FLENDER COUPLINGS

FIRST-CLASS CONNECTIONS

The Flender range of rail couplings ensures smooth travel for all rail vehicles.

flender.com

FLENDER

RELIABLE SERVICE

The Flender range of couplings for rail vehicles and our team's expertise will send your trains safely on their way. Have a good journey.

Couplings for rail vehicles have to fulfill numerous requirements during everyday use, sometimes in extreme conditions. With this in mind, Flender focuses on reliability and safety during both the design and the production of rail couplings and regularly subjects them to tests.

Years on the rails

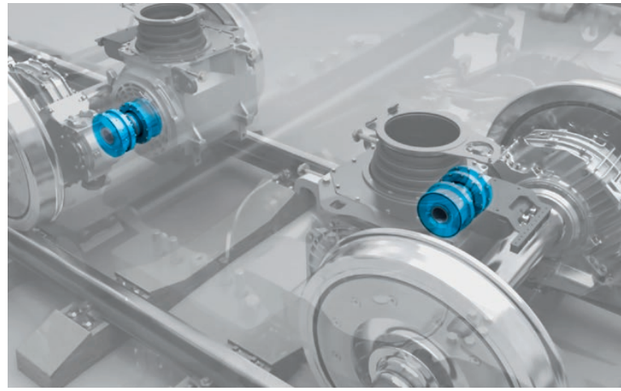
With over a hundred years of experience in manufacturing couplings and gear units, we can offer the expertise that your rail vehicle deserves. Our quality assurance measures ensure consistent product features. Our team will send you comfortably on your way with the right coupling solution for your drive system and provide you with guidance and advice even during maintenance and servicing work.

As traction drive specialists, we aim to meet all customer requirements and our range of couplings for rail vehicles is therefore based on a holistic approach.

The full range

The Flender product range comprises couplings for partially and fully suspended drives which can be mounted between motor and gear unit or gear unit and wheel set shaft. Axle loads of up to 32 t, motor speeds of over 6,000 rpm and driving speeds of more than 400 km/h create high forces, which our couplings are designed to withstand.

We have tested all model series under extreme conditions so as to guarantee maximum reliability. We offer you a broad range of products in all necessary sizes and designs as standard.



FLENDER RAIL COUPLINGS OFFER:

- High quality
- 100% component traceability
- Great depth within an extensive product range
- Component compatibility with Flender gear units for rail vehicles
- Low maintenance costs and a high level of serviceability

ON THE MOVE FOR 36 YEARS

Flender ZBG for high-speed and underground trains – we use the world's best coupling to make track changes simple.

Millions of kilometers of track, icy Siberian temperatures, extreme heat, maximum starting torques and revolution speeds, extremely dusty conditions, axial or radial jolts at high speeds – whatever route you use it on, the grease-lubricated Flender ZBG is always in its element.

A life spent traveling

Gear couplings from the Flender ZBG series make the best possible contribution to safeguarding the maximum availability of your rail vehicle – whether it is an underground train or a high-speed train. Comprehensive test runs involving continuous operation and interpolated empirical values indicate a 99.9% chance of a 36-year service life.

First-class service at a standard price

We help you to reduce costs as the long maintenance intervals of Flender ZBG gear couplings keep their life cycle costs to a minimum. The components are maintenance-free for up to three million kilometers of travel or a running time of up to 12 years. We also get your vehicle back on the rails quicker, as the main Flender ZBG inspection can be combined with checks on both the motor and the gear unit; these no longer have to be inspected separately. Thanks to the integrated grease nipple, relubrication takes less than two minutes.

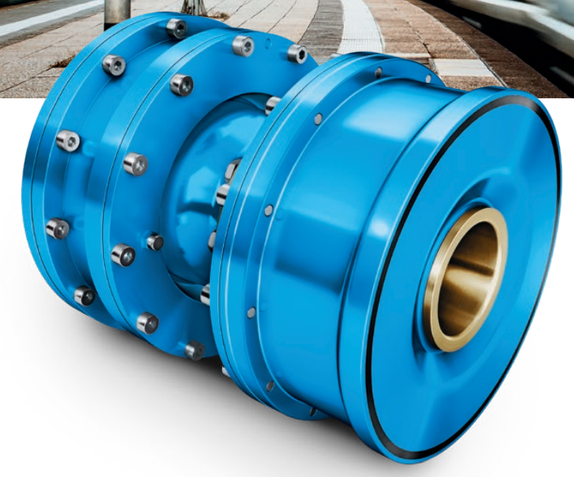
Endurance testing

More than 80,000 couplings supplied, more than 2.5 million years of cumulative operating time. We have tested and monitored the Flender ZBG gear coupling over many years of use. Not once have we found a technical fault with the gear pairings. Even with high mileage and an average of eight to ten years without a grease change, the low-wear Flender ZBG only has a minimal amount of surface burnishing.

