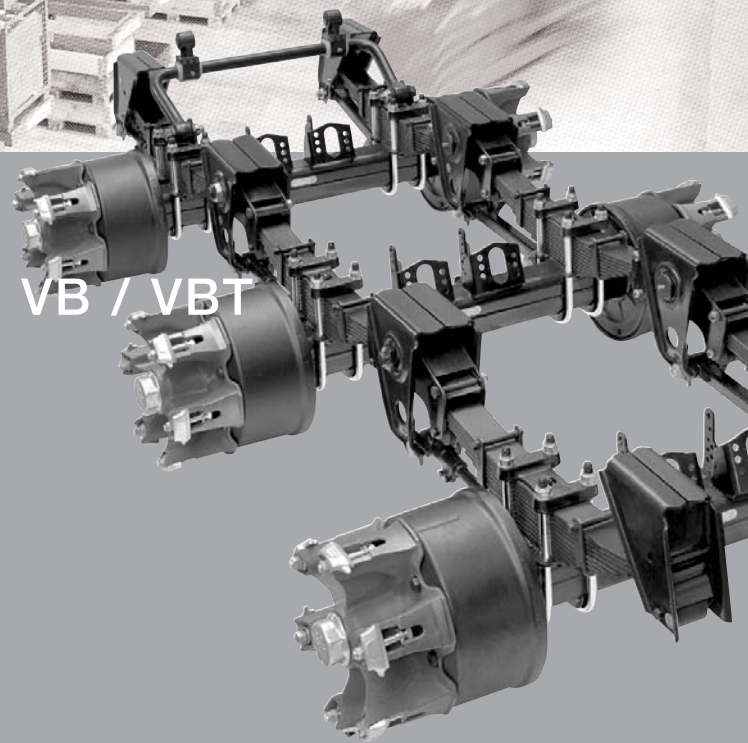




BPW Original spare parts  
Mechanical suspensions series VB / VBT



# VB

BPW ORIGINAL SPARE PARTS

# VBT

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Valid: **1.5.2005**

This spare parts list shows fast moving parts for BPW suspensions **series VB / VBT**.

For further spare parts see BPW spare parts catalogue and / or spare parts lists of the corresponding single axles without bogie parts.

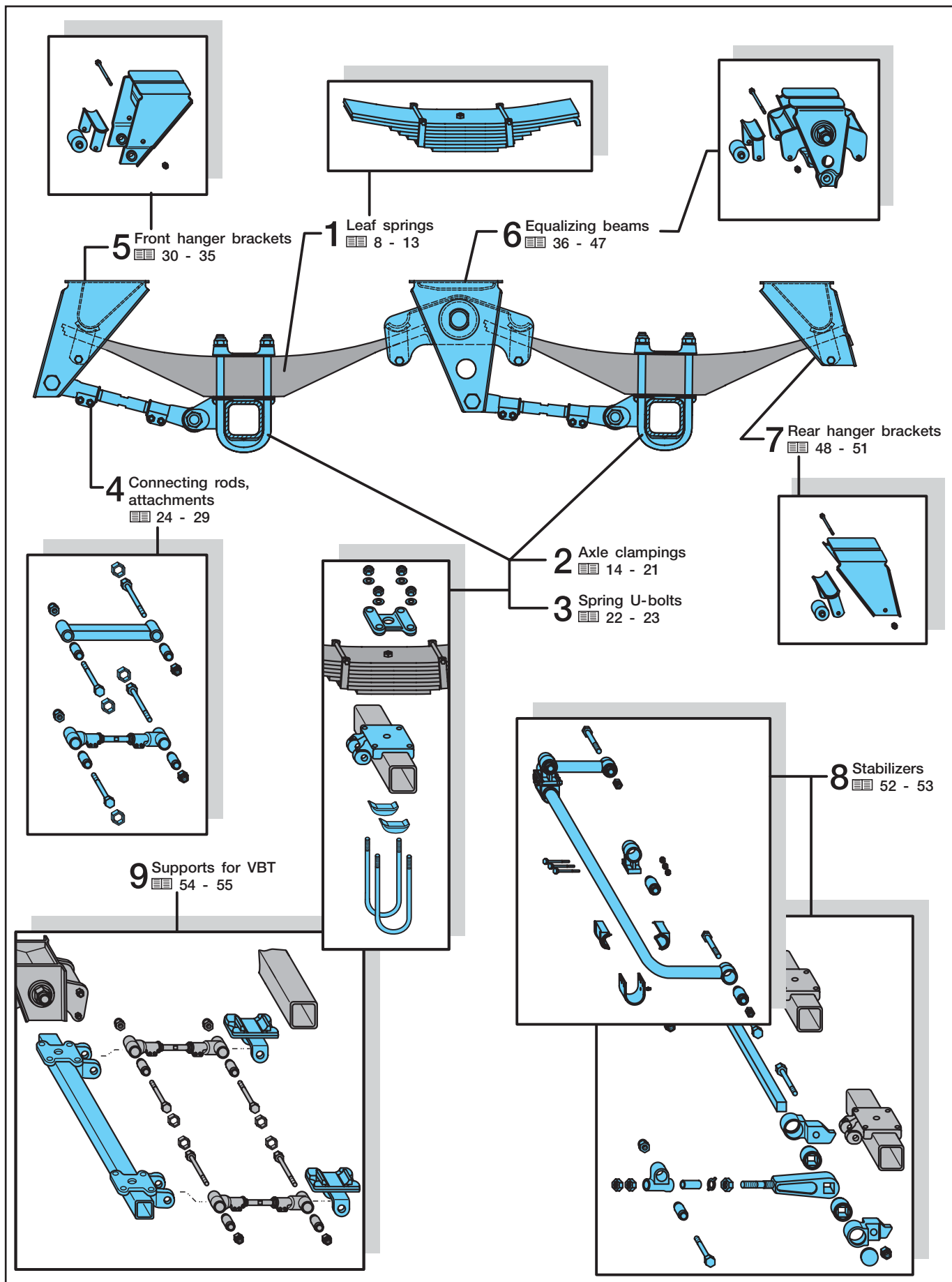


-parts are embossed with BPW Code no.

Subject to change (without notice).



# BPW Original spare parts • VB suspensions



## Explanation of BPW suspension type codes (extract)

Example:														
H	S	F	H	VB	U	LL	3 /	9010	/12°	K	ECO			
											Trailer axle	Brake	Tyre size	
H												H..	SN 420	20" - 24"
K												K..	SN 360	19.5"
N												N..	SN 300	15" (12"-17.5")
a.o.												Further axle types see BPW type designations		
B												For single wheels, wheels with offset		
S												For single wheels, wheels without offset		
Z												For twin wheels		
I												Wheel spiders for TRILEX wheel rims, single wheels		
IZ												Wheel spiders for TRILEX wheel rims, twin wheels		
F												Wheel studs M 22 x 1.5 without wheel nuts, order wheel nuts for stud or spigot alignment separately		
M												For spigot alignment		
H												For hanging boosters		
												<b>VB - Suspension series</b>		
				VB								VB	Mechanical suspension series VB, leaf springs above the axle	
				VBT								VBT	Mechanical suspension series VBT, leaf springs below the axle	
				U								With U-stabilizer		
				Q								With rectangular section stabilizer		
					L							With steering axle, series L	steering angle max. 40°	
					LL							With self-steering axle, series LL	steering angle max. 20°	
					LS							With self-steering axle, series LS	steering angle max. 20°	
					-							Single axle		
					2 /							Tandem axle suspension		
					3 /							Tri-axle suspension		
						6006 to 20010						Axle load (kg) + quantity of wheel studs per hub		
							/12° to /40°					Steering angle of steering axle		
								B				Version index	B	Reinforced
								BE					BE	Reinforced / Equalizer bearing with bronze bushes
								C					C	Open hanger bracket with screwed on sliders
								E					E	Equalizer bearing with bronze bushes
								HD					HD	Heavy duty execution (since 1999)
								HDE					HDE	Heavy duty execution (since 1999) Equalizer bearing with bronze bushes
								K					K	Weight-optimized version up to 10 t
								KE					KE	Equalizer bearing with bronze bushes
								KN					KN	Low construction height
								L					L	Reinforced
								LE					LE	Reinforced / Equalizer bearing with bronze bushes
								M					M	Reinforced version up to 12 t
								ME					ME	Equalizer bearing with bronze bushes
								MN					MN	Reinforced, low construction height
												ECO	Single axle with BPW ECO hub system	
												ECO-MAXX	Weight-optimized ECO-axle built as from 1997	
												ECO <sup>Plus</sup>	Weight-optimized axle with BPW ECO <sup>Plus</sup> hub system	
												MAXX	Weight-optimized axle with conventional hub bearing system	

## Explanation of BPW code numbers (extract)

Example:				
32.	14.	743.	000	
<b>1. + 2. digit</b>				
21.		<b>Single axle</b>		
28.				
30.				
38.				
22.				<b>Tandem axle suspension / Tri-axle suspension</b>
32.				
23.		<b>Tandem axle suspension / Tri-axle suspension</b>		
32.				
39.				
<b>3. + 4. digit</b>				
		<b>Axle load</b>	<b>Roller bearings</b>	<b>Hub bearing system</b>
06.		6500 kg	33116 / 32310	Conventional hub bearing system
08. 09.		8000 - 9000 kg	33116 / 32310	
10.		10000 - 12000 kg	33118 / 32313	
14.		13000 - 14000 kg	32219 / 33215	
16.		16000 - 18000 kg	32222 / 33214	
20.		20000 kg	32224 / 32316	
36.		6500 kg	33116 / 32310	ECO hub bearing system
38.		8000 - 9000 kg	33116 / 32310	
40.		10000 - 12000 kg	33118 / 33213	
44.		13000 - 14000 kg	32219 / 33215	
48.		8000 - 9000 kg	33118 / 33213	ECOPlus hub bearing system
50.		10000 - 12000 kg	33118 / 33213	
65.		6400 kg	33215 / 32310	Conventional hub bearing system
<b>5. - 7. digit</b>				
501. to 839.		<b>Designation of wheel brake in the case of ref. number 20... - 39...</b> For explanation of code number, see EL-HKN / EL-SB / BPW code number designation		
<b>8. - 10. digit</b>				
	000	Consecutive number 000 - 999		

## General

**BPW VB suspension units for trailers and semi-trailers. Sturdy leaf springs for the most demanding applications.**

Whether on roads or tracks, local or long-distance - BPW VB leaf-spring suspension systems can be relied upon one hundred percent.

They are extremely sturdy, and their tried and tested design stands up to the harshest challenges.

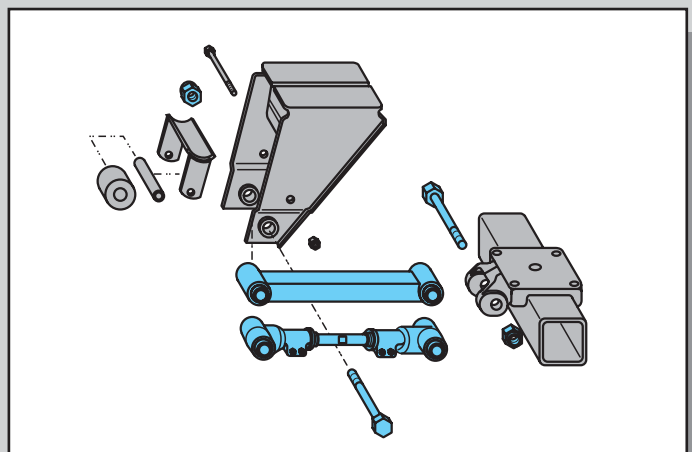
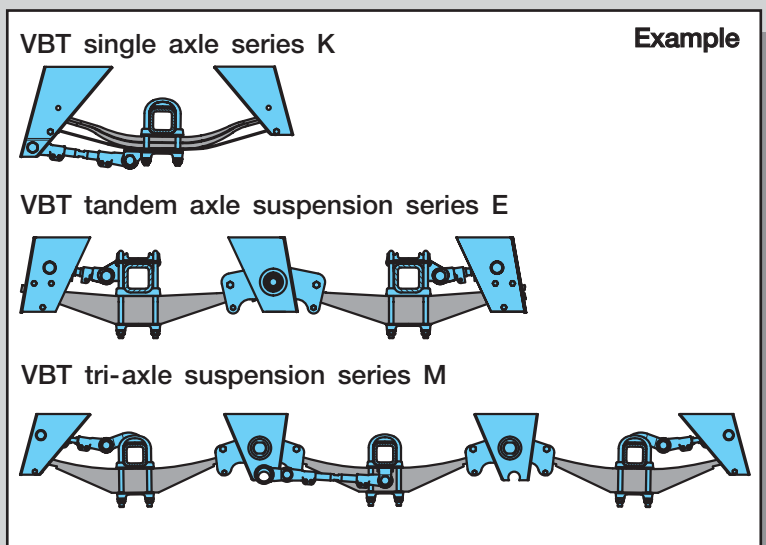
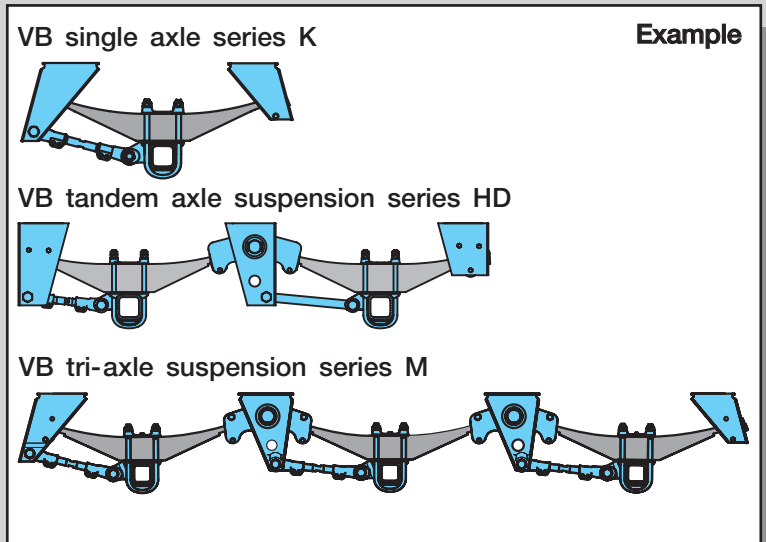
They are purely mechanical in operation. As a result they are easy to repair, even in circumstances where the infrastructure is poor.

With our VB suspension units for trailers and semitrailers, axle loads of 9 tonnes and more are no problem.

### Leaf spring installation

Series <b>VB</b>	Leaf spring above the axle beam
Series <b>VBT</b>	Leaf spring below the axle beam

Axle location is undertaken by separate connecting rods, which are adjustable on one side (or both) to enable the tracking to be set with ease (see also page 14).

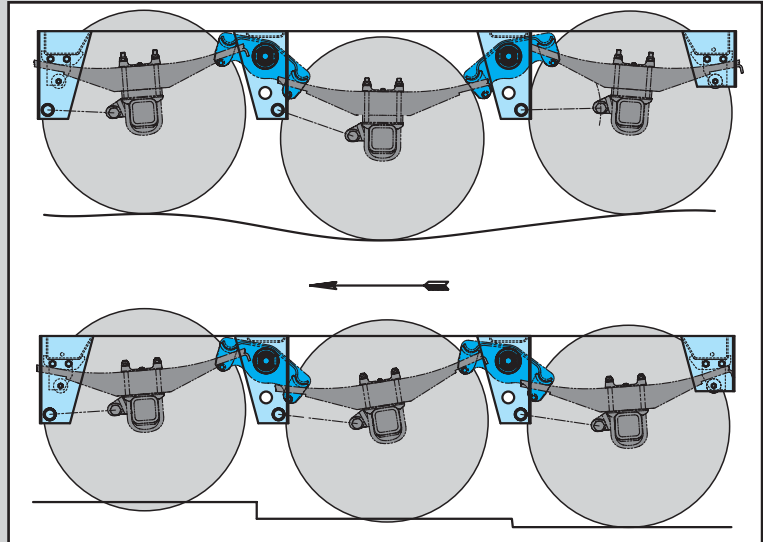


### Mode of operation

In multi-axle suspension systems, the middle connecting pieces have equalising beams which can rotate. The spring ends which slide in the equalising beam mountings combine to produce static axle load equalisation (even distribution of axle load when stationary and moving).

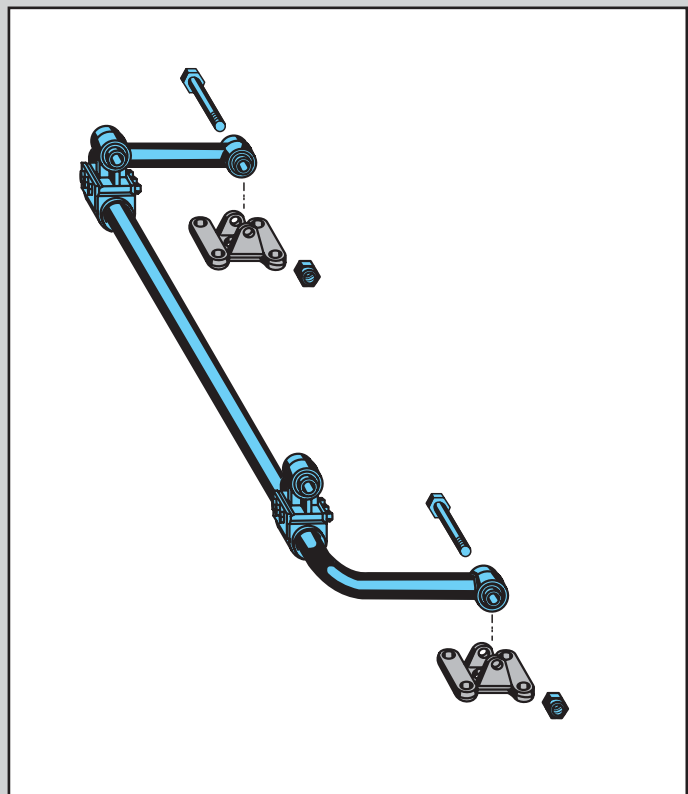
The design means that no dynamic axle load equalisation is provided (uneven axle load distribution when braking).

BPW leaf suspension systems are designed to offer self-damping and do not need any additional shock absorbers.



### BPW VB suspension units with anti-roll bar

BPW VB suspension units can also be equipped with one or more U-stabilisers when particularly high levels of roll stability are called for, e.g. in vehicles with a high centre of gravity.



#### Important for all welding work !

The leaf springs, plastic pipings and other sensitive parts should be protected against sparks and weld splashes during all welding work. The earth terminal must under no circumstances be attached to the leaf spring or hub.

Further information, along with installation and safety instructions, can be found in our current workshop manuals.

## 1 Leaf springs

### General

BPW VB suspension units are equipped with parabolic or multi-leaf springs.

Depending on the version, parabolic springs have two or three parabolic rolled spring layers. The efficient use of material enables them to combine low weight with a low height.

Multi-leaf springs (trapezoidal springs) contain a stack of spring layers with a constant cross-section and graded lengths to give a trapezoidal shape.

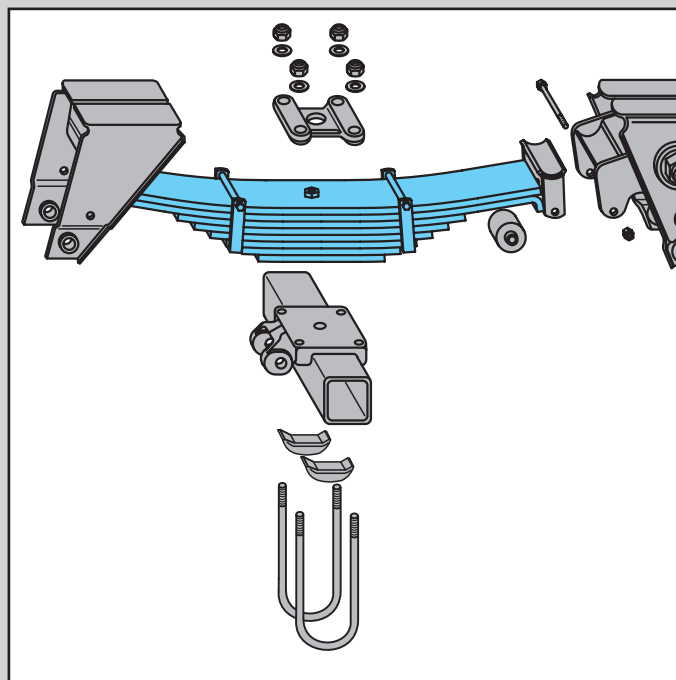
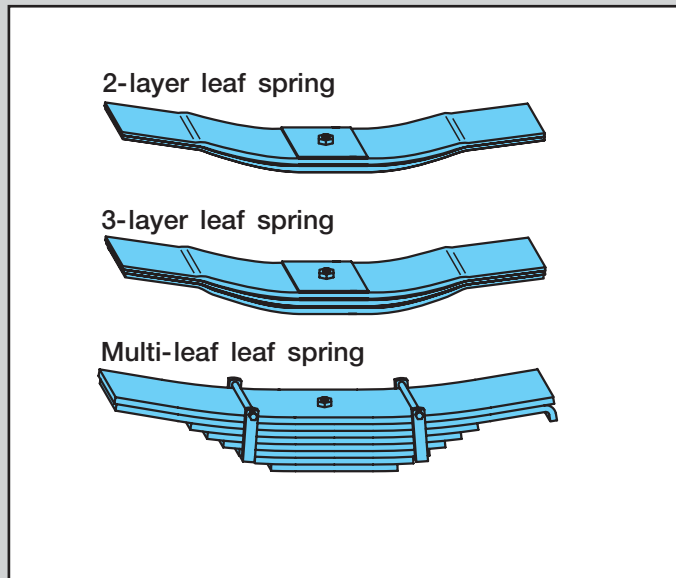
They are characterised by their robustness and good default driving properties as well as the ease of replacing individual spring layers. The ends of the leaf springs are mounted on sliding bearings using spring slides both in the connecting pieces and in the equalising beams. This allows the spring pack to increase in length without obstruction when the suspension deflects.

As a load-bearing component of the suspension unit, the leaf spring requires particular attention. The following instructions should be carefully adhered to during repair and maintenance work:

- Do not work on leaf springs with a hammer or any sharp objects.
- Do not work on leaf springs with cutters or grinders.  
In the event that replacement springs or leaves do not fit exactly into the seat of the spring pads, the mounting seat must always be widened.
- Double or triple parabolic springs can only be completely replaced.  
Individual leaves can be replaced in multi-leaf springs.

#### Important for all welding work !

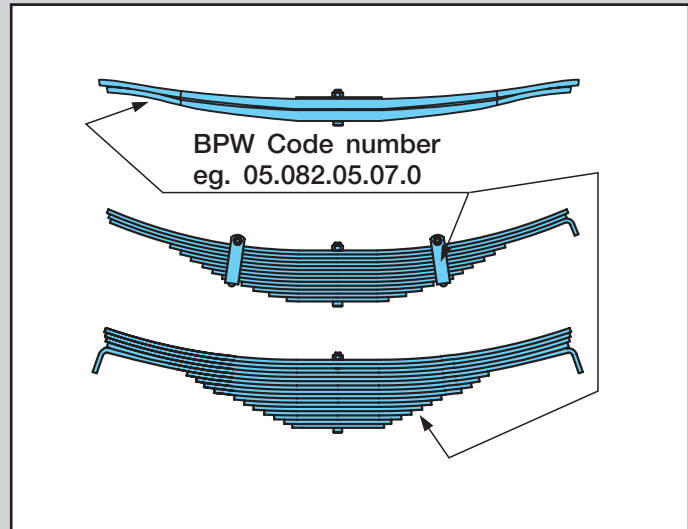
The leaf springs, plastic pipings and other sensitive parts should be protected against sparks and weld splashes during all welding work. The earth terminal must under no circumstances be attached to the leaf spring or hub.





### BPW Code number

The BPW code number of the leaf spring is stamped into one of the spring layers or into the spring shackle.

