



# RIMEX

*Building better wheels*

## RIMEX Safer Wheel & Rim Service Manual

Only qualified, well trained technicians should attempt to mount/dismount rim/tire assemblies.

**30**  
*Years of Excellence*

This manual is designed as a training tool in conjunction with the RIMEX "Safer Wheel and Rim Service, 'Off-Road' Video".

RIMEX also recommends the use of the TANA OTR Mounting / Dismounting Training Program as a further training tool.

# Learning Objectives

## Learning Objectives

1. Inspection and maintenance of components
2. Proper mounting and demounting procedures of wheels and rims
3. Understanding the features and benefits of the TSR design
4. Proper mounting and demounting procedures of the TSR wheel and rim
5. Ability to identify components
6. Understanding the repercussions of high air pressures and temperatures

# Table of Contents:

## General Practices

### **RIMEX MES**

Safe mounting and demounting practices specific to MES products

### **RIMEX TSR**

Safe mounting and demounting practices specific to TSR products

### **RIMEX DGS**

Safe mounting and demounting practices specific to DGS products

### **RIMEX Inspection Standards**

RIMEX design standards - 63" Caterpillar 797 and Liebherr T282

Inspection and maintenance specific to 63" wheels, rims and components

### **High Air Pressures and Temperatures**

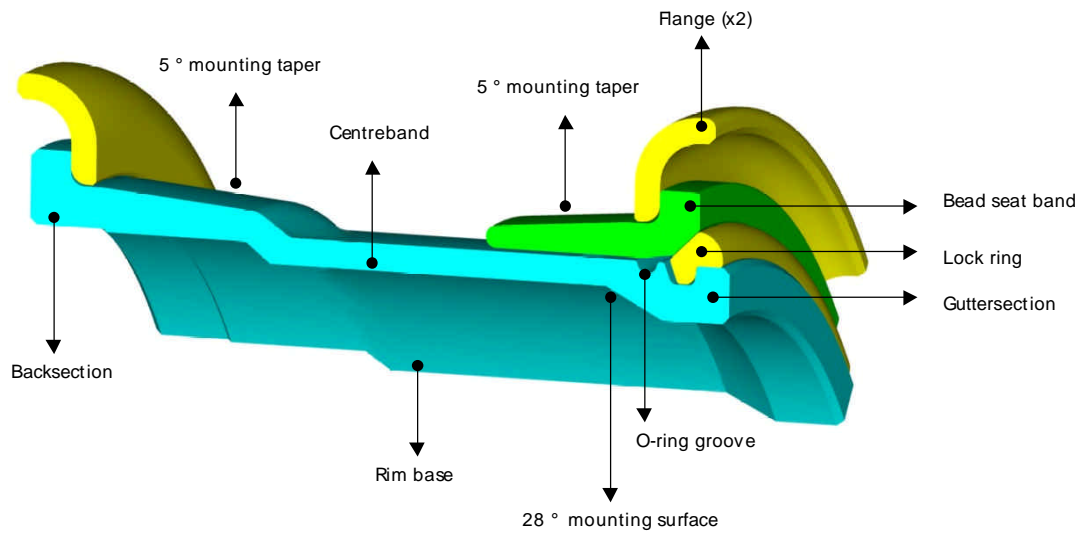
Repercussions of high pressures and temperatures on wheels, rims and components

### **Safety Bulletins**

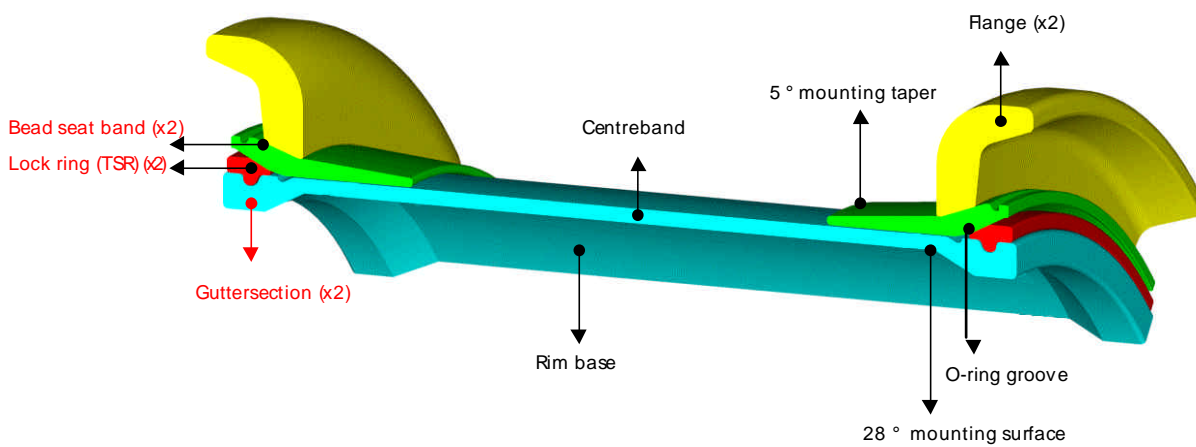


# Nomenclature:

## MES/EM TUBELESS WHEEL



## DOUBLE GUTTER (TSR) RIM



## Lifesaving Message:



**DEFUSE THE BOMB!!!**



### **Always .....**

1. Ensure the tire is completely deflated before any work is performed.
2. Clean and inspect closely for worn, fatigued or damaged rims, wheels and components.
3. Replace any damaged, worn, corroded or fatigued rims, wheels and components.

There's enough energy contained in a 40.00R57 tire to blow a 200lb. man over 1 mile in the air!

# Training

## **Training**

It is absolutely necessary that everyone who comes into contact with wheels, rims or components is properly trained.

### **Proper training includes:**

1. Understanding precautions to be observed during mounting and demounting
2. Proper deflation of tires
3. Inspection of wheels/rims and components for damages
4. Inflation of tires mounted on the vehicle
5. Monitoring tire pressures and temperatures

# Tools and Preparation

Selecting the right tools is essential for a safe working environment.

## **Tools:**

- Pneumatic torque wrenches
- Pneumatic impact wrenches
- Hydraulic bead breakers, rams and pumps
- Dead blow hammers and tire levers
- Approved jacking equipment and jack stands
- Rim mounting stand
- Tire handlers
- Wheel chocks
- Quality replacement studs, nuts and washers
- Approved lifting chains
- Non-petroleum based mounting compounds
- RIMEXCEL anti-corrosive liquid additive

## **Preparation:**

Thoroughly clean all around the tire/rim assembly you are working on.

It is important to have a clean working area in order to do your job safely. Make sure you have a large, organized work area, with a hard, flat surface and plenty of room to work around the equipment.

Position the truck on the tire pad, chock the wheels and place the jack in the designated area of the equipment. Raise the truck and place a jack stand as a safety precaution. Some jacks have a self-locking mechanism which enables the jack to be used without a stand.



**MES**

**Machined Extreme Service**

# MES Demounting of the Tire (Vertical)

## MES Series

- Step 1.** Deflate the tire using a deflation tool. Remove the valve core and deflate completely.
- Step 2.** Use a tire handler to push in on the side flange and bead seat band. Push evenly to remove the lock ring and the o-ring.
- Step 3.** Remove the lock ring with a tire bar. Use a tool to remove the o-ring, keeping fingers out of the way to avoid injury.
- Step 4.** Cut the o-ring so it cannot be re-used.
- Step 5.** Break down the back bead of the tire. Use a ram between the frame and the flange or use a bead breaking tool. Keep clear of their trajectory path.
- Step 6.** Remove the tire from the truck and place on the ground.
- Step 7.** Remove the bead seat band with a bead breaking tool. Stand clear in the event that it slips.
- Step 8.** Remove the flange and bead seat band from the tire.

## Loader Wheels

- Step 1.** Deflate the tire completely when demounting a loader wheel.
- Step 2.** Break the back bead of the tire from the wheel using a bead breaking tool or ram.
- Step 3.** With a tire handler, push evenly on the bead seat band.
- Step 4.** Remove the drive key from its pocket.
- Step 5.** Remove the lock ring and the o-ring.
- Step 6.** Cut the O-ring.
- Step 7.** Remove the tire.

# MES Cleaning and Inspection (Vertical)

Before mounting any tire, thoroughly clean the rim base and components for inspection. Remember - OSHA and WCB regulations state that damaged and fatigued wheel/rim parts must be replaced! Open pit mine haul trucks average 80,000 overloaded miles per year. These wheel rims are the most overstressed part of the vehicle. These inflated tires are extremely dangerous and have destructive power.

