

# DEMOUNTING AND MOUNTING PROCEDURES FOR TUBE-TYPE 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 2 OF A 3-CHART SET. BE SURE TO ALSO READ, UNDERSTAND AND COMPLY WITH CHART 1 RE: DEMOUNTING AND MOUNTING PROCEDURES FOR TUBELESS 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 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

Re-assembly and inflation of mismatched components on multi-piece tire and wheel assemblies can result in serious injury or death. Just because the components come in or fit together does not mean they are matched. Check the identification stamps for proper matching of all rim parts before assembling a multi-piece tire and wheel.

## 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.

## 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.
- Before loosening any nuts or clamps that attach a tube-type tire/rim assembly to a vehicle, **ALWAYS** completely deflate the tire (or both tires of a dual assembly) by taking out the valve core(s).
- 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** use a steel hammer to seat rim components—use only rubber, plastic or brass-tipped mallets. Striking a

rim/wheel assembly with a hard-faced hammer can damage the components and endanger the installer. Use a steel duck bill hammer only as a wedge to unseat the beads of tube-type tires. **NEVER** strike the tire/wheel assembly with a steel duck bill hammer to unseat the beads and do not strike the head of the duck bill hammer with another hard-faced hammer – use a rubber mallet or plastic dead blow hammer. Slide impact tools and hydraulic bead unseating tools can also be used to unseat beads on tube-type tires.

- **NEVER** re-inflate 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 re-inflating in a restraining device with the valve core removed.

## 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.



## 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 tools. Both beads must be loosened before demounting a tire.

### TUBE-TYPE; MULTI-PIECE

CURRENT PRODUCTION: TWO-PIECE SOLID RIM; SPLIT RING - LW, FL

- 2A. Make sure the top bead is unseated and below the side ring before attempting to remove it. Insert the tapered end of the lock ring tool into the notch and pry the side ring out of the rim gutter. Lift wheel from assembly.
- 2B. Continue to remove the side ring by progressively prying around the rim. Use small bites to prevent distorting the side ring.
- 2C. Place a tire stand on the rim. Turn the assembly over. Unseat the bottom bead. Remove the tire from the rim. Remove the tube and flap from the tire.



CURRENT PRODUCTION: THREE-PIECE SOLID RIM; SPLIT LOCK RING; SOLID FLANGE-M, CR, 5 DEGREE

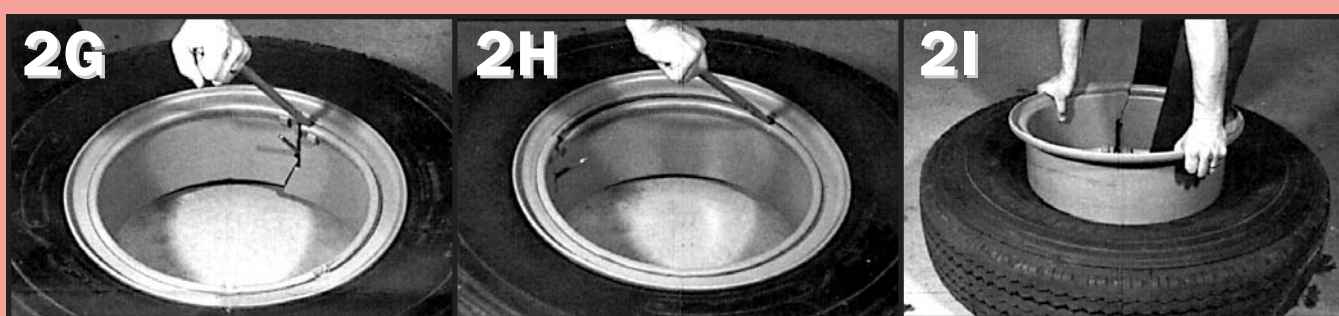
### CURRENT PRODUCTION MULTI-PIECE

- 2D. Make sure the top bead is unseated and the flange is below the lock ring before attempting to remove the lock ring. Insert the tapered end of the lock ring tool into the notch and pry the lock ring out of the rim gutter. Lift wheel from assembly.
- 2E. Insert the lock ring tool between the lock ring and the flange. Remove the lock ring by progressively prying around the rim. Use small bites to prevent distorting the lock ring. Remove solid flange.
- 2F. Place a tire stand on the rim. Turn the assembly over. Unseat the bottom bead. Remove the tire from the rim. Remove the tube and flap from the tire.



