

## BPW trailer axles and suspensions

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The following maintenance instructions apply to BPW trailer axles and BPW suspensions manufactured from 1982 onwards. They form part of the BPW warranty conditions.

All matters concerning warranty must initially be referred to the trailer manufacturer.

These maintenance instructions are set out in calendar weeks, and are listed to coincide with statutory testing requirements.

It is essential that all maintenance work is carried out in accordance with the prescribed intervals in order to maintain the safe operation and roadworthiness of the trailer. The relevant operation and service regulations of the vehicle manufacturer and of the manufacturers of other vehicle parts must also be adhered to.

Rectification of any defects which are discovered or replacement of worn parts should be carried out by a BPW Service Centre or BPW Direct Service Partner unless the vehicle owner has the appropriate personnel facilities, equipment and workshop manuals available and possesses an official certificate to perform interim inspections or special brake inspections.

**We strongly recommend that only genuine BPW parts be used when fitting spare parts. Parts authorised by BPW for trailer axles and axle units are regularly subjected to special inspections. BPW accepts product liability for them.**

**BPW is unable to determine whether all third party product can be used with BPW trailer axles and axle units without any safety risk; this also applies even if an authorised testing organisation has accepted the product**

**Our warranty will cease to apply if spare parts other than genuine BPW spare parts are employed in warranty-covered work and repairs.**

The warranty shall also be rendered null and void if the BPW axle systems are not installed in accordance with the technical guidelines given in the current BPW installation instructions.

## Brake linings

Brake lining qualities authorised by BPW are matched to each other and their performance is confirmed in the assessment reports and the general certification of the components. These brake linings are subject to continual monitoring by our quality assurance department, so that we are able to guarantee consistent quality.

BPW cannot verify the performance of the braking system should other types of lining be used. Our guarantee is therefore void if other brake linings are used.

**Valid 01.01.2005** Replaces maintenance instructions BPW-W-98/1 e  
Subject to change without notice. Previous maintenance instructions become invalid.

**Operating instructions which should also be adhered to by the driver:  
Observe the statutory regulations!**

### – Prior to each run –

- subject the brake and air suspension air reservoir to working pressure.

#### Visual inspection:

- Tyre pressures
- Wheel fastenings
- Check operation of lighting and braking systems
- Drum brake: Check the brake pad/lining thickness when the brake pad/lining wear indicator is in the horizontal position.
- Disc brake: Check the remaining brake pad/lining thickness. The thickness of the remaining pad can be detected by the position of the brake caliper in relation to the stationary guide sleeve. (see page 26)
- Rotary valve of air suspension in drive position
- Normal ride level of the air bags,  
check air bags are not creased. This also applies to rapid loading or unloading.

### – In the event of frost daily or in accordance with manufacturer's instructions –

- Drain off condensation water via the drainage valve at the bottom of the air reservoirs.
- Check the valve system.

### – Quarterly –

- Clean line filter (in accordance with manufacturer's instructions).

### – In the case of a new vehicle –

- **After the first run under load conditions and after each wheel change -**
  - Check wheel nuts for firm seating using a torque wrench. See point **1** on page 14.
- **After the first two weeks (after the first runs under load conditions) –**
  - Check that the screw connections of the spring attachments and axle steering devices are secure, and observe the stipulated tightening torques.

Air suspensions: see **4** and **9** page 36-38

Leaf-spring suspensions: see **2** and **4** to **7** page 43-44  
**1** and **3** page 49

We wish a safe journey!

## Lubrication

Valid: 01.01.2005

### Lubrication Overview

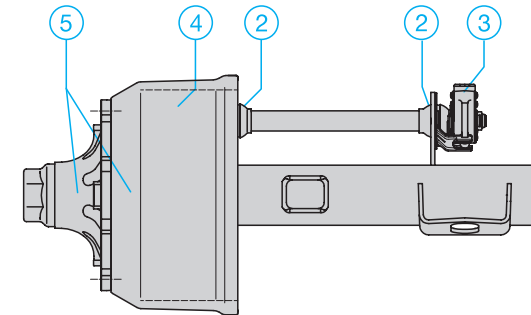
For detailed description see pages 6 - 11

**Lubrication with BPW special longlife grease ECO-LiPlus:**

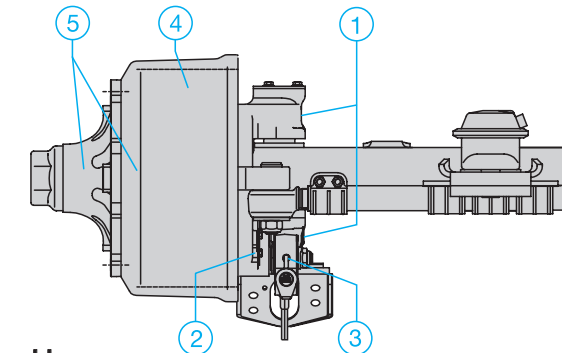
	initially	every 6 weeks	every 12 weeks	every 26 weeks <sup>2)</sup>	at every brake lining replacement, <sup>2)</sup>	at every annual replacement, <sup>2)</sup>	at every latest every 2 years	annually	every 2 years	latest every 3 years or min. every 500,000 km	every 3 years	after 5 years, thereafter every 3 years
① Steering knuckle bearing, top and bottom	①											
② Brake camshaft bearing, outer and inner Low maintenance camshaft bearing from year of manufacture 1993 short distance haulage long distance haulage Conventional brake camshaft bearing up to year of manufacture 1992	②	②	②	② <sup>1)</sup>	② <sup>1)</sup>							
③ Slack adjusters manual Slack adjuster ECO-Master: short distance haulage long distance haulage		③		③	③							
④ Brake shoes with closed anchor eye						④						
⑤ ECOPlus hub system: Off-road conditions <sup>3)</sup> On-road conditions <sup>3)</sup>								⑤	⑤			
Off-road conditions On-road conditions											⑤	⑤
ECO hub system								⑤ <sup>3)</sup>		⑤ <sup>2)</sup>		
Conventional hub bearing					⑤							

For the positions ① to ③ the use of a high-pressure central lubrication system which is capable of feeding special longlife grease of consistency class 2-3 is permissible. The use of liquid lubricants is not permitted!

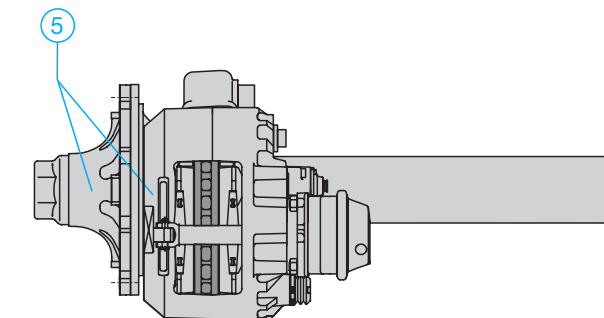
- 1) after a long idle period, prior to initial operation actuate the brake lever and lubricate the brake camshaft bearing.  
2) under extreme conditions, lubricate with more frequency (e. g. off-road, impeded braking effort).  
3) for use outside Europe



Series H / KH / NH



Series ...LL



Series SH / SKH

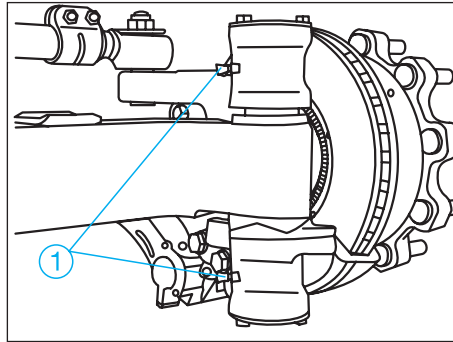
## Lubricate

Note: After cleaning the vehicle with high-pressure cleaners, all lubrication points must be relubricated.

### 1 Steering knuckle bearing, top and bottom

– every 6 weeks –

Grease lubrication nipple with BPW special longlife grease **ECO-LiPlus** until fresh grease emerges from the bearing points.



### 2 Brake camshaft bearing, outer and inner Low maintenance brake camshaft bearing (from year of manufacture 1993)

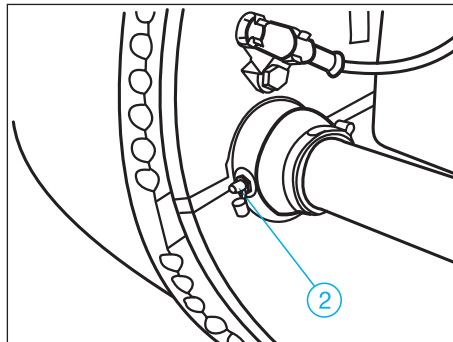
– every 6 months for short-distance traffic, every year and with each brake lining change for long-distance haulage –

Use only BPW special longlife grease **ECO-LiPlus**.

### Conventional brake camshaft bearing (up to year of manufacture 1992)

– quarterly –  
(and prior to initial operation after a long idle period!)

Grease lubrication nipple with BPW special longlife grease **ECO-LiPlus** until fresh grease emerges from the bearing points.



### 3 Slack adjusters (manual)

– quarterly –

Grease lubrication nipple with BPW special longlife grease **ECO-LiPlus** until fresh grease emerges.

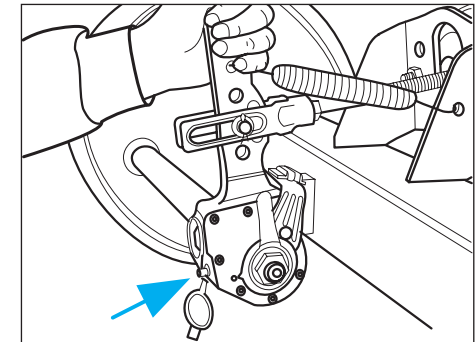
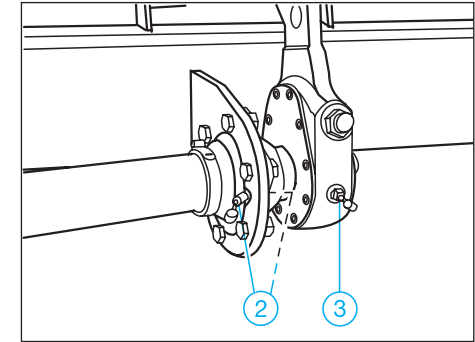
### Automatic slack adjuster ECO-Master (from year of manufacture 5/91)

– every 6 months for short-distance traffic, every year and with each brake lining change for long-distance haulage –

Remove rubber seal cap. Grease with BPW special longlife grease **ECO-LiPlus** (approx. 80 g) until sufficient new grease emerges from the adjustment screw.

Turn back adjustment screw by approx. one turn using a ring spanner. Actuate the brake lever several times by hand. The adjustment must be carried out smoothly. If necessary, repeat several times.

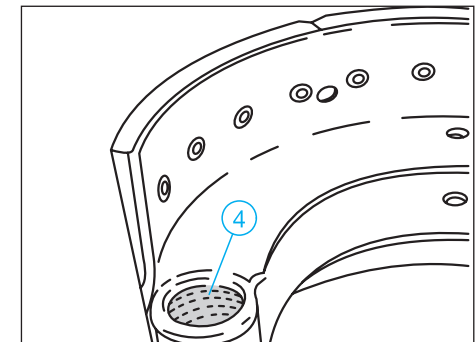
Once again only use BPW special longlife grease **ECO-LiPlus**. Replace seal cap.



### 4 Brake shoes with closed anchor eye

– every 2 years and with each brake lining change –

Clean the bush and roller, check for wear and, if necessary replace. Smear BPW special longlife grease **ECO-LiPlus** onto bearing points of brake shoe.



## 5 ECOPlus hub system

- every year in off-road use or every 2 years in on-road use outside Europe -
- every 3 years in off-road use or every 5 years in on-road use, thereafter every 3 years -

Clean taper roller bearings and seals (using e.g. diesel oil) thoroughly, dry and check for re-useability. Replace oil seal.

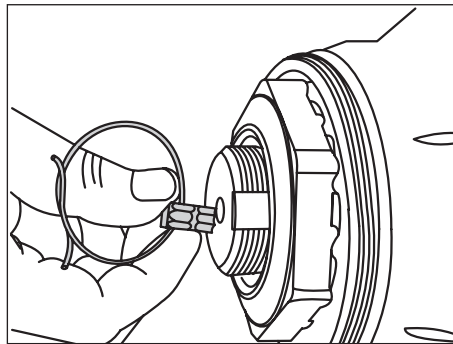
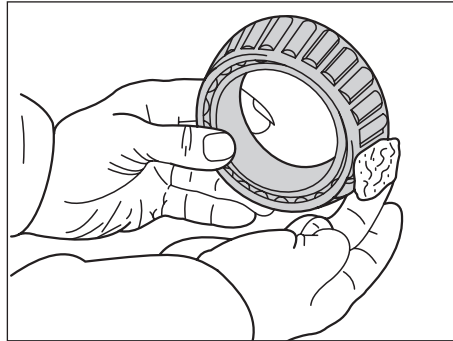
(Recommendation: Renew the tapered roller bearings after 5 years in on-road use and after 3 years in off-road use.)

