

Updated Pivot Bolt Installation Requirement

Introduction

BPW Axles introduced the Airlight 2 HD suspension in 2018 as a replacement for the SL suspension. One difference in these suspensions is the axle tracking method. The Airlight 2 design is an adjustable pivot bolt assembly, which has been in use on the Airlight 2 suspensions since 2002. Due to deteriorating road conditions in South Africa, BPW has been recommending that the adjusting plates be tack welded into place after wheel alignment and that the pivot bolt torque be increased to 700 Nm. It is also recommended to increase the U-bolt torque to 700 Nm to standardize the torque requirement and avoid confusion of the correct torque value. This bulletin acts as official confirmation of this recommendation.

Pivot Bolt Assembly

Axle tracking is an important procedure that is used to ensure even wear on tyres and to maximise operational life and reduce operating costs associated with tyre wear. Axle tracking on trailers is typically done either using tracking plates or using adjusting plates located at the hanger brackets.

Tracking plates are used with fixed hanger brackets while adjusting plates are used with adjustable hanger brackets. The difference in the pivot bolt assemblies for fixed and adjustable hanger brackets are shown in Figure 1.

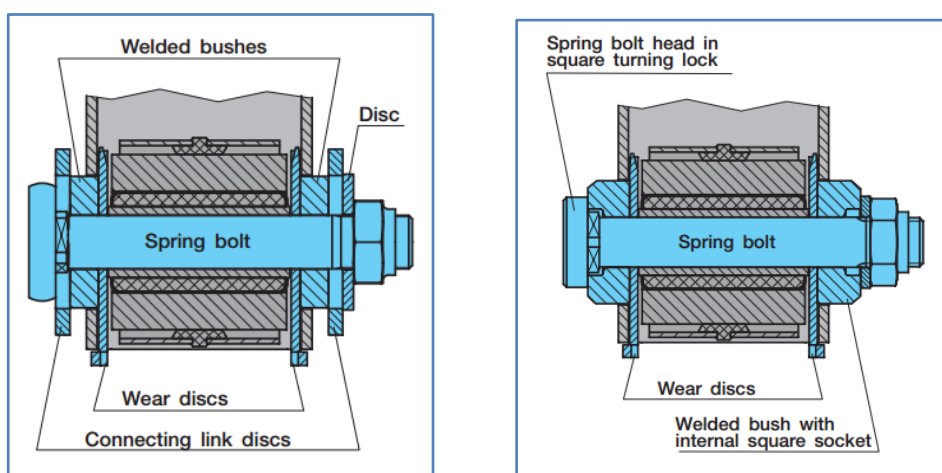


Figure 1: Adjustable hanger bracket pivot bolt assembly (Left) and Fixed hanger bracket pivot bolt assembly (Right)

Axle tracking is quicker and easier when using the adjustable hanger brackets compared to fixed hanger brackets and tracking plates, which must be welded to the axle spring pads after adjustment as shown in Figure 2.

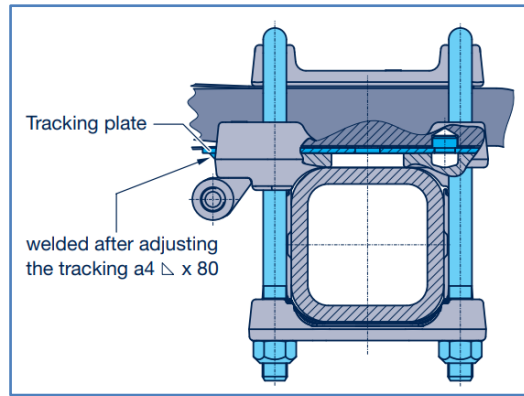


Figure 2: Illustration of the position of the tracking plate on the axle assembly

Adjusting the axle tracking on the adjustable hanger brackets is simply done by knocking the adjusting plates either up or down as shown in Figure 3. Important: The inner and outer plates must be adjusted to the same height.

