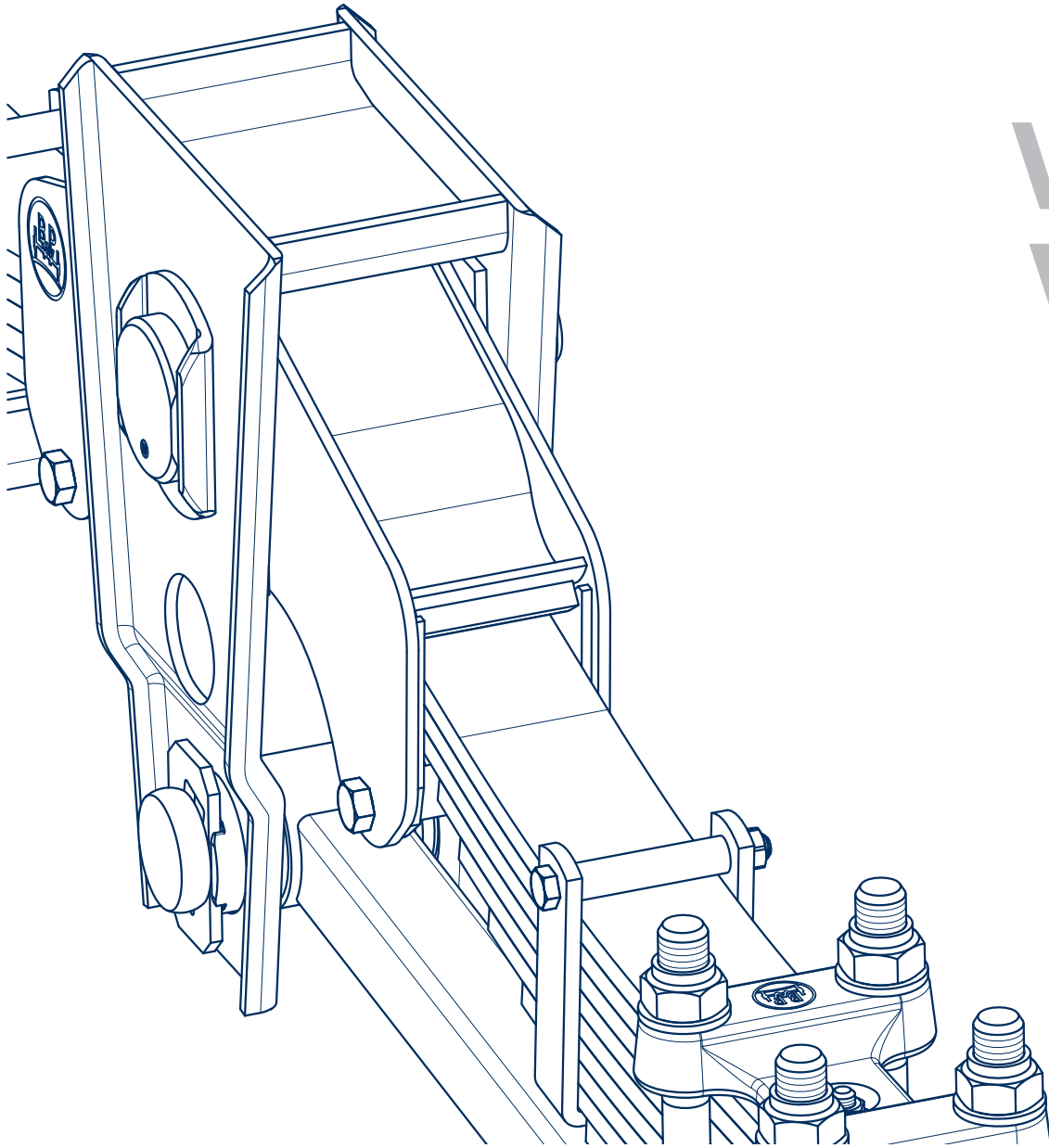


**VB**  
**VBN**  
**VBT**



# BPW Original-Spare parts

Mechanical suspensions (from 9 t)

series VB / VBN / VBT

ECO Cargo VB / ECO Cargo VBN



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Vaild: 01.06.2021

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

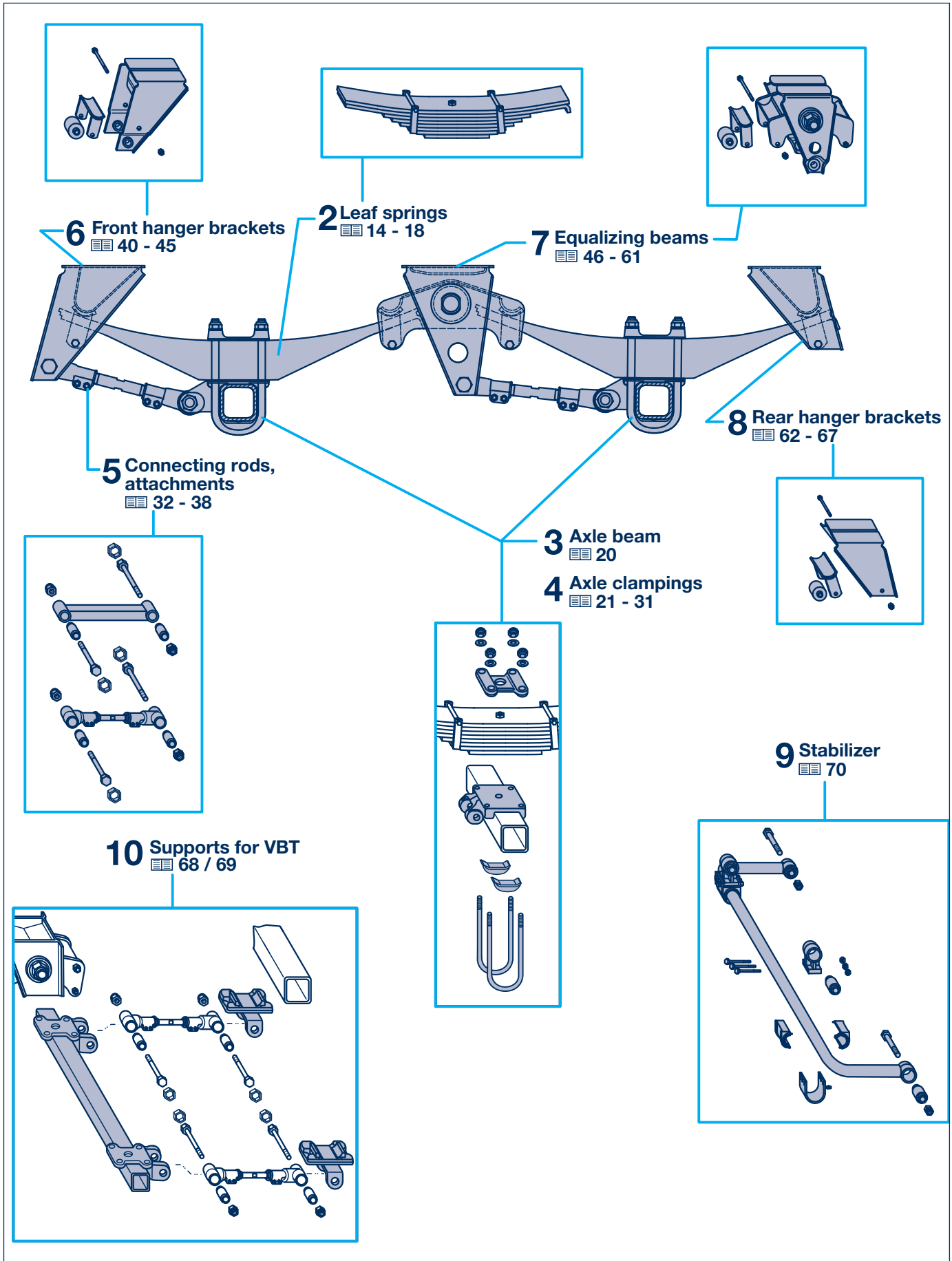
For further spare parts see BPW spare parts catalogue and / or spare parts lists of the corresponding single axles without bogie parts.

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

Subject to change (without notice).

⊙ -parts are embossed with BPW Code no.

# Contents (Exploded View)



# Explanation of BPW suspension type codes

## Mechanical suspensions series VB (extract)

| Example:                 |  |   |   |    |   |    |    |      |      |                     |                         |                  |
|--------------------------|--|---|---|----|---|----|----|------|------|---------------------|-------------------------|------------------|
| H                        | S  | F | H | VB | U | LL | 3/ | 9010 | /12° | M                   | ECO Plus 3              | ECO Cargo        |
|                          |  |   |   |    |   |    |    |      |      | <b>Trailer axle</b> | <b>Brake</b>            | <b>Tyre size</b> |
| <b>H</b>                 |  |   |   |    |   |    |    |      |      | <b>H..</b>          | SN 420                  | 20" - 24"        |
| <b>K</b>                 |  |   |   |    |   |    |    |      |      | <b>K..</b>          | SN 360                  | 19.5"            |
| <b>N</b>                 |  |   |   |    |   |    |    |      |      | <b>N..</b>          | SN 300                  | 15" (12"-17.5")  |
| <b>a.o.</b>              | Further axle types see BPW type designations   |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>B</b>                 | For single wheels, wheels with offset  |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>S</b>                 | For single wheels, wheels without offset   |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>Z</b>                 | For twin wheels  |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>I</b>                 | Wheel spiders for TRILEX wheel rims, single wheels   |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>IZ</b>                | Wheel spiders for TRILEX wheel rims, twin wheels   |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>F</b>                 | Wheel studs M 22 x 1.5 without wheel nuts, order wheel nuts for stud or spigot alignment separately  |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>M</b>                 | For spigot alignment, alloy wheels   |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>H</b>                 | For hanging boosters   |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>Suspension series</b> |  |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>VB</b>                | <b>VB</b> Mechanical suspension without braking load compensation, leaf springs above the axle   |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>VBN</b>               | <b>VBN</b> Mechanical suspension without braking load compensation, leaf springs above the axle, low design, only with <b>VB ECO Cargo</b> |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>VBT</b>               | <b>VBT</b> As <b>VB</b> , but leaf springs below the axle  |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>U</b>                 | With U-stabilizer  |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>L</b>                 | With steering axle, series <b>L</b>  |   |   |    |   |    |    |      |      |                     | Steering angle max. 40° |                  |
| <b>LL</b>                | With self-steering axle, series <b>LL</b>  |   |   |    |   |    |    |      |      |                     | Steering angle max. 27° |                  |
| <b>LS</b>                | With self-steering axle, series <b>LS</b>  |   |   |    |   |    |    |      |      |                     | Steering angle max. 20° |                  |
| -                        | Single axle  |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>2/</b>                | Tandem axle suspension   |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>3/</b>                | Tri-axle suspension  |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>6006 to 20010</b>     | Axle load (kg) + quantity of wheel studs per hub   |   |   |    |   |    |    |      |      |                     |                         |                  |
| <b>/12° to /40°</b>      | Steering angle of steering axle  |   |   |    |   |    |    |      |      |                     |                         |                  |

# Explanation of BPW suspension type codes

## Mechanical suspensions series VB (extract)

| Example: |    |   |    |    |      |      |                           |                  |           |  |
|----------|----|---|----|----|------|------|---------------------------|------------------|-----------|--|
| HSFH     | VB | U | LL | 3/ | 9010 | /12° | M                         | ECO Plus 3       | ECO Cargo |  |
|          |    |   |    |    |      |      |                           |                  |           | <b>Exec. index</b>   |
|          |    |   |    |    |      |      | <b>B</b>                  |                  |           | <b>B</b> Reinforced  |
|          |    |   |    |    |      |      | <b>BE</b>                 |                  |           | <b>BE</b> Reinforced, equalizer bearing with bronze bushes                           |
|          |    |   |    |    |      |      | <b>C</b>                  |                  |           | <b>C</b> Open hanger bracket with screwed on sliders                                 |
|          |    |   |    |    |      |      | <b>HD</b>                 |                  |           | <b>HD</b> Heavy duty execution   |
|          |    |   |    |    |      |      | <b>HDE</b>                |                  |           | <b>HDE</b> Heavy duty execution, equalizer bearing with bronze bushes                |
|          |    |   |    |    |      |      | <b>E</b>                  |                  |           | <b>E</b> Equalizer bearing with bronze bushes  |
|          |    |   |    |    |      |      | <b>K</b>                  |                  |           | <b>K</b> Weight-optimised version 9 to 10 t  |
|          |    |   |    |    |      |      | <b>KE</b>                 |                  |           | <b>KE</b> Equalizer bearing with bronze bushes                                       |
|          |    |   |    |    |      |      | <b>KN</b>                 |                  |           | <b>KN</b> Low construction height  |
|          |    |   |    |    |      |      | <b>L</b>                  |                  |           | <b>L</b> Reinforced  |
|          |    |   |    |    |      |      | <b>LE</b>                 |                  |           | <b>LE</b> Reinforced, equalizer bearing with bronze bushes                           |
|          |    |   |    |    |      |      | <b>M</b>                  |                  |           | <b>M</b> Reinforced  |
|          |    |   |    |    |      |      | <b>ME</b>                 |                  |           | <b>ME</b> Reinforced, equalizer bearing with bronze bushes                           |
|          |    |   |    |    |      |      | <b>MN</b>                 |                  |           | <b>MN</b> Reinforced, low construction height  |
|          |    |   |    |    |      |      | <b>MNE</b>                |                  |           | <b>MNE</b> Reinforced, low construction height, equalizer bearing with bronze bushes |
|          |    |   |    |    |      |      |                           |                  |           | <b>Hub bearing execution</b>   |
|          |    |   |    |    |      |      | <b>ECO</b>                |                  |           | BPW trailer axle with ECO Unit, 1996 (1998) -  |
|          |    |   |    |    |      |      | <b>ECO-MAXX</b>           |                  |           | Weight-optimised BPW trailer axle with ECO Unit, - 2003                              |
|          |    |   |    |    |      |      | <b>ECO<sup>Plus</sup></b> |                  |           | Weight-optimised BPW trailer axle with ECO <sup>Plus</sup> Unit, 2003 -              |
|          |    |   |    |    |      |      | <b>ECO Plus 2</b>         |                  |           | Weight-optimised BPW trailer axle with ECO Plus 2 Unit, 2007 -                       |
|          |    |   |    |    |      |      | <b>ECO Plus 3</b>         |                  |           | Weight-optimised BPW trailer axle with ECO Plus 3 Unit, 2015 -                       |
|          |    |   |    |    |      |      | <b>MAXX</b>               |                  |           | Weight-optimised BPW trailer axle with konv. hub bearing system                      |
|          |    |   |    |    |      |      |                           | <b>ECO Cargo</b> |           | Running gear system as from 2013   |

# Explanation of BPW code numbers

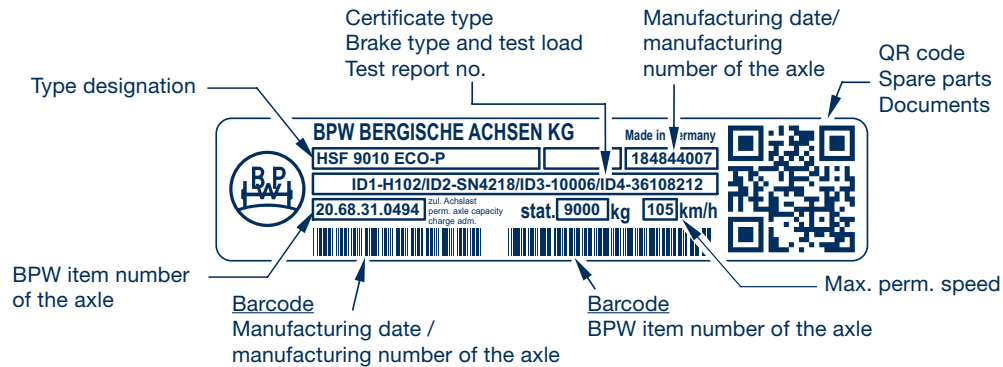
## Mechanical suspensions series VB (extract)

| Example:                          |     |   |                        |                                      |                       |                                 |
|-----------------------------------|-----|---|------------------------|--------------------------------------|-----------------------|---------------------------------|
| 39.                               | 68. | 743.  | 007                    |                                      |                       |                                 |
|                                   |     |   |                        | <b>1. + 2. digit</b>                 |                       |                                 |
| 21.                               |     | Single axle with suspension parts   |                        |                                      |                       |                                 |
| 28.                               |     |   |                        |                                      |                       |                                 |
| 30.                               |     |   |                        |                                      |                       |                                 |
| 38.                               |     |   |                        |                                      |                       |                                 |
| 22.                               |     | Tandem axle suspension / Tri-axle suspension  |                        |                                      |                       |                                 |
| 32.                               |     |   |                        |                                      |                       |                                 |
| 23.                               |     | Tandem axle suspension / Tri-axle suspension  |                        |                                      |                       |                                 |
| 32.                               |     |   |                        |                                      |                       |                                 |
| 39.                               |     |   |                        |                                      |                       |                                 |
|                                   |     |   |                        | <b>3. + 4. digit</b>                 |                       |                                 |
|                                   |     | <b>Axle load</b>  | <b>Roller bearings</b> | <b>Trailer axle</b>                  | <b>Year of manuf.</b> | <b>Remark</b>                   |
| 06.                               |     | 6500 kg   | 33116 / 32310          | H.. / K.. / N..                      | 1982 -                | Conventional hub bearing system |
| 08.                               |     | 8000 - 9000 kg  | 33116 / 32310          | H.. / K.. / N..                      | 1982 -                |                                 |
| 09.                               |     |   |                        |                                      |                       |                                 |
| 10.                               |     | 10000 - 12000 kg  | 33118 / 33213          | H.. / K.. / N..                      | 1982 -                |                                 |
| 14.                               |     | 13000 - 14000 kg  | 32219 / 33215          | H.. / K.. / N..                      | 1983 -                |                                 |
| 16.                               |     | 16000 - 18000 kg  | 32222 / 32314          | H..                                  | 1983 -                |                                 |
| 20.                               |     | 20000 kg  | 32224 / 32316          | H..                                  | 1983 -                |                                 |
| 36.                               |     | 6500 kg   | 33116 / 32310          | H.. / K.. / N..                      | 1991 (1992) -         | ECO / ECO-MAXX Unit             |
| 37.                               |     | 8000 - 9000 kg  | 33116 / 32310          | H.. / K.. / N..                      | 1991 (1992) -         |                                 |
| 38.                               |     |   |                        |                                      |                       |                                 |
| 39.                               |     |   |                        |                                      |                       |                                 |
| 40.                               |     | 10000 - 12000 kg  | 33118 / 33213          | H.. / K.. / N..                      | 1991 (1992) -         |                                 |
| 41.                               |     | 13000 - 14000 kg  | 32219 / 33215          | H..                                  | 1994 -                |                                 |
| 44.                               |     |   |                        |                                      |                       |                                 |
| 48.                               |     | 8000 - 9000 kg  | 33118 / 33213          | H.. / SH..;<br>KH.. / SKH..;<br>NH.. | 2000 -                | ECO <sup>Plus</sup> Unit        |
| 49.                               |     | 10000 - 12000 kg  | 33118 / 33213          | H.. / SH..;<br>KH.. / SKH..;<br>NH.. | 2000 -                |                                 |
| 50.                               |     |   |                        |                                      |                       |                                 |
| 51.                               |     |   |                        |                                      |                       |                                 |
| 56.                               |     | 6500/7000 kg  | 33118 / 33213          | H.. / NH..                           | 2007 -                | ECO Plus 2 Unit                 |
| 58.                               |     | 8000 - 9000 kg  | 33118 / 33213          | H.. / SH..;<br>KH.. / SKH..;<br>NH.. | 2007 -                |                                 |
| 59.                               |     |   |                        |                                      |                       |                                 |
| 64.                               |     | 6000 kg   | 30313 / 32309          | EH..                                 | - 1980                | Conventional hub bearing system |
| 65.                               |     | 6400 kg   | 33215 / 32310          | KR..                                 | 1985 -                |                                 |
| 66.                               |     | 6500 kg   | 33118 / 33213          | H.. / SH..; KH.. / SKH..;            | 2015 -                | ECO Plus 3 Unit                 |
| 68.                               |     | 8000 - 9000 kg  | 33118 / 33213          | NH..                                 |                       |                                 |
| 85.                               |     | 8000 kg   | 33215 / 32310          | EH.. / ZR..                          | 1967 - 1982           | Conventional hub bearing system |
| 86.                               |     | 10000 kg  | 33217 / 33213          | EH.. / ZR..                          | 1966 - 1982           |                                 |
| 87.                               |     | 20000 kg  | 32224 / 32316          | EH..                                 | - 1983                |                                 |
| 89.                               |     | 16000 kg  | 32222 / 32314          | EH..                                 | - 1983                |                                 |
| <b>5. - 6. digit (ECO Plus 3)</b> |     |   |                        |                                      |                       |                                 |
| 10.                               |     | <b>Designation of wheel brake in the case of ref. number 20... - 39...</b>            |                        |                                      |                       |                                 |
| -                                 |     | For explanation of code number, see EL-HKN / EL-TS2/TSB / BPW code number designation |                        |                                      |                       |                                 |
| 43.                               |     |   |                        |                                      |                       |                                 |
| <b>5. - 7. digit</b>              |     |   |                        |                                      |                       |                                 |
| 501.                              |     | <b>Designation of wheel brake in the case of ref. number 20... - 39...</b>            |                        |                                      |                       |                                 |
| -                                 |     | For explanation of code number, see EL-HKN / EL-TS2/TSB / BPW code number designation |                        |                                      |                       |                                 |
| 839.                              |     |   |                        |                                      |                       |                                 |
| <b>8. - 10. digit</b>             |     |   |                        |                                      |                       |                                 |
| 000 /                             |     | Consecutive number 000 - 999  |                        |                                      |                       |                                 |
| 0000                              |     | Consecutive number 0000 - 9999 (ECO Plus 3)   |                        |                                      |                       |                                 |

# Explanation of BPW code numbers and suspension types

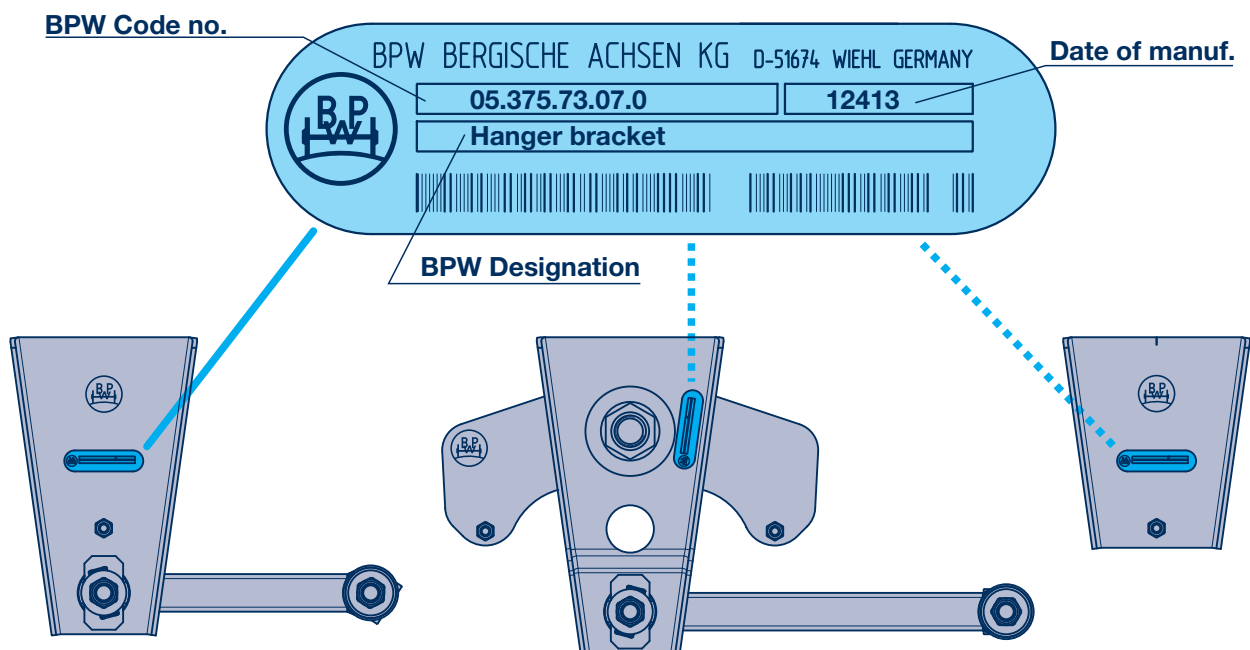
## BPW Type plate

### Type plate at axle beam (Axle type plate)



|   | Example:  |
|---|---|
| The BPW type name is composed of a letter group and a number group.   | <b>HSF 9010-15 ECO-P</b>  |
| The letter group identifies the type of axle and suspension version as well as defining the hub version.  | <b>HSF</b> - BPW axle series <b>H</b> for single wheels (without 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<br>- <b>10</b> wheel studs per wheel   |
| The group of letters at the end of the model name defines the type of hub bearing.  | <b>ECO-P</b> - <b>ECO Plus</b> bearing generation   |
| You can view the brake certificate referenced by certificate type/test report number on the type plate by logging onto the BPW website at <a href="http://www.bpw.de">www.bpw.de</a> (Download Centre in the German version of the website - „Bremsgutachten“). | e.g.: ID1-H102/ID2-SN4218/ID3-10006/ID4-36108212<br><b>ID1-H102</b> Certificate type<br><b>ID2-SN4218</b> Brake<br><b>ID3-10006</b> Tested axle load<br><b>ID4-36108212</b> Test report no. |

### Type plate on hanger brackets and equalizing beams in the case of VB ECO Cargo



All BPW parts and components are provided with a 10 digit „speaking“ code number.

# Mechanical suspensions series VB

## 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.

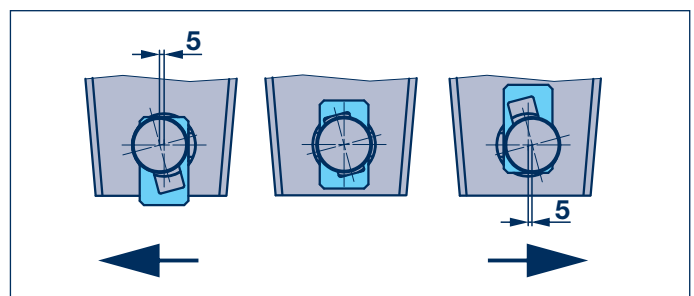
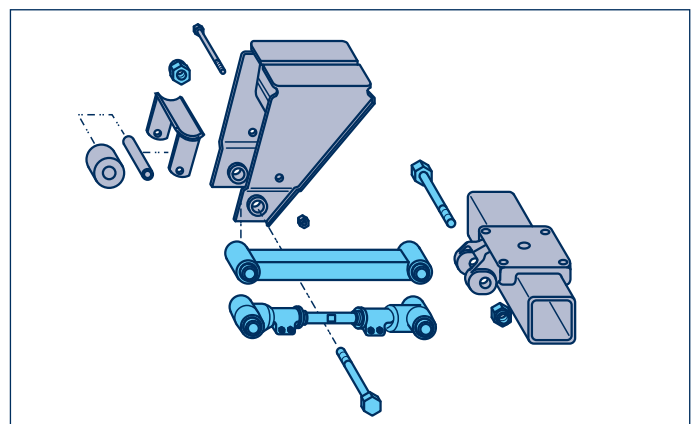
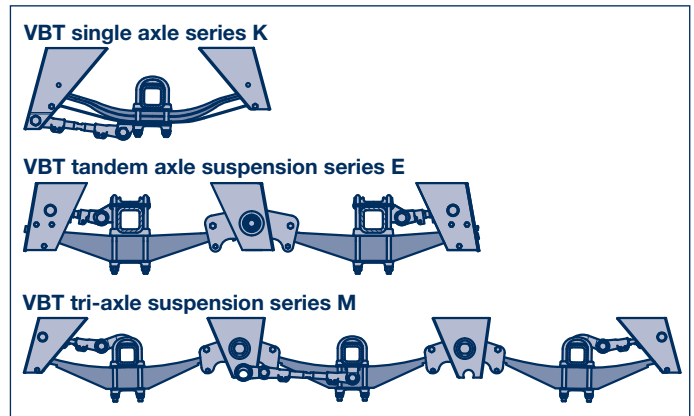
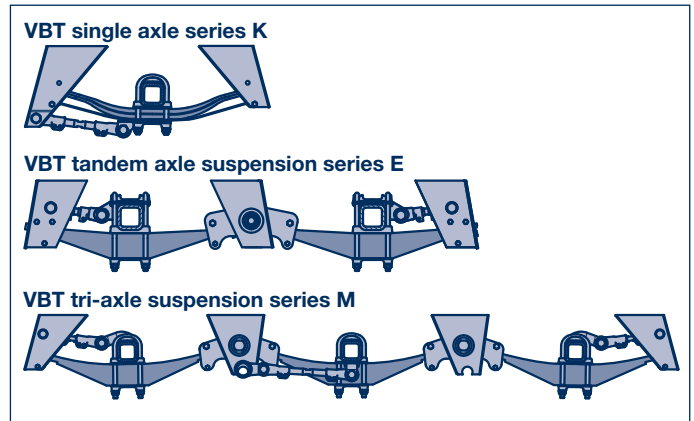
### Leaf spring installation

- Series **VB** Leaf spring above the axle beam
- Series **VBN** Leaf spring above the axle beam
- Series **VBT** 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 16).

Suspension axles can be quickly aligned through **VB ECO Cargo** hanger brackets and equalizing beams with integrated wheel alignment:

Production tolerances on the vehicle can be equalised or wheelbases corrected (axle tracking).



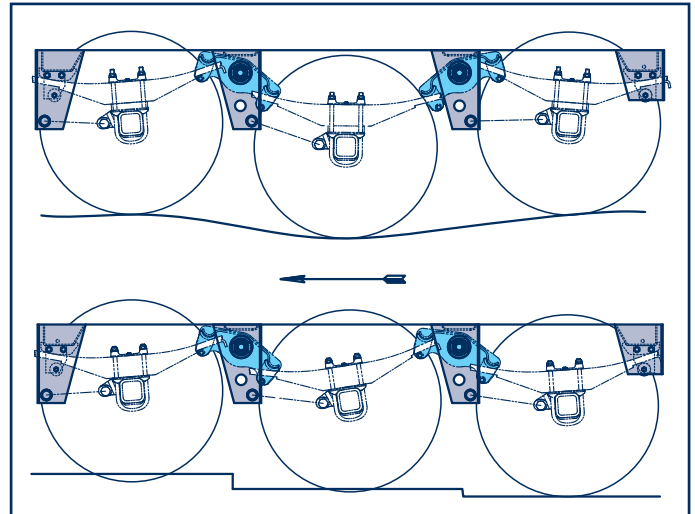


# Mechanical suspensions series VB

## General

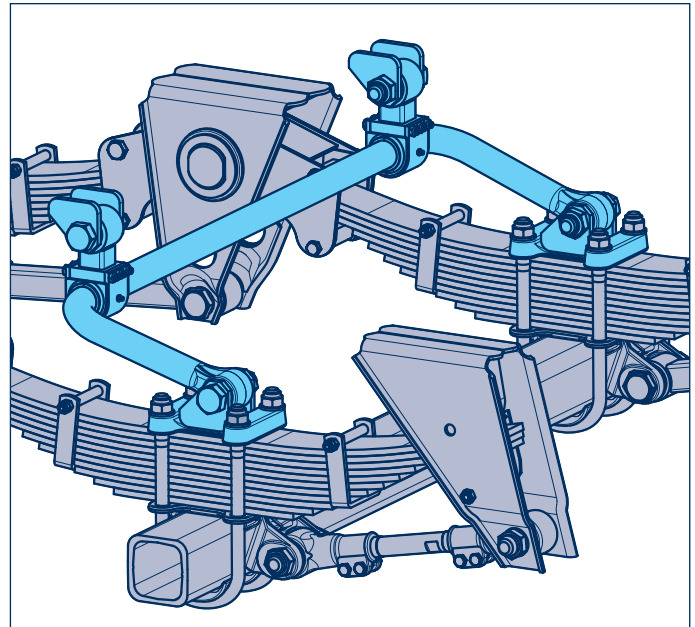
### Mode of operation

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.



