

# EXPANDING HUB PREVENTATIVE MAINTENANCE SERVICE BULLETIN

The TSISSG Hub assembly is designed and manufactured for long-term trouble-free operation. It is a time and labor saving unit that will deliver many years of service if a reasonable cleaning and maintenance schedule is practiced.

The purpose of this service bulletin is to show personnel how to perform simple procedures for maintaining the expanding hub assembly. Caution: Before performing any disassembly disconnect air supply to machine. Disconnect air hoses connected to the air swivel assembly.

## EXPANDING RIMS

The expanding rim assembly is a flexible unit comprised of more than two dozen individual pieces, held together by a natural rubber belt. Due to the movable parts on these expanding rims caution must be taken in handling all rims. Rough handling can cause rims to come apart and or be damaged. (DO NOT DROP THE EXPANDING RIMS, THEY WILL COME APART. WARRANTY DOES NOT COVER REASSESEMBLY OF THE RIMS)

Each segment or “shoe” is hand-fitted and then machined to precise tolerances. They are aluminum cast shoes and as such require much care when changing and transporting.

NOTE: Whenever a rim assembly appears to be sloppy or wobbles when placed on the floor, it is time to replace the belt. These, as well as all other parts, are available by calling TSISSG at 1-800-223-4540 or FAX at 1-602-437-5025.

General maintenance on these rims consists of blowing the dust or dirt off of the rubber belt periodically using about 50lbs to 75lbs air pressure. Keep the belt lightly lubricated with oil soap to prolong belt life. DO NOT USE GREASE OR ANY OTHER PETROLIUM BASED LUBRICANTS.

## GENERAL MAINTENANCE

**Please see the remaining pages of this guide or the DVD for detailed, step by step instructions.**

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

DO NOT use regular types of grease, Lubriplate, WD-40 on the Hub. Use only water resistant Marine Grease; TSI Part # 10787 or equivalent.

With a rim installed on hub assembly, cycle the hub and rim assemblies 12-20 times. This will allow the Marine Grease to work into all areas. The unit should cycle smoothly.

## **DAILY:**

- Lube belt with oil soap tire lube as needed
- Check the four expandable rim locks to ensure they are in the locked position
- Look inside the hub to see the locking tab is engaged

## **WEEKLY:**

In addition to the daily maintenance the following maintenance is recommended weekly.

- Detach 2 Air Supply Hoses and remove expandable rim
- Remove paddles
- Clean out the paddle slots using air pressure
- Use marine grease to lubricate the paddle slots
- Clean each paddle
- Lubricate the bottom of each paddle
- Reassemble
- Reinstall the rim, reconnect air hoses and locking tabs.
- Grease the main shaft- see detailed instructions

## **1-6 MONTH:**

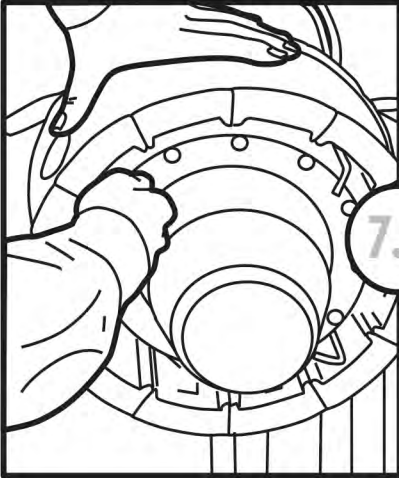
After completing the daily and weekly recommended maintenance the following procedures are recommended every 1-6 months.

- Remove the hub outer housing
- Remove internal cone
- Clean the inside of the housing cylinder- Use brake cleaner to remove grease residue. Follow with scotch bright pad
- Clean the cone- Use brake cleaner to remove grease residue. Follow with scotch bright pad.
- Lubricate the inside of the cylinder- Use marine grease
- Lubricate the outside of the cone-Use marine grease
- Lubricate the shaft
- Reassemble the Unit

# EXPANDABLE HUB MAINTENANCE

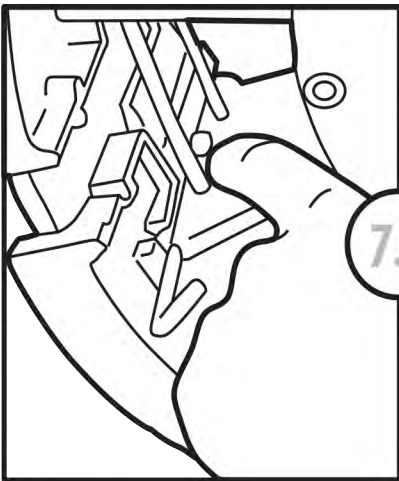
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## RIM LOCK MAINTENANCE



