

Made for Motion



KTR for Railway and Traffic Engineering

Drive Technology
Hydraulic Components

www.ktr.com

On track for success with KTR.

Companies in the railway and transport engineering sector are on the fast track to the future if they acquire cost-saving, installation-friendly, space-saving components from KTR. It is the only effective way to withstand the price pressure in the railway transportation sector. KTR offers such solutions based on its 35 years of experience in railway engineering. We will put the right idea on track for you – no matter whether you are developing standard projects or making application-specific adjustments to components.

We are very successful in this field, as a quick glance at the centres of German cities will confirm: half of all trams

on German streets feature ROTEX® couplings, the compact design which is best suited to modern bogies in low-floor trains.

KTR couplings are also a driving force outside cities, where they reliably keep things moving in rack railways, diesel locomotives, trolley buses, track-laying and cleaning machinery, signal systems and electro-hydraulic points equipment.





Keep moving forward with KTR.

For over 50 years, KTR has been a driving force in developing and manufacturing high-quality drive technology, braking systems, cooling systems and hydraulic components. We are a dependable partner for any company or organisation which needs durable, cost-efficient drives for railway and transport engineering.

It all began with an extremely successful development in 1959: the time-tested curved tooth coupling was combined with plastic and began its advance through the world's drives as the maintenance-free BoWex®. A short time later our engineers developed the ROTEX® jaw coupling, which was soon fitted to its first rail vehicles. This development was a game-changer for ROTEX®. Today, KTR offers a virtually unlimited product range of well over 20,000 different couplings and other drive groups.

If you are still unable to find what you are looking for, simply let us know your specifications. We see ourselves not only as a supplier, but also as a problem solver. This means we find the optimum, most cost-effective solutions for all customer applications. This brings us back to the figure of 20,000, as this is the number of newly developed products and product versions which we produce on behalf of clients every year. The coupling which you need for your railway and transport technology is sure to be among them.

KTR delivers quality even before the product actually exists. If you wish, our sales staff and application engineers will assist you right from the planning stage. In addition, a wealth of information about our products, a CAD library, assembly instructions and much more are freely available at www.KTR.com.

It is also worth visiting our website to view standard products for railway and transport engineering. Simply use the online calculation program to determine which component is right for your application and then order it for the desired date. Once the items are on their way, you are still in control of everything: the track-and-trace system allows you to check the delivery status at any time.





We put movement on the right track.

Every rail vehicle has a different drive system, with each drive requiring its own special coupling. Fortunately, KTR products can be specifically tailored to your specific traction system. We have been consistently delivering new ideas and food for thought in railway engineering for 35 years. These ideas help to transform conventional mechanical systems into cutting-edge technology.

A mobile world

Personal mobility continues to increase in leaps and bounds as more and more people taking the opportunity to travel. As a result, increasingly more efficient railway transport concepts are required to handle the steady growth in local and long-distance traffic. In the face of global competition, all providers seek to supply optimum quality at a low cost.

This is where KTR plays its part. As a supplier of ideas and products, KTR helps to ensure that rail vehicles operate successfully for the long term and at a low cost. Our shaft coupling systems, for example, are reliable, installation-friendly, space-saving solutions and increase a drive system's service life while improving comfort for passengers.

The fact that manufacturers consistently decide on KTR couplings, no matter what their drive type is, shows how effective KTR couplings are for manufacturers.

- For fully spring-mounted drives with dual-mount engines: the axial plug-in ROTEX®.
- For single-mount engines: the innovative, torsionally stiff steel membrane coupling RADEX®-MK.
- For non-spring-mounted quill drives: the torsionally rigid, backlash-free RIGIFLEX®.
- In case of emergency: the RIGIFLEX® overload protection system, which can be fitted to all traction couplings and protects adjacent components.

Drive components may be relatively small, but their quality determines the quality of the overall system. Thus, the more complex an application is, the more important it is to consider the drive system as a whole and include all components from the outset of the design process.



