

SR/SH  
SKR/SK  
S..LL

# BPW original spare parts

BPW trailer axles / steering axles with ECO Disc  
TS2/TSB disc brakes



# Contents

		Page
	<b>Explanation of BPW axle types</b>	<b>4</b>
	<b>Explanation of BPW item numbers</b>	<b>4</b>
	<b>BPW type plate</b>	<b>5</b>
⊙ <b>1</b>	<b>Axle beams, steering axle beams</b>	<b>6 - 9</b>
1.1	Axle beams, steering pivot bearing	8 - 9
⊙ <b>2</b>	<b>Steering axle, steering stabiliser</b>	<b>10 - 15</b>
2.1	Track rods, spare parts	12 - 13
2.2	Steering rod attachments, steering lock	14 - 15
⊙ <b>3</b>	<b>BPW ECO Disc brake parts</b>	<b>16 - 37</b>
3.1	General (TS2/TSB)	16 - 17
3.2	Functional principle (TS2)	18 - 19
3.3	Spare parts (TS2)	20 - 21
3.4	Brake cover parts (TS2)	22 - 23
3.5	Functional principle (TSB)	24 - 25
3.6	Spare parts (TSB)	26 - 27
3.7	Brake cover parts (TSB)	28 - 29
3.8	Brake disc (TS2/TSB)	30 - 31
3.9	Brake cylinder (TS2/TSB)	32 - 35
3.10	BPW Brake Monitor	36 - 37
⊙ <b>4</b>	<b>Hubs, hub bearings</b>	<b>38 - 51</b>
4.1	Hub bearing, ECO <sup>Plus</sup>	44
4.2	Hub bearing, ECO Plus 2	45
4.3	Hub bearing, ECO Plus 3	46
4.4	Hubs, ECO <sup>Plus</sup> , ECO Plus 2, ECO Plus 3	47
4.5	Grease sprays for greasing roller bearings	48
4.6	Grease filling, bearing adjustment, ECO <sup>Plus</sup>	49
4.7	Grease filling, bearing adjustment, ECO Plus 2	50
4.8	Grease filling, bearing adjustment, ECO Plus 3	51
⊙ <b>5</b>	<b>ABS</b>	<b>52 - 64</b>
5.1	ABS spare parts (TS2) – rigid axles	54 - 57
5.2	ABS spare parts (TSB) – rigid axles	58 - 59
5.3	ABS spare parts (TS2) – steering axles	60 - 61
5.4	ABS-spare parts (TSB) – steering axles	62 - 63
5.5	ABS spare parts (TS2/TSB) – supplementary installation kit ABS for rigid and steering axles	64 - 65
⊙ <b>6</b>	<b>Wheel studs</b>	<b>66 - 69</b>
6.1	Wheel studs, single wheels / twin wheels	68 - 69
⊙ <b>7</b>	<b>Accessories</b>	<b>70 - 80</b>
7.1	Steering damper	70 - 72
7.2	Hub caps with integrated mechanical odometer	74
7.3	Hub caps with integrated digital odometer (ECOMETER)	75
7.4	Special tools for BPW ECO Disc disc brakes	77 - 80

Valid: **01/12/2019**

This list shows original spare parts for BPW trailer axles and steering axles in the series **SR.. / SKR.. 9 t** from 2019 and **SH.. / SK.. 8 - 12 t** from 2010 onwards.

For additional spare parts, see the spare parts catalogues.

Current versions and additional information can be found online at: [www.bpw.de](http://www.bpw.de).

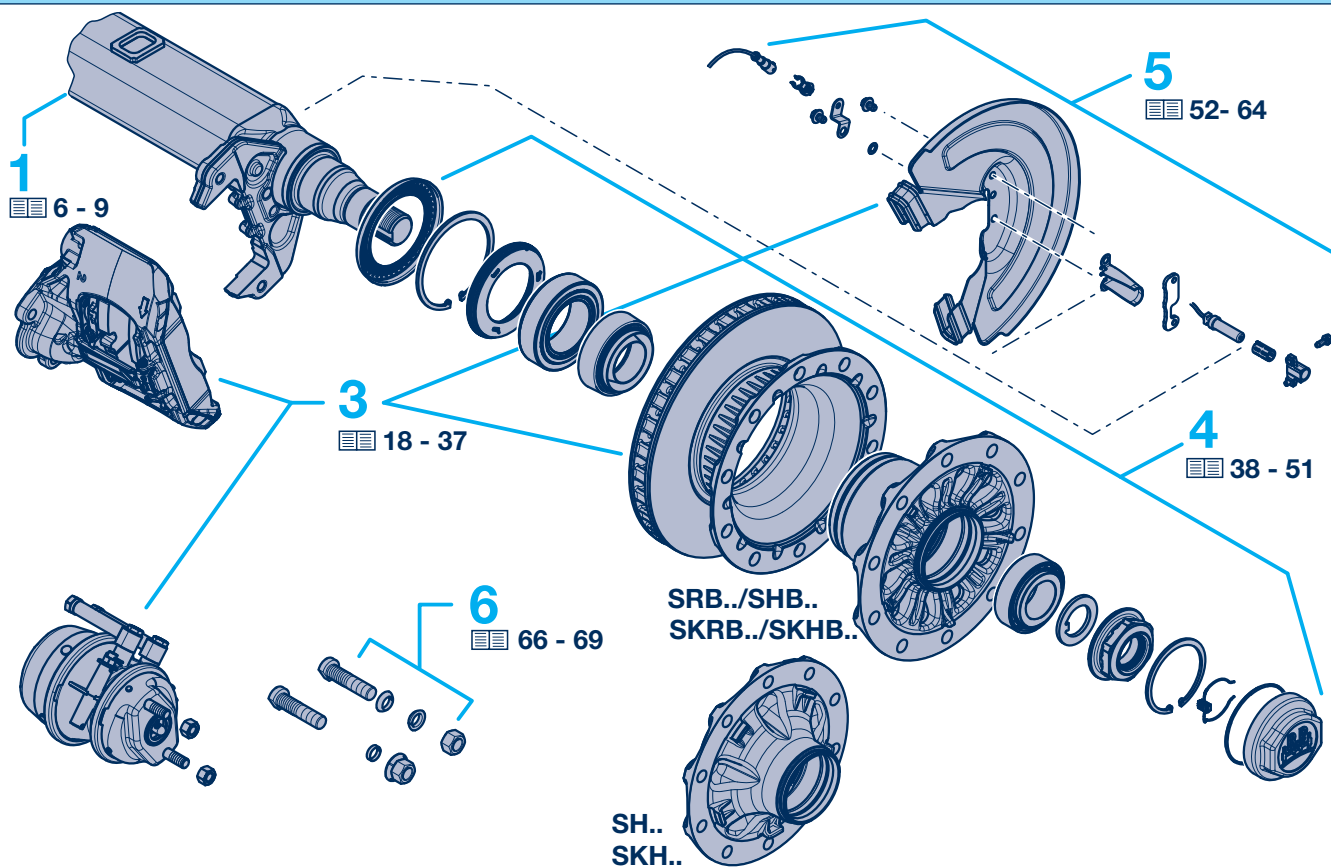
Subject to change without notice.

Parts marked with a  in the drawings are provided with a BPW item number.

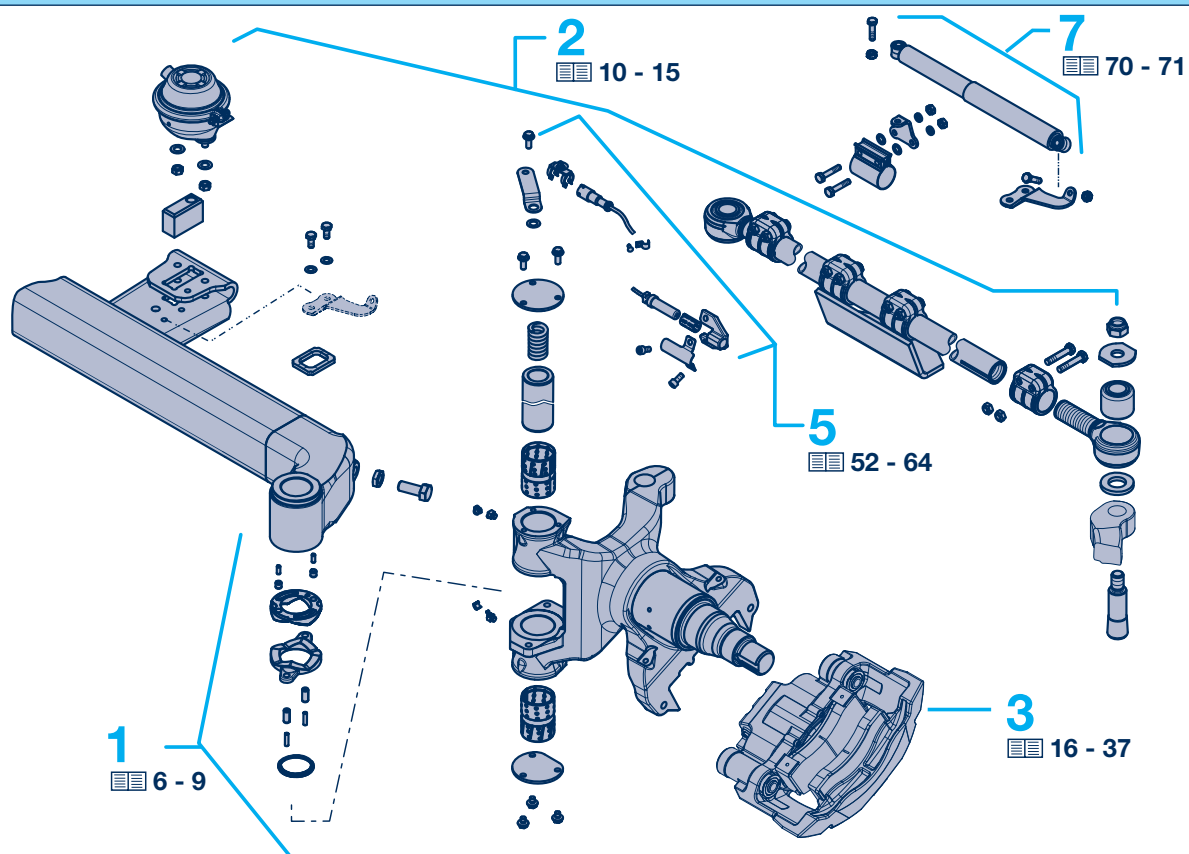


# Contents (exploded view)

## Rigid axle



## Steering axle



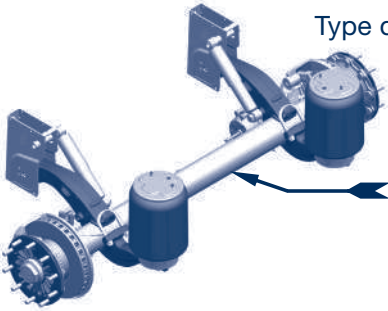
# BPW axle type and item number explanation

BPW axle type explanation (extract)						
Example:						
SH	S	F	LL	9010	-15	ECO Plus 2
				Axle series	Axle beam	Brake
SR				SR..	○	TS2 4309
SKR				SKR..	○	TS2 3709
SH				SH..	□	TSB 4309 TSB 4312
SKH				SKH..	□	TS2 4309 TSB 3709
SM				SM..	■	TS2 3709 TSB 4309 TSB 4312
SKM				SKM..	■	TS2 4309 TSB 3709 TS2 3709
B				For single wheels, wheels with offset		
S				For single wheels, wheels without offset		
Z				For twin wheels		
F				Wheel studs M 22 x 1.5, without wheel nuts, wheel nuts for stud or spigot alignment separate		
M				For spigot alignment		
LL				Self-steering axle series LL		
8008-12010				Axle load (kg) + quantity of wheel studs per hub		
-15				Axle beam - wall thickness, e.g. 15 mm		
8-27°				Steering angle of steering axle		
ECO <sup>Plus</sup>				Weight-optimised trailer axle with ECO <sup>Plus</sup> Unit		
ECO Plus 2				Weight-optimised trailer axle with ECO Plus 2 Unit		
ECO Plus 3				Weight-optimised trailer axle with ECO Plus 3 Unit		

BPW item number explanation (extract)				
Example:				
20.	68.	42.	0000	
Axle type				
20.	Trailer axle without suspension parts (ECO Plus 3)			
26.	Steering axle without suspension parts			
27.	Trailer axle without suspension parts			
29.	Steering axle without suspension parts (ECO Plus 3)			
		Axle load	Roller bearings	Bearing generation
50.		10000 - 12000 kg	33118 / 33213	ECO <sup>Plus</sup> Unit
58.		8000 - 9000 kg	33118 / 33213	ECO Plus 2 Unit
59.		8000 - 9000 kg	33118 / 33213	ECO Plus 3 Unit
68.		8000 - 9000 kg	33118 / 33213	ECO Plus 3 Unit
		Wheel brake	Dimension	Year of manufacture
		5th + 6th place (ECO Plus 3)		
40.		TSB 3709 (ECO Disc)	Ø 370 x 45	
41.		TSB 4309 (ECO Disc)	Ø 430 x 45	
42.		TS2 3709 (ECO Disc)	Ø 370 x 45	04/2019 →
43.		TS2 4309 (ECO Disc)	Ø 430 x 45	04/2019 →
5th - 7th place (item number range 2... / 3... / 6...)				
616.		TSB 3709 (ECO Disc)	Ø 370 x 45	
617.		TSB 4309 (ECO Disc)	Ø 430 x 45	
618.		TSB 4312 (ECO Disc)	Ø 430 x 45	
626.		TS2 3709 (ECO Disc)	Ø 370 x 45	04/2019 →
627.		TS2 4309 (ECO Disc)	Ø 430 x 45	04/2019 →
0000	7th - 10th place item number 0000 - 9999 (ECO Plus 3)			
000	8th - 10th place item number 000 - 999			



BPW type plate



Type designation

Certificate type  
Brake type and test load  
Test report no.

Manufacturing date/  
manufacturing  
number of the axle

QR code  
Spare parts  
Documents

BPW item number of  
the axle

Bar code  
Manufacturing date /  
manufacturing number of  
the axle

Bar code  
BPW item number of the axle

Max. perm. speed

**BPW BERGISCHE ACHSEN KG**


Made in Germany


**SRBF 9010 ECO-P**


**190550757**


**ID1-D116/ID2-TS2 4309/ID3-11380/ID4-36103516**

**20.68.43.0509** zul. Achslast  
perm. axle capacity  
charge adm. **stat. 9000 kg 105 km/h**









	Example:
The BPW type name is composed of a letter group and a number group.	<b>SRBF 9010 ECO-P</b>
The letter group identifies the type of axle and suspension version and also defines the hub version.	<b>SRBF</b> - BPW axle version <b>SR</b> with <b>B</b> -hub (with offset), wheel studs M 22 x 1.5, <b>without</b> wheel nuts
The number group specifies the axle load on the ground in kilogrammes and the number of wheel studs per wheel hub (for disc wheel connection).	<b>9010</b> - <b>9000</b> kg axle load - <b>10</b> wheel studs per wheel hub
The group of letters at the end of the type designation defines the type of hub bearing.	<b>ECO-P</b> - <b>ECO<sup>Plus</sup></b> bearing generation
You can view the brake certificate (as of 10/2004 multiple entries possible) referenced by certificate type/ test report number on the type plate by logging onto the BPW website at <a href="https://www.bpw.de/en/service/downloads">https://www.bpw.de/en/service/downloads</a> (BPW Braking Systems under Filters / Sector / Test report).	e.g. <b>D116/.../36103516</b> - <b>D116</b> Certificate type - <b>36103516</b> Test report no.

# 1 Axle beams, steering axle beams

## General

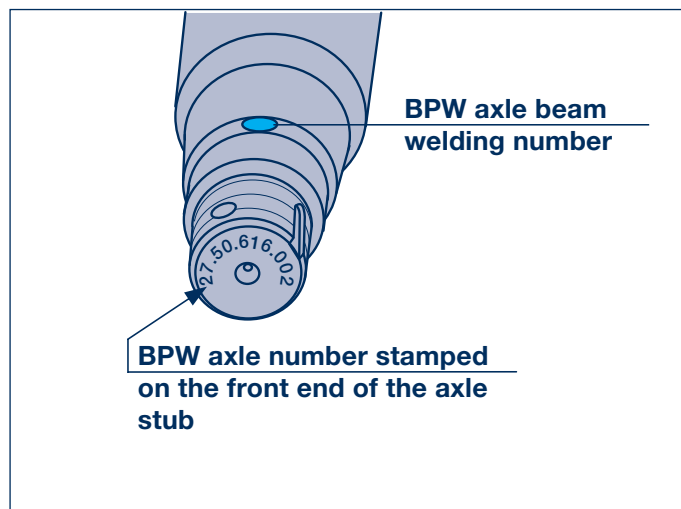
### Determining replacement axle beams

The BPW axle code number is shown on the type plate. If this is missing or no longer legible, the BPW axle number can be read off the front end of the axle stub in most cases.

When ordering a replacement, quote this BPW axle number with the reference to a replacement axle beam.

In steering axles and ECO Plus 2 bearings, no item number is stamped on the front end of the stub.

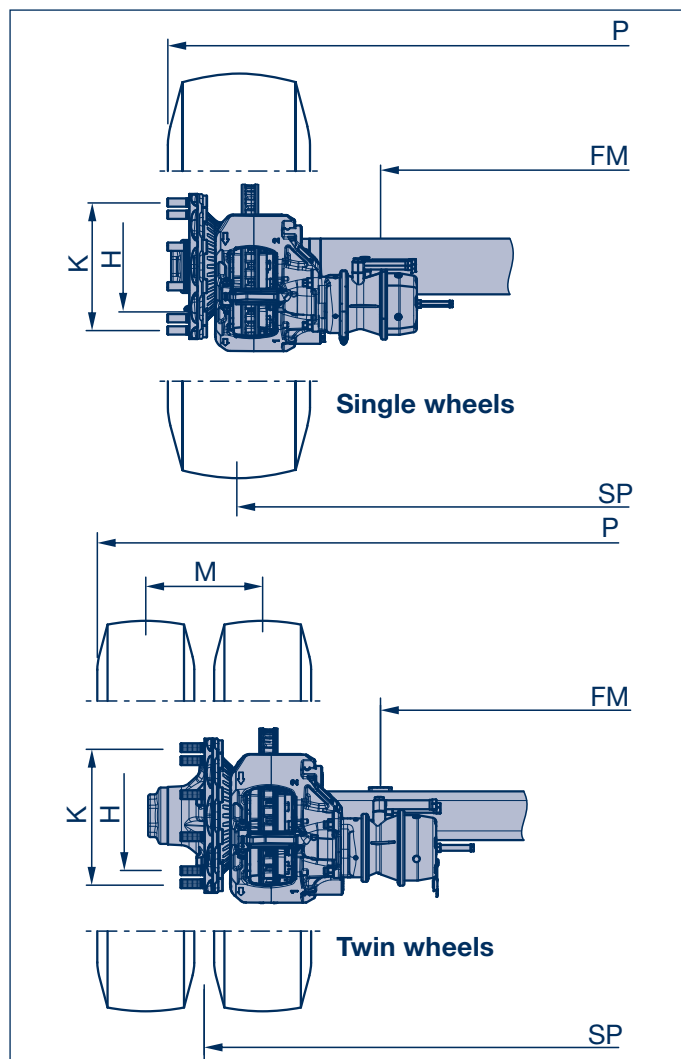
From June 2012, the axle beam welding number will now be stamped onto the front of the axle stub.



If there is no BPW axle number or none is known, BPW can identify the axle based on the axle beam welding number (see also BPW Internet application for spare part lists for commercial vehicles) or the dimensions.

1. **Axle beam cross section** ( $\square$  120/150 or  $\varnothing$  146)
2. **Axle beam wall thickness** (if known)
3. **Spring centre (FM)**
4. **Track (SP)**
5. **Overall width (P)**
6. **Leaf spring width**
7. **Spring pad hole pattern** (if present)
8. **Wheel seat (H)**
9. **Reference diameter and number of wheel studs (K)**
10. **For steering axles steering pivot centre**

In addition, the **type of tyres**, the **wheel size** and the **brake size** should also be specified, as well as the approximate **year of manufacture** (date of registration).

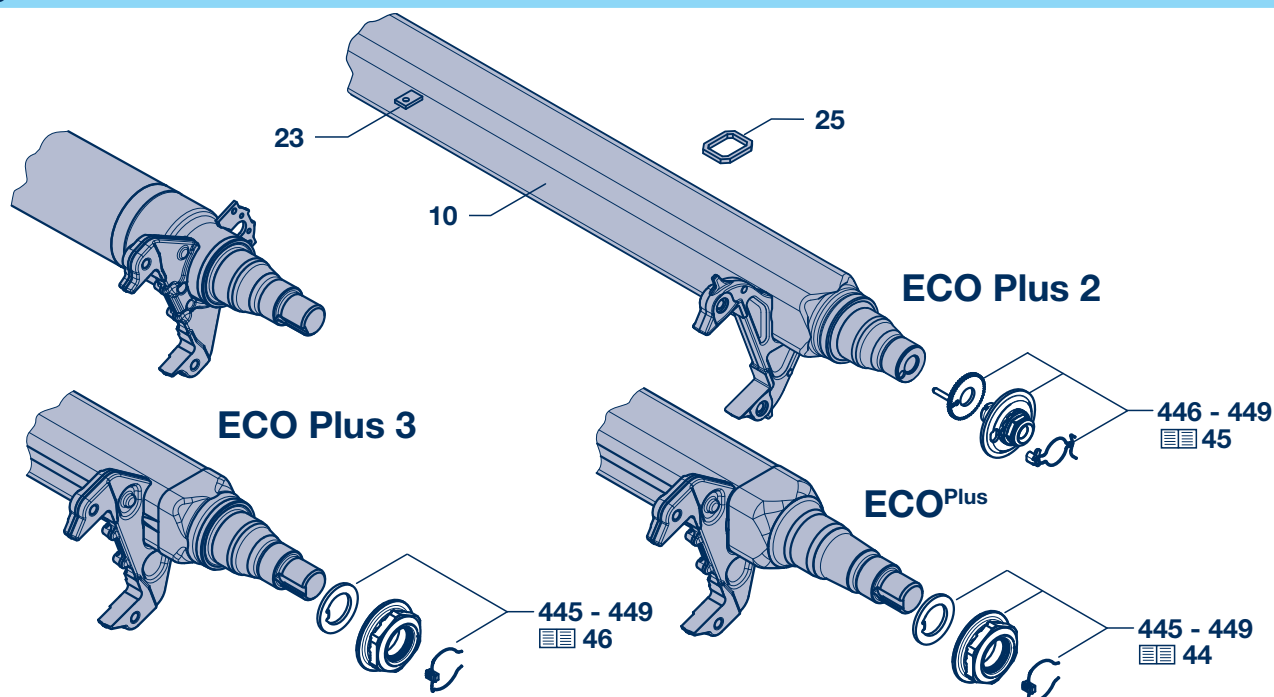




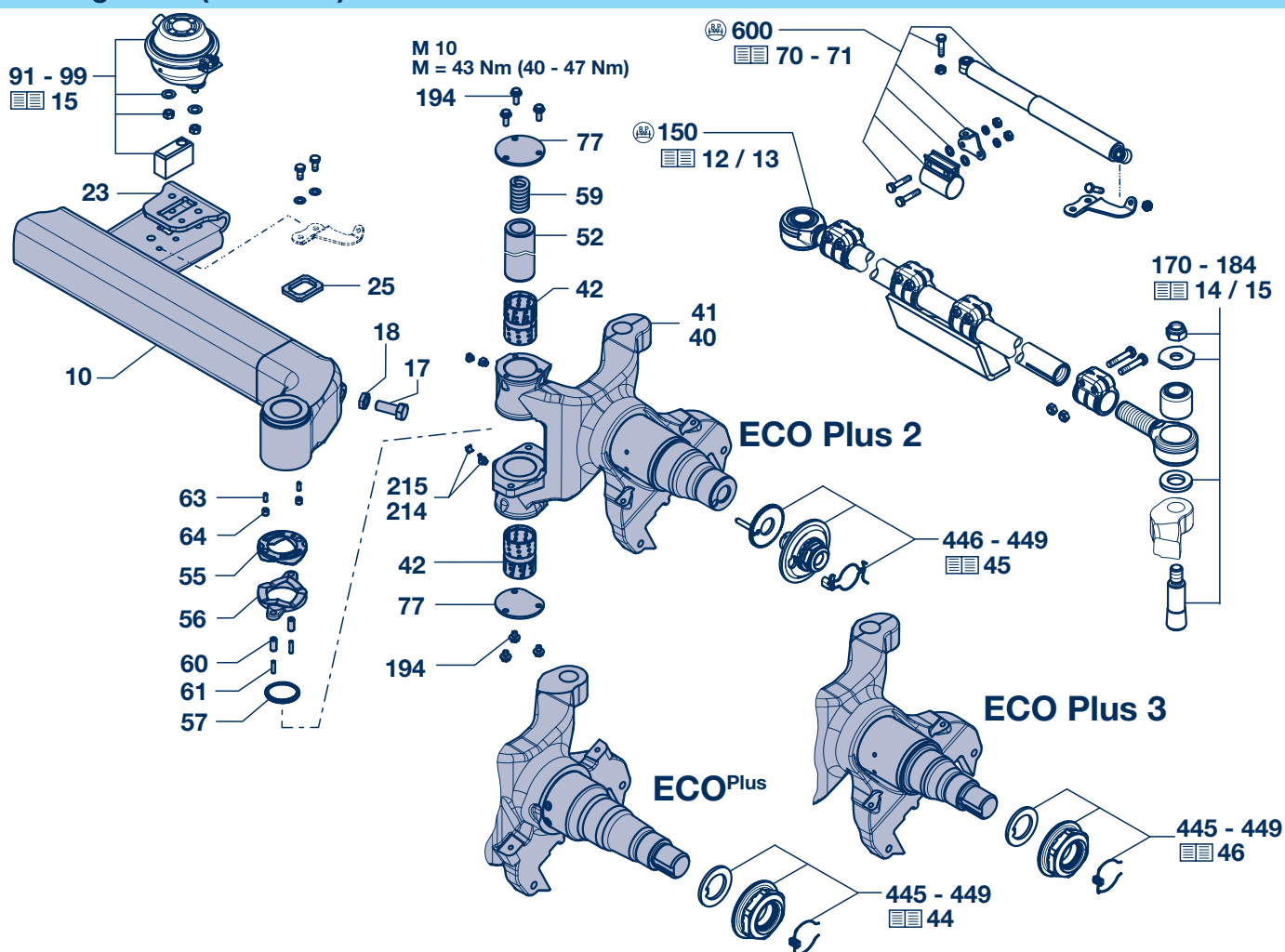
# 1 Axle beams, steering axle beams

## 1.1 Axle beams, steering pivot bearing

### Rigid axles



### Steering axles (LL series)



# Axle beam, steering axle beam 1

## Axle beams, steering pivot bearing 1.1

Item	Designation	BPW code no.	Dimension	BPW code no.	Dimension
<b>Rigid axles</b>					
10	Axle beam assembly	When ordering an axle beam assembly, state the axle type and BPW item number (type plate).			
23	Plate (air suspension valve attachment)	03.281.42.03.0			
25	Centering frame (for clamped spring seat arrangement)	03.295.46.21.0	72.5 x 60 x 8		For other axle plate designs, see the spare parts catalogues for the corresponding suspension units
<b>Steering axles (LL series)</b>					
10	Steering axle beam assembly	When ordering a steering axle beam assembly, state the axle type and BPW item number (type plate).			
17	Hexagon screw	02.5026.64.80	M 20 x 50 - 8.8		
		02.5037.61.80	M 20 x 60 - 8.8		
		02.5026.69.80	M 20 x 70 - 8.8		
		03.340.13.19.0	M 20 x 70 - 8.8		
18	Hexagon nut	02.5205.09.04	M 20		
23	Shaped plate	On request			
25	Centering frame (for clamped spring seat arrangement)	03.295.46.21.0	72.5 x 60 x 8		For other axle plate designs, see the spare parts catalogues for the corresponding suspension units
40	Steering pivot assembly, right	When ordering a steering pivot assembly, state the axle type, BPW item number (type plate) and the side (right or left).			
41	Steering pivot assembly, left				
		<b>Steering angle</b>	<b>&lt; 24°</b>	<b>Steering angle</b>	<b>&gt; 25°</b>
42	Bush	03.112.76.08.0	Ø 60 / 65 x 90	03.112.76.08.0	Ø 60 / 65 x 90
45	Steering pivot bearing repair kit, (item 42 , 52 - 64, 214)	09.801.02.35.0		09.801.07.90.0	
52	Steering pivot	03.240.08.04.0	Ø 39 / 60 x 331	03.240.08.04.0	Ø 39 / 60 x 331
55	Thrust washer, upper	03.128.05.07.0	Ø 64 / 99 x 18.5	03.128.05.10.0	Ø 61 / 99 x 18
56	Thrust washer, lower	03.128.05.06.0	Ø 64 / 99 x 18.5	03.128.05.09.0	Ø 64 / 99 x 18
57	Seal	02.5681.03.00	Ø 70 / 62 / 59 x 5	02.5681.03.00	Ø 70 / 62 / 59 x 5
59	Pressure spring	03.125.07.10.1	Ø 30 / 38 x 86 / Ø 8	03.125.07.10.1	Ø 30 / 38 x 86 / Ø 8
60	Roll pin	02.6006.95.90	Ø 12 x 28	02.6006.95.90	Ø 12 x 28
61	Roll pin	02.6016.01.90	Ø 7 x 28	02.6016.01.90	Ø 7 x 28
63	Roll pin	02.6016.00.90	Ø 7 x 18		
64	Roll pin	02.6016.11.90	Ø 12 x 12		
77	Washer	03.320.66.04.0	Ø 100 x 4.75 / 3 x Ø 11	03.320.66.04.0	Ø 100 x 4.75 / 3 x Ø 11
194	Locking screw	02.5070.60.02	M 10 x 12	02.5070.60.02	M 10 x 12
		02.5070.63.02	M 10 x 25	02.5070.63.02	M 10 x 25
214	Grease nipple	02.6802.06.50	BM 10 x 1 / 45°		
215	Cover	02.3505.20.00			

## 2 Steering axle, steering stabiliser

### General

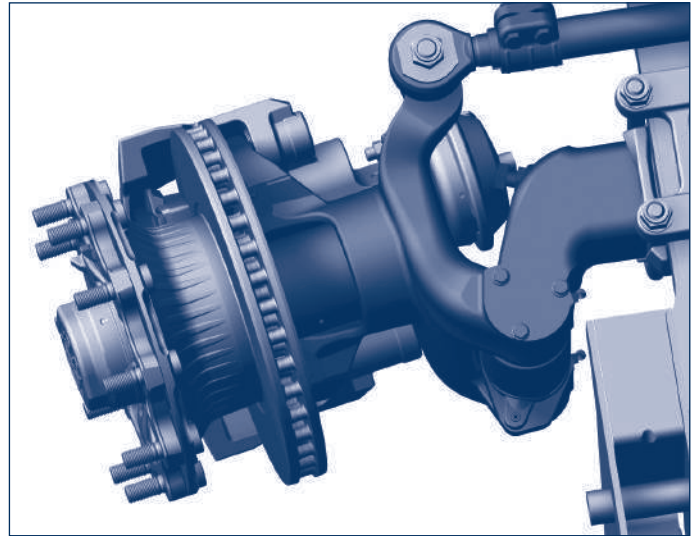
#### BPW steering axles, LL series

No one wants tyres that lose rubber every time they turn a corner. We have therefore developed an axle which allows your wheels to roll instead of slide.

The **BPW-Tag axle LL**.

The enormous advantages of the steering axle come to the fore when manoeuvring: Better manoeuvrability, reduced wear on all tyres and less fuel consumption.

For delivery and distribution traffic, primarily in dense conurbations and cities, the BPW-Tag axle is therefore the right economic solution.



#### How it works

LL stands for **load-dependent steering stabilisation** and it describes the unique, patented functional principle of the BPW-Tag axle.

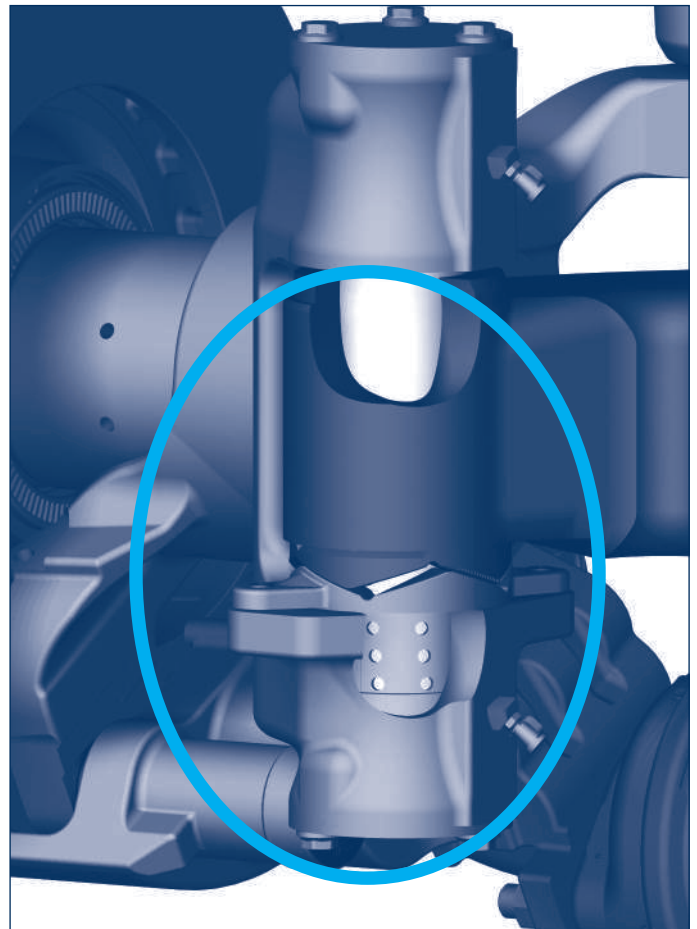
Conventional steering axle designs require steering stabilisers powered from an external source - this is not the case with the BPW-Tag axle. The axle beam and axle stub are connected to undulating thrust bearings via steering pivots.

When driving straight ahead (0 position), the undulations in the thrust washers keep the wheels on track. The vehicle weight presses the shaft contours of the upper and lower thrust washers together. The wheels remain stable in the correct straight-ahead position.

If the semi-trailer follows the tractor unit into a curve, the caster ensures that the wheels turn in accordance with the curve radius (the thrust washers slide over each other).

The frictional resistance changes depending on the load on the axle. As a result, a steering angle (8° to 27°, depending on the axle type) is achieved according to the load, and is entirely controlled by mechanical means.

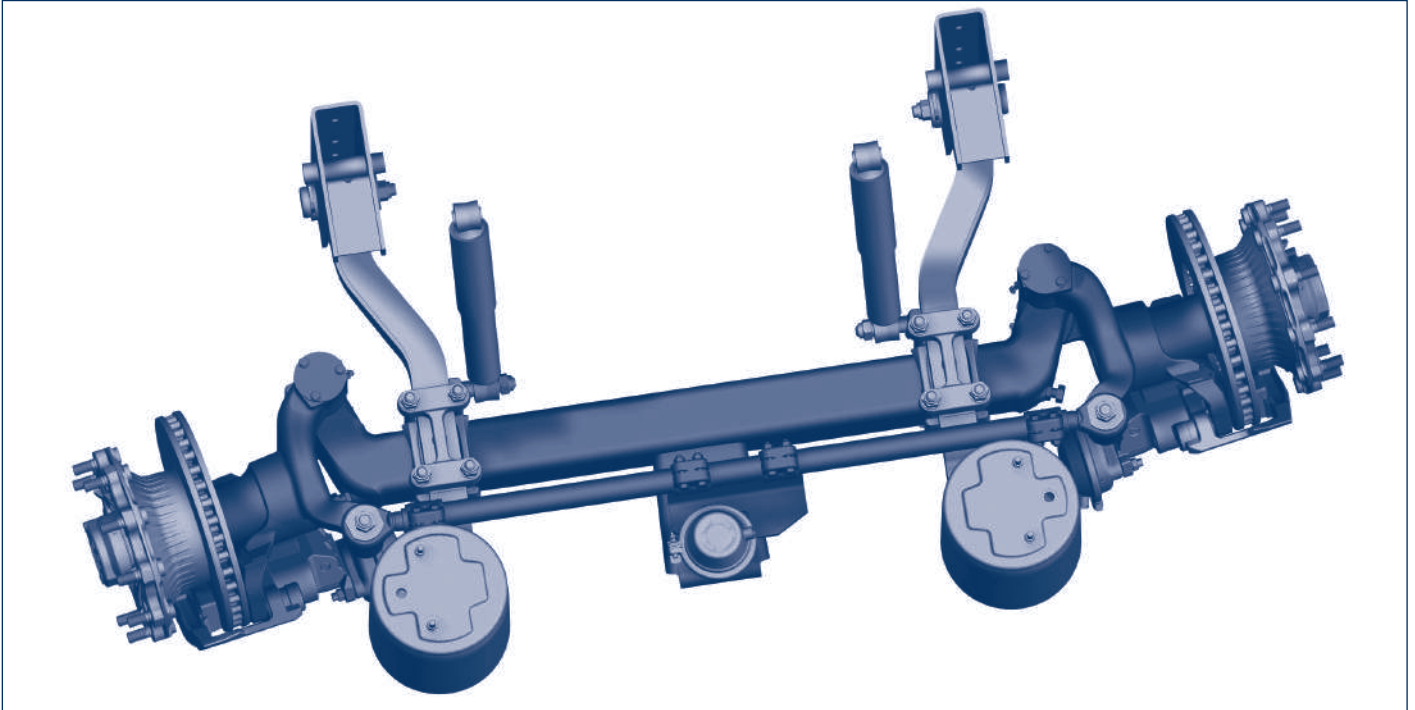
The drag link connecting the wheels uses a steering lock to prevent the wheels from steering when the vehicle is reversing.