7.1

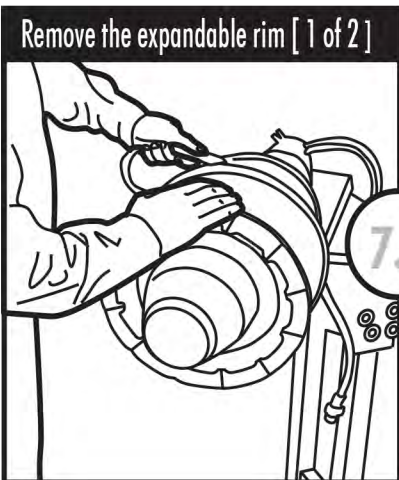
Check the four expandable rim locks to make sure they are locked into position. This involves physically feeling the locks to make sure they are turned counter clockwise



7.2

Place tire on rim. 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

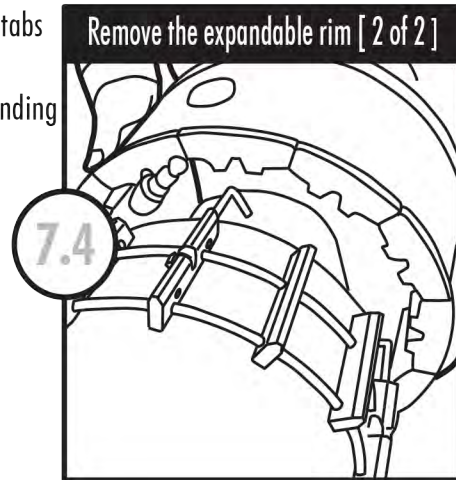


7.3

Remove the expandable rim [ 1 of 2 ]

Remove your expandable rim by first detaching the 2 air supply hoses.

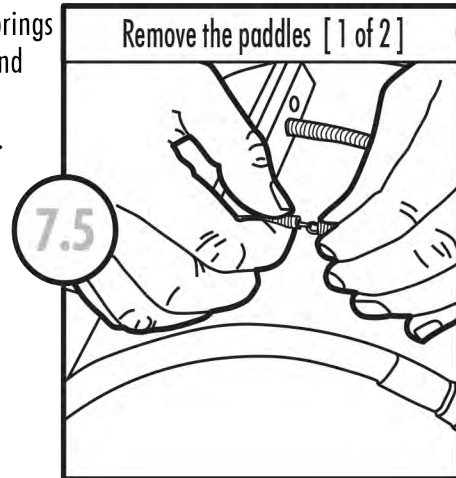
Continue by unlocking the tabs and pulling on the rim to remove. Carefully set expanding rim aside.



7.4

Remove the expandable rim [ 2 of 2 ]

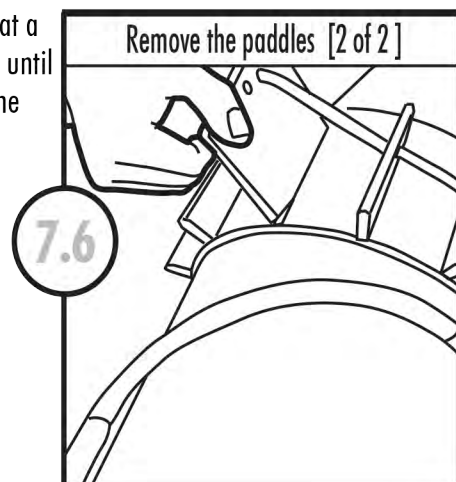
Disconnect one of the two springs ( rear one recommended ) and gently remove the spring by pulling it out of the paddles. Set the spring aside.



