**Department of Military and Veterans Affairs**
**Pennsylvania Army National Guard**
**State Safety and Occupational Health Office**
**Annville, PA 17003-5002**

STANDING OPERATING PROCEDURES

3 January 2008

# SERVICING MULTI-PIECE AND SINGLE PIECE RIM WHEELS

**SUBJECT** **PARAGRAPH**



**1. PURPOSE**.

a. The purpose of this SOP is to outline the procedures used to train maintenance personnel who service multi and single rim wheels concerning the hazards involved and the minimum safety procedures to be followed. This SOP does not negate any future additional requirements mentioned in Army regulations concerning services performed on rim wheels.

b. This SOP was developed to meet the requirements mentioned in 29 CFR PART 1910.177 (Servicing multi-piece and single piece rim wheels).

**2. GENERAL INFORMATION**. Tire and rim servicing can be dangerous and must be done only by trained personnel using the proper tools and procedures. Failure to do so may result in serious injury or death to the individual performing the operation or to other personnel in the near vicinity.

**3. SCOPE.** This SOP applies to all Pennsylvania Army National Guard maintenance personnel who perform services on multi-piece and single piece rim wheels.

**4. RESPONSIBILITIES.** Maintenance supervisors are responsible for:

a. Ensuring their maintenance personnel that service rim wheels are familiar with this SOP and the National Highway Traffic Administration (NHTSA) Charts mentioned in para 10.

b. Ensuring NHTSA Charts entitled “Demounting and Mounting Procedures for Truck/Bus Tires” and “Multi-piece Rim Wheel Matching Chart” are posted in the area where rim wheels are serviced.

c. Ensuring personnel do not perform services on rim wheels unless they have

been trained on the hazards and safety procedures associated with the services.

**5. TRAINING.**

a. Personnel who service rim wheels will be trained and instructed in the safe operating procedures described in paragraphs 8 and 9 of this SOP. Information to be used in the training program shall include, at a minimum, the data contained in this SOP, contents of the NHTSA charts and any applicable Army regulations.

b. Personnel performing rim wheeled services must demonstrate the ability to perform the following tasks:

(1) Demounting of tires, including deflation.

(2) Inspection and identification of the rim wheel components.

(3) Mounting of tires, including inflation with a retaining device or barrier (see para 6).

(4) Handling of rim wheels.

(5) Inflation of the tire when a single piece rim wheel is mounted on a vehicle.

(6) Understanding the necessity of standing outside the trajectory zone both during inflation of the tire and during inspection of the rim wheel following inflation (see Figure 1).

(7) Installation and removal of rim wheels.

c. Supervisors will evaluate each employee's ability to perform the tasks and service outlined in this SOP and shall be provided additional training as necessary to assure that each employee maintains their proficiency.

**6. WHEEL SERVICING EQUIPMENT.**

a. A Suitable restraining device will be used when inflating multi-piece wheels. A suitable barrier or restraining device will be used when inflating tires on single piece wheels unless the rim wheel is bolted onto the vehicle during inflation. A barrier is defined as a fence, wall or other structure or object placed between a single piece rim wheel and a n employee during inflation to contain the rim wheel components (tire parts) in piece rim wheel. A restraining device is defined as an apparatus such as a cage, rack, assemblage of bars and other components that will constrain all rim wheel components during an explosive separation of a multi-piece rim wheel, or during the sudden release of the contained air of a single piece rim wheel.

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. Restraining devices or barriers will be visually inspected prior to each day's use and after any separation of the rim wheel components or sudden release of contained air. Any restraining

device or barrier exhibiting damage such as the following defects will be immediately removed from service:

(1) Cracks at welds.

(2) Cracked or broken components.

(3) Severe pitting of components due to corrosion.

(4) Other structural damage which would decrease its effectiveness.

c. A sufficient length of hose between the clip-on chuck and the in-line valve will be used to allow the individual to stand outside the trajectory zone.

d. Only tools recommended in the wheel manuals for the type of wheel being serviced will be used.

