

WORKING WITH TIRES AND RIM ASSEMBLIES



When working with tires, such as deflating, inflating, or mounting and dismounting tire and rim assemblies, it is important to work safely to avoid injury to yourself or others around you.

The three tasks that will be outlined are:

1. Deflating Tires
2. Inflating Tires
3. Mounting and Dismounting Tire and Rim Assemblies (including trucks)

There are specific hazards associated with each task, as well as corresponding safe work guidelines. One of the identified hazards common to all these tasks is working in awkward and fixed positions.

Common Hazard: Working in Awkward and Fixed Positions

Details

Muscles tire quickly when you stay in a fixed position, placing them at higher risk of injury. When working with tires, working in awkward or fixed postures occur because of the tires' size and weight. As well, when inflating a tire, operating the remote valve manually necessitates holding it in the 'on' position for a significant amount of time.

Threat

- Muscle strain and associated tendon, nerve, disc, or joint pain; common areas at risk include lower back and shoulder
- Musculoskeletal injuries (e.g., tendonitis)

Safe Work Guidelines

- Whenever possible, keep fit by stretching and exercising your body regularly outside of work
- Ask for assistance (e.g., another worker, support for the part)
- Complete other tasks in between vehicles, so that you are not doing the same task for a long period of time
- Keep parts, tools, and supplies as close to you as possible
- Use height-adjustable controls on hoists and platforms to position truck tires in the ideal work zone (e.g., if you are standing, between shoulder and knuckle height)

- When inflating tires,
 - Keep the safety cage or other restraining device at floor level to avoid handling the tire manually
 - If you must manually operate a remote valve, switch hands or use both hands at first sign of finger, hand, or forearm fatigue

Hazard: Escaping Compressed Air and Debris (Deflating Tires)

Details

Air escaping from a tire being deflated is under high pressure. The sudden pressure drop releases a jet of air that can inflict serious injury. This escaping air can propel dirt and debris at high speed. Under certain conditions, ice may form in the valve stem, temporarily blocking the air flow.

Threat

- Debris in eyes
- Injury from the force of the air or debris

Safe Work Guidelines

- Deflate and remove tires whenever:
 - There is evidence of damage, failure, or deterioration of the tire or rim
 - The tire has been overloaded
 - The tire has been used when the pressure was less than 80% of the normal inflation pressure
- Wear safety glasses
- Deflate tires by removing the valve stem core from the valve stem
- Keep out of the path of air escaping from the tire
- When the air stops flowing, insert a probe into the valve stem to check for blockage in the valve

- Deflate the tire and wheel assembly completely before removing it from the vehicle and dismounting the side or lock rings; on dual wheel assemblies, deflate and remove both tires before you start any servicing

Hazard: Exploding Tire Debris and Parts (Inflating Tires)

Details

Inflated tires can explode from the force of the compressed air in the tire.

Threat

- Serious cuts
- Bruises
- Concussion
- Fractures
- Death

Safe Work Guidelines

- Unless otherwise recommended, apply a nonflammable rubber lubricant suggested by the tire or wheel manufacturer to the bead and rim mating surfaces during assembly
- **Do not** add air to a tire that was run flat or at 80% or less of its recommended pressure
- **Do not** inflate a truck tire that is flat or when the lock ring is unseated; remove the tire to service it instead
- **Do not** place your hands between dual truck tires when you are inflating them; use a special tire-inflating extension chuck
- Inflate a tire and wheel assembly only when you are sure that the parts are assembled according to the manufacturer's procedures
- Inflate in a safety cage or other restraining device (IER, s.77)
- Use a clip-on air chuck with a remote valve and pressure gauge

- During inflation, stand clear of the trajectory, or danger zone
- Inflate only to the inflation pressure indicated on the tire sidewall
- Check that the valve core is not leaking before installing a valve cap
- Before removing the inflated tire and wheel from the safety cage or restraining device, inspect them to make sure that the tire beads and side or lock rings are fully seated; to make an adjustment, deflate the tire

Note: if you notice anything unusual while inflating a tire, stop immediately and deflate the tire to find and correct the issue.

Hazard: Explosion or Separation of Tire and Rim Assembly

Details

An inflated tire and rim assembly can separate explosively from the force of air pressure in the tire. Damaged or deteriorated rim and wheel assembly components can fail to restrain the force of the compressed air.

Threat

- Serious injury
- Death

Safe Work Guidelines

- Wear approved personal protective equipment (e.g., safety glasses, steel-toed safety shoes, and leather or canvas gloves, etc.)
- Deflate the tire completely before dismounting it
- Before dismounting a tire, remove the valve core from the tire to ensure it is fully deflated; probe the valve stem to make sure valve is not plugged

- Know and follow the procedures for the tire changer in the equipment supplier's operating manual, or your shop safety manual
- If you use a tire changer, inflate the tire only enough to force the tire bead onto the rim ledge, then remove it from the changer
- Replace damaged or leaky tire valves
- Before loosening lug nuts on dual wheels, exhaust all the air from both tires so that a broken or cracked rim part will not blow apart under pressure
- **Do not** apply heat to or repair a rim with a tire mounted on it; heat can increase the air pressure enough to burst the tire or rim
- Keep rim flanges and gutter, rings, bead seating surfaces, and the bead areas of tires free of dirt, rust, scale, etc.
- After you have sealed the beads, adjust air pressure to the manufacturer's recommended cold operating pressure
- Before assembly, check the size (bead diameter and tire-wheel widths) and the type of the tire and the rim for compatibility
- **Do not** attempt to modify, rework, weld, heat, or braze rim parts in anyway; replace damaged parts with the same size, type, and make
- **Do not** use a hammer to correct the seating of the side and lock rings

Hazard: Weight of the Tire and Rim Assembly

Details

Tires and rim assemblies are very heavy and require proper lifting techniques.

Threat

- Serious back, hand, or foot injuries

Safe Work Guidelines

- Wear approved personal protective equipment (e.g., safety glasses, steel-toed safety shoes, and leather or canvas gloves, etc.)
- Fully deflate all tires before removing
- Protect against back injuries by following these guidelines:
 - Raise the vehicle just enough to remove or install the tire
 - Work in teams of at least two when lifting or lowering items
 - Lower heavy tires in a ‘controlled drop’ rather than fully supporting the tire
 - Get your body as close to the wheel as possible
 - For better control, handle large tires at the top and bottom, instead of at the sides
 - Avoid trying to ‘save’ a tire that is out of control – just let it fall

Hazard: Falling Tire Assembly or Moving Vehicle

Details

Vehicles and parts that are not properly supported or attached can slip and fall, or move.

Threat

- Serious injury
- Death

Safe Work Guidelines

- Wear approved personal protective equipment (e.g., safety glasses, steel-toed safety shoes, and leather or canvas gloves, etc.)
- Apply the brakes or block the wheels to prevent the vehicle from moving
- Support raised vehicles with jack stands that have the appropriate rating
- When you need to raise the vehicle, raise it just enough to remove the tire to minimize the distance the wheel might fall

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