READ INSTRUCTIONS THOROUGHLY BEFORE OPERATING

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MADE IN USA

OPERATING MANUAL

Expandable Hub & Expandable Rim

Expandable Hub

STE-M
Tire Siping Machine

TI-95
Tire Inspector

TI-96
Tire Dunker
How The Expanding Hub and Expanding Rims Work
The expanding hub and rim system allows service to a tire prior to mounting it on a rim.

Once air service is connected to the machine it passes through the unit to an Air Swivel located at the tail end of the Hub Assembly. Two valves, controlled by the operator, can then direct air either to the Expanding Hub or to Air Nozzles on the Expanding Rim.

Air pressure to the Air Nozzles are controlled by an Air Valve and Pressure Regulator. Set the PSI to the tire manufacturers requirements. As the Expanding Hub expands, a tires bead ‘seats’ to the Belt on the Expanding Hub. Air flowing from the Air Nozzles then inflate the tire. This is of course if the inner and outer bead of the tire envelope the Air Nozzle area on the Belt.

DO NOT over inflate a tire.

Observe and acknowledge all decals. These are two needing close attention:

After accomplishing your task with the Expanding Hub and Rim Assembly you will need to remove air from the tire cavity and remove air pressure from the Hub so the Expanding Rim contracts.

Reverse the air input to the Air Nozzles. Then reverse the air input to the Hub. Acting like a large rubber band the Belt will then contract the Rim so the tire can be removed.

Make sure the Rim is contracted fully before removing the tire.

Exchanging Expanding Rims from the Hub
Locate the 4 locking paddles on Hub. These turn to lock or unlock the Rim from the Hub to change and remove Rim for a different size Rim or for maintenance.

Two are shown in an unlock position at right in Fig. 1 (yellow arrows.)
Available Rim Sizes
08.410 / 13" - 16" x 6 3/8"
08.510 / 13" - 16" x 8"
09.410 / 14" - 17" x 7 1/8"
10.410 / 17" - 20" x 8 1/4"
11.410 / 20" - 22.5" x 9"
12.410 / 22" - 24.5" x 9"
13.410 / 20" - 22.5" x 11 3/4"
14.410 / 22" - 24.5" x 13 3/8"
14.710 / 14" - 17" x 10 1/2"
172010 / 17" - 20" x 10"

Expansion Rims are made to fit on the same Hub

FIG. 2

MAINTENANCE

Maintenance - Hub
A visual inspection during use is recommended.

Monthly: Disconnect air supply. Clean piston, paddles, cone and hub thoroughly. (See Fig. 3)

1. Disconnect hub end. Remove both springs and each paddle from hub.
2. Remove snap ring from end of shaft.

3. Take hub and cylinder apart by removing socket head cap screws from hub. Thoroughly clean each part using a solvent. Pay close attention to clean all contact surfaces. Let dry.
4. Reassemble each part in reverse order beginning with the shaft. Apply two coats marine grease to the following: Shaft, inner cylinder wall, the slope of the cone and U-cup seal on the cone, and in the hub end. See red arrows to grease more U-cups and seals.

Tip:
To remove cone grasp end of shaft and wiggle it to free cone from inside cylinder. Do not use air!

Marine grease PN 10787

FIG. 3
Referring to Page 3, Fig. 3

5. Once everything is greased and well lubricated assemble the parts together in reverse order of taking them apart, starting with putting the shaft in the cylinder assembly. The shaft should be visible at both ends of the cylinder assembly.

6. Slide cone onto shaft and guide U-cup end all the way into the cylinder. Maintain seeing the shaft at both ends of the cylinder assembly. Apply another coat of marine grease on the inner cylinder where the cone just passed through. Make sure the cone remains in contact with the back wall of the cylinder.

7. Put hub on shaft with the snap ring end protruding enough to fasten a snap ring. Initially, install a few bolts to hold the hub in place. Continue installing all the bolts. Put on snap ring. Tighten each bolt firmly being careful not to cross thread cylinder housing.

8. Install the paddles. Start with a locking paddle. Begin by applying a coat of marine grease on the sloped end of a paddle. Place it through the slot in the hub. While installing the paddles keep the hub from freely turning. As each paddle is installed thread one of the springs through a hole in the paddle, going through the holes on the same end of each paddle. Two paddles without a locking device go between the paddles that lock. Continue this until all the paddles are installed and fasten the spring ends to itself. Now thread the remaining spring in the second set of holes and fasten ends together.

9. Place hub end on backside of shaft and replace holding bracket. Be careful the U-cups and seals don’t get damaged during assembly.

10. Place an expanding rim on the hub and lock in place. Reconnect air supply and begin cycling unit 10-20 times to allow the marine grease to work itself into all areas.

Important

Exposure to water and dirt will require cleaning and lubricating with marine grease more frequently. This is more common when the Expansion Hub is used in conjunction with dunk tanks.

Use all four locking paddles to lock rim into place on hub!

WARNING: DO NOT USE GREASE OR PETROLEUM BASED LUBRICANTS ON RIM PARTS OR BELT. ONLY USE OIL SOAP OR SILICONE.

