



ECO Plus - axle systems with air suspension

Valid for all complete ECO Plus air-suspended axle systems
as from production date 01.07.2010



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1. WARRANTY

1.1. Warranty statement

BPW Bergische Achsen Kommanditgesellschaft, D-51674 Wiehl, hereinafter referred to as "BPW", warrants by an independent promise of guarantee (German term "Garantie") the manufacturing quality of the entire ECO Plus air-suspended axle system to the warranty under the conditions described below for the duration of the warranty (hereinafter referred to as the "ECO Plus Warranty").

The ECO Plus Warranty shall be valid

– from the day of vehicle registration or entry into service.

- within Europe for the period of
 - **5 years** in On-Road use (see Point 1.3.2.) or
 - **3 years** in Off-Road use (see Point 1.3.2.)
- outside Europe for the period of
 - **2 years** in On-Road use (see Point 1.3.2.) or
 - **1 year** in Off-Road use (see Point 1.3.2.)

– with unlimited mileage.

– for BPW running gear systems on drawbar and semi-trailers.

– only for complete ECO Plus air-suspended axle systems (AIRLIGHT II or other BPW air-suspended versions), selected according to the appropriate use (see required equipment features under Point 4).

– only for vehicles with air-suspended axle systems equipped with a transverse throttle between the air bags on the left and right-hand sides starting from the first day of registration or on the day when the vehicle entered service.

– only when pressure ranges are maintained in the supply line between 6.5 - 8.5 bar (according to ECE-R13 Annex 10 and 98/12/EG Annex II; both are made available free of charge on request).

The ECO Plus Warranty of **5 years** is extended, subject to documented proof of all specified inspections regarding the hub, the hub bearings, the axle beam, the axle beam to trailing arm connection and the hanger brackets, by a further **3 years**, if 60 months after the day of the vehicle's first registration or entry into service, a Full-Service is carried out by a BPW Direct Partner. Hereinafter referred to as "Extended Warranty".

1.2. Scope of the warranty

During the appropriate warranty period, BPW will, in the case of claims, accept the immediately incurred costs for the recommended material to be replaced as well as those for the actual removal and installation according to BPW reference times, **if agreed in advance with BPW or one of their representatives, and the work is carried out by an authorised workshop** (hereinafter referred to as "Warranty Service"). For this, it is necessary to include a copy of the completed sheet "Retention of value through preventative service" (see Point 3.1) with the warranty application. If the above requirements are not fulfilled, BPW will not accept any costs.



The removed damaged parts should be kept and, subject to agreement, returned to BPW at the cost of the warranty. Additional claims by the warranty, of whatever nature, in particular expenses in connection with the Warranty Service received, are excluded. All those warranty claims, occurring within the warranty period and which are immediately notified to the vehicle manufacturer, BPW, one of its representatives or a service workshop, shall be taken into account.

1.3. Conditions for obtaining and maintaining the ECO Plus Warranty

1.3.1. General Information

It is a pre-condition of obtaining and retaining the ECO Plus Warranty and, if appropriate, the Extended Warranty, that all measures must be carried out or arranged to be carried out in accordance with the current BPW service and BPW maintenance instructions (see Point 1.3.4.). The service and maintenance instructions are up to date at the time of going to press. However, they are subject to modifications in response to ongoing developments (see Point 1.3.4.).

		Retightening of all bolted connections by BPW Service Centre of vehicle owner	Check or visual inspection by BPW Service Centre	
		Within 2 weeks of the first journey under load; latest after 2000 km	12 months	36 months
Inside Europe	On-Road 5 years	X ¹⁾	X	X
	Off-Road 3 years	X	X	
Outside Europe	On-Road 2 years	X ¹⁾	X	
	Off-Road 1 year	X		

¹⁾ not applicable for Airlight II in On-Road-Applications

The warranty covering On-Road use in Europe can be extended by a further 3 years, the pre-condition for this being a Full-Service inspection after 60 months to be carried out by a BPW Direct Service Partner, at the trailer owner/operator's expense.

