



# Maintaining Alcoa Aluminum Wheels Rim Flange Wear

The purpose of these instructions is to provide guidelines for assessing and maintaining Alcoa wheels for rim flange wear. For additional assistance contact your Alcoa representative, or call Alcoa Wheel Products International at (800) 242-9898.

## Determining Rim Flange Wear

**STEP 1.** Remove the wheel/tire assembly from the vehicle. Remove the valve core to deflate the tire completely. Remove the tire from the wheel according to OSHA regulations, TMC recommended practices for tire and rim safety procedures and/or the Alcoa Heavy Duty Wheel Service Manual.

**STEP 2.** After the wheel is separated from the tire, check the wheel flange with the Alcoa Rim Flange Wear Gauge to determine if the wheels must be removed from service for excessive rim flange wear (*photo 1*).

See instructions below for the gauge to make this determination. Virtually all wheels will be deemed serviceable by the gauge measurement. If you do not have an Alcoa Rim Flange Wear Gauge, contact Alcoa Wheel Products International to obtain a gauge(s) at no charge.

**STEP 3.** If the wheel is deemed to be serviceable by the rim flange gauge, examine the wheel flange edge for sharpness by using a rubber sharpness gauge. These gauges are constructed by having a section of tire side wall or a suitable piece of rubber attached to a block of wood (*photo 2*). By running the sharpness indicator gauge along the wheel in the area of the wear, determine if the wear is sharp enough to cut or damage the rubber on the sharpness indicator (*photo 3*). If the rubber is cut, then follow the edge removal instructions below.



Photo 1. Acceptable Rim Flange Wear Condition

## Alcoa Rim Flange Wear Gauge Instructions

Contact Alcoa Wheel Products International to obtain a gauge(s) at no charge, (800) 242-9898.

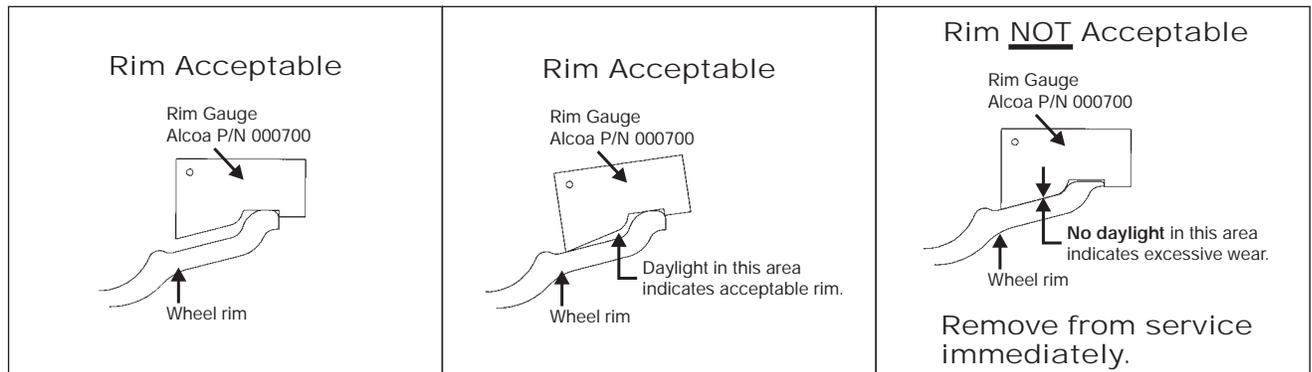




Photo 2. A rubber sharpness gauge constructed from a section of tire side wall or a suitable piece of rubber attached to a block of wood.

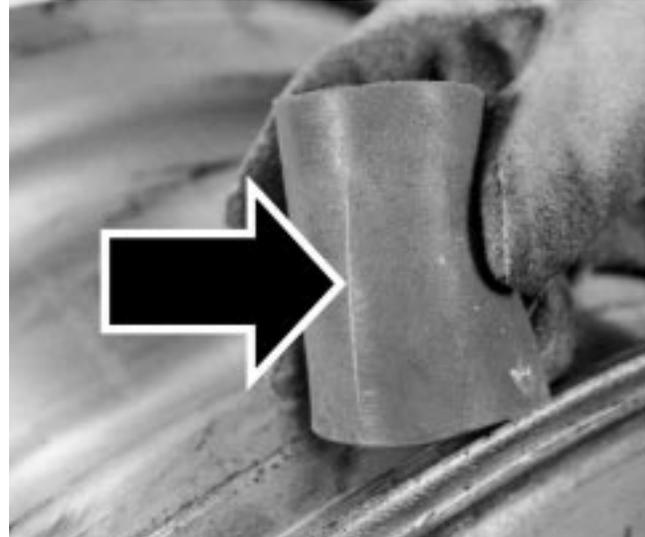


Photo 3. Run the sharpness indicator gauge along the wheel in the area of the wear to determine if the wear is sharp enough to cut or damage the rubber on the sharpness indicator.

If the flange appears close to being sharp enough to cut the rubber on the sharpness indicator gauge, the edge can be removed per the edge removal procedures below. If the rubber is not cut, then the wheel can be returned to service without further work for rim flange wear.

**NOTE:** Examine the tire for cuts in the bead area and side wall. If no damage occurred to these areas, return the tire to service. Cut tires should be removed from service. The tire should be inspected at this time for any other damage and be treated per normal tire procedures recommended by the tire manufacturer.



**CAUTION:** Do not run unprotected hands or fingers across worn rim flange areas of used wheels.

Worn rim flange areas are sharp and can cut hands or fingers. Cuts can lead to infection.

