

1981

Barber-Bettendorf Swing Motion Truck

The Barber Swing Motion Truck was designed solely for caboose service.

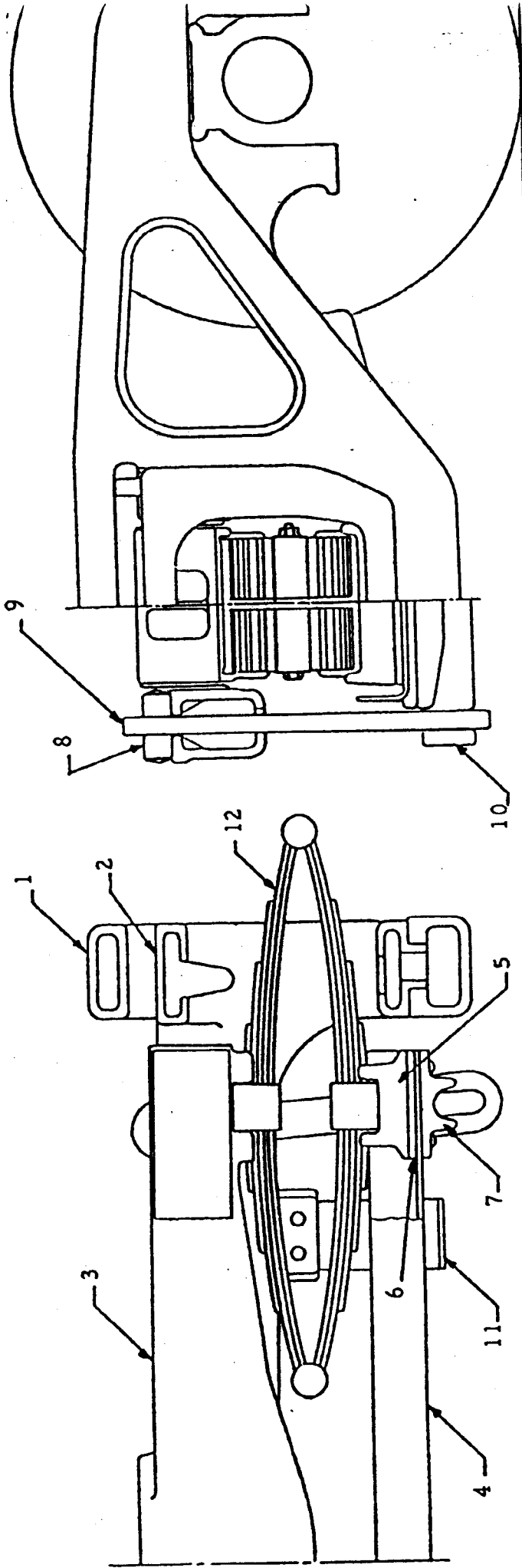
This truck can be provided for use with roller bearings or friction bearings. Present day requirements are for use with roller bearings.

Primary features of this truck are the lateral motion provided by suspending the bolster and elliptic springs from the transom, seven inch spring travel and the resquaring effect attained by the manner in which the transom is assembled into the side frames.

Full elliptic springs provide an efficient damping and cushioning effect.

The simplified design of the Barber Swing Motion Truck makes assembly and maintenance easy to accomplish with a minimum of labor.

RWG:pk



TRUCK NOMENCLATURE

- | | |
|-----------------------|-------------------------------|
| 1. Side Frame | 7. Spring Plank Bearing |
| 2. Transom | 8. Top Pin Bearing |
| 3. Bolster | 9. Swing Hanger |
| 4. Spring Plank | 10. Bottom Bearing |
| 5. Spring Seat | 11. Spring Plank Safety Strap |
| 6. Shim (if Required) | 12. Elliptic Spring |

Suggested Assembly - Roller Bearing Equipped Trucks

Sub-Assembly

Side frames should be prepared with brake beam wear plates.

Apply spring plank safety straps to transom with bolts, lockwashers, and nuts and draw up tightly. Batten threads to prevent nuts from working loose. (If locknuts are used, lockwashers are not required nor is the battering of the threads necessary.)

Assemble spring plank bearings to spring planks.

Assembly

1. Place transom on blocking between rails and obtain a height of 26-1/2 inches from the top surface of the transom to the top of the rail. Blocking should be placed under spring plank safety straps.
2. Place matching side frames alongside ends of transom.
3. Roll wheel and axle sets in to approximate position.
4. Hoist one side frame and move inward over end of transom. The round boss on the underside of the end of the transom should engage the hole provided in the frame. While moving the frame inward, the wheel and axle sets should be positioned so the pedestal openings will slide over the roller bearings. Bearing adaptor castings should be applied at this time.
5. Insert brake beam into wear plate in side frame that is in place.
6. Opposite side frame should be applied the same as in Step 4. (After this operation, blockage under transom can be removed.)
7. The swing hangers should be inserted in place in the slots of transom using the top pins to lock them in place.* Then insert the bottom bar through the slots in the hangers with the notches downward and interlocking with the hanger's eyes.
8. Place pre-assembled spring plank into position interlocked with the swing hanger bottom bar.

9. Drop shims and spring seats on locating bosses projecting up at ends of spring plank.
10. Place elliptic springs on spring seats of spring plank with spring bands properly seated between spring seat guides. Leave spring strapping on during assembly, however, exercise caution so that strapping does not interfere with proper seating of bands in spring seats.
11. Place bolster on top of springs with spring bands properly seated between guides on underside of bolster.
12. Clip bottom rod supports to brake beams and slide bottom rod through supports. Pin truck brake levers and dead lever fulcrum in place and secure pins with cotters provided.

*All transoms cast after November of 1972 have been designed to accept swing hanger top pin wear plates.

Wear plates must be in place prior to inserting swing hangers through slots in transom.

Transoms cast prior to November of 1972 will not accept these top pin wear plates.

Disassembly of Trucks - Roller Type Bearing

To disassemble the Barber-Bettendorf Truck after it has been removed from under the car, the following procedure can be followed:

1. Remove bottom rod support clips from brake beam. (Note: In some cases, the supports are welded to the bottom of the spring blank and do not require removal).
2. Remove pins from truck brake levers and dead lever fulcrum.
3. Lift bolster off the elliptic springs and out of transom.
4. Remove elliptic springs off spring seat and out of transom. (Note: Springs will have to be removed from inside of transom. They cannot be pulled through openings in ends of transom.)
5. Lift spring seats and shims off spring plank and remove.
6. Lift spring plank off bottom bars and out of transom.
7. Remove bottom bar through slots in swing hangers.
8. Lift swing hangers high enough to remove top pins and remove the swing hangers.
9. Place supports under spring plank safety straps. Wood blocking can be used. Blocking should be high enough so transom will be elevated to disengage bosses on bottom of transom ends from mating holes in side frames. This will allow for removal of side frames and brake beams.

Defining Caboose Company

Suggested Procedure for
Assembly of Barber-Bettendorf Swing Motion Caboose Truck
with Plain Bearings

SUB-ASSEMBLY

Side frames should be prepared with brake beam wear plates and journal stops applied as required.

Apply spring plank safety straps to transom with bolts, lock washers and nuts and draw up tightly. Batter threads to prevent nuts from working loose. (If locknuts are used, lockwashers are not required nor is the battering of the threads necessary.)

ASSEMBLY

1. Roll a pair of axle sets into position where assembly is to take place.
2. Place a pair of brake beams (1 with R.H. fulcrum and 1 with L.H. fulcrum) between wheels with the heads facing wheels.
3. Select brake beam with left-hand fulcrum and place right side up with heads on rails and back toward transom.
4. Roll other axle set into position.
5. Select one side frame and insert brake beam wear plates into guideways and dust guards into place.
6. Place side frames adjacent assemblage of parts on track and adjust position of axles so that they are in alignment with opening in back of journal boxes.
7. Carefully inspect journals to make sure there are no marks or scratches on the surface (use fingernail test). Put journal protectors in place.
8. Hoist side frames so as to be at the right height for the axles. (Blocking may be used under journal boxes or at center if desired.)
9. Adjust height of transom so that the side frame can be moved inward on to the end of the transom.
10. Move side frame inward very carefully so as not to injure the axle journals or dust guards until journal boxes are in proper position on the axles.

