

TECHNICAL SERVICE BULLETIN
RAFNA RAILGEAR

RAFNA R-002 & R-0830 VEHICLE WHEEL SERVICE INFORMATION

ISSUE DATE: May 25, 2004

TSB NUMBER: TSB-163 Rev 0

HAZARD / URGENCY RATING	
X	DANGER – Injury or death possible if TSB not observed or followed
	WARNING – Equipment damage possible if TSB not observed or followed
	CAUTION – Essential issue affecting operation, service, parts or installation
	INFORMATIONAL – Advisory which may be of interest

APPLICABLE EQUIPMENT:

All 2001 – 2004 GMC / Chevy 2500, 2500HD and 3500 pick-up trucks and Suburban / Yukon vehicles and 2001 – 2004 Ford F-250 and F-350 pick-up trucks and Excursion vehicles equipped with Rafna R-250HD or R-290 railgear and /or Rafna wheel modification kits using Rafna R-002 or R-0830 wheels manufactured by OTR Wheel Engineering (OTR) recently renamed as Armour Tire and Rim Inc. (ARMOUR).

SUMMARY:

A small number of R-002 and R-0830 wheels have developed cracks a short time after being put in service. If left unattended, these cracks can develop further, leading to separation of the wheel from the vehicle. It was determined by ARMOUR that the cracking is a result of poor installation and service practices and / or use under extreme duty. ARMOUR has issued a Safety Bulletin to Rafna indicating that the possible causes of the cracking are loose wheel nuts, over-tightened wheel nuts, vehicle overload and / or tire and wheel imbalance. ARMOUR has also provided preventative measures to avoid development of cracks in these wheels. If these measures are not followed, the wheels may develop cracks which lead to separation of the wheel from the vehicle. All of these issues are covered in the Rafna Installation and Operation, Service and Parts manuals, so this Technical Service Bulletin serves as an important reminder of this information.

IMPACT:

If the R-002 and R-083O wheels are not properly installed, used and / or serviced as per the Rafna Installation and Operation, Service and Parts manuals and this Technical Service Bulletin, the wheels may develop cracks which can lead to the wheels separating from the vehicle and causing equipment damage, an accident, injury and / or death. It is imperative that all wheels are properly installed, used and serviced as per the Rafna manuals and this Technical Service Bulletin.

ACTION:

Each of the applicable vehicles should have the wheels inspected for proper installation and for possible development of cracks on a routine basis. Wheels should especially be inspected after any type of vehicle service involving removing the wheels from the vehicles.

R-002 wheels are identified as being stamped with the letters OTR and the numbers 10813 on the face of the wheel around the wheel stud holes.

R-083O wheels are identified as being stamped with the letters OTR and the numbers 10808 on the face of the wheel around the wheel stud holes.

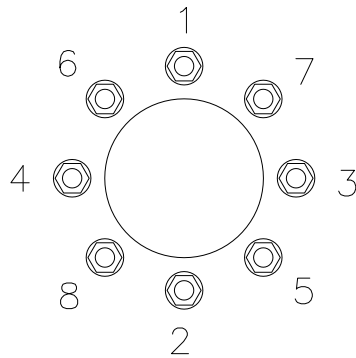
Following are the recommended measures to avoid wheel cracking:

1. When mounting the wheels, ensure that the mounting faces of the wheel, the hub, the spacer (if applicable), the wheel nuts, and the studs are clean and free from any dirt, rust, paint build up, or other residue, etc. Any of these can lead to wheel nuts loosening when these contaminants “squeeze out” from the contacting faces.
2. Ensure the wheel nuts are tightened in stages to the correct dry torque value (below) according to the correct tightening sequence (below) using a good, recently calibrated torque wrench. **DO NOT USE AIR TOOLS** to tighten wheel nuts. **DO NOT USE ANTI-SEIZE OR LUBRICANT** on wheel nuts, studs or mounting faces. If the correct tightening sequence is not used, the wheel could be misaligned on the hub causing it to wobble, the wheel nuts to come loose, or the wheel to crack. If the wheel nuts are not tightened to the correct torque value, the wheel nuts could come loose, leading to wheels cracking or separating from the vehicle.
3. Never over-tighten wheel nuts. Wheel studs which have been subjected to over-tightening could break leading to wheels separating from the vehicle. If any wheel nuts have been over-tightened, remove and replace all affected wheel nuts and wheel studs with new components as per the Rafna Operation, Service and Parts manual. Do not purchase aftermarket replacement parts as they may not meet the design specifications.
4. Never operate a vehicle with vibrations caused by imbalanced and / or out-of-round tires and wheels. Imbalance and out-of-round can cause undue cyclic loading of the wheels, which could cause the wheels to develop cracks leading to wheels separating from the

vehicle. There are several causes for wheel imbalance and out-of-round such as loss of wheel balance weights, inconsistent tire pressure, dirt accumulations, defective tires, bent wheels, etc. Ensure that the tires and wheels are clean, balanced, and round. They should not cause any vehicle vibrations.

5. Never operate the vehicle if the Gross Vehicle Weight Rating (GVWR), Gross Axle Weight Rating Front or Rear (GAWR), or the wheel or tire load ratings are exceeded. Over loading the vehicle, the axles, the tires, and / or the wheels could lead to catastrophic failure of any of the components including cracking and separation of the wheels from the vehicle.
6. Wheel nuts must be rechecked for correct torque value following the first 62 Miles (100km) after the wheels are installed or re-installed following a wheel service. The wheel nuts must also be rechecked for correct torque value every week. During the weekly wheel nut inspection, the wheels should also be inspected for cleanliness, presence of all balance weights, correct tire pressure, and development of cracks.

WHEEL NUT TIGHTENING SEQUENCE



WHEEL NUT TORQUE VALUES

R-002 (10813) WHEEL = 140 FT-LBS
R-0830 (10808) WHEEL = 165 FT-LBS