If you have any special requirements in this respect, do not hesitate to contact us. We are happy to help. We generally manufacture our railway and transport engineering products for use-specific requirements. Customised KTR couplings provide exceptional performance wherever they are used – in tram traction drives, light railways, underground railways, railcars or rail engineering vehicles. What's more, our components also keep many auxiliary drives moving, such as those in pantographs, at points, in tilting systems or in safety systems on doors and steps.

We do not keep the experience that we gain from all these projects to ourselves. We are happy to pass knowledge on to our customers since spin-off effects often lead to new, interesting opportunities. Try us and see.

KTR couplings ensure you go far, even on local transport.

Almost nothing would work in Germany's local transport networks without ROTEX®. Half of all German trams operate with the successful ROTEX® coupling. The same applies to the underground. Installed a million times over, this coupling reliably keeps trains moving - as a quick glance at rapid transit systems across the world will confirm. If you step onto an underground train in Toronto or Mexico City, you can be sure that KTR couplings help provide the power to take you to your destination swiftly and without delay.

One good reason why the ROTEX® is used in so many railways is its compact design. This ensures it can be effortlessly installed, even in modern bogies designed for low-floor, barrier-free access. But that is not the only advantage, not by far. The ROTEX® also offers the following:

- fast, blind, axial plug-in installation
- compensation for shaft misalignment
- vibration damping
- access for visual inspection for wear, thus reducing maintenance costs
- mileage significantly more than 1,000,000 kilometres
- the option to integrate overload protection.

Or to put it in a nutshell: the ROTEX® ensures drive systems are quiet, durable and reliable, just as we designed them. This is because its gear ring is made of a material that we have specially developed for rail engineering. The whole drive system functions without a problem for the long term thanks to its perfect fit.

Geneva, Switzerland



Bern, Switzerland



Top performance in a compact space.

RADEX®-MK – always perfectly matched

We always put our customers first. Naturally, this maxim also applies to rail services. Drive systems need to become increasingly more compact to ensure that passengers enjoy as much space as possible. This is achieved by installing more single-mount engines, where a torsionally rigid coupling transmits the applied force from the rotor onto the mount in first gear. This is a challenging task, for which we have a highly adaptable solution: the compact membrane coupling RADEX®-MK, which we tailor precisely to each individual engine and gear system. Made of highly resistant spring steel, the membranes compensate for axial misalignment while their flexibility and manufacturing accuracy ensure smooth running and wear-free operation.

The RUFLEX® – peak performance with peak loads

A great combination: the RADEX®-MK can be easily combined with a RUFLEX® overload unit. This reliable pair protects the powertrain from torque impulses, even with frequent peak loads. When the precise, factory-set overload moment is reached, the power transmission is automatically interrupted. This highly compact unit saves on both space and costs.



The RUFLEX® also provides optimum safety in combination with a ROTEX® - an ideal mix for rack railways and diesel-electric locomotives. Integrated into the coupling hub, this slide unit protects against peaks in torque, thus increasing the service life of adjacent components such as gear teeth. Other benefits include the compact, build-in dimensions and simple, cost-efficient, plug-in installation. RUFLEX® also features a special friction lining. This lining allows significantly more frequent sliding with greater repetition rates for slide moments without causing the damaging stick-slip effect.

The RIGIFLEX® – optimum protection against shaft misalignment

Some locomotives, local trains and trams are driven by quill drives. In such cases, you need a torsionally stiff, backlash-free shaft connection, such as the maintenance-free steel lamina coupling RIGIFLEX®. Customised to requirements, this double-cardan coupling never fails to impress as a hollow drive shaft link between the engine and gears offering optimum shift capability. The RUFLEX® slide hub can also prevent adverse circumstances in the event of overload.

The KTR insulation coupling to prevent current flow

KTR couplings are also the first choice when buses need to incorporate electricity to operate. Powered by electric motors using electricity from overhead wires, trolley buses benefit from KTR insulation couplings. These couplings meet two key requirements: they reliably transmit the high torque while also dependably blocking electric currents, thus protecting gears against damage from electricity.



