front side of the engine behind the steering drive assembly

Engine **coolant** is checked by removing the radiator cap (item 1). This system includes a coolant reservoir mounted on the side of the radiator (item 2)

DO NOT REMOVE THE CAP WHILE THE ENGINE IS HOT OR RUNNING.



PAVEMENT SAVER III PRE-CHECK (CONTINUED)

The **tires** installed on The PavementSaver III are a tube type tire mounted on a 2 piece rim. The **rear** tires need to be inflated to no more than 80psi. Tires should have adequate tread depth. Excess seal material should not be allowed to build up on the tires and rims. Tires and rims should be cleaned periodically.

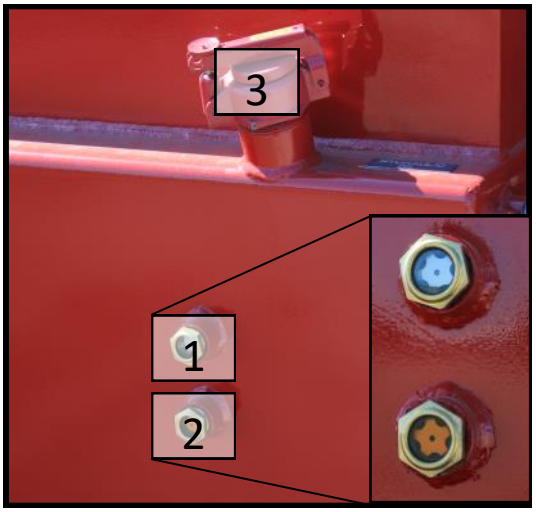
The front tire is foam filled. Only maintenance required is periodic removal of seal material buildup.

This PavementSaver III uses ***No. 2 diesel fuel***. The fuel tank is mounted on the left side of the machine. The fill cap is green (Item 2). A dial gauge (Item 1) is mounted adjacent to the water level gauge. Fill the tank from the green cap (Item 2). Open the fuel shutoff ball valve (Item 4) prior to starting the engine.

Please note: It is advised that you close the fuel valve when transporting the machine on a trailer.

PAVEMENT SAVER III PRE-CHECK (CONTINUED)

The **hydraulic** oil tank is located on the right side of the machine. Sight glasses are installed for quick fluid level checking. The "cold" (Lower - Item 2) glass should be submerged and the "hot" (Upper - Item 1) glass should be dry. The fill cap (item 3) is located on the top of the tank toward the front of the machine. Use Chevron THF1000 (or equivalent). A drain plug is located on the bottom near the right rear wheel (not visible).



The PavementSaver III utilizes high pressure **hydraulic lines** (hoses) and components. All the hoses, pumps, motors and valves should be free from leaks and should be kept clean. Hoses that are worn, abraded, scuffed or leaking from crimped fittings should be replaced with new hoses.

Please Note: Diesel fuel, gasoline and other fluids can deteriorate hydraulic lines. Keep your lines clean and free of dirt, fuels, grease and sealcoat buildup.

STARTING AND RUNNING

IMPORTANT!

The hydraulic line ball valves MUST remain open at all times unless the lines are to be removed. Leaving the valves closed with the engine running may result in serious damage to the hydraulic pumps

DESCRIPTION

The PavementSaver III's engine is started from the operators seating position. This machine uses a triple safety feature that includes a neutral safety switch, parking brake switch and a safety switch installed on the operators seat belt receiver.

The PavementSaver III **WILL NOT OPERATE** unless the following conditions are satisfied:

1. The operator is seated with seatbelt latched
2. The parking brake is engaged
3. The joy stick is in the neutral position

OPERATION

To Start: (*When cold, preheating may be necessary, see PREHEATING*)
Turn the ignition key clockwise to the "ON" position then turn further to start the Engine. Once started, the voltage should be within the range of 12 and 14 volts. Allow the engine to warm up to normal operating temperature, approximately 150 degrees, before moving or using the machine.

PREHEATING

Preheating the glow plugs may be necessary in colder conditions. Preheating may not be required when starting on warm days or once the engine has warmed up.

- To preheat, turn the ignition key counterclockwise and hold for 10 – 15 seconds.
- Turn key switch clockwise to start.

PARKING BRAKE SYSTEM

WARNING!

- **DO NOT set the parking brake while the machine is in motion**
- **Engaging the parking brake WILL LOCK UP BOTH REAR DRIVE WHEELS**
- **The operator MUST remain seated while the machine is in motion**
- **The parking brake MUST be set when the machine is stopped while the engine is running**

DESCRIPTION

The PavementSaver III uses an electronically controlled parking brake system. This system can be activated manually via the toggle switch located on the operator control panel (Fig: 1, page 6). A warning integrated into the display screen on the dash panel will flash when the parking brake is set (Fig: 4, page 7).

The brake will automatically be set when the machine's engine is not running.

The parking brake will also engage automatically when the operator releases the seal belt. The machine will not move until the system is reset. Reset procedure is as follows:

1. The operator must reengage seat belt
2. Place the joy stick to the neutral position

OPERATION

The toggle switch that operates the parking brake is located on the control box to the operator's right side. The switch uses a red safety cover. A red indicator light integrated into the digital display of the dash board (See Fig: 4 Page7) will flash when the brake is set. Closing the red safety cover will also switch the brake to "SET". The cover must be lifted and open in order to set the parking brake to "RELEASE". See figures below.

MANUAL PARKING BRAKE BYPASS

WARNING!

- **The bypass feature is ONLY to be used in case of failure of the parking brake release components. Repairs should be made as soon as possible !**

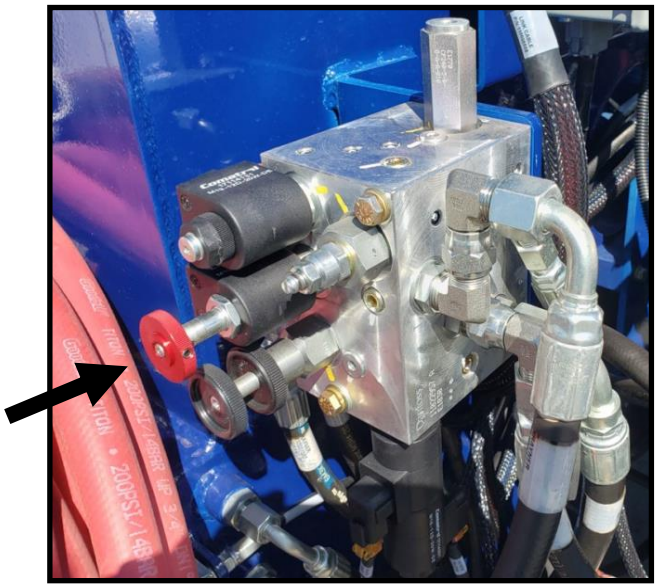
DESCRIPTION

All PavementSaver III models come equipped with a parking brake bypass. In the event that the parking brake switch or brake solenoid malfunction, this feature will allow the operator to disengage the parking brake and drive the PavementSaver II to a safe location for quick repair of the parking brake system.

OPERATION

WITH THE ENGINE OFF!

Pull the red knob (arrowed, Fig. 24) until the knob can be rotated, then rotate ¼ turn. The knob will now stay in the extended position. Reverse the procedure to reset normal parking brake operation.



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DRIVE SYSTEM AND HYDROSTATIC BRAKING

DESCRIPTION

The drive system on the PavementSaver III is powered by three hydraulic drive motors. Movement forward and reverse is controlled via joystick. The further the joystick is moved forward or reverse, the faster the machine moves.

When moving the machine, set the engine speed to 1000 to 1500 RPMs. Lower speed is more suited for an unloaded machine, higher RPMs for a loaded machine. Use these engine RPMs when slow movement is desired such as loading or unloading from a transport vehicle.

It will be necessary to run the engine at full throttle, or about 2600 RPMs, while applying seal coat material in order to have full access to all the features and capabilities of the PavementSaver III.

OPERATION

The PavementSaver III relies on movement of the joy stick to control the forward and reverse motion. Forward and reverse speed is controlled by advancing the joystick forward or backwards. See figures below.

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SPEED CONTROL SYSTEM

WARNING!

- **Do not shift from high (setting 1) to low (setting 2) until the machine is fully stopped**

DESCRIPTION

The PavementSaver III is equipped with a speed control function in the display which allows the operator to change the speed at which the machine travels.

Low speed, is the normal range for working.

High speed, is for travel and directs more hydraulic flow to the rear wheels.

SPEED CONTROL SYSTEM (CONTINUED)

SPEED CONTROL:

DESCRIPTION

The PavementSaver III with ARC is equipped with a speed adjusting on the lower LH of the display on the primary screen. This feature allows the operator to set the maximum travel speed for product application. When 2 speed is selected the machine goes to full seed range on the joystick, when 2 speed is turned off the operators preset speed takes over.

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SPRINKLER SYSTEM

DESCRIPTION

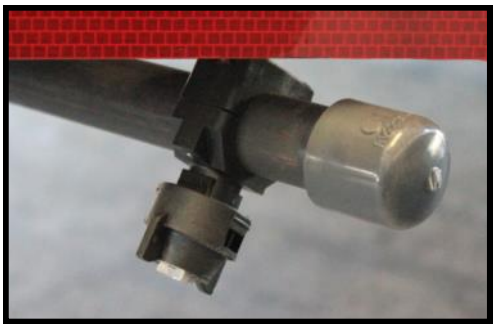
The PavementSaver III is equipped with an electrically operated sprinkler system powered by an electric water pump. Piping includes a ball valve for on and off and an in inline "Y" strainer. These are mounted on the bottom of the water tank on the left side (Fig: 29).

The electric pump is mounted on the forward frame on the left side. The pump provides a pre-set steady supply of water when switched on.

The water tank is equipped with a dial gauge mounted on the top of the tank. The fill cap is painted blue and mounted on the left side rear corner. A drain plug is placed on the bottom near the front. ***(NOTE: The system should be completely drained for winter storage.)***

OPERATION

1. Insure ball valve is in the open position (lever inline with piping) on bottom of the tank.
2. Press the bottom center button on the joystick.



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SQUEEGEE BOX

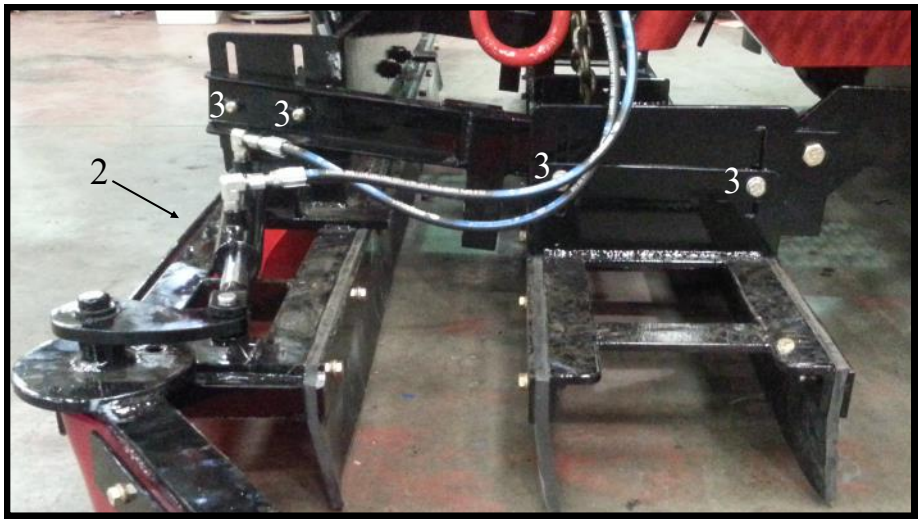
DESCRIPTION

The primary purpose of the squeegee box is to apply material, secondly, to contain the material being applied. Unlike other methods, application via squeegee allows for the material to reach deep into grooves present within existing asphalt by forcing material down with the squeegee rubbers.

The squeegee box or "striker" box (item 2), pivots hydraulically via buttons on the joystick (page 6). The vertical angle of the front and rear squeegees are adjusted by loosening the 8 (4 on each side) adjustment bolts (item 3).

The angle of the rear striker box should be pivoted according to the direction the seal material is going to be spread. (The angle of the pivot will vary depending on the slope of the surface being treated.) **Example:** The striker should be angled with the side farthest forward nearest the last pass and should be reversed when the machine is turned around for the next pass. This will keep the squeegee assembly pulling the material away from the surface that has already been treated. The striker on the last pass should face the previous pass.

It is important for the operator to raise the box off the ground when moving the machine while not laying material. The box should only be on the ground when spreading seal material or when the machine is not in use. Dragging the box will result in premature squeegee rubber wear.



As you become familiar with the machine you will quickly adjust to the material output necessary for varying pavement conditions, size of the squeegee, and speed of the machine.

