

# INSTALLATION INSTRUCTIONS FOR STUCKI® 656-CR RESILIENT SIDE BEARINGS ON 50- AND 70-TON FREIGHT CARS

## I. INTRODUCTION

The Stucki model 656-CR is a non-metal capped constant contact standard travel side bearing. The 656-CR side bearing\* consists of: ① two RB-11 resilient blocks, ② two steel end-closures, ③ one 4" diameter roller and ④ one 656-C single roller side bearing cage. The 656-CR components shown in Figure 1 should not be assembled into any other side bearing housing unless specifically approved by A. Stucki Company.

\* Manufactured under one or more of the following patents: US Patents 3957318, 4080016, 409075

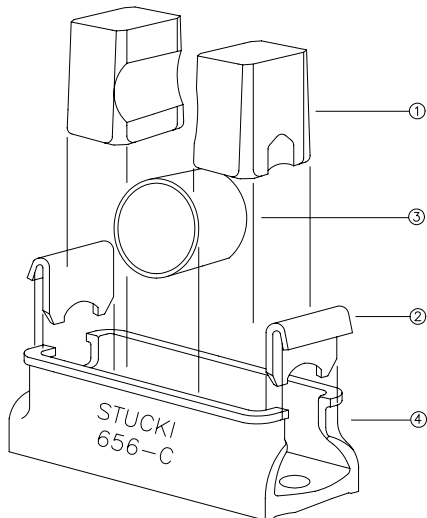


Figure 1. 656-CR Components

The 656-CR side bearing has a nominal preload of 6,000 lbs. The 656-CR is designed for use on cars having carbody weights (less trucks) of no less than 28,250 lbs.

It should be noted that Stucki manufactures several different resilient side bearing models, all of which use a different and exclusive resilient block design. The resilient blocks (RB-11) used in the 656-CR are not interchangeable with the blocks in any other side bearing model. The distinguishing features of the RB-11 are illustrated in Figure 2. In addition, all blocks are individually marked, as are the shipping cartons.



Figure 2. RB-11 Resilient Block

It is also important to note that the cage end-closures, ② although having undergone a series of geometry changes since introduced, are interchangeable between all Stucki resilient side bearing models, whether conventional or metal-capped. However, when converting or upgrading, from conventional 656-CR's to metal-capped 656-CRH's, older style end

closures not of the high abutment style illustrated above should be replaced with this current style.

Finally, it must be noted that A. Stucki Company does not recommend the application of 656-CR's to torsionally stiff, long truck center length cars having D-3 (2-1/2" travel) truck springs. This includes, but is not necessarily limited to, tank cars, boxcars and covered hoppers with truck centers exceeding 36'.

To insure the proper life and performance of the 656-CR resilient side bearing, as well as the operating safety of the freight cars to which they are applied, the following instructions must be carefully adhered to:

## II. ACHIEVING PROPER VERTICAL SET-UP HEIGHT

Vertical space between the car body side bearing wear plate ⑥ (or wedge) and the truck bolster surface to which the side bearing cage is mounted must be  $5\text{-}1/16" \pm 1/16"$ , measured as illustrated in Figure 3. Space must be measured with car positioned on reasonably level track before installing resilient blocks or applying solid centerplate lubrication.

Note that, although shimming under side bearing cages is not recommended, this may be encountered with some older cars. In such cases, the set-up height measurements must be made from, or referenced to, the tops of these shims.

Measurement of the side bearing space must always be made with the empty car positioned on reasonably level track (near zero cross-level difference) before installing the resilient blocks or applying any form of solid centerplate lubrication (this is to insure metal-to-metal centerplate contact).

If elastomeric centerplate horizontal liners will be used, they must be in place when set-up height measurements are taken. Also, when such liners are used, A. Stucki Company recommends that the set-up heights be adjusted to  $5\text{-}1/8" \pm 1/16"$  to allow for compression set of the elastomeric liner material. Further, it should be noted that the control of truck hunting may be diminished somewhat when low-friction centerplate liners are used, or when centerplates are lubricated excessively.

When body side bearing shimming adjustment is required to obtain the specified set-up heights, it is acceptable to average the measurements for the two side bearings at each end of a car. The sum of both measurements may thus be as low as 10", or as high as 10-1/4". However, in no case may an individual space be under 5".

