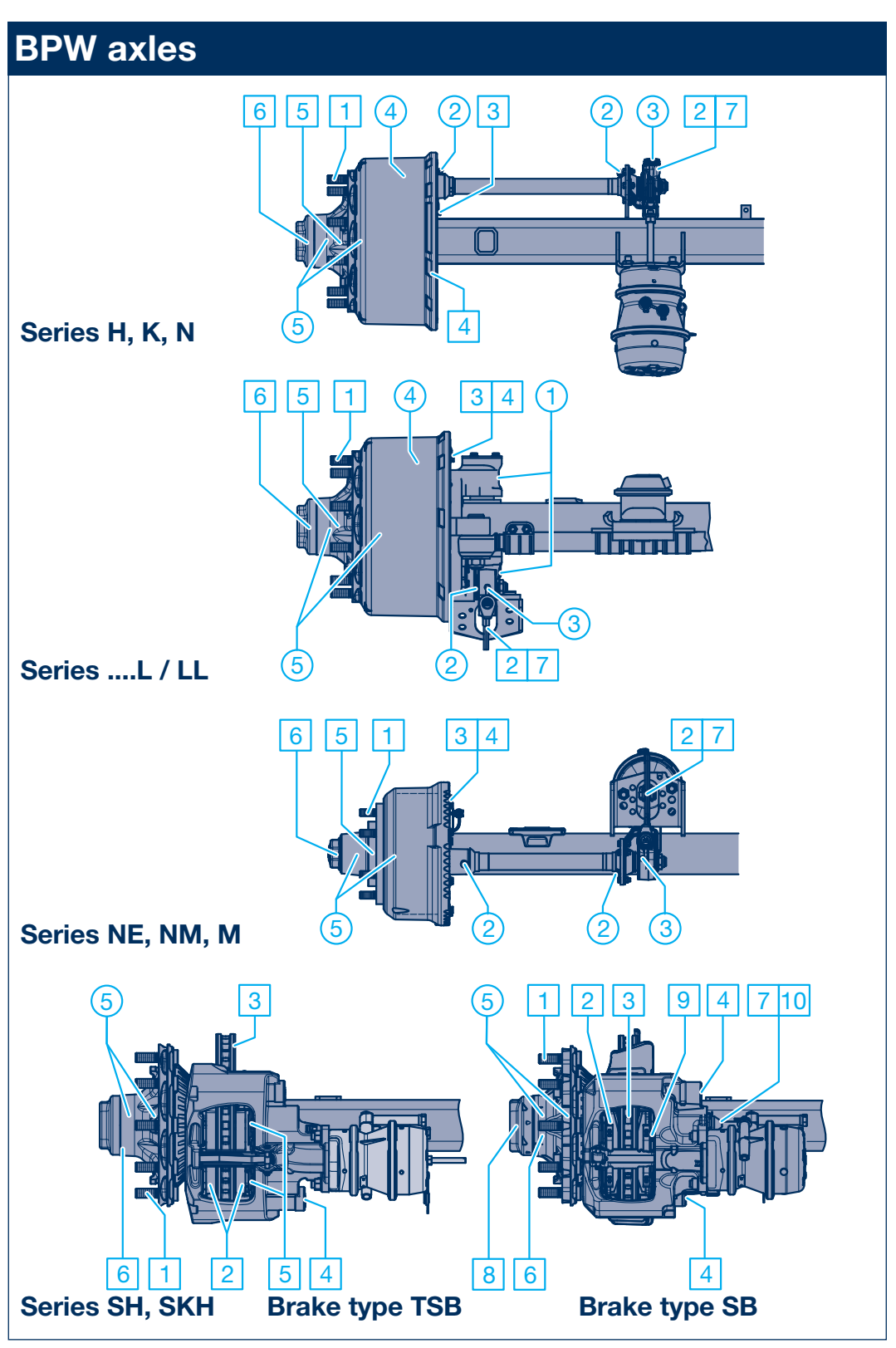




BPW axles and suspensions



Lubrication	initially		at every brake lining replacement ^{a)}	Δ BPW recommendation. Does not affect warranty ^{a)}
	after 2 weeks	every 6 weeks		
1 Steering knuckle bearing, top and bottom				
2 Brake camshaft bearing, outer and inner				
3 Slack adjusters manual				
4 Brake shoes with closed anchor eye				
5 ECO Plus 3, ECO Plus 2 and ECO ^{plus} Unit for use inside Europe				
6 ECO Plus 3, ECO Plus 2 and ECO ^{plus} Unit for use outside Europe				
7 ECO Unit for use				
8 Conventional hub bearing				

BPW air suspensions O / SL / AL / EAC				
1 Grease stabilizer bearing bushes and check for wear.				

