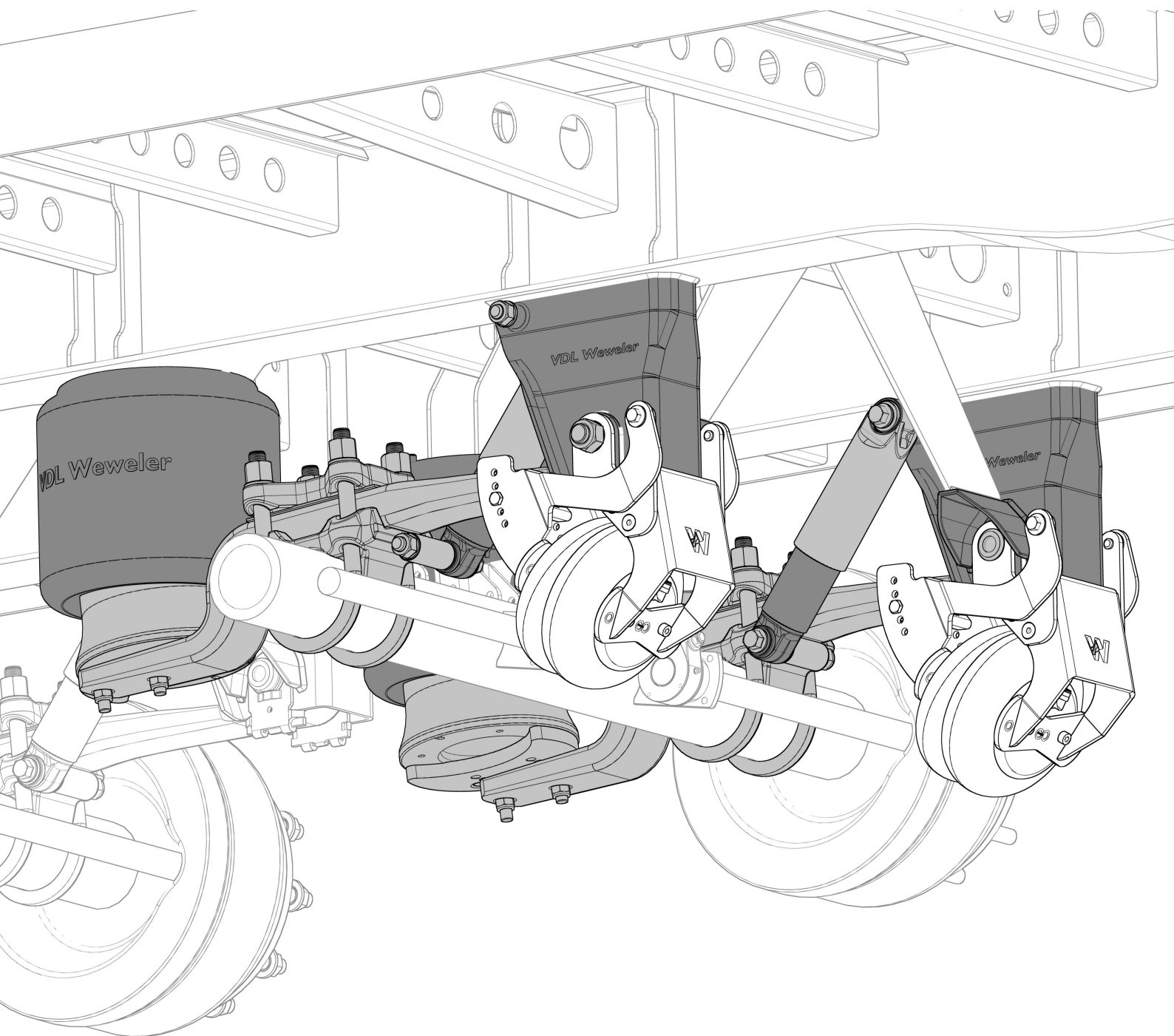


VDL Weweler



MAINTENANCE INSTRUCTIONS



VDL WEWELER MBS - HD / L / V / W / F AIR SUSPENSION SYSTEMS

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Revision summary

Date	Revision	Comment	Author
May 2017	-	Initial version	RTS
March 2019	A	Updated 'Periodic maintenance and inspection' table	RTS
July 2020	B	Updated tightening instructions (tolerance on M12 connections) and MBS connections added. Updated warranty & liability referral.	RTS

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General notes

The maintenance instructions in this manual are specific for VDL Weweler MBS - HD / L / V / W / F air suspension systems. It is essential to observe the maintenance intervals specified in this manual or specified by the manufacturer, this will ensure continuous operational safety and roadworthiness.