7.5

Remove the paddles [ 1 of 2 ]

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

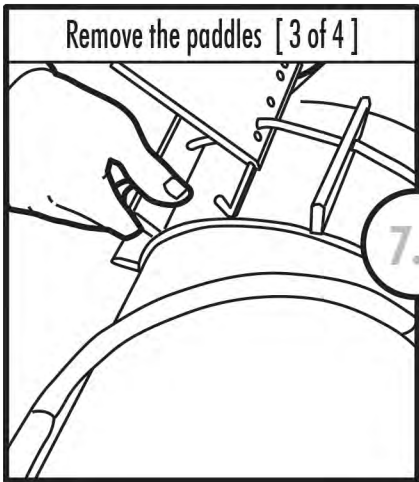


7.6

Remove the paddles [ 2 of 2 ]

# EXPANDABLE HUB MAINTENANCE

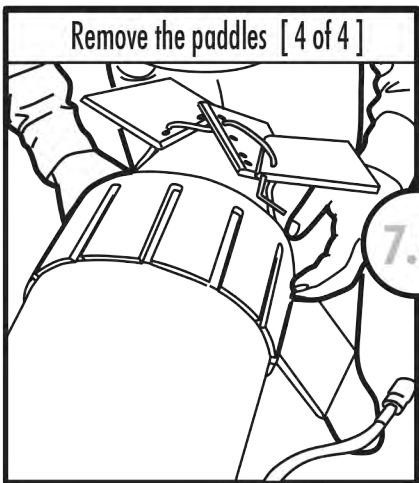
Remove the paddles [ 3 of 4 ]



Turn the paddle 180 degrees 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.

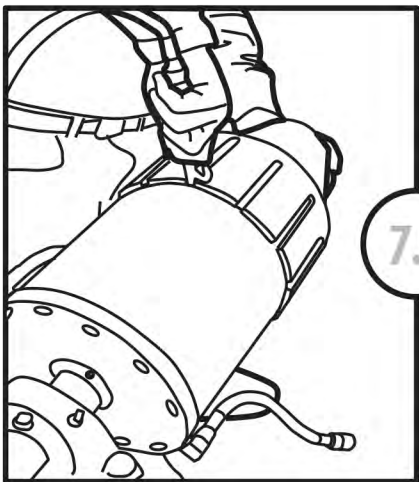
7.7

Remove the paddles [ 4 of 4 ]



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

7.8



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.

7.9



Only use a Marine base wheel grease such as TSI PN 10787.

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

NEVER USE AN OIL BASED LUBRICANT

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

7.10



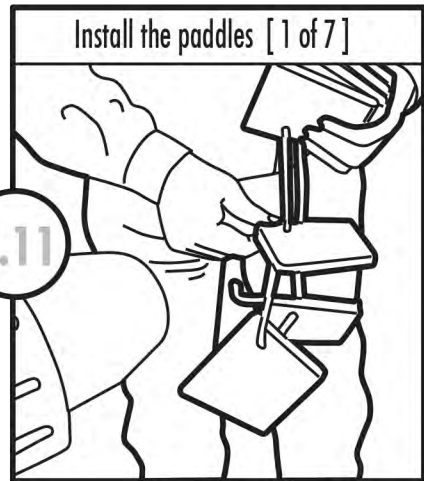
A pair of rubber gloves can come in handy when installing the paddles.

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 Brite pad.

7.11

Install the paddles [ 1 of 7 ]

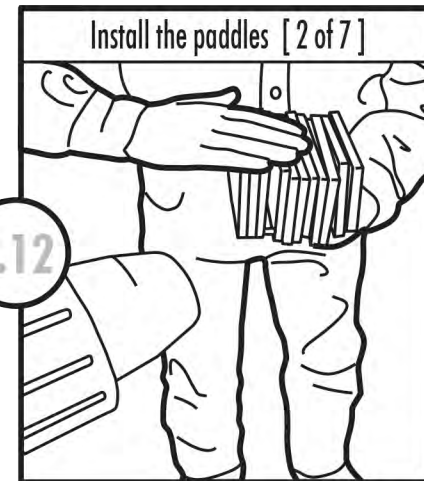


The slanted surface on each paddle inserts into the slots and ride against the cone within the hub.

Apply an even film of marine base wheel bearing grease on the slanted surface of each paddle.