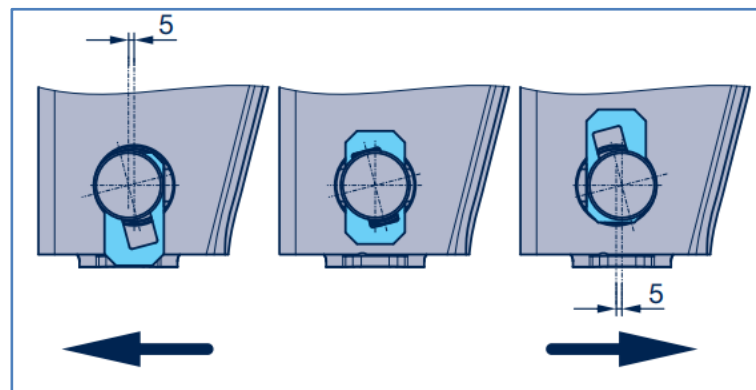


Figure 3: Axle tracking performed with the adjusting plates on adjustable hanger brackets

Once wheel alignment has been completed and the alignment values remain within specification, the pivot bolt assembly should not be loosened further, as it will already have settled into position. A summary of the wheel alignment recommendations for BPW axles is provided in.

New Installation Requirement

After the axle tracking has been completed (with brakes released and on level ground), it is important to tighten the pivot bolt nut to the correct torque (**M = 700 Nm** for M24 (SW36) bolts-range 605-715 Nm) at the correct ride height.

U-bolts

To prevent confusion and possible errors with the correct tightening torque of the U-bolts and pivot bolts, it is recommended to also increase the M24 (SW36) U-bolt torque to **M=700 Nm** (605-715 Nm) for the welded suspension.

Tack-Welding

BPW requires that all the adjusting plates be tack-welded as shown in Figure 4 (on the inside and outside of the hanger bracket). This is valid for both on-road and off-road vehicle operations. **It is however not required in the case of tankers or other vehicles which do not allow “hot-works” to be performed.**

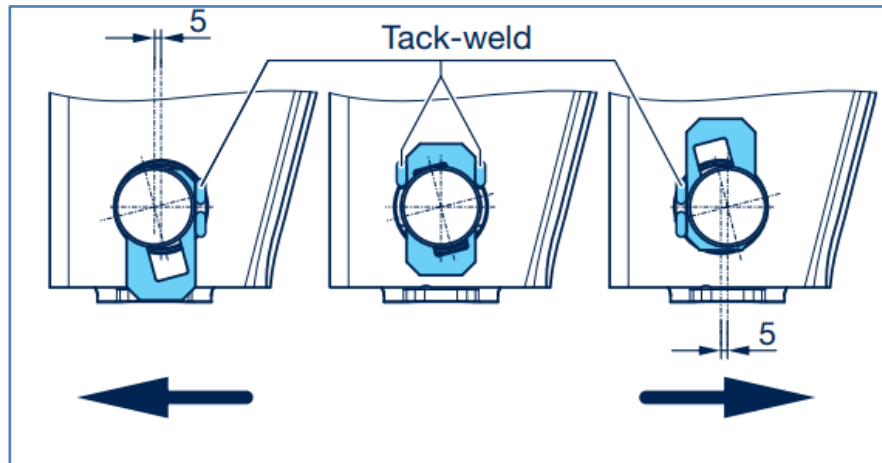
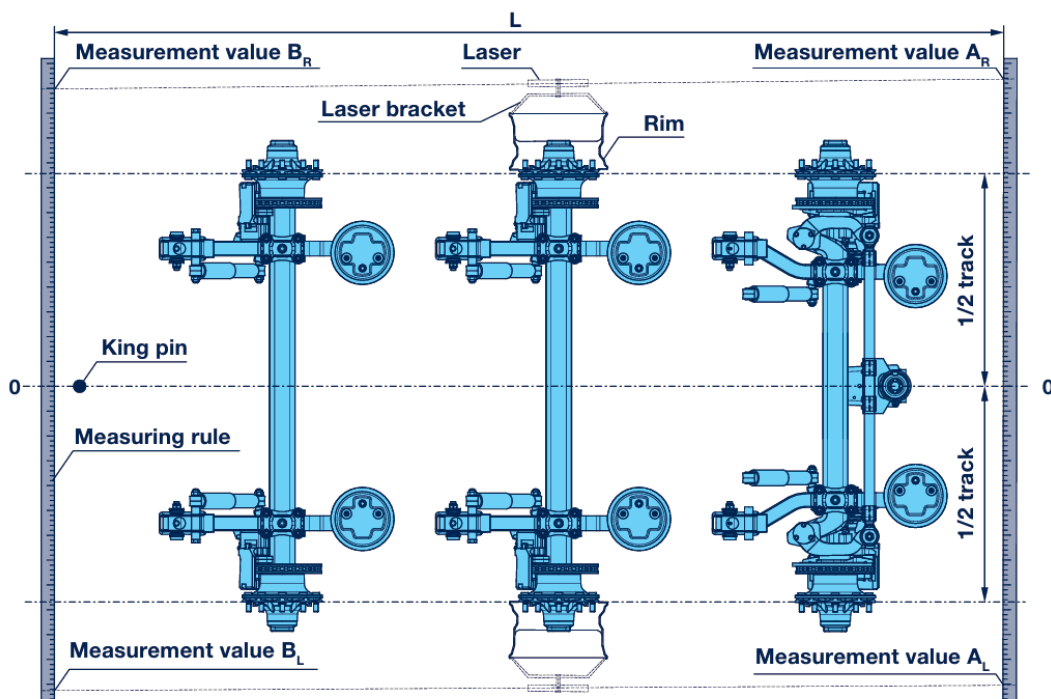