When complete the unit should cycle smoothly.

To order a service kit refer to TSI part number 10194.

The service kit is for more extensive maintenance. With it repeat the preceding steps. The service kit provides replacement U-cups and seals as noted by the blue and red arrows in Fig. 3 on page 3.

Follow the same steps as above. At step number 3 disassemble the cylinder cavity from the cylinder assembly. Upon reassembly make certain the seal being replaced is installed correctly and the bolts, cylinder cavity and end plate of the cylinder assembly do not compromise the seal in any way.
Expanding Rim
A visual inspection during use is recommended.

Daily: Lubricate belt on expansion rim with oil soap or silicone spray

Weekly: Blow dust off rim with an air nozzle.

Putting expanding rims back together in the field is virtually impossible without the right equipment so use caution when handling.

If a rim assembly appears to be loose or wobbly when placed on the floor it’s generally a good time to replace the belt and send it in to be rebuilt. Please call TSI/SSG at 1-800-223-4540 and schedule shipping it to our manufacturing plant.

It takes special equipment to build, or rebuild these rims so as suggested just send it in.

TROUBLESHOOTING

Expanding Hubs & Expanding Rims
The most frequent problem occurs when marine grease lubricant is not sufficiently applied to hub and not enough oil soap or silicone is applied to belt or rim.

Reminder: Do not apply any kind of regular grease or petroleum products to the belt, rim parts and components.

The two zerks at the far end of the hub require non-marine grease.

Hub not fully expanding
- Usually this is caused by lack of lubrication or the hub is dirty. Water and moisture may also cause an issue.
  - ✓ Lubricate as needed. If necessary clean the hub per the Hub Maintenance instructions starting on page 3 of this operating guide.
Hub still not fully expanding

- There could be a lack of air pressure.
  - Check line pressure. Service line to unit must meet manufactures suggested air pressure as indicated by a decal on each of the Siper, TI-95 & TI-96 units.
  - Manufactures suggested air pressure at hub to be 80-90 PSI.
  - Suggested air pressure to tire from expanding rim to be 0-30 PSI maximum.
  - Regulator valve may be defective. Replace if necessary.
  - Please call TSI/SSG at 1-800-223-4540 if you need further assistance.

Previous attempts to expand hub failed - Consider purchasing a service kit (PN 10194)

- Physical damage or wear could be affecting parts
  - Inner U-cup seals may be worn and leaking. Replace them as needed.
  - Paddles could be worn. Check cone surface first but the paddles may need replacing.

Expanding and contracting of the rim seems more labored than usual

- Paddles not sliding smoothly on cone
  - The cone can wear slightly. Use a Scotch Brite Pad or equivalent with nominal grit to rub and buff out the rough spots.
  - Check seal and U-cup grooves to determine wear and if damage is present replace the cone and seals. These are located on the outer flange edge of the cone and within the smaller diameter hole for the shaft.

*Please remember: Water in the hub can make the assembly function jerky and erratic.*

Air leaking out from tire while on the rim

- Rim not expanding or seating properly with tire
  - Lubricate belt on rim with oil soap or silicone spray. Some blow-by is acceptable.
  - Verify parts are free from debris and lubricated properly with marine grease. Primarily this refers to the hub but they must work smoothly in conjunction with each other. Clean with an air nozzle.
  - Make sure nothing is obstructing the contact surface between the hub and the rim.
  - Air pressure may need to be increased. *Contact TSI/SSG before changing air pressure.*

How do you know if the belt needs replacing?

- Rim not retracting
  - Review all the preceding information to determine if the suggestions given can resolve the situation. Over time rims do wear out and having one rebuilt may be the best option.
  - If worn consider having the rim rebuilt. The rims are virtually impossible to take apart and rebuild in the field without the right equipment. For belt replacement or rim service please call TSI/SSG to make arrangements and sent it in. 1-800-223-4540

Belt life is determined by proper care and use.
Hub does not fully retract
- Why can this happen?
  ✓ Hub valve was actuated without an expanding rim mounted on hub. (See decal below)
  ✓ Belt on rim must have strong enough elasticity to retract the hub. This indicates the belt is worn out and needs replacing.
  ✓ You removed a rim from the hub to put another on in its place and the paddles in the hub did not retract enough to put another rim on. It’s likely the rim you just took off has a worn belt and it needs replacing.

If you need to retract the hub in order to put a rim on:
Shut off or disconnect air supply to unit.

The front end of a hub, see Fig. 5 at left.
Note the snap ring and access plug.

Unless hub is being disassembled for service **do not** remove the snap ring.

The access plug can be removed to retract the paddles in the hub.

With an Allen Head wrench remove the plug. Insert a wooden dowel to pry into the front end of the cone by pushing it all the way back so the paddles in the hub retract safely. Do it slowly so damage does not occur.

When complete replace the access plug. Do not run unit without access plug.

Mount another rim on the hub.
*Then* turn on or connect air supply to unit.
Related Tire Service Products

SG Upright Groover

RHHG Hand Held Groover

TG-80 Tire Regroover

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