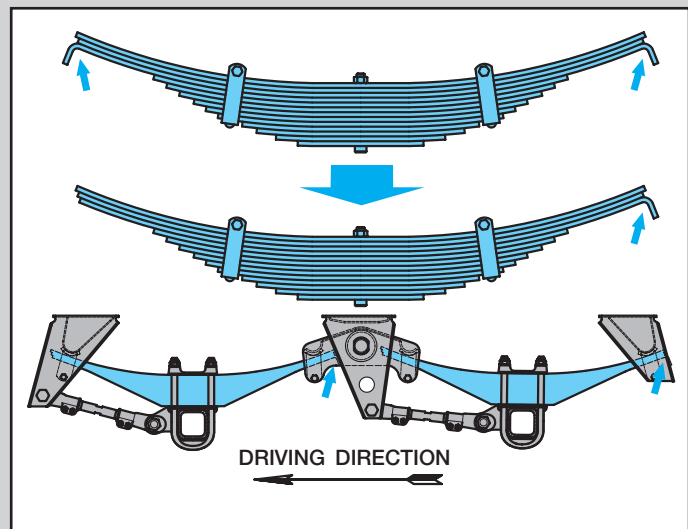


Up to 1996, BPW leaf springs for VB suspension units were supplied with two hooked ends.

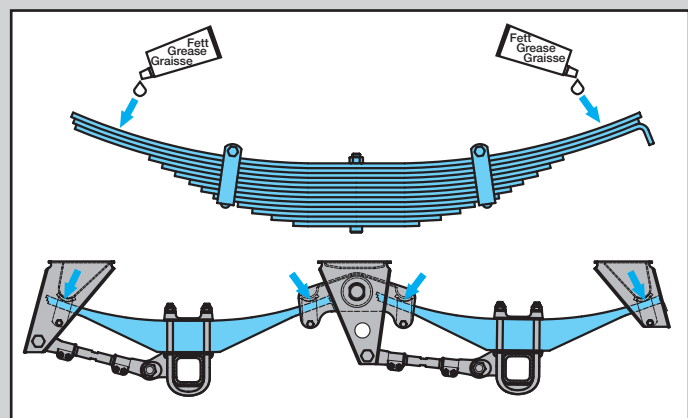
After that the leaf springs were only manufactured with one hooked end.

When replacements are needed, we now only supply leaf springs or spring layers with one hooked end.

When installed, the hooked end must be fitted towards the rear (see arrow).

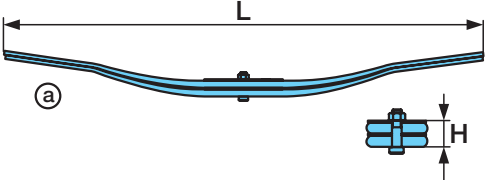
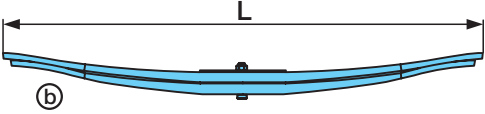
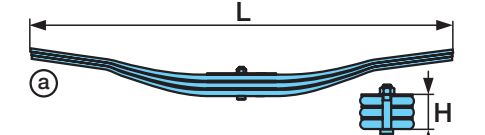
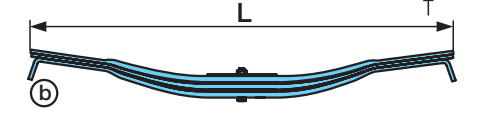
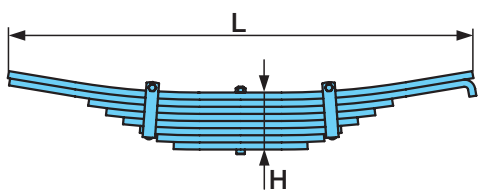
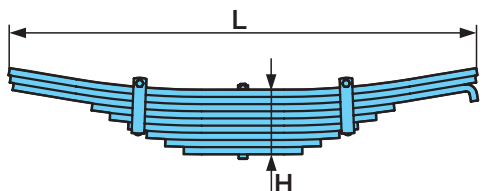
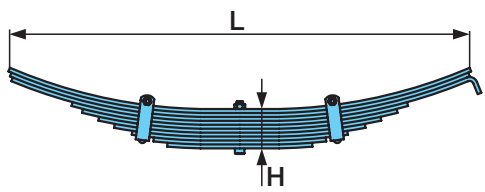


The contact points between the leaf springs and the retainers or sliders must be well greased in order to prevent unnecessary wear and rattling.

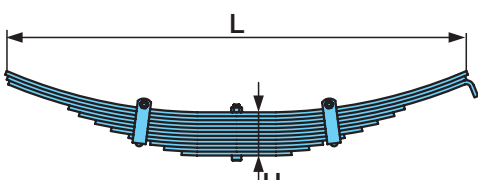
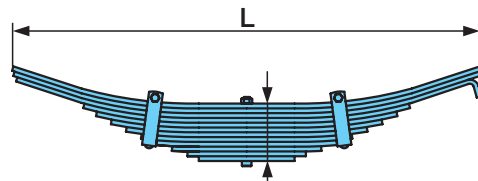
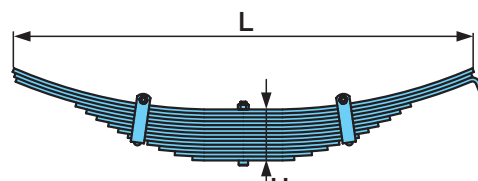
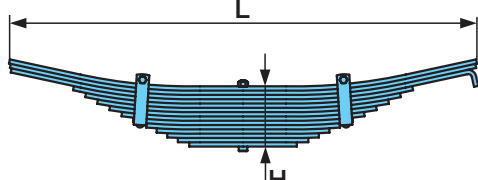


## 1.1 Leaf springs

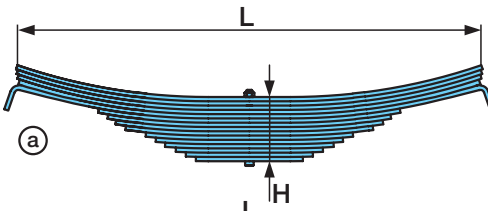
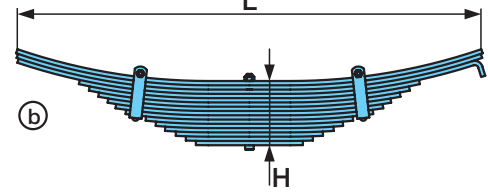
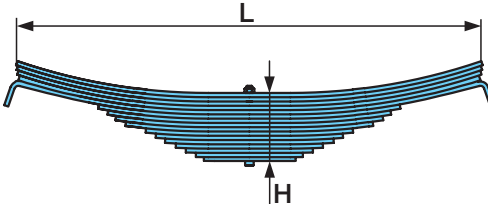
### Leaf springs

	Wheel base	Axle load	Fig.	H	L	BPW Code no.	Spring leaves
<b>2-layer leaf springs (Item 1000)</b>							
	1360 / 1500	8 t	a	54	1170	05.082.03.33.0	
	1360 / 2050	10 t	a	60	1170	05.082.04.08.0	
	1360 / 2050	10 t	b	60	1170	05.082.04.06.0	
	1360 / 2050	12 t	a	64	1170	05.082.04.13.0	
	No longer available, for further information contact BPW.						
<b>3-layer leaf springs (Item 1000)</b>							
	1140	9 t + 10 t	a	63	970	05.082.04.12.1	
	1310	8 t	a	66	1120	05.082.03.62.0	
	1360 / 2050	8 t	a	66	1170	05.082.03.32.0	
	1360 / 2170	8 t	b	66	1190	05.082.03.10.0	
	1310	9 t	a	69	1120	05.082.03.72.0	
	1360 / 2050	9 t	a	72	1170	05.082.03.36.0	
	1360 / 2050	10 t	b	72	1170	05.082.04.30.0	
	1360 / 2050	10 t	a	72	1170	05.082.04.26.0	
							
<b>8-layer leaf springs (Item 1000)</b>							
	1360	6.5 t		80	1170	05.082.02.01.0	1.+2. 02.1014.02.00
							3. 02.1014.02.01
							4. 02.1014.02.02
	1500	16 t - 20 t		160	1300	05.082.07.01.0	1. 02.1014.07.00
							2. 02.1014.07.01
							3. 02.1014.07.02
Further spring leaves upon request.							
<b>9-layer leaf springs (Item 1000)</b>							
	1500 / 1600	18 t - 20 t		180	1300	05.082.08.07.0	1.+2. 02.1014.08.20
							3. upon request
							4. upon request
Further spring leaves upon request.							
<b>10-layer leaf springs (Item 1000)</b>							
	1310	8 t		100	1120	05.082.03.63.0	1.+2. 02.1014.03.90
							3. 02.1014.03.91
							4. 02.1014.03.92
Further spring leaves upon request.							

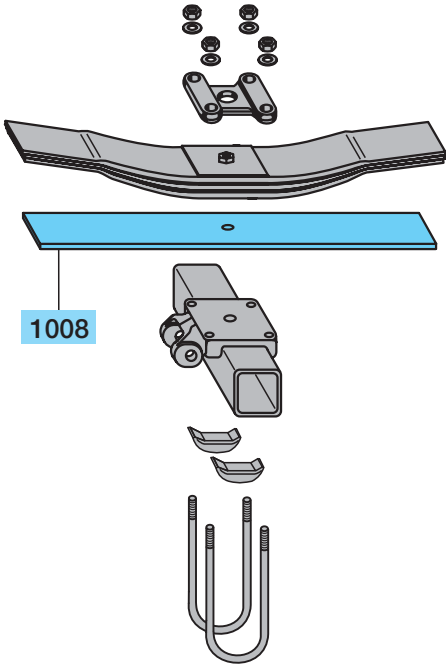
# Leaf springs 1.1

Leaf springs							
	Wheel base	Axle load	Fig.	H	L	BPW Code no.	Spring leaves
<b>11-layer leaf springs (Item 1000)</b>							
	1360	8 t		110	1170	05.082.03.03.0	1.+2. 02.1012.03.16 3. 02.1012.03.17 4. 02.1012.03.18
	1360 / 1410 / 2050	12 t		132	1170	05.082.04.02.0	1.+2. 02.1014.04.10 3. 02.1014.04.11 4. 02.1014.04.12
	Further spring leaves upon request. <div style="background-color: #cccccc; width: 20px; height: 10px; display: inline-block;"></div> No longer available, for further information contact BPW.						
<b>12-layer leaf springs (Item 1000)</b>							
	1360	14 t		144	1170	05.082.05.03.0	1.+2. 02.1014.05.22 3. 02.1014.05.23 4. 02.1014.05.24
	1500 / 2050	12 t		144	1300	05.082.04.07.0	1.+2. 02.1014.04.42 3. 02.1014.04.43 4. 02.1014.04.44
	1410	14 t		144	1230	05.082.05.07.0	1.+2. 02.1014.05.50 3. 02.1014.05.51 4. 02.1014.05.52
Further spring leaves upon request.							
<b>13-layer leaf springs (Item 1000)</b>							
	1360 / 2050	9 - 10 t		130	1170	05.082.03.02.0	1.+2. 02.1012.02.00 3. 02.1012.02.01 4. 02.1012.02.02
	Further spring leaves upon request.						
<b>14-layer leaf springs (Item 1000)</b>							
	1360	16 t		168	1170	05.082.06.01.0	1.+2. 02.1012.06.00 3. 02.1012.06.01 4. 02.1012.06.02
	1410	16 t		168	1230	05.082.06.03.0	1.+2. 02.1014.06.25 3. 02.1014.06.26 4. 02.1014.06.27
	1500 / 2050	14 t		168	1300	05.082.05.01.0	1.+2. 02.1014.05.09 3. 02.1014.05.10 4. 02.1014.05.11
	1410	20 t		196	1230	05.082.07.03.0	1.+2. 02.1014.07.08 3. 02.1014.07.09 4. 02.1014.07.10
Further spring leaves upon request.							

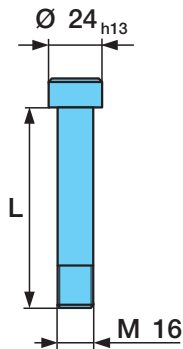
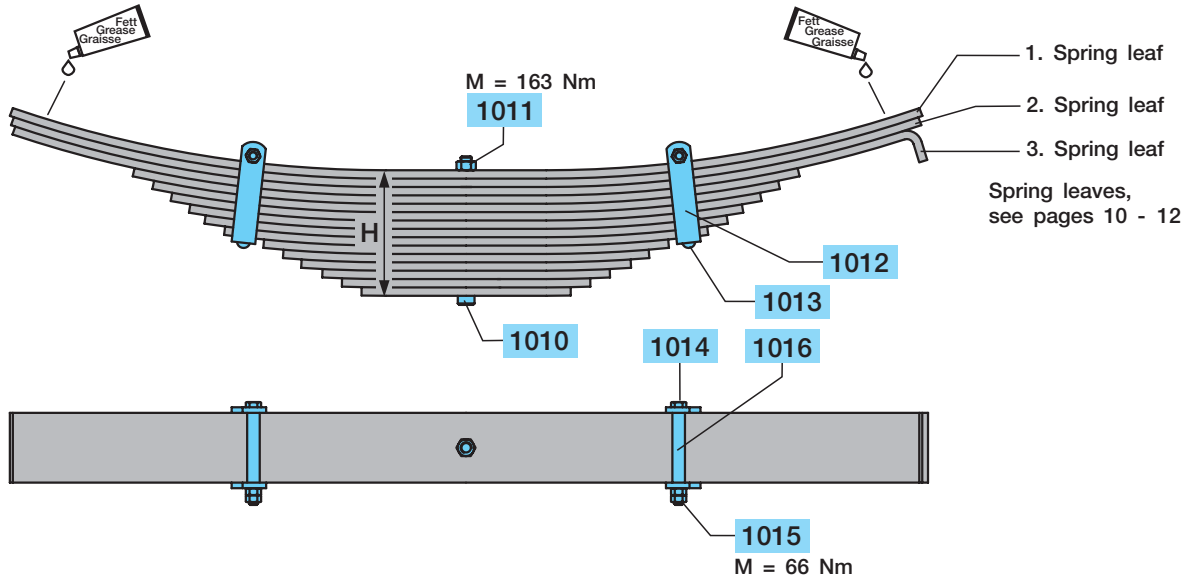
## 1.1 Leaf springs

Leaf springs							
	Wheel base	Axle load	Fig.	H	L	BPW Code no.	Spring leaves
<b>15-layer leaf springs (Item 1000)</b>							
	1140	8 t - 10 t	a	120	950	05.082.03.20.1	1.-4. 02.1014.03.51 5. 02.1014.03.52 6. 02.1014.03.53
	1500	16 t	b	180	1300	05.082.06.02.0	1. 02.1014.06.12 2. 02.1014.06.13 3. 02.1014.06.14
	Further spring leaves upon request.						
<div style="background-color: #cccccc; padding: 5px; display: inline-block;">No longer available, for further information contact BPW.</div>							
<b>16-layer leaf springs (Item 1000)</b>							
	1140	8 t		112	950	05.082.03.12.1	1.-4. 02.1012.03.86 5. 02.1012.03.89 6. 02.1012.03.90
	Further spring leaves upon request.						

## Anti-vibration leaves for 2- and 3-layer leaf springs

Item	Designation	Dimension	BPW Code no.
	Plate (WB 1310)	90 x 5 x 1190	03.281.39.02.0
	(WB 1360)	90 x 5 x 1230	03.281.39.01.0

## Spare parts for leaf springs



Item	Designation	Leaf spring H	Dimension (L)	BPW Code no.
1010	Spring screw	54 / 60	M 16 x 75	03.341.02.14.0
		63 / 64	M 16 x 80	03.341.02.18.0
		66	M 16 x 85	03.341.02.07.0
		69 / 72	M 16 x 90	03.341.02.02.0
		80	M 16 x 100	03.341.02.03.0
		85	M 16 x 105	03.341.02.17.0
		93	M 16 x 110	03.341.02.18.0
		95	M 16 x 115	03.341.02.15.0
		100	M 16 x 120	03.341.02.30.0
		112	M 16 x 130	03.341.02.04.0
		116	M 16 x 135	03.341.02.32.0
		120	AM 16 x 145	02.5038.53.80
		130	M 16 x 150	03.341.02.05.0
		140 / 144	M 16 x 165	03.341.02.16.0
		160	M 16 x 185	03.341.02.12.0
168	M 16 x 190	03.341.02.25.0		
180	M 16 x 200	03.341.02.26.0		
196	M 16 x 215	03.341.02.28.0		
1011	Hexagon nut		M 16 / 934-8	02.5202.20.80
1012	Spring clamp		C 100 x 63	02.1017.60.00
			C 100 x 93	02.1017.63.00
			C 100 x 104	02.1017.61.00
			C 100 x 109	02.1017.62.00
			C 100 x 121	upon request
			C 100 x 125	upon request
			C 100 x 133	upon request
1013	Button head rivet		12 x 28 / 124	upon request
1014	Hexagon screw		M 12 x 140 / 601	upon request
1015	Hexagon nut		M 12 / 934-8	02.5202.16.80
1016	Tube		Ø 14 / 18 x 104	upon request

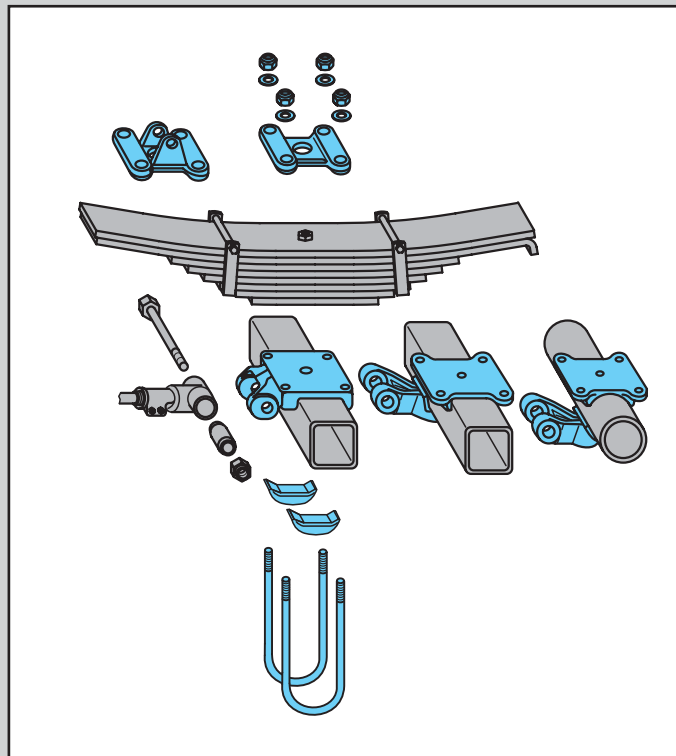
## 2 Axle clampings

### General

#### BPW Axle clampings

The axle is connected to the leaf spring using the axle connection comprising: spring plates, spring pads, segments and U-bolts.

In contrast to BPW air suspension systems (clamped), only welded axle assembly mountings are used with VB suspension units. This means that the spring pads are welded to the axle beam.



#### Axle alignment

After repairs have been carried out on the axle beam, connecting piece, connecting rods etc., the axle alignment must be checked and if necessary corrected.

Determine the diagonal dimensions **A - B** and **A - C** for the centre axle (reference axle) by means of comparative measurements ( $\pm 2$  mm tolerance).

Check and if necessary correct the wheelbase dimensions **B - D** and **C - E** for the front axle, and **B - F** and **C - G** for the rear axle (max. tolerance 1 mm).

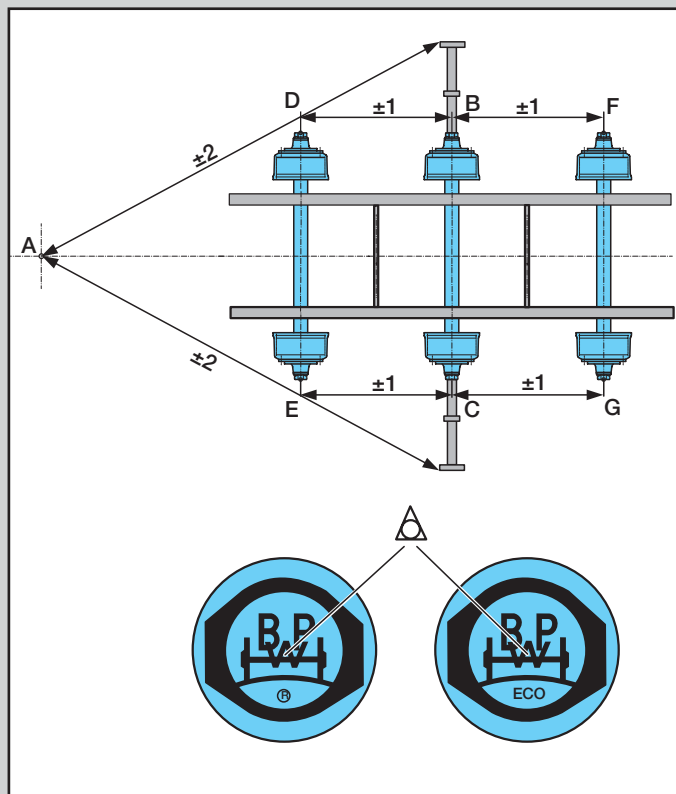
Measurement is generally carried out by means of the hub cap centre point (see illustration).

It can also be carried out using screwed-in graduated tubes.

Correct any discrepancies by means of the adjustable connecting rods.

#### Hub cap centre point in the BPW logo.

The triangle ( $\triangle$ ) in the BPW logo is positioned centrally if there is an ® or ECO stamped below the BPW logo (since 1989/1994).



### Welding guidelines for axle beams.

When fitting or repairing trailer axles it may be necessary to weld components onto the axle beam.

For that reason BPW axles are made of materials that can be welded. The axle beams do not have to be pre-heated before welding.

The carrying capacity and faultless operation of BPW axles are not impaired by welding, if the following points are complied with.

### Welding process

- Inert gas-shielded arc welding  
Welding wire quality G 42 0 (DIN EN 440)
- Manual arc welding  
Stick electrodes E 42 2 (DIN EN 499)

Mechanical quality values must correspond to the basic material ST 52-3.

Max. weld thickness a 5  $\nabla$  (DIN EN 25817)

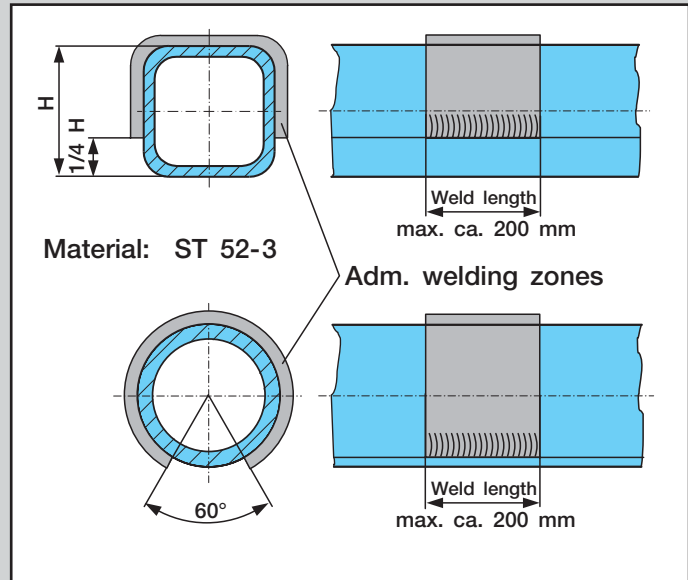
Avoid end craters and undercuts.

### Miscellaneous

No unauthorised change to the camber angle of the axle.

Adherence to the welding zones and weld lengths as shown in the adjacent sketch.