**Give special attention to the following critical failure areas:**

## **MES Series**

- Step 1.** Inspect the gutter, lock ring and o-ring grooves for wear, fatigue cracks or damage.
- Step 2.** Thoroughly clean and inspect the lock ring, rim base and bead seat band contact areas for metal fretting, wear or cracks.
- Step 3.** Remove all burrs, and ensure the contact areas are flush and evenly matched.
- Step 4.** Closely inspect the o-ring seal area on the bead seat band. Ensure it is clean and free of corrosion. This area is commonly overlooked and yet is one of the biggest causes of air loss and tire failures.
- Step 5.** Inspect both the side flanges for wear, cracks or damage and remove all build up of foreign material.
- Step 6.** Inspect the tire bead sealing and seating areas on the rim base and the bead seat band for wear, corrosion, damage and build up of foreign material. Ensure that the tire will fit into position and seal on these critical areas.
- Step 7.** Always replace damaged, worn or fatigued rims and components. Never **weld** on any wheel, rim or its components.

# MES Cleaning and Inspection (Vertical)

## Loader Wheels

- Step 1.** Clean and inspect the wheel base and remove all foreign build up of material from all component parts.
- Step 2.** Closely inspect the lock ring and o-ring grooves, as they are critical failure areas on these machines.
- Step 3.** Inspect the inside diameter of the lock ring area to ensure that there are no cracks through the gutter section.
- Step 4.** Check the driver pocket welds on the bead seat band and rim base, as these are also common failure areas.
- Step 5.** Closely inspect the bead seat band at the o-ring seal area and lock ring mating area.
- Step 6.** Inspect the back flange of the rim base for wear damage and cracks.
- Step 7.** Inspect the tire bead seating areas of the rim base and bead seat bands to ensure that the tire will seal on the surface and seat into position.

# MES Mounting of the Tire (Vertical)

## MES Series

- Step 1.** Inspect and clean the tire's casing, removing all water and foreign objects.
- Step 2.** Add the recommended amount of RIMEXCEL to the tire.
- Step 3.** Lubricate the tire beads with non-petroleum, vegetable based mounting compound.
- Step 4.** Once the back flange is mounted, mount the tire to the rim. (RIMEX has a tool available to hold the flange in place on the bead seat band for easier installation).
- Step 5.** Install the flange and bead seat band assembly to the rim.
- Step 6.** Install the new o-ring, ensuring it is not twisted and that it fits the groove uniformly.
- Step 7.** Lubricate the outside of the o-ring to ensure the bead seat band slides into place, not to disturb the o-ring from its groove.
- Step 8.** Install the lock ring.
- Step 9.** Remove the flange bead band assembly tools.
- Step 10.** Install the inflation tool. With the tire handler acting as a safety cage, inflate to 5 - 10 psi.
- Step 11.** Tap on the lock ring with a lead or rubber dead blow hammer to ensure all components are seated correctly.
- Step 12.** If any component is not fitted correctly, deflate the assembly completely and re-assemble.
- Step 13.** When all components are matched, stand clear and re-inflate to working pressure.

# MES Mounting of the Tire (Vertical)

## Loader Wheels:

- Step 1.** Remove all water and foreign objects then clean the tires' casing.
- Step 2.** Lubricate the tire beads and add RIMEXCEL.
- Step 3.** With the back flange mounted, install the tire on the wheel.
- Step 4.** Install the bead seat band and flange, align the driver pockets on the rim and bead band.
- Step 5.** Securing the bead seat band away from the o-ring groove, install the lock ring, making sure that it is not twisted and fits in it's groove properly.
- Step 6.** Install the lock ring and place the driver key into it's pocket.
- Step 7.** Remove the bead seat band flange assembly tool.
- Step 8.** When all components are matched, stand clear and re-inflate to working pressure.
- Step 9.** If any component is not fitted correctly, deflate the assembly completely and re-assemble.
- Step 10.** Using the tire handler as a safety cage, pre-inflate the tire to 5 - 10 psi. Ensure all components are properly seated and aligned. Stand clear and inflate to working pressure.

# MES Demounting of the Tire (Horizontal)

## MES Series

- Step 1.** Remove the tire/rim assembly from truck.
- Step 2.** With the deflation tool, remove the valve core and deflate the tire to a maximum of 10-20 psi. This makes it easier to handle the tire/rim assembly with the tire handler.
- Step 3.** Clean and spray the studs and nuts with a lubricant. Remove most of the nuts and clamps, leaving a few to secure the rim in place. Have a collection tray nearby.
- Step 4.** Secure tire/rim assembly with a tire handler and remove the balance of the clamps.
- Step 5.** A ram may be required to remove the rim from the hub. Place the ram between the frame and the backsection of the rim. When using a ram, stand clear of its trajectory path.
- Step 6.** Remove the rim assembly from the truck.

## Remove Tire/Wheel Assembly from Equipment

- Step 1.** Once the truck is on the pad and the wheels are chocked, place the jack in the designated jacking area, lift the truck.
- Step 2.** With a deflation tool, remove the valve core and deflate the tire to a maximum of 10 psi.
- Step 3.** Use a high-powered impact wrench, remove the bolts, leaving a few to secure the wheel in place.
- Step 4.** Secure the tire and wheel assembly with a tire handler and remove the balance of the bolts.
- Step 5.** Remove the tire/wheel assembly from the truck.

# MES Demounting of the Tire (Horizontal)

## Demount the Tire from the Rim

- Step 1.** Place the tire and rim assembly on the rim-mounting stand.
- Step 2.** Remove the lock ring with a tire bar.
- Step 3.** Remove and cut the o-ring ensuring it can not be used again.
- Step 4.** Remove the flange and bead seat band from the tire (when necessary use a bead breaking tool to remove the tire from the bead seat band and to remove the back bead off the back section of the rim).
- Step 5.** Remove the tire from the rim.

# MES Cleaning & Inspection (Horizontal)

- Step 1.** Thoroughly clean the rim base and all its components.
- Step 2.** Remove the back flange. Clean and closely inspect the back section, rim, flange and bead seat band.
- Step 3.** Inspect the gutter section, inside the o-ring and lock ring grooves.
- Step 4.** Remove all burrs and build up of foreign material to enable all the rim components to mate up uniformly.
- Step 5.** It is extremely important that the bead seating areas between the rim, bead seat band and tire are thoroughly cleaned and free of corrosion and all foreign build up is removed.
- Step 6.** Inspect for excessive wear, corrosion, damage, fatigue or cracks.

**Always replace any damaged, bent, corroded, cracked, or worn parts. Never heat, weld or repair any rim or wheel base or any of its components.**

# MES Mounting of the Tire (Horizontal)

## MES SERIES

- Step 1.** Mount the rim base to the rim stand.
- Step 2.** Fit the back flange to the rim base.
- Step 3.** Always replace valve hardware before mounting any tire to ensure air retention.
- Step 4.** After cleaning and inspecting the tire line, lubricate beads with non-petroleum mounting compound.
- Step 5.** Add RIMEXCEL, anti-corrosive to the tire casing.
- Step 6.** Mount the tire to the rim base with the back flange fitted and install the front side flange and bead seat band on the rim.
- Step 7.** It is best to fit the bead seat band with approved lifting chains so as not to distort the bead seat band.
- Step 8.** Install the o-ring and ensure that it fits uniformly in the o-ring groove of the rim. Lubricate the outside of the o-ring where it seals on the bead seat band.
- Step 9.** Install the lock ring.

## Mounting Rim and Tire Assembly to a Truck Hub.

- Step 1.** Before installing the tire and rim assembly to the truck, thoroughly clean and inspect the hubs for fatigue, wear and damage.
- Step 2.** Remove all burrs and ensure that the mating surfaces of the rim and hub are flush.
- Step 3.** Always closely inspect and replace all stretched, broken or damaged studs.
- Step 4.** When installing the tire and rim assembly to the hub of the truck, ensure that the driver and valve assembly on the rim is aligned with the slot in the hub.
- Step 5.** Once the rim is positioned on the hub, install the clamps and nuts. (An impact wrench must only be used to run up loosely to position the rim assembly. A calibrated torque wrench is required to tighten the nuts to the recommended foot-pounds).
- Step 6.** Inflate the tire to working pressure.

# MES Mounting of the Tire (Horizontal)

## Mounting Wheel Assembly to a Truck Hub (IE - 930E)

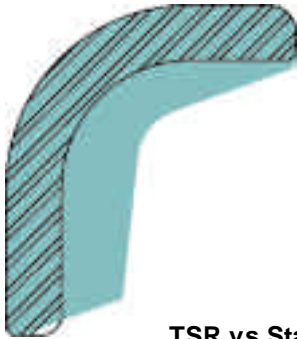
- Step 1.** Thoroughly clean and inspect the hub and studs.
- Step 2.** Ensure the hub and the wheel have clean, flush mating surfaces.
- Step 3.** Replace all, stretched or broken studs, nuts and washers. It can be difficult mounting the rear outer dual wheel assembly with fine thread bolts; the use of alignment studs will make this easier.
- Step 4.** Before installing the outer dual wheel, attach a wire to the inner wheel valve extension to safely run the extension through the outer wheel valve hole.
- Step 5.** Once the wheel is in position, lubricate and install the wheel bolts.
- Step 6.** Remove the alignment studs, as seen on video (impact wrenches should only be used to run bolts up snug. Final torquing must be completed with a calibrated tool).