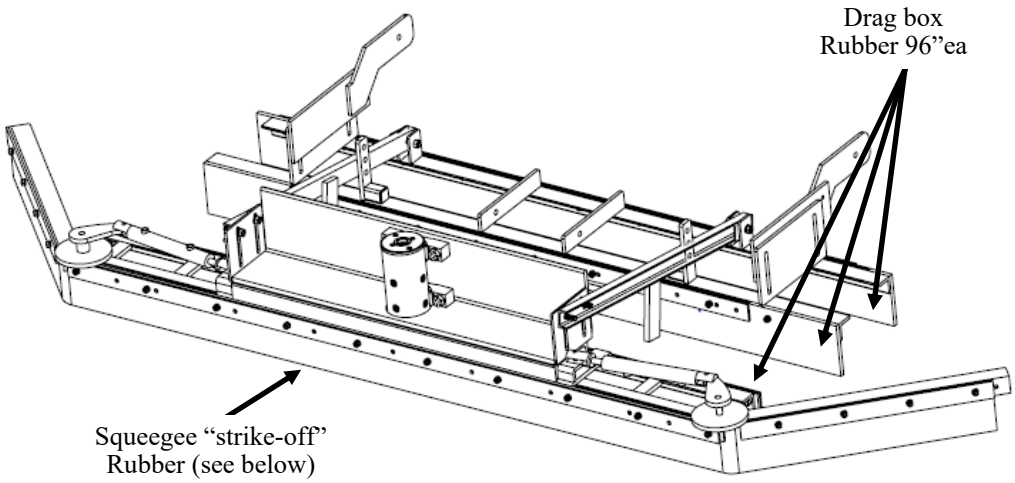
On the next page you will see suggested configurations for the squeegee system.

SQUEEGEE BOX

Selecting the proper squeegee rubber is the choice of the operator. In general terms there are two types of rubber, Black Neoprene and Red Urethane. Neoprene is softer, less expensive material but wears faster, Urethane is a stiffer, longer lasting material.

The variance in rubber stiffness directly affects the desired finish. Urethane is common for it has much longer wear life over Neoprene.

The spreader box requires 3 separate pieces of rubber that serve to pre distribute the material across the width of the machine. The Strike-off is a single length of rubber.



QTY	SIZE	LOCATION	MATERIAL	RES P/N
3	1/2" x 6" x 96"	Drag box	Black Neoprene	110001054
1	3/8" x 6" x 120"	Strike-off (Standard box)	Red Urethane	110001055
1	3/8" x 6" x 168"	Strike-off (w/Wings)	Red Urethane	110001056

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You will soon determine, by experience, what works best for you under your conditions.

- Squeegee position for normal surfaces (Fig. 32 below)

- The squeegee shown here is in the vertical position. This position will be used for most pavement surfaces.

The rubber shown here is 3/8" Red Urethane. This is stiffer than black rubber but has a much longer life.

Fig. 32

- The squeegee adjustment shown here is rotated fully forwards. This is on the extreme end of the adjustment range and is considered "Out of Adjustment". This box has a wide range of adjustment to allow for maximum use of your squeegee. *(Adjusting to a forward direction typically improves the finish on smoother surfaces.)*

Fig. 33

HYDRAULIC ADJUSTMENTS

WARNING!

- **Do not run the mixer while actively loading material into the machine**

MIXER MOTOR:

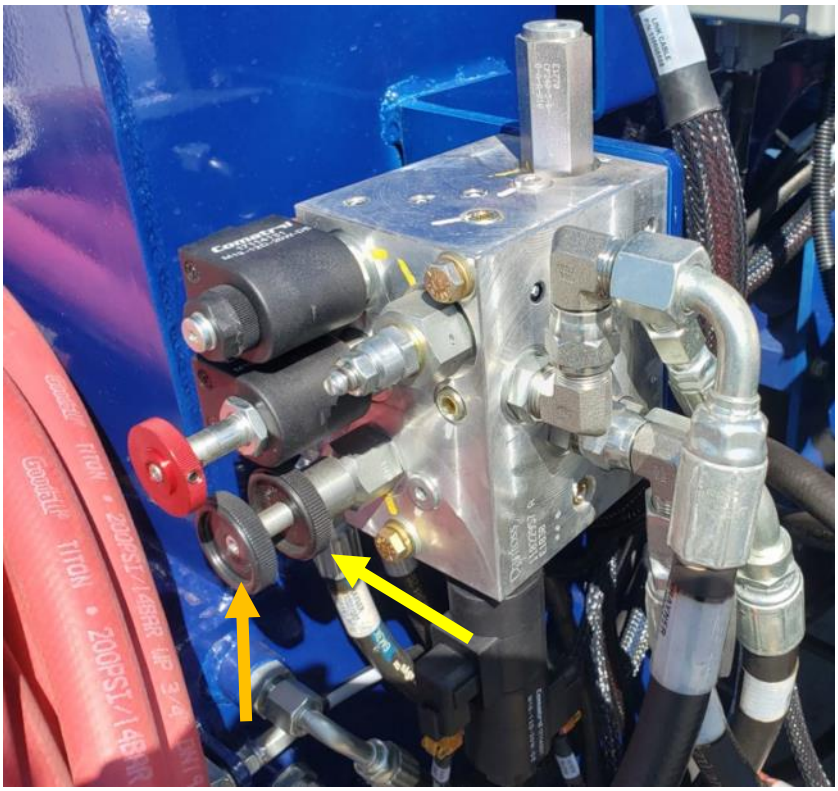
DESCRIPTION

The PavementSaver III mixer can be operated in “left rotation” or “right rotation. "Left rotation is a slower speed used when actively placing material. Right rotation is a higher speed used for mixing after loading or adding materials to the materials tank.

The speed of the mixer in right rotation can be adjusted via the control valve mounted on the engine fire wall (see Fig. 38 below). Left rotation speed of the mixer does not have an adjustment.

OPERATION

On the valve are two knobs. The outside knob “Orange arrow" adjusts the mixer speed, the inner knob “Yellow arrow” locks the adjuster knob. A slower speed is used to agitate the seal material. A faster speed is recommended when additives are mixed into the seal material in the tank.



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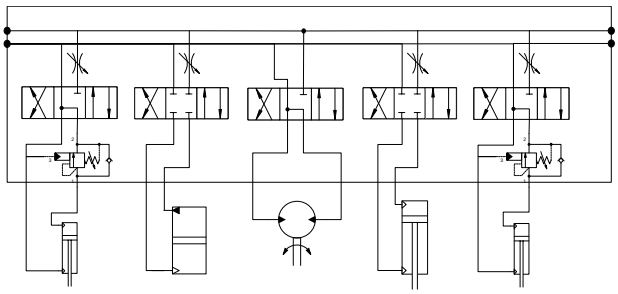
HYDRAULIC ADJUSTMENTS (CONTINUED)

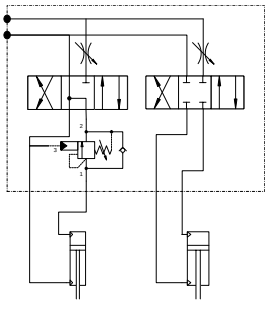
SQUEEGEE RAM PIVOT MOTOR & OPTIONAL SPRAY PUMP MOTOR:

DESCRIPTION

The speed of the squeegee lift ram and pivot motor can be adjusted to operator preference via set screws on the hydraulic valve mounted under the operator's seat (see Fig. 39 below). The screw labeled "# 1" controls the squeegee pivot or swing speed. The screw labeled "# 3" controls the squeegee box lift ram speed. The valve controlling the spray bar/wand pump is labeled "Item 2" (***OPTIONAL EQUIPMENT***). Turning each set screw "in" (clockwise) will slow the response of the ram or pivot motor. Turning each screw out (counterclockwise) will increase the response of each device.

See the Schematics section for other manifold configurations.

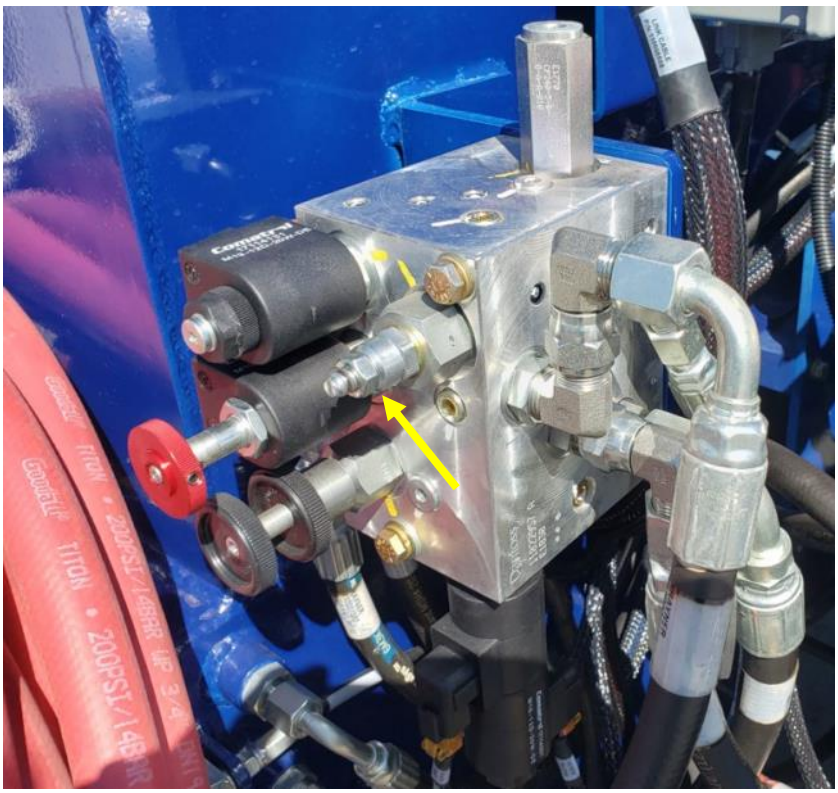




HYDRAULIC ADJUSTMENTS (CONTINUED)

Hydraulic Pressure Adjusting

If steering feels too tight or too loose, the hydraulic pressure may need adjusting. Locate the manifold on the front of the tank on the right side of the machine. Temporarily install a TEE on the top port labeled "A", use a 1500 psi pressure gauge on the TEE and reinstall the hose. Start the engine and allow the PavementSaver II to reach operating temperature. Observe the gauge reading. The gauge should read 800 psi. If the pressure needs to be adjusted, locate the adjusting screw (Arrowed). Loosen the outside hex nut, turn the flathead screw until the pressure reads as close to 800 psi as possible. **TIGHTEN** the lock nut!



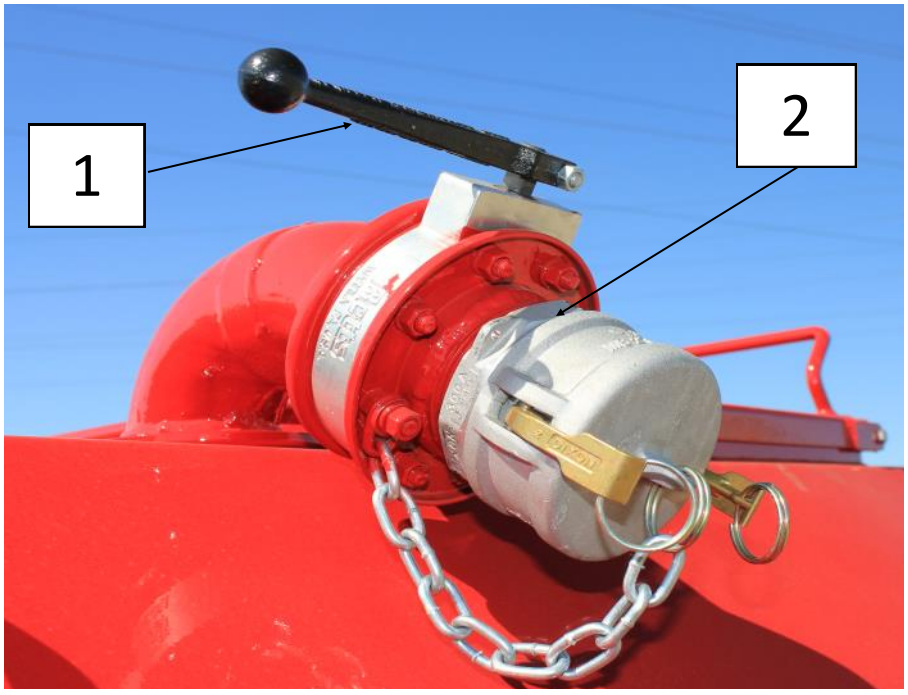
DIRECT FILL PORT

DESCRIPTION

An optional fill port may be installed on the top of the tank to allow filling with an attached hose. The port assembly uses a male 3 inch cam fitting, a dust cap and a manually operated butterfly valve. This system allows for the operator to fill the seal tank while evacuating any excess material in the fill hose back into the storage tank.

OPERATION

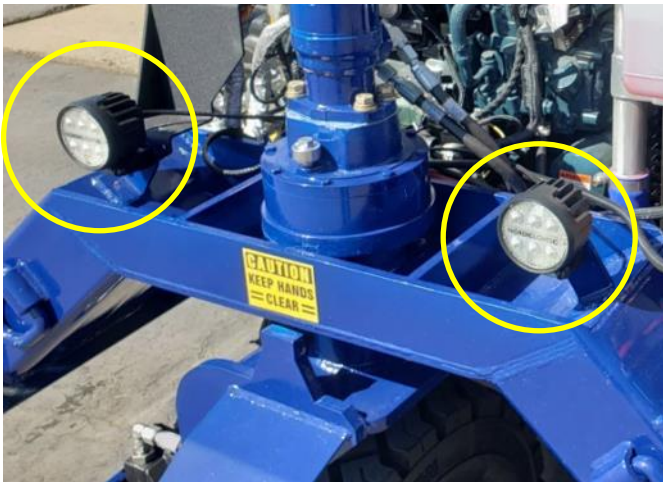
- Remove the dust cap
- Attach hose from the storage tank / truck to the 3 inch male cam fitting (item 2)
- Open the butterfly valve (item 1) by turning the lever parallel to the pipe.
- Activate your storage tank's pumping mechanism
- When the tank is filled, reverse the flow of the tank pump until the fill hose is empty
- Detach the fill hose
- Close the butterfly valve, reinstall the dust cap and wipe up any spillage that may mar the appearance of your PavementSaver II.