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Auxiliary drives are no minor matter.

KTR couplings not only ensure that trains can pick up speed, whether they are goods trains, passenger trains, excursion specials or express trains. They also help to protect people and machinery as part of secondary drives for door and braking systems.

An automatic door system is practical and convenient in railway vehicles. However, these qualities are not the prime need. Passenger safety is the number-one priority. As a result, the reliability of all components is necessarily high since such a door drive must be highly resistant and able to endure a great deal: heat, cold, damp, impact and vibrations. Furthermore, it must also withstand constant opening and closing. Swing doors, sliding doors and sliding plug doors are put to the test on a daily basis. Drives are subject to extremely heavy wear, unless, of course, they are protected by a perfectly matched shaft coupling. We offer not one, but two protective power transmitters for such applications: the BoWex® and the ROTEX®.

The technology may work perfectly, but what happens if passengers do not use doors correctly? You and your passengers can rely on the time-tested mechanical KTR overload protection systems to provide anti-jam protection. These systems stop door operation the moment that the door reaches overload. The backlash-free overload system SYNTEX®, or the slide hub RUFLEX®, is ideal for such incidents where complex safety locking systems and automatic boarding solutions require an optimum protection system which also provides a significantly longer working life for components.



Expertise in compressor technology

What do pneumatic doors, brakes and pantographs have in common? They all rely on a compressor to operate. Such compressors need to be capable of almost anything. They should be highly effective, yet take up little space. They need to be reliable and durable in operation, but must also be quiet when running. If these seemingly conflicting requirements are to be met, each individual compressor component needs to play its part, especially the couplings.

The elastic ROTEX[®], with its integrated fan, and the RADEX[®]-N lamina coupling generate considerable pressure in brake compressors. For instance, the ROTEX[®] is fitted to the fail-safe system in Germany's ICE high-speed trains where the compressor produces the required operating pressure to release the brake callipers. The fan removes the heat produced in the processor as the brakes are applied. Should, for example, the compressor fail due to a power outage, the brake linings are automatically pressed onto the brake discs, even at speeds over 300 km/h. RADEX[®]-N and our TOOLFLEX[®] couplings can be used as alternatives when extreme temperature fluctuations are especially demanding on the material properties in cases where the compressor is fitted to the roof.

Compressors in railway vehicles work almost non-stop – they're constantly in operation, constantly in motion. For this reason, noise emission must be taken into account at the design stage. KTR couplings provide optimum performance in terms of noise reduction. In fact, they even produce a silencing effect when they manage to fully reduce vibrations – in other words, when they rotate far away from resonance points.

Whether you are planning to optimise or completely redesign a compressed air system, we can assist you in all aspects thanks to our years of experience, optimum product quality and impeccable product adaptation. KTR products play a key role if you wish to provide greater performance and greater reliability in all drive systems.



KTR keeps everything on the right track.

By road or rail

It is not only trains and trams which travel along tracks. Many special vehicles used to inspect, maintain, repair and clean railway structures and systems also drive along the rails at times. This means that such vehicles require two different drive systems: one for travelling along roads and one for rails. KTR couplings provide an outstanding link between these two requirements.

The BoWex® FLE-PA flange coupling is commonly used in overhead catenary wire maintenance road rail vehicles, where they interlink the combustion engine and the axial piston pump. Often these couplings also feature in road rail excavators fitted with a friction wheel traction system to override safety systems.

The ROTEX® ZR and RADEX®-N help to propel tunnel rescue and fire service vehicles with a hub motor providing traction. These couplings can also be combined with CLAMPEX® clamping sets in very large vehicles.

With its flexibly mounted, detachable intermediate shaft, the double-cardan coupling ROTEX® ZR is suitable for smaller vehicles, especially for bridging larger shaft gaps and counteracting significant radial misalignments. Furthermore, the dual arrangement of gear rings ensures excellent damping properties.