**TSR**

**Taper Secure Radial**

# RIMEX TSR



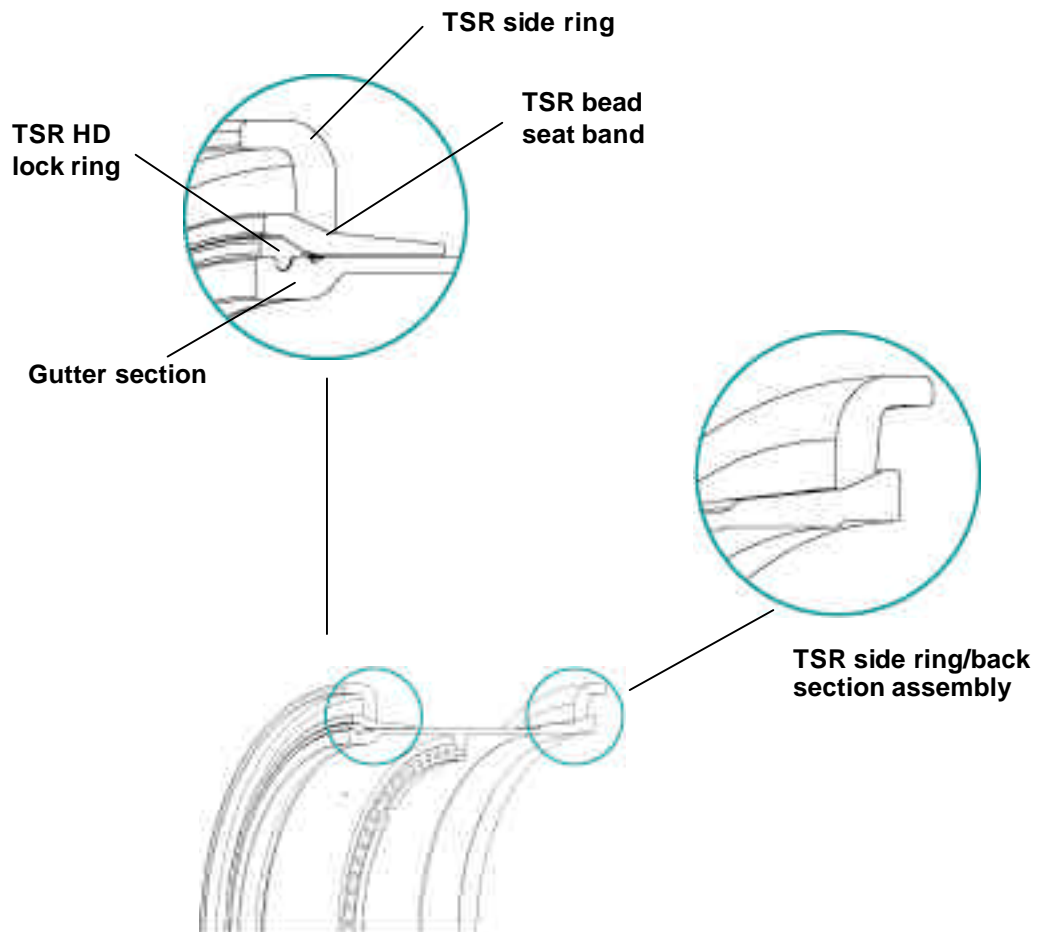
TSR vs Standard side ring comparison



TSR



Standard



# RIMEX TSR

The RIMEX TSR (Taper Secure Radial) Series wheels and rims is a unique design using a taper concept to secure the flanges in place. Component flexing and movement are common in standard designs. This movement causes premature rim and component failures. Any damage in the o-ring sealing area, or the bead seat band and lock ring mating area will lead to air loss in the tire. The taper system is self aligning and the more pressure, the better it works. There is absolute tire support, a solid foundation as the flange does not move or rotate. The tire is anchored and stabilized with absolutely no rim or accessory flex.

The taper design also gives the side rings more surface area over which to seat. The increased contact area spreads the forces and pressures out evenly across the components. The thickness of this area gives the side ring the stability to react against the forces of the tire. The fully machined taper ensures an even distribution of the contact stresses.

## **Feature:**

- Taper Design
- Thicker, fully machined components
- Knurless backsection & bead band
- Product strength
- Even stress distribution

## **Benefits:**

- No flex or movement in bead band, rim base or flange
- Absolute stability of bead and sidewall
- Increased tire life
- No wear or fatigue of components
- Vastly extended wheel service life
- Wheel is uniformly round & balanced
- Increased contact area
- Exact fitment of components
- Improved production
- No loss of pressure
- No uneven wear or bead movement
- Less variance in pressure build up between hot & cold

# RIMEX TSR

The TSR is supplied with four clamping plates and one mounting bolt per plate for each flange (See figure 1). **Note:** Clamping plates on 45" to 63" only

These plates are installed by RIMEX to aid in the correct flange placement during tire fitment. After the proper tire fitment has been achieved, all clamping plates and mounting bolts should be

removed and stored for later use so that none of them are lost during normal operation. Current production TSR wheels and rims are manufactured with three or four bead seat band tabs on the O.D. of the rims. (See figures 7 & 8) **DO NOT REMOVE THEM.**

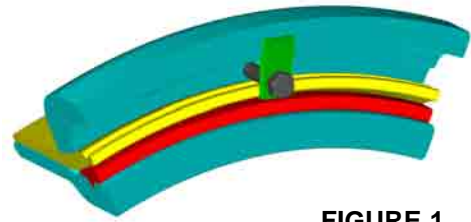


FIGURE 1

The tire mounting and demounting procedures that follow are in addition to all safety procedures that are normally observed. Please refer to the RIMEX Safety Brochures for normal procedures. **ALWAYS DEFLATE** the tire on a rim assembly before loosening any clamps or nuts. **On a dual rim assembly, deflate both tires.**

## Ensure that only RIMEX TSR components are used on TSR rim bases

**Step 1.** Clean **ALL** mating surfaces on the tire, rim or wheel and all corresponding components. On new assemblies, remove any protective grease from machined surfaces. (See figure 2).

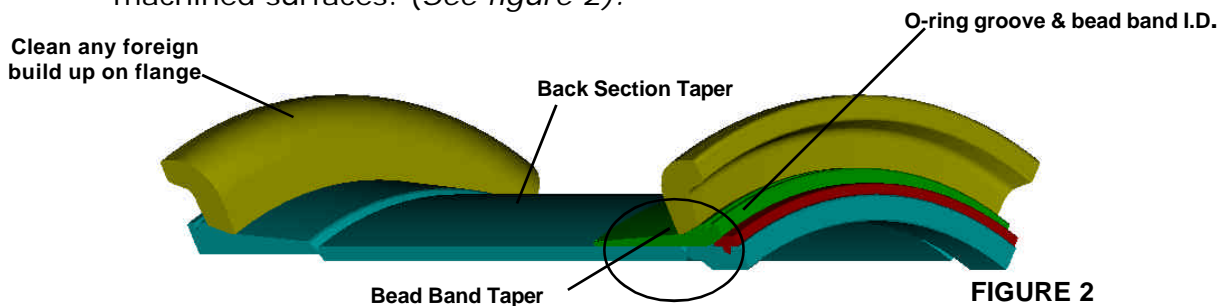


FIGURE 2

\*CLEAN ALL MATING SURFACES OF TIRE & RIM AS INDICATED ON DIAGRAM\*

**Step 2.** Apply non-petroleum bead lubricant to the following areas:

- Complete bead surface area of tire
- Entire 5 degree area of the rim or wheel back section where the tire bead will contact during the seating procedure. (See Figure 3).

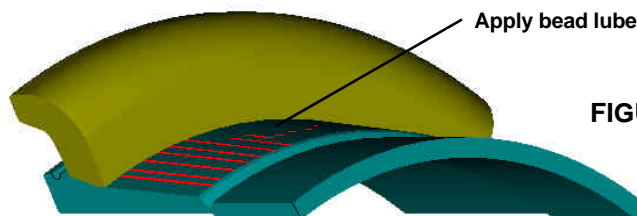


FIGURE 3

(\*Lube entire circumference of back section 5 degree taper)

Apply bead lube to areas indicated and the rubber o-ring.