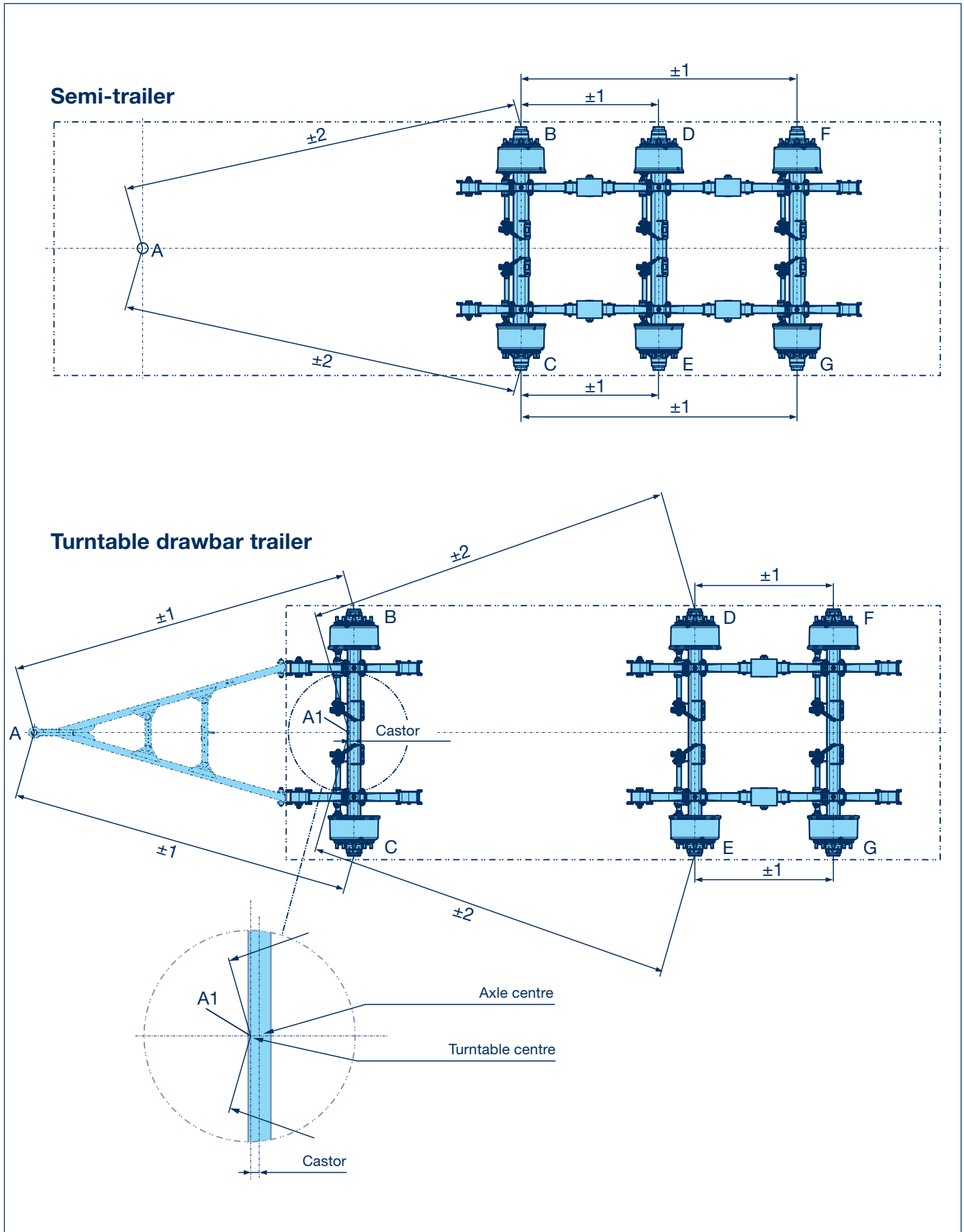
### BPW VB suspension units with anti-roll bar

**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.



# 1 Axle alignment

## 1.1 Axle alignment conventionel



# Axle alignment 1

## Axle alignment conventional 1.1

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.

### Semi-trailers:

Determine diagonal dimensions **A - B** and **A - C** for the front axle (reference axle) using comparative measurements and correct if necessary.

Check wheel base measurements **B - D** and **C - E** for the centre axle and **B - F** and **C - G** for the rear axle and correct if necessary.

### Turntable drawbar trailers:

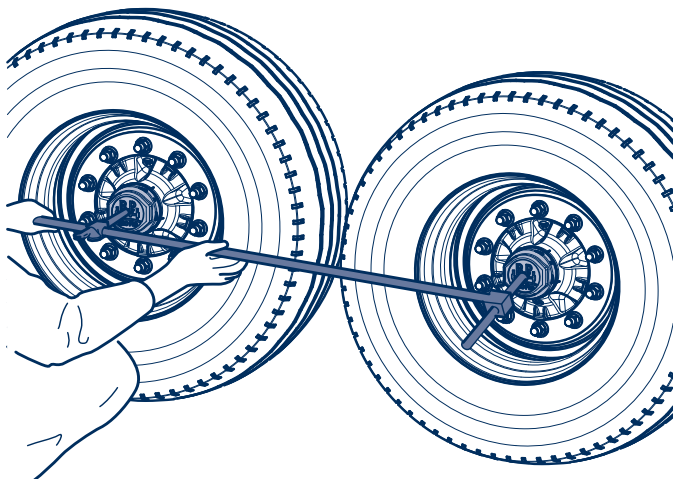
Determine diagonal dimensions **A - B** and **A - C** for the front axle (reference axle) using comparative measurements and correct if necessary.

Determine diagonal dimensions **A1 - D** and **A1 - E** for the centre axle using comparative measurements and correct if necessary.

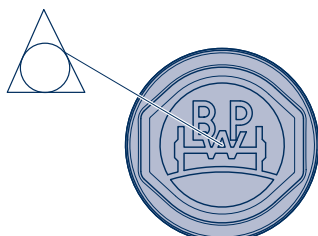
Check wheel base measurements **D - F** and **E - G** for the rear axle and correct if necessary.

Measurements are generally taken from the centre of the hub cap (Fig.).

It can also be carried out using suitable distancing devices or screwed-on calibration tubes.



The triangle in the BPW logo is in the centre and can be used for holding a measuring tool.



### IMPORTANT:

This method only takes into consideration the distances of the axles, but not the individual tracking values on the axle sides. This is sufficient for axles with optimal tracking values. This conventional method has a higher probability of incorrect measurements than the laser method (Chapter 11.2).

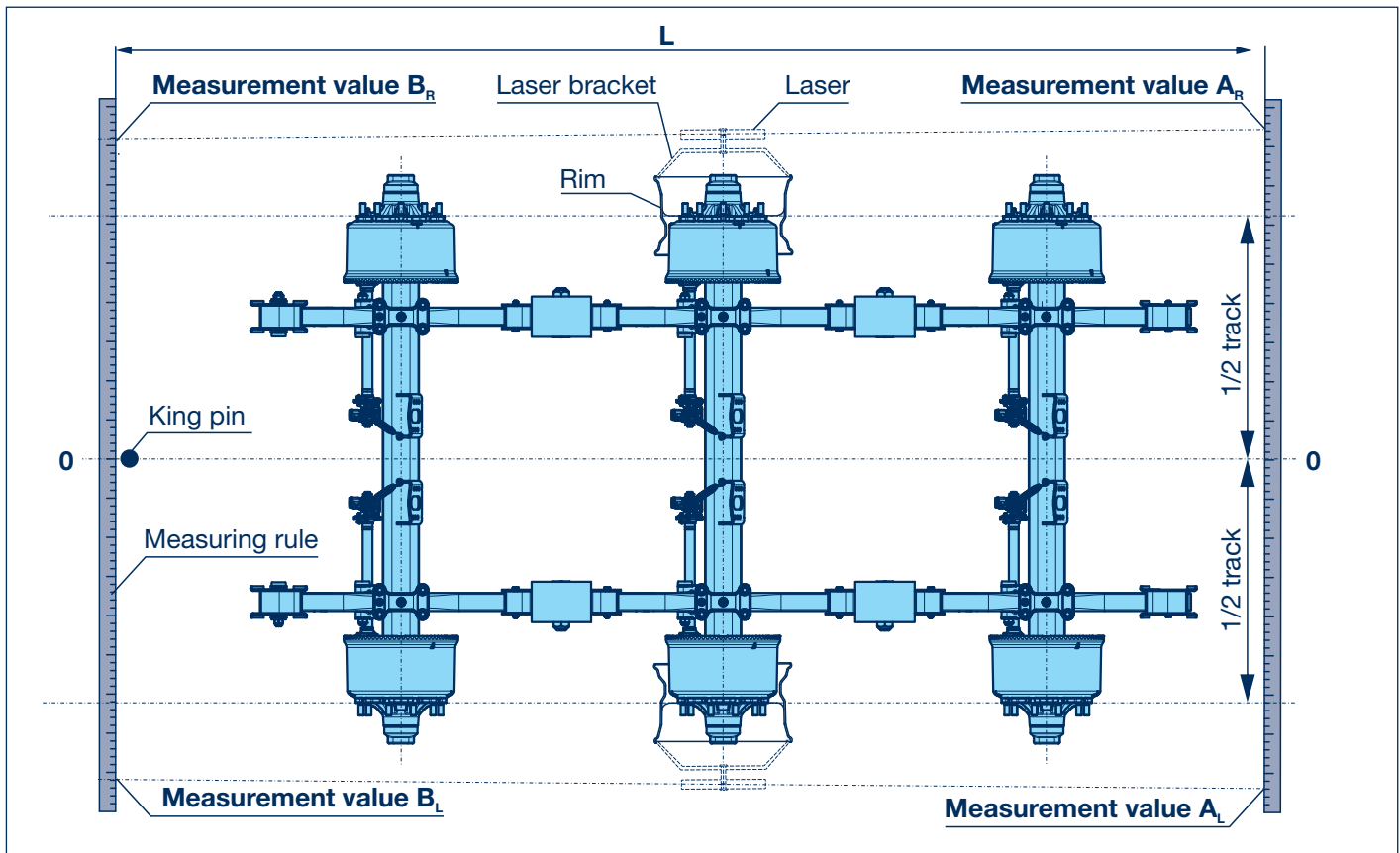
The measurement of smaller differences across greater lengths can be impacted by factors such as the elasticity in the measuring tool (manual force).

The tracking tolerances defined by BPW must be maintained. Only by maintaining these tolerances can low-wear operation of the vehicle be assured.

The tracking values are set for steered axles at the factory and the steering rod must not be adjusted.

# 1 Axle alignment

## 1.2 Axle alignment with laser measuring system



If laser measuring systems are used, care must be taken to ensure that the axle is aligned **horizontally** with the base in order to obtain a correct measurement as otherwise the camber values will affect the result. It is assumed that the vehicle does not carry any loads.

The operating and setting instructions of the system manufacturer must be adhered to!

The maximum possible wheelbase correction per axle is  $\pm 5$  mm for adjustable hanger brackets (see track settings with adjustable hanger brackets).

During the tracking process, the tracking values of the right and left wheel side must be averaged for each axle. Instead of measuring all three axles using the laser method, it is also possible to only track the mid-axle using the laser method.

The front and rear axle are positioned relatively to the mid-axle using suitable axle centre distance devices (like during conventional tracking).

### Calculation of the toe-in and toe-out settings:

$$\frac{(AR - BR) + (AL - BL)}{L} = \text{Axle track (mm/m)}$$

Positive value = toe-in

Negative value = toe-out

**The total of the values is the toe-in/toe-out value of the axle and must be within the permitted tolerance range.**

### Target values (total axle track):

- ⊙ Rigid axle  
=> -1 ... + 5 mm/m
- ⊙ Self-steering axle  
=> 0 ... + 4 mm/m (drum brake)

### IMPORTANT:

The tracking tolerances defined by BPW must be maintained. Only by maintaining these tolerances can low-wear operation of the vehicle be assured.

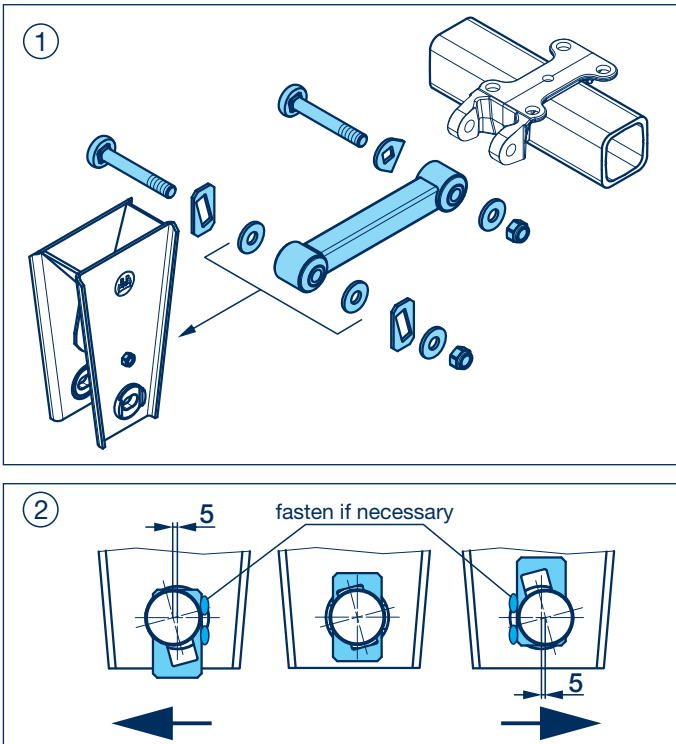
The tracking values are set for steered axles at the factory and the steering rod must not be adjusted.

# Axle alignment 1

## Axle alignment correction 1.3

### ECO Cargo VB

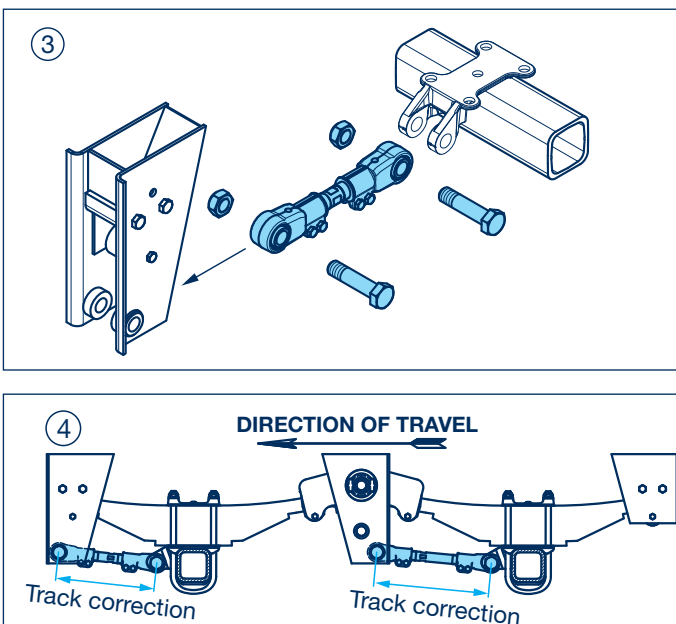
The maximum possible wheel base correction per axle for adjustable hanger brackets (ECO Cargo VB) is  $\pm 5$  mm.



### ECO Cargo VB HD / VBT

Each rigid and adjustable connecting rod enables easy tracking of the suspension axles.

For some suspension unit versions, two adjustable connecting rods are also fitted for each axle.



### Axle alignment correction

1. Raise and support the vehicle frame.
2. Loosen locking nut M 24 (SW 36) on the connecting rod mounting (Fig. ①).
3. For tandem and tridem: firstly align the front axle, then the other axles.
4. Slide the connecting linkage on both sides, as required, upwards or downwards with light hammer blows (Fig. ②).
5. **Make sure the inner and outer connecting linkages on each hanger bracket are adjusted symmetrically!**
6. Tighten locking nut M 24 (SW 36) with the prescribed tightening torque.  
M = 650 Nm (605 - 715 Nm)
7. For difficult road conditions, the connecting linkages can be affixed following alignment (Fig. ②).
8. Remove supports under the vehicle frame.

### Axle alignment correction

1. Raise and support the vehicle frame.
2. Loosen locking nuts M 12 / M 14 from the connecting rod clamp connections (Fig. ③).
3. For tandem and tridem: firstly align the front axle, then the other axles.
4. Align the axle by turning the adjusting spindle (left-right thread) (Fig. ④).
5. Tighten locking nuts M 12 / M 14 with the prescribed tightening torque.  
M 12            M = 66 Nm  
M 14            M = 140 Nm
6. Remove supports under the vehicle frame.

## 2 Leaf springs

### 2.1 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.

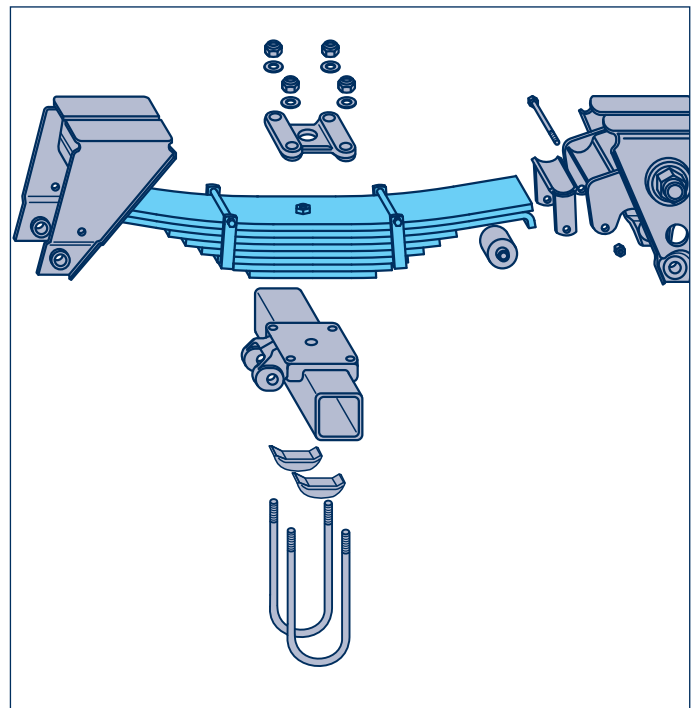
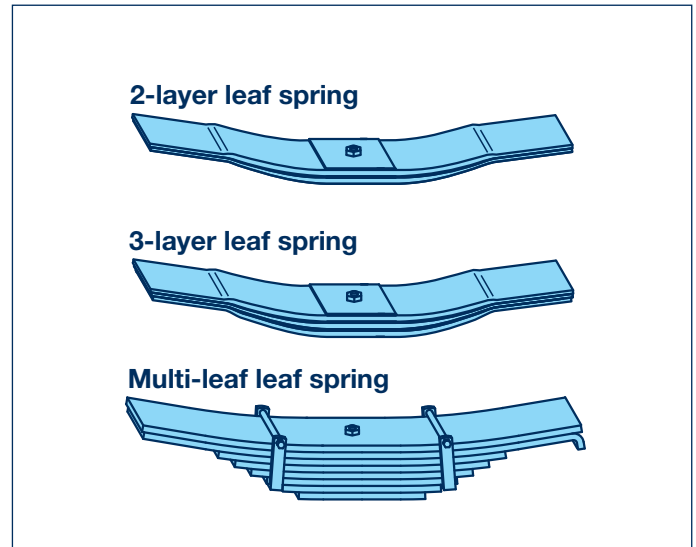
The ends of the leaf springs are mounted on sliding bearings using spring slides both in the connecting pieces and in the equalising beams.

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.

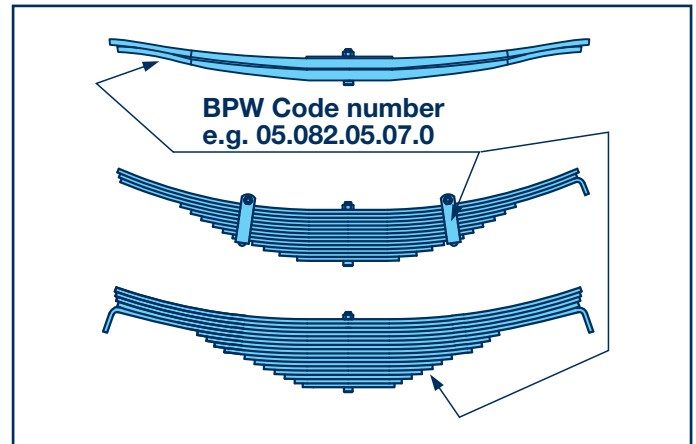
The earth terminal must under no circumstances be attached to the leaf spring or hub.

# Leaf springs 2

## General 2.1

### BPW Code number

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

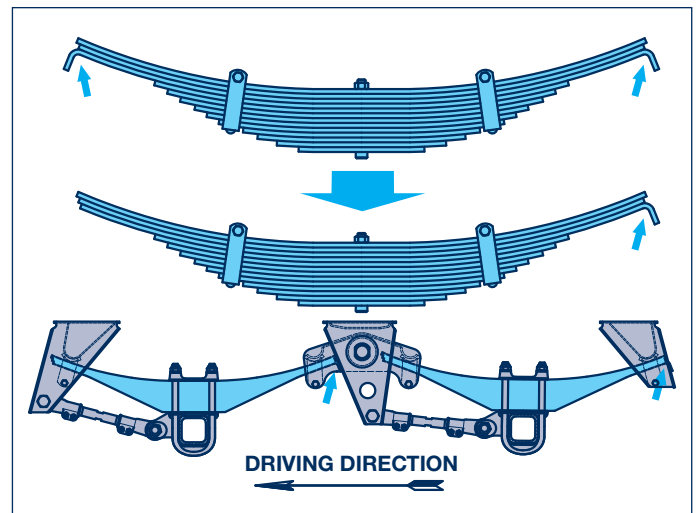


Up to 1996, BPW leaf springs for VB suspension units were supplied with two hooked ends.

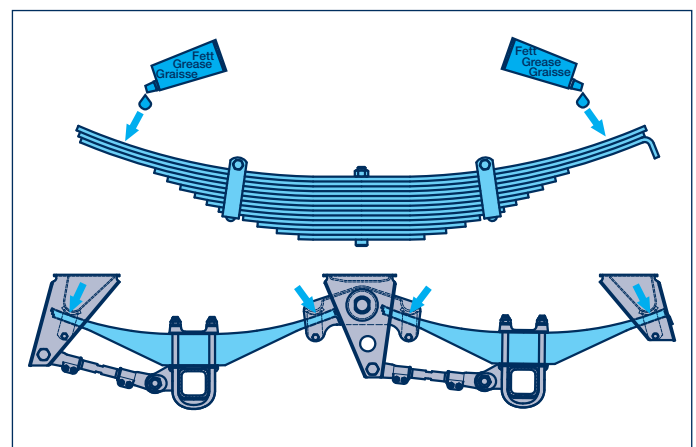
After that the leaf springs were only manufactured with one hooked end.

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).

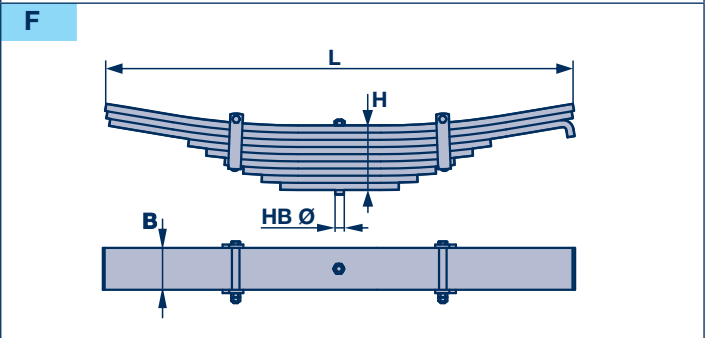
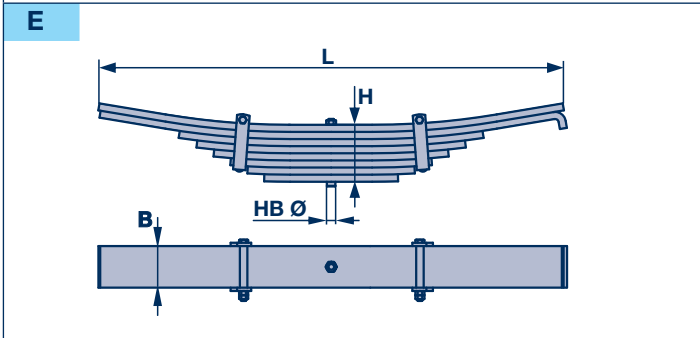
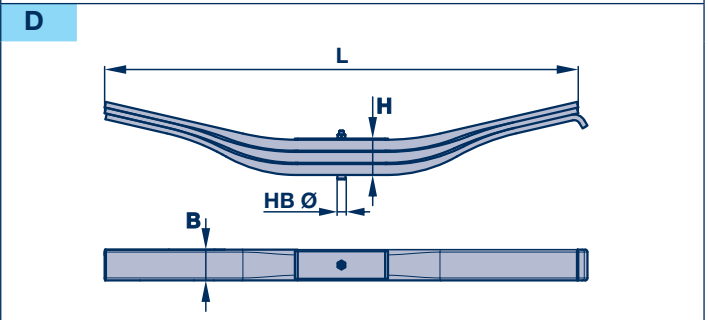
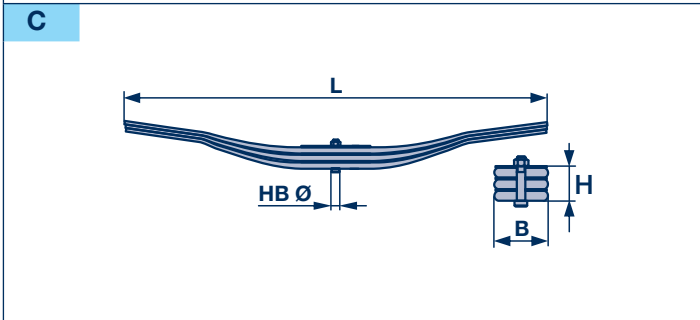
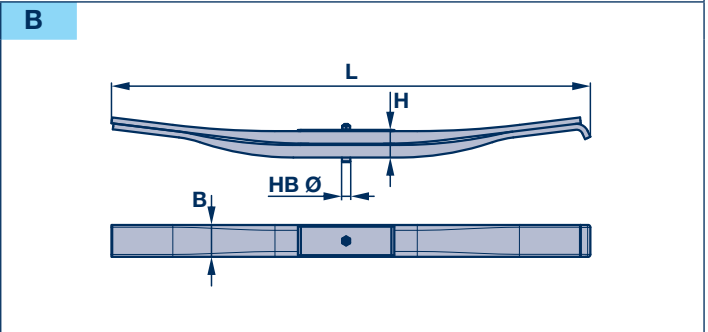
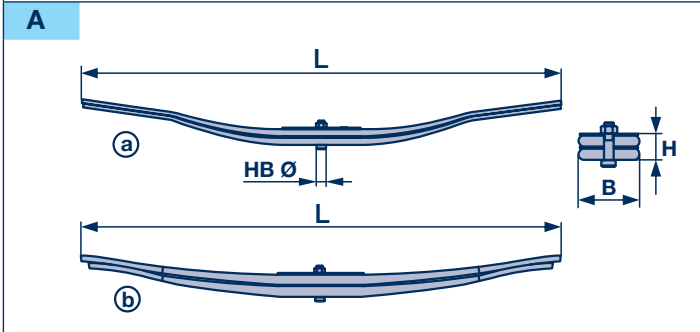
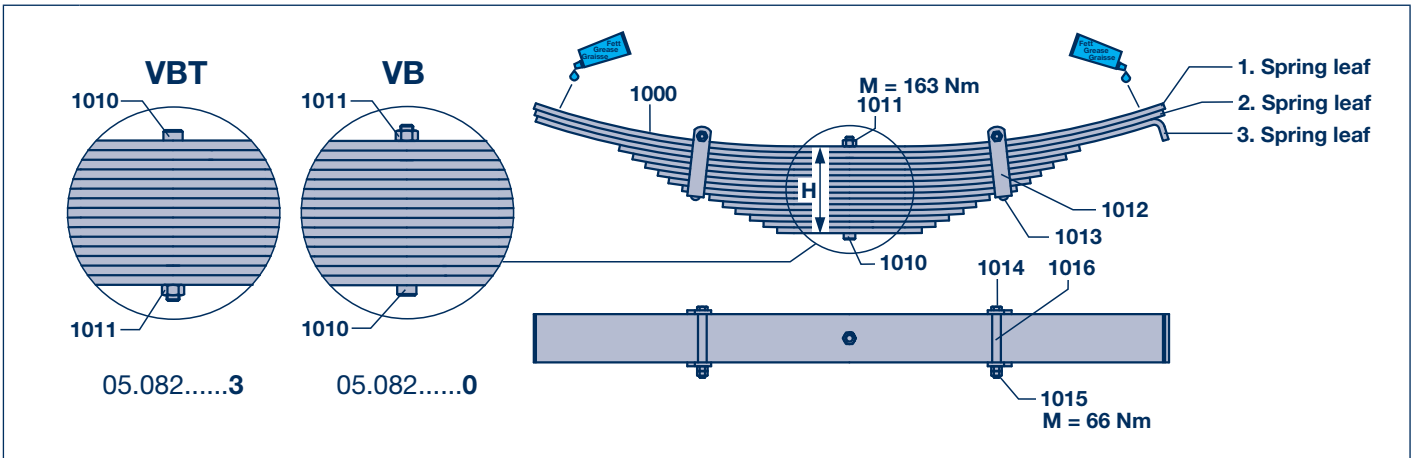


The contact points between the leaf springs and the retainers or sliders must be well greased in order to prevent unnecessary wear and rattling.



