

**OPERATING
& MAINTENANCE
INSTRUCTIONS
TIRE SIPING MACHINE**

READ INSTRUCTIONS THOROUGHLY BEFORE OPERATING

Models:STEM&ST
SP(PG9)



**SAF-TEE SIPING &
GROOVING INC**

TIRE SIPING MACHINE

DECALS - MEANINGS



WEAR PROTECTIVE GLOVES



READ THE MANUAL



WEAR DUST MASK



USE PROPER LOCK OUT,
TAG OUT PROCEDURES



DO NOT STAND



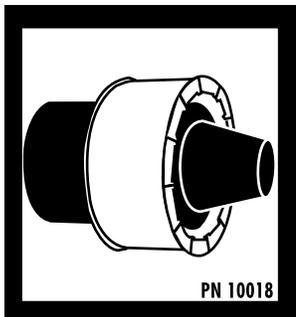
HAND CRUSH/PINCH POINT



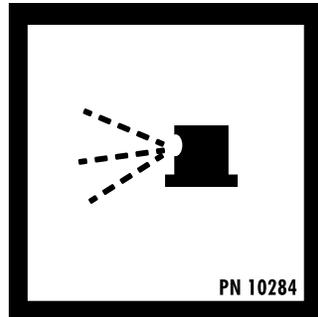
HAND ENTANGLEMENT



FLYING DEBRIS/LOUD NOISES



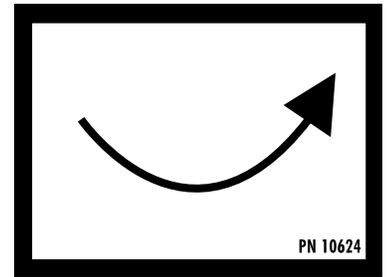
HUB



SPRAY MIST



TIRE



SHAFT ROTATION



PROTECTIVE EARTH
GROUND



ELECTRICAL SHOCK



CE MARK



NEUTRAL



PHYSICAL EARTH

TIRE SIPING MACHINE

SPECIFICATIONS

ELECTRICAL REQUIRED:

120 Volts
1 Phase
60 Hertz
20 Amp Circuit

Electrical Supply shall be 20 Amp fused or 20 Amp circuit breaker. The electrical circuit must be protected with a short circuit protective device.

AIR SUPPLY:

Minimum of 1/4 I.D. Air Hose
Minimum of 130 PSIG at the machine
6 CFM should be available
Air Supply should be filtered lubricated air

DIMENSIONS (Uncrated)

42" L x 41" W x 45" H
465 lbs

Call factory for shipping weights and dimensions, crated.

Note: The Stem electrical system is capable of operation correctly within a humidity range of 20 to 95 percent. The Stem will withstand storage and transportation temperatures within the range of -25C to 55C (-13F to + 131 F) and up to 70C (158F), for short period not exceeding 24 hours. The Stem will operate at altitudes up to 1000 m.

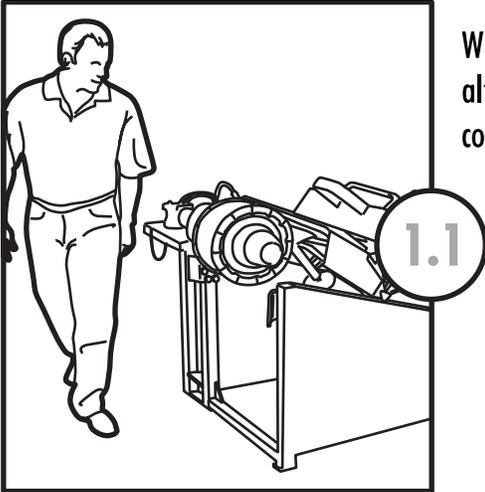
Note: If Stem is operated below 32°F (0°C); The coolant media must either be a mixture containing anti-freeze or a windshield washer fluid.

TIRE SIPING MACHINE

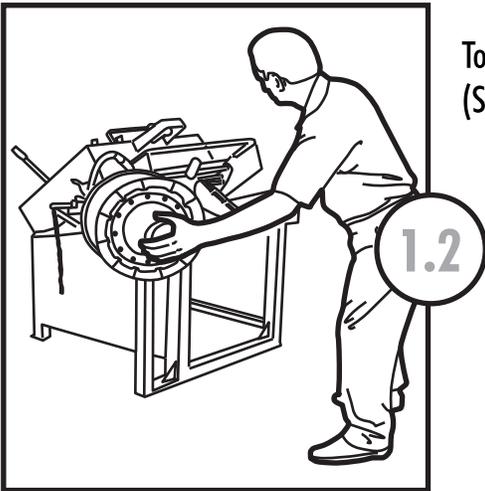
SHIPPING & RECEIVING-UNPACKING

SECTION ONE

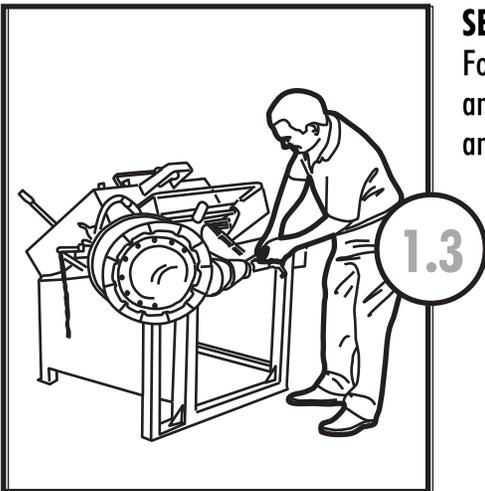
From all of us at Saf-tee Siping and Grooving thank you for purchasing your Tire Siping Machine. The important operating & maintenance instructions contained here will ensure your Siper operates dependably for many years to come. This manual will provide the proper instructions for setting up, using and maintaining your siper.



When receiving your Siper after shipment, take a moment to look it over, although shipping damage is highly unusual now is a good time to note the condition it has arrived in.



To unpack, pull the pin and swing the expandable hub assembly out of the way (STEM-only)



SET UP & SAFETY

For overseas units, the siper will be crated. Cut the bands. Remove the sidewalls and top of the crate. Unbolt the unit from the pallet and remove. The accessories and rims will be banded to the unit, cut the bands and remove from the unit.

When working near or around the blade take care to position the blade away from you. Cut and remove the straps holding the hood down. Lift the hood.

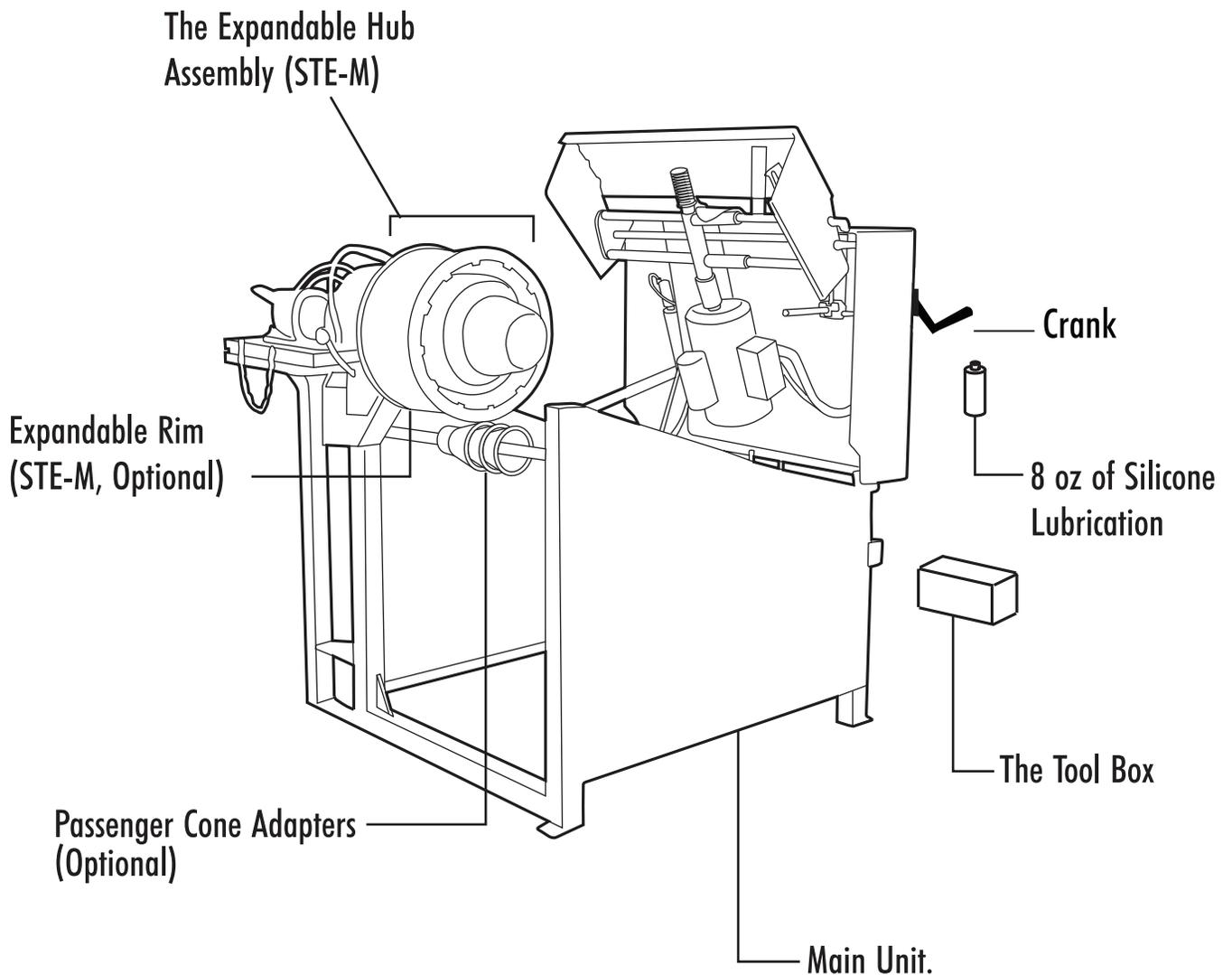
TIRE SIPING MACHINE

SHIPPING&RECEIVING -PACKAGE CONTENTS



When working near or around the blade take care to position the blade away from you.

After you've completed unpacking your Siper please take a moment to review the package contents. The following items are shipped with your Siper:



TIRE SIPING MACHINE

SET UP - BASIC REQUIREMENTS

SECTION TWO

You will need an air supply that can supply 90 PSI of air and access to an electrical power source with at least a 30 amp rating. For your air connection, a male couple will be needed and make sure to have some Teflon tape to help seal the connection airtight. Finally, you will need some chalk to make marks on the tires you are going to sipe.

Operate the unit on a clean, level, non-slip surface. The approximate work area should measure at least 3 feet from the foot print of the machine, this distance is the minimum recommended for non-operators in proximity to the machine. The machine's foot print of 66" L X 48" W x 50" H. The shipping weight is 1050 lbs.

To transport the machine ensure the hood is down, the hub is in its stored position and the lock pin on the hub is in place.



LUBRICATION

To gain access to the inside of your siper move the wheel mount assembly from its operational position on the side of the siper.

2.1



To cool the cutting blade and lubricate the tire, mix 1 part silicone lubricant (part# 2.029) to 16 parts water and fill the mist unit supply container. Insert the hose and secure. Engage the mister at the time of engaging the blade on the tire.

2.2

POWER CORD

Extend the power cord out the back of the cabinet to prevent it from being damaged by the stops on the hood. Position cord away from walkways, a nylon tied down may help to keep excess cord away from walk ways to prevent trip hazards.



2.3

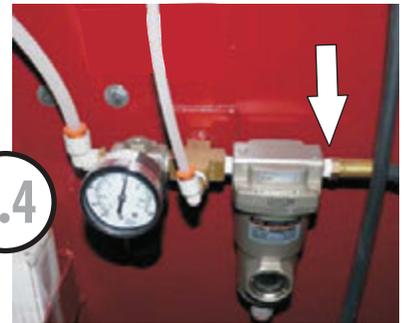


If you need to use an extension cord, it needs to be a heavy-duty extension cord, use a heavy-duty 30 amp power strip to plug into.

Do not plug the siper in until you are ready to sipe.

AIR SUPPLY

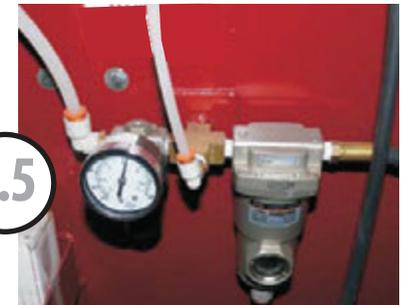
Install correct air hose fitting. (See arrow.) Use Teflon tape to prevent air leakage. Use correct size wrenches if available to grip fittings properly when tightening.



2.4

The moisture trap has a view glass.

Set the air regulator to 90 PSI



2.5



Remember to wear recommend PPE (Personal Protective Equipment) when working with the siper

The drip pan should be installed to collect any run-off lubricant. All lubricant run off, rags and materials should be disposed of according to local environmental regulations. Please see the appendix or our website for the Material Safety Data Sheet (MSDS) on the siper lubricant.

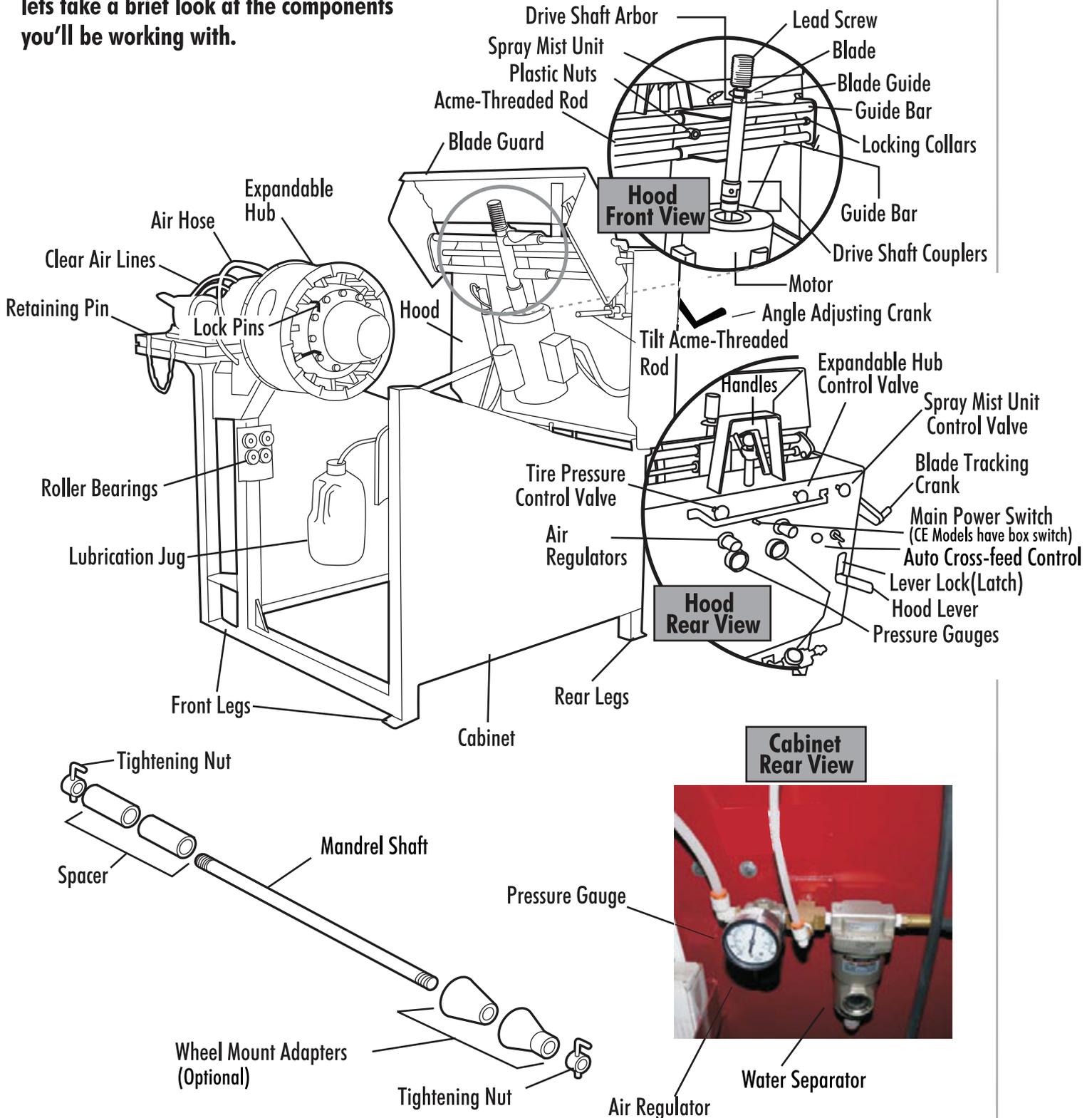
Proper Personal Protection Equipment for the operation and maintenance of this machine includes gloves, eye, ear, inhalation, and foot protection. The A-Weighted Sound Pressure Level at work station measured at 79.8 dB(A).