11. Remove journal protectors.
12. Carefully wipe lining of a pair of bearings clean and give the lining a generous squirt of oil over its length, then place the wedge on top and slide the pair between the axle and the roof of the journal box (side frame will require lifting to do this) and then lower the frame onto the wedges (make sure the wedge is not riding under the wedge stop).
13. Carefully inspect interior of journal box to make sure there is no foreign matter there. If necessary, wipe it out - using regular wiping cloth.
14. Raise brake beams so one end can be inserted into wear plates in side frame which is in place.
15. Transom should now be hoisted into position and inserted into the central opening of the side frame. The round boss on the underside of the end of the transom should engage the hole provided in the frame.
16. Proceed with side frame at opposite side of truck in the same manner but this will require the insertion of the brake beams into the wear plates at the same time continue with bearing and wedges as before.
17. Insert the swing hangers into place in the slots of the transom using the top pins to lock them into place. Then insert the bottom bar through the slots in the hangers with the notches downward and interlocking with the hanger's eyes.
18. Place pre-assembled spring plank into position interlocked with the swing hanger bottom bar.
19. Place elliptic springs on spring seats of spring plank with spring bands properly seated between guides. Leave spring strapping on during assembly.
20. Place bolster on top of springs with spring bands properly seated between guides.
21. Clip the bottom rod guards on the brake beams and slide bottom rod through these guards. Pin truck brake levers and dead lever fulcrum in place and secure the pins with the cotters provided.

22. Attach brake shoes using brake shoe keys provided.
23. Apply lubricator pads according to manufacturer's instructions.
24. Apply journal box lids and dust guard plugs.
25. Check for lateral freedom of swing hanger system.
26. After car body has been placed on trucks and car is standing on good level track, make side bearing adjustment by arranging shims to give 1/4" maximum or 1/8" minimum clearance each side of the car between the roller and the body side bearing.

Disassembly of Trucks with Plain Bearing

To disassemble this truck, the same disassembly procedure as shown under roller bearing trucks can be employed.

The only exception to this would be the care of the plain bearings during disassembly.

MAINTENANCE & REPAIR

The following pages explain how to repair various parts of the Barber Swing Motion Truck. For bolster and side frame casting repairs not shown, refer to Rules 47 and 48 in the Field Manual of the AAR Interchange Rules.

For unit bracket detail dimensions, see Section D - Part I of the AAR Manual of Standards & Recommended Practices.

WEAR PLATE REPLACEMENT

For the trucks that have been furnished with wear plates on both the bolsters and transoms, wear plates should be replaced and new ones applied as shown on Pages 8 and 10. These should be replaced when they have worn to a thickness of 1/8 inch.

On some of the earlier Barber-Bettendorf caboose trucks in service, there exists a condition wherein only the bolsters were furnished with 3/8 inch thick mild steel wear plates. The transoms for this earlier design had wear pads cast integrally. The pads were 3/16 inch high x 5-1/2 inches wide x 12 inches long. When these pads have had approximately 1/8 inch wear at any point on pad face, then they and the bolsters should be repaired as follows:

TRANSOM

1. Grind overall pad surface so it is reasonably true and smooth.
2. Locate and weld 1/4 inch thick hardened steel wear plates as shown on Page 9.

BOLSTER

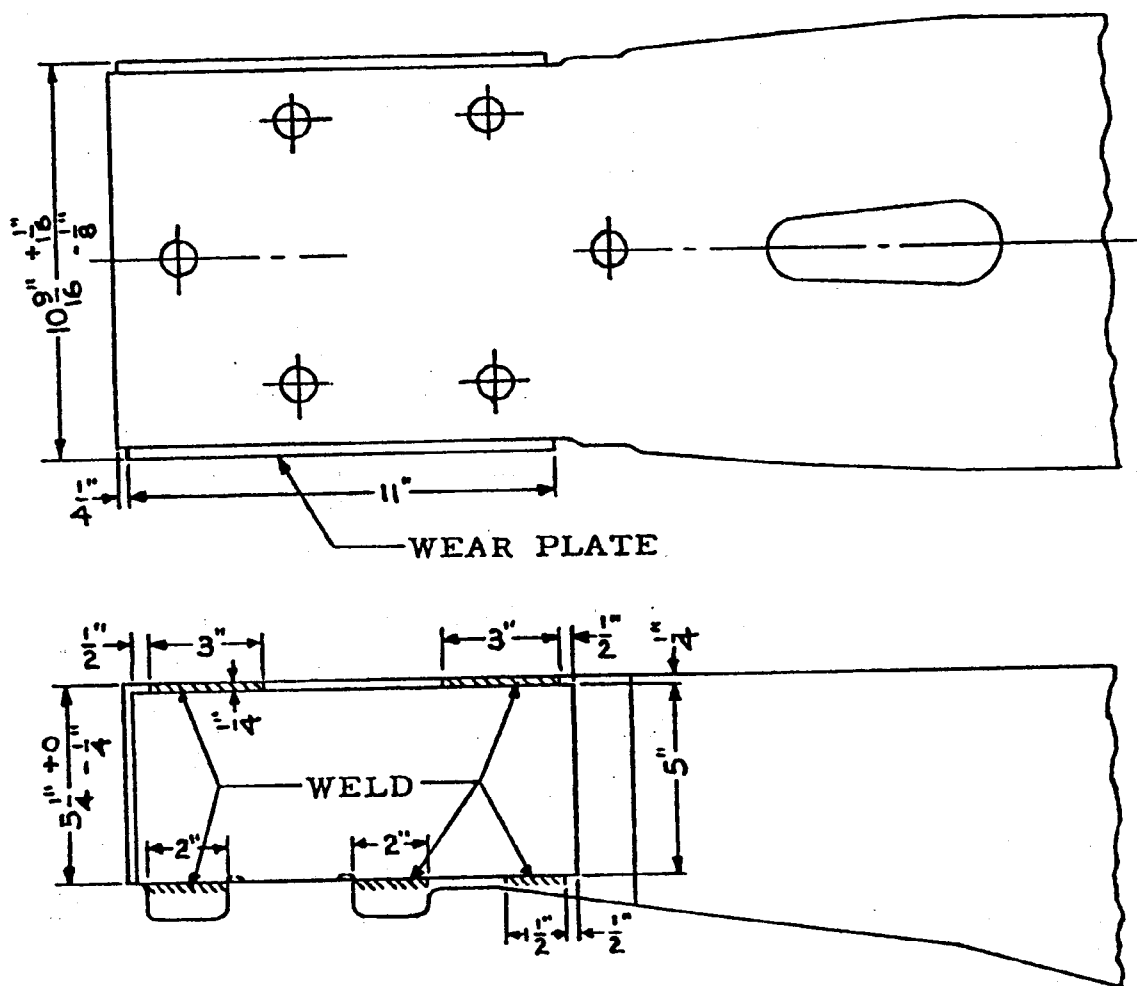
1. Remove worn wear plates from bolster.
2. Locate and apply new 1/4 inch thick wear plates as shown on Page 10.

Care should be exercised so weld fillets do not project past face of wear plates.

