Recommended Practice

RP 603C **VMRS 059-001**

FIFTH WHEEL MOUNTING—AFTERMARKET

PREFACE

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

PURPOSE

This Recommended Practice (RP) is designed to assist with the installation of heavy-duty aftermarket stationary and sliding fifth wheels. Application must be within legal axle weight limitations and fifth wheel manufacturers' capacity ratings.

SCOPE

This RP gives acceptable mounting methods and lists minimum guidelines which conform to Federal Motor Carrier Safety Regulation 393.70 (49 CFR 393.70).

GENERAL RECOMMENDATIONS FOR ANY MOUNTING STYLE

1. Mounting angle irons shall be ASTM-A36 carbon steel, or equal, and have a minimum leg thickness of 5/16 inch when mounting a fifth wheel having a vertical capacity of 45,000 lbs. For fifth wheels with a greater vertical capacity of 45,000 lbs., refer to the fifth wheel manufacturer's mounting instructions.
2. On over-the-frame installations, the angles must have a minimum horizontal leg of four inches and a minimum vertical leg of 3-1/2 inches. (See **Fig. 1**.)

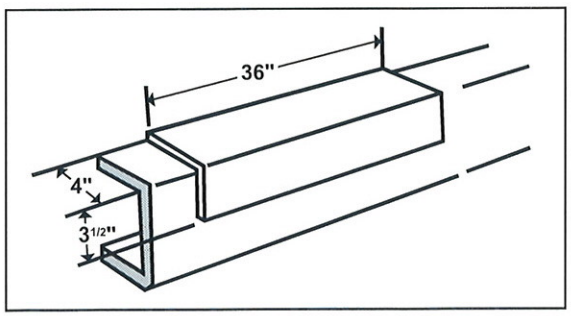

Fig. 1

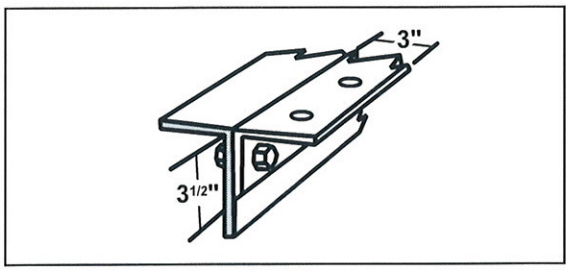

Fig. 2

3. Outboard angle iron installations require angles with a minimum vertical leg of 3-1/2 inches and a minimum horizontal leg of three inches. Longer horizontal legs may be required with narrow frame widths to ensure sufficient material around the mounting bolts. (See **Fig. 2.**)
4. Some applications, whether over-the-frame or outboard mounts, require angles with vertical legs longer than 3-1/2 inches to match chassis bolt holes and/or to pick up the center bogie mounting bolts.
5. In all mounting styles, the angle length should not be less than 36 inches unless specifically approved by the fifth wheel manufacturer.
6. When the fifth wheel is properly installed, the fifth wheel pivot point must always be positioned on or ahead of the tractor rear axle or bogie centerline. (See **Fig. 3**.) For assistance in determining the proper fifth wheel location, contact the tractor manufacturer. In all cases, the location must be in compliance with DOT regulations.

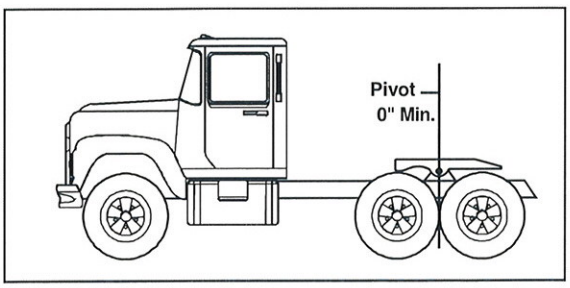

Fig. 3

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7. Position the mounting angles on the frame, aligning the pivot position. Mark the angles for any cutouts or holes required for spring hangers, etc. If offset spring hangers are used, the cutouts can be eliminated by sliding the angle behind the spring hanger and the frame rail. (See Fig. 4.)

