Maintenance of Air Spring in LHB Coaches

Inspection & Maintenance of Air Spring:
Inspect for any water collection in rubber bellow of air spring.
Inspect the air spring for any damage or leakage.
Inspect air spring seat and top plates for corrosion, if corrosion noticed apply primer & black paint duly ensuring proper surface preparation.

Inspection & Maintenance of Rectangular Platform Provided on y-frame:
Inspect air spring fixing holes of square platform provided on y-frame of bogie for elongation, if elongated build them to dia 22 mm.
Inspect the corrosion on top surface of square platform provided on y-frame of bogie, Remove the corrosion and paint with primer and black paint.

Inspection of Pipe Line:
The air spring piping may be checked for any leakage/damage by soap test and repair if required.

Leakage Test of Air Spring:
Leak test of air spring assembly shall be carried out in test fixture as per following procedure.
Install the air spring assembly at working height (292+0/-5 mm).
Gradually raise the air pressure to 9 kg/cm^2 and disconnect the air supply.
Air spring assembly shall be checked for pressure drop after 15 minute at internal pressure 9.0 kg/cm^2.
Drop of pressure at the completion of test shall be measured. The pressure drop is required to be within 1% of the test pressure i.e. 9.0 kg/cm^2.

Procedure for Adjustment of Installation Lever.
Keep the coach on a level track.
Connect the pressure gauges to the drain plug locations of all 60 lit. reservoirs in a bogie.
Adjust the length of all installation levers as per requirement to connect them to lever of levelling Valve.
Supply compressed air to the bogie.
Adjust the design height of air spring to 292^{+0}_{-5} mm by gradually increase or decrease the length of installation lever.
Repeat the same procedure for the other side of air springs of same bogie.
Recheck the design height of all air springs of coach and make minor adjustment if required to maintain the design height of all four air springs in same coach between 292 to 287 mm.

CAUTION:
If the difference in pressure of the air in the air springs of the same bogie is more than setting pressure of the duplex check valve i.e. 1.5 bar, then the air will continuously escape from one air spring to the other through the duplex check valve and then to atmosphere.
Tighten the installation lever lock nuts with the horizontal lever of leveling valve, so that the setting will not be disturbed.
Repeat the above procedure for the second bogie.
Disconnect the pressure gauges and replace the drain plug.

Check for Proper Fitment of Air Spring Assembly

- Check air spring vertical symmetry
- No pre twist in air spring top plate during fitment
- No push fittings in air spring holdings
- Leveled top and base plate of air spring

Periodiacal Inspection of Air Springs System on LHB Coaches

SCHEDULE	INSPECTION ONAIR SPRING SYSTEM
Scheduale D1-	Visual check: General conditions which includes any external damages, air leakage , infringement of any fitting, etc. Daring of 150-liter air reservoir of air spring Checking of spring height with gauge & adjustment of height by operation of installation lever Check the position of isolating cock and drain cock, these should be on and off position respectively. Draining of 60- liter resrvoir.
Scheduale D2-	As in Schedule D1 & Checking of installation lever with inflate air spring for normal function, tightening of installation lever nuts and protection screen nuts, tightening of bracket of all flexible hoses. Cleaning fo air filter of 150-liter reservoir. Cleaning of levelling valve filter as per manufacturer's manual.
Schedule D3-	As in Schedule D2 & Thorough checking of air spring, bulging of bellow, air leakage. Air suspension pipe leakage check by using soap water. Removing dust mud & oil deposit if any, on air spring and control equipment. Thorough checking of square platform provided on y-frame of bogie for any crack and deformation Tightening of air spring bottom plate bolts and nuts. Measurement of bogie clearances related to air spring
SS I/SS II-	As in Schedule D3 & Through visual check of air spring after dismanting as in clause 10. Remove all valves and carry out external cleaning, overhauling and function test should be done as given in maintenance manual supplied by respective vendors. Checking securing arrangement of steel pipeline. Leakage test of air springs Installation lever adjustment. Lateral damper condition should be checked and replace with fresh if damaged. Air spring bellow should nor be painted. Inspect the corrosion on top surface platform provided on y-frame of bogie Remove the corrosion and paint with primer and black paint.

Problem and their Reasons

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1	Inadequate bogie Clearances	• Imppropper initial settings of leveling valve. • Improper functioning of leveling valve • Non uniform wear in bogie parts.
2	Failure of lateral damper	• Damper fitting misalignment. • Inadequate damper stroke. • Pre angular twist in end fasteners due to level difference.
3	None lifting of air spring	• Low air pressure. • Heavy air leak in pipe connections • Fully choked leveling valve intel port.
4	Delayed lifting of air spring	• Perished rubber seat of lower daiphragm in leveling valve. • Partly choked wire mesh in leveling valve inlet port. • Back lash error in leveling valve rotation