

1. Application

To provide a standard work practice for the safe removal of tyre and rim assemblies from equipment using cleat / wedge mounted rims as required by legislation and in accordance with the ROCHE SAFE system.

2. Personal Protective Equipment (PPE) / Special Equipment

2.1 Personnel Protective Equipment

- Safety glasses
- Safety helmet
- Protective gloves
- Hearing protection
- Steel capped ankle length, lace up safety boots

2.2 Special Equipment

- Tyre Manipulator
- Approved jacks
- Approved equipment stands conforming to AS 2283
- Approved work platforms
- Approved wheel chocks
- Correctly calibrated tyre pressure gauge
- Pressure chart or relevant specification
- Jack & stand placement chart as recommended by vehicle manufactures
- Appropriate tools for the job
- Approved air lines and fitting complete with safety clips as required refer AS 2554

2.3 Other Controls

- This procedure is for the removal of an earthmoving tyre & wheel - rim using a tyre manipulator.
- A designated tyre changing area is to be used with this procedure – A separate risk assessment must be conducted for any other area.
- Articulated vehicles must have articulation lock pins in place when isolating machine.
- Tyre manipulator operator must be competent and authorised to operate on the particular site.
- Tyre manipulator operator to ensure that the tyre manipulator cannot be accidentally moved when the tyre fitter is in tyre manipulator work area.
- Adequate lighting shall be provided to ensure that the inspections and other work required by this procedure can be safely and correctly carried out

3. Requirements

3.1 Control of Hazards

Tyres when inflated contain compressed air or nitrogen at very high pressure. Major hazards associated with the handling and changing of tyres occur due to:

1. the energy stored within the tyre in this compressed air/ nitrogen and
2. risks associated with manual and equipment assisted handling of heavy tyre components.

The following is a listing of some of the major hazards and controls. Other hazards may also exist and each situation should be assessed to determine if further hazard controls are required to:

- **Ensure** that the requirements of Safe work Practice [RO-OP-SWP37 Tyre Safety and Emergency Response](#) are complied with before approaching the equipment and prior to any work being carried out on the tyre where tyres are suspected of being involved in:
 - a fire
 - having had electricity pass through them due to lighting strike, power line contact or other means
 - exposed to excessive heat through having been run under inflated or by other means.
- **Always** follow approved isolation procedures.
- **Never** rely solely on Jacks to support equipment. Approved stands must always be used.
- **Always** undertake a separate JHA to identify the controls required to ensure safe work where circumstances / hazards differ from those covered by this procedure prior to commencing work.
- **Only** trained and competent personnel may undertake activities associated with the changing, maintenance inspection and repair of tyres. (Suitably trained and competent people are referred to as Tyre Fitters within this document).
- **Only** appropriately trained and authorised personal may operate tyre manipulators.
- **Always** use recognised safe work practices when using hand tools, bead breakers and other equipment.
- **Always** be aware of the hidden danger that rim components may be damaged, distorted or cracked.
- **Ensure** that on items of equipment with only single tyre groups fitted that the tyre being removed is deflated to 5psi (35kpa) before loosening any rim retaining bolts/ nuts.
- **Ensure** that both the tyres on the dual assembly are deflated to 5psi (35kpa) on dual tyred vehicles before loosening any rim retaining bolts/ nuts on a dual tyre assembly.
- **Always** stand well clear of the lock ring area while deflating as failed components which have been held into place by the tyre pressure while inflated may come loose during deflation causing injury.
- **Always** remain aware that on cleat attached rims that the wedging force of the rim and the cleat may eject the cleat with considerable force once nuts are undone, even with deflated tyres. Leave the cleat nut screwed on to the full nut depth until you have unseated the cleat.
- **Always** remain aware of the dangers of crushing hands or fingers between lock ring and flange or stands and equipment.
- **Never** weld or apply heat to any rim while the tyre is mounted to it regardless of whether the tyre is deflated or not. This applies to heating of wheel nut etc as well as direct application of heat to the rim. Application of heat even to an uninflated tyre can cause an explosive atmosphere to develop in the tyre due to the decomposition of the tyre rubber.