The Extended Warranty only applies after receipt of the sheet, "Retention of value through preventative service" (page 7), and written confirmation of this by BPW.

Period of warranty	Work to be performed		
	Time	Measures	Service provider
On-Road 5+3 years	60 months	Full-Service	BPW Direct Service Partner
	72 months	Check/visual check	BPW Service Centre

1.3.2. Definition of On-Road / Off-Road:

The term "On-Road" refers to roads having a sealed and metalled surface, in other words with an asphalt or concrete surface. Gravel roads are regarded as being Off-Road. A vehicle is also regarded as being in Off-Road operation even if it departs from sealed surfaces under operating conditions for only short periods.

Off-Road operation is assumed in all cases in tippers and vehicles with comparable applications. The warranty for vehicles in Off-Road use is restricted to 3 years for operation within Europe and 1 year for operation outside Europe. For Off-Road use, no Extended Warranty is available.

1.3.3. Maintenance work , repairs, spare parts

Rectification of any discovered defects 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 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, in particular of brake linings, 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 responsibility for them.

BPW is unable to determine whether all third party products 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.

Use of spare parts other than original BPW Spare Parts renders the ECO Plus Warranty null and void (see Point 1.4.).

If, during the appropriate warranty period, Warranty Services or repair work are carried out, the warranty period will then not begin again for the affected component.

1.3.4. Current state of service and maintenance work

BPW is continually developing its products. Technical changes and/or new knowledge may cause the instructions and specifications published by BPW to change (in particular with regard to scopes of service and maintenance). The current state can be viewed at any time under www.bpw.de. On request, the latest printed edition of the required document can be made available by post free of charge.



1.4. Exclusion from the warranty

The ECO Plus Warranty does not cover normal wear and tear, the relevant wearing parts (in particular brake linings, brake drums, brake discs, brake cylinders, brake camshaft bearings, brake pads, shock absorbers and air bags), maintenance-dependent parts within disc brake calipers, or environmental impairments resulting from noise and odour emission.

In addition, the warranty shall not apply in the case of

- damage caused by external violence,
- operational errors,
- non-observance of the current BPW
 - installation instructions,
 - operating and assembly instructions,
 - equipment features / recommended uses (see Point 4.),
 - maintenance instructions (incl. safety instructions), (see Point 1.3.4.),
- use of spare parts other than BPW Original Parts during the warranty period.

1.5. Applicable law, place of jurisdiction

The basis for the ECO Plus Warranty as well as for the service and maintenance instructions will be the German-language version of documents where the purchase agreement is completed in Germany, Austria and Switzerland, and for all other countries the English-language version of documents. Translations into other languages are used solely for better comprehension of the original German or English-language version, for orientation and information. Should the original German or English-language version not be available, this can be made available free of charge using the address given on the back page of this warranty document or, on request, at info@bpw.de or www.bpw.de.

The laws of the Federal Republic of Germany shall apply, irrespective of where the purchase agreement was completed. The place of jurisdiction is Cologne. The United Nations Convention on Contracts for the International Sale of Goods shall not apply.

2. OPERATIONAL AND ROAD SAFETY

To maintain operational and road safety, maintenance work must be carried out at the prespecified intervals (see **BPW Maintenance Instructions** at www.bpw.de or, on request, from info@bpw.de).

The relevant operational and service instructions of the vehicle manufacturer, as well as the other vehicle parts manufacturers, shall also be complied with.

3. SERVICE INSTRUCTIONS

3.1. Retention of value through preventative service.

The visual checks after 12, 36 and 72 months are to be performed within the framework of any statutory inspections that might be prescribed in respect of these intervals. Visual checks are to be performed annually on vehicles in use outside Europe.