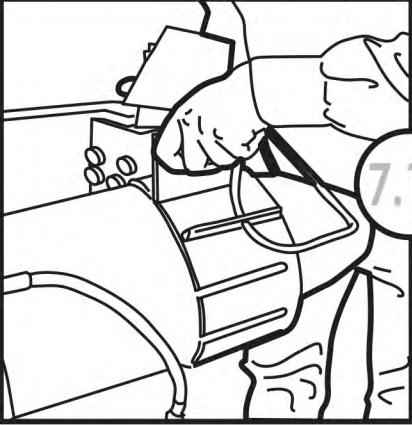
7.12

Install the paddles [ 2 of 7 ]



# EXPANDABLE HUB MAINTENANCE

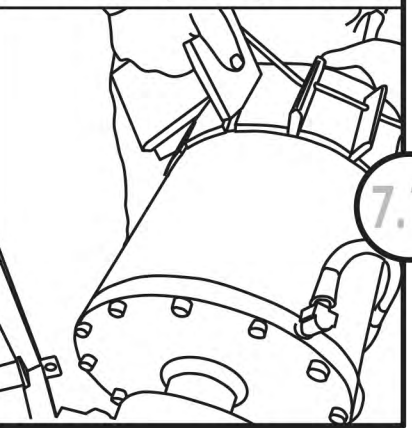
Install the paddles [ 3 of 7 ]



7.13

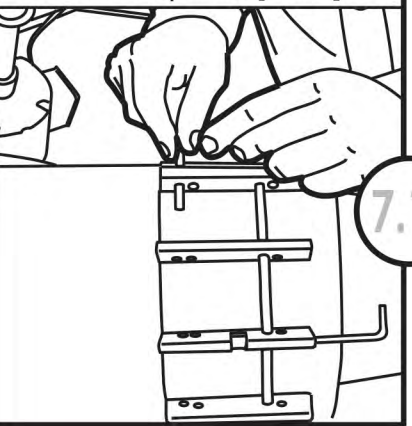
Two at a time, begin inserting the paddles into the hub. Align the paddles so that the slanted (greased) side rests inside the hub. The narrower portion of the paddle slides in nearest the rear of the hub. The longer portion nearer to you.

Install the paddles [ 4 of 7 ]



7.14

Install the paddles [ 5 of 7 ]

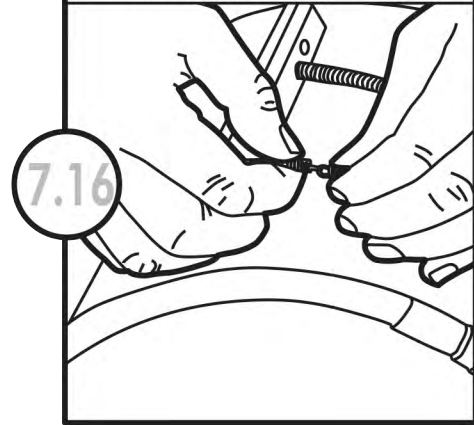


7.15

Now insert the rear spring into the outer holes and thread the spring through each paddle.

Eventually reattaching the spring ends when they meet.

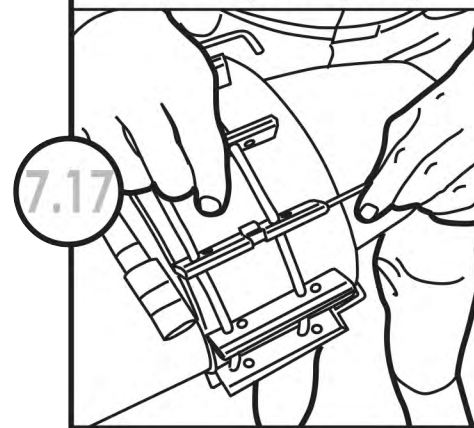
Install the paddles [ 6 of 7 ]



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.



# EXPANDABLE HUB MAINTENANCE



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

## Install the expandable rim [ 1 of 2 ]

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

7.20

## Install the expandable rim [ 2 of 2 ]

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

7.21

**LOCK** the locking tabs on the rim. Place tire on rim and expand your rim.

7.22

## STE-M

Also check the tightness of axle set screws located on the expandable hub. Deliver 1 shot of chassis lube to the sealed bearing on the expandable hub axle.

7.23

## TI-95

Grease the machine through the hole in the back of unit with standard chassis grease every 30 days or as needed.