TIRE SIPING MACHINE

ORIENTATION -CALL OUTS

SECTION THREE

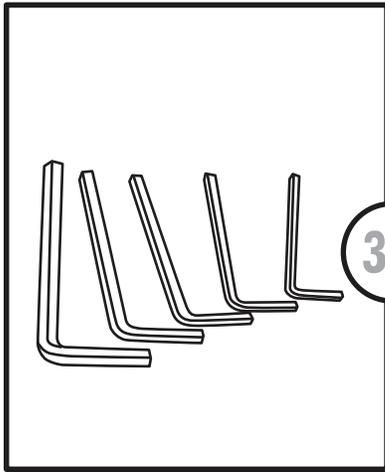
To become more familiar with your Siper lets take a brief look at the components you'll be working with.



TIRE SIPING MACHINE

ORIENTATION -COMPONENTS

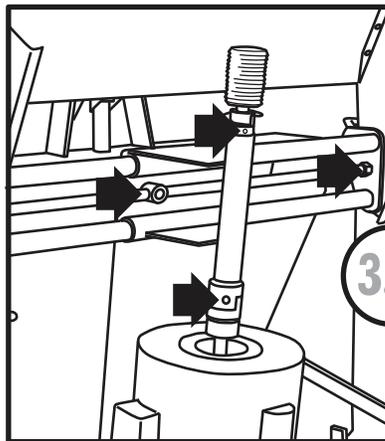
SECTION THREE



ALLEN WRENCHES

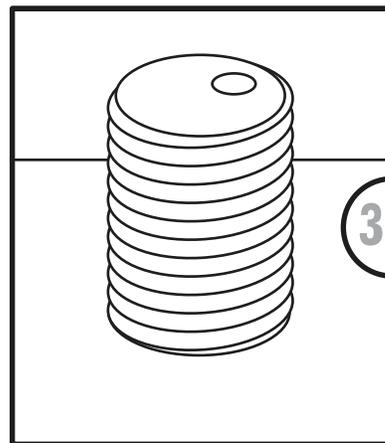
There is an Allen wrench to fit every set screw on the machine. The sizes provided are: 1/4", 5/32", 1/8" and 3/32".

3.1



Set screws are on the motor and drive shaft couplers, the nut on the ACME threaded rods, and the plastic nuts on the ACME threaded rods. The machine will vibrate some when using it (See the maintenance procedures for vibration in Section 6 of this manual).

3.2



LEAD SCREWS SELECTION

The lead screws are changed to set the depth you are siping into the tire. Measure the tire tread and use a lead screw with a minimum of 1 or 2/32 less than the low spot on the tire, 5/32 and 7/32 for used tires, 9/32 for most new passenger tires, 11/32 for most new light truck tires, and 13/32 for big truck tires (20" to 24.5").

3.3

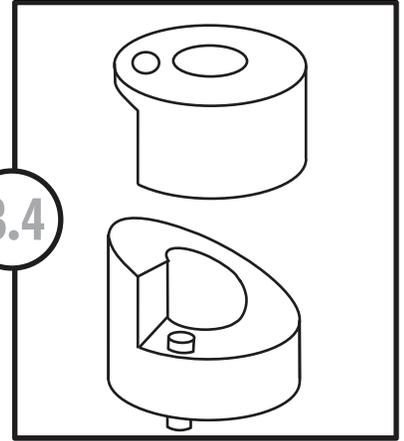
TOOL BOX

Introduction

The tool box that comes with your Siper contains a variety of tools that that you'll use through out the daily operation and maintenance of your new Siper.

BLADE GUIDES

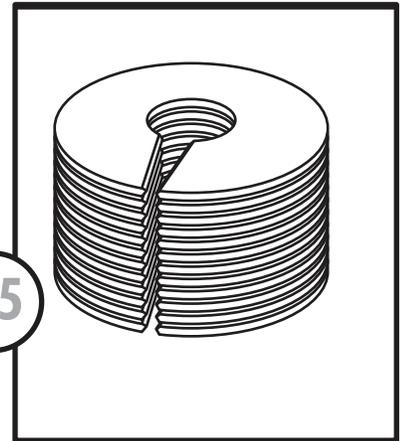
The siper has two blade guides supplied with it: 250/1000 for passenger and light trucks tires and 400/1000 for big trucks (20" to 24.5"). Guides of 300/1000 and 350/1000 are available as an option.



3.4

SIPING BLADE(S)

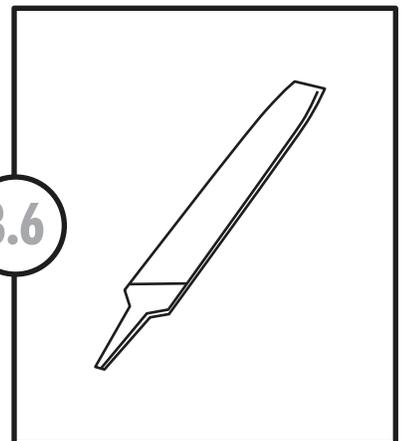
One dozen spare blades come with the siper.



3.5

FILE

A file is provided to keep your blade sharp.

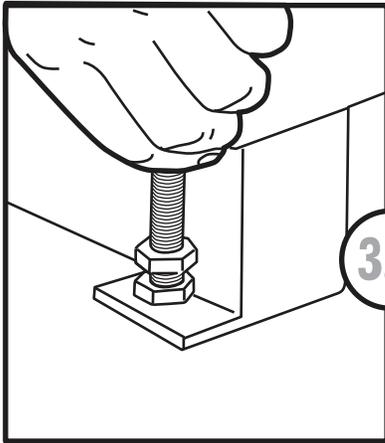


3.6

TIRE SIPING MACHINE

ORIENTATION - COMPONENTS

SECTION THREE



LEVELING SCREWS

Leveling screws to mount on the front legs of the Siper to adjust any rocking of the Siper are also included.

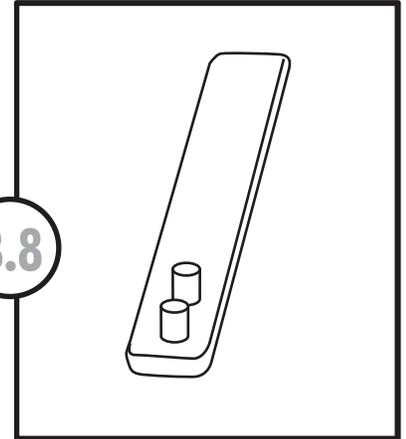
3.7

SPANNER WRENCH

The spanner wrench is used to loosen the lead screws for changing the blade guide or the lead screws themselves.

To see how this is done turn to page 11.

NOTE: Only hand tighten the lead screw. Never use the spanner wrench to tighten the lead screw.



3.8

TIRE SIPING MACHINE

OPERATION - MOUNTING & DISMOUNTING

SECTION FOUR

The type of tires that can be siped will depend on the Siper model you own.

SP

The SP Siper is designed for mounted tires only and the sizes are limited to passenger car/light truck.

ST

The ST is also designed for mounted tires only but has a wider arrange of tire sizes compared to the SP.

STE-M

The STE-M is designed to sipe both non-mounted and wheel-mounted tires with sizes ranging from passenger car/light truck to heavy truck tires. Typically brand new tires are unmounted and you will find that this will be the predominant way in which you'll sipe tires. For situations such as this the mounting process will be tailored for the Expandable Hub. The second method is reserved for wheel-mounted tires and for this situation you'll be swinging the Expandable hub aside (STE-M only) and using the wheel-mount adapters that come with your siper (STE-M, ST and SP).



Use proper lifting techniques when using the Sipers

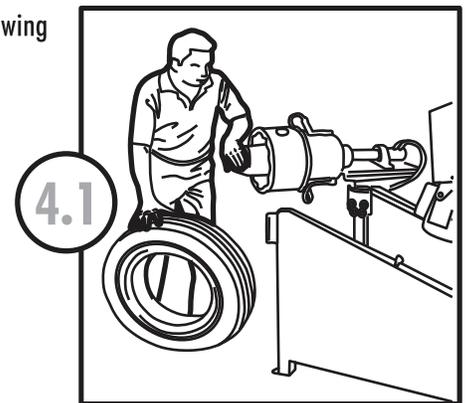
- Size up the load, ask for help if needed.
- Lifting loads heavier than 50 lbs will increase the risk of injury.
- Lift items close to your body from a low position
- Lift using your legs
- Carry the load close to your body from mid- thigh to mid-chest
- Avoid twisting, reaching or turning
- Information acquired from the US Dept. of Labor: Materials Handling guidelines.

EXPANDABLE HUB (STE-M ONLY) - MOUNTING

To reduce the risk of injury, seek lifting assistance from a coworker when lifting larger tires on the expanding rim.

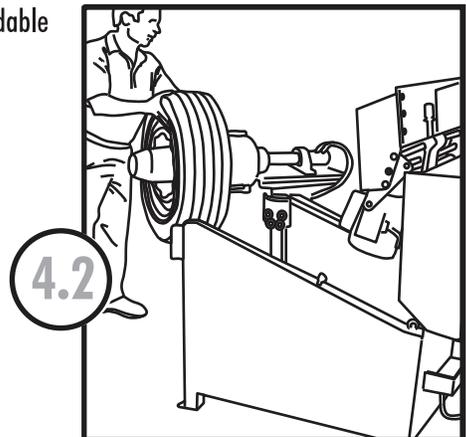
If your siper is quipped with the wheel lift feature please see page 24 for instructions

Pull the retaining pin to swing swing the Expandable Hub and rim assembly out. Remember to always use proper lifting techniques.



4.1

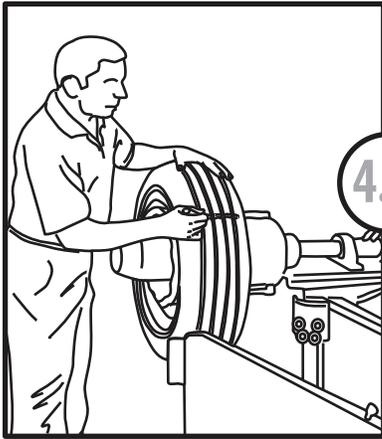
Set the tire on the Expandable Rim. Swing it back in and insert pin.



4.2

TIRE SIPING MACHINE

OPERATION - MOUNTING & DISMOUNTING SECTION FOUR



Make a small mark on the tire to use as a reference point. Ensure that a tire is properly mounted on the Hub before expanding the rim

PRESSURE SETTINGS

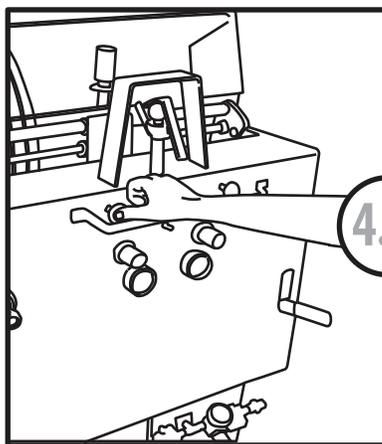
To Inflate: First, pull the inflate hub valve. Second, pull the inflate tire valve.

For passenger and light truck tires, set the Expandable Hub pressure around 75-80 PSI and the tire inflation pressure at 30 PSI.

For big truck tires, set the Expandable Hub pressure around 75-80 PSI and the tire inflation pressure at 30 PSI.

Note: If the expandable rim does not seal or contact tire properly, it is permissible to increase hub pressure by 10 lb increments up to max of 120 PSI. Normal operations are 90 PSI.

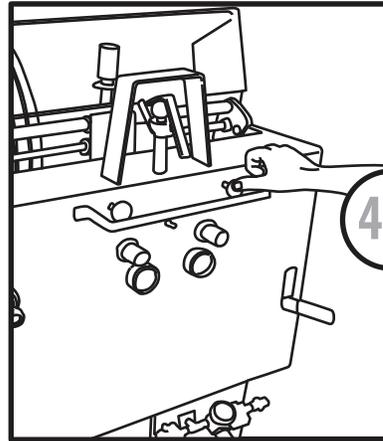
EXPANDABLE HUB (STE-M ONLY)-DISMOUNTING



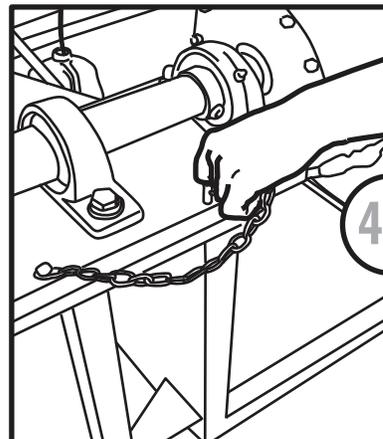
Pay close attention to the order in which this procedure is preformed. Release the **TIRE** pressure **FIRST** by pushing the valve in.



Visually inspect the tire is flat and hub is contracted.



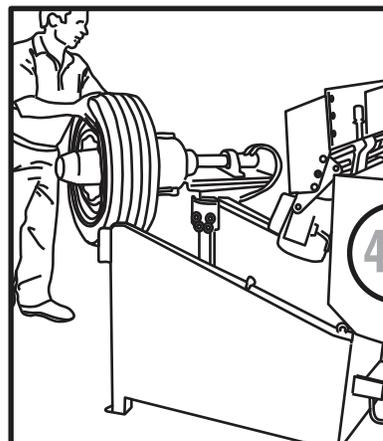
Push in the Expandable Hub pressure release valve.