If the operator of the trailer does not have the required technical equipment and/or expertise is not officially authorised to carry out intermediate inspections, contact VDL Weweler.

They can supply further detailed technical information if required and the correct procedure for replacing worn parts.

Ensure that when fitting replacement components, only fit VDL Weweler genuine parts. This will avoid invalidating warranties, type approvals, local and international regulations.

VDL Weweler air suspension systems are low maintenance systems. For this reason, all moving parts are equipped with rubber/steel bushings; this avoids the need for lubrication during regular service intervals. The specified torque settings and high clamping forces ensure that the steel inner bushes cannot turn. The rubber part of the component accommodates the turning movement, when required.

Welding remarks

The trailing arms, air bags and plastic shock absorber covers are to be protected against welding sparks and weld spatter when carrying out all welding work. The earth clamp must never be connected to the trailing arm or the axle hub.

No welding is allowed on the trailing arms!

Warranty and liability

VDL Weweler B.V. warrants all in house manufactured products and all non VDL Weweler components needed to complete a VDL Weweler product, for a period as per listed in the “Warranty tables” in the “VDL Weweler General Defects Liability Statement Trailer” or otherwise agreed in writing.

The “VDL Weweler General Defects Liability Statement Trailer” can be downloaded from our website www.vdlweweler.nl.

Periodic maintenance and inspection - MBS-HD/L/V/W/F air suspensions

For detailed instructions, see the following pages.

Operations to be done each time before you drive off:

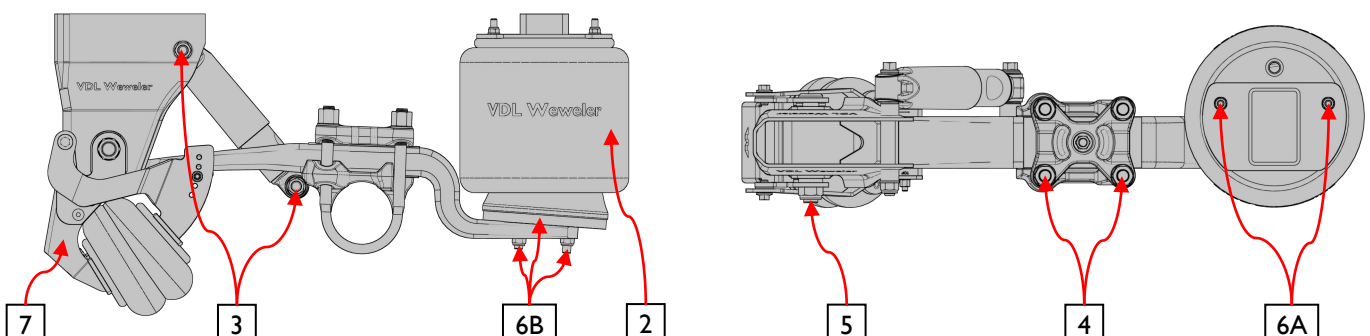
Ensure that the air reservoir of braking and suspension systems have reached their operating pressure.

Drain the water and condensation from the system.

Check air suspension air springs for signs of damage and incorrect seating.