Sealed grease chambers also prevent the lubricant from escaping. The potential fire risk that exists with conventional couplings is therefore eliminated.

Outstanding performance at maximum capacity

The gear couplings used on high-speed trains or electric multiple units (EMUs) often nearly reach their physical load limits. Following years of use in real-life conditions, we can confirm that the Flender ZBG gear couplings offer an outstanding performance and the utmost in safety. The approach journeys, switch crossings and high-speed journeys simulated within the scope of performance tests have shown that this particular coupling has clear load reserves. Axial jolts are absorbed by damping end stops; radial jolts are compensated for by the constant gap between hinge points.



This means there can be no contact between metal components within the coupling. The Flender ZBG coupling is also weight-optimized. Heavy parts are directly attached to the motor or gear unit shafts; the coupling's inner components compensate for any operational misalignments. The patented slip hub protects the drive system. Short-circuit torques of the motor are restricted with a tolerance of +/– 15%.

Impressive in extreme conditions

The availability of your rail vehicle must remain as high as possible throughout the year. The Flender ZBG functions equally perfectly over a huge temperature range of +60 °C to –60 °C. The Flender ZBG itself runs at a low temperature – even at the maximum starting torque, with major misalignments and at high speeds. In extremely dusty conditions, you can completely rely on the optimized seal system.

ADVANTAGES OF THE FLENDER ZBG

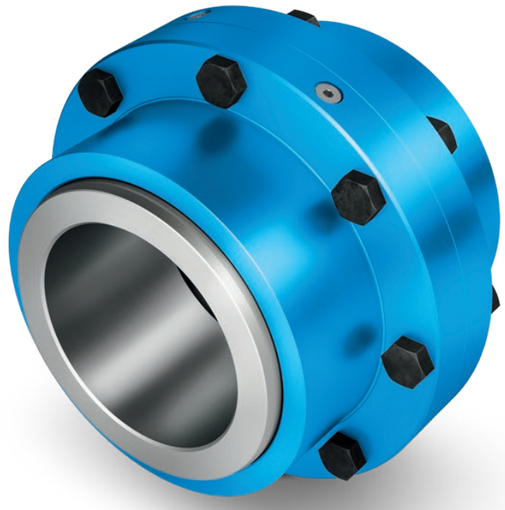
- Service life of up to 36 years
- Wear-resistant and service-friendly with very long maintenance intervals
- Main inspection combined with gear unit and motor checks
- On request, initial lubricant filling can occur on delivery
- Simple and rapid relubrication using the grease nipple
- Good emergency running properties thanks to sealed grease reservoirs
- Clear load reserves, even after extremely long running times
- Optimized seal system to prevent dust from penetrating
- Reliable running if the chassis is icy and at temperatures well below zero
- Heat-resistant, even in extreme conditions
- Slip bushing reduces stress on the drive

UNDERGROUND EXCELLENCE

Flender ZBG 177 and 198 rail couplings are used in underground trains. The reason: because they start moving quickly, have short braking distances and stop every few minutes, underground trains are subject to extreme loads. In addition, the cars are connected very closely together. Our ZBG couplings for underground trains feature robust design for short start-up and braking intervals. Like all of the couplings in the ZBG series, despite their compact structure, they compensate for misalignments.

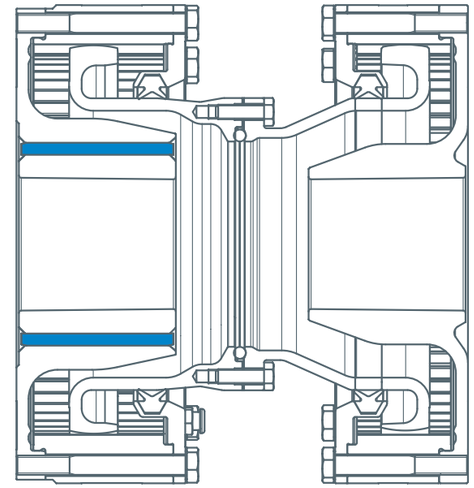
Smaller misalignments, smaller coupling – exactly the same reliability

The Flender ZBG 177 is our special coupling for drives with a wobble plate design. They are based on our proven ZAPEX design. We modified them to meet the specific demands of the rail industry. Flender ZBG 177 couplings are available with an optional slip bushing. This design is typical for underground trains in the U.S. market and that's precisely where your ZBG couplings can be manufactured. Made by the U.S. for the U.S.