# Steering axle, steering stabiliser 2

## General



The effect of the steering axle is that the suspension unit steers into a curve better and almost precisely follows the circular path of the tractor unit.

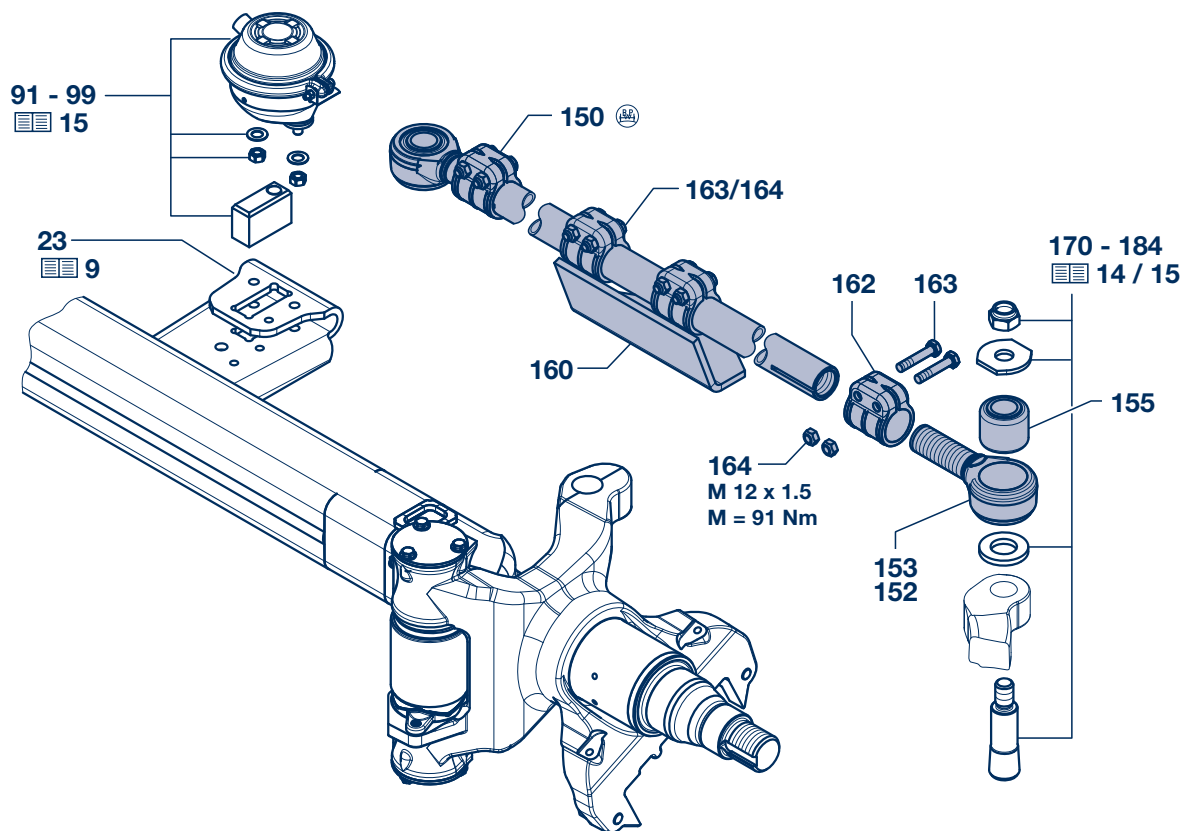
The lateral forces on the tyres are optimally distributed among all the axles, for example in the case of a three-axle trailer.

Because each axle experiences considerably lower lateral forces, the performance of the tyres is demonstrably increased by up to 50 % on the front axle – and up to 70 % on the rear axle.

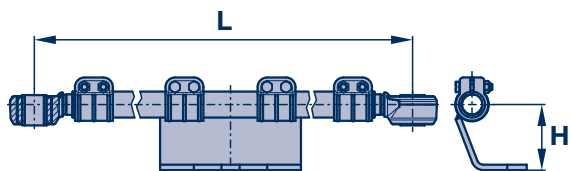
The use of the BPW steering axle produces absolutely even wear.

## 2 Steering axle, steering stabiliser

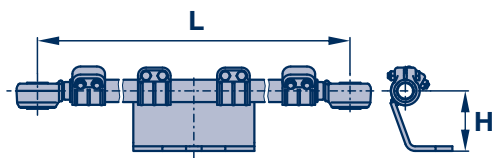
### 2.1 Track rods, parts



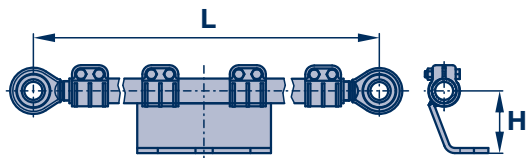
A



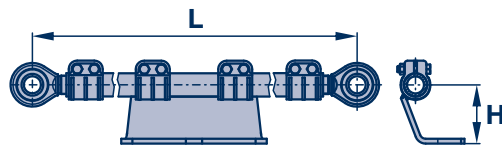
B



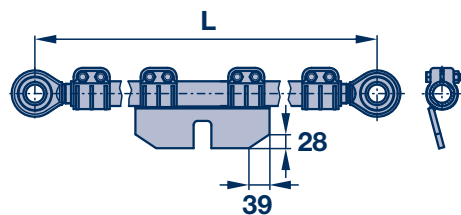
C



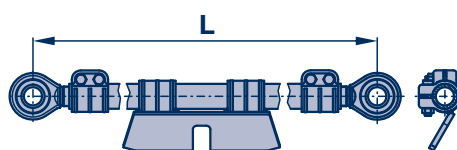
D



E

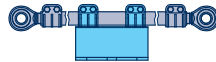
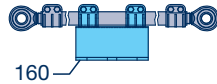


F



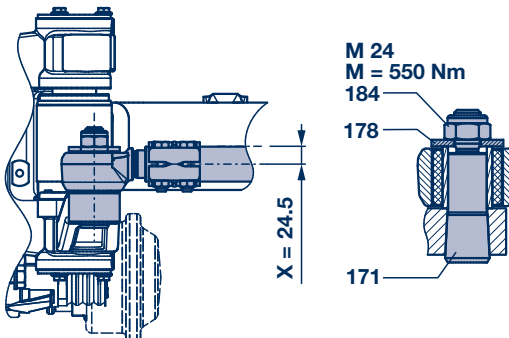
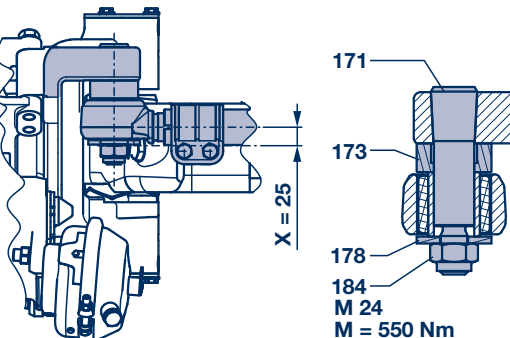
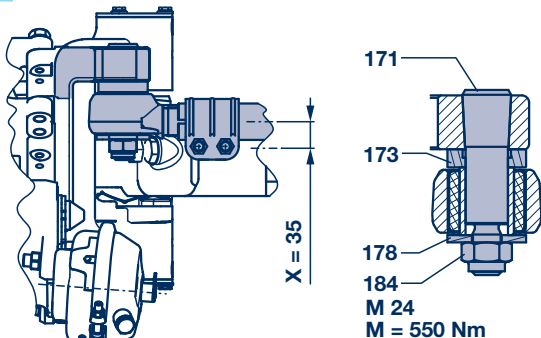
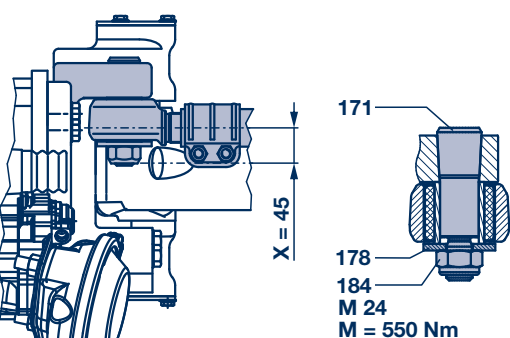
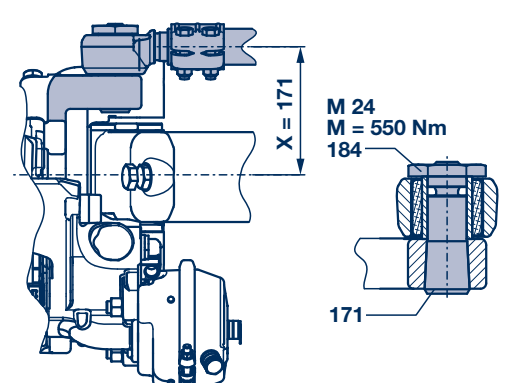
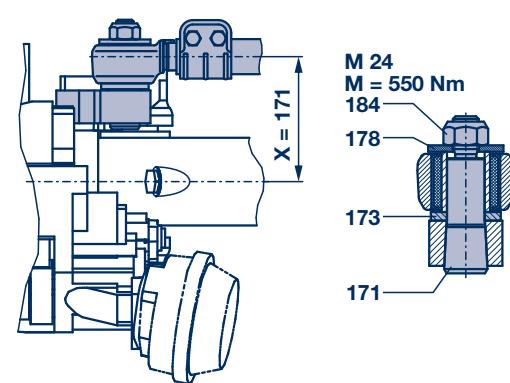
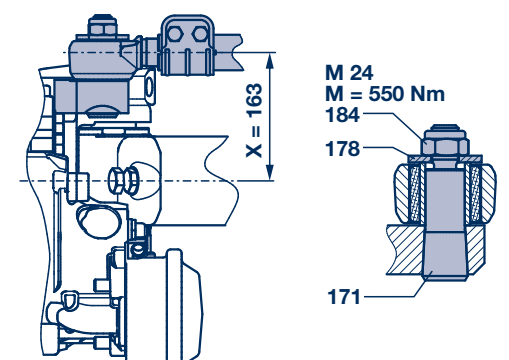
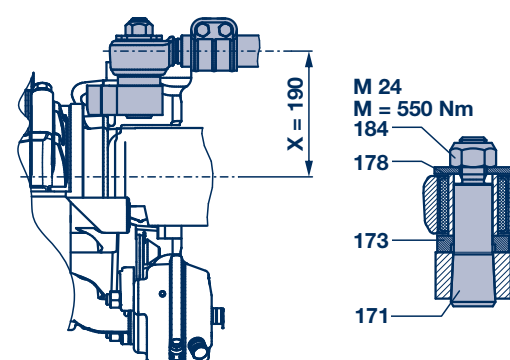
# Steering axle, steering stabiliser 2

## Track rods, parts 2.1

Item	Designation	Dimension		BPW code no.	Fig.	BPW code no.
						
		L (adjustment range)	H	2 collar bands		Support (locking plate) loose (item 160) incl. item 163 - 164
150	Track rod cpl., incl. item 152, 153, 160, 162 - 164	1180 (1160 - 1199)	121	05.246.46.55.0	A	05.189.14.39.1
			129	05.246.46.30.0	A	05.189.14.99.1
		1220 (1200 - 1239)	129	05.246.46.34.0	A	05.189.14.99.1
			1260 (1240 - 1279)	121	05.246.46.64.0	A
			129	05.246.46.39.0	A	05.189.14.99.1
		1300 (1280 - 1319)	121	05.246.46.54.0	A	05.189.14.39.1
			129	05.246.46.29.0	A	05.189.14.99.1
		1340 (1320 - 1359)	-	05.246.41.06.0	E	05.189.07.07.1
			121	05.246.46.56.0	A	05.189.14.39.1
			129	05.246.46.31.0	A	05.189.14.99.1
		1380 (1360 - 1399)	-	05.246.41.02.0	E	05.189.07.07.1
			121	05.246.46.52.0	A	05.189.14.39.1
			129	05.246.46.27.0	A	05.189.14.99.1
		1420 (1400 - 1439)	-	05.246.41.01.0	E	05.189.07.07.1
			-	05.246.49.26.0	F	05.189.15.51.1
			121	05.246.46.51.0	A	05.189.14.39.1
			121	05.246.49.51.0	D	05.189.14.42.1
			129	05.246.46.26.0	A	05.189.14.99.1
			129	05.246.49.77.0	D	05.189.15.07.1
			150	05.246.46.77.0	C	05.189.14.53.1
		1460 (1440 - 1479)	-	05.246.41.05.0	E	05.189.07.07.1
			121	05.246.46.61.0	A	05.189.14.39.1
			129	05.246.46.36.0	A	05.189.14.99.1
			129	05.246.49.81.0	D	05.189.15.07.1
		1500 (1480 - 1519)	-	05.246.41.03.0	E	05.189.07.07.1
			-	05.246.49.28.0	F	05.189.15.51.1
			121	05.246.46.53.0	A	05.189.14.39.1
			129	05.246.46.28.0	A	05.189.14.99.1
			129	05.246.49.79.0	D	05.189.15.07.1
		1520 (1520 - 1559)	-	05.246.49.38.0	F	05.189.15.51.1
		1540 (1520 - 1559)	-	05.246.41.13.0	E	05.189.07.07.1
			121	05.246.46.63.0	A	05.189.14.39.1
			121	05.246.49.63.0	D	05.189.14.42.1
			129	05.246.46.38.0	A	05.189.14.99.1
			129	05.246.49.89.0	D	05.189.15.07.1
152	Tensioner head, incl. item 155	Left hand thread		05.353.68.27.0		
153	Tensioner head, incl. item 155	Right-hand thread		05.353.68.26.0		
155	Bush	Ø 35 / 64 x 56		05.113.92.04.0		
162	Clamp			02.3507.25.00		
163	Hexagon screw	M 12 x 1.5 x 60 - 8.8		02.5029.35.80		
164	Lock nut	VM 12 x 1.5 - 8		02.5220.15.82		

## 2 Steering axle, steering stabiliser

### 2.2 Track rod attachments, steering lock

<p><b>A</b> Track rod position 24.5 mm</p>  <p>M 24 M = 550 Nm 184 178 171</p> <p>X = 24.5</p>	<p><b>B</b> Track rod position 25 mm</p>  <p>171 173 178 184 M 24 M = 550 Nm</p> <p>X = 25</p>
<p><b>C</b> Track rod position 35 mm</p>  <p>171 173 178 184 M 24 M = 550 Nm</p> <p>X = 35</p>	<p><b>D</b> Track rod position 45 mm</p>  <p>171 178 184 M 24 M = 550 Nm</p> <p>X = 45</p>
<p><b>E</b> Track rod position 171 mm</p>  <p>M 24 M = 550 Nm 184 178 171</p> <p>X = 171</p>	<p><b>F</b> Track rod position 171 mm</p>  <p>M 24 M = 550 Nm 184 178 173 171</p> <p>X = 171</p>
<p><b>G</b> Track rod position 163 mm</p>  <p>M 24 M = 550 Nm 184 178 171</p> <p>X = 163</p>	<p><b>H</b> Track rod position 190 mm</p>  <p>M 24 M = 550 Nm 184 178 173 171</p> <p>X = 190</p>

# Steering axle, steering stabiliser 2

## Track rod attachments, steering lock 2.2

Item	Designation	BPW code no.	Dimension	Fig.
		<b>Track rod position 24.5 mm</b>	<b>A</b>	
		<b>Track rod position 45 mm</b>	<b>D</b>	
		<b>Track rod position 163 mm</b>	<b>G</b>	
170	Assembly kit, item 171 - 184	05.801.43.18.1		
171	Threaded bolt	03.177.04.15.0	Ø 40 / 35 / M 24 x 133	
178	Washer	03.320.24.05.0	Ø 24.5 / 70 x 65 x 6	
184	Lock nut	02.5220.76.12	VM 24 / 980 - 10	
		<b>Track rod position 25 mm</b>	<b>B</b>	
170	Assembly kit, item 171 - 184	05.801.43.51.1		
171	Threaded bolt	03.177.04.14.0	Ø 40 / 35 / M 24 x 163	
173	Ring	03.310.03.22.0	Ø 35 / 40 / 65 x 25	
178	Washer	03.320.24.05.0	Ø 24.5 / 70 x 65 x 6	
184	Lock nut	02.5220.76.12	VM 24 / 980 - 10	
		<b>Track rod position 35 mm</b>	<b>C</b>	
		<b>Track rod position 190 mm</b>	<b>H</b>	
170	Assembly kit, item 171 - 184	05.801.43.19.1		
171	Threaded bolt	03.177.04.06.0	Ø 40 / 35 / M 24 x 153	
173	Ring	03.310.03.06.0	Ø 35 / 40 / 65 x 15	
178	Washer	03.320.24.05.0	Ø 24.5 / 70 x 65 x 6	
184	Lock nut	02.5220.76.12	VM 24 / 980 - 10	
		<b>Track rod position 171 mm</b>	<b>E</b>	
170	Assembly kit, item 171 - 184	05.801.43.50.1		
171	Threaded bolt	03.177.14.40.0	Ø 40 / 35 / M 24 x 118	
184	Lock nut	03.260.56.03.0	M 24 - 10	
		<b>Track rod position 171 mm</b>	<b>F</b>	
170	Assembly kit, item 171 - 184	05.801.43.47.1		
171	Threaded bolt	03.177.04.13.0	Ø 40 / 35 / M 24 x 146	
173	Washer	03.320.33.24.0	Ø 35 / 64 x 8	
178	Washer	03.320.24.05.0	Ø 24.5 / 70 x 65 x 6	
184	Lock nut	02.5220.76.12	VM 24 / 980 - 10	

### Steering lock

91	Cylinder, incl. item 98 + 99	02.0327.38.00	
96	Bumper	03.060.00.13.0	
98	Spring washer	02.5601.12.90	A 12
99	Hexagon nut	02.5202.16.80	M 12 - 8

## 3 BPW ECO Disc brake parts

### 3.1 General (TS2/TSB)

Brakes that are under-utilised can glaze up and reduce the braking effect. Brakes that overheat have disproportionate wear.

Correct dimensioning of the brake is therefore of crucial significance. BPW offers you the correct brake for every application.

#### BPW ECO Disc disc brakes (TS2/TSB) 3709 (Ø 370)

For versatile deployment in the haulage business under normal conditions (e.g. long-distance road haulage in Western Europe).

Axle load:	9 – 10 t
Tyre size:	19.5" (9 + 10 t) 22.5" (9 t)
Wheel type:	E, Z, ET 0 ET 120 (9 t only)

#### BPW ECO Disc disc brakes (TS2/TSB) 4309 (Ø 430)

For conditions that demand greater disc and lining volume, such as mountainous routes, frequently changing tractor-trailer combinations, deployment in Eastern Europe or in regional distribution.

Axle load:	9 – 10 t
Tyre size:	22.5"
Wheel type:	E, Z, ET 0; ET 120 (9 t only)

Advantage: Large brake disc diameter with brake actuating unit matching the axle load.

#### BPW ECO Disc disc brake (TSB) 4312 (Ø 430)

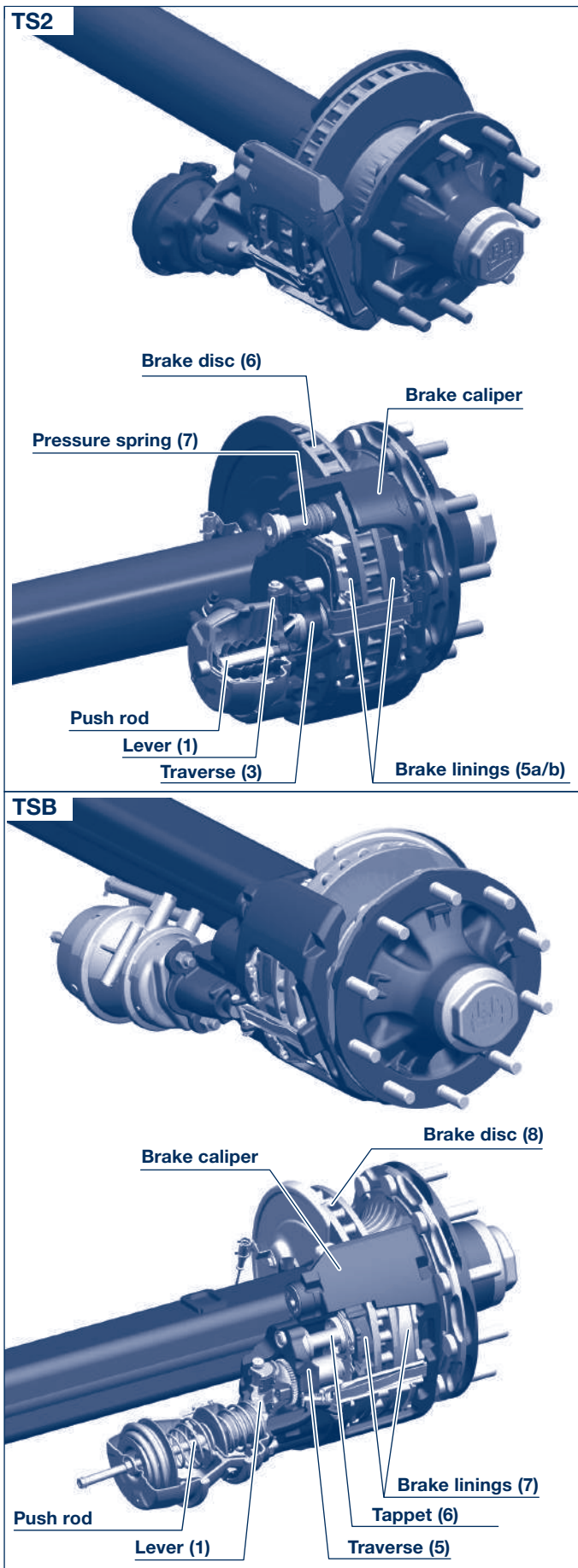
For axle loads above 10 t.

Axle load:	11 – 12 t
Tyre size:	22.5"
Wheel type:	E, Z, ET 0

E = Single wheels

Z = Twin wheels

ET = Offset





# BPW ECO Disc brake parts 3

## General (TS2/TSB) 3.1

### Type plate

There is a manufacturer's nameplate fixed onto each brake caliper, on which the data is stamped that is necessary to identify the respective brake.

- ⊙ BPW code number
- ⊙ Brake type + serial number



BPW item number on the caliper	Brake	BPW replacement brake caliper cpl. with brake lining set (axle) → 07/2011	BPW replacement brake caliper cpl. with brake lining set (axle) 08/2011 → 03/2019	BPW replacement brake caliper cpl. with brake lining set (for 1 axle side) 10/2019 →	BPW repla- cement brake caliper without brake lining set 04/2019 →
05.362.72.21.0	TS2 3709			09.362.72.21.3	09.362.72.21.0
05.362.72.20.0				09.362.72.20.3	09.362.72.20.0
09.362.72.23.0	TS2 4309			09.362.72.23.3	09.362.72.23.0
09.362.72.22.0				09.362.72.22.3	09.362.72.22.0
05.362.72.03.0	TSB 3709	09.362.72.03.0 * (BPW 8200)	09.362.72.13.0 * (BPW 8200)	09.362.72.13.3	09.362.72.13.2
		09.362.72.03.1 * (BPW 8101)			
05.362.72.04.0		09.362.72.04.0 * (BPW 8200)	09.362.72.14.0 * (BPW 8200)	09.362.72.14.3	09.362.72.14.2
		09.362.72.04.1 * (BPW 8101)			
05.362.72.01.0	TSB 4309	09.362.72.01.0 * (BPW 8200)	09.362.72.11.0 * (BPW 8200)	09.362.72.11.3	09.362.72.11.2
		09.362.72.01.1 * (BPW 8101)			
05.362.72.02.0		09.362.72.02.0 * (BPW 8200)	09.362.72.12.0 * (BPW 8200)	09.362.72.12.3	09.362.72.12.2
		09.362.72.02.1 * (BPW 8101)			
05.362.72.05.0	TSB 4312	09.362.72.05.0 * (BPW 8301)	09.362.72.15.0 * (BPW 8301)	09.362.72.15.3	09.362.72.15.2
05.362.72.06.0		09.362.72.06.0 * (BPW 8301)	09.362.72.16.0 * (BPW 8301)	09.362.72.16.3	09.362.72.16.2
		* = No longer available, replaced by the new version			

## 3 BPW ECO Disc brake parts

### 3.2 Functional principle (TS2)

#### BPW ECO Disc brake discs TS2 3709 / 4309

#### FUNCTIONAL PRINCIPLE: SLIDING CALIPER BRAKE (TS2)

##### APPLYING THE BRAKE

During braking, the push rod of the spring brake or diaphragm cylinder presses onto the brake lever (1). The offset position of the brake lever amplifies the force of the brake cylinder and allows it to be transferred to the traverse (3) with low losses via a needle bearing (2).

The clamping force acts on the inner brake lining (5a) via the traverse (3) and the threaded sleeve (4).

Once the clearance between the inner brake lining and the brake disc (6) has been overcome, the reaction force is transferred to the outer brake lining (5b) via the brake caliper.

The braking moment for the wheel results from the contact pressure of the brake linings on the brake disc.

The radial stabilizer force created by the responding brake lining at this time is transferred directly to the axle via the brake calliper.

##### RELEASING THE BRAKE

When brake pressure decreases, the pressure spring (7) moves the actuating unit back to its initial position.

##### ADJUSTMENT

The brake is fitted with an automatic non-wearing adjusting device to maintain constant clearance between the brake linings and the brake disc.

Each brake application also simultaneously actuates the adjustment hub (9), which is coupled with the brake actuating unit via a shift sleeve (10), via an adjustment pin (8) in the brake lever. A reset shaft (11) with toothed washer (12) connected to the shift sleeve defines the clearance of the disc brake via the tooth pitch.

When the clearance increases due to brake lining and brake disc wear, the threaded sleeve (4) is turned by the degree of wear through adjustment via a wrap spring (13).

When the clearance is correctly set, the wrap spring slides through without turning the threaded sleeve.

The overall clearance (total clearance on both sides of the brake disc) measures 0.7 – 1.3 mm.

##### RESET

The disc brake features a reset mechanism at the back for replacing the brake linings and brake disc.

To reset the threaded sleeve (4) to its initial position, the reset shaft equipped with a hexagon connection (14) is moved back using a slight torque, or the clearance of the brake is preset.

##### BRAKE CYLINDER

Air pressure builds up behind the diaphragm due to the action of compressed air on the brake cylinder.

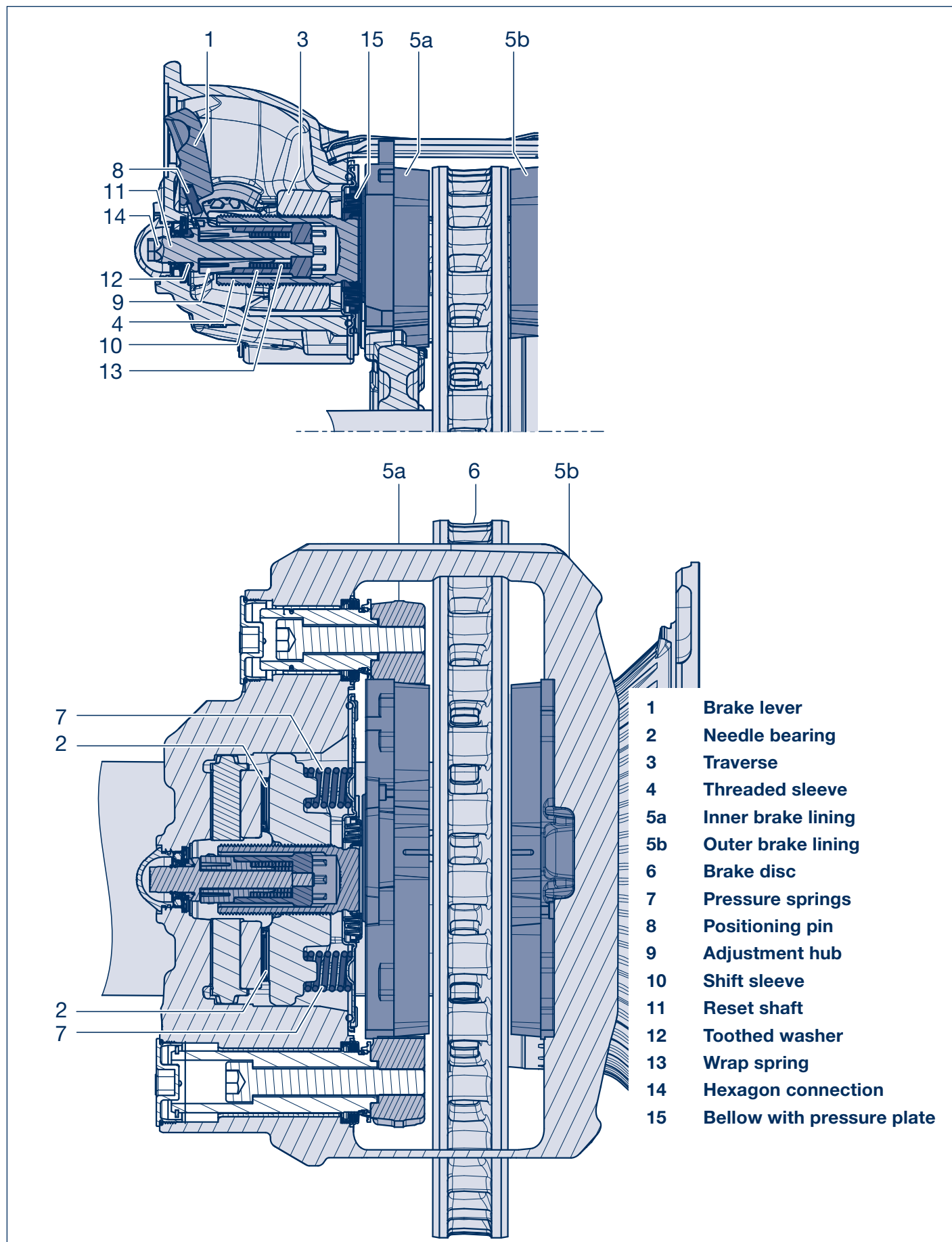
Air pressure forces the thrust rod out of the cylinder via the diaphragm plate.

The brakes may only be fitted with brake cylinders which are fitted with a so-called "inner sealing", apart from the sealing of the flange surface.

This means that the push rod acting on the lever (1) must be hermetically sealed from the secondary chamber of the brake cylinder, as otherwise the clamping mechanism is completely open to its surroundings.

# BPW ECO Disc brake parts 3

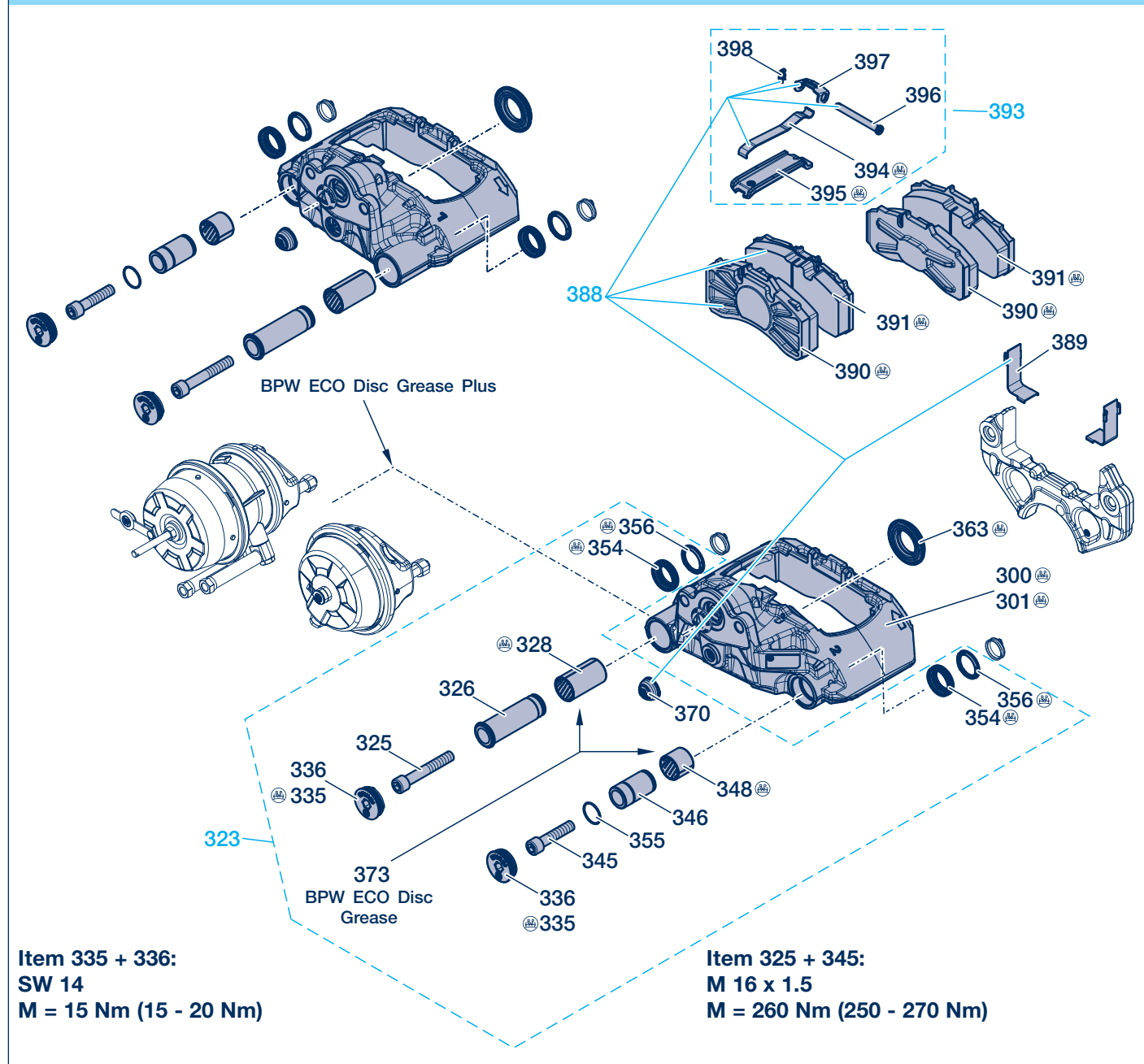
## Functional principle (TS2) 3.2



### 3 BPW ECO Disc brake parts

#### 3.3 Spare parts (TS2)

##### BPW ECO Disc TS2 3709 / 4309



# BPW ECO Disc brake parts 3

## Spare parts (TS2) 3.3

Item	Designation	Dimension	BPW code no.	
			TS2 3709 ---.626.--- ---.42.---	TS2 4309 ---.627.--- ---.43.---
300 301	<b>BPW replacement brake caliper without brake lining,</b> (pregreased), incl. guide pins and pad retainer (see page 17). Item 323, 363, 395	For 1 axle side	<b>09.362.72.20.0</b> <sup>1)</sup>  <b>09.362.72.21.0</b> <sup>1)</sup>	<b>09.362.72.22.0</b> <sup>1)</sup>  <b>09.362.72.23.0</b> <sup>1)</sup>
300 301	<b>BPW replacement brake caliper with brake lining,</b> (pregreased), incl. guide pins, brake lining and pad retainer (see page 17). Item 323, 363, 389, 390/391, 394 - 398	For 1 axle side	<b>09.362.72.20.3</b>  <b>09.362.72.21.3</b>	<b>09.362.72.22.3</b>  <b>09.362.72.23.3</b>
323	<b>Guide pins repair kit,</b> Item 325, 326, 328, 335, 336, 345, 346, 348, 354, 355, 356, 370, 373	For 1 axle side	<b>09.801.08.69.0</b>	
325 <sup>2)</sup>	Cylinder cap screw	M 16 x 1.5 x 103 - 10.9	03.340.12.32.0	
326 <sup>2)</sup>	Guide pin, long (fixed bearing)	Ø 18 / 26 / 37 x 123	05.001.00.70.0	
328 <sup>2)</sup>	Guide bush (fixed bearing)	Ø 37 / 41 x 73	03.112.33.13.0	
335 <sup>2)</sup>	Sealing cap, incl. item 336	M 49 x 1.5	05.001.00.45.0	
336 <sup>2)</sup>	O-ring	Ø 45 x 2	02.5679.97.40	
345 <sup>2)</sup>	Cylinder cap screw	M 16 x 1.5 x 73 - 10.9	03.340.12.31.0	
346 <sup>2)</sup>	Guide pin, short (floating bearing)	Ø 18 / 26 / 37 x 70	05.001.00.73.0	
348 <sup>2)</sup>	Guide bush (floating bearing)	Ø 37 / 41 x 34	03.112.33.16.0	
354 <sup>2)</sup>	Bellow	Ø 49 x 36	05.130.08.30.0	
355 <sup>2)</sup>	O-ring	Ø 31 x 2	02.5680.08.00	
356 <sup>2)</sup>	Ring	Ø 37 / 48 x 5.4	03.310.11.20.0	
363	Bellow	Ø 75.4	05.130.08.32.0	
370	Cap	Ø 36.5 x 20.5	03.211.10.11.0	
373	BPW ECO Disc Grease	25 g	02.1040.60.00	
374	BPW ECO Disc Grease Plus *	5 g	02.1040.61.00	
388	<b>Brake lining repair kit,</b> item 370, 389, 390/391, 394, 396, 397, 398	For 1 axle BPW 8201	<b>09.801.08.72.0</b>	<b>09.801.08.73.0</b>
389	Wearing plate <sup>3)</sup>		03.163.04.06.0	03.163.04.05.0
390/391	Brake lining <sup>3)</sup>	BPW 8201	05.092.90.29.0 <sup>3)</sup> 05.092.90.30.0 <sup>3)</sup>	05.092.90.25.0 <sup>3)</sup> 05.092.90.26.0 <sup>3)</sup>
393	<b>Pad retainer repair kit,</b> item 394 - 398	For 1 axle	<b>09.801.08.70.0</b>	
394 <sup>2)</sup>	Clamping spring		03.352.00.10.0	
395 <sup>2)</sup>	Brake pad retaining clip	151 x 42	03.001.00.64.0	
396 <sup>2)</sup>	Bolt	Ø 10 x 97	03.084.32.34.0	
397 <sup>2)</sup>	Holder clamp	52 x 23 x 21.5	03.114.43.02.0	
398 <sup>2)</sup>	Lock		02.3301.31.00	

\* Grease the spherical cap in the brake lever with BPW ECO Disc Grease Plus.