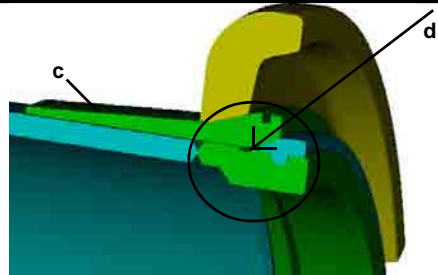
**IT IS ESSENTIAL TO MAKE SURE THERE IS ABSOLUTELY NO GREASE ON ANY OF THE TAPERS.**

# RIMEX TSR

c) Entire 5 degree area of the bead seat band where the tire bead will contact during the seating procedure (See figure 4).

d) O-ring

FIGURE 4



**Step 3.** Set the rim or wheel and back flange assembly in a horizontal position with the flange down on a rim stand (6" to 8" in height). Mount the tire on the assembly.

**Step 4.** Lift the bead band and flange assembly horizontally, carefully slide the assembly over the gutter section. Slowly lower the assembly and push down until the o-ring groove is exposed.

**Step 5.** Install the o-ring and the TSR lock ring.

**Step 6.** Check the fitment of the lock ring to ensure that it is correct (See figure 5).

**Step 7.** Connect air hose and fill in the same manner as a standard rim or wheel assembly.

**Step 8.** Vertical mounting is accomplished in the same manner except the rim or wheel base should be installed on the machine it is intended for.

**Step 9.** In either case, horizontal or vertical, the tire should be inflated to the manufacturer's maximum recommended pounds per square inch plus 15% to properly seat the beads of the tire. To insure the beads have been properly seated, RIMEX drills two small depth gauge holes through the side of the flanges. A simple bead gauge can be fabricated from any 3/16" diameter rod or smaller. Insert gauge to test for proper tire seating (See figure 6).

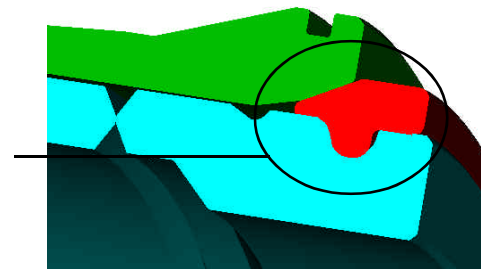


FIGURE 5

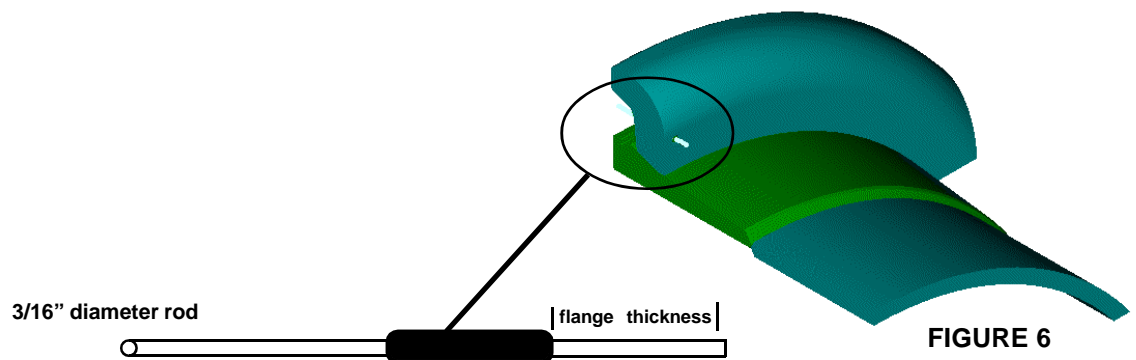


FIGURE 6

**RECOMMENDATIONS:** Use the tire manufacturers recommended non-petroleum based bead lubricant. The use of a protective antioxidant such as RIMEXCEL is highly recommended.

# RIMEX TSR

Current production model TSR rims and wheels are manufactured with three or four bead seat band stop tabs located approximately twelve inches from the gutter edge in the rim or wheel base outside diameter. These tabs stop the bead band from sliding completely down to the back section of the rim or wheel base when the tire bead is removed from the bead seat band.

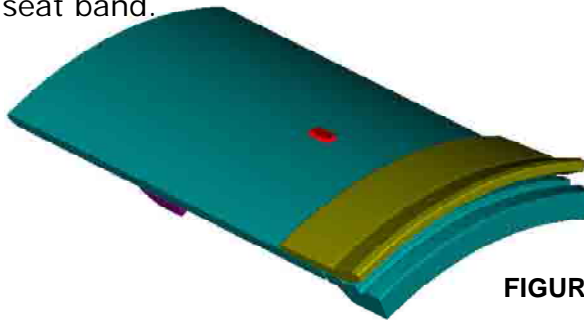


FIGURE 7

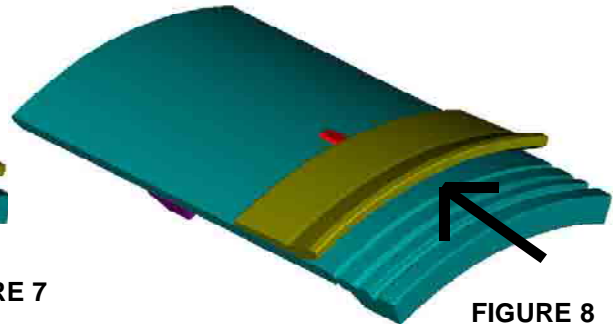


FIGURE 8

- Step 1.** Make sure tire is **completely DEFLATED!** To be sure of this run a wire through the valve stem or spud to remove obstructions that would not allow total deflation.

**ALWAYS ensure the TSR side ring on the back section has been dislodged or freed from the back section taper PRIOR TO demounting the deflated tire from the TSR rim/wheel. This ring could be under tension and spring back with some force. Keeping the deflated tire in place until the release of the side ring, will ensure a safe demount.**

- Step 2.** If you are using a tire press make sure flange clamping plates are removed before placement of tire/rim assembly in press.
- Step 3.** Follow all normal procedures for dismounting the tire on the press with the exception of one. It will **not be necessary** to use the four bead seat band retention hooks supplied with most presses. The bead seat band stop tabs already installed on the rim or wheel will not allow the bead band to fall out of reach of the press splades.
- Step 4.** If the tire and rim/wheel assembly is to remain mounted on the vehicle, it is recommended that the flange clamping plates be installed on the assembly prior to deflation. Having installed the clamping plates, **completely deflate the tire.**
- Step 5.** It is now possible to push on the side wall of the tire just outside of the flange ring with a tire hand to dismount the bead of the tire off the bead seat band. In some cases, it may be necessary to grab the outside diameter of the tire and push in while applying a twisting motion with the tire hand to dismount the tire bead. \*Pushing on the sidewall is common practice but you may need to consult your tire supplier to ensure there are no concerns.

# RIMEX TSR

- Step 6.** After you have demounted the bead of the tire from the bead band, push the bead band and flange assembly far enough to enable you to remove the lockring and o-ring. After you have done this you may remove the bead seat band and flange assembly.
- Step 7.** To remove the back section of the tire from the rim / wheel assembly, grab the outside diameter of the tire with the tire hand and pull with a twisting motion. This procedure might have to be performed more than once to demount the bead of the tire. In some cases, it may be necessary to remove the three clamping plates and place a port-a-power ram between the frame or strut and the flange to push off the bead of the tire.



DGS

Double Gutter Series

# Double Gutter Series (DGS)

The **RIMEX TSR double gutter** is a wheel/rim assembly consisting of two bead bands and side rings, a unique 2-piece (split and both together) lock ring and one standard lock ring. The **double gutter** was developed as a position sensitive outer dual so **the inside tire could be mounted and dismounted without removing the outer wheel or rim base.**

**The RIMEX Double gutter is designed for use on the outside rear position. Once installed, there is no need to remove nuts or clamps to rotate tires off and on. A service technician can simply slide the tire and any parts across the outside wheel as necessary.**

**Therefore, the use of impact wrenches to remove the tires is eliminated, greatly reducing the occurrence of injury due to flying debris, noise hazard, and repetitive strain on wrists and arms.**

To make lock ring assembly and removal easier, the outer lock ring of the inner dual, and the inner lock ring of the outer dual are split and bolt together lock rings. The outer lock ring of the inner dual is either a HDT or **TSR** split lock ring depending on the inner wheel or rim assembly.

## **Features:**

- Double gutter design

## **Benefits:**

- Same benefits of TSR design
- Wheel/rim stays fixed on the hub
- Less wear and tear on fasteners and tirefitters
- Dramatic time saving on man-hours and production down time
- Inside tire can be mounted and dismounted without removing the outer wheel or rim.

