



Uniquely sophisticated –
tried and tested a million times.

BPW Running Gear Systems.

we think transport



Safety

Durability

Innovation

Efficiency

Reliab

we think transport

It is the goal of the BPW Group to support our customers in the transport and logistic industry in the best possible way. This is why our first priority is to wholly focus on your requirements. This consists of listening to you, targeting our solutions to your individual needs and being there for you in any situation. This objective based on partnership means: **we think transport**

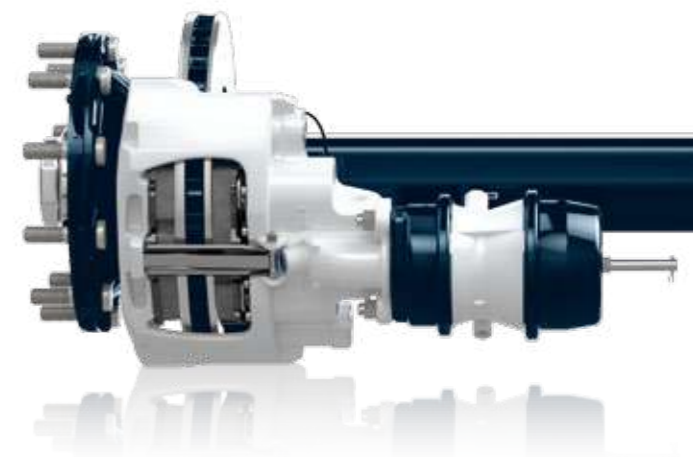
As international mobility partner we offer a perfectly coordinated product and service package. It helps you to make your transport processes more transparent, to make them even safer, more efficient and your fleet easier to control. Using our telematics solutions for truck and trailer, current information is available to you at any point in time so you can step in if necessary.

At the same time, the BPW Group supports all vehicle manufacturers as their system partner – offering a wide range of high-quality running gear systems and services for an efficient production process and for the fulfilment of a variety of customer needs.

Running gear systems for **your ultimate demands.**

In every-day transport business, reliability and safety come first. Your customers expect safe, economic and punctual transport of the goods they entrust you with and this is why we think that you should have the same high level of expectation regarding a running gear system.

ECO Plus storage technology, tried and tested a million times, offers you the best solution. It is not only extremely durable but also remarkably service friendly with low life-cycle costs.



Content

WHEEL END	AXLE	SOLUTIONS			
ECO Plus storage technology	6 – 7	Axle beam	9	System partnership	14 – 15
ECO-Principle	8	Rigid axle	10 – 11	Mobility partnership	16 – 17
		Self-steering	12 – 13	Services	18 – 19



Intelligent Running Gear Systems.

Regardless of how individual and complex your running gear requirements are, the combination of cutting-edge technologies and first-class components united in BPW running gear systems offers you utmost reliability and efficiency.



Running Gear systems

Your efficiency remains on track, too: the square axle beam with preset toe-in and camber.



Suspension systems

BPW air suspension reliably takes care of your vehicle and your cargo – in every range of application.