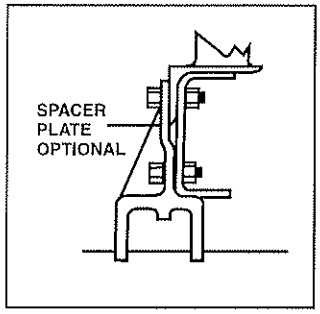


Fig. 4

8. The corners of all cutouts should have a minimum radius of one inch and all cut edges should be ground smooth.
9. When positioning over-the-frame mountings for bolt holes, the full length of the angle must fit tight with the frame rail on top and be tight against the frame rail side surfaces.
10. After making all cutouts and completing all hole drilling, chamfer or deburr all sharp edges and corners on the mounting angles. If this is not done, point loading can lead to frame cracking.
11. A minimum of five bolts must be used to attach each mounting angle to the frame rail. The distance between bolts should not exceed eight inches except when cutouts are required. The angle mounting bolts must be a minimum of 5/8 inch diameter Grade 8 (16 mm Grade 10.9) with Grade C lock nuts (or Grade 10.9 Huckbolts®) with hardened steel washers under the bolt heads and lock nuts. See Appendix A for additional fastener information. The bolts must be located one inch up from the bottom of the angle (measure from the center of the bolt holes). Whenever a cutout is made, the bolts should be placed on both sides of the cutout such that they are within 1-1/2 inches, but not closer than one inch from the edge of the cutout.
12. Tighten all bolts to the bolt manufacturer's recommended torque values, or inspect Huckbolt® fasteners per manufacturer data.
13. When welding is required to mount the fifth wheel, take adequate precautions not to damage the tractor frame and electrical systems. Welding to the tractor frame is not recommended.
14. When welding, use a low hydrogen process and AWS E70, or reference ANSI/AWS D1-1-90 Structural Welding Code class filler metal. Always use a procedure which ensures a sound, good quality weld and one which protects the operator and others. Over-welding may cause distortion and under-welding may not develop sufficient strength. All welding must be done by a qualified welder (Ref. ASTM A-488).
15. When mounting the fifth wheel to an aluminum frame, additional procedures may be required. Consult the tractor manufacturer and the fifth wheel supplier for recommendations.
16. Lubricate all moving parts per the fifth wheel manufacturer's recommendations.

SPECIFIC RECOMMENDATIONS FOR STATIONARY FIFTH WHEELS

Angle Mount

Review and follow the section entitled GENERAL RECOMMENDATIONS FOR ANY MOUNTING STYLE, above.

1. The mounting angle should extend a minimum of 18 inches forward and not less than 12 inches to the rear of the pivot point. The minimum angle length is 36 inches. (See **Fig. 5**.)
2. If brackets with over-the-frame mounting angles are used, they must be fabricated to match the tractor frame width.

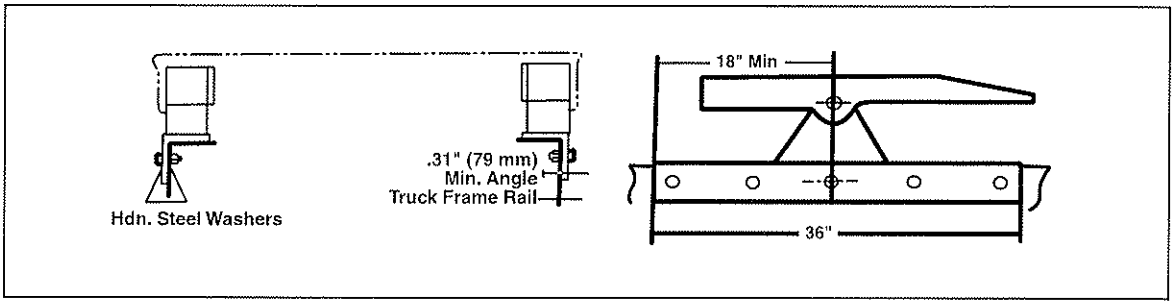


Fig. 5

Frame Mount

Review and follow the section entitled "GENERAL RECOMMENDATIONS FOR ANY MOUNTING STYLE," above.