Pull the retainer pin holding the Expandable Hub assembly in place.



Always keep hands clear of the Expandable Hub while releasing the air pressure to avoid a possible pinch point.

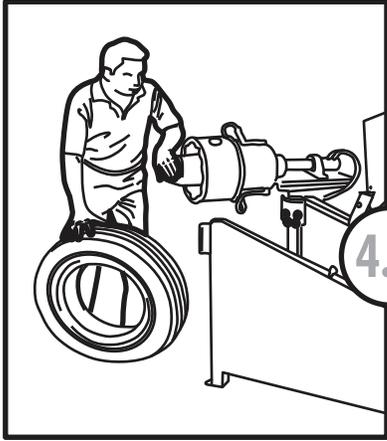


Slowly swing out the Expandable Hub assembly.

TIRE SIPING MACHINE

OPERATION -MOUNTING & DISMOUNTING

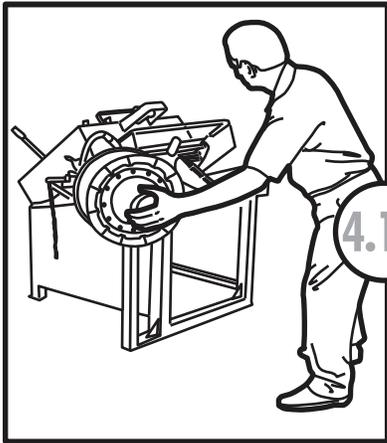
SECTION FOUR



Using two hands and proper lifting techniques, remove the tire.

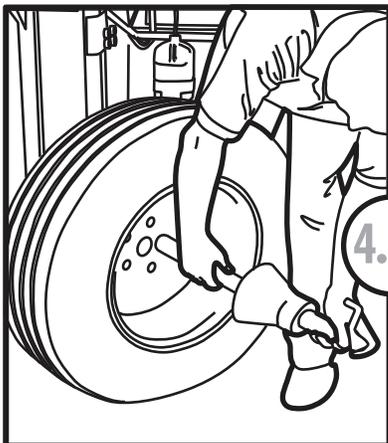
4.9

MOUNTED TIRES (ST, STE-M) – MOUNTING Wheel Preparation



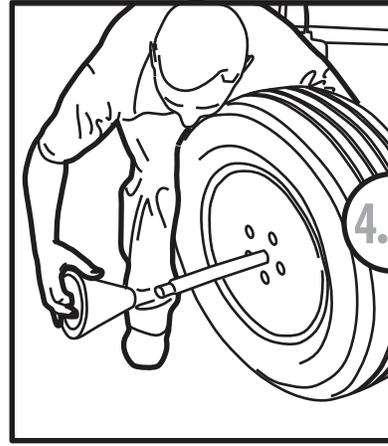
To sipe mounted tires, swing the Expandable Hub and rim assembly out of the way (STE-M Only).

4.10



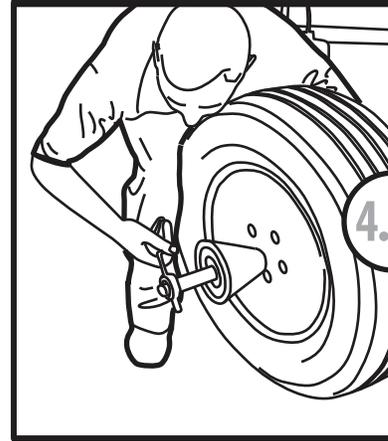
Insert the mandrel shaft and large cone on the back of the wheel.

4.11



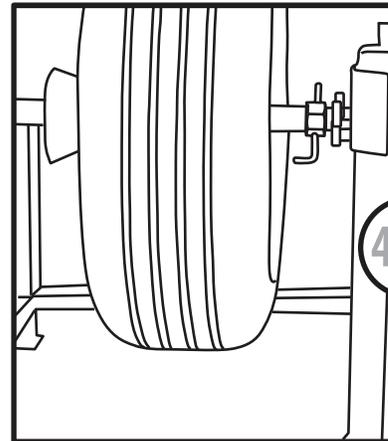
Install small tapered cone on the front of the wheel.

4.12



Install spacer and mandrel shaft. Handle on the nut must face inward.

4.13



WHEEL PLACEMENT

Lifting assistance is important when lifting the mounted assembly. Set mandrel shaft into the roller bearings in the cabinet. Rotate tire to be sure nothing catches or is loose.

4.14



Mark the tire for a reference point and sipe the tire (See Siping section 5).

4.15

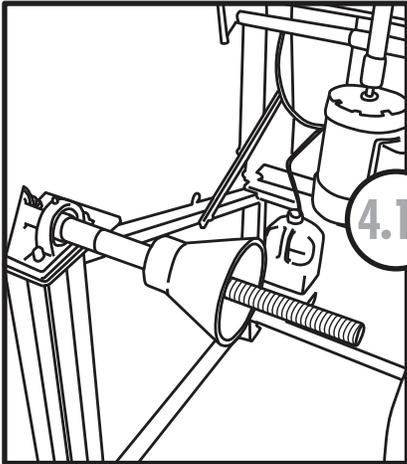
TIRE SIPING MACHINE

OPERATION-MOUNTING & DISMOUNTING

SECTION FOUR

MOUNTED TIRES (ST, STE-M) –DISMOUNTING

Dismount the tire in the reverse order you mounted it.

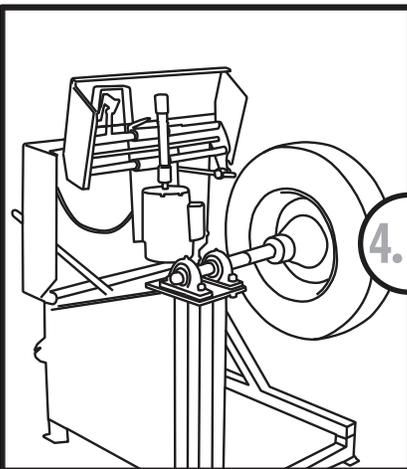


MOUNTED TIRE (SP) –MOUNTING

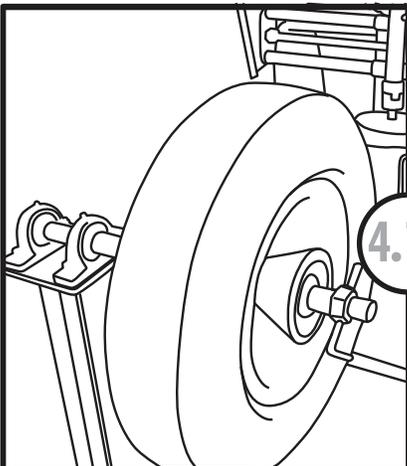
Insert the mid-sized spacer on the mandrel shaft, followed by the longest spacer.

Next insert the larger cone with the tapered end facing the mandrel shaft bearings.

Always use proper lifting technique or seek assistance when lifting heavy tires.



Mount the tire with the inside of the tire facing the cone.



Once the tire is in place insert the second cone with the tapered end pointing toward the wheel. Next insert the smallest spacer followed by the mandrel shaft. Tighten the mandrel shaft by hand until tight.

Be sure to check the assembly for wobble by spinning the tire. The tire should spin with NO wobble or side side movement.

TIRE SIPING MACHINE

OPERATION - SIPING

SECTION FIVE

INTRODUCTION

Although you'll find siping to be relatively easy it's important that we go through some pre-siping checkpoints.

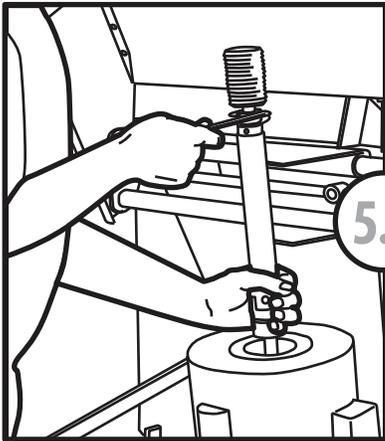
BLADE SHARPENING (ALL MODELS)



Ensure hood is locked in place **BEFORE** sharpening blade.

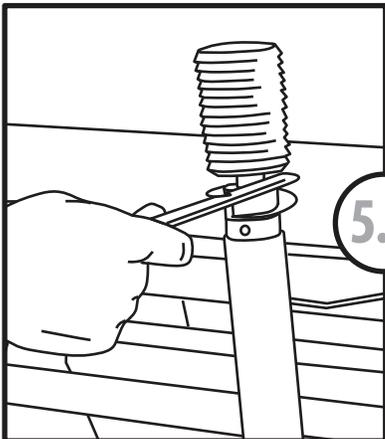


It's very important to disconnect the power supply to your siper when sharpening the blade. When available use gloves during this stage.



With the file in one hand hold the coupler of the drive shaft with the other hand.

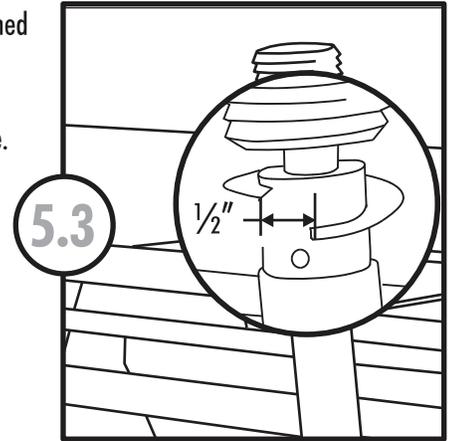
5.1



File the leading edge of the blade from the bottom. Take the burr off the top. Round off the tip of the blade so it will follow the existing sipe on each revolution of the tire. Sharpen blade on passenger and light truck tire every 8 tires. Big truck tires approximately every 4 tires.

5.2

The blade can be sharpened until there is 1/2" space between the leading and trailing edge of the blade.



5.3

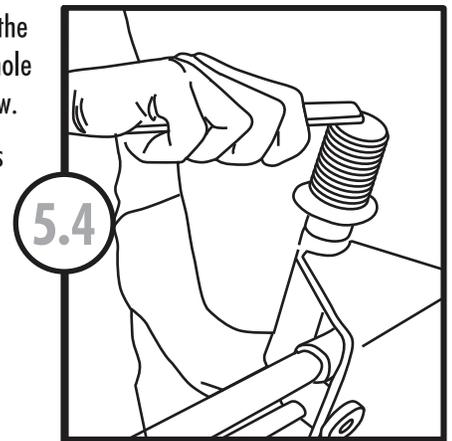


When working with the file and blade always take care to prevent any injury.

BLADE GUIDE & LEADS CREW CHANGING (ALL MODELS)

Insert the forward peg of the spanner wrench into the hole at the top of the lead screw.

NOTE: On a weekly basis check the blade for cracks and defects.

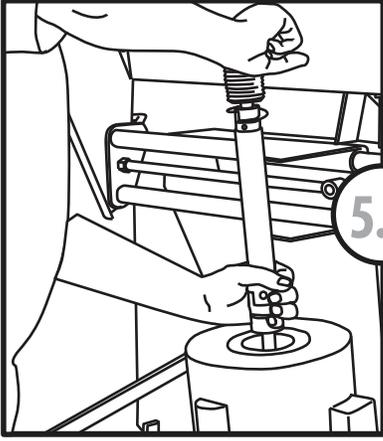


5.4

TIRE SIPING MACHINE

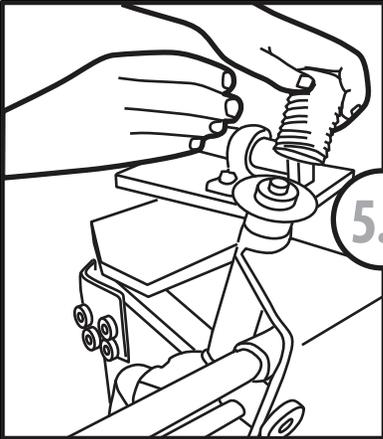
OPERATION - SIPING

SECTION FIVE



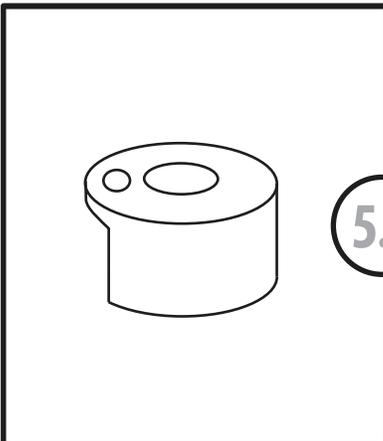
Hold the coupler on the drive shaft. Turn the spanner wrench.

5.5



Remove the lead screw and washer.

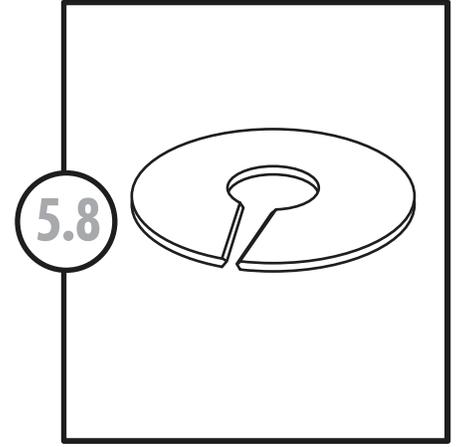
5.6



Remove the top half of the blade guide.

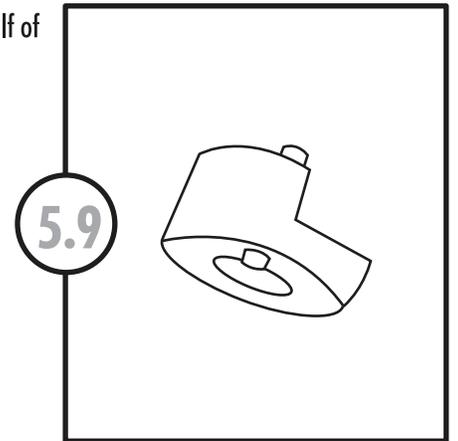
5.7

Remove the blade.



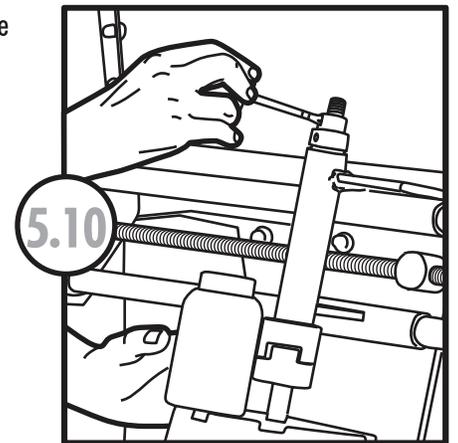
5.8

Remove the bottom half of the blade guide.



5.9

Clean parts and reverse procedure to install. Use anti-seize on the drive shaft and parts when installing.



5.10

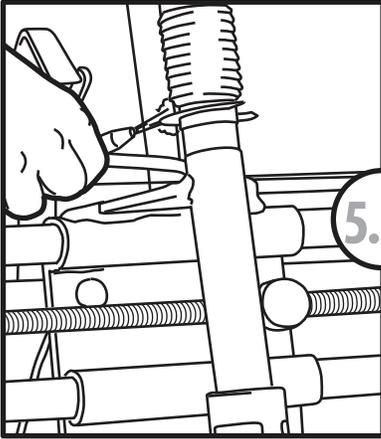
TIRE SIPING MACHINE

OPERATION -SIPING

SECTION FIVE



Only tighten the lead screw by hand when assembling.

