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ECO Plus 2 - The new generation of the proven BPW ECO Unit

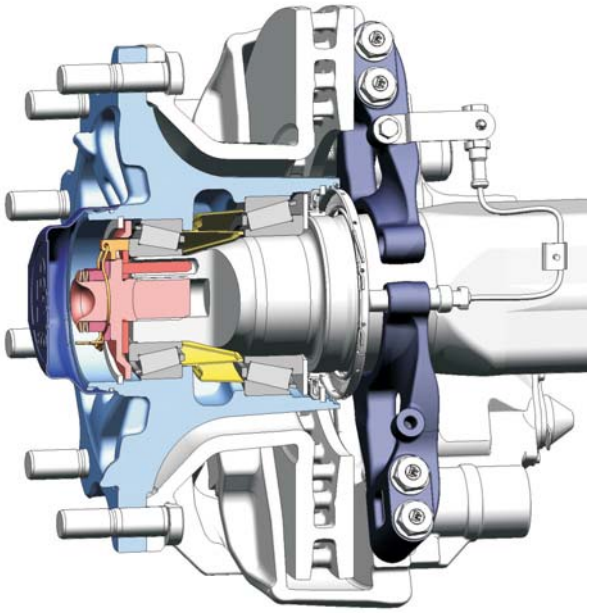
The BPW ECO Unit has proven itself millions of time over, and its ECO^{Plus} version will be replaced by the new and improved ECO Plus 2 version from **September 2007** onwards. By concentrating on optimising the components, it has been possible to achieve a significant weight reduction compared to the current ECO^{Plus} Unit. In the ECO Plus 2, the hub cap has a bayonet lock to allow the cap to be installed and removed more easily. Grease is supplied to the wheel bearings by means of a grease cartridge arranged between the bearing points. The axle nut, which has been used so far, is replaced by an axle bolt with integrated torque limiter. This product launch affects all ECO^{Plus} versions up to 9 t axle load (drum and disc-brake rigid axles, steering axles).

Advantages of ECO Plus 2:

- Significant weight savings are achieved with the revised air suspension, depending on the axle type:

  - Disc-brake axle with 0 offset: 8 kg
  - Disc-brake axle with 120 offset: 25 kg
  - Drum-brake axle with ECO DRUM: 18 kg
    (For SN 4218 see also BPW NEWS TB 7143709e)

- Axle bolt with torque limiter for optimum bearing setting
- Easy to grease the bearings with a grease cartridge
- Existing certificates and homologations are retained



Disc-brake axle with ECO Plus 2 Unit and new B-hub.

Furthermore, all the proven advantages of ECO^{Plus} bearings are retained:

- Encapsulated ECO bearing unit
- 5+3 year ECO Plus warranty (on-road)
- ECO system: Removal of the bearing using the Formula 1 principle
- Globally available DIN ISO tapered roller bearings and seals that can be renewed individually

1. Hub cap / ECOMETER

BPW trailer axles with the ECO Plus 2 Unit are fitted with hub caps (and ECOMETERs) with a bayonet lock. The bayonet lock replaces the former screw connection. A 120 mm spanner is required for installation and removal of the new hub caps with bayonet lock (BPW code number 03.339.05.07.0, see also publication BPW-WP 1218...e). **Impact drivers must not be used for removing and installing hub caps or ECOMETERs with a bayonet lock!**

1.1 Removal

To remove the hub cap turn it approx. 30° anticlockwise with the spanner (Fig. 1). The hub cap is now free of the hub seat in this position. The released position is additionally indicated by marks on the cap or wheel hub (Fig. 2). In the released position, the hub cap can be pulled off the wheel hub axially.