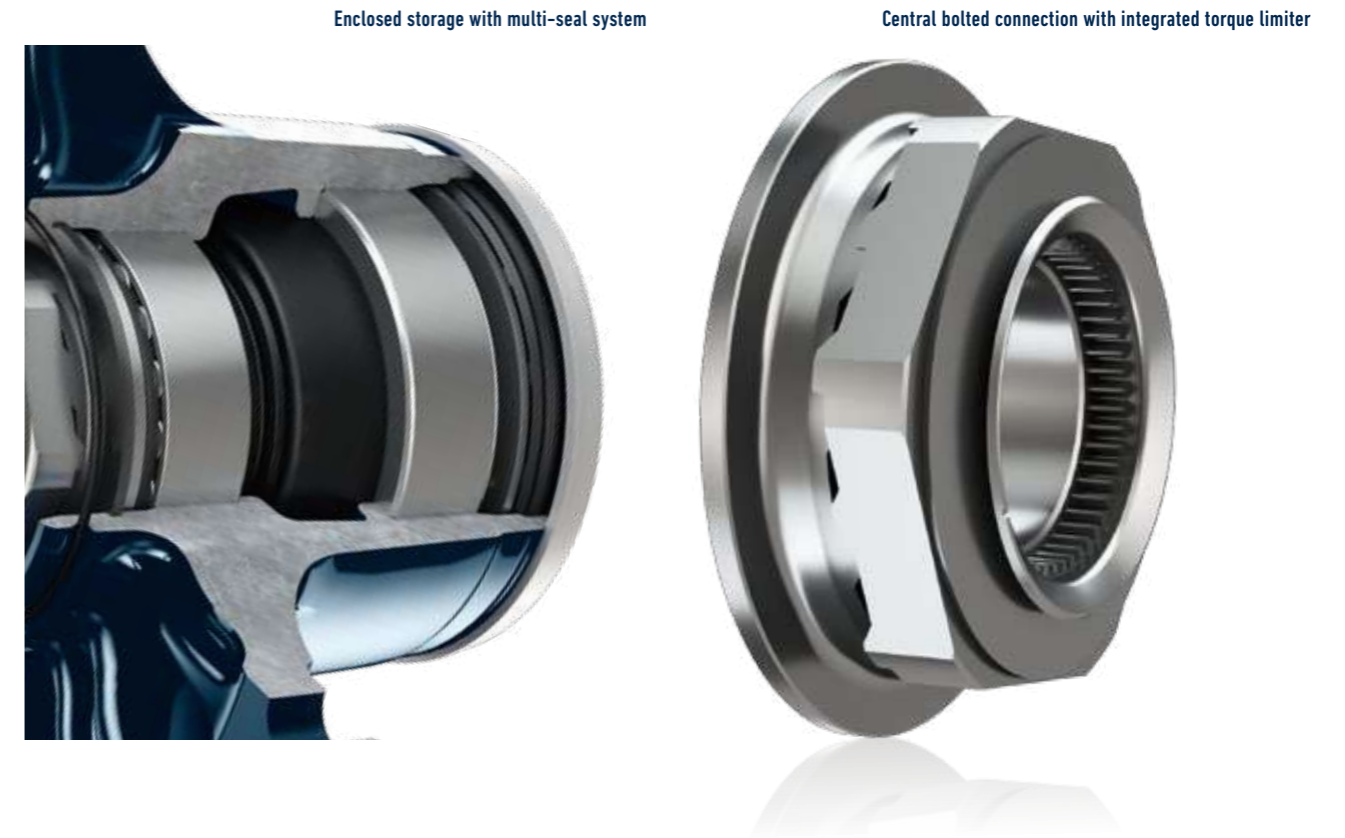
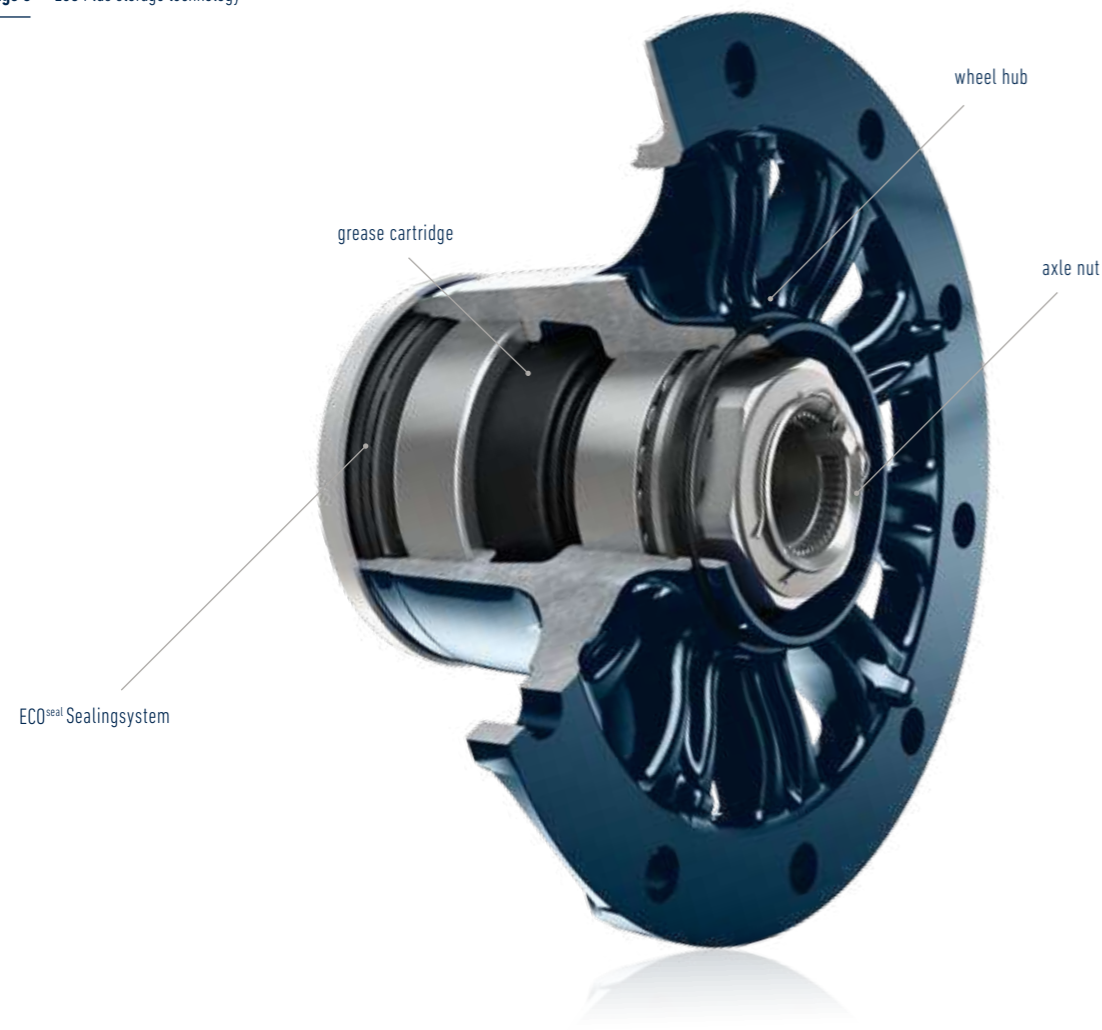
Brake technology