# 2 Leaf springs

## 2.2 Leaf springs, anti-vibration leaves





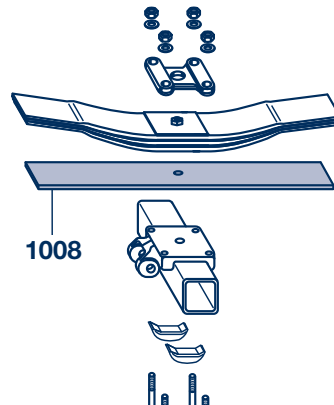
# Leaf springs 2

## Leaf springs, anti-vibration leaves 2.2

| Qty. Layer | Wheel base                 | Axle load | Exec.     | Fig. | L    | H   | B    | HB Ø                         | BPW Code no. Leaf spring Item 1000 | Spring leaves   |
|------------|----------------------------|-----------|-----------|------|------|-----|------|------------------------------|------------------------------------|---|
| 2          | 1360 / 1500 / 2050         | 10 t      | VB K / M  | A a  | 1170 | 60  | 100  | Ø 24                         | 05.082.04.08.0                     |   |
|            |                            |           | VBT K / M |      |      |     |      |                              | 05.082.04.08.3                     |   |
|            |                            | VB K / M  | A b       | 1170 | 60   | 100 | Ø 24 | 05.082.04.06.0               |                                    |   |
|            |                            | VBT K / M |           |      |      |     |      | 05.082.04.13.0               |                                    |   |
|            | 12 t                       | VB K / M  | A a       | 1170 | 64   | 100 | Ø 24 | 05.082.04.13.0               |                                    |   |
|            |                            | VBT K / M |           |      |      |     |      | 05.082.04.13.3               |                                    |   |
| 1310       | 12 t                       | VB EC     | B         | 1120 | 66   | 76  | Ø 20 | 05.082.04.46.0               |                                    |   |
| 3          | 1360 / 2050                | 9 t       | VB K / M  | C    | 1170 | 72  | 100  | Ø 24                         | 05.082.03.36.0                     |   |
|            |                            |           | VBT K     |      |      |     |      |                              | 05.082.03.36.3                     |   |
|            | 1360 / 2050                | 10 t      | VB K      | C    | 1170 | 72  | 100  | Ø 24                         | 05.082.04.30.0 <sup>1)</sup>       |   |
|            | 1360                       | 9 - 12 t  | VB EC     | D    | 1170 | 90  | 76   | Ø 20                         | 05.082.04.47.0                     |   |
| 8          | 1500                       | 16 - 20 t | VB        | E    | 1300 | 160 | 100  | Ø 24                         | 05.082.07.01.0                     | 1. 02.1014.07.00 <sup>1)</sup>                              |
|            |                            |           | VBT       |      |      |     |      |                              | 05.082.07.01.3                     |   |
| 9          | 1500 / 1600                | 18 - 20 t | VB        | F    | 1300 | 180 | 100  | Ø 24                         | 05.082.08.07.0                     | 1.+2. 02.1014.08.20   |
|            |                            |           | VBT       |      |      |     |      |                              | 05.082.08.07.3                     |   |
| 10         | 1360                       | 9 t       | VB EC     | F    | 1170 | 120 | 76   | Ø 20                         | 05.082.04.45.0                     | 1.+2. upon request  |
| 11         | 1360 / 1380<br>1410 / 2050 | 12 t      | VB        | F    | 1170 | 132 | 100  | Ø 24                         | 05.082.04.02.0                     | 1.+2. 02.1014.04.10<br>3. 02.1014.04.11<br>4. 02.1014.04.12 |
|            |                            |           | VBT       |      |      |     |      |                              | 05.082.04.02.3                     |   |
|            | 1360                       | 12 t      | VB EC     | F    | 1170 | 143 | 76   | Ø 20                         | 05.082.04.44.0                     | 1.+2. upon request  |
| 12         | 1360                       | 14 t      | VB        | F    | 1170 | 144 | 100  | Ø 24                         | 05.082.05.03.0                     | 1.+2. 02.1014.05.22   |
|            |                            |           | VBT       |      |      |     |      |                              | 05.082.05.03.3                     |   |
|            | 1410                       | 14 t      | VB        | F    | 1230 | 144 | 100  | Ø 24                         | 05.082.05.07.0                     | 1.+2. 02.1014.05.50   |
|            |                            |           | VBT       |      |      |     |      |                              | 05.082.05.07.3                     |   |
| 13         | 1360 / 2050                | 9 - 10 t  | VB        | F    | 1170 | 130 | 100  | Ø 24                         | 05.082.03.02.0                     | 1.+2. upon request  |
|            |                            |           | VBT       |      |      |     |      |                              | 05.082.03.02.3                     |   |
| 14         | 1360                       | 16 t      | VB        | F    | 1170 | 168 | 100  | Ø 24                         | 05.082.06.01.0                     | 1.+2. 02.1014.06.00   |
|            |                            |           | VBT       |      |      |     |      |                              | 05.082.06.03.0                     |   |
|            | 1410                       | 16 t      | VB        | F    | 1230 | 168 | 100  | Ø 24                         | 05.082.06.03.0                     | 1.+2. 02.1014.06.25   |
|            |                            |           | VBT       |      |      |     |      |                              | 05.082.06.03.3                     |   |
|            | 1500 / 2050                | 14 t      | VB        | F    | 1300 | 168 | 100  | Ø 24                         | 05.082.05.01.0                     | 1.+2. 02.1014.05.09   |
|            |                            |           | VBT       |      |      |     |      |                              | 05.082.05.01.3                     |   |
| 1410       | 20 t                       | VB        | F         | 1230 | 196  | 100 | Ø 24 | 05.082.07.03.0               | 1.+2. auf Anfrage                  |   |
|            |                            | VBT       |           |      |      |     |      | 05.082.07.03.3 <sup>1)</sup> |                                    |   |
| 15         | 1500                       | 16 t      | VB        | F    | 1300 | 180 | 100  | Ø 24                         | 05.082.06.02.0                     | 1.+2. auf Anfrage   |
|            |                            |           | VBT       |      |      |     |      |                              | 05.082.06.02.3                     |   |

Further leaf springs and spring leaves upon request.

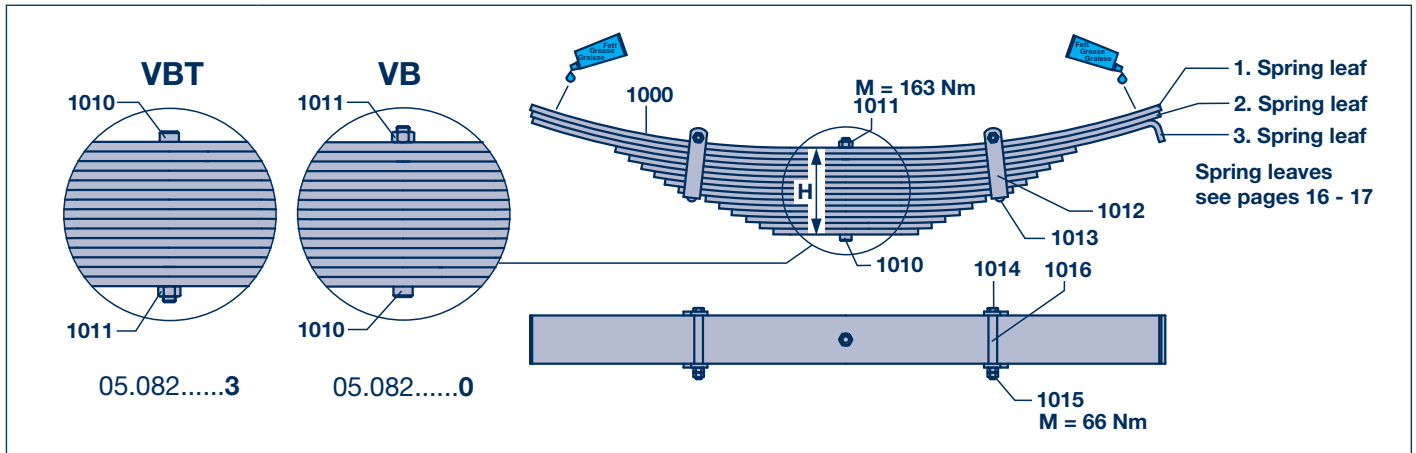
### Anti-vibration leaves for 2- and 3-layer leaf springs

|  | Item      | Designation     | Dimension                    | BPW Code no.   |
|---|-----------|-----------------|------------------------------|----------------|
|   | 1008      | Plate (WB 1310) | 90 x 1190 x 5                | 03.281.39.02.0 |
|   | (WB 1360) | 90 x 1230 x 5   | 03.281.39.01.0 <sup>1)</sup> |                |

<sup>1)</sup> no longer available

# 2 Leaf springs

## 2.3 Spare parts for leaf springs



|     | Item | Designation       | Leaf spring height H | HB Ø                         | d    | L             | BPW Code no.                |
|-----|------|-------------------|----------------------|------------------------------|------|---------------|-----------------------------|
|     | 1010 | Spring screw      | 54 / 60              | Ø 24                         | M 16 | 75            | 03.341.02.14.0              |
|     |      |                   | 63 / 64              |                              |      | 80            | 03.341.02.18.0              |
|     |      |                   | 66                   | Ø 20                         | M 12 | 80            | upon request                |
|     |      |                   |                      |                              |      | 85            | 03.341.02.07.0              |
|     |      |                   | 69 / 72              | Ø 24                         | M 16 | 90            | 03.341.02.02.0              |
|     |      |                   | 80                   |                              |      | 100           | 03.341.02.03.0              |
|     |      |                   | 85                   |                              |      | 105           | 03.341.02.17.0              |
|     |      |                   | 90                   |                              |      | 110           | upon request                |
|     |      |                   | 93                   | Ø 24                         | M 16 | 110           | 03.341.02.18.0              |
|     |      |                   | 95                   |                              |      | 115           | 03.341.02.15.0              |
|     |      |                   | 100                  |                              |      | 120           | 03.341.02.30.0              |
|     |      |                   | 112                  |                              |      | 130           | 03.341.02.04.0              |
|     |      |                   | 116                  | Ø 20                         | M 12 | 135           | 03.341.02.32.0              |
|     |      |                   | 120                  |                              |      | 140           | upon request                |
|     |      |                   |                      |                              |      | 145           | 02.5038.53.80 <sup>1)</sup> |
|     |      |                   | 130                  |                              |      | 150           | 03.341.02.05.0              |
|     |      |                   | 140 - 144            | Ø 24                         | M 16 | 160           | upon request                |
|     |      |                   |                      |                              |      | 165           | 03.341.02.16.0              |
|     |      |                   | 160                  |                              |      | 185           | 03.341.02.12.0              |
| 168 | 190  | 03.341.02.25.0    |                      |                              |      |               |                             |
| 180 | Ø 24 | M 16              | 200                  | 03.341.02.26.0               |      |               |                             |
| 196 |      |                   | 215                  | 03.341.02.28.0 <sup>1)</sup> |      |               |                             |
|     | 1011 | Hexagon nut       |                      | M 12 / 934-8                 |      | 02.5202.      |                             |
|     |      |                   |                      | M 16 / 934-8                 |      | 02.5202.20.80 |                             |
|     | 1012 | Spring clamp      |                      |                              |      | upon request  |                             |
|     | 1013 | Button head rivet |                      | 12 x 28 / 124                |      |               |                             |
|     | 1014 | Hexagon screw     |                      |                              |      |               |                             |
|     | 1015 | Hexagon nut       |                      | M 12 / 934-8                 |      |               |                             |
|     | 1016 | Tube              |                      |                              |      |               |                             |

<sup>1)</sup> no longer available

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# Notices

# 3 Axle beams

## Welding guidelines for axle beams

### 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


- ⊙ Gas shielded arc welding  
Weld wire quality G 4 Si 1 – EN ISO 14341-A
- ⊙ Manual arc welding  
Stick electrodes E 46 5 B 32 H 5 – EN ISO 2560-A
- ⊙ Mechanical quality values must correspond to the basic material S 420 or S 355 J 2
- ⊙ Single sided fillet weld:  
Seam quality according to DIN EN ISO 5817  
Sheet thickness 6 mm -> Weld thickness a4 ▽  
Sheet thickness 8 mm -> Weld thickness a6 ▽
- ⊙ Avoid end craters and undercuts!
- ⊙ Functional areas free from weld spatter.

### Miscellaneous

Do not alter the camber or tracking of the axles except within BPW tolerances.

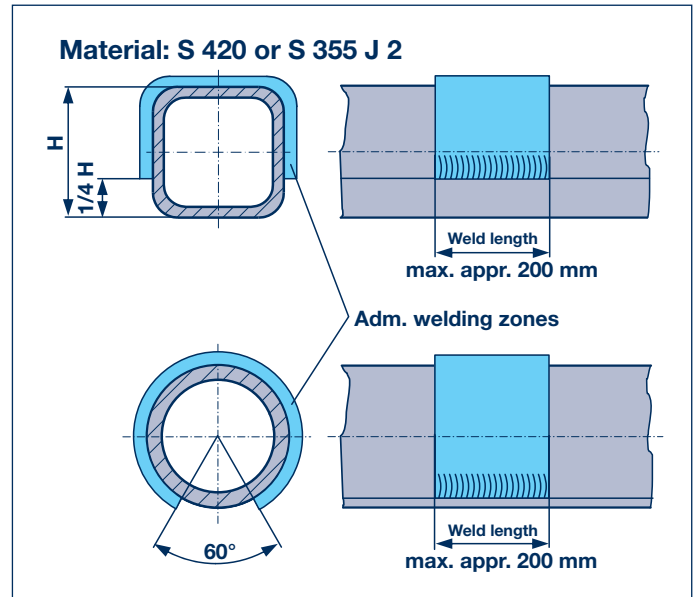
Observe the welding zones and weld lengths shown in the adjacent diagram.

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

 For all welding activities, the springs, spring clamps and all other sensitive components must be protected against flying sparks and welding spatter.

The earth terminal must under no circumstances be attached to the leaf springs, spring U-bolts or hubs.

No welding at leaf springs!



# Axle clampings 4

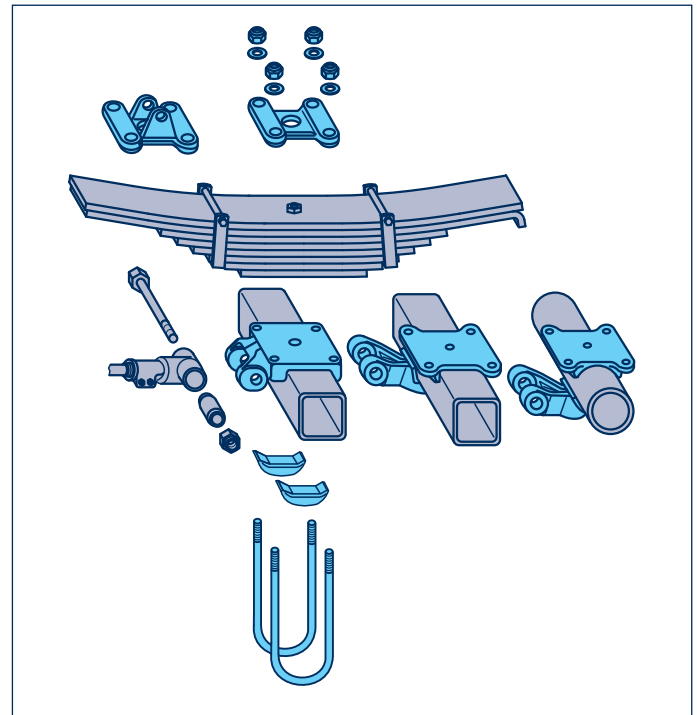
## General 4.1

### 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.

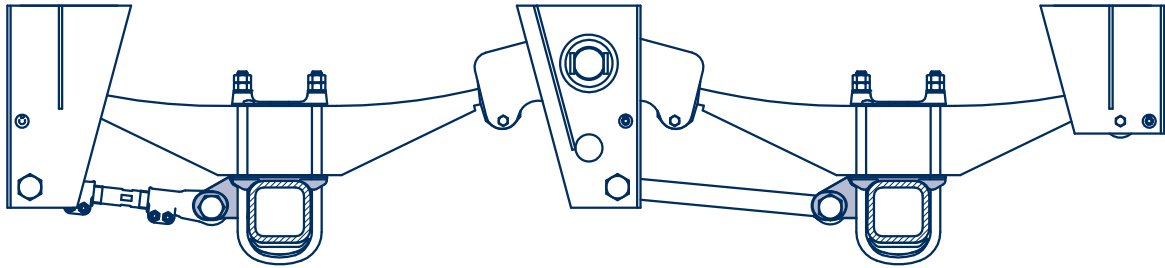
This means that the spring pads are welded to the axle beam.



# 4 Axle clampings

## 4.2 Spring seats, supports

### Spring seats, supports

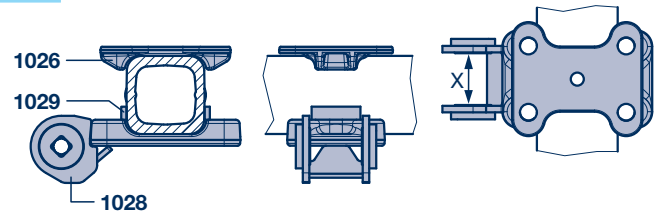


### VB ECO Cargo

**A**



**B**

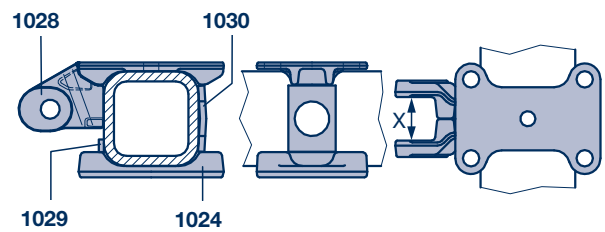


### VB

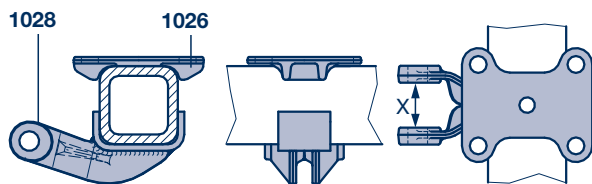
**C**



**D**



**E**



# Axle clampings 4

## Spring seats, supports 4.2

### Spring seats, supports

| Spring seats, supports   |                     |           |                    |                    |           |                |     |                             |                |                |      |
|--|---------------------|-----------|--------------------|--------------------|-----------|----------------|-----|-----------------------------|----------------|----------------|------|
|  | Series              | Item      | Designation        | Fig.               | Axle beam | Brake position | X   | Ø Attachment connecting rod | BPW Code no.   |                |      |
| <p><b>Axle series H. / R..</b></p> <p><b>Axle series K. / N..</b></p> <p><b>VB</b></p> | <b>VB ECO Cargo</b> | 1028      | Support            | A                  | □ 120     | 16°            | 79  | Ø 24                        | 03.189.16.04.0 |                |      |
|  |                     |           |                    |                    |           | □ 150          | 25° | 79                          | Ø 24           | 03.189.16.03.0 |      |
|  |                     | 1024      | Spring seat, upper | B                  | □ 120     | 0°             |     |                             |                | 03.032.18.26.0 |      |
|  |                     | <b>VB</b> | 1028               | Support            | C         | □ 120          | 30° | 69                          | Ø 30           | 05.189.16.13.0 |      |
|  | 1029                |           | Plate              | 03.283.53.12.0     |           |                |     |                             |                |                |      |
|  | 1028                |           | Support            | 03.189.02.04.0     |           |                |     |                             |                |                |      |
|  |                     |           |                    |                    |           | □ 150          | 25° | 69                          | Ø 30           | 03.189.15.56.0 |      |
|  |                     |           |                    |                    |           | □ 150          | 25° | 69                          | Ø 36           | 03.189.15.57.0 |      |
|  |                     |           | 1024               | Spring seat, lower | D         | □ 120          | 30° |                             |                | 03.032.17.05.1 |      |
|  |                     |           | 1028               | Support            | D         | □ 120          | 30° | 69                          | 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 | D         | □ 150          | 25° |                             |                | 03.032.19.26.0 |      |
|  |                     |           | 1028               | Support            | D         | □ 150          | 25° | 69                          | Ø 30           | 03.189.15.56.0 |      |
|  |                     |           |                    |                    |           |                |     |                             |                | 69             | Ø 36 |
|  |                     | 1029      | Plate              | 03.283.53.12.0     |           |                |     |                             |                |                |      |
|  |                     | 1030      | Shaped plate       |                    |           |                |     |                             | 03.161.64.05.0 |                |      |
|  |                     | 1026      | Spring seat, upper | E                  | □ 120     | 0°             |     |                             | 03.032.17.89.0 |                |      |
|  |                     | 1028      | Support            | ~E                 | Ø 127     | 0°             | 69  | Ø 30                        | 05.189.07.63.0 |                |      |
|  |                     | 1026      | Spring seat, upper |                    |           |                |     |                             | 03.032.38.37.0 |                |      |
|  |                     | 1028      | Support            |                    |           |                |     |                             | 05.189.04.97.1 |                |      |

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

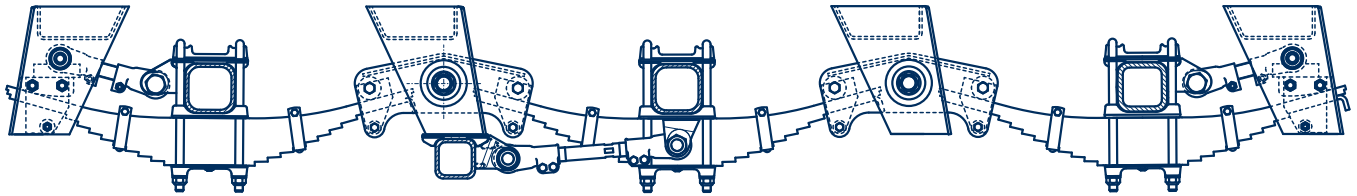
### Packer

|  |      |       |       |                |
|--|------|-------|-------|----------------|
|  | 1039 | Plate | 20 mm | 03.281.96.26.0 |
|  |      |       | 30 mm | 03.281.96.19.0 |

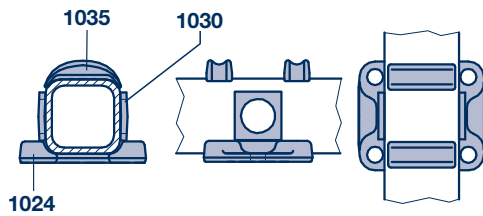
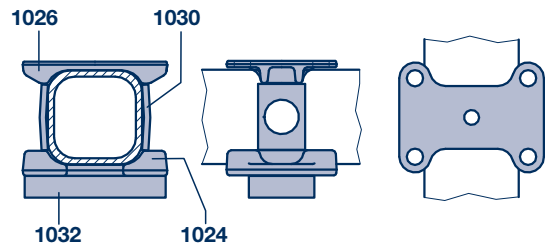
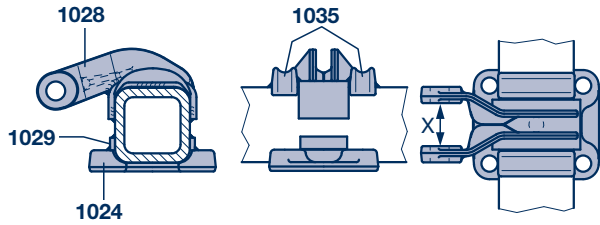
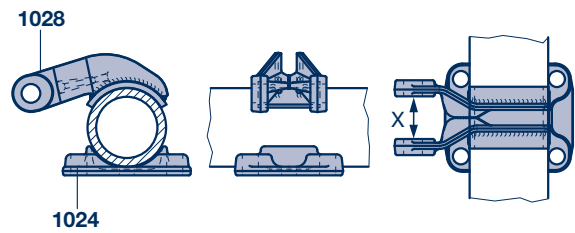
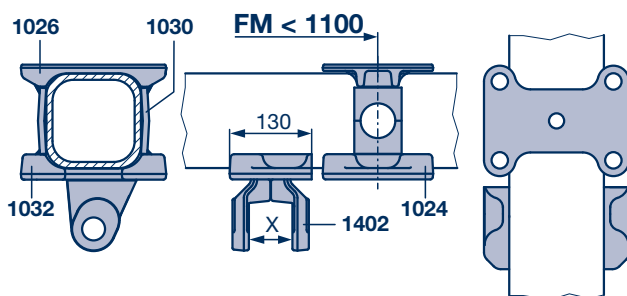
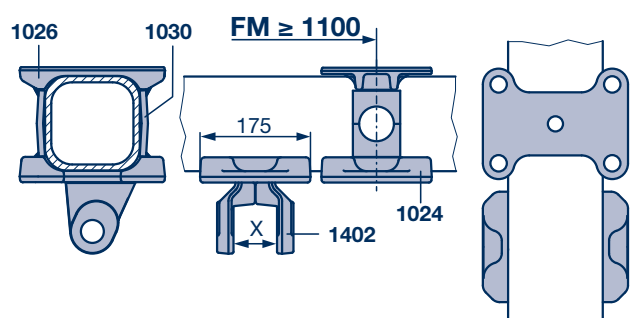
## 4 Axle clampings

### 4.2 Spring seats, supports

#### Spring seats, supports



#### VBT

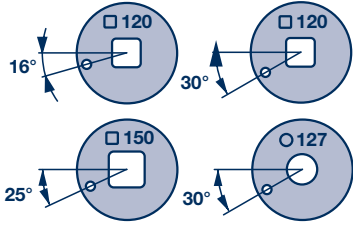
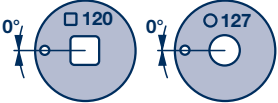
**F**

**G**

**H**

**I**

**J**

**K**




# Axle clampings 4

## Spring seats, supports 4.2

### Spring seats, supports

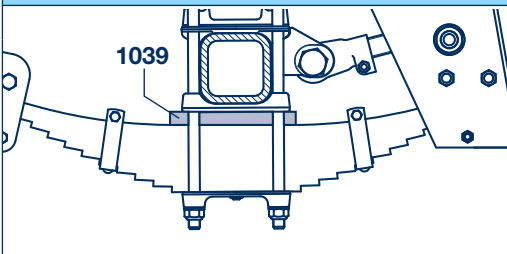
| Spring seats, supports   |                    |      |                    |      |           |                |      |                             |                |                              |
|--|--------------------|------|--------------------|------|-----------|----------------|------|-----------------------------|----------------|------------------------------|
|  | Series             | Item | Designation        | Fig. | Axle beam | Brake position | X    | Ø Attachment connecting rod | BPW Code no.   |                              |
| <p><b>Axle series H.. / R..</b></p>  <p><b>Axle series K.. / N..</b></p>  | <b>VBT</b>         | 1024 | Spring seat, lower | F    | □ 120     | 16°            |      | -                           | 03.032.17.05.1 |                              |
|  |                    | 1030 | Shaped plate       |      |           |                |      |                             |                | 03.161.63.01.0               |
|  |                    | 1035 | Segment            |      |           |                |      |                             |                | 03.345.23.02.1               |
|  |                    | 1024 | Spring seat, lower | F    | □ 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 | G    | □ 120     | 30°            |      | -                           |                | 03.032.17.89.0               |
|  |                    | 1026 | Spring seat, upper |      |           |                |      |                             |                | 03.032.17.05.1               |
|  |                    | 1030 | Shaped plate       |      |           |                |      |                             |                | 03.161.63.01.0               |
|  |                    | 1032 | Plate              |      |           |                |      |                             |                | 03.281.96.19.0               |
|  |                    | 1024 | Spring seat, lower | H    | □ 120     | 0°             |      |                             |                | 03.032.17.05.1               |
|  |                    | 1028 | Support *          |      |           |                |      | 69                          | 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 | I    | Ø 127     | 0°             |      |                             |                | 03.032.38.13.0               |
|  |                    | 1028 | Support            |      |           |                |      | 69                          | Ø 30           | 05.189.10.58.0 <sup>1)</sup> |
|  |                    | 1024 | Spring seat, lower | J    | □ 150     | 25°            |      |                             |                | 03.032.19.26.0               |
|  |                    | 1026 | Spring seat, upper |      |           |                |      |                             |                | 03.032.19.46.0               |
|  |                    | 1030 | Plate              |      |           |                |      |                             |                | 03.161.64.05.0               |
|  |                    | 1402 | Support            |      |           |                |      | 69                          | Ø 36           | 05.189.03.52.0               |
| 1024   | Spring seat, lower | K    | □ 150              | 25°  |           |                |      | 03.032.19.26.0              |                |                              |
| 1026   | Spring seat, upper |      |                    |      |           |                |      | 03.032.19.46.0              |                |                              |
| 1030   | Plate              |      |                    |      |           |                |      | 03.161.64.05.0              |                |                              |
| 1402   | Support            |      |                    |      |           | 69             | Ø 36 | 05.189.02.69.0              |                |                              |

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

<sup>1)</sup> no longer available

Further types upon request.