**Warning:** No welding must be carried out in the lower tensile zone of the axle beam!

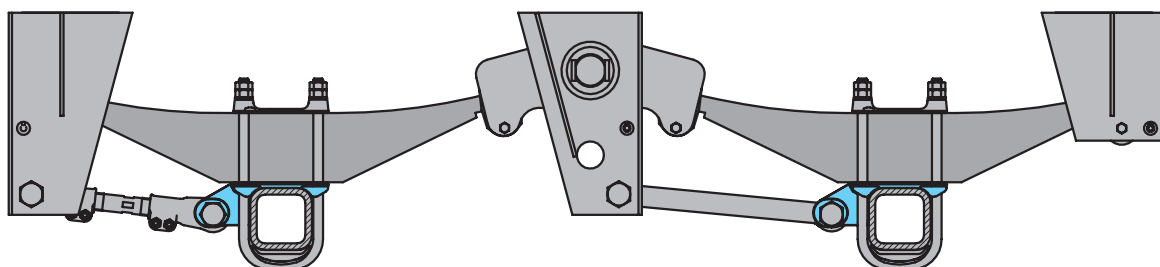


### Important for all welding work !

The leaf springs, plastic pipings and other sensitive parts should be protected against sparks and weld splashes during all welding work. The earth terminal must under no circumstances be attached to the leaf spring or hub.

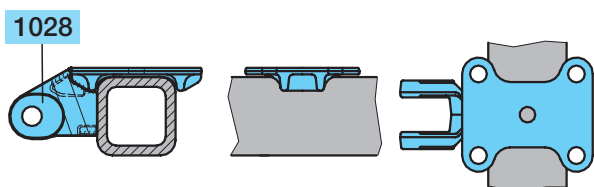
2.1 Spring seats, supports

Spring seats, supports

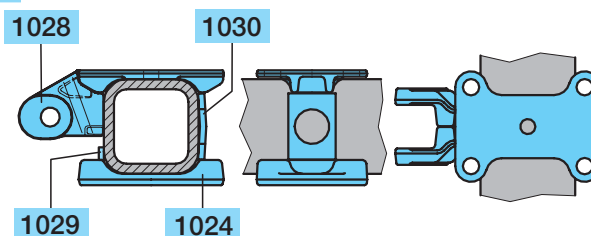


VB

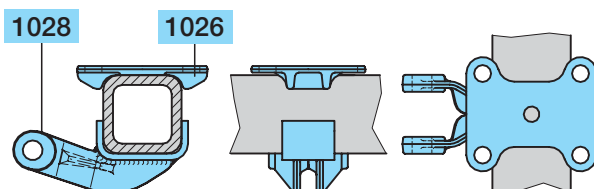
A



B

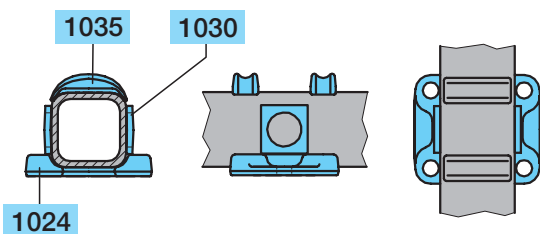


C

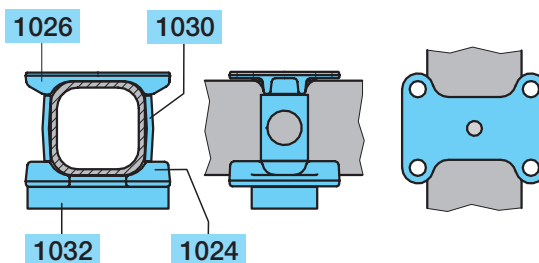


VBT

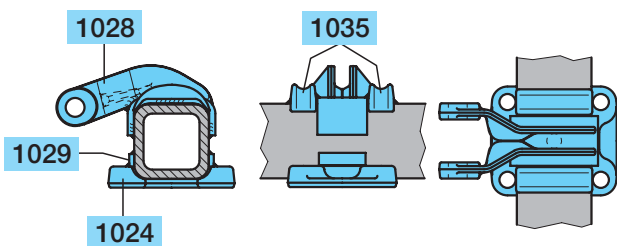
E



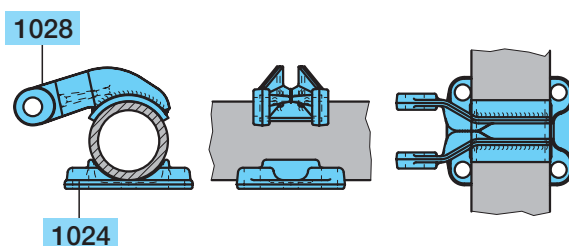
F



G



H





## Spring seats, supports 2.1

### Spring seats, supports

	Series	Item	Designation	Fig.	Axle beam	Brake position	Ø Attachment connecting rod	BPW Code no.
<p><b>Axle series H.. / R..</b></p> <p><b>Axle series K.. / N..</b></p>	<b>VB</b>	1028	Support	A	□ 120 □ 150 □ 150	30° 25° 25°	Ø 30 Ø 30 Ø 36	05.189.02.04.0 05.189.02.05.0 05.189.02.26.0
		1024	Spring seat, lower	B	□ 120	30°	Ø 30	03.032.17.05.0
		1028	Support				Ø 30	05.189.02.04.0
		1029	Block					03.221.25.04.0
		1030	Shaped plate					03.161.63.01.0
		1024	Spring seat, lower	B	□ 150	25°	Ø 30	03.032.19.26.0
		1028	Support				Ø 36	05.189.02.05.0 05.189.02.26.0
		1029	Plate					03.283.53.12.0
		1030	Shaped plate					03.161.64.05.0
		1026	Spring seat, upper	C	□ 120	0°	Ø 30	03.032.17.89.0
		1028	Support				Ø 30	05.189.07.63.0
			<b>VBT</b>	1024	Spring seat, lower	E	□ 120	16°
1030	Shaped plate							03.161.63.01.0
1035	Segment							03.345.23.02.1
1024	Spring seat, lower			E	□ 150	25°	-	03.032.19.26.0
1030	Shaped plate							03.161.64.05.0
1035	Segment							03.345.25.01.1
1024	Spring seat, lower			F	□ 120	30°	-	03.032.17.89.0
1026	Spring seat, upper							03.032.17.05.0
1030	Shaped plate							03.161.63.01.0
1032	Plate							03.281.96.19.0
1024	Spring seat, lower			G	□ 120	0°	Ø 30	03.032.17.05.0
1028	Support *						Ø 30	05.189.10.59.0
1029	Plate							03.283.53.12.0
1035	Segment							03.345.23.02.1
1024	Spring seat, lower			H	Ø 127	0°	Ø 30	03.032.38.13.0
1028	Support *				Ø 30	05.189.10.58.0		

\* The support (item 1028) can be aligned facing the front or the rear.

Further types upon request.

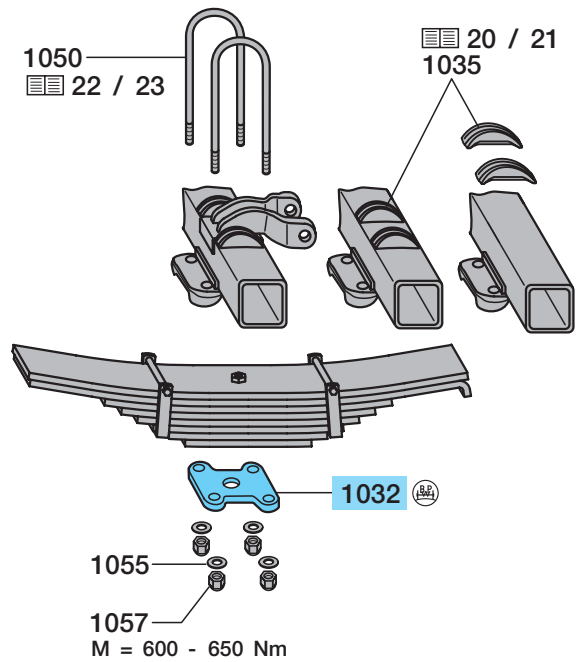
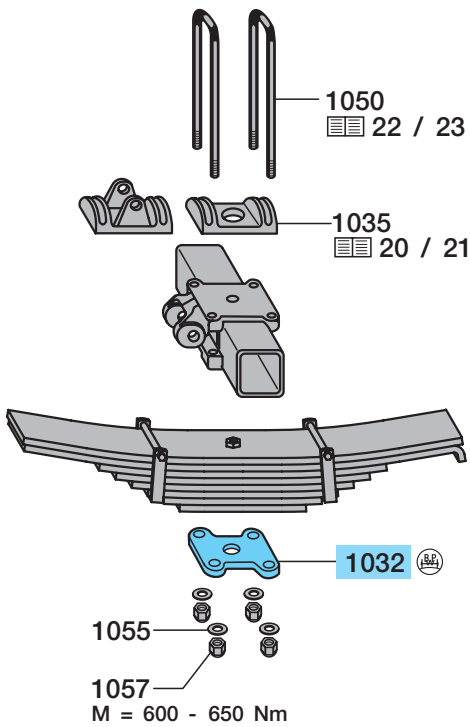
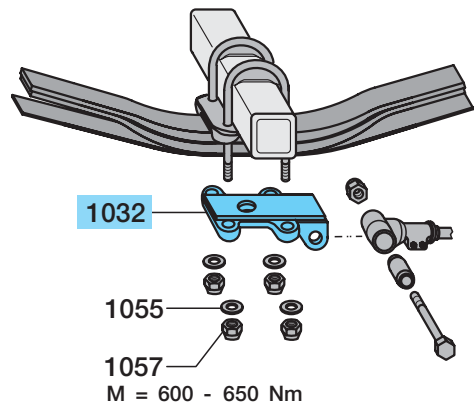
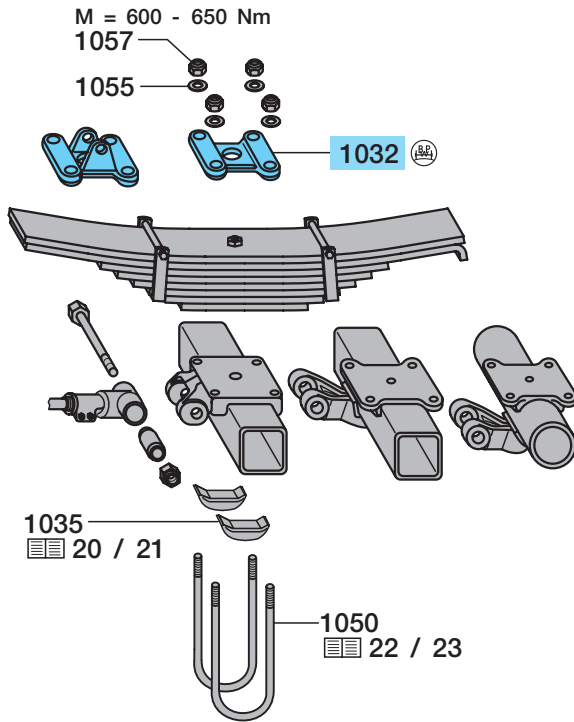
■ No longer available, for further information contact BPW.

#### Packer

	1039	Plate	20 mm 30 mm 40 mm 60 mm	03.281.96.26.0 03.281.96.19.0 03.281.96.35.0 03.281.96.46.0
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## 2.2 Spring plates, segments

### Spring plates

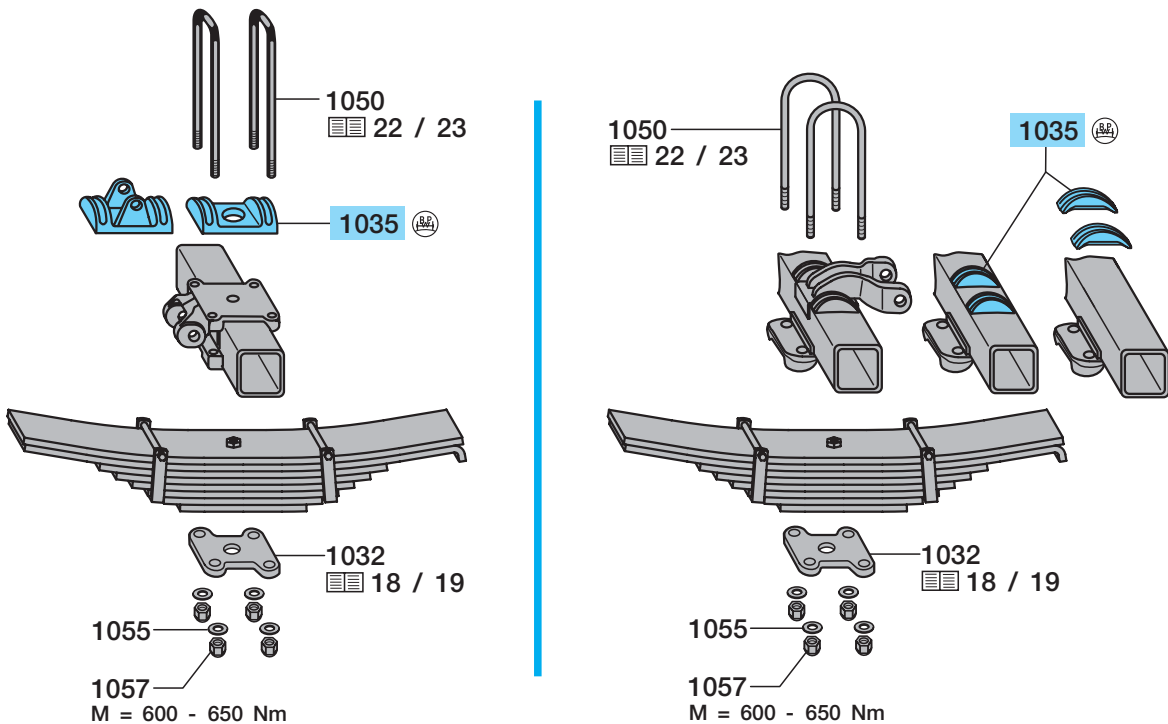
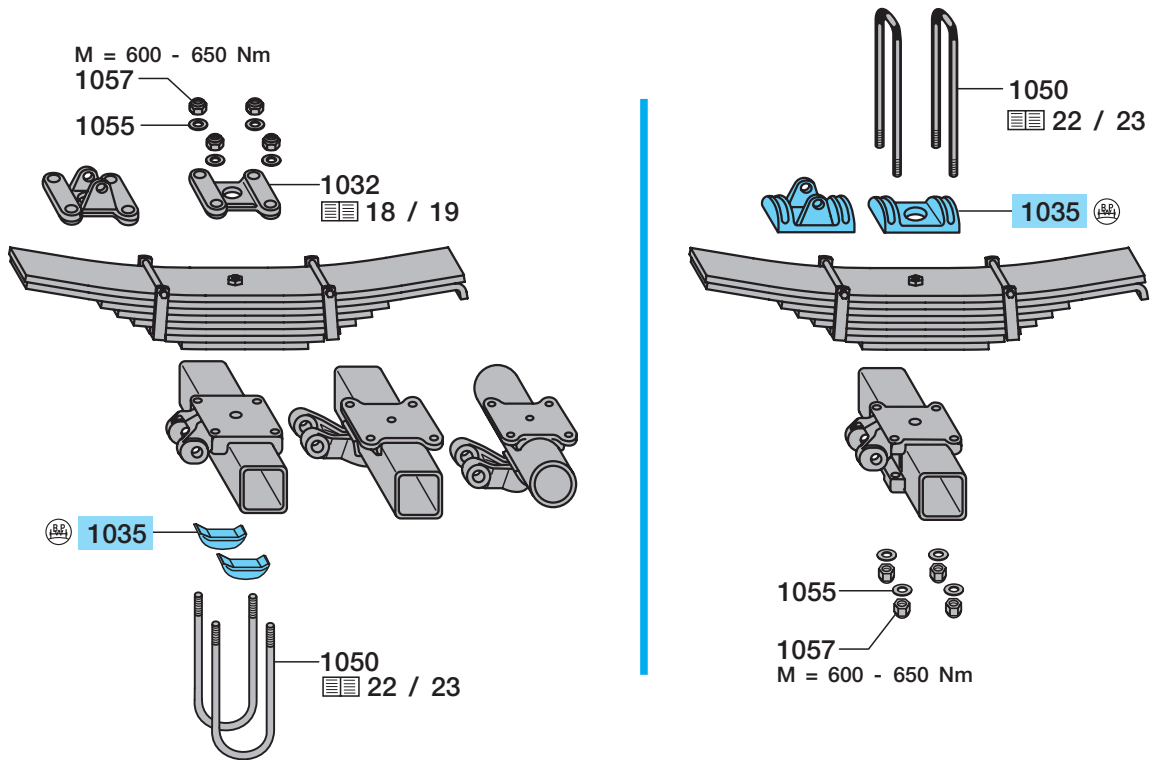


## Spring plates, segments 2.2

Spring plates							
	Item	Designation	Utilisation / Axle beam	Dimension			BPW Code no.
				A	B	V	
<b>Spring U-bolts mounted from below (above)</b>							
<b>Without U-stabilizer</b>							
	1032	Spring plate	□ 120	125	150	-	03.145.22.01.0
			□ 150		180		03.145.22.06.0
			∅ 127		155		03.145.23.27.0
<b>Spring plate for U-stabilizer attachment / connecting rod attachment</b>							
	1032	Spring plate	□ 120	125	150	-	05.145.22.05.0
			□ 150		180		05.145.23.08.0
			∅ 127		155		05.145.22.20.0
	1032	Spring plate	□ 120	125	150	-	05.145.22.04.0
			□ 150		180		05.145.23.05.0
	1032	Spring plate, right	□ 150	125	180	10	05.145.23.24.0
	1033	Spring plate, left				20	05.145.23.21.0
						10	05.145.23.25.0
						20	05.145.23.22.0

## 2.2 Spring plates, segments

### Spring plates, segments



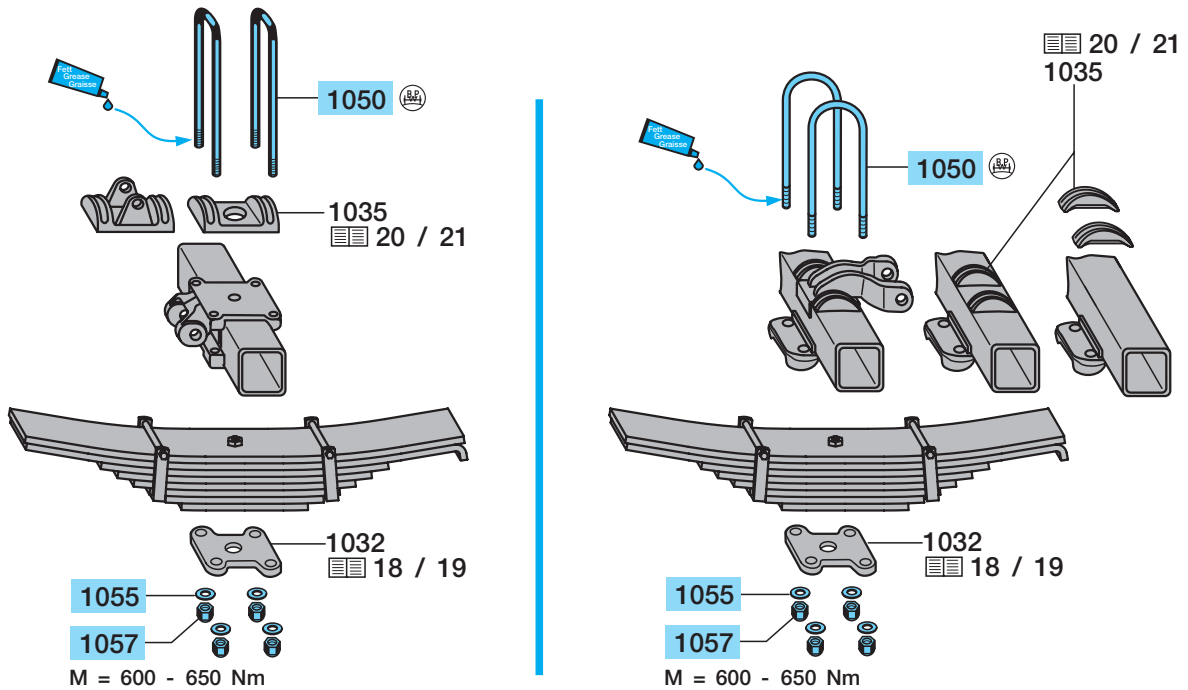
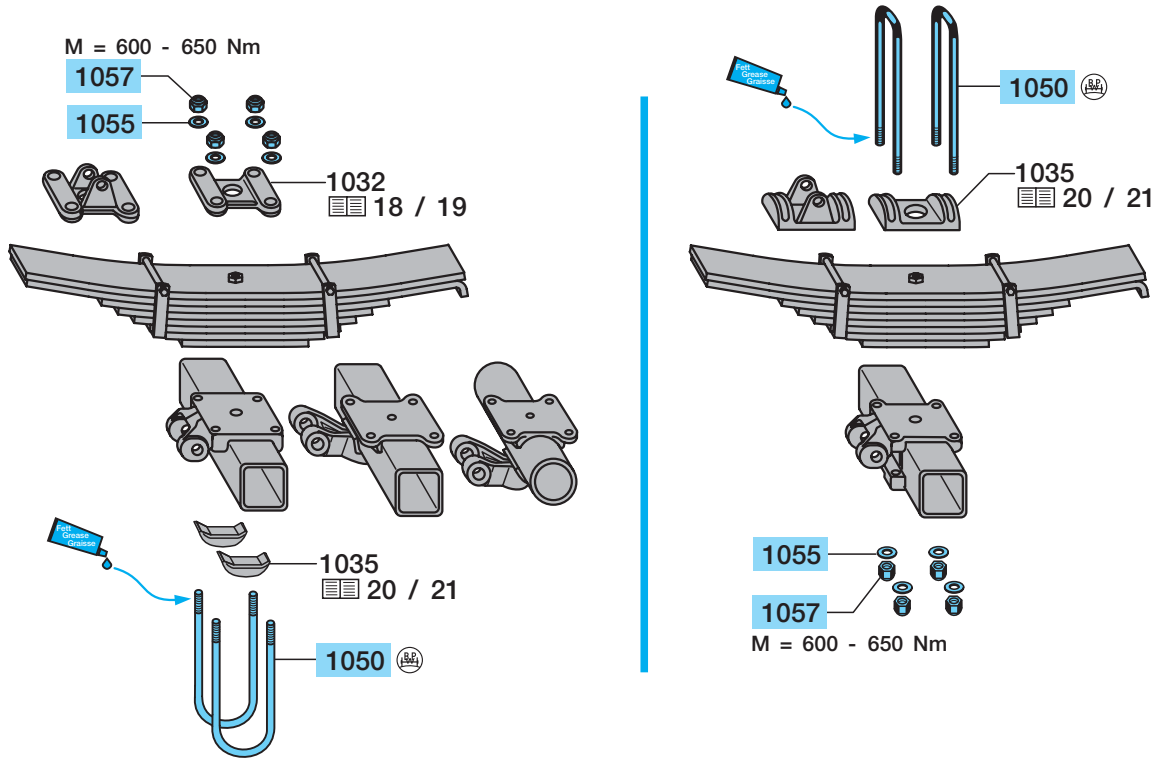
## Spring plates, segments 2.2

Spring plates							
	Item	Designation	Utilisation / Axle beam	Dimension			BPW Code no.
				A	B	L	
<b>Spring U-bolts mounted from above</b>							
<b>Without U-stabilizer</b>							
	1035	Spring plate	<input type="checkbox"/> 120	95	150	195	03.145.10.39.0
			<input type="checkbox"/> 150		180	225	03.145.10.40.0
		Spring plate *	<input type="checkbox"/> 120 / <input type="checkbox"/> 150	95	150 / 180	225	03.145.10.08.0
<p>* No longer available, replaced by 10.39.0 / 10.40.0 (see above).</p> <p style="text-align: center;">■ No longer available, for further information contact BPW.</p>							
<b>With U-stabilizer</b>							
	1035	Spring plate	<input type="checkbox"/> 120 / <input type="checkbox"/> 150	95	150 / 180	220	03.145.10.15.0