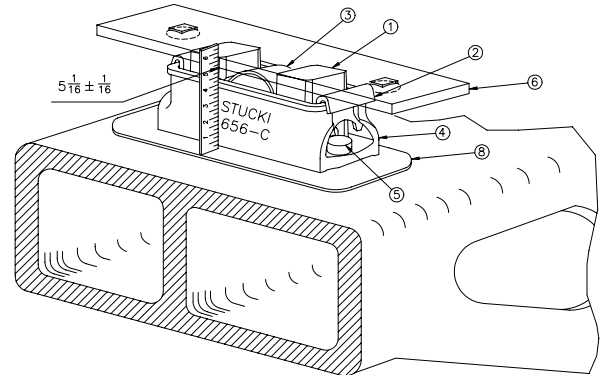


Figure 3. Measurement of Set-Up Height

## III. CAR BODY SIDE BEARING WEAR PATE

Body side bearing wear plates ⑥ (or wedges) must conform to AAR Standard S-235-83. Wear surface must be smooth. Any weld spatter, heavy rust, or surface projections must be removed by grinding. Fastener heads ⑦ (see Figure 5) must be flush or recessed with the wear plate surface. Fasteners must be securely tightened.

Plates or wedges with surface variations between fastener holes (roller impressions, convexity or concavity) greater than 1/8" or greater than 1/16" over any 4" space must be replaced. Wear plate surface must be reasonably parallel to the side bearing mounting surface of the truck bolster. Variation should not exceed 1/16" across width, or 1/8" end-to-end.

Body wear plates must be of sufficient length and width to maintain engagement with the resilient blocks when the car negotiates the tightest curves for

which it is designed. For cars having a 150' minimum radius curve negotiation requirement, the following table provides a guide for the minimum wear plate length.

Truck Center Length	Min. Wear Plate Length
28' or less	12"
28'-1" to 40'	14"
40'-1" to 55'	16"
55'-1" to 66'	18"

Cars having a truck center length greater than 42' must be equipped with 5" wide wear plates.

Wedge type wear plates having fastener hole centers under 15-1/2" should not be used on cars having a truck center length greater than 50'.

When first applying new resilient blocks, a thin coating of lubricant (#2 lithium grease or equivalent) must be applied to the entire lower surface of the body side bearing wear plate or wedge. Excessive lubricant should be avoided. Lubricant should never be applied before running car through grit-blast facility. Never use asphaltic or molybdenum disulfide type lubricants. Lubrication is required to reduce wear plate friction only during initial break-in, or conditioning period. After a short period of service, the lubricant is dissipated. The resilient blocks, then contacting a relatively unlubricated, but somewhat polished surface, will function to give maximum hunting control. The body side bearings should never be re-lubricated in service, except in cases where new wear plates are installed.

#### IV. TRUCK SIDE BEARING

The 656-C side bearing cage (see Figure 3) must be free of flaws or cracks and must be securely fastened to the truck bolster. Please refer to A. Stucki Company's roller side bearing installation instructions for cage fastener recommendations.

The cage fastener heads must not be too large for the cavity provided in the bottoms of the blocks.

The internal length of the cage (between end gibs) must be no less than 8-11/16". Cages not meeting this requirement should be replaced.

The inside edges of the end gibs must be free of upset metal that could prevent the end-closure from fitting flush against the inside faces of the gibs.

The diameter of a new standard 656-C roller is 3-15/16" (+ 1/16" to -0"). This is the only roller size which may be used in the 656-CR assembly. The minimum diameter of the roller due to wear is 3 7/8" (1/16" wear from nominal). Rollers under 2-15/16" diameter must be replaced.

#### V. RESILIENT BLOCKS

The RB-11 resilient blocks when compressed by the car body to the nominal 5-1/16" set-up height will provide, after an initial break-in relaxation period, approximately 6,000 pounds of vertical pre-load. The initial relaxation period will be about 12 to 24 hours if the temperature of the resilient blocks is above 50°F. During this time the car body centerplate may not be in contact with the truck bolster, since side bearings with new blocks installed can initially support as much as 14,000 pounds per bearing. However, with proper body side bearing lubrication initial wear plate friction is very low, and the car should experience no difficulty moving through curves.