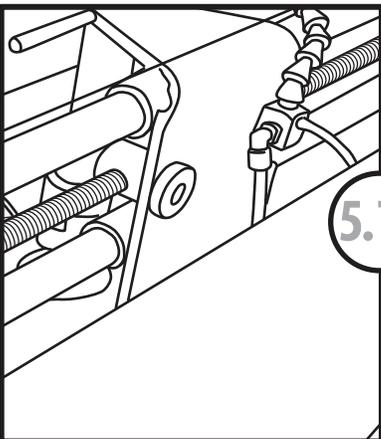


OPERATION AND SETTINGS OF THE SPRAY MIST COOLING UNIT.

The Spray Mist Cooling Unit is designed to cool the blade during siping and provide additional lubrication for the tire. See installation instructions (Fig 2.2) for the proper solution mixture for the cooling unit.



Damage to the blade and tire can occur if not properly lubricated while siping



Use the adjustable nozzle of the spray mist unit to create a light mist on the blade. During operation of the siper the blade should be continually damp. If there is a significant amount of run off from the overspray on the tire, adjust the nozzle's spray to a lighter mist.

Engage the Spray Mist Unit Control Valve button at the

back of the unit at the same time you engage the siping blade. The blade should be kept damp during the siping process.

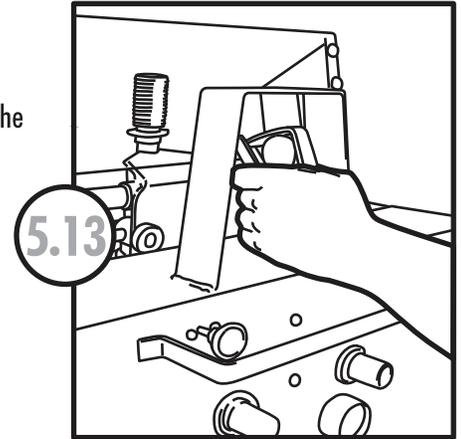
Periodically check the drip pan and empty as necessary according to local environment procedures. The drip pan should be installed directly under the siper to collect any run-off lubricant. All lubricant run off, rags and materials should be disposed of according to local environmental regulations.

Please see the back of the manual or our website for the Material Safety Data Sheet (MSDS) on the siper lubricant.

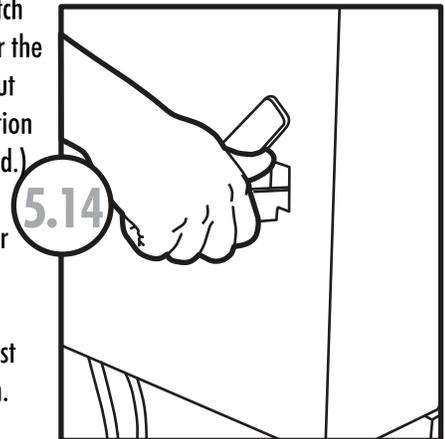
www.tsissg.com

PRELIMINARY

Use your left hand for the handle and on switch.



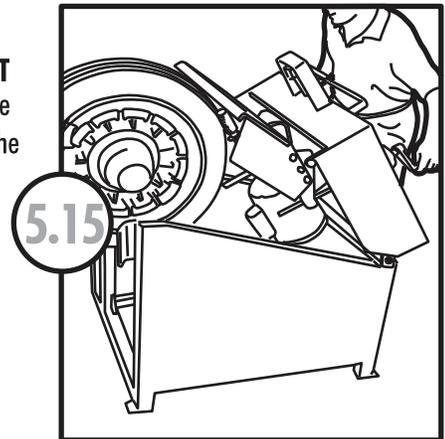
Use your right hand to unlatch the hood and carefully lower the hood down to the tire without starting the Siper. (Use caution to prevent dropping the hood.)



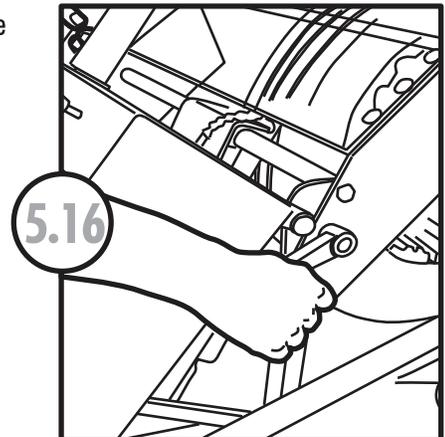
Please inspect these parts for normal wear. The safety knob/grip, handle or shield should be replaced at the first signs of wear or malfunction. Part #'s 15.550 knob/grip, 90.070 handle, 54.298 is lock bar shield.

LEAD SCREW ALIGNMENT

Adjust the Siper blade so the lead screw is parallel with the tread of the tire.



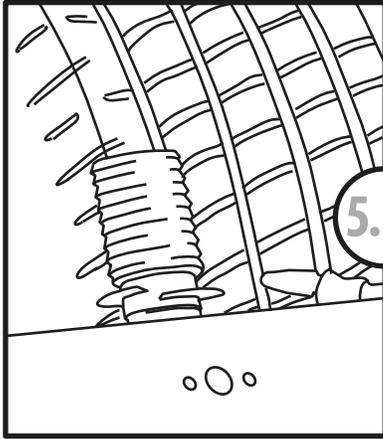
Set the Siper to the left edge of the tire.



TIRE SIPING MACHINE

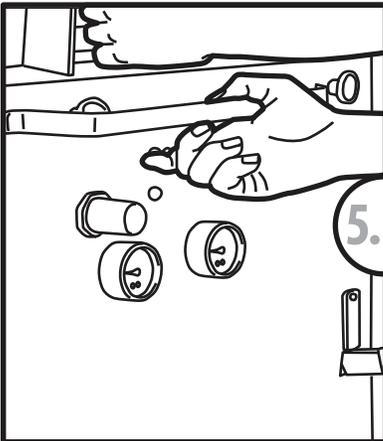
OPERATION-SIPING

SECTION FIVE



Have at least $\frac{3}{4}$ the diameter of the lead screw on the surface of the tire.

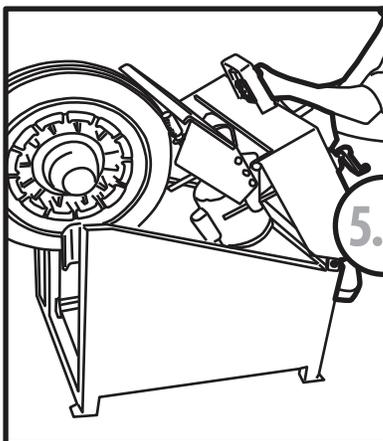
5.19



BEGINNING

With your left hand on the handle for the hood, turn the main power switch on.

5.18



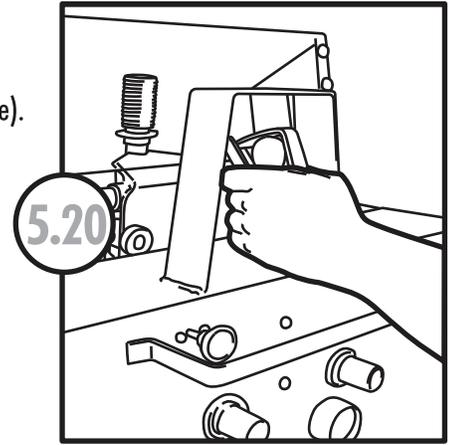
Pull the hood back and release lock on lever.

5.19

Squeeze the handle and lower into the tire at the reference point (chalk line).

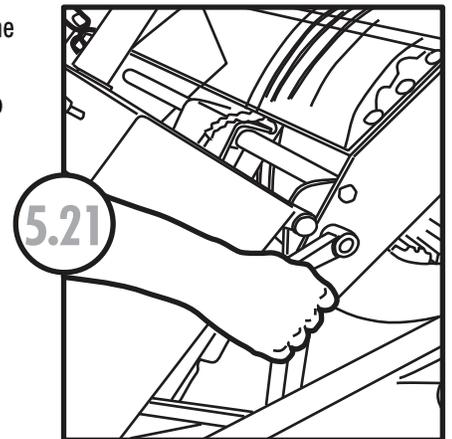
At this time engage the spray mist unit.

Start the spray mist unit at the same time you engage the blade.



5.20

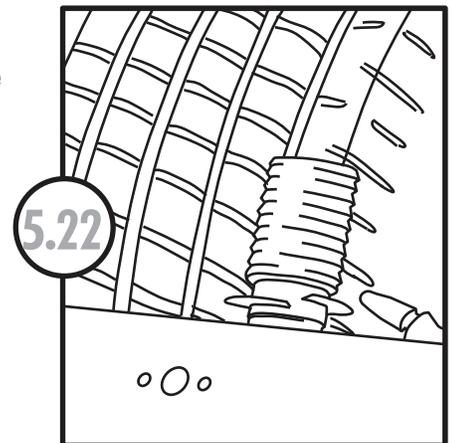
After each revolution of the tire turn crank 5 turns clockwise to move Siper to next section of the tire.



5.21

FINISHING

Continue siping across the tire to the right edge of the tread.

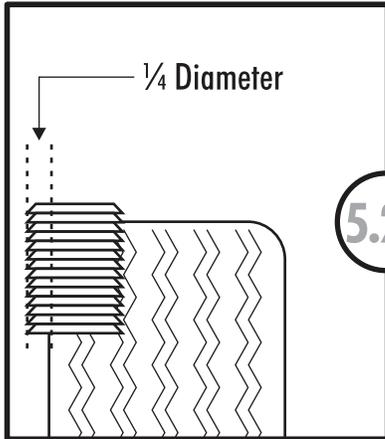


5.22

TIRE SIPING MACHINE

OPERATION -SIPING

S E C T I O N F I V E

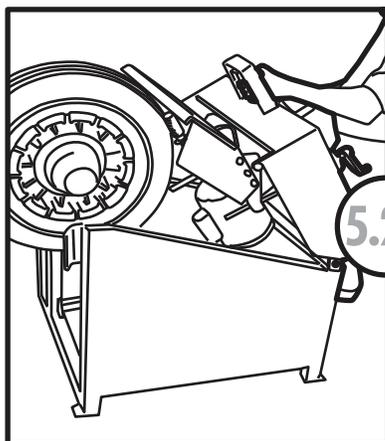


5.23

Do not let more than $\frac{1}{4}$ the diameter of the lead screw off the edge of the tread surface. It's acceptable, on the last pass, if you do not get five full turns.

INSPECTION

The sipes should be plainly visible on close inspection of the tread.

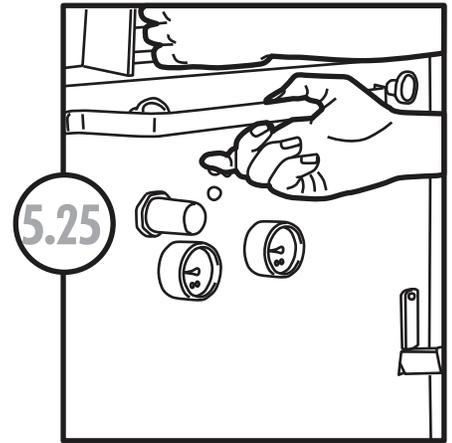


5.24

INTERRUPTIONS

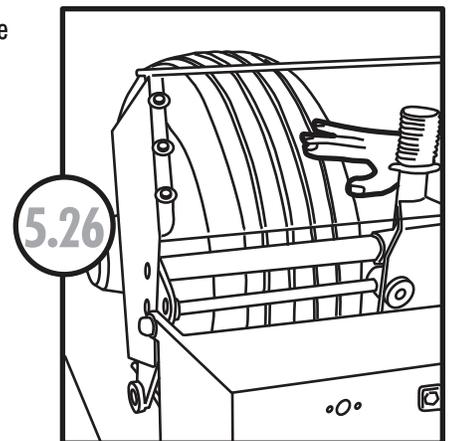
If you are interrupted while siping a tire, lift the hood from the tire with it running.

Then turn the power off.



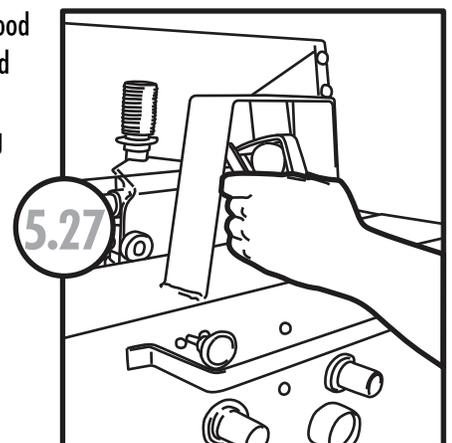
5.25

To continue, rotate the tire back $\frac{1}{4}$ turn.



5.26

Start the Siper with the hood in the upright position and slowly lower into the tire. It will fall into the existing sipe.



5.27

TIRE SIPING MACHINE

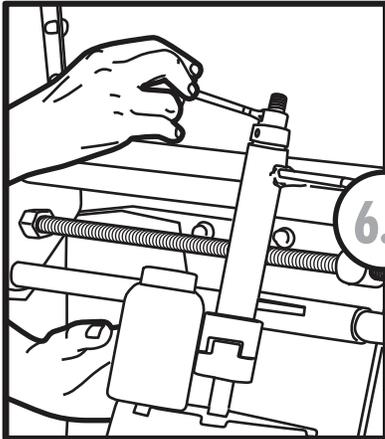
MAINTENANCE - MAIN UNIT

S E C T I O N S I X



Unplug unit before maintenance

The STE-M requires regular maintenance to ensure dependable performance. Daily, weekly and monthly maintenance should be completed as recommend in the manual.

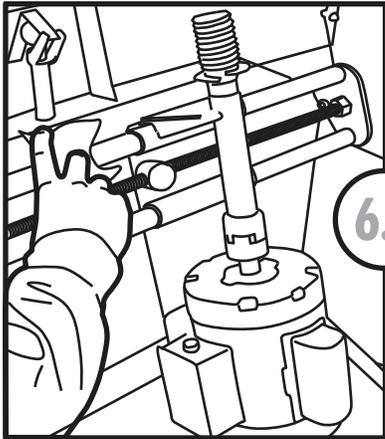


6.1

LUBRICATION

After you have removed the lead screw with the spanner wrench, apply a visible amount of anti-seize on these parts

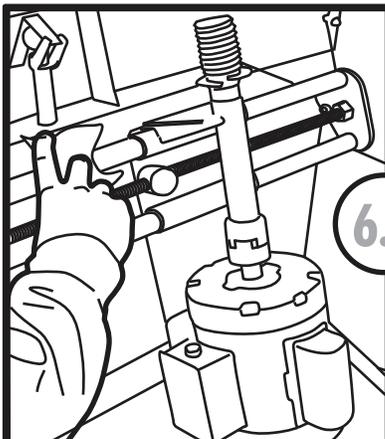
Refer to the Blade Guide and Lead Screw Changing section 5 of this manual.



6.2

Keep the threads and guide bars clean by gently wiping down the surfaces with a clean rag as needed. Make sure to lube these items with a silicone spray lube.