Optional integrated isolation

By request, we supply ZBG couplings with electrical isolation, which prevents the transfer of leakage current between the engine and the gear unit. The isolation is integrated – so there are no additional components or interfaces. This eliminates further adjustment work as well. This way, the Flender ZBG retains all of its well-known advantages for efficient rail operation.



© Wiener Linien

2 TIMES FIRST CLASS, PLEASE.

The MBG membrane couplings impress due to their high level of concentricity and freedom from maintenance.

Flender membrane couplings from the MBG series

Flender MBG membrane couplings are two-part, torsionally rigid, all-steel couplings with excellent concentricity thanks to a special production process. Our MBG couplings are also balanced together with the motor rotor to give them outstanding balance quality. They are used to transmit torques and support the motor shaft in the gear unit.

Their membrane contour gives them axial yield. There aren't many connection screws and the motor bell housing has small inspection holes, so the coupling halves can be assembled quickly. This means that the engine and the gear unit can be connected without having to disengage the interference fits. Their high concentricity and excellent balance quality are permanently retained thanks to the optimum centering of the gear teeth on the two coupling halves. Flender MBG drive train couplings are maintenance-free and are used for standard and low-floor streetcars.

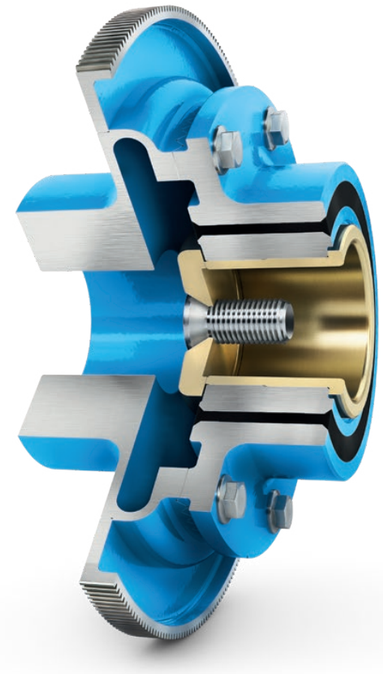
Flender MBG-ISO membrane couplings

The steel membrane couplings consist of two coupling halves that are connected by means of optimized self-centering gear teeth. The torque is thus transmitted positively via the gear teeth. Due to optimized manufacturing, the membrane couplings have a very high level of concentricity, which is not impaired during reassembly.

The couplings are generally balanced together with the rotor of the motor to ensure that potential additional influences during assembly are kept as low as possible.

Slip hubs, speed sensors and also electric insulation of the coupling are available as additional options. The insulation is integrated into the coupling half on the gear unit side without additional components. The assembly process at the customer can be performed as for standard membrane couplings.

It is also possible to retrofit existing couplings with an electric earthing device.



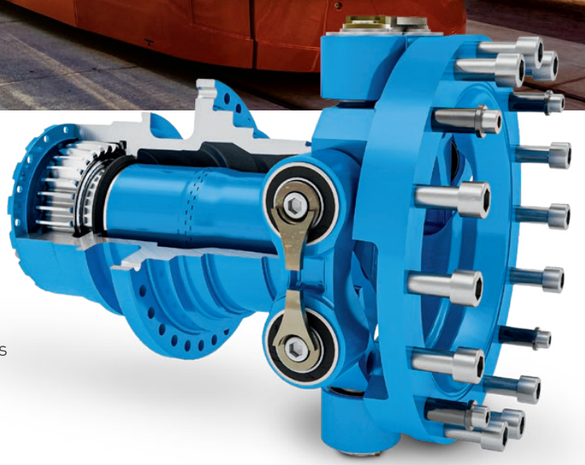
YOUR 24/7 TRAVEL CARD

Valid for years in any country around the world: the available quality of the Flender rail coupling series GKG, LBK and MBG for locomotives, streetcars and many other rail vehicles.

The connecting rod coupling LBK 330 and the membrane coupling MBG 200 have been successfully used with Cityrunner streetcars.

Flender connecting rod couplings from the LBK series

Flender LBK connecting rod couplings have radially arranged rubber elements, which make it possible to radially replace the elastic elements beneath the vehicle. The connecting rod couplings have a split spacer and can be ultra-compactly connected to the gear unit. They are driven using self-centering cyclo-palloid gear teeth in the "axle connection" version and flanged to the drive wheel in the "wheel connection" version. They are used for low-floor streetcars.