**7. WHEEL COMPONENT ACCEPTABILITY.**

a. Multi-piece wheel components will not be interchanged except as provided in
the charts or in the applicable rim manual.

b. Multi-piece wheel components and single piece wheels will be inspected prior to assembly. Any wheel or wheel component which is bent out of shape, pitted from corrosion, broken, or cracked will not be used and will be tagged unserviceable. Damaged or leaky valves shall be replaced.

c. Rim flanges, rim gutters, rings, bead seating surfaces and the bead areas of tires will be free of any dirt, surface rust, scale or loose or flaked rubber build-up prior to mounting and inflation.

d. The size (bead diameter and tire/wheel widths) and type of both the tire and the wheel will be checked for compatibility prior to assembly of the rim wheel.

**8. SAFETY PROCEDURES FOR MULTI-PIECE RIM WHEELS.** Personnel performing services on multi-piece rim wheels will be instructed in the following minimum procedures:

a. Tires will be completely deflated before demounting by removal of the valve core.

b. Tires will be completely deflated by removing the valve core **before a rim wheel is removed from the axle** in either of the following situations:

(1) When the tire has been driven under inflated at 80% or less of its recommended pressure.

(2) 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 does not recommend 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 personnel remain in the trajectory zone 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 individual shall not rest or lean any part of their body or equipment on or against the restraining device.

g. After tire inflation, the tire and wheel components will 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 will 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 heated.

j. Whenever multi-piece rim wheels are being handled, individuals will stay out of the trajectory zone unless the maintenance supervisor can demonstrate that performance of the servicing makes the individuals presence in the trajectory necessary.

k. No heat will be applied to a multi-piece wheel or wheel component.

**9. SAFETY PROCEDURES FOR SINGLE PIECE RIM WHEELS.** Individuals performing services on single piece rim wheels will be instructed in the following minimum safe operating procedures:

a. Tires shall be completely deflated by removal of the valve core before demounting.

b. Mounting and demounting of the tire shall be done only from the narrow ledge side of the wheel. Care shall be taken to avoid damaging the tire beads while mounting tires on wheels. Tires will be mounted only on compatible wheels of matching bead diameter and width.

c. Nonflammable rubber lubricant will be applied to bead and wheel mating surfaces before assembly of the rim wheel, unless the tire of wheel manufacturer does not recommend the use of any rubber lubricant.

d. If a tire changing machine is used, the tire shall be inflated only to the minimum pressure necessary to force the tire bead into the rim ledge while on the tire changing machine.

e. If a bead expander is used, it will be removed before the valve core is installed and as soon as the rim wheel becomes airtight (the tire bead slips onto the bead seat).

f. Tires will be inflated only when contained within a restraining device, positioned behind a barrier or bolted on the vehicle with the lug nuts fully tightened.

g. Tires will not be inflated when any flat, solid surface is in the trajectory zone and within one foot of the sidewall.

h. Personnel will stay out of the trajectory zone (pieces of tire) when inflating a
tire.

i. Tires will not be inflated to more that the inflation pressure stamped in the sidewall unless a higher pressure is recommended by the manufacturer.

j. Tires will not be inflated above the maximum pressure recommended by the manufacturer to seat the tire bead firmly against the rim flange.

k. No heat will be applied to single piece wheels.

l. Cracked, broken, bent, or otherwise damaged wheels shall not be reworked, welded, brazed, or otherwise heated.

**10. POSTING NHTSA CHART.** The United States Department of Transportation, National Highway Traffic Safety Administration (NHTSA) chart entitled “Safety Precautions for Mounting and Demounting Tube-Type Truck/Bus Tires” will be mounted in the work area where rimmed wheel services are performed. Chart number 2 entitled “Multi-Piece Rim Wheel Matching Chart” will be made available to personnel performing Multi-piece rim wheel services. This second chart does not have to be posted, but made available to personnel.

FOR THE ADJUTANT GENERAL:

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DISTRIBUTION:
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