OBSOLETE\*: SPLIT RIM; SOLID RING-K

- 2G. Make sure the top bead is unseated and insert the tapered end of the lock ring tool into the notch in the rim near the split. Push the tool downward and toward the center of the rim. A block of wood may be placed under the left side of the rim split to help offset the rim base.
- 2H. Insert the tapered end of the lock ring tool into the second notch and push downward toward the center of the rim, prying the solid side ring from the rim. Remove the solid side ring.
- 2I. Place a tire stand on the rim. Turn the assembly over. Unseat the bottom bead. Remove the tire from the rim. Remove the tube and flap from the tire.



### OBSOLETE MULTI-PIECE\*

- 2J. Make sure the top bead is unseated and insert the tapered end of the lock ring tool into the notch in the solid side ring. This notch is located between the embossments on the solid side ring.
- 2K. Push the solid side ring downward at a point opposite the notch. Force the lock ring tool handle downward to pry the solid side ring from the rim. Continue prying around the rim until the solid side ring is free.
- 2L. Remove the solid side ring from the rim. Turn the assembly over and unseat the other bead. Remove the rim from the tire. \* NOTE: These rims are no longer in production and replacement parts are not available.

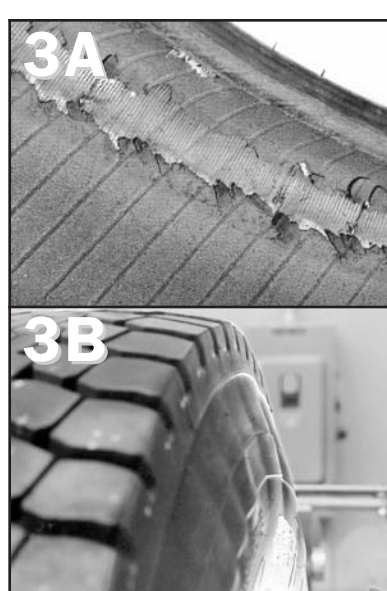


## 3 INSPECTING TIRE AND RIM/WHEEL COMPONENTS

- **ALWAYS** conduct a visual and tactile inspection of the tire, rim/wheel and its components.
- **LOOK** and **FEEL** for any damage or evidence of being operated overloaded and/or in a run-flat condition (80% or less of its 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. Fol-



low 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 rim/wheel mating surfaces.
- **NEVER** use any multi-piece rim parts that are worn, bent, cracked, or pitted by corrosion. Clearly mark and remove all unserviceable parts from the service area.
- **DO NOT** rework, weld, heat or braze any rim parts or components for any reason.
- **ALWAYS** find the identification stamp on multi-piece rim components. Check Chart 3 Multi-Piece Rim Matching to see that the parts are properly matched. **NEVER** use a rim part unless you can positively identify it from the markings stamped by the manufacturer. If you cannot identify a multi-rim component, **DO NOT USE IT.** (See WARNINGS.)

EXAMPLES OF UNSERVICEABLE PARTS BENT, RUSTED, CRACKED, OR WORN PARTS CANNOT BE SAFELY ASSEMBLED AND MUST BE CLEARLY MARKED AND REMOVED FROM THE SERVICE AREA. REPLACE THEM WITH PROPERLY MATCHED, SERVICEABLE PARTS.