CLAMPEX® clamping elements are also used on test benches for locomotive gears. The frictionally engaged shaft-hub connection offers clear advantages compared to a form-fit feather key connection: the friction fit ensures a precise, wear-free, material-saving shaft connection, even under high alternating loads.





Special rail vehicles

KTR also supplies the best connections when it comes to special vehicles which only travel on rails. Used in direct drives on rail axles, a custom-built ROTEX® model in a flange design has proven to be highly successful in vehicles such as track-laying machines.

The ROTEX® coupling also reliably propels the conveyor drive on track cleaning machinery in track maintenance and cleaning vehicles. BoWex® curved tooth couplings® are also used with combustion engines and KTR steel tanks with hydraulic systems.

DMUs (diesel multiple units) are operated in places where there are no overhead catenary wires and KTR's highly elastic couplings can be fitted to their underfloor engines. The new BoWex-ELASTIC® sizes, with their increased torques, can also transmit motion in diesel electric drives in many locomotives.

On car-carrying trains, vehicles are transported on two levels, and drives are needed when the upper level is lowered to form a ramp. ROTEX® and ROTEX® GS jaw couplings are fitted to these drives - some featuring special designs, such as those with an intermediate piece.

Movement in peripheral devices

Stationary equipment, such as points equipment, signal systems or rail yard controls, are also ideal areas of use for the ROTEX® and the ROTEX® GS.

The coupling joins the motor and pump in electro-hydraulic points systems, and the motor and the switch mechanism in mechanical systems. Electrical signals switch the points in both systems. Thanks to a long service life, our couplings reliably operate such systems for up to 20 years while maximum operating requirements are met due to the high quality, dependability and durability of our couplings. Of that you can be assured.



PRODUCT OVERVIEW FOR RAILWAY AND TRAFFIC ENGINEERING

					
Product	ROTEX®	ROTEX® GS	POLY-NORM®	RIGIFLEX®	BoWex®
Traction drives, fully spring-mounted, dual mount	■				
Traction drives, fully spring-mounted, single mount					
Traction drives, not spring-mounted, axle mount	■			■	
Door drives	■	■	■		■
Compressors	■		■		
Tilting technology	■	■			
Electro-hydraulic drives	■		■		■
Diesel-hydraulic drives					
Point controls	■	■			
Trolley buses (insulation coupling)	■				
Road rail drive	■				



BoWex® HEW
Compact

BoWex® FLE-PA
BoWex-ELASTIC®

RADEX®-N

RADEX®-MK

TOOLFLEX®

RUFLEX®
SYNTEX®

Hydraulic
components

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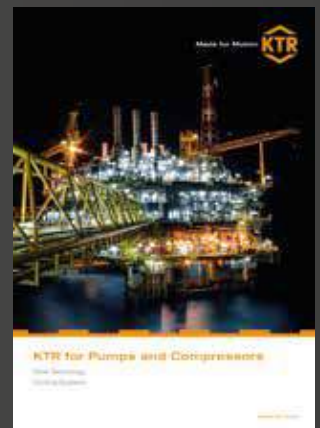
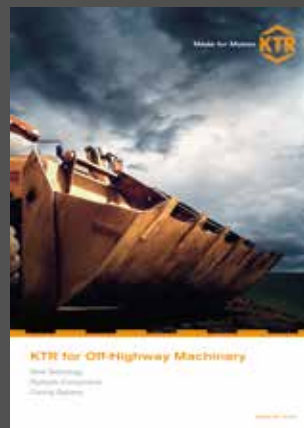
Overview of literature

The KTR product portfolio is as varied as its areas of use, whether you require the perfect power transmission system, effective brakes, space-saving cooling systems or precision hydraulics on land, water or high in the air. These catalogues and brochures offer an overview. Available at www.ktr.com

Product catalogues



Individual sector brochures





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