Work BPW special longlife grease **ECO-LiPlus** thoroughly into the cavities between the taper rollers and the cage in both taper roller bearings. (For grease quantity see illustration below). Smear any residual grease into the hub's outer bearing race. Smear the lip of the new seal all round with BPW special longlife grease **ECO-LiPlus**.

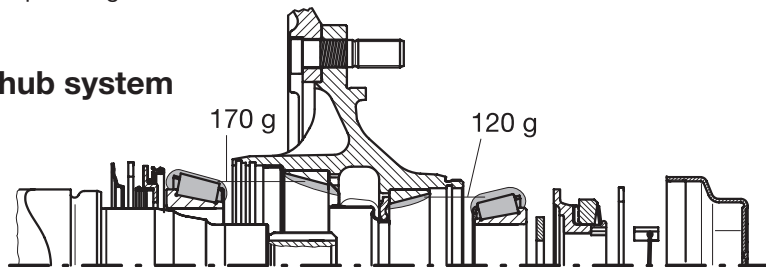
Clean the bearing seats of the axle stub (metal must be bright, dry and free from grease). Spray with **BPW ECO Assembly and Protection Spray**.

Fit the wheel hub, tighten the axle nut whilst at the same time turning the wheel hub, until the axle nut torque limiter operates. (Do not use an impact driver.) Fit the retaining key in the groove between the axle stub and the nut (do not reset the axle nut).

For production date April 2000 onwards, insert the hooked spring ring behind the edge of the axle nut or, up to March 2000, into the thread on the axle stub. Screw on the hub cap and tighten to 800 Nm.



## ECOPlus hub system



## ECO hub system

- latest every 3 years or min. every 500,000 km (Western European road conditions), annually in use outside Europe -

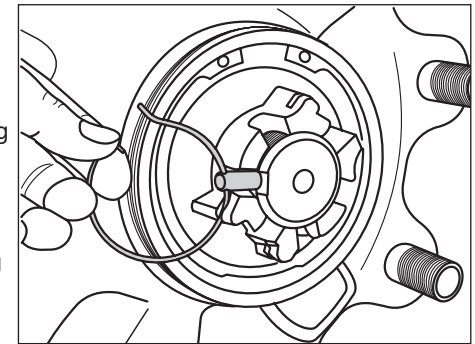
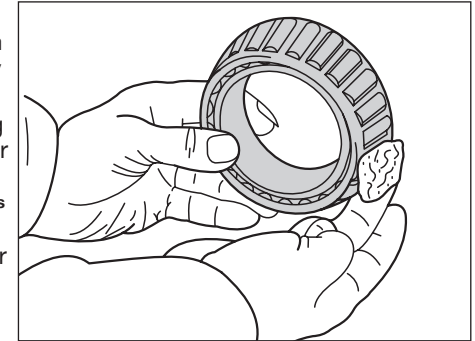
Clean taper roller bearings and seals (using e.g. diesel oil) thoroughly, dry and check for re-useability. Replace oil seal.

Work BPW special longlife grease **ECO-LiPlus** thoroughly into the cavities between the taper rollers and the cage in both taper roller bearings. Comply with the total grease quantity in tables **A** and **B**. Smear any residual grease into the hub's outer bearing race. Smear the lip of the new seal all round with BPW special longlife grease **ECO-LiPlus**.

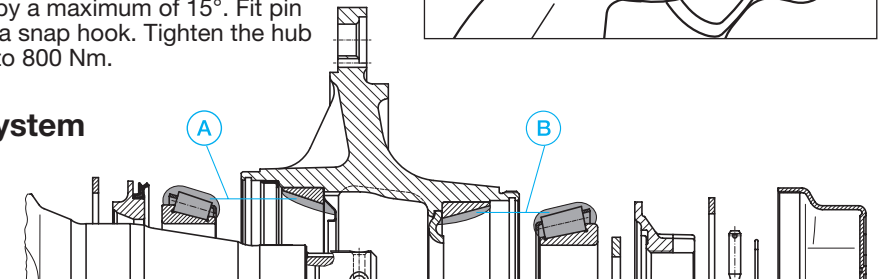
Clean the bearing seats of the axle stub (metal must be bright, dry and free from grease). Spray with **BPW ECO Assembly and Protection Spray**.

Fit the wheel hub, tighten the axle nut using a torque wrench to 150 Nm while simultaneously turning the wheel hub and turn back by a maximum of 15° to the next possible locking hole.

The next locking hole is reached by turning back the asymmetrical axle nut cap by a maximum of 15°. Fit pin with a snap hook. Tighten the hub cap to 800 Nm.



## ECO hub system



Axle load	BPW special longlife grease <b>ECO-LiPlus</b> Grease quantity per taper roller bearing	
	<b>A</b> inner bearing	<b>B</b> outer bearing
6000 - 9000 kg	120 g	120 g
10000 - 12000 kg	170 g	120 g
13000 - 14000 kg	230 g	150 g

## Change wheel hub bearing grease (Conventional)

– whenever brake linings are changed, at the latest annually or after 150,000 km –  
For demounting and re-fitting of wheel hubs, see workshop manuals.

Mark demounted wheel hubs and bearing races so that their identity is not mistaken during re-assembly.

Clean wheel hubs thoroughly inside and outside.

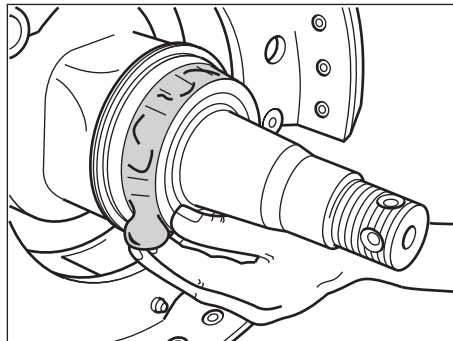
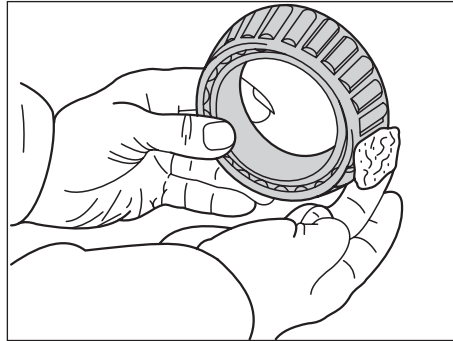
Clean taper bearings (using diesel e.g. oil) thoroughly, dry and check for re-useability. Replace seals.

Work BPW special longlife grease ECO-LiPlus into the cavities between the taper rollers and cage.

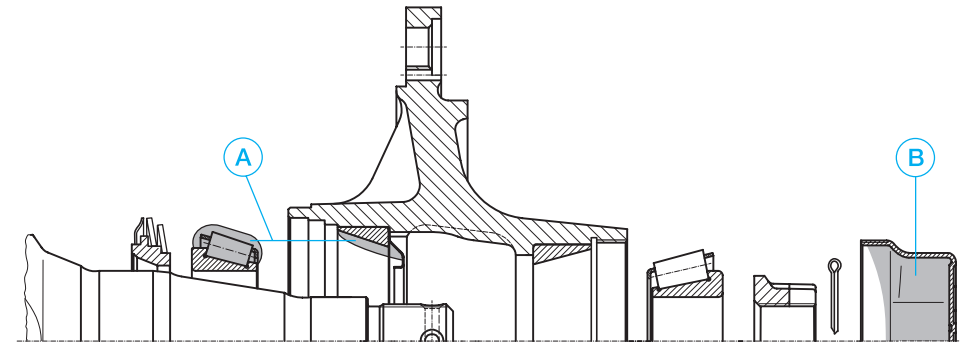
Comply with total grease quantity (table **A**), smear any residual grease into the hub's outer bearing race.

Fit wheel hubs and adjust bearing play (see point **7** pages 19/20).

Fill hub caps with BPW special longlife grease ECO-LiPlus (table **B**) and screw on. For tightening torques see **5** page 17.



## Grease filling per wheel hub - Conventional wheel hub bearing



<b>BPW special longlife grease ECO-LiPlus</b> Grease quantity per taper roller bearing		
Axle load (Series H, K, N, M)	<b>A</b> inner bearing	<b>B</b> outer bearing (cap filling)
4000 - 5500 kg	80 g	130 g
6000 - 9000 kg	170 g	290 g
10000 - 12000 kg	180 g	320 g
13000 - 14000 kg	240 g	500 g
16000 - 18000 kg	400 g	800 g
20000 kg	440 g	900 g
Axle load (Series E and NE)		
3000 kg	70 g	100 g
3500 - 3800 kg	80 g	120 g
4500 kg	90 g	180 g

Valid: 01.01.2005

## Maintenance work and visual inspection Overview

For detailed description, see pages 13 - 21

Disc brakes, see pages 22 - 31

Air suspension, see pages 32 - 38

Suspension, see pages 40 - 49

### Maintenance work - Drum brakes

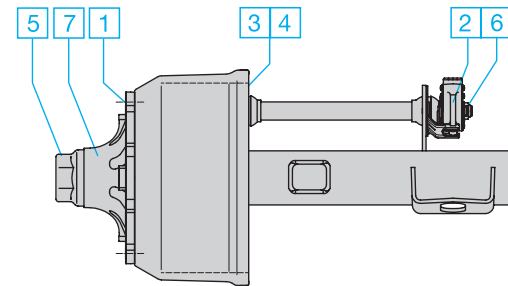
- 1) Check wheel nuts for tightness.
- 2) With manual slack adjusters, check brake play, adjust if necessary to 10 - 12% of the connected brake lever length and activate by hand or with 0.5 - 0.8 bar. (Not applicable in the case of automatic slack adjusters.)
- 3) Check brake lining thickness. Brake lining thickness at least 5 mm or check wear indicator. (Cam brake N 3006 min. 2.5 mm residual lining thickness).
- 4) Check the residual brake drum thickness.
- Check the tyres for uneven wear, adjust the inflation pressure if necessary according to the manufacturer's specifications.
- 5) Check hub caps for firm seating. (not necessary with ECO<sup>Plus</sup> axles)
- 6) Check operation of automatic slack adjusters.
- Visual inspection of all component parts for damage and wear.
- 7) Check wheel hub bearing play, adjust if necessary.
  - ECO<sup>Plus</sup> hub bearing
  - ECO hub bearing, conventional bearing

	initially	every 1 to 3 weeks	every 12 weeks	every 26 weeks <sup>2)</sup>	at every brake lining replacement, latest annually <sup>2)</sup>
1)	1)				
2)		2)			
3)			3)		
4)			4)		
-			-		
5)				5)	
6)			6)	6)	
-			-	-	
7)				7)	7)

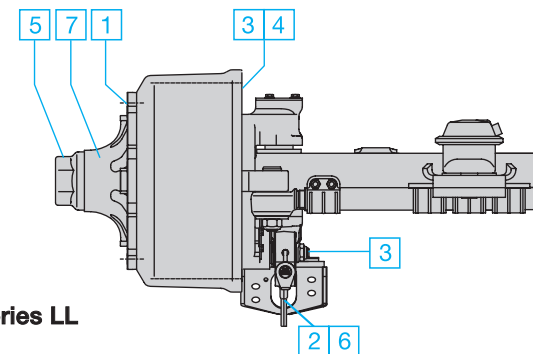
<sup>1)</sup> after the first run under load conditions, likewise after each wheel change.

<sup>2)</sup> under extreme conditions, increase frequency (e.g. construction sites and poor roads)

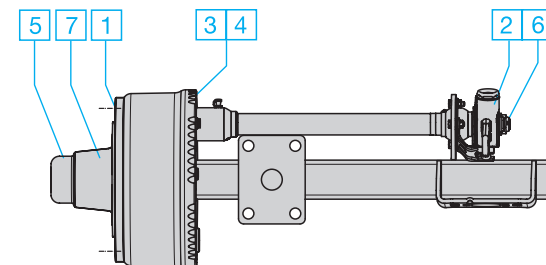
<sup>3)</sup> for use outside Europe



Series H, KH, NH



Series LL



Series NE, NM, M

## Maintenance - Drum Brakes

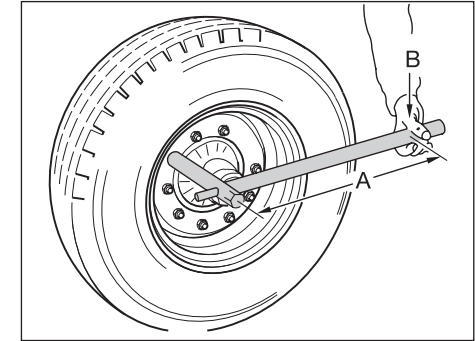
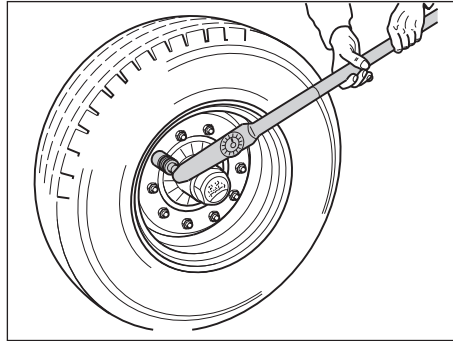
### 1 Check wheel nuts for tightness

– after the first run under load conditions, likewise after each wheel change –

Tighten wheel nuts crosswise using a torque wrench to the tightening torque shown in the table.