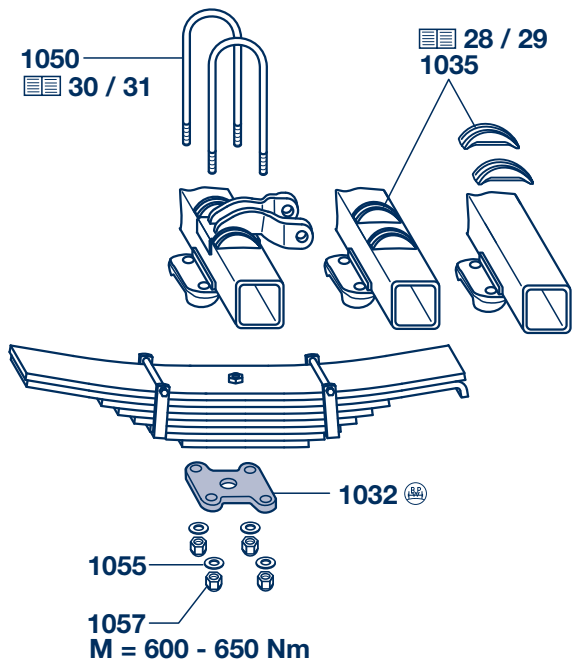
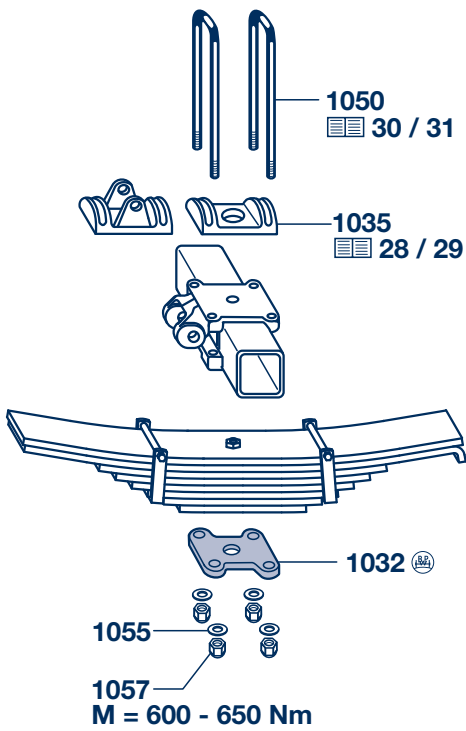
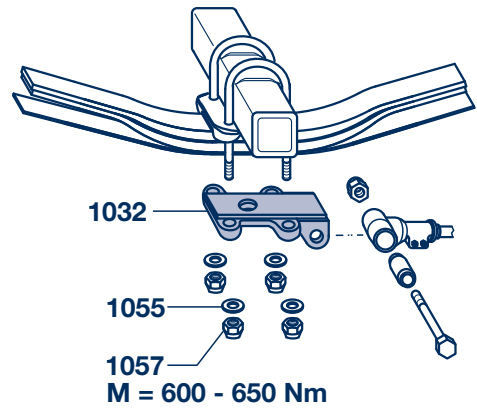
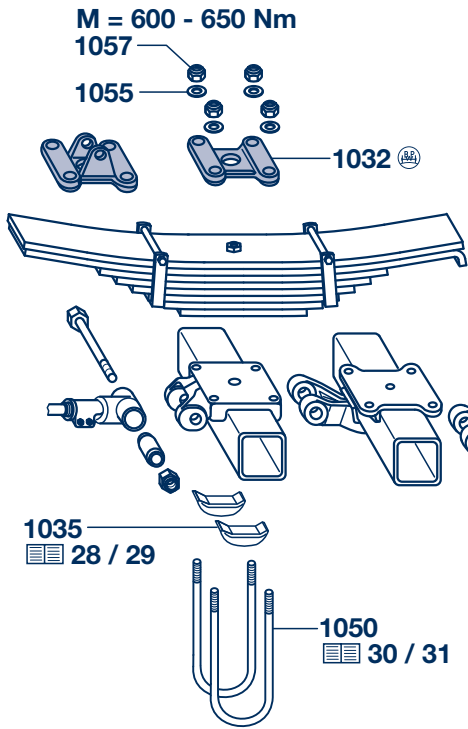
### Packer

|  |      |       |       |                |
|--|------|-------|-------|----------------|
|  | 1039 | Plate | 20 mm | 03.281.96.26.0 |
|  |      |       | 30 mm | 03.281.96.19.0 |

# 4 Axle clampings

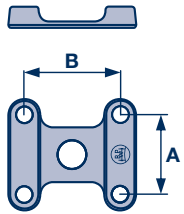
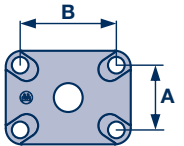
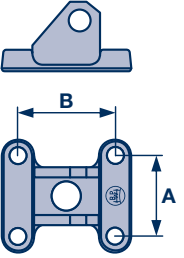
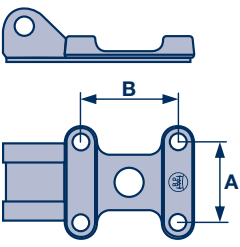
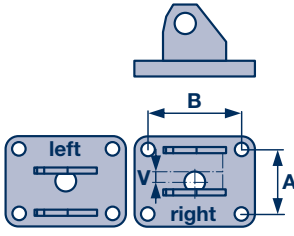
## 4.3 Spring plates, segments

### Spring plates



# Axle clampings 4

## Spring plates, segments 4.3

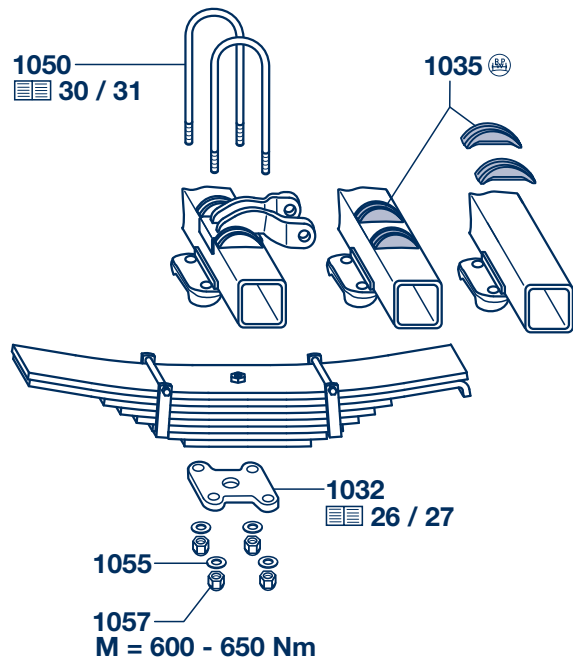
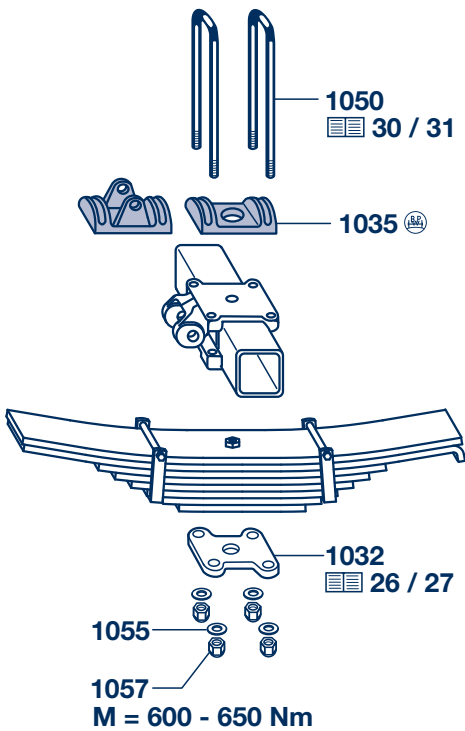
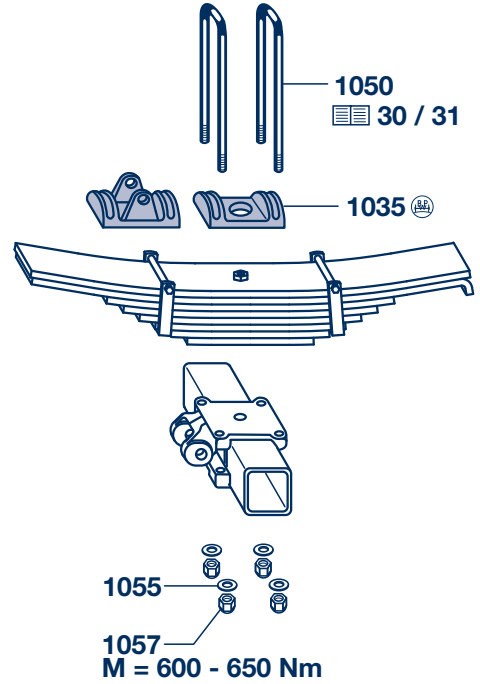
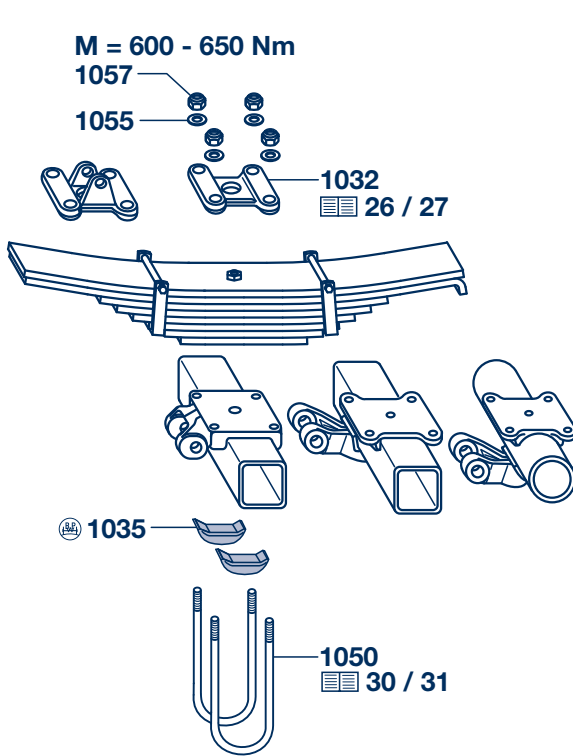
| Spring plates   |      |                     |                            |           |     |    |                              |
|---|------|---------------------|----------------------------|-----------|-----|----|------------------------------|
|   | Item | Designation         | Utilisation /<br>Axle beam | Dimension |     |    | BPW Code no.                 |
|   |      |                     |                            | A         | B   | V  |                              |
| <b>Without U-stabilizer</b>   |      |                     |                            |           |     |    |                              |
|    | 1032 | Spring plate        | □ 120                      | 125       | 150 | -  | 03.145.22.01.0               |
|   |      |                     | □ 120 <b>VB ECO Cargo</b>  | 101       | 150 |    | 03.145.25.27.0               |
|   |      |                     | ∅ 127                      | 125       | 180 |    | 03.145.22.06.0 <sup>1)</sup> |
|   |      |                     | □ 150 <b>VB ECO Cargo</b>  | 101       | 180 |    | 03.145.23.32.0               |
|   |      |                     | □ 150                      | 125       | 155 |    | 03.145.23.27.0               |
|    | 1032 | Spring plate        | □ 120 <b>VB ECO Cargo</b>  | 101       | 150 | -  | 03.145.25.28.0               |
|   |      |                     |                            |           |     |    |                              |
| <b>Spring plate for U-stabilizer attachment / connecting rod attachment</b>         |      |                     |                            |           |     |    |                              |
|  | 1032 | Federplatte         | □ 120                      | 125       | 150 | -  | 05.145.22.05.0               |
|   |      |                     | □ 150                      |           | 180 |    | 05.145.23.08.0               |
|   |      |                     | ∅ 127                      |           | 155 |    | 05.145.22.20.0 <sup>1)</sup> |
|  | 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 <sup>1)</sup> |
|   | 1033 | Spring plate, left  |                            |           |     | 20 | 05.145.23.21.0 <sup>1)</sup> |
|   |      |                     |                            |           |     | 10 | 05.145.23.25.0 <sup>1)</sup> |
|   |      |                     |                            |           |     |    | 20                           |

<sup>1)</sup> no longer available

# 4 Axle clampings

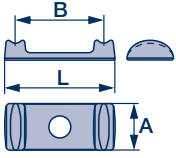
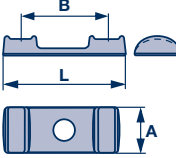
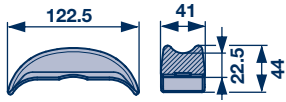
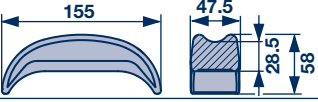
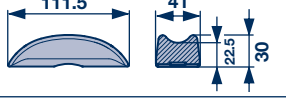
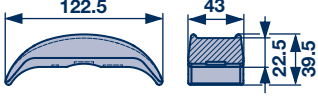
## 4.3 Spring plates, segments

### Spring plates, segments



# Axle clampings 4

## Spring plates, segments 4.3

| Spring plates, segments   |      |                                     |  |           |           |     |                              |
|---|------|-------------------------------------|--|-----------|-----------|-----|------------------------------|
|   | Item | Designation                         | Utilisation /<br>Axle beam                                       | Dimension |           |     | BPW Code no.                 |
|   |      |                                     |  | A         | B         | L   |                              |
| <b>Double segment</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               |
|    | 1035 | Spring plate                        | <input type="checkbox"/> 120 / <input type="checkbox"/> 150      | 95        | 150 / 180 | 225 | 03.145.10.08.0 *             |
|   |      |                                     | * no longer available, replaced by 10.39.0 / 10.40.0 (see above) |           |           |     |                              |
| <b>Segments</b>   |      |                                     |  |           |           |     |                              |
| <b>Single segment on the axle beam</b>  |      |                                     |  |           |           |     |                              |
|  | 1035 | Segment                             | <input type="checkbox"/> 120                                     |           |           |     | 03.345.23.02.1               |
|   |      |                                     | <input type="checkbox"/> 150                                     |           |           |     | 03.345.25.01.1               |
|  | 1035 | Segment<br>(welded on axle<br>beam) | <input checked="" type="checkbox"/> 120 solid                    |           |           |     | 03.345.23.03.0               |
|   |      |                                     | <input checked="" type="checkbox"/> 150 solid                    |           |           |     | 03.345.25.04.0 <sup>2)</sup> |
|  | 1035 | Segment <sup>1)</sup>               | <input type="checkbox"/> 120                                     |           |           |     | 03.345.23.09.0               |
|   |      |                                     | <input type="checkbox"/> 150                                     |           |           |     |                              |
|  | 1035 | Segment <sup>1)</sup>               | <input type="checkbox"/> 120                                     |           |           |     | 03.345.23.09.0               |

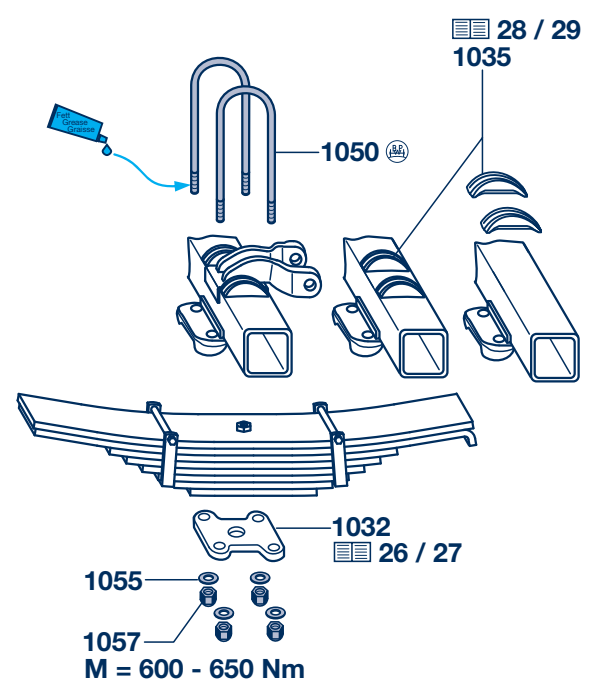
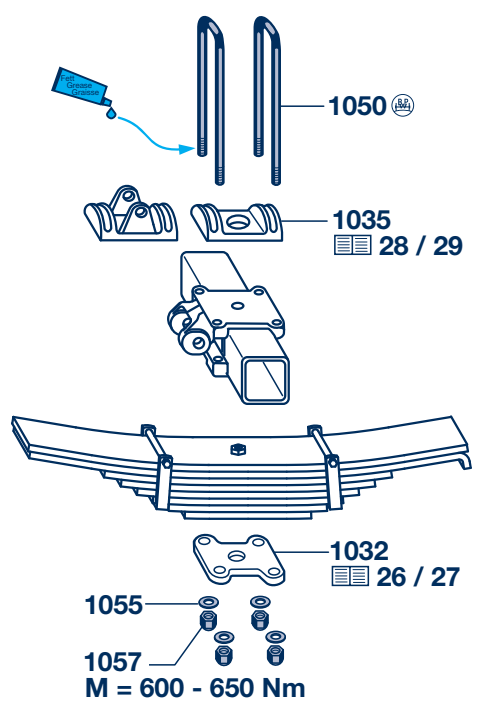
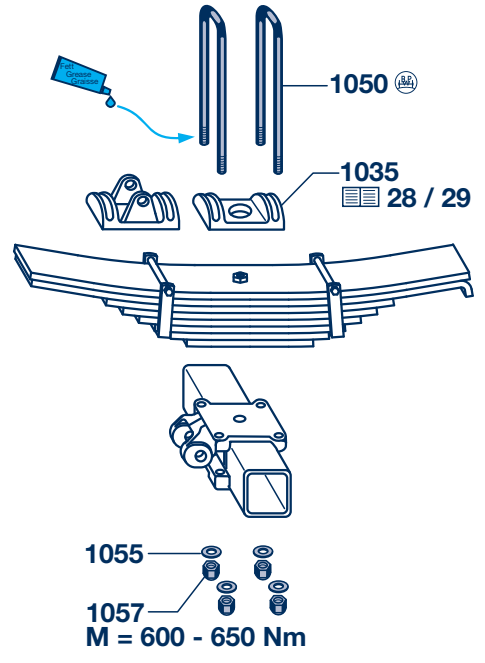
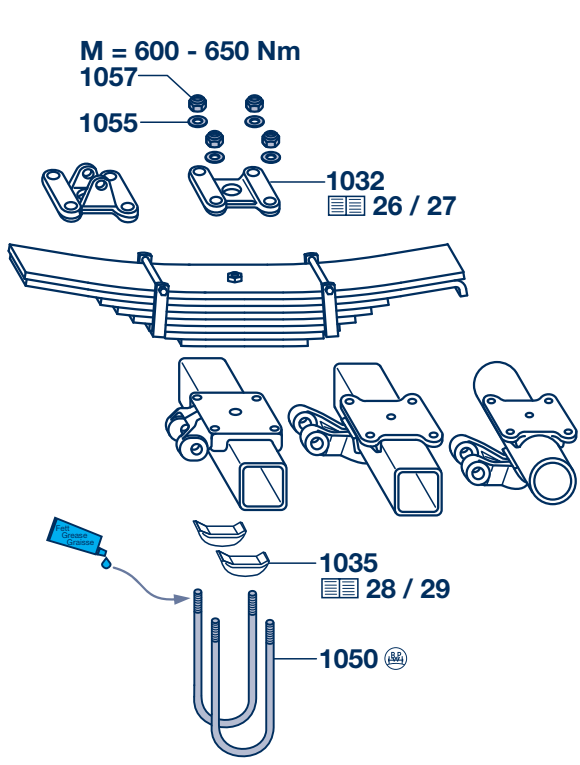
<sup>1)</sup> for flattened spring U-bolts (disc brake)

<sup>2)</sup> no longer available

# 4 Axle clampings

## 4.4 Spring U-bolts

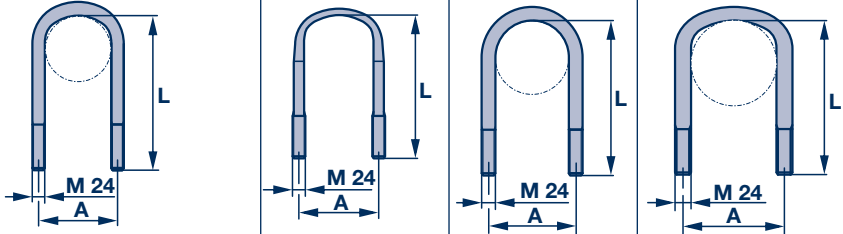
### Spring U-bolts



# Axle clampings 4

## Spring U-bolts 4.4

### Spring U-bolts

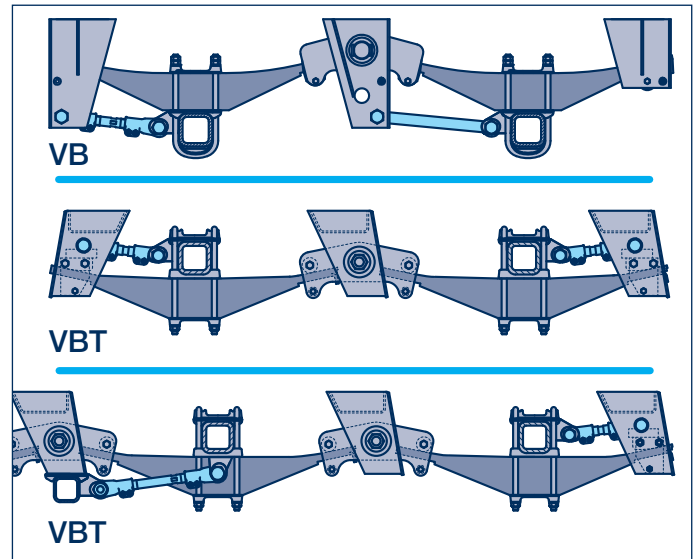
| Item | Designation       | Dimension | BPW Code no.   |                         |                                       |                         |                         |
|------|-------------------|-----------|--|-------------------------|---------------------------------------|-------------------------|-------------------------|
|      |                   |           |  |                         |                                       |                         |                         |
|      |                   | <b>L</b>  | <b>A = 125</b><br>Leaf spring width<br>100 mm                                      | <b>A = 152</b><br>□ 120 | <b>A = 152</b><br>Disc brake<br>□ 120 | <b>A = 152</b><br>Ø 127 | <b>A = 180</b><br>□ 150 |
| 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                        | 03.138.41.22.4          | 03.138.45.11.4          |
|      |                   | 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   | 03.138.41.29.4          |                                       |                         |                         |
|      |                   | 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          |                         |
| 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                              |                         |                                       |                         |                         |
| 1057 | Lock nut (8x)     |           | 02.5220.74.12 VM 24 / 980-10   |                         |                                       |                         |                         |

## 5 Connecting rods

### 5.1 General

#### General

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



#### Tracking adjustment (VB up to 08/2013 + VB Heavy duty)

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.

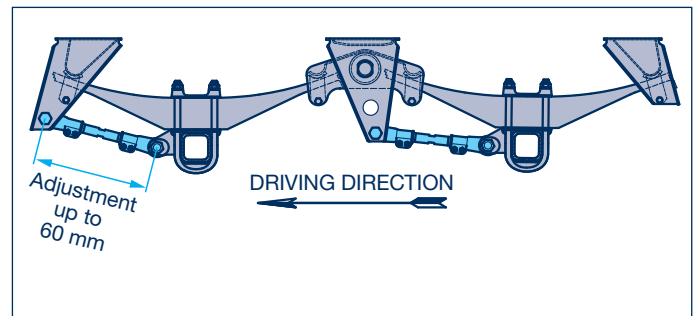


Fig. with adjustable connecting rod

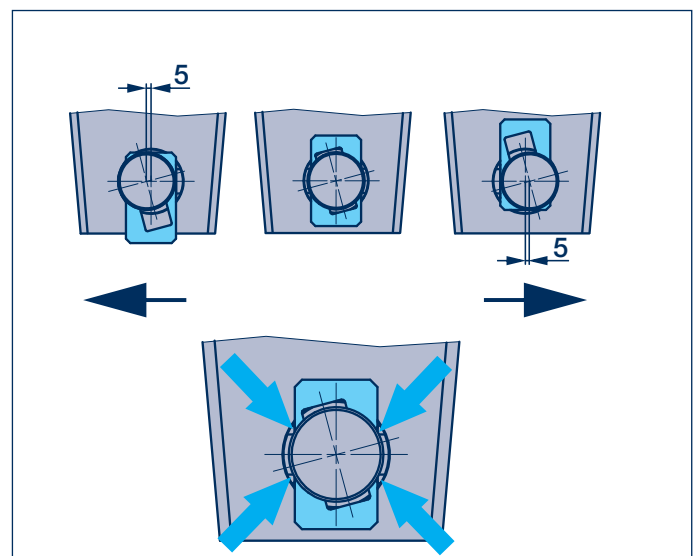
#### Tracking adjustment (VB ECO Cargo)

Suspension axles can be quickly aligned through **VB ECO Cargo** hanger brackets and equalizing beams with integrated wheel alignment:

Production tolerances on the vehicle can be equalised or wheelbases corrected (axle tracking), see also installation information (04.00.547110).

Make sure that the adjusting plates (arrows) on the bracket are correctly seated, make sure that inner and outer adjusting plates of a bracket are set symmetrically!

The square on the spring bolt head (anti-rotation lock) must sit in the slot of the adjusting plate.



Track adjusting with **VB ECO Cargo**



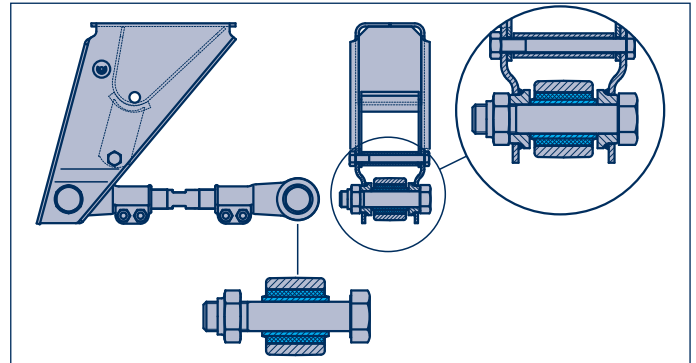
# Connecting rods 5

## General 5.1

### 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 24    | Ø 60/68      | Ø 55                   |
| 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 24 / 60 BPW Code no. **15.009.19433 VB EC**

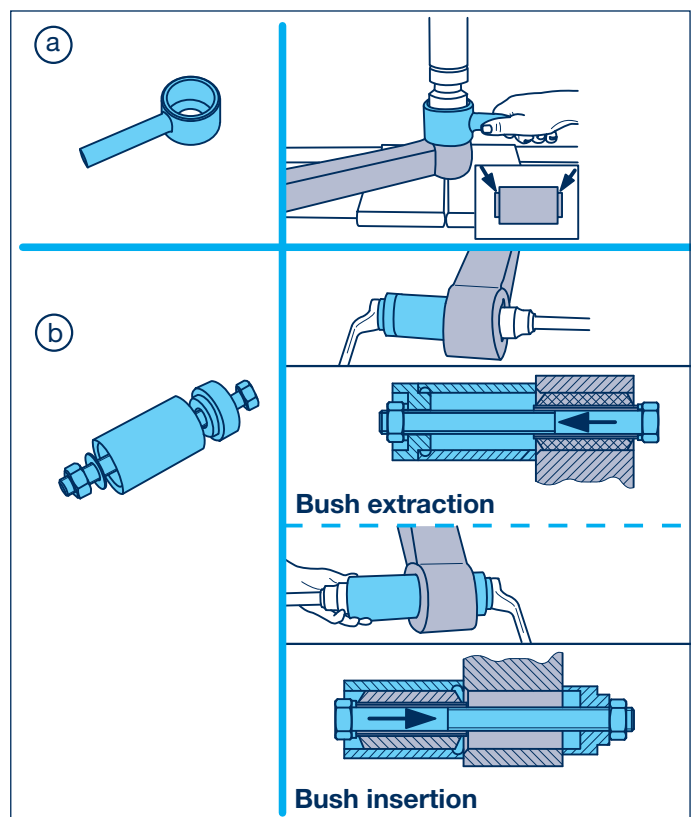
Ø 30 / 60 BPW Code no. **15.003.19433**

Ø 36 / 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.**

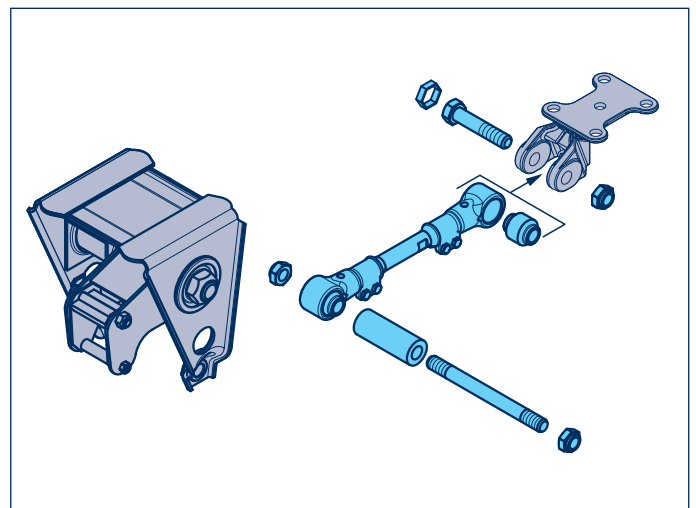


### Connecting rod attachments

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.

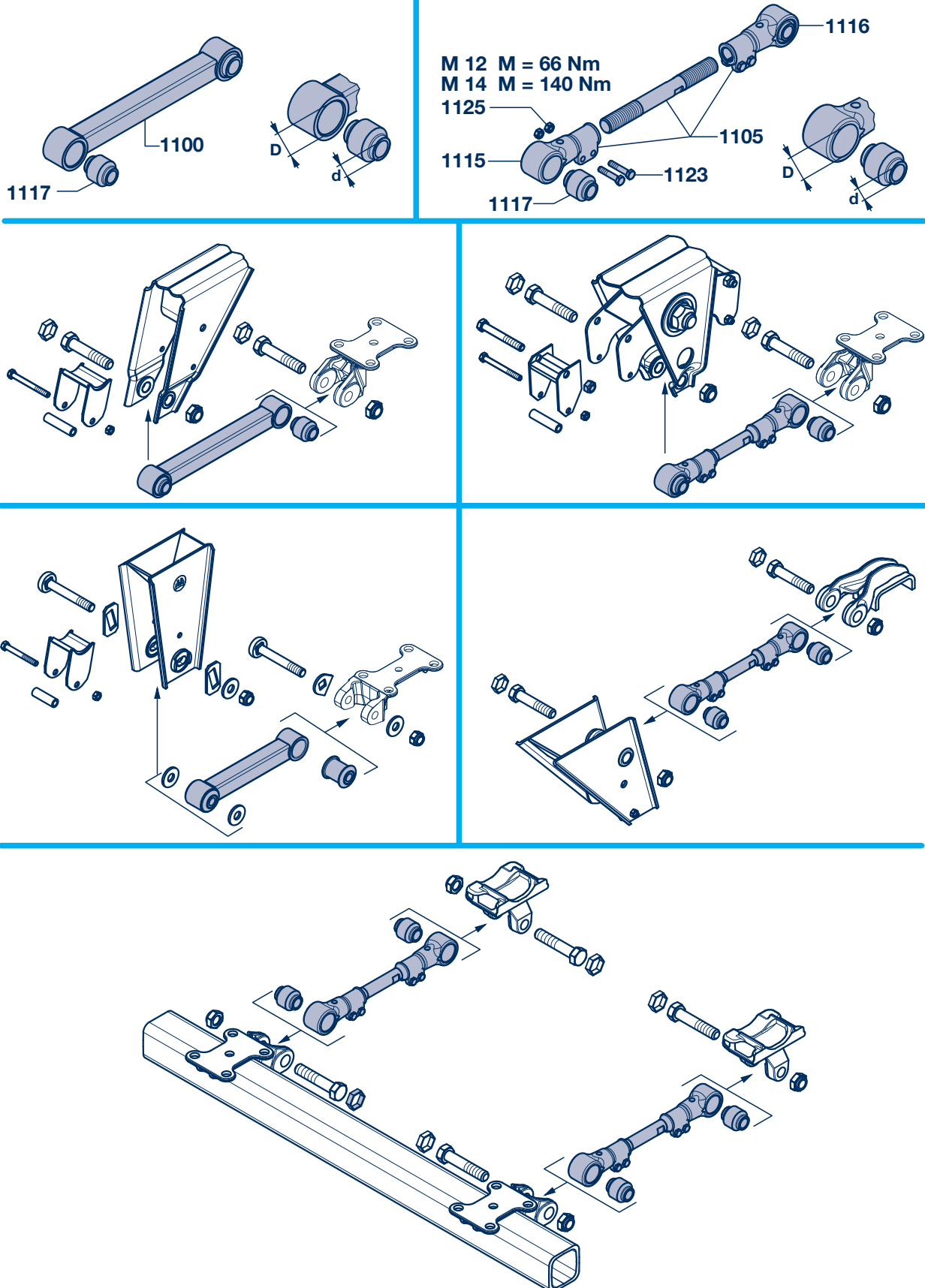
Reducing sleeves can be used for the attachment of Ø 36 connecting rods with M 30 bolts (see attachments).