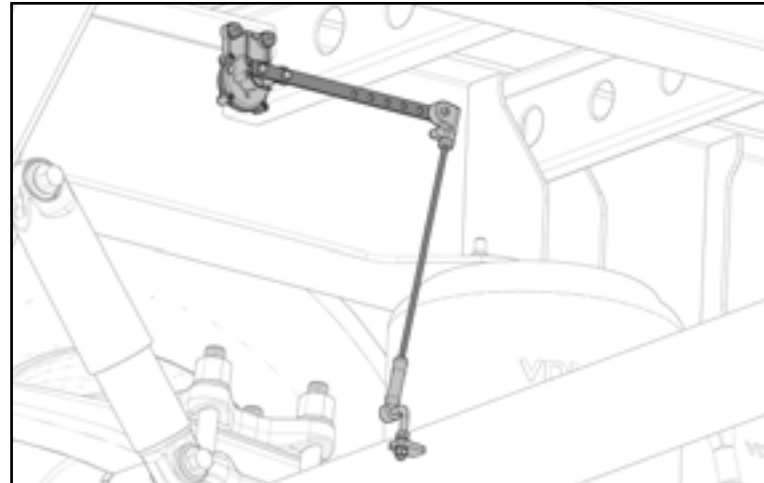
		INITIALLY AFTER 2 WEEKS *	EVERY 6 MONTHS **	EVERY YEAR **
-	Visual inspection. Check all components and welding seams for damage and wear.		X	
1	Check the condition of the air suspension levelling valve and for the correct torque loadings.			X
2	Check the condition of the air springs.		X	
3	<p>Check shock absorber fastening for the correct torque loading.</p> <p>Field check of torque settings with a calibrated torque wrench:</p> <ul style="list-style-type: none"> ✓ M16 (A/F 24) 350 Nm ✓ M20 (A/F 30 - nut) 550 Nm ✓ M24 (A/F 36) 620 Nm <p>When mounting new shock absorber kit:</p> <ul style="list-style-type: none"> ✓ Side mounted: M20 (A/F 30 - nut) 200 Nm (+20 / -0) + 180° tightening angle ✓ Center mounted: M16 (A/F 24) 170 Nm (+17 / -0) + 270° tightening angle ✓ Center mounted: M20 (A/F 30 - nut) 550 Nm (+50 / -0) ✓ Rear mounted: M24 (A/F 30) 620 Nm (+50 / -0) 	X		X
4	<p>Check the axle clamp U-bolts / bolts for the correct torque loadings.</p> <p>Field check of torque settings with a calibrated torque wrench:</p> <ul style="list-style-type: none"> ✓ M22 (A/F 32) 600 Nm ✓ M24 (A/F 36) 800 Nm ✓ M27 (A/F 41) 1000 Nm <p>When mounting new axle clamp U-bolts / bolts:</p> <ul style="list-style-type: none"> ✓ M22 (A/F 32) 600 Nm (+25 / -0) ✓ M24 (A/F 36) 800 Nm (+50 / -0) ✓ M27 (A/F 41) 750 Nm (+50 / -0) + 180° tightening angle 	X		X
5	<p>Check the pivot bolts for the correct torque loadings.</p> <p>Field check of torque settings with a calibrated torque wrench:</p> <ul style="list-style-type: none"> ✓ M27 (A/F 41) 1000 Nm <p>When mounting new trailing arms:</p> <p>For 102mm wide trailing arm bush:</p> <ul style="list-style-type: none"> ✓ M27 (A/F 41) 250 Nm (+25 / -0) + 270° tightening angle + ¼ of thread greased <p>For 82mm wide trailing arm bush:</p> <ul style="list-style-type: none"> ✓ M27 (A/F 41) 250 Nm (+25 / -0) + 250° tightening angle + ¼ of thread greased 	X		X
6	<p>Check air spring, offset plate & external bump stop (not shown) fastening for the correct torque loadings.</p> <p>Field check of torque settings with a calibrated torque wrench:</p> <ul style="list-style-type: none"> ✓ A: Air spring top & External bump stop: M12 (A/F 19) 30 Nm ✓ A: Air spring top: M22 (A/F 32) 50 Nm ✓ B: Air spring bottom & Offset plate: M12 (A/F 19) 65 Nm ✓ B: Air spring bottom & Offset plate: M16 (A/F 21 / 24) 200 Nm <p>When mounting new air springs / offset plates / external bump stops:</p> <ul style="list-style-type: none"> ✓ A: Air spring top & External bump stop: M12 (A/F 19) 30 Nm (+10 / -0) ✓ A: Air spring top: M22 (A/F 32) 65 Nm (+0 / -15) ✓ B: Air spring bottom & Offset plate: M12 (A/F 19) 65 Nm (+10 / -0) ✓ B: Air spring bottom & Offset plate: M16 (A/F 21 / 24) 200 Nm (+20 / -20) 	X		X
7	Check axle lift and splitter for the correct torque loadings. See axle lift and splitter data sheets for the correct torque settings.	X		X

* After the first run under load conditions. ** Under extreme conditions with more frequency.