Long-life and high performance braking systems, especially developed for trailers. Not only do they have short braking distances, but also less maintenance.



Telematics solutions

By means of BPW Telematics solutions you have all information and cost at first sight and under control. BPW is the first manufacturer to offer a complete telematics solution for truck and trailer, independent from the car manufacturer.



Less friction on the path to more efficiency: The ECO Plus storage technology.

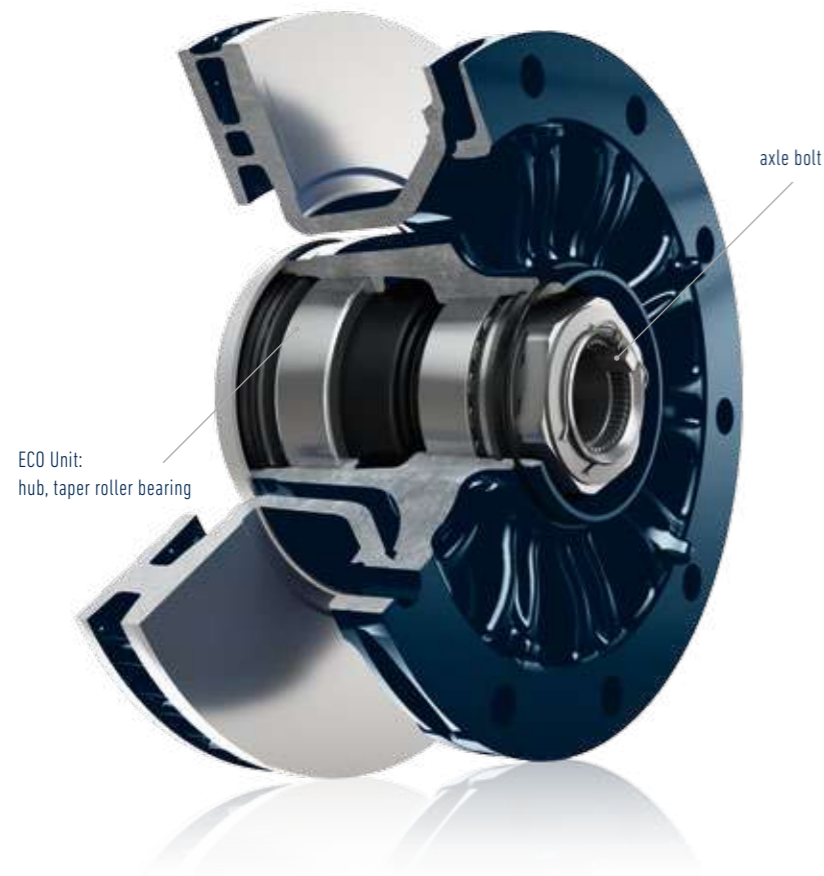
The proven and tested storage technology of the ECO Unit is one of the most important determinants for the success of more than 14 million BPW running gear systems sold. Its enclosed construction guarantees utmost service performance and availability. The latest developments reveal numerous innovative details, making the chassis even more maintenance and repair friendly.

When it comes to easy maintenance and efficiency, the proven and tested ECO unit is a real professional convincing you with globally available DIN-ISO taper roller bearings as well as quick disassembly/assembly according to the Formula 1 principle via the central axle nut.