# DGS Demounting of the Tire

## Outside tire:

- Step 1.** When demounting a RIMEX TSR rim, **deflate the tire completely**. On duals, deflate both tires. To be ensure of this, run a wire through the valve stem or spud to remove obstructions that would not allow total deflation.
- Step 2.** Install the TSR mounting plates
- Step 3.** Push on the flange to allow room to remove outer lock ring and o-ring.
- Step 4.** Remove tire with both flange and bead band assemblies still in place
- Step 5.** Laying the tire horizontally on the ground remove bead seat band with a bead breaker. Using RIMEX's custom hook may stop the bead breaker from dangerously flying out.

## Inside Tire tire:

- Step 1.** Remove the 2-piece lock ring – loosen and remove both clips and remove both lock ring segments. **DISCARD BOLTS – DO NOT REUSE**
- Step 2.** Push on the flange of the inside tire to allow room to remove outer 2-piece lock ring and o-ring.
- Step 3.** Remove tire with flange and bead seat band assembly still in place sliding over the outside wheel.
- Step 4.** Laying the tire horizontally on the ground remove bead seat band with a bead band breaker. Using RIMEX's Custom hook may stop the bead breaker from dangerously flying out.

***Some TSR bead seat bands and rim bases have pull grooves where a conventional bead breaker can be used.***

# DGS Cleaning & Inspection

Before mounting any tire, thoroughly clean the rim base and components for inspection.

**Remember** - OSHA and WCB regulations state that damaged and fatigued wheel/rim parts must be replaced! Open pit mine haul truck's average 80,000 overloaded miles per year. These wheel rims are the most overstressed part of the vehicle. There is awesome destructive power in these inflated tires.

**Give special attention to the following critical failure areas:**

- Step 1.** Inspect the gutter, lock ring and o-ring grooves for wear, fatigue cracks or damage.
- Step 2.** Thoroughly clean and inspect the lock ring, rim base and bead seat band contact areas for metal fretting, wear or cracks. Remove all burrs and ensure the contact area is flushed and evenly matched.
- Step 3.** Closely inspect the o-ring seal area on the bead seat band. Ensure it is clean and free of corrosion. This area is commonly overlooked and yet is one of the biggest causes of air loss and tire failures.
- Step 4.** Inspect both the side flanges for wear, cracks or damage and remove all build up of foreign material.
- Step 5.** Inspect the tire bead sealing and seating areas on the rim base and the bead seat for wear corrosion, damage, and build up of foreign material. Ensure that the tire will fit into position and seal on these critical areas.

**ALWAYS REPLACE DAMAGED, WORN OR FATIGUED RIMS AND COMPONENTS.  
NEVER WELD ON ANY WHEEL, RIM OR ITS COMPONENTS.**

Every 500 hours check fasteners and lock rings halves to ensure secure fit. Use RIMEX supplied fasteners only. Use RED TSR Lock rings on TSR wheels only. Use yellow HDT lock rings on standard wheels only (these lock rings are not interchangeable).

# DGS Mounting of the Tire

## Inside tire:

- Step 1.** Remove all water and foreign objects, then clean the tires casing.
- Step 2.** Lubricate the tire beads and add RIMEXCEL.
- Step 3.** Install inside flange
- Step 4.** Lift tire vertically and slide over the outside wheel onto the inside wheel.
- Step 5.** Lift the bead band and flange assembly vertically and slide over gutter section. Slowly push in until the outside o-ring groove is exposed.
- Step 6.** Install the O-ring and 2-piece lock ring
  - a) Place lock ring halves into lock ring groove on wheel & rim. Ends of lock ring halves must not touch. Minimum of 3/16" gap
  - b) Secure in place with supplied clips and bolts (RIMEX supplied fasteners only)
  - c) Tighten all bolts to approximately 150ft-lb (200Nm) torque (NOTE: Supplied bolts are one time use only)
- Step 7.** Check fitment of the lock ring to ensure it's correct fitment.
- Step 8.** Connect air hose and fill in the same manner as a standard rim or wheel.
- Step 9.** The tire should be inflated to the manufacturers recommended pounds-per-square inch plus 15% to properly seat the bead of the tire. To ensure the beads have been properly seated, RIMEX drills two small depth gauge holes through the side of the flanges. A simple bead gauge can be fabricated from any 3/16-diameter rod or smaller. Insert gauge to test for proper tire seating.

# DGS Mounting of the Tire

## Outside tire:

- Step 1.** Remove all water and foreign objects, then clean the tires casing
- Step 2.** Lubricate the tires beads and add RIMEXCEL
- Step 3.** Install the O-ring and 2-piece lock ring  
Place lock ring halves into lock ring groove on wheel & rim. Ends of lock ring halves must not touch. Minimum of 3/16" gap  
  
Secure in place with supplied clips and bolts  
(RIMEX supplied fasteners only)  
  
Tighten all bolts to approximately 150ft-lb (200Nm) torque  
(NOTE: Supplied bolts are one time use only)
- Step 4.** Lift bead band and flange assembly vertically and slide over gutter section. Slowly push in along the base until it seats against o-ring and lock ring.
- Step 5.** Lift tire vertically and slide onto base.
- Step 6.** Lift the bead band and flange assembly vertically and slide over gutter section. Slowly push until the outside o-ring groove is exposed.
- Step 7.** Install o-ring and TSR lock ring.
- Step 8.** Check fitment of the lock ring to ensure it's correct fitment.
- Step 9.** Connect air hose and fill in the same manner as a standard rim or wheel.
- Step 10.** The tire should be inflated to the manufacturers recommended pounds-per-square inch plus 15% to properly seat bead of the tire. To ensure the beads have been properly seated, RIMEX drills two small depth gauge holes through the side of the flanges. A simple bead gauge can be fabricated from any 3/16 diameter rod or smaller. Insert gauge to test for proper tire seating.

# **RIMEX Inspection Standards**

# Inspection of Wheels/Rims - 49" Through 57"

SERIAL	COMPONENT	INSPECTION	INSPECTION FREQUENCY	REMARKS
1	Side ring	Visual damage - 20 degree taper	Every tire change and after every 6000 hours	Any damage on side ring must be referred to RIMEX for inspection and advice.
2	Side ring	Magnetic Particle Inspection (MPI) to detect cracks	Every tire change and after every 6000 hours	Scrap if any cracks detected. Crack on side ring are not permissible.
3	Side ring	Geometry 1 - Side ring bore 2 - 20 degree taper	Every tire change and after every 6000 hours	1 - Clean and check the side ring diameter at four places with a micrometer. Maximum permissible deviation on diameter is 0.062". 2 - Maximum permissible deviation is 20 degree +/- 1 degree
4	Bead band	Visual: Surface damage	Every tire change and after every 6000 hours	Damage on the 20 degree taper not more than 10% of the thickness
5	Lock ring	Visual damage	Every tire change and after every 6000 hours	Check overlap & diameter. Deviation of more than 0.12" on diameter is to be referred to RIMEX for advice.
6	Lock ring	MPI - cracks	Every tire change and after every 6000 hours	If crack is detected - scrap lock ring
7	Weldment	Geometry - Circularity	Every tire change and after every 6000 hours	Check for permanent deformation on the back side. Measure on 4 places - maximum permissible deformation is 0.25" on diameter.
8	Corrosion	Visual	Every tire change and after every 6000 hours	Damage from corrosion not more than 10% of original thickness in any section
9	Circumferential weld	MPI - cracks	every tire change and after every 6000 hours	Contact RIMEX for repair of crack
10	Back	Visual - surface damage	Every tire change and after every 6000 hours	Maximum permissible damage on the 20 degree taper is 10% of thickness
11	Disc	Geometry - Circularity	Every tire change and after every 6000 hours	Check disc diameter at 4 places for permanent deformation. Maximum permissible deformation on diameter 0.25"
12	Disc	Visual - Stud hole	Every tire change and after every 6000 hours	Check for dimensions and damage. Contact RIMEX for advice.
13	Gutter - LR Groove	MPI - cracks	At every tire change and after every 6000 hours	No crack in gutter is permissible. Contact RIMEX for advice

# Inspection of Wheels/Rims - 63"

Performance and service life of rims and wheels largely depends on maintaining the operating conditions within the design limits. Non-observance of these conditions severely affects the service life. By proper inspection and recording the observations it is possible to extract optimum service life.

## **Inspection During Service:**

Due to its design, TSR side rings re-adjust their position after initial tire inflation and take their final position after the inflated tire runs for some time. Proper mounting of the TSR side rings is key to getting the maximum benefits of the TSR design. Refer to mounting instructions for TSR side rings.

For safety reasons, it is important that side rings sit square on the back section taper and bead taper within accuracy of 0.12" and that there is absolutely no grease on any of the tapers. Failure to observe this may lead to a side ring sitting higher on one side of the back section or bead band taper (cocked).

