Demounting and Mounting Procedures for Tubeless Truck and Bus Tires

TIRE AND RIM SERVICING CAN BE DANGEROUS AND MUST ONLY BE PERFORMED BY TRAINED PERSONNEL USING PROPER PROCEDURES AND TOOLS.

FAILURE TO READ AND COMPLY WITH ALL OF THESE PROCEDURES MAY RESULT IN SERIOUS INJURY OR DEATH TO YOU AND OTHERS.

PLEASE NOTE: THIS IS CHART 1 OF A 3-CHART SET. BE SURE TO ALSO READ, UNDERSTAND AND COMPLY WITH CHART 2 RE: DEMOUNTING AND MOUNTING PROCEDURES FOR TUBE-TYPE TRUCK AND BUS TIRES, AND CHART 3 RE: MULTI-PIECE RIM MATCHING

⚠WARNING

Completely deflate any tire by removing the valve core before removing the tire/wheel assembly from the axle if there is known or suspected damage to the tire or wheel or if the tire has been operated at 80% or less of its recommended operating pressure. Demount, inspect and match all tire and rim parts before re-inflating in a restraining device.

⚠WARNING

NEVER use starter fluid, ether, gasoline, or other flammable materials and/or accelerants to lubricate or to seat the beads of a tire. This practice can cause the explosive separation of the tire/wheel during servicing or during highway use, which may result in serious injury or death.

⚠WARNING

NEVER inflate beyond 40 psi to seat any tire beads. **NEVER** stand, lean, or reach over the tire rim/wheel assembly in the restraining device during inflation. Even if a tire is in a restraining device, inflating beyond 40 psi when trying to seat the beads is a DANGEROUS PRACTICE that may break a tire bead or the rim/wheel with explosive force and possibly result in serious injury or death.

⚠WARNING

Any inflated tire mounted on a wheel contains explosive energy. The use of damaged, mismatched or improperly assembled tire and wheel components can cause the assembly to separate with explosive force. If struck by an exploding tire, wheel component, or the air blast, you or someone else may be seriously injured or killed.

⚠WARNING

Mismatching tire and rim diameters is dangerous. A mismatched tire and rim assembly may separate and can result in serious injury or death. This warning applies to 15" and 15.5", 16" and 16.5", 18" and 18.5", 22" and 22.5", 24" and 24.5" tire and rim assemblies as well as other sized assemblies. **NEVER** assemble a tire and rim unless you have positively identified and correctly matched the tire and rim diameter.

⚠WARNING

NEVER assemble a tire and rim unless you have positively identified and correctly matched the tire and rim diameter. If an attempt is made to seat the tire bead by inflating on a mismatched rim/wheel, the tire bead will break with explosive force and may result in serious injury or death.

1 BEFORE SERVICING ANY TIRE RIM/WHEEL ASSEMBLY

- **ALWAYS comply with the procedures** on this chart and in the tire/wheel manufacturer's catalogs, instruction manuals or other industry and government instructional materials.
- **Use a non-flammable vegetable or soap-based rubber lubricant** on the beads and rim surfaces to make tire demounting and mounting easier.
- **Use proper tools to demount or mount tires and rims** (refer to "Typical Tire Service Tools"). **NEVER** strike the tire/wheel assembly with a steel duck bill hammer to unseat the beads and do not strike the head of the hammer with another hard-faced hammer – use a rubber mallet or plastic dead blow hammer. Slide impact bead unseating tools are the preferred tools for unseating beads on tubeless tires.
- **NEVER reinflate any tire that has been operated in a run-flat or underinflated condition** (i.e., operated at 80% or less of recommended operating pressure). Demount, inspect and match all tire and rim components before reinflating in a restraining device with the valve core removed.
- **If an emergency puncture repair inflater was used** on a tubeless tire, deflate and reinflate the tire several times to remove potentially explosive propellant before servicing the tire.

⚠WARNING IF YOU DO NOT KNOW HOW TO USE TIRE SERVICING TOOLS — **STOP!** TIRE SERVICING MUST ONLY BE PERFORMED BY TRAINED PERSONNEL. FAILURE TO FOLLOW PROPER PROCEDURES CAN RESULT IN SERIOUS INJURY OR DEATH.