2 Visual check after 12 months

(As described on pages 10 and 11)

Date: _____

Stamp and signature of the BPW Service Centre performing the work

Visual check after 36 months

(As described on pages 10 and 11)

Date: _____

Stamp and signature of the BPW Service Centre performing the work

3 Full-Service after 60 months

(As described on pages 10 to 13)

Date: _____

Stamp of the **BPW Direct Service Partner**

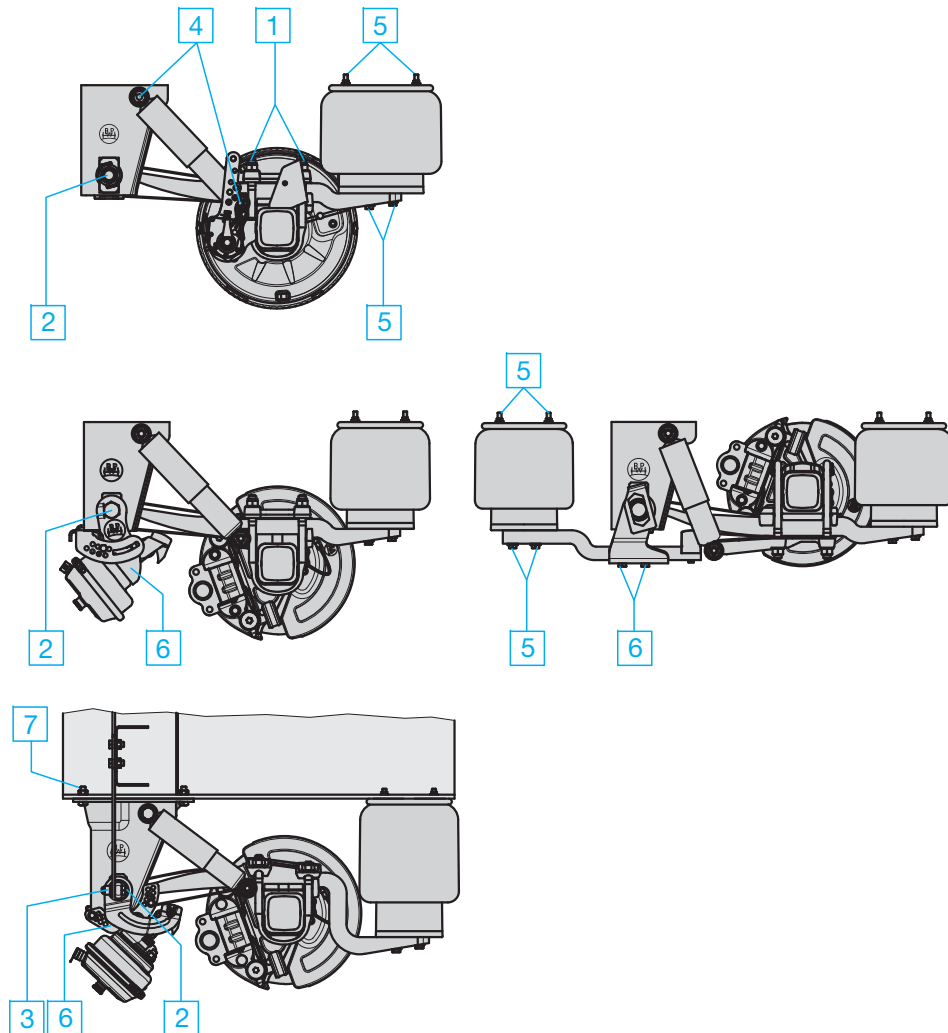
4 Check after 72 months

(As described on pages 10 and 11)

Date: _____

Stamp and signature of the BPW Service Centre performing the work

3.2. Checks to be performed after entering into service –
(within 2 weeks of the first journey under load, latest after 2000 km)



ECO Plus units with Airlight II air suspension (70 mm wide trailing arms) do not have to be retightened for On-Road use.

It is essential for the specified bolted connections to be retightened on all other BPW air-suspended axle systems, as well as Airlight II when used Off-Road.