# 5 Connecting rods


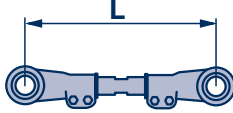





## 5.2 Connecting rods, spare parts

### Connecting rods, spare parts



# Connecting rods 5

## Connecting rods, spare parts 5.2

| Connecting rods, spare parts  |                              |   |                                 |  |    |  |   |  |  |    |    |                  |                  |   |  |
|---|------------------------------|---|---------------------------------|--|----|--|---|--|--|----|----|------------------|------------------|---|--|
|  |                              |  |                                 |  |    |  |  |  |  |    |    |                  |                  |   |  |
| Connecting rod, fixed<br>Item 1100<br>(incl. item 1117)                           |                              | Connecting rod, adjustable<br>Item 1105<br>(incl. item 1115 - 1125)               |                                 | Dimension  |    | Tensioner head,<br>left threaded<br>Item 1115                                      | Tensioner head,<br>right threaded<br>Item 1116                                      | Bush<br>Item 1117  |  |    |    |                  |                  |   |  |
| L   | BPW Code no.                 | L   | BPW Code no.                    | d  | D  | BPW Code no.   | BPW Code no.  | BPW Code no.   |  |    |    |                  |                  |   |  |
| 330   | 05.443.49.83.0               | -   | -                               | 24   | 55 | -  | -   |                                       |  |    |    |                  |                  |   |  |
| 355   | 05.443.49.80.0               | -   | -                               |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 500   | 05.443.49.84.0               | -   | -                               |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 520   | 05.443.49.79.0               | -   | -                               |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 535   | 05.443.49.85.0               | -   | -                               |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 640   | 05.443.49.81.0               | -   | -                               |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 750   | 05.443.49.82.0               | -   | -                               |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 330   | 05.443.44.07.0 <sup>2)</sup> | -   | -                               | 30   | 55 | 03.353.67.04.0   | 03.353.67.05.0  | 05.113.96.05.0<br>Ø 30 / 60 x 68<br> |  |    |    |                  |                  |   |  |
| 360   | 05.443.45.21.0               | 320 - 380   | 05.443.70.92.0 <sup>2)</sup>    |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 425   | 05.443.46.06.0 <sup>2)</sup> | 410 - 450   | 05.443.70.14.1 <sup>1)</sup>    |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 440   | 05.443.46.04.0 <sup>2)</sup> | 410 - 470   | 05.443.70.43.0 <sup>2)</sup>    |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 450   | 05.443.47.19.0 <sup>2)</sup> | 430 - 480   | 05.443.71.15.0 <sup>2)</sup>    |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 475   | 05.443.47.15.0               | 450 - 500   | 05.443.70.77.0                  |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 505   | -                            | 475 - 535   | 05.443.70.83.0                  |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 535   | -                            | 515 - 555   | 05.443.70.19.1 <sup>1) 2)</sup> |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 545   | 05.443.48.15.0               | 510 - 560   | 05.443.70.98.0                  |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 575   | -                            | 550 - 600   | 05.443.71.10.0 <sup>2)</sup>    |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 705   | 05.443.49.31.0               | 680 - 730   | 05.443.71.18.0 <sup>2)</sup>    |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 820   | 05.443.49.32.0               | 790 - 840   | 05.443.71.19.0                  |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 880   | -                            | 860 - 900   | 05.443.71.37.0 <sup>1) 2)</sup> |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 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<br>Ø 36 / 66 x 68<br> |  |
| 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                  | * with only one hexagon screw<br>(M 14 x 65) per tensioner head<br>(no longer available) |    |  |   |  |  |    |    |                  |                  |   |  |
| 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 <sup>2)</sup> | 435 - 465   | 05.443.71.02.0 <sup>2)</sup>    |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 470   | 05.443.48.35.0               | 455 - 485   | 05.443.71.56.0                  |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 495   | 05.443.48.18.0 <sup>2)</sup> | 480 - 510   | 05.443.71.08.0                  |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 515   | 05.443.48.29.0               | 485 - 545   | 05.443.70.94.0                  |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 515   | -                            | 485 - 545   | 05.443.71.33.0 <sup>1)</sup>    |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 575   | 05.443.48.27.0 <sup>2)</sup> | 545 - 600   | 05.443.71.09.0                  |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 575   | -                            | 545 - 600   | 05.443.70.86.0 <sup>1)</sup>    |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 770   | 05.443.49.36.0 <sup>2)</sup> | 755 - 785   | 05.443.71.07.0                  |  |    |  |   |  |  |    |    |                  |                  |   |  |
| 785   | -                            | 755 - 815   | 05.443.71.22.0 <sup>1)</sup>    |  |    |  |   |  |  |    |    |                  |                  |   |  |
| Item  | Designation                  | Dimension   |                                 |  |    | BPW Code no.   |   | Utilisation  |  |    |    |                  |                  |   |  |
| 1123  | Hexagon screw                | M 12 x 60   |                                 |  |    | 02.5021.76.82  |   | for d = Ø 30   |  |    |    |                  |                  |   |  |
|   |                              | M 14 x 65   |                                 |  |    | 02.5022.03.80  |   | for d = Ø 36   |  |    |    |                  |                  |   |  |
| 1125  | Lock nut                     | M 12-8  |                                 |  |    | 02.5273.12.82  |   | for d = Ø 30   |  |    |    |                  |                  |   |  |
|   |                              | M 14-8  |                                 | 02.5273.14.82  |    | for d = Ø 36   |   |  |  |    |    |                  |                  |   |  |

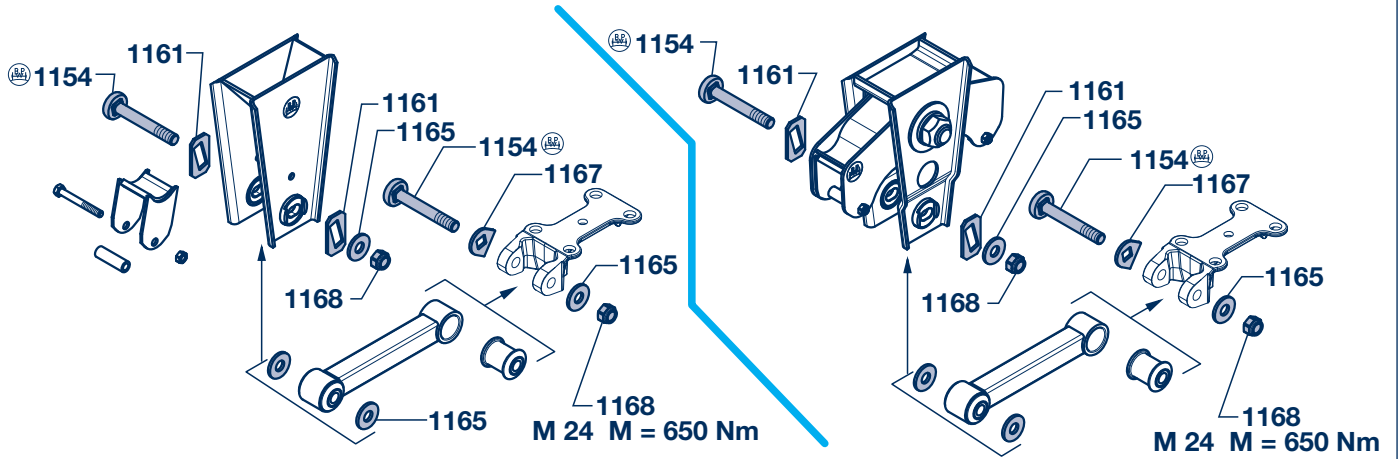
<sup>1)</sup> for VBT, incl. bushes, attachment screws and lock nuts

<sup>2)</sup> no longer available

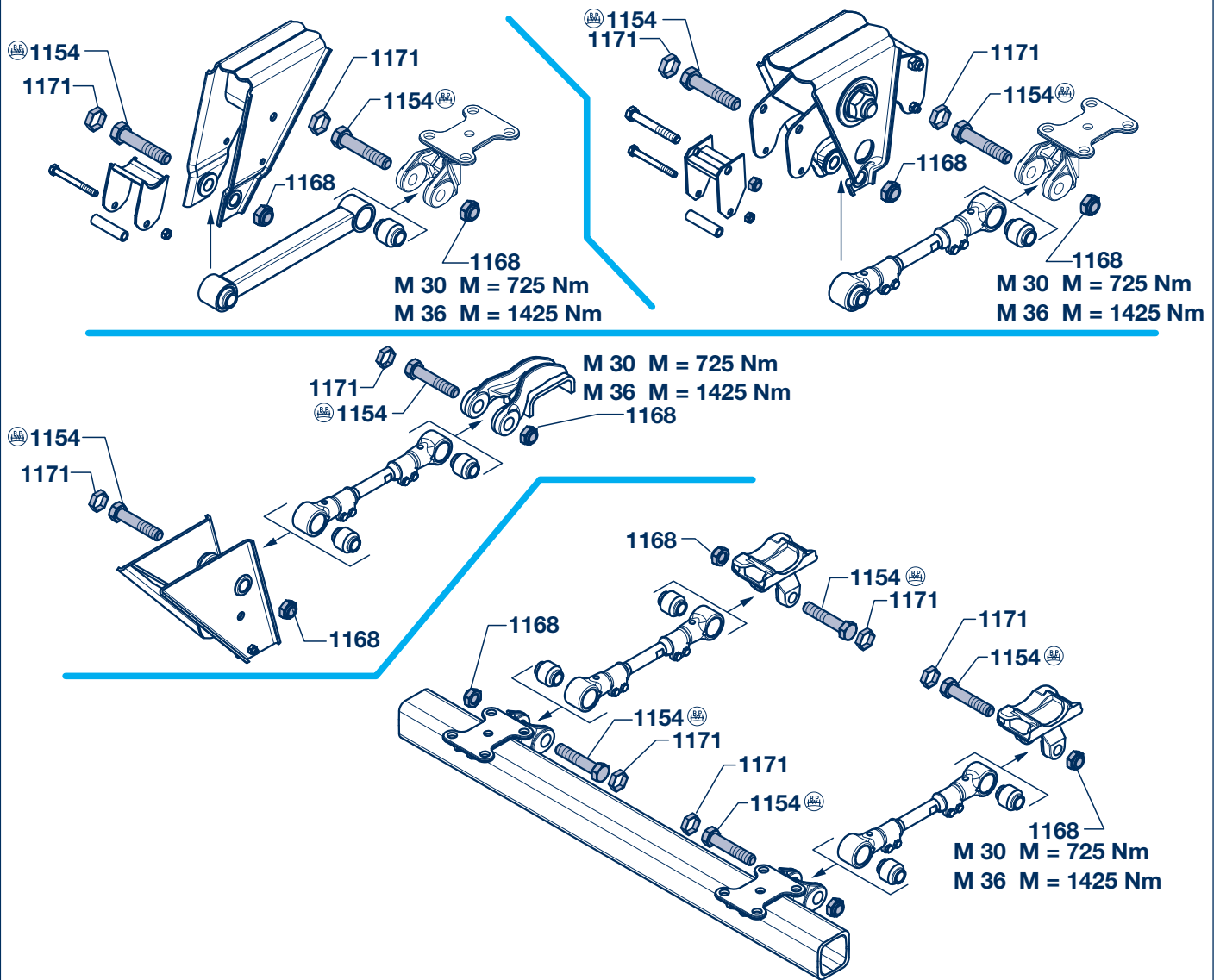
# 5 Connecting rods

## 5.3 Connecting rod attachments, straight equalizing beam

### Connecting rod attachments, VB ECO Cargo, M 24


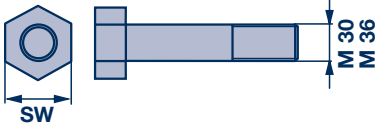
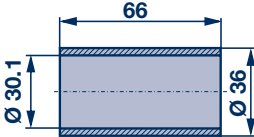
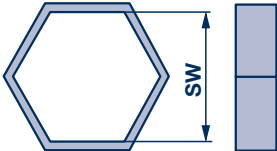
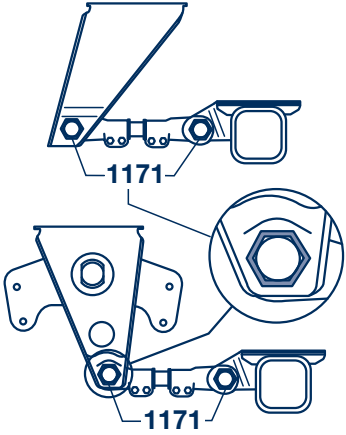


### Connecting rod attachments, VB / VBT, M 30 / M 36



# Connecting rods 5

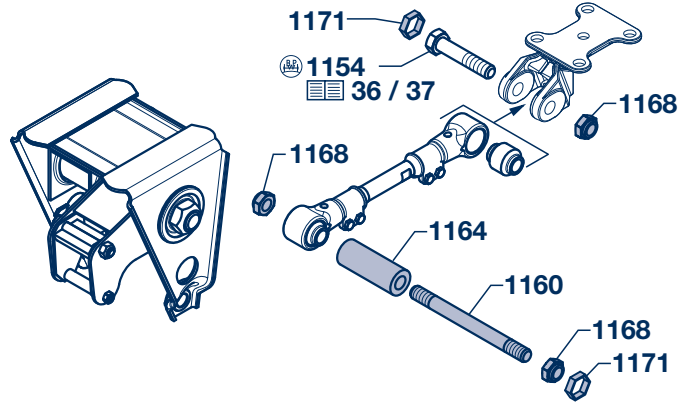
## Connecting rod attachments, straight equalizing beam 5.3


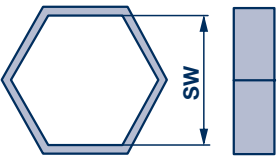
| Connecting rod attachments   |      |                               |  |                                 |
|--|------|-------------------------------|--|---------------------------------|
|  | Item | Designation                   | Dimension                                      | BPW Code no.                    |
| <b>Attachment at hanger bracket or straight equalizing beam with track adjustment (VB ECO Cargo), M 24</b> |      |                               |  |                                 |
|                           | 1154 | Screw                         | M 24 x 171 / Ø 56                              | 03.340.14.33.0                  |
|  | 1161 | Plate<br>(Adjusting plate)    | 98 x 51.5 x 6                                  | 03.281.44.25.0                  |
|  | 1165 | Washer                        | Ø 25 / 60 x 6                                  | 03.320.33.28.0                  |
|  | 1167 | Plate<br>(Torsion protection) | 60 x 60 x 6                                    | 03.281.43.17.0                  |
|  | 1168 | Lock nut                      | M 24 / SW 36                                   | 03.260.14.13.0                  |
| <b>Attachment at hanger bracket or straight equalizing beam VB / VBT, M 30 / M 36</b>                      |      |                               |  |                                 |
|                           | 1154 | Screw                         | M 30 x 130 / SW 46                             | 03.340.15.26.0                  |
|  | 1155 |                               | M 30 x 150 / SW 46                             | 03.340.15.15.0                  |
|  | 1156 |                               | 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 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                                 |                                 |
|  | 1168 | Lock nut                      | M 30 / 980-06 / SW 46<br>M 36 / 980-06 / SW 55 | 03.260.15.01.0<br>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>Torsion protection</b>  |      |                               |  |                                 |
|                         | 1171 | Profiled part                 | SW 46  | 03.001.14.15.0                  |
|  |      |                               | SW 55  | 03.001.14.30.0                  |
|                        |      |                               |  |                                 |

## 5 Connecting rods

### 5.3 Connecting rod attachments, equalizing beam with offset

#### Connecting rod attachments, equalizing beam with offset



|   | Item | Designation   | Fig. | Dimension             | BPW Code no.                 |
|---|------|---------------|------|-----------------------|------------------------------|
| <b>Equalizing beam with offset (with steering axles)</b>                            |      |               |      |                       |                              |
|  | 1160 | Screw         |      | M 30 x 310            | 03.340.75.23.0               |
|   |      |               |      | M 30 x 340            | 03.340.75.24.0 <sup>1)</sup> |
|   |      |               |      | M 30 x 350            | 03.340.75.19.0               |
|   |      |               |      | M 30 x 392            | 03.340.75.18.0 <sup>1)</sup> |
|   |      |               |      | M 36 x 400            | 03.340.76.46.0               |
|   | 1164 | Tube          |      | Ø 31 / 60 x 130       | 03.300.74.51.0 <sup>1)</sup> |
|   |      |               |      | Ø 31 / 60 x 160       | 03.300.74.93.0               |
|   |      |               |      | Ø 38 / 70 x 146       | 03.300.75.45.0 <sup>1)</sup> |
|   | 1168 | Lock nut      |      | M 30 / 980-06 / SW 46 | 03.260.15.01.0               |
|   |      |               |      | M 36 / 980-06 / SW 55 | 02.5220.85.26                |
| <b>Torsion protection</b>   |      |               |      |                       |                              |
|  | 1171 | Profiled part |      | SW 46                 | 03.001.14.15.0               |
|   |      |               |      | SW 55                 | 03.001.14.30.0               |

<sup>1)</sup> no longer available

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# Notices

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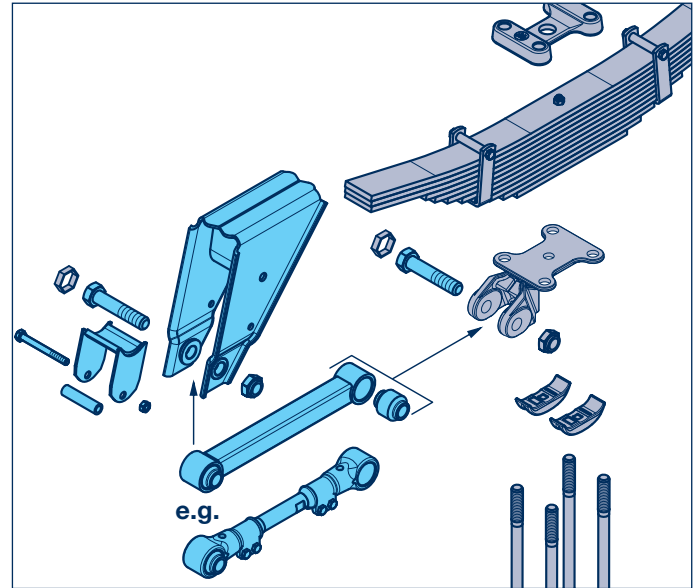
## 6 Front hanger brackets

### 6.1 General

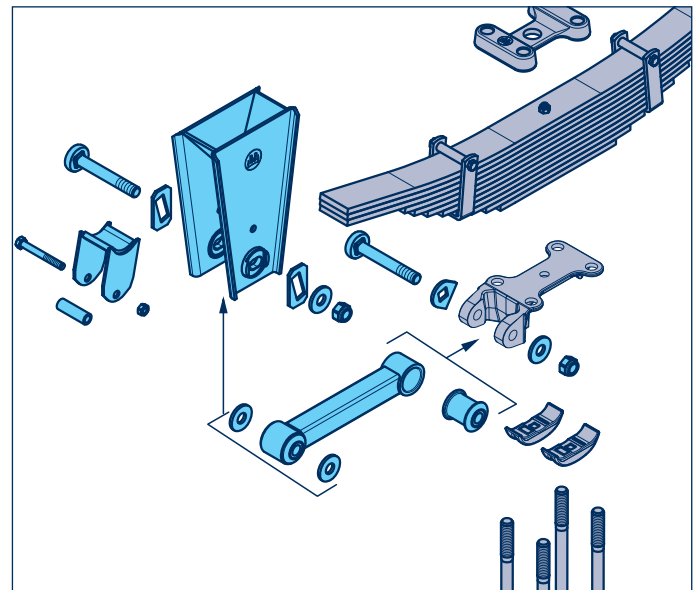
#### General

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.



Suspension axles can be quickly aligned through **VB ECO Cargo** hanger brackets with integrated wheel alignment: Production tolerances on the vehicle can be equalised or wheelbases corrected (axle tracking), see also installation information (04.00.547110).



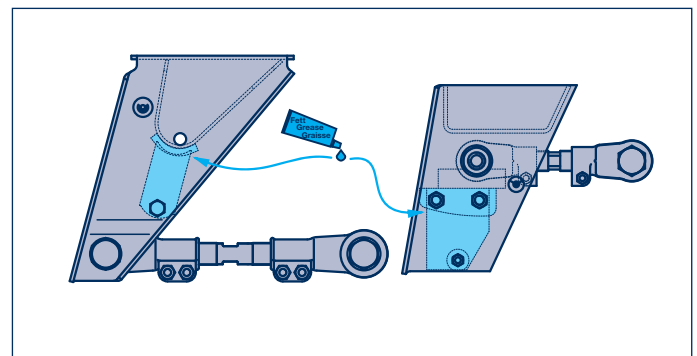
#### Sliders

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 47 and rear hanger brackets, page 62) !



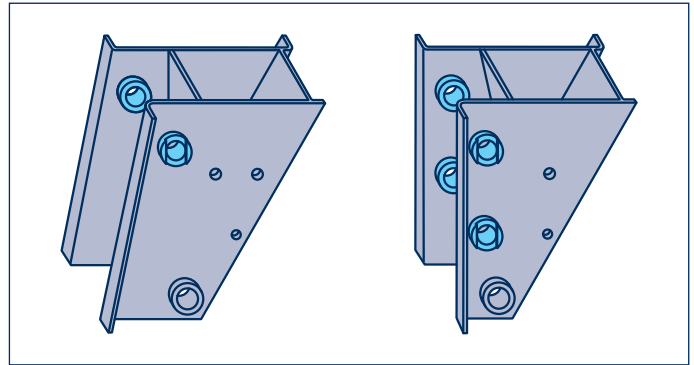


# Front hanger brackets 6

## General 6.1

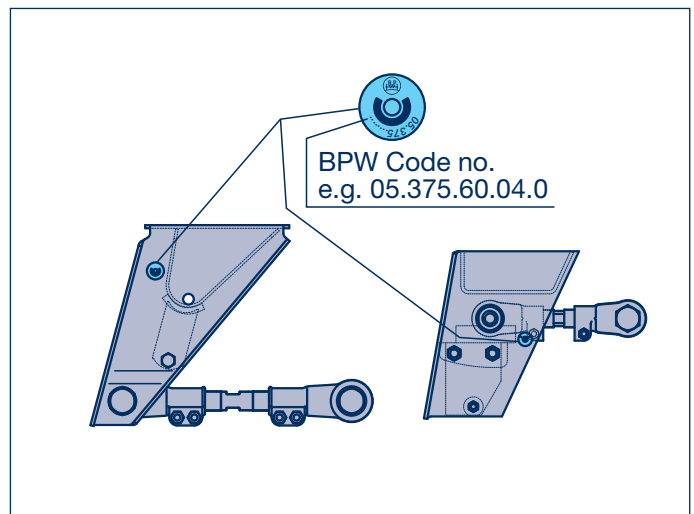
### Drawbar connection

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

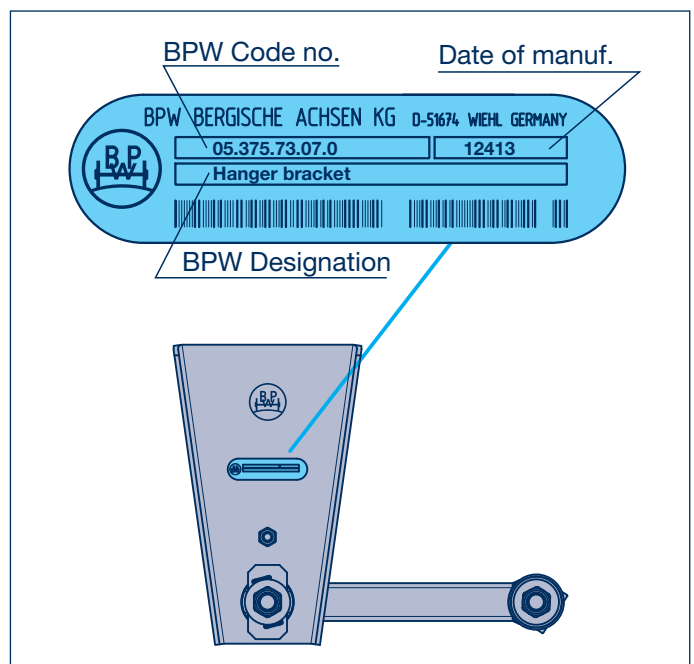


### BPW Code number

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



**VB ECO Cargo** hanger brackets with integrated wheel alignment are provided with a type plate on each bracket. It shows the name, BPW code number and the date of manufacture.



### Scope of delivery

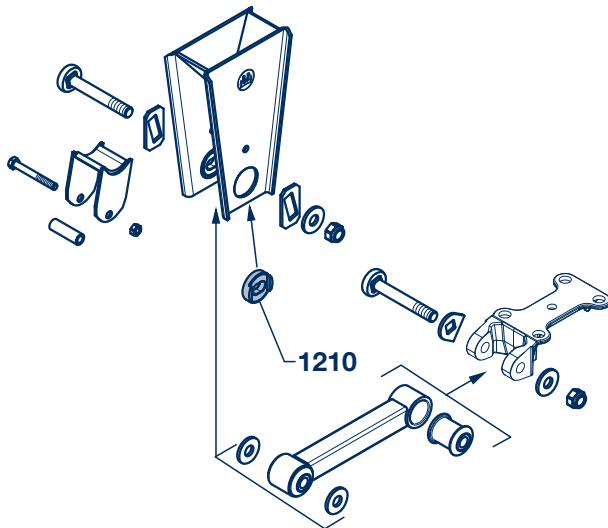
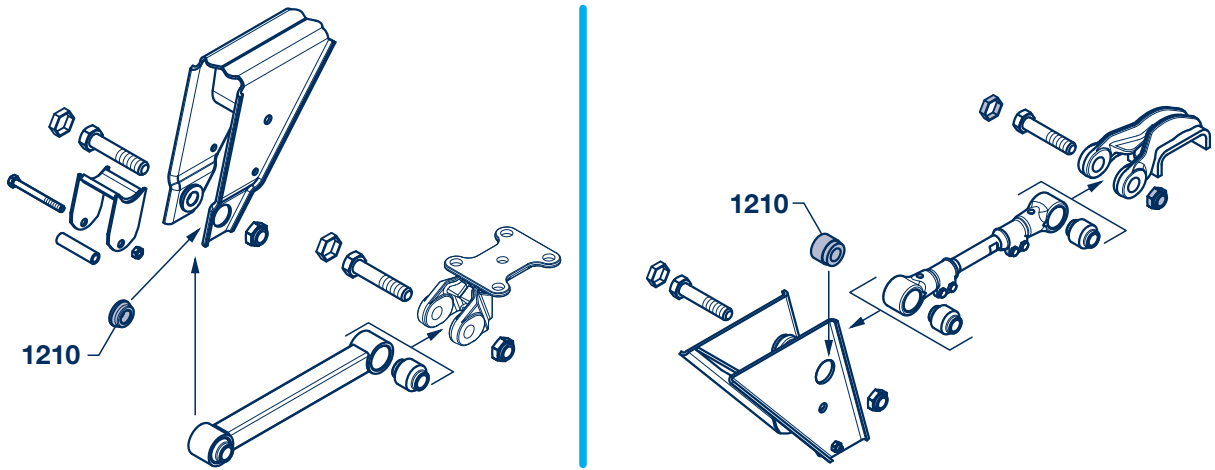
When you order this BPW code number you receive the complete hanger bracket, including slider, connecting rod and attachment parts.

# 6 Front hanger brackets

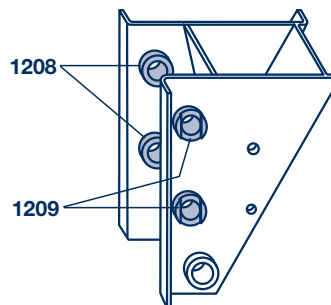
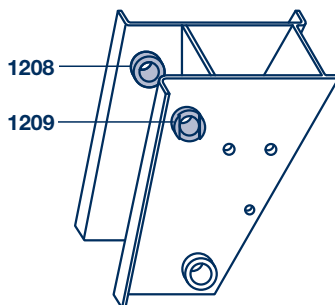
## 6.2 Spare parts for front hanger brackets

### 6.2.1 Weld-in bushes

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



#### Weld-in bushes for drawbar attachment

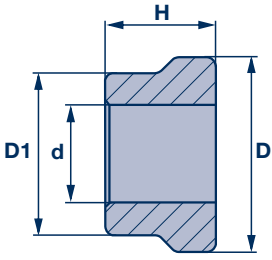
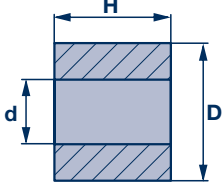
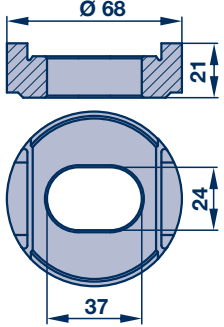


# Front hanger brackets **6**

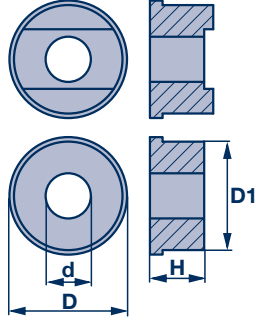
## Spare parts for front hanger brackets **6.2**

### Weld-in bushes **6.2.1**

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

|   | Series   | Item | Designation | Dimension |    |    |    | BPW Code no.                 | Qty. / Hanger bracket |
|---|--|------|-------------|-----------|----|----|----|------------------------------|-----------------------|
|   |  |      |             | d         | D1 | D  | H  |                              |                       |
|     | <b>VB-K</b><br><b>VB-KN</b><br><b>VB-KE</b><br><b>VBT-K</b><br><b>VBT-KE</b><br><b>VB-L</b><br><b>VB-LE</b><br><b>VB-M</b><br><b>VB-ME</b><br><b>VBT-M</b> | 1210 | Bush        | 30        | 50 | 60 | 21 | 03.113.01.19.0               | 2                     |
|   | <b>VB-C</b>  | 1210 | Bush        | 30        | 50 | 60 | 30 | 03.200.34.05.0               | 2                     |
|   | <b>VBT-C</b>   |      |             | 30        | 50 | 60 | 35 | 03.200.34.04.0 <sup>1)</sup> | 2                     |
|   | <b>VB</b>  | 1210 | Bush        | 30        | -  | 60 | 30 | 03.113.01.22.0               | 2                     |
|   | <b>VB-M</b>  |      |             |           |    |    |    |                              |                       |
|   | <b>VB</b>  | 1210 | Bush        | 36        | -  | 65 | 40 | 03.200.75.01.0               | 2                     |
|   | <b>VBT</b>   |      |             |           |    |    |    |                              |                       |
|   | <b>VB-B</b><br><b>VBT-B</b><br><b>VB-E</b><br><b>VBT-E</b><br><b>VB-HD</b><br><b>VB-HDE</b>  |      |             |           |    |    |    |                              |                       |
|  | <b>VB ECO Cargo</b>  | 1210 | Bush        | 24/37     | -  | 68 | 21 | 03.113.03.10.0               | 2                     |
|   |  |      |             |           |    |    |    |                              |                       |

#### Weld-in bushes for drawbar attachment

|   |             |      |                   |    |    |    |    |                              |   |
|---|-------------|------|-------------------|----|----|----|----|------------------------------|---|
|  | <b>Ø 25</b> | 1208 | Bush without slot | 25 | 58 | 65 | 30 | 03.113.00.19.0               | 1 |
|   |             | 1209 | Bush with slot    | 25 | 58 | 65 | 35 | 03.113.00.18.0               | 1 |
|   | <b>Ø 32</b> | 1208 | Bush without slot | 32 | 58 | 65 | 30 | 03.113.02.05.0 <sup>1)</sup> | 1 |
|   |             | 1209 | Bush with slot    | 32 | 58 | 65 | 35 | 03.113.02.04.0               | 1 |
|   |             |      |                   |    |    |    |    |                              |   |
|   |             |      |                   |    |    |    |    |                              |   |