Innovative construction properties like grease cartridge, the proven and tested central screw connection with integrated torque control underline the innovative capacity of BPW.

ECO UNIT – FEATURES AND VALUES

- › axle load from 9 t to 12 t
- › maintenance free, enclosed bearing system
- › high running performance by enclosed construction type of bearing technology
- › quick maintenance according to Formula 1 principle via the central axle nut
- › automatically adjusted bearing clearance by means of central screw connection with integrated torque limiter
- › easy lubrication of bearings by grease cartridge
- › hub cap with proven and tested axle nut
- › 5+3 years ECO Plus warranty with unlimited mileage
- › available worldwide: DIN-ISO taper roller bearings for utmost availability and quick service



whether drum or disc brake, the
ECO-principle always applies

Easy maintenance: The ECO-Principle – find the key to cost saving.

There is a variety of convincing arguments in favour of the BPW ECO-Principle. First of all, we have to mention its long life-cycle and its service-friendly construction. As regards the drum brake, the complete wheel can be removed according to the Formula 1 principle simply by loosening the axle nut. Moreover, the graded bearing offers easy removal without the need of a pull-off device.

Functioning of the ECO-Principle:

Thanks to the BPW ECO-Principle disassembly is very easy. With effortless ease the hub can be removed with the axle nut according to the Formula 1 principle.

Because of stepped bearings, pull-off devices are not necessary. Perfectly protected from dirt and moisture the taper roller bearings remain in the hub.

Assembly is just as easy and quick: a box spanner for hub cap and axle nut is sufficient. In the case of drum braked BPW axles, the wheel can remain mounted on the hub during disassembly and assembly.

BPW ECO-PRINCIPLE – FEATURES AND VALUES

- › fewer downtimes, lower maintenance cost and reduced assemblies thanks to fewer operations during normal brake service
- › easy and safe assembly via axle nut with integrated torque limitation
- › easy removal throughout the entire life cycle by means of graded stepped bearings
- › application of worldwide available DIN-ISO taper roller
- › no pulling device is required

We trust in the robust square so that everything runs smoothly for you.

BPW axle beams are square based for a proper reason. They combine contradictory properties: low dead load with extreme stability and utmost reliability which is a proven and tested construction principle of BPW. Together with our brakes and suspensions the square beam forms a stable, perfectly balanced unit for a long vehicle life.

BPW AXLE BEAMS – FEATURES AND VALUES

- › the square axle beam is perfectly adapted to the total load amount caused by bending and torsion forces.
- › the hollow axle beam has low dead load and is of the utmost rigidity for high usable loads.
- › the assembly of tempered axle stub and square beam by means of flash-butt welding ensures a uniquely safe connection and maximum life cycles.
- › as standard, it is possible to retrofit ABS to BPW axle beams.
- › by means of positive camber and precise toe-in, tolerances of the axle beam, an even wear of tyres is achieved.
- › easy assembly/disassembly of the wheel hub by stepped bearings on the axle stub.
- › permanent corrosion protection by KTL_{Zn}-Coating



Small setting – strong relief for wheels and driver: Track and Camber.

Every BPW Axle beam is equipped with preset camber and toe-in. Small values that show benefit in daily driving practice because camber and toe-in aid reduction in tyre wear and ensure more driving safety and efficiency.

Positive Camber – vehicle unloaded

Camber is defined as the angle between the wheel centre plane and a line drawn perpendicular to the plane of the carriageway. The camber is positive if the top of the wheel is angled outwards when the axle is unladen.

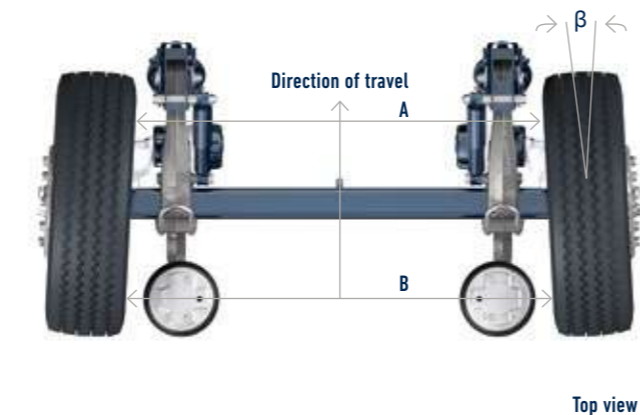
Positive camber – laden vehicle

The bending load on the axle beam when the vehicle is laden causes the wheel to straighten. This means the tyre rolls with optimum road contact when the vehicle is laden (the most critical condition in terms of wear). This avoids uneven, premature tyre wear.