<sup>1)</sup> For replacement, brake calipers will only be supplied as a replacement brake caliper (**09.362 .....**) without cpl. lining set

<sup>2)</sup> Only deliverable as a kit

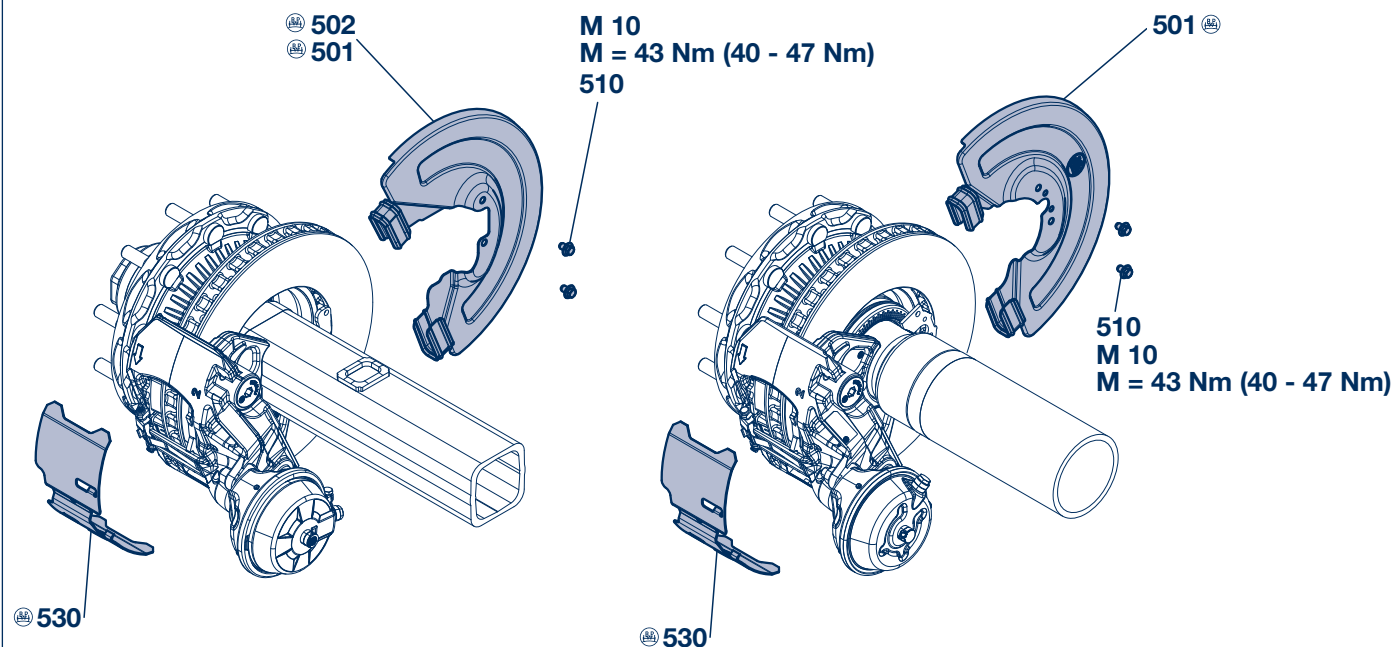
<sup>3)</sup> Not available loose – see brake lining repair kit (item 388)

### 3 BPW ECO Disc brake parts

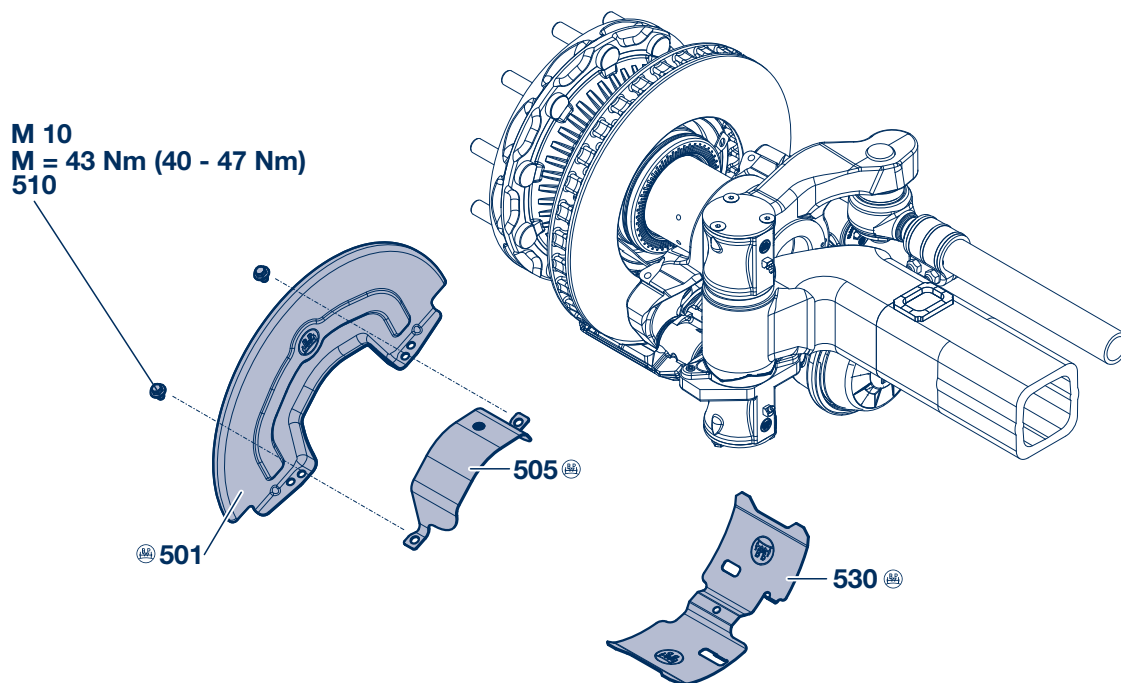
#### 3.4 Brake cover parts (TS2)

Brake cover parts, brake lining - dust cover

##### BPW ECO Disc TS2 3709 / 4309 – rigid axles



##### BPW ECO Disc TS2 3709 / 4309 – steering axles





### Brake cover parts, brake lining - dust cover

\* Mounted under the pad retainer without any additional attachment parts

## **3 BPW ECO Disc brake parts**

### **3.5 Functional principle (TSB)**

#### **BPW ECO Disc disc brakes TSB 3709 / 4309 / 4312**

#### **FUNCTIONAL PRINCIPLE: SLIDING CALIPER BRAKE (TSB)**

##### **APPLYING THE BRAKE**

During braking, the push rod of the spring brake or diaphragm cylinder presses onto the brake lever (1). The offset position of the brake lever amplifies the force created by the brake cylinder and allows it to be transferred to the pressure plate (4) with minimal loss via a needle bearing (3).

The clamping force acts on the inner brake lining (7a) via the transverse (5) and the tappets (6).

Once the clearance between the inner brake lining and the brake disc (8) has been overcome, the reaction force is transferred to the outer brake lining (7b) via the brake caliper.

The braking moment for the wheel results from the contact pressure of the brake linings on the brake disc.

The radial stabilizer force created by the responding brake lining at this time is transferred directly to the axle via the brake calliper.

##### **RELEASING THE BRAKE**

When brake pressure decreases, the pressure spring (9) moves the actuating unit back to its initial position.

##### **ADJUSTMENT**

The brake is fitted with an automatic non-wearing adjusting device (10) to maintain a constant clearance between the brake linings and the brake disc.

Each brake application simultaneously activates the adjuster pin (11), which is coupled with the brake actuating unit via a movement thread (11a). The axial clearance of the trapezoidal thread determines the clearance value of the disc brake.

When the clearance increases due to brake lining and brake disc wear, the threaded tube (14) is turned by the degree of wear through adjustment via a ball joint (12).

When the clearance is correctly set, the ball joint moves out without turning the threaded tube.

The overall clearance (total clearance on both sides of the brake disc) measures 0.7 – 1.3 mm.

##### **RESET**

The disc brake features a reset mechanism at the front for replacing the brake pads and brake disc.

The return spring gear wheel (13) is mechanically connected to the external gearing of the threaded tube (14) so that the tappets (6) can return to their initial position. Only minimal torque is required to move the tappets (6) back to their initial position or preset the clearance.

##### **BRAKE CYLINDER**

Air pressure builds up behind the diaphragm due to the action of compressed air on the brake cylinder.

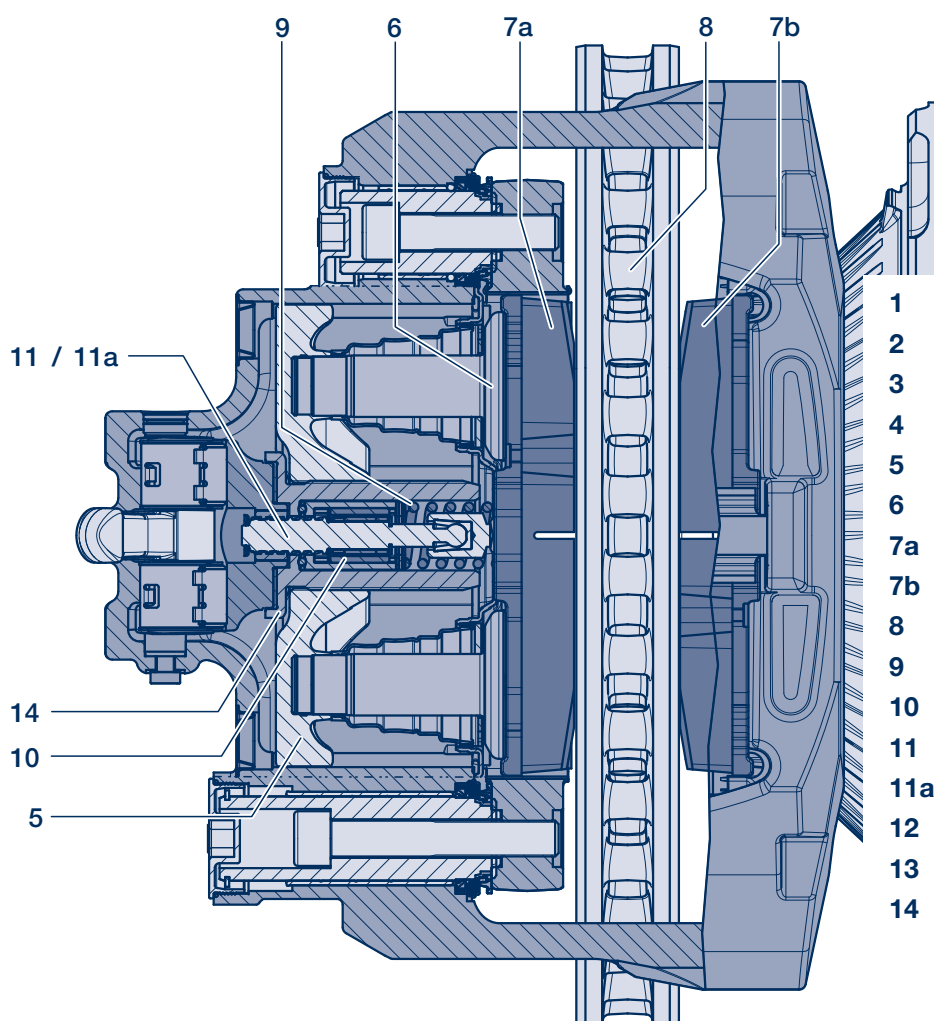
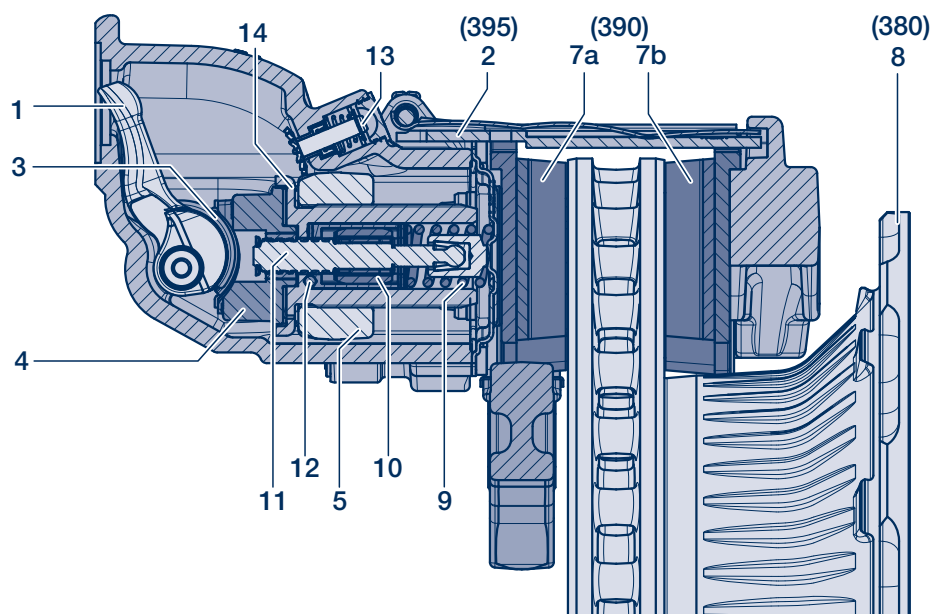
Air pressure forces the thrust rod out of the cylinder via the diaphragm plate.

The brakes may only be fitted with brake cylinders which are fitted with a so-called "inner sealing", apart from the sealing of the flange surface.

This means that the push rod acting on the lever (1) must be hermetically sealed from the secondary chamber of the brake cylinder, as otherwise the clamping mechanism is completely open to its surroundings.

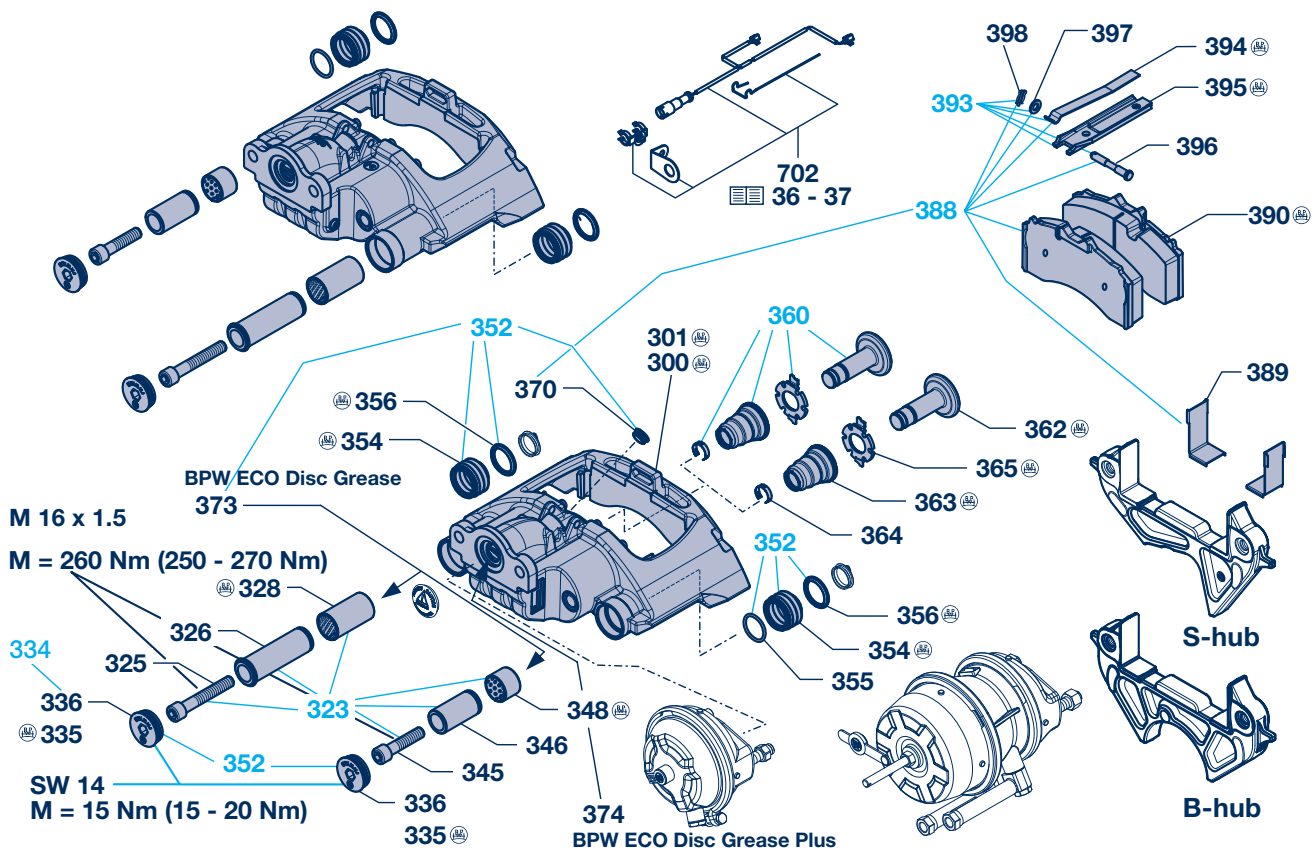
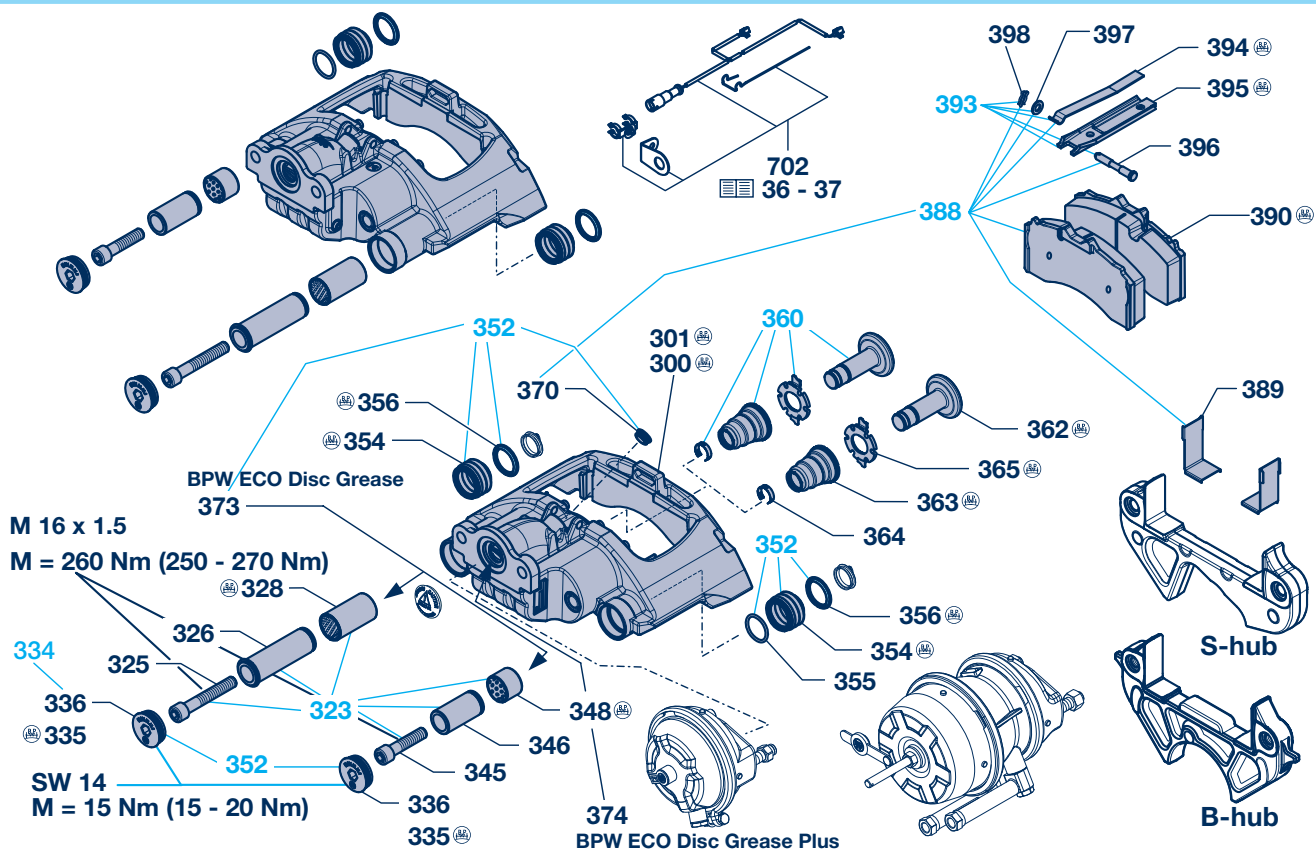
# BPW ECO Disc brake parts 3

## Functional principle (TSB) 3.5



- |     |                          |
|-----|--------------------------|
| 1   | Brake lever              |
| 2   | Brake pad retaining clip |
| 3   | Needle bearing           |
| 4   | Pressure plate           |
| 5   | Traverse                 |
| 6   | Tappets                  |
| 7a  | Inner brake lining       |
| 7b  | Outer brake lining       |
| 8   | Brake disc               |
| 9   | Pressure spring          |
| 10  | Adjustment device        |
| 11  | Adjuster pin with        |
| 11a | Movement thread          |
| 12  | Ball joint               |
| 13  | Return spring gear wheel |
| 14  | Threaded pin             |

### 3.6 Spare parts (TSB)



# BPW ECO Disc brake parts 3

## Spare parts (TSB) 3.6

Item	Designation	Dimension	BPW code no.		
			TSB 3709 ---.616.--- ---.40.---	TSB 4309 ---.617.--- ---.41.---	TSB 4312 ---.618.---
300	<b>BPW replacement brake caliper without brake lining,</b> (pregreased), incl. guide pins and pad retainer (see page 17). Item 323, 352, 360, 395	For 1 axle side	09.362.72.13.2 <sup>1)</sup>	09.362.72.11.2 <sup>1)</sup>	09.362.72.15.2 <sup>1)</sup>
301			09.362.72.14.2 <sup>1)</sup>	09.362.72.12.2 <sup>1)</sup>	09.362.72.16.2 <sup>1)</sup>
300	<b>BPW replacement brake caliper with brake lining,</b> (pregreased), incl. guide pins, brake lining and pad retainer (see page 17). Item 323, 352, 360, 389, 390, 394 - 398	For 1 axle side	09.362.72.13.3	09.362.72.11.3	09.362.72.15.3
301			09.362.72.14.3	09.362.72.12.3	09.362.72.16.3
323	<b>Guide pins repair kit,</b> item 325, 326, 328, 345, 346, 348, 373	For 1 axle side	09.801.07.61.1		
325 <sup>2)</sup>	Cylinder cap screw	M 16 x 1.5 x 103 - 10.9	03.340.12.32.0		
326 <sup>2)</sup>	Guide pin, long (fixed bearing)	Ø 17 / 26 / 37 x 123	05.001.00.41.0		
328 <sup>2)</sup>	Guide bush (fixed bearing)	Ø 37 / 41 x 73	03.112.33.13.0		
334	<b>Sealing cap repair kit,</b> item 335 + 356	For 1 axle side	09.801.07.87.0		
335 <sup>2)</sup>	Sealing cap, incl. item 336	M 49 x 1.5	05.001.00.45.0		
336 <sup>2)</sup>	O-ring	Ø 45 x 2	02.5679.97.40		
345 <sup>2)</sup>	Cylinder cap screw	M 16 x 1.5 x 73 - 10.9	03.340.12.31.0		
346 <sup>2)</sup>	Guide pin, short (floating bearing)	Ø 17 / 26 / 36 x 70	03.001.00.35.0		
348 <sup>2)</sup>	Guide bush (floating bearing)	Ø 37 / 41 x 30	03.112.33.14.0		
352	<b>Seal for guide pins repair kit,</b> item 334, 354, 355, 356, 370, 373	For 1 axle side	09.801.07.62.0		
354 <sup>2)</sup>	Bellow	Ø 52 x 34	05.130.08.27.0		
355 <sup>2)</sup>	O-ring	Ø 36 x 3.5	02.5679.98.40		
356 <sup>2)</sup>	Ring	Ø 38 / 48 x 5	03.310.11.19.0		
360	<b>Tappet repair kit,</b> item 362 - 365	For 1 axle side	09.801.07.63.1		
362 <sup>2)</sup>	Tappet	Ø 24 / 27 / 84.5 x 93.8	03.127.18.03.0		
363 <sup>2)</sup>	Bellow	Ø 26 / 55 x 17	05.130.07.07.0		
364 <sup>2)</sup>	Holding clamp	Ø 25 x 7	03.001.57.01.0		
365 <sup>2)</sup>	Dirt seal	Ø 55 x 1.5	03.121.30.15.0		
370	Plug	Ø 24 x 9	02.3704.69.00		
373	BPW ECO Disc Grease	25 g	02.1040.60.00		
374	BPW ECO Disc Grease Plus *	5 g	02.1040.61.00		
388	<b>Brake lining repair kit,</b> item 370, 389, 390, 394, 396 - 398	For 1 axle			
		BPW 8200	09.801.07.94.0	09.801.07.96.0	-
		BPW 8301	-	-	09.801.07.98.0
389	Wearing plate <sup>3)</sup>		03.163.04.02.1 <sup>3)</sup>	03.163.04.03.1 <sup>3)</sup>	03.163.04.04.1 <sup>3)</sup>
390	Brake lining <sup>3)</sup>	BPW 8200	05.092.90.12.1 <sup>3)</sup>	05.092.90.13.1 <sup>3)</sup>	-
		BPW 8301	-	-	05.092.90.20.1 <sup>3)</sup>
393	<b>Pad retainer repair kit,</b> item 394 - 398	For 1 axle	09.801.07.68.1		
394 <sup>2)</sup>	Clamping spring		03.352.00.08.1		
395 <sup>2)</sup>	Brake pad retaining clip		03.001.00.54.0		
396 <sup>2)</sup>	Bolt	Ø 8 / 10 / 14 x 75 (73)	03.084.32.33.0		
397 <sup>2)</sup>	Washer	Ø 10.5 galv	02.5404.10.04		
398 <sup>2)</sup>	Lock		02.3301.31.00		

\* Grease the spherical cap in the brake lever with BPW ECO Disc Grease Plus.

<sup>1)</sup> For replacement, brake calipers will only be supplied as a replacement brake caliper (09.362 ..... ) without cpl. lining set

<sup>2)</sup> Only deliverable as a kit

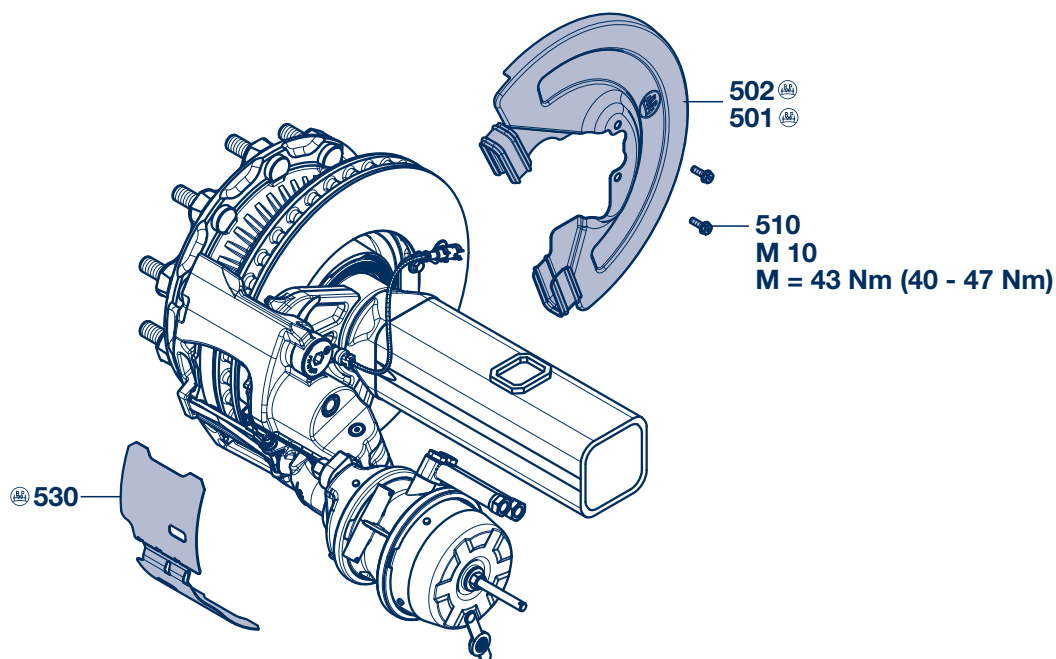
<sup>3)</sup> Not available loose – see brake lining repair kit (item 388)

### 3 BPW ECO Disc brake parts

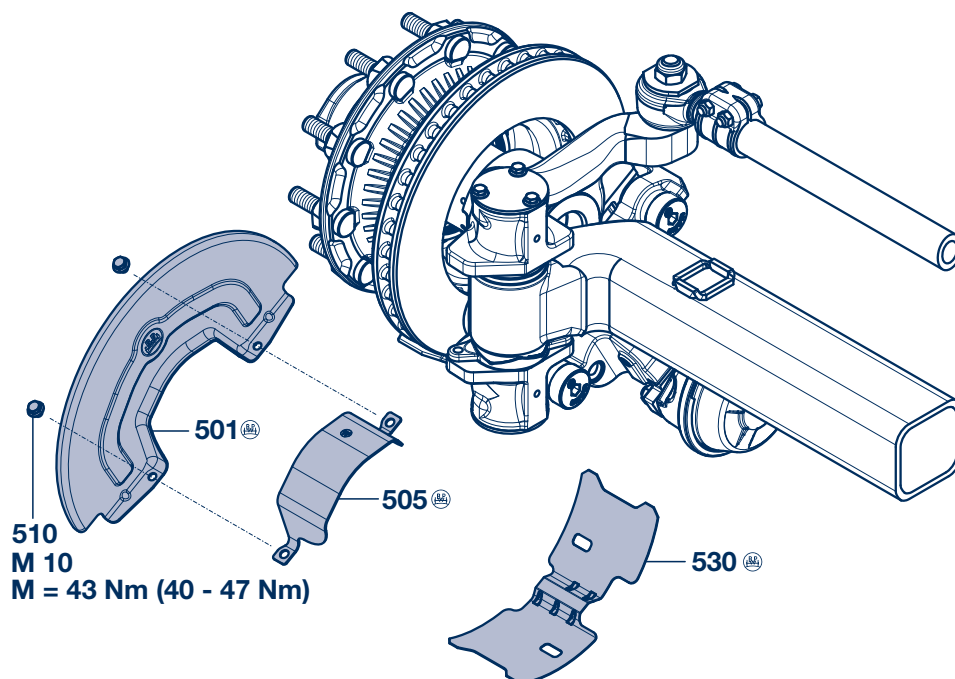
#### 3.7 Brake cover parts (TSB)

Brake cover parts, brake lining - dust cover

##### BPW ECO Disc TSB 3709 / 4309 / 4312 - rigid axles



##### BPW ECO Disc TSB 3709 / 4309 - steering axles





# BPW ECO Disc brake parts 3

## Brake cover part (TSB) 3.7

### Brake cover parts, brake lining - dust cover

#### Brake cover parts TSB 3709 / 4309 / 4312

Item	Designation	Dimension	BPW code no.		
			<b>TSB 3709</b> ---.616.--- ---.40.--- <input type="checkbox"/> 120	<b>TSB 4309</b> ---.617.--- ---.41.--- <input type="checkbox"/> 120	<b>TSB 4312</b> ---.618.--- <input type="checkbox"/> 120 / <input type="checkbox"/> 150

#### Rigid axles

500	<b>Supplementary installation kit for cover plates, item 501 - 510</b>	<b>For 1 axle</b>	<b>09.801.07.51.0</b>	<b>09.801.07.52.0</b>	<b>09.801.07.53.0</b>
501	Dust cover		03.010.71.59.0	03.010.71.61.0	03.010.71.57.0
502	Dust cover		03.010.71.60.0	03.010.71.62.0	03.010.71.58.0
510	Locking screw	M 10 x 15	02.5071.22.00	02.5071.22.00	02.5071.22.00
513	Cable grommet	Ø 7 / 10 / 13	-	02.5681.78.00	-

#### Steering axles

500	<b>Supplementary installation kit for cover plates, item 501 - 510</b>	<b>For 1 axle</b>	<b>05.801.50.48.0</b>	<b>05.801.50.47.0</b>	<b>09.801.07.53.0</b>
501	Dust cover		03.010.71.64.0	03.010.71.63.0	03.010.71.57.0
502	Dust cover		-	-	03.010.71.58.0
510	Locking screw	M 10 x 15	02.5071.22.00	02.5071.22.00	02.5071.22.00

#### ECO Plus 3 steering axles

500	<b>Supplementary installation kit for cover plates, item 501 - 510</b>	<b>For 1 axle</b>	<b>05.801.49.62.0</b>	<b>05.801.49.63.0</b>	-
501	Dust cover		03.010.71.64.0	03.010.71.63.0	
505	Dust cover			03.010.95.35.0	
510	Locking screw	M 10 x 15		02.5071.22.00	

#### Brake lining - dust cover

530	Dust cover *	For 1 axle side	03.010.95.32.0
-----	--------------	-----------------	----------------

\* Mounted under the pad retainer without any additional attachment parts

## 3 BPW ECO Disc brake parts

### 3.8 Brake discs (TS2/TSB)

#### General

#### BPW brake discs

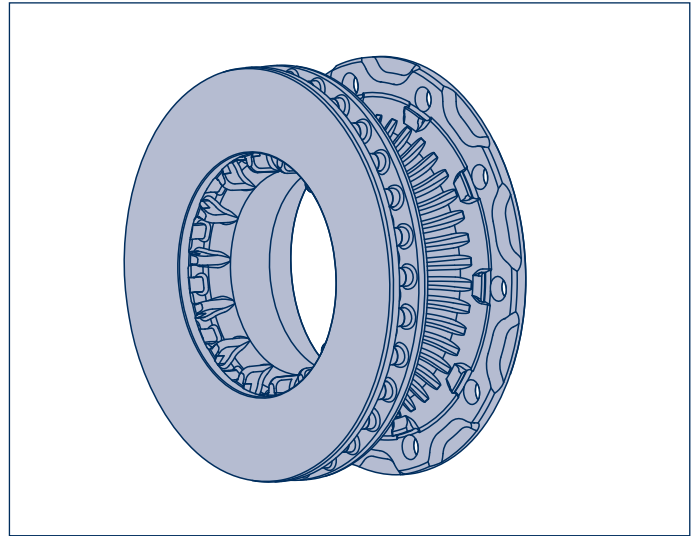
With the introduction of IBD brake discs (IBD = Internal ventilation/permanent brake), the tried and proven BPW design of the collar disc has been further improved.

Further development has focused on the regulation of thermal efficiency in order to optimise wear characteristics and to increase reliability.

The quality of brake discs is the result of a combination of the shape of the design, the materials used and the quality of the mechanical machining.

The chemical composition of the material alloy is in particular responsible for a large number of properties, and hence determines some essential product features.

BPW has taken these technological influences into account for many years in the development of brake discs, matching them to the requirements on the trailer.



