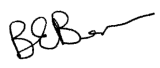


SPOORNET R & TS - WAGONS

File Ref.: S.RTS/W. 15/8/5/4	REPAIR PROCEDURE FOR THE 508-mm KEYSTONE CENTRE SLIDING SILL HYDRAULIC CUSHIONING UNIT.	Document no: RW/TE/PRO/0037
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1.0 Scope.

This procedure must be worked to for repairs of Keystone 508 Centre Sliding Cushioning Units fitted to various freight wagon types.

2.0 Disassembly of Unit.

2.1 Remove the oil drain plug and drain the all the oil from the unit.

2.2 Position the unit in the collet / spring removal fixture and by compressing the spring, remove the spring retaining collets. Once the collets have been removed, remove the unit for the fixture and remove the return spring.

NOTE: *EXTREEM CARE MUST BE TAKEN WHEN REMOVING THE COLLETS SO AS NOT TO CAUSE ANY INJURY TO THE ONE REMOVING THESE COLLETS AND SPRING.*

2.3 Inspect the spring for any defects such as breakage's / cracks, etc., if found, the spring must be scrapped. Springs worn more than 2 mm on the outer coils must be scrapped.

2.4 Remove the spring housing from the unit by making use of a cutting jig.

2.5 Removal of front seal housing.

2.5.1 Mark the front seal housing and unit reservoir to ensure that matched parts are re-assembled.

2.5.2 Position the unit on a milling machine and cut through the front seal housing. Cut must be as narrow as possible to avoid excessive subsequent welding.

2.5.3 Complete the removal of the seal housing from the unit reservoir by cutting trough the corners using a hack saw.

2.5.4 Separate the seal housing from the reservoir and remove the piston rod from the housing.

2.6 Remove of the piston head from piston rod.

Note: The first generations of these units were fitted with a wider piston. These wider pistons can be identified by the 100 mm rods being tapped with an UNC thread in the end of the rod. Later models with the narrower piston a tapped with a NF thread.

2.6.1 Place the piston rod into a centre lathe. Machine out the welding securing the piston head to the rod on both sides of the piston head.

2.6.2 Remove the piston head.

2.7 Remove the high-pressure cylinder from the housing.

2.8 Remove all the existing oil seals from the seal housings.

2.9 Remove the piston ring from the piston.

3.0 Examination and Repair of Components.

3.1 Piston rings found with any scratches and or score marks deeper than 1 mm must be scrapped and replaced with new piston rings in accordance with drawing PMLA07.50X1.00A.

3.2 Examine the high-pressure cylinder for any cracks and or scratches deeper than 1 mm. If found, scrap the cylinder.

3.2.1 All high-pressure cylinders not falling into the above category must be honed for re-use.

3.2.2 The high-pressure cylinder retaining spigot and front seal housing must be checked for size and finish. Badly finished spigots and those that are more than 0,05 mm smaller in diameter than the internal diameter of the high pressure cylinder must be built up by welding and re-machined to size.

3.3 Seal housings must be examined for any cracks and or scratches. These defects must be repaired and re-worked to a smooth finish. Corrosion found in the seal pocket must be polished out.

3.4 Examine the bushings in the front and back seal housing. Defective bushing and worn more than 2 mm in diameter must be renewed.

3.5 Examine the piston rod assemblies for score marks and or surface defects. Score marks deeper than 500 µm must be scrapped.

3.6 Check the piston rod for straightness. Rods with a run out in excess of 250 µm must be straightened. (Wooden or plastic lined blocks must be used for this operation to avoid damaged to the rods).

3.7 All defective piston rod assemblies must be repaired by grinding and restored to correct diameter by the hard chroming process. (50 mm and 100 mm respectively).

3.8 Piston rods not requiring repairs must be polished by using a fine emery tape.

4.0 Assembly. (All components must be washed and cleaned).

Note: Where possible, only matched components as marked on disassembly must be assembled in a unit.

4.1 Remove the locating dowel from the high-pressure cylinder. Fit the high-pressure cylinder into the reservoir with any scratch and or score marks to the top.

4.2 Fit the piston ring onto the piston.

4.3 Position the reservoir in fixture and insert the 50 mm diameter rod through the bush. Ensure that the correct width piston is replaced in the unit.

4.4 Position the front seal housing onto the reservoir.

4.5 Clamp the front seal housing to the reservoir to ensure a tight fit of the high-pressure cylinder between the seal housing.

4.6 Using a four directional clamp or press, clamp the reservoir firmly to the front seal housing ensuring that no gap exists between the reservoir and the front seal housing.

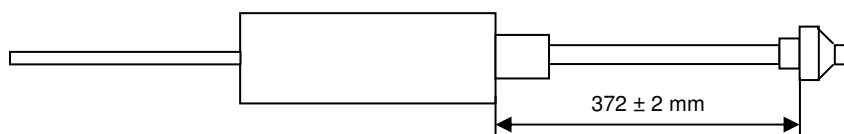
4.7 Weld the front seal housing to the reservoir taking extreme care to avoid the ingress of weld spatter into the unit.