In the case of Trilex wheels tighten the nuts consecutively several times around.

Wheel contact surfaces should not have additional coats of paint (risk of the wheels becoming detached!)



The torque values shown below can be achieved using a normal wheel nut spanner (vehicle tool kit) and a length of tubing.

**However always check with a torque wrench as soon as possible afterwards.**

### Tightening torques for wheel nuts

Wheel stud arrangement	Tightening torque	
M 14 x 1.5	<b>125 Nm</b> (120 - 130 Nm)	
M 18 x 1.5	<b>290 Nm</b> (275 - 305 Nm)	
M 20 x 1.5	<b>380 Nm</b> (360 - 400 Nm)	
M 22 x 1.5	<b>510 Nm</b> (485 - 535 Nm)	
M 22 x 2	<b>460 Nm</b> (435 - 485 Nm)	
Spigot arrangement		Wheel nut with collar
M 18 x 1.5	<b>350 Nm</b> (330 - 370 Nm)	
M 20 x 1.5	<b>480 Nm</b> (455 - 505 Nm)	
M 22 x 1.5	<b>630 Nm</b> (600 - 660 Nm)	
M 22 x 1.5 alloy wheels	<b>630 Nm</b> (600 - 660 Nm)	
M 24 x 1.5	<b>860 Nm</b> (820 - 900 Nm)	
Trilex-wheels		
M 18 x 2	<b>285 Nm</b> (270 - 300 Nm)	
M 20 x 2	<b>335 Nm</b> (320 - 350 Nm)	
Japan connection		
M 20 x 1.5	<b>475 Nm</b> (450 - 500 Nm)	
M 30 x 1.5	<b>475 Nm</b> (450 - 500 Nm)	

### To achieve tightening torques with on-board tools

Tightening torque	Tubing length "A"	Physical weight "B"
270 - 310 Nm	300 mm	90 - 105 kg
	350 mm	78 - 89 kg
	400 mm	68 - 78 kg
320 - 350 Nm	350 mm	91 - 99 kg
	400 mm	80 - 88 kg
	450 mm	71 - 78 kg
	500 mm	64 - 70 kg
360 - 400 Nm	400 mm	90 - 99 kg
	450 mm	80 - 89 kg
	500 mm	72 - 80 kg
	600 mm	60 - 67 kg
440 - 480 Nm	500 mm	88 - 96 kg
	600 mm	73 - 80 kg
	700 mm	63 - 69 kg
480 - 540 Nm	600 mm	80 - 90 kg
	700 mm	67 - 77 kg
	800 mm	60 - 67 kg
600 - 660 Nm	700 mm	85 - 95 kg
	800 mm	75 - 83 kg
	900 mm	67 - 73 kg
	1000 mm	60 - 66 kg
820 - 900 Nm	1000 mm	82 - 90 kg



## Maintenance and Visual Inspection - Drum Brakes

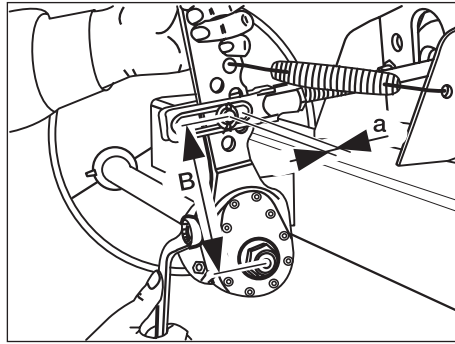
### 2 Check and adjust wheel brake play with manual slack adjusters

- frequent checks are necessary -
- depending upon application every 1 to 3 weeks -

Actuate slack adjusters by hand, pulling against the return spring. If there is more than 35 mm of play, the slack adjuster must be reset. This can be done by adjusting the nut on the slack adjuster as shown.

Adjust the play "a" to 10 -12% of the connected brake lever length "B", e.g. lever length 150 mm = 15 - 18 mm of play.

Automatic slack adjusters make this adjustment automatically whenever the camshaft is rotated by more than 15°.



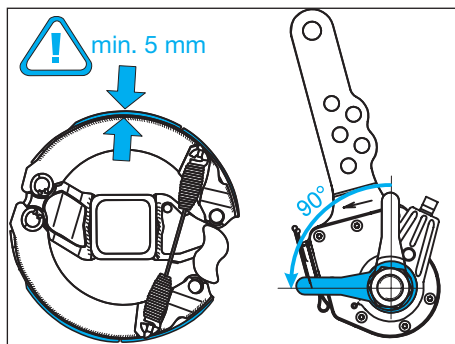
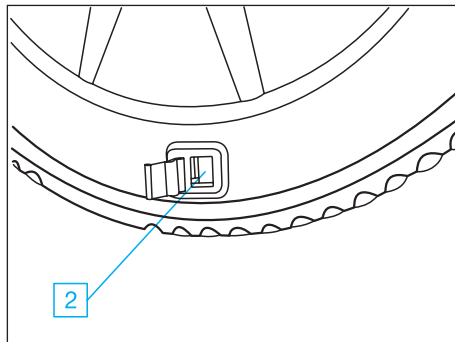
### 3 Check brake lining thickness

- quarterly -

Open inspection hole by folding back the rubber flap. The brake lining should be replaced at a residual lining thickness of 5 mm or on reaching the bottom of the indicator machined into the edge of the lining. Re-insert the rubber flap.

If brake lining wear indicators are fitted to the slack adjusters, the minimum thickness of the brake linings is indicated by the horizontal position of the lever (when the brake is released).

In certain cases the slack adjusters may not be fitted in the normal (i.e. vertical) position. In such instances, the position of the wear indicator will also be different. Linings should be changed when the wear indicator is approximately at right angles to the brake lever.



### 4 Check the residual brake drum thickness.

- quarterly -

Remove a brake cover plate. Check the condition of the brake drum and that there is adequate remaining thickness. Renew the brake drum when the wear edge on the side of the drum has been reached (3 mm perm. wear).

### Check the tyres for uneven wear, adjust the inflation pressure if necessary according to the manufacturer's specifications.

- quarterly -

### 5 Check hub caps for firm seating

- every 6 months - (not necessary with ECOPlus axles)

Check hub caps for tightness using a torque wrench or power tool.

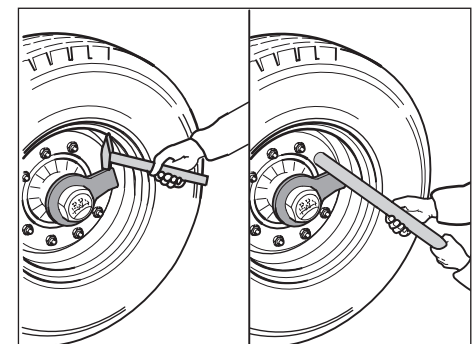
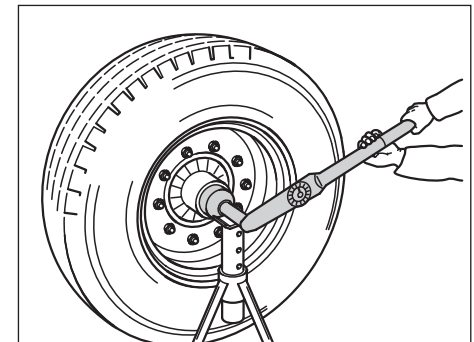
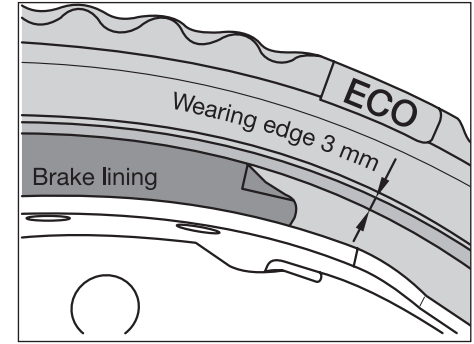
Tightening torques:

	Cap for ECO and ECOPlus hub	6 - 12 t	800 Nm
	Steel cap	6 - 12 t	500 Nm
	Alloy cap	14 t	800 Nm
		6 - 12 t	350 Nm

	Steel cap	5.5 t	500 Nm
	Steel cap	6 - 16 t	700 Nm
	Alloy cap	5.5 - 12t	350 Nm

In an emergency the hub caps can be tightened using a normal cap spanner (vehicle tool kit) by striking the latter with a hammer, or also with the aid of a piece of tubing, inserted into the spanner. Hub caps with integrated hubodimeters must be fitted and dismantled using only torque controlled (not impact!) air guns or manually with a torque wrench.

**Tighten to the correct tightening torque as soon as possible.**



## □ Maintenance and Visual Inspection - Drum Brakes

### 6 Check operation of the automatic slack adjuster

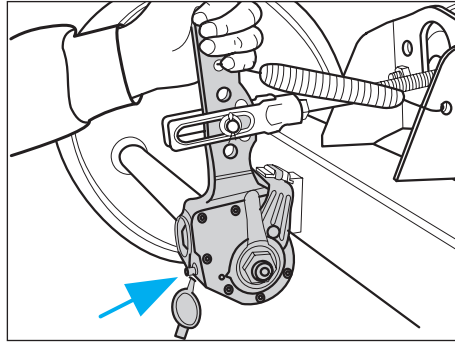
- every 6 months and / or as part of any other service inspection -
- quarterly in use outside Europe -

#### Prevent the vehicle from rolling away.

Remove rubber seal cap. Turn back adjustment screw by approx. 3/4 of a turn in a counterclockwise direction using a ring spanner. A play of at least 50 mm with a lever length of 150 mm must be available.

Actuate the brake lever several times by hand. When this is done automatic adjustment must take place smoothly. Engagement of the clutch coupling is audible and on the return stroke the adjustment screw turns slightly in a clockwise direction.

Grease with ECO-LiPlus, see also ③ on page 7. **Fit seal cap.**



### □ Visual inspection

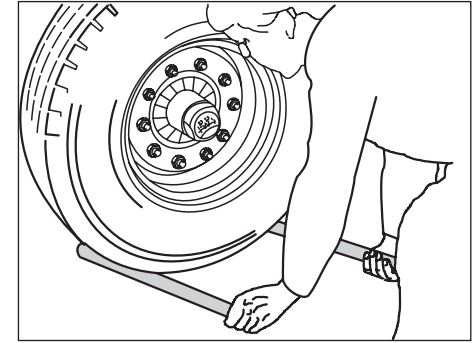
- every 6 months -
- quarterly in use outside Europe -

Check all components for damage and wear.

### 7 Check wheel hub bearing play

- ECOPlus hub bearing at every brake lining replacement, latest annually -
- ECO hub bearing und conventional hub bearing every 6 months -

In order to check the wheel hub bearing play lift the axle until the wheels are off the ground. Release the brake. Apply a lever between the tyre and the ground and check the play.

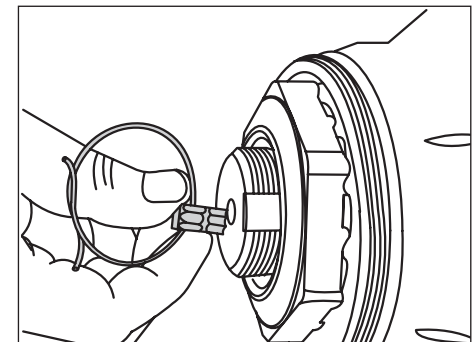
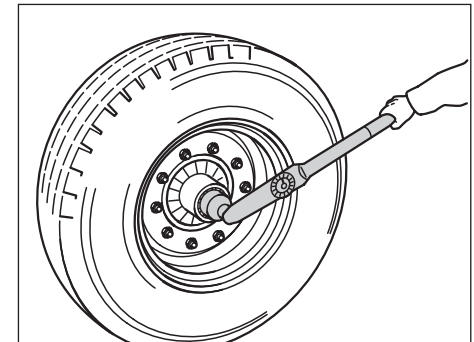


If bearing play is detected -

#### **ECOPlus hub bearing:**

##### Adjust the bearing play

1. Unscrew the hub cap.
2. Remove the hooked spring ring with a wedge from the axle nut.
3. Use a spanner to tighten the axle nut whilst at the same time turning the wheel hub, until the axle nut torque limiter operates (do not use an impact driver).
4. Fit the retaining key in the groove between the axle stub and the nut (do not reset the axle nut).
5. For production date April 2000 onwards, insert the hooked spring ring behind the edge of the axle nut or, up to March 2000, into the thread on the axle stub.
6. Tighten the hub cap to 800 Nm.