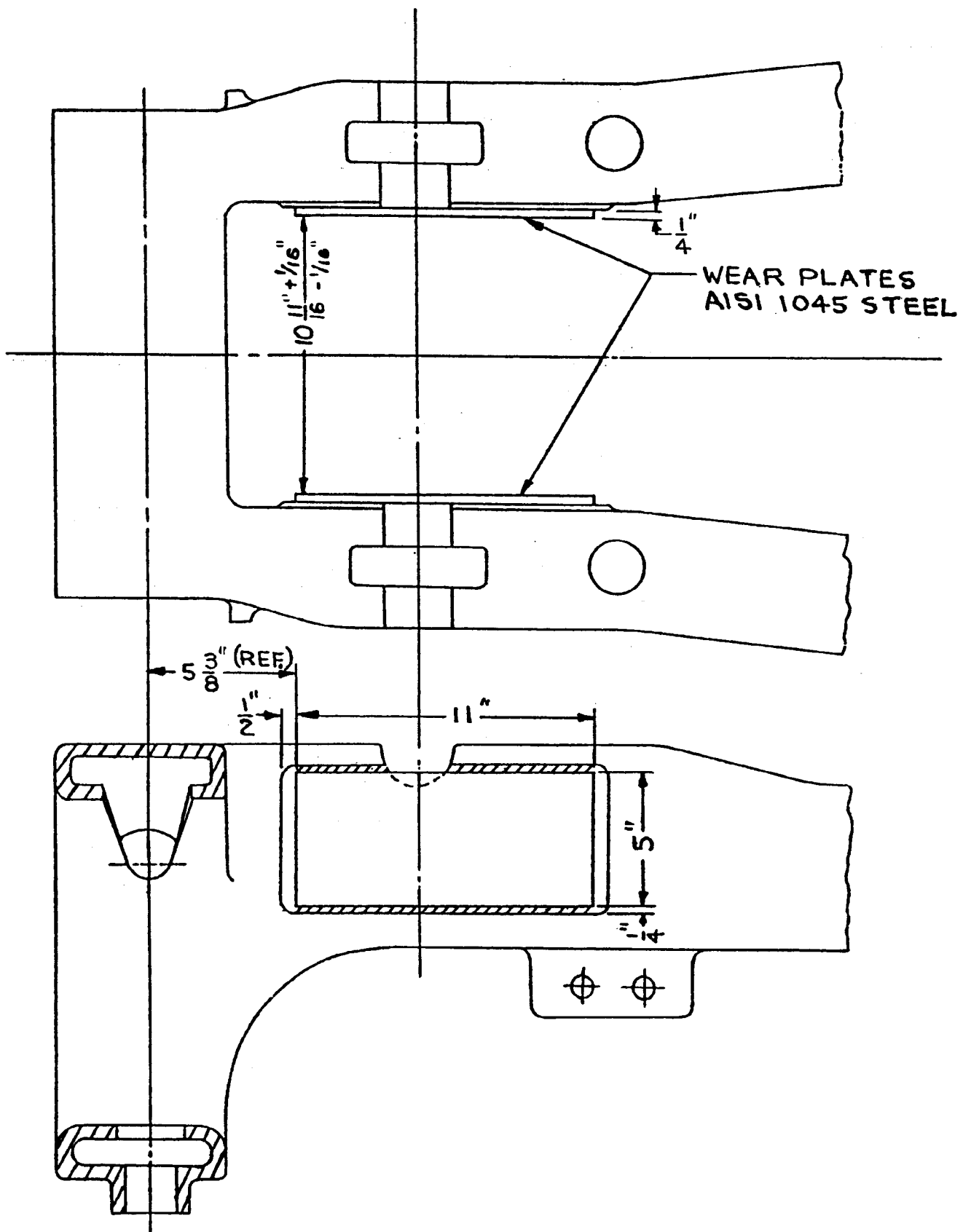
WEAR PLATES

Wear plates are now provided on both the transom and bolster casting to prevent wear of these major castings due to lateral motion of the bolster within the transom.

The plates are of A. I. S. I. 1045 steel and are heat treated. Use A. W. S. E-7016 welding rod to apply plates after ascertaining that the mating surface of the bolster or transom is smooth, flat, and clean.

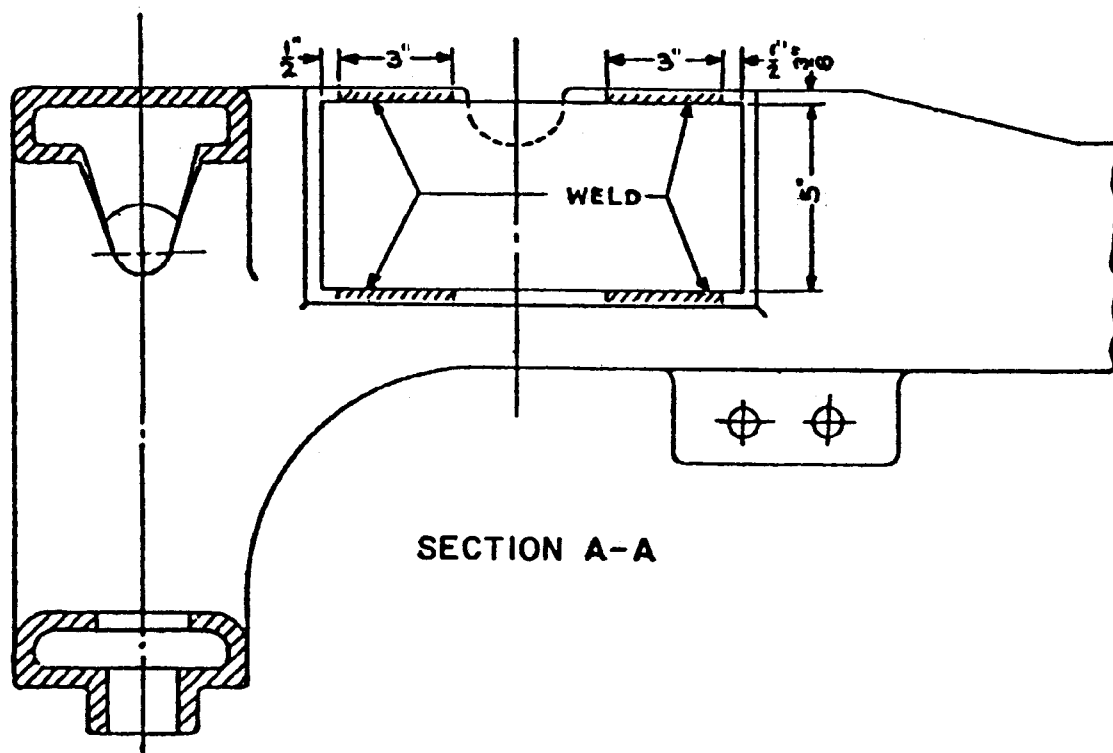
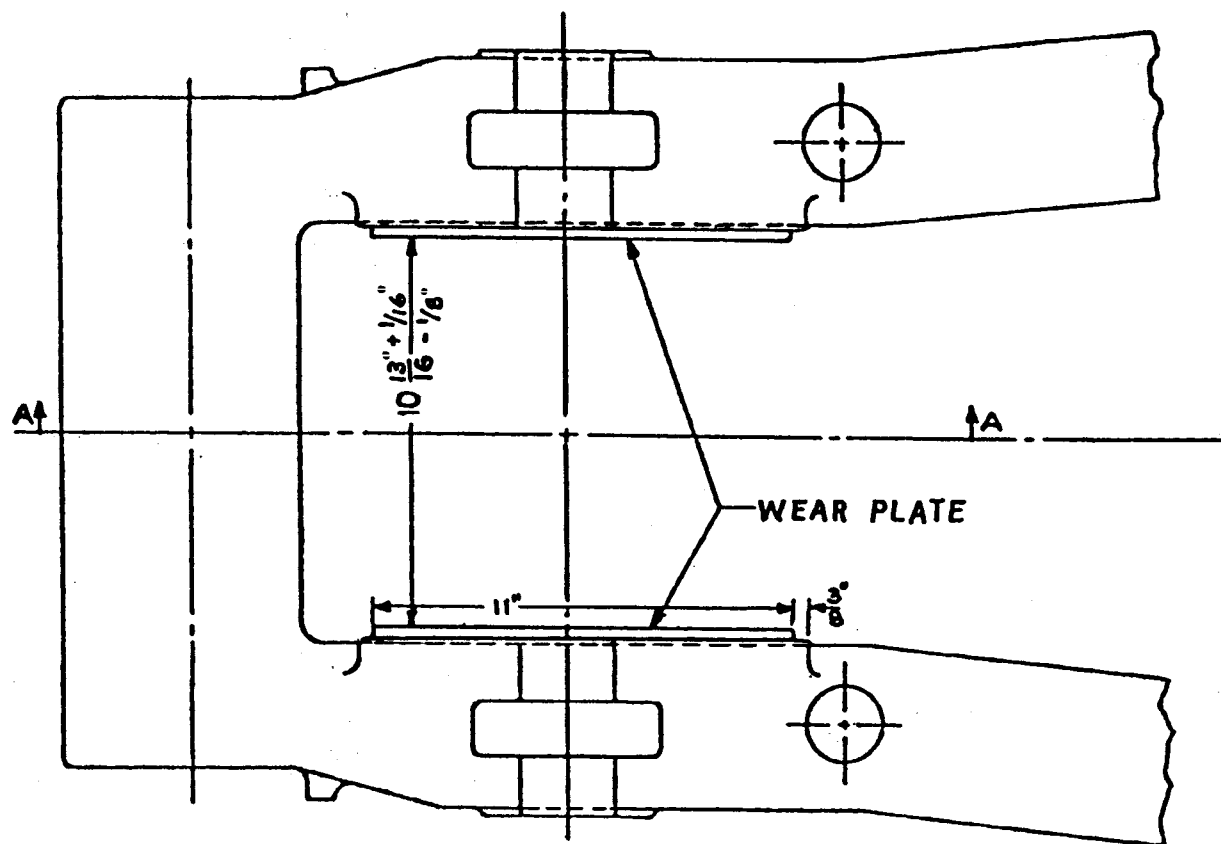


BOLSTER-WEAR PLATE APPLICATION (4 Per Bolster Required)



TRANSOM WEAR-PLATE REPLACEMENT

(four required per transom)

