

## Preventive Maintenance for FEPP 6x6 Suspension Torque Rods

*Roscommon Equipment Center*  
 Northeast Forest Fire Supervisors  
*in Cooperation with*  
 Michigan's Forest Fire Experiment Station

The torque rod assemblies keep the rear axles in their proper orientation. If one of these assemblies fails it can allow the axle to move out of position potentially allowing the spring to slide out of its retainer on the axle. This immobilizes the unit and makes for a very difficult field repair.

This can usually be avoided with regular inspections of the torque rod assemblies. Rod ends that show signs of failure can be easily replaced in a repair shop setting.

A torque rod assembly consists of the torque rod with two rod ends pressed into the "eyes" on the ends of the rod (Figures 1 and 2).



**Figure 1.** The torque rod assemblies for 2-1/2 and 5 ton 6x6's are very similar. Some of the rods are round from eye to eye (as above) and on some, the shaft between the eyes has an "I-beam" cross section.

The integrity of the unit can be determined by a visual inspection of the rod ends for signs of rubber deterioration or separation from the outer steel sleeve or inner ball joint.

There are six torque rod assemblies with 12 rod ends on each 6x6. Torque rod assemblies are different on 2-1/2 ton and 5 ton units, but they are in the same locations and the inspection method is the same. Two torque rods are attached above the axle on the right side of the frame (Figure 3). The remaining four torque rod assemblies, two on each

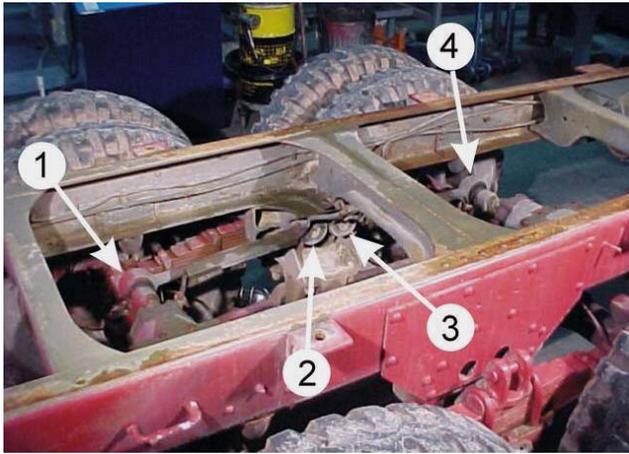


**Figure 2.** The rod end is a ball joint encased in rubber with a steel outer sleeve. The rod end is pressed into the eye of the rod. The photos above are of a new rod end.

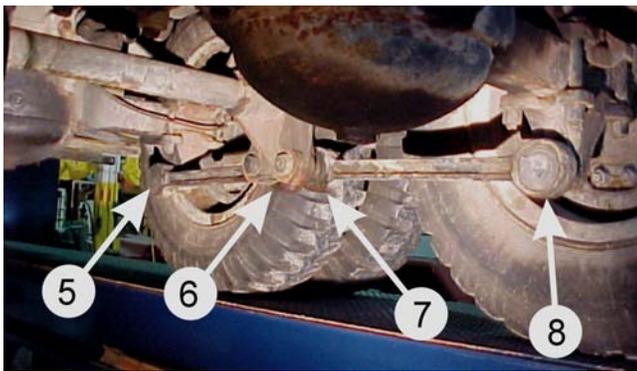
side of the vehicle, are attached below the axles (Figures 4 and 5).

One end of each rod is attached to brackets at the center point between the two rear axles. The other end attaches to either the front/rear or rear/rear axle.

Figures 6-12 depict a number of examples of rod ends that are either still usable or in need of replacement.



**Figure 3.** The two upper torque rod assemblies (four rod ends) may be inspected from below the unit. However, for photographic purposes, the water tank was removed from this unit.



**Figure 4.** Two lower torque rod assemblies are located on each side of the vehicle. Four rod ends on each side should be inspected.



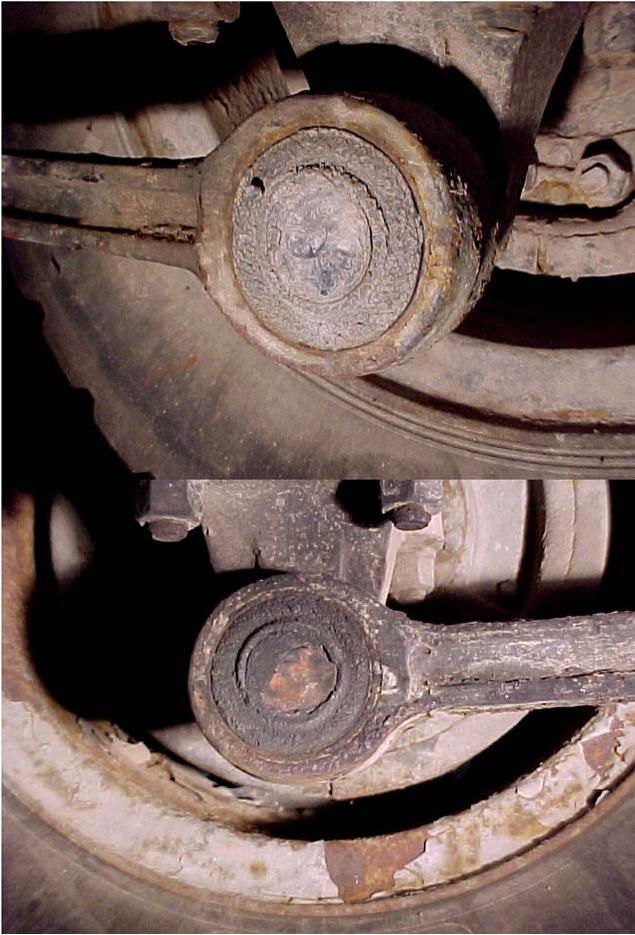
**Figure 5.** The center two lower rod ends may be easily seen by standing next to the unit and looking between the rear duals.