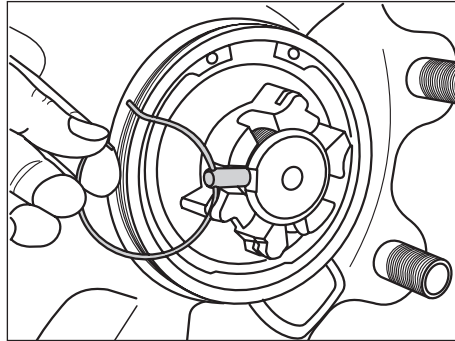
## □ Maintenance and Visual Inspection - Drum Brakes

If bearing play is detected -

### **ECO hub bearing:**

Adjust the bearing play

1. Unscrew the hub cap.
  2. Unlock axle nut.
  3. Tighten axle nut with torque wrench while simultaneously turning the wheel hub with a tightening moment of 150 Nm.
    - If a normal axle nut spanner is used (vehicle tool kit), tighten the axle nut until the wheel bearing race drags slightly.
  4. Turn back axle nut to the next locking position (max. 15°). The asymmetrical cap of the axle nut enables the next locking position to be reached after turning back max. 15°.
  5. Insert bolt and locking ring.
  6. Screw on hub cap.
- Tightening torque:
- |                  |        |
|------------------|--------|
| Steel / cast cap | 800 Nm |
| Aluminium cap    | 350 Nm |



If bearing play is detected

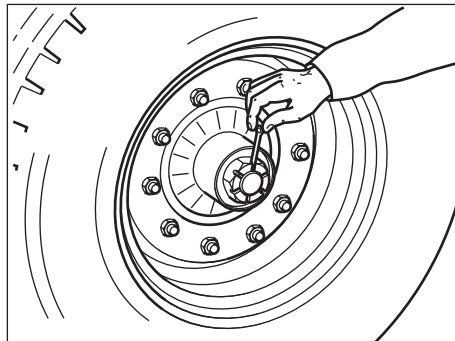
### **conventional hub bearing:**

Adjust the bearing play

1. Unscrew the hub cap.
2. Remove the split pin from the axle nut.
3. Tighten using a torque wrench whilst simultaneously turning the wheel.
 

Tightening torques:

  - up to an axle load of 5.5 tons = 100 Nm,
  - from 6 to 14 tons axle load = 150 Nm,
  - from 16 to 30 tons axle load = 350 Nm.
  - If a normal axle nut spanner is used (vehicle tool kit), tighten the axle nut until the wheel bearing race drags slightly.
4. Turn back the axle nut to the next available split pin hole. Should they already be in line turn back to the next



hole (30° at the maximum). (Does not apply to the ECO hub system).

5. Insert the split pin and bend upwards slightly.
6. Refill the hub cap as required with BPW special longlife grease ECO-Li<sup>Plus</sup> and replace. For tightening torques see point [5](#) on page 17.

Valid: 01.01.2005

## Maintenance work and visual inspection Overview

For detailed description, see pages 24 - 31  
Air suspension, see pages 32 - 38  
Suspension, see pages 40 - 49

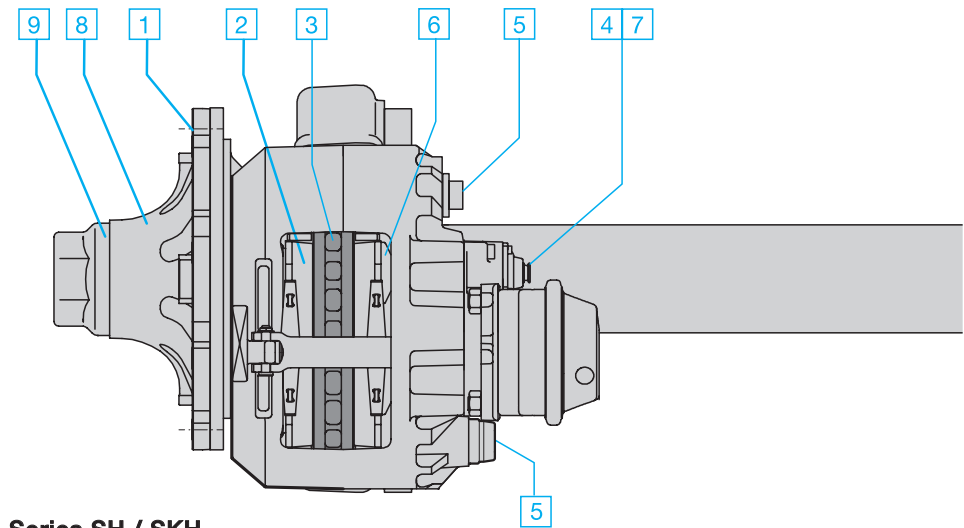
### Maintenance work - Disc brake

	initially	every 12 weeks	every 26 weeks <sup>2)</sup>	at every brake lining replacement, <sup>2)</sup> latest annually <sup>2)</sup>
<b>1</b> Check wheel nuts for firm seating.	<b>1</b> <sup>1)</sup>			
<b>2</b> Check brake pad thickness. The thickness of the remaining pad can be detected by the position of the brake caliper in relation to the stationary guide sleeve.		<b>2</b>		
<b>-</b> Check the tyres for uneven wear, adjust the inflation pressure if necessary according to the manufacturer's specifications.		<b>-</b>		
<b>-</b> Visual inspection of all component parts for damage and wear.			<b>-</b>	
<b>3</b> Check the brake disc for cracking and to see if the thickness is too small.		<b>3</b> <sup>3)</sup>	<b>3</b>	
<b>4</b> Check brake adjustment.		<b>4</b> <sup>3)</sup>	<b>4</b>	
<b>5</b> Check caliper guide system.		<b>5</b> <sup>3)</sup>	<b>5</b>	
<b>6</b> Check bellows on the guide pins.			<b>6</b>	
<b>7</b> Check caliper unit.			<b>7</b>	
<b>8</b> Check wheel hub bearing play, adjust if necessary. - ECO <sup>Plus</sup> hub bearing - ECO hub bearing			<b>8</b>	<b>8</b>
<b>9</b> Check hub caps for tightness. (not necessary with ECO <sup>Plus</sup> axles)			<b>9</b>	

<sup>1)</sup> after the first run under load conditions, likewise after each wheel change.

<sup>2)</sup> under extreme conditions, increase frequency (eg. construction sites and poor roads)

<sup>3)</sup> for use outside Europe



Series SH / SKH

## □ Maintenance and Visual Inspection - Disc Brakes

### Premature brake pad wear on the disc brake

Even at high temperatures, disc brakes display stable braking properties and a high level of safety. In contrast to the situation with drum brakes, excessive thermal stress is not indicated by brake fade. Though positive in itself, this characteristic of the disc brake leads to increased levels of wear when they are used in a particular way.

All the brakes on a tractor/trailer unit **must be balanced to ensure the braking effort is distributed evenly throughout the vehicle**. Tractor units with EBS cannot have their brakes adjusted in the normal manner. As a result, the trailer or semi trailer merely has to be checked for compliance with the EC tolerance bands. Always check the tractor vehicle, if the trailer is in the EC band despite premature brake pad wear. The EBS parameters in the tractor unit must be modified in order to improve compatibility, see ECE R 13 in this connection. Failure to do so will invalidate the warranty.

The disc brake's response is so good that a pressure lead is not necessary or should be restricted to a max. 0.2 bar.

Other possible solutions to premature brake pad wear:

- Prescribed maintenance work must be performed at regular intervals.
- Use the retarder or engine brake to adjust the vehicle's speed.
- Think ahead when driving.
- Drop down to a lower gear in good time.
- BPW Disc Protector (cover plates for brake discs).

### 1 Check wheel nuts for tightness

- after the first loaded journey or
- after a wheel change -

Tighten wheel nuts crosswise using a torque wrench to the correct tightening torque.

Tightening torques for wheel nuts  
M 22 x 1.5:

Wheel stud alignment:

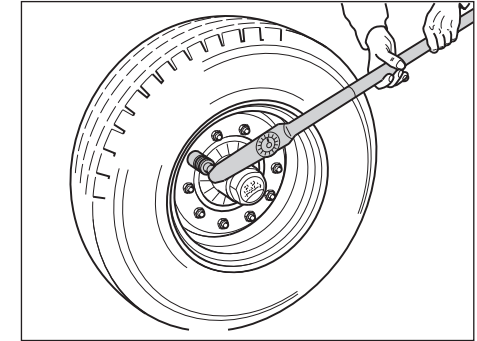
**510 Nm** (485 - 535 Nm)

Spigot alignment:

**630 Nm** (600 - 660 Nm)

**Warning: Do not exceed specified settings!**

Wheel contact surface should not have additional coats of paint (risk of the wheels becoming detached)!



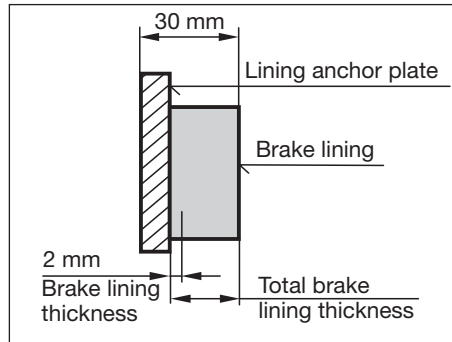
## Maintenance and Visual Inspection - Disc Brakes

### 2 Check brake pad thickness

– quarterly –

The brake pad thickness must be checked regularly, e.g. during the tyre inflation pressure check. The intervals must not be more than 3 months.

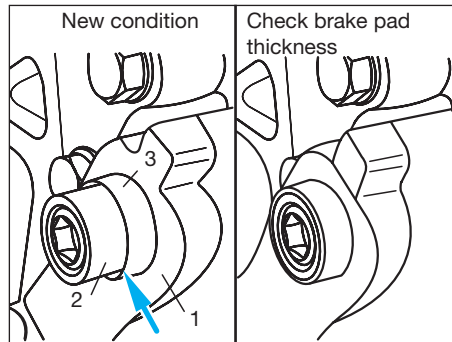
The thickness of the remaining pad must not be less than 2 mm.



### Open bearing:

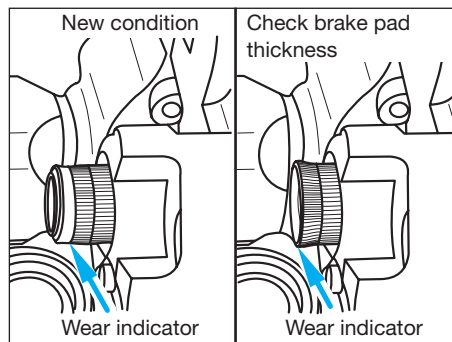
The thickness of the brake pad can be checked by the position of the brake caliper (1) in relation to the guide rod (2) (rough indication of wear).

If the end of the guide sleeve (3) is level with the fixed guide rod, the pad thickness must be checked again after the wheels have been removed.



### Sealed bearing:

The sealed bearing has a ridged rubber seal which is fitted over the guide pin. Pad wear should be checked when the wear mark (transition point between the ridged and smooth areas - see diagram) has moved to the end of the guide pin.



### Check tyres for uneven wear

– quarterly –

### Visual inspection

– every six months –

Check all components for damage and wear.

### 3 Brake disc

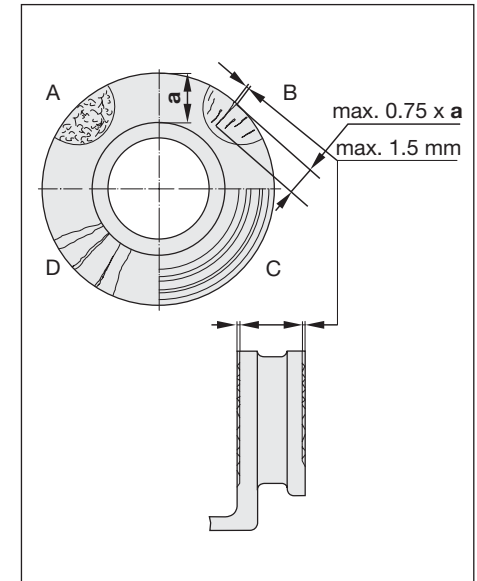
(Checking the condition of the brake disc)  
– every 6 months –  
– quarterly in use outside Europe –  
Section A - D (see fig.) show the possible conditions of the disc surface:

- A:** Network-type tears = permissible
- B:** Radial cracks up to max. 1.5 mm width and depth = permissible
- C:** Uneven disc surface less than 1.5 mm = permissible
- D:** continuous cracks = not permissible

Technical details:

- disc thickness, new = 45 mm
- minimum permissible disc thickness = 37 mm

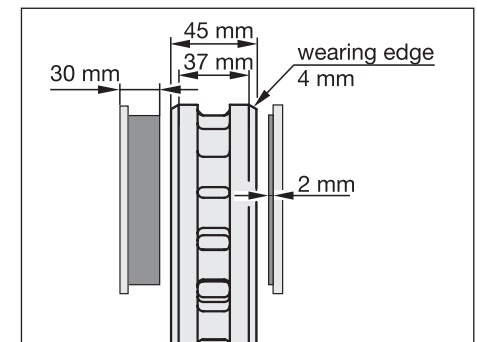
In the case of surface conditions **A - C** the brake disc can be used until the minimum permissible disc thickness has been reached.