Toe-in

Toe is the angle between the longitudinal axis of the vehicle and the wheel centre plane. Toe-in means the front part of the wheel is turned inwards towards the longitudinal axis of the vehicle – ie the distance between the front of the tyres is less than the distance at the rear. During driving, the rolling resistance of the tyres causes the angle to be forced back to zero, thereby ensuring stable straight-ahead driving. Without toe-in, the wheels would attempt to run outwards.



CAMBER AND TOE-IN – FEATURES AND BENEFITS

- › positive camber adjustment provides maximum road contact of the tyres of the laden vehicle, optimum tyre use and avoidance of uneven premature tyre wear
- › precise toe-in offers stable straight-ahead driving
- › low running costs and more driving safety



Lifting even heavy loads with ease.

BPW rigid axles are the strong backbone of your trailer. They are tough, extremely hard working and, luckily enough, they are lightweight. This means: free ride for more efficiency.

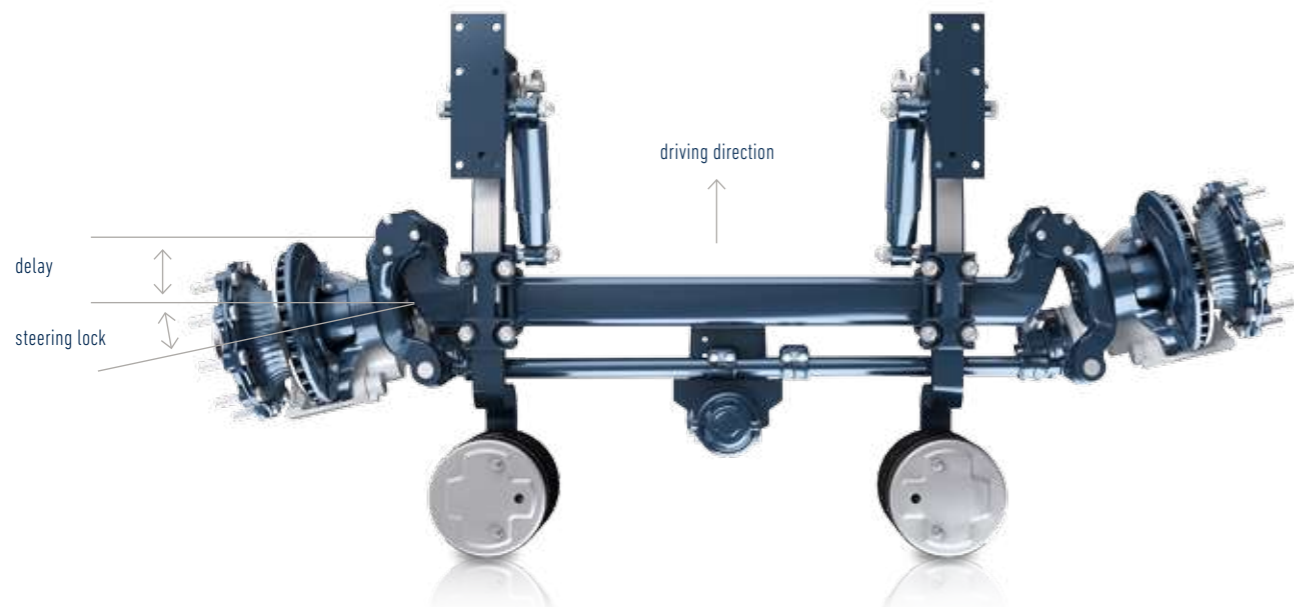
Short description of functioning: The axle stub of the axle beam houses the wheel bearings and thus the hub on which the wheel is mounted via the wheel bolts. Depending on the type of brake, the brake disc or the brake drum is connected with the hub. The brake support is welded with the axle beam and forms the connection with the brake. For disc-braked axles, the brake caliper is bolted here, for drum-braked axles it takes up the brake shoes. The axle suspension connects axle and spring. Wheels, axle and spring form the running gear and are installed at the vehicle frame of the trailer or the semi-trailer.

The most important feature of the rigid axle is the connection of both axle sides by means of a one-piece axle beam: a change of position of the angle of a wheel, e.g. in case of one-sided spring loading, is also imposed on the other wheel. This also applies for camber and track angle changes.

The axle transfers static, dynamic and vertical wheel loads acting upon the wheels. Besides, vertical wheel loads acting in driving direction (e.g. resulting from braking manoeuvres) as well as longitudinal and vertical forces from cornering arise.