Segments							
Segment on the axle beam							
	1035	Segment	<input type="checkbox"/> 120		03.345.23.02.1		
			<input type="checkbox"/> 150		03.345.25.01.1		
	1035	Segment *	<input type="checkbox"/> 120 solid		03.345.23.03.0		
			<input type="checkbox"/> 150 solid		03.345.25.04.0		
* welded on axle beam							
	1035	Segment <sup>1)</sup>	<input type="checkbox"/> 120		03.345.23.09.0		
<p><sup>1)</sup> for flattened spring U-bolts (disc brake)</p>							

3 Spring U-bolts

Spring U-bolts



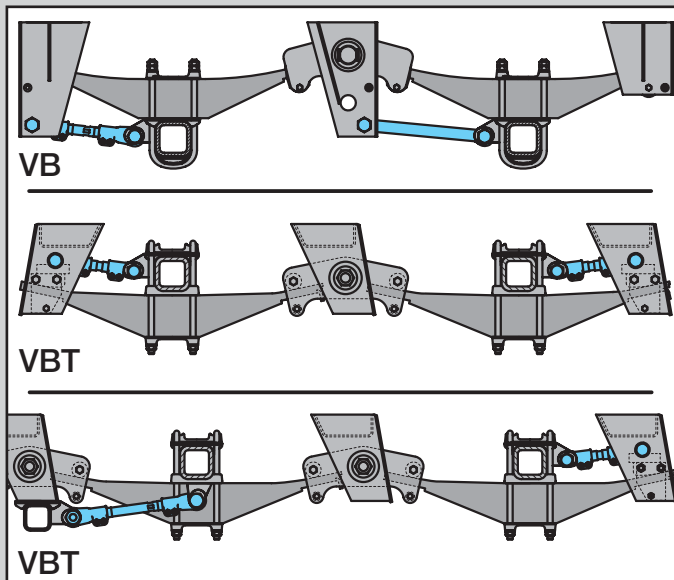
## Spring U-bolts

Item	Designation	Dimension	BPW Code no.				
		<b>L</b>	<b>A = 125</b> Leaf spring width 100 mm	<b>A = 152</b> □ 120	<b>A = 152</b> Disc brake □ 120	<b>A = 182</b> □ 150	<b>A = 152</b> Ø 127
1050	Spring U-bolt	190	-	03.138.41.31.4	-	-	-
		210	03.138.44.17.4	03.138.41.32.4	-	-	-
		230	03.138.44.21.4	-	-	-	-
		250	-	-	-	03.138.45.20.4	-
		255	03.138.44.14.4	-	-	-	-
		265	-	-	-	-	03.138.41.20.4
		270	03.138.44.19.4	03.138.41.01.4	-	-	-
		275	-	-	-	-	03.138.41.21.4
		280	03.138.44.08.4	03.138.41.19.4	-	-	03.138.41.18.4
		290	03.138.44.16.4	03.138.41.17.4	-	-	03.138.41.14.4
		300	03.138.44.04.4	03.138.41.13.4	03.138.41.34.4	-	-
		310	03.138.44.09.4	03.138.41.16.4	-	-	03.138.41.11.4
		320	03.138.44.15.4	03.138.41.08.4	03.138.41.35.4	03.138.45.11.4	03.138.41.22.4
		330	03.138.44.02.4	03.138.41.26.4	-	03.138.45.09.4	-
		335	-	-	-	-	03.138.41.10.4
		340	03.138.44.18.4	-	-	03.138.45.19.4	-
		345	-	03.138.41.05.4	03.138.41.36.4	-	-
		350	-	-	-	03.138.45.08.4	-
		355	03.138.44.01.4	03.138.41.23.4	-	-	03.138.41.09.4
		360	-	-	-	03.138.45.07.4	-
		365	-	03.138.41.06.4	-	-	-
		370	03.138.44.12.4	-	-	-	03.138.41.15.4
		380	-	-	-	03.138.45.06.4	-
		385	03.138.44.03.4	03.138.41.07.4	-	-	-
		390	-	-	-	-	03.138.41.04.4
		400	03.138.44.25.4	03.138.41.02.4	-	03.138.45.03.4	-
		405	-	03.138.41.12.4	-	-	-
		410	03.138.44.10.4	-	-	-	03.138.41.24.4
		420	03.138.44.11.4	-	-	03.138.45.04.4	-
		435	03.138.44.06.4	03.138.41.03.4	-	-	-
		440	-	-	-	03.138.45.05.4	-
		452	03.138.44.07.4	-	-	-	-
		460	-	-	-	03.138.45.10.4	-
		470	03.138.44.20.4	-	-	-	-
		485	-	-	-	03.138.45.12.4	-
		490	03.138.44.13.4	-	-	-	-
		495	-	-	-	03.138.45.13.4	-
		520	-	-	-	03.138.45.16.4	-
		540	-	-	-	03.138.45.15.4	-
1055	Washer	02.5401.25.07	Ø 25 / 125				
1057	Hexagon nut (16x)	02.5202.30.10	M 24 / 934-10	replaced by 02.5220.74.12 (Item 1330)			
1057	Lock nut (8x)	02.5220.74.12	VM 24 / 980-10				

## 4 BPW Connecting rods, attachments

### General

The horizontal alignment of BPW connecting rods guarantees precise axle location.



### Tracking adjustment

One rigid and one adjustable connecting rod enable slight adjustment of the tracking of the axles on the suspension unit.

Two adjustable connecting rods are used for each axle in the case of some suspension unit designs.

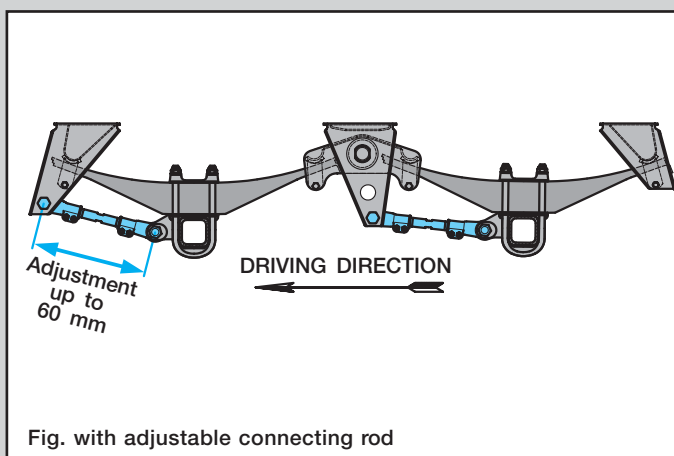
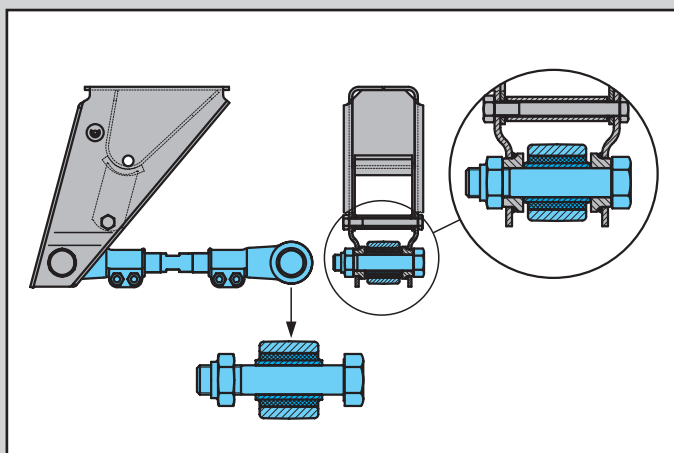


Fig. with adjustable connecting rod

### Rubber-steel bushes

The rubber-steel bushes pressed into the connecting rods guarantee a low-maintenance mounting.

Ø Screw	Outer Ø Bush	Inner Ø Connecting rod
Ø 30	Ø 60	Ø 55
Ø 36	Ø 66	Ø 62





### Changing bushes

The bushes in the connecting rods can either be pressed in and out under a press (a), or changed under the vehicle with the BPW installation device (b).

When replacing the bushes it is important to ensure that they project evenly on both sides (arrows) after assembly.

### Tool for pressing bushes in under a press.

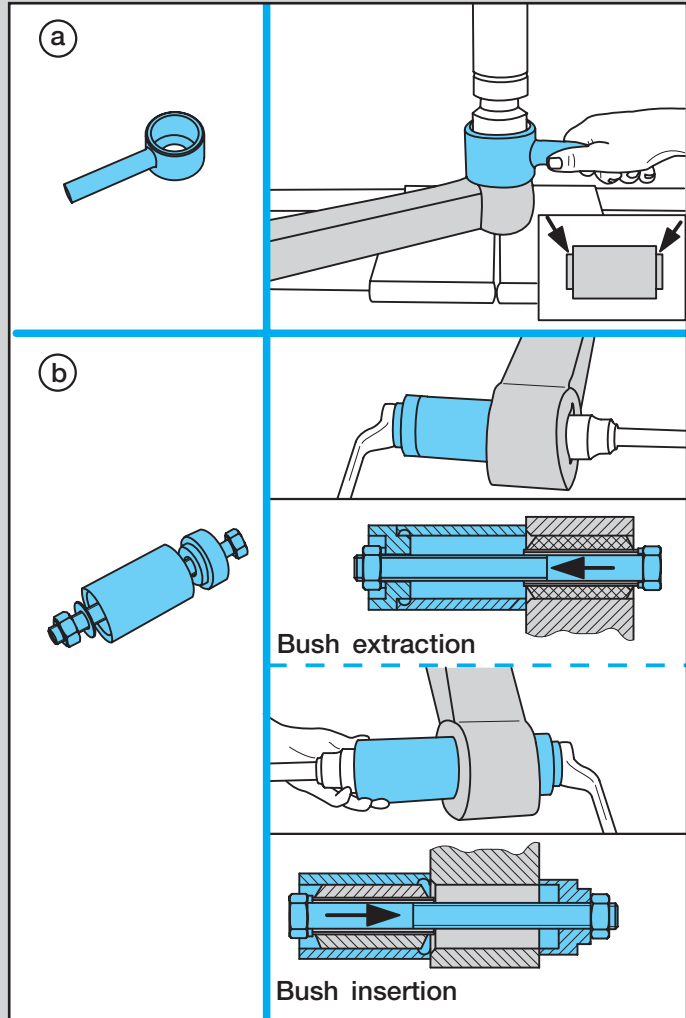
Ø 60                    BPW Code no. **15.003.19433**

Ø 66                    BPW Code no. **15.004.19433**

### Tool for manual fitting

Ø 60                    BPW Code no. **14.825.11744**

**Apply soapy water or another lubricant to the bushes before fitting them.**

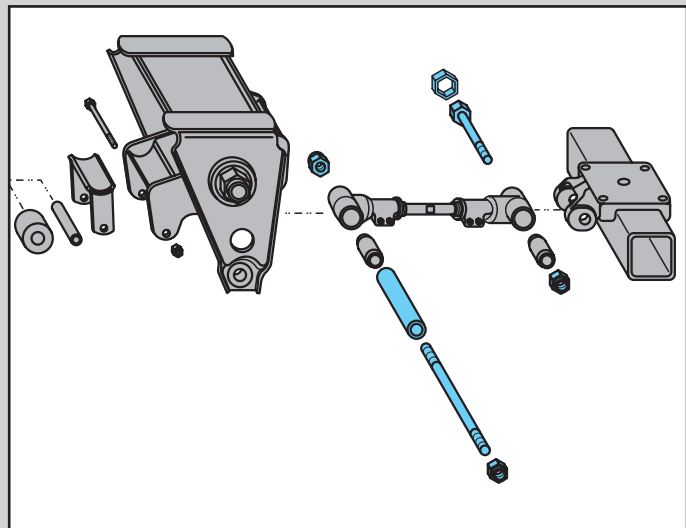


### Connecting rod attachments

The connecting rods are attached to the axle beams, connecting pieces and equalising beams using hexagon bolts.

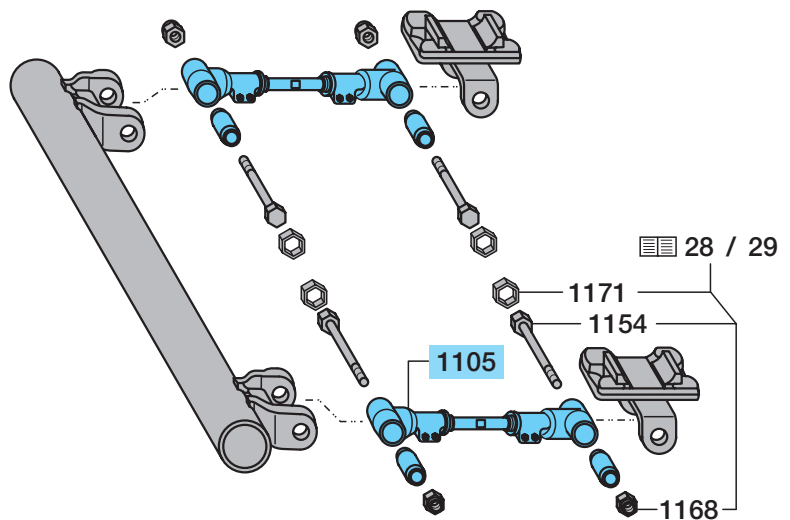
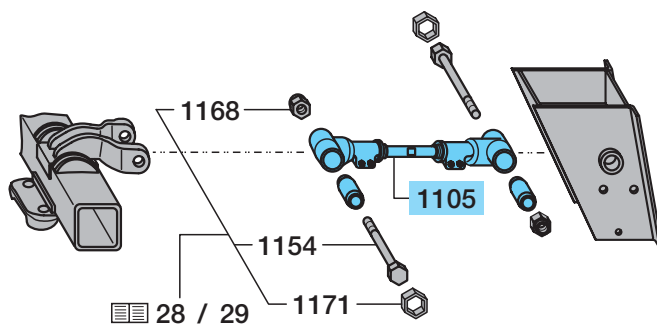
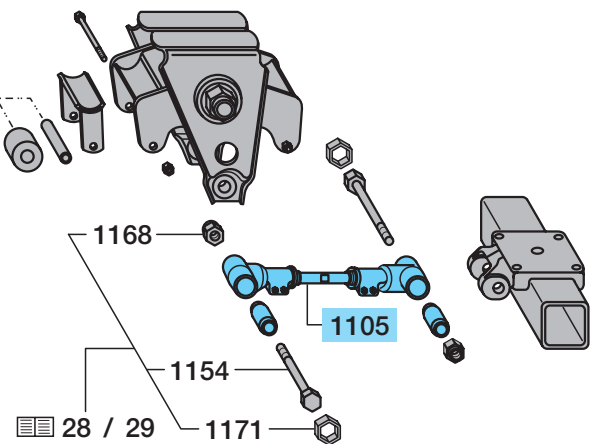
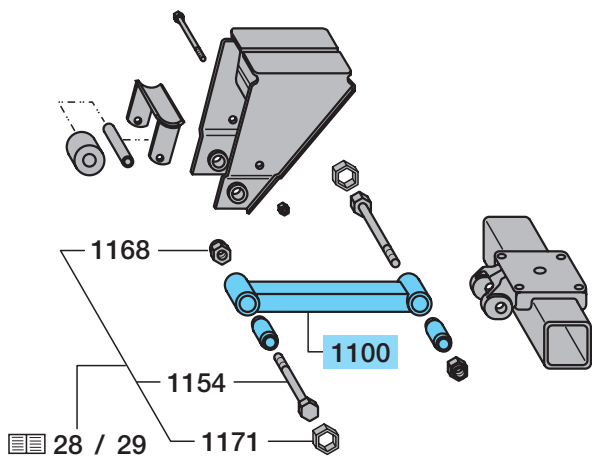
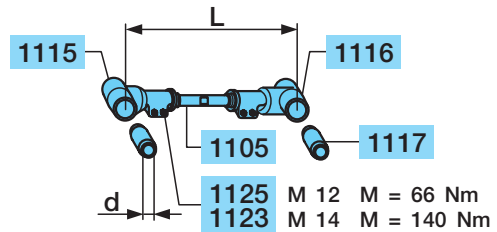
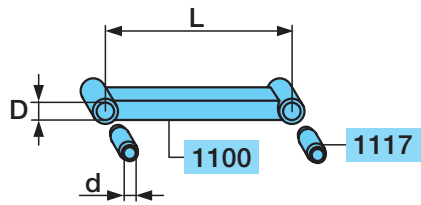
Where there is an offset equalising beam (for steering axles) a threaded rod is used with a spacer tube.

Reducing sleeves can be used for the attachment of Ø 36 connecting rods with M 30 bolts (see attachments).


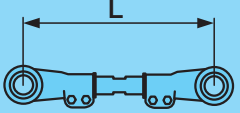





## 4.1 Connecting rods

### Connecting rods, spare parts



## Connecting rods 4.1

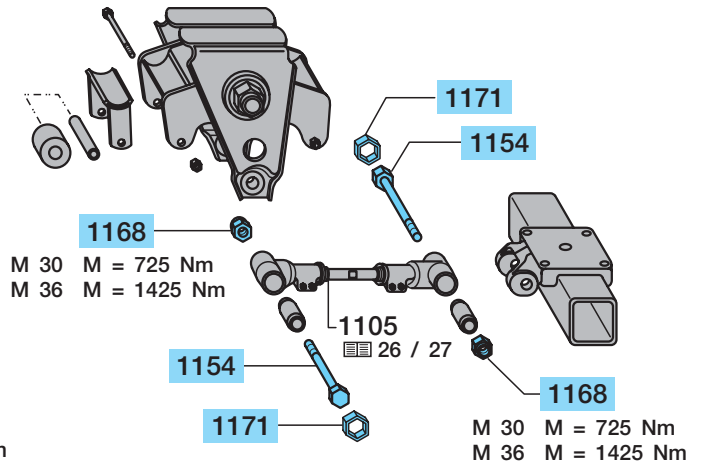
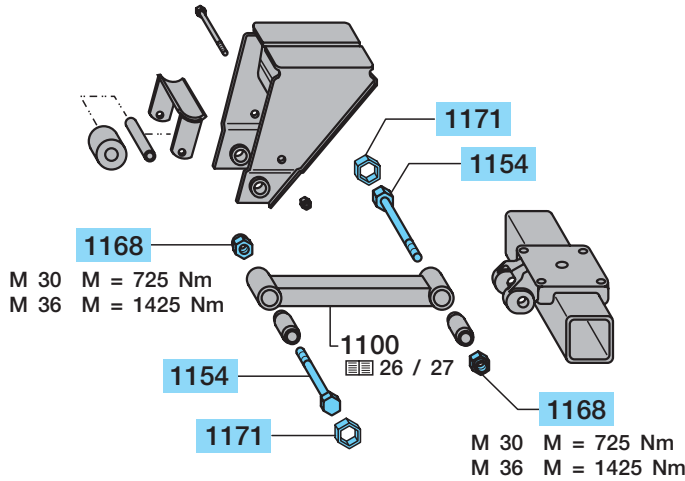
Connecting rods, spare parts													
						 Left threaded	 Right threaded						
L	Connecting rod, fixed Item 1100 (incl. item 1117) BPW Code no.	L	Connecting rod, adjustable Item 1105 (incl. item 1115 - 1125) BPW Code no.	Dimension		Tensioner head, left threaded Item 1115 BPW Code no.	Tensioner head, right threaded Item 1116 BPW Code no.	Bush Item 1117 BPW Code no.					
	d		D	BPW Code no.	BPW Code no.	BPW Code no.							
330	05.443.44.07.0			30	55	03.353.67.04.0	03.353.67.05.0	05.113.96.05.0 Ø 30 / 60 x 68					
360	05.443.45.21.0	320 - 380	05.443.70.92.0										
425	05.443.46.06.0	410 - 450	05.443.70.14.1										
440	05.443.46.04.0	410 - 470	05.443.70.43.0										
450	05.443.47.19.0	430 - 480	05.443.71.15.0										
465	05.443.47.23.0	440 - 490	05.443.71.35.0										
475	05.443.47.15.0	450 - 500	05.443.70.77.0										
		475 - 535	05.443.70.83.0										
545	05.443.48.15.0	510 - 560	05.443.70.98.0										
		515 - 555	05.443.70.19.1										
575	05.443.48.16.0	550 - 600	05.443.71.10.0										
615	05.443.49.33.0	590 - 640	05.443.71.17.0										
705	05.443.49.31.0	680 - 730	05.443.71.18.0										
		725 - 775	05.443.71.01.0										
775	05.443.49.49.0	750 - 800	05.443.70.97.0										
820	05.443.49.32.0	790 - 840	05.443.71.19.0										
855	05.443.49.40.0												
		885 - 935	05.443.70.90.0										
300	05.443.44.06.0	285 - 315	05.443.71.12.0 *						36	62	03.353.68.05.0	03.353.68.06.0	05.113.93.03.0 Ø 36 / 66 x 68
345	05.443.44.08.0	335 - 360	05.443.71.06.0								03.353.68.01.0	03.353.68.02.0	
370	05.443.48.37.0	355 - 385	05.443.71.57.0										
395	05.443.48.33.0	380 - 410	05.443.71.55.0										
425	05.443.46.03.0	410 - 440	05.443.71.04.0										
440	05.443.48.31.0	425 - 455	05.443.71.54.0										
445	05.443.48.39.0	430 - 460	05.443.71.58.0										
450	05.443.47.20.0	435 - 465	05.443.71.02.0										
470	05.443.48.35.0	455 - 485	05.443.71.56.0										
495	05.443.48.18.0	480 - 510	05.443.71.08.0										
515	05.443.48.29.0	485 - 545	05.443.70.94.0										
575	05.443.48.27.0	545 - 600	05.443.71.09.0										
635	05.443.49.35.0	605 - 665	05.443.71.03.0										
655	05.443.48.43.0	625 - 685	05.443.71.60.0										
770	05.443.49.36.0	755 - 785	05.443.71.07.0										
790	05.443.48.41.0	760 - 820	05.443.71.59.0										
825	05.443.49.34.0	810 - 840	05.443.71.05.0										
1123	Hexagon screw	M 12 x 60	02.5021.76.80	für d = Ø 30									
		M 14 x 65	02.5022.03.80	für d = Ø 36									
1125	Lock nut	M 12-8	02.5273.12.82	für d = Ø 30									
		M 14-8	02.5273.14.82	für d = Ø 36									

\* with only one hexagon screw (M 14 x 65) per tensioner head

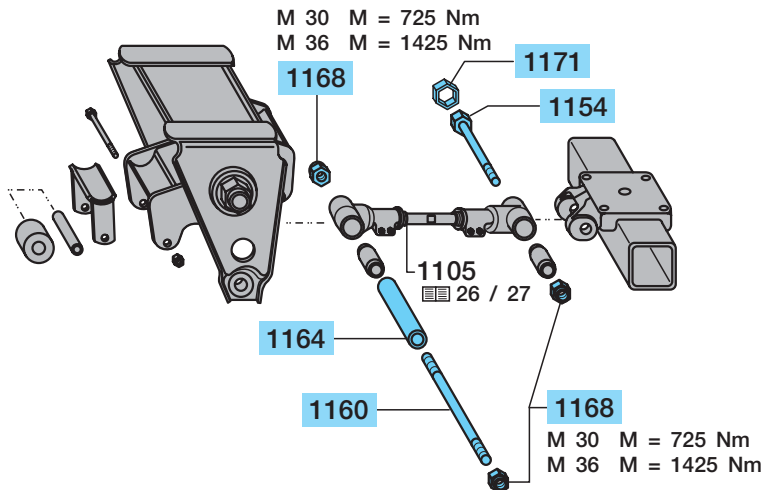
## 4.2 Connecting rod attachments

### Connecting rod attachments

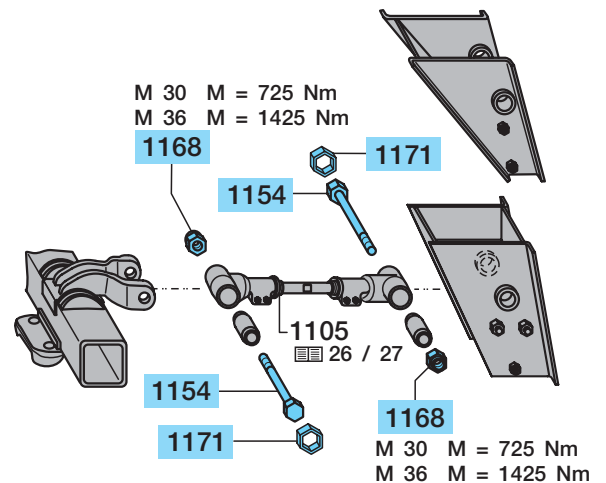
Attachment at hanger bracket or straight equalizing beam