### IMPORTANT!

To prevent damage to the brake discs, the brake pads should be replaced when their thickness (excluding backing plate) is 2 mm or less.

If this instruction is not adhered to there is a danger that braking performance could be seriously reduced.



## Maintenance and Visual Inspection - Disc Brakes

### 4 Checking adjustment

- every 6 months -
- quarterly in use outside Europe -

**Prevent the vehicle from rolling away. Release the service brakes and the handbrake.**

Remove cap.

Place a ring spanner size 8 on the hex. profile of the adjuster, or a spanner size 10 on the adjuster adapter. Turn anti-clockwise until the ratchets click 3 or 4 times.

### Important!

If the version has an adjustment adapter, never turn without the adapter. Exceeding the specified break-off torque of the adapter will cause the adapter to break. Repeat with a new adapter. Fit a new brake caliper if the adapter shears off again - this is an indication of internal damage.

Do not use an open-ended spanner.  
Max. torque: approx. 25 Nm

Apply brake 5 to 10 times (approximately 2 bar). If the adjustment is correct, the ring spanner will turn back in a clockwise direction (make sure the ring spanner can rotate freely).

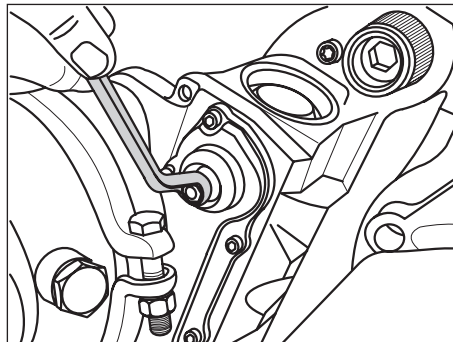
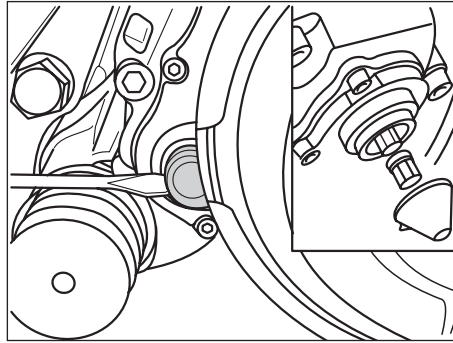
Note: As the cycle rate increases, the movement of the ring spanner, becomes smaller. If the ring spanner moves as described, the adjustment is OK.

Remove ring spanner.

Apply **Renolit HLT2** to the cap and re-fit. For the version with the adapter, fit the lug on the cap pointing towards the axle beam.

If the following faults occur:

- The adjuster, or the ring spanner
- does not turn,
  - turns only upon initial application,
  - turns forward and back again upon each application,
- the adjustment is not correct and the brake caliper must be replaced.



### 5 Checking the brake caliper guide system

- every 6 months -
- (e.g. within the scope of the statutory checks)
- quarterly in use outside Europe -

Prevent the vehicle from rolling away.

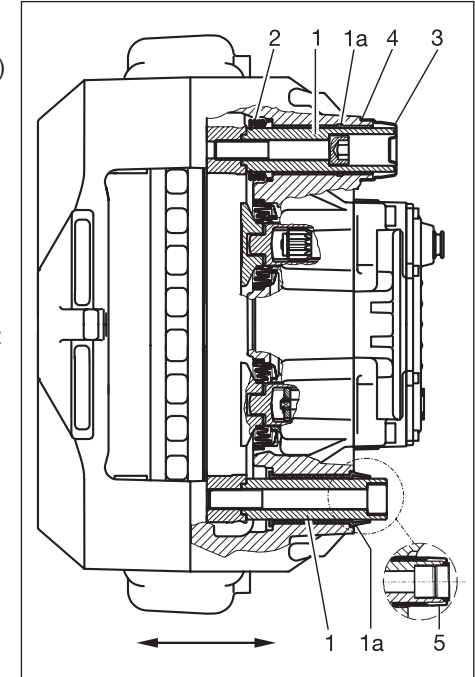
Release the service brakes and the handbrake.

Apply considerable pressure to the sliding caliper in the direction of the guide bearing. It should be possible to move it by about 0.5 to 1 mm (play). Check the brake caliper guide, if this is not the case.

The guide bush (1a) is sealed by the bellows (2) and the sheet metal cap (3) with the sealing ring (4).

Parts (2) and (3) must not be split or damaged in any way. Check for correct fitting.

If the version has a guide sleeve (5), check it for damage and to make sure it is correctly seated.



### 6 Bellows on the thrust tappets

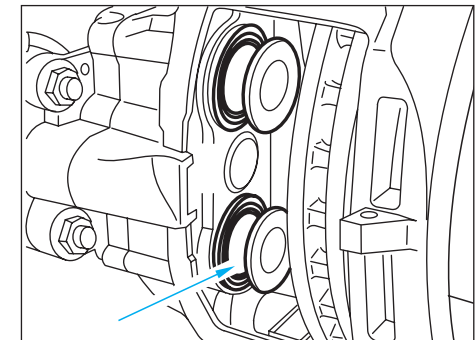
- every 6 months -

The bellows on the tappets (arrow) must have no splits or damage.

Check for correct fitting.

**Advice: Penetrating dirt and moisture cause corrosion and affect the operation of the clamping mechanism and adjustment.**

If water has penetrated or rusting has been detected, replace the brake caliper.



## Maintenance and Visual Inspection - Disc Brakes

### 7 Check the caliper

– every 6 months –

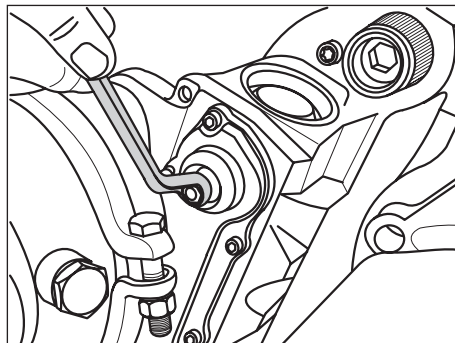
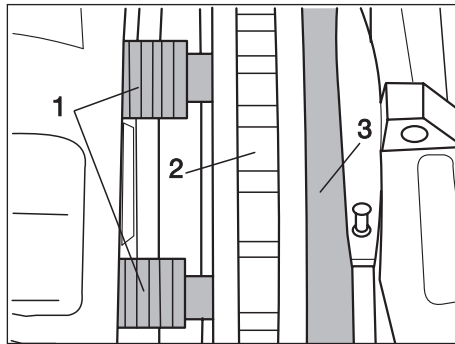
If damage to the parts becomes visible on the thrust tappet when the bellows are checked, both bellows must be dismantled. The parts which have been removed must be replaced by new ones.

Before the new parts are fitted check that the adjusting unit is free of corrosion and operates smoothly.

To check the parts, turn the threaded tubes (1) on the hexagon nut (size 8 or size 10 with an adapter) of the adjuster clockwise onto the brake disc (2).

The threads of the threaded tubes (1) can be checked during the turning process for corrosion damage.

If the threads are rusted, the brake caliper must be replaced.

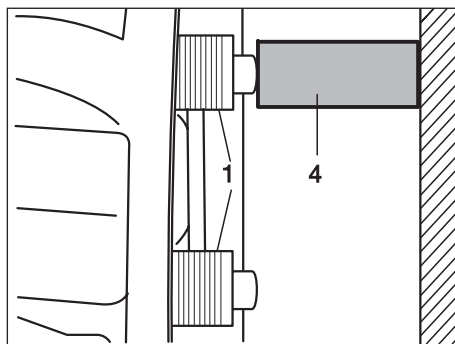


#### Advice:

To prevent the threaded tubes (1) from being turned completely out of the caliper, insert a new brake pad (3) into the caliper in the outboard brake pad position.

To prevent the threaded tubes from being wound completely out of the caliper when working on a work bench, insert a separator (approximately 75 mm) between the tubes and the caliper housing.

**If the threaded tubes are wound completely out of the caliper, the brake caliper must be replaced.**

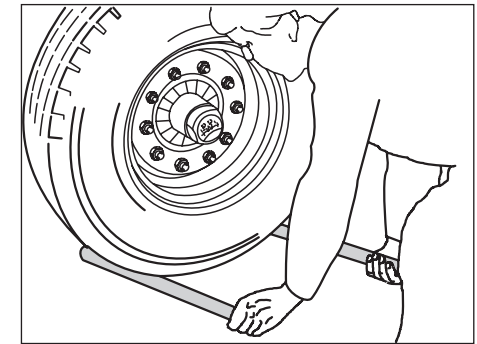


### 8 Check wheel hub bearing play

– ECO<sup>Plus</sup> hub system at every brake pad change, however at least once a year –  
– every 6 months with the ECO hub system –

To check the wheel hub bearing play, raise the axle until the tyres are free. Release brake. Position lever between tyre and ground and check play.

If you can feel play in the bearing, adjust the bearing play as described on pages 19/20.



### 9 Check hub caps for tightness

(not necessary with ECO<sup>Plus</sup> axles)

– every 6 months and/ or as part of any other service inspection –

Check hub caps for tightness using a torque wrench or power tool.

Tightening torques:

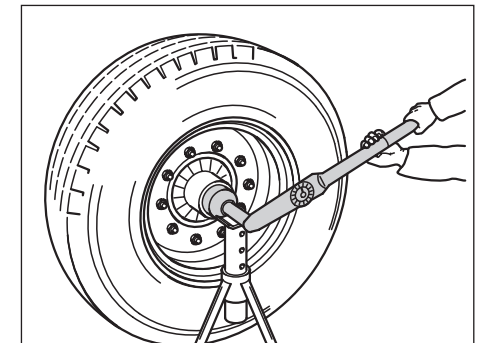
Steel cap M = 800 Nm

Alloy cap M = 350 Nm

In an emergency the hub caps can be tightened using a normal cap spanner (vehicle tool kit) by striking the latter with a hammer, or also with the aid of a piece of tubing, inserted into the spanner.

Hub caps with integrated hubodometers must be fitted and dismantled using only torque controlled (not impact!) airguns or manually with a torque wrench.

**Tighten to the correct tightening torque as soon as possible.**





Valid: 01.01.2005

## Lubrication and maintenance work Overview

For detailed description, see pages 34 - 38

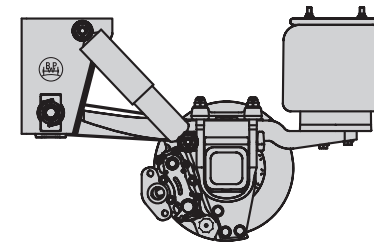
	initially after 2 weeks <sup>2)</sup>	every 12 weeks (quarterly)	every 26 weeks (twice annually)	annually <sup>1)</sup>
① Grease stabilizer bearing bushes with BPW special longlife grease ECO-Li <sup>Plus</sup> and check for wear.	<input type="radio"/>	<input type="radio"/>		
[-] Visual inspection, check all component parts for damage and wear.			<input type="checkbox"/>	
① Check strap. Check condition and fastening.			<input type="checkbox"/>	
② Check condition of air bags.			<input type="checkbox"/>	
③ Check air suspension level valves for condition, seal tightness and tightness			<input type="checkbox"/>	
④ Check shock absorber fastening for tightness. Tightening torque with a torque wrench: M 20 M = <b>320 Nm</b> (300-350 Nm) M 24 M = <b>420 Nm</b> (390-460 Nm) for aluminium hanger brackets M 24 M = <b>320 Nm</b> (300-350 Nm)	<input type="checkbox"/>			<input type="checkbox"/>
⑤ Check spring mounting kit for tightness. Tightening torque with a torque wrench: M 20 M = <b>340 Nm</b> (315-375 Nm) M 22 M = <b>550 Nm</b> (510-605 Nm) <sup>3)</sup> M 24 M = <b>650 Nm</b> (605-715 Nm)	<input type="checkbox"/>			<input type="checkbox"/>
⑥ Check air bag fastening for tightness. Tightening torque with a torque wrench: M 12 M = 66 Nm M 16 M = 230 Nm	<input type="checkbox"/>			<input type="checkbox"/>
⑦ Check spring pivot bolts for tightness. Tightening torques with a torque wrench: Hanger brackets up to 07/2001: M 30 M = <b>750 Nm</b> (700-825 Nm) Hanger brackets from 08/2001: M 30 M = <b>900 Nm</b> (840-990 Nm) Channel cross member: M 30 M = <b>900 Nm</b> (840-990 Nm)	<input type="checkbox"/>			<input type="checkbox"/>
⑧ Check axle lift for tightness. Tightening torques with a torque wrench. Supporting arm M 16 M = 230 Nm Cylinder M 16 M = 180 - 210 Nm	<input type="checkbox"/>			<input type="checkbox"/>
⑨ Check stabilizer fastenings. Tightening torques with a torque wrench: M 10 M = 53 Nm M 30 M = <b>750 Nm</b> (700-825 Nm)	<input type="checkbox"/>			<input type="checkbox"/>

<sup>1)</sup> under extreme conditions, with more frequency.