It is also important that the position of the TSR side ring is observed on a regular basis and mounting distances are monitored and recorded.

For 63" TSR side rings, the maximum allowable limit should be as follows:

## **Caterpillar 797 Generation IV Wheel (825-063-0020-01-A)**

- Step 1.** The distance between the back section outer edge and the inside edge of the side ring is 1.34". Refer to sketch for drawing 825-063-0020-01-A.
- Step 2.** Maximum allowable movement of the side ring on the back side is 0.30" from initial position.
- Step 3.** The distance between the bead band outer edge and inside edge of the side ring is 1.34". Refer to sketch for drawing 825-063-0020-01-A.
- Step 4.** Maximum allowable movement of the side ring on the bead band side is 0.30" from initial position.

# Inspection of Wheels/Rims - 63"

## Caterpillar 797 Generation III Wheel (825-063-0013-01-A)

- Step 1.** The distance between the back section outer edge and the inside edge of the side ring is 0.95". Refer to sketch 825-063-0013-01-A, Use gauge # 782-000-0005.
- Step 2.** Maximum allowable movement of the side ring on the back side is 0.40" from initial position.
- Step 3.** The distance between the bead band outer edge and the inside edge of the side ring is 1.55". Refer to sketch 825-063-0013-01-A. Use gauge # 782-060-0006.
- Step 4.** Maximum allowable movement of the side ring on the bead band side is 0.40" from initial position.

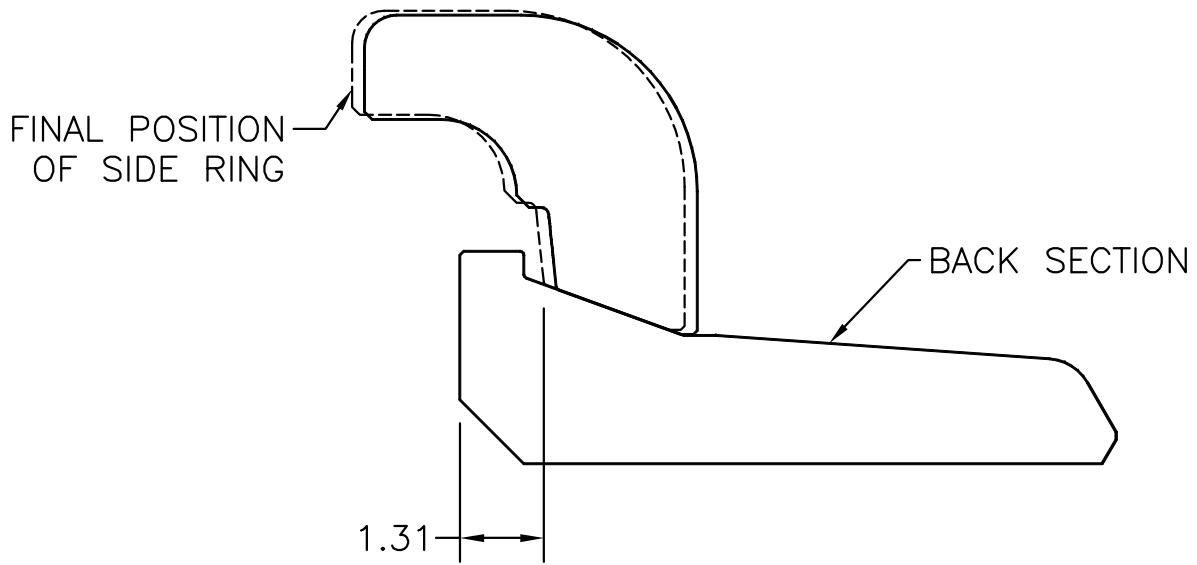
## Liebherr T282 Generation III Wheel (825-063-0025-01-A)

- Step 1.** The distance between the back section outer edge and the inside outer edge of the side ring is 1.31". Refer to sketch 825-063-0025-01-A.
- Step 2.** Maximum allowable movement of the side ring on the back side is 0.20" from initial position.
- Step 3.** The distance between the bead band outer edge and the inside edge of the side ring is 1.76". Refer to sketch 825-063-0025-01-A.
- Step 4.** Maximum allowable movement of the side ring on the bead band side is 0.20" from the initial position.
- Step 5.** Side ring movement must be monitored by inspection gauges (provided only by RIMEX) at a minimum of three places around the circumference.
- Step 6.** If these measured distances are not as per the values indicated above, a RIMEX representative should be contacted for investigation and assessment of the situation.

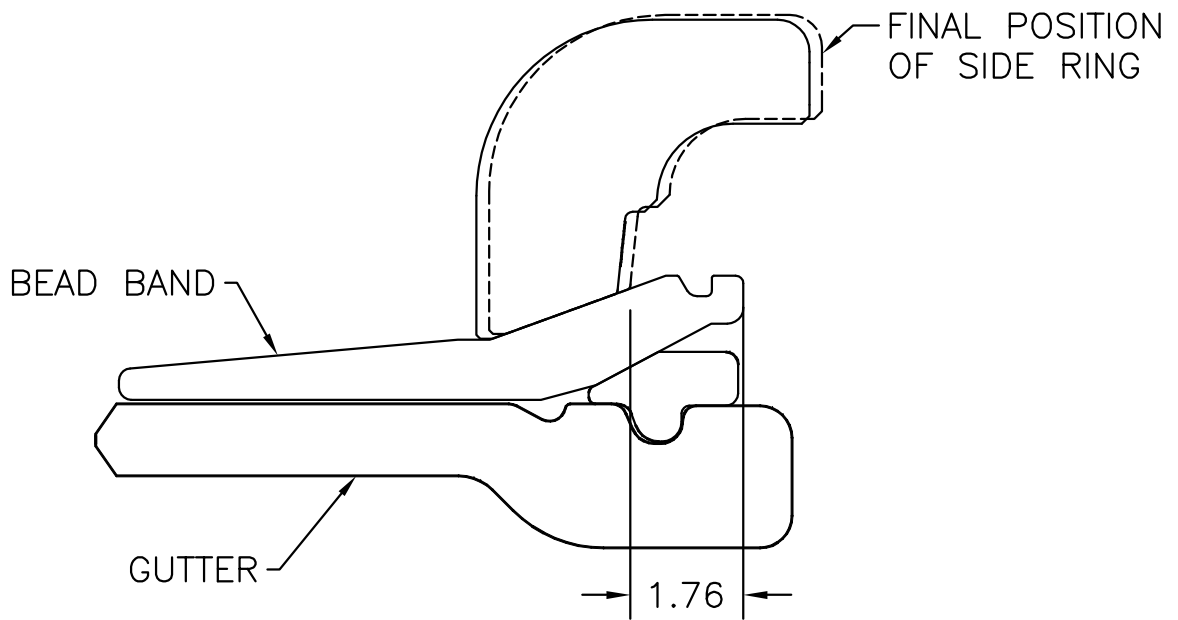
# Inspection of Wheels/Rims - 63"

SERIAL	COMPONENT	INSPECTION	INSPECTION FREQUENCY	REMARKS
1	Side ring	Visual damage - 20 degree taper	Every tire change and after every 6000 hours	Any damage on side ring must be referred to RIMEX for inspection and advice.
2	Side ring	Magnetic Particle Inspection (MPI) to detect cracks	Every tire change and after every 6000 hours	Scrap is any cracks detected. Crack on side ring are not permissible.
3	Side ring	Geometry 1 - Side ring bore 2 - 20 degree taper	Every tire change and after every 6000 hours	1 - Clean and check the side ring diameter at four places with a micrometer. Maximum permissible deviation on diameter is 0.062". 2 - Maximum permissible deviation is 20 degree +/- 1 degree
4	Bead band	Visual: Surface damage	Every tire change and after every 6000 hours	Damage on the 20 degree taper not more than 10% of the thickness
5	Lock ring	Visual damage	Every tire change and after every 6000 hours	Check overlap & diameter. Deviation of more than 0.12" on diameter is to be referred to RIMEX for advice.
6	Lock ring	MPI - cracks	Every tire change and after every 6000 hours	If crack is detected - scrap lock ring
7	Weldment	Geometry - Circularity	Every tire change and after every 6000 hours	Check for permanent deformation on the back side. Measure on 4 places - maximum permissible deformation is 0.25" on diameter.
8	Corrosion	Visual	Every tire change and after every 6000 hours	Damage from corrosion not more than 10% of original thickness in any section
9	Circumferential weld	MPI - cracks	every tire change and after every 6000 hours	Contact RIMEX for repair of crack
10	Back	Visual - surface damage	Every tire change and after every 6000 hours	Maximum permissible damage on the 20 degree taper is 10% of thickness
11	Disc	Geometry - Circularity	Every tire change and after every 6000 hours	Check disc diameter at 4 places for permanent deformation. Maximum permissible deformation on diameter 0.25"
12	Disc	Visual - Stud hole	Every tire change and after every 6000 hours	Check for dimensions and damage. Contact RIMEX for advice.
13	Gutter - LR Groove	MPI - cracks	At every tire change and after every 6000 hours	No crack in gutter is permissible. Contact RIMEX for advice