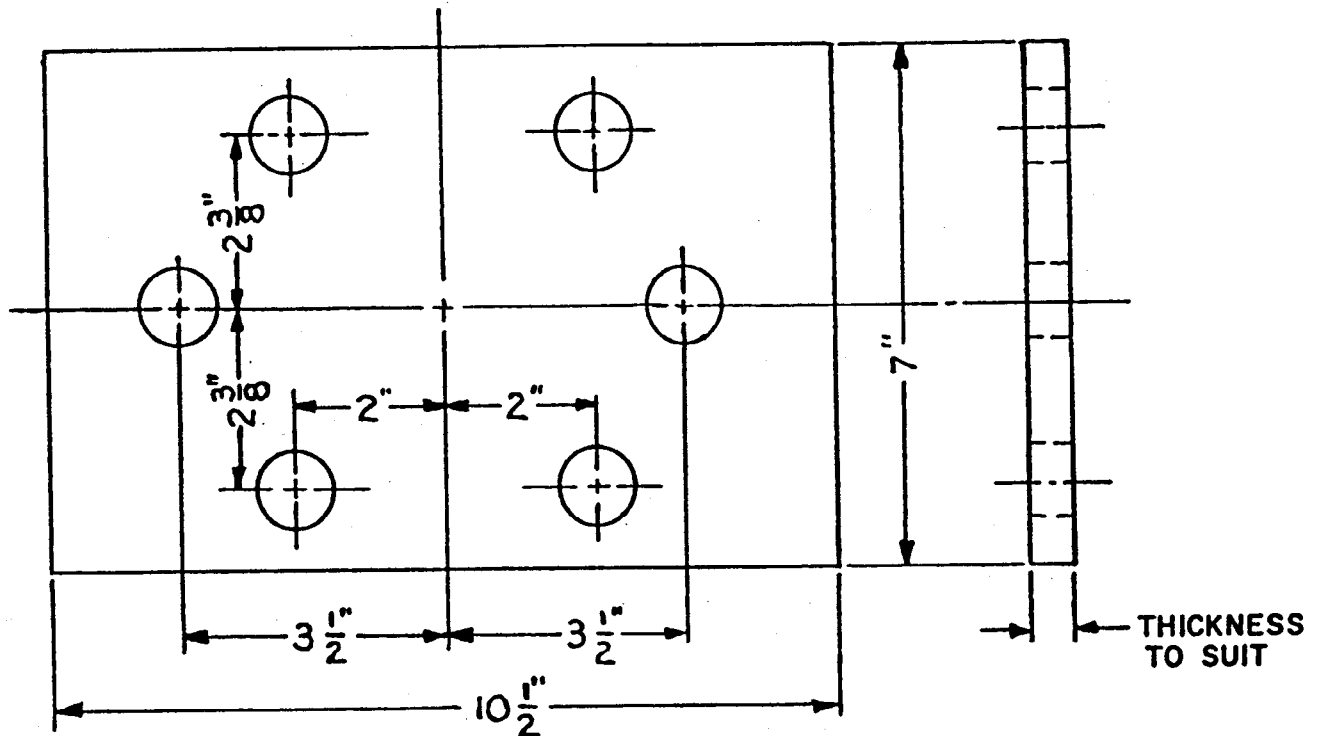


TRANSOM WEAR PLATE APPLICATION
(4 REQUIRED PER TRANSOM)

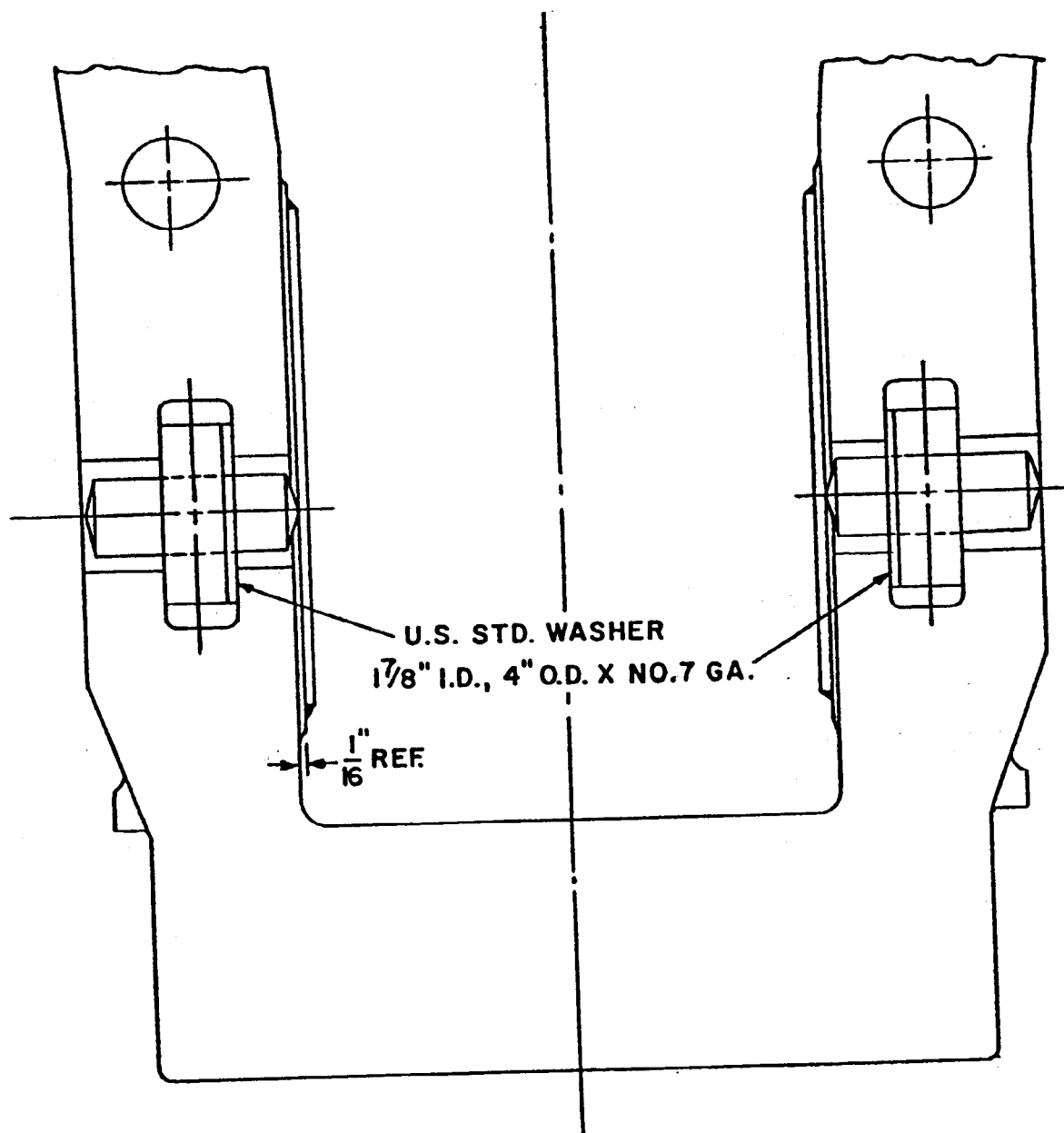
COUPLER HEIGHT SHIMMING PROCEDURE

To obtain the nominal centerplate height of $25\text{-}\frac{3}{4}"$ from the top of the rail all of the required shimming can be done between the spring seat forging and the spring plank.

The nominal shim required is $\frac{1}{2}"$ thick however if the coupler height is either too high or low the shim thickness can be varied accordingly as indicated above.