Always wear gloves when handling used wheels or when testing for edge sharpness.

**NOTE:** Check the wheel at every tire change or **ONCE PER YEAR** for rim flange wear and any sharp edges. If you follow this practice, you will significantly reduce the possibility of a rim flange cutting into the tire.

## Edge Removal Procedures

There are many tools available to remove the sharp edge on the wheel caused by rim flange wear. Here are some examples of commonly used tools:

**File.** A file can be used very effectively to remove the edge (*photo 4*).

**Air or Electric Powered Sander.** This provides a very quick and effective method of removing the edge. Operators should use all care to keep a uniform edge when using these tools (*photo 5*).

**Air or Electric Grinder.** Another quick and effective method of removing the sharp edge caused by rim flange wear. Be careful as grinding pads may “gum up” from the aluminum that is removed (*photo 6*). Care must be used to avoid gouging the wheel.



Photo 4. Removing sharp edge by hand with a metal file.



Photo 5. Air or electric power sander.



Photo 6. Air or electric grinder.



Photo 7. Die grinder.

**Die Grinder.** Used with a sanding wheel, cutting stone or grinding tool, this is a version of an electric grinder. This tool is very quick and effective as well, and care must be taken to remove metal as uniformly as possible and not to gouge the wheel (*photo 7*).



**CAUTION:** Removing sharp edges with hand or power tools produces metal filings and sparks. Many power tools have edges that are sharp or may become hot during use. Some power tools produce excessive noise when used.

Metal filings can be sharp and, when projected by the action of power tools, can cause serious skin or eye damage. Excessive noise from power tools can harm hearing. Sharp edges can produce cuts and hot surfaces can cause burns. Cuts and burns can lead to infection.

Always wear appropriate safety gear such as protective eye wear, gloves, protective clothing and hearing protection when using hand or power tools (*photo 8*).

**STEP 4.** The photographs show the process of removing the edge. With whatever tool is selected, work the tool around the wheel's circumference removing only enough material to eliminate the sharp edge. This should only be a small amount of metal. Perform this work on both flanges if there is evidence of sharpness.

**Regardless of the method which you choose, the objective is to remove the sharp edge** (*photo 9*).

Remove just enough metal to smooth the edge. Take care to make sure the edge removal is as uniform as possible. Avoid gouging the wheel.



Photo 8. Always use proper safety gear.

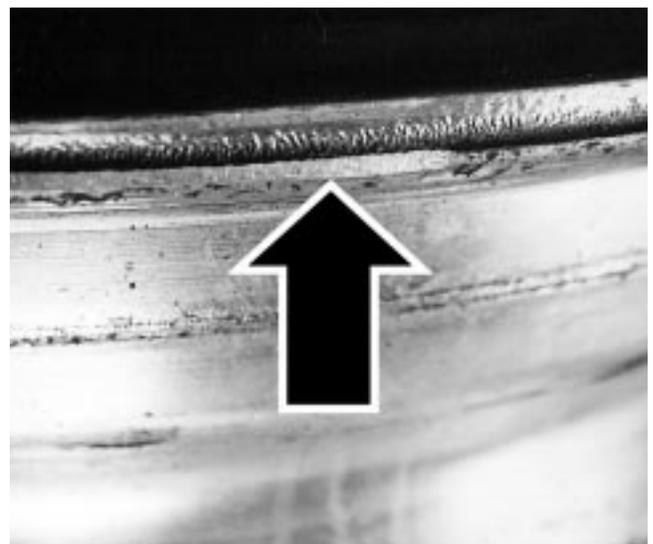


Photo 9. Adequate repair for sharp edge resulting from rim flange wear removes just enough metal to smooth the edge.

**STEP 5.** After the edge is removed, run the sharpness indicator gauge along the area of edge removal to check for any remaining sharpness. If the rubber is still cut, perform the steps again to remove the sharp edge. Always remove the minimum amount of material necessary to eliminate the sharp edge.

**STEP 6.** Check the rim flange height with the Alcoa Rim Flange Wear Gauge to make sure there is adequate height remaining to safely support the tire. The photograph again shows how this gauge is used (photo 1). Be sure to move the gauge all around the wheel's circumference and make sure that no area of the flange is below what the gauge indicates is acceptable. If the entire wheel flange is within the limits of the rim flange wear gauge, the wheel may be returned to service.

**STEP 7.** Always inspect the wheel for any other conditions that would warrant removal from service. Consult the Alcoa Heavy Duty Wheel Service Manual or the TMC User's Guide to Wheels and Rims.



**WARNING:** Welding or brazing the rim flange or any area of an Alcoa aluminum wheel will weaken the wheel. Weakened or damaged wheels can lead to an explosive separation of tires and wheels or wheel failure on the vehicle.

Explosive separations of tires and wheels or wheel failure on the vehicle could cause injuries or death.

Never attempt to weld or braze any surface of an Alcoa aluminum wheel.



**WARNING:** Returning wheels to service with inadequate flange height as determined by the Alcoa Rim Flange Wear Gauge can lead to an explosive separation of tires and wheels.

Explosive separation can result in serious injury or death.

Wheels with flange height that falls below the Alcoa gauge have inadequate rim flange height to support the tire on the rim. Permanently remove any wheel from service that has inadequate rim flange height.

Always follow safe mounting procedures as recommended using OSHA approved tire inflation cages. See the Alcoa Heavy Duty Wheel Service Manual or OSHA safety wall charts and procedures.