**Figure 6.** These rod ends have been in service for five to six years. The rubber is still in excellent condition.



**Figure 7.** When you inspect the rod ends, always check both the outer and inner sides of them. The rubber of this rod end shows signs of weathering, but no separation from the metal sleeve or ball joint.



**Figure 8.** The above photos show rod ends that are starting to show some signs of deterioration. However, they would still be considered to be in usable condition. Notice the rubber peeling off the end of the inner ball joint. This is not an indication of a major problem.



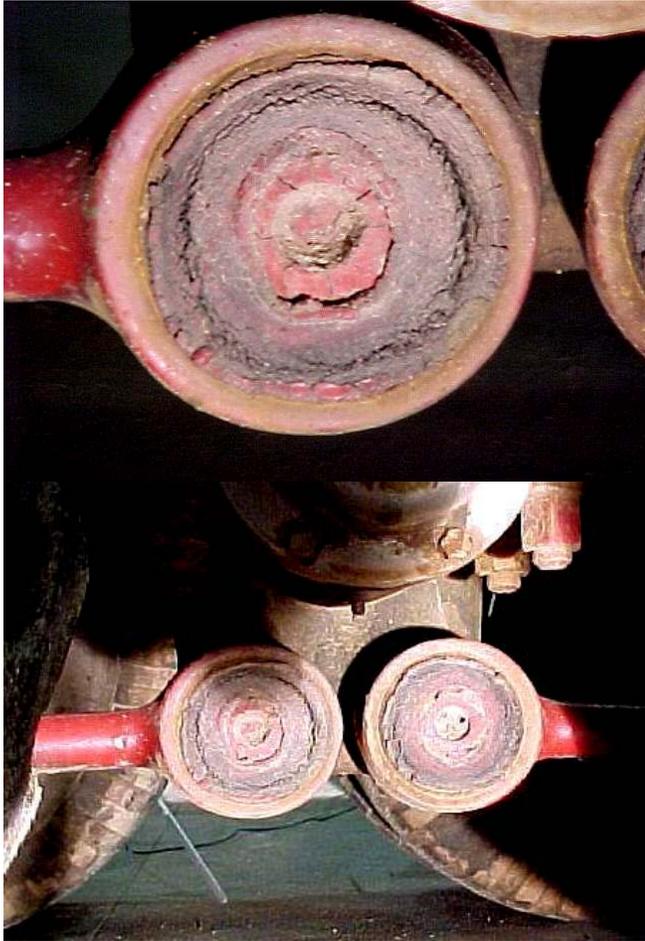
**Figure 9.** The outer metal sleeve has completely separated from the rubber on both of the above rod ends, allowing the torque rods to slide against the frame.



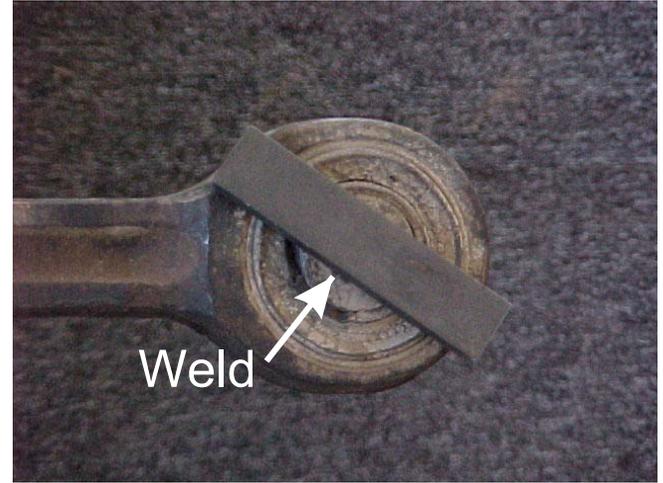
**Figure 10.** The rubber on the above rod end is beginning to separate from the ball joint. These rod ends should be replaced.



**Figure 11.** This is an example of the rubber separating from the outer metal sleeve of the ball joint. This rod end should be replaced.



**Figure 12.** The rubber itself may also fail. As the rubber deteriorates, the rotational forces can shear the rubber between the metal sleeve and the ball joint as shown above.



**Figure 13.** When a rod end gets to the point of certain failure, it is possible to place a piece of metal bar stock over the eye of the torque rod and weld it to the end of the ball joint. This will help prevent the torque rod from sliding off the ball joint. **Caution: This should only be used as an emergency repair to get the unit to a repair facility.** The heat from welding will seriously degrade the rubber, causing premature failure of otherwise serviceable rod ends. The added metal also restricts the ball joints' movement within the torque rod eye, which may cause additional problems.

Since this type of suspension is used on some commercial vehicles, replacement rod ends and torque rod assemblies can be purchased through truck equipment dealers or service centers. However, make sure the center to center distance between the ball joints of any replacement torque rod assembly is the same as the original.

If a company that specializes in military equipment is preferred, one source for replacement parts is Memphis Equipment.

Memphis Equipment  
 766 South Third Street  
 Memphis, TN 38106  
 Telephone: (901) 774-0600  
 Fax: (901) 946-1919

[www.memphisequipment.com/](http://www.memphisequipment.com/)