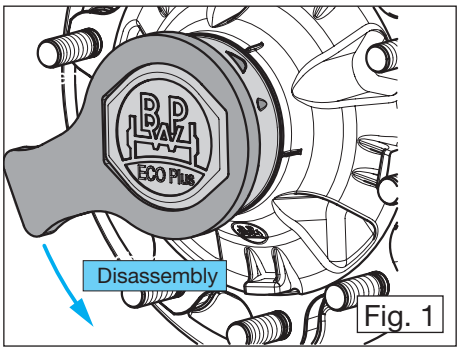


Fig. 1

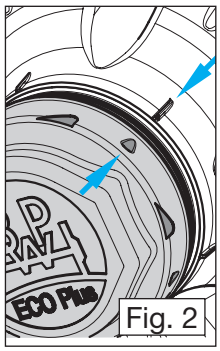


Fig. 2

1.2 Assembly

The seal between the hub cap and the wheel hub in the ECO Plus 2 Unit is provided by an O-ring (Fig. 3). The O-ring is inserted in the groove at the hub neck of the wheel hub and must be renewed each time the hub cap is removed and replaced. The hub cap itself must have a thin coat of BPW special long-life grease ECO-Li^{Plus} applied to its inside before installation, in the area of the bayonet lock.
Installation of the hub cap is made easier by lining up the corresponding marks on the cap and hub (Fig. 4). Fig. 5 shows the hub cap in push-on position with the spanner in place. After pushing on, turn the hub cap clockwise at the same time as applying pressure axially. The position in Fig. 6 shows the hub cap firmly seated.

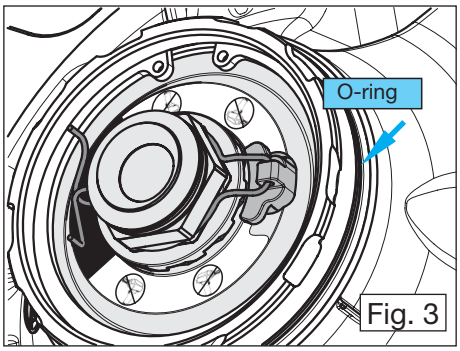


Fig. 3

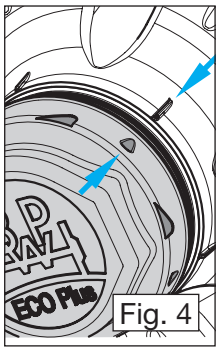


Fig. 4

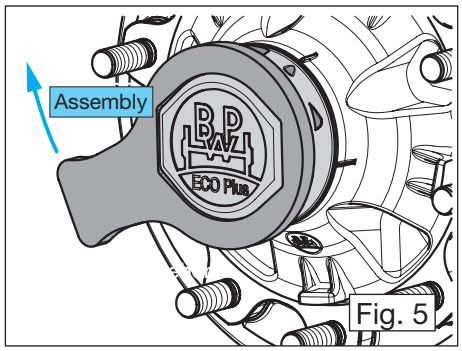


Fig. 5

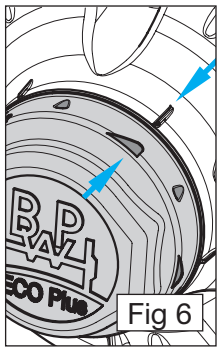


Fig 6

2. Grease cartridge

The ECO Plus 2 unit has a grease cartridge located between the tapered roller bearings in the wheel hub. The grease cartridge has two separate grease chambers. The wheel bearings are supplied with BPW special long-life grease ECO-Li^{Plus} from these grease chambers.

After maintenance work, repairs, etc., clean the grease chambers of the grease cartridge (whilst still installed) and fill them full with BPW special long-life grease ECO-LiPlus (grease gun, etc.). Make sure the grease is filled without air traps or cavities. The required amount of BPW special long-life grease ECO-Li^{Plus} depends on the particular grease chamber volume of the grease cartridge (approx. 130 g for the inside wheel bearing and approx. 90 g for the outside wheel bearing, see Figs. 7 and 8). New or cleaned bearings must have a ring-shaped bead of grease applied to the contact surfaces of the outer bearing races as initial lubrication during the installation procedure (see Figs. 7 and 8).

Existing grease dispensers for ECO^{Plus} wheel bearings can continue to be used for ECO Plus 2 as well. There is no need to follow the grease filling procedure of the cartridge described above when grease dispensers are used. The amounts of grease are the same in the grease dispenser and the grease cartridge.