BPW brake disc - IBD version

#### Original BPW brake discs offer the following advantages:

- ⊙ Increased surface area for effective heat dissipation
- ⊙ Optimisation of material for improved heat distribution over the surface of the disc
- ⊙ Venturi contour for optimal internal air flow
- ⊙ Matched to the optimised BPW brake linings
- ⊙ High resistance to wear
- ⊙ Simplified spare parts supply thanks to uniform brake discs for 0 and 120 offsets

# BPW ECO Disc brake parts 3

## Brake discs (TS2/TSB) 3.8

### Brake discs

#### Brake discs

Brake	BPW code no.	Reference diameter / wheel connection	Wheel hub	ET	Version	Comments
<b>TS2 3709</b> <b>TSB 3709</b>	03.088.34.15.7	275 / 8 hole	S, Z	0		
	03.088.34.16.7	275 / 8 hole	S, Z	0		With exciter ring mounting
	03.088.34.14.7	335 / 10 hole	S, Z, B	0 / 120	IBD	Replaced by 03.088.34.21.7
	03.088.34.17.7	335 / 10 hole	S	0	IBD	10 t, with exciter ring mounting Replaced by 03.088.34.22.7
	<b>03.088.34.21.7</b>	335 / 10 hole	S, Z, B	0 / 120	IBD	
	03.084.34.22.7	335 / 10 hole	S	0	IBD	10 t, with exciter ring mounting
<b>TS2 4309</b> <b>TSB 4309</b>	03.088.35.05.7 *	335 / 10 hole	S, Z, B	0 / 120	IBD	Replaced by 03.088.35.12.7
	<b>03.088.35.12.7</b>	335 / 10 hole	S, Z, B	0 / 120	IBD	
<b>TSB 4312</b>	03.088.35.05.7 *	335 / 10 hole	S, Z	0	IBD	Replaced by 03.088.35.12.7
	<b>03.088.35.12.7</b>	335 / 10 hole	S, Z	0	IBD	

S = Single wheels ET 0  
B = Single wheels ET 120  
Z = Twin wheels

#### Wear status of the brake disc

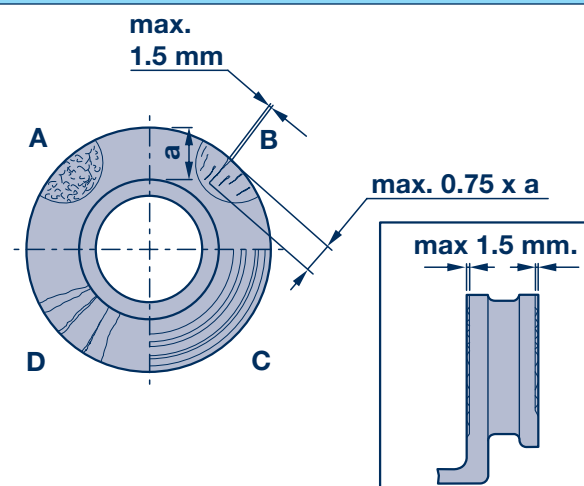
The brake disc is to be regularly checked for its residual thickness and any damage to the braking surface.

The residual thickness of the brake disc must not be less than the permissible minimum in any area of the disc.

Network-like heat cracking (**A**), radial cracks up to 1.5 mm in width and depth (**B**) and pitting of the braking surface less than 1.5 mm (**C**) are permissible.

Continuous cracks (**D**) are not permissible.

If the brake disc has reached its wear limit or its braking surface shows inadmissible damage, it must be replaced.



#### Technical details:

- Disc thickness, new = 45 mm
- Minimum permissible disc thickness = 37 mm (check with slide gauge)

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

## 3 BPW ECO Disc brake parts

### 3.9 Brake cylinder (TS2/TSB)

#### General

#### BPW Brake Cylinders

BPW brake cylinders come with a range of special features that prove their high quality level:

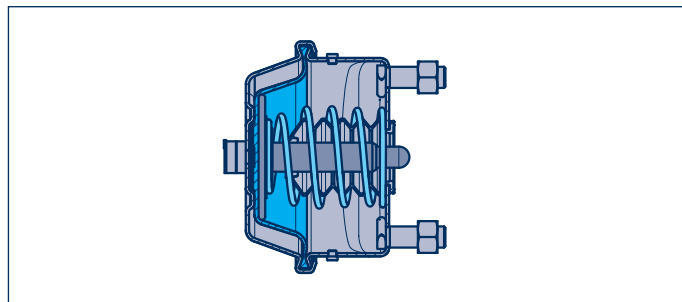
- ⊙ The cylinder size and the item number are permanently stamped
- ⊙ Parts which are critical to function can be traced back through the QA system by means of their type plate
- ⊙ Easy to install due to compressed air connection extension
- ⊙ Double seals on the twin compartment
- ⊙ Effective anti-corrosion protection through powder and Delta Tone coating
- ⊙ Shot peened and epoxy coated pressure springs
- ⊙ Undetachable spring chamber secured with a tight fit
- ⊙ Long life expectancy due to high-performance rubber diaphragms
- ⊙ Closely sealing bellow
- ⊙ Chromated alloy housing



#### Versions:

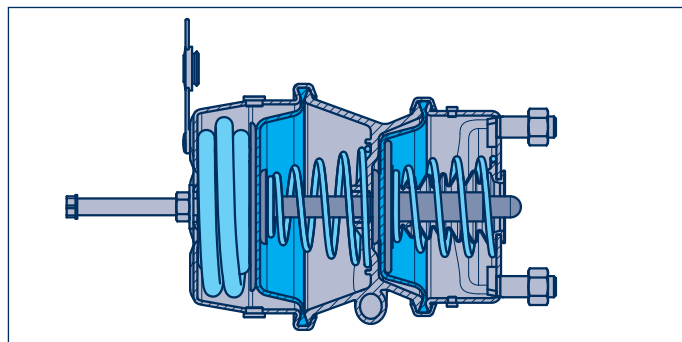
##### Cylinder

These act as a service brake and are characterised by their compact external dimensions and low weight.



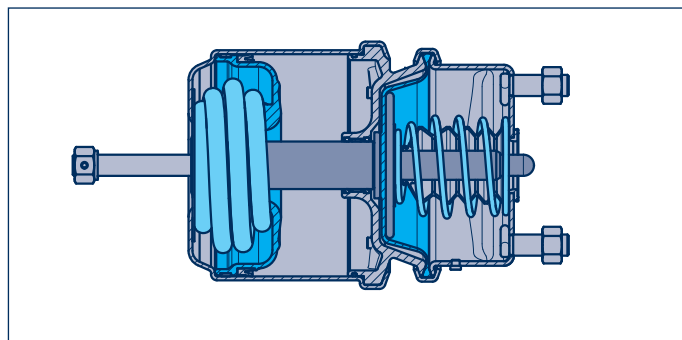
##### Diaphragm-diaphragm (M-M) cylinders

These act both as a service brake – and an auxiliary and parking brake. They are lighter than the diaphragm-piston cylinder.



##### Diaphragm-piston (M-K) cylinders

These have the same function as a diaphragm-diaphragm cylinder. Their greater spring accumulator force means they are particularly suitable for vehicles with higher axle loads.



# BPW ECO Disc brake parts 3

## Brake cylinder (TS2/TSB) 3.9

### General

#### Release device

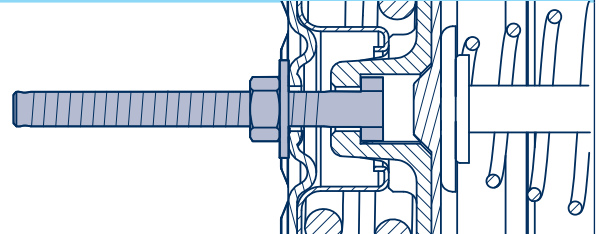
As of March 2004 the release device for M-M brake cylinders on axles with disc brakes have had a new parking position.

The release device is no longer accommodated in the parking pocket on the outside of the cylinder but is left directly in the cylinder cover plate.

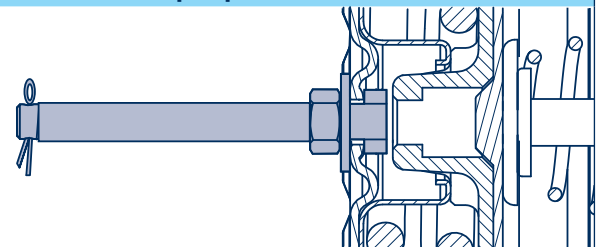
All that is needed to use the parking position is to turn the release device 90° and then lock it in place with a hexagon nut.

In addition, it is still also possible to remove the release device completely.

Release device inserted,  
spring brake released



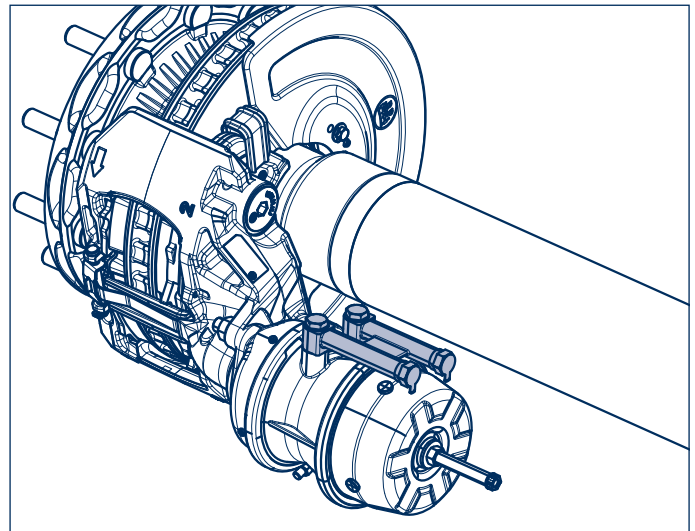
Release device in parking position,  
plastic sleeve and split pin fitted



#### Compressed air connection extension (DLAV)

Spring-type cylinders for disc brakes are fitted with a compressed air connection extension (DLAV) as standard.

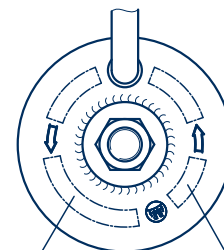
This allows fast and easy assembly on the compressed air system.



#### Identification

The BPW item number and the cylinder type are stamped on the front of every brake cylinder.

Each brake cylinder also has a type plate riveted onto it, with the details of the BPW item number, cylinder type and completion date.

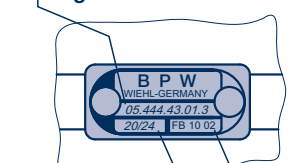


BPW item number  
e.g. 05.444.43.01.3

Cylinder type  
e.g. 20/24"

BPW type plate on  
the brake cylinder

BPW item number  
e.g. 05.444.43.01.3



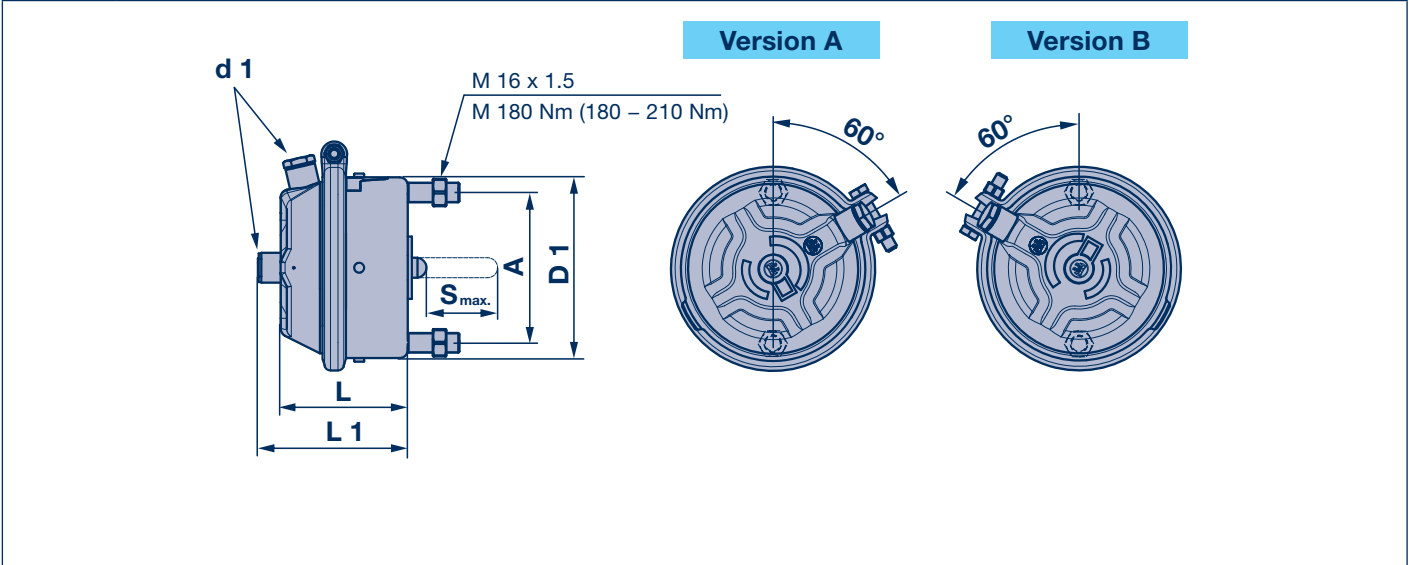
Cylinder type  
e.g. 20/24"

Completion date  
e.g. year 2010 / CW 2

3 BPW ECO Disc brake parts

3.9 Brake cylinder (TS2/TSB)

Brake cylinder, diaphragm cylinder



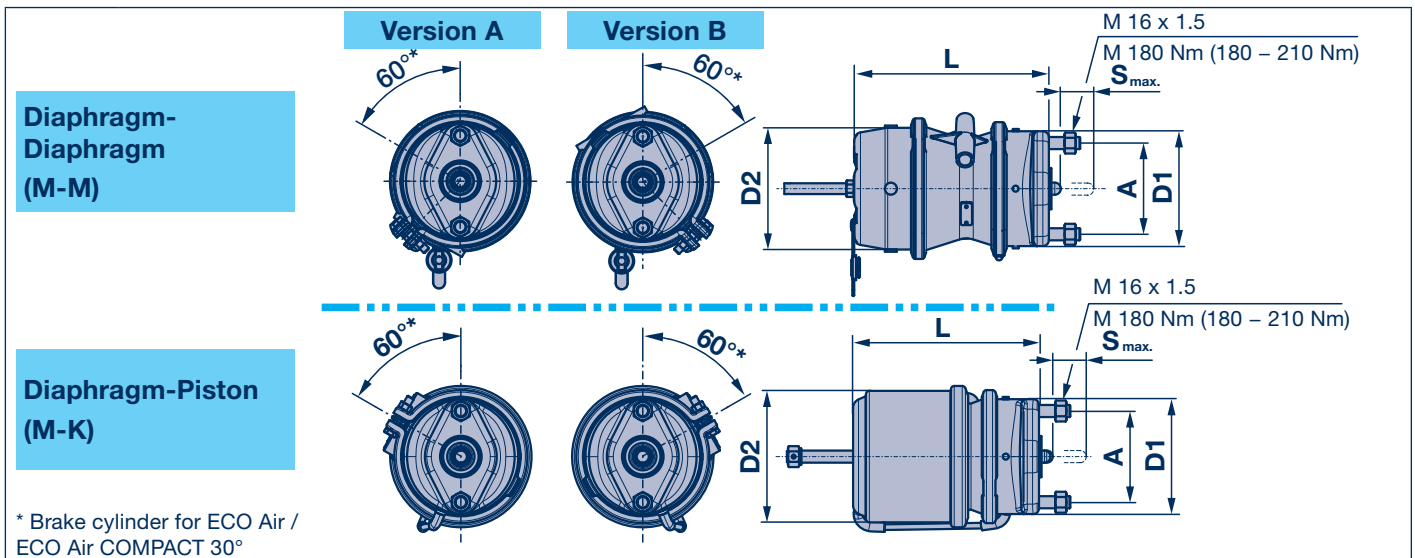
Cylinder size	BPW code no.	Version	Air connection thread d 1	L (mm)	L 1 (mm)	D 1 (mm)	A (mm) Connection dimension	Maximum stroke S max. (mm)		
14"	05.444.30.01.0	B	M 16 x 1.5	101	116	143	120.7	62		
	05.444.30.02.0	A								
15"	05.444.31.01.0	B		101	116	143		60		
	05.444.31.02.0	A								
16"	05.444.32.01.0	B		101	116	145		60		
	05.444.32.02.0	A								
18"	05.444.33.01.0	B		108	124	150		65		
	05.444.33.02.0	A								
20"	05.444.34.01.0	B		108	124	150		65		
	05.444.34.02.0	A								
22"	05.444.35.01.0	B		110	125	160		69		
	05.444.35.02.0	A								
24"	05.444.36.01.0	B		110	125	160		66		
	05.444.36.02.0	A								
				Attachment nuts for brake cylinder						
				Thread	BPW item no.					
				M 16 x 1.5	02.5202.21.80					



# BPW ECO Disc brake parts 3

## Brake cylinder (TS2/TSB) 3.9

### Brake cylinders, diaphragm-diaphragm cylinders / diaphragm-piston type cylinders



Cylinder size	Version	BPW code no. Brake cylinder without screwed joint	BPW code no. Brake cylinder with compressed air connection extension (DLAV)	BPW code no. Complete set * with compressed air connection extension (DLAV)	BPW code no. Brake cylinder with compressed air connection extension (DLAV) 30° rotated for ECO Air COMPACT	Air connection thread	L (mm)	D 1 (mm)	D 2 (mm)	A (mm) Connection dimension	Piston stroke S <sub>max.</sub> (mm)
---------------	---------	---	---	---	--	-----------------------	--------	----------	----------	-----------------------------------	---

#### Diaphragm-diaphragm (M-M) cylinders

14/24"	B	05.444.38.01.0	05.444.38.01.3	05.801.21.50.0	-	M 16 x 1.5	235	145	161	120.7	57
	A	05.444.38.02.0	05.444.38.02.3								
15/24"	B	05.444.39.01.0	05.444.39.01.3	05.801.21.51.0	-						
	A	05.444.39.02.0	05.444.39.02.3								
16/24"	B	05.444.40.01.0	05.444.40.01.3	05.801.21.52.0	05.444.40.07.3						
	A	05.444.40.02.0	05.444.40.02.3		05.444.40.08.3						
18/24"	B	05.444.42.01.0	05.444.42.01.3	05.801.21.53.0	05.444.42.03.3		257	152			
	A	05.444.42.02.0	05.444.42.02.3		05.444.42.04.3						
20/24"	B	05.444.44.01.0	05.444.44.01.3	05.801.21.54.0	05.444.44.03.3					64	
	A	05.444.44.02.0	05.444.44.02.3		05.444.44.04.3						

#### Diaphragm-piston (M-K) cylinders

16/16"	B	05.444.41.01.0	05.444.41.01.3	05.801.21.55.0	-	M 16 x 1.5	230	145	162	120.7	60
	A	05.444.41.02.0	05.444.41.02.3								
	B <sup>1)</sup>	05.444.41.03.0	05.444.41.03.3	05.801.21.59.0	-						
	A <sup>1)</sup>	05.444.41.04.0	05.444.41.04.3								
20/24"	B	05.444.43.01.0	05.444.43.01.3	05.801.21.56.0	-		246	152	174	120.7	68
	A	05.444.43.02.0	05.444.43.02.3								
	B <sup>1)</sup>	05.444.43.03.0	05.444.43.03.3	05.801.21.60.0	05.444.43.05.3 05.444.43.06.3						
	A <sup>1)</sup>	05.444.43.04.0	05.444.43.04.3								
22/24"	B	05.444.45.01.0	05.444.45.01.3	05.801.21.57.0	-		249	163	174	120.7	65
	A	05.444.45.02.0	05.444.45.02.3								
	B <sup>1)</sup>	05.444.45.03.0	05.444.45.03.3	05.801.21.61.0	-						
	A <sup>1)</sup>	05.444.45.04.0	05.444.45.04.3								
24/24"	B	05.444.46.01.0	05.444.46.01.3	05.801.21.58.0	-		249	163	174	120.7	65
	A	05.444.46.02.0	05.444.46.02.3								
	B <sup>1)</sup>	05.444.46.03.0	05.444.46.03.3	05.801.21.62.0	-						
	A <sup>1)</sup>	05.444.46.04.0	05.444.46.04.3								

<sup>1)</sup> For top trailing arm (vent rotated 180°)

\* BPW complete kit consisting of 2 brake cylinders (type A + B) with corresponding screwed joints (DLAV).

#### Attachment nuts for brake cylinder

Thread	BPW item no.
M 16 x 1.5	02.5202.21.80

## 3 BPW ECO Disc brake parts

### 3.10 BPW Brake Monitor

#### General

#### BPW Brake Monitor

With the BPW Brake Monitor supplementary installation kit for our disc brakes, you can check your vehicle from the outside at any time to see if the wear limit has been reached.

As soon as one of the brake linings has worn down by approx. 80 % the yellow "**Warning**" LED on the BPW Brake Monitor starts flashing.

Once the minimum pad thickness of 2 mm has been reached, the "**Service**" indicator changes to red, while the green and yellow LEDs flash alternately.

The red **SERVICE** indicator remains visible and indicates that the wear limit of at least one brake lining has been reached even if you have parked the vehicle and there is no electrical power supply to the trailer.

The brake linings should then be replaced as soon as possible.



#### Warning:

At least one brake lining is approx. 80 % worn down!

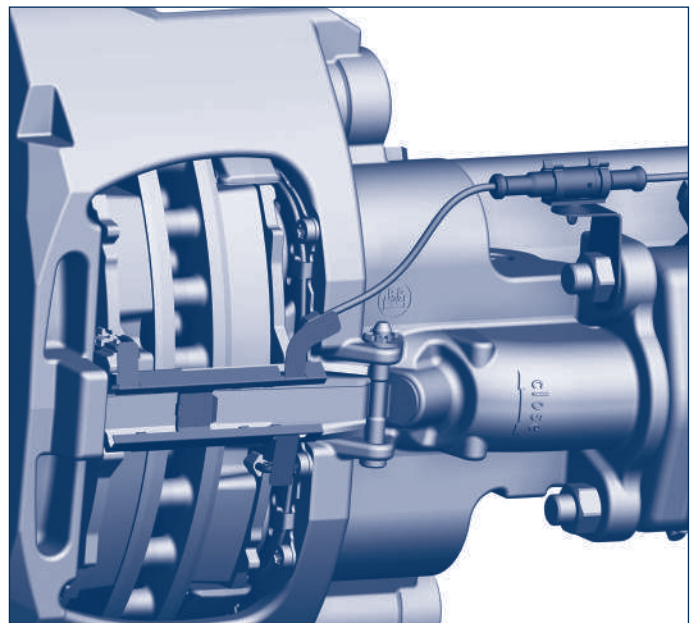
#### Service:

At least one brake lining has reached the minimum lining thickness of approx. 2 mm.

Have the linings replaced immediately!







#### BPW Brake Monitor – Features and benefits

- ⊙ Optimal use of the brake lining wear volume
- ⊙ Longer life expectancy for the brake discs and brake
- ⊙ No unscheduled downtime
- ⊙ No expensive follow-on costs (e.g. due to a complete failure)
- ⊙ The service indicator tells you exactly when a brake lining replacement is necessary, even if there is no operating voltage
- ⊙ Operates without a separate ECU and does not need EBS
- ⊙ Individual composition of kits possible because of modules (e.g. for four-axle vehicles)
- ⊙ Easy and fast assembly
- ⊙ Can easily be retrofitted
- ⊙ No technical inspection is required, since a general EU certification and hazchem approval have already been obtained
- ⊙ Can be connected to EBS for indication in motor vehicle



## Brake Monitor

The diagram illustrates the wiring for the brake monitor system. It shows two axle assemblies, each with a central hub and four wheel sensors. The sensors are connected to a central unit labeled '1.3'. This unit is then connected to an 'External signal connection' block, which includes a 'Power supply' and a 'Brake Monitor' unit. The 'Brake Monitor' unit has three indicator lights: 'ON', 'WARNING', and 'SERVICE'. The diagram includes various cable lengths (2 m, 1.5 m) and connection points labeled (3), (4), and (5).

Item	BPW code no.	Designation (remark)	Quantity						
			Vehicle type						
									
1	05.801.60.07.0  incl. 1.1 02.0339.01.00 1.2 02.4312.58.00 1.3 02.3713.08.00	Brake Monitor basic set with connecting cables  Brake Monitor Connection cable Connection plug	1 x	1 x	1 x	1 x	1 x	1 x	1 x
2	02.4312.57.00	Axle connection module	1 x	2 x	3 x	4 x	2 x	3 x	4 x
3	02.1819.26.00 02.1819.25.00 02.1819.22.00	Extension 1 m Extension 3 m Extension 5 m 3-pin K/E-connector system	Acc. to vehicle configuration						
4	05.801.49.50.0	Axle wear sensor set	1 x	2 x	3 x	4 x	2 x	3 x	4 x
5	02.1819.29.00 02.1819.30.00	Extension 2 m Extension 10 m 7-pin DIN bayonet connector system	Acc. to vehicle configuration						

## 4 Hubs, hub bearings

### General

#### BPW hub bearings

##### ECO<sup>Plus</sup> bearing

If you require high performance, rapid maintenance and low maintenance costs from your axle, there is only one option for you: ECO<sup>Plus</sup>.

On the basis of the special BPW ECO hub system, the ECO Unit has been further developed to create the trend-setting ECO<sup>Plus</sup> bearing system.

The hub requires no maintenance and has an integrated multi-seal system to protect the roller bearings against dust and dirt.

A central bolt with integrated torque limiting function ensures the bearing preload is always optimal.

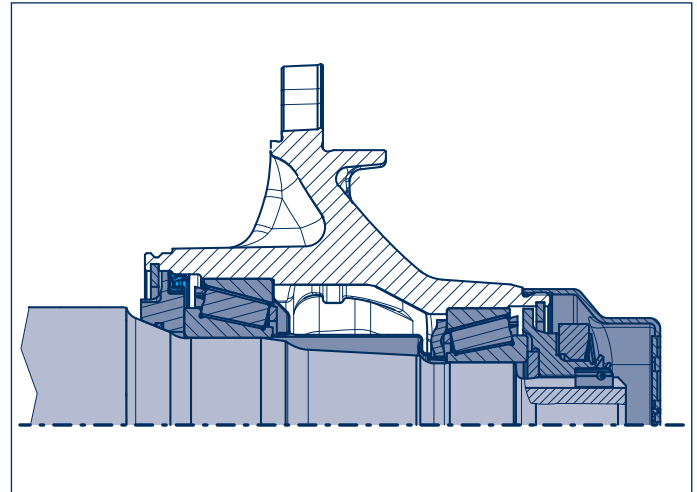


Fig. ECO<sup>Plus</sup> (10 - 12 t)

#### BPW ECO<sup>Plus</sup> bearing – Features and benefits

- ⊙ The encapsulated bearing unit (ECO Unit) requires no maintenance and has an integrated multi-seal system to protect the roller bearings from dust and dirt
- ⊙ Integrated torque limiter in the axle nut (ECO<sup>Plus</sup>) prevents wrong usage when tightening
- ⊙ Bearings are precisely re-adjusted after every disc replacement
- ⊙ 5+3 years ECO Plus warranty (on-road) without mileage limit
- ⊙ Compact bearing system with DIN-ISO roller bearings available worldwide for excellent availability and rapid service
- ⊙ Removal of the complete hub unit - thanks to central bolt - with simple tools
- ⊙ Excellent bearing service life with minimal life cycle costs

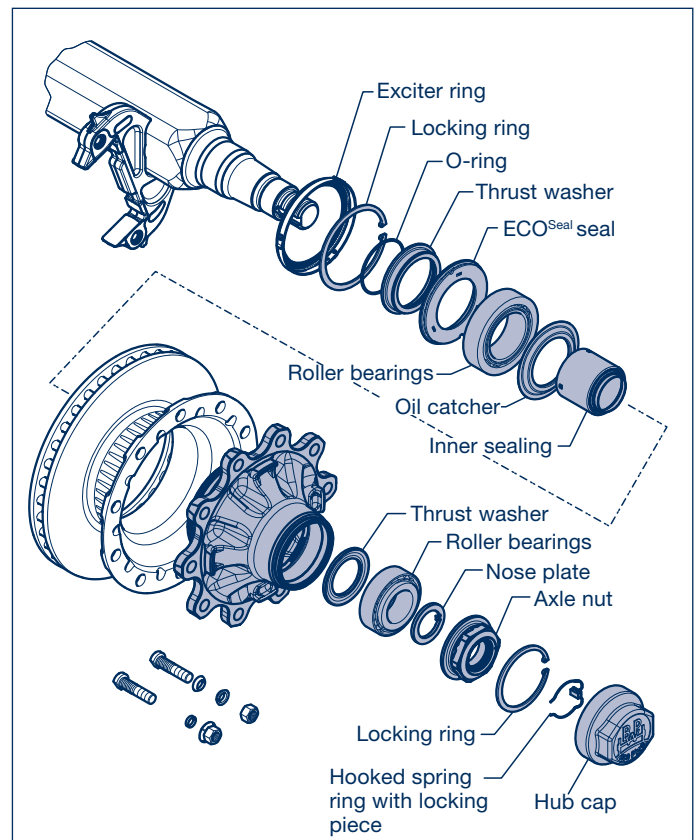


Fig. ECO<sup>Plus</sup> (10 - 12 t)

# Hubs, hub bearings 4

## General

### BPW ECO Plus 2 bearing

The BPW ECO Unit, tried and proven a million times over in its ECO<sup>Plus</sup> design, has been replaced by the still further improved, new ECO Plus 2 design.

A consistent optimisation of the components has resulted in a significant weight reduction compared with the current ECO<sup>Plus</sup> Unit.

In the case of the ECO Plus 2 the hub cap has a bayonet lock, enabling comfortable assembly and disassembly of the hub cap.

Grease is supplied to the wheel bearings by means of a grease cartridge located between the bearing points.

The axle nut previously used is replaced by an axle bolt with integrated torque limiter.

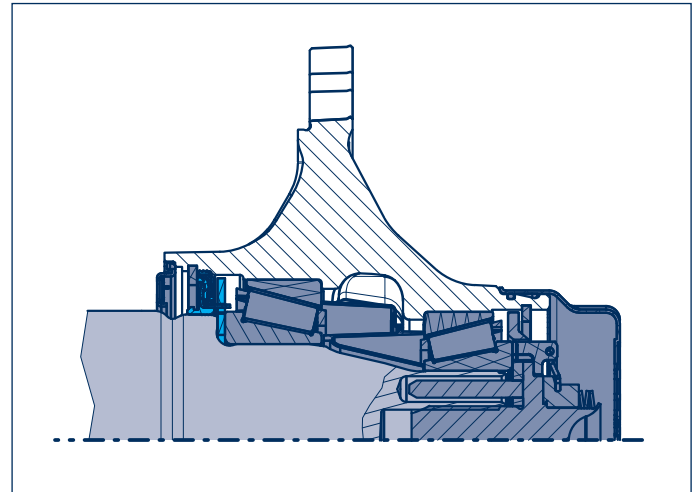


Fig. ECO Plus 2 (8 - 9 t)

### ECO Plus 2 bearing - Features and benefits

- ⊙ The encapsulated bearing unit (ECO Unit) requires no maintenance and has an integrated multi-seal system to protect the roller bearings from dust and dirt
- ⊙ Integrated torque limitation of the axle bolt prevents wrong usage during tightening
- ⊙ Bearings are precisely re-adjusted after every disc replacement
- ⊙ 5+3 years ECO Plus warranty (on-road) without mileage limit
- ⊙ Compact bearing system with DIN-ISO roller bearings available worldwide for excellent availability and rapid service
- ⊙ Removal of the complete hub unit - thanks to central bolt - with simple tools
- ⊙ Simple lubrication of the bearing by means of a grease cartridge
- ⊙ Excellent bearing service life with minimal life cycle costs
- ⊙ In conjunction with the revised air suspension system there are significant weight savings up to 25 kg depending on the axle type
- ⊙ Existing approvals and homologations remain in force

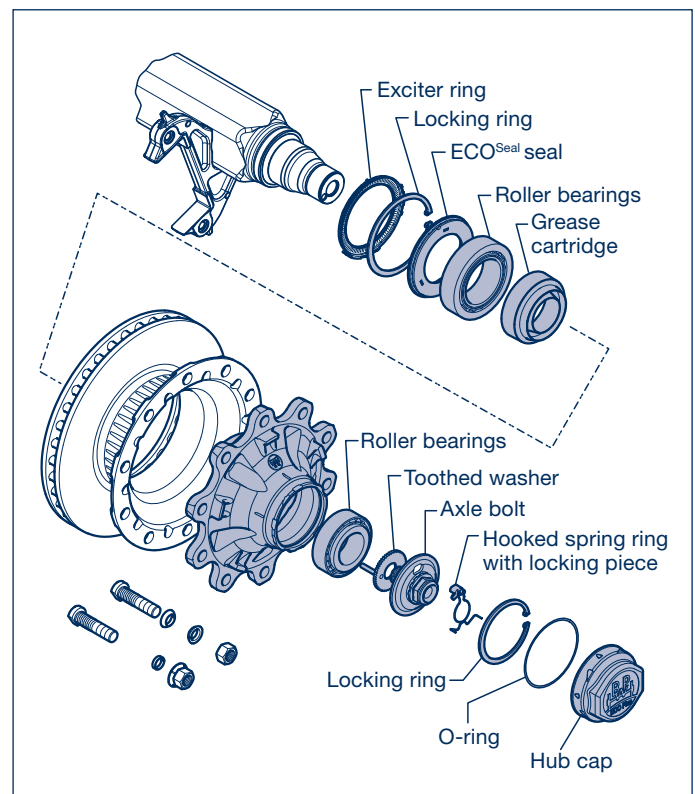


Fig. ECO Plus 2 (8 - 9 t)



## 4 Hubs, hub bearings

### General


#### ECO Plus 2

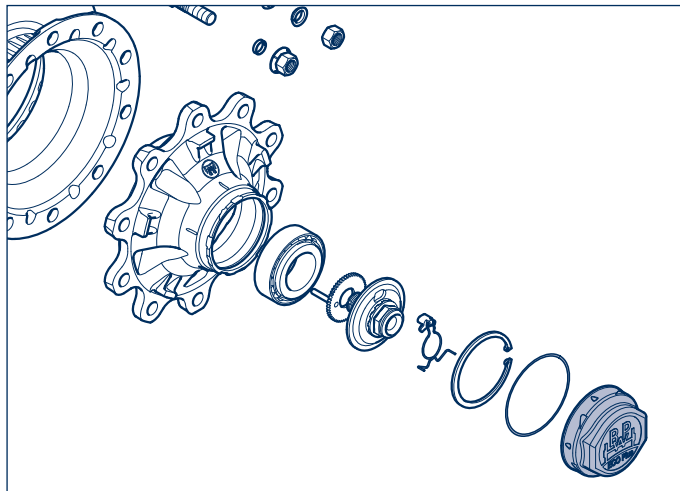
##### Hub cap/ECOMETER

BPW trailer axles with the ECO Plus 2 bearing have hub caps (and ECOMETER) with a bayonet lock.

The bayonet lock replaces the previously usual threaded connection.

An installation spanner with SW 120 (BPW item number 03.339.05.02.0, see also BPW tool catalogue) is needed for assembly or disassembly of the new hub caps with the bayonet lock.

 **An impact driver must not be used for assembly/disassembly of hub caps or ECOMETERS with a bayonet lock!**



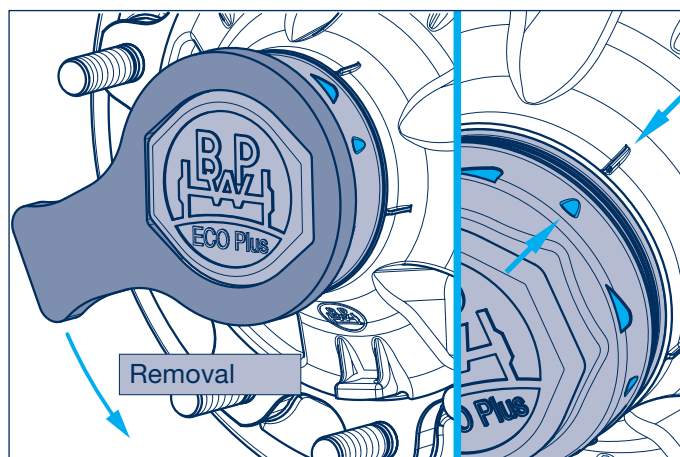
#### Removal

For removal, the hub cap is turned counterclockwise approx. 30° with the installation spanner (Fig.).

When turned further, the hub cap lifts clearly away from the hub seat.

The released position is also indicated by markings on the hub cap and on the wheel hub (Fig. / arrows).

In the released position the hub cap can be removed axially from the wheel hub.



#### Assembly

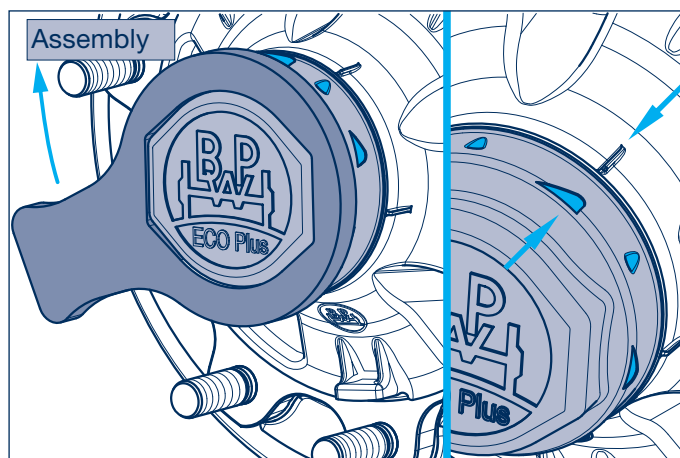
The seal between the hub cap and the wheel hub takes the form of an O-ring in the case of the ECO Plus 2 unit.