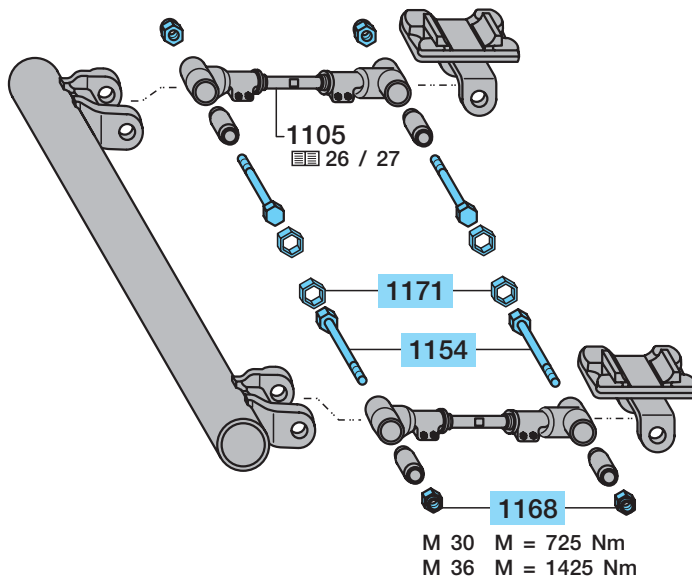
Equalizing beam with offset (with steering axes)



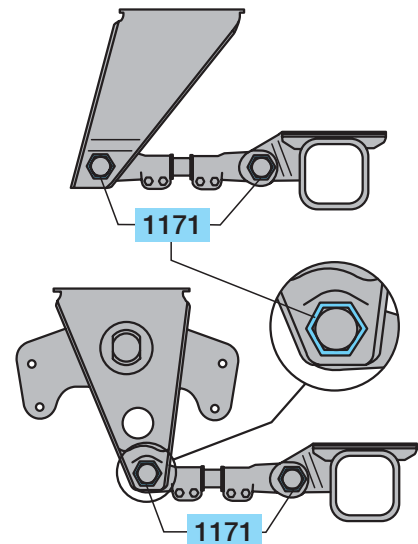
VBT



VBT



Anti-rotation device



## Connecting rod attachments 4.2

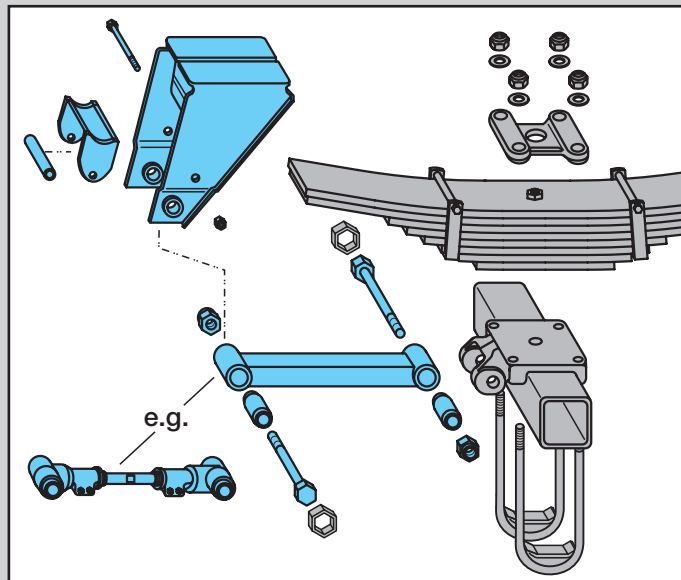
Connecting rod attachments				
	Item	Designation	Dimension	BPW Code no.
<b>Attachment at hanger bracket or straight equalizing beam or VBT</b>				
	1154 1155 1156	Screw	M 30 x 120 / SW 46	03.340.15.22.0
			M 30 x 150 / SW 46	03.340.15.15.0
			M 30 x 160 / SW 46	03.340.15.21.0
			M 30 x 170 / SW 46	03.340.15.24.0
			M 30 x 180 / SW 46	03.340.15.30.0
			M 30 x 190 / SW 46	03.340.15.20.0
			M 30 x 210 / SW 46	03.340.15.23.0
			M 36 x 155 / SW 55	03.340.16.03.0
			M 36 x 185 / SW 55	03.340.16.04.0
			M 36 x 215 / SW 55	03.340.16.05.0
			M 36 x 235 / SW 55	03.340.16.06.0
			1168	Lock nut
	M 36 / 980-06	02.5220.85.26		
	<b>Equalizing beam with offset (with steering axes)</b>			
	1160	Screw	M 30 x 310	03.340.75.23.0
			M 30 x 340	03.340.75.24.0
			M 30 x 350	03.340.75.19.0
			M 30 x 392	03.340.75.18.0
			M 36 x 400	03.340.76.46.0
	1164	Tube	Ø 31 / 60 x 130	03.300.74.51.0
			Ø 31 / 60 x 146	03.300.74.89.0
			Ø 31 / 60 x 160	03.300.74.93.0
			Ø 38 / 70 x 146	03.300.75.45.0
	1168	Lock nut	M 30 / 980-06	03.260.15.01.0
M 36 / 980-06			02.5220.85.26	
<b>Reducing sleeves for the attachment of Ø 36 connecting rods with M 30 bolts</b>				
	1160	Bush	Ø 30.1 / 36 x 66	03.112.12.17.0
<b>Anti-rotation device</b>				
	1171	Profiled part	SW 46	03.001.14.15.0
			SW 55	03.001.14.30.0

## 5 Front hanger brackets

### General

The front connecting pieces welded onto the vehicle chassis are connected to the first axle of the suspension unit by means of connecting rods, thus conveying all the tracking, braking and acceleration forces from the axle into the vehicle chassis.

Adjustable connecting rods are fitted on one side to ensure easy tracking of the vehicle.



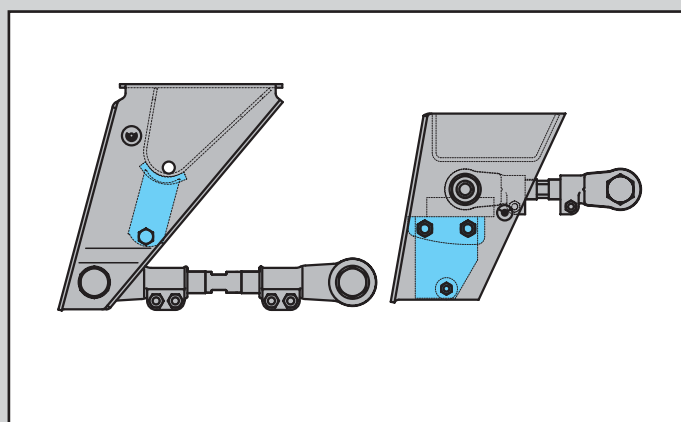
### Sliders

The ends of the leaf spring are slide-mounted in the connecting pieces by means of screwed-in sliders or welded-in retainers made of hardened steel alloy.

In this context it should be ensured that the sliding points are always well greased.

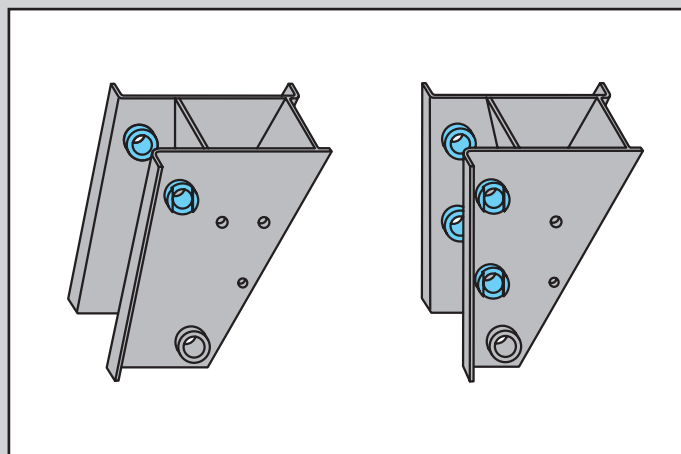
Thick-walled lateral wear plates ensure precise guidance of the spring ends in the connecting pieces.

Note the correct position of the retainers when replacing them (see also equalising beams, page 37) !



### Drawbar connection

VB connecting pieces with integrated drawbar connection have 2 or 4 welded-in bushes, depending on the design, to take the attachment bolts.

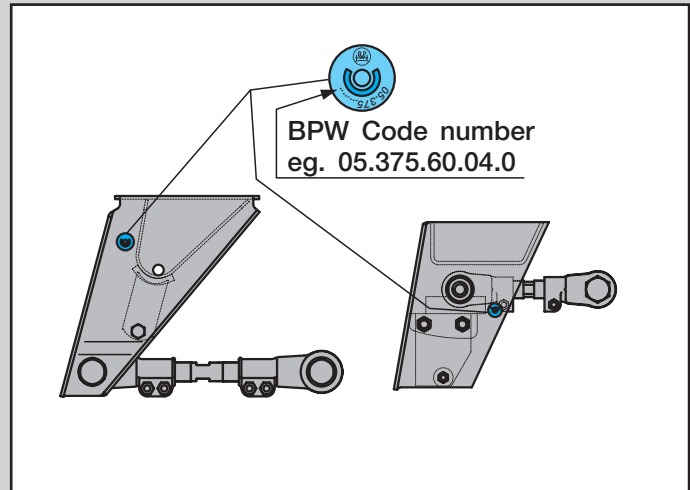


### BPW Code number

The BPW code number is stamped into the manufacturer's nameplate on the connecting piece.

### Scope of delivery

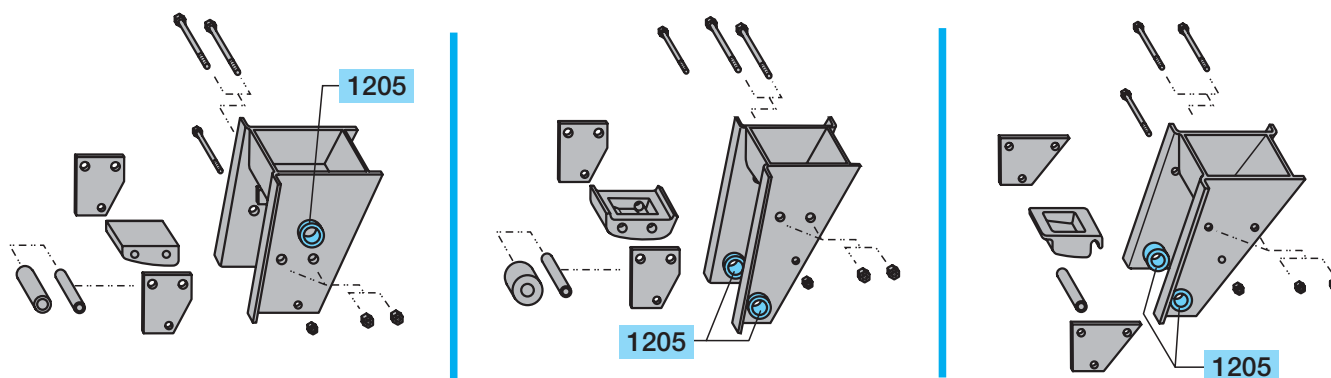
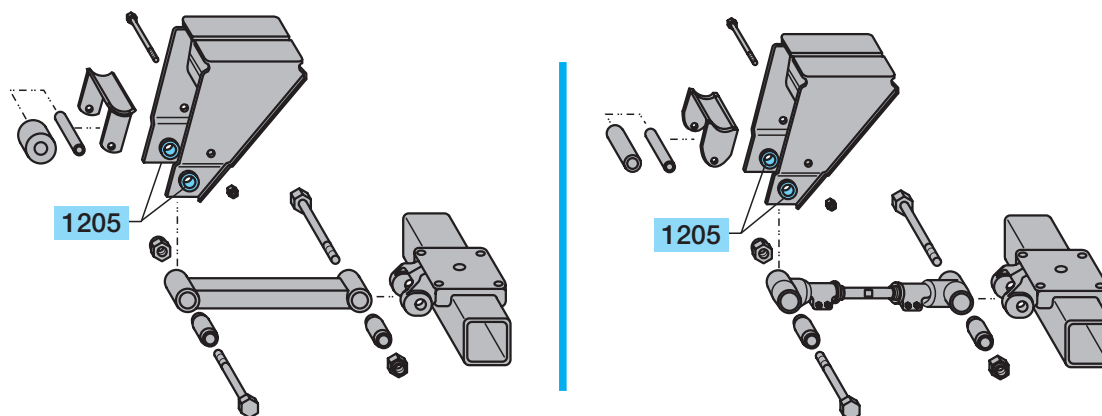
When you order this BPW code number you receive the complete connecting piece, including slider, connecting rod and attachment parts.



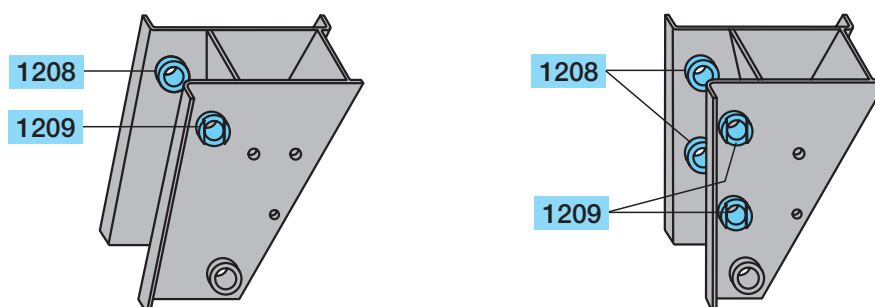
## 5.1 Spare parts for front hanger brackets

### Weld-in bushes

#### Weld-in bushes for connecting rod attachment



#### Weld-in bushes for drawbar attachment





## Spare parts for front hanger brackets 5.1

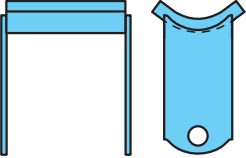
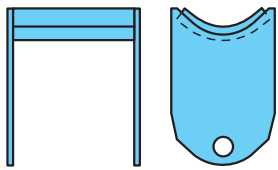
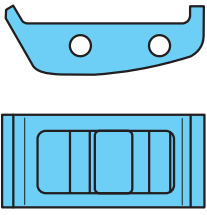
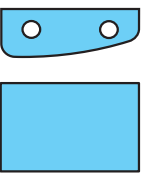

Weld-in bushes									
	Series	Item	Designation	Dimension				BPW Code no.	Quantity / Hanger bracket
				d	D1	D	H		
<b>Weld-in bushes for connecting rod attachment</b>									
	VB-K VB-KN VB-KE VBT-K VBT-KE VB-L VB-LE VB-M VB-ME VBT-M	1205	Bush	30	50	60	21	03.113.01.19.0	2
	VB-C VBT-C	1205	Sleeve	30	50	60	30	03.200.34.05.0	2
				30	50	60	35	03.200.34.04.0	2
	VB VB-M	1205	Sleeve	30	-	60	30	03.113.01.22.0	2
	VB VBT VB-B VBT-B VB-E VBT-E VB-HD VB-HDE	1205	Sleeve	36	-	65	40	03.200.75.01.0	2
<b>Weld-in bushes for drawbar attachment</b>									
	Ø 25	1208	Bush without slot	Ø 25 / 58 / 65 x 30				03.113.00.18.0	1
		1209	Bush with slot	Ø 25 / 58 / 65 x 35				03.113.00.19.0	1
	Ø 32	1208	Bush without slot	Ø 32 / 58 / 65 x 30				03.113.02.05.0	1
		1209	Bush with slot	Ø 32 / 58 / 65 x 35				03.113.02.04.0	1

## 5.1 Spare parts for front hanger brackets

### Supports / sliders / attachment parts

<p><b>A</b></p> <p>1235 1230 1245 1238 M 14 M = 140 Nm</p> <hr/> <p>1410 I 1410 1412 II 1415 III</p>	<p><b>B</b></p> <p>1235 1230 1410 1245 1238 M 14 M = 140 Nm</p>
<p><b>D</b></p> <p>1240 1235 1232 1230 1410 1245 1238 1244 M 20 M = 320 Nm M 14 M = 140 Nm</p>	<p><b>E</b></p> <p>1235 1232 1230 1245 1238 M 14 M = 140 Nm</p>
<p><b>C</b></p> <p>1235 1240 1230 1232 1410 1245 1238 1244 M 20 M = 320 Nm M 14 M = 140 Nm</p>	

## Spare parts for front hanger brackets 5.1

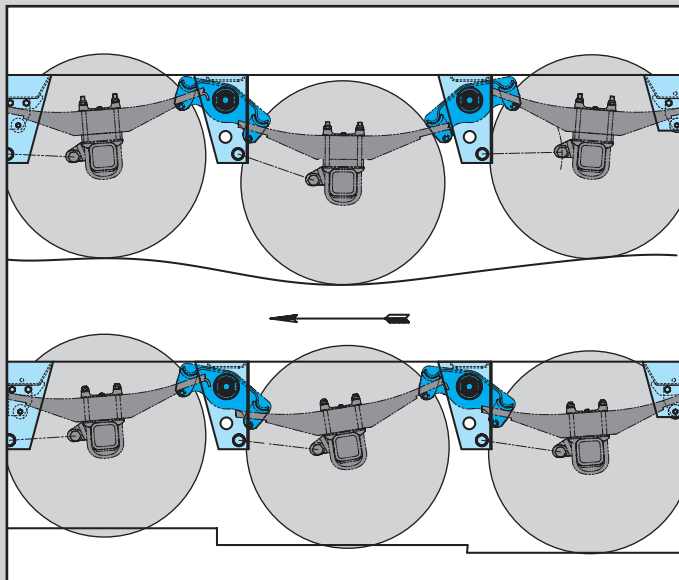
Supports / sliders / attachment parts						
	Series	Item	Designation	Dimension	BPW Code no.	
<b>Fig. A</b> 	<b>VB-K</b> <b>VB-KN</b> <b>VB-KE</b> <b>VBT-K</b> <b>VBT-KE</b>	1230	Support ( normal I )		05.189.04.70.0	
			Support ( reinforced II )		05.189.05.22.0	
			Support ( solid III )		05.189.05.97.0	
		1235	Hexagon screw	M 14 x 140 / 931-8.8	02.5022.09.80	
		1238	Lock nut	M 14-8	02.5273.14.82	
		1245	Tube	Ø 16 / 25 x 103	03.300.73.12.0	
<b>Fig. B</b> 	<b>VB-L</b> <b>VB-LE</b> <b>VBT-L</b> <b>VBT-LE</b> <b>VB-M</b> <b>VB-ME</b> <b>VBT-M</b>	1230	Support		05.189.05.75.0	
			Hexagon screw	M 14 x 140 / 931-8.8	02.5022.09.80	
			Lock nut	M 14-8	02.5273.14.82	
			Tube	Ø 16 / 25 x 103	03.300.73.12.0	
<b>Fig. C</b> 	<b>VB</b> <b>VB-B</b> <b>VB-E</b> <b>VB-HD</b> <b>VB-HDE</b>	1230	Block		03.221.89.05.0	
			1232	Plate		03.285.45.08.0
			1235	Hexagon screw	M 14 x 150 / 931-8.8	02.5022.10.80
			1238	Lock nut	M 14-8	02.5273.14.82
			1240	Hexagon screw	M 20 x 160 / 931-8.8	02.5023.09.80
			1244	Lock nut	VM 20 / 980-8	02.5220.50.82
			1245	Tube	Ø 14.8 / 20 x 103	03.300.72.05.0
<b>Fig. D</b> 	<b>VBT</b> <b>VBT-B</b> <b>VBT-E</b>	1230	Block		03.221.79.01.0	
			1232	Plate		03.285.45.08.0
			1235	Hexagon screw	M 14 x 150 / 931-8.8	02.5022.10.80
			1238	Lock nut	M 14-8	02.5273.14.82
			1240	Hexagon screw	M 20 x 160 / 931-8.8	02.5023.09.80
			1244	Lock nut	VM 20 / 980-8	02.5220.50.82
			1245	Tube	Ø 14.8 / 20 x 103	03.300.72.05.0
<b>Fig. E</b> 	<b>VB-C</b> <b>VBT-C</b>	1230	Slider		03.181.40.11.0	
			1232	Plate		03.285.36.01.0
			1235	Hexagon screw	M 14 x 140 / 931-8.8	02.5022.09.80
			1238	Lock nut	M 14-8	02.5273.14.82
			1245	Tube	Ø 16 / 25 x 106	03.300.73.21.0
<b>Silent block bushes</b>						
		1410	Rubber roll	Ø 20 / 40 x 80	02.1205.02.00	
			Bush	Ø 20 / 80 x 80	03.113.90.11.0	
				Ø 25 / 80 x 80	03.113.90.05.0	
		1412	Bush	Ø 40 / 80 x 80	03.113.94.04.0	
		1415	Slider		03.181.90.10.0	

## 6 Equalizing beams

### General

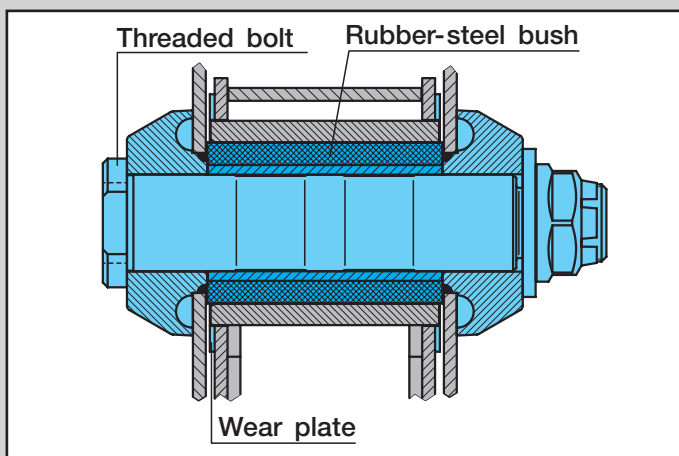
#### Mode of operation

In the case of multi-axle suspension units, the middle connecting pieces have pivoting equalising beams. The spring ends slide-mounted in the equalising beams together achieve static axle equalisation (even distribution of axle load when stationary and on the move).

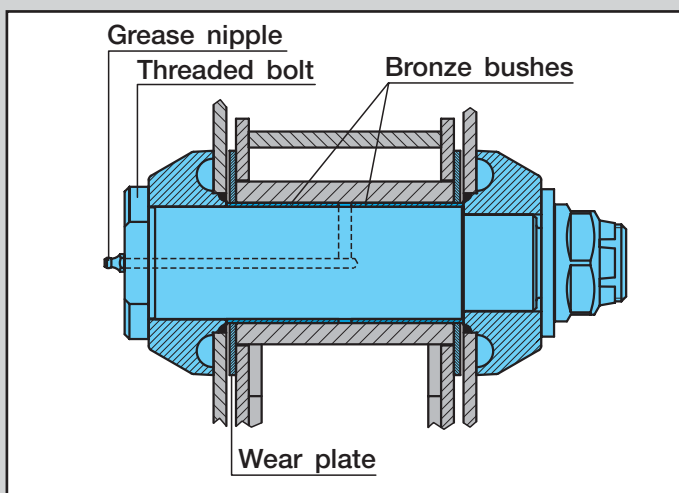


#### Equalizing beam bearing

Maintenance-free **rubber-steel bushes** are used in the weight range from 9 to 14 tonnes axle load.



