

FIFTH WHEELS

SERVICE BULLETIN



Fifth Wheel and Upper Coupler Connections

July 9, 1997

Fifth wheels and upper couplers are a system that work together and both must be designed to ensure an even distribution of the trailer's vertical load between the two surfaces. Upper coupler designs utilizing thinner, high-strength materials in combination with smaller and more widely spaced support structures may increase upper coupler deflection. Increased deflections in the upper coupler (see **FIGURES 3, 4 and 5**) can lead to fifth wheel center loading, premature upper coupler wear, and difficult release handle operation.

"CENTER-LOADING"

A Holland fifth wheel is designed to carry its load over the machined surfaces of the fifth wheel top plate. The center section of the fifth wheel is purposely recessed to prevent it from carrying any vertical load (see **FIGURE 2**). A "bowed" upper coupler can cause the vertical load to be concentrated in the center of the fifth wheel (see **FIGURE 3**). "Center-loading" causes the fifth wheel to act like a beam, flexing up and down over every bump and ripple in the road. This continuous flexing can lead to top plate cracking.

Identification: Center-loading can often be identified by shiny spots in the recessed area of the top plate and in the mating area on the upper coupler. Additionally, a straight edge placed across the fifth wheel or upper coupler may reveal inadequate contact area due to deflections on the mating surfaces.

FIGURE 2

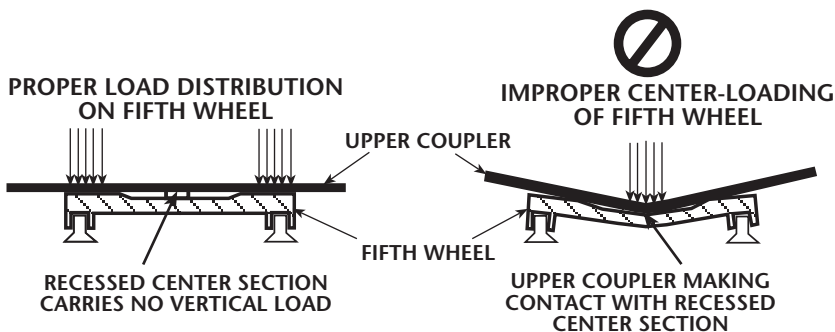


FIGURE 1

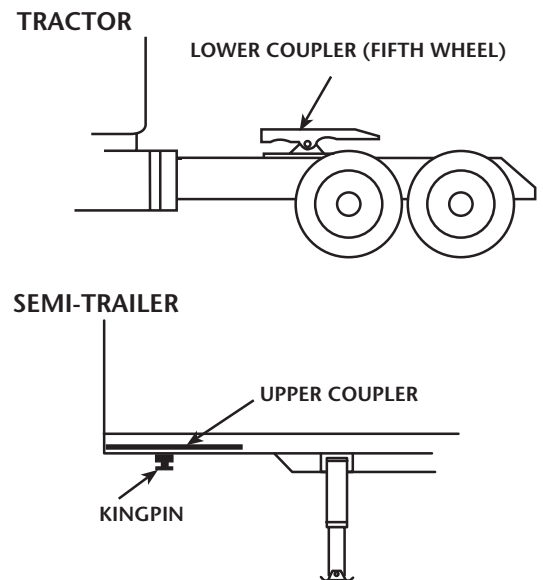
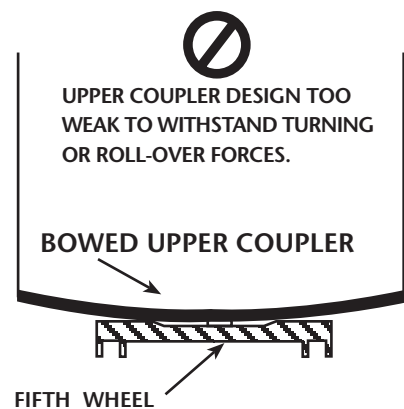


FIGURE 3



PREMATURE WEAR/UPPER COUPLER FAILURE

A wavy upper coupler or severely distorted fifth wheel can result in inadequate surface contact (see **FIGURE 4**). Inadequate contact dramatically increases surface pressures, pushing (scraping) grease out of the way and leading to bare steel-on-steel contact. This will cause galling, premature wear, and potential failure as the fifth wheel will begin to wear through the upper coupler.

Identification: Severe wear areas, galling, and/or dry spots in either the upper coupler or fifth wheel.

DIFFICULT RELEASE HANDLE OPERATION

Heavy loading and inadequate upper coupler strength can cause the upper coupler to “bow”, pulling the kingpin upward when the trailer weight is resting on the fifth wheel (see **FIGURE 5**). The release handle will be difficult to pull because the kingpin is pulling up on the fifth wheel locks.

Identification: The release handle is easy to pull when weight is removed from the fifth wheel top plate, but difficult to pull when there is a load on the upper coupler and fifth wheel. This condition may not be detected by using a straight edge because the upper coupler may be straight when unloaded, but deflect severely under load.

PREVENTIVE MEASURES

These conditions can be eliminated by taking the following preventive measures:

1. Specify trailer upper couplers and bracing which are appropriate for the trailer application.
Please note that the allowable limits for upper coupler plate bowing provided in SAE recommended practice J700b are **maximum** allowable deflections on worn, in-service units before repairs are required. New upper couplers should be designed to withstand normal loading with minimal deflection and should **NOT** be designed to deflect to the SAE limits. (Refer to Holland Service Bulletin XL-SB20 for additional information on upper coupler specifications.)
2. Use fifth wheel greases with EP (extreme pressure) characteristics.
3. Conduct regular inspections and repairs of upper couplers and fifth wheels which exhibit any of these problems. A good guideline for these inspections can be found in the Holland publication “How to Get the Most From Your Holland Fifth Wheel” and is available from any Holland warehouse distributor.

FIGURE 4

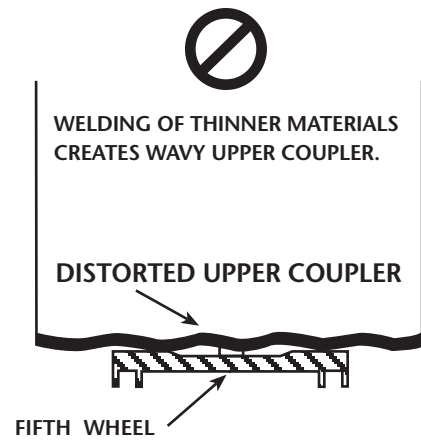
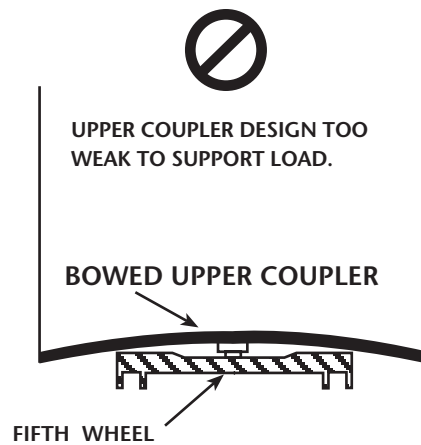


FIGURE 5



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