The O-ring is inserted in the groove on the neck of the wheel hub and is to be replaced at every assembly. The hub cap itself is to be given a thin coating of ECO-Li<sup>Plus</sup> BPW special longlife grease inside in the area of the bayonet lock, before assembly.

Corresponding markings in the hub cap and on the hub make it easier to assemble the hub cap.

The figure shows the hub cap in the correct position for fitting, with the spanner engaged.

After being placed in position, the hub cap is axially pressed onto the hub and at the same time turned in clockwise direction. The hub cap is tightly seated when the position shown in Fig. (arrows) has been reached.





# Hubs, hub bearings 4

## General

### Hub seal for ECO<sup>Plus</sup> bearings

The innovative ECO<sup>Seal</sup> sealing system is used on all axles with the BPW ECO Disc disc brake.

With this hub seal, the primary seal lip (ECO<sup>Seal</sup>) no longer seals directly against the sealing partner (bearing race of the hub) but instead against a bearing race which is integrated in the seal itself.

This new design has made it possible to significantly reduce the circumferential speed of the seal and thus wear. In addition, the wheel bearing is provided with even better protection against dirt penetration by means of the covering dust and dirt sealing lips.

### Advantages:

- ⊙ An introversive pre-stressed main seal lip with a low circumferential speed and a low thermal load, resulting in low wear
- ⊙ An approximately 30 % reduction in frictional resistance inside the seal (compared with conventional seals)
- ⊙ The seal is well protected during service due to the cartridge construction
- ⊙ Pretensioned main sealing lip with venting function, no opening with negative pressure
- ⊙ No dirt seal necessary

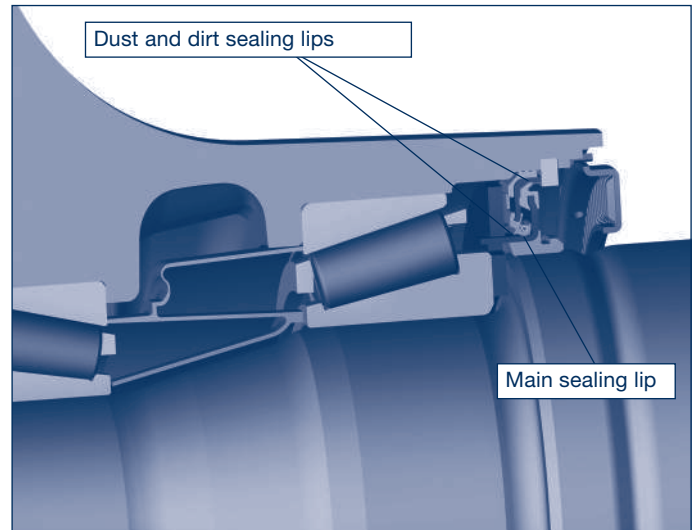


Fig. ECO Plus 2 + ECO Plus 3 (8 - 9 t)

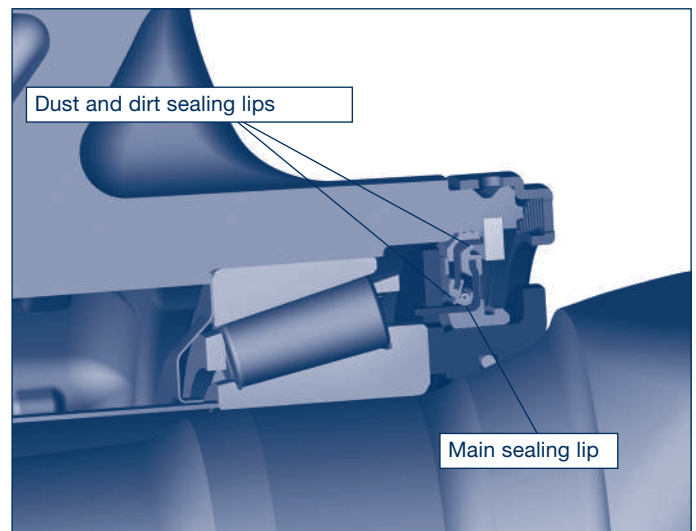


Fig. ECO<sup>Plus</sup> (10 - 12 t)

## 4 Hubs, hub bearings

### General

#### BPW hub bearings ECO Plus 3 bearing

Starting from the special BPW ECO Plus 2 hub system, the ECO Unit was further developed and resulted in the ECO Plus 3 bearing.

The hub requires no maintenance and has an integrated multi-seal system to protect the roller bearings against dust and dirt.

With the ECO Plus 3, the hub cap has a screw connection (M 135 x 2 / SW 110), which allows comfortable assembly and disassembly of the hub cap.

The tightening torque of the hub cap is 350 Nm.

An O-ring inserted between wheel hub and hub cap guarantees sealing against moisture and dirt.

Grease is supplied to the wheel bearings by means of a grease cartridge located between the bearing points.

A central bolt with integrated torque limiting function ensures the bearing preload is always optimal.

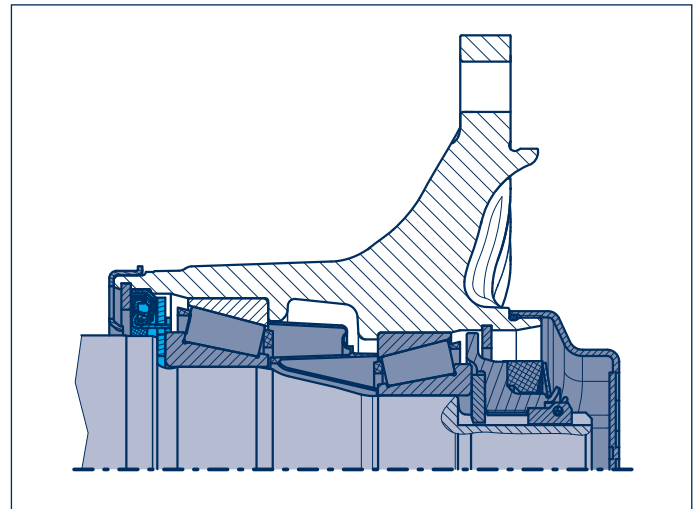
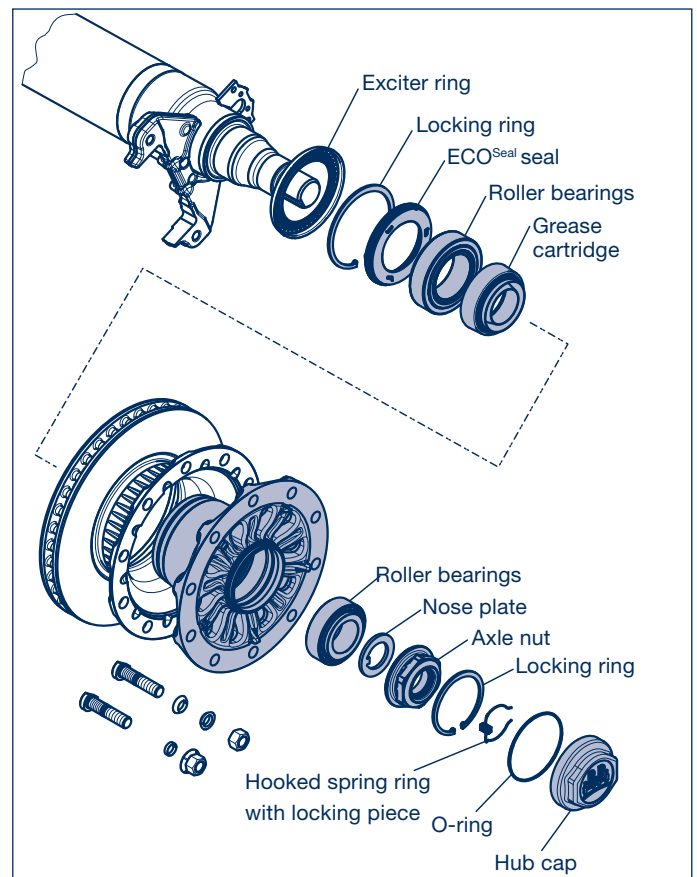


Fig. ECO Plus 3 (8 - 9 t)

#### ECO Plus 3 bearing - Features and benefits

- ⊙ The encapsulated bearing unit (ECO Unit) requires no maintenance and has an integrated multi-seal system to protect the roller bearings from dust and dirt
- ⊙ Integrated torque limiting function of the axle nuts (ECO Plus 3) prevents wrong usage during tightening
- ⊙ Bearings are precisely re-adjusted after every disc replacement
- ⊙ 5+3 years ECO Plus warranty (on-road) without mileage limit
- ⊙ Compact bearing system with DIN-ISO roller bearings available worldwide for excellent availability and rapid service
- ⊙ Removal of the complete hub unit - thanks to central bolt - with simple tools
- ⊙ Simple lubrication of the bearing by means of a grease cartridge
- ⊙ Excellent bearing service life with minimal life cycle costs
- ⊙ Existing approvals and homologations remain in force

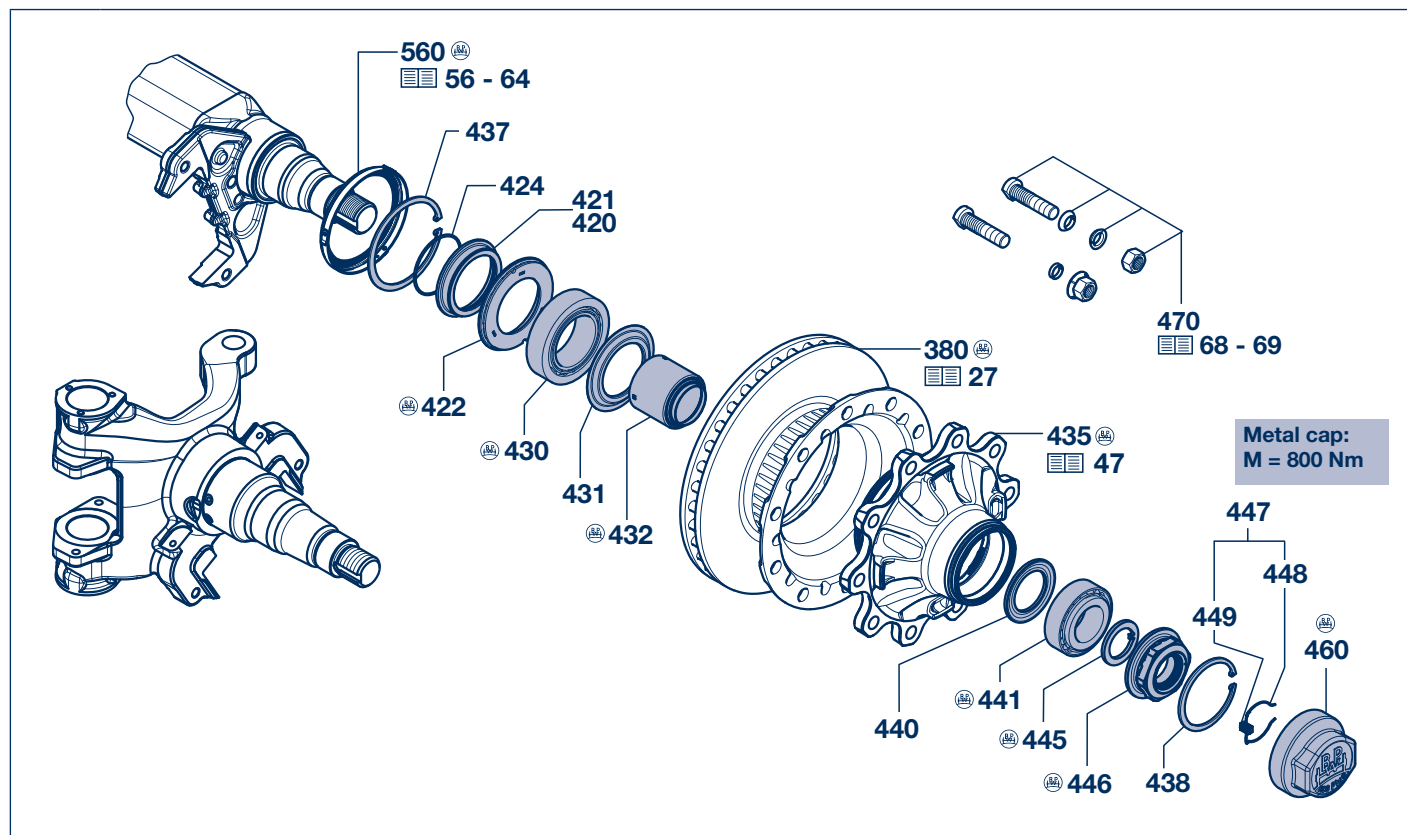




## 4 Hubs, hub bearings

### 4.1 Hub bearing

#### ECO<sup>Plus</sup> hub system (ECO<sup>Plus</sup> Unit)



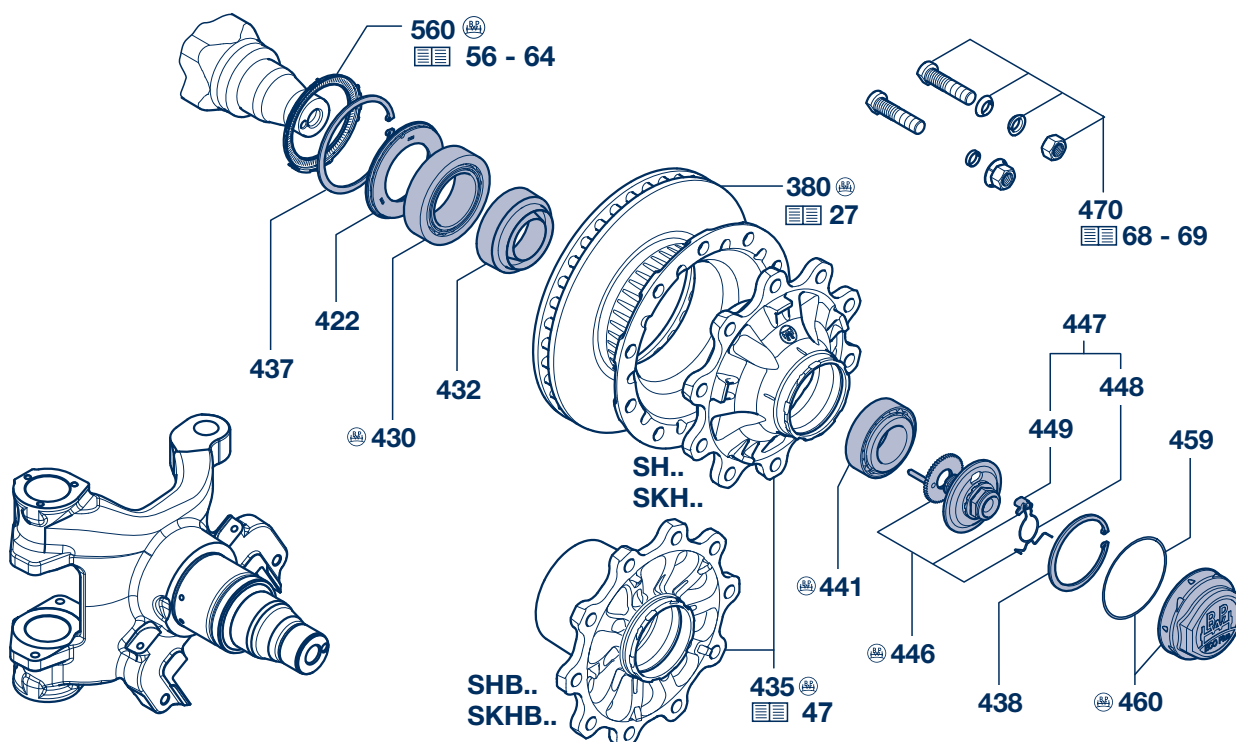
Item	Designation	BPW code no.	Dimension	
		SH.. ECO <sup>Plus</sup> SKH.. ECO <sup>Plus</sup> 10 - 12 t	--.50.----.----	
380	Brake disc	see page 27		
419	Roller bearing repair kit, <b>without</b> axle nut and hub cap, item 420, 422, 430 - 432, 440 - 445	09.801.07.04.1	For 1 axle side	
420	Thrust washer cpl. item 421, 424	05.370.07.73.0		
421	Thrust washer	03.370.07.72.0	Ø 96 / 117.5 / 132 x 22	
422	ECO <sup>Seal</sup> seal	02.5664.74.00	Ø 117.5 x 158 x 12.5	
424	O-ring	02.5678.00.00	Ø 100 x 3	
430	Roller bearings	02.6410.23.00	33118	
431	Dust cover (oil catcher)	03.010.93.34.0	Ø 94 / 148.5 x 8.5	
432	Seal	03.120.45.16.0	Ø 67 / 93 x 90.5	
435	Hub	see page 47		
437	Locking ring	02.5606.58.90	158 x 4 / 472	
438	Locking ring	02.5606.22.90	122 x 4 / 472	
440	Thrust washer	03.370.26.24.0	Ø 71 / 108 x 8	
441	Roller bearings	02.6410.22.00	33213	
445	Washer	03.320.64.01.0	Ø 53 / 76 x 5.8	
446	Axle nut	05.266.47.11.0	M 52 x 2 / WAF 95	Replacement for 05.266.47.06.0
447	Hooked spring ring cpl. item 448 + 449	05.188.04.15.0		
448	Hooked spring ring	03.188.04.10.0	Ø 62 x 1.8	
449	Locking piece	03.277.00.07.0		
460	Hub cap	Standard chromate <sup>1)</sup>	03.212.25.31.0* M 136 x 2.5 / WAF 110 03.212.25.57.0* M 136 x 2.5 / WAF 110	

<sup>1)</sup> Not resistant to corrosion acc. to DIN EN ISO 9227

# Hubs, hub bearings 4

## Hub bearing 4.2

### ECO Plus 2 hub system (ECO Plus 2 Unit)



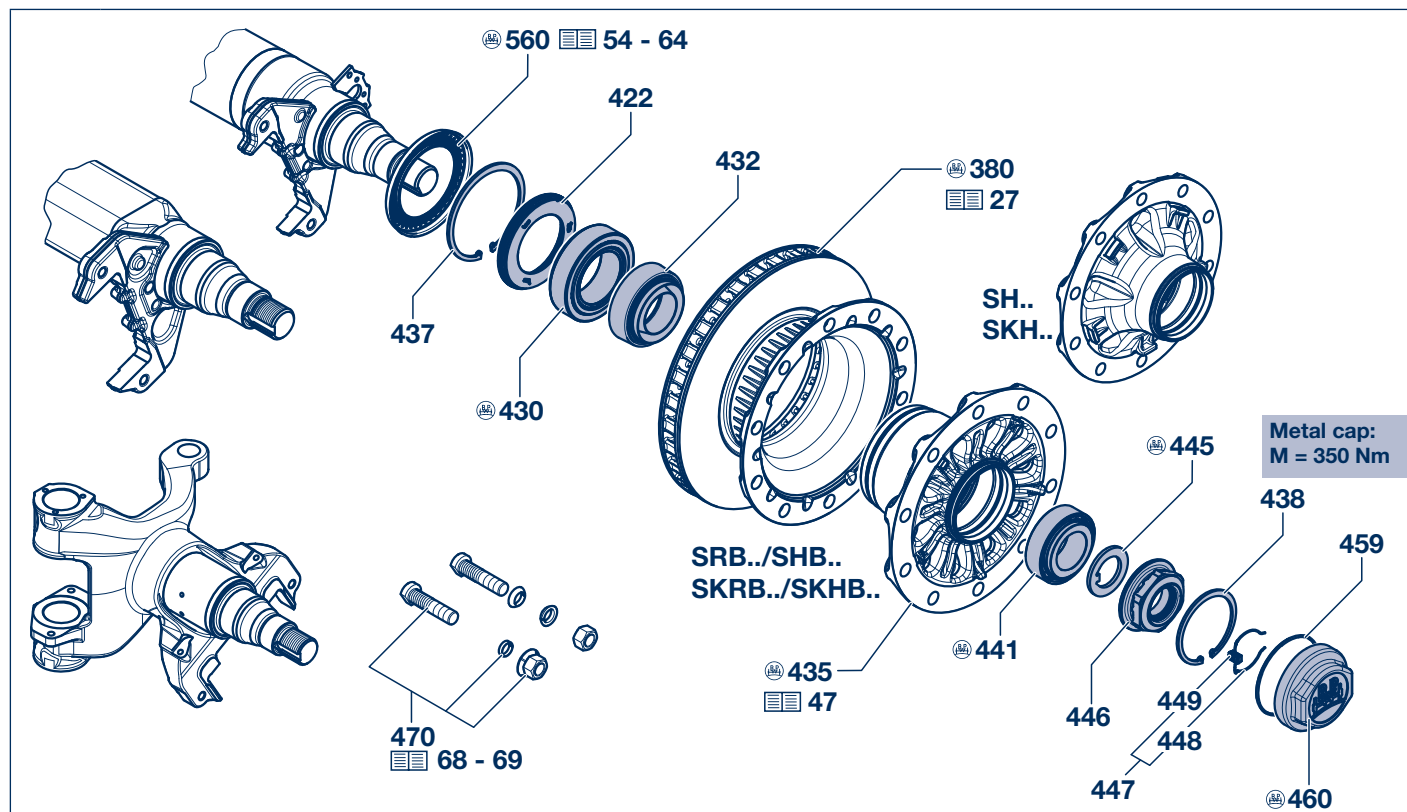
Item	Designation	BPW code no.	Dimension
	SH.. ECO Plus 2 SKH.. ECO Plus 2 8 - 9 t		--.58.---.--- / --.59.---.---
380	Brake disc	see page 27	
418	Roller bearing repair kit, <b>with</b> axle bolt and hub cap, item 422 - 432, 437 - 460	09.801.07.33.0	For 1 axle side
419	Roller bearing repair kit, <b>without</b> axle bolt and hub cap, item 422, 430, 437 - 441, 459	09.801.07.34.0	For 1 axle side
422	ECO <sup>Seal</sup> seal	02.5664.74.00	Ø 117.5 x 158 x 12.5
430	Roller bearings	02.6410.23.00	33118
435	Hub	see page 47	
437	Locking ring	02.5606.58.90	158 x 4 / 472
438	Locking ring	02.5606.22.90	122 x 4 / 472
441	Roller bearings	02.6410.22.00	33213
446	Axle bolt with toothed washer, (incl. item 447)	09.001.37.03.0	M 32 x 2 / WAF 46
447	Hooked spring ring cpl. item 448 + 449	05.188.03.10.0	
448	Hooked spring ring	03.188.03.09.0	
449	Locking piece	03.277.10.01.0	
459	O-ring	02.5678.65.00	Ø 128 x 3
460	Hub cap (bayonet), incl. item 459	Standard Chromate <sup>1)</sup>	05.212.25.78.0 Ø 137 / 142.6 x 56.3 / SW 120 05.212.25.81.0 Ø 137 / 142.6 x 56.3 / SW 120
470	Wheel studs	See page 68 - 69	
560	Exciter ring	See page 56 - 59	

<sup>1)</sup> Not resistant to corrosion acc. to DIN EN ISO 9227

## 4 Hubs, hub bearings

### 4.3 Hub bearing

#### ECO Plus 3 hub system (ECO Plus 3 Unit)



Item	Designation	BPW code no.	Dimension
		<b>SRB../SKRB.. ECO Plus 3</b>	
		<b>SH../SKH.. ECO Plus 3</b>	
		<b>8 - 9 t</b>	<b>--.68.--,----</b>
380	Brake disc	see page 27	
418	Roller bearing repair kit, <b>with</b> axle nut and hub cap, item 422 - 432, 437 - 460	<b>09.801.08.40.0</b>	For 1 axle side
419	Roller bearing repair kit, <b>without</b> axle nut and hub cap, item 422 - 432, 437 - 445, 459	<b>09.801.08.41.0</b>	For 1 axle side
422	ECO <sup>Seal</sup> seal	02.5664.77.00	Ø 117 / 158 x 15
430	Roller bearings	02.6410.23.00	33118
432	Grease cartridge	03.120.47.08.0	Ø 101 / 130 x 50
435	Hub	see page 47	
437	Locking ring	02.5606.58.90	158 x 4 / 472
438	Locking ring	02.5606.22.90	122 x 4 / 472
441	Roller bearings	02.6410.22.00	33213
445	Washer	03.320.65.05.0	Ø 53 / 83 x 5.8
446	Axle nut	05.266.47.11.0	M 52 x 2 / WAF 95
447	Hooked spring ring cpl. item 448 + 449	05.188.04.15.0	
448	Hooked spring ring	03.188.04.10.0	Ø 62 x 1.8
449	Locking piece	03.277.00.07.0	
459	O-ring	02.5678.72.00	Ø 126 x 3
460	Hub cap, incl. item 459	Standard <b>05.212.25.98.0</b> Chromate <sup>1)</sup> <b>05.212.25.99.0</b>	M 135 x 2 / H 48 / SW 110 M 135 x 2 / H 48 / SW 110
470	Wheel studs	See page 68 - 69	
560	Exciter ring	See page 54 - 59	

<sup>1)</sup> Not resistant to corrosion acc. to DIN EN ISO 9227



# Hubs, hub bearings 4

## Hubs 4.4

Item	Designation (remark)	Hub cap thread	Hub BPW code no.	Complete hub BPW code no.	
SKH..(LL) ECO <sup>Plus</sup> (TSB 3709)					
435	Hub		10 - 12 t --.50.---.---		
	220.8 / 275 / 8 x Ø 22				
	SKH.. ECO <sup>Plus</sup>	Steel and alloy wheels	M 136 x 2.5	03.272.46.30.2	09.801.06.59.2
	280.8 / 335 / 10 x Ø 22				
	SKH.. ECO <sup>Plus</sup>	Steel and alloy wheels	M 136 x 2.5	03.272.43.24.2	09.801.06.22.0
SH..(LL) ECO <sup>Plus</sup> (TSB 4309 / 4312)					
435	Hub		10 - 12 t --.50.---.---		
	280.8 / 335 / 10 x Ø 22				
	SH.. ECO <sup>Plus</sup>	Steel and alloy wheels	M 136 x 2.5	03.272.43.22.2	09.801.06.62.2
	SHZM.. ECO <sup>Plus</sup>	Alloy wheels		03.272.43.26.2	09.801.06.23.2
SKH..(LL) ECO Plus 2 (TSB 3709)					
435	Hub		8 - 9 t --.58.---.---		
	220.8 / 275 / 8 x Ø 22				
	SKH.. ECO Plus 2	Steel and alloy wheels	bayonet lock	03.272.46.33.0	09.801.07.36.0
	SKMZ..LL ECO Plus 2	Steel wheels			
	SKHZMLL ECO Plus 2	Alloy wheels			
	280.8 / 335 / 10 x Ø 22				
	SKH.. ECO Plus 2	Steel and alloy wheels	bayonet lock	03.272.43.29.0	09.801.07.35.0
	SKMS..LL ECO Plus 2	Steel wheels			
	SKHB.. ECO Plus 2	Steel and alloy wheels			
SH..(LL) ECO Plus 2 (TSB 4309 / 4312)					
435	Hub		8 - 9 t --.58.---.---		
	280.8 / 335 / 10 x Ø 22				
	SH.. ECO Plus 2	Steel and alloy wheels	bayonet lock	03.272.43.29.0	09.801.07.35.0
	SHSLL.. ECO Plus 2	Steel and alloy wheels			
	SMS..LL ECO Plus 2	Steel wheels			
	SMS..LL ECO Plus 2	Steel wheels	bayonet lock	03.272.43.28.0	09.801.07.32.0
	SHB.. ECO Plus 2	Steel and alloy wheels			
	SHB..LL ECO Plus 2	Steel and alloy wheels			
	SMB..LL ECO Plus 2	Steel wheels			
SKRB../SKH..(LL) ECO Plus 3 (TS2 3709 / TSB 3709)					
435	Hub		8 - 9 t --.68.--.---		
	220.8 / 275 / 8 x Ø 22				
	SKH.. ECO Plus 3	Steel and alloy wheels	M 135 x 2	03.272.46.37.0	09.801.08.48.0
	SKMZ..LL ECO Plus 3	Steel wheels			
	SKHZMLL ECO Plus 3	Alloy wheels			
	280.8 / 335 / 10 x Ø 22				
	SKRB../SKHB.. ECO Plus 3	Steel and alloy wheels	M 135 x 2	03.272.43.41.0	09.801.08.36.0
	SKH.. ECO Plus 3	Steel and alloy wheels		03.272.43.42.0	09.801.08.39.0
SRB../SH..(LL) ECO Plus 3 (TS2 4309 / TSB 4309)					
435	Hub		8 - 9 t --.68.--.---		
	280.8 / 335 / 10 x Ø 22				
	SRB../SHB.. ECO Plus 3	Steel and alloy wheels	M 135 x 2	03.272.43.41.0	09.801.08.36.0
	SH.. ECO Plus 3	Steel and alloy wheels			

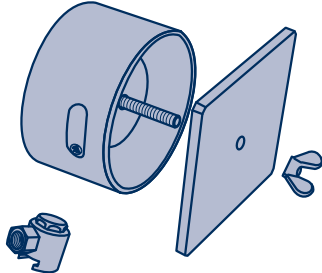
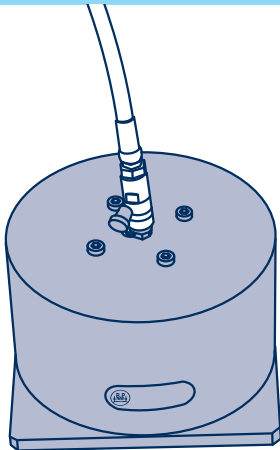
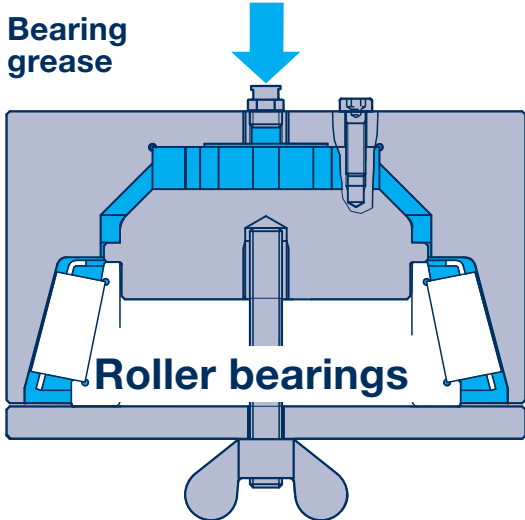
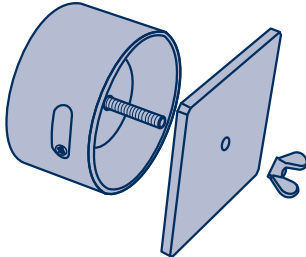
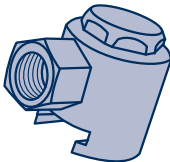
4

Hubs, hub bearings

4.5

Grease filling, bearing adjustment

Grease sprays

Grease sprays for greasing roller bearings				
				
				
Grease spray	for roller bearings	BPW code no. Grease spray, loose	BPW code no. Complete set	
	33118	16.062.22935	99.00.000.9.55	
	33213	16.068.22935		
	Complete set incl. adapter for flat-type grease nipple			
Adapter for flat-type grease nipple		BPW code no.		
		15.069.22935		

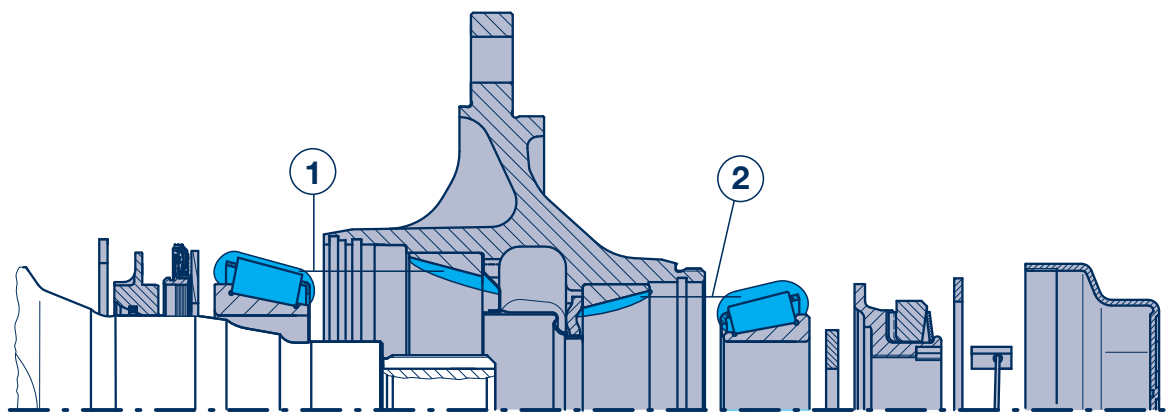
# Hubs, hub bearings 4

## Grease filling, bearing adjustment 4.6

### ECO<sup>Plus</sup> hub system (ECO<sup>Plus</sup> Unit)

#### Grease filling

#### ECO<sup>Plus</sup> hub system (ECO<sup>Plus</sup> Unit)



The ECO<sup>Plus</sup> hub system is designed for longlife lubrication. On expiry of the guarantee, the roller bearings, the inside of the hub and the seals must be thoroughly cleaned (with diesel oil), dried, checked to see if they can be re-used, and regreased every 3 years when used off-road, or every 5 years when used on the road within Europe (or every year when off-road and every 2 years when on the road outside of Europe) (observe the current BPW maintenance instructions).

Use a microfibre cloth to clean the bearing seats of the axle stub (metal must be bright, dry and free of grease) and apply **Castrol White T** thinly all around using a microfleece brush.

		BPW special longlife grease ECO-Li <sup>Plus</sup> , quantity of grease per roller bearing			
		① inner		② outer	
Axle load	Axle type	Roller bearings	Quantity of grease	Roller bearings	Quantity of grease
10000 - 12000 kg	SH.. 10 - 12 t ECO <sup>Plus</sup> SK.. 10 - 12 t ECO <sup>Plus</sup>	33118	170 g 130 g *	33213	120 g 90 g *

- ① + Work **BPW special longlife grease ECO-Li<sup>Plus</sup>** thoroughly into the spaces between the tapered rollers and the races, and apply the remaining amount in the bearing outer ring of the hub.

② \* Lubrication with grease spray see page 48.

For other procedures see the current maintenance instructions.

#### Bearing adjustment

#### ECO<sup>Plus</sup> hub system (ECO<sup>Plus</sup> Unit)

1. Unscrew the hub cap.
2. Remove the hooked spring ring with a wedge from the axle nut.
3. Tighten the axle nut while turning the wheel hub at the same time with a hexagon spanner until the tothing of the axle nut clicks round. Repair guide! Do not use an impact tool.
4. Fit the retaining key in the groove between the axle stub and the nut (do not reset the axle nut).
5. Insert the hooked spring ring behind the formed edge of the axle nut or into the thread on the axle stub, depending on the design.
6. Screw on the hub cap and tighten it to 800 Nm.

BPW special longlife grease ECO Li <sup>Plus</sup>	Container	BPW code no.
	0.4 kg cartridge	02.1040.45.00
	5 kg bucket	02.1040.47.00
	25 kg bucket	02.1040.49.00
	50 kg barrel	02.1040.50.00

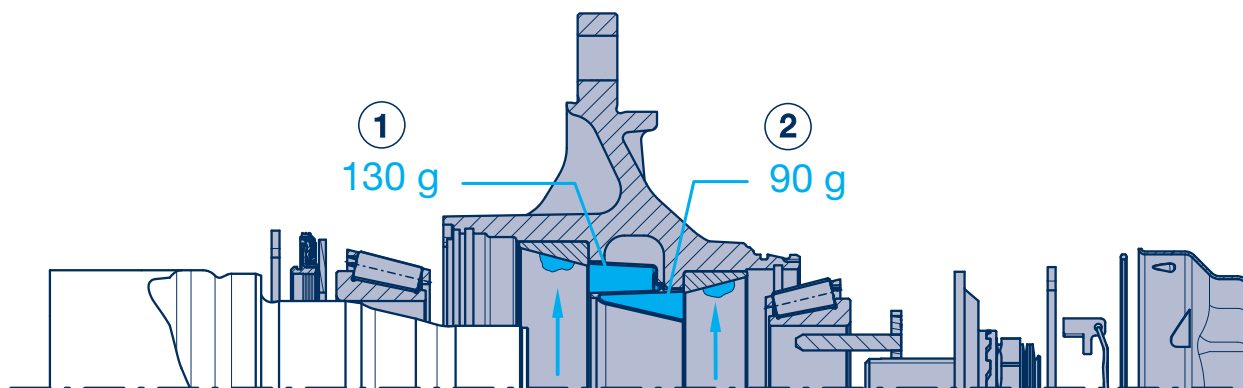
## 4 Hubs, hub bearings

### 4.7 Grease filling, bearing adjustment

#### ECO Plus 2 hub bearing (ECO Plus 2 Unit)

##### Grease filling

##### ECO Plus 2 hub system (ECO Plus 2 Unit)



The ECO Plus 2 Unit is designed for longlife lubrication. On expiry of the guarantee, the roller bearings, the inside of the hub and the seals must be thoroughly cleaned (with diesel oil), dried, checked to see if they can be re-used, and regreased every 3 years when used off-road, or every 5 years when used on the road within Europe (or every year when off-road and every 2 years when on the road outside of Europe) (observe the current BPW maintenance instructions).