- **Always** ensure that the tyre pressure gauge being used to monitor tyre inflation is correctly calibrated, that you clearly understand the units the gauge is reading in and what the target pressure is in those units for each stage of the deflation and inflation procedure.
- **Always** ensure the wheel is effectively restrained (normally restrained by the tyre manipulator) before undoing the wheel nuts to prevent the rim moving on the hub. For dual tyre fitments with cleated rims ensure the inner tyre is restrained when removing the outer as both inner and outer tyre are released when the cleats are undone.
- **Never** leave a tyre free standing on it's tread on the floor or ground after it has been removed from a machine.
- **Always** ensure that the equipment is securely positioned and that clear communications are in place between all members of the tyre change crew in particular between the tyre manipulator operator and tyre fitter as any unplanned equipment movement can cause injury to personnel or damage to equipment.
- **Never** use or vent nitrogen in an enclosed space.
- **Always** assume that the air escaping from a tyre may be low in oxygen or otherwise harmful to your health and ensure the area is adequately ventilated.

3.2 Initial Assessment and Isolation

- Carefully inspect the tyre and the wheel assembly to determine reason for removal and condition of the tyre and wheel assembly.
- Should tyre heating be apparent refer to Safe work Practice [RO-OP-SWP37](#) Tyre Safety and Emergency Response.
- Where circumstances / hazards differ from those covered by this procedure undertake a separate JHA to identify the controls required to ensure safe work under those circumstances/hazards prior to commencing work.
- Before commencing work ensure the area is clear of persons who are not required to complete the tasks required and that appropriate warning signs / barricades are in place to restrict entry while work proceeds.
- Ensure the work area has adequate lighting, that sufficient room is available and that housekeeping is maintained.

3.3 Removal Procedure for Cleat / Wedge Mounted Rims

(This system is typically used on Electric DC drive trucks)

- Park vehicle on suitable area and inspect tray and chassis for hang-up, rocks and other potential falling objects, have vehicle washed if necessary.
- Ensure machine park brake is operational and applied.
- Isolate Vehicle and fit "Out of Service" and "Personal Danger" tags.
- Chock wheels front & rear on wheels which will remain firmly on the ground and ensure park brake is on.
- Place jacks under correct jacking points as per manufactures recommendation.
- Raise vehicle until wheel(s) to be removed are clear of the ground.
- Place stands with required load capacity under the vehicle in the recommended position by vehicle manufacturer.

3.4 Cleat / Wedge Mounted Rims – Front Tyres

- Deflate tyres to be removed to 5psi (35kpa) with a large bore deflator with attached noise muffler. **Stand well clear of the lock ring area while deflating as failed components which have been held into place by the tyre pressure while inflated may come loose during deflation causing injury.**
- Support the wheel with the tyre manipulator by gripping the tyre between manipulator jaws, establish clear communication between the tyre manipulator operator and the tyre fitter and

confirm that it is safe to enter the area between the tyre manipulator and tyre before entering that area.

- Loosen rim retaining nuts with an impact gun making sure to leave all retaining nuts with a minimum of a full nut depth of thread.
- Remove tension from wheel cleats using jacking bolts.
- Finish removing nuts & cleats from wheel assembly.
- Remove all tools and personnel outside the tyre manipulator work area.
- Remove wheel & tyre assembly.
- Ensure the removed tyre is either laid flat on the floor in an appropriate area or adequately restrained from falling.

3.5 Cleat / Wedge Mounted Rims – Rear Tyre

- Where dual tyres are fitted always deflate both tyres even if only removing the outer tyre to 5psi (35kpa) with a large bore deflator with attached noise muffler. Stand well clear of the lock ring area while deflating as failed components which have been held into place by the tyre pressure while inflated may come loose during deflation causing injury.
- Support the wheel with the tyre manipulator by gripping the tyre between manipulator jaws, establish clear communication between the tyre manipulator operator and the tyre fitter and confirm that it is safe to enter the area between the tyre manipulator and tyre before entering that area.
- Loosen the rim retaining nuts with an impact gun making sure to leave all retaining nuts with a minimum of a full nut on the thread at all times.
- Remove tension from wheel cleats using jacking bolts.
- Finish removing nuts & cleats from wheel assembly.
- Remove all tools and personnel outside the tyre manipulator work area.
- Remove outer tyre and secure the inner tyre which will now be loose on the hub.
- Ensure the removed tyre is either laid flat on the floor in an appropriate area or adequately restrained from falling.
- When removing rear inner wheels ensure clear communication is made with tyre manipulator operator and it is safe. Make the rock ejector safe by using either an appropriately rated and approved sling, ejector prop or by removing the rock ejector from the vehicle.
- Remove spacer band with either an appropriately rated and approved sling, tyre manipulator or forklift.
- Remove all tools and personnel outside the tyre manipulator work area.
- Remove inner wheel with tyre manipulator.
- Ensure the removed tyre is either laid flat on the floor in an appropriate area or adequately restrained from falling.