High-quality, durable **bronze bushes** are used for heavy axle loads (9 - 20 tonnes) as well as for extreme off-road applications.

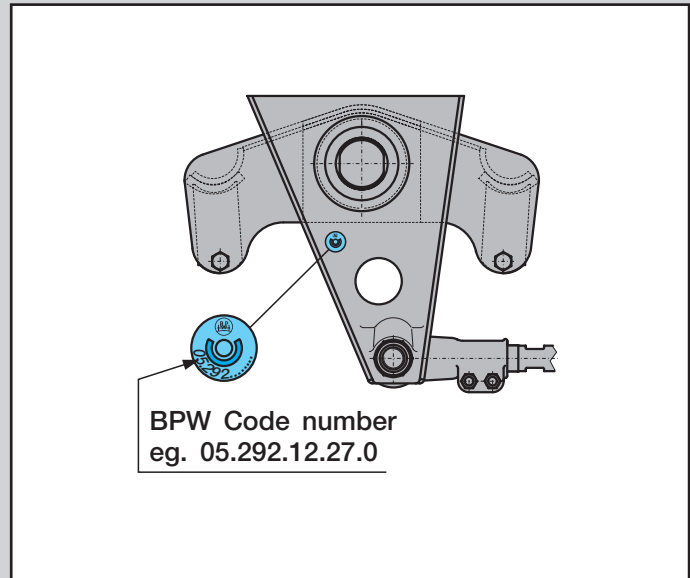


### BPW Code number

The BPW code number is stamped into the manufacturer's nameplate on the connecting piece for the equalising beam.

### Scope of delivery

When you order this BPW code number you get the complete equalising beam, including connecting piece, sliders, connecting rod and attachment parts.

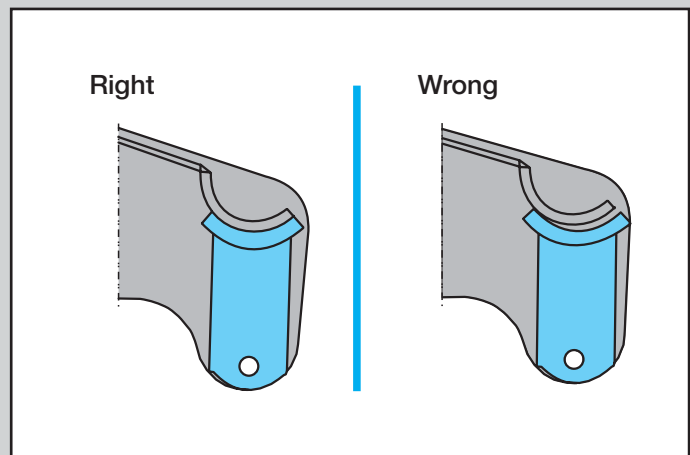


### Sliders

The ends of the leaf springs are slide-mounted in the equalising beams by means of screwed-in sliders or welded-in retainers made of hardened steel alloy.

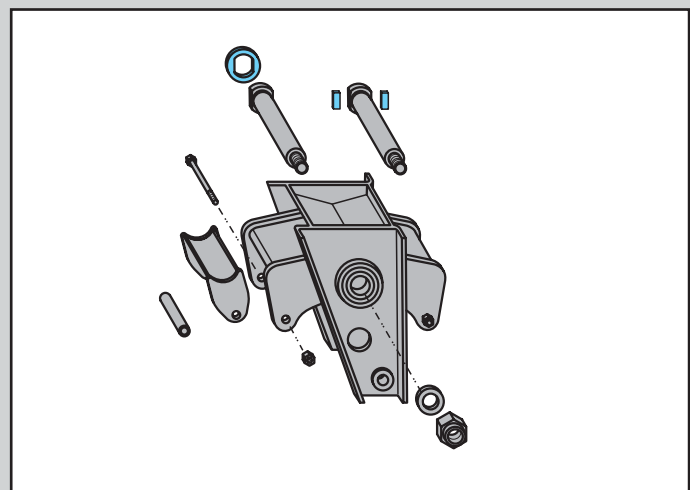
In this context it should be ensured that the sliding points are always well greased.

Note the position of the retainers when replacing them (see illustration).



### Anti-rotation device for threaded bolts

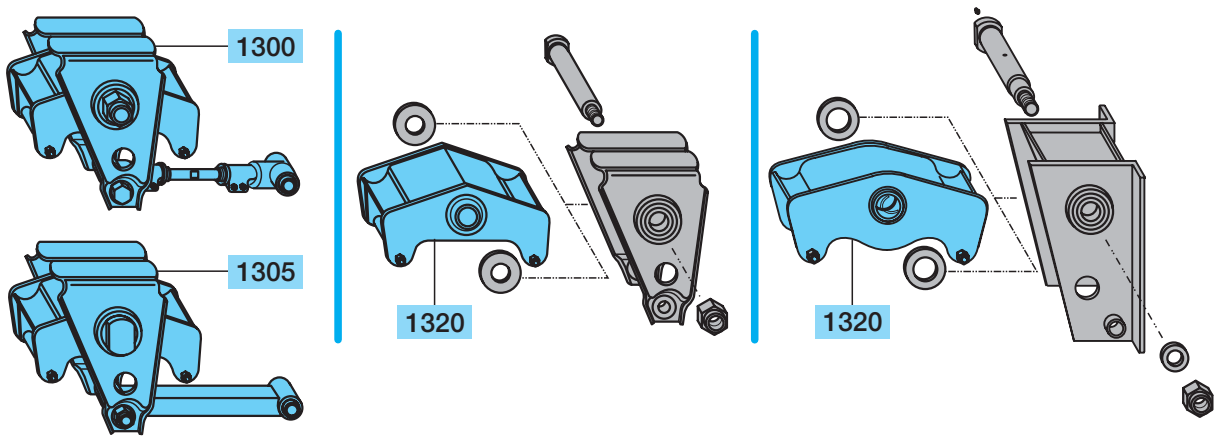
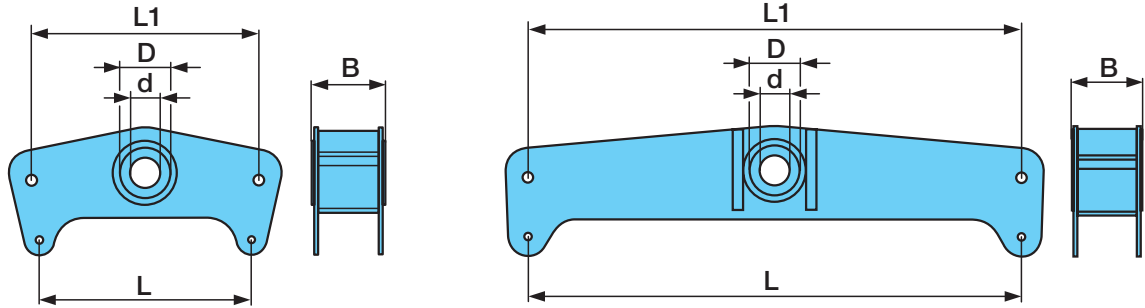
The threaded bolt is secured against twisting by means of a welded-on ring or welded-on lugs.



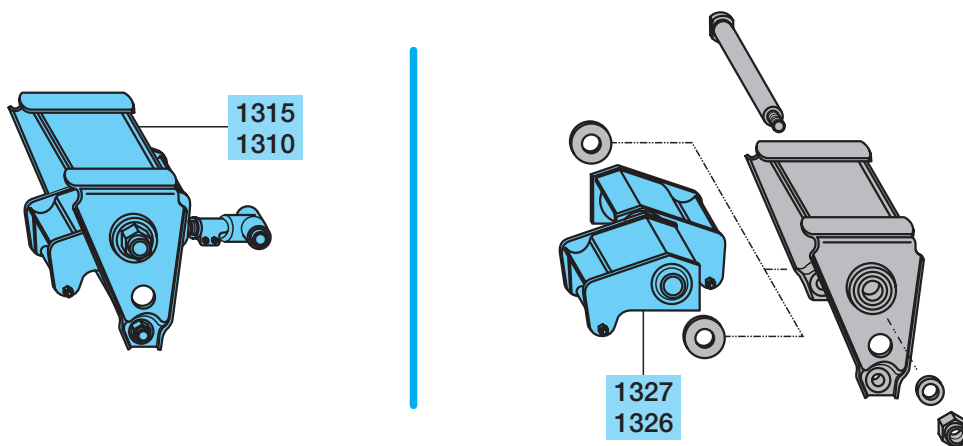
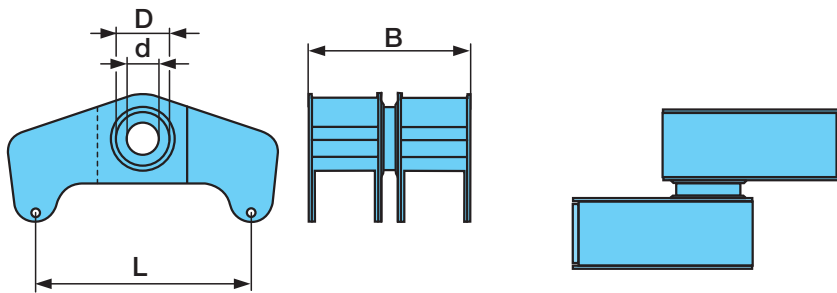
6.1 Spare parts for equalizing beams

Equalizing beams

Straight equalizing beam



Equalizing beam with offset (for steering axles)

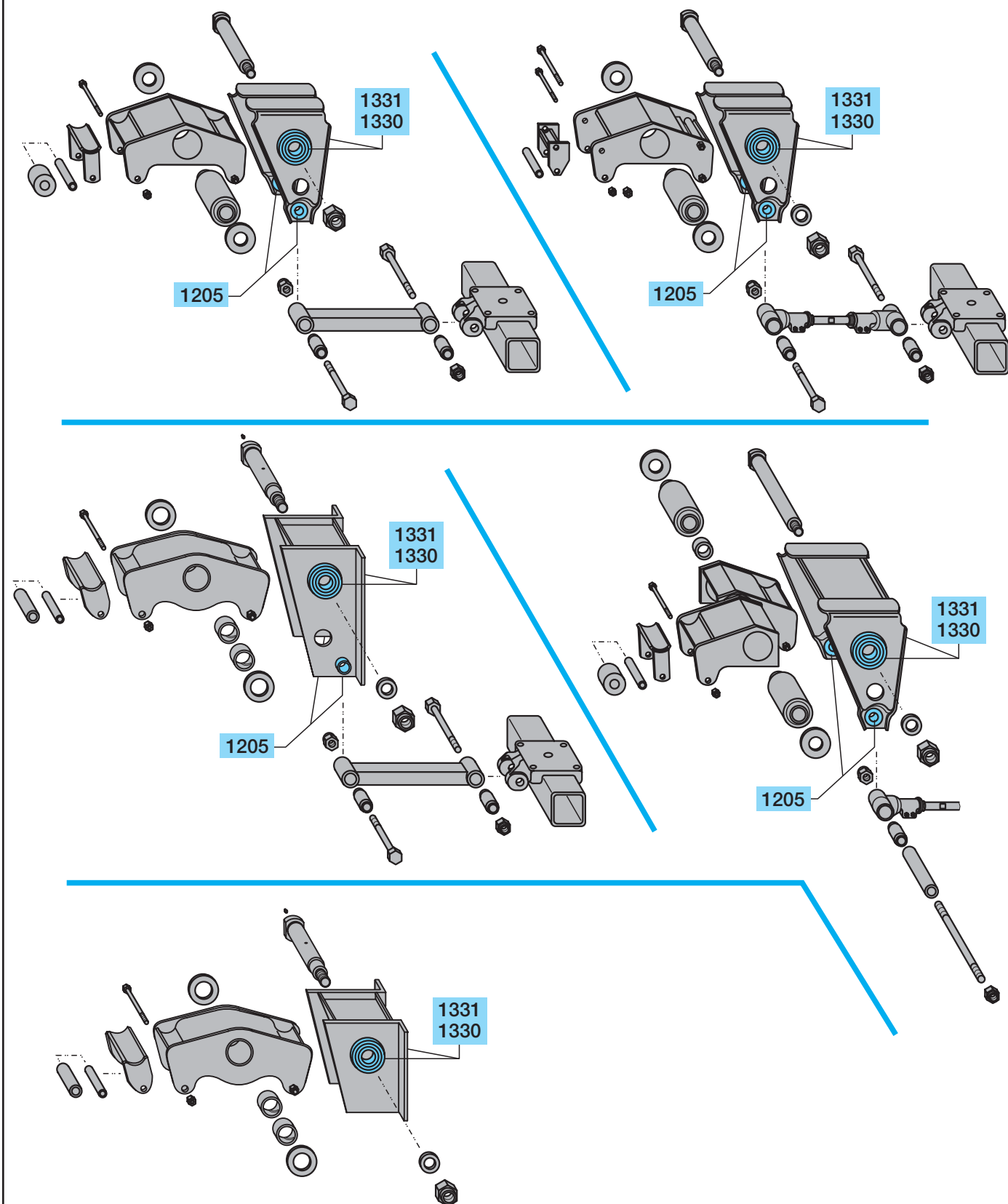


## Spare parts for equalizing beams 6.1

Equalizing beams											
Item	Designation	Dimension						BPW Code no.			
1300 / 1310	Equalizing beam assembly cpl., right						upon request				
1305 / 1315	Equalizing beam assembly cpl., left						upon request				
Straight equalizing beam											
1320	Equalizing beam (only)										
Series	Wheel base	Axle load	Dimension					BPW Code no.	● = with bush inserted	● = with support fitted (slider)	● = with welded wear plate
			L	L1	B	D	d				
Equalizing beam bearing with rubber-steel bushes											
<b>VB</b> <b>VB-B</b> <b>VB-L</b>	1360 1410 1500	10 - 16 t	420	450	142	100	60	09.291.00.08.1	●		
<b>VB</b> <b>VB-B</b> <b>VB-L</b>	2050	10 - 12 t	1000	1000	142	100	60	09.291.00.39.0	●		
<b>VB-K</b>	1140 1360	6.5 - 10 t	385	-	128	94	50	05.291.11.13.0	●	●	
<b>VB-M</b>	1140 1310 1360	8 - 12 t	385	400	128	100	60	05.291.11.50.0	●		
<b>VB-M</b>	1820	8 - 12 t	850	860	128	100	60	05.291.12.38.0			
<b>VB-HD</b>	1360 1410 1500	14 - 20 t	416	-	142	100	60	05.291.01.11.0		●	●
Equalizing beam bearing with bronze bushes											
<b>VB-B</b> <b>VB-BE</b>	1360 1410 1500	13 - 16 t	420	450	136	75	70	05.291.00.84.0	●		
<b>VB-HDE</b>	1360 1410 1500	14 - 20 t	416	-	136	75	70	05.291.01.14.0	●	●	
<b>VB-ME</b>	1140 1310 1360	8 - 12 t	385	400	128	65	60	05.291.11.70.0	●		
<b>VB-ME</b>	1820	8 - 12 t	850	860	128	65	60	05.291.12.90.0			
Equalizing beam with offset (for steering axles)											
1326	Equalizing beam, right (only)										
1327	Equalizing beam, left (only)										
Equalizing beam bearing with rubber-steel bushes											
<b>VB-K</b> <b>Offset 122 *</b>	1360	6.5 - 10 t	385	-	258	94	50	05.291.11.26.0 R 05.291.11.25.0 L	●	●	
<b>VB-K</b> <b>Offset 160 *</b>	1360	6.5 - 10 t	385	-	288	94	50	05.291.11.20.0 R 05.291.11.19.0 L	●	●	
Further types upon request. * see page 42											

6.1 Spare parts for equalizing beams

Equalizing beam bearing - Weld-in bushes





## Spare parts for equalizing beams 6.1

### Equalizing beam bearing - Weld-in bushes

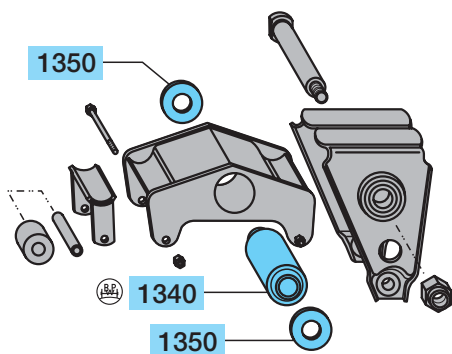
	Series	Item	Designation	Dimension				BPW Code no.	Quantity / Equalizing beam
				d	d1	D	H		
<b>Weld-in bushes for connecting rod attachment</b>									
	VB-K VB-KN VB-KE VBT-K VBT-KE VB-M VB-ME VBT-M	1205	Bush	30	50	60	21	03.113.01.19.0	2
	VB-C VBT-C	1205	Sleeve	30	50	60	30	03.200.34.05.0	2
				30	50	60	44	03.200.34.03.0	2
	VB-L VB-LE VBT-L VBT-LE	1205	Eye	30	-	65	55	03.076.76.01.0	2
	VB VBT VB-B VB-BE VBT-B VB-E VBT-E VB-HD VB-HDE	1205	Sleeve	36	-	65	55	03.200.75.06.0	2
<b>Weld-in bushes for equalizing beam bearing</b>									
<b>Equalizing beam bearing with rubber-steel bushes</b>									
	VB-K	1330	Bush	50	114	130	28	03.113.06.10.0	2
	VB VB-B VB-L	or 1331		60	87	140	35	03.113.07.03.0	2
	VB-M			60	114	130	28	03.113.06.11.0	2
	VB-HD			60	87	140	50	03.113.07.14.0	2
	VB-C			50	74	130	32	03.113.06.06.0	2
<b>Equalizing beam bearing with bronze bushes</b>									
	VB-KE VB-ME	1330 1331	Bush Bush	50 60	114 114	130 130	28 28	03.113.06.10.0 03.113.06.11.0	1 1
	VB-E VB-BE VB-LE			60 70	87 87	140 140	33 33	03.113.07.12.0 03.113.07.11.0	1 1
	VB-HDE			60 70	87 87	140 140	49 49	03.113.07.16.0 03.113.07.15.0	1 1

6.1 Spare parts for equalizing beams

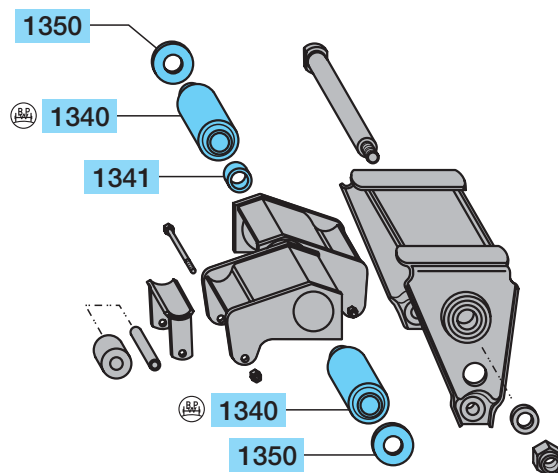
Equalizing beam bearing - Bushes, wear plates

Equalizing beam bearing with rubber-steel bushes

Straight equalizing beam

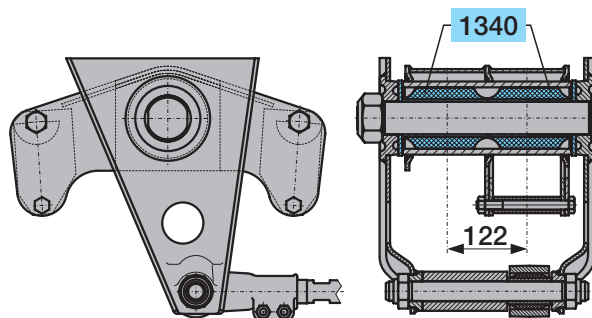
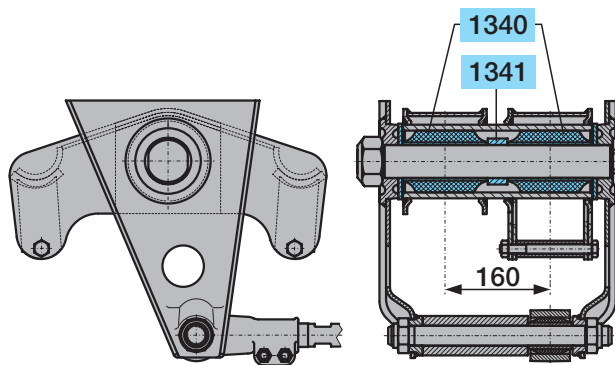
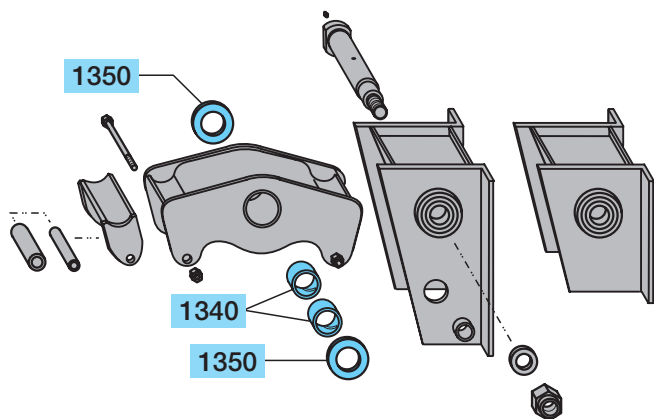


Equalizing beam with offset



Equalizing beam bearing with bronze bushes

Straight equalizing beam



## Spare parts for equalizing beams 6.1

### Equalizing beam bearing - Bushes, wear plates

	Series	Item	Designation	Dimension				BPW Code no.	Quantity / Equalizing beam
				d	d1	D	L		
	<b>Equalizing beam bearing with rubber-steel bushes</b>								
	<b>Straight equalizing beam</b>								
	VB-K VB-C	1340	Bush	50	58	100	130	02.0316.65.00	1
	VB-M			60	72	107	130	05.113.97.13.0	1
	VB VB-B VB-HD VB-L			60	72	107	150	05.113.97.10.0	1
	<b>Equalizing beam with offset</b>								
	VB-K VB-C	1340	Bush	50	58	100	130	02.0316.65.00	2
	VB-K VB-C	1341	Ring *	Ø 50.5 / 70 x 30				03.310.34.27.0	1
	VB VB-B VB-HD VB-L	1340	Bush	60	72	107	150	05.113.97.10.0	2
	* only with 160 mm offset								
	<b>Equalizing beam bearing with bronze bushes</b>								
	VB-KE VB-ME	1340	Bush	60	-	65	60	03.112.76.14.0	2
	VB-E VB-BE VB-HDE VB-LE			70	-	75	70	03.112.76.13.0	2
<b>Wear plates</b>									
VB all *	1350	Washer	Ø 50.5 / 115 x 6				03.320.36.12.0	2	
		Ring	Ø 60.5 / 115 x 6				03.310.36.50.0	2	
			Ø 76 / 140 x 4				03.310.37.31.0	2	
		Plate	176 x 160 / Ø 128 x 3				03.285.25.35.0	2	
* if present									

