

## Servicing Multi-Piece and Single-Piece Rim Wheels

### **Description:**

This OSHA regulation applies to the servicing of multi-piece and single piece rim wheels used on large vehicles such as trucks, tractors, trailers, buses and off-road machines. It does not apply to the servicing of rim wheels used on automobiles, or on pickup trucks and vans utilizing automobile tires or truck tires designated "LT".

### **Regulatory Reference**

29 CFR § 1910.177 Servicing multi-piece and single-piece rim wheels.

### **Applies to:**

In propane operations, the OSHA standard applies primarily to fleet mechanics, and under some circumstances, to drivers of commercial motor vehicles.

### **General Requirements:**

- (1) Tire servicing equipment. The employer shall furnish a restraining device (i.e., tire and rim cages) for inflating tires on multi-piece wheels.
- (2) The employer shall provide a restraining device or barrier for inflating tires on single piece wheels unless the rim wheel will be bolted onto a vehicle during inflation.
- (3) Restraining devices and barriers shall comply with the following requirements:
  - (a) Each restraining device or barrier shall have the capacity to withstand the maximum force that would be transferred to it during a rim wheel separation occurring at 150 percent of the maximum tire specification pressure for the type of rim wheel being serviced.
  - (b) Restraining devices and barriers shall be capable of preventing the rim wheel components from being thrown outside or beyond the device or barrier for any rim wheel positioned within or behind the device;
  - (c) Restraining devices and barriers shall be visually inspected prior to each day's use and after any separation of the rim wheel components or sudden release of contained air.
- (4) Any restraining device or barrier exhibiting damage such as the following defects shall be immediately removed from service:
  - (a) Cracks at welds;
  - (b) Cracked or broken components;
  - (c) Bent or sprung components caused by mishandling, abuse, tire explosion or rim wheel separation;
  - (d) Pitting of components due to corrosion; or
  - (e) Other structural damage which would decrease its effectiveness.

Restraining devices or barriers removed from service shall not be returned to service until they are repaired and re-inspected. Restraining devices or barriers requiring structural repair such as component replacement or re-welding shall not be returned to service until they are certified by

either the manufacturer or a Registered Professional Engineer as meeting the strength requirements of paragraph (d)(3)(i) of the regulation.

- (5) The employer shall furnish and assure that an air line assembly consisting of the following components be used for inflating tires:
  - (a) A clip-on chuck;
  - (b) An in-line valve with a pressure gauge or a pre-settable regulator; and
  - (c) A sufficient length of hose between the clip-on chuck and the in-line valve (if one is used) to allow the employee to stand outside the trajectory.
- (6) Current charts or rim manuals containing instructions for the type of wheels being serviced shall be available in the service area.
- (7) The employer shall furnish and assure that only tools recommended in the rim manual for the type of wheel being serviced are used to service rim wheels.
- (8) Wheel component acceptability. Multi-piece wheel components shall not be interchanged except as provided in the charts or in the applicable rim manual. Multi-piece wheel components and single piece wheels shall be inspected prior to assembly. Any wheel or wheel component which is bent out of shape, pitted from corrosion, broken, or cracked shall not be used and shall be marked or tagged unserviceable and removed from the service area. Damaged or leaky valves shall be replaced. Rim flanges, rim gutters, rings, bead seating surfaces and the bead areas of tires shall be free of any dirt, surface rust, scale or loose or flaked rubber build-up prior to mounting and inflation. The size (bead diameter and tire/wheel widths) and type of both the tire and the wheel shall be checked for compatibility prior to assembly of the rim wheel.
- (9) Safe operating procedure-multi-piece rim wheels. The employer shall establish a safe operating procedure for servicing multi-piece rim wheels and shall assure that employees are instructed in and follow that procedure. The procedure shall include at least the following elements:
  - (a) Tires shall be completely deflated before demounting by removal of the valve core.
  - (b) Tires shall be completely deflated by removing the valve core before a rim wheel is removed from the axle in either of the following situations:
    - (i) When the tire has been driven under-inflated at 80% or less of its recommended pressure, or
    - (ii) When there is obvious or suspected damage to the tire or wheel components.
  - (c) Rubber lubricant shall be applied to bead and rim mating surfaces during assembly of the wheel and inflation of the tire, unless the tire or wheel manufacturer recommends against it.
  - (d) 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 employees remain in the trajectory during inflation.
  - (e) Tires shall be inflated outside a restraining device only to a pressure sufficient to force the tire bead onto the rim ledge and create an airtight seal with the tire and bead.
  - (f) Whenever a rim wheel is in a restraining device the employee shall not rest or lean any part of his body or equipment on or against the restraining device.
  - (g) After tire inflation, the tire and wheel components shall be inspected while still within the restraining device to make sure that they are properly seated and locked. If further adjustment to the tire or wheel components is necessary, the tire shall be deflated by removal of the valve core before the adjustment is made.