WORKING LIGHTS

DESCRIPTION

The PavementSaver III is equipped with supplementary work lights. Twin sets of lights are mounted on both the front and the rear of the machine.



OPERATION

They are controlled via a toggle switch mounted on the operator display screen.

SPRAY BAR

WARNING!

- **The squeegee box assembly MUST NOT be used for spraying operations. The squeegee box can be used after spraying to further spread material if desired**

DESCRIPTION

The PavementSaver III with ARC spray bar assembly, uses a hydraulically operated knife valve, a hydraulically driven computer controlled pump, pressure sensing Autonomous Rate Control (ARC), an inline strainer, and a combination spray bar and secondary strainer assembly. This system is used to apply seal coat material via a spray as opposed to spreading the material out with the squeegee box.

OPERATION

See page 29 for operating instructions

Spray Bar Components:

1. Butterfly valve (shown closed)
2. Suction hose
3. Primary strainer
4. 3 inch pump
5. Feed hose
6. Spray bar and secondary strainer
7. End caps (two on the spray bar, one on the primary strainer)
8. Ball valve and nozzle assemblies (six)

SPRAY BAR (CONTINUED)

WARNING!

- **Running the pump for long periods of time with the valves closed may result in equipment damage**

OPERATION

The pump is in spray mode when the Front LH Button on the keypad (Green circle) is actuated. The spray bar valves are opened or closed using the two farthest LH buttons on the Joystick. (Green arrow is open, red arrow is close)

Turn the pump off when no spraying to prolong the pumps life.

Residual material in the spray bar system can be evacuated back to the tank. This should be performed when the spray bar is not in use or when transporting the machine. To do so, run the pump in "reverse" (Yellow circle) with the valves open for a minute or two. This procedure also removes most debris that accumulates on the strainer screens. **CLOSE** the valves when the system is evacuated.

If the pump is operated in reverse AND you want to keep the knife valve closed, actuate the "Knife valve lock" button (Blue square)

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SPRAY BAR EXTENDERS

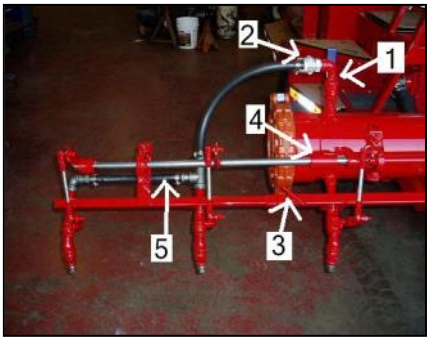
WARNING!

- **Install or remove spray extensions only when the machine is shut off**
- **Keep in mind the added width to the machine with the addition of spray bar extenders**

DESCRIPTION

The PavementSaver III may also be equipped with a set of spray bar extenders. The extenders will increase the number of spray nozzles from six (6) to ten(10).

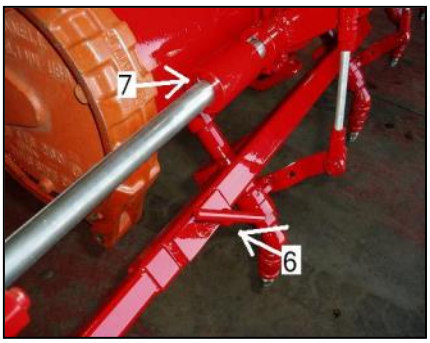
Spray Bar Extensions Parts: ***Fig 47***



1. Ball valve
2. Cam lock fitting
3. Bracket "Tee" handle
4. Spray tip arm rod coupling
5. Hose assembly
6. "Tee" handle
7. Rod coupler

Spray Bar Extensions Installation: ***Fig 48 and 49***

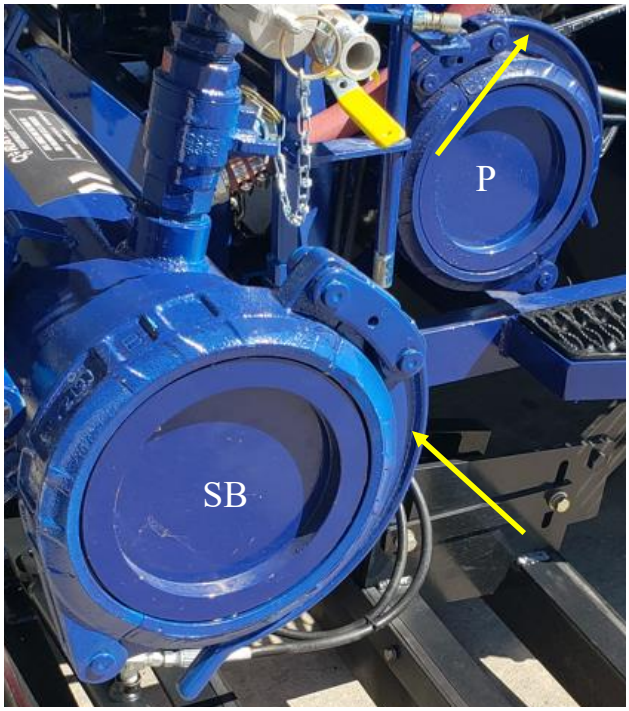
The spray extensions can be used on one or both sides. Line up the square tube insert into the receiver end with the "Tee" handle (Item 6) and the valve rod key way and slide into place (Item 7). Tighten the TEE handle set screw (Item 6), then tighten the set screws on the rod coupler (Item 7). Remove the dust cap (Item 2) and install the hose, open the ball valve (Item 3).



STRAINER SCREENS

MAINTENANCE INTERVAL

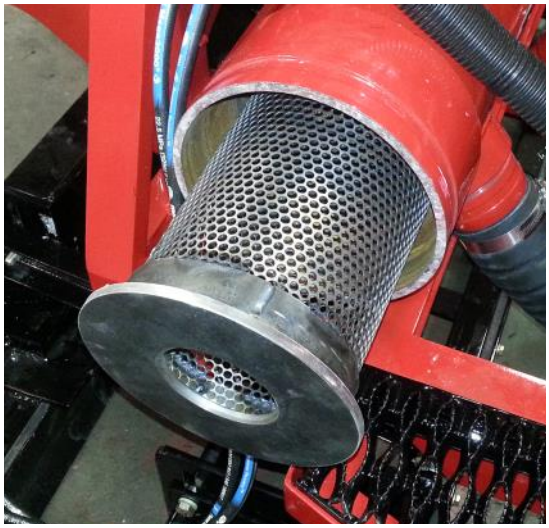
The strainer screens should be removed and cleaned daily or as the system becomes clogged.



PROCEDURE:

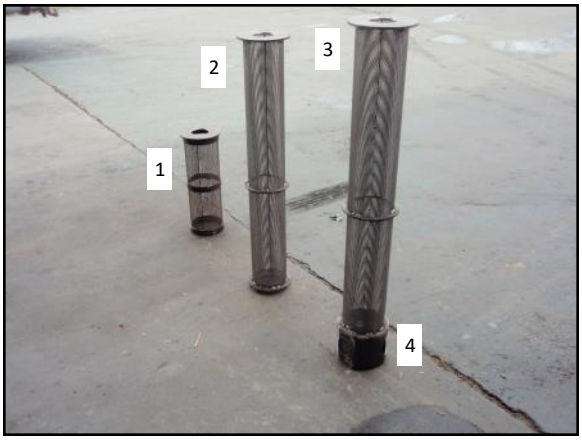
The primary strainer and the spray bar use "groove lock" caps. Remove the lock rings (Yellow arrows). Carefully remove the gasket so it may be reused so long as it is not damaged. Refer to page 34 for detailed instructions.

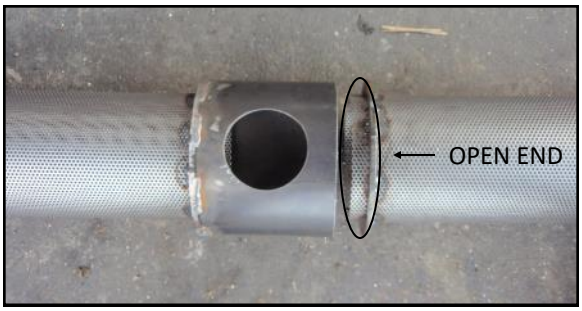
The strainer screens can be removed by reaching into the round access hole and pulling outward on the filter element.



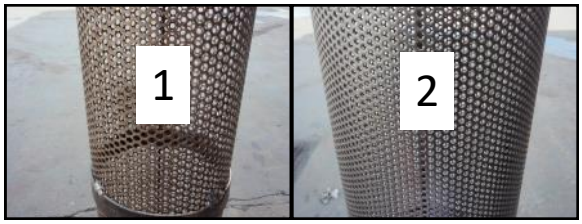
STRAINER SCREENS (CONTINUED)

Each strainer is designed to be installed in a particular location. The primary strainer uses a short strainer with large openings (Item 1). The secondary strainer uses TWO strainers. The taller (Item 3) is keyed as to allow the center joint (Item 4) to line up with the feed line. The other strainer (Item 2) **IS NOT** keyed. However when reinstalling be sure the open end of the strainer is inserted into the center joint

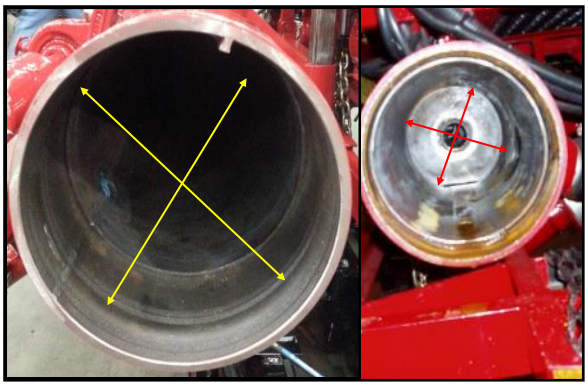




Each strainer is unique. The primary strainer uses larger openings (item 1) while the secondary screens use smaller openings (Item 2).



Remove any foreign debris and excess dried seal material from the strainers. Clean the inner walls of the filter and/or spray bar tubes and remove any debris or dried seal material (Right). Clean the sealing surfaces of the end caps, locking rings, and rubber gaskets (if being reused) to assure a leak free seal.



STRAINER SCREENS (CONTINUED)

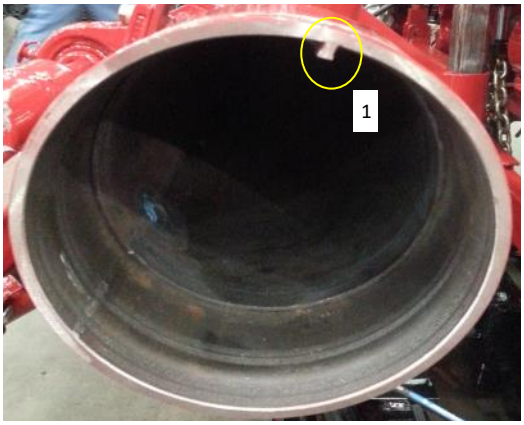
Strainer Installation:

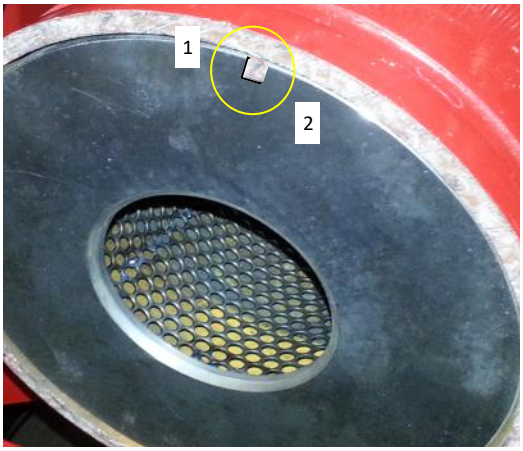
The primary strainer (shorter of the three) is slid into the strainer housing located under the operator's seat.

The secondary (within the spray bar assembly) are designed to be installed in a certain way.

1. Slide the taller of the two into the left side opening.
2. align the "key" on the inner lip of the tube (Item 1) with the keyway in the strainer end plate (Item 2)
3. Re install the cap, gasket and ring **before** re installing the right side strainer.
4. Slide the right side strainer into the tube, **this side has no keyway.** Align the open end of the strainer into the center joint on the left side strainer

Re install the cap, gasket and ring on the right side





GREASE THE GASKET AND INSIDE OF THE CLAMP RING

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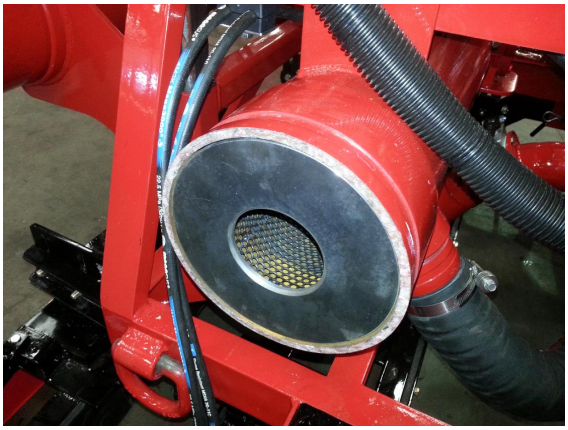
"GROOVE LOCK" CAP INSTALLATION

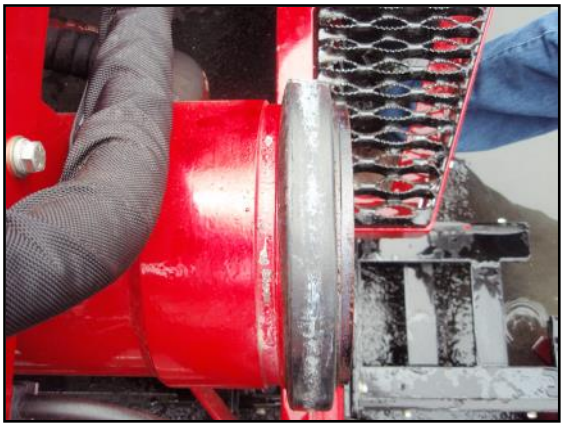
Insert strainer back into place, ensuring strainer face is flush with edge of strainer cylinder.