<sup>1)</sup> no longer available

# 6 Front hanger brackets

## 6.2 Spare parts for front hanger brackets

### 6.2.2 Supports, sliders and attachment parts

**Supports, sliders and attachment parts**

**Fig. A**

1235  
1230  
1245  
1238  
M 14 M = 140 Nm

1410  
1410  
1412  
1415

I  
II  
III

**Fig. B**

1235  
1230  
1410  
1245  
1238  
M 14 M = 140 Nm

**Fig. C**

1235  
1230  
1245  
1238  
M 14 M = 140 Nm

**Fig. D**

1235  
1240  
1230  
1232  
1410  
1245  
1244  
M 20 M = 320 Nm  
1238  
M 14 M = 140 Nm

**Fig. E**

1240  
1235  
1232  
1230  
1410  
1245  
1244  
M 20 M = 320 Nm  
1238  
M 14 M = 140 Nm

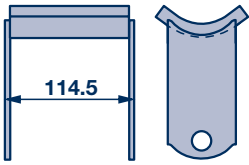
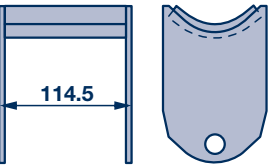
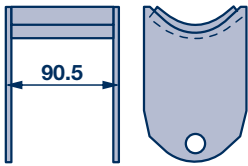
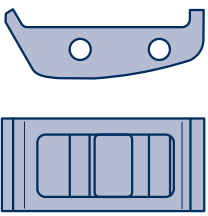
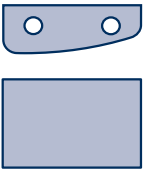

**Fig. F**

1235  
1232  
1230  
1245  
1238  
M 14 M = 140 Nm

# Front hanger brackets 6

## Spare parts for front hanger brackets 6.2

### Supports, sliders and attachment parts 6.2.2

| Supports, sliders and attachment parts   |   |      |                           |                      |                              |                |
|--|---|------|---------------------------|----------------------|------------------------------|----------------|
|  | Series  | Item | Designation               | Dimension            | BPW Code no.                 |                |
| <b>Fig. A</b><br>   | <b>VB-K</b><br><b>VB-KN</b><br><b>VB-KE</b><br><b>VBT-K</b><br><b>VBT-KE</b>                                | 1230 | Support ( normal I )      |                      | 05.189.04.70.0               |                |
|  |   |      | Support ( reinforced II ) |                      | 05.189.05.22.0 <sup>1)</sup> |                |
|  |   |      | 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><br>   | <b>VB-L</b><br><b>VB-LE</b><br><b>VBT-L</b><br><b>VBT-LE</b><br><b>VB-M</b><br><b>VB-ME</b><br><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><br>  | <b>VB ECO Cargo</b>   | 1230 | Support                   |                      | 05.189.16.07.0               |                |
|  |   |      | Hexagon screw             | M 14 x 120           | 02.5022.12.80                |                |
|  |   |      | Lock nut                  | M 14-8               | 02.5273.14.82                |                |
|  |   |      | Tube                      | Ø 16 / 25 x 79       | 03.300.73.42.0               |                |
|  |   |      |                           |                      |                              |                |
| <b>Fig. D</b><br> | <b>VB</b><br><b>VB-B</b><br><b>VB-E</b><br><b>VB-HD</b><br><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         | 02.5023.09.82  |
|  |   |      | 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><br> | <b>VBT</b><br><b>VBT-B</b><br><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         | 02.5023.09.82  |
|  |   |      | 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. F</b><br> | <b>VB-C</b><br><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 <sup>1)</sup> |                |

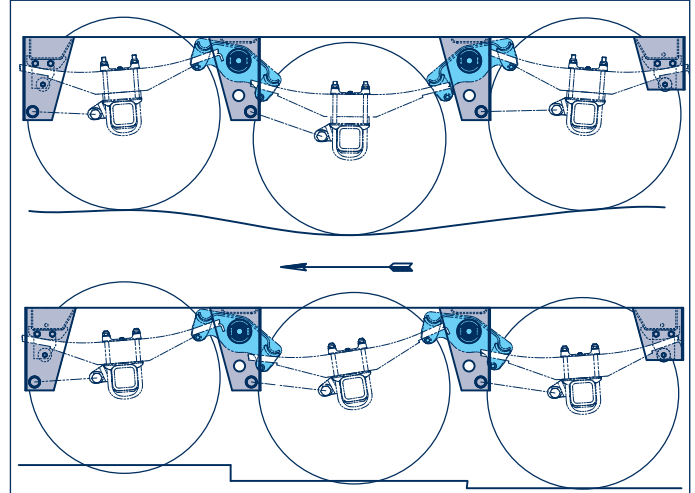
<sup>1)</sup> no longer available

# 7 Equalizing beams

## 7.1 General

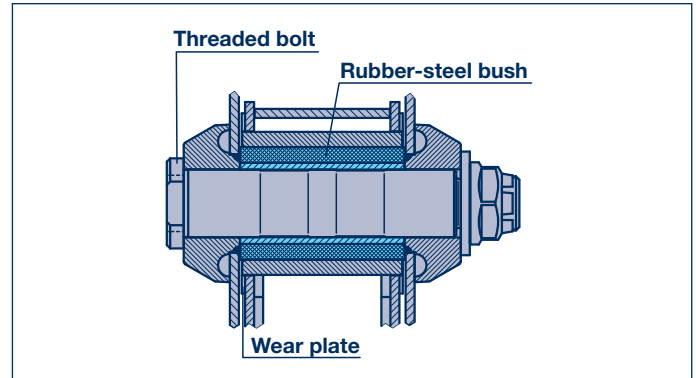
### Mode of operation

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).

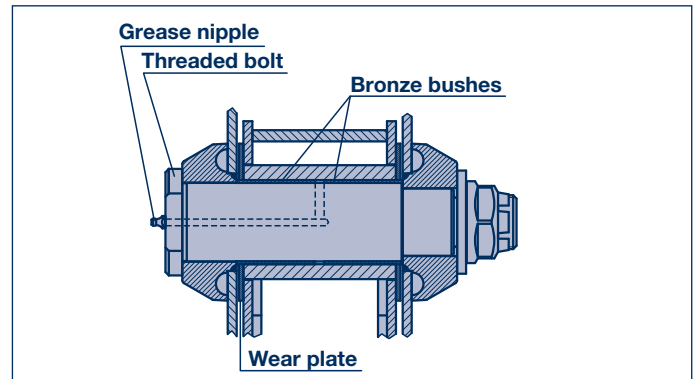


### Equalizing beam bearing

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



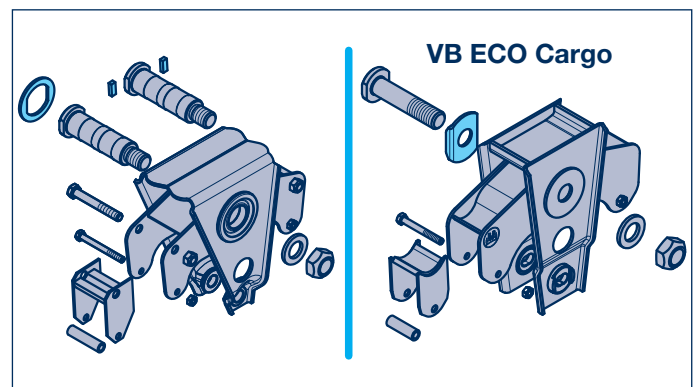
High-quality, durable **bronze bushes** are used for heavy axle loads (9 - 20 tonnes) as well as for extreme off-road applications.



### Anti-rotation device for threaded bolts

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

In **VB ECO Cargo** a folded disc (profiled sheet) is welded to the hanger bracket under the threaded bolt head.



# Equalizing beams 7

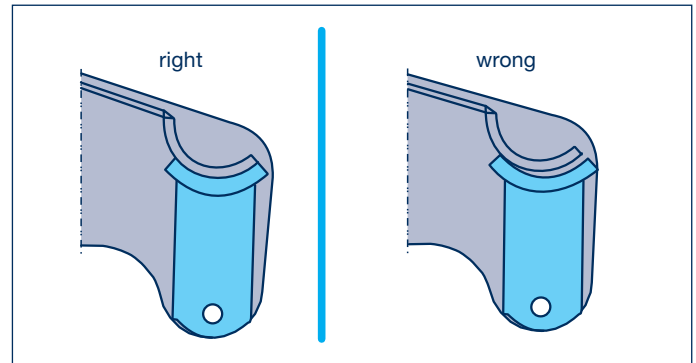
## General 7.1

### Sliders

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

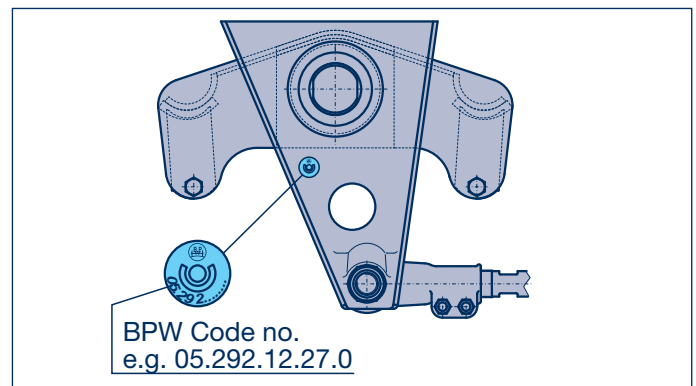
In this context it should be ensured that the sliding points are always well greased.

Note the position of the retainers when replacing them (see illustration on the right and chapter 7.2.5).

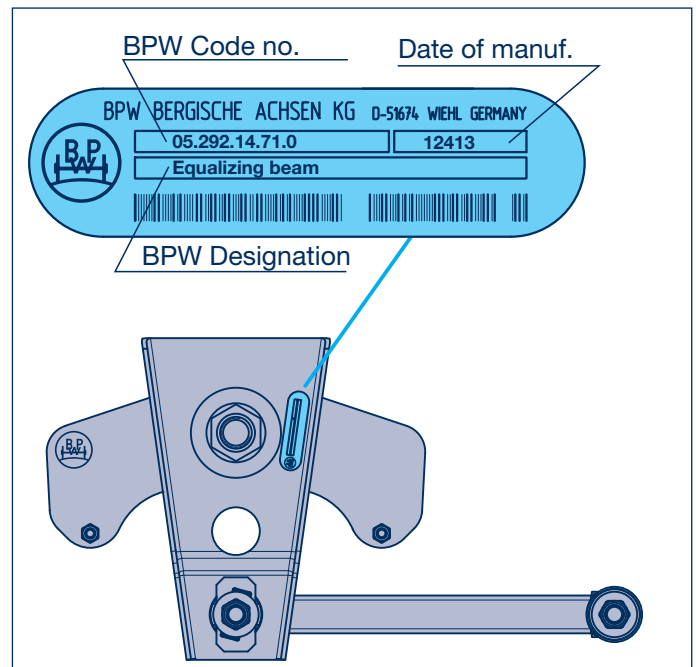


### BPW Code number

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



**VB ECO Cargo** equalizing beams with integrated wheel alignment are provided with a type plate on each hanger bracket. It shows the name, BPW code number and the date of manufacture.



### 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.

# 7 Equalizing beams

## 7.2 Spare parts for equalizing beams

### 7.2.1 Equalizing beams

**Equalizing beams**

**Straight equalizing beam**

Technical drawings and assembly diagrams for straight equalizing beams. Dimensions shown include  $L1$ ,  $D$ ,  $d$ ,  $L$ , and  $B$ .

Assembly diagrams show components labeled 1300, 1305, 1320, and 1300 being assembled.

**Equalizing beam with offset (for steering axles)**

Technical drawings and assembly diagrams for an equalizing beam with offset. Dimensions shown include  $D$ ,  $d$ ,  $L$ , and  $B$ .

Assembly diagrams show components labeled 1315, 1310, 1327, and 1326 being assembled.



# Equalizing beams 7

## Spare parts for equalizing beams 7.2

### Equalizing beams 7.2.1

#### Equalizing beams

| Item | Designation   | Utilisation        | BPW Code no.   |
|------|---|--------------------|----------------|
| 1300 | Equalizing beam assembly cpl., straight, right        | VB                 | see type plate |
| 1300 | Equalizing beam assembly cpl., straight, right + left | VB ECO Cargo       |                |
| 1310 | Equalizing beam assembly cpl., with offset, right     | for steering axles |                |
| 1305 | Equalizing beam assembly cpl., straight, left         | VB                 |                |
| 1315 | Equalizing beam assembly cpl., with offset, left      | for steering axles |                |

#### Straight equalizing beam (item 1320)

| 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  |                                  |                        |                                  |                            |
| <b>Equalizing beam bearing with rubber-steel bushes</b> |                  |            |           |      |     |     |    |                                  |                        |                                  |                            |
| <b>VB</b><br><b>VB-B</b><br><b>VB-L</b>                 | 1360, 1410, 1500 | 10 - 16 t  | 420       | 450  | 142 | 100 | 60 | 09.291.00.08.1 <sup>1)</sup>     | ●                      |                                  |                            |
| <b>VB</b><br><b>VB-B</b><br><b>VB-L</b>                 | 2050             | 10 - 12 t  | 1000      | 1000 | 142 | 100 | 60 | 09.291.00.39.0 <sup>1)</sup>     | ●                      |                                  |                            |
| <b>VB-K</b>   | 1140, 1360       | 6.5 - 10 t | 385       | -    | 128 | 94  | 50 | 05.291.11.13.0<br>05.291.11.77.0 | ●                      | ●                                |                            |
| <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                   |                        | ●                                | ●                          |
| <b>VB M ECO Cargo</b><br><b>VBN M ECO Cargo</b>         | 1310, 1360       | 8 - 12 t   | 385       | -    | 104 | 100 | 42 | 05.291.12.96.0                   | ●                      | ●                                |                            |
|   | 1380             | 8 - 12 t   | 455       | -    |     |     |    | 05.291.13.04.0                   | ●                      | ●                                |                            |
|   | 1600             | 8 - 12 t   | 625       | 640  |     |     |    | 05.291.13.00.0                   | ●                      | ●                                |                            |
|   | 1820             | 8 - 12 t   | 850       | 860  |     |     |    | 05.291.13.02.0                   | ●                      | ●                                |                            |
| <b>Equalizing beam bearing with bronze bushes</b>       |                  |            |           |      |     |     |    |                                  |                        |                                  |                            |
| <b>VB-B</b><br><b>VB-BE</b>                             | 1360, 1410, 1500 | 13 - 16 t  | 420       | 450  | 136 | 75  | 70 | 05.291.00.84.0                   | ●                      |                                  |                            |
| <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                   | ●                      |                                  |                            |
| <b>VB-HDE</b>   | 1360, 1410, 1500 | 14 - 20 t  | 416       | -    | 136 | 75  | 70 | 05.291.01.14.0                   | ●                      | ●                                |                            |
| <b>VB ME ECO Cargo</b>                                  | 1360             | 8 - 12 t   | 385       | -    | 104 | 65  | 60 | 05.291.12.98.0                   | ●                      | ●                                |                            |

#### Equalizing beam with offset (item 1326 / 1327)

| <b>Equalizing beam bearing with rubber-steel bushes</b> |      |            |     |   |     |    |    |                                      |   |   |  |
|---|------|------------|-----|---|-----|----|----|--------------------------------------|---|---|--|
| <b>VB-K</b><br><b>Offset 122 *</b>                      | 1360 | 6.5 - 10 t | 385 | - | 258 | 94 | 50 | 05.291.11.26.0 R<br>05.291.11.25.0 L | ● | ● |  |
| <b>VB-K</b><br><b>Offset 160 *</b>                      | 1360 | 6.5 - 10 t | 385 | - | 258 | 94 | 50 | 05.291.11.20.0 R<br>05.291.11.19.0 L | ● | ● |  |

Further types upon request.

\* see page 54

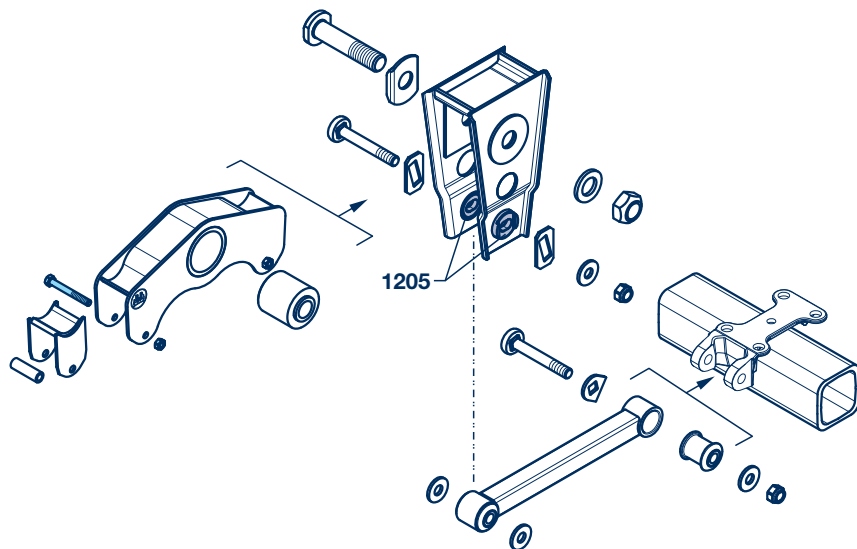
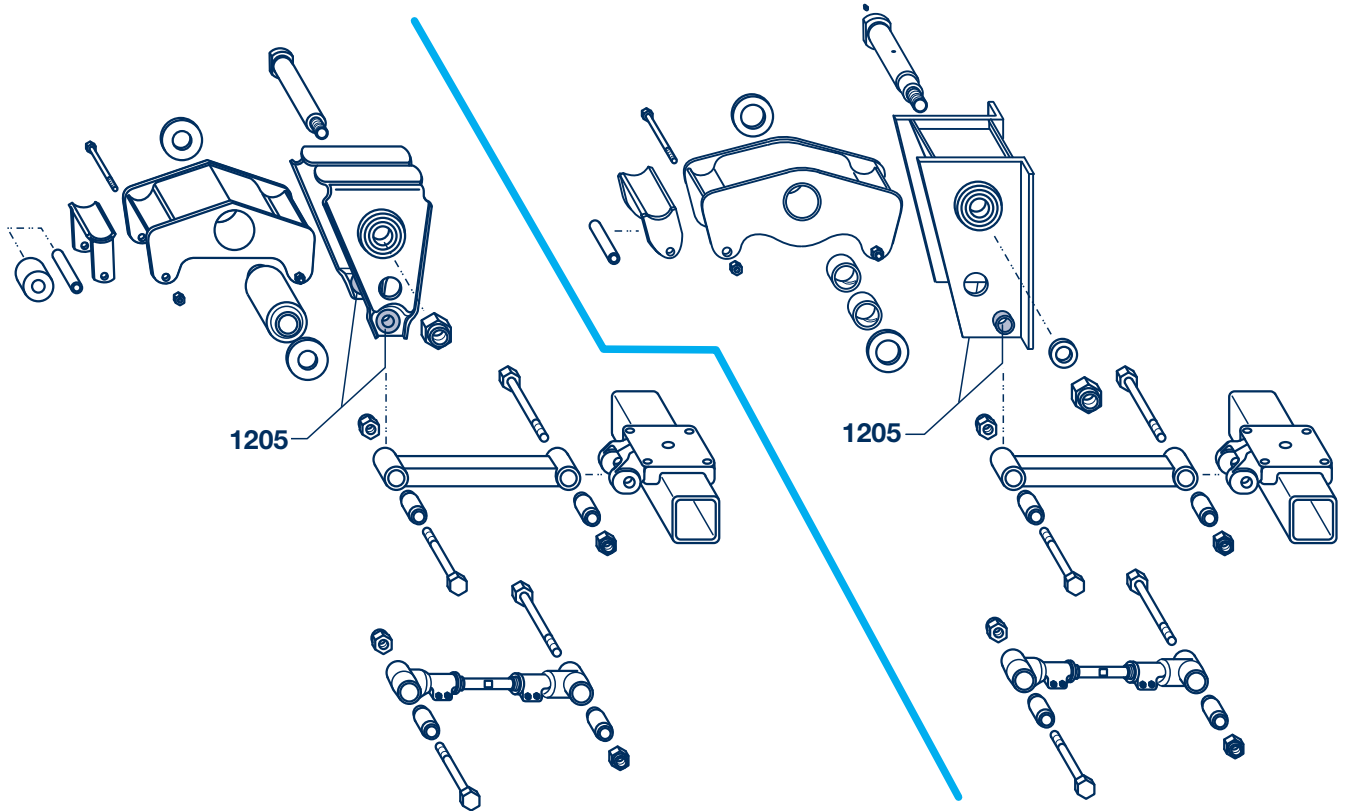
<sup>1)</sup> no longer available

# 7 Equalizing beams

## 7.2 Spare parts for equalizing beams

### 7.2.2 Weld-in bushes

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



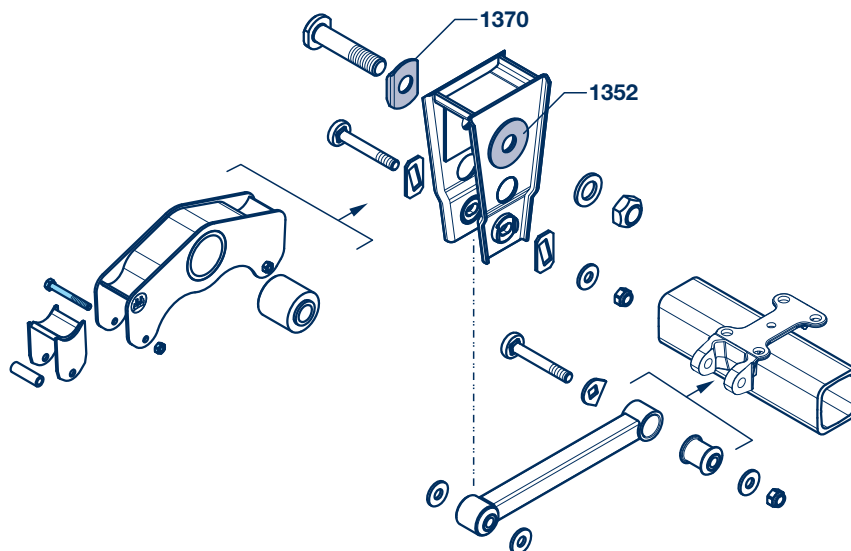
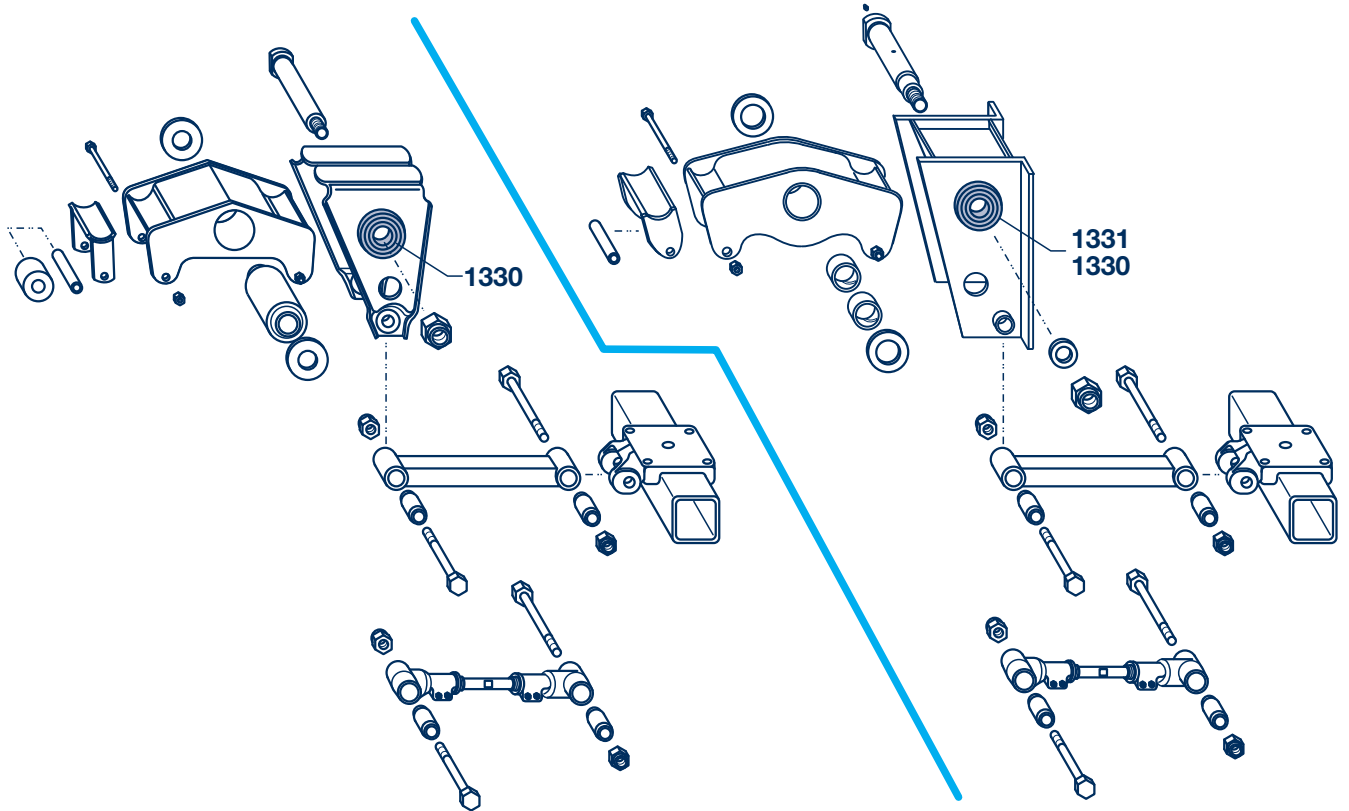


# 7 Equalizing beams

## 7.2 Spare parts for equalizing beams

### 7.2.2 Weld-in bushes

#### Weld-in bushes for equalizing beam bearing



# Equalizing beams 7

## Spare parts for equalizing beams 7.2

### Weld-in bushes 7.2.2

| Weld-in bushes for equalizing beam bearing |   |              |              |                |                |     |     |                              |                              |                       |
|--|---|--------------|--------------|----------------|----------------|-----|-----|------------------------------|------------------------------|-----------------------|
|  | Series  | Item         | Designation  | Fig.           | Dimension      |     |     |                              | BPW Code no.                 | Qty. / Hanger bracket |
|  |   |              |              |                | d              | D1  | D   | H                            |                              |                       |
|  | <b>Equalizing beam bearing with rubber-steel bushes</b> |              |              |                |                |     |     |                              |                              |                       |
|  | VB-K  | 1330         | Bush         | a              | 50             | 114 | 130 | 28                           | 03.113.06.10.0               | 2                     |
|  | VB  |              |              | b              | 60             | 87  | 140 | 35                           | 03.113.07.03.0               | 2                     |
|  | VB-B  |              |              |                |                |     |     |                              |                              |                       |
|  | VB-L  |              |              |                |                |     |     |                              |                              |                       |
|  | VB-M  |              | a            | 60             | 114            | 130 | 28  | 03.113.06.11.0 <sup>1)</sup> | 2                            |                       |
|  | VB-HD   |              | b            | 60             | 87             | 140 | 50  | 03.113.07.14.0               | 2                            |                       |
|  | VB-C  |              | b            | 50             | 74             | 130 | 32  | 03.113.06.06.0 <sup>1)</sup> | 2                            |                       |
|  | VB M ECO Cargo  | 1352         | Washer       | c              | Ø 42 / 119 x 6 |     |     |                              | 03.320.16.10.0               | 1                     |
|  | VB N M ECO Cargo  | 1370         | Shaped plate | d              |                |     |     |                              | 03.161.44.10.0               | 1                     |
|  | <b>Equalizing beam bearing with bronze bushes</b>       |              |              |                |                |     |     |                              |                              |                       |
|  | VB-KE   | 1330         | Bush         | a              | 50             | 114 | 130 | 28                           | 03.113.06.10.0               | 1                     |
|  | VB-ME   | 1331         | Bush         | a              | 60             | 114 | 130 | 28                           | 03.113.06.11.0 <sup>1)</sup> | 1                     |
|  | VB-E  |              |              | b              | 60             | 87  | 140 | 33                           | 03.113.07.12.0               | 1                     |
| VB-BE                                      | b   |              |              | 70             | 87             | 140 | 33  | 03.113.07.11.0 <sup>1)</sup> | 1                            |                       |
| VB-LE                                      |   |              |              |                |                |     |     |                              |                              |                       |
| VB-HDE                                     |   |              | b            | 60             | 87             | 140 | 49  | 03.113.07.16.0               | 1                            |                       |
|  |   |              | b            | 70             | 87             | 140 | 49  | 03.113.07.15.0               | 1                            |                       |
| VB ME ECO Cargo                            | 1352  | Washer       | c            | Ø 42 / 119 x 6 |                |     |     | 03.320.16.10.0               | 1                            |                       |
|  | 1370  | Shaped plate | d            |                |                |     |     | 03.161.44.10.0               | 1                            |                       |

<sup>1)</sup> no longer available

# 7 Equalizing beams

## 7.2 Spare parts for equalizing beams

### 7.2.3 Equalizing beam bearing - Bushes, wear plates

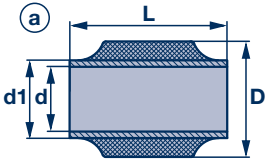
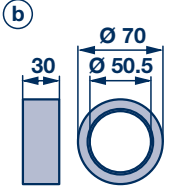
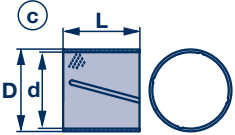
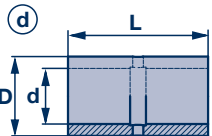
| Bushes  |  |
|---|--|
| Equalizing beam bearing with rubber-steel bushes  |  |
| <p><b>Straight equalizing beam</b></p>            | <p><b>VB M ECO Cargo / VBN M ECO Cargo</b></p> |
| Equalizing beam with offset (with steering axles) |  |
|   |  |
| Equalizing beam bearing with bronze bushes        |  |
| <p><b>Straight equalizing beam</b></p>            | <p><b>VB ME ECO Cargo</b></p>                  |

