

INSTALLATION INSTRUCTIONS FOR STUCKI® HS-7 AND SV-7 HYDRAULIC STABILIZERS

I. INTRODUCTION

The Stucki® HS-7/SV-7 stabilizer is a single-acting hydraulic damper that fits into the freight car spring nest and operates as the truck springs are compressed. One unit is installed in each spring group in the space normally occupied by one of the outboard truck springs. The stabilizer is designed to function only under a loaded car, no damping occurs when the car is empty.

The standard HS-7 unit is designed for use on 100-ton freight cars equipped with D-5 springs. Units for other applications are listed below:

HS-7B	70-ton Car
HS-7C	100-ton Car with D-3 Springs or 125-ton Car
SV-7	100-ton Car - Variable Rate Damping
SV-7B	70-ton Car - Variable Rate Damping

The model is identified on the unit serial number tag as shown in Figure 1. Whenever a Stucki stabilizer is to be replaced, it is important that it be replaced by a unit of equal capacity rating. Factory rebuilt units will have the letters "RB" and the date they were rebuilt stamped on the model identification tag.

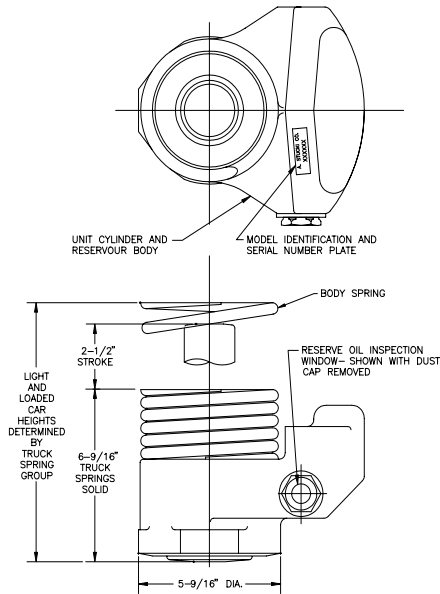


Figure 1. HS-7/SV-7 Identification

II. STORAGE PRECAUTIONS

An HS-7 stabilizer, as received, consists of three separate elements which are identified in Figure 1. The unit itself is packaged in a polyethylene bag containing a vapor-phase inhibitor to dispel moisture, thus preventing corrosion of the chrome-plated piston rod. However, units should not be stored outdoors any longer than necessary. Incoming stock should be rotated so that first received are the first used. Do not remove units from bags until ready to use. Contact A. Stucki Company before applying units which have been in prolonged storage unprotected from moisture.

The body spring and retainer assembly are normally shipped in the same cartons or crates as the units themselves. These must be assembled onto the stabilizer (see Figure 1) prior to installation of the unit into the spring nest.

III. PREPARATION OF TRUCK FOR HS-7/SV-7 APPLICATION

Figure 3 shows an HS-7/SV-7 in a typical 100-ton spring nest. When the truck spring nest has three outboard positions, the stabilizer should be installed in the center outboard position. If there are only two spring positions in the outer row, as on the 6 x 11 ride control truck, the stabilizer is usually located in the right-hand position as one faces the bolster. The units are then diagonally opposed in each truck.

Before the HS-7/SV-7 can be installed into a spring nest, the installer must make certain that the bolster-end arrangement and side-frame spring seat meet the following conditions:

1. BOLSTER TRUCK SPRING RETAINER

The truck spring retainer on the bolster at the stabilizer location must be of the outboard lug type, as illustrated in Figure 3. This arrangement is widely used in the ASF Ride Control truck design. This lug should be at least 1-1/2" wide x 1/2" thick, and project below the bolster undersurface no less than 3/4" and no more than 1-3/16". An internal centering spud type of spring retention is used on many Barber type trucks, cast on the underside of the truck bolster. The one at the stabilizer location must be removed as shown in Figure 2. An outboard or fence type lug must then be added for stabilizer retention, this is also shown in Figure 2. These lugs are available from A. Stucki Company. The bolster surface in the area where the centering spud has been removed must be ground smooth (remove all projections). Bolsters with integrally cast or retrofit lugs designed for retaining the Stucki HS-6 hydraulic stabilizer will accept the HS-7/SV-7 with no additional modification.