## 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.

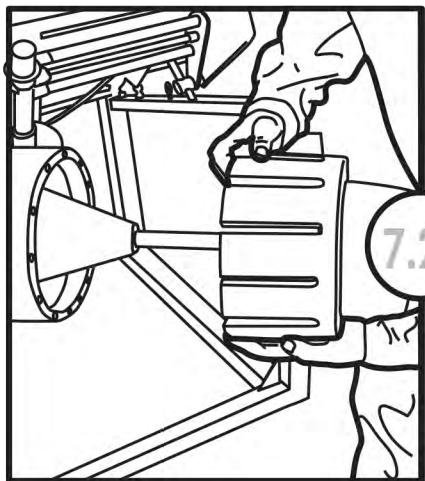
Take the front cover of the hub off by loosening the cover screws but leaving them seated in the holes.

7.24

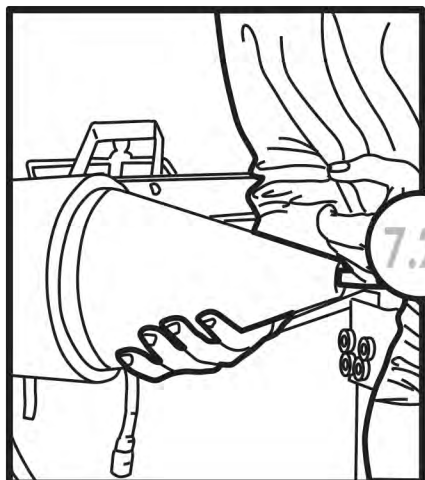
Once all the screws are completely loosened pull the hubs cover away from the hub about 6 - 8 inches. Then remove the loosened hub cover screws completely and set them aside.

7.25

# EXPANDABLE HUB MAINTENANCE

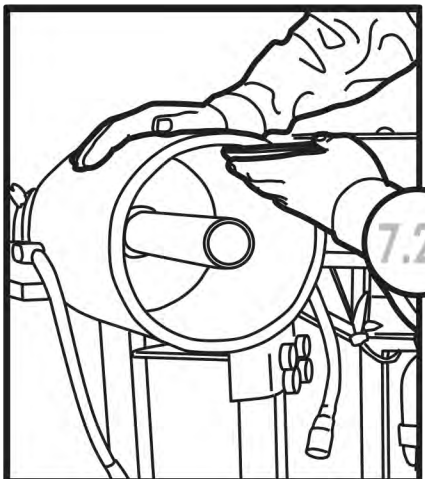


7.26 Pull the outer housing away, taking care not to bend the inner shaft. The inner shaft can be removed with the housing. Once the housing and shaft is pulled out completely gently set it aside and remove the cone.



7.27 To remove the cone insert a finger into the shaft opening of the cone ( being careful not to injure yourself) and with the other hand grasp 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 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.



Using a brake cleaner wash and wipe out any grease, oil or buildup that may be on the inside of the cylinder.

7.28 Using a 3M Scotch Brite pad or emery paper gently rub the inner walls of the hub chamber removing any loose dirt or debris. Polishing the inside will help remove any possible corrosion. The finished walls should feel ultra smooth

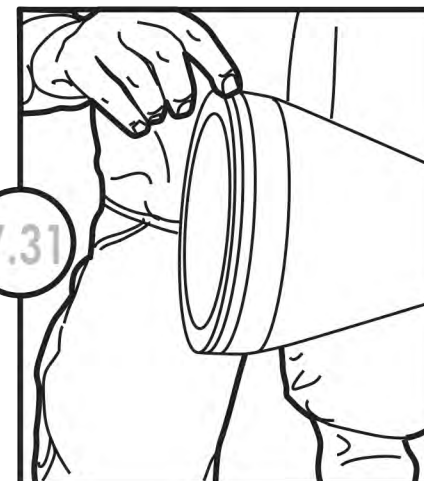
The cone will also need to be smoothed out by the same method. With the cone placed on the ground ( cone pointing upward) use the same type of pad to smooth the outer surface of the cone. The paddles have made contact with this surface. Apply special attention to these areas to ensure they are very smooth 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.



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 a seal kit to replace the defective seal.



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



# EXPANDABLE HUB MAINTENANCE



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

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

7.33

Insert the cone 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 at the base will help keep the lube coating remain.

7.34

Now reinstall the cone. To reinstall the cone carefully align the outer base with the hub chamber opening.

7.35

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

7.36

Once the cone is chambered. Replace the housing and inner shaft and tighten screws. Replace paddles by reversing procedure in Figure 7.5-7.9

7.37

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

7.38

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

7.39