# Equalizing beams 7

## Spare parts for equalizing beams 7.2

### Equalizing beam bearing - Bushes, wear plates 7.2.3

#### Bushes

|  | Series   | Item  | Designation | Fig.                  | Dimension        |    |     |                | BPW Code no.   | Qty. /<br>Equalizing<br>beam |
|--|--|---|-------------|-----------------------|------------------|----|-----|----------------|----------------|------------------------------|
|  |  |   |             |                       | d                | D1 | D   | L              |                |                              |
| <br> | <b>Equalizing beam bearing with rubber-steel bushes</b>  |   |             |                       |                  |    |     |                |                |                              |
|  | <b>Straight equalizing beam</b>  |   |             |                       |                  |    |     |                |                |                              |
|  | VB-K<br>VB-C   | 1340  | Bush        | a                     | 50               | 58 | 100 | 130            | 02.0316.65.00  | 1                            |
|  | VB-M   |   |             | a                     | 60               | 72 | 107 | 130            | 05.113.97.13.0 | 1                            |
|  | VB<br>VB-B<br>VB-HD<br>VB-L  |   |             | a                     | 60               | 72 | 107 | 150            | 05.113.97.10.0 | 1                            |
|  | VB M ECO Cargo<br>VBN M ECO Cargo  |   |             | b                     | 42               | 60 | 106 | 106            | 05.113.97.26.0 | 1                            |
|  | <b>Equalizing beam with offset (with steering axles)</b>   |   |             |                       |                  |    |     |                |                |                              |
|  | VB-K<br>VB-C   | 1340  | Bush        | a                     | 50               | 58 | 100 | 130            | 02.0316.65.00  | 2                            |
|  |  | 1341  | Ring *      | b                     | Ø 50.5 / 70 x 30 |    |     |                | 03.310.34.27.0 | 1                            |
|  | VB<br>VB-B<br>VB-HD<br>VB-L  | 1340  | Bush        | a                     | 60               | 72 | 107 | 150            | 05.113.97.10.0 | 2                            |
|  | * only with offset 160 mm (no longer available)  |   |             |                       |                  |    |     |                |                |                              |
|  | <br> | <b>Equalizing beam bearing with bronze bushes</b> |             |                       |                  |    |     |                |                |                              |
| VB-KE<br>VB-ME   |  | 1340  | Bush        | c                     | 60               | -  | 65  | 60             | 03.112.76.14.0 | 2                            |
| VB-E<br>VB-BE<br>VB-HDE<br>VB-LE   |  |   |             | c                     | 70               | -  | 75  | 70             | 03.112.76.13.0 | 2                            |
| VB ME ECO Cargo  |  | 1340  | Bush        | c                     | 60               | -  | 65  | 50             | 03.112.76.27.0 | 2                            |
|  |  | 1342  | Sleeve      | d                     | 42               | -  | 60  | 106            | 03.200.17.05.0 | 1                            |
| <b>Wear plates</b>   |  |   |             |                       |                  |    |     |                |                |                              |
|  |  | 1350  | Washer      | Ø 50 / 115 x 6        |                  |    |     | 03.320.36.12.0 | 2              |                              |
|  |  |   | Ring        | Ø 60 / 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              |                              |
| VB M ECO Cargo<br>VBN M ECO Cargo<br>VB ME ECO Cargo   |  | 1350  | Plate       | Ø 43 / 150 x 150 x 6  |                  |    |     | 03.281.45.19.0 | 2              |                              |

# 7 Equalizing beams

## 5.2 Spare parts for equalizing beams

### 7.2.4 Equalizing beam bearing - Threaded bolts

| Threaded bolts  |                                  |
|---|----------------------------------|
| Equalizing beam bearing with rubber-steel bushes  |                                  |
| Straight equalizing beam  | VB M ECO Cargo / VBN M ECO Cargo |
| <p>                     M 42 x 3 M = 1100 Nm -12t<br/>                     M 42 x 3 M = 1700 Nm 13t-<br/>                     M 48 x 3 M = 1250 Nm                 </p> | <p>M 42 x 3 M = 1300 Nm</p>      |
| Equalizing beam with offset (with steering axles)   |                                  |
| <p>                     M 42 x 3 M = 1100 Nm -12t<br/>                     M 42 x 3 M = 1700 Nm 13t-<br/>                     M 48 x 3 M = 1250 Nm                 </p> |                                  |
| Equalizing beam bearing with bronze bushes  |                                  |
| Straight equalizing beam  | VB ME ECO Cargo                  |
| <p>                     M 42 x 3 M = 1100 Nm -12t<br/>                     M 42 x 3 M = 1700 Nm 13t-<br/>                     M 48 x 3 M = 1250 Nm                 </p> | <p>M 42 x 3 M = 1300 Nm</p>      |



# Equalizing beams 7

## Spare parts for equalizing beams 7.2

### Equalizing beam bearing - Threaded bolts 7.2.4

#### Threaded bolts

|  | Item   | Designation       | Fig.               | Dimension |     |                |                |                              | BPW Code no.                 |
|--|--|-------------------|--------------------|-----------|-----|----------------|----------------|------------------------------|------------------------------|
|  |  |                   |                    | d         | D   | L              | SW             | Thread                       |                              |
|  | <b>Equalizing beam bearing with rubber-steel bushes</b>  |                   |                    |           |     |                |                |                              |                              |
|  | <b>Straight equalizing beam</b>                          |                   |                    |           |     |                |                |                              |                              |
|  | 1345   | Threaded bolt     | a                  | -         | 42  | 207            | 70             | M 42 x 3                     | 03.177.16.40.0 <sup>1)</sup> |
|  |  |                   | b                  | -         | 50  | 247            | 60             |                              | 03.177.16.25.0               |
|  |  |                   | b                  | -         | 60  | 257            | 70             |                              | 03.177.16.29.0               |
|  |  |                   | b                  | -         |     | 265            |                | 03.177.16.35.0 *             |                              |
|  |  |                   | b                  | -         |     | 285            |                | 03.177.16.20.0               |                              |
|  |  |                   | b                  | -         | 313 | M 48 x 3       | 03.177.17.05.0 |                              |                              |
|  | * Locking with castle nut and split pin                  |                   |                    |           |     |                |                |                              |                              |
|  | <b>Equalizing beam with offset (with steering axles)</b> |                   |                    |           |     |                |                |                              |                              |
|  | 1346   | Threaded bolt     | b                  | -         | 50  | 377            | 60             | M 42 x 3                     | 03.177.16.26.0               |
|  |  |                   | b                  | -         |     | 404            |                |                              | 03.177.16.27.0               |
| b  |  |                   | -                  | 60        | 459 | 70             | M 48 x 3       | 03.177.17.06.0               |                              |
|  | <b>Equalizing beam bearing with bronze bushes</b>        |                   |                    |           |     |                |                |                              |                              |
|  | <b>Straight equalizing beam</b>                          |                   |                    |           |     |                |                |                              |                              |
|  | 1345   | Threaded bolt     | c                  | -         | 42  | 207            | 70             | M 42 x 3                     | 03.177.16.41.0 <sup>1)</sup> |
|  |  |                   | d                  | 50        | 60  | 245            |                |                              | 03.177.16.28.0               |
|  |  |                   | d                  | 60        | 70  | 274            |                |                              | 03.177.16.30.0               |
|  |  |                   | d                  | 60        | 70  | 381            | 80             | M 48 x 3                     | 03.177.16.17.0               |
|  |  |                   |                    | 313       |     | 03.177.17.04.0 |                |                              |                              |
| 1347   | Grease nipple  | AM 10 x 1 / 71412 |                    |           |     |                |                | 02.6802.03.50 <sup>1)</sup>  |                              |
|  | 1353   | Washer            | 43 / 125           |           |     |                |                | 02.5401.43.01 <sup>1)</sup>  |                              |
|  |  |                   | 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 <sup>1)</sup>  |                              |
|  |  |                   | 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>Torsion protection for threaded bolts</b>             |                   |                    |           |     |                |                |                              |                              |
|  | 1370   | Ring *            | SW 60              |           |     |                |                | 03.310.76.10.0               |                              |
|  |  |                   | SW 70              |           |     |                |                | 03.310.76.11.0               |                              |
|  |  | Shaped plate      | SW 70              |           |     |                |                | 03.161.44.10.0 <sup>1)</sup> |                              |
| * It is possible to prevent the bolt rotating by using weld-on lugs. |  |                   |                    |           |     |                |                |                              |                              |

<sup>1)</sup> VB ECO Cargo

# 7 Equalizing beams

## 7.2 Spare parts for equalizing beams

### 7.2.5 Supports, sliders and attachment parts

#### Supports, sliders and attachment parts

Fig. A

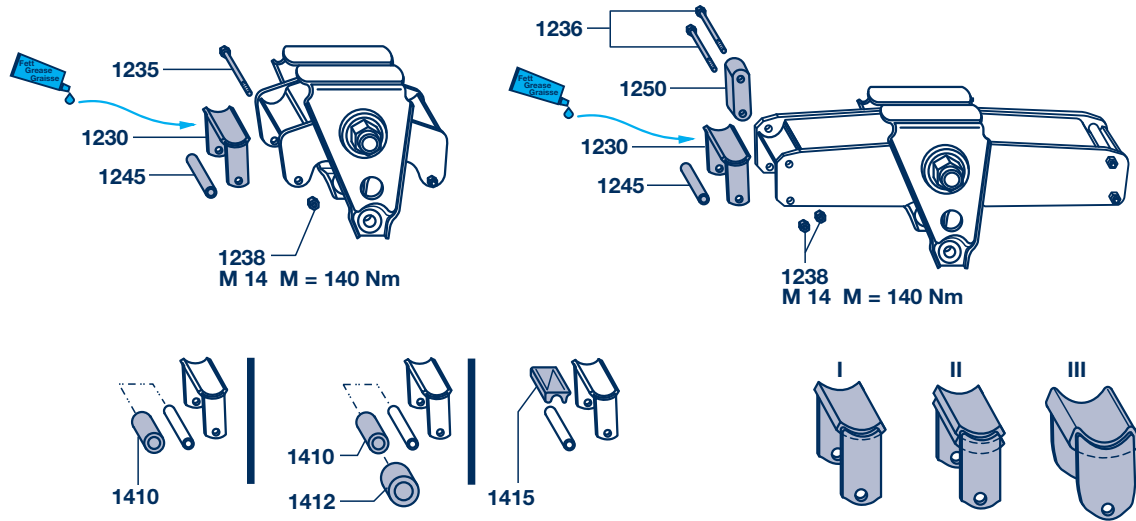


Fig. B

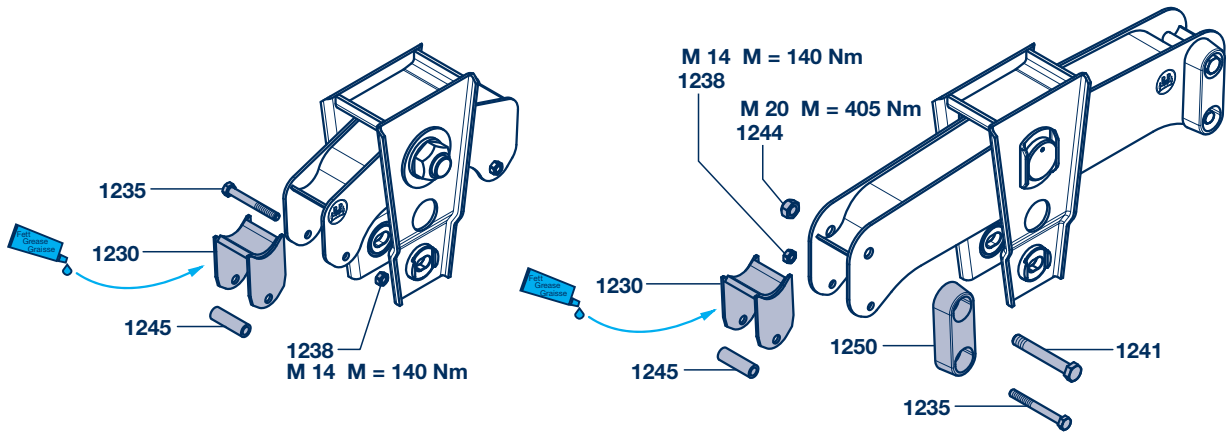
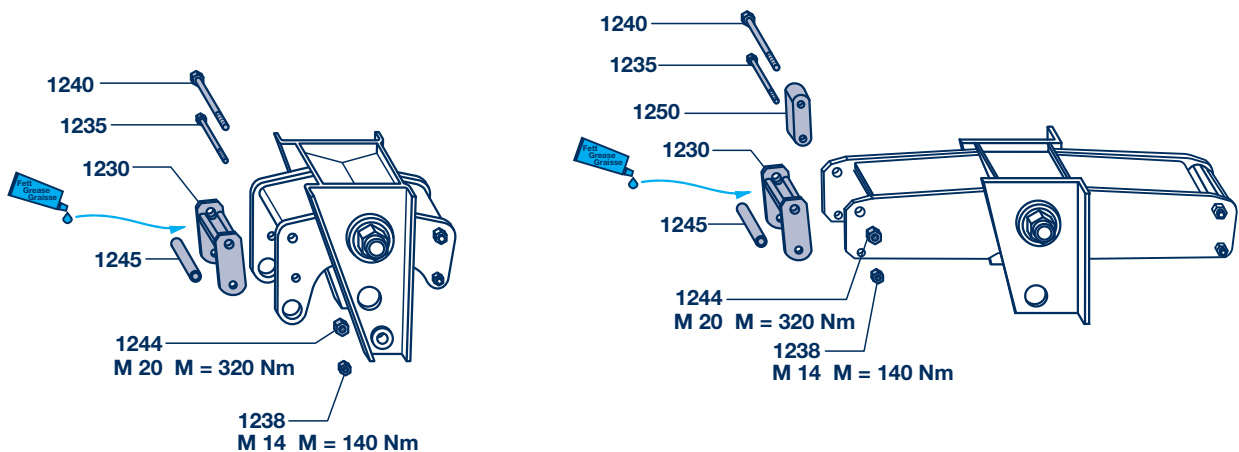


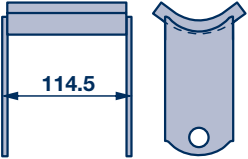
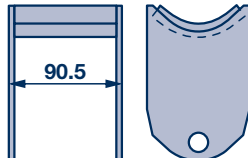
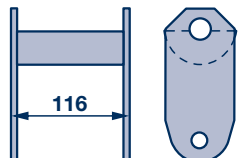
Fig. C



# Equalizing beams 7

## Spare parts for equalizing beams 7.2

### Supports, sliders and attachment parts 7.2.5

| Supports, sliders and attachment parts   |  |      |   |                           |                              |
|--|--|------|---|---------------------------|------------------------------|
|  | Series   | Item | Designation                               | Dimension                 | BPW Code no.                 |
| <b>Fig. A</b><br>   | <b>VB-K</b><br><b>VB-KN</b><br><b>VB-KE</b><br><b>VBT-K</b><br><b>VBT-KE</b> | 1230 | Support ( normal I )                      |                           | 05.189.04.70.0               |
|  |  |      | Support ( reinforced II )                 |                           | 05.189.05.22.0 <sup>1)</sup> |
|  |  |      | Support ( solid III )                     |                           | 05.189.05.97.0               |
|  |  | 1235 | Hexagon screw                             | M 14 x 140 / 931-8.8      | 02.5022.09.80                |
|  |  | 1236 | Screw<br>(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               |
|  |  | 1250 | Shackle<br>(for WB 1820 / 2050)           | 120 / 2 x Ø 15            | 03.232.96.03.0               |
| <b>Fig. B</b><br>  | <b>VB M ECO Cargo</b><br><b>VBN M ECO Cargo</b><br><b>VB ME ECO Cargo</b>    | 1230 | Support                                   |                           | 05.189.16.07.0               |
|  |  | 1235 | Hexagon screw                             | M 14 x 120                | 02.5022.12.80                |
|  |  | 1236 | Hexagon screw<br>(with shackle item 1250) | M 14 x 130 / 931-8.8      | 02.5022.11.82                |
|  |  | 1238 | Lock nut                                  | M 14-8                    | 02.5273.14.82                |
|  |  | 1241 | Screw<br>(with shackle item 1250)         | M 20 x 140 / 931-8.8      | 02.5023.19.80                |
|  |  | 1244 | Lock nut                                  | VM 20 / 980-8             | 02.5220.50.82                |
|  |  | 1245 | Tube                                      | Ø 16 / 25 x 79            | 03.300.73.42.0               |
|  |  | 1250 | Shackle<br>(for WB 1820 / 2050)           | 120 / 1 x Ø 15 / 1 x Ø 21 | 03.232.96.02.0 <sup>1)</sup> |
| <b>Fig. C</b><br> | <b>VB-C</b><br><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                |
|  |  | 1236 | Hexagon screw<br>(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                |
|  |  | 1240 | Screw                                     | M 20 x 150                | 03.340.13.07.0               |
|  |  | 1241 | Screw<br>(with shackle item 1250)         | M 20 x 160                | 03.340.13.05.0               |
|  |  | 1244 | Lock nut                                  | VM 20 / 980-8             | 02.5220.50.82                |
|  |  | 1245 | Tube                                      | Ø 16 / 25 x 106           | 03.300.73.21.0               |
|  |  | 1250 | Shackle<br>(for WB 1820 / 2050)           | 110 / 1 x Ø 15 / 1 x Ø 21 | 03.232.95.01.0               |

<sup>1)</sup> no longer available

Silent block bushes see page 61.

# 7 Equalizing beams

## 7.2 Spare parts for equalizing beams

### 7.2.5 Support, sliders and attachment parts

#### Supports, sliders and attachment parts

Fig. D

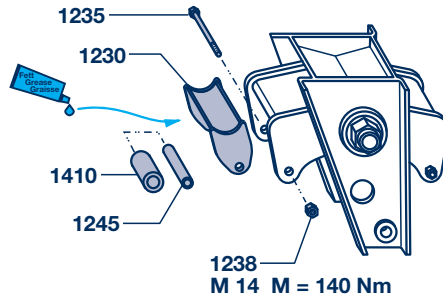


Fig. E

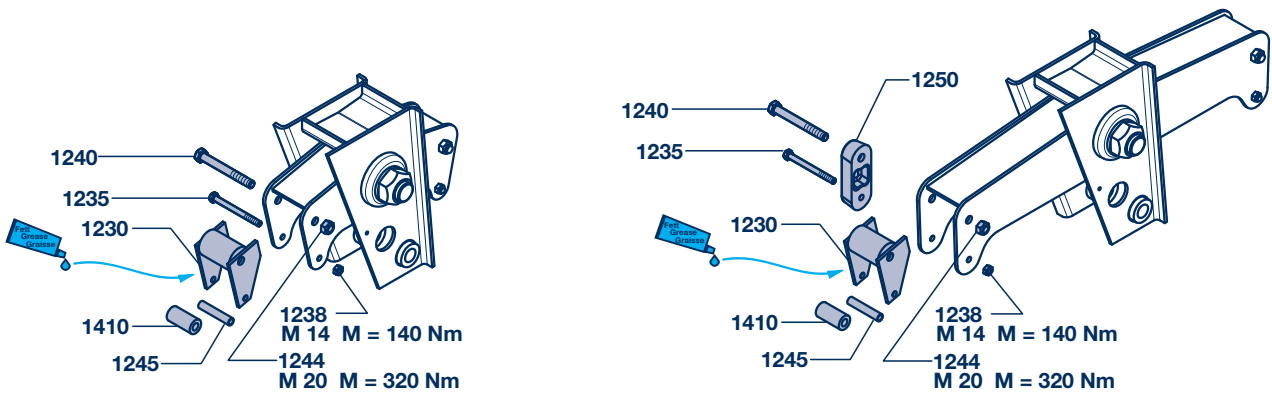
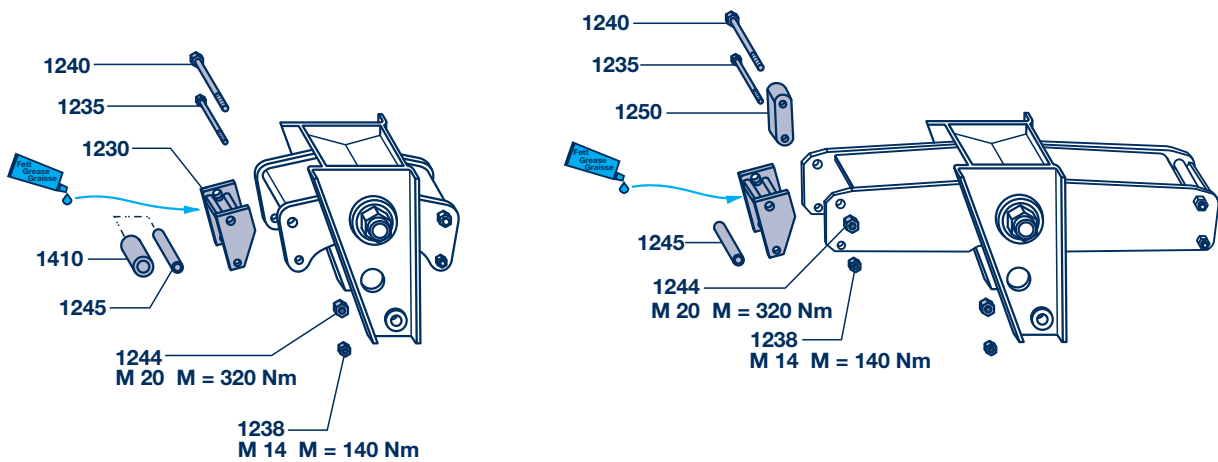


Fig. F

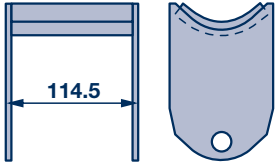
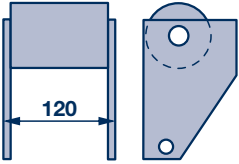
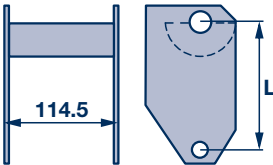
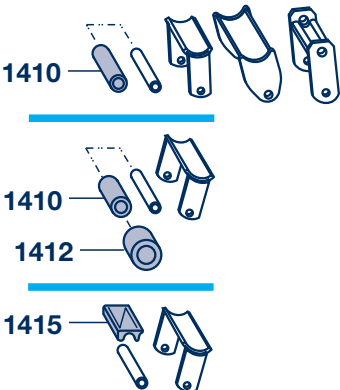


# Equalizing beams 7

## Spare parts for equalizing beams 7.2

### Supports, sliders and attachment parts 7.2.5

#### Supports, sliders and attachment parts

|  |   |             |   |                              |                              |
|--|---|-------------|---|------------------------------|------------------------------|
| <b>Fig. D</b><br>   | <b>VB-HD</b><br><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. E</b><br>   | <b>VB</b><br><b>VB-T</b><br><b>VB-B</b><br><b>VB-BE</b><br><b>VB-E</b><br><b>VB-T-E</b><br><b>VB-L</b><br><b>VB-LE</b><br><b>VB-T-L</b><br><b>VB-T-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<br>(with shackle item 1250) | M 14 x 160 / 931-8.8         | 02.5022.15.80 <sup>1)</sup>  |
|  |   | 1238        | Lock nut                                  | M 14-8                       | 02.5273.14.82                |
|  |   | 1240        | Screw                                     | M 20 x 160                   | 03.340.13.05.0               |
|  |   | 1241        | Screw<br>(with shackle item 1250)         | M 20 x 170                   | 03.340.13.06.0 <sup>1)</sup> |
|  |   | 1244        | Lock nut                                  | VM 20 / 980-8                | 02.5220.50.82                |
|  |   | 1245        | Tube                                      | Ø 14.8 / 20 x 103            | 03.300.72.05.0               |
|  |   | 1250        | Shackle<br>(for WB 1820 / 2050)           | 120 / 1 x Ø 15 / 1 x Ø 21    | 03.232.96.02.0 <sup>1)</sup> |
| <b>Fig. F</b><br> | <b>VB-M</b><br><b>VB-ME</b><br><b>VB-T-M</b><br><b>VB-T-ME</b>  | 1230        | Support (standard)                        | L = 128                      | 05.189.05.82.0               |
|  |   |             | Support (for WB 1820/2050)                | L = 120                      | 05.189.05.90.0 <sup>1)</sup> |
|  |   | 1235        | Hexagon screw                             | M 14 x 140 / 931-8.8         | 02.5022.09.80                |
|  |   |             | Hexagon screw<br>(with shackle item 1250) | M 14 x 160 / 931-8.8         | 02.5022.15.80 <sup>1)</sup>  |
|  |   | 1238        | Lock nut                                  | M 14-8                       | 02.5273.14.82                |
|  |   | 1240        | Screw                                     | M 20 x 150                   | 03.340.13.07.0               |
|  |   | 1241        | Screw<br>(with shackle item 1250)         | M 20 x 170                   | 03.340.13.06.0 <sup>1)</sup> |
|  |   | 1244        | Lock nut                                  | VM 20 / 980-8                | 02.5220.50.82                |
|  |   | 1245        | Tube                                      | Ø 14.8 / 20 x 103            | 03.300.72.05.0               |
|  |   | 1250        | Shackle<br>(for WB 1820 / 2050)           | 120 / 1 x Ø 15 / 1 x Ø 21    | 03.232.96.02.0 <sup>1)</sup> |
| <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 <sup>1)</sup> |                              |
| * Replaced by 03.113.90.11.0 (Item 1410)   |   |             |   |                              |                              |

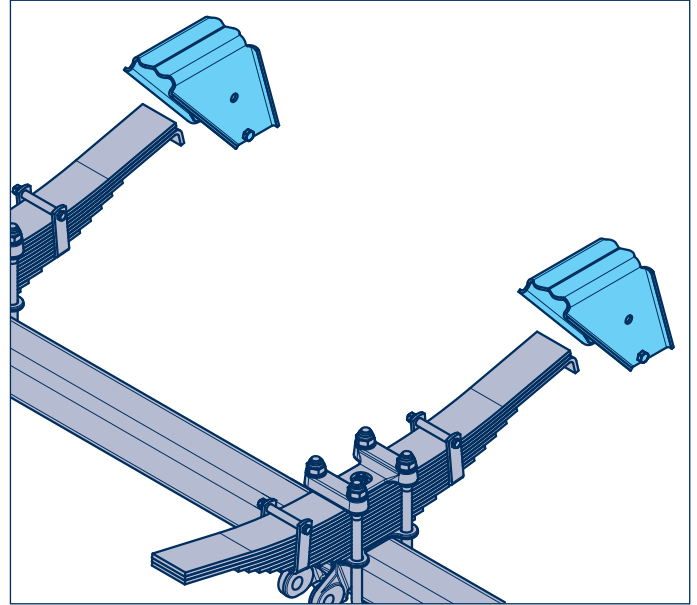
<sup>1)</sup> no longer available

## 8 Rear hanger brackets

### 8.1 General

#### VB

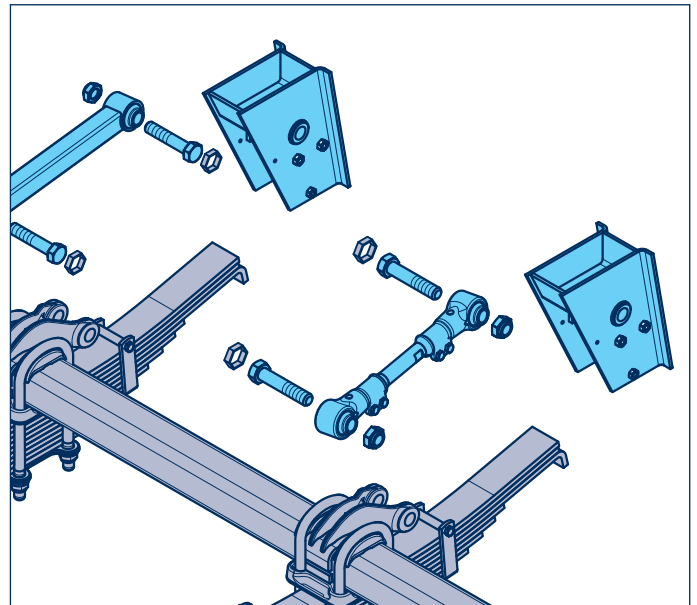
The rear hanger brackets welded onto the vehicle chassis are only connected to the final axle of the suspension unit by means of the leaf springs, and they only transfer the tracking forces of the axle to the chassis of the vehicle.



#### VBT

The rear hanger brackets 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.



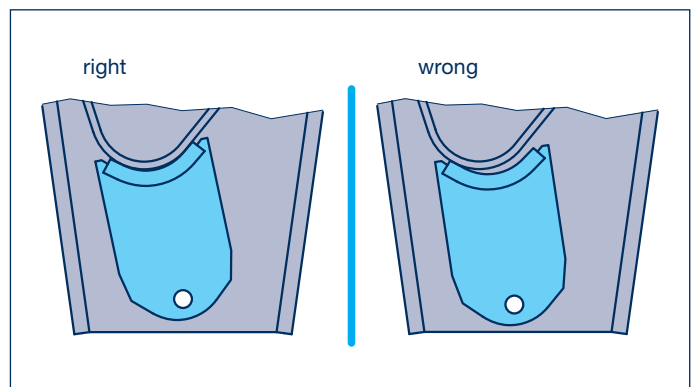
#### Sliders

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!

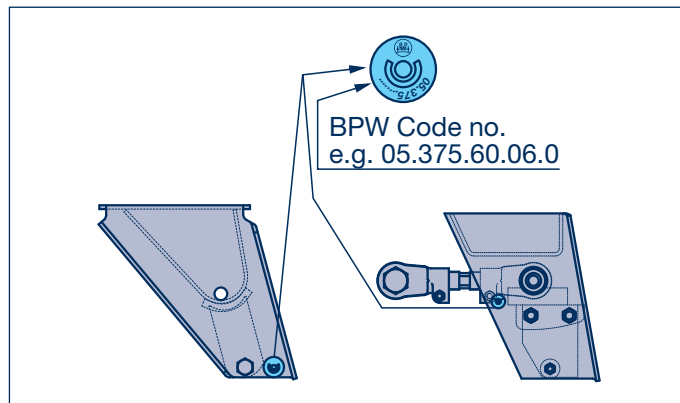


# Rear hanger brackets 8

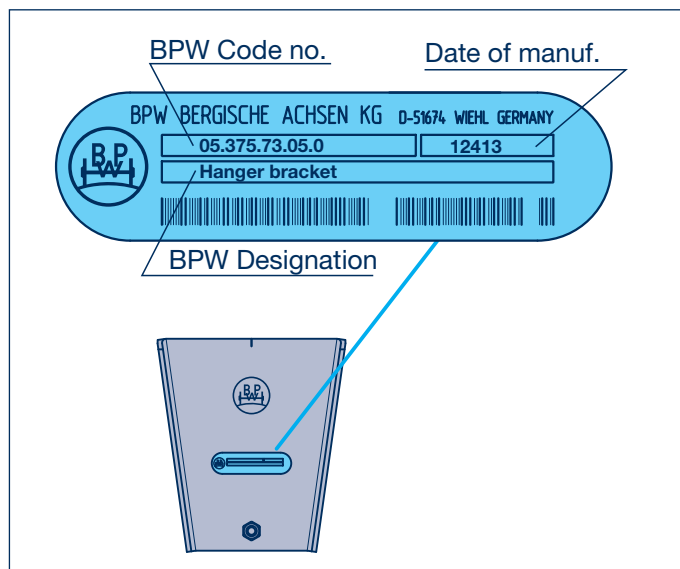
## General 8.1

### BPW Code number

The BPW code number is stamped into the manufacturer's nameplate on the hanger bracket.



**VB ECO Cargo** hanger brackets are provided with a type plate on each bracket. It shows the name, BPW code number and the date of manufacture.



