

Made for Motion



## **KTR for Off-Highway Machinery**

Drive Technology  
Hydraulic Components  
Cooling Systems

[www.ktr.com](http://www.ktr.com)



## KTR – a solid foundation.

Looking for a strong connection? Diesel engines on agricultural and construction machinery offer one thing above all else: extreme power. Converting this power into pure force for the job at hand requires an excellent connection that compensates for misalignments while absorbing torsional vibrations. Or, to put it another way: BoWex-ELASTIC® is needed. These heavy-duty workers offer the best properties, performing in every respect – even with an engine output of up to 2,500 kW.

One reason for this is that all KTR products are manufactured using high-strength materials, some of which have been developed from scratch and have since proven their mettle in thousands of extremely tough applications.

With KTR you can count on exceptional quality as well as a first-class service. For example, we are happy to offer professional advice when your project is still in its infancy. Additionally, a range of ingenious packages help you save time, effort and money, such as a combination of coupling and pump flange.

Give it a try – you'll see that components from KTR lay a solid foundation for success.



# Setting the world in motion – for more than half a century.

KTR is a driving force – a role it has played for more than 50 years. Over this time, we have developed and produced high-grade power transmission technology, braking and cooling systems, and hydraulic components for all industrial applications. As an innovative partner, well known for providing a reliable service, it goes without saying that we are also experts when it comes to finding cost-effective and durable power transmission systems for agricultural and construction machinery.

We are extremely proud of our company's origins too. In 1959, our engineers found an intelligent way to improve the tried-and-tested curved-tooth gear coupling by combining the design with plastic as a material. Since then, the maintenance-free BoWex® coupling has been an integral feature of power transmission systems around the world and the flange version is currently used in countless agricultural and construction machines. The success of BoWex® became the catalyst of the company's future path and today you can find more than 20,000 different couplings and other power transmission component groups in our product range.

You may think that such variety seems rather excessive. However, you should also be aware that construction and agricultural machinery in particular often requires customised components. For that reason, KTR develops some 20,000 new products and product variants every year on behalf of its clients. This figure could well include the coupling that provides perfect power transmission in your agricultural and construction machinery.

The linchpin of all our developments is our Power Transmission Center, a modern R & D facility with a multifunctional assembly hall. Within the centre our engineers subject new components to the highest demands in terms of durability and reliability, with the support of more than 25 hydraulic and electric test benches. As a result, you can be absolutely certain that a KTR coupling will do what you expect it to.

As a professional partner, we take responsibility from the outset – whenever you want. Our trained sales staff and application engineers will provide you with support right from the planning stage. You can also visit [www.ktr.com](http://www.ktr.com) to find all the relevant information about our products in addition to a CAD library, installation instructions and much more. It's definitely worth dropping by.

Our website can provide quick and straightforward assistance if you require one of our 20,000 standard products for your agricultural and construction machinery. Simply use one of the calculation programs to determine which component is right for your application, and then place your order 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.



## Used in construction – with no destruction.

Couplings for construction machines are real grafters – they have to perform difficult tasks under the toughest conditions. At the same time, they need to be versatile, flexible and maintenance-free to save time and money. It's quite a lot to wish for! And yet couplings from KTR go even further: they also help ensure a long service life for the entire power transmission system and increase operator comfort to boot!



### From digging, loading and transporting ...

Diesel engines are used on every construction site around the world. However, unlike electric motors, even the latest top-of-the-range diesel engines are rather unsophisticated and present special requirements for every coupling. For instance, the connection between the diesel engine and the hydraulic pump has to compensate for misalignments while also absorbing torsional vibrations. An example that proves how well our couplings can work is the highly flexible BoWex-ELASTIC<sup>®</sup>, which delivers a reliable performance even with engine output of up to 2,500 kW and nominal torque of up to 20,000 Nm.

The special cardan shaft version of the BoWex-ELASTIC<sup>®</sup> HEG coupling, which features an integrated frictional damper, also reduces torque peaks, which are especially common during start-up.