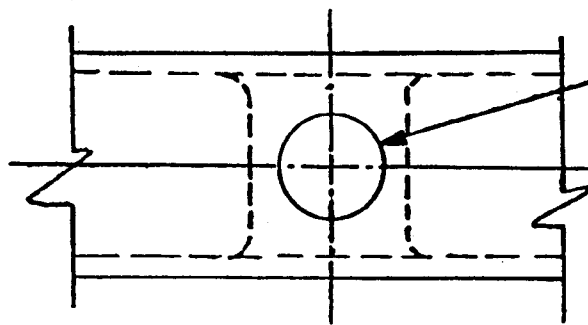
SHIM DETAIL



WASHER APPLICATION

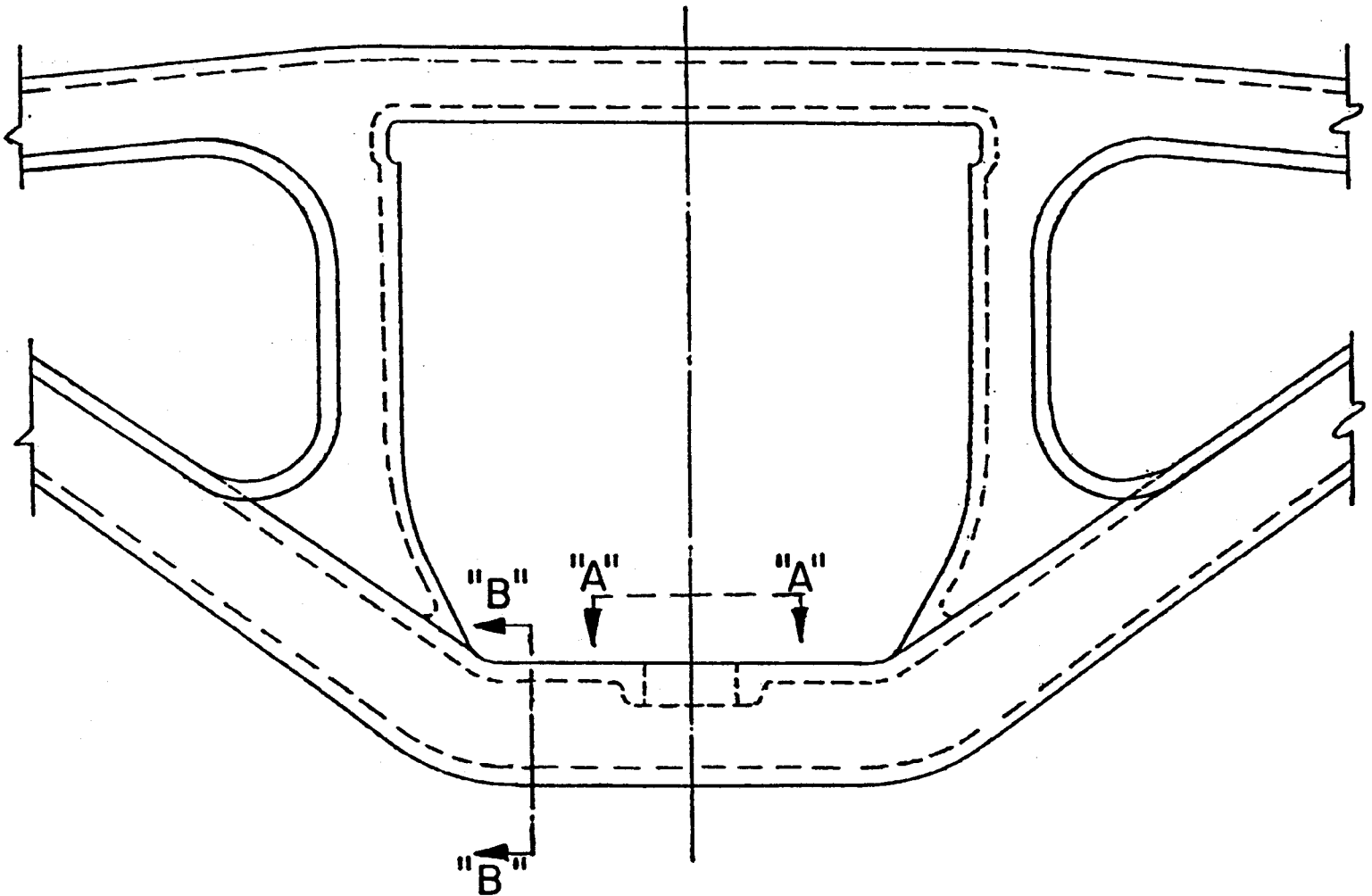
On some of the earlier trucks, there has been evidence of the ends of the top pins scoring the bolster wear plates. To prevent this, washers should be applied as shown above.

It is also recommended that these washers also be applied whenever the transom wear pads have worn and replacement wear plates have been applied.

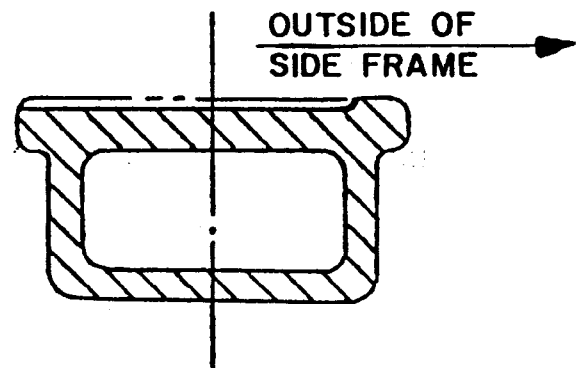


WHEN THIS HOLE
FOR TRANSOM BOSS
ELONGATES IT SHOULD
BE RESTORED TO 3".
CHECK WITH GAGE
SHOWN ON PAGE 16.

VIEW "A-A"

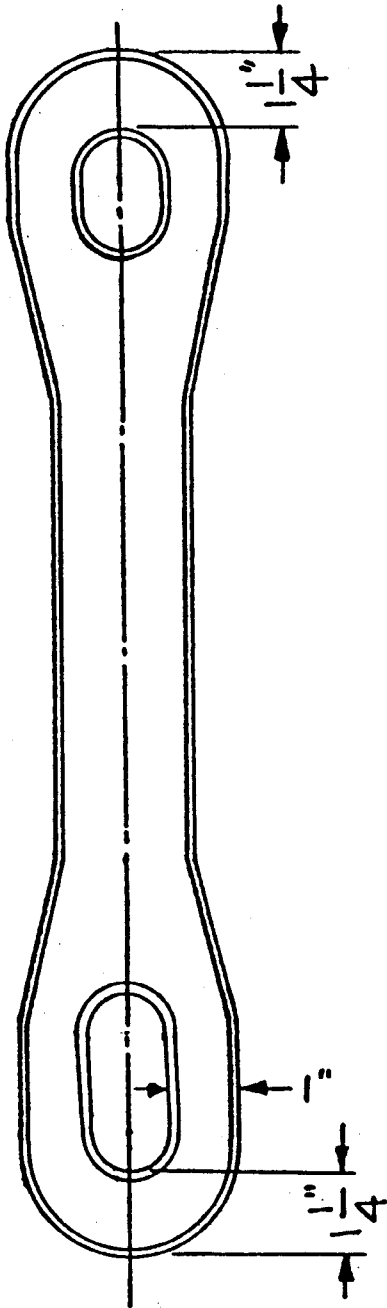


WEAR OF TRANSOM MOUNTING
SURFACE AS SHOWN IN
SECTION "B-B" SHOULD
BE RESTORED TO ORIGINAL
HEIGHT WHENEVER TRUCKS
ARE DISASSEMBLED.
USE TRANSOM SEAT GAGE
ON PAGE 16 TO CHECK
SURFACE AFTER REPAIRS
HAVE BEEN EFFECTED.

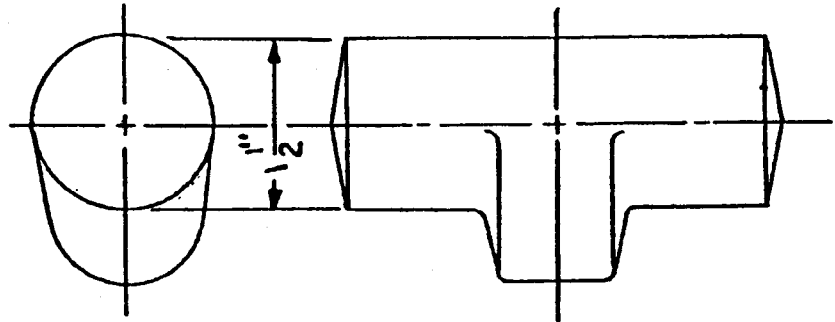


SECTION "B-B"

