

Importance of correct maintenance procedures on AL 2 pivot bolt assemblies

Introduction

BPW has always prided itself on being a company that considers the long-term value and ease of use of its products. BPW has been using the M24 pivot bolt on the AL II suspension in South Africa since September 2007.

The perception might be that the M30 pivot bolt must be “more robust” and last longer simply because it is bigger. The M24 pivot bolt is however highly engineered to produce a greater clamping force between all of the pivot bolt assembly components. This is also achieved using a lower tightening torque which makes maintenance and torque checking easier. A higher clamping force is needed due to the presence of more components as the AL 2 suspension uses an adjustable hanger to allow for more easy wheel alignment compared to the use of tracking plates.

It should however be noted that as with any bolted connection, over-torquing of the pivot bolt assembly can lead to irreversible damage to the assembly such as stretching of the pivot bolt. Operators should therefore pay special attention to avoid exceeding the limits prescribed by BPW, as the entire pivot bolt assembly will need to be exchanged once damaged.

Pivot bolt tightening torques

Axle tracking is an important procedure that is used to ensure even wear on tyres and 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 is shown in Figure 1.

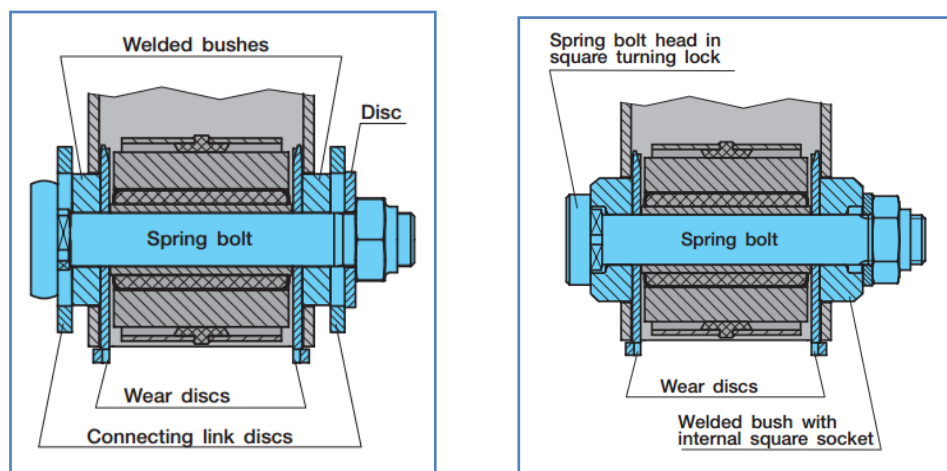


Figure 1: Adjustable hanger bracket pivot bolt assembly (Left) and Fixed hanger bracket pivot bolt assembly (Right)

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

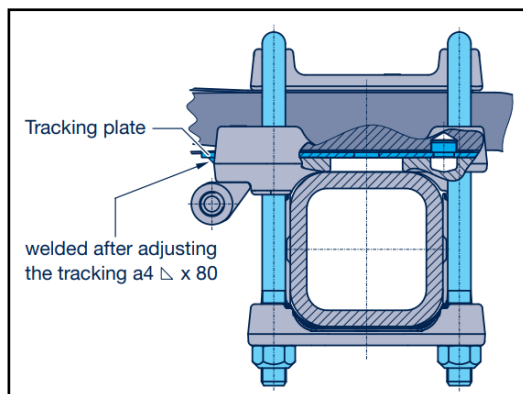


Figure 2: Illustration of the position of the tracking plate on the axle assembly

The AL 2 suspension has a tightening torque range of 605 Nm to 715 Nm, while the SL suspension has a tightening torque range of 840 – 990 Nm as summarised below.

Check spring pivot bolts for tightness.

Tightening torque with a torque wrench:

Hanger brackets and channel crossmember Airlight II from 09/2007:

M 24 (SW 36)

M = **650 Nm** (605 - 715 Nm)

Hanger brackets from 8/2001:

M 30 (SW 46)

M = **900 Nm** (840 - 990 Nm)

Figure 3: Summary of the tightening torque ranges for AL 2 and SL suspensions

Due to the worsening road conditions, some operators believe that it is necessary to increase the tightening torques of the AL 2 suspension to values above 715 Nm. In other instances, incorrect procedures are followed and power tools/ impact guns are used that can easily overtighten the pivot bolt assembly. It is also possible to accidentally over torque the AL 2 pivot bolt by confusing the torque ranges of the SL vs the AL 2 suspension.

The use of impact tools or exceeding the prescribed torque ranges is NOT allowed on any BPW components and requires immediate intervention.

To combat the worsening road conditions, BPW has instituted a requirement that all adjusting plates be tack welded. The technical bulletin is attached and can be found on our website. <https://www.bpw.co.za/downloads/bulletins/2022/TB42-Updated-Pivot-Bolt-Installation-Requirement.pdf>

The torque range of 605 Nm to 715 Nm is still more than sufficient to produce a suitable clamping force and should never be exceeded.

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It is important to note that the tightening of all bolt assemblies on BPW suspensions requires the use of a regularly calibrated torque wrench. Although impact wrenches can initially seem attractive due to perceived time savings, they frequently cause over-tightening of bolts. Overtightening of the bolt can lead to the deformation of the bolt or other assembly components and the loosening of the assembly as a result thereof. There is, unfortunately, no way of undoing this damage and can cause catastrophic failure of safety-critical components such as the pivot bolt assembly. The risk vs reward is therefore not

attractive when considering the possible long-term damage to the pivot bolt assembly and your vehicle due to over-torquing of bolts.

Unfortunately detecting damage from an over-torqued pivot bolt assembly is nearly impossible and if the recommended torque values have been exceeded, BPW recommends that the entire pivot bolt assembly be changed as soon as possible. It is important to note that the entire assembly needs to be changed as various components such as the pivot bolt bush may also have been damaged due to over-torquing. Simply changing the pivot bolt will not resolve the issue and the damaged assembly is likely to continue coming undone during operation, unless all pivot bolt assembly parts are changed simultaneously.

BPW have an excellent sales and technical team that will gladly assist you and your fleet. Should you have any queries or uncertainty regarding pivot bolt maintenance and torques, please do not hesitate to contact us. BPW also has useful workshop posters that assist workshops in determining the tightening torques and other critical settings on all components. It also provides the correct maintenance intervals for various components. If your workshop or your service provider does not have this poster, please let us know and we will gladly supply it. It can also be found online at <https://www.bpw.co.za/downloads/maintenance-instructions/BPW-maintenance-wall-chart2017.pdf>

For a list of all our accredited workshops, please follow the following link. <https://www.bpw.co.za/network>