1. The mounting angle should extend a minimum of 18 inches forward and not less than 12 inches to the rear of the pivot point. Remember that the minimum angle length is 36 inches unless specifically approved by the fifth wheel manufacturer.
2. Attach outboard mounting angles having dimensions of 3 x 3-1/2 x 5/16 inches minimum, with the top surface of the mounting angles flush with the top of the frame.
3. Each support bracket must be attached with the number of bolts recommended by the fifth wheel manufacturer. (See **Fig. 6.**)
4. A spacer that is the same thickness as the tractor frame must be used between the mounting bracket and inboard mounting angle iron. See **Fig. 6.**

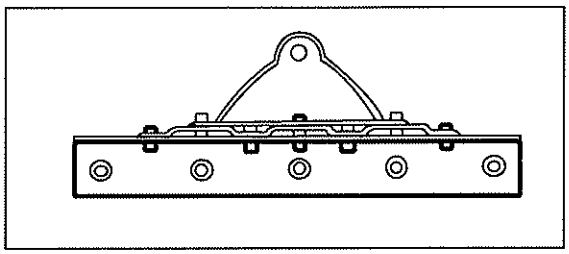


Fig. 6

5. Each support bracket must be attached with the number of bolts recommended by the fifth wheel manufacturer. (See **Fig. 7.**)

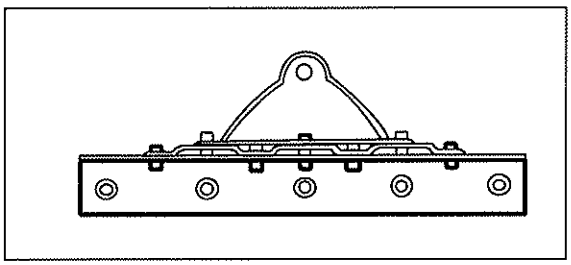


Fig. 7

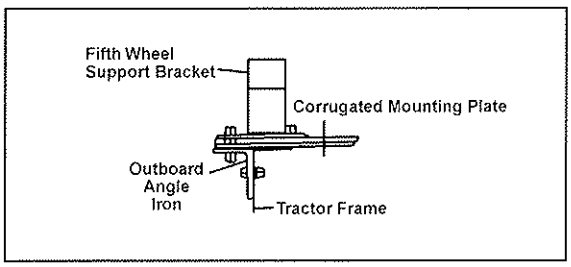


Fig. 8

Plate Mount

Review and follow the section entitled GENERAL RECOMMENDATIONS FOR ANY MOUNTING STYLE, above.

1. These mounting instructions are intended to be used with either a corrugated or flat mounting plate having a minimum thickness of 5/16 inch. (See **Figs. 7 and 8.**)
2. The corrugated mounting plate should be attached to the outboard mounting angle with a minimum of four (4) 3/4 inch Grade 8 (16 mm Grade 10.9) bolts on each bracket. (See **Fig. 7.**)
3. When mounting the flat plate, follow the same recommendations for installing the corrugated plate mount.

SPECIFIC RECOMMENDATIONS FOR SLIDING FIFTH WHEELS

Inboard Mounts

Review and follow the section entitled GENERAL RECOMMENDATIONS FOR ANY MOUNTING STYLE, above.

1. The mounting angle should be at least one inch longer on each side of the base slide plate and have a minimum length of 36 inches. (See **Fig. 9**).
2. The mounting angles must be located on the tractor frame such that when the fifth wheel is moved to the rear-most position, the fifth wheel pivot is located on or in front of the rear axle or bogie centerline. (See **Fig. 3.**)
3. The full length of the mounting angles must seat tightly on the vertical and horizontal surfaces of the tractor frame. (See **Fig. 9**).
4. Slide the sub-assembly to the rear-most position and engage the locking mechanism in the last position of the slide base plate.
5. Bolt on and/or weld on rear stops, making sure that the weld does not interfere with the proper

