RP 732
Trailer Rear Impact Guard Repair Guidelines

PREFACE

The following Recommended Practice is subject to the Disclaimer at the front of TMC's Recommended Maintenance Practices Manual. Users are urged to read the Disclaimer before considering adoption of any portion of this Recommended Practice.

This Recommended Practice (RP) serves as a guide for the proper inspection and repair of trailer rear impact guards – often referred to as underride guards or I.C.C. bumpers- provided on trailers produced after January 26, 1998. We will refer to them in this RP as "RIGs." The scope of this RP encompasses intermodal chassis, van, reefer and flatbed trailers, but excludes units with work-performing equipment and other exemptions under Federal Motor Vehicle Safety Standard (FMVSS) 224 and/or Canadian Motor Vehicle Safety Standard (CMVSS) 224.

NOTE: Equipment users must consult with individual trailer/equipment manufacturers to see if the guidelines established in this RP are applicable to their specific product.

BACKGROUND

FMVSS 223 and 224 and/or CMVSS 223 and 224 regulate the strength, location, energy absorption requirements, and dimensions of RIGs. The rules also describe in detail the type and manner of testing required to ensure that RIGs comply with these standards. The RIG designs must meet the testing requirements and conform to the dimensions shown in Figure 1.

The rules (included in the FMVSS document) also require a certification label to be located on the forward-facing surface of the horizontal member of the RIG and located within 12 inches of the outside of the horizontal member on the curbside. Some manufacturers attach a certification plate with rivets to meet this requirement, others install a decal for the same purpose. This label must give the name and address of the RIG manufacturer, month and year of RIG manufacture and the letters "DOT." According to the rules (FMVSS 223 and 224), the letters "DOT" constitute certification by the RIG manufacturer that the RIG conforms to ***all*** requirements contained in the (FMVSS 223 and 224) rules.

NOTE: FMCSR 393.86, adopted on October 1, 1999 and amended in 2002, requires that trailers manufactured after January 26, 1998 must be equipped with a RIG that meets the requirements of FMVSS standard no. 223 in effect at the time the vehicle was manufactured, and that when the RIG is installed on a trailer, This has been interpreted to require equipment users to regularly inspect RIGs and to maintain them so that they meet the requirements of FMVSS standard nos. 223 and 224 that were in effect at the time the trailer was manufactured. . This, in part, means that RIGs on trailers manufactured after January 26, 1998, must conform to the dimensions given in Figure 1.

INSPECTION GUIDELINES

RIGs should be regularly inspected for the following:

- cracked welds
- cracked or fractured vertical members, including any additional bracing added by the manufacturer, such as diagonal struts running from the center of the horizontal member to the vertical supports
- cracked or loose fasteners joining the RIG members together
- cracked or loose fasteners attaching the RIG to the trailer sill
- bends in any member
- corrosion/rust in any RIG member and the trailer sill
- cuts, punctures, and tears in any member
- proper attachment to the trailer sill
- rear cross members
- rear trailer sill and at least the last six feet of the floor
- and for dimensional and overall structural integrity.

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REPAIR GUIDELINES

Comomon Types of Damage: Industry surveys of damaged RIGs indicate that damage falls into a few distinct categories. A common type of damage is a vertical bend in the horizontal member of the RIG, shown in Fig. 2. Recent testing by the Insurance Institute for Highway Safety (IIHS)suggests that this type of damage can be brought back to the original position; thereby conforming to the dimensional requirements (by cold bending), without adversely affecting the performance of the RIG, providing that the upright members have not been distorted or compromised. In some instances, the ends of the horizontal member are bent upward or downward (see Figure 4) or toward the front of the trailer (see Figure 5). Sometimes the middle of the horizontal member is bent toward the front of the trailer (see Figure 6). Additionally, in some instances there may be accompanying damage to the cross members at the rear of the trailer. At times, there is no damage to any RIG member, but the entire RIG is canted inward to the front of the trailer (see Figure 7). And of course, other types of damage or wear occur from time to time.

Repair Recommendations:

Some studies indicate that bending, patching, or other repairs of damaged RIG parts may be sufficient in certain circumstances. Unfortunately, however, because each repair requires a case by case analysis, there is no way to be sure that any particular repair is sufficient. Therefore, because of the critical nature of the RIG as a safety feature of trailer vehicles, and the rigorous dimensional and testing requirements of FMVSS and/or CMVSS standard nos. 223 and 224, it is recommended that **any** discrepancies noted through the above recommended inspection procedure should be corrected as follows:

- Cracked welds must be repaired as soon as discovered
- Any rust, cuts, punctures, tears, excessive wear, corrosion, or rust, or other damage to any RIG component, including any bent RIG component, requires that the RIG component be discarded and replaced with a replacement RIG component approved by the RIG manufacturer.

- Any damage to the trailer sill, the rear six feet of floor, or any rear cross members must be repaired, according to the Trailer manufacturer's specifications and instructions.
- Cracked or loose fasteners joining the RIG members together or attaching the RIG to the trailer sill must be removed and replaced with replacement fasteners approved by the RIG manufacturer and must be installed according to the RIG manufacturer's specifications and instructions.
- Any deficiency in the dimensional or overall structural integrity of a RIG requires that the entire RIG system be discarded and replaced with a RIG system approved by the RIG manufacturer and must be installed according to the original RIG manufacturer's specifications and instructions. In many instances the RIG has been designed using multiple subassemblies which are capable of being replaced as individual components. With such designs it is permissible to replace these individual components as defined by the RIG manufacturer.
- All repairs must be performed in a manner that will result in the RIG and trailer meeting the requirements of FMVSS and/or CMVSS standard nos. 223 and 224 – that is, the RIG unit and attachment to the trailer sill must meet the FMVSS and /or CMVSS requirements in effect at the time the trailer was manufactured.
- Consult the RIG manufacturer for replacement part and installation instructions and specifications.
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CERTIFICATION LABEL

A new DOT certification label must be installed on any new RIG operating in the USA. These labels are to reflect the date of original manufacture of the unit (additional labeling may be required by the OEM in order to identify any replacement as such). Consult the manufacturer of the replacement RIG to obtain replacement labels. The original DOT certification label from the damaged RIG may be removed and installed on the replacement ~~new~~ RIG ***ONLY*** if the above guidelines have been followed.