### Scope of delivery

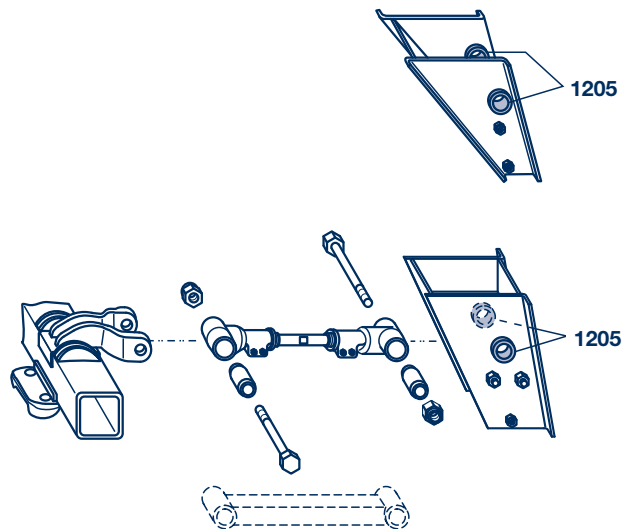
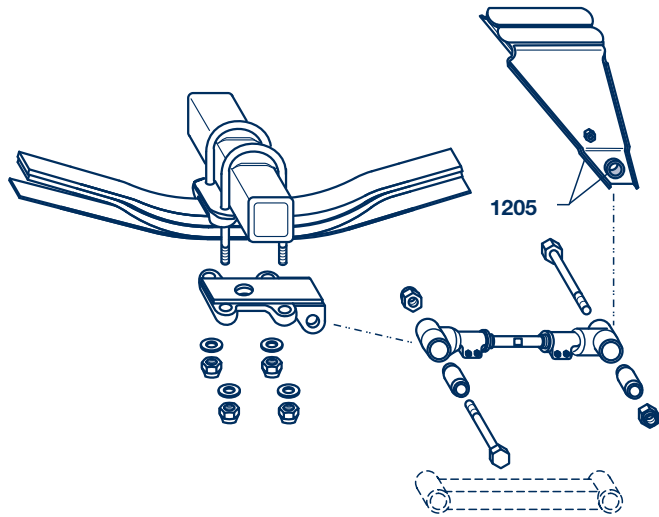
When you order this BPW code number you get the complete hanger bracket, including slider, connecting rod (if available) and attachment parts.

# 8 Rear hanger brackets

## 8.2 Spare parts for rear hanger brackets

### 8.2.1 Weld-in bushes

#### Weld-in bushes for connecting rod attachment (only VBT)



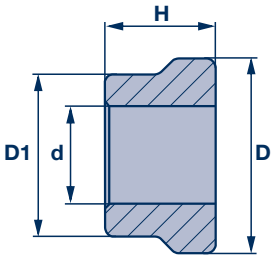
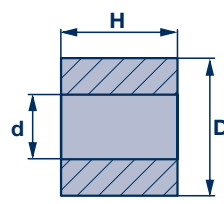


# Rear hanger brackets 8

## Spare parts for rear hanger brackets 8.2

### Weld-in bushes 8.2.1

#### Weld-in bushes for connecting rod attachment (only VBT)

|   | Series  | Item | Designation | Dimension |    |    |    | BPW Code no.   | Qty. / Hanger bracket        |
|---|---|------|-------------|-----------|----|----|----|----------------|------------------------------|
|   |   |      |             | d         | D1 | D  | H  |                |                              |
|  | <b>VBT-K</b><br><b>VBT-KE</b><br><b>VBT-L</b><br><b>VBT-LE</b><br><b>VBT-M</b><br><b>VBT-ME</b> | 1210 | Bush        | 30        | 50 | 60 | 21 | 03.113.01.19.0 | 2                            |
|   | <b>VBT-C</b>  | 1210 | Sleeve      | 30        | 50 | 60 | 30 | 03.200.34.05.0 | 2                            |
|   |   |      |             |           | 30 | 50 | 60 | 35             | 03.200.34.04.0 <sup>1)</sup> |
|  | <b>VBT</b><br><b>VBT-B</b><br><b>VBT-HD</b><br><b>VBT-HDE</b><br><b>VBT-E</b>                   | 1210 | Sleeve      | 36        | -  | 65 | 55 | 03.200.75.06.0 | 2                            |

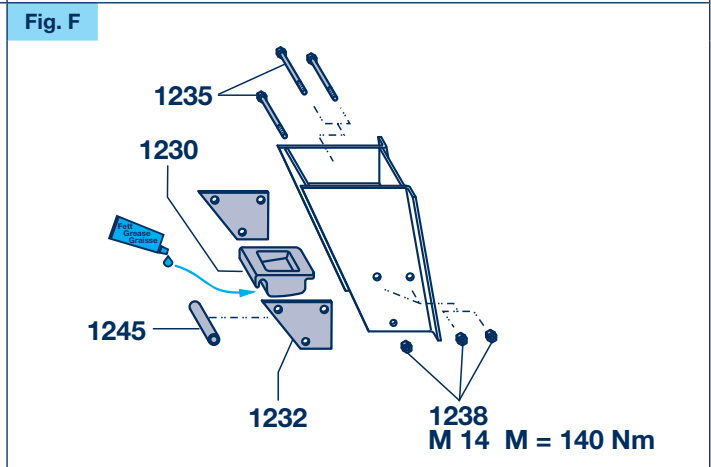
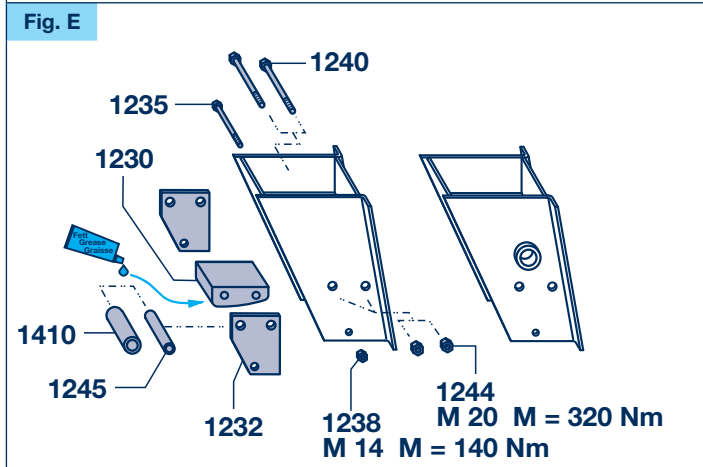
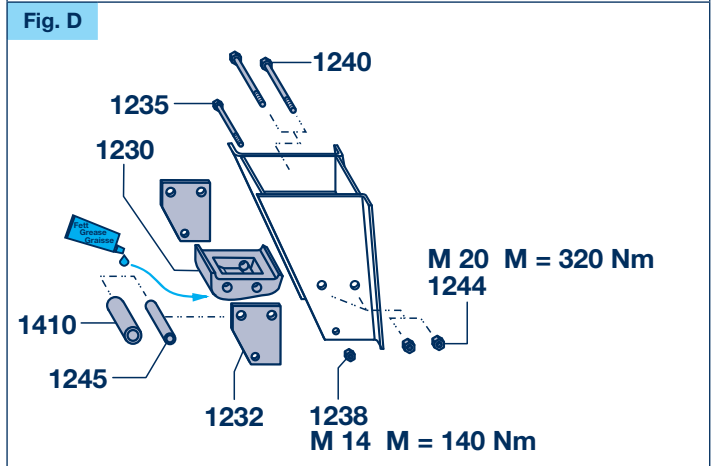
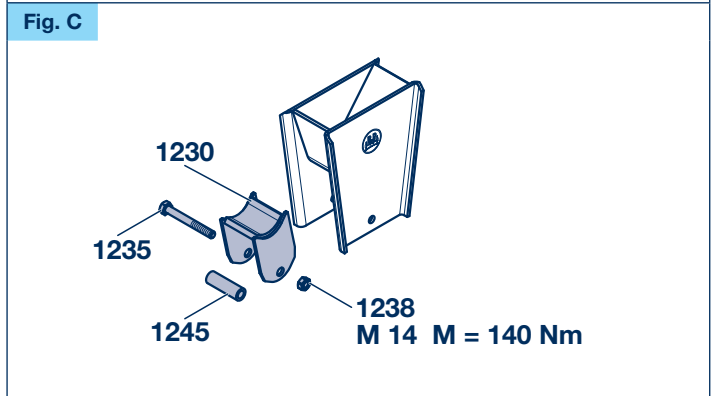
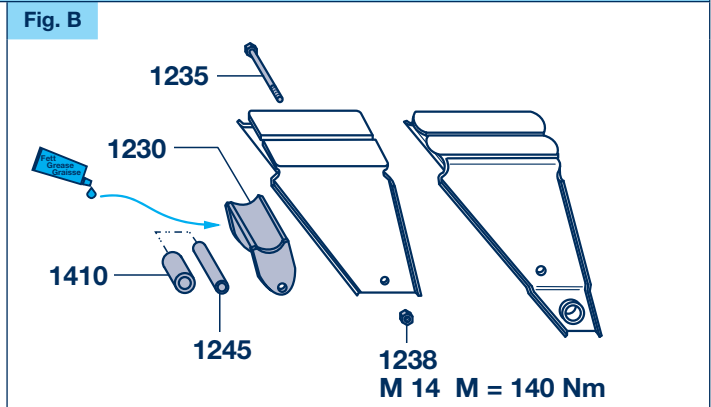
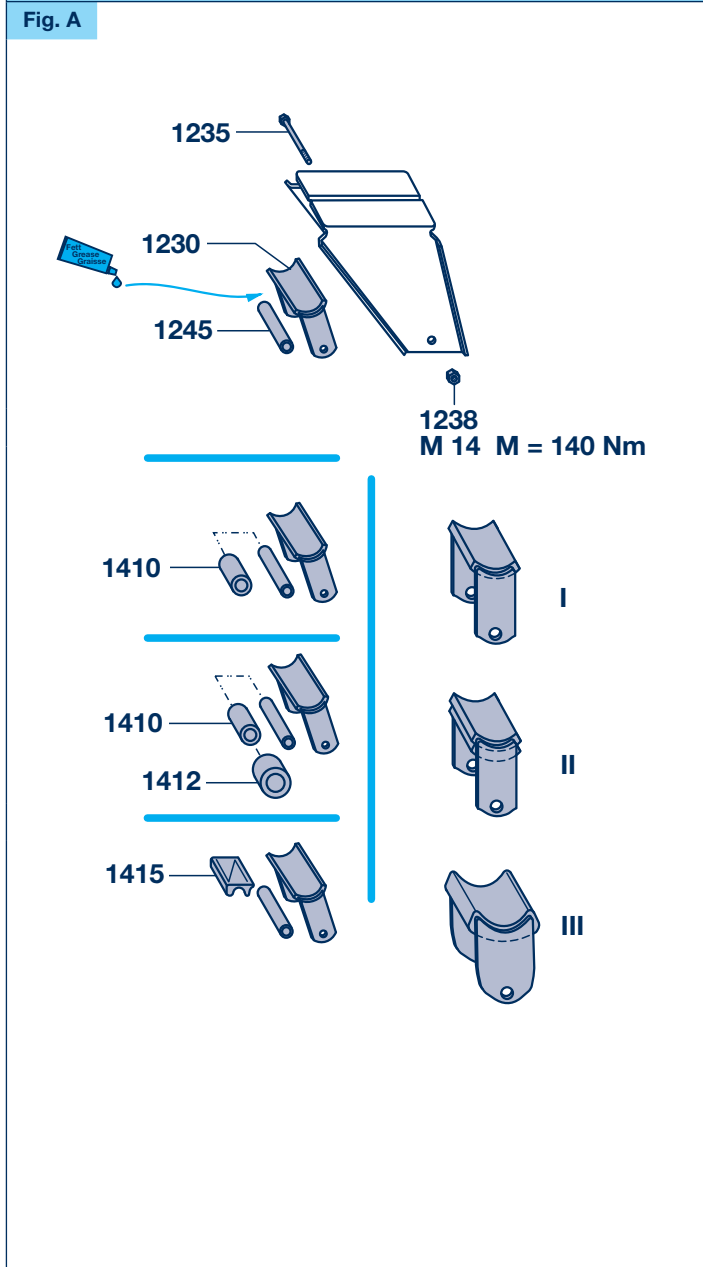
<sup>1)</sup> no longer available

# 8 Rear hanger brackets

## 8.2 Spare parts for rear hanger brackets

### 8.2.2 Supports, sliders and attachment parts

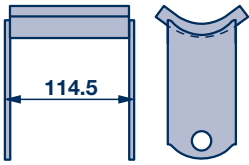
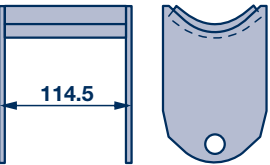
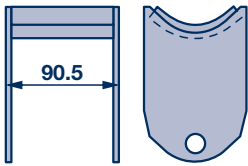
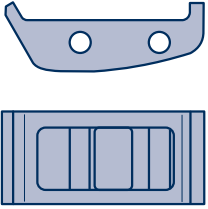
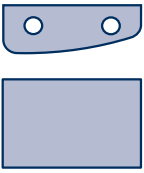

#### Supports, sliders and attachment parts



# Rear hanger brackets 8

## Spare parts for rear hanger brackets 8.2

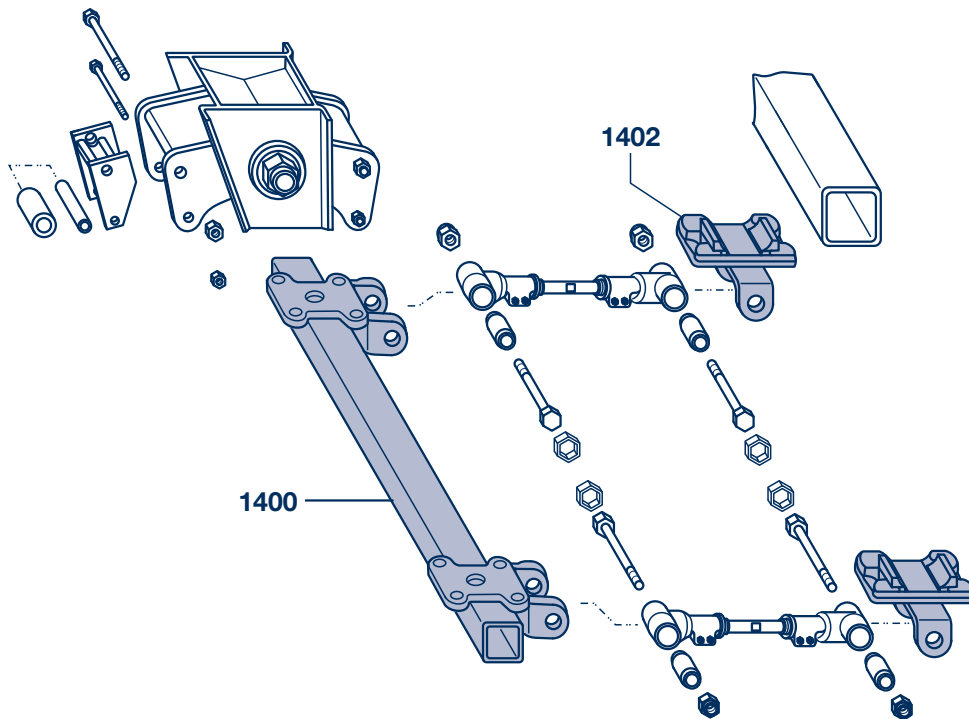
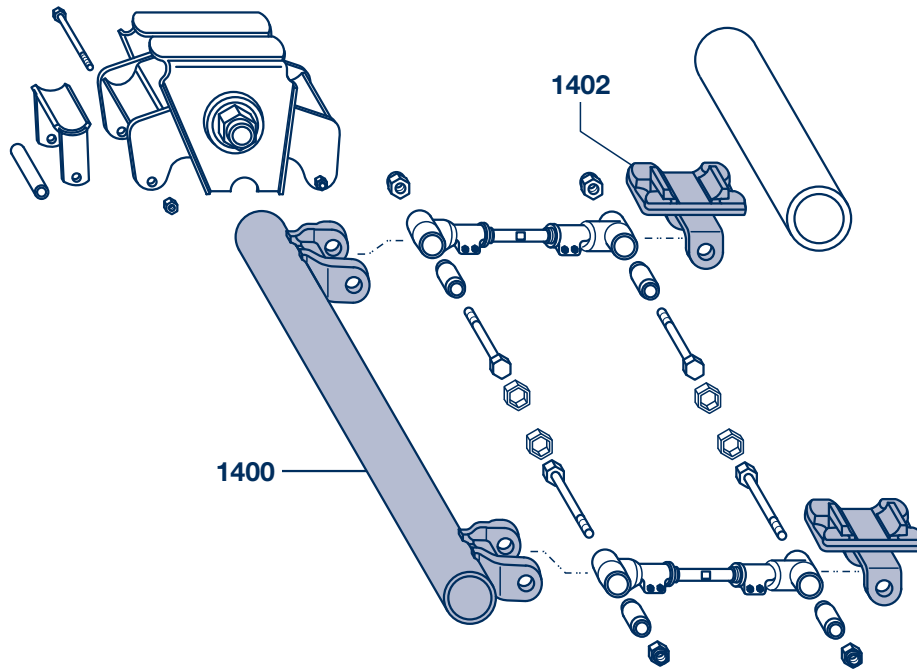
### Supports, sliders and attachment parts 8.2.2

| Supports, sliders and attachment parts   |   |      |                           |                      |                              |
|--|---|------|---------------------------|----------------------|------------------------------|
|  | Series  | Item | Designation               | Dimension            | BPW Code no.                 |
| <b>Fig. A</b><br>   | <b>VB-K</b><br><b>VB-KN</b><br><b>VB-KE</b><br><b>VBT-K</b><br><b>VBT-KE</b>                                | 1230 | Support ( normal I )      |                      | 05.189.04.70.0               |
|  |   |      | Support ( reinforced II ) |                      | 05.189.05.22.0 <sup>1)</sup> |
|  |   |      | 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><br>   | <b>VB-L</b><br><b>VB-LE</b><br><b>VBT-L</b><br><b>VBT-LE</b><br><b>VB-M</b><br><b>VB-ME</b><br><b>VBT-M</b> | 1230 | Support                   |                      | 05.189.05.75.0               |
|  |   | 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. C</b><br>  | <b>VB M ECO Cargo</b><br><b>VBN M ECO Cargo</b><br><b>VB ME ECO Cargo</b>                                   | 1230 | Support                   |                      | 05.189.16.07.0               |
|  |   | 1235 | Hexagon screw             | M 14 x 120           | 02.5022.12.80                |
|  |   | 1238 | Lock nut                  | M 14-8               | 02.5273.14.82                |
|  |   | 1245 | Tube                      | Ø 16 / 25 x 79       | 03.300.73.42.0               |
|  |   |      |                           |                      |                              |
| <b>Fig. D</b><br> | <b>VB</b><br><b>VB-B</b><br><b>VB-E</b><br><b>VB-HD</b><br><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 | 02.5023.09.82                |
|  |   | 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><br> | <b>VBT</b><br><b>VBT-B</b><br><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 | 02.5023.09.82                |
|  |   | 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. F</b><br> | <b>VB-C</b><br><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               |
|  |   |      |                           |                      |                              |
| Silent block bushes  |   |      |                           |                      |                              |
|  |   | 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 <sup>1)</sup> |

<sup>1)</sup> no longer available

# 9 Supports for VBT

## Supports for VBT



# Supports for VBT 9

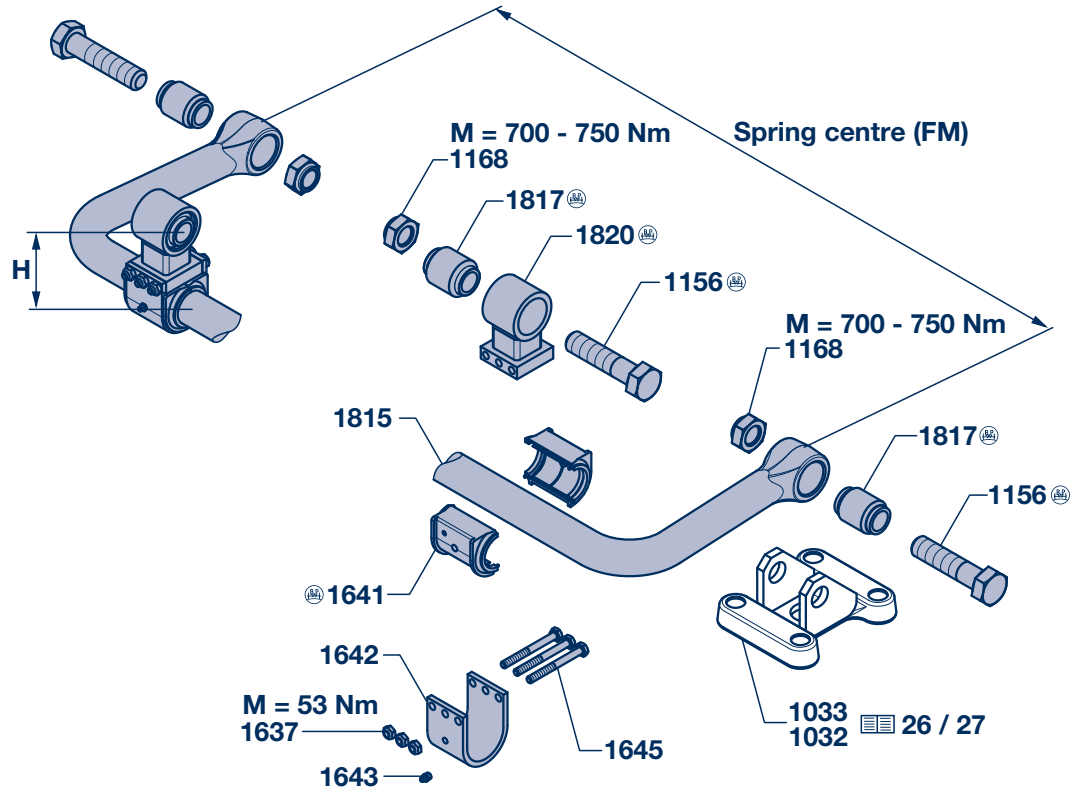
| Supports for VBT                                      |   |             |      |           |                              |       |                |      |                              |                |
|---|---|-------------|------|-----------|------------------------------|-------|----------------|------|------------------------------|----------------|
|   | Item  | Designation | Fig. | Dimension |                              |       |                |      | BPW Code no.                 |                |
|   |   |             |      | d         | D                            | FM    | L              | B    |                              |                |
|   | <b>VBT</b>                                      |             |      |           |                              |       |                |      |                              |                |
|   | 1400  | Support     | a    | 30        | Ø 101                        | 858   | 673            | 486  | 05.189.07.57.0               |                |
|   |   |             |      |           |                              | 980   | 797            | 610  | 05.189.05.74.0               |                |
|   |   |             |      |           |                              | 1000  | 817            | 630  | 05.189.06.40.0               |                |
|   |   |             |      |           |                              | 1024  | 841            | 654  | 05.189.07.17.0               |                |
|   |   |             |      |           |                              | 1100  | 917            | 730  | 05.189.05.73.0               |                |
|   |   |             | d    |           | c                            | □ 120 | 900            | 1098 | 560                          | 05.189.03.51.0 |
|   |   |             |      |           |                              |       | 980            | 1178 | 590                          | 05.189.11.34.0 |
|   |   |             |      |           |                              |       | 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               |                |
|   |   |             |      | 1400      |                              |       | 1588           | 1010 | 05.189.02.81.0               |                |
|   |   |             |      | 1500      | 1688                         | 1110  | 05.189.10.91.0 |      |                              |                |
|   |   |             |      | 1580      | 1778                         | 1190  | 05.189.14.05.0 |      |                              |                |
|   |   |             |      | 1650      | 1850                         | 1260  | 05.189.06.03.0 |      |                              |                |
|   |   |             |      | 1780      | 1978                         | 1390  | 05.189.06.04.0 |      |                              |                |
| FM = Spring centre                                    |   |             |      |           |                              |       |                |      |                              |                |
| Supports for VBT (Support welded under the axle beam) |   |             |      |           |                              |       |                |      |                              |                |
|   | Item  | Designation | Fig. | Dimension |                              |       |                |      | BPW Code no.                 |                |
|   |   |             |      | d         | D                            | B     | H              | X    |                              |                |
|   | <b>VBT (Support welded under the axle beam)</b> |             |      |           |                              |       |                |      |                              |                |
|   | 1402  | Support     | e    | 30        | □ 120                        | 140   | 70             | 69   | 05.189.02.12.0               |                |
|   |   |             |      |           |                              | 140   | 78             |      | 05.189.03.33.0 <sup>1)</sup> |                |
|   |   |             |      |           |                              | 130   | 78             |      | 05.189.03.52.0               |                |
|   |   |             | f    |           | Ø 127                        | 150   | 78             |      | 05.189.02.69.0               |                |
|   |   |             |      |           |                              | 130   | 70             |      | 05.189.04.54.0               |                |
|   |   |             |      |           |                              | 164   | 70             |      | 05.189.02.10.0               |                |
|   |   |             | 175  | 78        | 05.189.04.94.0 <sup>1)</sup> |       |                |      |                              |                |

<sup>1)</sup> no longer available

# 10 Stabilizers

## U-Stabilizer

### U-Stabilizer

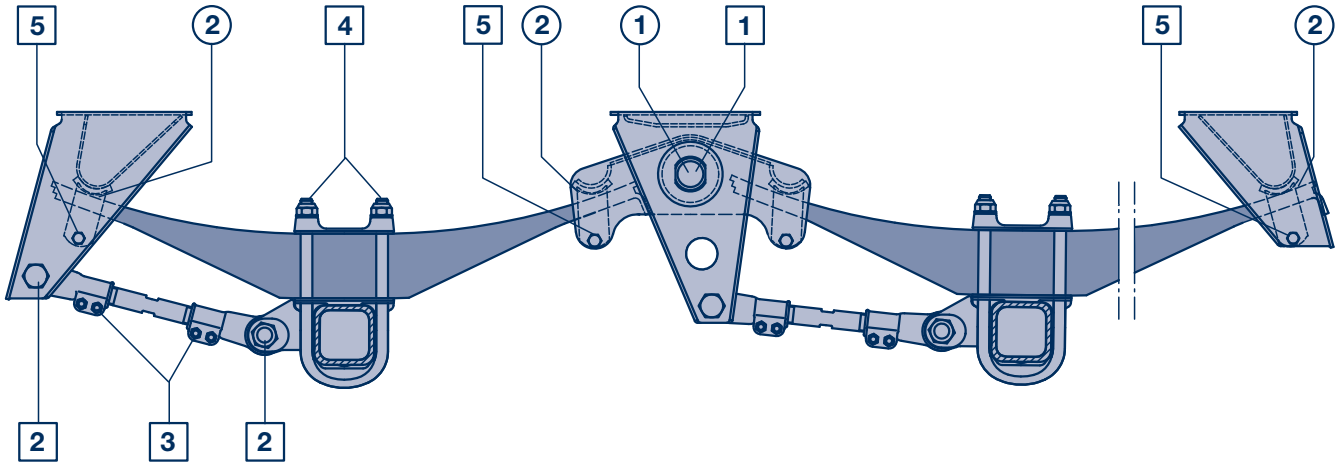


| Item | Designation                     | Dimension         | BPW Code no.                 |                                 |
|------|---------------------------------|-------------------|------------------------------|---------------------------------|
| 1156 | Screw                           | M 30 x 130-8.8    | 03.340.15.26.0               |                                 |
| 1168 | Lock nut                        | M 30              | 03.260.15.01.0               |                                 |
| 1637 | Lock nut                        | VM 10 / 980       | 02.5220.10.82                |                                 |
| 1641 | Bush, incl. seal                | Ø 50 / 70 x 94    | 05.801.50.35.0               |                                 |
| 1642 | Shaped plate                    |                   | 03.160.56.01.0               |                                 |
| 1643 | Grease nipple                   | AM 10 x 1 / 71412 | 02.6802.03.50                |                                 |
| 1645 | Hexagon screw                   | M 10 x 100 - 10.9 | 02.5021.54.11                |                                 |
|      |                                 |                   |                              | <b>Bush ( Item 1817 )</b>       |
| 1815 | U-Stabilizer<br>incl. item 1817 | FM = 900          | 05.114.98.18.0               | 05.113.96.06.0 Ø 30 / 52.6 x 68 |
|      |                                 | FM = 980          | 05.114.98.19.0               |                                 |
|      |                                 | FM = 1100         | 05.114.98.20.0               |                                 |
|      |                                 | FM = 1200         | 05.114.98.21.0               |                                 |
|      |                                 | FM = 1300         | 05.114.98.22.0               |                                 |
| 1817 | Bush                            | Ø 30 / 52.6 x 68  | 05.113.96.06.0               |                                 |
|      |                                 | Ø 30 / 60 x 68    | 05.113.96.05.0               |                                 |
|      |                                 |                   |                              | <b>Bush ( Item 1817 )</b>       |
| 1820 | Support<br>incl. item 1817      | H = 120           | 05.189.01.78.0 <sup>1)</sup> | 05.113.96.06.0 Ø 30 / 52.6 x 68 |
|      |                                 | H = 75            | 05.189.15.73.0               |                                 |
|      |                                 | H = 180           | 05.189.03.97.0               |                                 |
|      |                                 | H = 275           | 05.189.02.16.0               |                                 |
|      |                                 | H = 395           | 05.189.03.99.0               |                                 |
|      |                                 |                   |                              | 05.113.96.05.0 Ø 30 / 60 x 68   |

<sup>1)</sup> Replaced by 05.189.15.73.0

# Lubrication and maintenance work 11

## Lubrication and maintenance work (Overview)



| <input type="radio"/> <b>Lubricate</b><br><input type="checkbox"/> <b>Maintenance</b>  | initially<br>after 2 weeks          | very 6 weeks                        | every 26 weeks<br>(twice annually) <sup>1)</sup> |
|--|-------------------------------------|-------------------------------------|--|
| ① Grease bearings (suspension type E).<br>(Not applicable in the case of rubber / steel bushes)  | <input type="radio"/> <sup>1)</sup> | <input type="radio"/> <sup>1)</sup> |  |
| ② Slightly grease the slide elements / slide ends of leaf springs.   | <input type="radio"/>               | <input type="radio"/>               |  |
| - Visual inspections<br>Check all component parts for wear and damage.   |                                     |                                     | <input type="checkbox"/>                         |
| ① Check threaded bolts on equalizing beam bearing for tightness.<br>- 12 t axle load    M 42 x 3    M = 1100 Nm<br>VB ECO Cargo    M 42 x 3    M = 1300 Nm<br>13 t - axle load    M 42 x 3    M = 1700 Nm<br>M 48 x 3    M = 1250 Nm |                                     |                                     | <input type="checkbox"/>                         |
| ② Check axle guide linkage screws for tightness<br>using a torque wrench.<br>VB ECO Cargo    M 24        M = 650 Nm<br>M 30        M = 725 Nm<br>M 36        M = 1425 Nm   |                                     |                                     | <input type="checkbox"/>                         |
| ③ Check connecting rod clamping screws for tightness.<br>M 12-8.8    M = 66 Nm<br>M 14-8.8    M = 140 Nm   |                                     |                                     | <input type="checkbox"/>                         |
| ④ Check spring U-bolts for tightness using a torque wrench.<br>M 24        M = 600 - 650 Nm  | <input type="checkbox"/>            |                                     | <input type="checkbox"/>                         |
| ⑤ Check slide elements for tightness.<br>M 14-8.8    M = 140 Nm<br>M 20-8.8    M = 320 Nm<br>VB ECO Cargo    M 20-8.8    M = 405 Nm  |                                     |                                     | <input type="checkbox"/>                         |

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

# Notices



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# Notices

**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 path to economic viability



**BPW Bergische Achsen Kommanditgesellschaft**

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