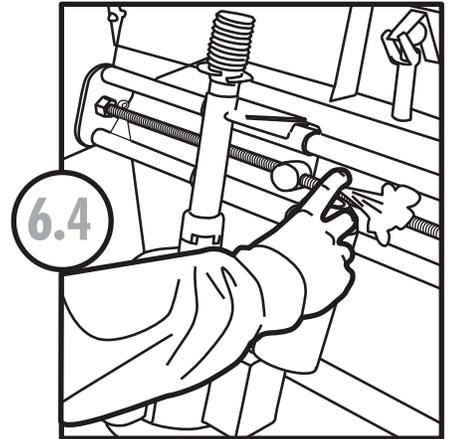
Perform the following on a weekly basis.



6.3

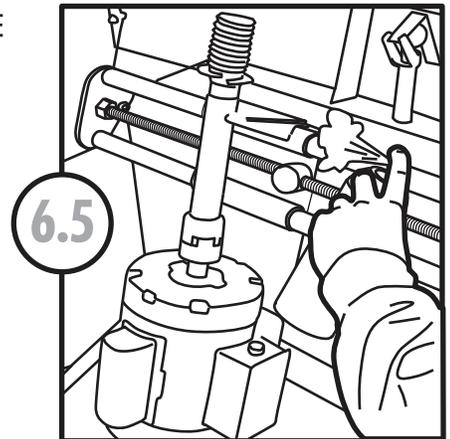
Raise the hood and clean the 2 guide bars using a 3M Scotch Guard Pad or emery paper.

Using a silicon spray (not an oil which attracts dust and dirt) spray the guide bars.



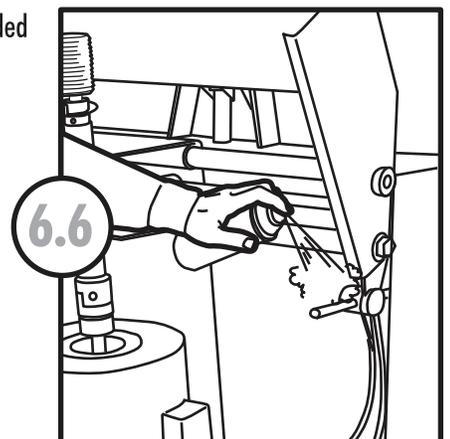
6.4

Spray the cross-feed ACME threaded rod.



6.5

Spray the tilt ACME threaded rod.



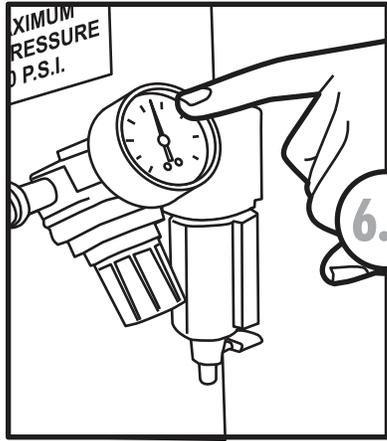
6.6

TIRE SIPING MACHINE

MAINTENANCE -MAIN UNIT

S E C T I O N S I X

DAILY PREVENTATIVE MAINTENANCE

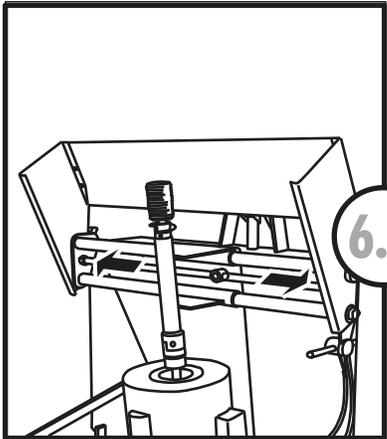


Check the regulator. Make sure your not exceeding the maximum pressure of 90 PSI.

6.7

VIBRATION

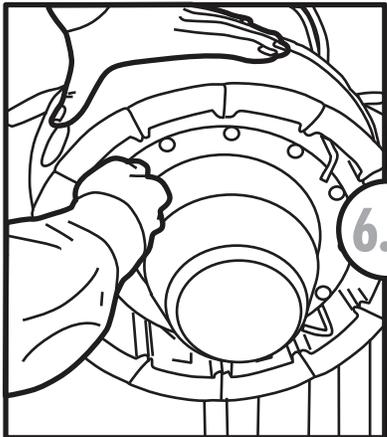
Vibration is expected during the normal operation of your Siper. It's important to ensure that the following areas are checked and properly re-tightened accordingly.



Loosen set screws on ACME adjusting nut using proper wrench. Adjust nut out to side frame on both sides. Do not over tighten.

6.8

Tighten set screw, test hand crank. It should turn freely. If not re-adjust.

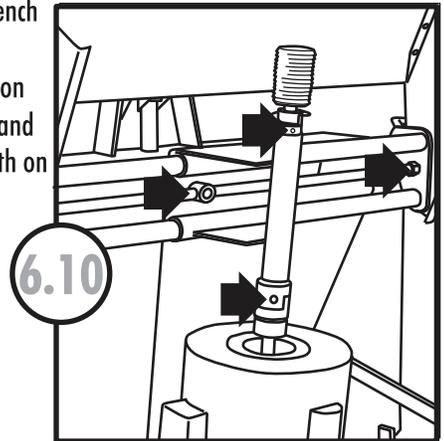


Check the lock pins on the Expandable Hub once a day to ensure they remain locked. (STE-M Only)

6.9

WEEKLY PREVENTATIVE MAINTENANCE

Use the supplied Allen wrench to physically check the tightness of the set screws on the blade guides, coupler and and the cross feed nuts both on the cross feed rod and the tilt rod.



6.10



Always Follow proper lock out tag out procedures.

The siper drive shaft bearings, hood latch, and other moving parts will require replacement if showing signs of malfunction or wear. These should be inspected when performing monthly safety inspections on the equipment.

TROUBLESHOOTING THE SIPER

SIPER MOTOR WILL NOT RUN

Possible causes:

1. Drive shaft seized
2. Power Switch malfunction
3. Handle Control switch malfunction

Solutions:

1. Unplug the Siper
2. Try to spin the drive shaft by hand. Verify bearings are in working order
3. Test power switch for continuity
4. Test handle control for continuity

BLADES BREAKING

Possible Causes. Correct as applicable.

1. Washer missing from between lead screw and top blade guide.
2. Blade guides worn out or improperly installed.
3. Leading edge of blade too pointed (round off with file)
4. Angle of lead screw set improperly
5. Rocks and or debris not removed from tire
6. Lead Screw worn out
7. Drive Shaft bearing is worn out

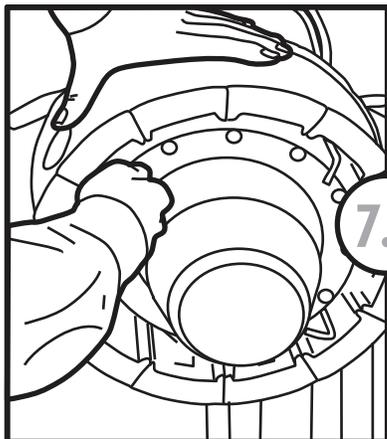
TIRE SIPING MACHINE

MAINTENANCE-EXPANDABLE HUB

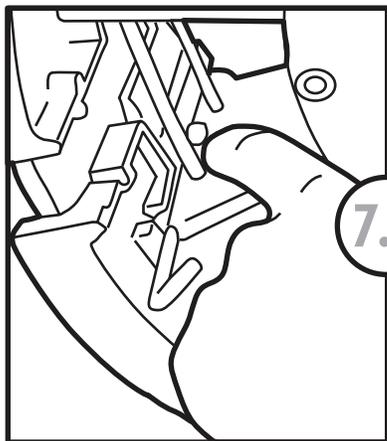
S E C T I O N S E V E N

The frequency in which these procedures are needed may depend on humidity and or moisture levels in your compressed air supply.

Please refer to the expandable hub maintenance and troubleshooting guide for further instructions on signs of wear and replacement parts.

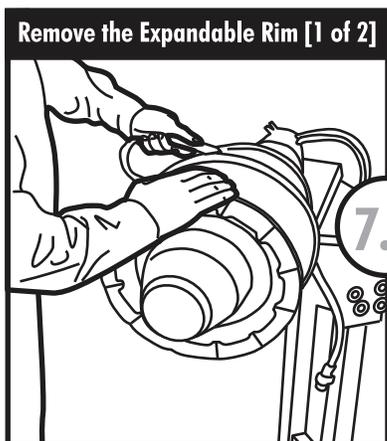


7.1 Check the four expandable rim locks to make sure they are locked into position. This involves physically feeling the locks to make sure they are turned counter clockwise.



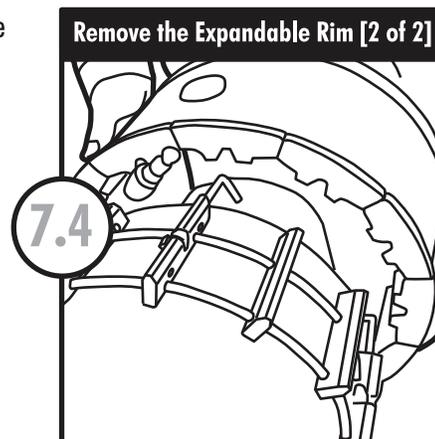
7.2 Expand your rim. Look in your hub to see the tab locking into the rim. Make sure that all four are locked into position.

WEEKLY PREVENTATIVE MAINTENANCE

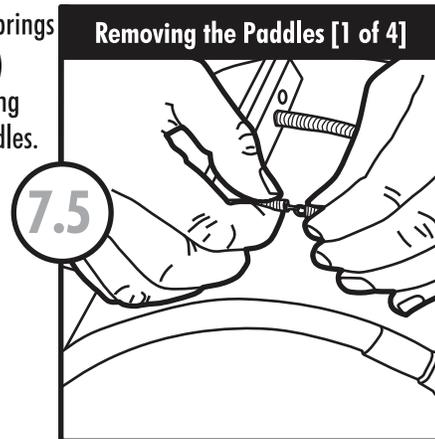


7.3 Remove your Expandable Rim by first detaching the 2 air supply hoses.

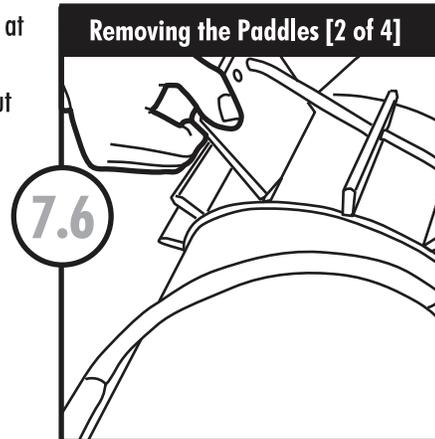
Continue by unlocking the tabs and pulling gently on the rim to remove.



Disconnect one of the two springs (rear spring recommended) and gently remove the spring by pulling it out of the paddles. Set the spring aside.



Remove your paddles one at time by pulling straight up until they're completely out of the paddle slot.

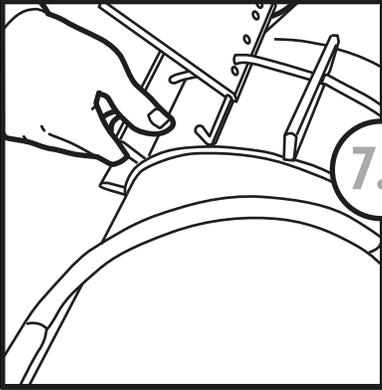


TIRE SIPING MACHINE

MAINTENANCE -EXPANDABLE HUB

SECTION SEVEN

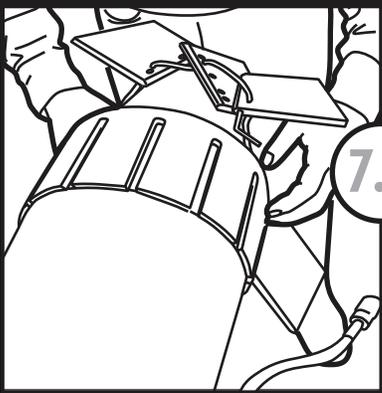
Removing the Paddles [3 of 4]



7.7

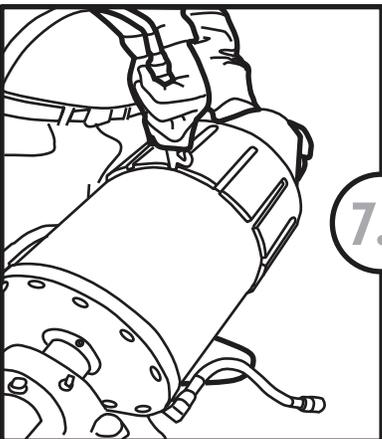
Then turning the paddle 180° and allowing the spring side to rest on the hub before continuing on to remove the next paddle. This will make removing the ring of paddles from the hub easier.

Removing the Paddles [4 of 4]



7.8

Once all the paddles are removed pull the collection gently away from the hub making sure to free any of the paddles that may get bound up by the locking pins.



7.9

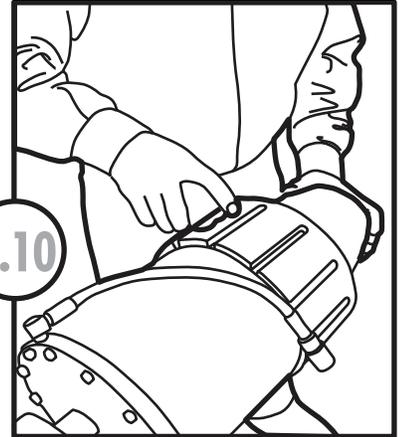
Using an air hose blow compressed air directly into the open paddle slots giving an approximate 2-3 second blast deep inside the slot working the hose side to side. This will help dislodge and expel any dirt or debris that may have collected in the hub. Insert your air hose into every other slot for sufficient air distribution.



Only use a Marine grade grease such as TSI PN 10787.

Using a marine grade grease apply a film of grease to each slot of the hub.

Turn the hub to advance to the next open slot and repeat until all slots have been lubricated.



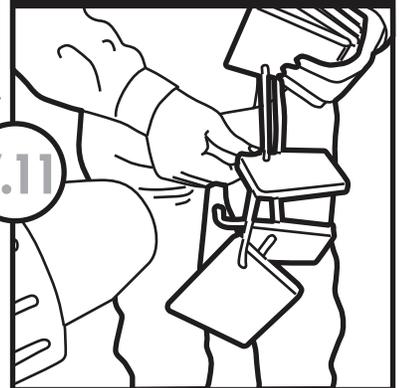
7.10



Protective gloves are recommended when installing paddles.

Carefully clean each paddle and the two springs before installing them. The paddles must be free of dirt and debris. If rough areas are present remove them using a 3M Scotch Guard pad or emery paper is suggested.

Install the Paddles [1 of 7]



7.11

Install the Paddles [2 of 7]



7.12

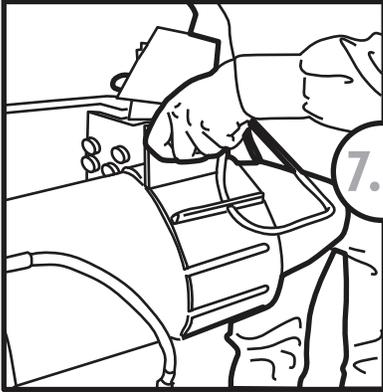
The slanted surface on each paddle inserts into the slots and ride against the cone within the hub. Apply an even film of marine grade grease on the slanted surface of each paddle.

