Spring Pivot Bolts – Correct Tightening Procedure

Introduction

The spring pivot bolt (see Figure 1, point 1) connects the trailing arm to the hanger bracket. The steel-rubber-steel bush within the trailing arm is responsible to absorb the torsional loading and transmit side forces into the vehicle frame. The serviceable life of the steel-rubber-steel bush is dependent on the tightness of the inner steel bushing and as such needs regular inspections.

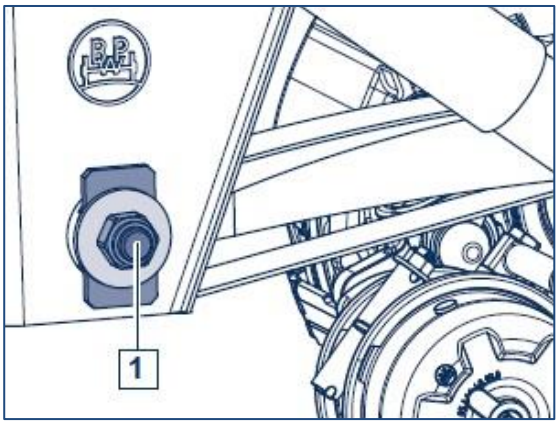

Figure 1

On every new vehicle the spring pivot bolt needs to be tightened within 2 weeks of the first journey under load or latest after 2000 km after which the tightness of the spring pivot bolt needs to be inspected every three months for off-road or bad road conditions and six months for on-road conditions. In addition, visual checks on the spring pivot bolt need to happen on an annual basis. This is done by moving the vehicle back and forth slightly with the brakes applied. One can also move the rolled spring ends with the aid of a lever. No play should be present in the rolled spring end when doing so. If the fastening is loose the spring pivot bolt may be damaged.
There are two sizes of the spring pivot bolt, M24 and M30 (see Figure 2) and the following should always form part of the inspection:

- Lateral wear washers
- Spring pivot bolt tightness:
  - M24 – 650Nm (605-715 Nm)
  - M30 – 900Nm (840-990 Nm)

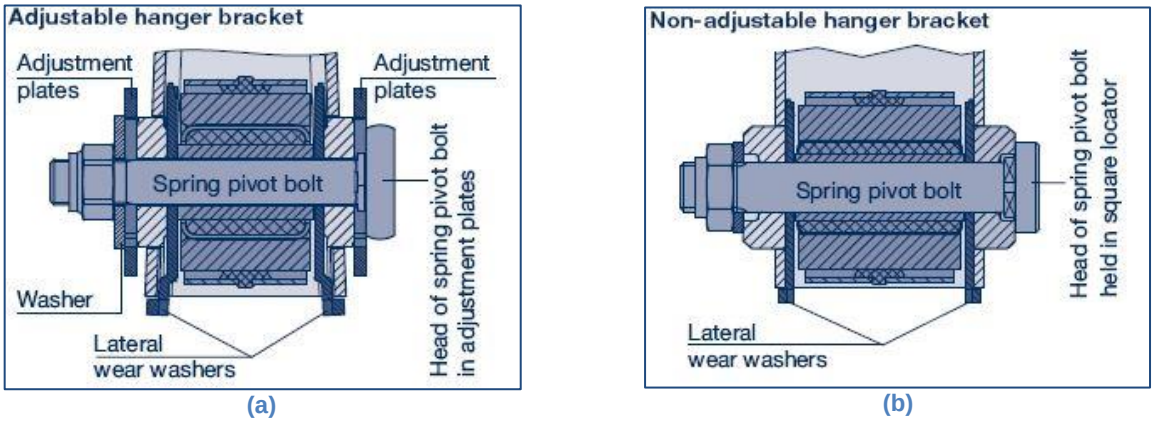

Figure 2 – (a) M24 and (b) M30 Spring pivot bolt

Spring Pivot bolt – Correct tightening procedure

The following procedure must be adhered to when tightening the spring pivot bolt:

1. The vehicle must be on level ground.
2. The brakes must be released and the wheels chocked.
3. The suspension must be fully charged and the trailer must be set to its correct ride height. The ride height (FH) is measured from the axle center to the lower edge of the frame, see Figure 3.

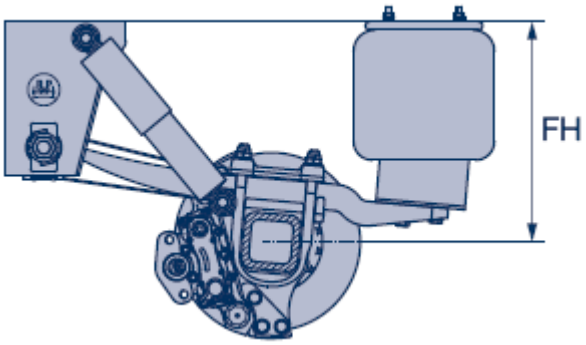

Figure 3

4. The pivot bolts need to be torqued (with a calibrated torque wrench) to the following torque values:
    a. M24 – 650Nm (605-715 Nm)
    b. M30 – 900Nm (840-990 Nm)

If the spring pivot bolt is found to be damaged the pivot bolt and the trailing arm bush needs to be replaced.

Conclusion

The steel-rubber-steel bush is a critical component in the air suspension as it is responsible to absorb the torsional loading and transmit side forces into the vehicle frame. The spring pivot bolt is responsible to ensure that fixed within the hanger so that these forces can be transmitted. Failure to tighten the spring pivot bolt as per the procedure will always lead to an early failure of the complete assembly. Regular inspection and correct maintenance of the spring will result in a prolonged life of the vehicle.