Reinstall gasket in such a way that it overhangs the cylinder by approximately a ½ an inch.

Place cap so it sits against the strainer face and rests within the gasket. (top view is shown)

GREASE THE GASKET AND INSIDE OF THE CLAMP RING



"GROOVE LOCK" CAP INSTALLATION (CONTINUED)

Before completely engaging lock ring lever, avoid pinching gasket. Doing so may cause a break in the gasket thereby reducing its service life or rendering it unusable.

GREASE THE GASKET AND INSIDE OF THE CLAMP RING

To avoid pinching, it may be necessary to add general purpose grease, or other lubricant, so lock ring is able to easily slide to a locking position without damaging the gasket.

GREASE THE GASKET AND INSIDE OF THE CLAMP RING

Finished assembly

PavementSaver III w/Arc

Main Menu Screen

This screen can be selected from any page by pushing the "O" softkey . From this page you are able to perform various tasks such as, operation selection, calibration, tips testing, settings and maintenance. (See Figure 7).

Fig. 7

Ref.	Function	Ref.	Function
F1	Not Used	F8	Maintenance
F2	Operation	X	Manual Mode
F3	Calibration	L	Not Used
F4	Diagnostics	U	Not Used
F5	Not Used	D	Not Used
F6	Test Tips	R	Not Used
F7	Settings	O	Main Menu

Setting Desired Ground Speed

- ***Step 1:*** Press the increase button (Green arrow) to increase max speed
- ***Step 2:*** Press the decrease button (Red arrow) to decrease max speed
- ***Step 3:*** Move joystick to the full forward position.
- ***Step 4:*** Press Increase or Decrease until the desired speed is reached.

(Travel speed can be adjusted at any time by adjusting the up or down arrows.)

Measuring Ground Speed

The FPM is the Feet Per Minute the buggy is traveling. This will show the operator how much **distance** is being coated per minute.

Setting Pump Volume

•**Step 1:** Press the increase (Blue arrow) or Decrease (Red arrow) to change pump volume

Adjusting Pump and ground speed for application rate

Set the ground speed to desired operating speed then adjust the pump volume to get the desired application rate as shown top center of the screen. *IF pump volume can not reach the desired application rate then reduce ground speed until the desired rate is met.*

Main Menu - Calibration Screen

From this page you are able to perform a machine calibration specific to the sealcoat being used. Up to four mix designs or "presets" can be stored. (See Figure 9). Follow the on screen instructions for the simple 6 step process.

Fig. 9

Ref.	Function	Ref.	Function
F1	Not Used	F8	Scroll Down
F2	Information	X	Manual Mode
F3	Settings	L	Not Used
F4	Previous Page	U	Not Used
F5	Not Used	D	Not Used
F6	Mode Select	R	Not Used
F7	Scroll Up	O	Main Menu

Main Menu - Diagnostics Screen

This page provide diagnostics information for the various input/outputs and CAN components on the machine. (See Figure 10).

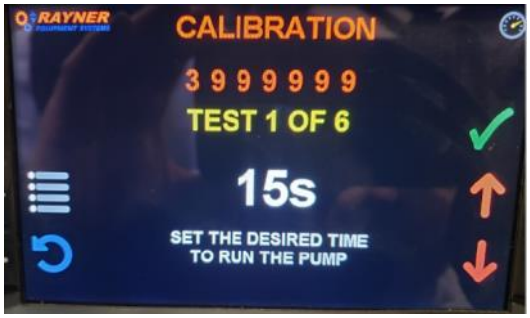
Fig. 10

Ref.	Function	Ref.	Function
F1	Not Used	F8	Scroll Down
F2	Not Used	X	Manual Mode
F3	Settings	L	Not Used
F4	Previous Page	U	Not Used
F5	Not Used	D	Not Used
F6	Diagnostic Selection	R	Not Used
F7	Scroll Up	O	Main Menu

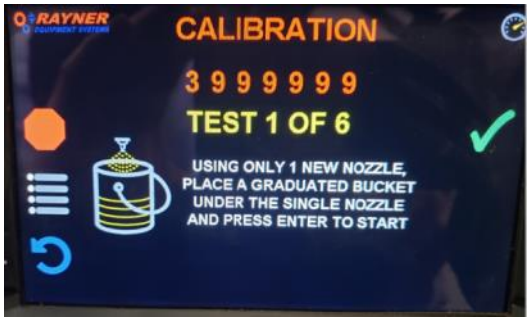
Main Menu - Calibration Screen

Select 1 of 4 presets and name if desired by pressing the button next to the pencil and scroll up and down to desired character.

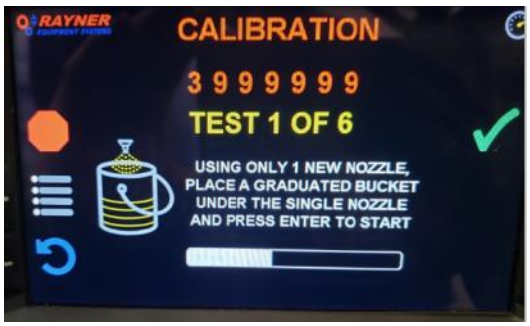
Set desired time of each test (15 is preferred)



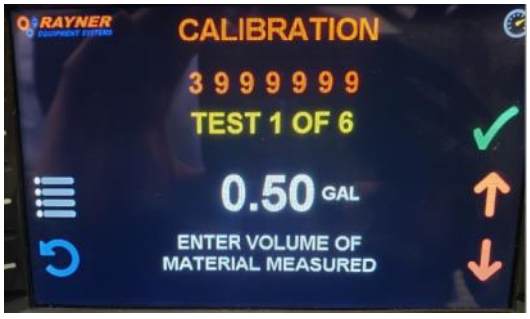
Place a graduated bucked under only 1 nozzle, use a NEW spray tip for this calibration. Disconnect all other valves via the quick release linkages.



When the green arrow is pressed the pump will automatically start, the spray bar will open, the progress is viewed on the bar as shown here. When the preset time has expired the spray bar will automatically close and the pump will turn off.



Read the volume in your graduated bucket and enter the volume here. Press the button next to the green arrow when complete to move to the next step. (6 in total)



Main Menu - Spray Tips Screen

When this page it active, the operator is preparing the perform a spray tips test to check the integrity of the tips on the machine. (See Figure 11).

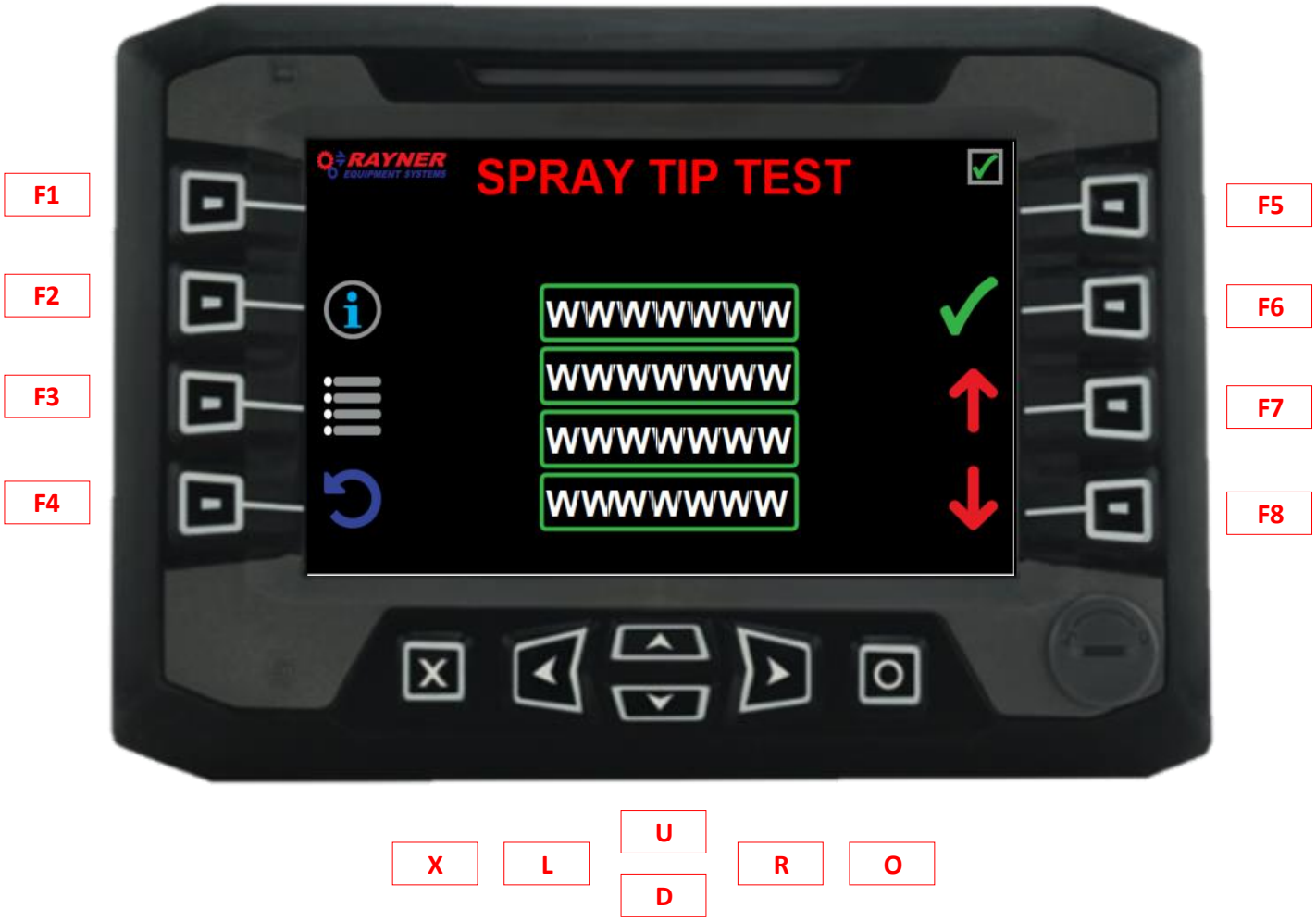


Fig. 11

Ref.	Function	Ref.	Function
F1	Not Used	F8	Scroll Down
F2	Information	X	Manual Mode
F3	Settings	L	Not Used
F4	Previous Page	U	Not Used
F5	Not Used	D	Not Used
F6	Selection	R	Not Used
F7	Scroll Up	O	Main Menu

Main Menu - Settings Screen

This is the general setting screen where language and unit of measure selections can be made. (See Figure 12).

Fig. 12

Ref.	Function	Ref.	Function
F1	Not Used	F8	Scroll Down
F2	Not Used	X	Manual Mode
F3	Settings	L	Not Used
F4	Previous Page	U	Not Used
F5	Not Used	D	Not Used
F6	Selection	R	Not Used
F7	Scroll Up	O	Main Menu

Diagnostic - Screen

This screen lets the Operator or Mechanic to test the CAN components for functionality. If the button in pressed on the device it will show in this screen.

Fig. 12

Ref.	Function	Ref.	Function
F1	Not Used	F8	Not Used
F2	Not Used	X	Manual Mode
F3	Settings	L	Not Used
F4	Previous Page	U	Not Used
F5	Not Used	D	Not Used
F6	Not Used	R	Not Used
F7	Not Used	O	Main Menu

Cleaning the Spray Bar

Steps to clean the Spray Bar :

1. Open the knife valve.
2. Operate the pump in the reverse direction.
3. Open the Spray wand Valve, **(Figure 1)** allow the pump to draw most of the material from the bar.
4. Stop the pump and Close the knife valve.
5. Place a containment device (Tarp and buckets work well) under the spray bar assembly leaving at least 5 feet on either ends to catch potential splashing. **(Figure 2)**
6. Remove all spray tips and place in bucket of water or solvent to soak. (Clean later)
7. Release each spray tip valve from the main control bar via the quick release coupler. **(Figure 3)**
8. Open each spray tip individually allowing material to drain into containment buckets.
9. Once all material is drained from the spray bar remove the quick release end caps.
   (Use caution as the end caps are heavy and likely slippery.) ***(Figure 5)***
10. Use either the threaded handle (old style) or the hand port to extract the filter from each side. Do NOT allow the filter to drop to the ground loaded with material, bending of the filter assembly is a likely result. **(Figure 6)** Clean immediately, dry material is difficult to remove.
    (Make note that one side is keyed for alignment with the inlet port.)
11. Stand each filter on it's open end and scrape excess material onto containment device.
12. After bulk of material is removed from filters stand each filter in 5 gallon bucket and rinse with water. **(Figure 4)**
13. Remove the supply hose via the cam locks on each end, wash out hose and set aside.
14. Rinse bar with water making sure to wash out each spray port.
15. Reinstall each filter half.
16. Reinstall each pressure end cap. *(Make sure the clamp mechanisms are installed correctly.)* ***Grease the rubber gaskets and the inside of the clamp mechanism*** *to prevent gasket binding and damage. Install the pressure plate. (Only installs one way.) Locate clamp assembly providing clearance for extension shaft. Clamp should require moderate force to close.*

    CAUTION: Improper installation could result in injury or death.
17. Reattach the spray bar quick release couplers.