4.8 Fit the 100 mm and 50 mm seal packs to the seal housing.

NOTE: Only approved seals must be fitted.

4.9 Test the unit with compressed air at 700 kPa ensuring that the welds and oil seal are oil tight.

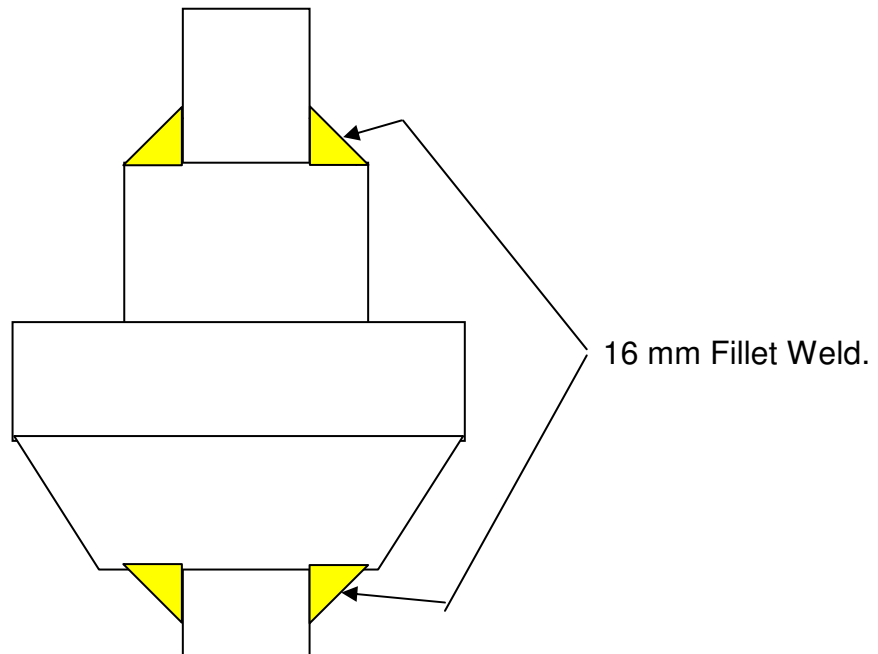
4.10 Passed test in clause 4.9 above, replace and weld on the 100 mm rod piston head, the collet stop on the 50 mm rod and the return spring housing as described below.



❖ Push the piston rod completely into the unit.

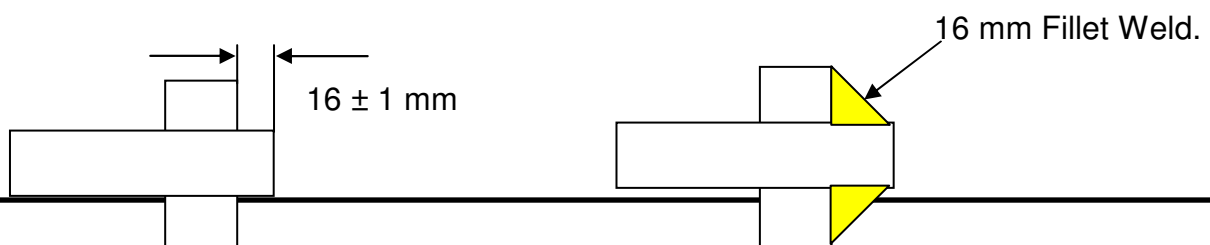
❖ Position the piston head onto the piston rod at a distance of $372 \pm 2 \text{ mm}$ as shown above and tack weld the head onto the rod.

- ❖ Weld both sides of the piston head to the piston rod with a 16 mm fillet weld.
- ❖ Pre-heat the welding area to 120 °C (At least 100 mm).
- ❖ Note: This weld must be done with a minimum of three weld runs.



NOTE: The 100 mm rod end must be fully extended when the piston head is being welded. **AFTER WELDING, THE UNIT MUST BE SUBMERGED IN A WATER WITH ONLY A SECTION OF THE PISTON ROD AND THE PISTON HEAD ABOVE WATER. THIS MUST BE DONE BEFORE THE HEAT IS GENERATED DOWN THE PISTON RESULTING IN DAMAGE BEING CAUSED TO THE OIL SEELS.**

4.11 Position the spring retaining collar to the 50 mm diameter rod and weld into position with a 16 mm fillet weld.



- 4.12** Care must be taken to ensure that the return spring housing is positioned with the spring rod in the centre.
- 4.13** Weld on the spring housing.
- 4.14** Place the unit in the testing fixture and stroke the unit. The piston assembly must move freely backwards and forwards.
- 4.15** Place the unit in the fixture and replace the return spring.
- 4.16** Fill the unit with ± 22 litres of SAE 10-30 oil.
- 4.17** Mark the repaired unit by stamping the depot code, repair date and consecutive number on the unit's front seal housing using 10 mm types.