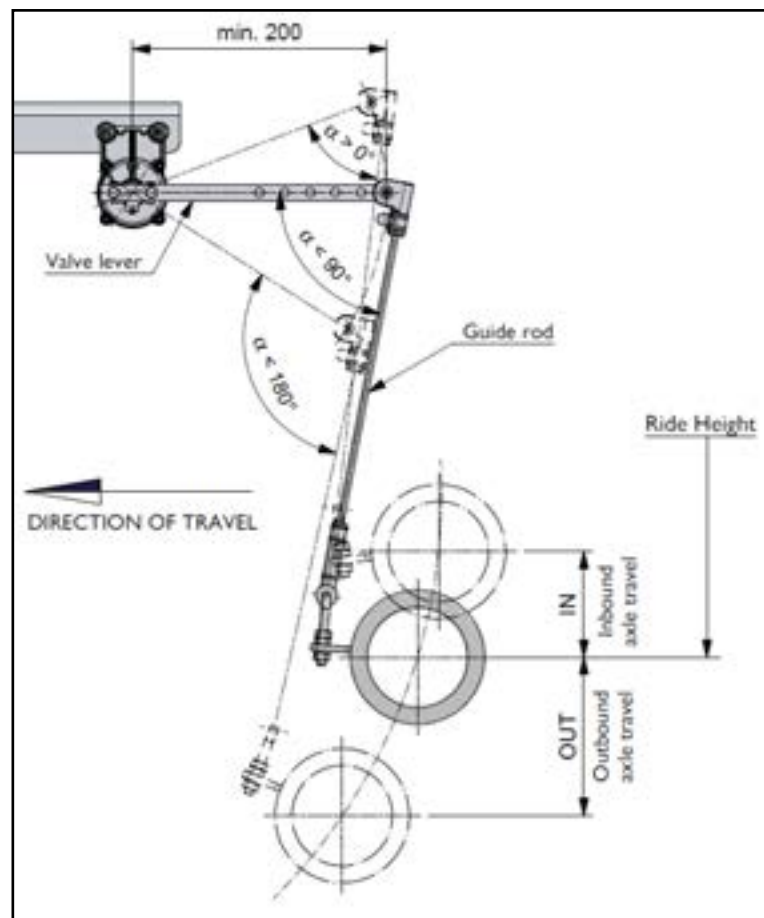


1. Air suspension levelling valve

Check the condition of the air suspension levelling valve and the line connections for correct seating, damage and air tightness. Check all the fastenings of the linkages for the correct torque loadings (acc. specifications of the valve supplier).



Check if the air suspension levelling valve is installed properly according the illustration on the right.

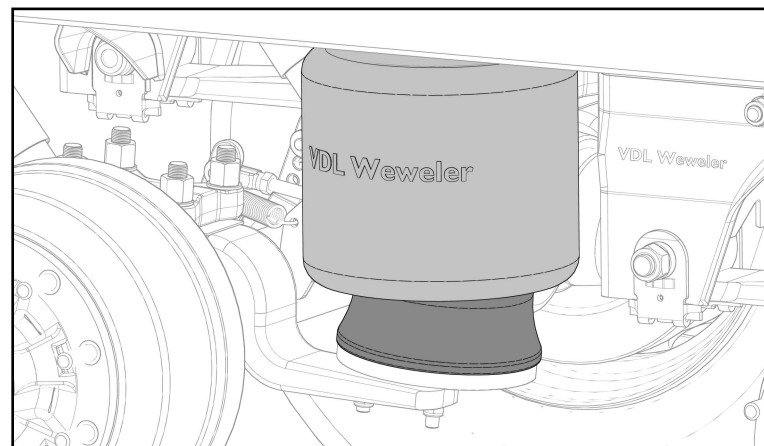


2. Air springs visual inspection

Check air springs, every 6 months, for external damage like surface cracking, abrasion, trapped debris etc. Replace the air springs in the event of damage.

Notice:

No welding should be carried out on the steel parts of the air springs and pressure vessel! The air suspension should only be filled with compressed air when mounted on the vehicle.



3. Shock absorbers

Check shock absorbers fastening every year and initially after 2 weeks of operation. Check lower and upper shock absorber fastening for tightness.

Field check of torque settings with a calibrated torque wrench:

- ✓ M16 (A/F 24) **350 Nm**
- ✓ M20 (A/F 30 - nut) **550 Nm**
- ✓ M24 (A/F 36) **620 Nm**

When mounting new shock absorber kit:

- ✓ Side mounted:
 - M20 (A/F 30 - nut) **200 Nm (+20 / -0) + 180° angle**
- ✓ Center mounted:
 - M16 (A/F 24) **170 Nm (+17 / -0) + 270° angle**
 - M20 (A/F 30 - nut) **550 Nm (+50 / -0)**
- ✓ Rear mounted:
 - M24 (A/F 30) **620 Nm (+50 / -0)**

Follow mounting instructions according to the specific 'System Installation Guide' (SIG document) in case of replacement of parts.

During vehicle maintenance "misting" shock absorbers are often criticised and replaced because the phenomenon "misting" shock absorber is often confused with leakage.

Misting is the process whereby very small amounts of shock fluid evaporate at a high temperature through the upper seal of the shock. On bad roads shock absorbers can reach an operating temperature of over 180°C. When the "mist" reaches the cooler outside air, it condenses and forms a film on the outside of the shock body. Misting is perfectly normal and a necessary function of the shock. The fluid which evaporates through the seal area helps to lubricate and prolong the life of the seal.

Misting symptoms:

- The shock absorber shows little oil and has a matt appearance.
- No oil is dripping of the outer tube.
- The oil film feel dry.
- Neighboring parts are free of oil.