(Left over black water can usually be dumped into storage tank as % cut for next application.)

Figure 1

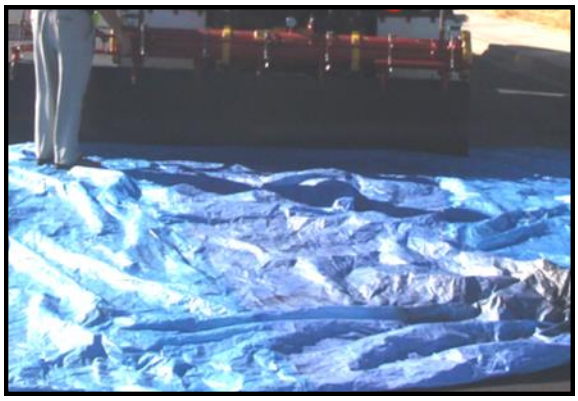


Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

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Cleaning the Primary Filter

Steps to clean the Primary Filter:

1. Place containment devices under the Primary filter assembly. (Leave at least 5 feet of material past the end of the filter's end cap to catch potential splash.)
2. At the end cap place a 5 gallon bucket. **(Figure 1)**
3. Remove the quick release end cap, drain all material from the filter assembly . **(Figure 2)** *(Use caution as the end cap is heavy and likely slippery.)*
4. Use hand port to extract the filter. Do NOT allow the filter to drop to the ground loaded with material, bending of the filter assembly is a likely result. **(Figure 3)** *Clean immediately, dry material is difficult to remove.*
5. Stand the filter on it's open end and scrape excess material onto containment device.
6. After bulk of material is removed from filters stand filter in 5 gallon bucket and rinse with water. **(Figure 4)**
7. With an empty bucket under the filters end cap operate the pump in reverse. Flush water through the pump rinsing out any stored material. While operating the pump at a slow, reverse rpm add water through the now open port where the spray bar supply hose was connected.
8. Rinse filter housing with water making sure to wash out each suction port.
9. Reinstall the filter. **(Figure 5)**
10. Reinstall each pressure end cap. *(Make sure the clamp mechanism is installed correctly.)* ***Grease the rubber gasket and the inside of the clamp mechanism*** *to prevent gasket binding and damage. Install the pressure plate. (Only installs one way.) Locate clamp assembly providing clearance clamp lock to close completely. Clamp should require moderate force to close.*

CAUTION: Improper installation could result in injury or death.

Figure 1

Figure 2

Figure 3

Figure 4

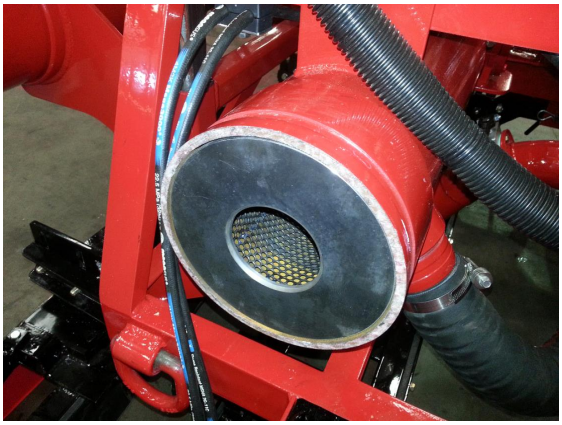


Figure 5

MAINTENANCE ITEMS

WARNING!

- **Perform all maintenance functions with the engine stopped and the ignition key switched off**

Air filter: Every year or more frequently under dusty conditions

Remove the quick clamps on the filter housing. After removing the filter element (item 2), clean the inner and outer surfaces of the air cleaner housing with clean rags. Install new filter.

Motor Oil: Every 200 hours

Remove the drain plug at the bottom of the oil pan. Allow the oil to drain and re install the oil plug. Remove the oil filter (mounted on the engine block) use a filter wrench if necessary. Clean the filter base with a clean rag. Lube the gasket of the new filter with fresh motor oil. With clean dry hands install a new filter hand tight **(do not tighten with a filter wrench)** Refill the engine with 6 quarts of 15w-40 motor oil (item 2). Check the dipstick, add more oil as needed.

MAINTENANCE ITEMS (CONTINUED)

Fuel Filter: Every 400 hours

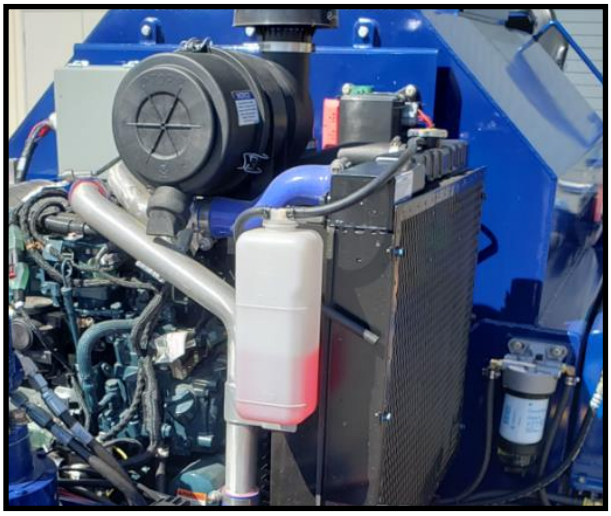
Remove the old fuel filter, use a filter wrench if necessary.
Clean the filter base with a clean rag and install a new fuel filter.
Bleeding the air from the fuel system may be necessary. See "Air bleeding the fuel system" in the Kubota operator's manual.

Fan Belt: Every 500 hours

Remove the cooling fan guard. Loosen the alternator pivot bolt. Loosen the alternator adjustment bolt. Push the alternator toward the engine enough to allow the belt to slip over the pulley lip. Loop the old belt (item 4) around the fan blades.

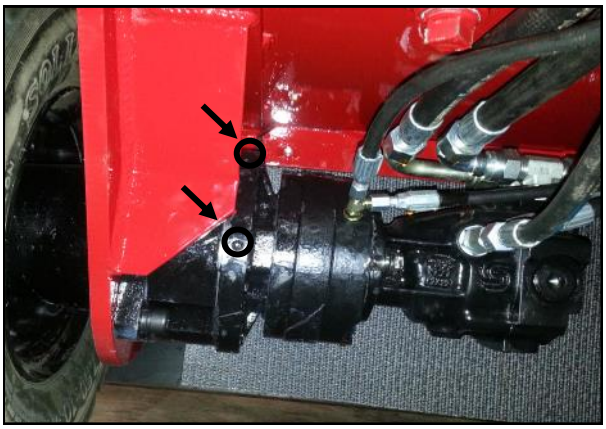
Install a new belt in the reverse order of removal. Use a suitable pry bar to move the alternator to tension the belt. When applying thumb pressure between the pulleys the movement on the belt should be no more than 0.28 to 0.35 in. Reinstall the cooling fan guard.

MAINTENANCE ITEMS (CONTINUED)



Radiator Coolant: Every 2 years
WARNING! The cooling system will be under pressure when hot.

Open the radiator cap (item 1). Open the drain plug on the lower tank and allow the coolant to drain into a container. Inspect the radiator hoses for signs of damage, leaks or deterioration. Replace hoses if needed. Refill with 1 gal of 50/50 mix of coolant and water. Empty the coolant reservoir (item 2) by removing it from the bracket and pouring out the coolant, refill with a 50/50 mix of coolant and water.



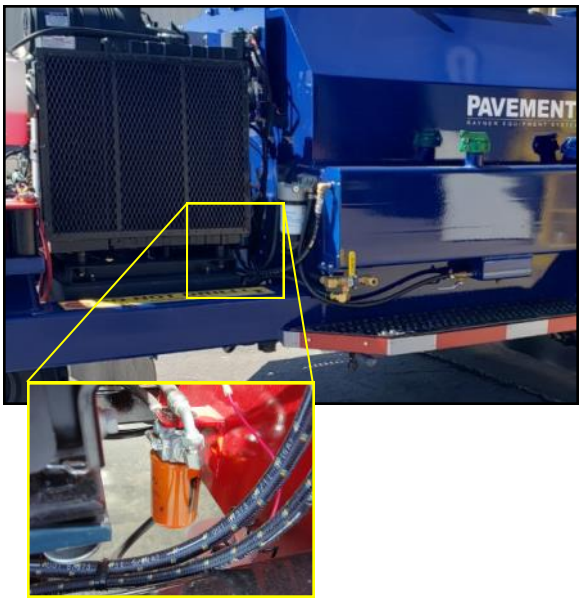
Wheel Gear Box Gear Oil
Remove the bottom (Item 2) and the side (Item 1) plugs. After the oil drains out, replace the bottom plug. Fill with 85w-140 gear lube from the side plug until the level reaches the top of the side plug (rear shown, front similar).

Squeegee Pivot Motor
Observe for erratic operation and any hydraulic fluid leaks

MAINTENANCE ITEMS (CONTINUED)

Hydraulic Filters Every 250 hours
Charge filter (Front of machine)

Return filter (rear of machine)



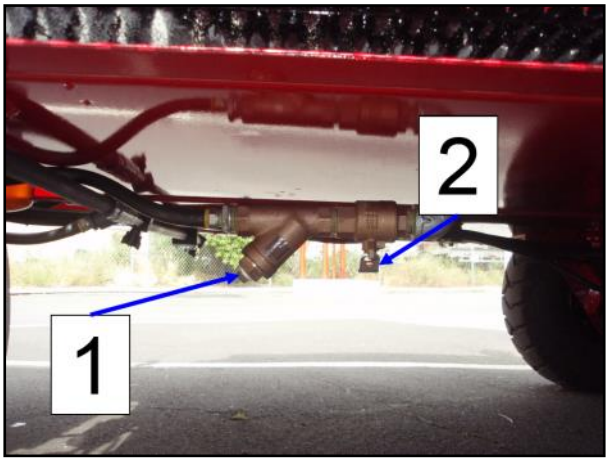
Removal (both): Use a filter wrench to loosen the filters. Spin off by hand. Fill new filters and coat the gaskets with fresh hydraulic oil (Chevron THF100 or equivalent). Hand tighten both filters.
Note: Use a filter wrench to snug the charge filter (Fig. 72). Grasp the filter near the base and turn. Run the engine for a few minutes. Inspect the hydraulic fluid level (see page 3)

MAINTENANCE ITEMS (CONTINUED)

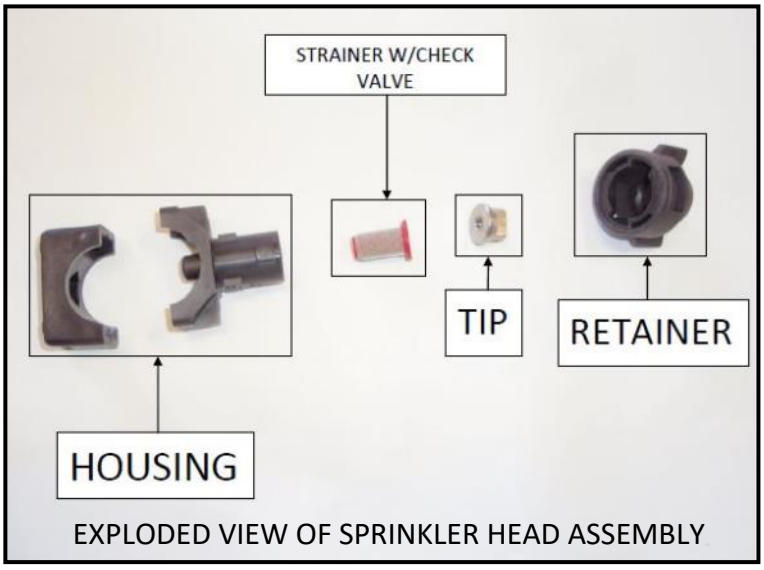
Sprinkler "Y" Strainer
At the beginning and the end of the season or as needed – Contaminants in your water supply may clog your filters.

Close the water tank ball valve (item 2). Grasp the hex on the "Y" strainer closest to the elbow with a suitable wrench. Remove the screen cap (item 1). Remove all debris and particles from the strainer screen. Reinstall the strainer screen and cap. Open the ball valve.

Remove the cap from each sprinkler tip, remove the filter. Clean and reinstall.