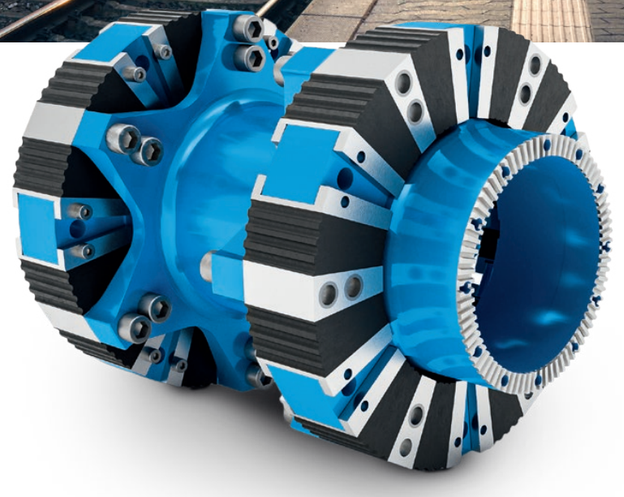


Beneficial gearing: LBKZ

By request we also supply Flender LBK connecting rod couplings as an integrated solution – called LBKZ. In this case, the connecting rod joint plane on the gear unit side is replaced with a geared joint. This gearing is integrated into the gear unit hollow shaft. Flender also supplies the hollow shaft if needed.

Your benefits: you save space and weight. The gear unit can be executed in a very narrow design. Grease nipples are used for relubrication and the grease is replaced at regular gear unit servicing intervals.

Flender rail couplings create reliable connections for locomotives and street-cars. With state-of-the-art technology and high-precision workmanship, they have been successfully used in thousands of vehicles around the world. Our standard range contains solutions for most drive train tasks; customized products are also available in specific cases.



A fixed connection with complete flexibility

Flender KPK couplings are rubber wedge couplings. They are double-jointed, flexible output couplings. They compensate for primary suspension misalignments in the bogie that are generated when there is full torque transmission between the gear unit and the powered wheel set shaft. The flexible elements of KPK couplings are positioned radially. This allows radial assembly and disassembly of the flexible elements as well.

With a long service life of up to one million kilometers, they meet the requirements for demanding rail operations.

Flender cardan couplings from the GKG series

Flender GKG cardan couplings are elastic, double-jointed output couplings used to compensate for primary suspension misalignments in the bogie with full torque transmission between the gear unit and the powered wheel set shaft. The coupling parts can be individually installed on the gear unit and wheel set shaft. By screwing the brackets onto the spherical bearing pins, the coupling can be installed simply using standard tools. The spacer automatically centers itself.

The self-calibrated spherical bearings come preinstalled into the coupling parts. The spherical rubber elements are protected and have a long service life of up to one million kilometers of vehicle travel. They permit very large shaft displacements and allow major misalignments between the axle and the gear unit. The restoring forces that occur here are also very low. The fields of application are street-cars and locomotives.

WITHOUT ANY DELAYS.

The Flender ARV all-steel multi-disk coupling can compensate for large misalignments and can be assembled and disassembled with very little effort.

The all-steel multi-disk coupling is a torsionally rigid coupling that can compensate for large misalignments. In general, the coupling is compactly connected to the gear unit via a hollow-shaft connection and gear teeth. The motor-side coupling half is connected to the motor shaft via an oil pressure interference fit. This ensures rapid assembly and disassembly.

An optimized conical bolt connection developed in-house is used to connect the disk packs to the respective coupling components. The components are assembled by means of both positive and nonpositive connections.

The tightening torques are low due to the optimized design of the bolted connection. In addition, due to the special form of the polygonal elements, an additional anti-rotation mechanism is not required during assembly, which also keeps the assembly effort low. Another positive effect here is the protection of the disks at the outer diameter against possible damage from stones or similar hazards.

The couplings are available with an optional slip bushing and electrical isolation. In general, the assembly effort is very low, as the main coupling components are delivered ready for installation ex-works.

ADVANTAGES OF THE FLENDER ARV

- Form-closed bolt connection, low tightening torque
- Polygonal disk creates a bending line in order to compensate for the large misalignments
- Polygonal disk with impact protection during use
- Simple alignment during assembly

COMPREHENSIVE RANGE OF SERVICES

Avoiding vehicle downtime is crucial for transport companies. By ensuring short delivery times on spares and wearing parts, we guarantee the maximum availability of your vehicles.

Our services include condition-based servicing, condition monitoring, replacement and repair services. These are available 24 hours a day, 7 days a week, 365 days a year – all around the world.

WE **MOVE** the WORLD

Flender International GmbH
Alfred-Flender-Straße 77
46395 Bocholt
Germany

Article no.: FLEX-B10086-01-7600
Printed in Germany
Dispo 27904
WÜ BR 12201.0

flender.com