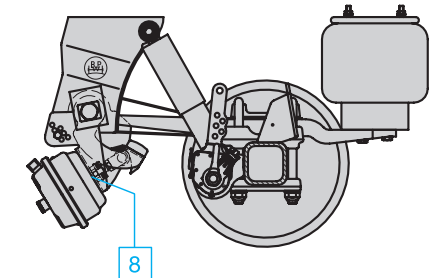
<sup>2)</sup> after the first run under load conditions

<sup>3)</sup> when mounting new spring mounting kits for Airlight II:

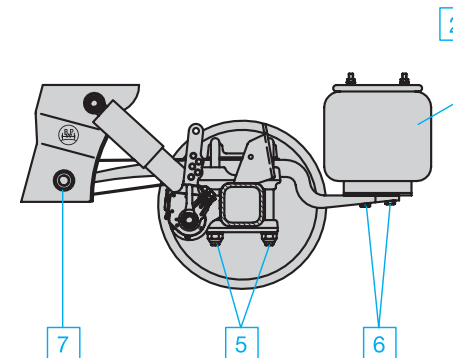
Tightening torque: M 22 M = 550 Nm + 90° tightening angle



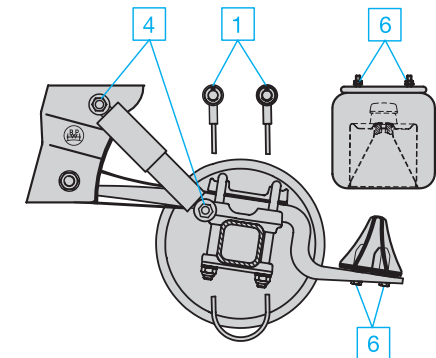
Series ALO/SLO



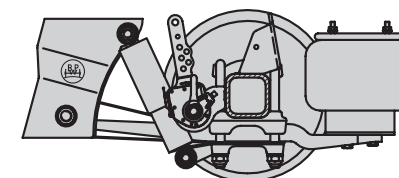
Series ALO/SLO with two-sided axle lift



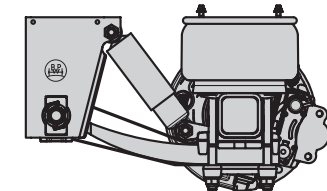
Series ALM/SLM



Series ALM/SLM with Kombi-Air Bag II



Series ALU/SLU



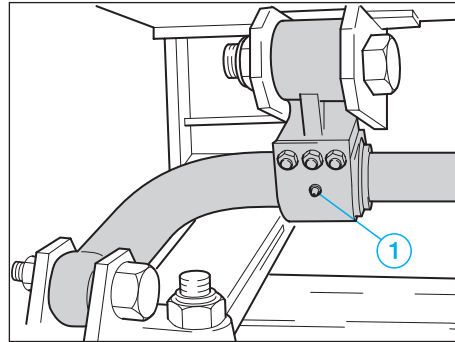
Series DLU - Airlight<sup>Direct</sup>

## Maintenance and visual inspection

### 1 Stabilizer bearing bushes

– quarterly, initially after 2 weeks –

Grease stabilizer bearing bushes with BPW special longlife grease ECO-LiPlus and check for wear.



### Visual inspection

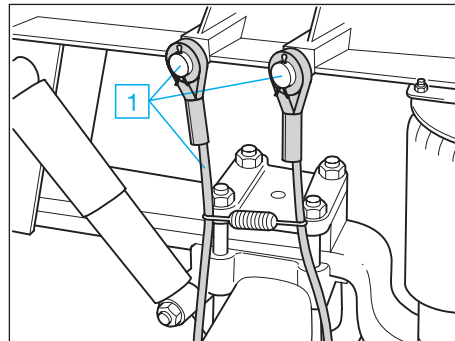
– every 6 months –

Check all component parts for wear and damage.

### 1 Check straps

– every 6 months –

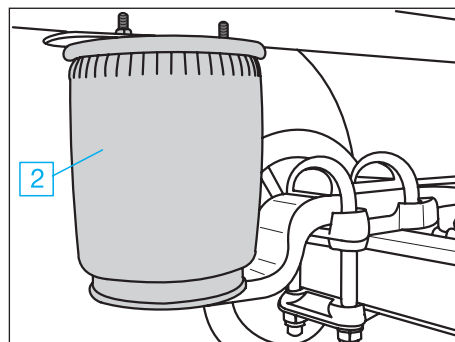
Examine check straps and attachment. Replace if necessary.



### 2 Air bags

– every 6 months –

Check air bags for external damage (surface cracking, abrasion, crease formation, trapped foreign bodies etc.). Replace air bags in the event of damage.



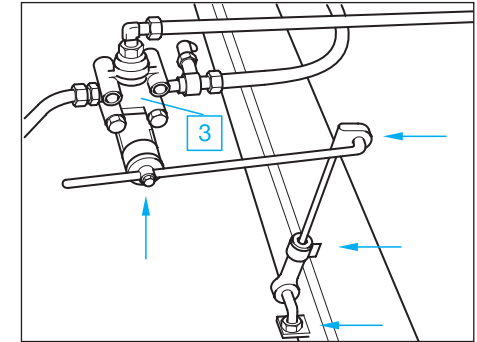
### ⚠ Safety notice

No welding should be carried out on steel parts of air bags and pressure vessel! The air suspension should only be filled with compressed air when mounted or when the mechanical height limit has been reached! Danger of injury!

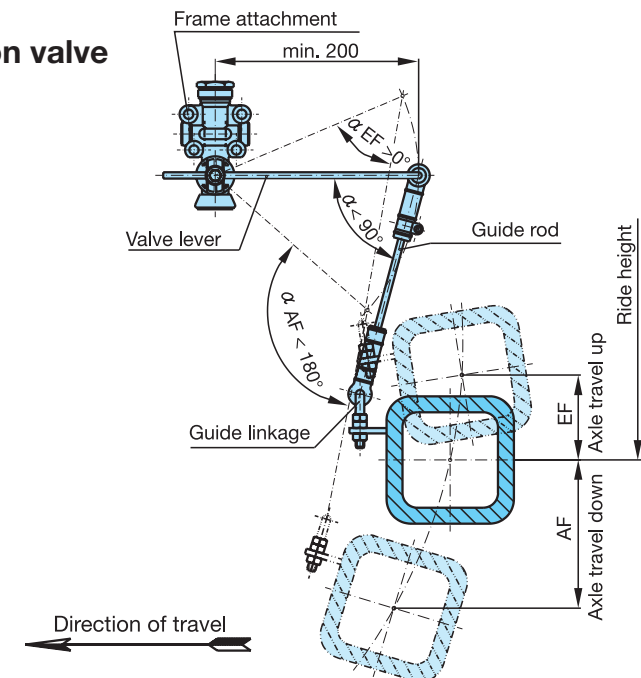
### 3 Air installation circuit

– every 6 months –

Check air installation valves and line connections for firm seating, damage and seal tightness. Check valve linkage and fastenings (arrows) for damage and tightness. The length of the valve lever and permissible angular positions on the valve linkage are shown in the illustration below.



## Air suspension valve



## Maintenance and visual inspection

### 4 Shock absorber fastening

– annually, initially after 2 weeks –

Check lower and upper shock absorber fastening for tightness.

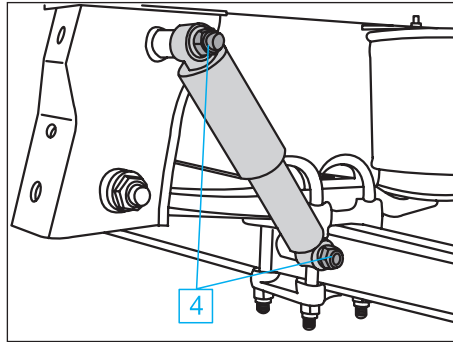
Tightening torques with a torque wrench:

M 20 M = **320 Nm** (300-350 Nm)

M 24 M = **420 Nm** (390-460 Nm)

In the case of alloy hanger brackets

M = **320 Nm** (300-350 Nm)



### 5 Spring mounting kit

– annually, initially after 2 weeks –

Check lock nuts of spring U-bolts for tightness. If loose, tighten nuts alternately a little at a time. No welding should be performed on the trailing arm spring!

Tightening torques with a torque wrench:

M 20 M = **340 Nm** (315-375 Nm)

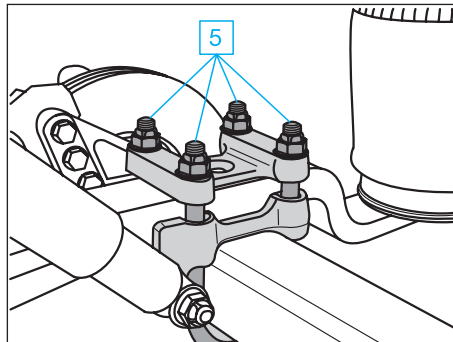
M 22 M = **550 Nm** (510-605 Nm)

M 24 M = **650 Nm** (605-715 Nm)

When mounting new spring mounting kit components for Airlight II:

Tightening torque:

M 22 M = 550 Nm + 90° angle tightening



### 6 Air bag fastenings

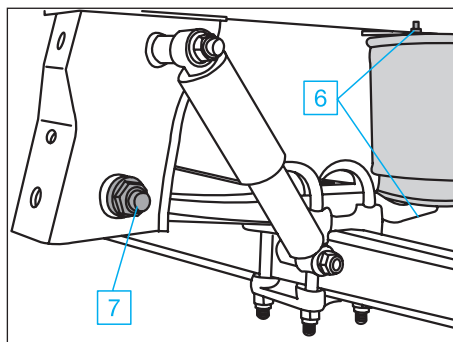
– annually, initially after 2 weeks –

Check air bag fixing screws or nuts for tightness.

Tightening torques with a torque wrench:

M 12 M = 66 Nm

M 16 M = 230 Nm



### 7 Spring pivot bolts

– annually, initially after 2 weeks –

Check bushes, move vehicle back and forth slightly with the brake applied, or move 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.

- Check the lateral wear washers in the hanger bracket.

- Check the M 30 lock nut on the spring pivot bolt for tightness.

Tightening torque with a torque wrench:

Air suspension hanger brackets:

up to 07/2001 M 30 M = **750 Nm** (700-825 Nm)

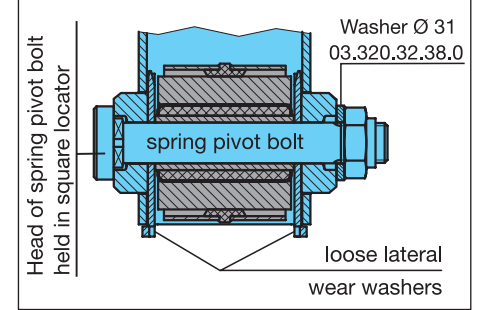
from 08/2001 M 30 M = **900 Nm** (840-990 Nm)

Channel crossmember

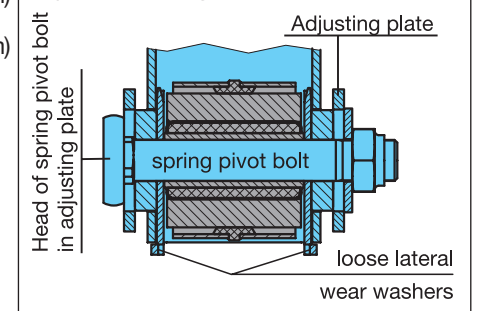
M 30 M = **900 Nm** (840-990 Nm)

The serviceable life of the rubber / steel bush is dependent on the tightness of the inner steel bushing.

