Republic Indemnity®

Single and Multi-Piece Wheel Safety

Loss Control Bulletin

According to the Occupational Safety and Health Administration (OSHA), accidents involving multi-piece wheels have been reduced by 70% since the original OSHA standard was introduced on servicing multi-piece wheels in 1980. Similar improvements have been experienced with servicing of single piece rims. The OSHA safety standard has four major requirements:

- Training for all servicing employees.
- The use of industry accepted procedures that minimize the potential for employee injury.
- The use of proper equipment such as clip-on chucks, restraining devices or barriers to retain the wheel components in the event of an accident during the inflation of tires.
- The use of compatible components.

Training– OSHA required Safe Operating Procedures for Single Piece Wheels

Employees must be instructed in and must use the following steps for safe operating procedures with single-piece wheels:

- The tire must be completely deflated by removing the valve core before demounting.
- Mounting and demounting of the tire must be performed only from the narrow flange side of the wheel. Care must be taken to avoid damaging the tire beads, and the tire must be mounted only on a compatible wheel of matching bead diameter and width.
- A non-inflammable rubber lubricant must be applied to bead and wheel mating surfaces before assembling the rim wheel unless the tire or wheel manufacturer recommends against the use of any rubber lubricant.
- If a tire changing machine is used, the tire may be inflated only to the minimum pressure necessary to force the tire bead onto the rim flange and create an airtight seal before removal from the tire changing machine.
- If a bead expander is used, it must be removed before the valve core is installed and as soon as the rim wheel becomes airtight (when the tire bead slips onto the bead seat).
- The tire may be inflated only when contained within a restraining device, positioned behind a barrier, or bolted on the vehicle with the lug nuts fully tightened.
- The tire must not be inflated when any flat, solid surface is in the trajectory and within 1 foot (30.48 centi- meters) of the sidewall.
- The tire must not be inflated to more than the inflation pressure stamped in the sidewall unless a higher pressure is recommended by the manufacturer.
- Employees must stay out of the trajectory when the tire is being inflated.
- Heat must not be applied to a single-piece wheel.
- Cracked, broken, bent, or otherwise damaged wheels must not be re- worked, welded, brazed or otherwise heated.

Training – OSHA required Safe Operating Procedures for Multi-piece Wheels

Employers must instruct employees to use the following steps for safe operating procedures:

- The tire must be completely deflated by removing the valve core before a rim wheel is removed from

the axle:

- When the tire has been driven under-inflated at 80 % or less of its recommended pressure
- When there is obvious or suspected damage to the tire or wheel components.

- The tire must be completely deflated by removing the valve core before demounting.
- A rubber lubricant must be applied to the bead and rim mating surfaces when assembling the wheel and inflating the tire unless the tire or wheel manufacturer recommends against its use.
- If a tire on a vehicle is under-inflated but has more than 80 % of the recommended pressure, the tire may be inflated while the rim wheel is on the vehicle, provided remote control inflation equipment is used, and no employee remains in the trajectory during inflation.
- The tire shall be inflated outside a restraining device only to a pressure sufficient to force the tire bead onto the rim flange and create an airtight seal with the tire and bead.
- Whenever a rim wheel is in a restraining device, the employee must not rest or lean any part of his/her body, or equipment, on or against the restraining device.
- After tire inflation, the tire and wheel must be inspected while still within the restraining device to make sure that they are properly seated and locked. If further adjustment is necessary, the tire must be deflated by removing the valve core before the adjustment is made.
- An attempt must not be made to correct the seating of side and lock rings by hammering, striking, or forcing the components while the tire is pressurized.
- Cracked, broken, bent or otherwise damaged wheel components must not be reworked, welded, brazed, or otherwise heated.
  Heat must not be applied to a multi-piece wheel.
- Whenever multi-piece rim wheels are being handled, employees must stay out of the trajectory unless the employer can show that performance of the servicing makes the employee's presence in the trajectory necessary.

The employer must furnish a restraining device for inflating a tire on a multi-piece wheel or must provide a restraining device or barrier for inflating a tire on a single-piece wheel unless the single-piece rim wheel is bolted onto a vehicle during inflation. In all cases the employee must stay out of the trajectory.

Proper Use of Equipment and Components Required by OSHA

A restraining device, such as a cage, rack or assemblage of bars that will restrain all rim wheel components during an explosive separation of a split rim wheel, multi-piece rim wheel or during the sudden re- lease of the contained air of a single piece rim wheel must be provided and used when inflating mounted tires.

If a restraining device has any defects, the device must be removed from service until it has been repaired and certified by the manufacturer or a professional engineer as meeting the strength requirement of 150% of the force of the maximum tire specification pressure.

Current charts or a rim manual containing instructions for the types of wheels being serviced must be available in the service area.

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The employer must also supply air line equipment with a clip-on chuck with sufficient length of hose between the chuck and in-line valve or regulator to allow the employee to stand outside the trajectory, as well as an in-line valve with a pressure gauge or a pre-settable regulator.

The size (bead diameter and tire/wheel width) and type of both tire and wheel must be checked for compatibility prior to the assembly of the rim wheel. Mis- matching of half sizes such as 16 and 16.5 inch tires and wheels must be avoided.

Multi-piece wheel components must not be interchanged except as indicated in the applicable charts or rim manuals.

Multi-piece wheel components and single-piece wheels must be inspected prior to assembly. Any wheel or component that is bent out of shape, pitted from corrosion, broken, or cracked must be marked or tagged "unserviceable" and removed from the service area. Damaged or leaky valves must be replaced.

Rim flanges, rim gutters, rings, and the bead-seating areas of wheels must be free of any dirt, surface rust, scale, or loose or flaked rubber buildup prior to tire mounting and inflation.