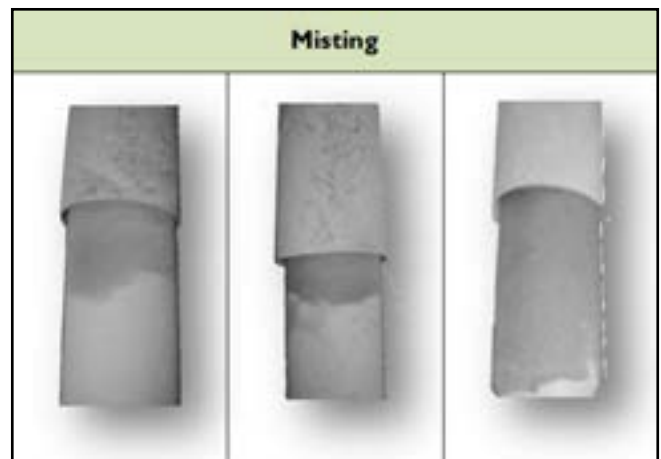
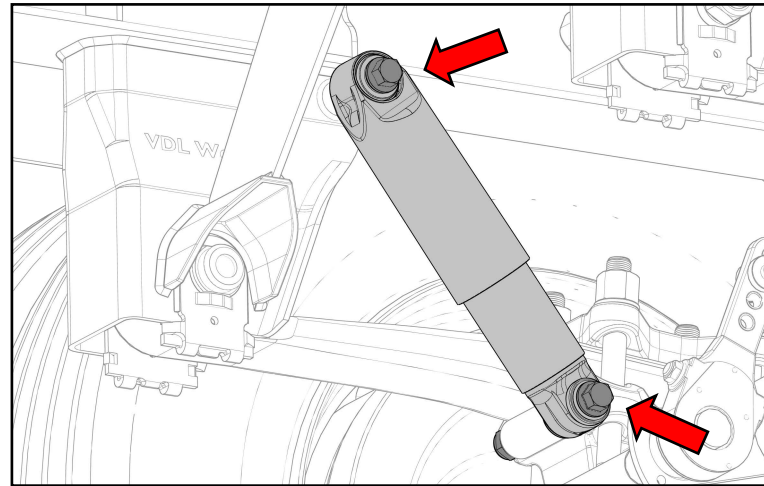
Leaking symptoms:

- The main surface of the outer tube is covered in oil and dirt (shiny oil and dirt film).
- The touch of oil film feels wet.
- A leaking shock absorber shows signs of fluid leaking in streams from the upper seal. These streams can easily be seen when the shock is fully extended, underneath the dust cover of the shock.

In case of doubts, clean and dry the shock absorber and drive the vehicle at moderate speeds for 15 minutes. Inspect again after the test drive.

Perform the inspection under dry weather conditions.

In case of failed shock absorber bushes, the shock absorber should be replaced. Trying to move the shock absorber when it is fastened, enables you to simply detect excessive wear of rubber bushes. Observing the specified torque setting ensure that the steel inner bush will not get twisted and that the torsional motion is accommodated by the rubber part alone.



The above pictures are only examples of different types of misting or leaking and should only support the visual inspection.

4. Axle clamping

Check U-bolts / bolts fastening every year and initially after 2 weeks. Check nuts of the U-bolts / bolts for tightness. If loose, tighten nuts alternately a little at a time.

Field check of torque settings with a calibrated torque wrench:

- ✓ M22 (A/F 32) **600 Nm**
- ✓ M24 (A/F 36) **800 Nm**
- ✓ M27 (A/F 41) **1000 Nm**

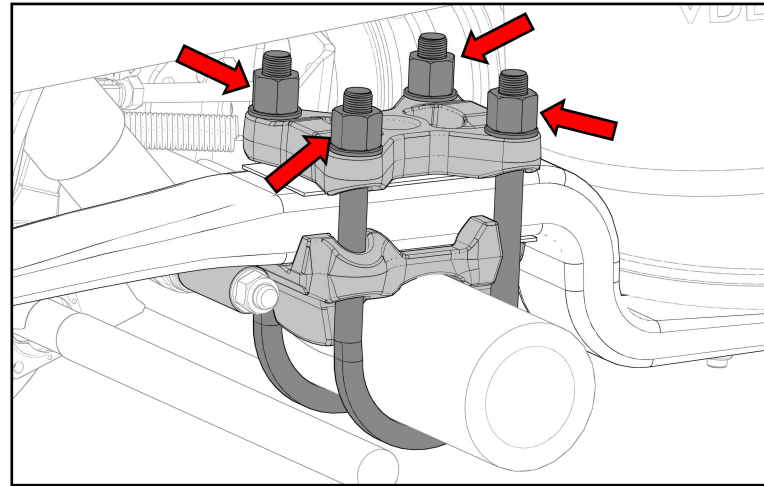
When mounting new axle clamp U-bolts / bolts:

- ✓ M22 (A/F 32) **600 Nm (+25/-0)**
- ✓ M24 (A/F 36) **800 Nm (+50/-0)**
- ✓ M27 (A/F 41) **750 Nm (+50/0) + 180° angle**

Follow mounting instructions according to the specific 'system installation Guide' (SIG document) in case of replacement of parts.