- **ALWAYS** wear adequate protective eyewear (or face shield), protective footwear, and ear protection while servicing tires to avoid injury.
- **NEVER** use a tire tool for anything except demounting and mounting tires.
- **NEVER** use an extension or "cheater" bar with tire irons.
- **ALWAYS** use soft-faced hammers when driving tire irons or assembling components.
- **NEVER** use a hammer with a loose or cracked handle.
- **NEVER** use a bent, cracked, chipped, dented or mushroomed tool. Keep tools clean and inspect them frequently.
- **NEVER** alter or apply heat to any tire service tool.

Typical Tire Service Tools

Use only tools recommended by the tire or wheel manufacturer.

Restraining Devices

ALWAYS WEAR SAFETY GLASSES

2 DEFLATING AND DEMOUNTING TIRE FROM RIM/WHEEL ASSEMBLY

- **ALWAYS completely deflate** the tire assembly before attempting to demount. Remove the valve core and insert a wire down the valve stem to ensure complete deflation. NEVER demount a tire from a rim unless you are sure it is completely deflated.
- **Loosen beads** by using a slide impact bead unseating tool, duck bill hammer with a rubber mallet, or other bead unseating tool. Both beads must be loosened before demounting a tire.

TUBELESS; SINGLE PIECE

2A. Identify the short side of the drop center wheel well. Single piece tubeless rims and wheels must be demounted from the short side of the drop center well. On steel disc wheels, the short side is typically located opposite the disc. Aluminum wheels typically have symmetrical drop centers so tires can be demounted from either side. However, on certain 19.5-inch aluminum wheels, the short side of the drop center well is located on the disc side.

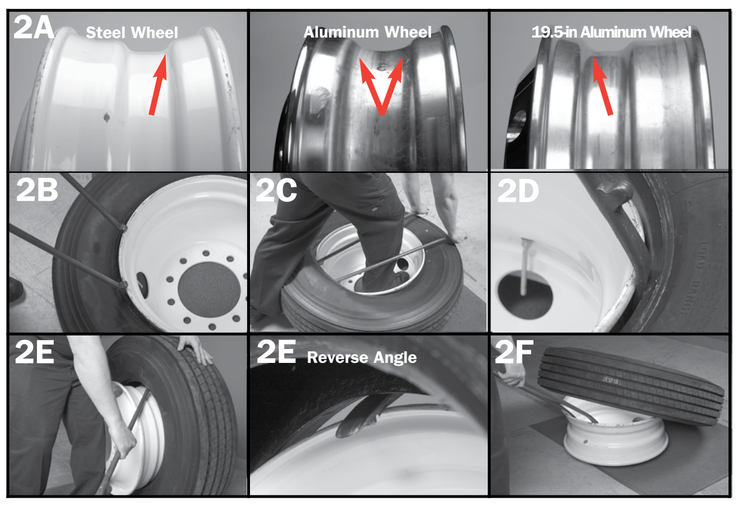
2B. Unseat and lubricate both beads. Position the assembly with the short side of the drop center well facing up.

2C. Insert tire irons on either side of the valve stem approximately 6 inches (152 mm) apart. Pry the top bead over the rim flange and force the bead opposite the tire irons in the drop center well.

2D. Remove one tire iron and insert the curved end between the bead and rim. Pry the rest of the top bead over the rim flange. Repeat this process until the first bead is entirely free from the rim.

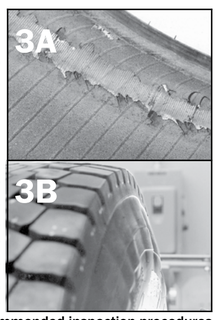
2E. Stand the tire on its tread. Slide the flat end of the tire iron between the bead and the rim flange; make sure the tip is completely over the rim flange. Remove solid flange.

2F. Pry the tire iron and allow the rim/wheel to drop. IMPORTANT! Make sure your feet are clear of the rim. If necessary, rock or bounce the assembly to remove the tire from the rim/wheel. For aluminum wheels, a rubber mat should be placed on the floor to prevent damage to the mounting surface of the wheel.