TIRE SIPING MACHINE

MAINTENANCE-EXPANDABLE HUB

SECTION SEVEN

Install The Paddles [3 of 7]

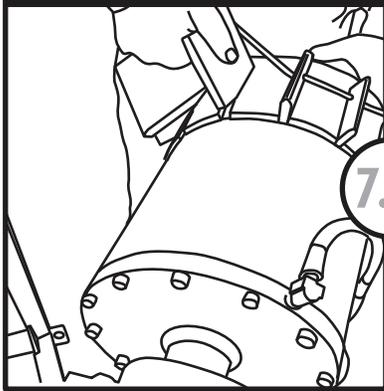


Begin inserting the paddles into the hub. Align the paddles so that the slanted (greased) side rest inside the hub.

7.13

The narrower portion of the paddle slides in nearest the rear of the hub. The longer portion nearer to you (See diagram).

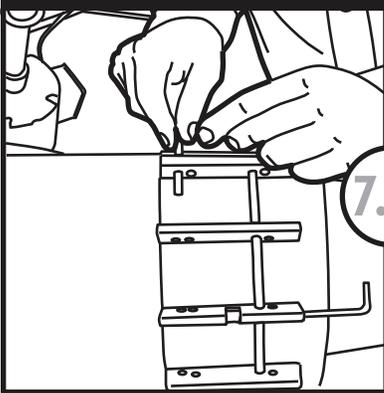
Install The Paddles [4 of 7]



7.14

When installing the 12 paddles in in the slots on the hub make sure the four paddles with locking tabs have two plain paddles in between them. Install about six of the paddles and temporarily connect the spring through them. Rotate the hub and continue installing the paddles.

Install The Paddles [5 of 7]

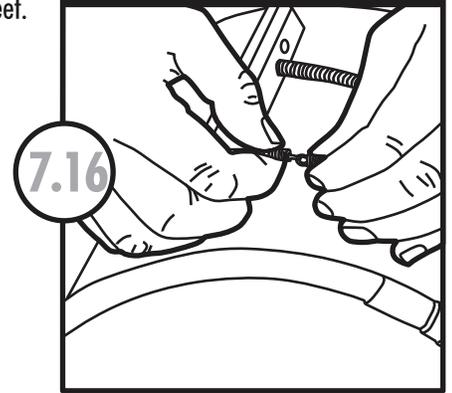


7.15

As you install the remaining paddles disconnect the spring, thread it through the newly installed paddles until all 12 are installed. Now insert the rear spring into the outer holes and thread the spring through each paddle.

Eventually reattaching the spring ends when they meet.

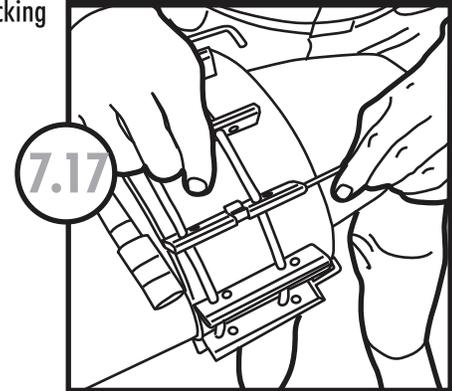
Install The Paddles [6 of 7]



7.16

Once the spring is reattached check to make sure the locking tabs are UNLOCKED.

Install The Paddles [7 of 7]



7.17

After putting in the springs and paddles the photo below shows what the completed assembly will look like.

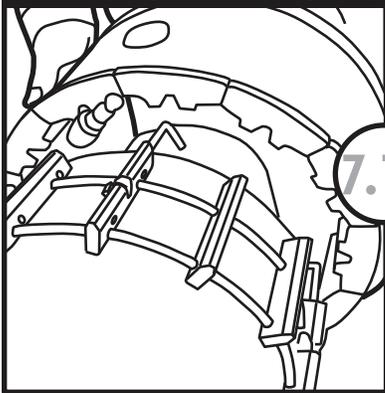


TIRE SIPING MACHINE

MAINTENANCE-EXPANDABLE HUB

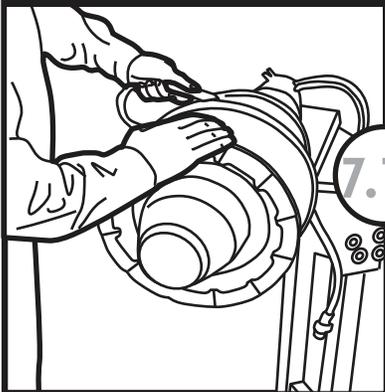
SECTION SEVEN

Install the Expandable Rim [1 of 2]

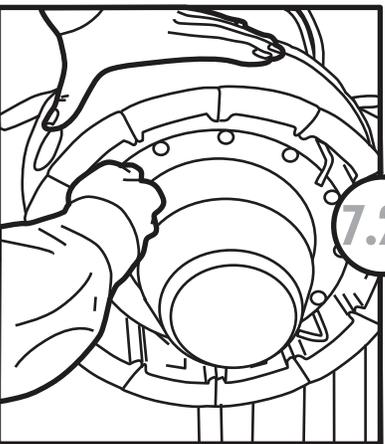


Re install the rim onto the hub making sure that the airline couplers on the rim are facing the airlines on the hub.

Install the Expandable Rim [2 of 2]



The rim must be positioned so that when the hub air hose are connected, they have as much slack as possible to accommodate the distance required for expanding.

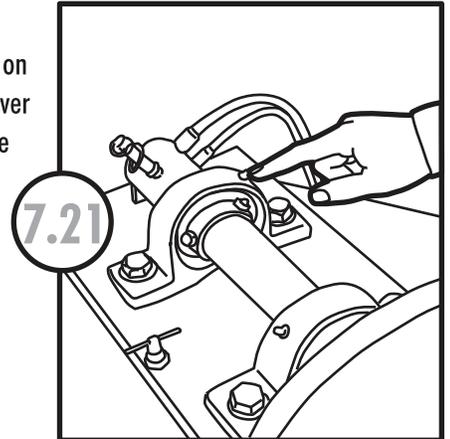


Lock the locking tabs on the rim and expand the rim.



Physically and visibly check to ensure the locking pins are locked and secure before deflating the rim.

Also check the tightness of the axle set screws located on the Expandable Hub. Deliver 1 shot of chassis lube to the sealed bearings on the Expandable Hub axle.

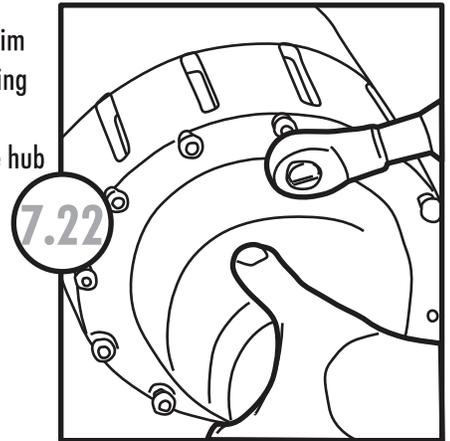


1-6 MONTH PREVENTATIVE MAINTENANCE

Remove the Expandable Rim (Refer to figures 7.3 - 7.4)

Remove the paddles (Refer to figures 7.5 - 7.9)

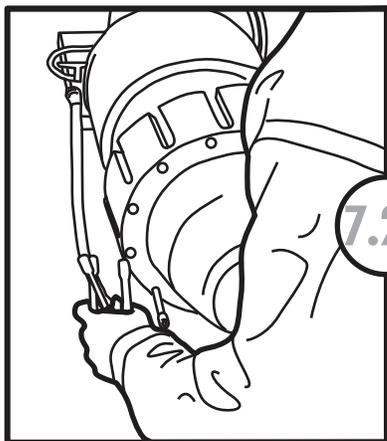
Remove the Expandable Rim & paddles before performing the following procedures. Take the front cover of the hub off by loosening the cover bolts but leaving them seated in the holes.



TIRE SIPING MACHINE

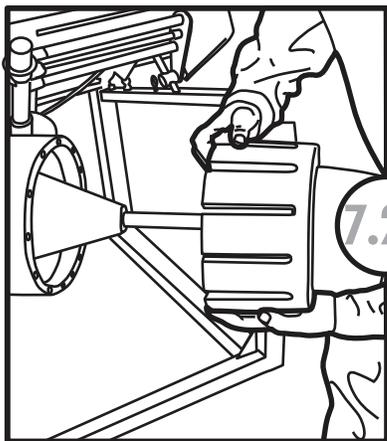
MAINTENANCE-EXPANDABLE HUB

SECTION SEVEN



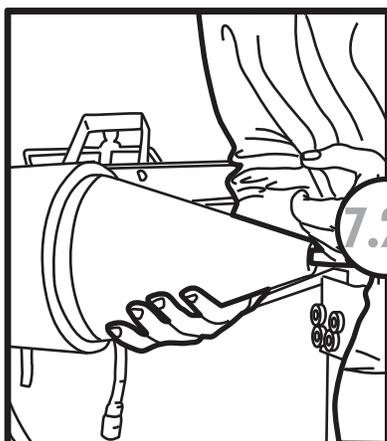
Pull the hubs cover away from the hub about 6 - 8 inches. Then remove the loosened hub cover bolts completely and set them aside.

7.23



Pull the cover out straight taking care not to bend the inner shaft. Once the cover and shaft assembly is pulled out completely gently set it aside and remove the cone.

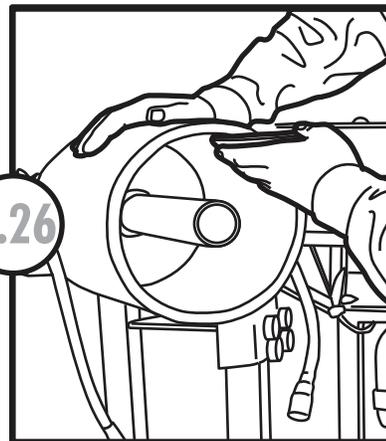
7.24



To remove the cone insert a finger into the shaft opening of the cone (being careful not to injure yourself). With the other hand grasp the narrow tip of the cone and gently work the cone out of the hub chamber. You may need to gently work the cone up and down as you pull out the cone out. Be careful not to drop the cone it may come out unexpectedly. Set the cone on the base with cone pointing upward.

7.25

Using a cleaning solvent wash and wipe out any grease, oil or buildup that maybe on the inside of its cylinder. Using a 3M Scotch Pad to gently rub the inner walls of the hub chamber removing any lose dirt or debris. Polishing the inside will help remove any possible corrosion. The finished walls should feel ultra smooth.



7.26

The cone will also need to be smoothed out by the same method. With the cone placed on a flat surface (cone pointing upward) use the same type of pad to smooth the outer surface of the cone.



7.27

Pay special attention to the cone's surface to ensure they are very smooth to the touch.

Once the cone surface is clean and smoothed, pick up the cone turning it on its side and resting it on a towel or soft surface like your lap or knee. Then smooth the flat outer surface where the rubber seal is located.

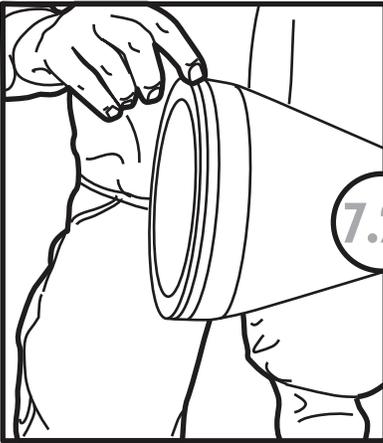


7.28

TIRE SIPING MACHINE

MAINTENANCE-EXPANDABLE HUB

SECTION SEVEN



Inspect the rubber seal itself feeling for cracks and defects. If defects do appear in the large outer rubber seal or in either one of the small inner seals (at the tapered end of the cone) then contact us to obtain seal kit to replace the defective seal.

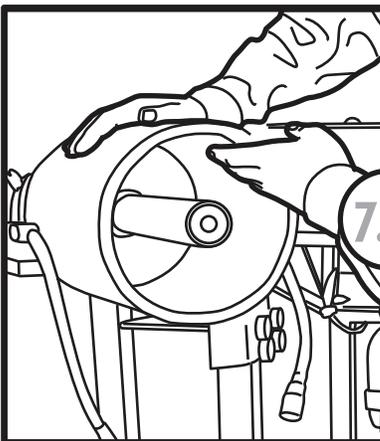
7.29



Lubricate the outer surface of the cone with a film of marine grease.

7.30

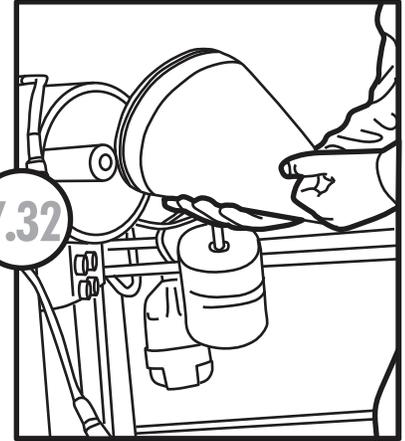
 Only use a Marine grade bearing grease such as TSI PN 10787.



Lubricate the inside of the hub chamber as well. Apply an even film of marine grade bearing grease.

7.31

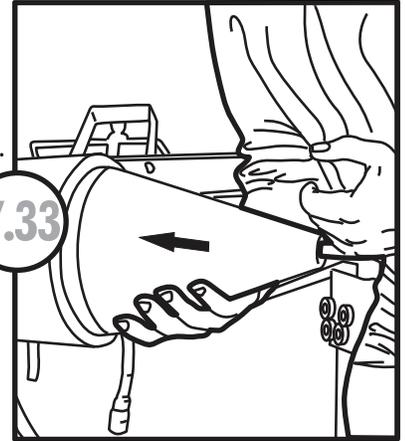
Insert the cone back into the hub chamber (tapered end facing you). Picking the cone up by inserting a finger (being careful not to injure yourself) into the top of the hub and supporting the weight of the cone by the other hand.



7.32

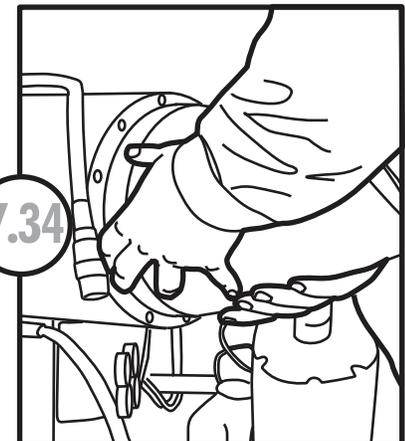
Now reinstall the cone.

Carefully align the outer base with the hub chamber opening.



7.33

Holding the tapered end securely, begin to apply pressure to the larger outer rubber seal located at the base of the cone. This seal will form an air tight seal creating a tight fit. The seal must be compressed allowing the cone to seat inside the hub chamber.