### Unadjustable hanger bracket

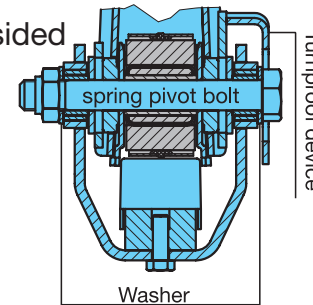


### Adjustable hanger bracket

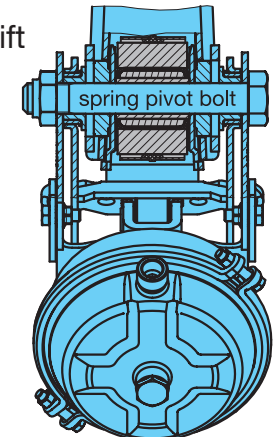


### Spring pivot bolt bearing with axle lift

Single-sided lift



Two-sided lift



## □ Maintenance and visual inspection

### 8 Axle lift

– annually, initially after 2 weeks –

Check M 16 lock nuts on the lever arm fixing and diaphragm cylinder to make sure they are tight. Tighten with a torque wrench, if necessary.

Tightening torques with a torque wrench:

Supporting arm

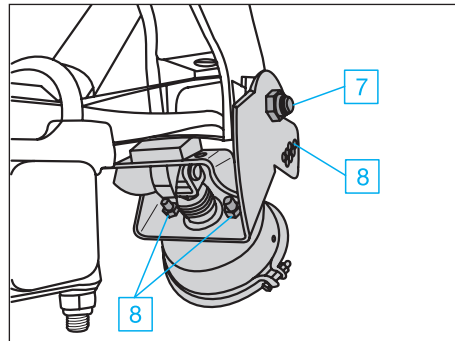
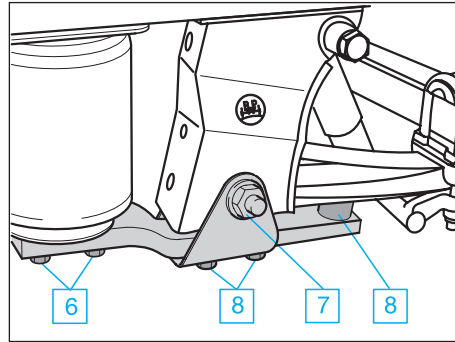
M 16 M= 230 Nm

Cylinder

M 16 M= 180 - 210 Nm

Check for wear on the bump stop on the lever arm or the stop for the double-sided lift. Make sure they are secure.

M 12 M= 66 Nm



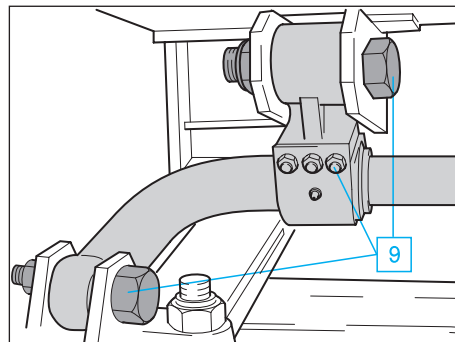
### 9 Stabilizer

– annually, initially after 2 weeks –

Check stabilizer bearings for wear and tightness. Tightening torques with a torque wrench:

M 10 M = 53 Nm

M 30 M = **750 Nm** (700-825 Nm)



Valid: 01.01.2005

## Lubrication and maintenance work

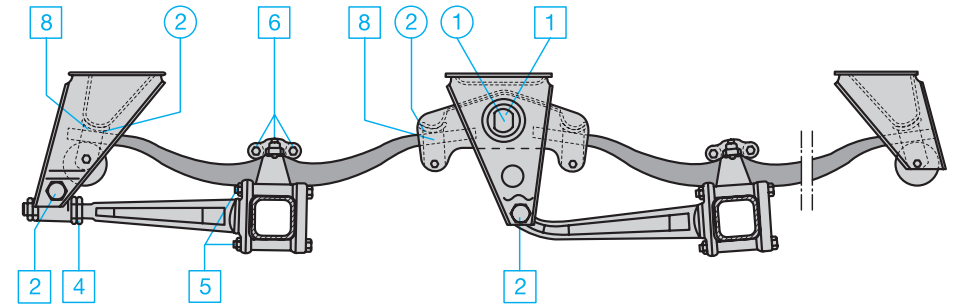
### Overview

For detailed descriptions, see pages 42 - 45

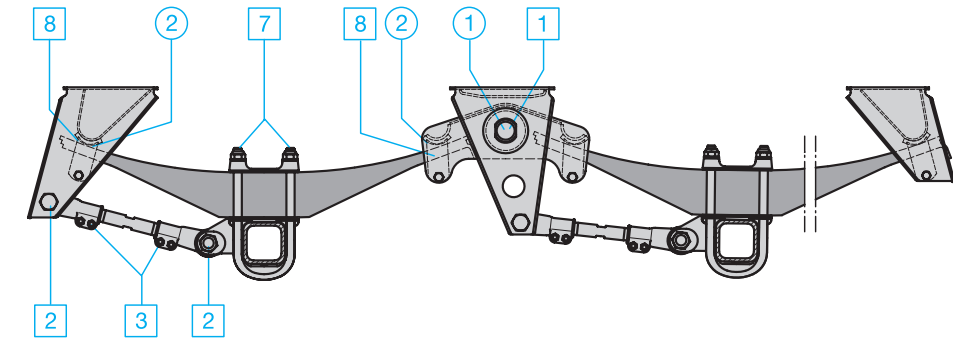
	initially after 2 weeks	every 6 weeks	every 26 weeks (twice annually) <sup>1)</sup>
① Grease bearings (suspension type E) with BPW special longlife grease ECO-LiPlus. (Not applicable in the case of rubber/steel bushes)	<input type="radio"/>	<input type="radio"/>	
② Slightly grease the slide elements/slide ends of springs.	<input type="radio"/>	<input type="radio"/>	
[-] Visual inspection, check all component parts for wear and damage.			<input type="checkbox"/>
① Check threaded bolts on floating arm bearings for tightness. VG M 24 M = 325 Nm VA / VB up to an axle load of 12 tonnes M 42 x 3 M = 1100 Nm VA / VB from an axle load of 13 tonnes M 42 x 3 M = 1700 Nm			<input type="checkbox"/>
② Check axle guide linkage screws for tightness using a torque wrench. M 24 (VG) M = 325 Nm M 30 M = 725 Nm M 36 M = 1425 Nm	<input type="checkbox"/>		<input type="checkbox"/>
③ Check connecting rod clamping screws for tightness. M 12-8.8 M = 66 Nm M 14-8.8 M = 140 Nm			<input type="checkbox"/>
④ Check axle guide linkage nuts for tightness. See point ④ on page 43.	<input type="checkbox"/>		<input type="checkbox"/>
⑤ Check axle fastening screws for tightness using a torque wrench. Lock nut M 20 M = 400 Nm Castellated nut M 22 M = 320 Nm Lock nut M 24 M = 570 Nm Check rubber plates for wear.	<input type="checkbox"/>		<input type="checkbox"/>
⑥ Check spring shackles for tightness. M 14-10.9 M = 195 Nm M 16- 8.8 M = 163 Nm M 14- 8.8 M = 140 Nm (rubber roller)	<input type="checkbox"/>		<input type="checkbox"/>
⑦ Check spring U-bolts for tightness using a torque wrench. M 24 M = 600 - 650 Nm	<input type="checkbox"/>		<input type="checkbox"/>
⑧ Check slide elements for tightness. M 14-8.8 M = 140 Nm M 20-8.8 M = 320 Nm			<input type="checkbox"/>

For BPW trailer axles / self steering axles, see pages 4 - 31

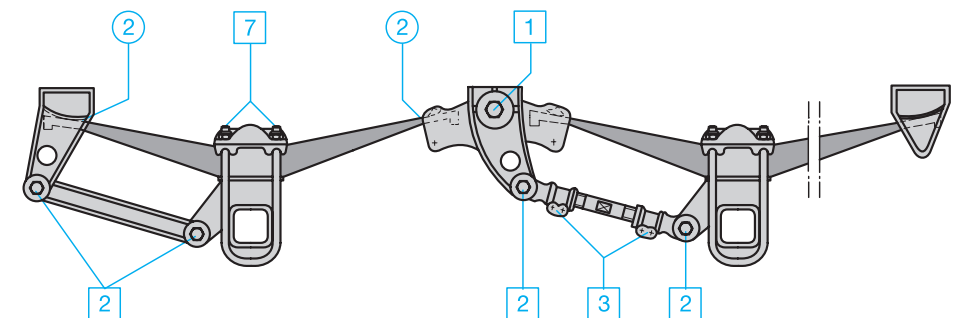
<sup>1)</sup> under extreme conditions, with more frequency.



Series VA



Series VB



Series VG

**Lubrication**

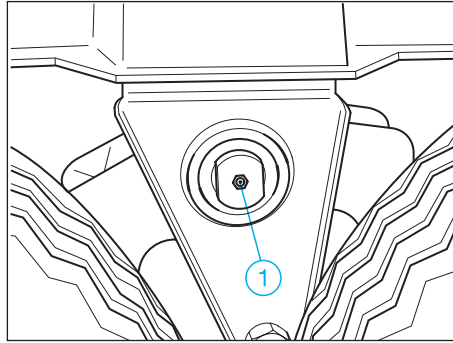
**Visual inspection and maintenance**

**1 Equalizer arm bearings with bronze bushes (series VA-E, VB-E)**

- every 6 weeks, initially after 2 weeks -
- under extreme conditions, lubricate with more frequency -

Lift trailer to take pressure off equalizer arm bearings.

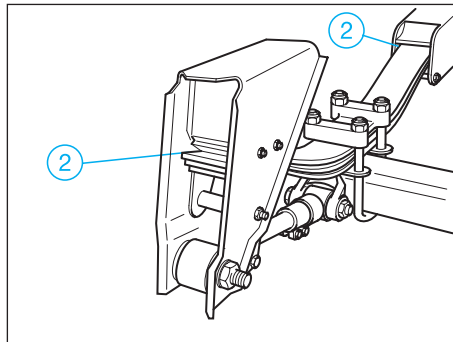
Grease bronze bush bearing via the grease nipple in the heads of the threaded bolts with BPW special longlife grease ECO-LiPlus until fresh grease emerges. (Not applicable to rubber/steel bushes).



**2 Slide elements**

- every 6 weeks, initially after 2 weeks -
- under extreme conditions, lubricate with more frequency -

In the case of VB suspensions with anti-vibration leaf underneath the parabolic springs, grease the lower slide elements via the grease nipples.



**Visual inspection**

- twice annually -

Check all component parts for wear and damage.

In order to check the bearing on the equalizer and axle guide linkage: move the vehicle back and forth slightly with the brake applied; or move the bearing points with the aid of a lever. No play should be present in the bearing when doing so.

**1 Equalizer arm bearings**

- twice annually -

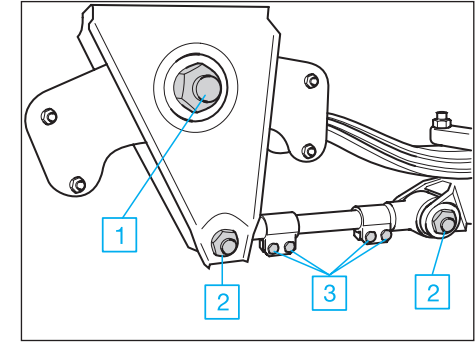
Check nuts on the equalizer arm bearings for tightness. The serviceable life of the rubber/steel bush bearings is dependent on the tightness of the inner steel bush.

Tightening torques:

VG M 24 M = 325 Nm

VA/VB up to an axle load of 12 tonnes  
M 42 x 3 M = 1100 Nm

VA/VB from an axle load of 13 tonnes  
M 42 x 3 M = 1700 Nm



**2 Axle guide linkages**

- twice annually, initially after 2 weeks -

Check lock nuts of the axle guide linkages/connecting rods for tightness using a torque wrench. Tightening torques:

VG M 24 M = 325 Nm

VA/VB M 30 M = 725 Nm

VA/VB M 36 M = 1425 Nm

**3 Connecting rods**

- twice annually -

Check connecting rod clamping screws for tightness. Tightening torques:

M 12-8.8 M = 66 Nm

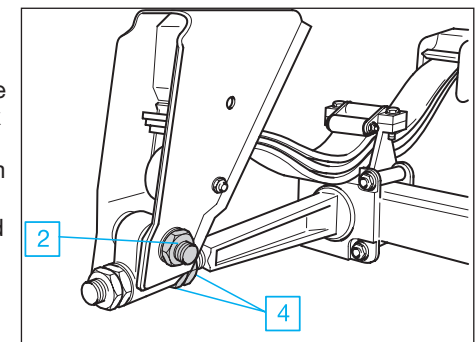
M 14-8.8 M = 140 Nm

**4 Axle guide linkages (VA)**

- twice annually, initially after 2 weeks -

In the case of horizontal play in the axle guide linkages: loosen rear nut locking plate or lock nut. Tighten rear nut (M 42 x 2, M 55 x 1.5, M 70 x 1.5) to tightening torque M = 100 Nm and lock. In the case of double nuts:

Tighten first nut to 100 Nm, tighten second nut to 1000 Nm, firmly locking both nuts together using two spanners. (The front double nuts (hex. nut M 36 x 2) remain locked at 1000 Nm or locked by means of a lock plate).