Use a microfibre cloth to clean the bearing seats of the axle stub (metal must be bright, dry and free of grease) and apply **Castrol White T** thinly all around using a microfleece brush.

		BPW special longlife grease ECO-LI <sup>Plus</sup> , Quantity of grease per roller bearing			
		① inner		② outer	
Axle load	Axle type	Roller bearings	Quantity of grease	Roller bearings	Quantity of grease
8000 - 9000 kg	SH.. 8 - 9 t ECO Plus 2 SK.. 8 - 9 t ECO Plus 2	33118	130 g	33213	90 g

- ① Clean the grease cartridge and fill it up to the edge on both sides with **BPW special longlife grease ECO-LI<sup>Plus</sup>**.  
 ② Apply a ring-shaped bead of grease to the running surfaces of the bearing outer rings.

For other procedures see the current maintenance instructions.

When BPW grease sprays are used there is no need to fill the grease cartridge or to apply the bead of grease.

For lubrication with grease spray see page 48.

##### Bearing adjustment

##### ECO Plus 2 hub system (ECO Plus 2 Unit)

- Undo the hub cap by turning it approx. 30° in a counterclockwise direction (see page 40).  
When turned slightly further the hub cap lifts clearly away from the ECO Unit and can be removed by pulling it away axially.
- Remove the hooked spring ring and retaining key from the axle bolt.
- Tighten the axle bolt while at the same time turning the ECO Unit with a hexagon spanner (SW 46) until the tothing of the axle bolt clicks round.  
**Attention! Do not use an impact tool.**
- Insert the locking piece into the recess of the axle bolt and into the tothing of the toothed washer  
(Do not turn back the axle bolt).
- Insert the hooked spring ring into the groove at the end of the hexagon profile of the axle bolt.
- Insert a new O-ring into the groove in the wheel hub.
- Apply a thin layer of **BPW special longlife grease ECO-LI<sup>Plus</sup>** to the hub cap in the area of the O-ring contact surface and the bayonet lock.
- Put the hub cap on (position 1, page 40). Use the 120 mm hub cap spanner to lock the hub cap in place by turning approx. 30° in a clockwise direction, while at the same time pressing on the hub cap axially.  
Has a tight seat when it reaches position 2 (page 40).

**Repair guide! Do not use an impact driver- bayonet lock.**

Hubs, hub bearings

4

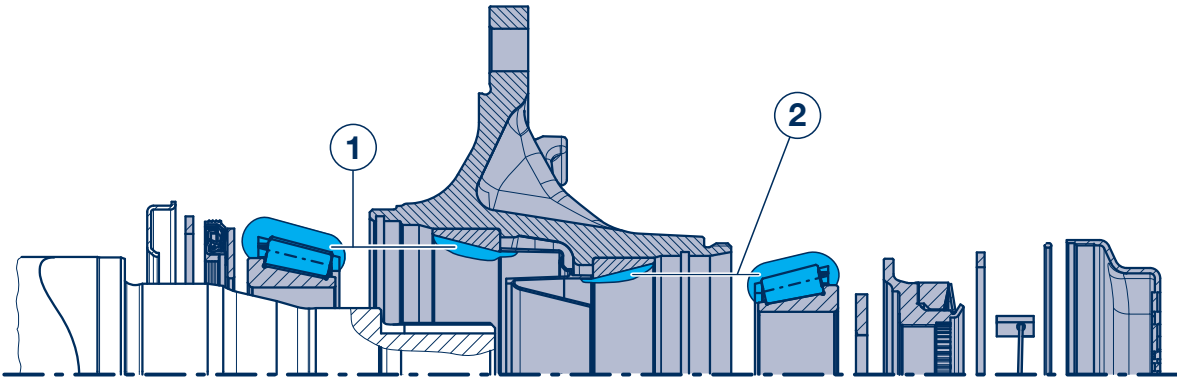
Grease filling, bearing adjustment

4.8

ECO Plus 3 hub system (ECO Plus 3 Unit)

Grease filling

ECO Plus 3 hub system (ECO Plus 3 Unit)



The ECO Plus 3 hub system is designed for the use of longlife lubrication. On expiry of the guarantee, the roller bearings, the inside of the hub and the seals must be thoroughly cleaned (with diesel oil), dried, checked to see if they can be re-used, and regreased every 3 years when used off-road, or every 5 years when used on the road within Europe (or every year when off-road and every 2 years when on the road outside of Europe) (observe the current BPW maintenance instructions). Use a microfibre cloth to clean the bearing seats of the axle stub (metal must be bright, dry and free of grease) and apply **Castrol White T** thinly all around using a microfleece brush.

		BPW special longlife grease ECO-Li <sup>Plus</sup> , quantity of grease per roller bearing			
		① inner		② outer	
Axle load	Axle type	Roller bearings	Quantity of grease	Roller bearings	Quantity of grease
8000 - 9000 kg	SR../SKR.. 9 t ECO Plus 3 SH../SKH.. 8 - 9 t ECO Plus 3	33118	170 g 130 g *	33213	120 g 90 g *

- ①  
+  
②
- Work **BPW special longlife grease ECO-Li<sup>Plus</sup>** thoroughly into the spaces between the tapered rollers and the races, and apply the remaining amount in the bearing outer ring of the hub.

\* Lubrication with grease spray see page 48.

For other procedures see the current maintenance instructions.

Bearing adjustment

ECO Plus 3 hub system (ECO Plus 3 Unit)

1.

Unscrew the hub cap.
2.

Remove the hooked spring ring with a wedge from the axle nut.
3.

Tighten the axle nut while turning the wheel hub at the same time with a hexagon spanner until the tothing of the axle nut clicks round. Repair guide! Do not use an impact tool.
4.

Fit the retaining key in the groove between the axle stub and the nut (do not reset the axle nut).
5.

Insert the hooked spring ring behind the formed edge of the axle nut or into the thread on the axle stub, depending on the design.
6.

Insert a new O-ring into the groove in the wheel hub.
7.

Screw on the hub cap and tighten it to 350 Nm.

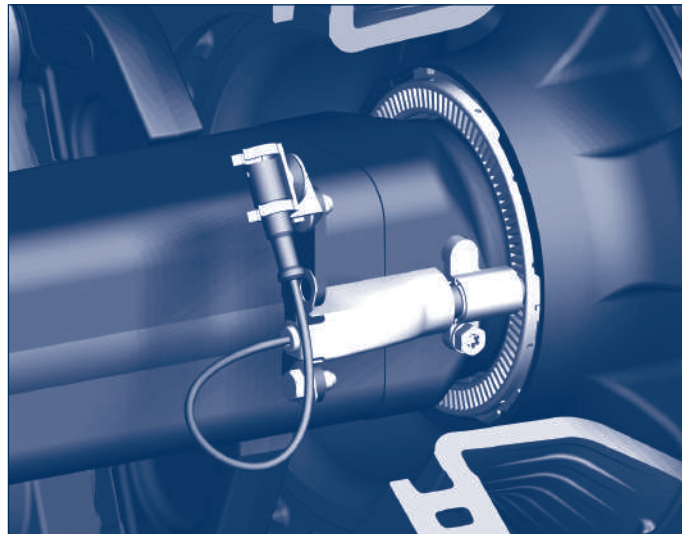
## 5 ABS

### General

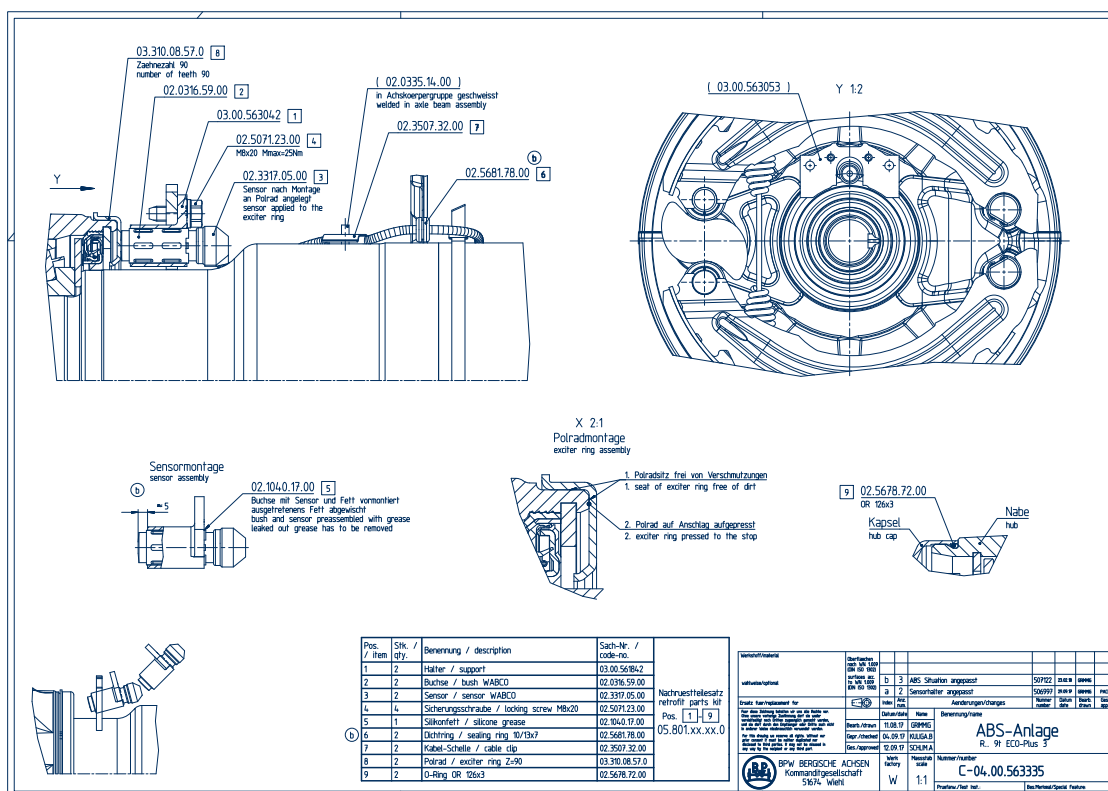
#### ABS

In the anti-lock brake system (ABS), the wheel movement is recorded using a proximity-type arrangement with an exciter ring attached to the hub and a sensor (speed sensor) that generates the pulses.

The wheel speed is continuously reported to the central control electronics from each wheel in this way. It has a complex program for processing the received information about the movement behaviour of the wheel and for calculating and logically linking the control signals. Using the pressure control valves assigned to each wheel, it adjusts the air pressure and therefore the braking of each individual wheel (depending on the ABS system).



Almost all BPW axles can be retrofitted with ABS without any problem. Simply attach the exciter rings, sensor brackets, sensors and attachment parts included in the supplementary installation kit to the axle according to the supplied mounting drawing and connect them to the vehicle electronics.





# ABS 5

## General

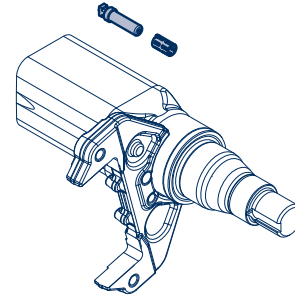
### Attachment of the sensor support

Various sensor attachments are used, depending on the axle design.

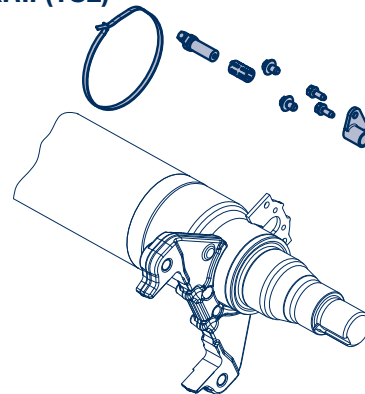
- ⊙ Sensor attachment on the brake anchor without any additional components

- ⊙ Bolted sensor attachment on the axle beam / steering pivot assembly

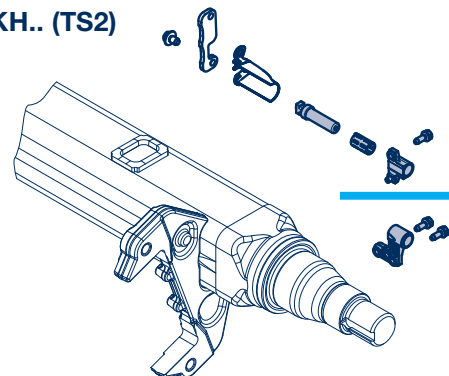
SH../SKH.. (TS2)



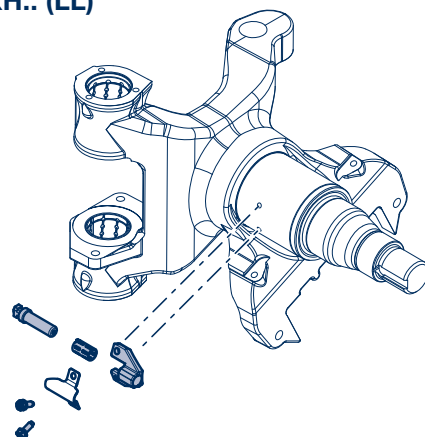
SR../SKR.. (TS2)



SH../SKH.. (TS2)



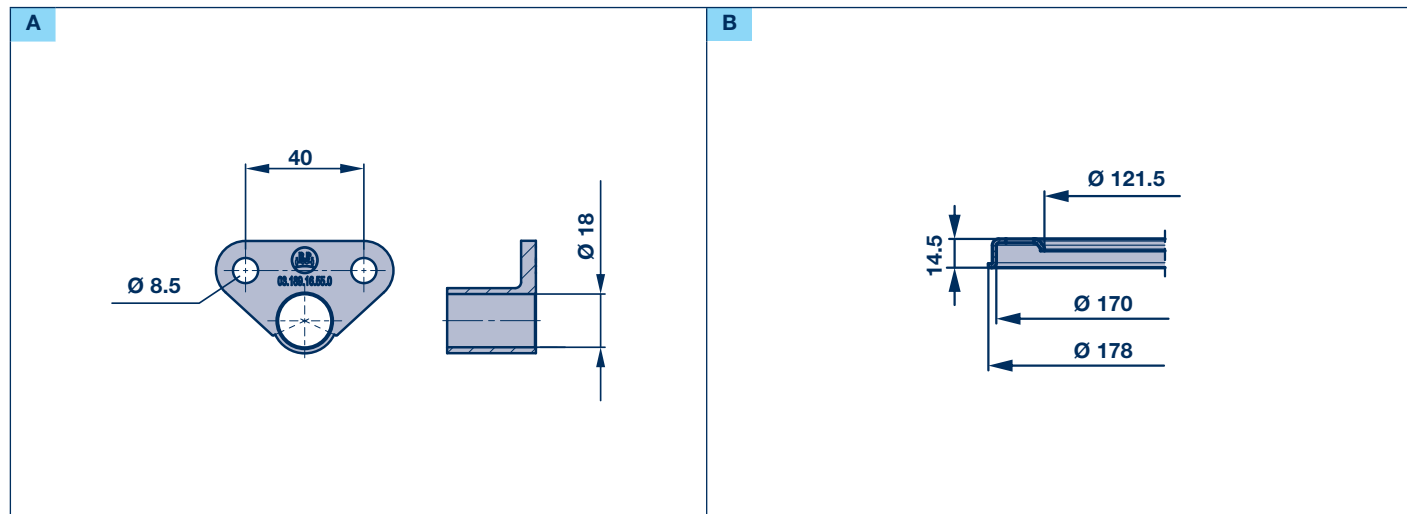
SH../SKH.. (LL)



## 5 ABS

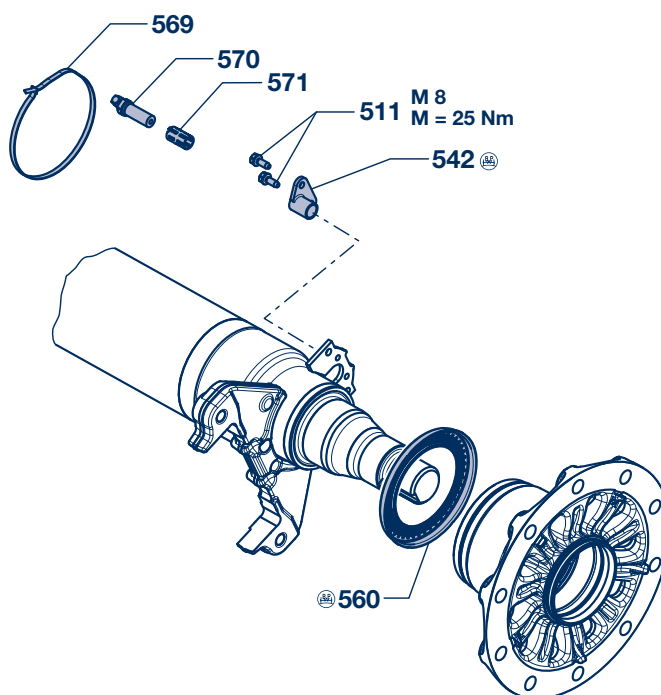
### 5.1 ABS spare parts (TS2)

#### Rigid axles



#### ECO Plus 3

**SKRB..**  
**SRB..**



**ABS 5****ABS spare parts (TS2) 5.1****Rigid axles****ABS spare parts  
TS2 3709 / 4309 – rigid axles**

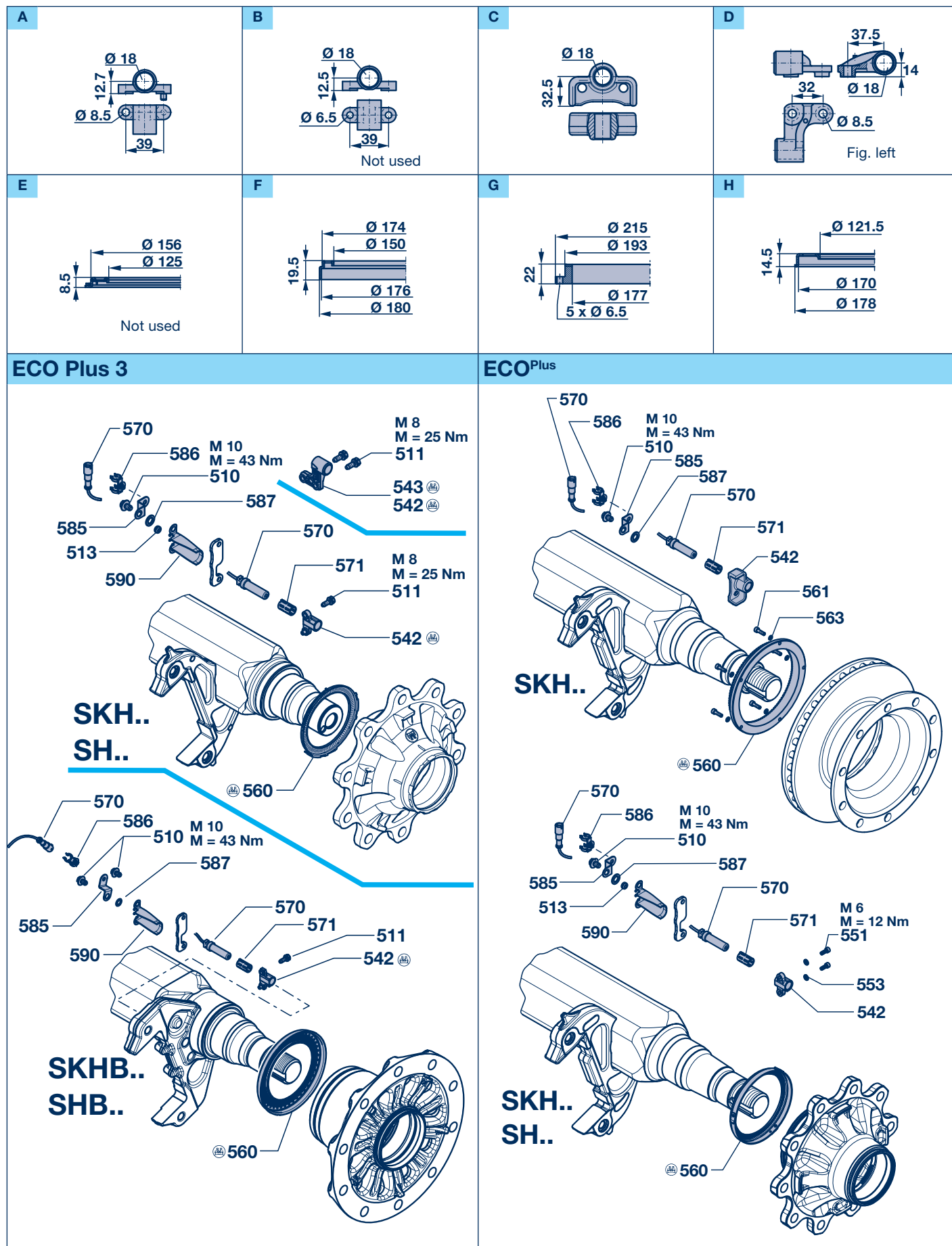
					TS2 3709	TS2 4309
					SKRB.. 9 t ECO Plus 3	SRB.. 9 t ECO Plus 3
Item	Designation	Dimension	Fig.	BPW code no.		
511	Locking screw	M 8 x 20		02.5071.23.00	●	●
542	Sensor bracket		A	03.189.16.55.0	●	●
560	Exciter ring	Ø 121.5 / 170 / 178 x 14.5 / Z = 90	B	03.310.08.57.0	●	●
569	Cable ties	540 x 7.5		02.1809.04.00	●	●
570	Sensor, cranked	L = 350		02.3317.05.00	●	●
571	Bush			02.0316.59.00	●	●

Supplementary installation kit ABS see page 64.

## 5 ABS

### 5.1 ABS spare parts (TS2)

#### Rigid axles



**ABS 5****ABS spare parts (TS2) 5.1****Rigid axles****ABS spare parts  
TS2 3709 / 4309 – rigid axles**

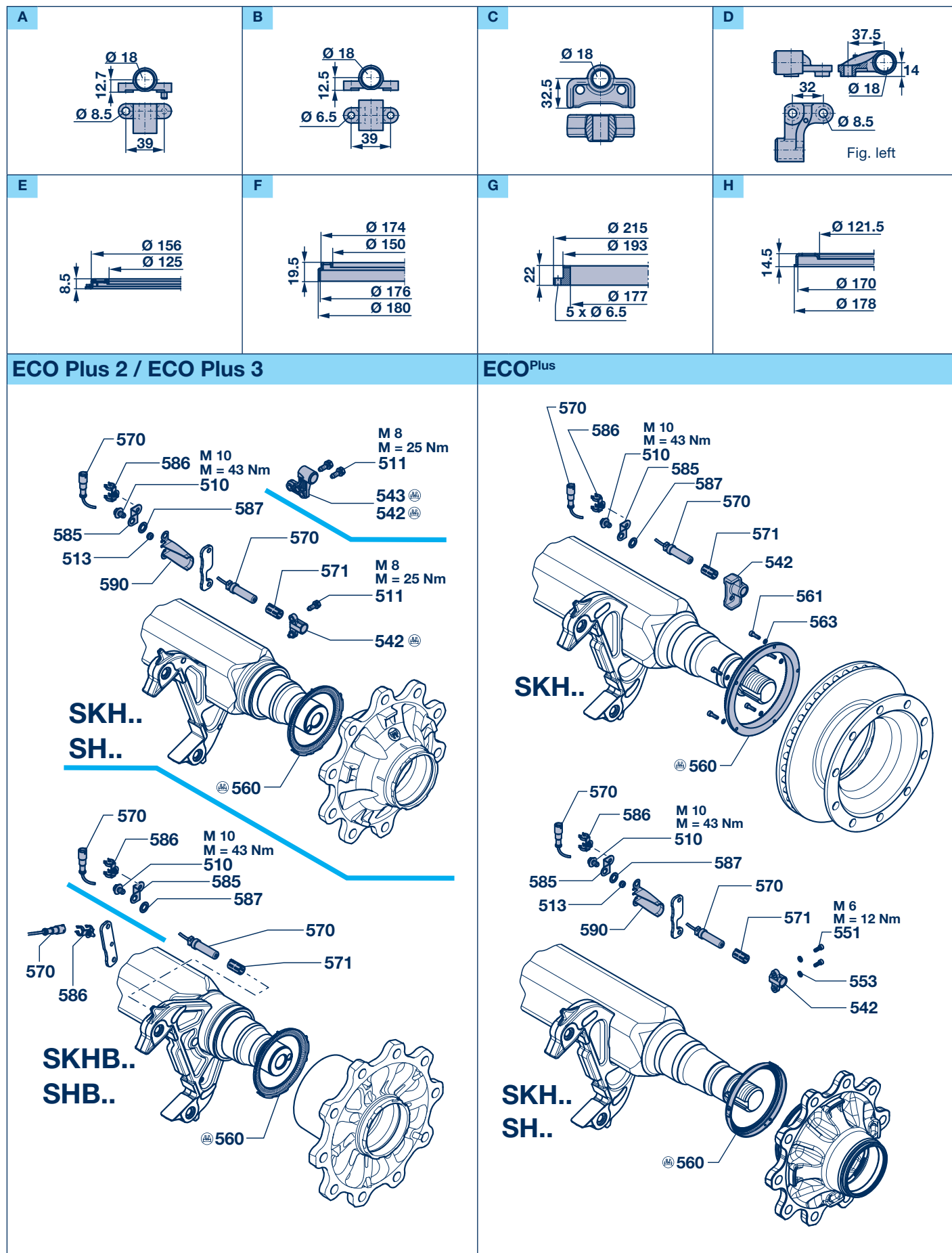
					TS2 3709			TS2 4309		
					SKHB.. 9 t ECO Plus 3	SKH.. 9010 ECO Plus 3 SKH.. 9008 ECO Plus 3	SKH.. 10008 / 100100 ECO <sup>Plus</sup>	SHB.. 9 t ECO Plus 3	SH.. 9010 ECO Plus 3	SH.. 10110 ECO <sup>Plus</sup>
Item	Designation	Dimension	Fig.	BPW code no.						
510	Locking screw	M 10 x 15		02.5071.22.00	●	●	●	●	●	●
511	Locking screw	M 8 x 20		02.5071.23.00		●		●	●	●
513	Cable protection			02.5681.78.00		●		●	●	
542	Sensor bracket		A	03.189.14.61.0		●		●	●	
			B	03.189.07.87.0						
			C	03.189.15.76.0			●			
542	Sensor bracket, right		D	03.189.07.58.0						●
543	Sensor bracket, left		D	03.189.07.59.0						●
560	Exciter ring	Ø 125 / 156 x 8.5 / Z = 100	E	03.310.08.51.0						
		Ø 121.5 / 170 / 178 x 14.5 / Z = 90	H	03.310.08.57.0	●	●		●	●	
		Ø 125 / 156 x 8.5 / Z = 80	E	03.310.08.53.0						
		Ø 150 / 174 / 176 / 180 x 19.5 / Z = 100	F	05.310.08.50.1						I
		Ø 177 / 193 / 215 x 14/22 Z = 80	G	03.310.09.38.0			●			
		Ø 177 / 193 / 215 x 14/22 Z = 100	G	03.310.09.39.0			●			
561	Cylinder cap screw	M 6 x 30 - 8.8		02.5015.48.82			●			
		M 6 x 20 - 8.8		02.5015.06.82			●			
563	Spring washer	Ø 6		02.5611.06.90			●			
570	Sensor, straight	L = 350		02.3317.07.00	●	●		●	●	●
	Sensor, cranked	L = 350		02.3317.05.00			●			
571	Bush			02.0316.59.00	●	●	●	●	●	●
					Sensor support at angled sheet					
510	Locking screw	M 10 x 15		02.5070.22.00	●	●	●	●	●	●
585	Support (angled sheet)	Short – L = 35		03.189.07.35.0	●	●	●	●	●	●
586	Retaining clip			02.1421.11.00	●	●	●	●	●	●
587	Serrated lock washer			02.5414.11.90	●	●	●	●	●	●
					Sensor support at attachment plate					
586	Retaining clip			02.1421.23.00	●	●	●	●	●	●
590	Heat conducting sheet			03.165.14.23.0		●			●	●
	Special grease	3 g		02.1040.17.00			●			

Supplementary installation kit ABS see page 64.

## 5 ABS

### 5.2 ABS spare parts (TSB)

#### Rigid axles





# ABS 5

## ABS spare parts (TSB) 5.2

### Rigid axles

#### ABS spare parts TSB 3709 / 4309 / 4312 – rigid axles

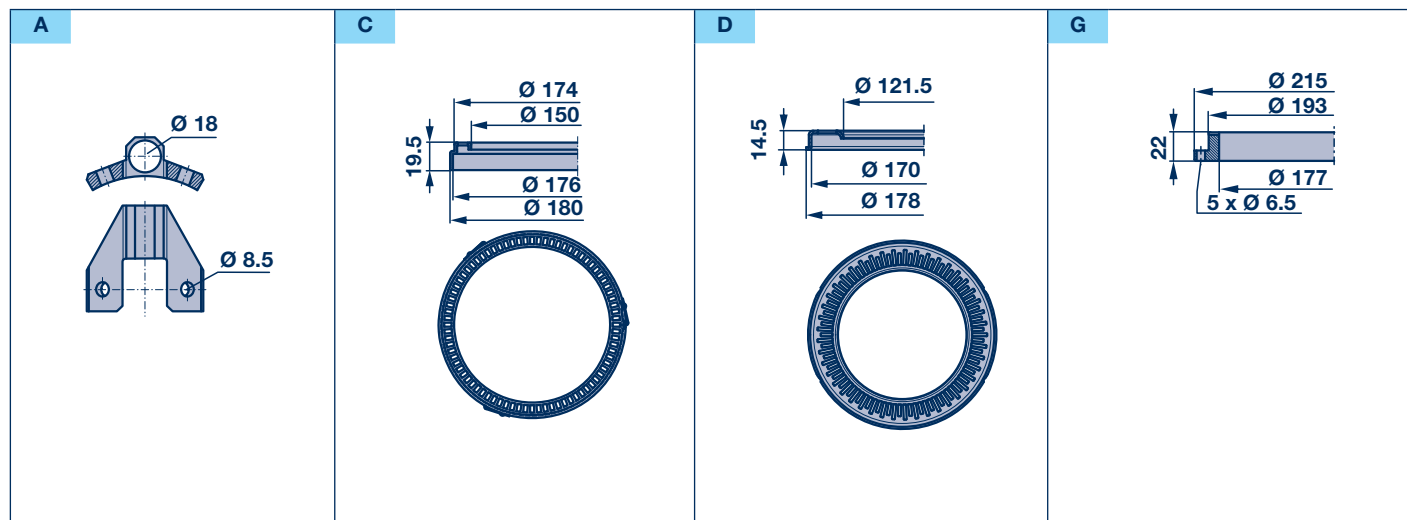
ABS spare parts TSB 3709 / 4309 / 4312 – rigid axles					TSB 3709										TSB 4309					TSB 4312			
					SKHB.. 8010 / 9010 ECO Plus 2	SKHB.. 8010 / 9010 ECO Plus 3	SKHS.. 8008 / 9008 ECO Plus 2	SKHZ.. 8008 / 9008 ECO Plus 2	SKHS.. 8010 / 9010 ECO Plus 2	SKHZ.. 8010 / 9010 ECO Plus 2	SKHS.. 8010 / 9010 ECO Plus 3	SKHZ.. 8010 / 9010 ECO Plus 3	SKH.. 10008 ECO <sup>Plus</sup>	SKH.. 10010 ECO <sup>Plus</sup>	SHB.. 8010 / 9010 ECO Plus 2	SHB.. 8010 / 9010 ECO Plus 3	SHS.. 8010 / 9010 ECO Plus 2	SHZ.. 8010 / 9010 ECO Plus 2	SHS.. 8010 / 9010 ECO Plus 3	SHZ.. 8010 / 9010 ECO Plus 3	SH.. 10110 ECO Plus 2	SHS.. 10010 - 12010 ECO <sup>Plus</sup>	SHZ.. 10010 - 12010 ECO <sup>Plus</sup>
Item	Designation	Dimension	Fig.	BPW code no.																			
510	Locking screw	M 10 x 15		02.5071.22.00			●	●							●			●					
511	Locking screw	M 8 x 20		02.5071.23.00			●	●	●						●		●	●					
513	Cable protection			02.5681.78.00				●	●						●			●					
542	Sensor bracket		A	03.189.14.61.0			●	●	●						●		●						
			B	03.189.07.87.0															●				
			C	03.189.15.76.0							●	●											
542	Sensor bracket, right		D	03.189.07.58.0														●					
543	Sensor bracket, left		D	03.189.07.59.0														●					
551	Cylinder cap screw	M 6 x 16		02.5015.00.80																●			
553	Spring washer	A 6		02.5601.06.90																●			
560	Exciter ring	Ø 125 / 156 x 8.5 / Z = 100	E	03.310.08.51.0	●				●				●		●								
		Ø 121.5 / 170 / 178 x 14.5 / Z = 90	H	03.310.08.57.0		●				●				●				●					
		Ø 125 / 156 x 8.5 / Z = 80	E	03.310.08.53.0			●																
		Ø 150 / 174 / 176 / 180 x 19.5 / Z = 100	F	05.310.08.50.1															●	●			
		Ø 177 / 193 / 215 x 14/22 Z = 80	G	03.310.09.38.0								●											
		Ø 177 / 193 / 215 x 14/22 Z = 100	G	03.310.09.39.0									●										
561	Cylinder cap screw	M 6 x 30 - 8.8		02.5015.48.82							●												
		M 6 x 20 - 8.8		02.5015.06.82								●											
563	Spring washer	Ø 6		02.5611.06.90							●	●											
570	Sensor, straight	L = 350		02.3317.07.00	●	●	●	●	●				●	●	●	●	●	●	●	●			
	Sensor, cranked	L = 350		02.3317.05.00							●	●											
571	Bush			02.0316.59.00								●											
					Sensor support at angled sheet																		
510	Locking screw	M 10 x 15		02.5070.22.00	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
585	Support (angled sheet)	Short – L = 35		03.189.07.35.0	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
586	Retaining clip			02.1421.11.00	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
587	Serrated lock washer			02.5414.11.90	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
					Sensor support at attachment plate																		
586	Retaining clip			02.1421.23.00	●	●		●					●	●				●					
590	Heat conducting sheet			03.165.14.23.0			●	●	●						●	●	●	●					
	Special grease	3 g		02.1040.17.00									●										

Supplementary installation kit ABS see page 64.

