

## GUIDANCE NOTE

### SPLIT RIMS ON EARTH MOVING MACHINERY, FORKLIFTS, TRACTORS AND LARGE TRUCKS

Split rims are different from the regular wheels you find on most everyday cars. Most cars we drive have wheels that are a single piece of metal with the rubber tyre inflated around it (which is then secured to your vehicle). Split rims are multi-piece or divided rims and wheels that are held together by bolts or a lock ring.

**If you have split rims, it's very important you deflate the tyre before removing it from the vehicle and take care when inflating; otherwise they can explode causing serious injury or death.**

There are other potentially dangerous hazards associated with split rims.



A multi-piece rim



A multi-piece wheel

## WHAT TO DO

### Removing wheels

Before loosening the fasteners to remove a split rim or multi-piece wheel from a vehicle, deflate the tyre. Deflate both tyres when dealing with dual wheels.

Serious injuries have been caused when loosening the fasteners on a cracked wheel without deflating the tyre, and when loosening the fasteners that hold two halves of a split rim together (instead of the wheel nuts) while the tyre is inflated.

**Note:** Sometimes the passage in the valve stem can remain blocked after the valve core has been removed. Clear these blocks with a flexible wire or similar device. Before undertaking such action, first put in place a safe system of work, (which may involve the use of personal protective equipment).

In rare instances where the tyre cannot be deflated through the valve system, the tyre may be driven over a specially designed spike to pierce the tyre. Manage any risks associated with this procedure with careful planning.

### Inspection and cleaning

Here are some things you can do to keep safe if you're doing an inspection or cleaning split rims:

- Be alert for defects on new and used tyres – check for aging (perishing) on tyres more than five years old

- Be aware of manufacturer's standards for usable components
- Clean all parts and check for excessive pitting by corrosion, wear, deformations and cracks – a mechanical tool may be required to clean some parts properly
- Discard unusable parts in a manner that they won't be reused
- Carry out non-destructive testing (NDT) on rims larger than 600mm, or based on manufacturers' recommendations or personal experience. The frequency of NDT should depend on the time taken to develop cracks, the model of the vehicle, the rim type and conditions under which the vehicle is used. For more information refer to the Australian Standards: [AS 4457.1-2007](#) and [AS 4457.2-2008](#), available from [saiglobal.com](#)

## Assembly

Here are some things you can do to keep safe when assembling split rims:

- Only use serviceable and compatible parts. If any doubt, don't use them.
- Only use components recommended by the rim or wheel manufacturer.



Tap the lock ring to seat it in the groove.

- Only use lubricants suitable for assembling the tyre, rim or wheel
- Ensure the replacement fasteners are of the correct grade
- When securing the two halves of a split rim ensure the torque is as per the manufacturer's recommendations – over-tightening could lead to weakening or stripping the threads.
- Proper cleaning helps seat the parts
- Don't use air pressure alone to seat parts of divided or multi-piece wheels
- When seating, inflate the tyre to a low pressure (generally about 30 kPa) and tap the lock-ring to seat it in the lock-ring groove. Don't hit the wheel or rim components too hard to seat the components. If difficulties arise, deflate the tyre and investigate the problem.

## Inflating tyres

Here are some things you can do to keep safe when inflating split rims:

- Don't inflate tyres beyond the maximum pressure recommended by the manufacturer.
- Always keep away from the sidewall (eg the flat sides of the tyre), even when the wheel is restrained. You can use a long air hose to do this (at least three metres long). See the image below.



Place the wheel in a restraint (cage or straps) device when inflating. Note the yellow lines which depict the exclusion zone from the side wall.

- Use a dump valve so you can rapidly deflate the pressure of the tyre, in the event of an emergency – when you hear or see something unsafe or unusual.
- Place the wheel in a cage before inflating. If a cage is not available, use straps or other appropriate measures to control the risks. Straps may restrain broken parts but the whole assembly can still be projected.
- Place large wheels against a wall to restrain the broken parts.
- Periodically check the functioning of the pressure regulators. Also, calibrate the pressure gauges.
- Large flat pneumatic tyres are difficult to roll, so only inflate the tyre slightly to assist in manoeuvring the wheel.
- Some split rims need to be fitted to the vehicle before being fully inflated (to gain full strength), others don't. Refer to the manufacturer's instructions to determine the type of wheel you are working with. If in doubt, bolt the wheel to the hub of the vehicle before inflating to full pressure.
- Running a tyre at below 80% of the recommended pressure, or when a tyre has been overloaded, can contribute to fatigue failures, such as zipper failure (a fracture on a tyre's side wall). If you suspect this, remove the tyre from the rim and inspect it before further use. For dual-wheel assemblies you may need to use a pressure gauge to determine this as it is difficult to see.

## Pyrolysis

When tyres are subject to excessive temperature (like being hit by lightning or powerlines, or welding on rims), a chemical process called pyrolysis occurs.

This is when flammable gas and pressure builds up within the tyre (without any noticeable signs). The tyre then explodes, sometimes up to three days after the build-up begins.

If pyrolysis is suspected, park the vehicle in an isolation zone or deflate the tyre (if safe to do so).

## FURTHER INFORMATION

You can also watch the NSW WorkCover split rims video safety alert by clicking the link below:

<https://youtu.be/wnWwOVm488s>