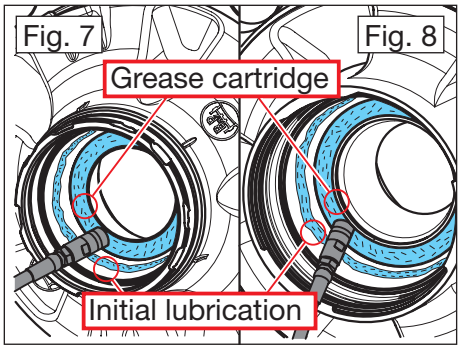
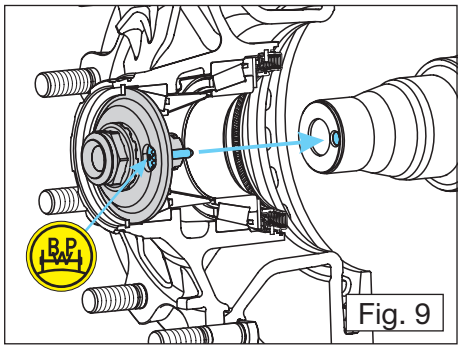
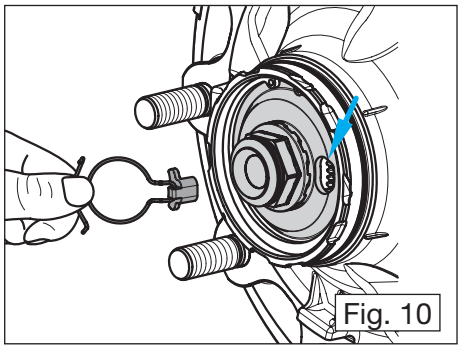
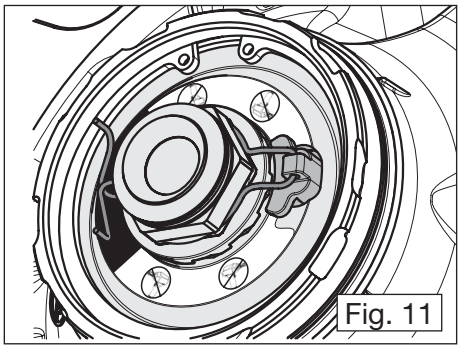


Fig. 7= View of outside bearing,
Fig. 8= View of inside bearing.