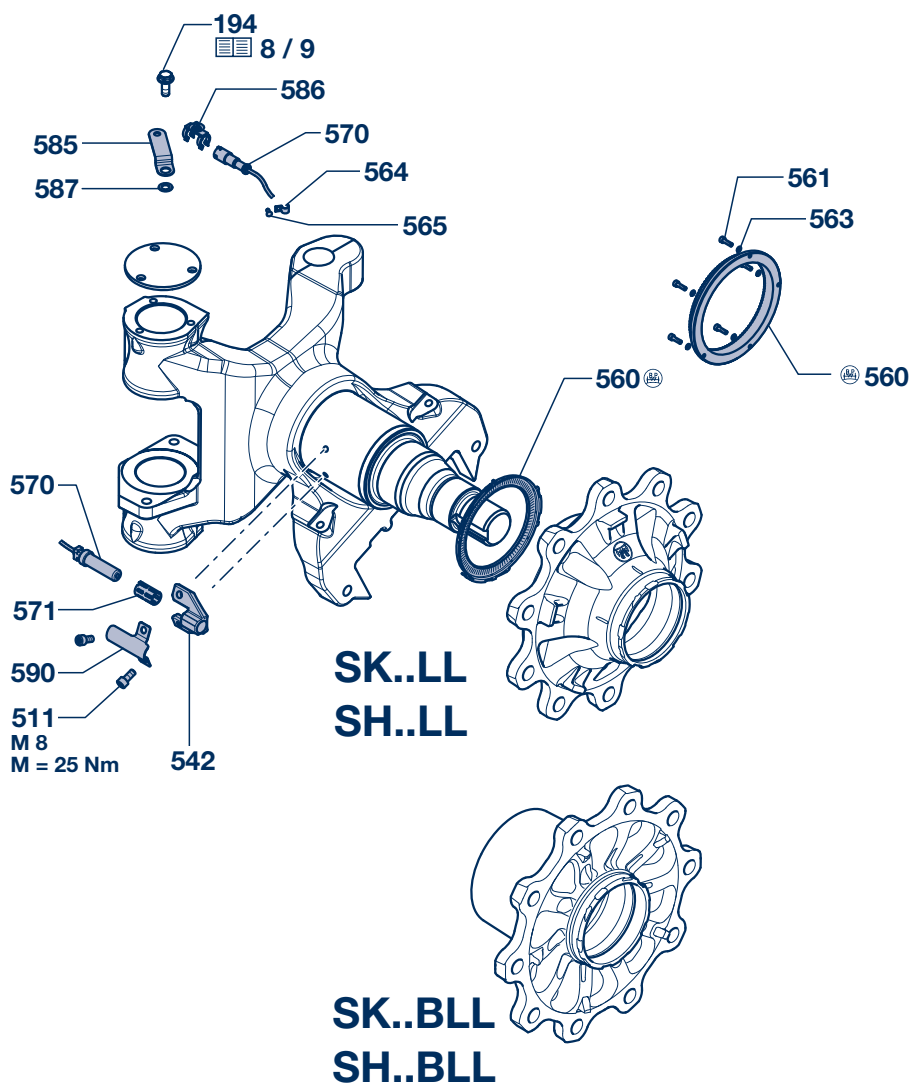
## 5 ABS

### 5.3 ABS spare parts (TS2)

#### Steering axles



#### BPW ECO Disc TS2 3709 / 4309 – Steering axles



**ABS 5****ABS spare parts (TS2) 5.3****Steering axles****ABS spare parts  
TS2 3709 / 4309 – Steering axles**

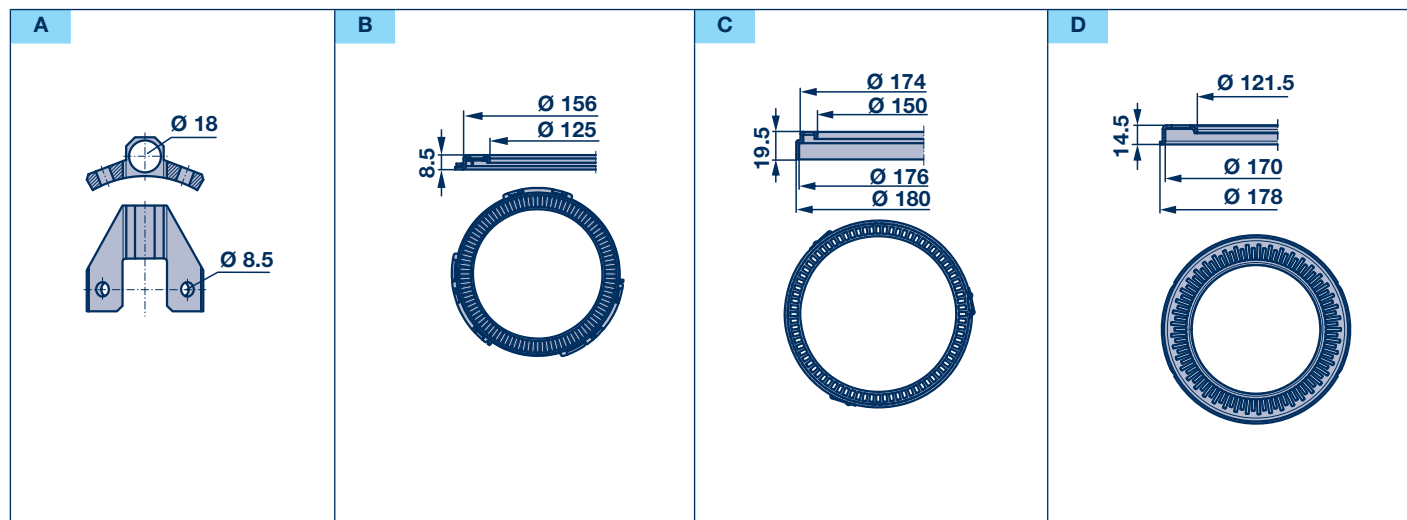
					TS2 3709				TS2 4309			
					SK..B..LL 9010 ECO Plus 3	SK..S..LL 9008 / 9010 ECO Plus 3 SK..Z..LL 9008 / 9010 ECO Plus 3	SK..S..LL 9008 / 9010 ECO Plus 3 SK..Z..LL 9008 ECO Plus 3	SK..Z..LL 1008 ECO Plus 3 SKM..Z..LL 1008 ECO Plus 3	SH..B..LL 9010 ECO Plus 3	SH..S..LL 9010 ECO Plus 3	SH..S..LL 9010 ECO Plus 3	SH..S..LL 1010 ECO Plus 3 SM..S..LL 1010 ECO Plus 3 SM..Z..LL 1010 ECO Plus 3
Item	Designation	Dimension	Fig.	BPW code no.								
511	Locking screw	M 8 x 20		02.5071.23.00	●	●	●		●	●	●	
542	Sensor bracket		A	03.189.14.86.0	●	●	●		●	●	●	●
551	Self tapping screw	M 8 x 30 / WAF 13		02.5047.16.00								●
552	Washer	A 8.4		02.5401.08.04								●
556	Sleeve	Ø 8.5 / 15 x 10		03.200.71.06.0								●
560	Exciter ring	Ø 121.5 / 170 / 178 x 14.5 / Z = 90	D	03.310.08.57.0	●	●	●		●	●	●	
		Ø 150 / 174 x 19.5 / Z = 100	C	05.310.08.50.1								●
		Ø 177 / 193 / 215 x 14/22 Z = 80	G	03.310.09.38.0				●				
561	Cylinder cap screw	M 6 x 30 - 8.8		02.5015.48.82				●				
563	Spring washer	Ø 6		02.5611.06.90				●				
564	Attachment	1 x 6		02.0326.32.00	●	●	●	●	●	●	●	●
565	Drive pin	Ø 4 x 10		02.6005.25.40	●	●	●	●	●	●	●	●
570	Sensor, straight	L = 350		02.3317.07.00	●	●	●	●	●	●	●	●
571	Bush			02.0316.59.00	●	●	●	●	●	●	●	●
585	Support (angled sheet)	Short – L = 35		03.189.07.35.0			●				●	
585	Support (angled sheet)	Long – L = 70		03.189.07.72.0	●	●		●	●	●		●
586	Retaining clip			02.1421.11.00	●	●	●	●	●	●	●	●
587	Serrated lock washer	A 10.5		02.5414.11.90	●	●		●	●	●		●
590	Heat conducting sheet			03.165.03.01.0		●	●			●	●	●
	Special grease	3 g		02.1040.17.00	●	●	●	●	●	●	●	●

Supplementary installation kit ABS see page 64.

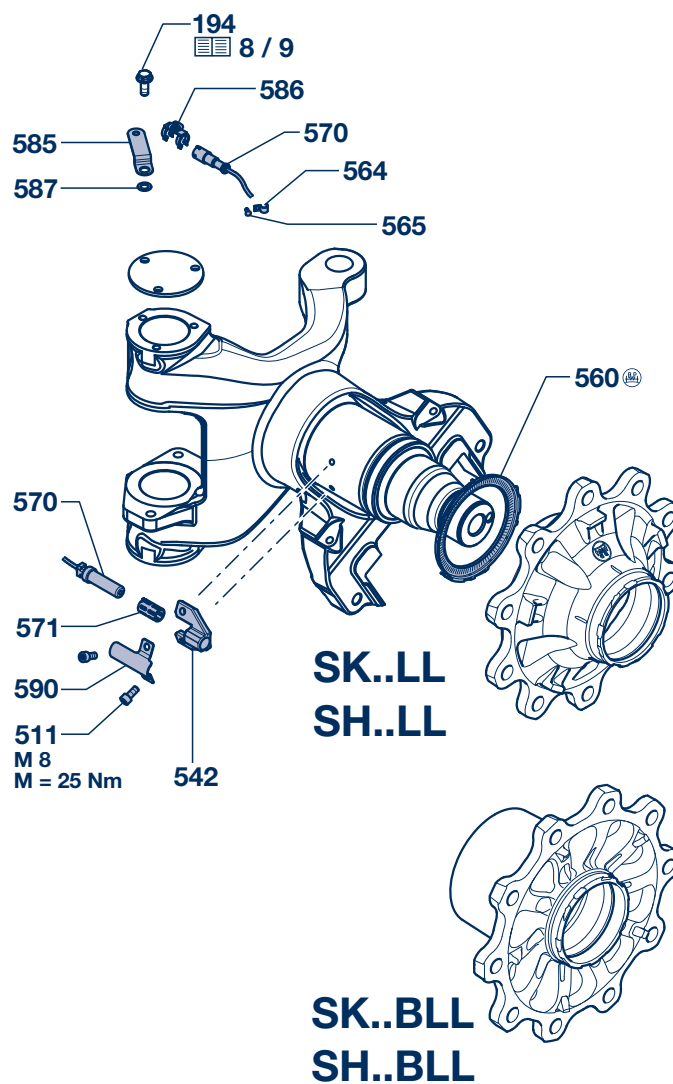
## 5 ABS

### 5.4 ABS spare parts (TSB)

#### Steering axles



#### BPW ECO Disc TSB 3709 / 4309 / 4312 – Steering axles



**ABS 5****ABS spare parts (TSB) 5.4****Steering axles**

ABS spare parts TSB 3709 / 4309 / 4312 – Steering axles					TSB 3709				TSB 4309				TSB 4312								
					SK..B..LL 7510 - 9010	SK..B..LL 7510 - 9010 ECO Plus 3	SK..S..LL 7510 - 9010 ECO Plus 3	SK..S..LL 8008 / 9008 SK..Z..LL 8008 / 9008	SK..S..LL 8010 / 9010 SK..Z..LL 8010 / 9010	SH..B..LL 8010 / 9010 SH..Z..LL 9010 / 9010	SH..B..LL 7510 - 9010 ECO Plus 3	SH..S..LL 7510 - 9010 ECO Plus 3	SH..S..LL 10110 SM..S..LL 10110 SM..Z..LL 10110	SM..S..LL 12110 SM..Z..LL 12110							
Item	Designation	Dimension	Fig.	BPW code no.																	
511	Locking screw	M 8 x 20	A	02.5071.23.00	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
542	Sensor bracket			03.189.14.86.0	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
551	Self tapping screw	M 8 x 30 / WAF 13		02.5047.16.00														●	●	●	
552	Washer	A 8.4		02.5401.08.04														●	●	●	
556	Sleeve	Ø 8.5 / 15 x 10		03.200.71.06.0														●	●	●	
560	Exciter ring	Ø 125 / 156 x 8.5 / Z = 100	B	03.310.08.51.0	●				●	●											
		Ø 121.5 / 170 / 178 x 14.5 / Z = 90	D	03.310.08.57.0		●	●					●	●								
		Ø 125 / 156 x 8.5 / Z = 80	B	03.310.08.53.0				●													
		Ø 150 / 174 x 19.5 / Z = 100	C	05.310.08.50.1														●	●		
564	Attachment	1 x 6		02.0326.32.00	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
565	Drive pin	Ø 4 x 10		02.6005.25.40	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
570	Sensor, straight	L = 350		02.3317.07.00	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
571	Bush			02.0316.59.00	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
585	Support (angled sheet)	Long – L = 70		03.189.07.72.0	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
586	Retaining clip			02.1421.11.00	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
587	Serrated lock washer	A 10.5		02.5414.11.90	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
590	Heat conducting sheet			03.165.03.01.0	●		●	●	●	●	●		●	●	●	●	●	●	●	●	
	Special grease	3 g		02.1040.17.00	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	

Supplementary installation kit ABS see page 64.

## 5 ABS

### 5.5 ABS spare parts (TS2/TSB)

#### Supplementary installation kit ABS for rigid and steering axles

Supplementary installation kit ABS for rigid and steering axles							
Supplementary installation kit ABS for one axle, consisting of exciter rings, sensors, sensor brackets, attachment parts and assembly drawings.				Alternative versions on request..			For ABS Wabco / Bosch also for Grau-Girling DGX / Grau-Girling MGX 100 / Knorr
Axle type	Pitch circle (TK)	Comments	BPW drawing	Brake	Bearing	Teeth / exciter ring	BPW code no.
SKRB.. 9 t	335	○	C-04.00.567297	TS2 3709	ECO Plus 3	90	05.801.75.19.0
SKHB.. 9 t	285		C-04.00.561695		ECO Plus 3	90	05.801.75.07.0
SKH.. 9010	335		C-04.00.561696		ECO Plus 3	90	05.801.75.08.0
SKH.. 9008	275		C-04.00.561696		ECO Plus 3	90	05.801.75.08.0
SKHB..LL 9010	335		B-04.00.563187		ECO Plus 3	90	05.801.75.16.0
SKH..LL 9008	275	ABS support = long	B-04.00.563173		ECO Plus 3	90	05.801.75.17.0
SKH..LL 9010	335	ABS support = long	B-04.00.563173		ECO Plus 3	90	05.801.75.17.0
SKH..LL 9008	275	ABS support = short	B-04.00.566423		ECO Plus 3	90	05.801.75.18.0
SKH..LL 9010	335	ABS support = short	B-04.00.566423		ECO Plus 3	90	05.801.75.18.0
SKH.. 10008	275		C-04.00.562656		ECO Plus	80	05.801.75.13.0
SKH.. 10010	335		C-04.00.562656		ECO Plus	100	05.801.75.12.0
SKH..LL 10008	275		C-04.00.510097		ECO Plus	80	05.801.74.26.0
SKH..LL 10010	335		C-04.00.510097		ECO Plus	100	05.801.74.25.0
SKH..LL 10010	335		C-04.00.510097		ECO Plus	100	05.801.74.25.0
SRB.. 9 t	335	○	C-04.00.567297	TS2 4309	ECO Plus 3	90	05.801.75.19.0
SHB.. 9 t	285		C-04.00.561695		ECO Plus 3	90	05.801.75.07.0
SH.. 9010	335		C-04.00.561696		ECO Plus 3	90	05.801.75.08.0
SH.. 10110	285		C-04.00.562503		ECO Plus	100	05.801.75.11.0
SHB..LL 9010	335		B-04.00.563187		ECO Plus 3	90	05.801.75.16.0
SH..LL 9010	335	ABS support = long	B-04.00.563173		ECO Plus 3	90	05.801.75.17.0
SH..LL 9010	335	ABS support = short	B-04.00.566423		ECO Plus 3	90	05.801.75.18.0
SH..LL 10010	335	□ 120	B-04.00.566423		ECO Plus 3	90	05.801.75.18.0
SM..LL 10010	335		C-04.00.510096		ECO Plus	100	05.801.74.24.0
SKH.. 8008 - 9008	275	□ 120	C-04.00.533322	TSB 3709	ECO Plus 2	80	05.801.74.55.0
SKH.. 8010 - 9010	335	□ 120	C-04.00.533322		ECO Plus 2	100	05.801.74.54.0
SKH.. 9010	335		C-04.00.553150		ECO Plus 3	90	05.801.74.88.0
SKH..LL 8008 - 9008	275		C-04.00.510065		ECO Plus	80	05.801.74.23.0
SKH..LL 8010 - 9010	335		C-04.00.510065		ECO Plus	100	05.801.74.22.0
SKH.. 10008	275	□ 150	C-04.00.533324		ECO Plus	80	05.801.74.58.0
SKH.. 10010	335	□ 150	C-04.00.533324		ECO Plus	100	05.801.74.57.0
SKHB.. 9010	335	□ 120	C-04.00.533323		ECO Plus 2	100	05.801.74.56.0
SKHB.. 9010	335		C-04.00.551507		ECO Plus 3	90	05.801.74.85.0
SKHB..LL 9010	335		B-04.00.551513		ECO Plus 3	90	05.801.74.87.0
SKHS..LL 9010	335		B-04.00.553204		ECO Plus 3	90	05.801.74.89.0
SH.. 8010 - 9010	335	□ 120	C-04.00.533322	TSB 4309	ECO Plus 2	100	05.801.74.54.0
SH..LL 8010 - 9010	335		C-04.00.510065		ECO Plus	100	05.801.74.22.0
SHB.. 9010	335	□ 120	C-04.00.533323		ECO Plus 2	100	05.801.74.56.0
SHB.. 9010	335		C-04.00.551507		ECO Plus 3	90	05.801.74.85.0
SH.. 9010	335		C-04.00.553150		ECO Plus 3	90	05.801.74.88.0
SHB..LL 9010	335		B-04.00.551513		ECO Plus 3	90	05.801.74.87.0
SHS..LL 9010	335		B-04.00.553204		ECO Plus 3	90	05.801.74.89.0
SM..LL 10110	335	□ 120	C-04.00.510096		ECO Plus	100	05.801.74.24.0
SM..LL 12110	335	□ 120	C-04.00.544236	TSB 4312	ECO Plus	100	05.801.71.60.0



**ABS 5****ABS spare parts (TS2/TSB) 5.5****Supplementary installation kit ABS for rigid and steering axles**

<b>Supplementary installation kit ABS (without exciter ring) for rigid and steering axles</b>						
Supplementary installation kit ABS (without exciter ring) for one axle, consisting of sensors, sensor brackets, attachment parts and assembly drawings.					For <b>ABS Wabco / Bosch</b> also for <b>Grau-Girling DGX /</b> <b>Grau-Girling MGX 100 / Knorr</b>	
Axle type	Pitch circle (TK)	Comments	BPW drawing	Brake	Bearing	BPW code no.
<b>SKHB.. 9 t</b>	285		C-04.00.561695	<b>TS2 3709</b>	ECO Plus 3	05.801.75.26.0
<b>SHB.. 9 t</b>	285		C-04.00.561695	<b>TS2 4309</b>	ECO Plus 3	05.801.75.26.0
<b>SKH.. 8010 - 9010</b>	335	□ 120	C-04.00.533322	<b>TSB 3709</b>	ECO Plus 2	05.801.74.62.0
<b>SKH.. 9010</b>	335		C-04.00.553150		ECO Plus 3	05.801.75.01.0
<b>SKHB.. 9010</b>	335		C-04.00.551507		ECO Plus 3	05.801.74.91.0
<b>SKHB..LL 9010</b>	335		C-04.00.540768		ECO Plus 2	05.801.74.61.0
<b>SKHS..LL 9010</b>	335		B-04.00.551513		ECO Plus 3	05.801.75.04.0
<b>SH.. 8010 - 9010</b>	335	□ 120	C-04.00.533322	<b>TSB 4309</b>	ECO Plus 2	05.801.74.62.0
<b>SHB.. 9010</b>	335		C-04.00.551507		ECO Plus 3	05.801.74.91.0
<b>SH.. 9010</b>	335		C-04.00.553150		ECO Plus 3	05.801.75.01.0
<b>SHB..LL 9010</b>	335		C-04.00.540768		ECO Plus 2	05.801.74.61.0
<b>SHS..LL 9010</b>	335		B-04.00.551513		ECO Plus 3	05.801.75.04.0
<b>SM.. 8010 - 9010</b>	335	□ 120	C-04.00.533322	<b>TSB 4312</b>	ECO Plus 2	05.801.74.62.0

## 6 Wheel studs

### General

#### BPW wheel studs

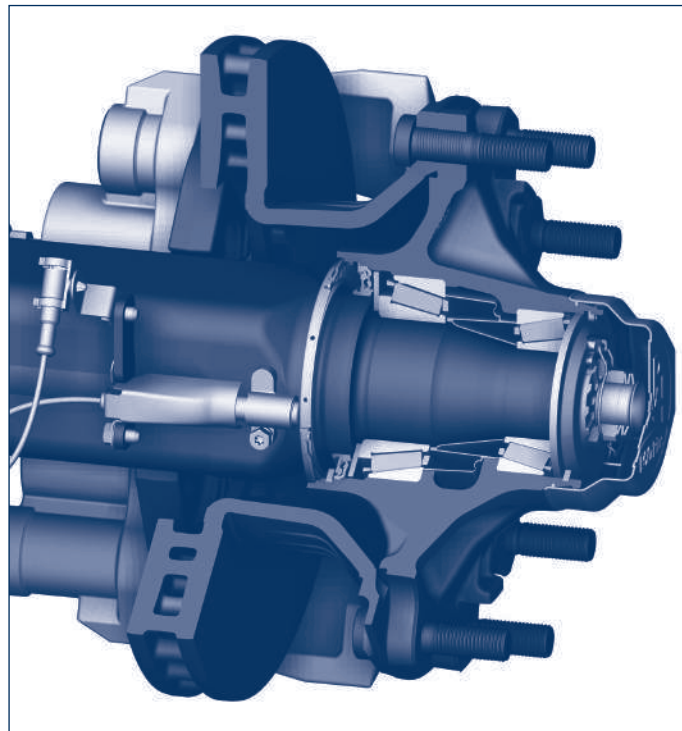
The wheel brace (or wheel disc) connects the rim with the wheel hub and must absorb the high, lateral and longitudinal forces that occur and transmit them to the wheel hub via the wheel studs (wheel screws).

BPW axles with disc brakes are suitable for wheels with either stud or spigot alignment, and with a few exceptions they are all supplied with helical fit wheel bolts.

Helical studs are easy to maintain and connect the brake disc to the hub using a pressfit. As a result, there is no need for internal nuts.

The hub bore is not damaged even after several removal/fitting operations (in contrast to splined bolts) and the clamping forces for the wheel studs remain constant.

The prescribed BPW tightening torques for wheel fastening are listed in the current BPW maintenance instructions and must be observed.

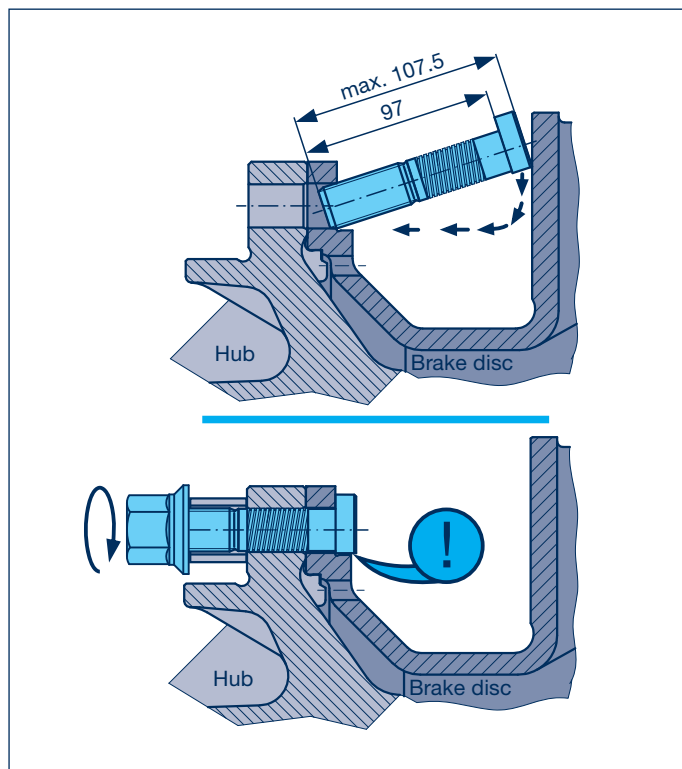


#### Assembly of the wheel studs

The helical fit wheel bolt is inserted from the rear through the hole in the brake disc / hub.

Then a sleeve is pushed over it, a wheel nut is applied and the wheel stud is drawn into its final position.

 **It is important to ensure that the flattened head of the wheel bolt sits correctly!**

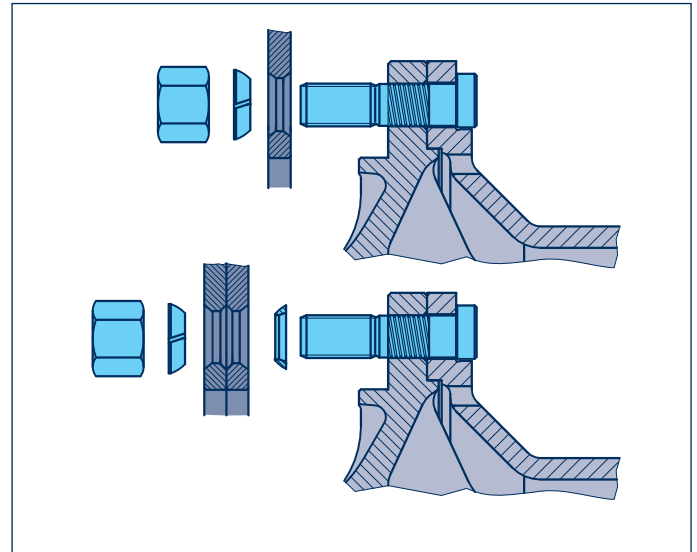


# Wheel stud 6

## General

### Wheel stud alignment

In stud alignment, the wheel brace (with countersunk stud holes) is centred using wheel studs with (spring) centring rings.

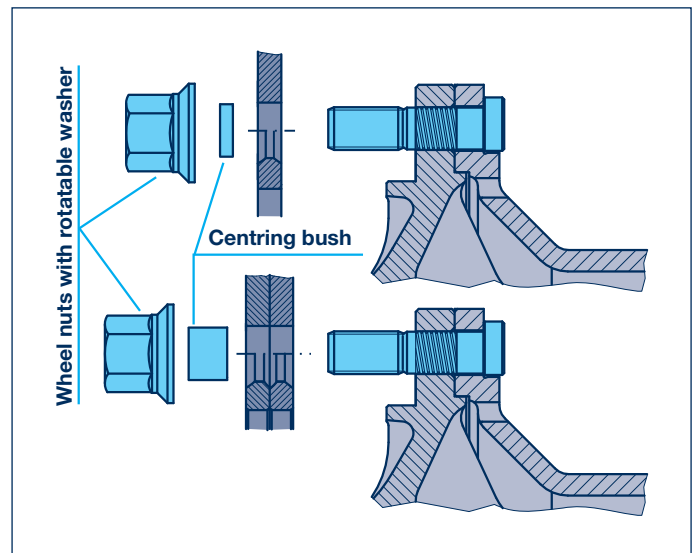


### Spigot alignment

In spigot alignment, the wheel brace is centred using a centring spigot or ring surfaces on the wheel hub.

Centring bushes may be mounted on two opposing wheel studs of each hub in the case of wheels with spigot alignment. This is not necessary, however.

Centring bushes must be mounted on two opposing wheel studs of each hub in the case of wheels with mixed centring.



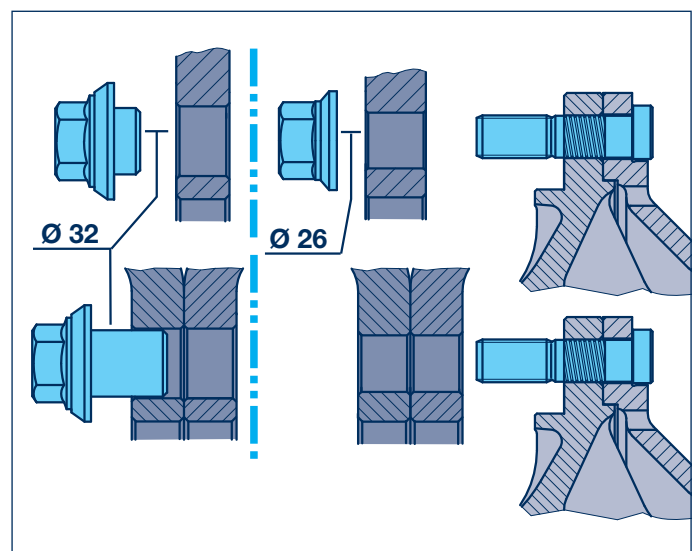
### Alloy wheels

In the case of alloy wheels, the wheel brace is centred using a centring cam or ring surfaces on the wheel hub. As the flange thickness is greater with alloy wheels than with steel wheels, it is important to check whether the axles are suitable for fitting alloy wheels (with 26 mm-diameter hole).

In the case of twin wheels the available centring seat and wheel studs must be of adequate length (i.e. the thread of the wheel nut must be completely engaged with the wheel bolt thread).

If not, alloy wheels with stud hole  $\varnothing 32$  can be used in conjunction with shaft nuts without replacing the hub or the wheel studs.

(The wheel is not centred by the shaft nuts.)



## 6 Wheel studs

### 6.1 Single wheels / twin wheels

Wheel studs	Hub	Wheel type						Wheel nuts			Fig.	Item 470		Item 472	Item 477	Item 476			
	Steel hub	Steel wheel with offset (120)	Steel wheels without offset	Alloy wheel Ø 26 with offset (120)	Alloy wheel Ø 26 without offset	Alloy wheel Ø 32 with offset (120)	Alloy wheel Ø 32 without offset	Wheel stud alignment:	Spigot alignment	Standard SW 32	Cap nut SW 33	Shaft nut SW 32	Wheel stud assembly cpl. 09.806. (item 472-474, 477-479)	Dimension of wheel studs L / L1	Wheel studs 03,296.	Centering ring <sup>1)</sup> 03,310.	Bush <sup>2)</sup> 03,112.		
Single wheels																			
Helical bolt	Wheel stud alignment:																		
	●	●	●					●		●			1 A	33.75.0	80 / 45	33.11.1	-	-	
	●	●	●					●		●			1 A	33.80.0	93 / 58	33.21.1	-	-	
	Spigot alignment																		
	●		●						●	●			1 C	33.11.0	89 / 54	33.14.1	-	00.43.0	
	●	●	●						●	●			1 C	33.76.0	80 / 45	33.11.1	-	00.43.0	
	●	●	●						●	●			1 C	33.81.0	93 / 58	33.21.1	-	00.43.0	
	●		●						●		●		1 C	33.61.0	89 / 54	33.14.1	-	00.43.0	
	●		●						●		●		1 C	33.77.0	80 / 45	33.11.1	-	00.43.0	
	Alloy wheels Ø 26																		
	●			●	●					●			1 E	33.68.0	97 / 62	33.12.1	-	-	
	●			●	●					●			1 E	33.81.0	93 / 58	33.21.1	-	-	
	●				●						●		1 E	33.69.0	97 / 62	33.12.1	-	-	
	●				●						●		1 E	33.82.0	93 / 58	33.21.1	-	-	
	Alloy wheels Ø 32																		
	●					●							●	1 F	33.78.0	80 / 45	33.11.1	-	-
	●					●							●	1 F	33.83.0	93 / 58	33.21.1	-	-
	●						●						●	1 F	33.79.0	97 / 62	33.12.1	-	-
	●						●						●	1 F	33.83.0	93 / 58	33.21.1	-	-
	Twin wheels																		
Helical bolt	Wheel stud alignment:																		
	●		●					●		●			1 B	33.67.0	97 / 62	33.12.1	10.13.0	-	
	●		●					●		●			1 B	33.80.0	93 / 58	33.21.1	10.13.0	-	
	Spigot alignment																		
	●		●						●	●			1 D	33.68.0	97 / 62	33.12.1	-	00.42.0	
	●		●						●	●			1 D	33.81.0	93 / 58	33.21.1	-	00.42.0	
	Alloy wheels Ø 32																		
●						●						●	1 G	33.84.0	89 / 54	33.14.1	-	-	
●						●						●	1 G	33.85.0	97 / 62	33.12.1	-	-	

<sup>1)</sup> Centering ring with helical fit wheel bolts and twin wheels

<sup>2)</sup> Bush not included in wheel stud assembly 09.806.... (page 67)

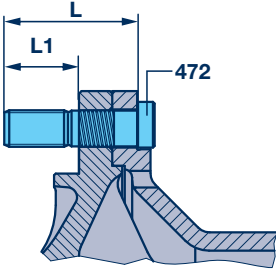
SW = spanner width

Wheel stud6

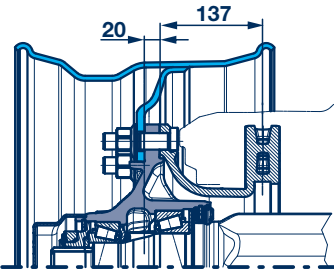
Single wheels / twin wheels6.1

Item 478		Item 479
Spring washer 02.5615.		Wheel nuts
22.90		03.260.04.12.0
22.90		03.260.04.12.0
-		05.260.54.10.0
-		05.260.54.10.0
-		05.260.54.10.0
-		05.260.54.19.0
-		05.260.54.19.0
-		05.260.54.10.0
-		05.260.54.10.0
-		05.260.54.19.0
-		05.260.54.19.0
-		05.260.54.21.1
-		05.260.54.21.1
-		05.260.54.21.1
-		05.260.54.21.1
22.90		03.260.04.12.0
22.90		03.260.04.12.0
-		05.260.54.10.0
-		05.260.54.10.0
-		05.260.54.14.1
-		05.260.54.14.1

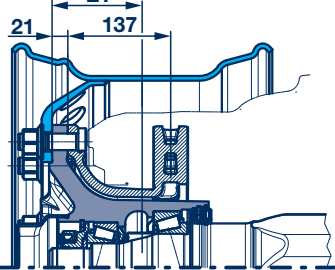
Helical fit wheel bolt  
Steel hub1

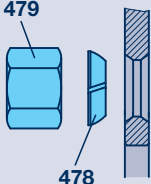
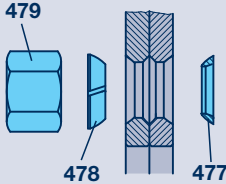
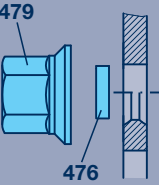
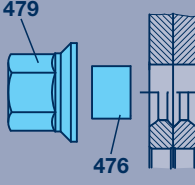
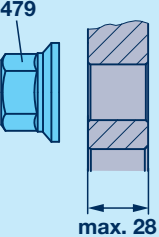
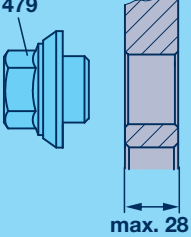
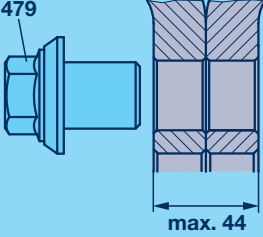


ET 0



ET 120



Single wheels	Twin wheels											
<div>Steel wheels Stud alignmentA</div> <div></div>	<div>B</div> <div></div>	<div>Tightening torques for wheel nuts item 479</div> <table><tr><th>Thread</th><th>Wheel stud alignment:</th></tr><tr><td>M 18 x 1.5</td><td>290 Nm (275-305)</td></tr><tr><td>M 20 x 1.5</td><td>380 Nm (360-400)</td></tr><tr><td>M 22 x 1.5</td><td>510 Nm (485-535)</td></tr><tr><td>M 22 x 2</td><td>460 Nm (435-485)</td></tr></table>	Thread	Wheel stud alignment:	M 18 x 1.5	290 Nm (275-305)	M 20 x 1.5	380 Nm (360-400)	M 22 x 1.5	510 Nm (485-535)	M 22 x 2	460 Nm (435-485)
Thread	Wheel stud alignment:											
M 18 x 1.5	290 Nm (275-305)											
M 20 x 1.5	380 Nm (360-400)											
M 22 x 1.5	510 Nm (485-535)											
M 22 x 2	460 Nm (435-485)											
<div>Steel wheels Spigot alignmentC</div> <div></div>	<div>D</div> <div></div>	<div>Tightening torques for wheel nuts item 479</div> <table><tr><th>Thread</th><th>Spigot alignment</th></tr><tr><td>M 18 x 1.5</td><td>350 Nm (330-370)</td></tr><tr><td>M 20 x 1.5</td><td>480 Nm (455-505)</td></tr><tr><td>M 22 x 1.5</td><td>630 Nm (600-660)</td></tr></table>	Thread	Spigot alignment	M 18 x 1.5	350 Nm (330-370)	M 20 x 1.5	480 Nm (455-505)	M 22 x 1.5	630 Nm (600-660)		
Thread	Spigot alignment											
M 18 x 1.5	350 Nm (330-370)											
M 20 x 1.5	480 Nm (455-505)											
M 22 x 1.5	630 Nm (600-660)											
<div>Alloy wheels Ø 26E</div> <div></div>		<div>Tightening torques for wheel nuts item 479</div> <table><tr><th>Thread</th><th>Spigot alignment</th></tr><tr><td>M 22 x 1.5</td><td>630 Nm (600-660)</td></tr></table>	Thread	Spigot alignment	M 22 x 1.5	630 Nm (600-660)						
Thread	Spigot alignment											
M 22 x 1.5	630 Nm (600-660)											
<div>Alloy wheels Ø 32F</div> <div></div>	<div>G</div> <div></div>	<div>Tightening torques for wheel nuts item 479</div> <table><tr><th>Thread</th><th>Spigot alignment</th></tr><tr><td>M 22 x 1.5</td><td>630 Nm (600-660)</td></tr></table>	Thread	Spigot alignment	M 22 x 1.5	630 Nm (600-660)						
Thread	Spigot alignment											
M 22 x 1.5	630 Nm (600-660)											

# 7 Accessories

## 7.1 Steering dampers, general

### BPW steering dampers

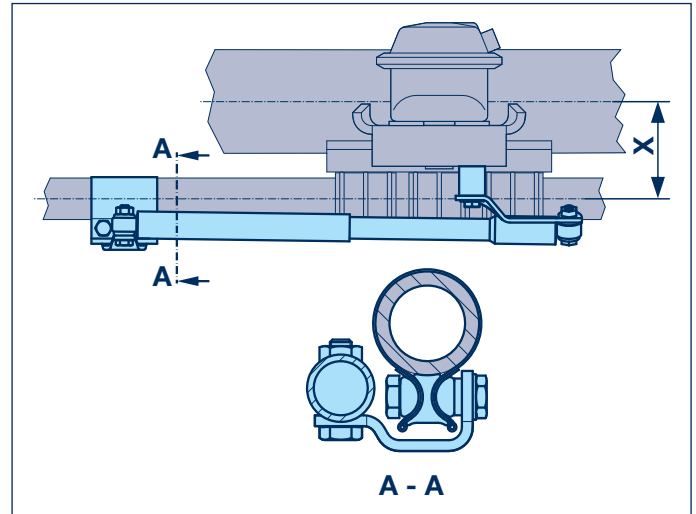
For BPW-Tag axles, ..LL series, there are various steering damper parts kits.

**A steering damper is absolutely essential under the following operating conditions:**

- ⦿ Where the ratio of the number of rigid axles to steering axles is 1:1 (2:2)
- ⦿ Where an axle lift is used in the tri-axle suspension
- ⦿ Where steering axle king pin bearings are connected to a central lubrication system

The steering damper is easy to assemble and retrofit. Assembly is carried out exclusively by means of screws (no welding).