SWING HANGER AND TOP PIN BEARING



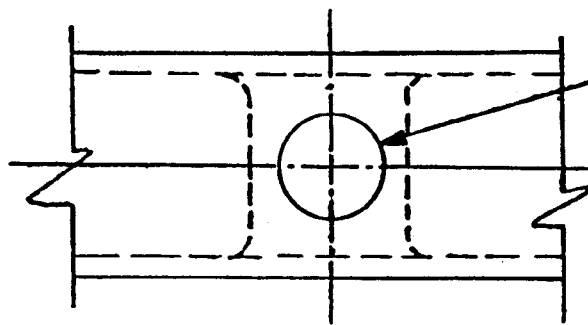
SWING HANGER



TOP PIN BEARING

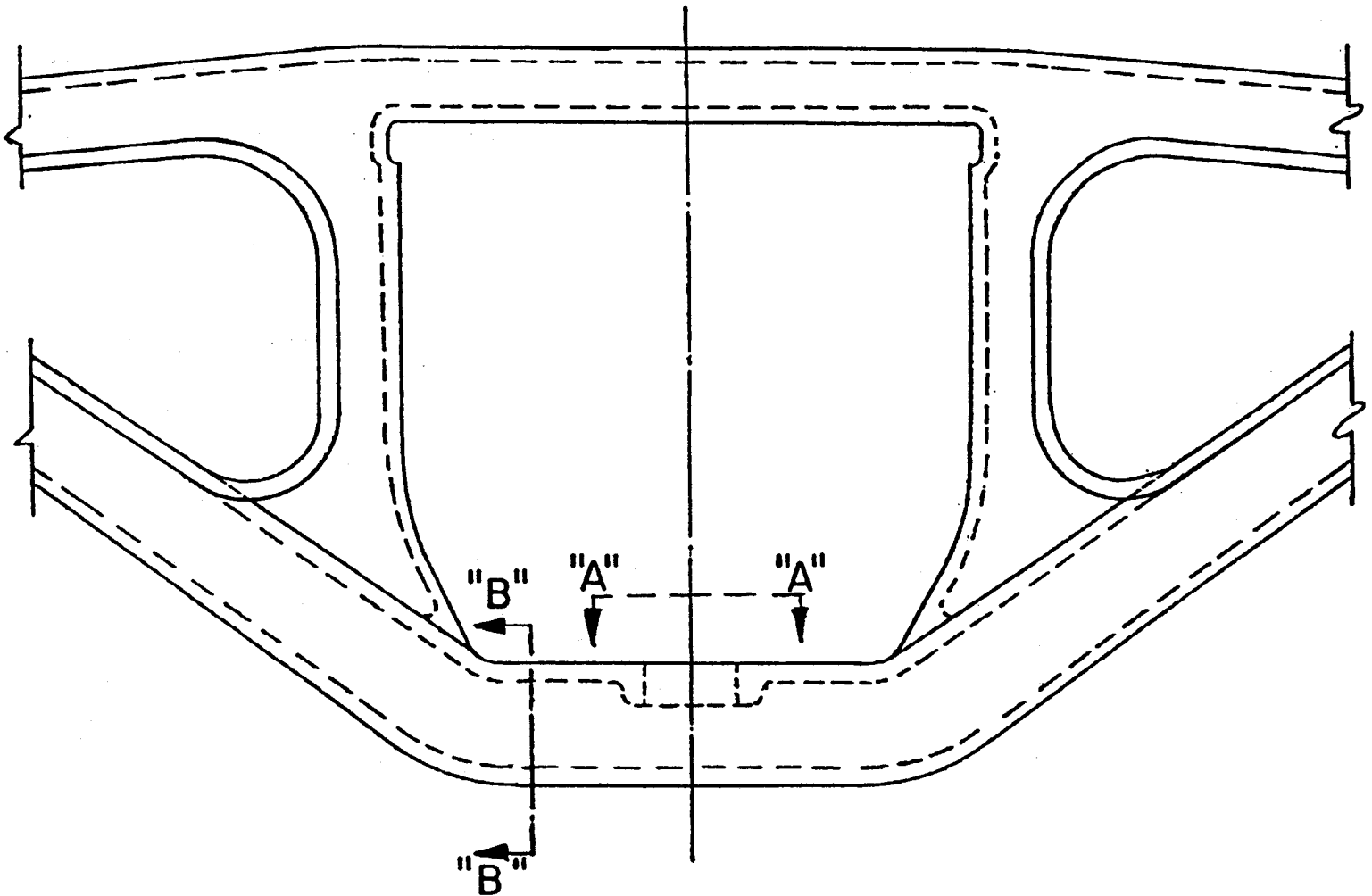
When diameter of pin is reduced from $1\frac{3}{4}$ " to $1\frac{1}{2}$ " as shown, replacement is required.

When stock thickness in upper and lower slot of swing has been reduced as shown, replacement or rework is required. Use swing hanger gage to check slots after rework.

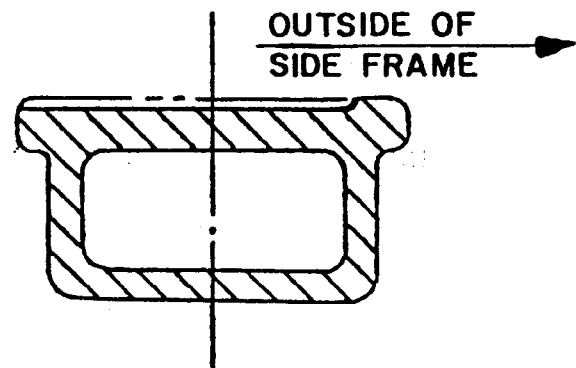


WHEN THIS HOLE
FOR TRANSOM BOSS
ELONGATES IT SHOULD
BE RESTORED TO 3".
CHECK WITH GAGE
SHOWN ON PAGE 16.

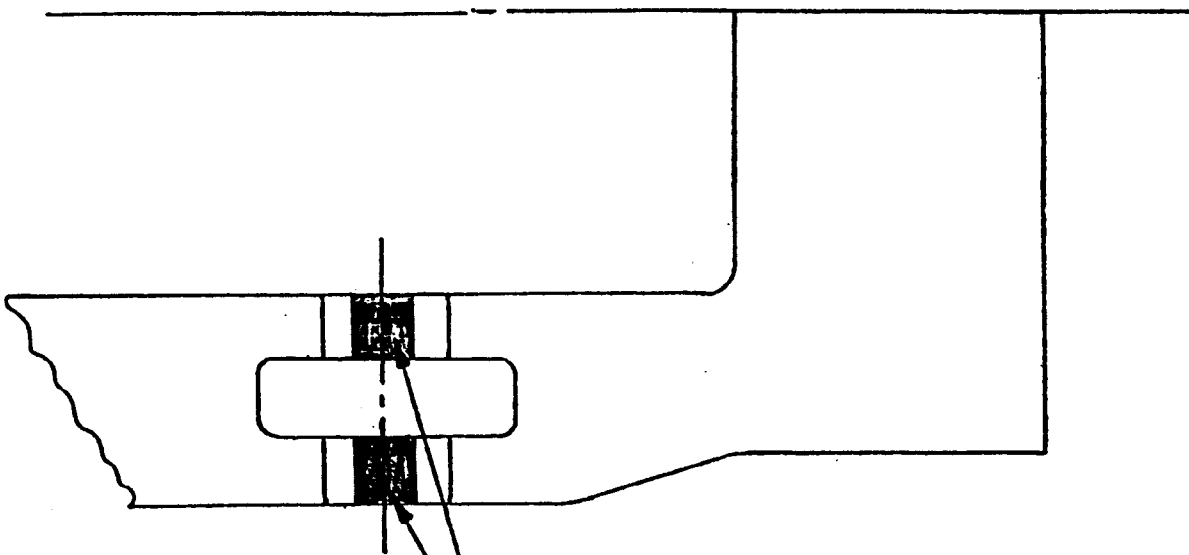
VIEW "A-A"



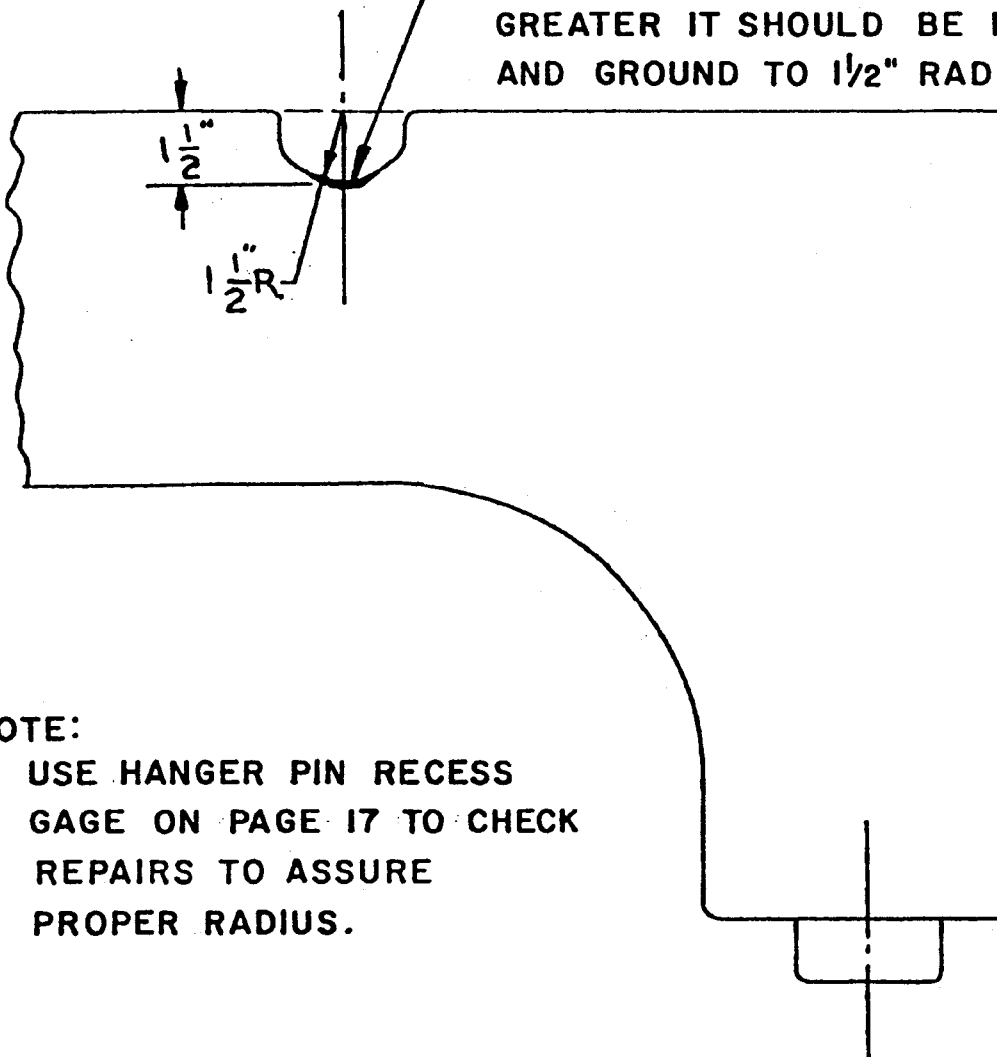
WEAR OF TRANSOM MOUNTING
SURFACE AS SHOWN IN
SECTION "B-B" SHOULD
BE RESTORED TO ORIGINAL
HEIGHT WHENEVER TRUCKS
ARE DISASSEMBLED.
USE TRANSOM SEAT GAGE
ON PAGE 16 TO CHECK
SURFACE AFTER REPAIRS
HAVE BEEN EFFECTED.