## 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.

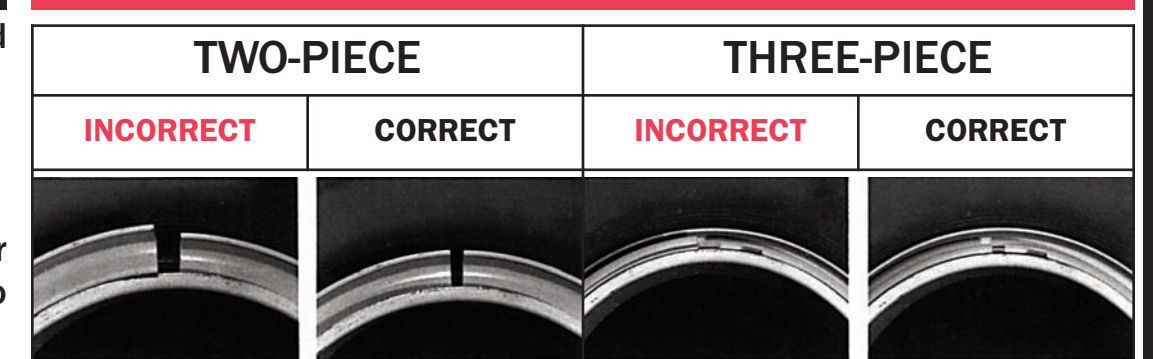
## 4 MOUNTING TIRE ON RIM/WHEEL ASSEMBLY

### TUBE-TYPE; MULTI-PIECE

BEFORE MOUNTING A TUBE-TYPE TIRE ON THE RIM/WHEEL ASSEMBLY, BE SURE TO INSTALL AN INNER TUBE AS FOLLOWS:

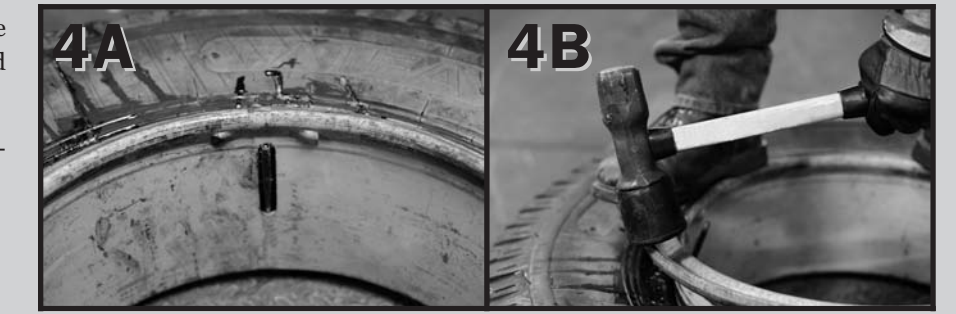
- Insert the tube into the tire and inflate with just enough air to round out the tube without creating wrinkles or creases.
- Insert the flap making sure the flap wings are not folded.
- Remove the valve core from the valve stem to prevent trapped air from interfering with the proper seating of the side or lock ring into the rim gutter.

BEFORE INFLATING TIRE RIM/WHEEL ASSEMBLY, ALL RIM PARTS MUST BE PROPERLY MATCHED AND INSTALLED.



CURRENT PRODUCTION: TWO-PIECE SOLID RIM; SPLIT RING - LW, FL

- 4A. Lay the rim on the floor and align the valve stem with the slot in the rim. Lift the tire at the valve stem to work it onto the rim. For rims with bead humps, make sure the top bead is below the bead hump before attempting to install the side ring.
- 4B. Insert one end of the side ring into the rim gutter and use a rubber mallet or dead-blow hammer to progressively seat the remainder of the side ring in the rim gutter.



CURRENT PRODUCTION: THREE-PIECE SOLID RIM; SPLIT LOCK RING; SOLID FLANGE-M, CR, 5 DEGREE

- 4C. Lay the rim on the floor and align the valve stem with the slot in the rim. Lift the tire at the valve stem to work it onto the rim. For rims with bead humps, make sure the top bead is below the bead hump before attempting to install the side ring. Install the flange making sure it is below the rim gutter.
- 4D. Insert the end of the lock ring in the rim gutter and use a rubber mallet or dead-blow hammer to progressively seat the remainder of the lock ring in the rim gutter.
- 4E. Ensure the lock ring is completely seated in the rim gutter by using the rubber mallet or dead-blow hammer before attempting to inflate the tire.



## 5

### INFLATING 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** If the parts are not seated properly, deflate the tire and correct the problem before proceeding. **NEVER** attempt to seat any part on a multi-piece tire/rim assembly by hammering, striking or prying while the tire contains inflation pressure. Striking the assembly in this manner is a DANGEROUS PRACTICE that may result in serious injury or death.