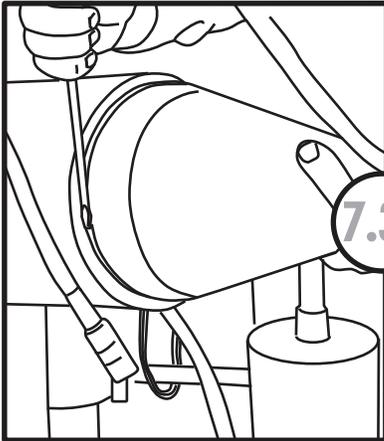


7.34

TIRE SIPING MACHINE

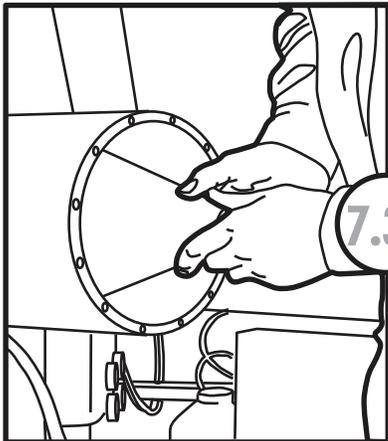
MAINTENANCE-EXPANDABLE HUB

SECTION SEVEN



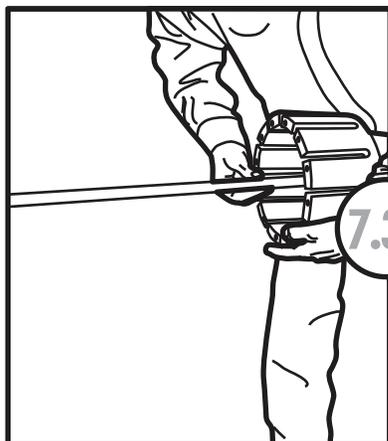
The use of a flat head screw driver may help to slowly compress the seal. Use of any tools could result in damage to the seal so never push the tip of the screw driver into seal but rather pull the tip along the seal forcing it to flatten. It may help to start at one side of the seal and focus on compressing it enough to allow the cone to gain ground.

7.34



Eventually the rubber seal will be entirely contained with the hub chamber and the cone should then be gently eased into the chamber until it comes to rest on the back wall of the hub chamber.

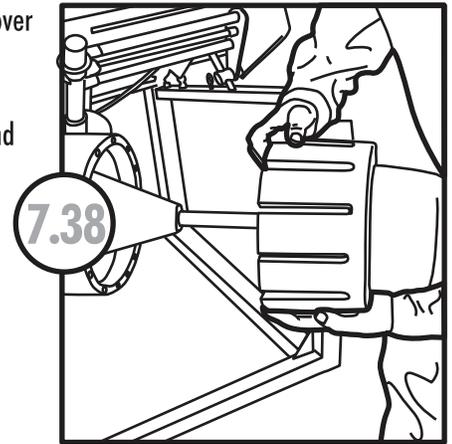
7.36



Locate the shaft and hub cover assembly. Inspect the shaft, rough areas and use 3M Scotch Guard pad to smooth them. Grease the shaft with a film of marine grease evenly along the entire length.

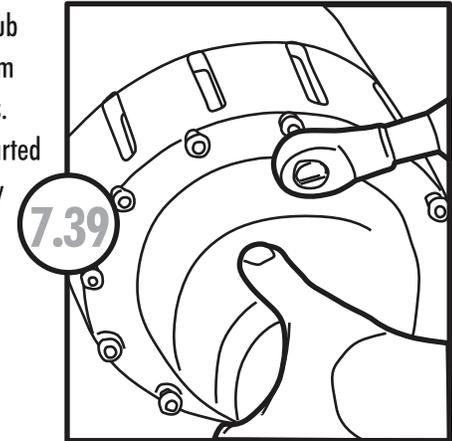
7.37

Insert the shaft and hub cover assembly into the tapered opening of the cone using extra caution as to not bend the shaft.



7.38

Once in place insert the hub cover bolts and insert them into the appropriate holes. Make sure each bolt is started by hand prior to using any air wrench or ratchet.

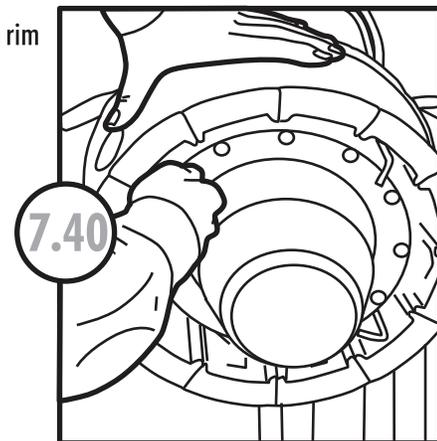


7.39

Install the Paddles (Refer to Figures 7.11 - 7.17)

Install the Expandable Rim (Refer to Figures 7.20 - 7.21)

Lock the locking tabs on the rim and expand the rim.



7.40

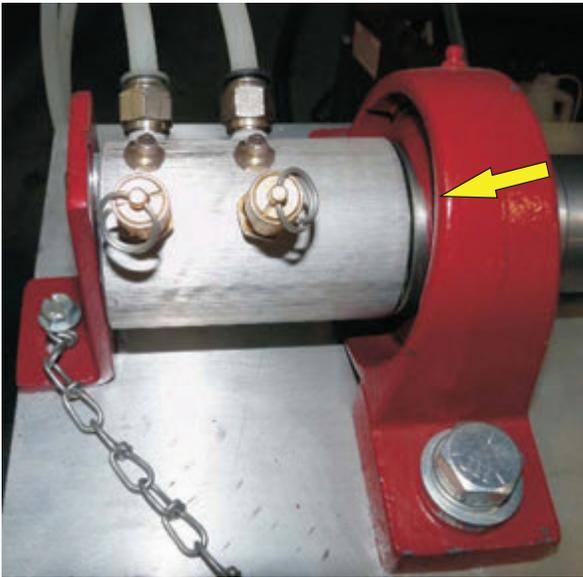


Physically and visibly check to ensure the locking pins are LOCKED and secure before deflating the rim.

TIRE SIPING MACHINE

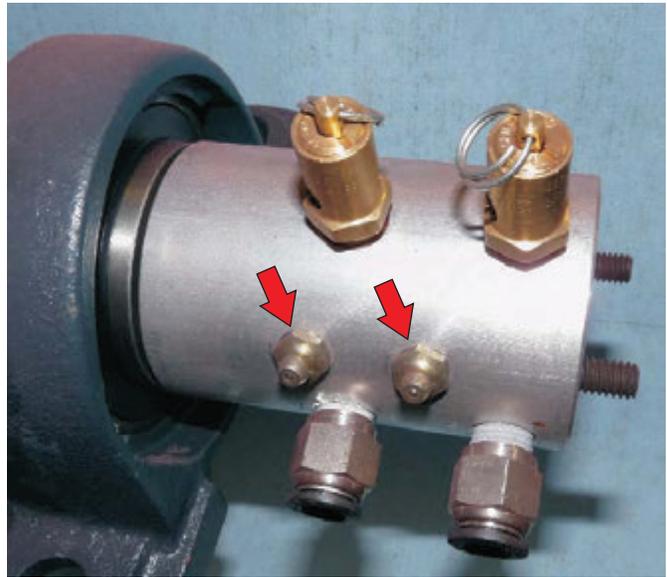
MAINTENANCE-EXPANDABLE HUB

S E C T I O N S E V E N



For proper function of air flow through the Expandable Hub system allow a slight gap. See yellow arrow.

Upon making adjustments or maintaining your machine this gap must not exceed 1/16 inch. A larger gap can substantially decrease proper air flow to the Expandable Hub.



Grease the inlet hub as located by the two red arrows.

Under normal usage add one pump of grease to each zerk every 30 days.

OPTION SECTION - WHEEL LIFT



Stand clear of the lift mechanism before pressing the pedal



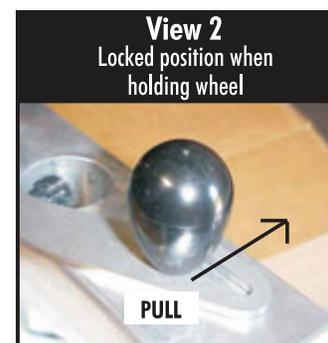
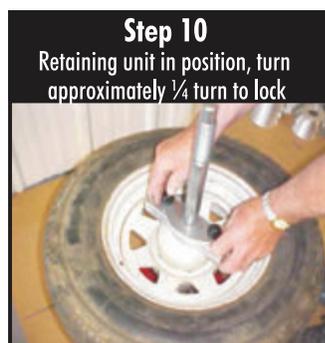
The Wheel Lift

Roll the tire onto the lift ramp until it reaches the backstop. Stand clear of ramp and press the foot pedal (Indicated by blue arrow) to engage the lift. Once the lift reaches the top, engage the wheel into the bearing slot. When the tire is engaged in the bearings, stand clear of the lift ramp and press the pedal to lower the lift ramp.



OPTION SECTION - 6030

SSG# 6030	QUICK LOCK WHEEL ADAPTER PROCEDURES	For Use on SSG, ST & STE-M SIPERS
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OPTION SECTION - AUTOMATED CYCLE FEED

STE-M AUTOMATIC CYCLE FEED - OPERATION

K I T P N 6 0 0 5



Fig. 1

Step 1.

Turn switch to the left to reverse motor into position on the tire to be siped. (Fig. 1)

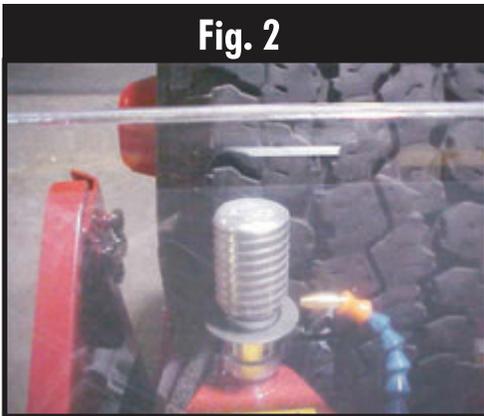


Fig. 2

Approximate Blade guide positioning shown on tire. (Fig. 2)

Position blade at same starting position as with the manual crank machine.



Fig. 3

Step 2.

Squeeze handle switch to start machine operation. Engage spray unit mist. After tire turns one revolution PRESS JOG BUTTON to move blade guide set over to proper cutting row position. (Fig. 3)

**Repeat this operation until complete tire is siped.

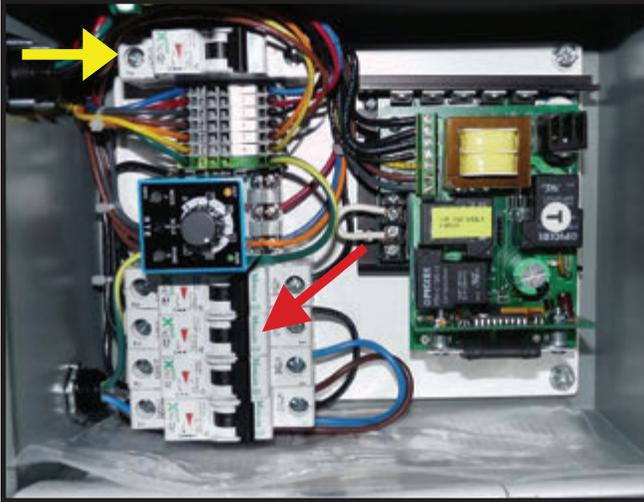
OPTION SECTION - AUTOMATED CYCLE FEED

SIPER AUTOFEED CONTROL BOX BASICS - TROUBLESHOOTING



**DISCONNECT POWER
BEFORE OPENING
CONTROL BOX**

Fig. 1 - Inside of Control Box

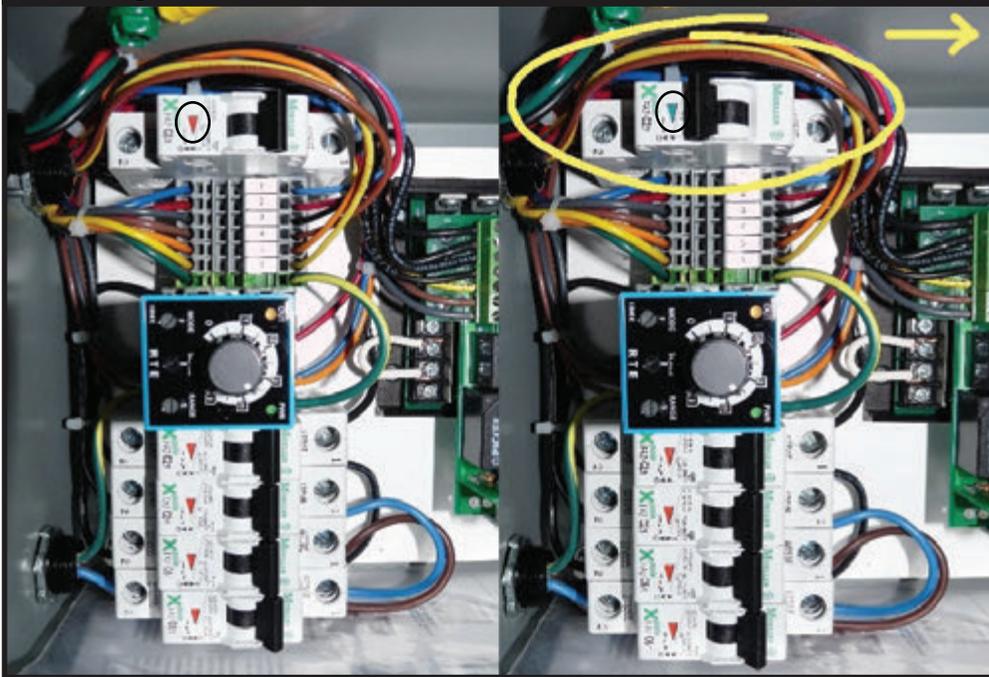


Prior to shipping, the electronic components in each Control Box are factory set, tested and approved for optimum performance.

If, upon installing a Siper STE-M with an Automatic Cycle Feed (ACF) feature and it fails to work, please review this guideline.

Disconnect your power source. Open the Control box located on the side of the machine. Visually check to see if the breaker has 'tripped.' Reset the breaker.