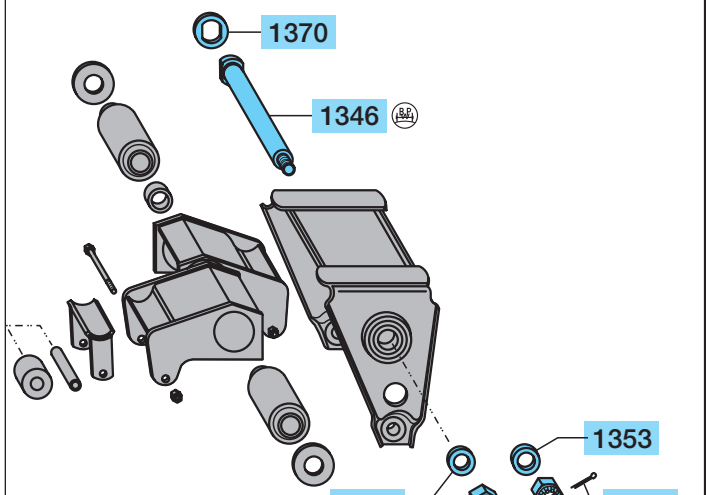
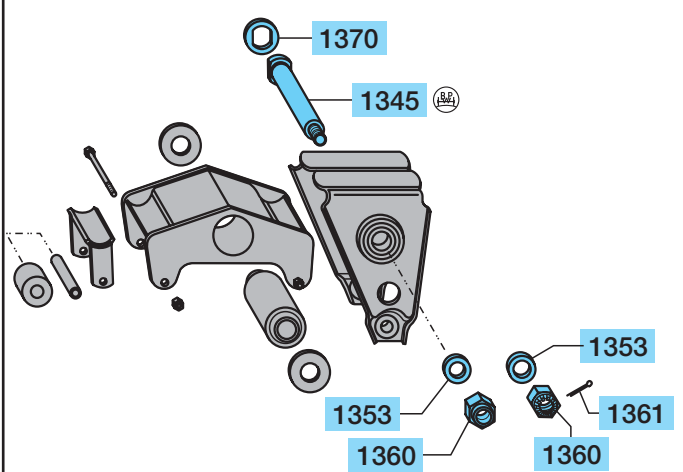
6.1 Spare parts for equalizing beams

**Equalizing beam bearings - Threaded bolts**

**Equalizing beam bearing with rubber-steel bushes**

**Straight equalizing beam**

**Equalizing beam with offset**

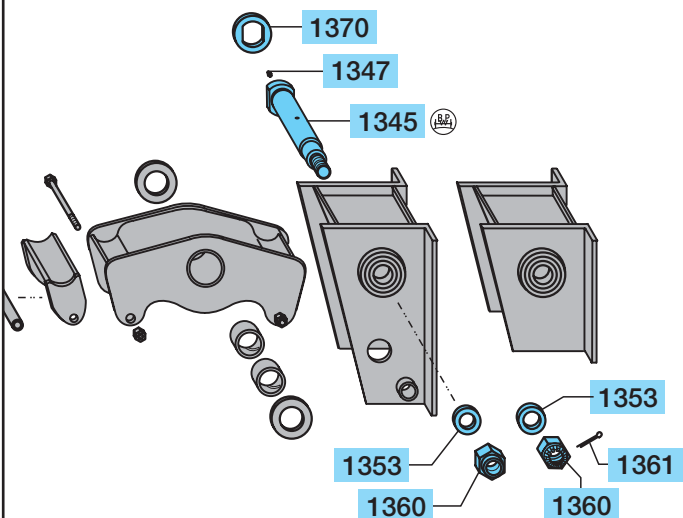


M 42 x 3 M = 1100 Nm - 12 t  
 M 42 x 3 M = 1700 Nm 13 t -  
 M 48 x 3 M = 1250 Nm

M 42 x 3 M = 1100 Nm - 12 t  
 M 42 x 3 M = 1700 Nm 13 t -  
 M 48 x 3 M = 1250 Nm

**Equalizing beam bearing with bronze bushes**

**Straight equalizing beam**



M 42 x 3 M = 1100 Nm - 12 t  
 M 42 x 3 M = 1700 Nm 13 t -  
 M 48 x 3 M = 1250 Nm

## Spare parts for equalizing beams 6.1

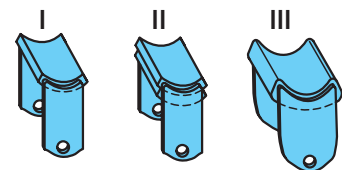
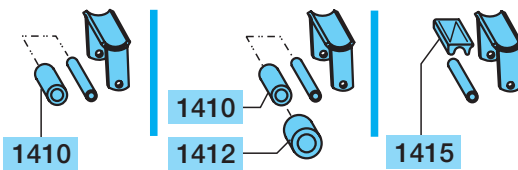
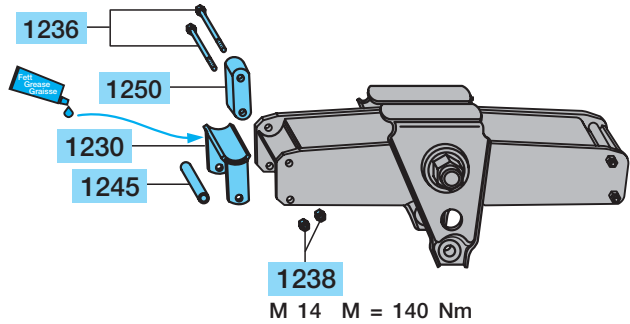
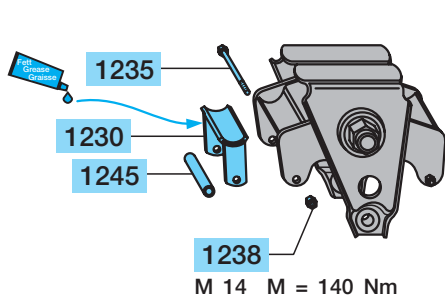
### Equalizing beam bearings - Threaded bolts

	Item	Designation	Dimension					BPW Code no.	
			D	d	L	SW	Thread		
	<b>Threaded bolt (Equalizing beam bearing with rubber-steel bushes)</b>								
	<b>Straight equalizing beam</b>								
	1345	Threaded bolt	50	-	247	60	M 42 x 3	03.177.16.25.0	
			60		257	70		03.177.16.29.0	
				265	03.177.16.35.0 *				
				285	03.177.16.20.0				
				313	M 48 x 3		03.177.17.05.0		
	<b>Equalizing beam with offset</b>								
	1346	Threaded bolt	50	-	377	60	M 42 x 3	03.177.16.26.0	
			60		404	70		03.177.16.27.0	
				421	03.177.16.07.0 *				
				412	03.177.16.37.0 *				
		459	M 48 x 3	03.177.17.06.0					
* Locking with castle nut and split pin									
	<b>Threaded bolt with grease way (Equalizing beam bearing with bronze bushes)</b>								
	<b>Straight equalizing beam</b>								
	1345	Threaded bolt	60	50	245	70	M 42 x 3	03.177.16.28.0	
			70	60	374	80		03.177.16.30.0	
					281		03.177.16.17.0		
					313		M 48 x 3	03.177.17.04.0	
1347	Grease nipple	AM 10 x 1 / 71412					02.6802.03.50		
	1353	Washer	43 / 125					02.5401.43.01	
			A 50 / 125					02.5401.50.09	
	<b>Threaded bolt with lock nut</b>								
	1360	Lock nut	VM 42 x 3 / 980-06					02.5220.91.26	
			VM 42 x 3 / 980-8					02.5220.90.82	
			M 48 x 3					02.5273.39.00	
	<b>Threaded bolt with castle nut</b>								
	1360	Castle nut	M 42 x 3 / 937-04					02.5207.46.04	
	1361	Split pin	8 x 63 / 94					02.6201.84.01	
		<b>Anti-rotation device for threaded bolts</b>							
1370		Ring *	SW 60					03.310.76.10.0	
			SW 70					03.310.76.11.0	
* It is possible to prevent the bolt rotating by using weld-on lugs.									

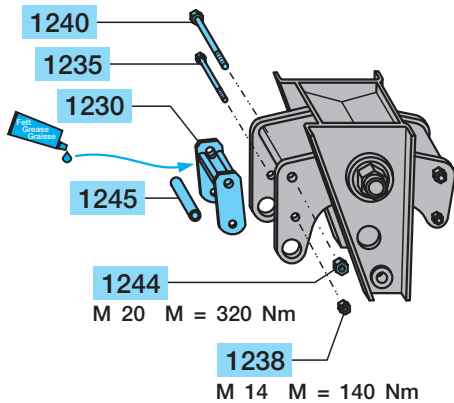
## 6.1 Spare parts for equalizing beams

### Supports / sliders / attachment parts

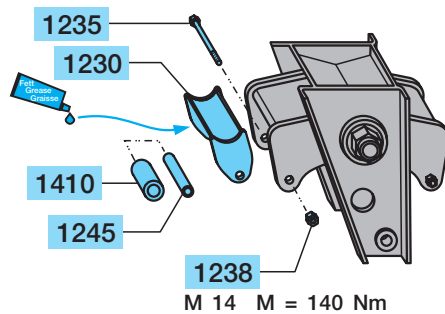
A



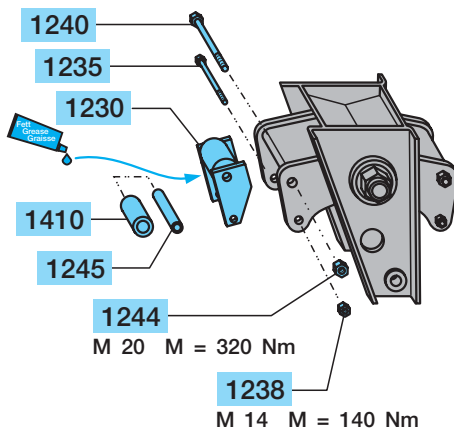
B



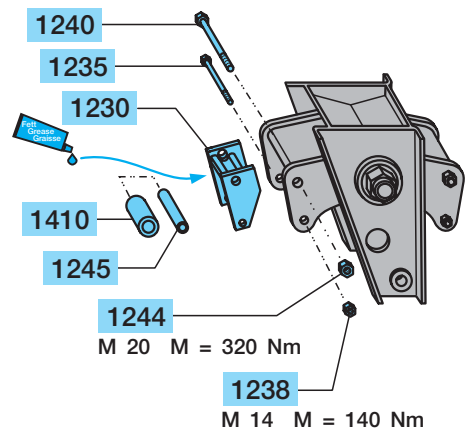
C



D

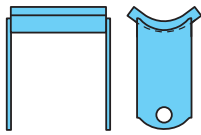
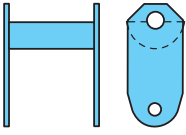
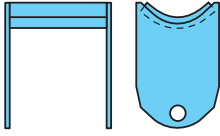
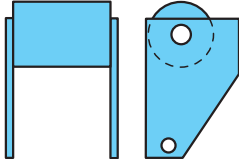
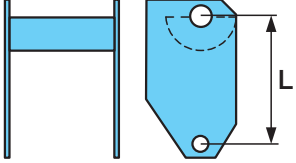


E



## Spare parts for equalizing beams 6.1

### Supports / sliders / attachment parts

Supports / sliders / attachment parts					
	Bau-reihe	Item	Designation	Dimension	BPW Code no.
<b>Fig. A</b>  	<b>VB-K</b> <b>VB-KN</b> <b>VB-KE</b> <b>VBT-K</b> <b>VBT-KE</b>	1230	Support ( normal I )		05.189.04.70.0
			Support ( reinforced II )		05.189.05.22.0
			Support ( solid III )		05.189.05.97.0
		1235	Hexagon screw	M 14 x 140 / 931-8.8	02.5022.09.80
		1236	Hexagon screw (with shackle item 1250)	M 14 x 150 / 931-8.8	02.5022.10.80
		1238	Lock nut	M 14-8	02.5273.14.82
		1245	Tube	Ø 14.8 / 20 x 103	03.300.72.05.0
<b>Fig. B</b>  	<b>VB-C</b> <b>VBT-C</b>	1230	Support		05.189.02.87.0
		1235	Hexagon screw	M 14 x 140 / 931-8.8	02.5022.09.80
		1238	Lock nut	M 14-8	02.5273.14.82
		1240	Screw	M 20 x 150	03.340.13.07.0
		1244	Lock nut	VM 20 / 980-8	02.5220.50.82
		1245	Tube	Ø 16 / 25 x 106	03.300.73.21.0
<b>Fig. C</b>  	<b>VB-HD</b> <b>VB-HDE</b>	1230	Support		05.189.14.52.0
		1235	Hexagon screw	M 14 x 150 / 931-8.8	02.5022.10.80
		1238	Lock nut	M 14-8	02.5273.14.82
		1245	Tube	Ø 14.8 / 20 x 103	03.300.72.05.0
<b>Fig. D</b>  	<b>VB</b> <b>VBT</b> <b>VB-B</b> <b>VB-BE</b> <b>VB-E</b> <b>VBT-E</b> <b>VB-L</b> <b>VB-LE</b> <b>VBT-L</b> <b>VBT-LE</b>	1230	Support		05.189.02.70.0
		1235	Hexagon screw	M 14 x 150 / 931-8.8	02.5022.10.80
		1236	Hexagon screw (with shackle item 1250)	M 14 x 160 / 931-8.8	02.5022.15.80
		1238	Lock nut	M 14-8	02.5273.14.82
		1240	Screw	M 20 x 150	03.340.13.07.0
			Screw	M 20 x 160	03.340.13.05.0
		1241	Screw (with shackle item 1250)	M 20 x 170	03.340.13.06.0
		1244	Lock nut	VM 20 / 980-8	02.5220.50.82
		1245	Tube	Ø 14.8 / 20 x 103	03.300.72.05.0
<b>Fig. E</b>  	<b>VB-M</b> <b>VB-ME</b> <b>VBT-M</b> <b>VBT-ME</b>	1230	Support (standard)	L = 128	05.189.05.82.0
			Support (for WB 1820)	L = 120	05.189.05.90.0
		1235	Hexagon screw	M 14 x 140 / 931-8.8	02.5022.09.80
		1236	Hexagon screw (with shackle item 1250)	M 14 x 160 / 931-8.8	02.5022.15.80
		1238	Lock nut	M 14-8	02.5273.14.82
		1240	Hexagon screw	M 20 x 150 / 931-8.8	03.340.13.07.0
		1241	Screw (with shackle item 1250)	M 20 x 170	03.340.13.06.0
		1244	Lock nut	VM 20 / 980-8	02.5220.50.82
1245	Tube	Ø 16 / 25 x 103	03.300.73.12.0		
<b>Shackles</b>					
		1250	Shackle	2 x Ø 15	03.232.96.03.0
				1 x Ø 15 / 1 x Ø 21	03.232.96.02.0

Silent block bushes, sliders (Item 1410 / 1412 / 1415) see page 35.

## 7 Rear hanger brackets

### General

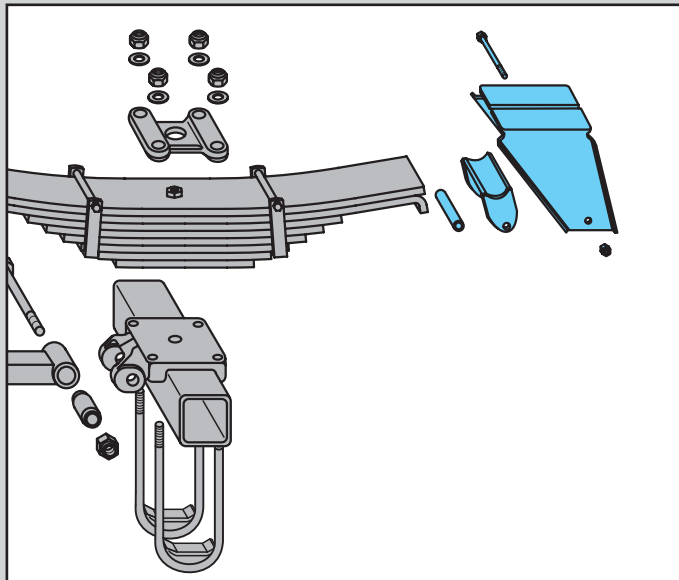
#### VB

The rear connecting pieces welded onto the vehicle chassis are only connected to the final axle of the suspension unit by means of the leaf springs, and they only transfer the tracking forces of the axle to the chassis of the vehicle.

#### VBT

The rear connecting pieces welded onto the vehicle chassis are connected to the last axle of the suspension unit by means of connecting rods, and convey all the tracking, braking and acceleration forces from the axle into the vehicle chassis.

Adjustable connecting rods are fitted on one side (or both) to ensure easy tracking of the vehicle.

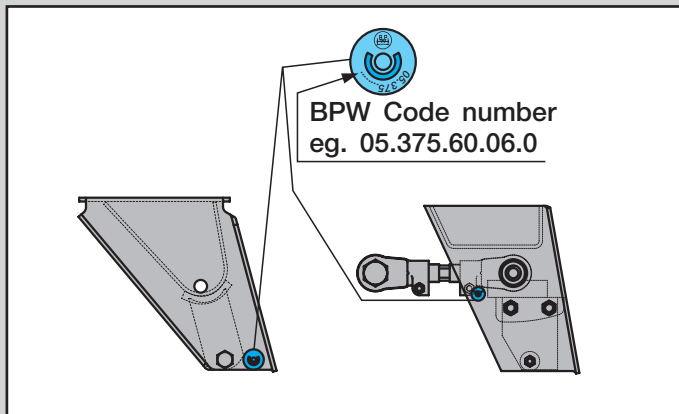


#### BPW Code number

The BPW code number is stamped into the manufacturer's nameplate on the connecting piece.

#### Scope of delivery

When you order this BPW code number you get the complete connecting piece, including slider, connecting rod (if available) and attachment parts.



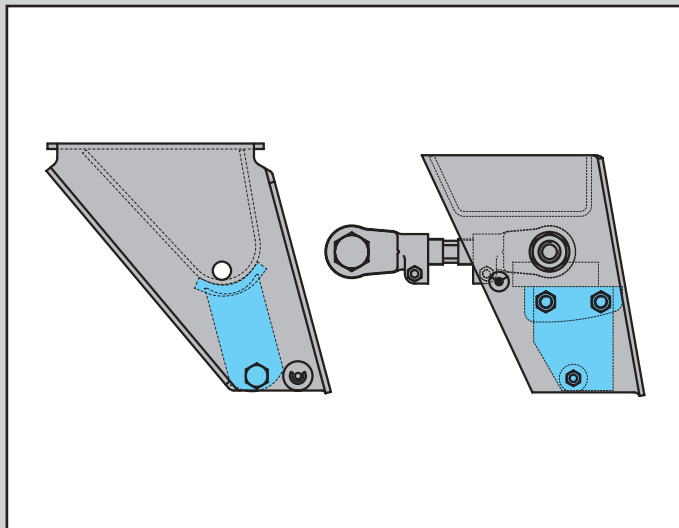
#### Sliders

The ends of the leaf spring are slide-mounted in the connecting pieces by means of screwed-in sliders or welded-in retainers made of hardened steel alloy.

In this context it should be ensured that the sliding points are always well greased.

Thick-walled lateral wear plates ensure precise guidance of the spring ends in the connecting pieces.

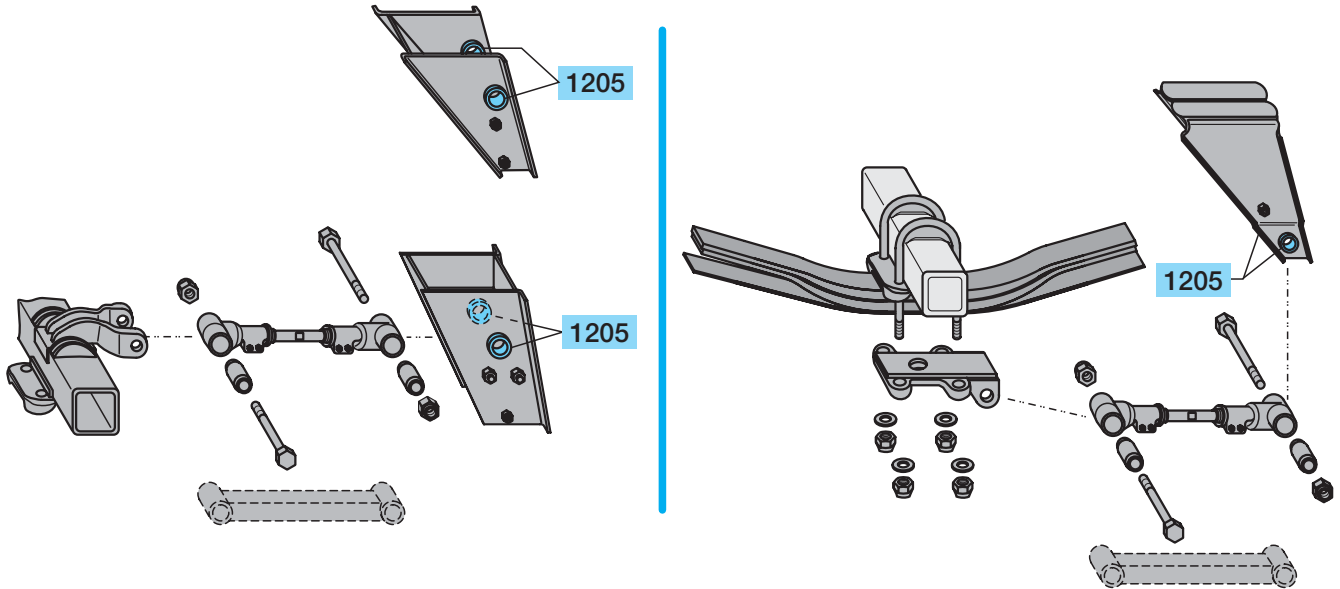
Note the correct position of the retainers when replacing them (see also equalising beams, page 37) !