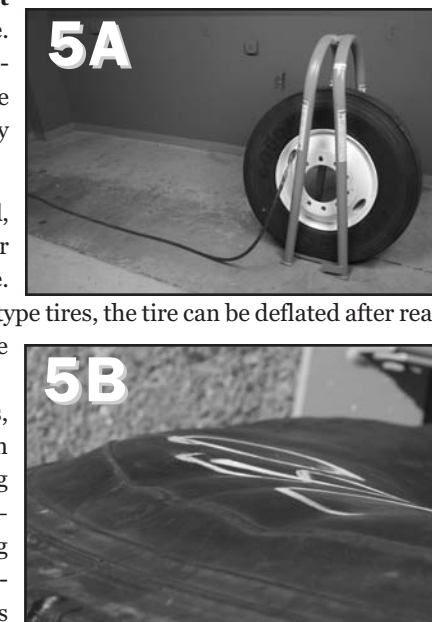
- **WARNING** During inflation, if ANY sidewall undulations or bulges appear or if ANY snapping, cracking or popping noises occur — **STOP! DO NOT** approach tire. Before removing from restraining device, completely deflate tire remotely. Remove clip-on air chuck. Mark tire as damaged for potential "zipper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

- **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 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. For a tube-type tire, be certain that the side or lock ring is properly seated.
2. After mounting the tire on the rim, inflate to approximately 5 psi to seat the beads.
3. Place the assembly in an OSHA-compliant restraining device, such as a tire safety cage. Photo 5A is an example of a portable 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 sufficient length of hose. Inflate to 20 psi in restraining device. For tube-type tires, the tire can be deflated after reaching 20 psi and re-inflated to prevent inner tube wrinkles. **IMPORTANT!** Look for distortions, undulations, or other irregularities in the tire sidewall, such as in Photo 5B. 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 unserviceable, non-repairable and scrap.
5. Visually inspect multi-piece tire rim/wheel assemblies throughout the inflation process for improper seating of the rings and/or beads. 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 and/or inner tube on the rim, lubricate, and re-inflate.
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 5B. 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 unserviceable, 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.

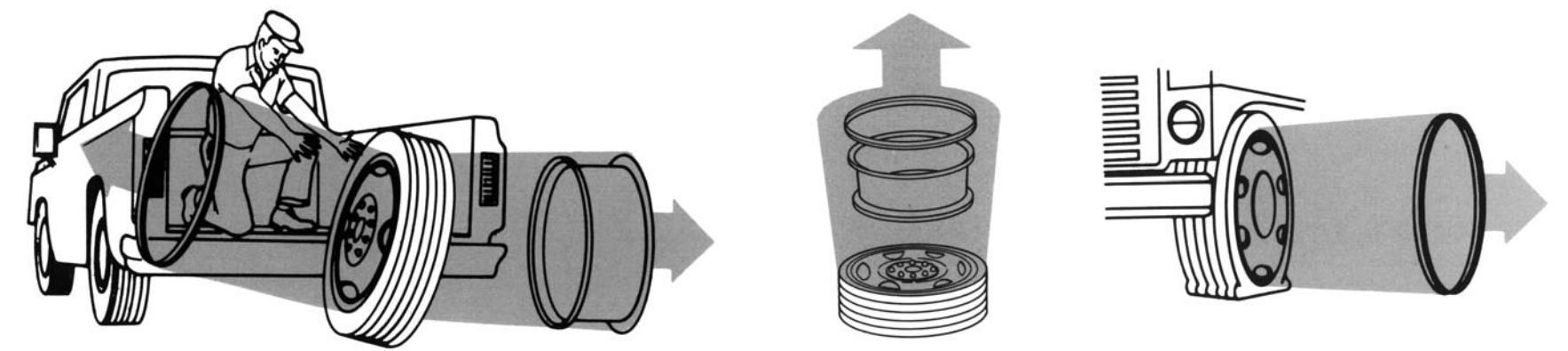


## WARNING

### 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 workplace. If you think your job is unsafe and you have questions, call OSHA. It's confidential. We can help!

**OSHA** Occupational Safety and Health Administration  
U.S. Department of Labor  
www.osha.gov • (800) 321-OSHA (6742) • TTY (877) 889-5627

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