Fig. 2 - Yellow circle indicates the breaker 'tripped'



In Fig. 2 a circuit breaker is tripped (circled in yellow). Note the position of the toggle switch and the red arrow changing to green. If any breakers 'trip,' flip the toggle and return it to an "ON" position

OPTION SECTION - AUTOMATED CYCLE FEED

SIPER AUTOFEED CONTROL BOX BASICS - TROUBLESHOOTING

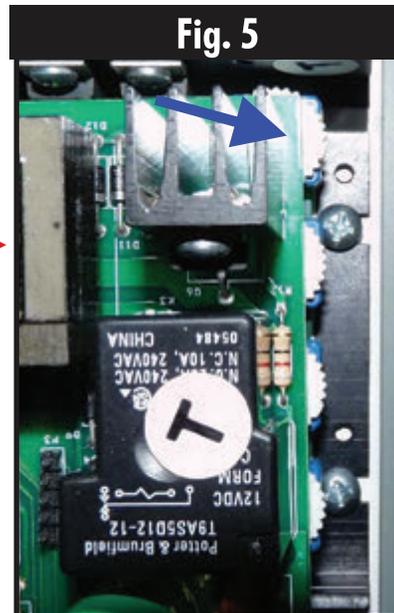
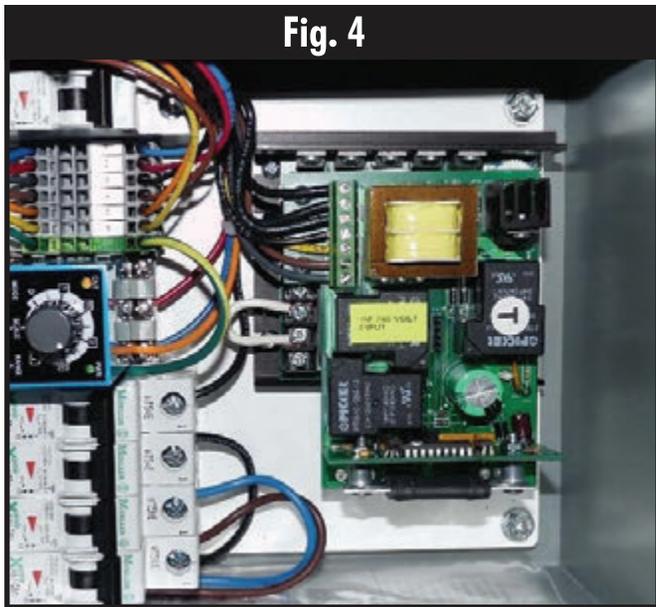


Reconnect power to the unit and turn "ON." Look for a green light indicating the power is ON. (See green arrow in Fig. 3)

If the green light is not on recheck the breakers.

FYI: The orange arrow points to where an orange light comes on when the unit is in "Jog" mode. This should not be a factor but that's what the orange light is for. The dial changes the Jog distance. This too is a pre-set and should not be a factor.

The photos below identify the PC board in the control box. (Fig. 4 & 5)
There are four adjustment wheels that are key to setting up the Siper Autofeed.



Power
Pulse

This procedure covers adjusting the first wheel, Power and possibly the second wheel, Pulse/Surge. Only change one of these at a time and ONLY one notch at a time.

See Fig. 5 and turn wheel clock wise one notch.

It may be necessary to adjust the Power setting by as many as 3 notches. Once the gear motor begins operating it may operate intermittently . Turn Pulse adjustment wheel one notch counter clockwise. Fine tune this setting one notch at a time.

When complete close and secure the Control Box cover.

OPTION SECTION - AUTOMATED CYCLE FEED

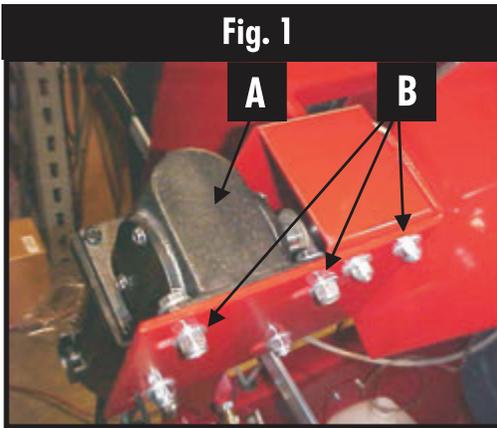


Fig. 1

MOTOR GUIDE ADJUSTMENT:

Occasionally due to machine use and movement the Cross Feed guide bars may become misaligned causing the right angle motor (Fig 1. A) to pull hard and blow a fuse. **Unplug the unit.**

To realign, loosen cap screw (Fig. 2 C) reposition guide bars so they are parallel and retighten.

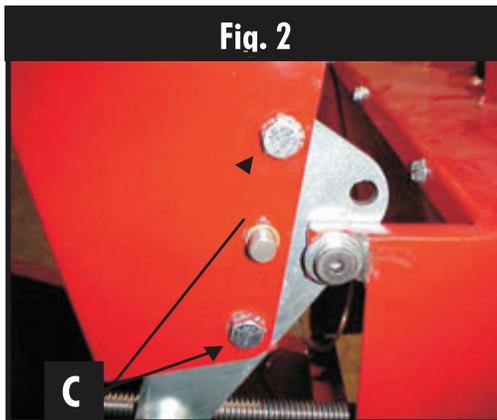


Fig. 2

MANUAL OPERATION:

Please remove motor (Fig. 1 A) by loosening bolts and nuts (Fig. 1 B) and replace with the manual crank.

OPTION SECTION - ANGLE/SIPE WHEEL ADAPTERS



The motor drive unit on a Siper can include an angled motor mounting bracket.

This option enables tires to be siped at four additional 15 degree angled increments than a standard unit.



Currently two large sized wheel adapters are available for Sipers. Available are a 19.5" and 22.5" set of disks. These disks allow the user to sipe non-mounted tires from 19.5" to 22.5" in diameter.

APPENDIX

REPAIR PARTS

ITEM NO.	DESCRIPTION
18.071	Siper Blades
24.929	250/1000 Blade Guide Set Stamped "A"
25.929	300/1000 Blade Guide Set Stamped "AA"
26.929	350/1000 Blade Guide Set Stamped "D"
27.929	400/1000 Blade Guide Set Stamped "E"
28.816	Siper File
6.887	Spanner Wrench
58.242	5/32 Lead Screw
57.242	7/32 Lead Screw
56.242	9/32 Lead Screw
55.242	11/32 Lead Screw
62.242	13/32 Lead Screw
6030	Quick Mount Wheel Lock Adapter
33.901	1125mm 10 Budd Adapter
43.901	35mm x 10 Budd Unimount Adapter
42.901	285.75mm x 10 Budd Unimount Adapter
167.190	Spray Mist Coolant Unit
2.029	Silicone Emulsion
3738-1	Handle Control Switch
4038-1	Toggle Switch
4479	Blade Shield
10787	Hub Grease
4954	Hand Crank
5.964	8" Drive Shaft Kit
31.034	Coupler with Spider
31.034C	Spider Only
128.055	Crossfeed Nut

Material Safety Data Sheet

Section 1 Product Identification

Product Name: LUBE TECH Silicone Siping Lubricant
MSDS CODE: 10300
Formula type: Silicone emulsion

Manufacturer's Name:
LUBRICATION TECHNOLOGIES, INC
900 MENDELSSON AVE. N
GOLDEN VALLEY, MN 55427

Emergency Telephone: 1-800-424-9300 (CHEMTREC)
Information: 763-545-0707
Fax: 763-545-9256

Section 2 Hazardous Ingredients

Chemical Name	CAS#	%	Threshold Limit Value	Permissible Exposure Limit
Water	7732-18-5			
Dimethylpolysiloxanes	63148-62-9	20 - 25	NE	NE
Octylphenoxypolyethoxyethanol	9036-19-5	0.5 - 1.5	1 PPM	5 PPM

Balance of ingredients are not hazardous as defined by OSHA

Section 3 Physical Data

Form:	Liquid	pH as is:	6.5 - 7.5
Color:	White emulsion	pH (1% vol):	7.0 - 7.6
Odor:	None	Solubility in Water:	Forms emulsion
Specific Gravity (Water = 1):	0.97 - 1.00	Vapor Density (Air = 1):	ND
Boiling Point °F:	Approx. 212	% VOC:	<0.5
Evaporation Rate (Water = 1):	<1	Vapor pressure:	Similar to water

Section 4 Fire and Explosion Information

Flash Point (Method) F: 216° PMCC

Unusual Fire and Explosion Hazards: Methylpolysiloxanes can generate formaldehyde at approximately 300 degrees F and above in atmospheres which contain oxygen.

Extinguishing Agents: Foam, carbon dioxide, dry chemical, water fog, water

Fire fighting methods: Evacuate area and fight fire from a safe distance. If leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop a leak. Use water spray to cool adjacent structures and to protect personnel. Shut off source of flow if possible. Stay away from storage tank ends. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of storage tank due to fire. Fire fighters must wear MSHA/NIOSH approved positive pressure breathing apparatus with full face mask and full protective equipment.

Section 5 Health Hazard Data - Signs and Symptoms of Overexposure:

Probable Routes of Entry: Eyes or skin

Eyes: May cause mild eye irritation
Skin: May cause mild skin irritation
Inhalation: May cause respiratory tract irritation
Ingestion: May cause stomach discomfort
Medical Conditions Aggravated by Exposure: Pre-existing skin disorders

Section 6 Emergency First Aid Procedures

Eyes: Immediately flush eyes with cool running water for at least 15 minutes. Obtain medical aid if irritation develops.
Skin: Wash skin with soap and cool water. Obtain medical aid if irritation develops. Remove contaminated clothing and launder.
Inhalation: Remove to fresh air. Monitor breathing. If breathing is difficult, obtain immediate medical aid.
Ingestion: Drink 1-2 large glasses of milk or water. Obtain immediate medical aid or call poison control. Do not induce vomiting unless directed by a physician. During vomiting there is a danger of aspirating liquid into lungs, causing serious damage and chemical pneumonitis. If spontaneous vomiting occurs, keep head below hips to prevent aspiration and monitor for breathing difficulty. Gastric lavage should be performed only by qualified medical personnel. Keep affected person warm and at rest. Seek immediate medical attention or call 911.

Section 7 Reactivity Data

Stability: Stable
Incompatibility: Acids, bases, and oxidizers.
Hazardous Decomposition Products: Carbon dioxide, carbon monoxide, silicon dioxide, formaldehyde
Hazardous Polymerization: Will not occur

Section 8 Spill & Leak Procedures

Procedures for Cleanup: Area will be slippery. For small spills, mop up with soap and water and then rinse with water.
Large Spills: For large spills, area will be very slippery. Dike product with sand or dirt. Keep out of surface waters. Salvage for reuse if possible. Otherwise place into suitable container for disposal. Wash walk areas with soap and water. Inform local pollution officials of spill. Spill may be considered RCRA hazardous if contaminated. Call local regulatory agency.
Waste Disposal: Dispose in accordance with federal, state and local regulations. Waste if contaminated, may be subject to RCRA.

Section 9 Special Protection Information

Ventilation Type Required: General
Protective Gloves: Rubber, neoprene, and nitrile
Respiratory Protection: Not necessary under normal use conditions and ventilation. If mists are generated, wear NIOSH respirator for mists. May be needed for spill clean up.
Eye Protection: Goggles or splash-proof glasses
Other Equipment: Eye wash station. Rubber boots for spill cleanup.

Section 10 Special Precautions

Store between 30° F and 110° F. Store away from heat or ignition sources. Store out of direct sunlight. Keep out of reach of children. Keep container closed when not in use. For industrial and institutional use only. Mix only with water. Thoroughly rinse empty containers before disposal.

Section 11 Toxicity Data

Toxicity:

Ingredient	LD50 - Oral	LD50 - skin absorption	LC50 - Inhalation	Effects
Dimethylpolysiloxanes	ND	ND	ND	See note below
Octylphenoxypolyethoxyethanol	1800 mg/kg	ND	ND	See note below

Note: Non-irritating to skin (rabbit), minimally irritating to eye (rabbit)

Carcinogenicity:

Ingredient	NTP	IARC	OSHA
Dimethylpolysiloxanes	No	No	No
Octylphenoxypolyethoxyethanol	No	No	No

Other effects:

Ingredient	Reproductive Toxicity	Teratogenicity	Mutagenicity
Dimethylpolysiloxanes	ND	ND	ND
Octylphenoxypolyethoxyethanol	Possibly	ND	Mammalian somatic cells.

Section 12 Ecological Information

Ingredient

Dimethylpolysiloxanes	No data
Octylphenoxypolyethoxyethanol	BOD5 and COD: Not available. Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Section 13 Hazard Rating - HMIS

0 = minimal 1 = slight 2 = moderate 3 = serious 4 = severe

Health: 1 Reactivity: 0 Fire: 0 Personal protection equipment::

Section 14 Regulatory Information

• Chemical Inventory Status - part 1 •

Ingredient	TSCA	EC	Japan	Australia
Dimethylpolysiloxanes	Yes	ND	ND	ND
Octylphenoxypolyethoxyethanol	Yes	ND	ND	ND

• Chemical Inventory Status - part 2 •

Ingredient	Korea	-----Canada-----		Philippines
		DSL	NDSL	
Dimethylpolysiloxanes	ND	Yes	No	ND
Octylphenoxypolyethoxyethanol	ND	Yes	No	ND

• Federal, State & International Regulations - part 1 •

---- SARA 302 ----

----- SARA 313 -----

Ingredient	RQ	TPQ	List	Chemical Catg.
Dimethylpolysiloxanes	No	No	No	No
Octylphenoxypolyethoxyethanol	No	No	No	No

• Federal, State & International Regulations - part 2 •

Ingredient	CERCLA	RCRA 261.33	TSCA 8(d)
Dimethylpolysiloxanes	No	No	No
Octylphenoxypolyethoxyethanol	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No

SARA 311/312: Acute: No Chronic: No Fire: No Pressure: No

Reactivity: No

Section 15 Shipping Name:

Cleaning Compound

Section 16 WHMIS

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

This product is not hazardous according to the CPR.

Section 17 Documentary Information

Date issued: 10-23-2009 Supercedes: -- Reason for update: New product

ABBREVIATIONS:

NE = NOT ESTABLISHED NDA = NO DATA AVAILABLE
 > = GREATER THAN <= LESS THAN
 BCF = BIOCONCENTRATION FACTOR ND = NO DATA

The data and recommendations presented herein are based upon our research and the research of others, and are believed to be accurate. However, no warranty of guarantee of their accuracy is made; and the products are distributed without any warranty, expressed or implied, including the limited warranties of merchantability of fitness for a particular purpose. The supplier makes no warranties, expressed or implied to the vendee, the vendee's employees or anyone for any direct, special or consequential damages arising out of or in connection with the accuracy, adequacy or furnishing of such information. Employers should use this information only as a supplement to other information and must make independent determinations of suitability to assure proper use, safety, and health of employees.

Warranty Statement & Return Policy

Warranty & Workmanship you can depend on.

With over 25 years of manufacturing experience we maintain the ability to provide competitive prices while employing and manufacturing the majority of our products in the USA. Pride in our workmanship and standing behind each and every product is not just our claim but our uncompromising responsibility.

TSISSG equipment is warranted to be free from defects in materials and workmanship for a period of one year from the date of original purchase to the original owner. Repair labor is warranted for 90 days from the date of original purchase. Bushings, blades, bearings and normal wear and tear are not covered under warranty. Careless handling, negligence, misuse, abuse, mutilation, improper operation, making unauthorized repairs, additions, and or alterations automatically cancel this warranty and relieves TSISSG of any obligation. Cheetah tanks claimed to be defective while under warranty will be evaluated at our manufacturing plant and either repaired if possible or exchanged and returned or credit issued to the customer account at our discretion. Damage resulting from dropping the tanks will not receive warranty consideration. Warranty parts need to be returned prepaid to the plant for credit. Any replacement parts shipped from the plant will be shipped at the customer's expense. Machines requiring warranty work must be brought to the manufacturing plant in 201 Chelsea Rd, Monticello, MN or to a repair facility authorized by TSISSG.

Return Policy:

!!WARNING!! Goods returned without an RGA will be refused. A Returned Goods Authorization form must be obtained before returning any material or goods. All non-warranty returns will be subject to a 15% restocking fee plus any additional charges for reconditioning/repacking.