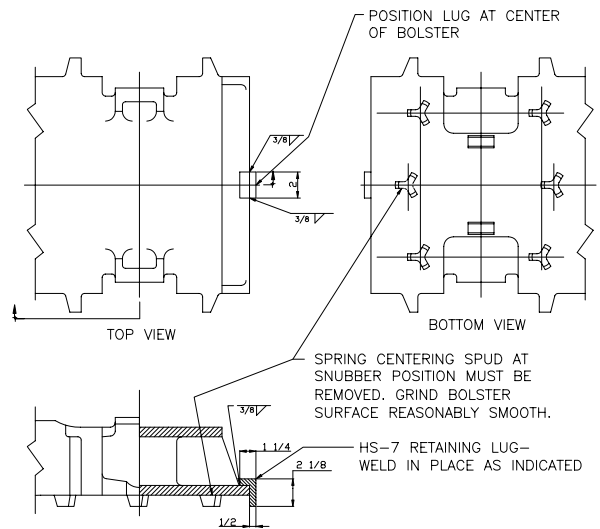


Figure 2. Bolster Modification

2. SIDE FRAME SPRING SEAT

The position the HS-7/SV-7 will occupy on the spring seat must be reasonably flat. Again, retention of the unit at the lower end must also be provided by outboard lugs such as are shown in Figure 3. Note the HS-7/SV-7 will not fit into a spring nest where the side frame has an outer rim or "fence" around the spring seat that is higher than 1-1/2" from the seat surface.

Certain freight car trucks have unconventional spring arrangements. In some cases, the spring centering lugs on the side-frame spring seat interfere with the HS-7/SV-7 body. When installed, the stabilizer must be positively seated on the spring seat. If a HS-7/SV-7 application is to be made to freight car trucks of unconventional design, A. Stucki Company engineering department should be contacted for technical assistance.

3. SPRING GROUPS

For optimum performance the HS-7/SV-7 stabilizer must be applied with the proper combination of truck springs. A. Stucki Company's general HS-7/SV-7 truck arrangement drawings list the recommended groups for conventional applications. In special cases where the cars in question are to be used in assigned service for loads which will be consistently and significantly greater than or less than their rated capacity, Stucki Company should be contacted for a compatible spring group recommendation.

When stabilizers are being applied on a retrofit basis to older cars, the existing truck springs, if reused, should be checked for height or load according to the AAR specifications.

IV. INSTALLATION OF THE HS-7/SV-7

If the bolster-end and spring seat conditions have been met, the stabilizer can be installed in the spring group. With the bolster raised to its maximum height in the side-frame transoms, the unit is then installed as follows:

1. Place all accompanying truck springs into position.
2. Remove the stabilizer from its shipping bag and remove the cardboard sleeve from the piston rod. Do not remove the yellow plastic cap which is a dust cover for the reservoir sight glass.
3. Place the body spring over top of the unit as shown in Figure 1.
4. With the body spring and upper end of the unit angled outward, seat the unit in its proper position on the spring seat.
5. Depress the body spring downward and inward until it passes under the bolster lug. Tilt the top of the spring inward until the spring is completely inside the bolster lug and can extend to meet with the bolster undersurface as shown in Figure 3. In the case of trucks designed for the shorter 2-1/2" or 3-1/16" travel springs (D-3 and D-4) and particularly the low-level style 6x11 trucks, considerable compression of the HS-7 retaining spring will be required to depress it below and past the bolster lug. Generally a pair of pry bars, one utilized on each side of the lug, may be required for such installations. When pry bars are used, care must be exercised to avoid striking the exposed area of the piston rod.
6. Check for proper seating of the unit on the side-frame spring seat. Pull the lower end of the unit outward as far as the lugs will allow.
7. When the car body has been lowered onto the trucks, check for proper clearance of each unit, i.e., the unit should have sufficient freedom to allow slight rotation using only manual effort. This is a normal condition.

Note: If trucks are to be painted, the piston rod area of the HS-7 should be shielded. Heavy paint coatings on the rod can cause seal damage and premature failure.

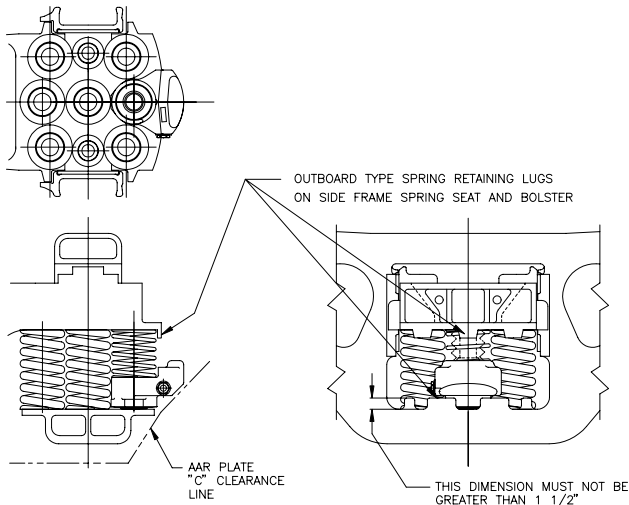


Figure 3. Arrangement of HS-7 in Typical Freight Car Truck

V. REMOVAL OF AN HS-7/SV-7 FROM A CAR

If it becomes necessary to remove a stabilizer from a truck spring group, the following procedure should be followed:

1. Raise truck bolster as high as practical. In most cases, it will not be necessary to remove the trucks from under the car. With the car body raised up from the truck, a small track jack can be used to raise the truck bolster to permit removal of the unit.
2. If the bolster has been raised sufficiently, the HS-7/SV-7 can be lifted up and out of position manually. If the bolster cannot be raised high enough a pry bar can be used to lift the bottom of the unit over the side-frame spring retaining lugs. A second pry bar between an adjacent truck spring and the stabilizer body will be helpful in forcing the lower end outward over the lugs.
3. If the unit is to be returned to A. Stucki Company for replacement the piston rod should be wiped off and the cardboard sleeve placed over it. If a sleeve is not available, the rod can be wrapped with a piece of cardboard and taped. In cases where a number of units will be

removed, cardboard sleeves may be obtained for a small charge from A. Stucki Company.

4. If units are being removed and returned to A. Stucki Company as part of a normal rebuild cycle, the existing body springs should be retained for reuse unless they are damaged or worn.
5. It is advisable, when replacing a unit, to remove any dirt-oil sludge accumulation on the side-frame spring seat.

VI. FIELD INSPECTION OF THE HS-7/SV-7

The HS-7/SV-7 incorporates a low pressure seal on the piston rod which characteristically will pass slight amounts of oil under normal operating conditions. This lost fluid is compensated for by the reserve oil in the unit which comprises about 45 percent of the total oil volume of 1350 ml. (46 ounces). The availability of reserve oil can be checked by visual inspection of the sight gage or window in the plug on one side of the reservoir (see Figure 1).

The window is protected from dust and dirt by a plastic press-in cap which must be removed to make the visual check. If the cap is missing, any accumulated dirt in the window recess must be cleaned out. A short narrow piece of wood is good for this task, since it will not scratch the glass.

A flashlight is helpful in making the sight glass inspection. It is best, however, not to aim the light directly at the window, as this will often create a glare on the surface of the glass which may be mistakenly interpreted as an empty window.

Figure 4 illustrates the conditions that can be encountered on visual inspection of the sight glass. When the oil level is above the window, the entire glass area will appear dark, as in illustration "A". Once the oil level has dropped to the window area, as in "B", the portion of two rings on the inside of the glass above the oil level will reflect light back to the viewer and appear shiny as shown. When the oil level recedes below the window, these "shiny" rings will be totally visible as complete circles, as in "C".

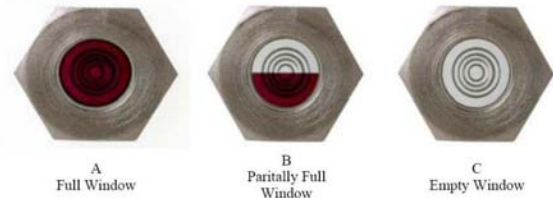


Figure 4. Oil Sight Glass Conditions

When inspecting the sight glass, the unit must be sitting in the normal operating, upright, position.

If the sight glass inspection reveals condition "C", the unit should be scheduled for replacement as soon as practical and can be returned for rebuild. When the oil level is half full, as in "B", the unit should be scheduled for replacement when the car is next shopped. As long as the window shows full as in "A", the unit should be left in service regardless of any external oil sludge accumulation. (refer to Stucki Service Bulletin HS8906)

We strongly recommend units not be opened for refilling in the field. This can lead to dirt contamination or overfilling with excess oil. Either condition will result in damage to the seal and will void the warranty.

Note that the damping characteristics of the stucki HS-7 are identical to those of the HS-7-100 and the earlier stucki HS-6, within a given capacity rating. Thus, on the basis of performance they're interchangeable. However, if interchange between models are made the installer must insure that the retention requirements specified in the installation instructions for the particular design are met. Also, to alleviate future logistics problems, it is advisable not to mix various models on a given car. (please refer to Stucki Service Bulletin HS8905)