3 INSPECTING TIRE AND RIM/WHEEL COMPONENTS

- **ALWAYS** conduct a visual and tactile inspection of the tire.
- **LOOK** and **FEEL** for any damage or evidence of being operated overloaded and/or in a run-flat condition (80% or less of recommended operating inflation pressure). *Photo 3A is an example of innerliner damage created by an underinflated and overloaded condition.*

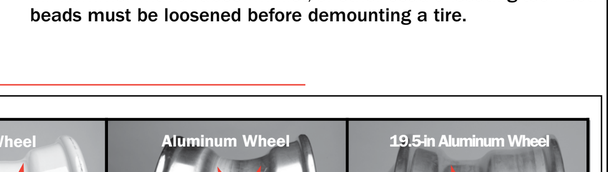


⚠WARNING Radial tires that have undulations or irregular sidewall distortions could possibly have permanent sidewall structural damage (steel cord fatigue). Ply cords weakened by underinflation and/or overloading may break one after another, until a rupture occurs in the upper sidewall with accompanying instantaneous air loss and explosive force. This can result in serious injury or death. Follow tire industry recommended inspection procedures for tires with these characteristics. *Photo 3B is an example of sidewall undulations indicative of a potential "zipper rupture".*

- Remove rust, dirt, or foreign material from all tire and wheel mating surfaces.
- Inspect rim/wheel. **NEVER** use any single-piece rims/wheels that are worn, bent, cracked, or pitted by corrosion. Clearly mark and remove all unserviceable parts from the service area. See examples in 3C and 3D.
- **DO NOT** rework, weld, heat or braze any rim parts or components for any reason.

3C In the examples at right, a rim flange wear guage can be used to determine if the rim flange is acceptable for service. The guage reads "Daylight in this area is an acceptable rim."

3D Use a carpenter square and a credit card to examine rim diameter.



By using the carpenter square and the credit card on this wheel, it is more clear that the rim diameter has been reduced so the wheel should not be used. See WARNING below.

⚠WARNING ANY INFLATED TIRE MOUNTED ON A WHEEL CONTAINS EXPLOSIVE ENERGY. THE USE OF DAMAGED, MISMATCHED OR IMPROPERLY ASSEMBLED TIRE AND WHEEL COMPONENTS CAN CAUSE THE ASSEMBLY TO SEPARATE WITH EXPLOSIVE FORCE. IF STRUCK BY AN EXPLODING TIRE, WHEEL COMPONENT, OR THE AIR BLAST, YOU OR SOMEONE ELSE MAY BE SERIOUSLY INJURED OR KILLED.

4 MOUNTING TIRE ON RIM/WHEEL ASSEMBLY

TUBELESS; SINGLE PIECE

4A. Before mounting, be sure that the tire is properly matched to the rim. These photo examples show the rim/wheel size stamp.

⚠WARNING **NEVER** assemble a tire and rim unless you have positively identified and correctly matched the tire and rim diameter. If an attempt is made to seat the tire bead by inflating on a mismatched rim/wheel, the tire bead will break with explosive force and may result in serious injury or death.

4B. Identify the short side of the drop center well. Single-piece tubeless rims and wheels must be mounted from the short side of the drop center well. On steel disc wheels, the short side is typically located opposite the disc. Aluminum wheels typically have symmetrical drop centers so tires can be mounted from either side. However, on certain 19.5-inch aluminum wheels, the short side of the drop center well is located on the disc side.

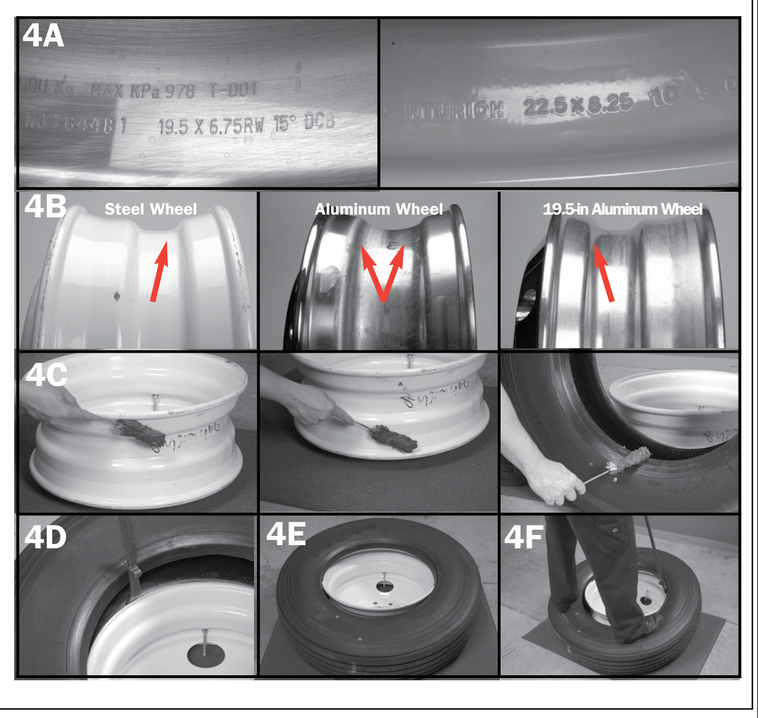
4C. Place the wheel on the floor with the short side of the drop center well facing up. **Lubricate** the tire beads and rim surfaces.