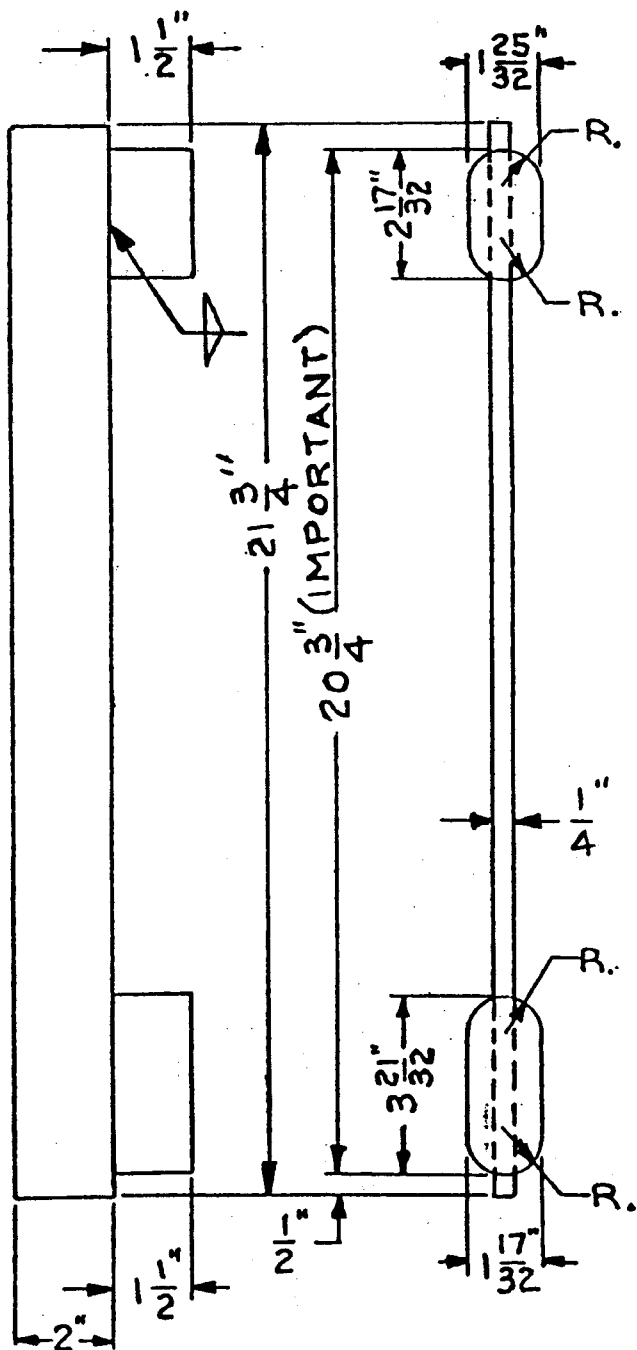
SECTION "B-B"



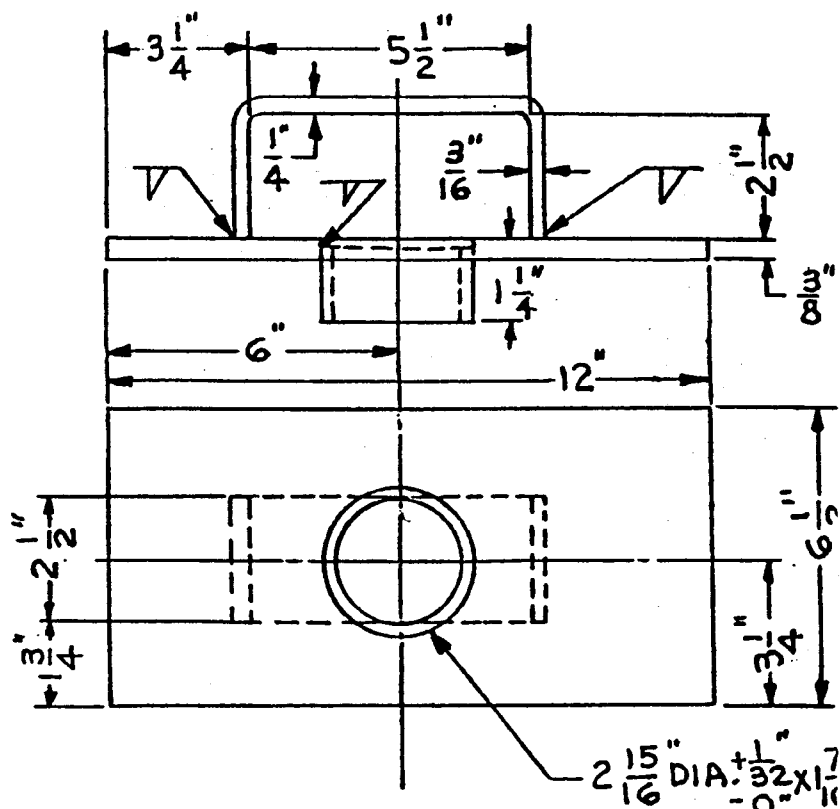
WHEN WEAR IN SHADED AREAS IN SWING
HANGER TOP PIN RECESS IS $\frac{1}{8}$ " DEEP OR
GREATER IT SHOULD BE HARDFACED
AND GROUND TO $1\frac{1}{2}$ " RADIUS.



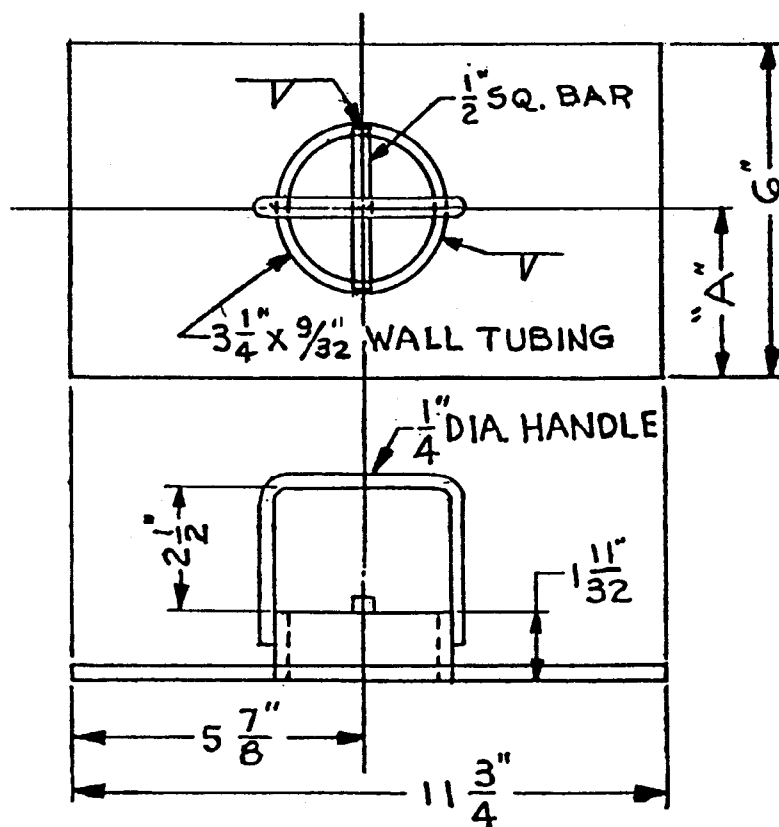
NOTE:
USE HANGER PIN RECESS
GAGE ON PAGE 17 TO CHECK
REPAIRS TO ASSURE
PROPER RADIUS.