## Maintenance

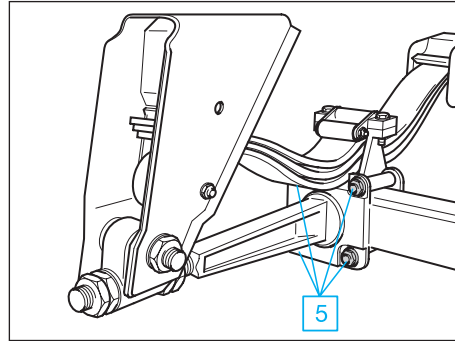
### 5 Axle fastenings (VA)

– twice annually, initially after 2 weeks –  
Check axle fastening screws for tightness using a torque wrench. Tighten the 4 nuts crosswise, in the case of castle nuts secure again by means of a cotter pin.

Tightening torques:

Lock nut	M 20	M = 400 Nm
Castle nut	M 20	M = 320 Nm
Lock nut	M 24	M = 570 Nm

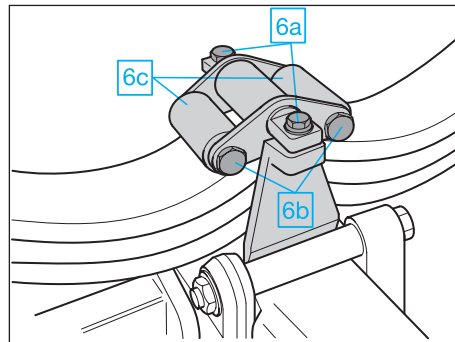
Check rubber plate between axle shaft and guide linkage for wear. If the rubber plate has visibly worked its way out downwards or upwards, replace the plate.



### 6 Spring shackle (VA)

– twice annually, initially after 2 weeks –  
Check fastening screws of the spring shackle for tightness. Tightening torques:

- Ⓐ M 14-10.9      M = 195 Nm
- Ⓐ M 16-8.8      M = 163 Nm
- Ⓑ M 14-8.8      M = 140 Nm  
(rubber roller)
- Ⓒ Check rubber rollers for wear and required pretensioning of at least 1 mm.

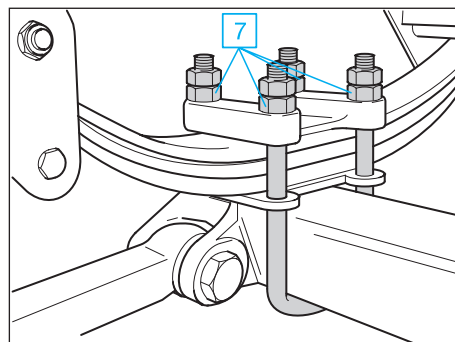


### 7 Spring U-bolts

– twice annually, initially after 2 weeks –  
Check spring U-bolts for tightness. If necessary loosen lock nuts, tighten nuts alternately to the prescribed torque, and a bit at a time, then re-lock.

Tightening torques:

M 24	M = 600 - 650 Nm
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### 8 Slide elements

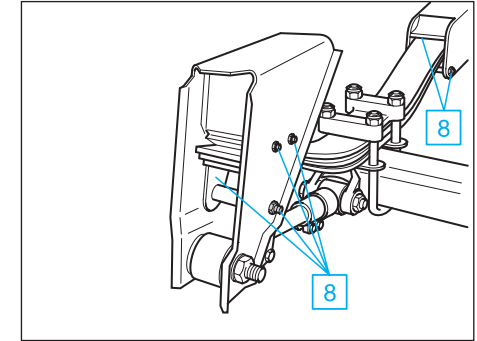
– twice annually –

Check slide elements and lateral wear plates in the shackle and equalizer arm for wear and the fastening screws for tightness.

Tightening torques:

M 14-8.8	M = 140 Nm
M 20-8.8	M = 320 Nm

If necessary, check rubber rollers under the spring ends for wear.



Valid: 01.01.2005

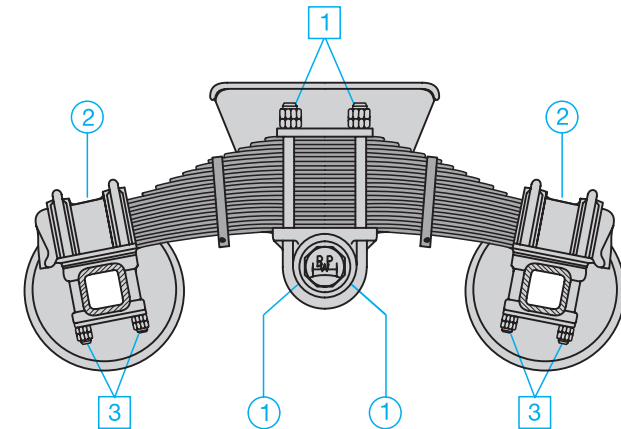
## Lubrication and maintenance work Overview

For detailed description, see pages 48 - 49

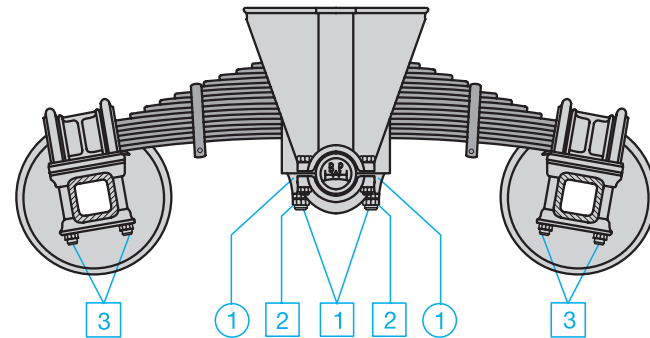
- |   | initially<br>after 2 weeks          | every 6 weeks                       | every 26 weeks<br>(twice annually) <sup>1)</sup> |
|---|-------------------------------------|-------------------------------------|--|
| ① Grease axle support bearing series W, BW using BPW special longlife grease ECO-LiPlus.  | <input type="radio"/> <sup>1)</sup> | <input type="radio"/> <sup>1)</sup> |  |
| ② Grease spring tension casing series W using BPW special longlife grease ECO-LiPlus.   | <input type="radio"/>               | <input type="radio"/>               |  |
| [-] Visual inspection, check all component parts for wear and damage.   |                                     |                                     | <input type="checkbox"/>                         |
| ① Check spring U-bolt of support axle for tightness.<br>M 30 x 2-8.8      M = 980 Nm<br>M 36-8.8          M = 1555 Nm   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>                         |
| ② Check fastening screws on the bearing covers for tightness.<br>M 20-8.8          M = 320 Nm<br>M 24-8.8          M = 570 Nm   |                                     |                                     | <input type="checkbox"/>                         |
| ③ Check spring U-bolts on the spring tension casings for tightness.<br>M 20-8.8          M = 320 Nm<br>M 20-10.9        M = 450 Nm<br>M 24-8.8          M = 570 Nm<br>M 24-10.9        M = 700 Nm | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>                         |

BPW trailer axles / self steering axles, see pages 4-31

<sup>1)</sup> under extreme conditions, with more frequency



Series W



Series BW / GW



**Lubrication**

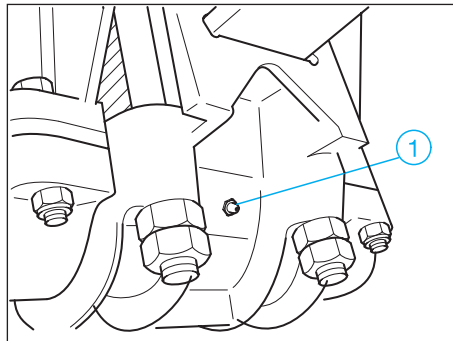
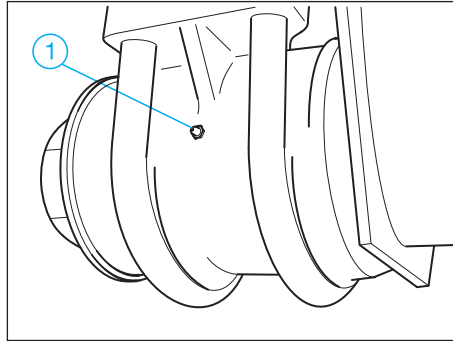
**Visual inspections and maintenance**

**1 Support axle (series W, BW)**

- every 6 weeks, initially after 2 weeks -
- under extreme conditions, lubricate with more frequency -

Lift trailer to take pressure off the bearings. Grease lubrication nipple front and rear on the bearing brackets of the support axle using BPW special longlife grease ECO-LiPlus until fresh grease emerges (not applicable to axle assembly series GW = rubber bush)

Series W



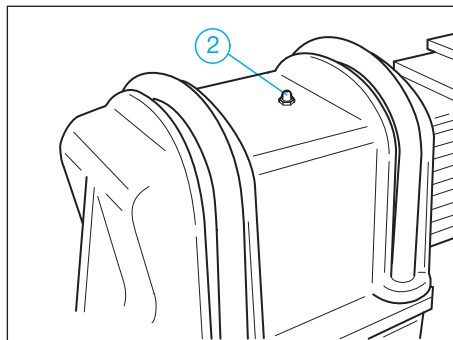
Series BW

**2 Spring tension casing (series W)**

- every 6 weeks, initially after 2 weeks -

Grease lubrication nipples on the spring tension casing using BPW special longlife grease ECO-LiPlus.

Series W



**Visual inspection**

- twice annually -

Check all components for wear and damage.

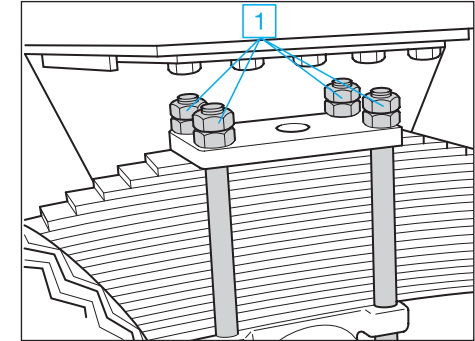
**1 Spring U-bolts on the trunnion axle**

- twice annually, initially after 2 weeks -

Check spring U-bolts for tightness. If necessary loosen lock nuts, tighten nuts alternately to the prescribed torque, a bit at a time, then relock.

Tightening torques:

M 30 x 2-8.8	M = 980 Nm
M 36-8.8	M = 1555 Nm



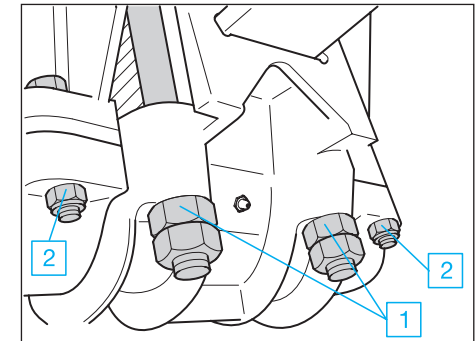
**2 Fastening screws on the cover plates**

- twice annually -

Check the fastening screws on the cover plates of the support axle for tightness.

Tightening torques:

M 20-8.8	M = 320 Nm
M 24-8.8	M = 570 Nm



**3 Spring U-bolts on the spring tension casings**

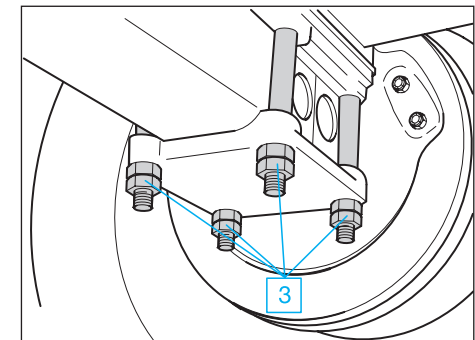
- twice annually -

Check spring U-bolts on the spring tension casings for tightness.

If necessary loosen lock nuts, tighten nuts alternately to the prescribed torque, a bit at a time, then relock.

Tightening torques:

M 20-8.8	M = 320 Nm
M 20-10.9	M = 450 Nm
M 24-8.8	M = 570 Nm
M 24-10.9	M = 700 Nm







BPW-W-05/1e



BPW Bergische Achsen Kommanditgesellschaft, P.O. Box 1280, D-51656 Wiehl,  
Phone +49 2262 78-0, [info@bpw.de](mailto:info@bpw.de), [www.bpw.de](http://www.bpw.de)