WHEEL T282, GEN 3  
DRAWING No: 825-063-0025-01-A



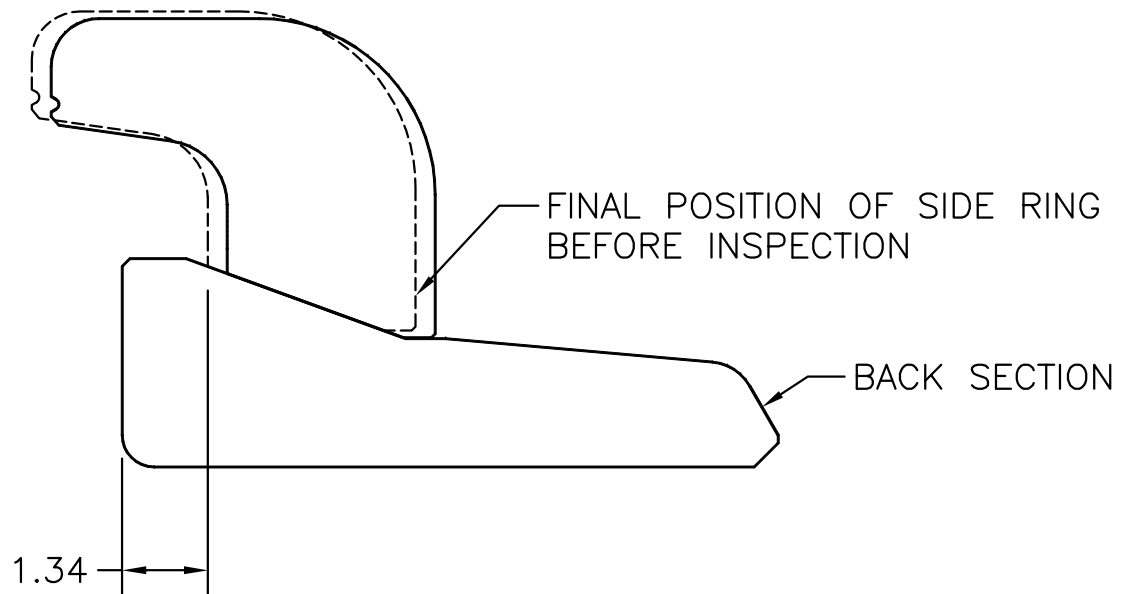
BACK SECTION SIDE



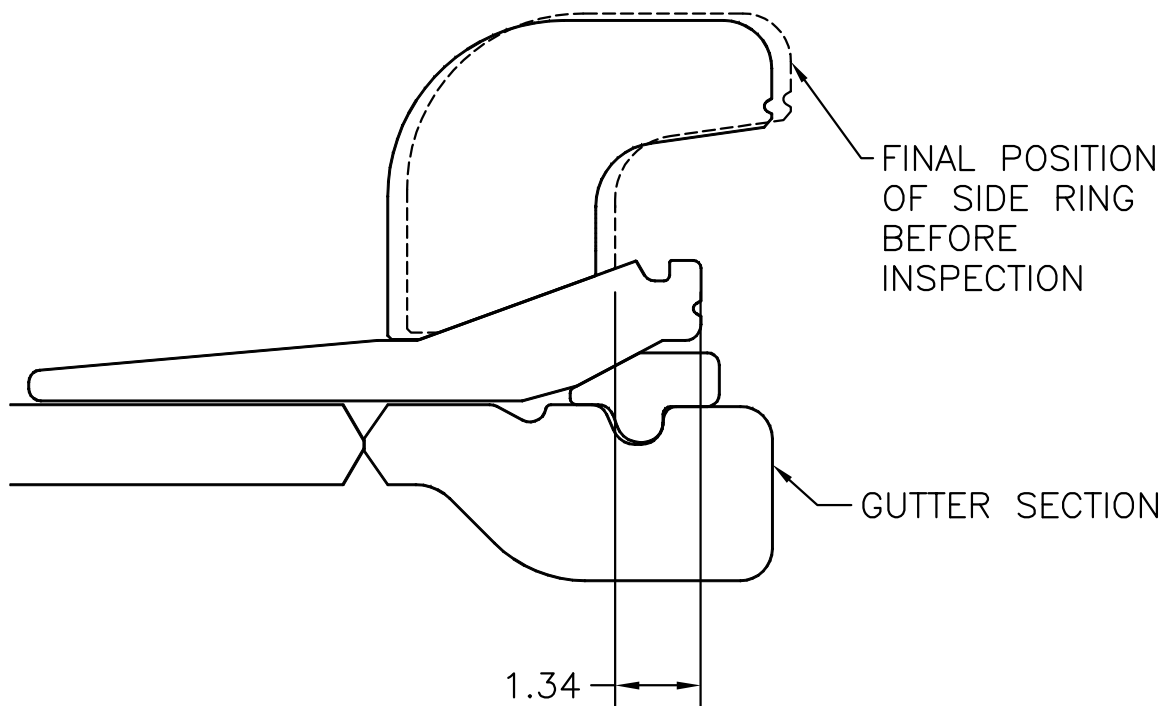
GUTTER SIDE

WHEEL CAT 797, GEN 4  
DRAWING No: 825-063-0020-01-A

BACK SECTION SIDE



BEAD BAND SIDE



# Tire Pressure

Maintaining tire pressure within the specified limits is key in getting maximum service life out of rims and wheels. Tire pressure is proportional to the tire temperature and any increase in the tire pressure over the permissible limits dramatically changes the loading pattern and may become the cause for a premature onset of the rim/wheel failure.

This necessitates monitoring and maintaining the tire pressure as per the designed values, which is 20% maximum over the specified inflation pressure in cold condition.

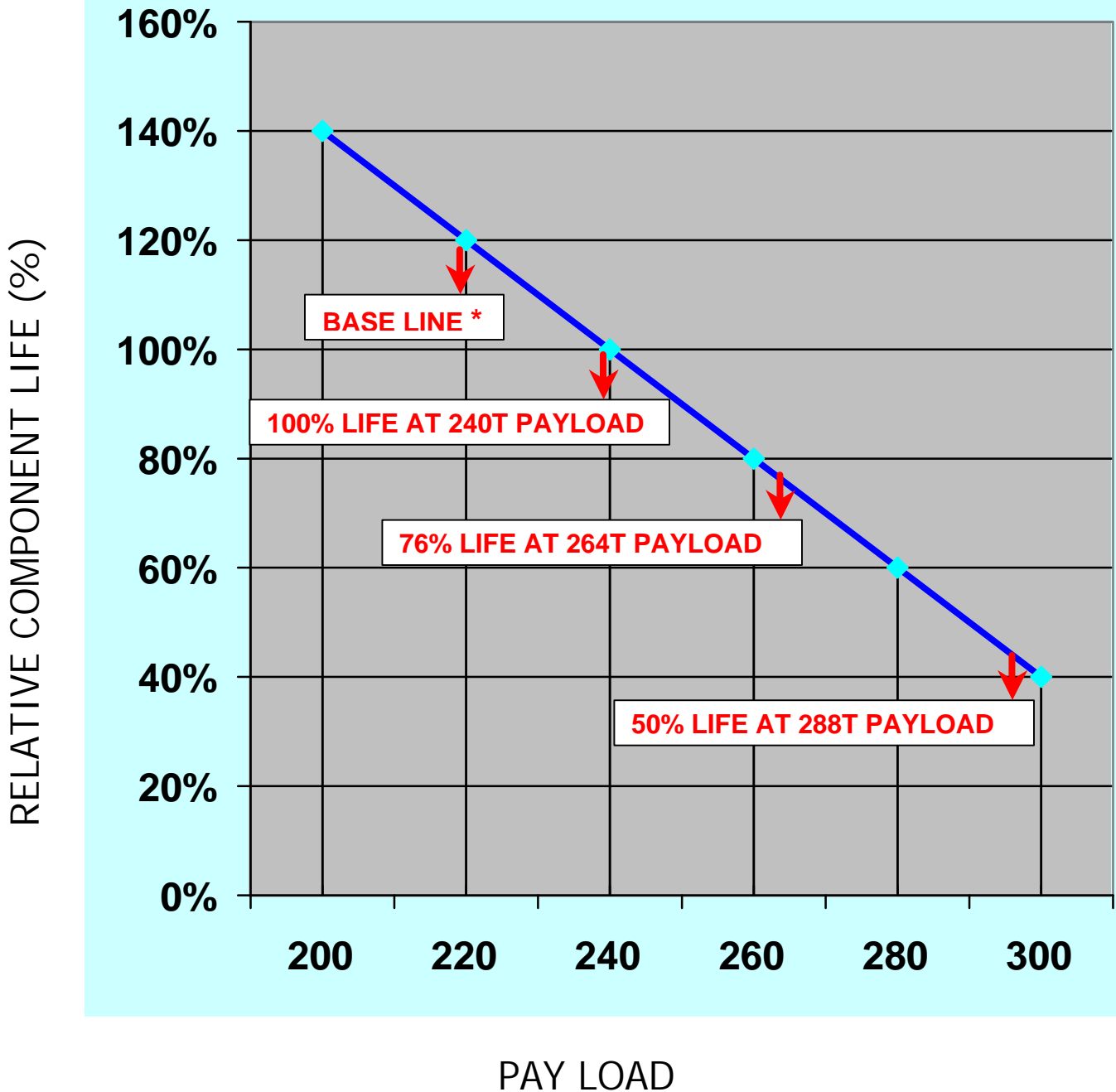
Recording tire pressures at the beginning of the truck operational shift (cold) and at the end of the shift (hot) help in arriving to the cold inflation temperature.