4D. Push the tire on the rim opposite the valve stem and use the curved end of the tire iron to pry the bottom bead over the rim flange.

4E. Apply pressure to the bead opposite the valve stem making sure the bead is completely in the drop center well.

4F. Taking small bites, use the curved end of the tire iron to pry the top bead over the rim flange. Keep the bead in the drop center well with your foot or a bead-locking device. Continue until the top bead is fully mounted over the rim flange.

BEFORE INFLATING TIRE RIM/WHEEL ASSEMBLY, THE TIRE MUST BE PROPERLY MOUNTED.



5 INSPECTING TIRE RIM/WHEEL ASSEMBLY

⚠WARNING TIRE AND RIM SERVICING CAN BE DANGEROUS AND MUST ONLY BE PERFORMED BY TRAINED PERSONNEL USING PROPER PROCEDURES AND TOOLS. FAILURE TO READ AND COMPLY WITH ALL OF THESE PROCEDURES MAY RESULT IN SERIOUS INJURY OR DEATH TO YOU AND OTHERS.

⚠WARNING **NEVER** use starter fluid, ether, gasoline, or other flammable materials and/or accelerants to lubricate or to seat the beads of a tire. This practice can cause the explosive separation of the tire/wheel during servicing or during highway use, which may result in serious injury or death.

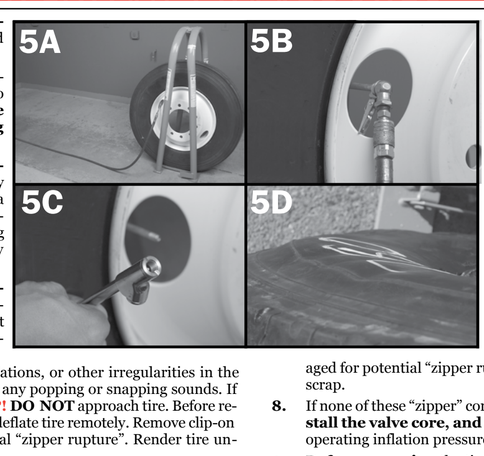
⚠WARNING **ALWAYS** inflate the tire rim/wheel assembly in a restraining device with the valve core removed. The air line assembly must consist of the following components: a clip-on air chuck, an in-line valve with a pressure gauge or presettable regulator, and sufficient hose length to keep the technician outside the trajectory during inflation. (See "Trajectory" WARNING below.) **DO NOT** rest or lean any part of your body against the restraining device during inflation. Failure to use a restraining device when inflating a tire rim/wheel assembly is not only a violation of OSHA regulation 1910.177, but also a DANGEROUS PRACTICE that may result in serious injury or death.

⚠WARNING During inflation, if ANY sidewall undulations or bulges appear or if ANY snapping, cracking or popping noises occur — STOP! **DO NOT** approach tire. Before removing from restraining device, completely deflate tire remotely. Remove clip-on air chuck. Mark tire as damaged for potential "zipper rupture". Render tire unservicable, non-repairable and scrap.

⚠WARNING **NEVER** inflate beyond 40 psi to seat any tire beads. **NEVER** stand, lean, or reach over the tire rim/wheel assembly in the restraining device during inflation. Even if a tire is in a restraining device, inflating beyond 40 psi when trying to seat the beads is a DANGEROUS PRACTICE that may break a tire bead or the rim/wheel with explosive force and possibly result in serious injury or death.