BPW RIGID AXLES – PROPERTIES AND VALUES

- › for axle loads up to 20 t
- › designs with air or mechanic suspension
- › designs with disc or drum brake
- › with (mounted) BPW brake cylinders
- › wheels with or without offset
- › single or dual tyres
- › wheel sizes from 12" to 24"
- › stud- or hub centering
- › for disc wheels (steel or aluminium) or multiple wheels
- › ABS retrofit possible
- › all axles perfectly protected against corrosion even at inaccessible places like hollow spaces by means of KTL_{ZN} surface treatment
- › BPW Axles and suspensions are heat resistant according to NATO regulations



Thoughtful steering.

The BPW self-steering axle LL.

The self-steering axle LL is pure cutting-edge technology – especially when it comes to effectiveness. It shows its strengths especially in narrow transport infrastructure for delivery and distribution. Thanks to an improved manoeuvrability in corners as well as in confined spaces, you will benefit from a vehicle which is easy to handle. Tyre wear is reduced and less fuel consumption is achieved. With a service life of one million kilometres this means saving up to 10,000 litres and more than 40 wheels per vehicle.

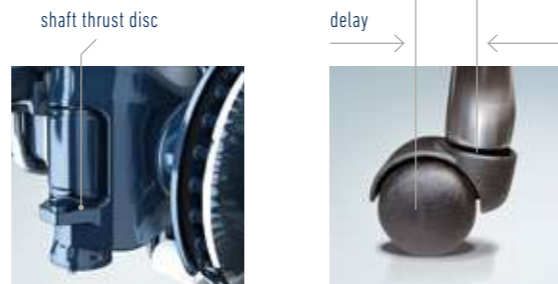
Figure this out for your entire vehicle fleet!

Functioning of the self-steering axle

With a BPW steering axle the trailer corners better and follows the same path as the tractor unit. Forces acting on the tyres when cornering are distributed more evenly. As a result it has been shown that the life of the tyre on the front axle increases by up to 50% while that of the rear axle can increase by as much as 70%. BPW's LL self-steering axle is also available with a 27 degree of steer, ideal for longer trailers. To simplify installation, BPW has developed a double-cranked trailing arm. This allows the trailer builder to fit a BPW self-steering axle to a standard chassis without the need to reduce the chassis width in the area of the steer axle.

BPW self-steering axles operate without the need for power assisted stabilisers. They are automatically controlled according to the load being carried. Because the design of the self-steering axle is so simple, the number of individual components required is low. This saves weight and reduces installation and maintenance costs. The principle of the BPW self-steering axle is described by the abbreviation LL – it stands for load dependent steering.

The axle stub is connected to the axle beam via a specially designed pressure bearing. When travelling in a straight line the weight of the load acting on the pressure bearing keeps the wheels in the straight ahead position.

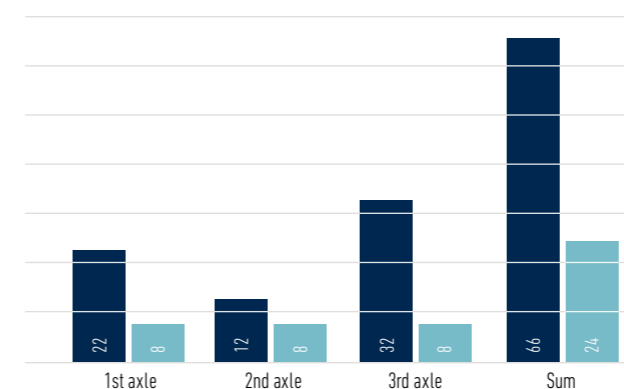


The caster functions as in a swivel chair

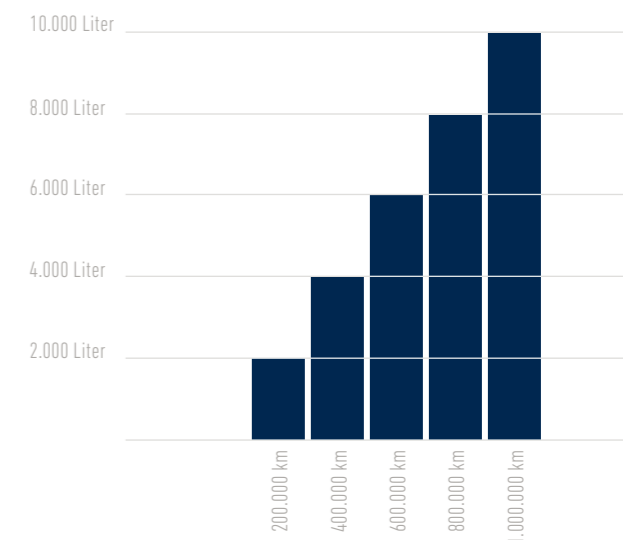
When the trailer enters a bend, side forces acting on the tyres cause the wheels to turn slightly and the flanks of the pressure bearing to slide over each other allowing the wheels to move from the straight ahead position and create a steering effect. The degree of steering is dependent on the axle load and the 'tightness' of the bend. Both wheels are connected via a tie-bar to ensure the same degree of steer on each wheel.