BPW suspensions, series ECO Cargo VB / VB HD / VB 5.5 t				
1 Grease bearings (suspension type E). (Not applicable in the case of rubber / steel bushes).				
2 Slightly grease the slide elements / slide ends of springs.				

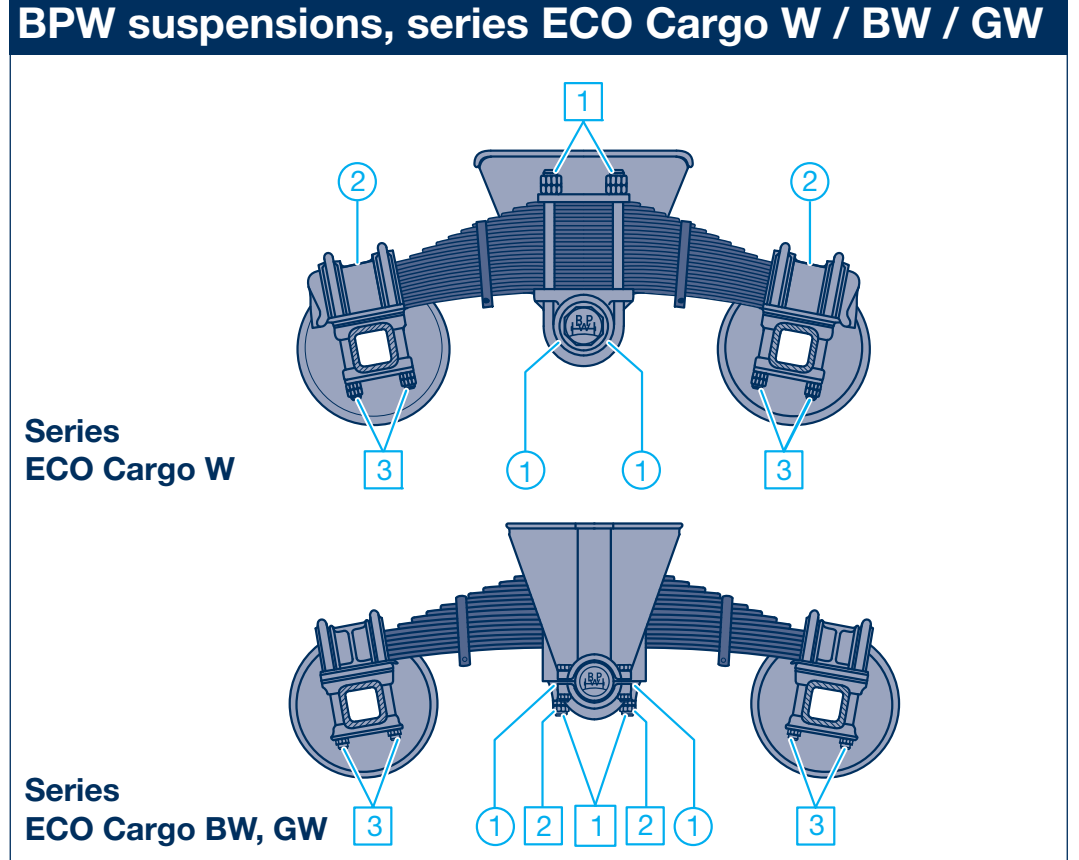
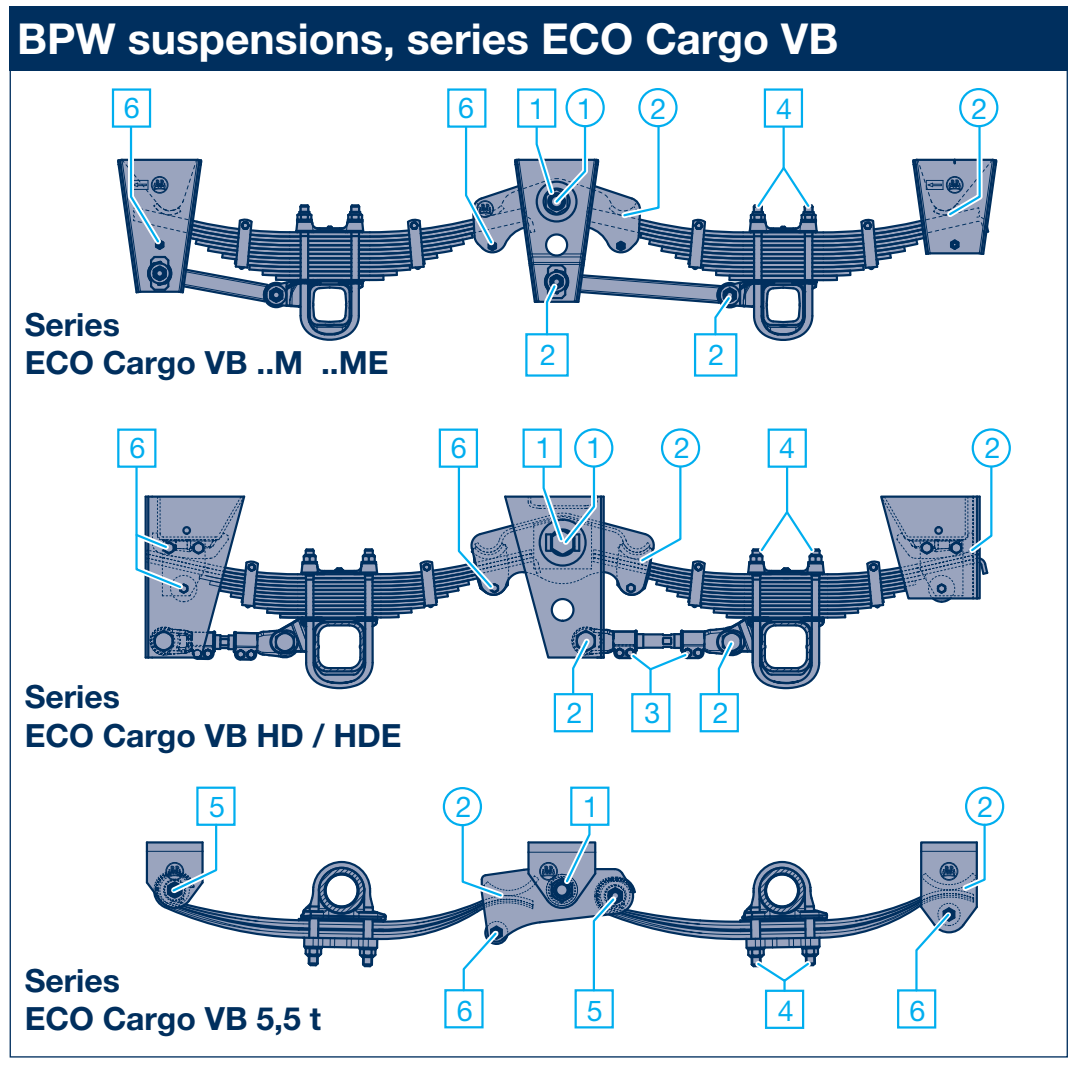
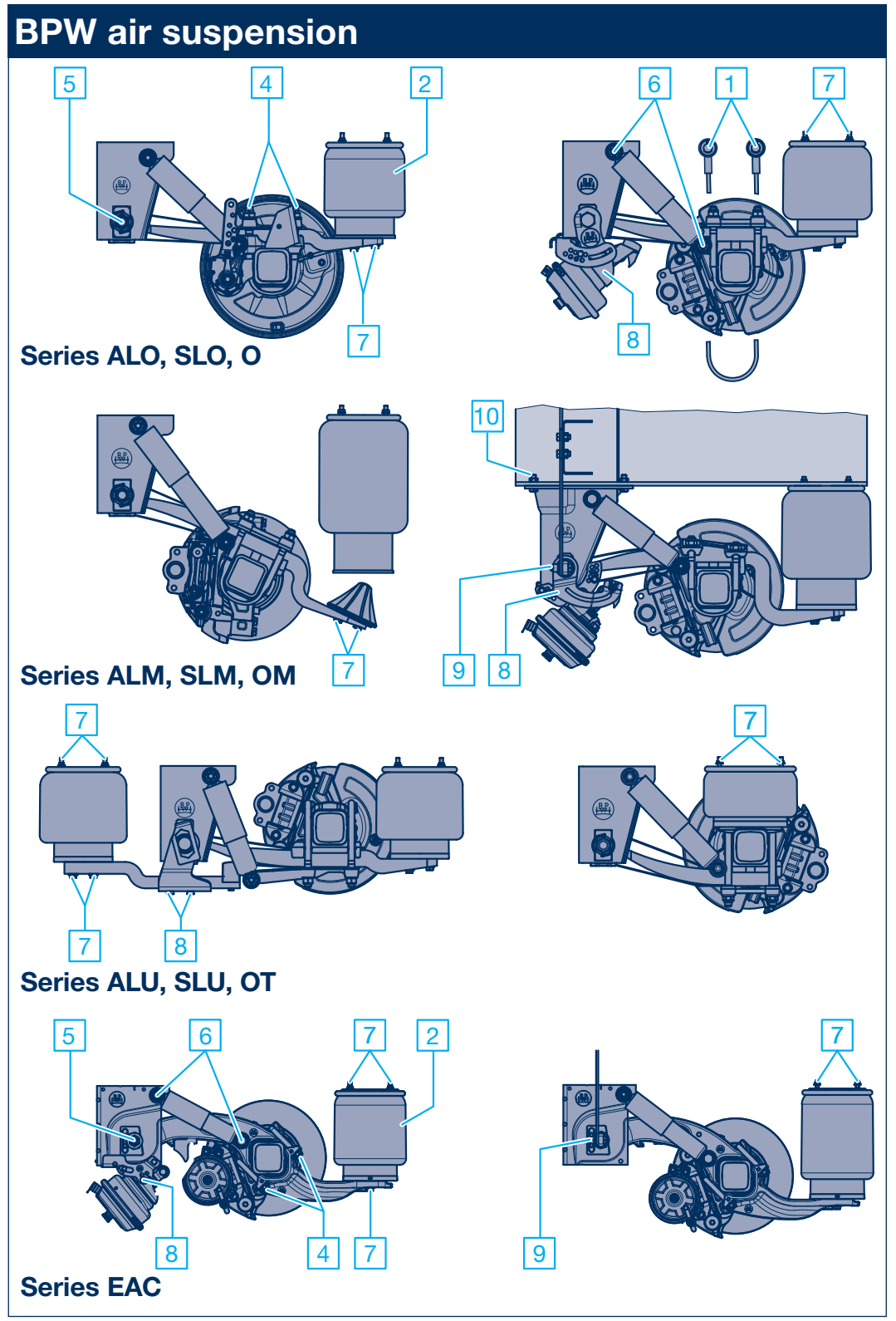
BPW suspensions, series ECO Cargo W / BW / GW				
1 Grease axle support bearing series W, BW.				
2 Grease spring tension casing series W.				