Exploded View of Sprinkler Strainer



EXPLODED VIEW OF SPRINKLER HEAD ASSEMBLY

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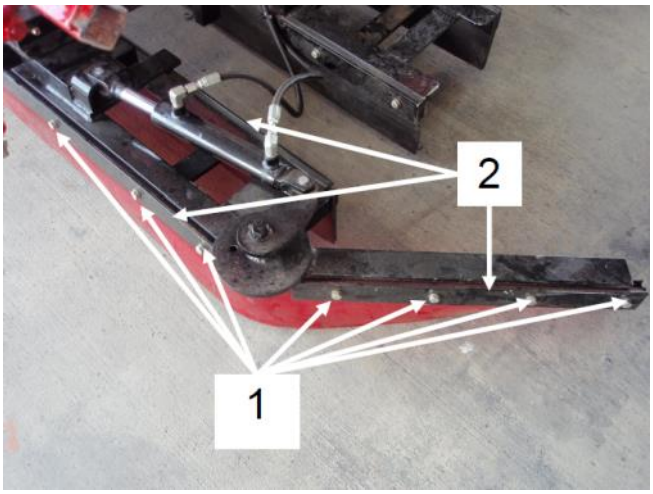
Squeegee Rubber Replacement



Remove all the bolts (items 1) along the squeegee frame. Remove the rubber clamp bars (items 2). Clean off any excess seal material build up. New rubbers will need to be hole punched at a diameter of 3/8 where bolts must pass through. Line up the holes on the rubbers with the bolt holes on the frame. Reinstall the clamp bars and bolts.

The wing slide should be pulled out, cleaned thoroughly and re-greased before mounting the rubber.

(The wing is an optional item that may not be included on your machine.)

Front mixer bearing replacement

Remove the motor and shaft coupler assembly. Loosen the set screws and remove the mounting bolts "Item 1". Rotate the bearing casting 1/8 of a turn. Using two long 14mm course thread bolts, thread them into opposing bolt holes on the casting (Arrowed). Incrementally turn each bolt in until the bearing is clear of the mixer shaft.

STRIKER QUICK REMOVAL *

Raise the squeegee assembly off the ground. Rotate the striker to a diagonal position to expose the top hex socket bolt (Circled), remove the bolt. Repeat with bolt on opposite side.

WARNING !!
The engine should be shut off unless to turn, lift or lower the striker ! !

Align the striker to a straight position and lower it to the ground. Remove the bolts along the back (Arrowed)

Clean the mounting surfaces and threaded bolt holes before reinstalling striker

Install striker in reversal of removal

**if equipped*

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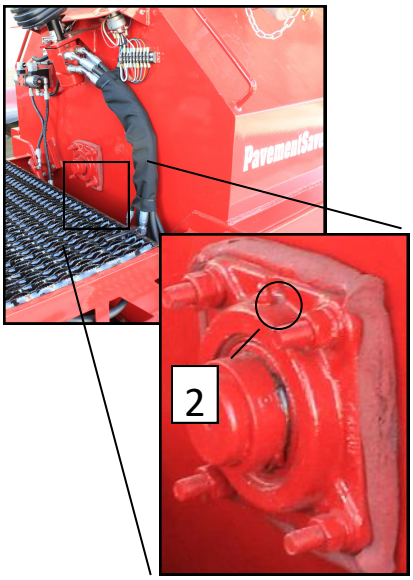
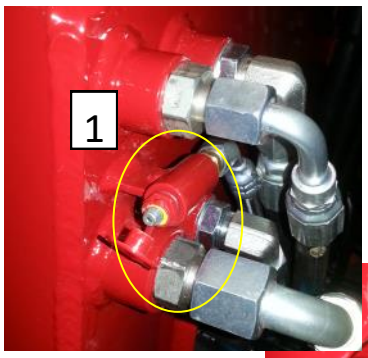
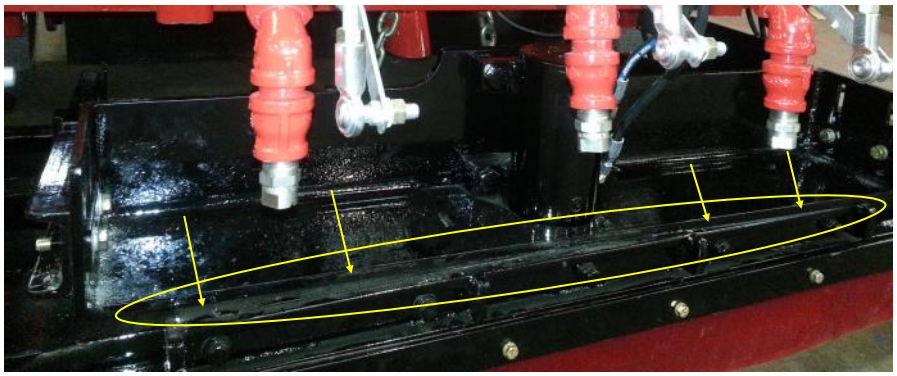
Greasing your machine

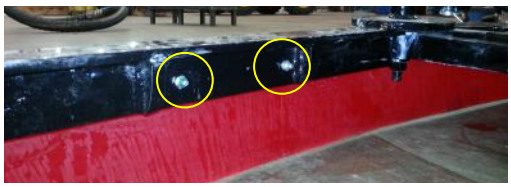
Periodically, the mixer bearings will need to be greased. Use heavy duty red grease, dispensed from a grease gun. Clean off any excess grease and dirt that may be on the grease fitting. Add grease until grease can be seen weeping from the bearing.

Add grease to the squeegee pivot plate and to the grease ports for each wing (If equipped)

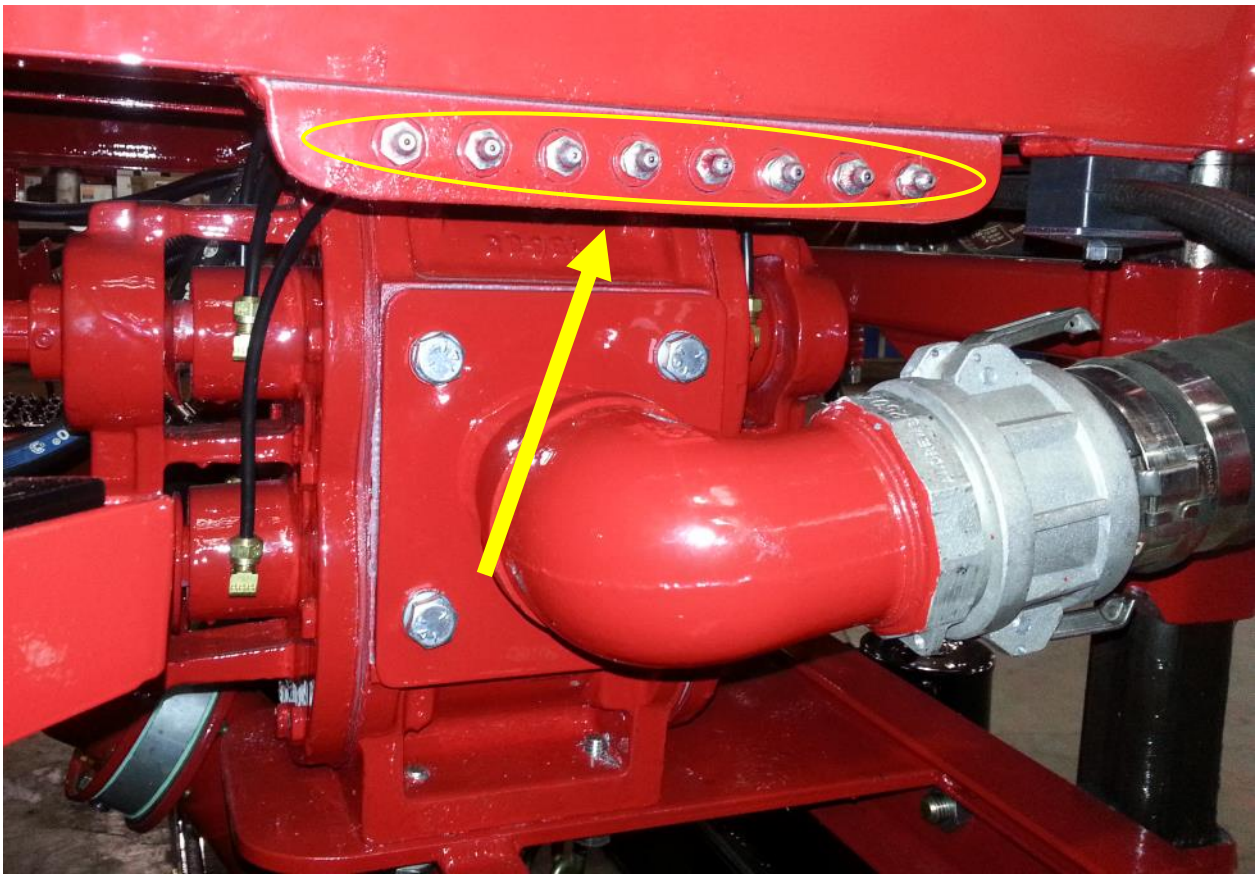






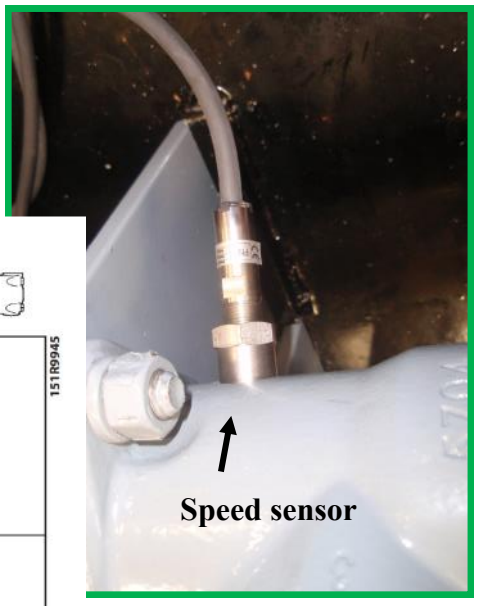


Locate all grease points and manifolds. Follow maintenance instructions and grease each "zerk" fitting daily.



The seals on the RaynPump are designed to keep material from escaping the pump. Due to the high viscosity of the materials we spray the pump will draw a vacuum on the inlet side of the pump. We grease the ports to fill the seal cavity to reduce the potential for sucking air IN over the seals. If your system is working well and all of a sudden the pump looses pressure it is very likely that it is easier to draw in air than the high viscosity material. If this happens try greasing the pump, usually the problem will be resolved.

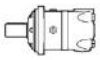
RaynPump Drive Motor



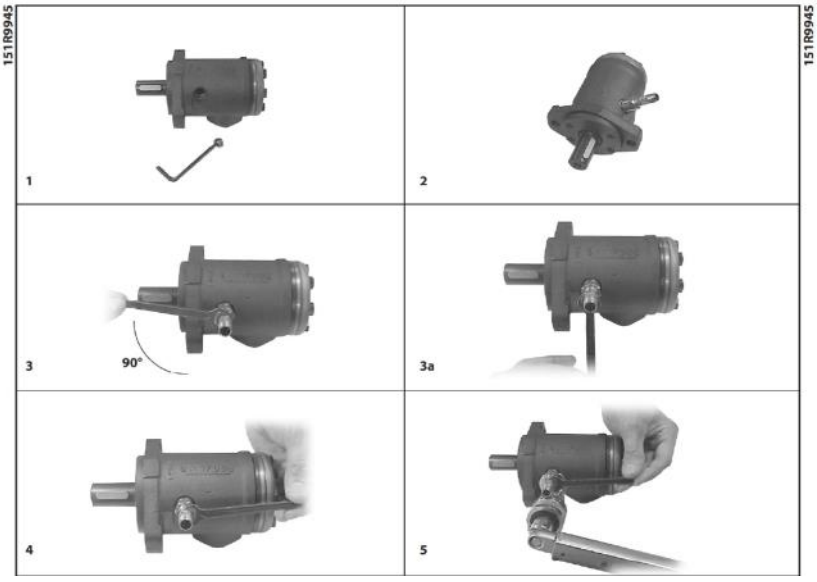
SAUER DANFOSS

INSTRUCTIONS

Motor with speed sensor OMM EM, OMP EM, OMR EM, OMS EM, OMSW EM, OMT EM, OMV EM



151R9945



151R9945

1. Remove the plug and washer from the motor (6mm Allen key)
2. Without tools screw in the sensor till it makes contact with the shaft/nut of the motor.
3. Turn 1/4 revolution back again (90 deg.) as shown in photo 3a.
4. Turn further back until the 10mm flats of the sensor are aligned with the longitudinal axis of the motor. Tolerance +/- 5 deg.
5. Keep the sensor in this position while tightening the compression nut to the prescribed torque of 15-20 daNm.

To make the sensor work, be sure to carry out the steps 2-5 correctly and in the right order of succession.

CALIBRATION - Field

Setting the PSIII for operation :

1. Load the tank with material, additives and or aggregates that will be used for this test
2. Test the material's viscosity and record the findings. Refer to the viscosity testing portion of this manual for instructions. (Make adjustments to the material as needed, keep any addition of water within the manufacturer's specifications.)
3. Set the display screen to the "Main Screen"
4. Set the desired max speed
5. Adjust the pump volume up or down as you test spray to set your application rate
6. Open the knife valve (Make sure the squeegee dump valve is closed.)
7. Switch the pump to spray
8. Open the spray wand valve on top of the spray bar and vent into a 5 gallon bucket
9. Close the spray wand valve when the air is purged from the system
10. Open the spray bar and allow material to spray on the ground. This creates a test pattern to check for spray over lap (See figure 1A)
11. Close the spray bar valve
12. Turn off the pump
13. Adjust the tips so each spray pattern is close but does not touch on either side
14. Verify that the Speed sensor in the front motor is working by watching the FPM increase on the display as the PSII moves forward. Operate the PSII at a speed above .5 mph. (If NO signal is discovered refer to the troubleshooting guide.)
15. Operate the PSIII at a speed between .5 mph and 7.5 mph (Use your desired application speed)
16. Switch the pump to SPRAY. Switch the bar to "OPEN" when the PSIII is at the desired location. Spray a test pattern on the ground approximately 10 feet long. Switch the bar to "Close"
17. Inspect for desired coverage
18. Adjust the pump volume up or down and repeat steps 16-18 until desired results are achieved

Never run the material pump in reverse with the knife valve closed.