Notice:

No welding should be performed on the trailing arm!



5. Pivot bolts

Check pivot bolts fastening every year and initially after 2 weeks. Using the specified torque settings ensures that the steel inner bush (5) will not get twisted and the torsional motion is accommodated by the rubber part (4) alone.

Check bushes, move the vehicle back and forth slightly with the brake applied or lever rolled spring ends with the aid of a bar. No play should be present in the rolled spring eye (6) when doing so. If the fastening is loose the pivot bolt (2) may be worn or damaged. Replace damaged parts immediately!

Hanger bracket with axle alignment device:

Check the wear plates (3) that are located on the hanger bracket (1). If these are worn to the point that perfect clamping of the steel inner bush (5) is no longer insured, replace the complete rubber bush and wear plates.

Hanger bracket without axle alignment device:

Check the wear plates (3) that are welded to the hanger bracket (1). If these are deteriorated to the point that perfect clamping of the steel inner bush (5) is no longer insured, replace the complete rubber bush and the hanger bracket.

Check the M27 lock nut (8) on the pivot bolt for tightness.

Field check of torque settings with a calibrated torque wrench:

- ✓ M27 (A/F 41) **1000 Nm**

When mounting new trailing arms:

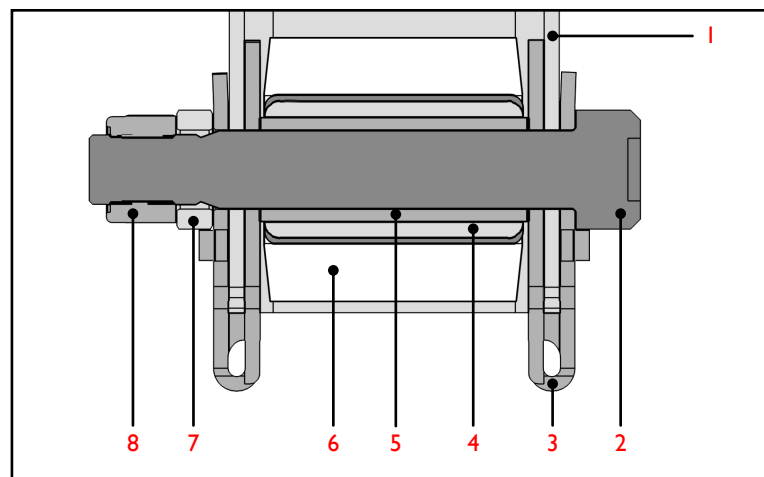
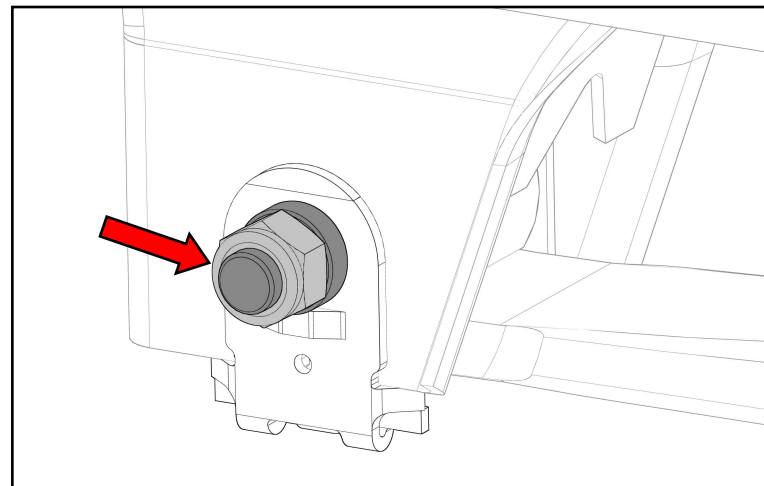
For **102mm** wide trailing arm bush:

- ✓ M27 (A/F 41) **250 Nm + 270° tightening angle + ¼ of thread greased**

For **82mm** wide trailing arm bush:

- ✓ M27 (A/F 41) **250 Nm + 250° tightening angle + ¼ of thread greased**

Follow mounting instructions according to the specific 'System Installation Guide' (SIG document) in case of replacement of parts.