Maintenance	initially		at every 2 weeks of first journey under load, latest after 2000 km	every 12 weeks ^{a)} (quarterly)	every 26 weeks ^{a)} (twice annually)	annually and at every brake lining replacement ^{a)}	Visual checks during the warranty period for chassis fitted with ECO Plus air suspension after 12, 36, 60 and 72 month, subsequently yearly ^{a)}
	every 1 to 3 weeks	every 6 weeks					
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.							
4 Check the brake drum for cracks and check the internal diameter.							
5 Check wheel hub bearing play, adjust if necessary. ECO Plus 3, ECO Plus 2 and ECO ^{plus} Unit ECO Unit / conventional bearing							
6 Check caps for firm seating (not necessary with ECO Plus axles).							
7 Check operation of automatic slack adjusters.							
8 Check the tyres for uneven wear.							
9 Visual inspection of all component parts and for damage and wear.							
10 Check axle support bearing series W, BW.							
11 Grease spring tension casing series W.							

BPW air suspension, series O / SLO / AL / AL II / EAC				
1 Visual inspection, check all component parts for damage and wear.				
2 Check strap: Check condition and fastening.				
3 Check air suspension level valves for condition, seal-tightness and tightness.				
4 Check spring mounting kit for tightness.				
5 Check spring pivot bolts for tightness with a torque wrench.				
6 Check shock absorber fastening for tightness with a torque wrench.				
7 Check air bag fastening for tightness.				
8 Check axle lift for tightness.				
9 Tighten the spring bolt to gusset plate connection bolt.				
10 Check the bolt connection between the air suspension hanger bracket and the longitudinal member for tightness.				
11 Check stabilizer fastenings.				

BPW suspensions, series ECO Cargo VB / VB HD / VB 5.5 t				
1 Visual inspection, check all component parts for wear and damage.				
2 Check threaded bolts on equaliser arm bearings for tightness.				
3 Check axle connecting rod bolts for tightness.				
4 Check connecting rod clamping screws for tightness.				
5 Check spring U-bolts for tightness using a torque wrench.				
6 Check spring pivot bolts for tightness. (Serie up to 5.5 t)				
7 Check slide elements for tightness.				

BPW suspensions, series ECO Cargo W / BW / GW				
1 Visual inspection, check all component parts for wear and damage.				
2 Check spring U-bolt of support axle for tightness.				
3 Check fastening screws on the bearing covers for tightness.				
4 Check spring U-bolts on the spring housing for tightness.				



Lubricants			
Grease quantity - ECO Plus 3 and ECO ^{plus} Unit			
Axle load	Grease quantity per taper roller bearing		
	A inner	B outer	
8000 - 12000 kg	170 g 130 g*	120 g 90 g*	

Grease quantity - ECO Plus 2 Unit			
Axle load	Grease quantity per taper roller bearing		
	A inner	B outer	
8000 - 9000 kg	170 g 130 g*	120 g 90 g*	

Grease quantity - ECO Unit			
Axle load	Grease quantity per taper roller bearing		
	A inner	B outer	
8000 - 9000 kg	120 g	120 g	
10000 - 12000 kg	170 g	120 g	
13000 - 14000 kg	230 g	150 g	

Grease quantity - Conventional wheel hub bearing			
Axle load	Grease quantity per taper roller bearing		
	A inner	B outer	
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	

Tightening torques			
Axles			
Wheel nuts			
Wheel stud arrangement	M 14 x 1.5	SW 19	M = 125 Nm
	M 18 x 1.5	SW 24 / 27	M = 290 Nm
	M 20 x 1.5	SW 27	M = 380 Nm
	M 22 x 1.5	SW 32	M = 510 Nm
	M 22 x 2	SW 32 / 33	M = 460 Nm
Spigot arrangement	M 18 x 1.5	SW 27	M = 350 Nm
	M 20 x 1.5	SW 30	M = 480 Nm
	M 22 x 1.5	SW 32 / 33	M = 630 Nm
	M 24 x 1.5	SW 36	M = 860 Nm
Alloy wheels	M 22 x 1.5	SW 32 / 33	M = 630 Nm
Trilex-wheels	M 18 x 2	SW 27	M = 285 Nm
	M 20 x 2	SW 27	M = 335 Nm
Japan connection	M 20 x 1.5		M = 570 Nm
	M 30 x 1.5		M = 570 Nm
Hub caps			
with BPW oval shape	ECO Plus 3 Unit	SW 110	M = 350 Nm
	ECO Plus 2 Unit	SW 110	Bajonet lock
	ECO ^{plus} Unit	SW 110	M = 800 Nm
	ECO Unit	SW 110	M = 800 Nm
	8 - 12 tonnes	SW 110	M = 800 Nm
	6 - 12 tonnes	SW 110	M = 800 Nm
	5.5 tonnes	SW 70	M = 500 Nm
	6.5 - 9 tonnes	SW 95	M = 500 Nm
	10 - 12 tonnes	SW 110	M = 500 Nm
	13 - 14 tonnes	SW 120	M = 800 Nm
	16 - 18 tonnes	SW 140	M = 350 Nm
Alloy cap with octagonal shape	6 - 12 tonnes	SW 110	M = 350 Nm
	13 - 20 tonnes	SW 120	M = 500 Nm
Axle nut			
	(Hub cap with BPW oval shape)	≤ 5.5 tonnes	M = 70 Nm / 100 Nm
	(Hub cap with BPW oval shape)	6 - 18 tonnes	M = 150 Nm
	(Hub cap with octagonal shape)	16 - 30 tonnes	M = 350 Nm
ECO Plus 3, ECO Plus 2 and ECO ^{plus} Unit:	Axle bolt or axle nut with torque limiter - do not use an impact driver -		