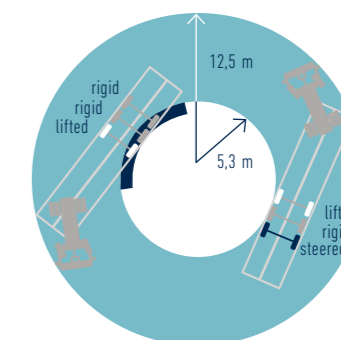
service life of wheels in km during distribution transport



Tyre consumption on a 3-axle vehicle over 1 million km, used in distribution haulage



fuel saving by means of BPW self-steering axle depending on the service life - example showing distribution transport



Compliance with the turning circle is guaranteed with BPW self-steering axles – with lifted first axle.

SELF-STEERING AXLE:

- › for axle loads of 6,4 t to 14 t
- › design with disc and drum brake
- › easy-going self-steering axle
- › steering stabilisation totally depending on the load
- › considerably reduced and even wear of wheels saves more than 40 wheels with a service life of one million km
- › considerably reduced fuel consumption: up to 10,000 litres with one million km service life
- › improved manoeuvrability
- › protection of carriage, frame and road
- › tracking when changing lanes
- › particularly recommended for the 44 t regulation*
- › simplified installation thanks to optional 3-D-trailing arms, no retracted frame required
- › permitted ratio of rigid axles and steering axles: 1:1 (even with 1st axle lifted in case of a six-wheeler)
- › higher resale value
- › KTL_{Zn}- Coating

*44-t regulation: according to § 34 (6) of the German StVZO: A semi-trailer transporting an ISO Container (...) must not exceed 44 t gross weight.



lighting- and cable systems

- › tail lights
- › stand lamps
- › indicator lamps
- › position lamps

www.transport-technik.dk



plastics technology

- › mudguard
- › air bag pistons
- › airtanks

www.hbn.dk



locking and truck technology

- › strap lift systems
- › rear portals
- › pillars
- › locks

www.hestal.de



telematics

- › real-time monitoring
- › temperature supervision
- › wheel pressure control
- › integration of existing Telematics

www.idemtelematics.com



The BPW Group.

The BPW Group with more than 50 subsidiaries worldwide is your partner for economical transport. Our engineering and consulting support you in the selection and design process of your vehicles.

And we are always close to you.

YOUR ADVANTAGES:

- › individual consulting for vehicle design
- › sophisticated design: BPW – we think transport
- › tailor-made logistics concepts to support your manufacturing process

The more intelligent the running gear, the more efficient is your driving.

A comprehensive product portfolio opens up a wide range of applications. This is the reason why BPW is the perfect system partner for vehicle manufacturers. We know. The utmost economic viability is achieved if all processes from the development of the vehicle concepts to the manufacture of the trailer are carried out in close cooperation with all suppliers. We therefore offer large-scale engineering services, the ECO Plus running gear, user-friendly telematics as well as intelligent additional components from the BPW Group.

We offer you a convincing integrated system:

Today many of our vehicle components are equipped with sensors so that important information about the vehicle is available at any time. This information is processed by means of our complete telematics solution and is placed at the disposal of the vehicle operator. Active alarms **increase the safety of the transport** and clear analyses contribute their share to an **efficient fleet management**.

System of partnership with manufacturers.

Intelligent running gear systems

The demands you have regarding a running gear are both **individual and complex**. The BPW running gear perfectly unites **cutting-edge technologies and first-class components** – tailored to your requirements.

- › running gear systems
- › spring systems
- › brake technologies incl. brake cylinders
- › complete telematics for truck and trailer

Intelligent trailer components

Perfectly meeting your requirements: **the BPW trailer components**. From robust support devices of steel, lightweight aluminium wheel **ECO Wheel** to innovative plastic components like the **ECO Air** receivers.

- › strap lifting systems, rear portals, pillars, locks
- › trailer connecting equipment, supporting equipment, swing bearings
- › mudguards, air spring pistons, air tanks
- › lighting systems
- › ECO Wheel



Telematics for truck and trailer: more safety and cost efficiency for transportation.