6. Air spring & Support

Check air spring (& support) fastening every year and initially after 2 weeks. The different types of air springs can be mounted directly on the trailing arm or with a separate air spring support. This depends on the type of air suspension system and the desired air spring offset.

Check air spring & offset plate fastening for the correct torque loadings.

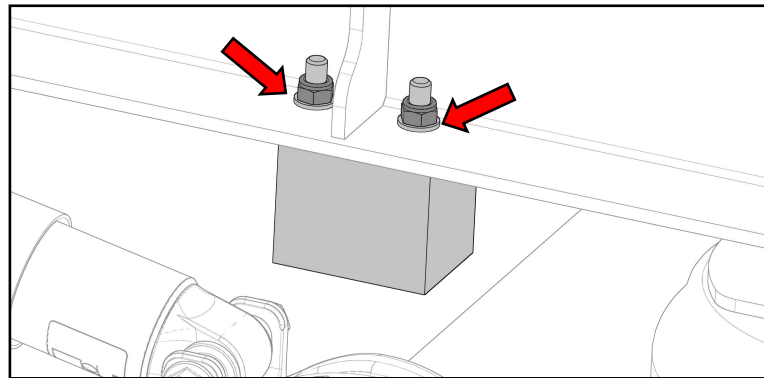
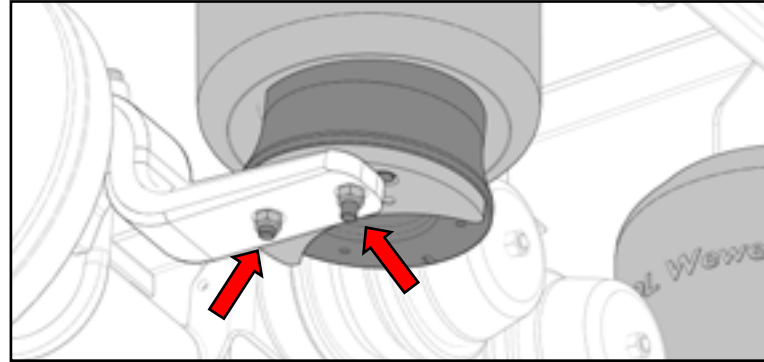
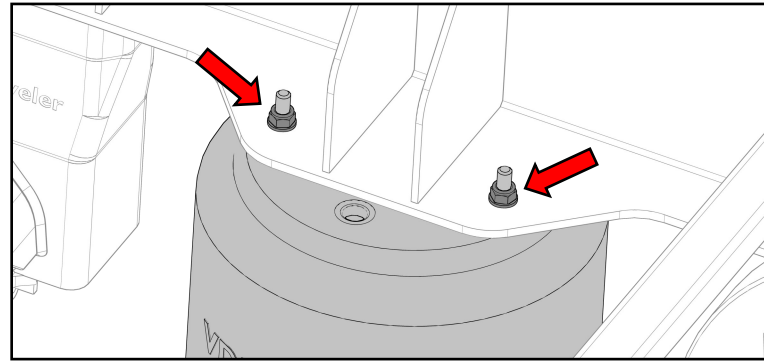
Field check of torque settings with a calibrated torque wrench:

- ✓ Air spring top: M12 (A/F 19) **30 Nm**
- ✓ Air spring top: M22 (A/F 32) **50 Nm**
- ✓ Air spring bottom: M12 (A/F 19) **65 Nm**
- ✓ Air spring bottom: M16 (A/F 21) **200 Nm**
- ✓ Offset plate: M12 (A/F 19) **65 Nm**
- ✓ Offset plate: M16 (A/F 24) **200 Nm**
- ✓ External bump stop: M12 (A/F 19) **30 Nm**

When mounting new air springs / offset plates:

- ✓ Air spring top: M12 (A/F 19) **30 Nm (+10 / -0)**
- ✓ Air spring top: M22 (A/F 32) **65 Nm (+0 / -15)**
- ✓ Air spring bottom: M12 (A/F 19) **65 Nm (+10 / -0)**
- ✓ Air spring bottom: M16 (A/F 21) **200 Nm (+20 / -20)**
- ✓ Offset plate: M12 (A/F 19) **65 Nm (+10 / -0)**
- ✓ Offset plate: M16 (A/F 24) **200 Nm (+20 / - 20)**
- ✓ External bump stop: M12 (A/F 19) **30 Nm (+10 / -0)**

