SECTION 10.2 LEVELING OF PASSENGER CARBODIES

1.0 SCOPE:

The following procedure is to be used to make final adjustments in leveling the truck frame and carbody, and in achieving proper carbody, coupler, and truck frame height.

2.0 EQUIPMENT:

1. One eighty-five foot section of tangent, level, track equipped with a pit.

2.1 Four 50 ton jacks.

2.2 AAR Steel Wheel Gage

2.3 Device for measuring coupler height from rail.

2.4 Measuring tape.

2.5 5 ft. steel straight edge.

3.0 PROCEDURE:

In leveling passenger car bodies and four wheel trucks the car should be placed on the wheel pit with level track (if wheel pit is not available select level track) and the following measurements should be made and recorded:

3.1 Height of coupler in relation to rail.

3.2 Height of platform at the four corners of car in relation to rail.

3.3 Check thickness of wheel rim with A.A.R. wheel gauge and wheel diameter.

3.4 Obtain the truck frame height from rail at the four corners. This should be done by removing the pedestal tie bars and placing a straight edge against the finished surface of pedestal for pedestal tie bar. The straight edge should be long enough to project over the top of the rail so measurement can be made between it and rail.

3.5 Measure the equalizer and bolster spring heights.

3.6 Check side bearing clearances.

The following leveling procedures should be followed:

The greatest cause of differences in truck frame heights is due to variations in wheel diameter due to wear and turning which changes the distance from rail to equalizer. This should be compensated for in the thickness of the separate journal box equalizer seats. The Pullman Company and some railroads have available separate equalizer seats for application on top of the journal boxes which are made in increments of 1/2 inch thickness, from 1/2 inch to 1-1/2 inch, to provide for reduction in wheel diameter. Their use will provide 1 inch vertical height adjustment between journal box and underside of equalizer. Adjustment due to differences in wheel diameter should be made at this point.

After the equalizers have been leveled by use of the separate equalizer seats, the truck frame should again be checked for level and the balance of leveling of truck frame should be taken care of by shimming at the top of the several equalizer coil springs. The truck arrangement drawing should be referred to for proper truck frame heights. Most new trucks have non-metallic pads and 1/8 inch thick steel wear plates at the top of their equalizer springs with 1/8 inch steel plate being applied between the non-metallic pad and the top of the spring. Care should be taken to restore these. When blocking here the top of the springs should be kept at least 3/8 inches inside of the spring pocket at all times.

Most trucks are originally provided with one or two 1/4 inches steel shims between spring plank and swing hanger bar bearing block for car builder's use in lowering or leveling the car. These shims can be removed or added to, within limits, to help level car body. In performing this operation when jacking against the spring plank, the jack should be placed as close as possible to the swing hanger cross bar to avoid bending the spring plank. In adding shims here, care should be taken so that the clearance between underside of truck frame wheel piece and top of bolster when car is about 1-1/2 inches or 2 inches to prevent wheel piece striking top of bolster when car is in operation. If car leans to one side, as measurements at sides of car will indicate, apply 1/32 inches or 1/16 inches shims to spring plank bearing at low side to level car. Hardwood blocks may be applied to top and bottom of bolster coil springs to raise car height or to compensate for springs that have taken a set. When such blocking is done satisfactory, clearance between top of bolster and underside of wheel piece must again be provided.

If the car height is not entirely corrected by the above shimming, blocking or shims may be applied under the truck center plate if separate center plates are used. The maximum blocking or shimming at this point is dependent upon the height of the retaining flanges on top of truck bolster and good engagement should be provided between it and center

plate. After leveling the trucks and car body, the side bearing clearances should be checked and adjusted as may be necessary.

Bolster and equalizer springs as originally furnished by car builder were designed to suit car weight and desired flexibility. When any springs are replaced, they should be checked to make sure they meet the original requirements.

On cars equipped with G.S.C.C. bolster roll stabilizers, no blocks or shims should be applied at top and bottom of bolster springs, unless a spring has taken a permanent set, nor between swing hanger bottom cross bar and bearing on the underside of stabilizer parts as the vertical distance between the spring seat and the bolster spring seat should be held equal on the sides of truck. This is due to the positive mechanics of the bolster roll stabilizer.

4.0 RESULTS:

After the carbody is leveled, the coupler height should conform to P.C. Rule 5 of the Field Manual of the A.A.R Interchange Rules. The following is taken from the above:

4.1 Passenger carrying cars

(1) Minimum - 34 inches
(2) Preferred - 34 1/2 inches
(3) Maximum - 35 inches

4.2 Non-passenger carrying cars

(1) Empty cars - same as passenger carrying cars
(2) Loaded cars
    (a) Minimum - 32 inches
    (b) Preferred - 32 1/2 inches
    (c) Maximum - 33 inches

4.3 Measurements to be made from top of rail to center face of coupler knuckle.

4.4 Where possible, adjustment of coupler height should be made when the car is empty.

4.5 See paragraph 13, Section E of Freight Rule 16, for correct method of adjusting coupler height.

4.6 The distance from the top of rail to the top of the buffer plate shall be as follows:

HEP modified conventional car 53 ±1/4 inch.
HEP modified bi-level car (39900's) 104 3/8 ±1/4.
Non-HEP modified conventional car 50 1/2 ±1/4.
Non-HEP modified bi-level car (9900's) 98 1/16 ±1/4.

4.7 All clearances between truck components shall be in accordance with the applicable GSI general assembly drawing. The clearances shall apply with the car in the light weight condition.

End of Test