### ...to lifting, lowering and steering

For construction machines with an output of up to 250 kW, the flexible MONOLASTIC® flange coupling provides the perfect connection. It reliably dampens any torsional vibrations and compensates for radial and angular misalignments. Given that it is made from a vulcanised combination of rubber and plastic (apart from the hub), it is completely maintenance-free. KTR has broken new ground in this area – to the great advantage of users. After all, less maintenance means less labour and lower costs.

Even when the going gets tough on construction sites, you can rely on KTR. Our torsionally rigid couplings facilitate the resonance-free operation of hydrostatic power transmission systems and remain completely cool, even at temperatures as high as 130 degrees. As you can see, the BoWex® FLE-PA is a curved tooth coupling with many outstanding features, designed for engine output of up to around 500 kW. However, if there's need for a little more power, the same coupling exists in the BoWex® FLE-PAC version. The C at the end stands for 'carbon' – a material added to the polyamide flange for a considerably longer service life than the usual 10,000 hours.

### All the advantages in a single package

As impressive as individual components from KTR may be, they are simply in a class of their own when provided as a package – a perfectly coordinated ensemble. Take, for example, the ready-to-install packages with a BoWex® FLE-PA, BoWex® FLE-PAC or MONOLASTIC® and pump mounting flange. These often save you the usual SAE ring as well as considerable effort and expense. We offer high-quality housing packages like these for a variety of motors. Alternatively, we can customise them to meet your individual needs, delivering them to schedule as you would expect from a professional one-stop shop.





## A wide field of possible applications.

Agricultural machinery and the fields cultivated by farmers share something in common: they are both relied upon to provide a healthy yield. This means that equipment and attachments have to be increasingly powerful and cost-effective yet require less maintenance. Components from KTR offer reliable assistance when it comes to mastering this balancing act.

### **More flexibility, less wear**

Wind, weather, sand, dust, dirt, vibrations and shocks – agricultural machines (and thus each of their components) must face many challenges. For that reason, KTR offers a comprehensive range of couplings that perform their job come what may, even in extremely poor environmental conditions - they are easy to install, non-wearing and maintenance-free. Furthermore, our couplings also stand out for low mass moments of inertia and a high power density. Once fitted, these flexible couplings reliably compensate for shaft misalignments resulting from installation as well as thermal expansion. They absorb shocks and vibrations in the power transmission system and divert critical torsional vibrations away from the internal combustion engine.





### **Ready for every application**

There are many areas where savings can be made, but performance is not one of them. Thanks to the use of light, high-strength metals and reinforced plastic, KTR couplings offer savings in weight that benefit the entire system. The high-quality hub materials allow the complete range of ROTEX® elastomers to be used, including new materials with extreme temperature resistance and enhanced wear resistance. No matter what the area of application, simply let us know your requirements and we will produce the right coupling.

### **Agricultural work without limits**

All over the world, couplings from KTR demonstrate that they are in their element performing agricultural tasks wherever farmers are busy reaping, cutting, planting, harvesting or ploughing. Typical applications include self-propelled agricultural machines, such as combine harvesters, field choppers, field mowers, potato and carrot harvesters, grape harvesters, tree felling equipment and wood chopping machines, as well as attachments like swath rakes, mowers, tedders, balers, mulchers, drills, bulk fertiliser spreaders and crop protection sprayers, to name just a few. Other possible applications are agitators and screw conveyors such as those used for biogas plants.

# Perfect connections for agricultural and construction machinery.

## MONOLASTIC® couplings

For smaller equipment: a torsionally flexible connection for diesel engines and hydraulic pumps.

The MONOLASTIC® is a single-piece, flexible coupling with torque-to-bore volume ratio made from natural rubber. The hub, made from steel with a hardened internal spline, comes ready assembled, allowing the hydraulic pump to be connected axially. The coupling bores can also be supplied with all the usual SAE or DIN involute splines. Threaded connections on flywheels with special dimensions are possible.

Thanks to its elastomer component, the MONOLASTIC® coupling manages to compensate radial and angular misalignments with extremely low restoring forces. This makes it especially suitable for driving hydraulic pumps in individual or multiple arrangements.

The coupling is mounted and centred to the engine flywheel directly by the threaded connection.

## BoWex® FLE-PA couplings

For a positive connection between diesel engines and hydraulic pumps.