BPW air suspension Series O / SL / AL / EAC			
Tightening torques with a torque wrench			
Axle clampings / U-bolt			
ECO Air COMPACT	M 20	SW 30	M = 420 Nm
Airlight II when servicing	M 22	SW 32	M = 550 Nm
Airlight II when replacing	M 22	SW 32	M = 550 Nm
			+ 90° rotation angle
O / SL / AL			
Air suspension 3.5 - 5 tonnes, hexagon screws	M 20	SW 30	M = 340 Nm
Spring pivot bolts			
Hanger brackets and channel crossmember	M 24	SW 36	M = 650 Nm
Airlight II from 09/2007			
Hanger brackets from 08/2001	M 30	SW 46	M = 900 Nm
Hanger brackets up to 07/2001	M 30	SW 46	M = 750 Nm
Channel cross member	M 30	SW 46	M = 900 Nm
Check absorber fastening			
ECO Air COMPACT	M 24	SW 36	M = 420 Nm
Steel hanger brackets	M 20	SW 30	M = 320 Nm
Steel hanger brackets	M 24	SW 36	M = 420 Nm
Alloy hanger brackets	M 24	SW 36	M = 320 Nm
Air bag fastenings			
	M 12	SW 17	M = 66 Nm
	M 16	SW 22	M = 260 Nm
Central screw	M 16	SW 22	M = 300 Nm
Axle lift			
Supporting arm (EAC)	M 20	SW 30	M = 350 Nm
Supporting arm (O / SL / AL)	M 16	SW 22	M = 230 Nm
Cylinder	M 20	SW 30	M = 360 Nm
Cylinder	M 16	SW 24	M = 190 Nm
Hexagon screw	M 12	SW 17	M = 75 Nm
Lock nut	M 10	SW 16	M = 38 Nm
Cylinder cap screw	M 10	SW 8	M = 50 Nm
Stabilizer fastenings			
	M 10-10.9	SW 17	M = 53 Nm
	M 30	SW 46	M = 750 Nm
Sundries			
Spring bolt screw connection on the gusset plate	M 18 x 1.5	SW 27	M = 420 Nm
Bolt connection between the air suspension hanger bracket and the longitudinal chassis beam	M 16		M = 260 Nm

BPW suspensions Series ECO Cargo VB / VB HD / VB 5.5 t			
Equalizer arm bearings			
up to an axle load of 5.5 tonnes (from 03/2016)	M 30	SW 46	M = 725 Nm
up to an axle load of 12 tonnes (from 08/2013)	M 42 x 3	SW 65	M = 1300 Nm
up to an axle load of 12 tonnes (up to 07/2013)	M 42 x 3	SW 65	M = 1100 Nm
Series HD / HDE	M 48 x 3	SW 65	M = 1240 Nm
Axle guide linkages			
	M 24 x 2	SW 36	M = 650 Nm
	M 30	SW 46	M = 725 Nm
	M 36	SW 55	M = 1425 Nm
Connecting rod clamping screws			
	M 12	SW 19	M = 66 Nm
	M 14	SW 22	M = 140 Nm
U-bolts			
	M 20	SW 30	M = 340 Nm
	M 24	SW 36	M = 620 Nm
Spring pivot bolt			
	M 20	SW 30	M = 340 Nm
Slide elements			
	M 14	SW 22	M = 140 Nm
	M 16	SW 24	M = 163 Nm
	M 20	SW 30	M = 320 Nm

BPW suspensions Series ECO Cargo W / BW / GW			
Spring U-bolt of support axle			
	M 30 x 2	SW 46	M = 980 Nm
	M 36	SW 55	M = 1555 Nm
Fastening screws on the bearing covers			
	M 20	SW 30	M = 320 Nm
	M 24	SW 36	M = 570 Nm
Spring U-bolts on the spring housing			
	M 20	SW 30	M = 450 Nm
	M 24	SW 36	M = 700 Nm