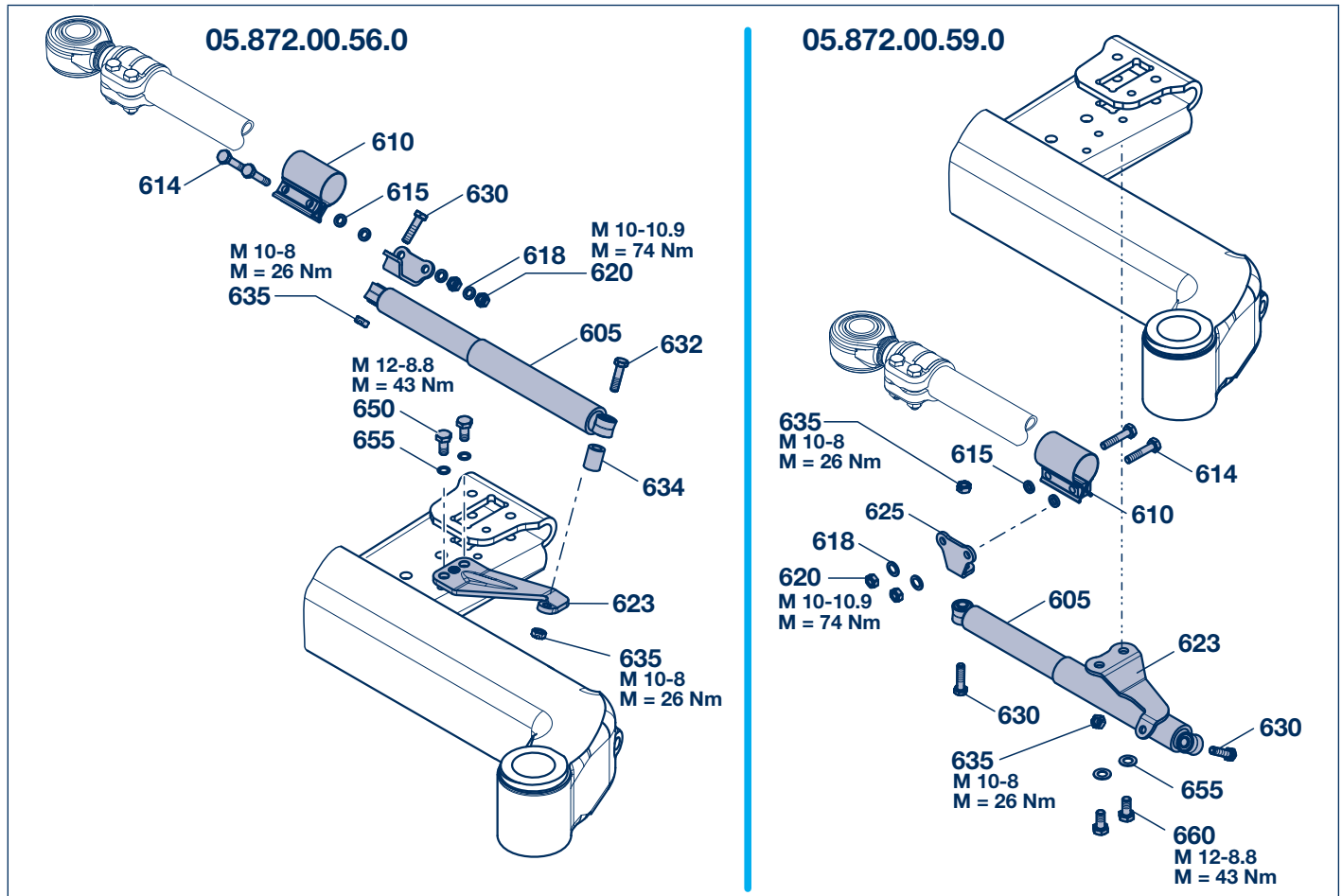
The necessary attachment holes are present on the steering axles. Each parts kit also includes an installation drawing.





# Accessories 7

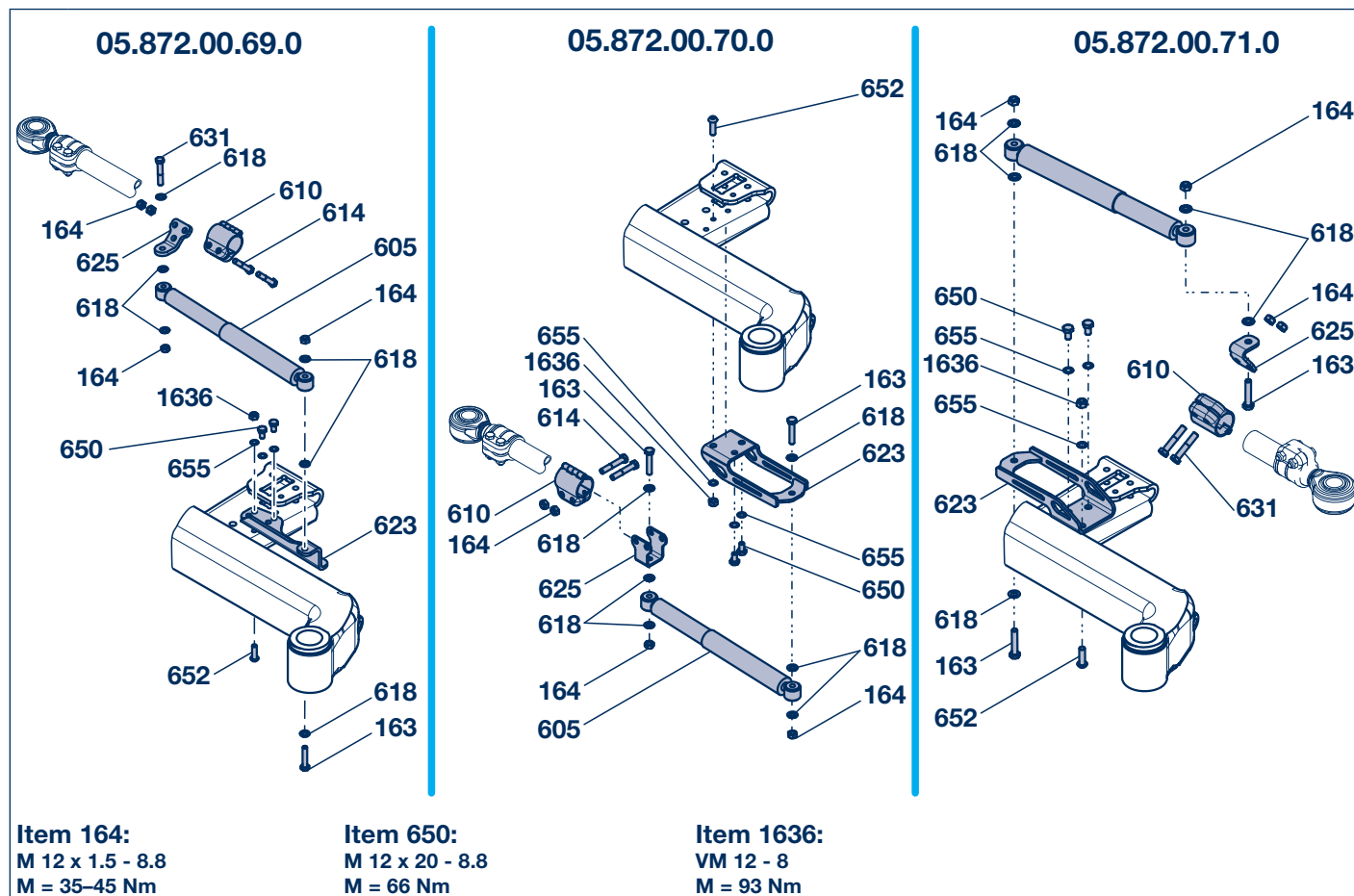
## Steering damper 7.1



Item	Designation	BPW code no.	Dimension	BPW code no.	Dimension
		Trailing arm above X = 163 / 171		Trailing arm below X = 25 / 35 / 45	
600	Steering damper assembly, item 605 - 660	<b>05.872.00.56.0</b>		<b>05.872.00.59.0</b>	
605	Steering damper	02.3702.93.00		02.3702.93.00	
610	Clamp cpl., incl. item 614	05.001.00.03.0		05.001.00.03.0	
614	Hexagon screw	02.5025.56.11	M 10 x 50 - 10.9	02.5025.56.11	M 10 x 50 - 10.9
615	Ring	03.310.30.51.0	Ø 10.5 / 17 x 3.5	03.310.30.51.0	Ø 10.5 / 17 x 3.5
618	Spring washer	02.5403.10.92	B 10	02.5403.10.92	B 10
620	Hexagon nut	02.5205.03.24	M 10	02.5205.03.24	M 10
623	Shaped plate	03.165.56.35.0		03.165.35.12.0	
625	Shaped plate	03.165.34.10.0		03.165.34.09.0	
630	Hexagon screw	02.5021.43.82	M 10 x 40 - 8.8	02.5021.43.82	M 10 x 40 - 8.8
632	Hexagon screw	02.5021.50.82	M 10 x 70 - 8.8	-	
634	Ring	03.310.30.68.0	Ø 10.2 / 13 x 30	-	
635	Lock nut	02.5273.10.82	M 10	02.5273.10.82	M 10
650	Hexagon screw	02.5025.75.82	M 12 x 16 - 8.8	02.5025.75.82	M 12 x 16 - 8.8
655	Spring washer	02.5403.12.92	B 12	02.5403.12.92	B 12

# 7 Accessories

## 7.1 Steering damper



Item	Designation	BPW code no.	Dimension	BPW code no.	Dimension	BPW code no.	Dimension
		Trailing arm above X = 312 / 171		Trailing arm above X = 285 / 35		Trailing arm below X = 312 / 50	
600	Steering damper assembly, item 163, 164, 605 - 655.1636	05.872.00.69.0		05.872.00.70.0		05.872.00.71.0	
163	Hexagon screw	02.5029.35.80	M 12 x 1.5 x 60 - 8.8	02.5029.35.80	M 12 x 1.5 x 60 - 8.8	02.5029.35.80	M 12 x 1.5 x 60 - 8.8
164	Hexagon nut	02.5220.15.82	VM 12 x 1.5 - 8	02.5220.15.82	VM 12 x 1.5 - 8	02.5220.15.82	VM 12 x 1.5 - 8
605	Steering damper	02.3732.12.00		02.3732.12.00		02.3732.12.00	
610	Clamp	02.3507.74.00		02.3507.74.00		02.3507.74.00	
614	Hexagon screw	02.5029.32.82	M 12 x 1.5 x 70 - 8.8	02.5029.32.82	M 12 x 1.5 x 70 - 8.8	-	
618	Spring washer	02.5401.13.04		02.5401.13.04		02.5401.13.04	
623	Support for steering damper	03.165.56.37.0		05.189.16.57.0		05.189.16.57.0	
625	Shaped plate	03.165.64.12.0		03.161.43.05.0		03.163.45.22.0	
631	Hexagon screw	02.5029.36.80	M 12 x 1.5 x 65 - 8.8	-		02.5029.36.80	M 12 x 1.5 x 65 - 8.8
650	Hexagon screw	02.5025.77.82	M 12 x 20 - 8.8	02.5025.77.82	M 12 x 20 - 8.8	02.5025.77.82	M 12 x 20 - 8.8
652	Hexagon screw	02.5046.02.13	M 12 x 40 - 10.9	02.5046.02.13	M 12 x 40 - 10.9	02.5046.02.13	M 12 x 40 - 10.9
655	Locking washer	02.5421.05.92	Ø 12 x 18 x 1.5	02.5421.05.92	Ø 12 x 18 x 1.5	02.5421.05.92	Ø 12 x 18 x 1.5
1636	Lock nut	02.5220.14.82	VM 12 - 8	02.5220.14.82	VM 12 - 8	02.5220.14.82	VM 12 - 8



## 7 Accessories

### 7.2 Hub caps with integrated mechan. odometer

Axle load	Axle series	Axle type	Hub cap thread	Rolling circumference	for tyre e.g.	Hub cap with integrated odometer BPW item no.
10 - 12 tonnes		SH.. ECO <sup>Plus</sup>	M 136 x 2.5	2830 - 2860	255 / 70 R 22.5	05.212.25.41.0
				2915	275 / 70 R 22.5	05.212.25.42.0
				3015 - 3134	385 / 55 R 22.5 315 / 70 R 22.5	05.212.25.44.0
				3175 - 3220	10.00 R 20 11.00 R 22.5	05.212.25.45.0
				3240 - 3260	385 / 65 R 22.5	05.212.25.46.0
				3280 - 3310	12.00 R 22.5	05.212.25.47.0
				3410 - 3470	425 / 65 R 22.5 13.00 R 22.5	05.212.25.48.0
				3505	445 / 65 R 22.5	05.212.25.49.0
8 - 9 tonnes	SR.. SH..	SH.. ECO Plus 2	bayonet lock	3015 - 3134	385 / 55 R 22.5 315 / 70 R 22.5	05.212.25.73.0
				3175 - 3220	11.00 R 22.5	05.212.25.74.0
				3240 - 3260	385 / 65 R 22.5	05.212.25.75.0
		SR../SH.. ECO Plus 3	M 135 x 2	2830 - 2860	255 / 70 R 22.5	05.212.75.17.0
				2915	275 / 70 R 22.5	05.212.75.18.0
				3015 - 3134	385 / 55 R 22.5 315 / 70 R 22.5	05.212.75.20.0
				3175 - 3220	10.00 R 20 11.00 R 22.5	05.212.75.21.0
				3240 - 3260	385 / 65 R 22.5	05.212.75.22.0
				3280 - 3310	12.00 R 22.5	05.212.75.23.0
				3410 - 3470	425 / 65 R 22.5 13.00 R 22.5	05.212.75.24.0
				3505	445 / 65 R 22.5	05.212.75.25.0
10 - 12 tonnes		SKH.. ECO <sup>Plus</sup>	M 136 x 2.5	2620 - 2650	265 / 70 R 19.5	05.212.25.38.0
				2712 - 2750	285 / 70 R 19.5	05.212.25.39.0
				2730 - 2790	445 / 45 R 19.5	05.212.25.40.0
				2960	425 / 55 R 19.5	05.212.25.43.0
8 - 9 tonnes	SKR.. SK..	SKH.. ECO Plus 2	bayonet lock	2730 - 2790	445 / 45 R 19.5	05.212.25.72.0
		SKR../SKH.. ECO Plus 3	M 135 x 2	2560	245 / 70 R 19.5	05.212.75.13.0
				2620 - 2650	265 / 70 R 19.5	05.212.75.14.0
				2712 - 2750	285 / 70 R 19.5	05.212.75.15.0
				2730 - 2790	445 / 45 R 19.5	05.212.75.16.0
				2830 - 2860	435 / 55 R 19.5	05.212.75.17.0
				2960	425 / 55 R 19.5	05.212.75.19.0
				3015 - 3134	385 / 65 R 19.5	05.212.75.20.0

Hub caps for ECO axles have internal thread.

Alternative versions on request..

# Accessories 7

## Hub caps with integrated digital odometer (ECOMETER) 7.3

The BPW hub cap with its integrated digital odometer is an important instrument for checking the mileage of your drawbar trailer or semi-trailer. This means you can always track the real trailer mileage, especially in case of alternating motor vehicles.

The digital ECO meter can be used universally for all tyre sizes.

The adjustment of the wheel size is carried out by means of the display unit (basic setting 385/65 R 22.5).

A minicomputer that is protected from water and dirt counts the wheel revolutions using a magnet and a reed contact.

The digital ECOMETER with the special hooked spring ring and integrated magnet is available for all BPW ECO-Plus axles with an M 136 x 2.5 hub cap thread, as well as ECO Plus 2 axles with a bayonet lock.



### BPW item no.:

Thread M 136 x 2.5	05.212.75.06.0 KTL <sub>Zn</sub>
	05.212.75.03.0 chromate <sup>1</sup>
bayonet lock	05.212.75.05.0 KTLZn incl. O-ring
Hooked spring ring loose	
	ECO <sup>Plus</sup> 05.188.04.13.0
	ECO Plus 2 05.277.10.03.0
Replacement battery	02.0130.97.00

<sup>1)</sup> Not resistant to corrosion acc. to DIN EN ISO 9227

Further information see service and installation instruction "Digital ECOMETER" - BPW No.: 04.001.21.24.0 (ECO<sup>Plus</sup>) and 04.001.21.25.0 (ECO Plus 2).

# 7 Accessories

## 7.4 Tools, general

### BPW special tools and measuring devices

Special tools and measuring devices have a long tradition at BPW Bergische Achsen KG and are based on decades of experience.

The existing range of tools has been systematically improved with each new generation of axles and expanded by new products.

For the maintenance and repair of its ECO Disc TS2/TSB disc brake, BPW offers a new **tool case (BPW code no. 99.00.000.9.72)** that keeps all the tools that may be required to hand.

For an existing tool case TSB, BPW offers a **supplemental set (BPW item no. 09.801.08.82.0)** which contains all additional tools for the TS2.

In addition, BPW offers special measuring devices for checking dimensions on axles and suspensions (toe-in, toe-out etc.).

### Long-life, low wear

BPW tools are designed to be particularly resistant to wear and tear, and guarantee an extremely long service life, even with frequent use.

### Easy to handle

The best solutions are always the simplest ones. This statement also particularly applies to tools.

This is the reason why BPW tools are geared specifically to meet technical requirements.

Solutions that do not meet practical requirements are rigorously weeded out at the development stage.

Details on the correct use of the tools can be found in the respective workshop manuals.

For more tools see the BPW tools catalogue.

### Version

Tools must prove their worth in hard, everyday use. Only then does it become clear whether tools are up to the demands of the real world.

### Use of high-quality materials

Top quality materials are the key to high quality tools. Continuous quality assurance guarantees consistent quality.

### Favourable cost-performance ratio

Quality is not always obvious at first glance (e.g. materials).

Buying quality tools is often the better-value solution in the long run. This is the case especially whenever tools are required on a regular basis and trouble-free use has to be ensured at all times.

- ⊙ The special tools guarantee that all recommended service work on the BPW ECO Disc (TS2 3709 / 4309 as well as TSB 3709 / 4309 / 4312) can be performed safely and easily.
- ⊙ All work on the vehicle is only allowed to be performed by employees of the commercial vehicle industry and the commercial vehicle trade who have the appropriate technical proficiency. Always follow the safety instructions issued by the vehicle manufacturer.
- ⊙ Observe the BPW workshop manual ([www.bpw.de](http://www.bpw.de)).



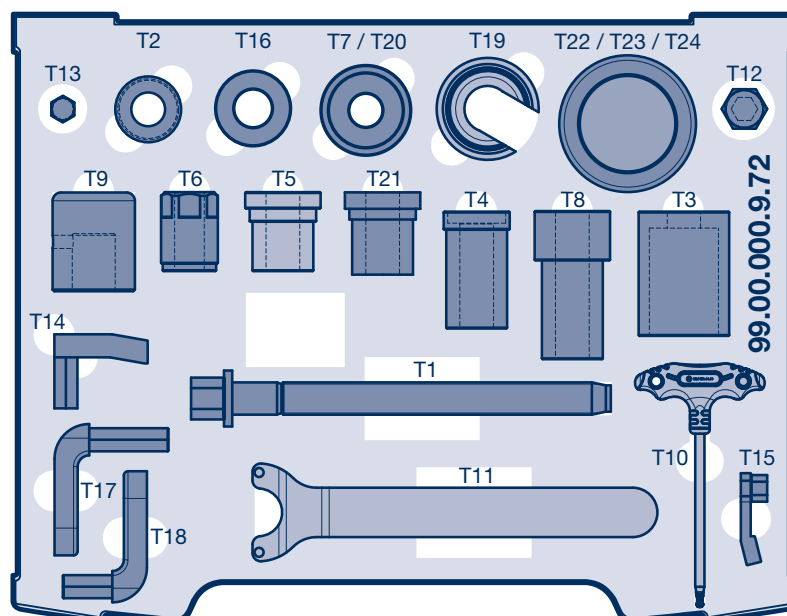
# Accessories 7

## Tools 7.4

### Contents of the tool case

No.	Designation	TSB	TS2	BPW code no.	Dimension	Page
T1	Threaded spindle	●	●	02.0130.39.10	Tr 20 x 2 / SW 22	78
T2	Ball bearing	●	●	02.0130.40.10	Ø 20.5/40 x 14.5	78
T3	Sleeve	●	●	02.1410.26.00	Ø 20.2/42 x 75.5	78
T4	Press-out tool for movable and fixed bearings	●	●	02.0130.41.10	Ø 20.5/40.1 x 71	78
T5	Pressing tool (movable bearing)	●		02.0130.42.10	Ø 20.5/45.8 x 48	78
T6	Nut	●	●	02.5270.37.00	Tr 20 x 2 / SW 32	78
T7/T20	Counter-hold tool	●	●	02.1421.25.00	Ø 20.2/53 x 13	78
T8	Pressing tool (fixed bearing)	●	●	02.0130.43.10	Ø 20.5/45.8 x 90	78
T9	Press-on tool (plastic bellows)	●		02.0130.45.10	Ø 26.1/50 x 60	79
T10	Torx spanner return mechanism	●	●	02.0130.44.10	TX 25	79
T11	Two-hole spanner for coarse dirt seal	●	●	02.3516.20.00		79
T12	Adapter for moveable bearing screw	●	●	02.0130.46.10	SW 14 / SW 24	79
T13	Adapter for plastic cap	●	●	02.0130.47.10	SW 14 / SW 12	79
T14	Adapter for torque wrench (movable bearing)	●	●	02.0130.48.10	WAF 14	79
T15	Adapter for torque wrench (plastic cap)	●	●	02.0130.49.10	WAF 14	79
T16	Ring for pulling in wheel studs	●	●	02.5683.92.00	Ø 23/46 x 15	79
T17	Adapter for fixed bearing bolt	●	●	02.0130.64.10	SW 14 / SW 14	79
T18	Adapter for movable bearing screw	●	●	02.0130.65.10	SW 14 / SW 14	79
T19	Mounting tool for the bellows	●		02.0130.80.10	Ø 27.6/62 x 32	79
T21	Pressing tool for loose bearing		●	02.0130.72.20	Ø 20.5/45.8 x 50	78
T22	Piston for pressing tool bellows		●	02.0130.74.20	Ø 83 / M 20 x 2	80
T23	Screw for pressing tool bellows		●	02.0130.73.20	M 14 x 2	80
T24	Adapter for pressing tool bellows		●	02.4319.42.00	SW 24 / M 20 x 2 / M 14 x 2	80

SW = Spanner width



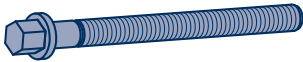
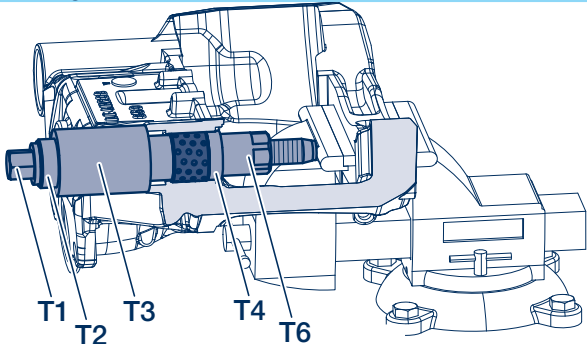

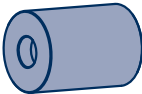
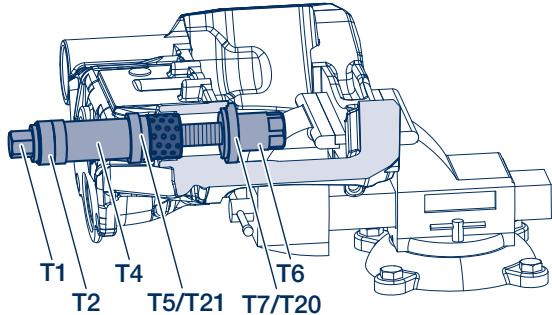


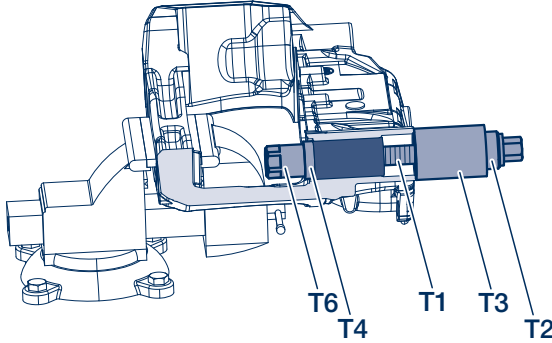



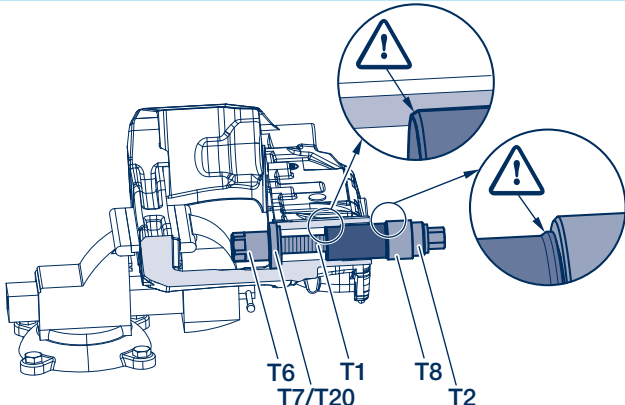
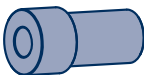
# 7 Accessories

## 7.4 Tools

### Tools at work

#### BPW special tools at work

Item / BPW code no. / name / dimension

<b>T1</b> 02.0130.39.10 Threaded spindle TR 20 x 2 / SW 22		<b>Extractor tool for movable bearings,</b> consisting of item T1, T2, T3, T4, T6	
<b>T2</b> 02.0130.40.10 Ball bearing Ø 20.5/40 x 14.5			
<b>T3</b> 02.1410.26.00 Sleeve Ø 20.2/42 x 75.5		<b>Pressing tool for movable bearing,</b> consisting of item T1, T2, T3, T4, <b>T5</b> , T6, T7/T20 (TSB) T1, T2, T3, T4, <b>T21</b> , T6, T7/T20 (TS2)	
<b>T4</b> 02.0130.41.10 Press-out tool for movable and fixed bearings Ø 20.5/40.1 x 71			
<b>T5 (only for TSB)</b> 02.0130.42.10 Pressing tool (movable bearing) Ø 20.5/45.8 x 48		<b>Press-out tool for movable bearing,</b> consisting of item T1, T2, T3, T4, T6	
<b>T21 (only for TS2)</b> 02.0130.72.20 Pressing tool (movable bearing) Ø 20.5/45.8 x 50			
<b>T6</b> 02.5270.37.00 Nut TR 20 x 2 / SW 32			
<b>T7/T20</b> 02.1421.25.00 Counter-hold tool Ø 20.2/53 x 13		<b>Pressing tool for fixed bearing,</b> consisting of item T1, T2, T6, T7/T20, T8	
<b>T8</b> 02.0130.43.10 Pressing tool (fixed bearing) Ø 20.5/45.8 x 90			



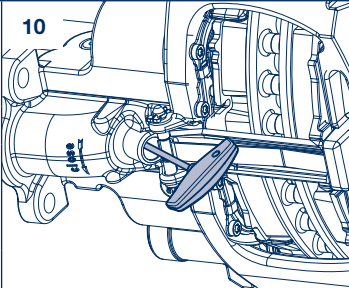
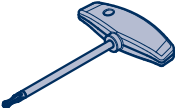
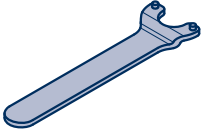
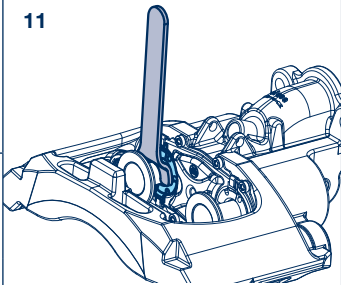
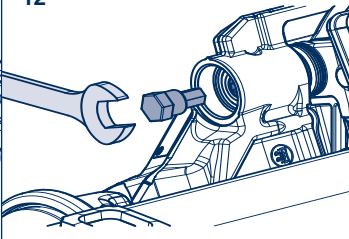


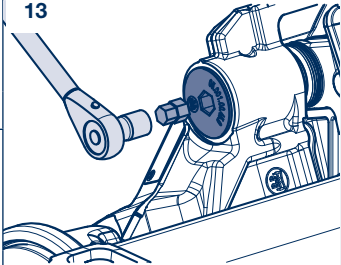
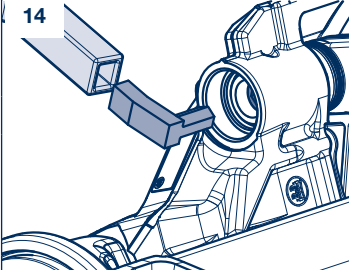
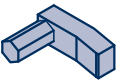

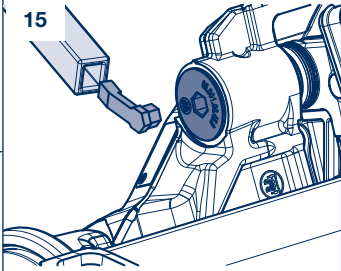
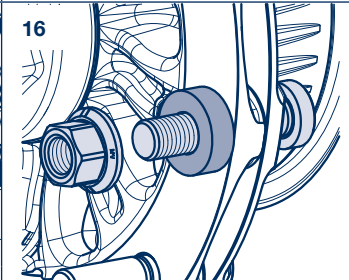


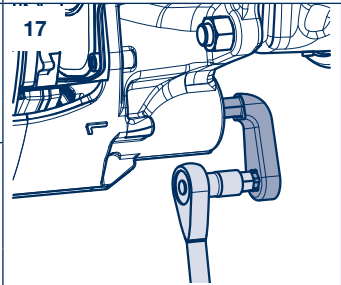
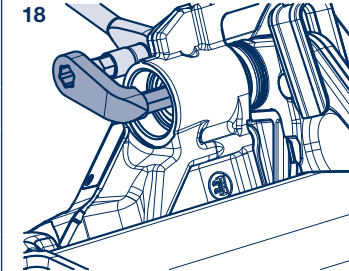


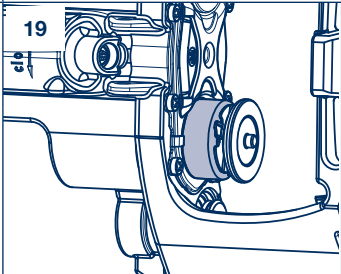
# Accessories 7

## Tools 7.4

### Tools at work

#### BPW special tools at work

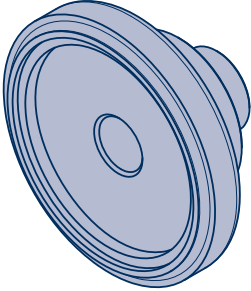
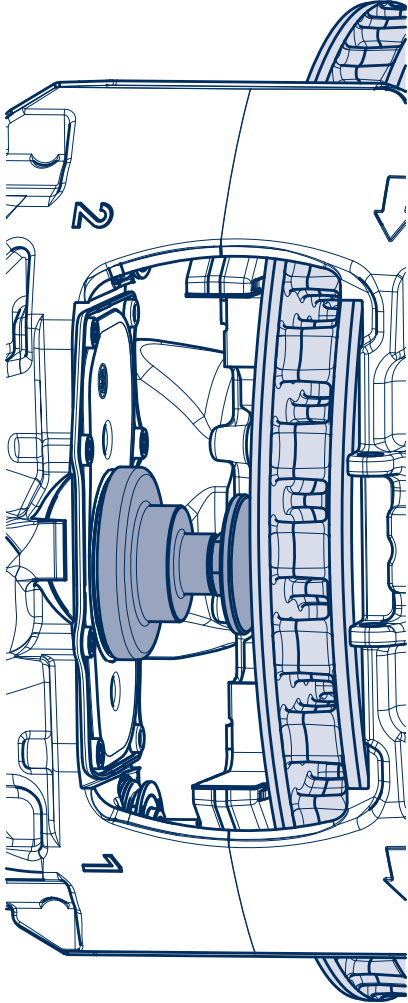
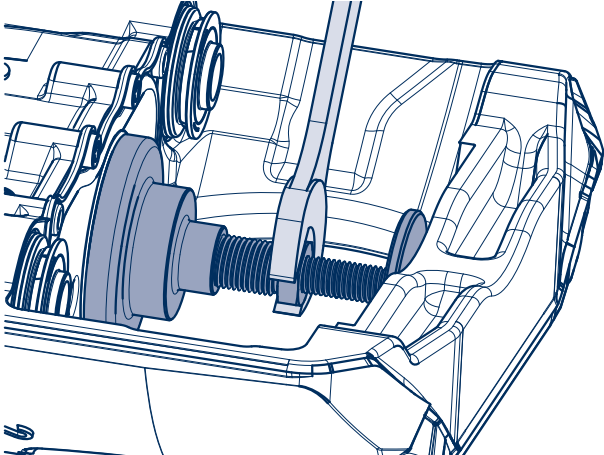
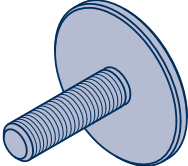
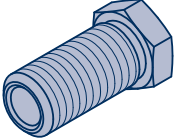
Item / BPW code no. / name / dimension

<b>T9 (only for TSB)</b> 02.0130.45.10 Press-on tool (plastic bellows) Ø 26.1/50 x 60		<b>9</b> 	<b>10</b> 
<b>T10</b> 02.0130.44.10 Torx spanner for return mechanism TX 25			
<b>T11</b> 02.3516.20.00 Two-hole spanner for coarse dirt seal		<b>11</b> 	<b>12</b> 
<b>T12</b> 02.0130.46.10 Adapter for movable bearing screw SW 14 / SW 24			
<b>T13</b> 02.0130.47.10 Adapter for plastic cap SW 14 / SW 12		<b>13</b> 	<b>14</b> 
<b>T14</b> 02.0130.48.10 Adapter for torque wrench (movable bearing) SW 14			
<b>T15</b> 02.0130.49.10 Adapter for torque wrench (plastic cap) SW 14		<b>15</b> 	<b>16</b> 
<b>T16</b> 02.5683.92.00 Ring for pulling in wheel studs Ø 23/46 x 15			
<b>T17</b> 02.0130.64.10 Adapter for fixed bearing bolt SW 14 / SW 14		<b>17</b> 	<b>18</b> 
<b>T18</b> 02.0130.65.10 Adapter for movable bearing screw SW 14 / SW 14			
<b>T19 (only for TSB)</b> 02.0130.80.10 Mounting tool for the bellows Ø 27.6/62 x 32		<b>19</b> 	

# 7 Accessories

## 7.4 Tools

### Tools at work

BPW special tools at work		
Item / BPW code no. / name / dimension		
<div>T22 (only for TS2)</div> <div>02.0130.74.20</div> <div>Piston for pressing tool bellows</div> <div>Ø 83 / M 20 x 2</div>		<div>Pressing tool for bellow, consisting of item T22, T23, T24</div>  
<div>T23 (only for TS2)</div> <div>02.0130.73.20</div> <div>Screw for pressing tool bellows</div> <div>M 14 x 2</div>		
<div>T24 (only for TS2)</div> <div>02.4319.42.00</div> <div>Adapter for pressing tool bellows</div> <div>SW 24 / M 20 x 2 / M 14 x 2</div>		

Accessories

7

Tools

7.4

Supplemental set TS2

BPW supplemental set TS2 – 09.801.08.82.0			
Item	BPW code no.	Designation	Dimension
T7/T20	02.1421.25.00	Counter-hold tool	Ø 20.2/53 x 13
T21	02.0130.72.20	Pressing tool (movable bearing)	Ø 20.5/45.8 x 50
T22	02.0130.74.20	Piston for pressing tool bellows	Ø 83 / M 20 x 2
T23	02.0130.73.20	Screw for pressing tool bellows	M 14 x 2
T24	02.4319.42.00	Adapter for pressing tool bellows	SW 24 / M 20 x 2 / M 14 x 2

BPW is a globally leading manufacturer of intelligent running gear systems for trailers and semi-trailers. As an international mobility and system partner, we offer a wide range of solutions for the transport industry from a single source, from axle to suspension and brake to user-friendly telematics applications.

We thereby ensure outstanding transparency in loading and transport processes and facilitate efficient fleet management. Today, the well-established brand represents an international corporation with a wide product and service portfolio for the commercial vehicle industry. Offering running gear systems, telematics, lighting systems, composite solutions and trailer superstructures, BPW is the right system partner for automotive manufacturers.

BPW, the owner-operated company, consistently pursues one target: To always give you exactly the solution which will pay off. To this end, we focus our attention on uncompromising quality for high reliability and service life, weight and time-saving concepts for low operating and maintenance costs as well as personal customer service and a close-knit service network for quick and direct support. You can be sure that with your international mobility partner BPW, you always use the most efficient method.

# Your partner on the way to economic viability!



**BPW Bergische Achsen Kommanditgesellschaft**

Postbox 12 80 · 51656 Wiehl, Germany · Phone +49 (0) 2262 78-0  
info@bpw.de · [www.bpw.de](http://www.bpw.de)