Until initial relaxation of pre-load has occurred, the vertical space at a side bearing will probably be greater than as originally set up. It will gradually approach the anticipated dimension. At temperatures below 50°F, this may require more than 24 hours. For this reason blocks being installed in a cold environment should be stored at or near room temperature for at least 24 hours prior to installation.

If solid lubricants have been applied to the centerplate, the anticipated side bearing height may not be realized until after the car has been moved for some distance, as some solid lubricants are capable of supporting considerable vertical load.

The resilient blocks must not be exposed to temperatures greater than 200°F, or 175°F for extended periods of time. If cages have been riveted, welded, or otherwise heated for any reason, the resilient blocks should not be installed until the cage and fasteners have cooled to a touch-safe temperature.

Whenever a car having 656-CR's is raised from the trucks and the blocks are removed, measurement of their free height will reveal them to be somewhat shorter than a new block of the same design. During its normal life, the RB-11 block can take as much as 1/4" permanent set, and still function to give adequate hunting control. Stucki Service Bulletin RSB8904 gives guidelines for block replacement due to age or to minimum free height requirements.

#### VI. INSTALLATION OF COMPONENTS INTO CAGE (see Figure 1)

1. Insert the end closures into place.
2. Position the two resilient blocks adjacent to the end closures.
3. While holding the two blocks up slightly and inclined away from each other, the roller can be dropped into place between the cavities provided in the faces of the blocks. The blocks and roller then are seated downward together.

All elements should fit into place easily. If elements must be forced into position, disassemble and review Section IV: Truck Side Bearing. Note that on initial application the roller will generally not seat on the cage bottom even after the blocks are compressed to their pre-load height by the car body. The total free space above and below the roller will generally be equivalent to conventional side bearing clearance, and depending on the free space below the roller, the visible clearance between roller and wear plate will vary. Roller to wear plate clearance must not be used as a set-up criterion. The side bearing space set-up described in section II: "Achieving Proper Vertical Set-Up Height" must be followed.

After the resilient side bearings have been assembled and the car body has been lowered onto the trucks, a visual check should be made of the relative lateral position of the body side bearing wear plates or wedges with respect to the resilient blocks. This is particularly important in the case of 4" wide wedges, the lateral position of which varies with the amount of shim applied. As indicated in Figure 4, there should be a minimum plate or wedge "overhang" of 7/16" toward the center of the car and a minimum of 1/4" toward the outside. A 4" wide plate or wedge not meeting this requirement should be replaced by one 5" wide.

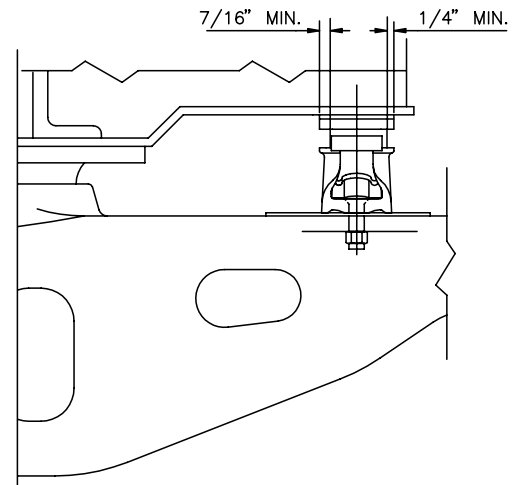


Figure 4. Minimum Plate or Wedge Overhang

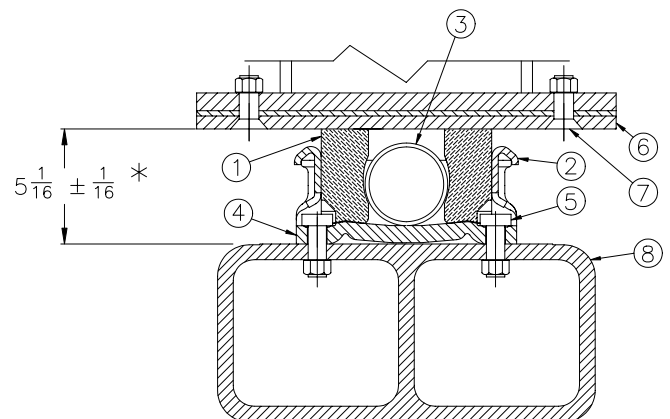


Figure 5. 656-CR Side Bearing Arrangement