SWING HANGER
SLOT GAGE



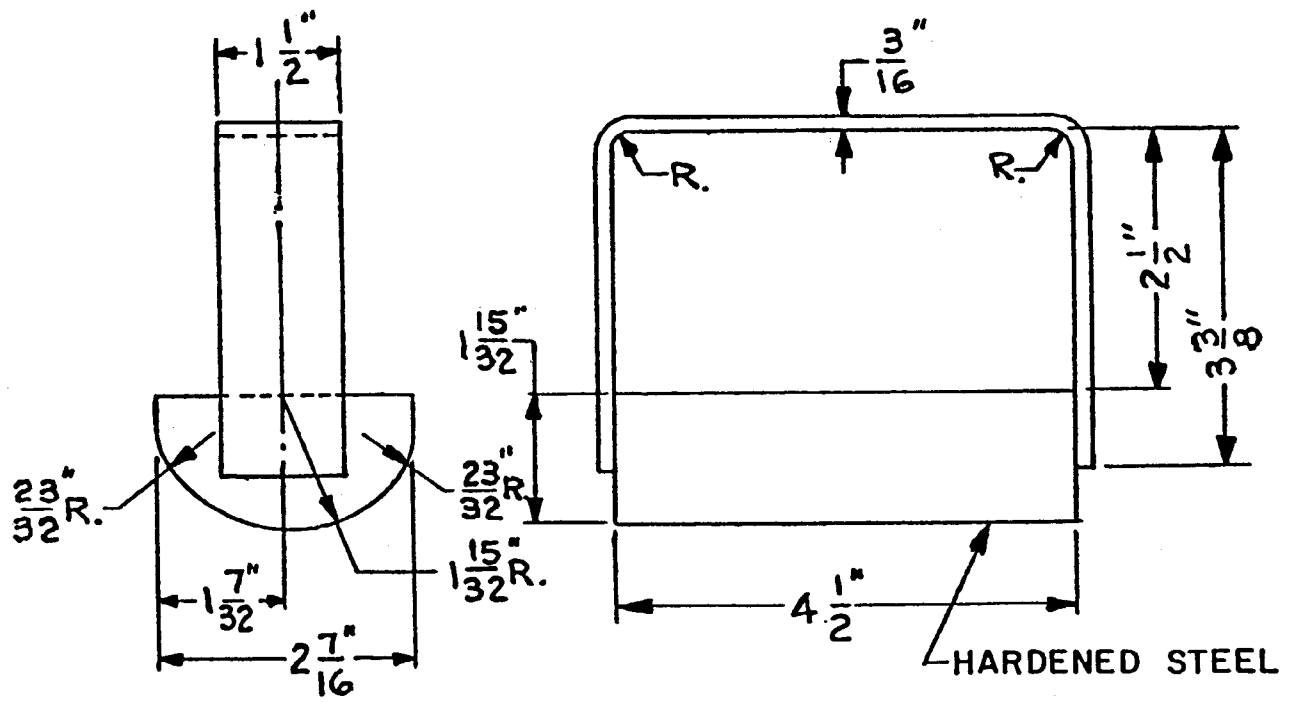
TRANSOM SEAT GAGE



TRANSOM BOSS GAGE

DIM. "A" = 2 3/4" (5 1/2" X 10" JOURNAL)

DIM. "A" = 3" (5" X 9" JOURNAL)



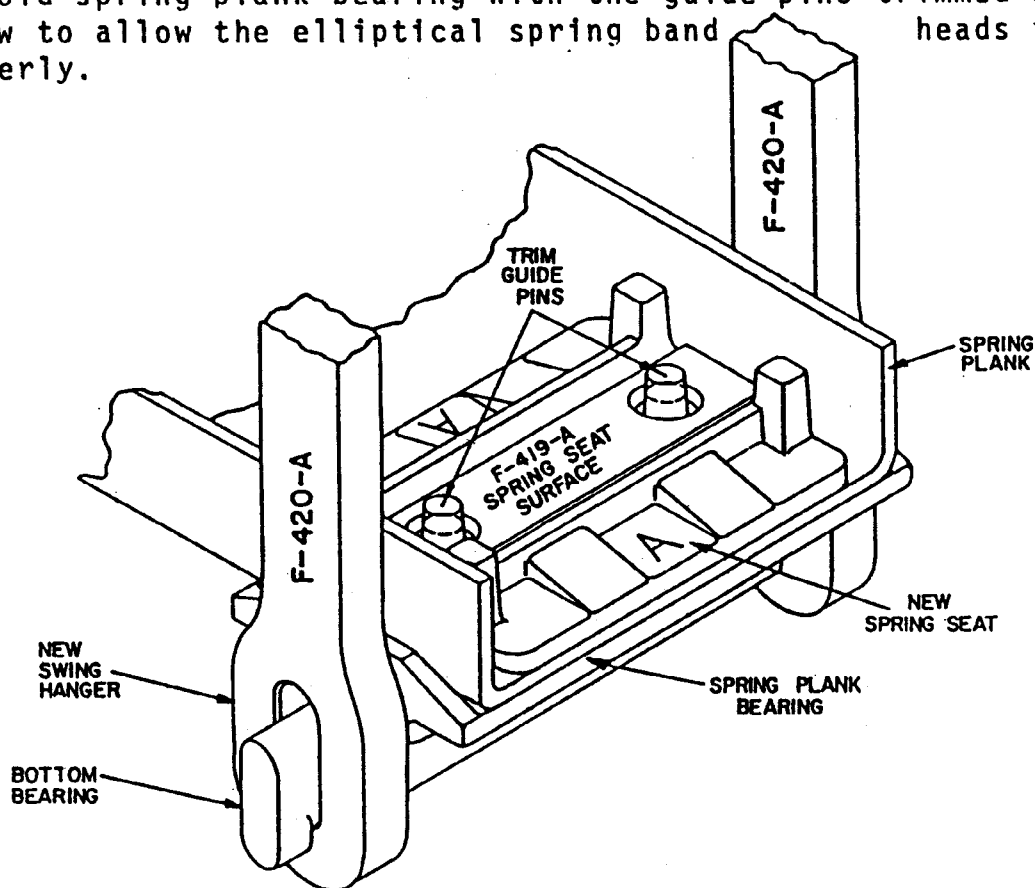
HANGER TOP PIN RECESS GAGE

METHOD OF INCREASING RAIL CLEARANCE ON EXISTING TRUCKS

From component wear due to service, it may be possible for the bottom of the swing hanger to project outside the clearance diagram on older trucks.

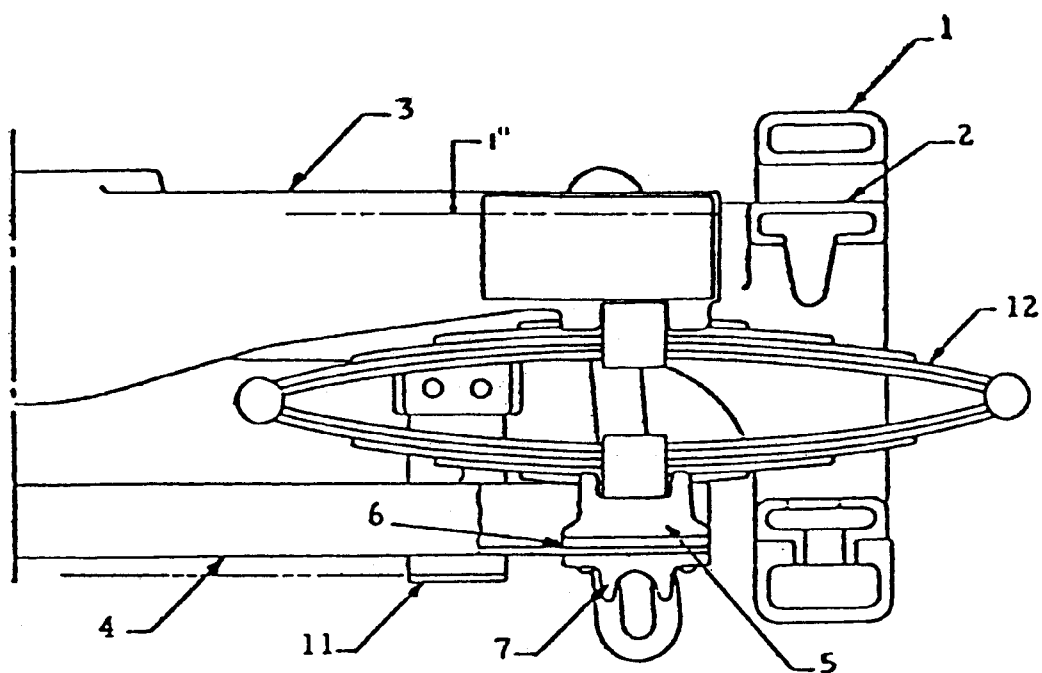
To prevent this occurrence, Standard Car Truck Company now furnishes a new, shorter swing hanger, new spring seat and spring plank bearing to provide 1" additional clearance between the swing hangers and rail on new cars.

Trucks in service can be modified by using the new swing hangers (Pattern No. F-420-A), new spring seat (Pattern No. F-419-A), and the old spring plank bearing with the guide pins trimmed as shown below to allow the elliptical spring band heads to seat properly.



PROCEDURE FOR INCREASING CLEARANCE ABOVE THE RAIL ON EXISTING TRUCKS:

1. REPLACE SWING HANGERS WITH NEW SHORTER HANGERS, PART NUMBER F-420-A,
2. REPLACE SPRING SEAT WITH NEW THINNER SEAT, PART NUMBER F-419-A.
3. SPRING PLANK BEARING,
 - A.) REPLACE WITH NEW UNIT HAVING SHORTER GUIDE PINS, PART NUMBER F-388-A,
 - OR
 - B.) USE ORIGINAL UNIT IF IN GOOD CONDITION, BUT REDUCE HEIGHT OF GUIDE PINS SO THEY DO NOT PROJECT ABOVE SPRING SEAT SURFACE.



VISUAL CHECKS TO DETERMINE REQUIRED REPAIRS

- 1 When top of bolster (Item 3) is below top of transom (Item 2)
- 2 - When the spring plank (Item 4) contacts the spring plank safety strap (Item 11)