- 1 Tighten the spring mounting kit (U-bolts) with a torque wrench.
Tightening torques:

M 22 (SW 32)	M = 550 Nm (510 - 605 Nm) ¹⁾
M 24 (SW 36)	M = 650 Nm (605 - 715 Nm)

- 2 Tighten the spring pivot bolt with a torque wrench. Tightening torques:
hanger brackets and channel crossmember Airlight II

from 09/2007:	M 24 (SW 36)	M = 650 Nm (605 - 715 Nm)	
Hanger brackets	from 08/2001:	M 30 (SW 46)	M = 900 Nm (840 - 990 Nm)
Hanger brackets	up to 07/2001:	M 30 (SW 46)	M = 750 Nm (700 - 825 Nm)
Channel crossmember:	M 30 (SW 46)	M = 900 Nm (840 - 990 Nm)	

- 3 Tighten the spring bolt to gusset plate connecting bolt with a torque wrench.
Tightening torque:

M 18 x 1.5	M = 420 Nm (390 - 460 Nm)
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- 4 Tighten the shock absorber fastening with a torque wrench.
Tightening torques:

M 24	M = 420 Nm (390 - 460 Nm)
For aluminium hanger brackets	M = 320 Nm (300 - 350 Nm)

- 5 Tighten the air bag fastenings with a torque wrench.
Tightening torques:

M 12	M = 66 Nm
M 16	M = 230 Nm

- 6 Tighten the axle lift device with a torque wrench. Tightening torques:

Cylinder	M 16	M = 180 - 210 Nm
	M 20	M = 350 - 380 Nm
Supporting arm	M 16	M = 230 Nm
Hexagon screw	M 12	M = 75 Nm

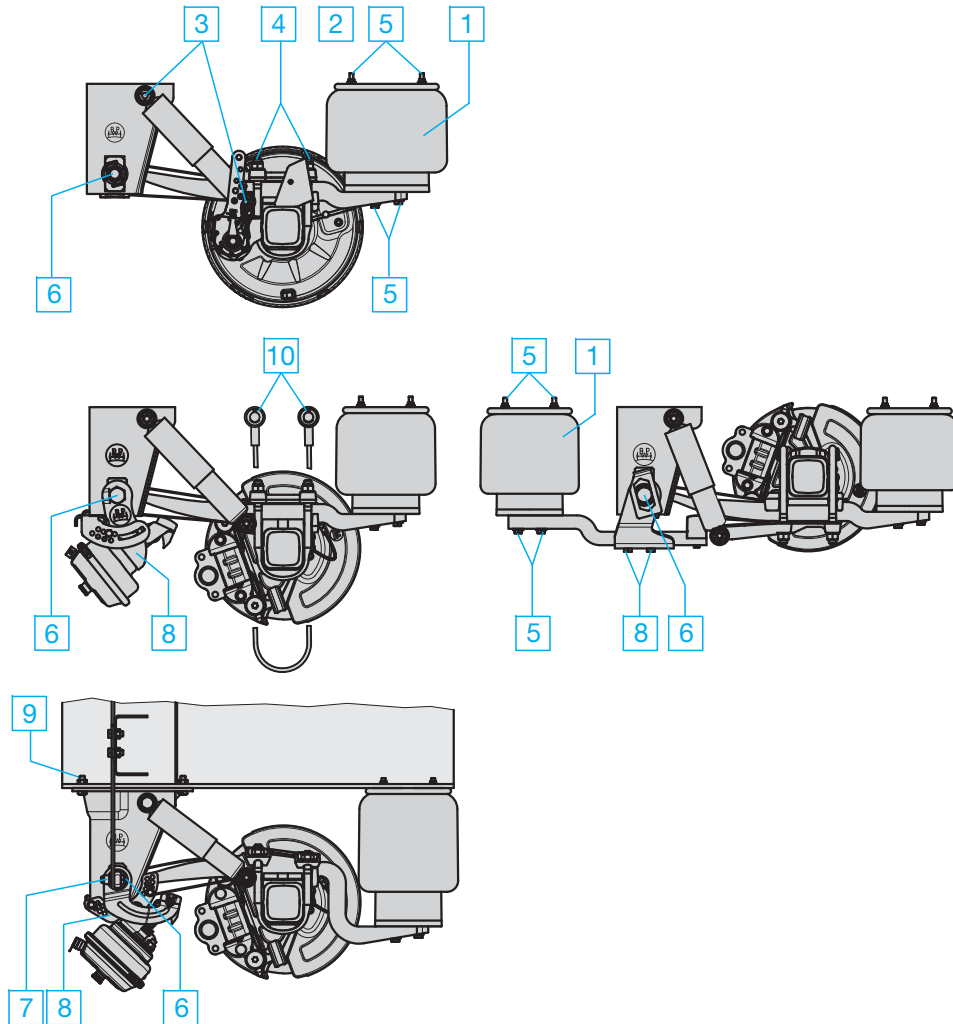
- 7 Tighten the bolt connection between the air suspension hanger bracket and the longitudinal member.
Tightening torques:

M 16	M = 260 Nm (240 - 285 Nm)
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¹⁾ When mounting new spring mounting kit components for Airlight II:
Tightening torque: M 22 M = 550 Nm + 90° angle tightening

3.3. Visual inspection to be carried out within the framework of the statutory annual inspection

- Description of inspection after 12, 36 and, if appropriate, 60 months -
- Description of inspection after 72 months -



Visual inspections to be performed

- Visual inspection - Check all component parts for damage and wear.
- 1** Check condition of air bags.
- 2** Check air suspension level valves for condition, seal integrity and tightness.
- 3** Visual inspection - Check shock absorber fastening for tightness.

M 24	M = 420 Nm (390 - 460 Nm)
For alloy hanger brackets M 24	M = 320 Nm (300 - 350 Nm)
- 4** Visual inspection - Check spring mounting kit for tightness.

M 22 (SW 32)	M = 550 Nm (510 - 605 Nm)
M 24 (SW 36)	M = 650 Nm (605 - 715 Nm)
- 5** Visual inspection - Check air bag fastening for tightness.

M 12	M = 66 Nm
M 16	M = 230 Nm
- 6** Visual inspection - Check spring pivot bolts for tightness.

Hanger brackets and channel crossmember Airlight II	
from 09/2007: M 24 (SW 36)	M = 650 Nm (605 - 715 Nm)
Hanger brackets	
from 08/2001: M 30 (SW 46)	M = 900 Nm (840 - 990 Nm)
up to 07/2001: M 30 (SW 46)	M = 750 Nm (700 - 825 Nm)
Channel crossmember: M 30 (SW 46)	M = 900 Nm (840 - 990 Nm)
- 7** Visual inspection - Check spring bolt to gusset plate connection.

M 18 x 1.5	M = 420 Nm (390 - 460 Nm)
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- 8** Visual inspection - Check axle lift for tightness.