# Spare parts for rear hanger brackets 7.1

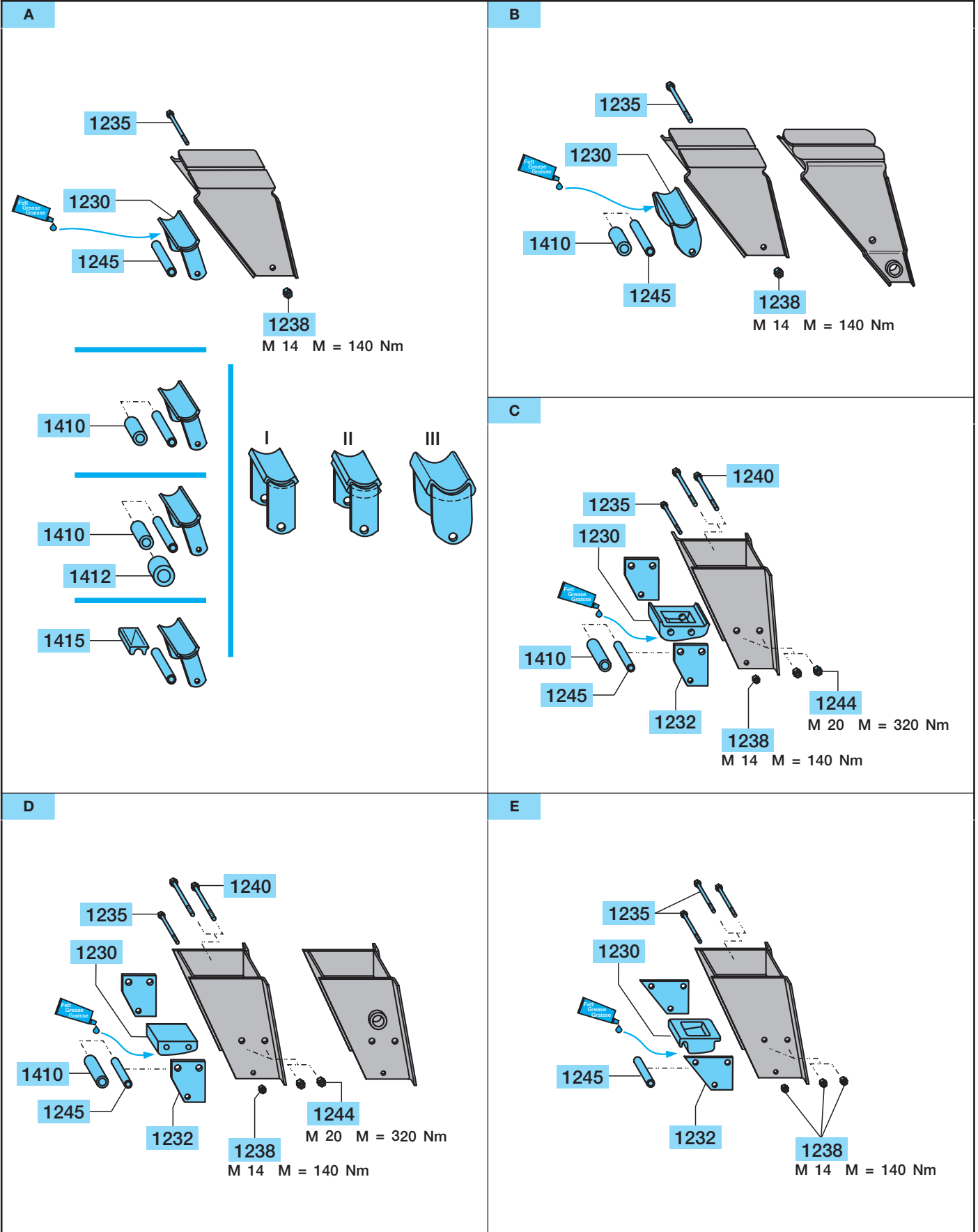
## Weld-in bushes (only VBT)



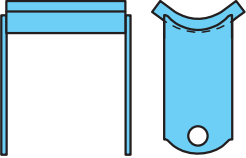
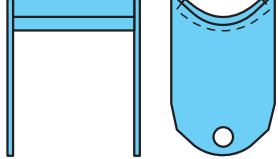
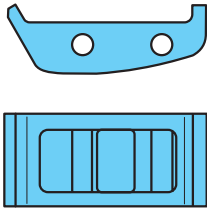
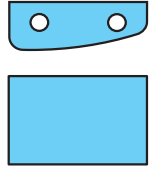

	Series	Item	Designation	Dimension				BPW Code no.	Quantity / Hanger bracket
				d	D1	D	H		
<b>Weld-in bushes for connecting rod attachment (only VBT)</b>									
	<b>VBT-K</b> <b>VBT-KE</b> <b>VBT-L</b> <b>VBT-LE</b> <b>VBT-M</b> <b>VBT-ME</b>	1205	Bush	30	50	60	21	03.113.01.19.0	2
	<b>VBT-C</b>	1205	Sleeve	30	50	60	30	03.200.34.05.0	2
	<b>VBT</b> <b>VBT-B</b> <b>VBT-HD</b> <b>VBT-HDE</b> <b>VBT-E</b>	1205	Sleeve	36	-	65	55	03.200.75.06.0	2

## 7.1 Spare parts for rear hanger brackets

### Supports / sliders / attachment parts

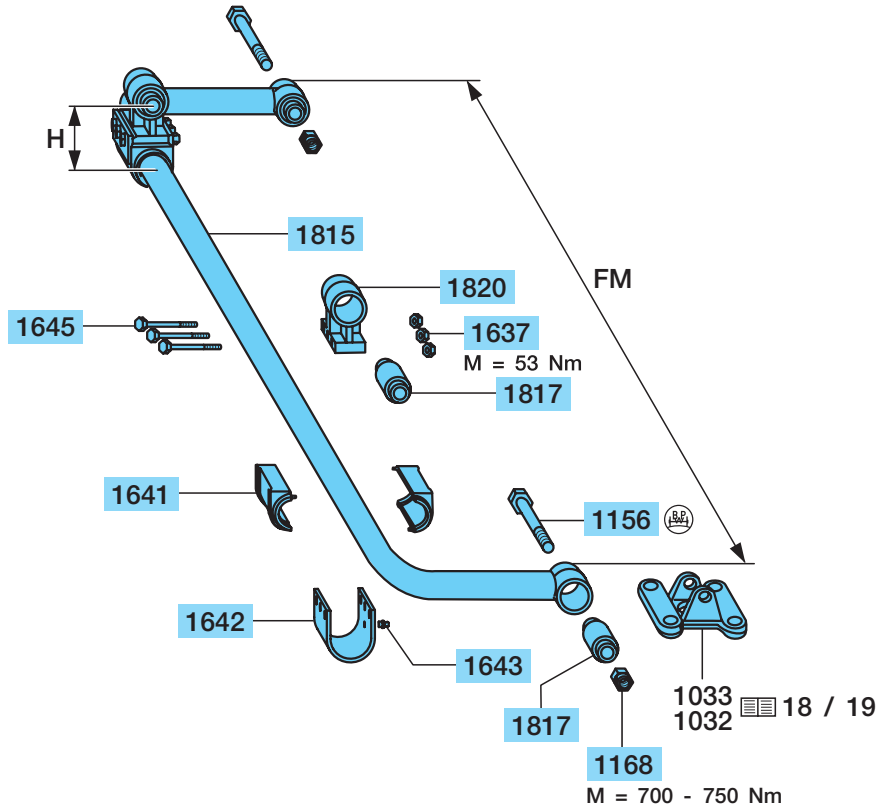


## Spare parts for rear hanger brackets 7.1

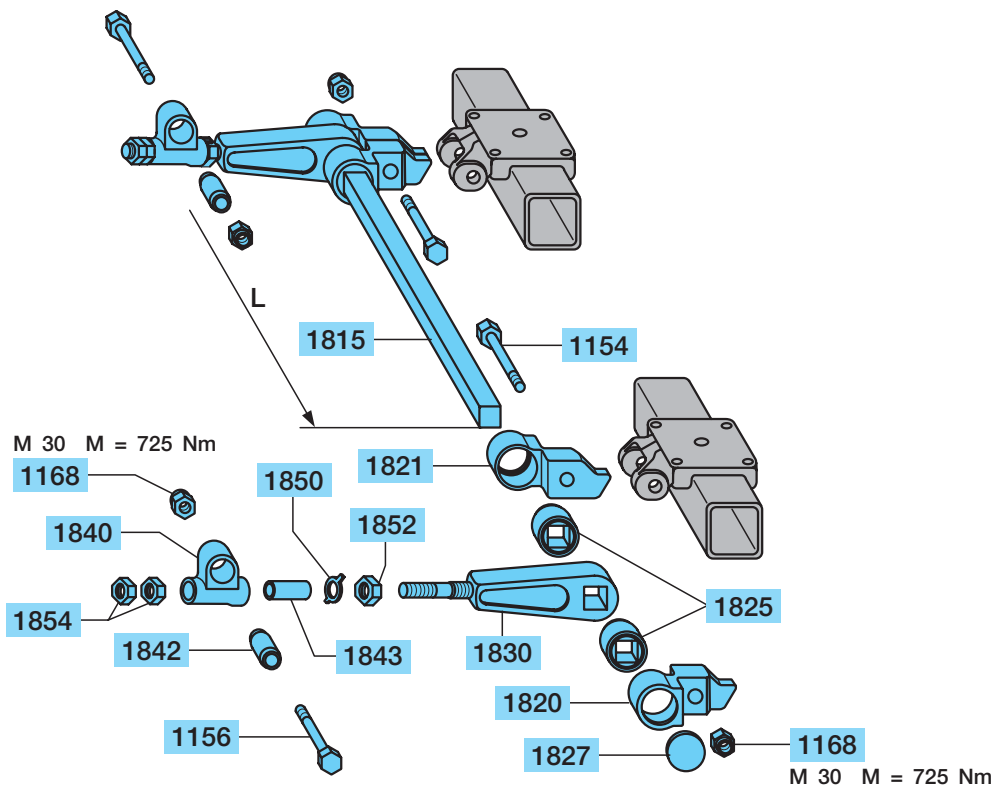
Supports / sliders / attachment parts					
	Series	Item	Designation	Dimension	BPW Code no.
<b>Fig. A</b> 	<b>VB-K</b> <b>VB-KN</b> <b>VB-KE</b> <b>VBT-K</b> <b>VBT-KE</b>	1230	Support ( normal I )		05.189.04.70.0
			Support ( reinforced II )		05.189.05.22.0
			Support ( solid III )		05.189.05.97.0
		1235	Hexagon screw	M 14 x 140 / 931-8.8	02.5022.09.80
		1238	Lock nut	M 14-8	02.5273.14.82
		1245	Tube	Ø 16 / 25 x 103	03.300.73.12.0
<b>Fig. B</b> 	<b>VB-L</b> <b>VB-LE</b> <b>VBT-L</b> <b>VBT-LE</b> <b>VB-M</b> <b>VB-ME</b> <b>VBT-M</b>	1230	Support		05.189.05.75.0
			Hexagon screw	M 14 x 140 / 931-8.8	02.5022.09.80
			Lock nut	M 14-8	02.5273.14.82
			Tube	Ø 16 / 25 x 103	03.300.73.12.0
<b>Fig. C</b> 	<b>VB</b> <b>VB-B</b> <b>VB-E</b> <b>VB-HD</b> <b>VB-HDE</b>	1230	Block		03.221.89.05.0
		1232	Plate		03.285.45.08.0
		1235	Hexagon screw	M 14 x 150 / 931-8.8	02.5022.10.80
		1238	Lock nut	M 14-8	02.5273.14.82
		1240	Hexagon screw	M 20 x 160 / 931-8.8	02.5023.09.80
		1244	Lock nut	VM 20 / 980-8	02.5220.50.82
		1245	Tube	Ø 14.8 / 20 x 103	03.300.72.05.0
<b>Fig. D</b> 	<b>VBT</b> <b>VBT-B</b> <b>VBT-E</b>	1230	Block		03.221.79.01.0
		1232	Plate		03.285.45.08.0
		1235	Hexagon screw	M 14 x 150 / 931-8.8	02.5022.10.80
		1238	Lock nut	M 14-8	02.5273.14.82
		1240	Hexagon screw	M 20 x 160 / 931-8.8	02.5023.09.80
		1244	Lock nut	VM 20 / 980-8	02.5220.50.82
		1245	Tube	Ø 14.8 / 20 x 103	03.300.72.05.0
<b>Fig. E</b> 	<b>VB-C</b> <b>VBT-C</b>	1230	Slider		03.181.40.11.0
		1232	Plate		03.285.36.01.0
		1235	Hexagon screw	M 14 x 140 / 931-8.8	02.5022.09.80
		1238	Lock nut	M 14-8	02.5273.14.82
		1245	Tube	Ø 16 / 25 x 106	03.300.73.21.0
<b>Silent block bushes</b>					
		1410	Rubber roll	Ø 20 / 40 x 80	02.1205.02.00
			Bush	Ø 20 / 80 x 80	03.113.90.11.0
			Bush	Ø 25 / 80 x 80	03.113.90.05.0
		1412	Bush	Ø 40 / 80 x 80	03.113.94.04.0
		1415	Slider		03.181.90.10.0

8 Stabilizers

U-Stabilizer (VBU)



Rectangular section stabilizer (VBQ)



### U-Stabilizer (VBU)

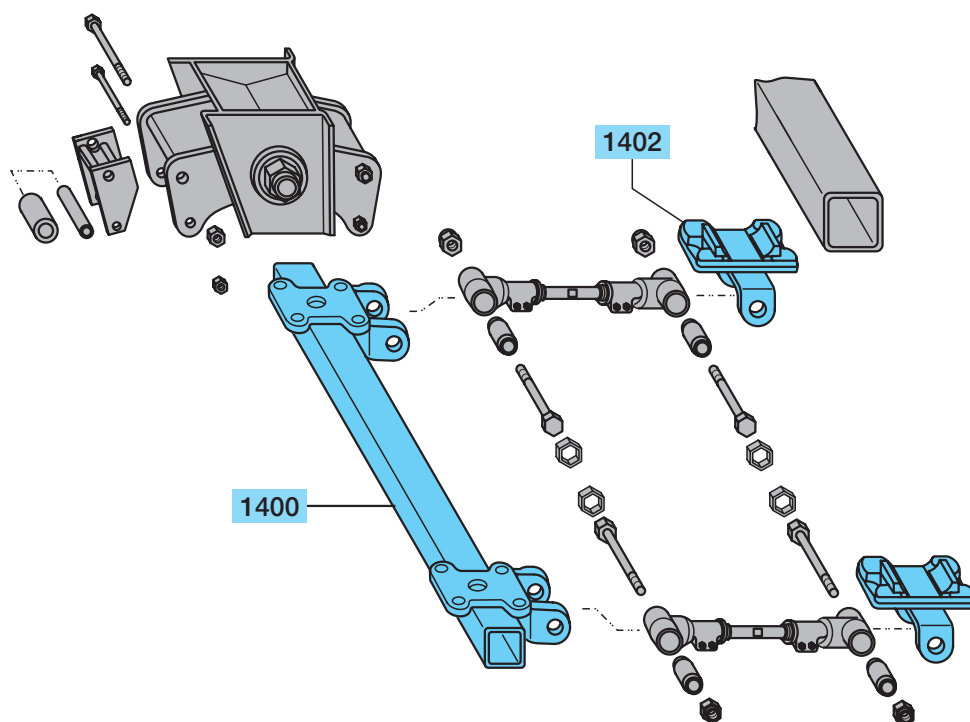
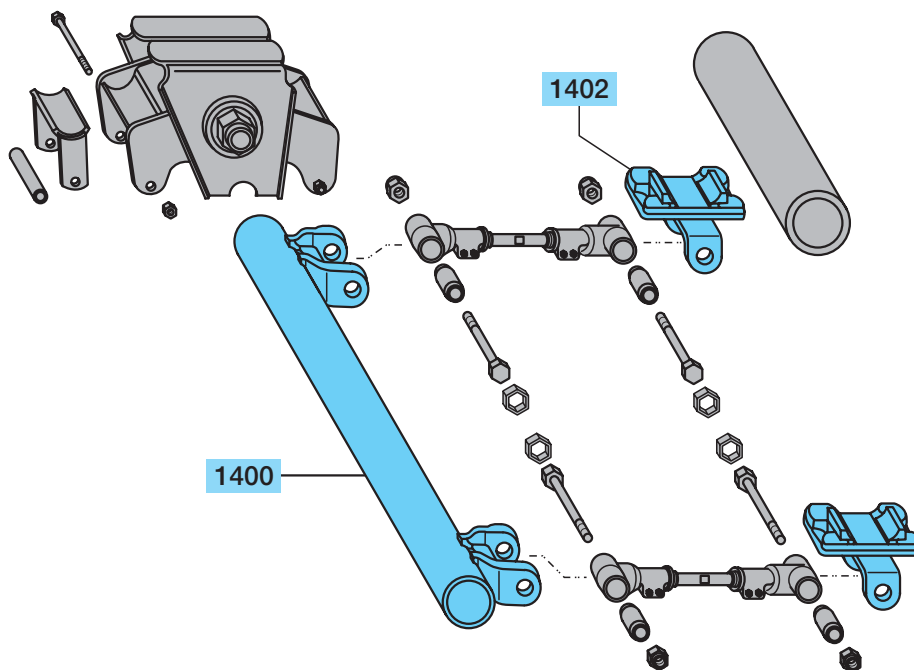
Item	Designation	Remark	BPW Code no.	Dimension	
1156	Screw		03.340.15.26.0	M 30 x 130-8.8	
1168	Lock nut		03.260.15.01.0	M 30	
1637	Lock nut		02.5220.10.82	VM 10 / 980	
1641	Bush		03.113.98.06.0	Ø 50 / 70 x 94	
1642	Shaped plate		03.160.56.01.0		
1643	Grease nipple		02.6802.03.50	AM 10 x 1 / 71412	
1645	Hexagon screw		02.5021.54.10	M 10 x 110 - 10.9	
					<b>Bush ( Item 1817 )</b>
1815	U-Stabilizer (incl. item 1817)		05.114.98.18.0	FM = 900	05.113.96.06.0 Ø 30 / 52.6 x 68
			05.114.98.19.0	FM = 980	05.113.96.06.0 Ø 30 / 52.6 x 68
			05.114.98.20.0	FM = 1100	05.113.96.06.0 Ø 30 / 52.6 x 68
			05.114.98.21.0	FM = 1200	05.113.96.06.0 Ø 30 / 52.6 x 68
			05.114.98.22.0	FM = 1300	05.113.96.06.0 Ø 30 / 52.6 x 68
1817	Bush		05.113.96.06.0	Ø 30 / 52.6 x 68	
			05.113.96.05.0	Ø 30 / 60 x 68	
					<b>Bush ( Item 1817 )</b>
1820	Support (incl. item 1817)		05.189.01.78.0	H = 120	05.113.96.06.0 Ø 30 / 52.6 x 68
			05.189.03.97.0	H = 180	05.113.96.05.0 Ø 30 / 60 x 68
			05.189.02.16.0	H = 275	05.113.96.05.0 Ø 30 / 60 x 68
			05.189.03.99.0	H = 395	05.113.96.05.0 Ø 30 / 60 x 68

### Rectangular section stabilizer (VBQ)

1154	Screw		03.340.15.15.0	M 30 x 150	
1156	Screw		03.340.15.21.0	M 30 x 160	
			03.340.15.20.0	M 30 x 190	
1168	Lock nut		03.260.15.01.0	M 30	
1815	Torsion bar		03.123.15.01.1	L = 1020	
			03.123.15.03.1	L = 1100	
			03.123.15.04.1	L = 1220	
			03.123.15.05.1	L = 1320	
			03.123.15.06.1	L = 1420	
1820	Support (right) (incl. item 1825)		05.189.01.96.1		
1821	Support (left) (incl. item 1825)		05.189.01.97.1		
1825	Bush		03.113.96.07.0	□ 50 / Ø 90 x 34	
1827	Washer		03.320.75.08.0		
1830	Connecting rod		03.443.47.06.0		
1840	Trunnion block assembly (incl. item 1842 + 1843)		05.256.83.01.1		
1842	Bush		05.113.96.06.0	Ø 30 / 52.6 x 68	
1843	Sleeve		03.200.94.01.0		
1850	Locking plate		02.5424.43.01	43 / 463	
1852	Hexagon nut		02.5205.30.04	M 43 x 2 / 936	
1854	Hexagon nut		02.5205.22.04	M 36 x 2 / 936	

9 Supports for VBT

Supports for VBT



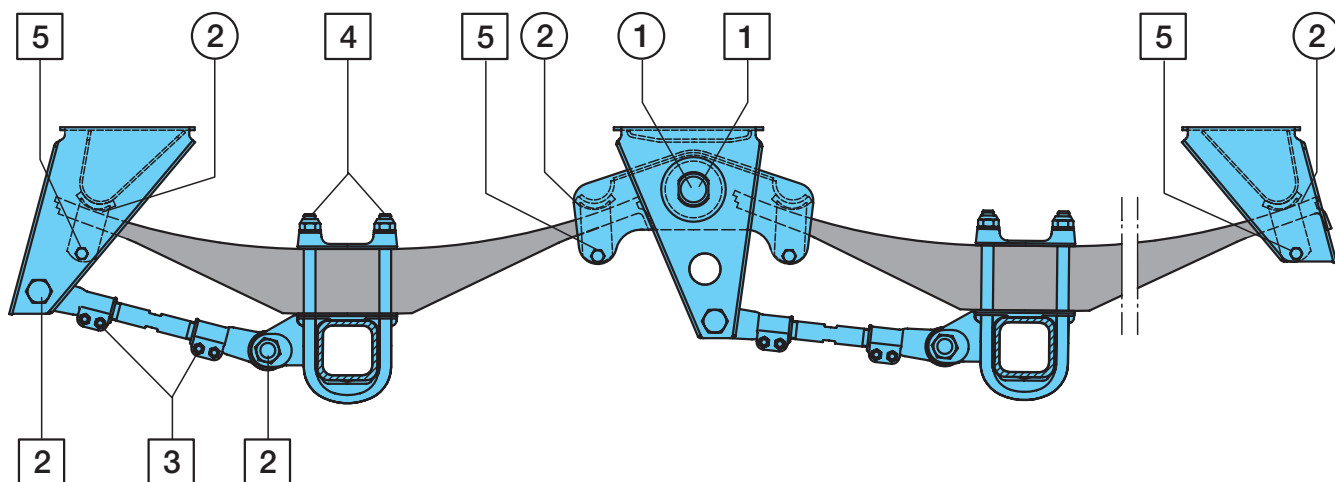
## Supports for VBT

Item	Designation	Fig.	Dimension					BPW Code no.
			d	D	FM	L	B	
<b>VBT</b>								
	Support	a	30	∅ 101	780	597	410	05.189.06.08.0
					858	673	486	05.189.07.57.0
		900			717	560	05.189.12.80.0	
		b		∅ 101	980	832	610	05.189.01.61.0
					980	797	610	05.189.05.74.0
					1000	817	630	05.189.06.40.0
					1024	841	654	05.189.07.17.0
					1050	867	680	05.189.10.33.0
					1100	917	730	05.189.05.73.0
					1270	1087	900	05.189.07.62.0
		c		□ 120	900	1098	560	05.189.03.51.0
					980	1178	590	05.189.11.34.0
					1044	1538	695	05.189.11.42.0
					1044	1248	695	05.189.11.43.0
					1100	1298	710	05.189.02.68.0
					1150	1368	760	05.189.05.51.0
					1200	1388	810	05.189.13.31.0
					1300	1518	910	05.189.03.14.0
					1380	1588	990	05.189.06.14.0
					1400	1588	1010	05.189.02.81.0
1500	1708		1160		05.189.10.60.0			
1500	1688		1110		05.189.10.91.0			
1580	1778		1190		05.189.14.05.0			
1600	1798	1210	05.189.07.14.0					
1650	1850	1260	05.189.06.03.0					
1780	1978	1390	05.189.06.04.0					

<b>VBT (Support welded under the axle beam)</b>									
Item	Designation	Fig.	Dimension					BPW Code no.	
			d	D	B	H	X		
	Support	e	30	□ 120	140	70	69	05.189.02.12.0	
					140	78	69	05.189.03.33.0	
					□ 150	130	78	69	05.189.03.52.0
						150	78	69	05.189.02.69.0
				f	∅ 127	130	70	69	05.189.04.54.0
						164	70	69	05.189.02.10.0
						175	78	69	05.189.04.94.0
							78	69	05.189.04.94.0

## 10 Lubrication and maintenance work

### Lubrication and maintenance work



Overview	initially after 2 weeks	every 6 weeks	every 26 weeks (twice annually) <sup>1)</sup>
<p><input type="radio"/> Lubricate</p> <p><input type="checkbox"/> Maintenance</p>			
<p>① Grease bearings (suspension type E). (Not applicable in the case of rubber / steel bushes)</p>	<input type="radio"/> <sup>1)</sup>	<input type="radio"/> <sup>1)</sup>	
<p>② Slightly grease the slide elements / slide ends of leaf springs.</p>	<input type="radio"/>	<input type="radio"/>	
<p>- Visual inspections Check all component parts for wear and damage.</p>			<input type="checkbox"/>
<p>① Check threaded bolts on equalizing beam bearing for tightness.</p> <p>- 12 t axle load      M 42 x 3      M = 1100 Nm</p> <p>13 t - axle load      M 42 x 3      M = 1700 Nm</p> <p>                                 M 48 x 3      M = 1250 Nm</p>			<input type="checkbox"/>
<p>② Check axle guide linkage screws for tightness using a torque wrench.</p> <p>                                 M 30              M = 725 Nm</p> <p>                                 M 36              M = 1425 Nm</p>			<input type="checkbox"/>
<p>③ Check connecting rod clamping screws for tightness.</p> <p>                                 M 12-8.8      M = 66 Nm</p> <p>                                 M 14-8.8      M = 140 Nm</p>			<input type="checkbox"/>
<p>④ Check spring U-bolts for tightness using a torque wrench.</p> <p>                                 M 24              M = 600 - 650 Nm</p>	<input type="checkbox"/>		<input type="checkbox"/>
<p>⑤ Check slide elements for tightness.</p> <p>                                 M 14-8.8      M = 140 Nm</p> <p>                                 M 20-8.8      M = 320 Nm</p>			<input type="checkbox"/>
<p><sup>1)</sup> under extreme conditions, with more frequency.</p>			



## Notices



BPW-EL-VB-05/1 e