BoWex® FLE-PA couplings are torsionally rigid curved-tooth flange couplings made from a maintenance-free combination of plastic and steel. The BoWex® FLE-PA flange is made from GRP polyamide, a material that stands out for its high mechanical strength and dimensional stability under heat (up to 130 degrees). The coupling hub, with proven BoWex® curved teeth, is made entirely of steel.

Installation of the BoWex® FLE-PA saves an impressive amount of time, thanks in part to the compact design of the coupling hubs and their axial plug-socket connection. Additionally, the coupling is easy to install and connect axially without extra alignment tools. This ensures even more time savings if, for example, the hydraulic system has to be dismantled for maintenance.

As well as transmitting torque, the BoWex® FLE-PA also compensates for radial, angular and axial manufacturing inaccuracies.



## BoWex® FLE-PAC couplings

For greater demands: a positive connection between diesel engines and hydraulic pumps.

Increasingly, people expect hydrostatic power transmission systems in construction and agricultural machinery to provide a longer service life and greater operational flexibility. The new BoWex® FLE-PAC coupling meets both requirements with a single flange. This is indicated by the C in the product name, which stands for 'carbon' – a material we have added to strengthen the polyamide flange. This combination of materials enhances power transmission performance while considerably extending the component's lifespan.

In addition to a longer service life, the BoWex® FLE-PAC offers another key design advantage: the flange is produced as a composite part. A plastic part with a BoWex® spline toothing is injection moulded into a steel flange with special toothing. The conical design of the toothing ensures a zero-play connection with endurance strength and reliable torque transmission. Thanks to this protected composite design, even custom sizes can be produced at an affordable cost. When required, this means the coupling can be adapted for engine flywheels with special dimensions – without the need for bulky and expensive adapter solutions. All of this makes the new BoWex® FLE-PAC a compact, versatile and cost-effective power transmission component in mobile hydraulics.



Deutz engine with pump mounting flange

## BoWex-ELASTIC® couplings

Coping with power transmission systems that are vulnerable to torsional vibrations? The answer is flexible torque transmission when connecting diesel engines to pump transfer gears, generators, compressors, feed pumps, high-pressure pumps and the like.

It is a perfect union: the BoWex-ELASTIC® is highly flexible and combines the advantages of the tried-and-tested BoWex® system with the option of an axial plug assembly within the curved toothing. As a result, torsional vibrations and impact loads are absorbed and reduced. At the same time, the coupling makes it possible to compensate for misalignments – be they radial, angular or axial – with extremely low restoring forces.

The BoWex-ELASTIC® consists of a highly flexible annular rubber element made from natural rubber. The internal axial plug-in hub with external spline is the same as the basic version of the BoWex®. The BoWex-ELASTIC® is available with different levels of elastomer hardness and with mounted flanges on the engine flywheel according to SAE J620; custom dimensions are also possible for output up to 2,500 kW.

## Ready-to-install packages

Pump-mounting flanges and housings for diesel engines.

KTR supplies mounted flanges in nominal sizes SAE 6 to SAE 1 for the straightforward mounting of hydraulic pumps to diesel engines. These flanges are made from steel or cast material, and they are compatible with hydraulic pumps featuring flange connections to SAE A, B, C, D or E, with two or four holes.

KTR also supplies a range of pump-mounting housings. These are available for well-known global engine manufacturers, which means the requisite SAE adapter ring is often unnecessary.

The un-machined surfaces of the mounting housing are primed black as standard. On request, mounting housings and mounted flanges can be galvanised and passivated.

# A safe choice – the right choice.

Couplings may be small but there are always major consequences if they don't work correctly. A coupling of the wrong design in the main drive system could result in the early failure of the coupling or another power transmission component, disabling the entire system. That is why you should come to us for advice. If you prefer, we can assist you from the outset, even during the planning phase of a project. You can rest assured that every KTR coupling that leaves our company to be mounted on an internal combustion engine is subject to exacting criteria, in terms of the proper vibration control within the power transmission system.

To ensure that we can guarantee the safe and long-lasting use of our components, all KTR couplings are developed using our special FEM calculation programs and a careful vibration analysis. Naturally, this applies to both our comprehensive standard range and the large number of custom-built models we produce each year according to individual customer requirements.