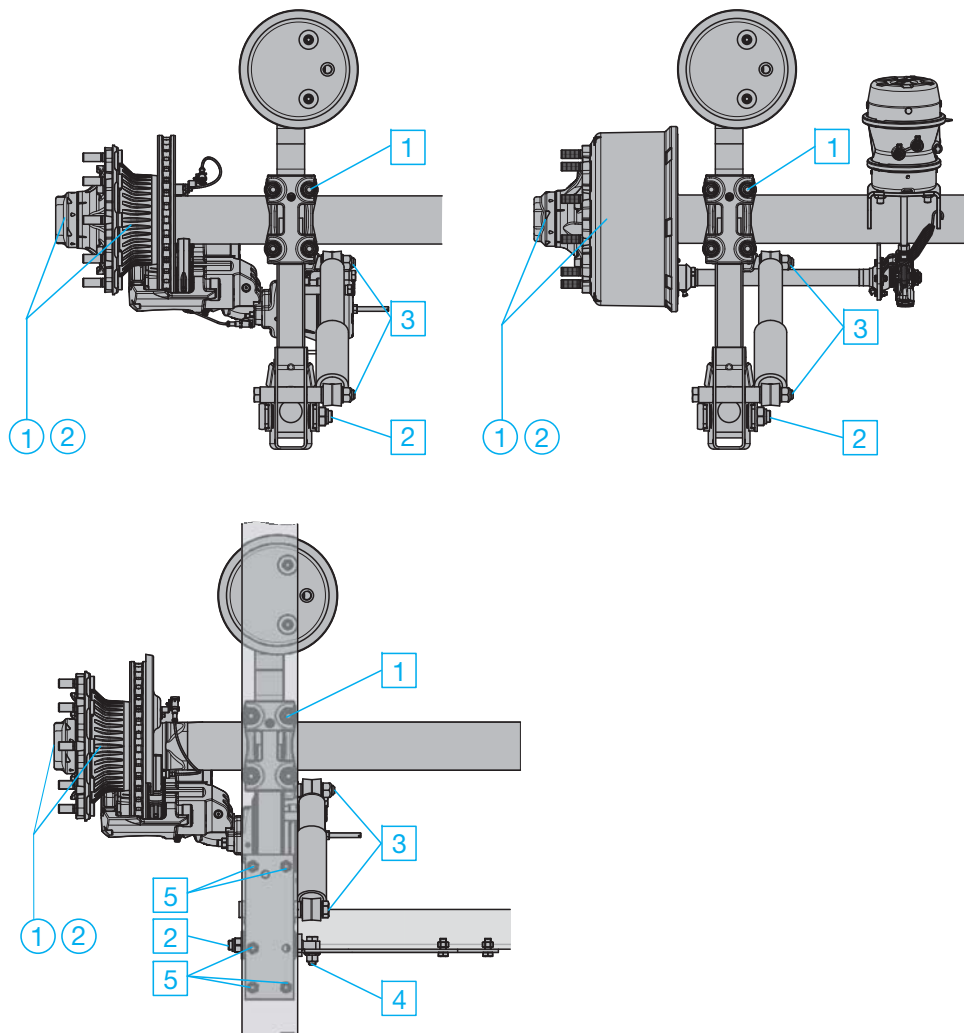
Cylinder	M 16	M = 180 - 210 Nm
	M 20	M = 350 - 380 Nm
Supporting arm	M 16	M = 230 Nm
Hexagon screw	M 12	M = 75 Nm
- 9** Visual inspection - Check bolted connection between the air suspension hanger bracket and the longitudinal member.

M 16	M = 260 Nm (240 - 285 Nm)
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- 10** Check strap. Check condition and fastening.

	after 12 months,	36 months,	60 months,	72 months
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A visual check is sufficient for these checks. Tighten any bolted connections as required to the specified tightening torques. Tightening may be charged to the vehicle owner.

3.4. Full-Service after 60 months at the BPW Direct Service Partner
(For Extended Warranty)



- The Extended Warranty applies to the ECO Unit, the axle beam, the axle beam to trailing arm connection and the hanger brackets. It is essential for the prescribed inspections to have been performed - with full documentation - starting from when the vehicle was first taken into service (payment required).

In all cases, replacement of components as part of the warranty provision shall be agreed with BPW or the relevant BPW representative prior to the start of work.

Fully functioning shock absorbers are essential for the suspension function, and therefore, represent the basis of the warranty agreement. A preventative exchange of shock absorbers (payment required) is necessary as part of the Full-Service after 60 months.