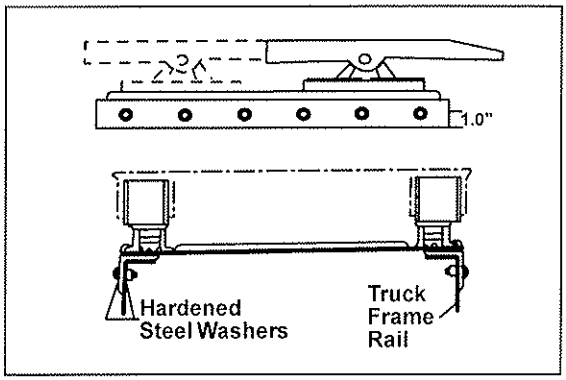


Fig. 9

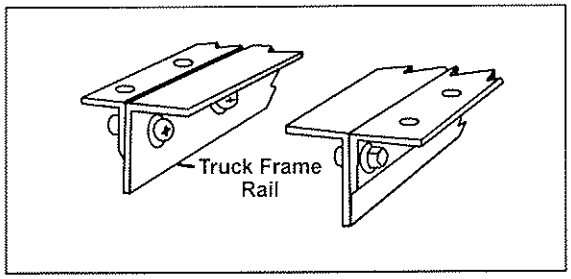


Fig. 10

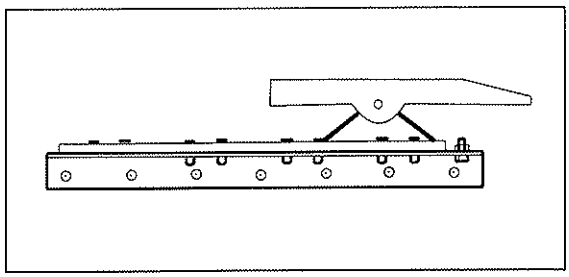


Fig. 11

operation of the slide bracket in the rear-most position.

Outboard Mounts

Review and follow the section entitled GENERAL RECOMMENDATIONS FOR ANY MOUNTING STYLE, above.

1. Prepare the outboard angles for installation by making the required cutouts and drilling required holes.
2. Clamp the vertical leg of outboard angles to the tractor frame. The top of the outboard angle horizontal leg should be flush with the top of the tractor frame. (See **Fig. 10**.)
3. Attach the slide base plate to the outboard angles using 5/8 inch Grade 8 bolts, hardened steel washers, and Grade C lock nuts in all slide plate holes. Tighten all bolts to the manufacturer's torque specifications. (See **Fig. 11**.)

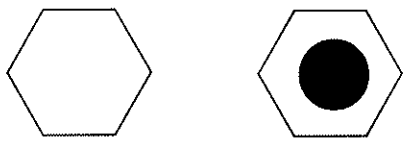
AIR SLIDE LOCK RELEASE INSTALLATION

1. If the sliding fifth wheel is equipped with an air activated slide release assembly, it will be necessary to complete the air hookup.
2. Mount the cab control valve in accordance with the instructions provided. It should be readily accessible to the driver, but protected to prevent accidental activation.
3. If a bulkhead fitting is used, a location should be selected which does not interfere with the operation of the slide bracket.
4. After attaching the air line, secure it to prevent damage.
5. After completing the air hookup, check the slider mechanism for proper operation.

APPENDIX A
BOLT MATERIALS

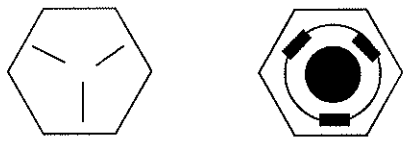
Grade 2 steel

80 ksi



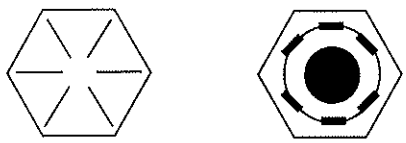
Grade 5 steel

120 ksi



Grade 8 steel

150 ksi



NOTE: When using Huck® fasteners, refer to the manufacturer's manual for proper installation.