We are your international mobility partner supporting you best in your transport business. Our reliable products, detailed technical documentation, manuals and worldwide reliably available spare parts supply speak for themselves. Our subsidiaries in 43 countries are at your disposal for optimal service. Our complete telematics solution for truck and trailer even goes beyond. For an optimisation of your fleet management we place the necessary data at your disposal exactly the way you require it: detailed, clear and adapted to your requirements. Irrespective of which vehicles you are using.

YOUR ADVANTAGES:

- › investment security
(5+3 years guarantee with unlimited mileage)
- › 24 hours mobile service
- › worldwide competent network (3,200 service locations)
- › low operational costs
(worldwide available original spare parts)
- › efficient fleet management (truck and trailer telematics)

3,200 service locations worldwide

Scheduled maintenance planning and quick reaction times with our 24-hours service. Our service network protects your mobility. There is always one service partner on the move to you.

Full vehicle control

The solution for all vehicle types: thanks to our telematics solution you are always kept informed about your vehicles. We send you active alarms so that you are able to intervene if the limits defined by you are exceeded. The benefit: you are safely on the move and operating costs are reduced.

All the information you need

For you it is all about transport. We give you all the relevant information you need at a glance. For example: location, route, EBS-Data, door activity, wheel pressure and cooling temperature.

First complete telematics solution for truck and trailer

BPW is the first manufacturer to offer a complete telematics solution for the entire articulated vehicle: our complete telematics solution gathers all information of truck and trailer aiming at utmost transparency and efficiency.

Efficient fleet management

You know which data you need. We deliver the evaluations. Clearly visualised in real time. Moreover: active alarms sent as an e-mail, SMS or by means of the mobile app. Reliable. Day and night.



Small box,
big effect



Our service. Your advantage.

We would be glad to supply you with our running gear technologies and trailer electronics. However, there is a lot more we have to offer you. Here's an overview of our full service package. For further information please refer to our website www.bpw.de.



BPW service on the move:
the app „BPW mobile“

Download it now free of charge:
www.bpw.de/app

Engineering and Consulting

As a vehicle manufacturer you can make use of our construction know-how and individual engineering services (e.g. with FEM, braking or tilting stability calculations). Apart from the advice given by our specialists, we further support you upon request with individual logistics concepts.

You will find your personal contact at:
www.bpw.de/en/support

Partner-Service-Package

Benefit from a special maintenance contract offering tailor-made conditions for new semi-trailers and trailers with drum or disc brake BPW running gear systems.

Your advantage: you are free to determine the scope and have full cost control and transparency.

www.bpw.de/en/support/partner-service-package

Workshop and Fleet Support

The worldwide BPW service network and full spare parts availability as well as personal support and advice are ensured by means of our international mobility partnership, **365 days a year, 24 hours a day**.
For immediate service: BPW service-hotline +49 (0) 2262 78-0

Trainings and Seminars

By professionals for professionals - with certificate. The BPW seminar programme offers an extensive range aimed at vehicle manufacturers, freight forwarders, workshops and commercial partners.

We give practical support and have numerous tips for you:
www.bpw.de/en/support/seminars

Logistics Concepts

Increased availability, less effort, more efficiency – this is what the BPW Logistics concept offers you. Your personal contact and tailor-made solutions according to your individual requirements. The basis is: the BPW logistics centre delivering your components punctually and ready to use.

www.bpw.de/en/support/logistical-concepts

Technical documentation

Whether for assembly, maintenance or ordering spare parts - any BPW documentation is structured with regard to contents, target group and media and is indispensable for both vehicle manufacturers and users. BPW user information receives the same particular attention as do BPW products - **our commitment to quality does not simply end with the product itself.**

www.bpw.de/en/support/downloads/general-download-area.html

BPW 24-hours Breakdown Service Hotline

Be assured with BPW technologies. In case of a breakdown, transporters of **39 European countries** may call the free **BPW 24-hours Breakdown Service Hotline**. Every caller will be supported in his own language. More than 3,200 BPW service locations and the Europe-wide breakdown service network comprising 4,500 support bases help in case of emergency.

Immediate help: 00800 780 780 00 and
www.bpw.de/en/support/customer-service

Documented manufacture

Our certified manufacture ensures BPW running gear systems components suit perfectly and is of a consistent high quality. All relevant manufacturing and assembly processes as well as quality and functional tests are continuously being documented - thus offering our customers **a maximum of transparency and safety.**

www.bpw.de/en/company/competences

The BPW Group:



we think transport

www.united.de BPW Axle-systems 15891401 e