While inflating tires, ensure that the airline has a proper functional moisture separator. This ensures moisture free air and protection against corrosion.

Over inflation in the shop during tire change - even for a short duration - should be avoided. Tire pressure should be gradually increased to cold designed inflation pressure.

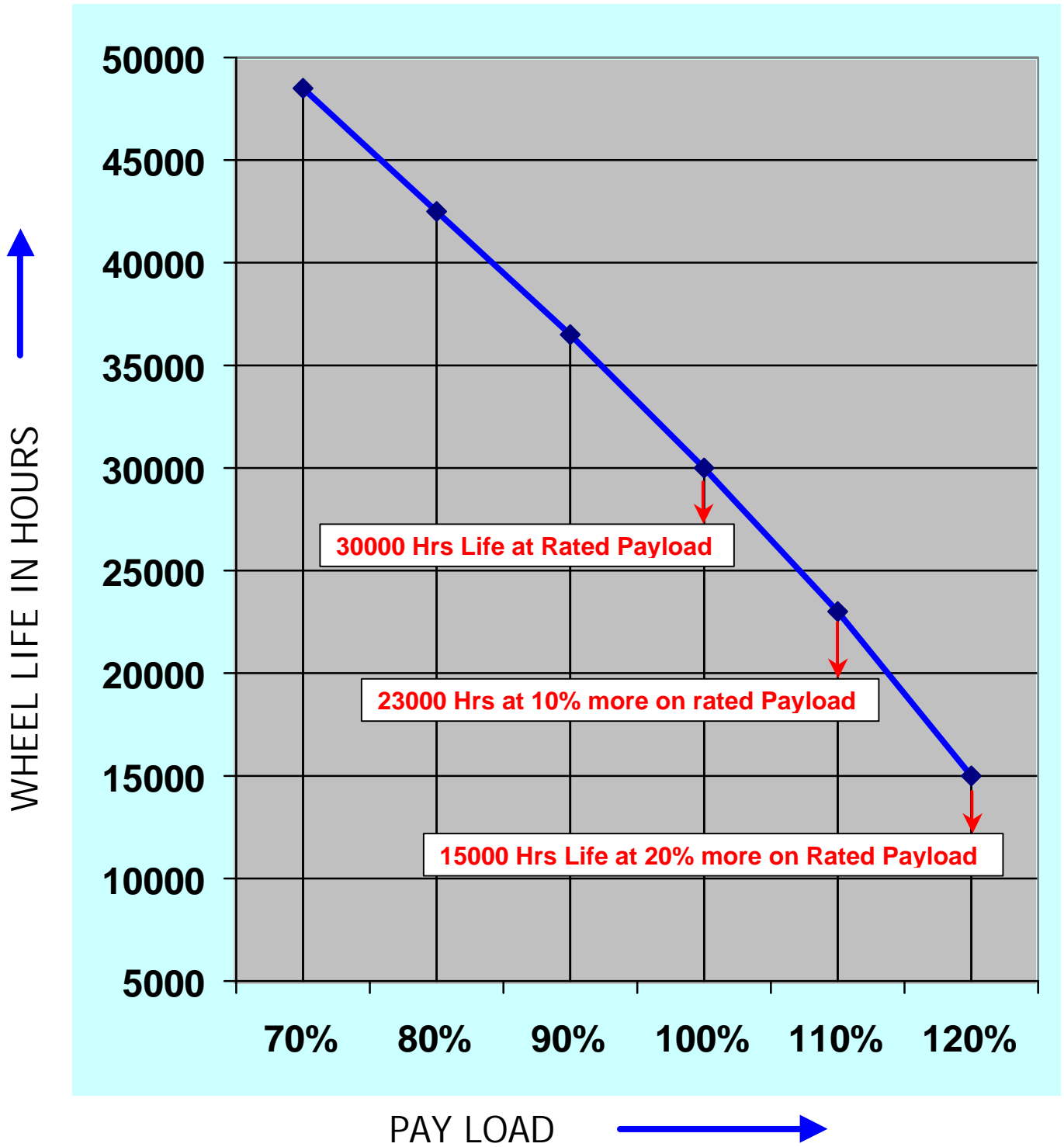
See your RIMEX representative for information on the revolutionary TYRSESENSE Tire Monitoring System.

# CATERPILLAR STUDY OF 793C COMPONENT LIFE VS PAYLOADS



**\* BASED ON CATERPILLER'S  
PAYLOAD AND COMPONENT LIFE EXPERIENCE**

# GUARANTEED LIFE OF RIMEX RIMS AND WHEELS



# RIMEX SAFETY BULLETIN

Due to extreme weights and harsh conditions adding to the stresses of wheels on large earthmover mining trucks, it is very important that special care and attention are taken when handling and mounting RIMEX TSR wheels. This will ensure optimum levels of safety, improved wheel and rim performance and extended tire life.

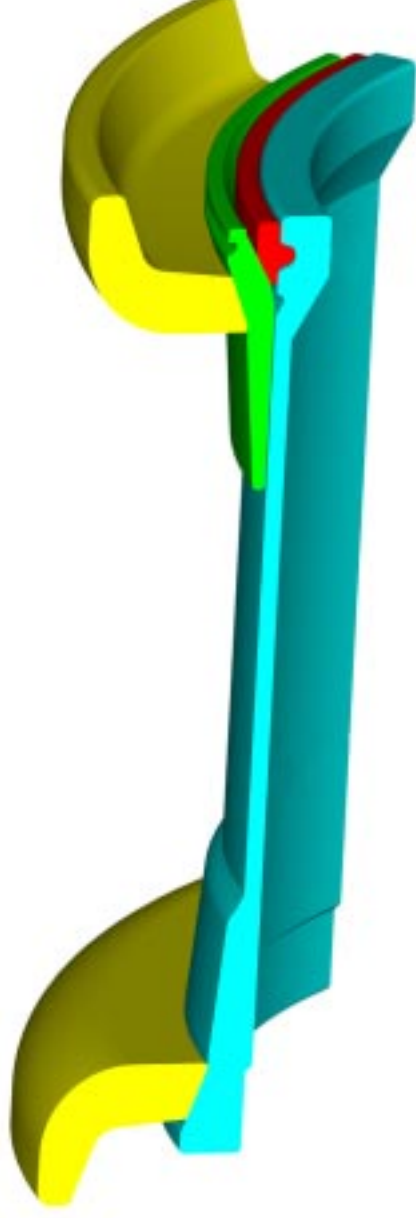
**PLEASE NOTE:** It is **VERY IMPORTANT** to keep the manipulating pads of the tirehandler clear of the TSR's tapers. The tirehandler can cause major damage to the tapered mating surfaces of the back section, bead seat bands and side flanges.

## **Before assembling any RIMEX TSR product:**

1. Thoroughly *clean all foreign material* (i.e. paint, grease, mounting compounds, dirt, etc..) from the mounting tapers of the back section, bead seat band and side rings.
2. *Remove any steel burrs* for a flush, uniform, machined mating surface.

## **Before dis-assembling any RIMEX TSR product:**

1. Use caution when vertically removing the tire as the inside back flange can, on occasion, secure itself to the backsection due to pressure build-up. Dislodging the flange before tire removal will prevent a potentially abrupt discharge



Failure to address these areas when assembling TSR wheels can void the RIMEX warranty policy. It can also affect any safety and performance benefits which the TSR product provides through increased wheel and component life and extended tire performance over conventional wheel designs.