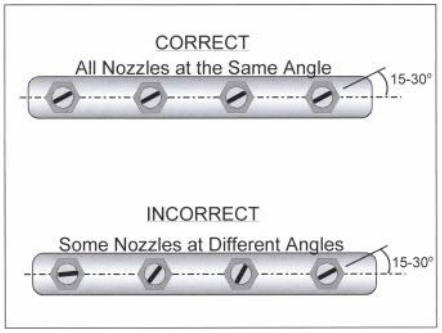
Only run the material pump when needed, this will reduce the pumps wear and extend it's life.

Calibration

Figure 1A

Turn the spray tips to create a consistent pattern. Each fan should reach the center of the tip on either side.

Ensure the streams DO NOT touch as this would cause a streak in the material.



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Understanding Viscosity

Viscosity is the measure of a material's resistance to flow. Units of dynamic viscosity can be measured in centipoises (cP). The thicker the material the higher the viscosity.

A sealcoat spray application system is designed for sealcoat material of a certain viscosity range. Viscosity lab testing was done with RaynGuard's SteelGuard to provide a centipoises value of different percent cuts of the material.

Figure 1. below shows the relationship between viscosity in centipoises versus percent cut of SteelGuard.

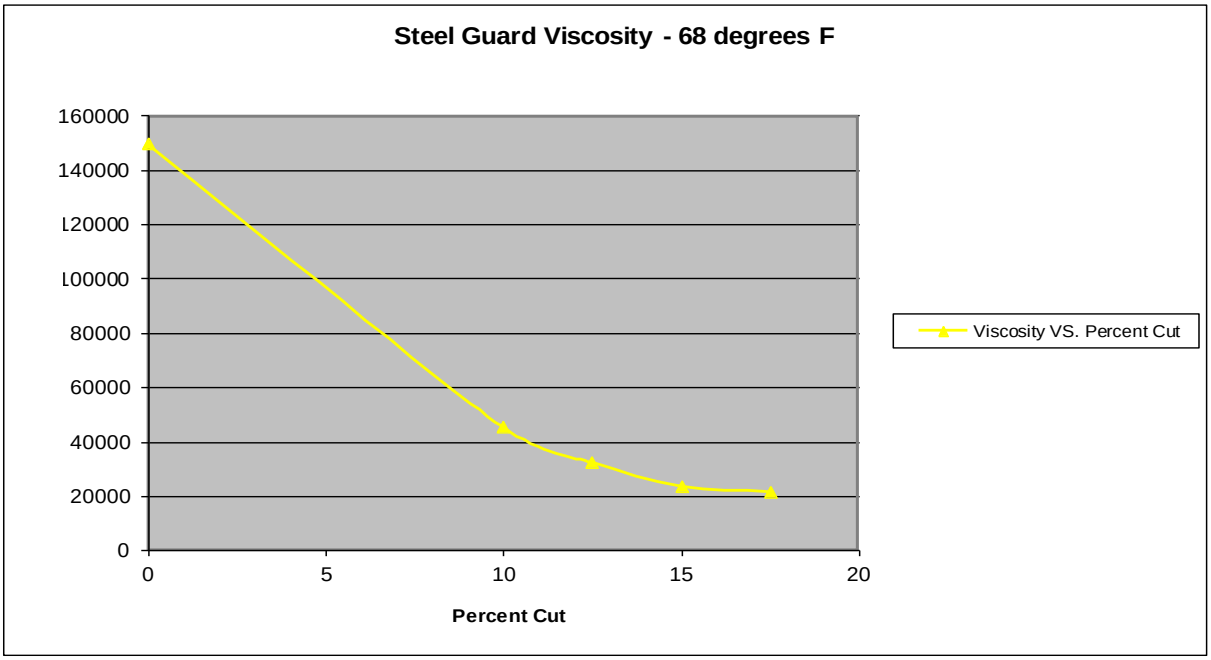

Figure 1.

SteelGuard concentrate material ~ 149,760 cP
Viscosity of Peanut Butter = 250,000

SteelGuard 10% cut ~ 45,440 cP
(typically used)

NOTE: All testing for values on Figure 1. were done using a Brook field viscometer in a controlled lab setting with the material temperature at 68 degrees Fahrenheit (+/-.5). Viscosity tests are temperature sensitive.

Instructions for RaynCup Test

A RaynCup test can be used for obtaining an approximate centipoises value of sealcoat, to check for consistency of material, and/or as a tool for operators on the jobsite to be able to test and target the desired percent cut of sealcoat material.

When in a controlled environment, place at least 400ml of material in a container. Before the test is conducted the material must be mixed well and at a temperature of 68 degrees Fahrenheit +/- .5degrees. Temperature can be controlled via ice bath and/or heat source. Since temperature cannot be controlled on the jobsite, one should record the ambient temperature. Take ambient temperature into consideration when testing viscosity on the jobsite. Typically, the warmer the material the less viscous the material.

Place the RaynCup in the material. Let the rim of the cup sit just under the surface of the material. Begin timing the moment the RaynCup lifts out of the material. Stop time when there is a clear/obvious break in material, when material starts to drip out of the cup. There should be no material or close to no material left in the RaynCup. If there is a material clog, move material around at the bottom of cup to see what is clogging the hole. If clogging occurs after an attempt of unclogging, with more than 1/4 of material left in the cup, a larger RaynCup and/or an increase in material cut may be necessary for the material.

Repeat this process several times and take an average time. For most accurate readings, clean RaynCup after every test.

RaynCup

The 80/70 cup size refers to a standard RES PavementSaver/RaynMaker spray nozzle. 80 refers to the angle of spray at 40psi and 70 refers to the GPM at 40psi (Water). As a customer's material thickens, an 80/100 or 80/150 RaynCup size may be necessary for comparing viscosity.

*An 80/70 cup is typically used for SteelGuard.

Flowing Material

Break in Material

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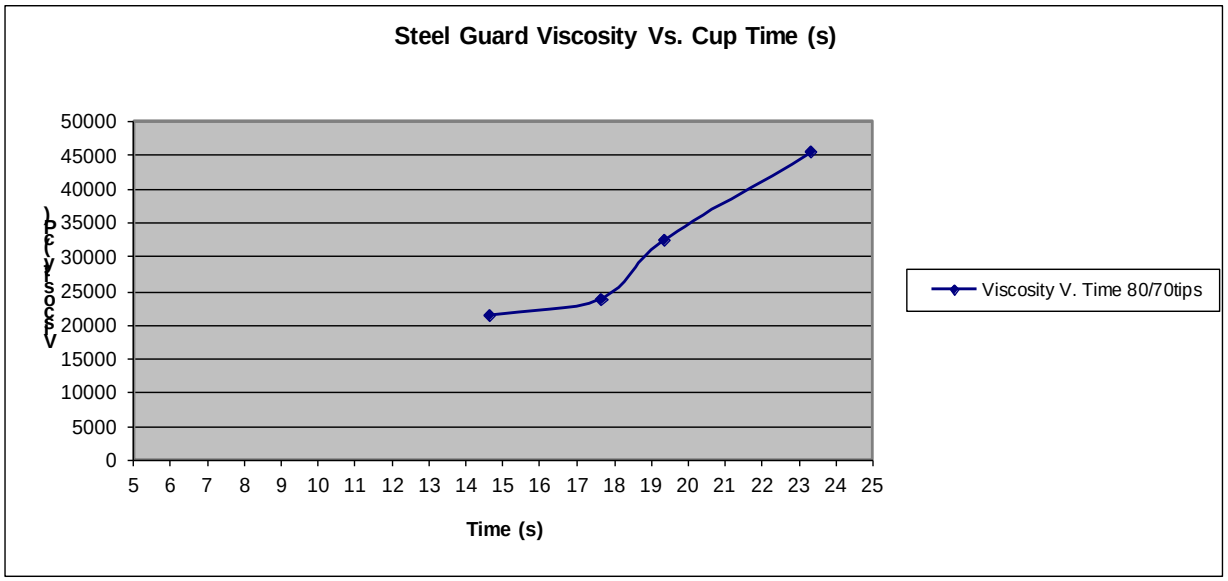
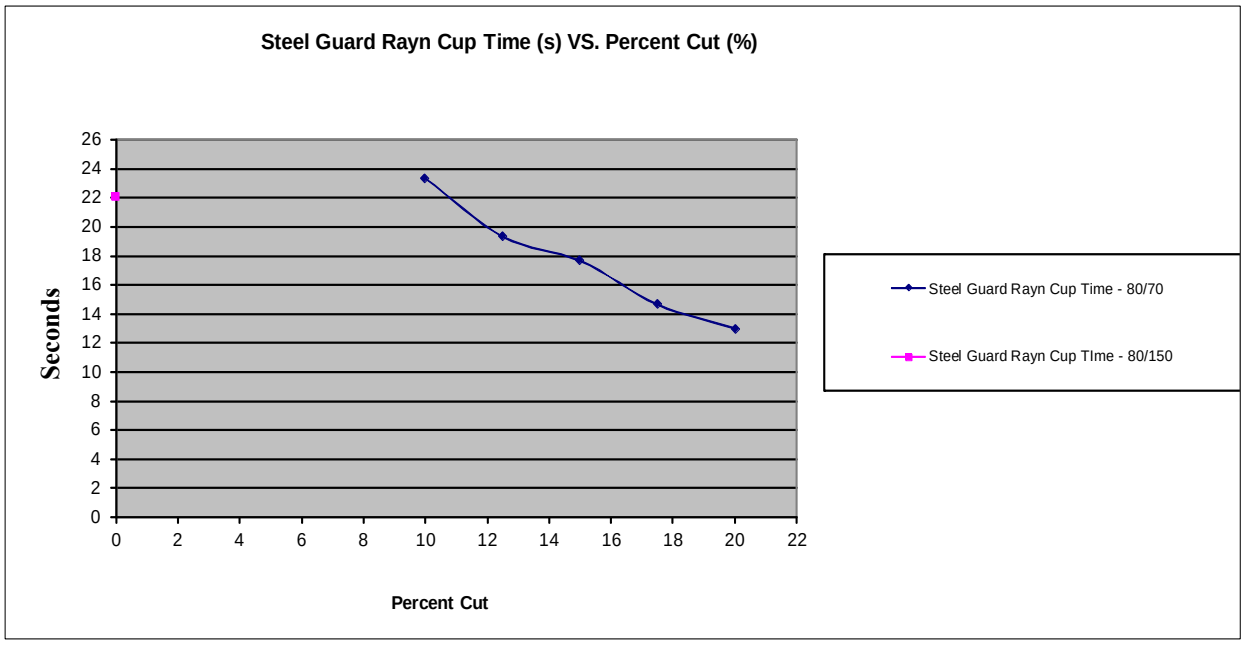
DATA ANALYSIS—STEELGUARD

For SteelGuard: Compare the averaged viscosity time to Figure 2 and 3 below. Depending on the desired percent cut, the target viscosity time should be between 14-25seconds.

*Use Figure 2 to obtain an approximate centipoises value of SteelGuard.
*Use Figure 3 to obtain a percent cut value of SteelGuard.



Figure



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Viscosity Cup Testing

Name:	<u>Material Info</u>
Customer Name:	Percent Solids:
Date:	Thickening Agent:
Ambient Temperature:	Typical Percent Cut Used During Application:

Note: Stop time when there is a clear/obvious break in material. There should be no material or close to no material left in cup. If there is a material clog, move material around at the bottom off the cup to see what is clogging the hole. If clogging occurs after attempt of unclogging, with more than 1/4 of material left in cup, a larger Viscosity Cup and/or an increase in material cut may be necessary for material.

Material Cut (%)	Material Temperature (F)	Time 1	Time 2	Time 3	Time 4	Time 5	Time Average	Notes

NOTE: Disregard highest and lowest time when taking a time average.

Sealcoat Material Viscosity Test

The Pavement Saver material pumping system is designed for sealcoat material of a certain viscosity range. The viscosity chart below shows the relation of centipoise versus percent cut of the RG material. RG typically uses a 10% cut, which has a viscosity of 45,440 cP.

If the viscosity of your material is of concern, one can conduct a viscosity test using a RG viscosity cup. This viscosity must be ordered through RG.

The cup hole size refers to the equivalent 80/70.