Work to be performed:

Lubrication work:

- ① **Mounting for the ECO Unit:** completely re-grease, renew bearings
- ② **Seals for the ECO Unit:** replace all seals

Maintenance:

- ① **Spring mounting kits:** Use a torque wrench to check the spring mounting kit is firmly seated. Tightening torques:

M 22 (SW 32)	M = 550 Nm (510 - 600 Nm)
M 24 (SW 36)	M = 650 Nm (605 - 715 Nm)
- ② **Spring pivot bolts:** Use a torque wrench to check the spring pivot bolts are firmly seated and check them for wear. Tightening torques:

Hanger brackets and channel crossmember Airlight II	
Hanger brackets from 09/2007:	M 24 (SW 36) M = 650 Nm (605 - 715 Nm)
Hanger brackets from 08/2001:	M 30 (SW 46) M = 900 Nm (840 - 990 Nm)
Hanger brackets up to 07/2001:	M 30 (SW 46) M = 750 Nm (700 - 825 Nm)
Channel crossmembers:	M 30 (SW 46) M = 900 Nm (840 - 990 Nm)
- ③ **Shock absorber:** Fit new shock absorbers. Tightening torques:

	M 24	M = 420 Nm (390 - 460 Nm)
For alloy hanger brackets	M 24	M = 320 Nm (300 - 350 Nm)
- ④ **Gusset plate:** Check the spring bolt to gusset plate connection is firmly attached and check for wear. Tightening torque:

M 18 x 1.5	M = 420 Nm (390 - 460 Nm)
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- ⑤ **Bolted-on air suspension hanger bracket:** Check that the mounting bolts of the air suspension hanger bracket on the longitudinal member are firmly tightened. Tightening torque:

M 16	M = 260 Nm (240 - 285 Nm)
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The necessary maintenance and lubrication requirements should be performed as part of the Full-Service in accordance with information provided by BPW. Parts subject to wear which the BPW Direct Service Partner assesses as defective should be replaced subject to a charge.



4. REQUIRED EQUIPMENT FEATURES

	Conditions	Axle load	Air suspension series	Tyre	Spring centre	Trailing arm		Hanger brackets	Shock absorber	Air bag	Axle beam	Axle connection	Comments
						70 mm	100 mm						
On-Road use	Standard use	9 t	AL II	S	≥ 1200	1 x 56		Standard	Standard / HD ¹⁾	Ø 300 / Ø 360	120 x 10	Clamped	With container and coil vehicles with stroke limiter
				Z	< 1200	1 x 62					120 x 15		
		10 t	SL	S	≥ 1100		1 x 57 / 2 x 43	Standard / HD ¹⁾	Ø 360 with reinforced disc	120 x 15			
				Z	< 1100					150 x 16			
Mega trailers	9 t	SL	S / Z			1 x 58	Standard	Standard	Ø 360 long-stroke air bag 36-1	120 x 10	Clamped		
Off-Road use	Standard Application e.g. light tipper use	9 t	AL II	S	≥ 1200	1 x 62		Standard	Standard / HD ¹⁾	Ø 300 / Ø 360 with reinforced disc	120 x 15	Clamped	With tippers with lowering device or stroke limiter
			SL	Z	< 1200		1 x 57 / 2 x 43	HD			Ø 360 with reinforced disc		
	Heavy duty Application - e.g. tippers behind all-wheel drive tractor units	9 t	SL	S	≥ 1200		1 x 57 / 2 x 43	HD	Standard / HD ¹⁾	Ø 360 with reinforced disc	120 x 15	Clamped	With tippers with lowering device or stroke limiter
				Z	< 1200						150 x 16	Welded	
		10 t		Z									

S = Single tyres, Z = Twin tyres

¹⁾ With higher vehicle speeds and poor road conditions use the HD version of the component concerned.

Deviations from these specifications in Europe or axle and axle unit combinations for use beyond Europe require approval by BPW.



BPW-GD-ECO Plus 39091101e



BPW Bergische Achsen Kommanditgesellschaft, P.O. Box 1280, D-51656 Wiehl,
Phone: +49 2262 78-0, info@bpw.de, www.bpw.de