3. Installation of the ECO Plus 2 Unit and setting bearings





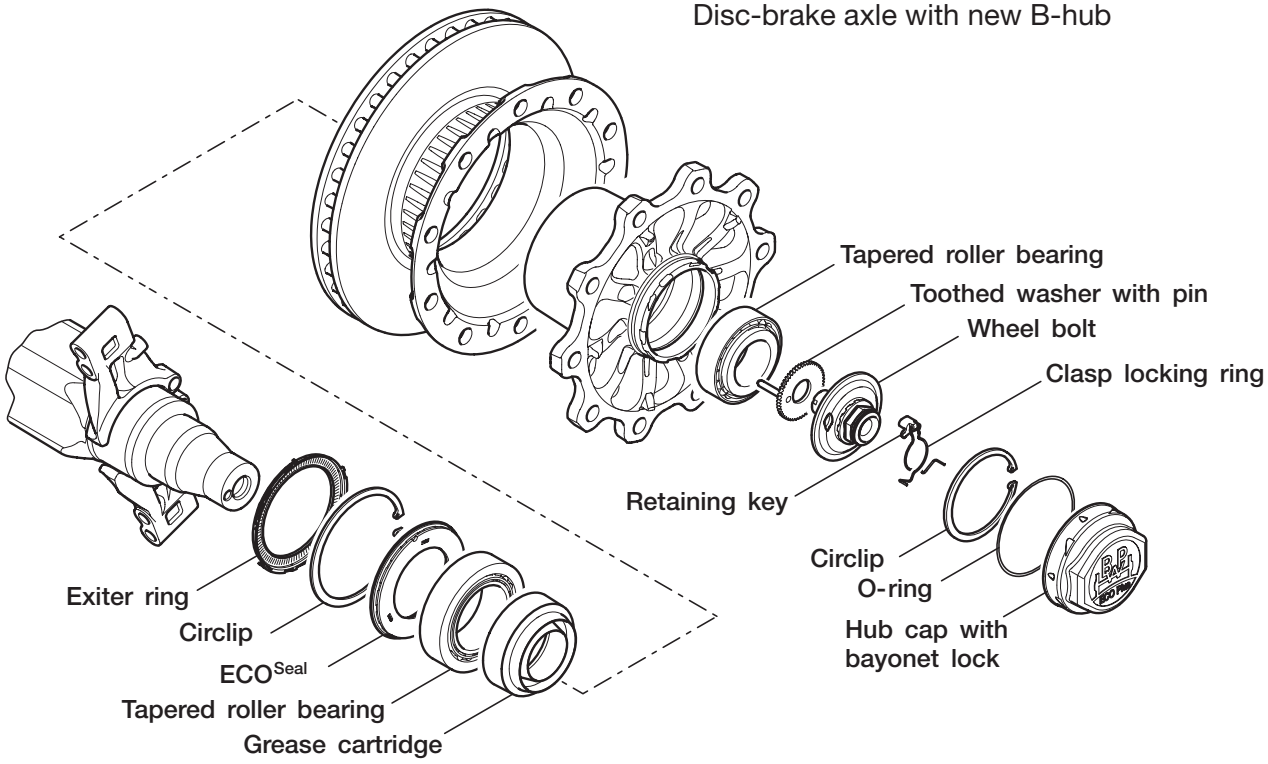


The ECO Plus 2 Unit is set using an axle bolt. The axle stub has two holes in its front end for this purpose. The centrally located hole M 32 x 2 is used for receiving the wheel bolt, while the ø 12 hole has a torsion lock function together with the pin for the toothed washer. During installation, the toothed washer must be positioned behind the axle screw so that the pin for the toothed washer and the hole in the axle stub line up (Fig. 9). There is a BPW logo on a yellow background on the toothed washer to assist in setting the position of the pin during installation (Fig. 9). For installation, the axle bolt must be turned so that the yellow logo is in the middle of the viewing window of the axle bolt. Then the window and the logo must be lined up with the hole in the axle stub and the hub unit pushed on. Once all components have been installed, the axle bolt is tightened using a 46 mm spanner (BPW code number 03.364.18.01.0 / .. 02.0, see also publication BPW-WP 1218...e). The ECO Unit must be turned at the same time as the axle bolt is being tightened. **Do not use an impact driver!**

The end position (optimum bearing setting) is achieved when the built-in torque limiter activates (slips). The axle bolt must not be turned back from this position. Following this, the retaining key already mounted on the clasp locking ring can be inserted into the recess in the axle bolt and the gearing of the toothed lock washer (Fig. 10). Correct seating of the retaining key is assured when the clasp locking ring is fully engaged in the groove provided for it in the axle screw (hexagonal) (Fig. 11). The clasp locking ring is opened up by pressing together the ends of the wire in order to install it over the hexagonal profile.

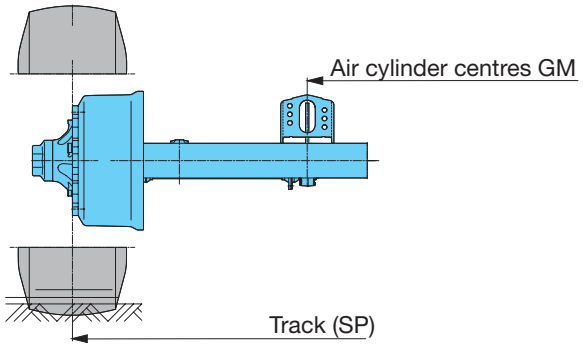
4. Components of ECO Plus 2 wheel bearings

Fig. 12:
Disc-brake axle with new B-hub



5. New air cylinder centres with 9 t drum-brake axles

In order to standardise components, the familiar air cylinder centres (GM) are reduced in size by 6 mm for 9 t drum-brake axles (e. g. 409 mm air cylinder centres in future instead of 415 mm). Please note this difference in dimension when configuring your vehicles!



6. Exchange of components

Following the changeover to ECO Plus 2, no more 9 t ECO^{Plus} axles will be built, even as spare parts. The further development of the bearings means the components of the ECO^{Plus} and ECO Plus 2 series are no longer exchangeable like-for-like. The following table shows the interchangeability of components in relation to the various axle series.

Example:
Existing ECO^{Plus} brake drums can also be used on ECO Plus 2 axles with ECO Drum, and conversely it is possible to use the new ECO Drum brake drums on ECO^{Plus} axles.

		Components					
		Axle beam	ECO^{Plus} axle nut / ECO Plus 2 axle bolt	Dust cover 1)	Hub 2) incl. bearing, seal, hub cap	Brake disc, brake drum	Brake components (brake caliper, camshaft, shoe, linings)
Axle series	Disc-brake axle 120 offset	🔴	🔴	🔴	🔴	🟢	🟢
	Disc-brake axle 0 offset	🔴	🔴	🟢	🔵	🟢	🟢
	Drum-brake axle	🔴	🔴	🔴 1)	🔵	🟢	🟢

🔴 No interchange between ECO^{Plus} and ECO Plus 2 possible
🟢 ECO^{Plus} components can be used in ECO Plus 2 axles and vice versa
🔵 ECO^{Plus} components can be used in ECO Plus 2 axles but not vice versa

1) With 120 sq. / 30° brake position, the dust covers and fastening elements can continue to be used.
2) ECO^{Plus} wheel hubs and hub caps will continue to be available as replacements.

Separate repair kits will be offered for ECO Plus 2 wheel bearings as was the case with ECO^{Plus}.

☞ All information about ECO Plus 2 wheel bearings can also be found on the BPW website at www.bpw.de.