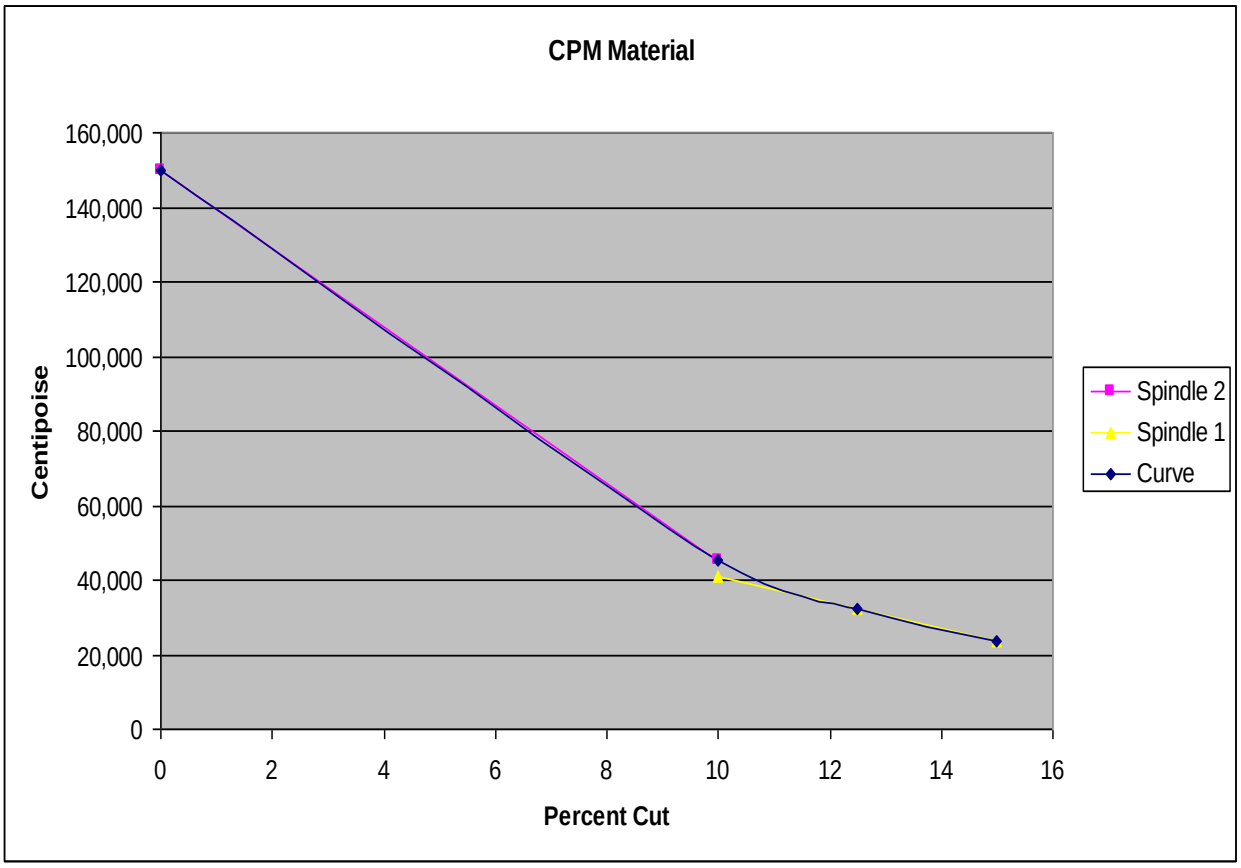

Fig. 88

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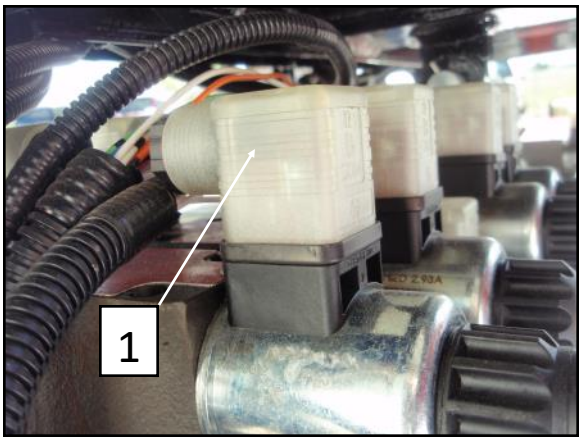
HYDRAULIC DRIVE SOLENOID TESTING

The PavementSaver III is equipped with hydraulic solenoids and valves that aid with diagnosing problems. The solenoids are equipped with LED indicators (item 1) to show voltage present in the circuit. A manual override (item 2) is used to open the hydraulic circuit.

Components equipped with solenoids:

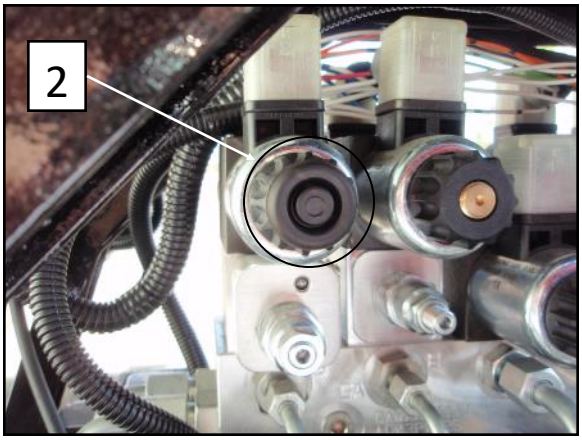
- Knife valve ram (under dash panel)
- Squeegee lift ram (under control panel)
- Squeegee striker motor (under control panel)

Parking Brake (front of tank)



Use the following diagnosis procedure if one or more components fail to function properly. If ALL hydraulic functions fail to work, a malfunction in the main pump or a restriction in the system may have occurred.

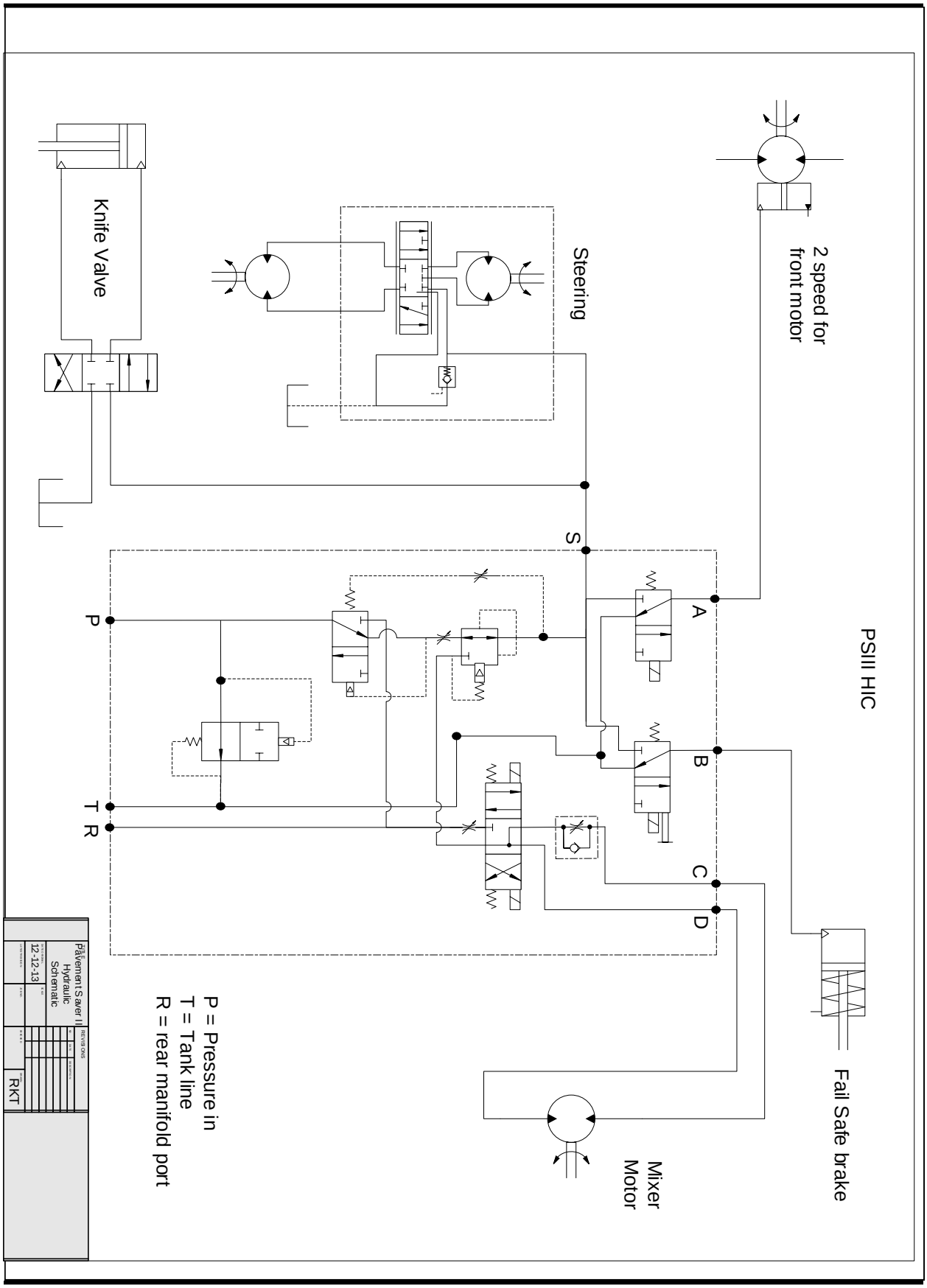
Each hydraulic solenoid uses a green LED. When the electric circuit controlling that component is closed (on) the LED will light up. The ignition key must be switched to the engine run position. **DO NOT** start the engine!



LED indicators:
Assistance may be necessary to observe the LED's that are not visible while manipulating the switches on the control panel and/or joystick. An illuminating LED will indicate an electrical circuit free from faults.

Manual override:
Manipulating the manual override will activate the hydraulic functions associated with each solenoid. Keep hands and feet clear of the squeegee box when performing this test.
THE ENGINE MUST BE RUNNING TO PREFORM THESE TESTS! Use a small tool such as a Phillips screwdriver. Press the button (item 2) located on the solenoid. If the function fails to work, the ram and/or the motor is faulty.

Schematics



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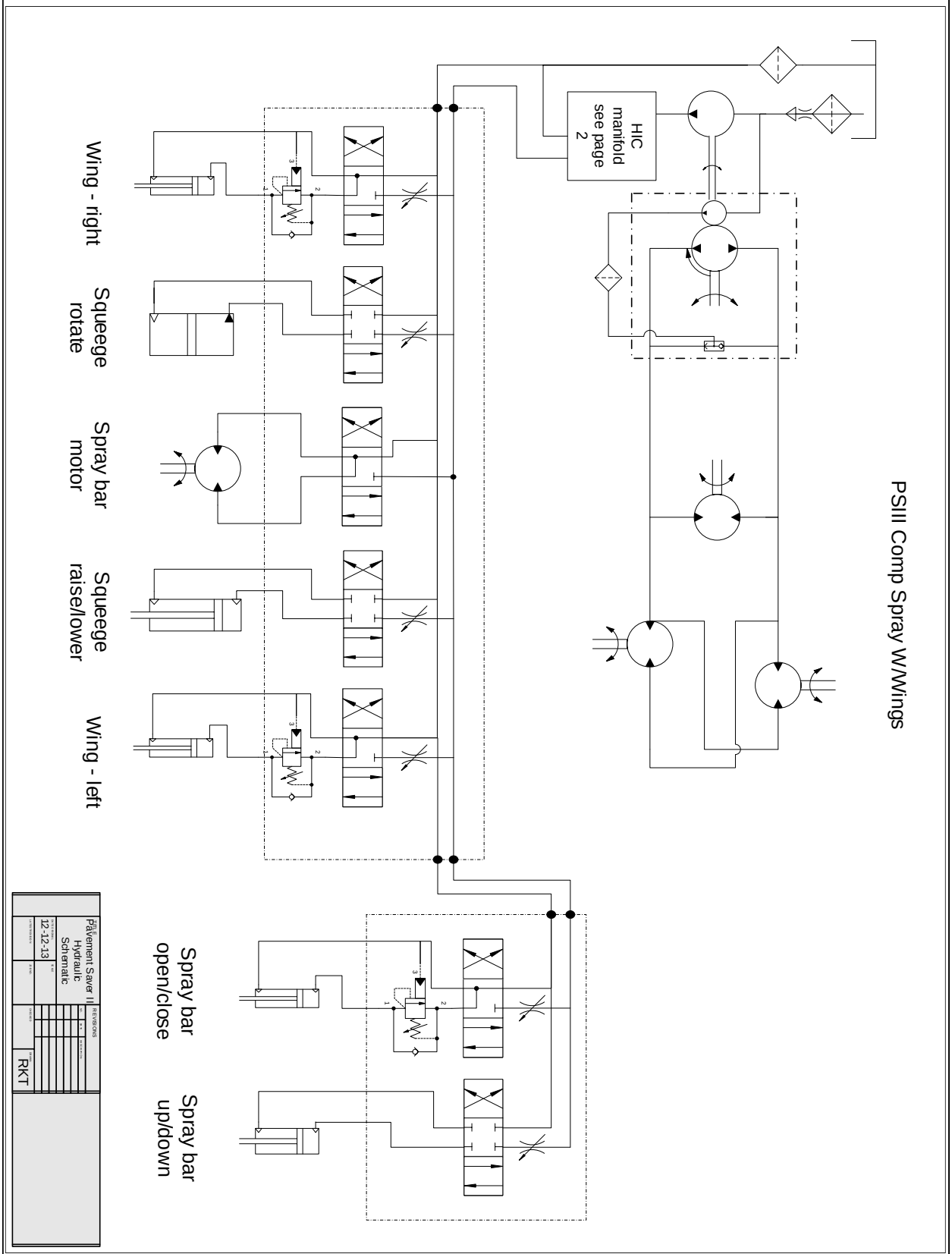
Schematics



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