## Customised designs

Couplings for agricultural and construction machinery deliver exceptional performance; in many cases, they are one of a kind. This is because a made-to-measure solution must take into consideration each of the specific elements of the application in question. You will receive the complete support of our engineers in this regard; we will analyse torque transmission as well as the function of the whole machine – even during the conceptual phase, if desired.

## A cool complement

Hard work creates heat – and we make sure that heat is dissipated. Based on the thermal data you provide, we develop customised heat exchangers to cool charge air, coolants and hydraulic oil. For both single-circuit and multiple-circuit coolers, we tailor modular or system solutions to suit your application, with a compact and optimised design.



# The MMC combined cooler – in its element when dealing with heat.

When you work hard, you also have to cool down regularly. Of course, the same is true for any agricultural and construction machinery kept in motion by couplings from KTR – and components from KTR ensure things stay cool. Take the MMC combined cooler, for example, which has proven itself under the toughest conditions in three ways: as a water cooler, it takes care of cooling water; while as an oil cooler, it prevents hydraulic and gear oil from getting too hot; and as an intercooler, it ensures that combustion air is the right temperature. And because KTR likes to go one step further, it can also be used very efficiently as a fuel cooler, if necessary.



## One cooler – many advantages

The MMC combined cooler offers many advantages. It is compact, powerful, durable and reliable. All of this ultimately pays off for you because the unit offers more installation options, longer operating times and greater efficiency. This makes it the ideal cooling system for mobile agricultural and construction machinery.

However, if your equipment is intended to deliver maximum performance from a single position, the MMC combined cooler also guarantees that stationary combustion engines operate at the right temperature.





## Made to measure as standard

Before we produce a cooler for you, we ask all kinds of questions. Only in this way can we do the best job for you. After all, every cooler from KTR is a customised piece of equipment, developed in close cooperation with the customer to meet the required cooling capacity. Cooling elements may be used individually or combined, either side-by-side or arranged in series. If necessary, MMC coolers can also be fitted with hydraulically or electrically driven fans. You can choose between a 12/24 V or a 230/400 V electric motor. For larger machines, hydraulic systems are a proven solution because they offer higher efficiency, adaptability and lower noise emissions.

No matter which type of drive is used, we use only the latest fan designs. These are both highly efficient and very quiet. If things get noisy on the construction site, you can rest assured it won't be because of the new MMC combined cooler – even if it is running at full speed.



# PRODUCT OVERVIEW FOR OFF-HIGHWAY MACHINERY

					
Product		ROTEX®	POLY-NORM®	REVOLEX® KX-D	BoWex®
Construction machinery	Hydraulic excavators				
	Wheel loaders				
	Telescopic handlers				
	Compactors	■			■
	Paver finishers	■			■
	Road cutters				
	Forklift trucks				
	Diesel generators				
	Mobile compressors				
	Dewatering pumps	■			
Agricultural machinery	Field choppers	■			
	Feed mixer wagons	■			
	Forestry equipment	■			
	Farm loaders				
	Combine harvesters	■			
	Crop protection sprayers	■			
	Carrot harvesters	■			
	Stump grinders				
	Telescopic handlers				
	Grape harvesters	■			
	Balers	■			
	Biogas systems	■	■	■	■
	Slope maintenance equipment	■			
	Drillers	■			
	Bulk fertiliser spreaders	■			
	Wood splitters	■			■
	Potato harvesters	■			
	Mowers and slitting rollers	■			
	Mulchers	■			
	Swath rakes	■			





BoWex-ELASTIC®

BoWex® FLE-PA/  
FLE-PAC

MONOLASTIC®

RUFLEX®

CLAMPEX®

KTR-STOP®

MMC  
combined cooler

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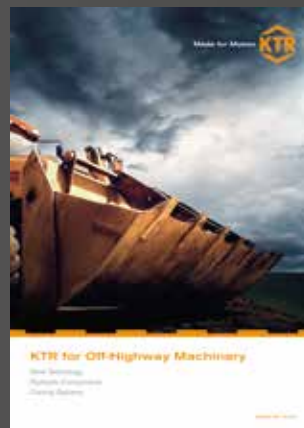
# Overview of literature

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](http://www.ktr.com)

## Product catalogues



## Individual sector brochures





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