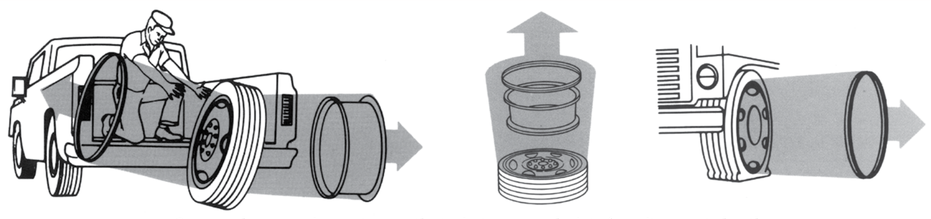
STEP-BY-STEP INFLATION PROCEDURES

1. **Before inflating any tire rim/wheel assembly**, be sure to read, understand and comply with ALL WARNINGS.
2. After mounting the tire on the rim, use a compressed air tank with quick release valve to seal the beads. **Do not exceed 5 psi before placing the assembly in a restraining device**.
3. **Place the assembly in an OSHA-compliant restraining device**, such as a tire safety cage. Photo 5A is an example of one type of a restraining device. Manufacturers recommend that restraining devices be freestanding and located at least one foot away from any flat or solid surface.
4. **Inflate the tire, with the valve core removed**, using a clip-on air chuck with an in-line valve or pressure regulator and a sufficent length of hose. **Inflate to 20 psi** in restraining device.
   IMPORTANT! Look for distortions, undulations, or other irregularities in the tire sidewall, such as in Photo 5C. Listen for any popping or snapping sounds. If ANY of these conditions are present — **STOP! DO NOT** approach tire. Before removing from restraining device, completely deflate tire remotely. Remove clip-on air chuck. Mark tire as damaged for potential "zipper rupture". Render tire unservicable, non-repairable and scrap.
5. **Visually inspect tire rim/wheel assemblies** throughout the inflation process for improper seating. When inflating a tire, stay out of the trajectory. See "Trajectory" WARNING below. **DO NOT** stand or lean any part of your body against, or reach over, the restraining device during inflation.
6. **Continue to inflate until the beads are seated on the rim/wheel.** Inspect both sides of the tire to be sure that the beads are evenly seated. **NEVER** inflate beyond 40 psi to seat any tire beads. If the beads are not seated at 40 psi — **STOP!** Completely deflate, remove from the restraining device, and determine the problem. Reposition the tire on the rim, relubricate, and reinflate.
7. **After the tire beads are seated, continue to inflate the tire** to its recommended inflation pressure. **IMPORTANT!** Look for distortions, undulations, or other irregularities in the tire sidewall, such as in Photo 5D. Listen for any popping or snapping sounds. If ANY of these conditions are present — **STOP! DO NOT** approach tire. Before removing from restraining device, completely deflate tire remotely. Remove clip-on air chuck. Mark tire as damaged for potential "zipper rupture". Render tire unservicable, non-repairable and scrap.
8. If none of these "zipper" conditions are present, **remove clip-on air chuck, install the valve core, and adjust the inflation pressure** to the recommended operating inflation pressure.
9. **Before removing** the tire rim/wheel assembly from the restraining device, always visually inspect for proper seating of the beads and all parts.
10. **Conduct a final inspection.** Check for air leaks. Install a suitable valve cap.



⚠WARNING **TRAJECTORY** **⚠WARNING**

THE AIR PRESSURE CONTAINED IN A TIRE IS DANGEROUS. THE SUDDEN RELEASE OF THIS PRESSURE BY A TIRE BLOW-OUT OR SIDE RING SEPARATION CAN CAUSE SERIOUS INJURY OR DEATH. STAY OUT OF THE TRAJECTORY AS INDICATED BY THE SHADED AREA DEPICTED IN THE GRAPHICS. WHEN INSTALLING THE TIRE RIM/WHEEL ASSEMBLY ON THE VEHICLE, IT WILL BE IMPOSSIBLE TO STAY OUT OF THE TRAJECTORY. HOWEVER, AT ALL OTHER TIMES YOU AND ALL OTHERS MUST STAY OUT OF THE TRAJECTORY.



NOTE: Under some circumstances, the trajectory may deviate from its expected path.

You have a right to a safe work place.
If you think your job is unsafe and you have questions, call DOSH at 1-800-423-7233.
It's confidential. We can help!
www.Lni.wa.gov/Safety

THIS CHART MUST BE PRINTED AT LEAST 2' X 3' MINIMUM SIZE.

Poster produced by the federal Occupational Safety and Health Administration. In Washington State, this poster is printed and distributed by the Department of Labor & Industries, Division of Occupational Safety and Health (DOSH).

Washington State Department of Labor & Industries
Division of Occupational Safety and Health

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