Figure 4: Illustration of tack welds on adjusting plates

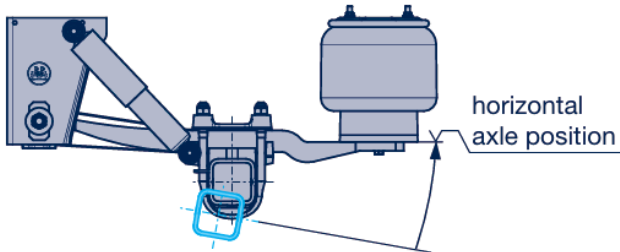
As part of normal maintenance procedure, all nuts must be checked and retorqued after the first loaded operation, and thereafter as prescribed in the service manual. BPW recommends that a marker be used to mark nuts that have been torqued. This visual cue will ensure that bolts are not skipped and gives an indication if there has been any movement of the assembly. The brakes must be released and the vehicle positioned on a flat surface when performing the torque check or torquing of the pivot bolts.

For further information regarding the installation of BPW air suspension, please refer to the BPW EA Airlight II / SL 37571901e installation manual. All installation and workshop manuals can be downloaded from the BPW Axles website: <https://bpw.co.za/support-services>



To compensate for manufacturing tolerances, an axle alignment check must be conducted and any corrections made as necessary.

Care must be taken to ensure that the axle is aligned **horizontally** (at ride height) with the base in order to obtain a correct measurement. It is assumed that the vehicle does not carry any loads.



The operating and setting instructions of the laser measuring system manufacturer must be adhered to! The maximum possible wheel base correction per axle is ± 10 mm for tracking plates (see Chapter 11.4) and ± 5 mm for adjustable hanger brackets (see Chapter 11.3).

During the tracking process, the tracking values of the right and left wheel side must be averaged for each axle.

Instead of measuring all three axles using the laser method, it is also possible to only track the mid-axle using the laser method. The front and rear axle are positioned relatively to the mid-axle using suitable axle centre distance devices (like during conventional tracking).

$$\frac{(AR - BR) + (AL - BL)}{L} = \text{Axle track (mm/m)}$$

Positive value = toe-in

Negative value = toe-out

Target values (total axle track):

- ⦿ Rigid axle
=> -1 + 5 mm/m
- ⦿ Self-steering axle
=> 0 + 4 mm/m (drum brake)
=> -5 - 1 mm/m (disc brake)