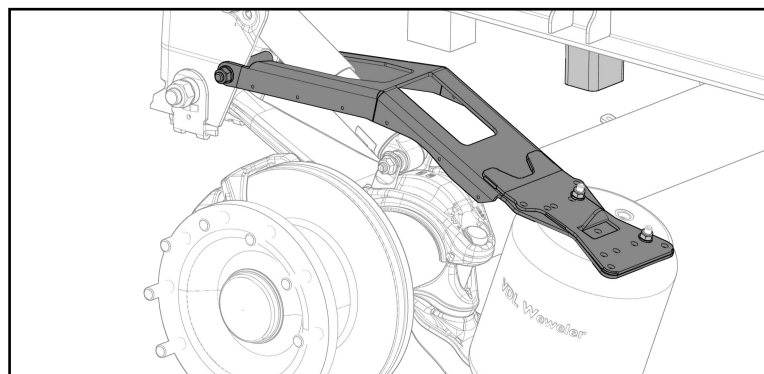
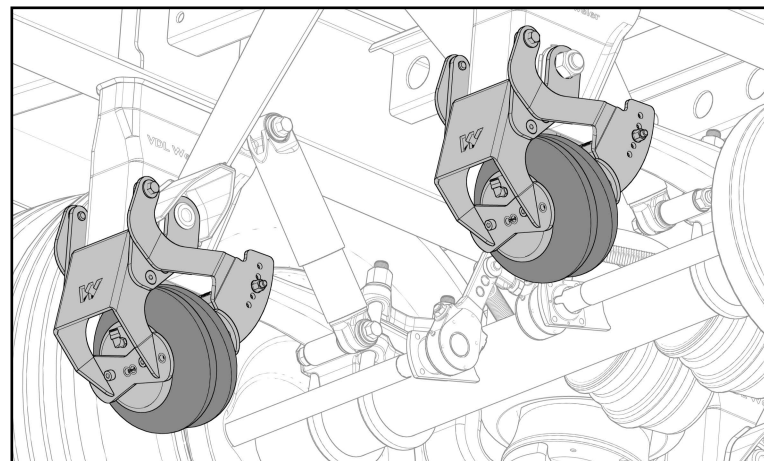
Follow mounting instructions according to the specific 'System Installation Guide' (SIG document) in case of replacement of parts.



7. Axle lift & Splitter

Check axle lift / Splitter fastening every year and initially after 2 weeks.

The torque settings depends on the type of axle lift or Splitter. See the axle lift / Splitter data sheets for the corresponding torque settings for each axle lift / Splitter.



8. General information

8.1 Suspension stop

The air suspension systems have been engineered so that the shock absorber acts as the suspension stop.

The shock absorbers can withstand heavy-duty service, which obviates the need for arrester cables or other suspension stops.

In order to cope with the situation where the air suspension system has been lowered without air, an internal bump stop in the air spring is present.

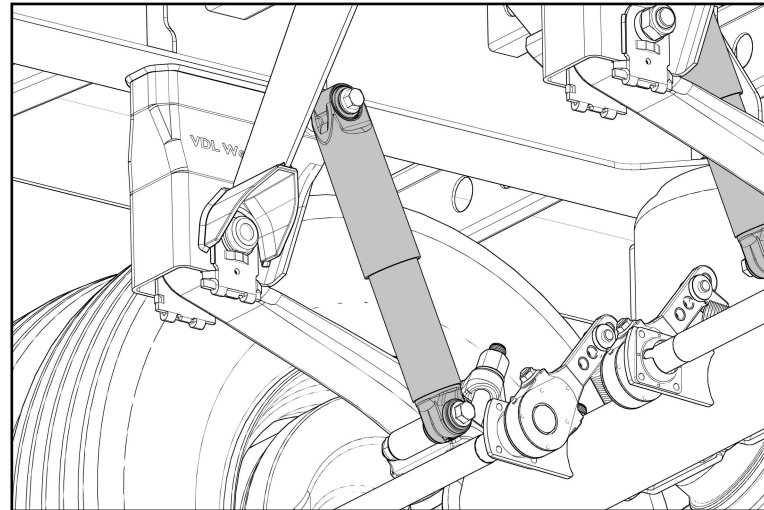
If an air spring failure occurs, the internal bump stops enables the user to run (without air pressure) at very low speed for a short period of time to get to the nearest service station. To prevent further damage, always make sure that there is enough clearance for all moving parts.

8.2 Lifting and lowering valve

Use the raise-lower valve **ONLY** for loading and unloading.

When driving the vehicle, be sure that you have selected “driving position” on the valve.

Driving with the air suspension valve set to “RAISE/LIFT” may cause damage to the load, semi-trailer, brakes and the suspension system and leads to shock absorber overloading and eventually the failure of the system.



Notes

A series of horizontal dotted lines for taking notes, spanning the width of the page.