- (h) No attempt shall be made to correct the seating of side and lock rings by hammering, striking or forcing the components while the tire is pressurized.
  - (i) Cracked, broken, bent or otherwise damaged rim components shall not be reworked, welded, brazed, or otherwise heated.
  - (j) Whenever multi-piece rim wheels are being handled, employees shall stay out of the trajectory unless the employer can demonstrate that performance of the servicing makes the employee's presence in the trajectory necessary.
  - (k) No heat shall be applied to a multi-piece wheel or wheel component.
- (10) Safe operating procedure-single piece rim wheels. The employer shall establish a safe operating procedure for servicing single piece rim wheels and shall assure that employees are instructed in and follow that procedure. The procedure shall include at least the elements prescribed in paragraph (g) of the regulation.

### **Training Requirements:**

- (1) The employer shall provide a program to train all employees who service rim wheels in the hazards involved in servicing those rim wheels and the safety procedures to be followed.(i) The employer shall assure that no employee services any rim wheel unless the employee has been trained and instructed in correct procedures of servicing the type of wheel being serviced, and in the safe operating procedures described in paragraphs (f) and (g) the regulation.
- (2) Information to be used in the training program shall include, at a minimum, the applicable data contained in the charts (rim manuals) and the contents of this standard.
- (3) Where an employer knows or has reason to believe that any of his employees is unable to read and understand the charts or rim manual, the employer shall assure that the employee is instructed concerning the contents of the charts and rim manual in a manner which the employee is able to understand.
- (4) The employer shall assure that each employee demonstrates and maintains the ability to service rim wheels safely, including performance of the following tasks:
  - (a) Demounting of tires (including deflation);
  - (b) Inspection and identification of the rim wheel components;
  - (c) Mounting of tires (including inflation with a restraining device or other safeguard required by this section);
  - (d) Use of the restraining device or barrier, and other equipment required by this section;
  - (e) Handling of rim wheels;
  - (f) Inflation of the tire when a single piece rim wheel is mounted on a vehicle;
  - (g) An understanding of the necessity of standing outside the trajectory both during inflation of the tire and during inspection of the rim wheel following inflation; and
  - (h) Installation and removal of rim wheels.
- (5) The employer shall evaluate each employee's ability to perform these tasks and to service rim wheels safely, and shall provide additional training as necessary to assure that each employee maintains his or her proficiency.

### **Maintenance and Review**

Company officials responsible for safety should ensure that procedures that conform to the OSHA standard for inspecting and inflating tires, and for servicing single-piece and multi-piece wheels

and rims are set out in standard operating procedures or in suitable locations in the company safety program. As part of those procedures, steps should be taken to ensure that the required OSHA charts are prominently posted in fleet maintenance facilities or drivers rooms.

Documented training should be provided to fleet mechanics and drivers that meets the particular needs of these employees based on their duties and responsibilities.

Periodic checks should be made of training records, and managers and supervisors should be trained to monitor employee operations and behaviors regarding tire and wheel inspection, checking of tire inflation and recording deficiencies on Driver Vehicle Inspection Reports.

### **Additional Information and Resources**

Appendix B to 29 CFR § 1910.177 Ordering Information for the OSHA Charts

OSHA has printed two charts entitled "Demounting and Mounting Procedures for Truck/Bus Tires" and "Multi-piece Rim Matching Chart," as part of a continuing campaign to reduce accidents among employees who service large vehicle rim wheels.

Reprints of the charts are available through the Occupational Safety and Health Administration (OSHA) Area and Regional Offices. The address and telephone number of the nearest OSHA office can be obtained by looking in the local telephone directory under U.S. Government, U.S. Department of Labor, Occupational Safety and Health Administration. Single copies are available without charge.

Individuals, establishments and other organizations desiring single or multiple copies of these charts may order them from the OSHA Publications Office, U.S. Department of Labor, Room N-3101, Washington, DC 20210, Telephone (202) 219-4667.